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*STEP BY STEP INSTALLATION GUIDE
OF A DIGITAL PRESERVATION INFRASTRUCTURE*

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STEP BY STEP INSTALLATION GUIDE OF A DIGITAL PRESERVATION INFRASTRUCTURE

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ABSTRACT: The Ceris-CNR project of digital preservation infrastructure has been committed by Bess (Social Science Electronic Library of Piemonte) for years 2011-2012 sponsored by Compagnia di San Paolo of Turin. Ceris-CNR role is to handle all the post-scan of the digitalization, for this purpose it has deployed the software and server platforms of the repository and also the web portal for the presentation, research and consulting. This report is a guide of step by step followed to build the digital archive infrastructure.

KEY WORDS: open-source, repository, digital archive, cms

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1 Introduction

The Ceris-CNR project of digital preservation infrastructure has been committed by Bess (Social Science Electronic Library of Piemonte) for years 2011-2012.

Bess is a group of eighteen socioeconomic libraries in Piemonte (Italy) included Ceris-CNR library, they share a common specialization even if they are private foundations, research institutes, and university libraries that means different libraries in terms of size, parent institution, purpose, financial endowment, as well as collections.

One of the initiative promoted by Bess and sponsored by Compagnia di San Paolo of Turin, is the creation of a digital repository of sources of Piedmontese society and economy.

Bess has set up a digitalization laboratory, to be directly used by the members, for the conservation and preservation of collections included out of print and gray literature materials;

External partners are welcome to digitalize and share their archives, Istituto Gramsci for example has licensed "Sisifo" review that is now accessible through Bess archive and other institutions has agree to share some collections yet.

The resulting repository will serve as a source of regional and economic information to the whole community.

Ceris-CNR role is to handle all the post-scan of the digitalization, for the end of the two years' project, we planned to have 5.000 items so Ceris-CNR had to provide for the management of large volumes of data with the availability of space storage for the digitized works with characteristics of stability, versatility and dynamism.

Ceris-CNR has deployed the software and server platforms of the repository, in a virtualized and redundant infrastructure and also take care of the design, development and management of the web portal (front-end) for the presentation, research and consulting data of the digitalized items.

Here listed some evidence of numbers, hardware and software used, most of the aspects will be analyzed in this paper:

- 5000 digitalized items at the end of the project
- files: pdf/a, high resolution tiff, txt file
- Dublin Core metadata
- 14 TB disk space at disposal
- 2-node active/passive open-source cluster
- High Availability Hypervisor using cluster storage
- repository: Fedora Commons
- harvesting OAI-PMH
- scripting for ingesting
- Custom models and datastreams
- Islandora
- front-end server: Drupal
- Solr - search platform from the Apache Lucene project

An analogue project is taking place at another CNR institute: ISMAR - Venice is setting up a digital repository for its historical librarian heritage (<http://biblio1.ve.ismar.cnr.it/fedora/repository>) following up all the listed steps.

In this case the resources consist in different typologies: books, manuscripts, journals and maps from 16th to 20th centuries.

As a consequence there will be some different features in managing collections and in the output structure.

The open-source community helped us to build on our project and this paper is our thanks, of course at disposal of the open-source community.

2 Architecture

Our solution is a two-server architecture: back-end server to host repository and java applications and front-end server for public access to objects. The servers are virtual machines guested on a hypervisor.

The storage for repository and virtualized infrastructure is a HA two-node active/passive cluster deployed with open source software.

2.1 Infrastructure

The whole project is realized at CNR Piedmont Network Infrastructure administered by Ceris-CNR IT Office. The infrastructure includes networking equipments, servers and offers core network services to CNR structures in Piedmont.

Some keywords to describe our experience: VLANs, IPv6, SAML2 SSO, Virtualization, Clustering, Mail server, File server, Wireless.

- **Virtualization**

There are many reasons to choice virtualized deployment: high availability provided by redundant hypervisors, simple maintenance operations, automatic backup, direct portability.

The hypervisors are connected to VLANs so virtual machines can have one or more interfaces, each of them connected to a different subnet.

The HA cluster is the backup storage for hypervisor virtual machines, in case of failure they could be run from cluster to reduce down time.

- **Storage**

The HA storage is our deployment of a open-source cluster. It provides storage for users and network services by iSCSI connected partitions.

Virtual machine system partitions are on local storage of hypervisor and daily scheduled backup on cluster. Data partition of repository server is on the cluster directly attached to server by iSCSI protocol.

The cluster is deployed on Linux OS (Ubuntu 10.04 LTS) using Corosync, Pacemaker and DRBD as main components for cluster orchestration, resources administration and data mirroring.

More details on cluster and maintenance in Ceris-CNR technical report No. 37 "Storage in HA: cluster attivo/passivo open source" and No. 41 "Storage in HA: manutenzione ordinaria e straordinaria".

2.2 Repository Models

2.2.1 Start conditions

- **Objects**
 - Books

- **Digitalization process**
 - high resolution page tiff image
 - page OCR text file
 - book PDF
 - Dublin Core metadata
 - index

- **Metadata**
 - Dublin Core

- **Collections**
 - books organized into collections
 - collections may be nested within another collection
 - collection contains books or collections

- **Search**
 - index and search by Dublin Core elements
 - full-text search

2.2.2 Logical tree

Logical organization of Collections (C), Books (B) and Pages (P). Within brackets PID value.

```

Digital Archive root
[islandora:root] |- Fondazione Gramsci (C)
                  | [fgramsci:collezioni] |- Sisifo (C)
                  |                       | [fgramsci:sisifo] |- Sisifo vol.1 (B)
                  |                       |                       | [fgramsci:TO024-00001] |- Sisifo vol.1 page 1 (P)
                  |                       |                       |                       | [fgramsci:TO024-00001-0001]
                  | ... (C)                       | ... (B)                       | ... (P)
                  | ... (C)                       | ... (B)                       | ... (P)
                  | ... (C)                       | ... (B)                       | ... (P)
                  | ... (C)                       | ... (B)                       | ... (P)
    
```

2.2.3 Logical models

• Collection datastreams

```

DC _____ Dublin Core metadata

<dc:title>Fondazione Gramsci</dc:title>
<dc:identifier>fgramsci:collezioni</dc:identifier>

RELS-EXT _____ Relationship metadata

<isMemberOfCollection xmlns="info:fedora/fedora-system:def/relations-external#"
rdf:resource="info:fedora/islandora:root"/>
<hasModel xmlns="info:fedora/fedora-system:def/model#"
rdf:resource="info:fedora/islandora:collectionCModel"/>
<oai:setSpec>digibess:fgramsci</oai:setSpec>
<oai:setName>DigiBESS FGramsci</oai:setName>

COLLECTION_POLICY _____

<content_models>
  <content_model dsid="ISLANDORACM" name="Islandora Collection Content Model"
namespace="fgramsci:1" pid="islandora:collectionCModel"/>
</content_models>
    
```



```

<search_terms>
</search_terms>
<staging_area/>
<relationship>isMemberOfCollection</relationship>

```

TN _____ Jpeg thumbnail image

SetInfo.xml _____ OAI-PMH Set description

```

<dc:description>Fondazione Gramsci Sisifo</dc:description>

```

See *openbess:collezioni* [8.3.16], *fgramsci:collezioni* [8.3.17] and *fgramsci:sisifo* [8.3.18] for examples in FoXML format.

• Book datastreams

DC _____ Dublin Core metadata

```

<dc:title>Sisifo 1</dc:title>
<dc:creator>Istituto Gramsci piemontese</dc:creator>
<dc:subject>sviluppo; industria; welfare; lavoro; sociale; ricerca; innovazione; cultura,
Piemonte, Torino</dc:subject>
<dc:description>Idee, ricerche, programmi dell'Istituto Gramsci piemontese. Gennaio
1984</dc:description>
<dc:publisher>Istituto Gramsci piemontese</dc:publisher>
<dc:date>2011-10-09</dc:date>
<dc:type>Text</dc:type>
<dc:format/>
<dc:identifier>fgramsci:T0024-00001</dc:identifier>
<dc:identifier>http://www.digibess.it/fedora/repository/fgramsci:T0024-00001</dc:identifier>
<dc:language>it</dc:language>

```

RELS-EXT _____ Relationship metadata

```

<fedora:isMemberOfCollection rdf:resource="info:fedora/fgramsci:sisifo"/>
<fedora-model:hasModel rdf:resource="info:fedora/islandora:bookCModel"/>
<oai:itemID>oai:fcl.to.cnr.it:fgramsci:T0024-00001</oai:itemID>

```

TN _____ Jpeg thumbnail image

INDEX _____ Book index

```

fgramsci:T0024-00001|Sisifo 1||fgramsci:T0024-00001-0001|Perché Sisifo, di Mario Dogliani||
fgramsci:T0024-00001-0002|Il lavoro oggi: trasformazioni nella sua organizzazione e nel suo
significato, di Luciano Gallino a cura di Fiorenzo Ferrero||fgramsci:T0024-00001-0006|Le
riforme istituzionali: quali aspettative dalla politica?||fgramsci:T0024-00001-0006|Politica
per innovare o politica per convivere? Di Mario Dogliani||...||PID|Item||PID|Item

```

PDF _____ Reference PDF

See *fgramsci:T0024-00001* [8.3.19] for example in FoXML format.

• Page datastreams

DC _____ Dublin Core metadata

```

<dc:title>Sisifo 1 - page 0001</dc:title>
<dc:creator>Istituto Gramsci piemontese</dc:creator>
<dc:subject>sviluppo; industria; welfare; lavoro; sociale; ricerca; innovazione; cultura,
Piemonte, Torino</dc:subject>
<dc:description>Idee, ricerche, programmi dell'Istituto Gramsci piemontese. Gennaio
1984</dc:description>
<dc:publisher>Istituto Gramsci piemontese</dc:publisher>
<dc:date>2011-10-09</dc:date>
<dc:type>Text</dc:type>
<dc:format/>
<dc:identifier>fgramsci:T0024-00001-0001</dc:identifier>
<dc:language>it</dc:language>

```

RELS-EXT _____ Relationship metadata

```

<fedora:isMemberOf rdf:resource="info:fedora/fgramsci:T0024-00001"/>
<fedora-model:hasModel rdf:resource="info:fedora/islandora:pageCModel"/>

```

TN _____ Jpeg thumbnail image

JP2 _____ Compressed JPEG2000 page image

OCR _____ OCR page text

TIFF _____ Reference HD Tiff page image

See *fgramsci:TO024-00001-0001* [8.3.20] for example in FoXML format.

3 Back-end server

Java applications (tomcat container) are hosted by back-end server, i.e., repository, viewer, solr, image server and OAI-PMH provider.

3.1 Operating System

- **DNS records**

```
fc1.to.cnr.it  A  150.145.48.41
               A  2a00:1620::41
```

- **Virtual machine creation**

2CPU / 2GB RAM / 8GB HD / 2 eth (DMZ, VLAN2)

- **Ubuntu server 10.04 LTS installation**

from CDROM

default partitioning (root/swap)

- **Network interfaces configuration**

```
nano -w /etc/network/interfaces

auto lo
  iface lo inet loopback
auto eth0
  iface eth0 inet static
    address 150.145.48.41
    netmask 255.255.255.0
    network 150.145.48.0
    broadcast 150.145.48.255
    gateway 150.145.48.1
    dns-nameservers 150.145.48.8 150.145.48.9
    dns-search to.cnr.it
  iface eth0 inet6 static
    address 2a00:1620::41
    netmask 64
    gateway 2a00:1620::1
# Disable autoconf
post-up echo 0 > /proc/sys/net/ipv6/conf/default/accept_ra
post-up echo 0 > /proc/sys/net/ipv6/conf/all/accept_ra
post-up echo 0 > /proc/sys/net/ipv6/conf/$IFACE/accept_ra
post-up echo 0 > /proc/sys/net/ipv6/conf/default/autoconf
post-up echo 0 > /proc/sys/net/ipv6/conf/all/autoconf
post-up echo 0 > /proc/sys/net/ipv6/conf/$IFACE/autoconf

auto eth1
  iface eth1 inet static
    address 192.168.1.41
    netmask 255.255.255.0
    network 192.168.1.0
    broadcast 192.168.1.255
```

- **NTP Client and other packages**

```
apt-get install ntp
nano -w /etc/ntp.conf
server ntp1.inrim.it
server ntp2.inrim.it
/etc/init.d/ntp restart
apt-get install unzip
apt-get install git-core
apt-get install tofrodos
apt-get install libtiff-tools
```

- **OS update**

```
apt-get update
apt-get upgrade
reboot
```

- **Hypervisor guest tools installation**

```
apt-get install build-essential linux-headers-`uname -r` psmisc
mkdir /media/cdrom
mount /dev/cdrom /media/cdrom
cp /media/cdrom/Tools*.tar.gz ./
tar xvf Tools*.tar.gz
cd tools-distrib/
./install.pl
reboot
```

3.2 iSCSI partition configuration

- **Packages required**

```
apt-get install open-iscsi gdisk
```

- **iSCSI discovery**

```
nano -w /etc/iscsi/iscsid.conf

node.startup = automatic

iscsiadm -m discovery -t st -p 192.168.1.105
iscsiadm -m node
```

leave only the one for repository store

```
rm -R /etc/iscsi/nodes/iqn.a
rm -R /etc/iscsi/nodes/iqn.b
rm -R /etc/iscsi/nodes/iqn.c
```

- **iSCSI authentication**

Add authentication method and credentials

```
nano -w /etc/iscsi/nodes/iqn.d/192.168.1.105\,3260\,1/default [8.1.1]

node.session.auth.authmethod = CHAP
node.session.auth.username = user
node.session.auth.password = password
```

Restart iSCSI

```
/etc/init.d/open-iscsi restart
```

- **iSCSI LUN GPT partitioning**

```
gdisk -l /dev/sdb

GPT fdisk (gdisk) version 0.5.1
Partition table scan:
  MBR: protective
  BSD: not present
  APM: not present
  GPT: present
Found valid GPT with protective MBR; using GPT.
Disk /dev/sdb: 23408220815 sectors, 10.9 TiB
Disk identifier (GUID): xxxxxx
Partition table holds up to 128 entries
First usable sector is 34, last usable sector is 23408220781
Total free space is 2014 sectors (1007.0 KiB)
Number  Start (sector)    End (sector)  Size      Code  Name
   1            2048             23408220781   10.9 TiB   0700   Linux/Windows data
```

- **Permanent iSCSI LUN mount at boot time**

find disk UUID

```
ls /dev/disk/by-uuid -alh
```

add entry to fstab file

```
nano -w /etc/fstab

UUID=yyyyy /srv/storage ext4 defaults,auto,_netdev 0 0
```

3.3 Tomcat and MySQL

- **Java**

Add partner repository

```
nano -w /etc/apt/sources.list
deb http://archive.canonical.com/ubuntu lucid partner
deb-src http://archive.canonical.com/ubuntu lucid partner
```

install packages

```
apt-get install sun-java6-jdk sun-java6-jre
```

- **MySQL packages**

```
apt-get install mysql-server libmysql-java
```

- **Tomcat**

Install core and admin packages

```
apt-get install
tomcat6 tomcat6-admin tomcat6-common tomcat6-docs tomcat6-examples tomcat6-user
```

Add Tomcat manager admin user

```
nano -w /etc/tomcat6/tomcat-users.xml [8.1.2]

<tomcat-users>
<role rolename="admin"/>
<role rolename="manager"/>
<user username="*****" password="*****" roles="admin,manager"/>
</tomcat-users>
```

3.4 Fedora Commons 3.5

- **Repository pre-installation task**

Create directory

```
mkdir /usr/local/fedora
```

Configure Tomcat

```
nano -w /etc/default/tomcat6 [8.1.3]

# Stuff for Fedora Commons
export FEDORA_HOME=/usr/local/fedora
PATH=$PATH:$FEDORA_HOME/server/bin:$FEDORA_HOME/client/bin:
$JAVA_HOME/bin:/bin:/usr/bin:/sbin:/usr/sbin
```

Create database

```
mysql -u root -p
CREATE DATABASE fcrepo01;
GRANT ALL ON fcrepo01.* TO fedoraAdmin@localhost IDENTIFIED BY '***';
GRANT ALL ON fcrepo01.* TO fedoraAdmin@%' IDENTIFIED BY '***';
FLUSH PRIVILEGES;
```

Restart Tomcat

```
/etc/init.d/tomcat6 restart
```

- **Repository installation**

Download Fedora Commons jar installer

```
wget http://downloads.sourceforge.net/fedora-commons/fcrepo-installer-3.5.jar
```

Stop Tomcat

```
/etc/init.d/tomcat6 stop
```

Run installer

```
java -jar fcrepo-installer-3.5.jar
```

Install process options

```
#Install Options
#Wed Sep 14 19:05:38 CEST 2011
ri.enabled=true
messaging.enabled=true
apia.auth.required=false
database.jdbcDriverClass=com.mysql.jdbc.Driver
ssl.available=false
database.jdbcURL=jdbc:mysql://localhost/fcrepo01?
    useUnicode=true&characterEncoding=UTF-8&autoReconnect=true
messaging.uri=vm:(broker:(tcp://localhost:61616))
database.password=*****
database.mysql.driver=included
database.username=*****
fesl.authz.enabled=false
tomcat.shutdown.port=8005
deploy.local.services=true
xacml.enabled=true
database.mysql.jdbcDriverClass=com.mysql.jdbc.Driver
tomcat.http.port=8080
fedora.serverHost=fcl.to.cnr.it
database=mysql
database.driver=included
fedora.serverContext=fedora
llstore.type=akubra-fs
tomcat.home=/var/lib/tomcat6
fesl.authn.enabled=true
fedora.home=/usr/local/fedora
database.mysql.jdbcURL=jdbc:mysql://localhost/fcrepo01?
    useUnicode=true&characterEncoding=UTF-8&autoReconnect=true
install.type=custom
servlet.engine=existingTomcat
fedora.admin.pass=*****
```

- **Repository post-installation task**

Configure repository storage Akurba

```
mkdir /srv/storage/data
chown tomcat6:tomcat6 /srv/storage/data
chmod 755 /srv/storage/data
nano -w /usr/local/fedora/server/config/spring/akubra-llstore.xml

<bean name="fsObjectStore" class="org.akubraproject.fs.FSBlobStore" singleton="true">
  <constructor-arg value="urn:example.org:fsObjectStore" />
  <constructor-arg value="/srv/storage/data/objectStore"/>
</bean>
...
<bean name="fsDatastreamStore" class="org.akubraproject.fs.FSBlobStore" singleton="true">
  <constructor-arg value="urn:example.org:fsDatastreamStore" />
  <constructor-arg value="/srv/storage/data/datastreamStore"/>
</bean>
```

Replace Tomcat server configuration

```
cp /usr/local/fedora/install/server.xml /var/lib/tomcat6/conf/server.xml
```

Enable Tomcat AJP for reverse proxy

```
nano -w /var/lib/tomcat6/conf/server.xml [8.1.4]

<!-- Define an AJP 1.3 Connector on port 8009 -->
<!--
-->
<Connector port="8009" protocol="AJP/1.3" redirectPort="8443"/>
```

Change owner

```
chown -R tomcat6:tomcat6 /usr/local/fedora
```

Start Tomcat

```
/etc/init.d/tomcat6 start
```

Edit repository policies to permit APIM access from IP or network

```
nano -w /usr/local/fedora/data/fedora-xacml-policies/repository-
policies/default/deny-apim-if-not-localhost.xml [8.1.5]
```

```
<AttributeValue DataType="http://www.w3.org/2001/XMLSchema#string">150.145.48.41
...
<AttributeValue DataType="http://www.w3.org/2001/XMLSchema#string">2a00:1620:0:0:0:0:41
...
<AttributeValue DataType="http://www.w3.org/2001/XMLSchema#string">2a00:1620:0:ff20:*
...
<AttributeValue DataType="http://www.w3.org/2001/XMLSchema#string">150\ .145\ .48\ .*
```

Edit repository spring policy to avoid IIV authentication

```
cd /usr/local/fedora/server/config/spring/web
cp security.xml security.xml.ORI
nano -w security.xml
```

```
!-- RISearch service gets auth protection
<security:filter-chain pattern="/risearch*"
filters="ChannelFilter,AuthFilterJAAS" /> -->
```

Edit repository policy to permit ingest by reference

```
nano -w /usr/local/fedora/data/fedora-xacml-policies/
repository-policies/default/deny-unallowed-file-resolution.xml [8.1.6]

<Rule RuleId="1" Effect="Permit">
  <Condition FunctionId="urn:oasis:names:tc:xacml:1.0:function:and">
    <Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:regex-string-match">
      <AttributeValue
        DataType="http://www.w3.org/2001/XMLSchema#string">^file:/srv/storage/scansioni/.*/</AttributeVa
        lue>
      <Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:string-one-and-only">
        <ResourceAttributeDesignator
          AttributeId="urn:fedora:names:fedora:2.1:resource:datastream:fileUri"
          DataType="http://www.w3.org/2001/XMLSchema#string"/>
        </Apply>
      </Apply>
      <Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:string-is-in">
        <AttributeValue
          DataType="http://www.w3.org/2001/XMLSchema#string">administrator</AttributeValue>
        <SubjectAttributeDesignator AttributeId="fedoraRole"
          DataType="http://www.w3.org/2001/XMLSchema#string"/>
        </Apply>
      </Condition>
    </Rule>
```

Custom information

```
nano -w /usr/local/fedora/server/config/fedora.fcfg [8.1.7]

<param name="adminEmailList" value="g.birello@ceris.cnr.it supporto@to.cnr.it">
...
<param name="pidNamespace" value="OpenBess">
...
<param name="adminEmails" value="g.birello@ceris.cnr.it supporto@to.cnr.it"/>
...
<param name="repositoryDomainName" value="to.cnr.it"/>
...
<param name="repositoryName" value="Fedora Repository _at_ To.CNR.IT"/>
```

Restart Tomcat

```
/etc/init.d/tomcat6 restart
```

3.5 Solr search platform

Install from package

```
apt-get install solr-tomcat
```

Stop Solr by tomcat manager web page.

Move Solr storage to cluster partition

```
mkdir /srv/storage/solr
cp -pr /var/lib/solr/data /srv/storage/solr/
nano -w /etc/solr/conf/solrconfig.xml [8.1.8]

...
<dataDir>/srv/storage/solr/data</dataDir>
...
```

Edit Solr context configuration file to add filter by IP address

```
nano -w /etc/solr/solr-tomcat.xml [8.1.9]

...
<Valve className="org.apache.catalina.valves.RemoteAddrValve"
allow="127\.0\.0\.1,150\.145\.48\.45,2a00\:1620\:0\:0\:0\:0\:0\:45,0\:0\:0\:0\:0\:0\:1,150\.
145\.48\.41,2a00\:1620\:0\:0\:0\:0\:0\:41,2a00\:1620\:0\:1234.*"/>
...
```

Start Solr by tomcat manager web page.

Ubuntu package installation parameters:

- conf files location

```
/usr/share/solr/conf -> /etc/solr/conf
```

- home directory

```
cat /etc/solr/solr-tomcat.xml [8.1.9]

...
<Environment name="solr/home" type="java.lang.String" value="/usr/share/solr" override="true"/>
...
```

3.6 Fedora Generic Search Service 2.2

• Installation

```
wget http://downloads.sourceforge.net/fedora-commons/genericsearch-2.2.zip
unzip genericsearch-2.2.zip
cp genericsearch-2.2/fedoragsearch.war /var/lib/tomcat6/webapps/
```

• Properties

```
cd /var/lib/tomcat6/webapps/fedoragsearch/WEB-INF/classes
mv configDemoOnSolr/ config
cd config
nano -w fedoragsearch.properties [8.1.10]

fedoragsearch.soapBase      = http://fc1.to.cnr.it:8080/fedoragsearch/services
fedoragsearch.soapUser     = fedoraAdmin
fedoragsearch.soapPass     = password
fedoragsearch.repositoryNames = gsearch_solr
fedoragsearch.indexNames  = gsearch_solr
```

• Repository

```
cd repository
mv DemoAtDtu gsearch_solr
cd gsearch_solr /var/log/apt/history.log.3.gz
nano -w repository.properties [8.1.11]

fgsrepository.repositoryName = gsearch_solr
fgsrepository.fedoraSoap    = http://fc1.to.cnr.it:8080/fedora/services
fgsrepository.fedoraUser    = fedoraAdmin
fgsrepository.fedoraPass    = password
fgsrepository.fedoraObjectDir = /srv/storage/data/objectStore
```

• Index

```
cd ../..
cd index
mv DemoOnSolr/ gsearch_solr
cd gsearch_solr
nano -w index.properties [8.1.12]

fgsindex.indexName = gsearch_solr
fgsindex.indexBase = http://fc1.to.cnr.it:8080/solr
fgsindex.indexDir  = /srv/storage/solr/data/index
```

Remove test condition

```
nano -w demoFoxmlToSolr.xslt [8.1.15]

<!-- <xsl:if test="starts-with($PID,'demo')"> -->
<xsl:apply-templates mode="activeDemoFedoraObject"/>
<!-- </xsl:if> -->
```

add indexing of DSID RELS_EXT, OCR and OBJ


```

...
<xsl:for-each select="foxml:datastream[@ID='RELS-
EXT']/foxml:datastreamVersion[last()]/foxml:xmlContent//rdf:Description/*">
  <field index="TOKENIZED" store="YES" termVector="NO">
    <xsl:attribute name="name">
      <xsl:value-of select="concat('rels.', substring-after(name(), ':'))"/>
    </xsl:attribute>
    <xsl:value-of select="@rdf:resource"/>
  </field>
</xsl:for-each>
<xsl:for-each select="foxml:datastream[@ID='OCR']/foxml:datastreamVersion[last()]">
  <field index="TOKENIZED" store="YES" termVector="NO">
    <xsl:attribute name="name">
      <xsl:value-of select="concat('OCR.', 'OCR')"/>
    </xsl:attribute>
    <xsl:value-of select="exts:getDatastreamText($PID, $REPOSITORYNAME, 'OCR', $FEDORASOAP,
$FEDORAUSER, $FEDORAPASS, $TRUSTSTOREPATH, $TRUSTSTOREPASS)"/>
  </field>
</xsl:for-each>
<xsl:for-each select="foxml:datastream[@ID='OBJ']/foxml:datastreamVersion[last()]">
  <field index="TOKENIZED" store="YES" termVector="NO">
    <xsl:attribute name="name">
      <xsl:value-of select="concat('OBJ.', 'OBJ')"/>
    </xsl:attribute>
    <xsl:value-of select="exts:getDatastreamText($PID, $REPOSITORYNAME, 'OBJ', $FEDORASOAP,
$FEDORAUSER, $FEDORAPASS, $TRUSTSTOREPATH, $TRUSTSTOREPASS)"/>
  </field>
</xsl:for-each>
...

```

remove indexing of any other DSID

```

<!--
      <xsl:for-each select="foxml:datastream[@CONTROL_GROUP='M']">
        <field index="TOKENIZED" store="YES" termVector="NO">
          <xsl:attribute name="name">
            <xsl:value-of select="concat('dsm.', @ID)"/>
          </xsl:attribute>
          <xsl:value-of select="exts:getDatastreamText($PID,
$REPOSITORYNAME, @ID, $FEDORASOAP, $FEDORAUSER, $FEDORAPASS, $TRUSTSTOREPATH,
$TRUSTSTOREPASS)"/>
        </field>
      </xsl:for-each>
-->

```

- **Updater**

```

cd /var/lib/tomcat6/webapps/fedoragsearch/WEB-INF/classes/config
mkdir updater
cd updater
cp -R ../../configBasic/updater/* .

```

[8.1.13]

- **Solr**

Solr schema for fedoraGSearch

```

cd /etc/solr/conf
mv schema.xml schema.xml.bak
cp /var/lib/tomcat6/webapps/fedoragsearch/WEB-
INF/classes/config/index/gsearch_solr/conf/schema.xml .

```

Edit Solr schema to index some datastreams

```

nano -w /etc/solr/conf/schema.xml

```

[8.1.14]

```

<field name="OCR.OCR" type="text_fgs" indexed="true" stored="true" multiValued="true"/>
<field name="OBJ.OBJ" type="text_fgs" indexed="true" stored="true" multiValued="true"/>
...
<field name="rels.isMemberOfCollection" type="string" indexed="true" stored="true" multiValued="true"/>
...
<field name="dc.identifier" type="text_fgs" indexed="true" stored="true" multiValued="true"/>
<field name="dc.description" type="text_fgs" indexed="true" stored="true" multiValued="true"/>
<field name="dc.title" type="text_fgs" indexed="true" stored="true" multiValued="true"/>
<field name="dc.creator" type="text_fgs" indexed="true" stored="true" multiValued="true"/>
<field name="dc.subject" type="text_fgs" indexed="true" stored="true" multiValued="true"/>
<field name="dc.publisher" type="text_fgs" indexed="true" stored="true" multiValued="true"/>
...
<dynamicField name="rels.*" type="text_fgs" indexed="true" stored="true" multiValued="true"/>
<dynamicField name="*" type="ignored" indexed="false" stored="false" multiValued="false"/>

```

NOTE: The following steps (see *fedoraGSearch 2.2 installation manual*) are NOT required to configure Solr for *fedoraGSearch*, settings are just included in 3.5.

```
mv solrconfig.xml solrconfig.xml.bak
cp /var/lib/tomcat6/webapps/fedoragsearch/WEB-INF/classes/config/index/gsearch_solr/conf/solrconfig.xml --
nano -w solrconfig.xml
-<dataDir>/srv/storage/solr/data</dataDir>-
```

- **Rest service**

```
cd /var/lib/tomcat6/webapps/fedoragsearch/WEB-INF/classes/config/rest
```

replace CONFIGPATH with '/var/lib/tomcat6/webapps'

```
<xsl:include href="/var/lib/tomcat6/webapps/fedoragsearch/WEB-INF/classes/config/rest/demoCommon.xslt"/>
```

in all xslt files

```
nano -w demoBrowseIndexToHtml.xslt
nano -w demoGetIndexInfoToHtml.xslt
nano -w demoGetRepositoryInfoToHtml.xslt
nano -w demoGfindObjectsToHtml.xslt
nano -w demoUpdateIndexToHtml.xslt
```

- **Lucene libraries**

Update *fedoraGSearch* lucene libraries

```
cd /var/lib/tomcat6/webapps/fedoragsearch/WEB-INF/lib
cp /usr/share/solr/WEB-INF/lib/lucene-*.jar .
rm lucene-core-2.4.0.jar
rm lucene-demos-2.4.0.jar
rm lucene-highlighter-2.4.0.jar
```

- **Log level**

```
nano -w /var/lib/tomcat6/webapps/fedoragsearch/WEB-INF/classes/log4j.xml [8.1.16]
```

```
<appender name="FILEOUT" class="org.apache.log4j.FileAppender">
  <param name="File" value="/var/log/tomcat6/fedoragsearch.log"/>
  <layout class="org.apache.log4j.PatternLayout">
```

- **Custom information**

```
nano -w /var/lib/tomcat6/webapps/fedoragsearch/WEB-INF/classes/config/index/gsearch_solr/indexInfo.xml [8.1.17]
nano -w /var/lib/tomcat6/webapps/fedoragsearch/WEB-INF/classes/config/repository/gsearch_solr/repositoryInfo.xml [8.1.18]
```

- **Restart Tomcat**

```
/etc/init.d/tomcat6 restart
```

- **Test**

Test installation browsing to URL

```
http://fc1.to.cnr.it:8080/fedoragsearch/rest
```

- **Maintenance**

Index reset:

- browse to URL

```
http://fc1.to.cnr.it:8080/fedoragsearch/rest?operation=updateIndex
```

- click on button **updateIndex createEmpty**

- Stop Solr by tomcat manager web page

- Delete index by server console

```
rm -R /srv/storage/solr/data/index
```

- Start Solr by tomcat manager web page

3.7 Djatoka Jpeg 2000 Image Server

- **Download**

```
cd /tmp/
```

```
wget http://downloads.sourceforge.net/project/djatoka/djatoka/1.1/adore-djatoka-1.1.tar.gz
```

and extract to working directory

```
tar -xzf adore-djatoka-1.1.tar.gz
cp -R adore-djatoka-1.1 /opt/
cd /opt/adore-djatoka-1.1/
```

- **Environment variables**

Tomcat Init script

```
cd bin/
cp env.sh envinit.sh
nano -w envinit.sh

#!/bin/sh
# setup environment variables for tomcat
CURRENTDIR=$PWD
# Define DJATOKA_HOME dynamically
LAUNCHDIR="/opt/adore-djatoka-1.1/bin"
DJATOKA_HOME="/opt/adore-djatoka-1.1"
LIBPATH=$DJATOKA_HOME/lib
if [ `uname` = 'Linux' ] ; then
  if [ `uname -m` = "x86_64" ] ; then
    # Assume Linux AMD 64 has 64-bit Java
    PLATFORM="Linux-x86-64"
    LD_LIBRARY_PATH="$LIBPATH/$PLATFORM"
    export LD_LIBRARY_PATH
    KAKADU_LIBRARY_PATH="-DLD_LIBRARY_PATH=$LIBPATH/$PLATFORM"
  else
    # 32-bit Java
    PLATFORM="Linux-x86-32"
    LD_LIBRARY_PATH="$LIBPATH/$PLATFORM"
    export LD_LIBRARY_PATH
    KAKADU_LIBRARY_PATH="-DLD_LIBRARY_PATH=$LIBPATH/$PLATFORM"
  fi
elif [ `uname` = 'Darwin' ] ; then
  # Mac OS X
  PLATFORM="Mac-x86"
  export PATH="/System/Library/Frameworks/JavaVM.framework/Versions/1.5/Home/bin:$PATH"
  export DYLD_LIBRARY_PATH="$LIBPATH/$PLATFORM"
  KAKADU_LIBRARY_PATH="-DDYLD_LIBRARY_PATH=$LIBPATH/$PLATFORM"
elif [ `uname` = 'SunOS' ] ; then
  if [ `uname -p` = "i386" ] ; then
    # Assume Solaris x86
    PLATFORM="Solaris-x86"
    LD_LIBRARY_PATH="$LIBPATH/$PLATFORM"
    export LD_LIBRARY_PATH
  else
    # Sparcv9
    PLATFORM="Solaris-Sparcv9"
    LD_LIBRARY_PATH="$LIBPATH/$PLATFORM"
    export LD_LIBRARY_PATH
  fi
else
  echo "djatoka env: Unsupported platform: `uname`"
  exit
fi

KAKADU_HOME=$DJATOKA_HOME/bin/$PLATFORM

JAVA_OPTS="$JAVA_OPTS -Djava.awt.headless=true -Dkakadu.home=$KAKADU_HOME
-Djava.library.path=$LIBPATH/$PLATFORM $KAKADU_LIBRARY_PATH"
```

Shell command line utilities Init script

```
nano -w env.sh

#!/bin/sh
# setup environment variables for shell script
# Define DJATOKA_HOME dynamically
LAUNCHDIR=$PWD
cd ..
DJATOKA_HOME="/opt/adore-djatoka-1.1"
LIBPATH=$DJATOKA_HOME/lib
if [ `uname` = 'Linux' ] ; then
  if [ `uname -m` = "x86_64" ] ; then
    # Assume Linux AMD 64 has 64-bit Java
    PLATFORM="Linux-x86-64"
    LD_LIBRARY_PATH="$LIBPATH/$PLATFORM"
```

```

export LD_LIBRARY_PATH
KAKADU_LIBRARY_PATH="-DLIBRARY_PATH=$LIBPATH/$PLATFORM"
else
# 32-bit Java
PLATFORM="Linux-x86-32"
LD_LIBRARY_PATH="$LIBPATH/$PLATFORM"
export LD_LIBRARY_PATH
KAKADU_LIBRARY_PATH="-DLIBRARY_PATH=$LIBPATH/$PLATFORM"
fi
elif [ `uname` = 'Darwin' ] ; then
# Mac OS X
PLATFORM="Mac-x86"
export PATH="/System/Library/Frameworks/JavaVM.framework/Versions/1.5/Home/bin:$PATH"
export DYLD_LIBRARY_PATH="$LIBPATH/$PLATFORM"
KAKADU_LIBRARY_PATH="-DDYLD_LIBRARY_PATH=$LIBPATH/$PLATFORM"
elif [ `uname` = 'SunOS' ] ; then
if [ `uname -p` = "i386" ] ; then
# Assume Solaris x86
PLATFORM="Solaris-x86"
LD_LIBRARY_PATH="$LIBPATH/$PLATFORM"
export LD_LIBRARY_PATH
else
# Sparcv9
PLATFORM="Solaris-Sparcv9"
LD_LIBRARY_PATH="$LIBPATH/$PLATFORM"
export LD_LIBRARY_PATH
fi
else
echo "djatoka env: Unsupported platform: `uname`"
exit
fi

KAKADU_HOME=$DJATOKA_HOME/bin/$PLATFORM
export KAKADU_HOME
cd $LAUNCHDIR
for line in `ls -l $LIBPATH | grep '.jar'`
do
classpath="$classpath:$LIBPATH/$line"
done
CLASSPATH=../build/.$classpath
JAVA_OPTS="$DEBUG -Djava.awt.headless=true -Xmx512M -Xms64M -Dkakadu.home=$KAKADU_HOME
-Djava.library.path=$LIBPATH/$PLATFORM $KAKADU_LIBRARY_PATH -XX:MaxPermSize=256m"
    
```

Kakadu libraries

```

cp /opt/adore-djatoka-1.1/bin/Linux-x86-64/* /usr/local/bin/
cp /opt/adore-djatoka-1.1/lib/Linux-x86-64/* /usr/local/lib/
ldconfig
    
```

Test command line

```

./compress.sh -i ../etc/test.jpg -o ../etc/test.jp2
./extract.sh -i ../etc/test.jp2 -o ../etc/test-size1.jpg -l 1
kdu_compress (return Command Usage)
    
```

- **Tomcat startup default**

```

nano -w /etc/default/tomcat6 [8.1.3]

# Stuff for Adore-Djatoka-1.1
. /opt/adore-djatoka-1.1/bin/envinit.sh

/etc/init.d/tomcat6 restart
    
```

- **Deploy application**

```

cp /opt/adore-djatoka-1.1/dist/adore-djatoka.war /var/lib/tomcat6/webapps/
    
```

Configure log

```

nano -w /var/lib/tomcat6/webapps/adore-djatoka/WEB-INF/classes/log4j.properties

log.dir=/var/log/tomcat6/
log4j.rootLogger=WARN, defaultLog
    
```

Configure test page

```
nano -w /var/lib/tomcat6/webapps/adore-djatoka/index.html
```

replace localhost with fc1.to.cnr.it

Test server installation browsing to URL

```
http://fc1.to.cnr.it:8080/adore-djatoka/
```

3.8 ImageMagick

Install by Ubuntu package

```
apt-get install imagemagick
```

3.9 Islandora Image Viewer

Install IIV from git

```
mkdir /tmp/git
cd git
git clone https://github.com/Islandora/iiv.git iiv
cd iiv/
git pull
cp /home/giancarlo/git/iiv/dist/iiv.war /var/lib/tomcat6/webapps/
```

3.10 Reverse proxy

To expose services and applications also on standard port 80.

- **Install Apache package**

```
apt-get install apache2
```

- **Enable/Disable modules**

```
a2dismod actions auth_basic authn_file authz_groupfile authz_user
a2enmod cache proxy proxy_http proxy_ajp
```

- **Configure site**

```
cp /etc/apache2/sites-available/default /etc/apache2/sites-available/default.ORI
nano -w /etc/apache2/sites-available/default
```

```
<VirtualHost *:80>
    ServerAdmin webmaster@localhost
    ServerName fc1.to.cnr.it
    ErrorLog /var/log/apache2/error.log
    LogLevel warn
    CustomLog /var/log/apache2/access.log combined
    ProxyRequests Off
    ProxyPreserveHost On
    <Proxy *>
        Order deny,allow
        Allow from all
    </Proxy>
    ProxyPass /fedora/describe ajp://127.0.0.1:8009/fedora/describe
    ProxyPassReverse /fedora/describe ajp://127.0.0.1:8009/fedora/describe
    ProxyPass /fedora/oai ajp://127.0.0.1:8009/fedora/oai
    ProxyPassReverse /fedora/oai ajp://127.0.0.1:8009/fedora/oai
    ProxyPass /fedora/risearch ajp://127.0.0.1:8009/fedora/risearch
    ProxyPassReverse /fedora/risearch ajp://127.0.0.1:8009/fedora/risearch
    ProxyPass /fedora/get ajp://127.0.0.1:8009/fedora/get
    ProxyPassReverse /fedora/get ajp://127.0.0.1:8009/fedora/get
    ProxyPass /fedora/services ajp://127.0.0.1:8009/fedora/services
    ProxyPassReverse /fedora/services ajp://127.0.0.1:8009/fedora/services
    ProxyPass /iiv ajp://127.0.0.1:8009/iiv
    ProxyPassReverse /iiv ajp://127.0.0.1:8009/iiv
    ProxyPass /adore-djatoka ajp://127.0.0.1:8009/adore-djatoka
    ProxyPassReverse /adore-djatoka ajp://127.0.0.1:8009/adore-djatoka
    ProxyPass /oaprovider ajp://127.0.0.1:8009/oaprovider
    ProxyPassReverse /oaprovider ajp://127.0.0.1:8009/oaprovider
</VirtualHost>
```

```
/etc/init.d/apache2 restart
```

3.11 OaiProvider

- **Installation**

```
wget http://downloads.sourceforge.net/project/
  fedora-commons/services/3.4/oaiprovider-1.2.2.zip
unzip oaiprovider-1.2.2.zip
cp oaiprovider-1.2.2/oaiprovider.war /var/lib/tomcat6/webapps/
```

- **Configuration**

Stop oaiprovider by tomcat manager web page.

Create mysql database

```
root@fc1:~# mysql -u root -p
mysql> CREATE DATABASE proai;
mysql> GRANT ALL ON proai.* TO proaiAdmin@localhost IDENTIFIED BY '****';
mysql> GRANT ALL ON proai.* TO proaiAdmin@'%' IDENTIFIED BY '****';
mysql> FLUSH PRIVILEGES;
```

Prepare storage

```
mkdir /srv/storage/proai
chown -R tomcat6:tomcat6 /srv/storage/proai
```

Edit proai.properties

```
nano -w /var/lib/tomcat6/webapps/oaiprovider/
  WEB-INF/classes/proai.properties [8.1.22]
...
proai.cacheBaseDir = /srv/storage/proai/cache
proai.sessionBaseDir = /srv/storage/proai/sessions
proai.schemaDir = /srv/storage/proai/schemas
...
proai.db.url = jdbc:mysql://localhost/proai?useUnicode=true&characterEncoding=UTF-
  8&autoReconnect=true
proai.db.driverClassName = com.mysql.jdbc.Driver
...
proai.db.username      = proaiAdmin
proai.db.password     = ****
...
com.mysql.jdbc.Driver.ddlConverter      = proai.util.MySQLDDLConverter
com.mysql.jdbc.Driver.backslashIsEscape = true
...
driver.fedora.baseURL = http://fc1.to.cnr.it:8080/fedora/
driver.fedora.user    = admin
driver.fedora.pass    = ****
...
driver.fedora.identify = http://fc1.to.cnr.it:8080/fedora/get/fc1repo:OAIRepository/Identify.xml
driver.fedora.itemID   = http://www.openarchives.org/OAI/2.0/itemID
...
driver.fedora.md.formats = oai_dc
...
driver.fedora.md.format.oai_dc.dissType = info:fedora/*/DC
...
driver.fedora.setSpec.desc.dissType = info:fedora/*/SetInfo.xml
driver.fedora.itemSetSpecPath = $item <info:fedora/fedora-system:def/relations-
  external#isMemberOfCollection> $set $set <http://www.openarchives.org/OAI/2.0/setSpec>
  $setSpec
...

```

Edit log configuration file

```
nano -w /var/lib/tomcat6/webapps/oaiprovider/WEB-INF/classes/log4j.xml [8.1.23]
...
<appender name="RollingFile" class="org.apache.log4j.RollingFileAppender">
  <param name="File" value="/srv/storage/proai/log/proai.log"/>
...

```

Ingest object to identify OAI Provider, i.e., "fc1repo:OAIRepository" [8.3.15].

Start oaiprovider by tomcat manager web page.

- **Maintenance**

To manual update oaiprovider index after a multiple object ingest:

- Reset the "lastPollDate" for "oai_dc" in the proai database:

```
mysql -u proaiAdmin -p
UPDATE rcFormat SET lastPollDate = 0 WHERE mdPrefix = 'oai_dc'
```

- stop oaiprovider by tomcat manager
- remove folders /srv/storage/proai/cache and /srv/storage/proai/sessions
- drop all tables from proai database

```
mysql -u proaiAdmin -p
USE proai
drop table rcAdmin;
drop table rcFailure;
drop table rcFormat;
drop table rcItem;
drop table rcMembership;
drop table rcPrunable;
drop table rcQueue;
drop table rcRecord;
drop table rcSet;
```

- start oaiprovider by tomcat manager.

4 Front-end server

Web site and repository access are hosted by front-end server.

4.1 Operating System

- **DNS records**

```
server45.to.cnr.it A 150.145.48.45
                  A 2a00:1620::45
demo              CNAME server45.to.cnr.it.
```

- **Virtual machine creation**

1CPU / 1GB RAM / 8GB HD / 1 eth(DMZ)

- **Ubuntu server 10.04 LTS installation**

from CDROM with LAMP and SSH

LVM partitioning (root/swap)

- **Network interfaces configuration**

```
nano -w /etc/network/interfaces

auto lo
iface lo inet loopback
auto eth0
iface eth0 inet static
address 150.145.48.45
netmask 255.255.255.0
network 150.145.48.0
broadcast 150.145.48.255
gateway 150.145.48.1
dns-nameservers 150.145.48.8 150.145.48.9
dns-search to.cnr.it
iface eth0 inet6 static
address 2a00:1620::45
netmask 64
gateway 2a00:1620::1
# Disable autoconf
post-up echo 0 > /proc/sys/net/ipv6/conf/default/accept_ra
post-up echo 0 > /proc/sys/net/ipv6/conf/all/accept_ra
post-up echo 0 > /proc/sys/net/ipv6/conf/$IFACE/accept_ra
post-up echo 0 > /proc/sys/net/ipv6/conf/default/autoconf
post-up echo 0 > /proc/sys/net/ipv6/conf/all/autoconf
post-up echo 0 > /proc/sys/net/ipv6/conf/$IFACE/autoconf

auto eth1
iface eth1 inet static
address 192.168.1.45
netmask 255.255.255.0
network 192.168.1.0
broadcast 192.168.1.255
```

- **NTP Client and other packages**

```
apt-get install ntp
nano -w /etc/ntp.conf
server ntp1.inrim.it
server ntp2.inrim.it
/etc/init.d/ntp restart
apt-get install unzip
apt-get install git-core
```

- **OS update**

```
apt-get update
apt-get upgrade
reboot
```


- **Hypervisor guest tools installation**

```
apt-get install build-essential linux-headers-`uname -r` psmisc
mkdir /media/cdrom
mount /dev/cdrom /media/cdrom
cp /media/cdrom/Tools*.tar.gz ./
tar xvf Tools*.tar.gz
cd tools-distrib/
./install.pl
reboot
```

4.2 Server web Apache

- **Create virtual host**

```
mkdir /usr/share/demo.bess-piemonte.it/
nano -w /etc/apache2/sites-available/demo.bess-piemonte.it

<VirtualHost *:80>
    ServerAdmin webmaster@localhost
    ServerName demo.bess-piemonte.it
    DocumentRoot /usr/share/demo.bess-piemonte.it

    <Directory />
        Options FollowSymLinks
        AllowOverride All
    </Directory>
```

Directory configuration to enable Clean URL

```
<Directory /usr/share/demo.bess-piemonte.it>
    Options FollowSymLinks MultiViews
    AllowOverride All
    Order allow,deny
    allow from all
</Directory>

ScriptAlias /cgi-bin/ /usr/lib/cgi-bin/
<Directory "/usr/lib/cgi-bin">
    AllowOverride None
    Options +ExecCGI -MultiViews +SymLinksIfOwnerMatch
    Order allow,deny
    Allow from all
</Directory>

ErrorLog /var/log/apache2/error.log
LogLevel warn
CustomLog /var/log/apache2/access.log combined
ServerSignature On

</VirtualHost>
```

- **Enable module rewrite**

```
a2enmod rewrite
```

- **Enable site**

```
a2ensite demo.bess-piemonte.it
/etc/init.d/apache2 restart
```

4.3 Drupal CMS

- **Download**

```
wget http://ftp.drupal.org/files/projects/drupal-6.22.tar.gz
tar -xvzf drupal-6.22.tar.gz
```

- **Create site root**

```
cp -R drupal-6.22/* /usr/share/demo.bess-piemonte.it/
cp -R drupal-6.22/.htaccess /usr/share/demo.bess-piemonte.it/
mkdir /usr/share/demo.bess-piemonte.it/sites/default/files
chown www-data:www-data /usr/share/demo.bess-piemonte.it/sites/default/files
cd /usr/share/demo.bess-piemonte.it/sites/default/
cp default.settings.php settings.php
chown www-data:www-data settings.php
```

- **Create database**

```
mysqladmin -u root -p create demobess
mysql -u root -p
GRANT SELECT, INSERT, UPDATE, DELETE, CREATE, DROP, INDEX, ALTER, CREATE TEMPORARY
TABLES, LOCK TABLES ON demobess.* TO 'dbuser'@'localhost' IDENTIFIED BY 'password';
FLUSH PRIVILEGES;
quit

> ~/.mysql_history
```

- **Complete installation**

Run the installation script browsing to URL

```
http://demo.bess-piemonte.it/
```

Create directory

```
mkdir /usr/share/demo.bess-piemonte.it/sites/all/modules
mkdir /usr/share/demo.bess-piemonte.it/sites/all/themes
mkdir /usr/share/demo.bess-piemonte.it/sites/all/libraries
```

Schedule cron job

```
crontab -e
10 * * * * /usr/bin/wget -O - -q -t 1 http://demo.bess-piemonte.it/cron.php
```

- **Install base modules**

Libraries from Ubuntu packages

```
apt-get install php5-gd php5-curl php-soap php5-xsl php5-imagick imagemagick
```

Kakadu libraries

```
wget http://downloads.sourceforge.net/project/djatoka/djatoka/1.1/adore-djatoka-
1.1.tar.gz
tar -xvzf adore-djatoka-1.1.tar.gz
mv adore-djatoka-1.1/bin/Linux-x86-64/* /usr/local/bin/
mv adore-djatoka-1.1/lib/Linux-x86-64/* /usr/local/lib/
ldconfig
rm -R adore-djatoka-1.1

/etc/init.d/apache restart
```

Drupal modules

```
wget http://ftp.drupal.org/files/projects/tabs-6.x-1.3.tar.gz
tar -xvzf tabs-6.x-1.3.tar.gz
mv tabs /usr/share/demo.bess-piemonte.it/sites/all/modules/

wget http://ftp.drupal.org/files/projects/cck-6.x-2.9.tar.gz
tar -xvzf cck-6.x-2.9.tar.gz
mv cck /usr/share/demo.bess-piemonte.it/sites/all/modules/

wget http://ftp.drupal.org/files/projects/imageapi-6.x-1.10.tar.gz
tar -xvzf imageapi-6.x-1.10.tar.gz
mv imageapi /usr/share/demo.bess-piemonte.it/sites/all/modules/
```

Enable modules from Drupal administrator web site browsing to URL

```
http://demo.bess-piemonte.it/admin/build/modules
```

5 Common configuration

@BE = back-end server

@FE = front-end server

5.1 Islandora core

- Pre-installation

@FE

Create Drupal "administrator" role for user admin. i.e., Drupal admin user will be a Repository admin.

@BE

DON'T install Islandora "Drupal Servlet Filter".

Filter permits authentication from Fedora Commons vs Drupal mysql database by opening MySQL access to IP address other than localhost. Instead of servlet, add Drupal admin user /password (hash) and anonymous user in Fedora Commons users.

```
nano -w /usr/local/fedora/server/config/fedora-users.xml

<?xml version="1.0"?>
<users>
  <user name="fedoraAdmin" password="*****">
    <attribute name="fedoraRole">
      <value>administrator</value>
    </attribute>
  </user>
  <user name="drupaladmin" password="MySQLdbHashPassword">
    <attribute name="fedoraRole">
      <value>administrator</value>
    </attribute>
  </user>
  <user name="anonymous" password="anonymous">
    <attribute name="fedoraRole">
      <value>fedoraUser</value>
    </attribute>
  </user>
  <user name="fedoraIntCallUser" password="changeme">
    <attribute name="fedoraRole">
      <value>fedoraInternalCall-1</value>
      <value>fedoraInternalCall-2</value>
    </attribute>
  </user>
</users>
```

Edit Fedora Commons policy to allow APIM access from front-end server

```
nano -w /usr/local/fedora/data/fedora-xacml-policies/repository-
policies/default/deny-apim-if-not-localhost.xml [8.1.5]

<AttributeValue DataType="http://www.w3.org/2001/XMLSchema#string">150.145.48.45</AttributeValue>
<AttributeValue
  DataType="http://www.w3.org/2001/XMLSchema#string">2a00:1620:0:0:0:0:45</AttributeValue>
```

- Installation

@FE

Install Islandora from GitHub.

```
mkdir /tmp/git
cd /tmp/git
git clone https://github.com/Islandora/islandora.git islandora-github
cd islandora-github/
git pull
cd ..
cp -R islandora-github /usr/share/demo.bess-piemonte.it/sites/all/modules/
```

• Configuration

@FE

Enable module and configure Islandora core browsing to URL

```
http://demo.bess-piemonte.it/admin/settings/fedora_repository
```

set parameters

```
Root Collection Name:      Islandora demos collection
Root Collection PID:       islandora:root
Fedora base URL:          http://fcl.to.cnr.it/fedora
Fedora RISEarch URL:      http://fcl.to.cnr.it/fedora/riearch
Fedora SOAP Url:         http://fcl.to.cnr.it/fedora/services/access?wsdl
Fedora SOAP management URL: http://fcl.to.cnr.it:8080/fedora/services/management?wsdl
Enforce namespace restr...: Enabled
PID namespaces allowed ...: islandora: books: fgramschi: openbess:
Digital Repository Title: Bess Digital Archive
Display Object Title ...: Always
Display Object Descript...: Always
Restrict Access to Fedora...: False
Display Collection List ...: Always
Export area:             sites/default/files/fedora_export_area
```

NOTE: add port 8080 to each URL above without reverse proxy on back-end server

Browse to **Solution Packs** tab

```
http://demo.bess-piemonte.it/admin/settings/fedora_repository/demoobjects
```

Select **Install** to ingest the 2 objects into Fedora Commons @BE

```
islandora:collectionCModel [8.3.1]
islandora:root [8.3.2]
```

5.2 Islandora Solution Pack Book

• Install dependencies and modules

@FE

Drupal modules jQuery UI and jQuery Update

```
cd /tmp
wget http://ftp.drupal.org/files/projects/jquery_ui-6.x-1.5.tar.gz
tar -xvzf jquery_ui-6.x-1.5.tar.gz
mv jquery_ui /usr/share/demo.bess-piemonte.it/sites/all/modules/

wget http://ftp.drupal.org/files/projects/jquery_update-6.x-2.0-alpha1.tar.gz
tar -xvzf jquery_update-6.x-2.0-alpha1.tar.gz
mv jquery_update /usr/share/demo.bess-piemonte.it/sites/all/modules/

wget http://jquery-ui.googlecode.com/files/jquery.ui-1.6.zip
unzip jquery.ui-1.6.zip
mv jquery.ui-1.6 /usr/share/demo.bess-piemonte.it/sites/all/libraries/jquery.ui
```

Islandora modules from git

```
Islandora XML Forms
PHP Lib
Objective Forms
Islandora Content Model Forms
Islandora Book Solution Pack
```

repeat for each module

```
cd /tmp/git
git clone https://github.com/Islandora/modulename.git
cd modulename/
git pull
cd ..
cp -R modulename /usr/share/demo.bess-piemonte.it/sites/all/modules/
```

enable modules from Drupal Administer Site building Modules.

NOTE: to update git modules, pull and overwrite files in modules directory.

- **Configuration**

@FE

Browse to admin module URL

```
http://demo.bess-piemonte.it/admin/settings/islandora_book
```

Image processing and OCR are done on @BE, disable options

Create derivative images locally ?	Disable
Perform OCR on incoming TIFF images?	Disable

Browse to Islandora admin **Solution Packs** tab

```
http://demo.bess-piemonte.it/admin/settings/fedora_repository/demoobjects
```

Select **Install** next to **Islandora Books** to ingest the 12 objects into Fedora Commons @BE

islandora:pageCModel	[8.3.3]
islandora:bookCModel	[8.3.4]
islandora:jp2Sdef	[8.3.5]
islandora:viewerSdef	[8.3.6]
islandora:viewerSdep-bookCModel	[8.3.7]
islandora:viewerSdep-pageCModel	[8.3.8]
islandora:tei2htmlSdef	[8.3.9]
islandora:tei2htmlSdep-pageCModel	[8.3.10]
islandora:collection	[8.3.11]
islandora:jp2Sdep-pageCModel	[8.3.12]
islandora:CollectionModel	[8.3.13]
books:collection	[8.3.14]

NOTE: If an error is returned or object missed, try manual ingesting of object FoXML by Fedora Commons admin web page at URL

```
http://fc1.to.cnr.it:8080/fedora/admin
```

- **Test adding new collections**

@BE

Browse to Fedora Commons admin web page

```
http://fc1.to.cnr.it:8080/fedora/admin
```

add a new collection child of root collection (islandora:root)

PID	openbess:collezioni	[8.3.16]
Datastreams	DC, RELS-EXT, COLLECTION_POLICY, TN, SetInfo.xml	
RELS-EXT	<isMemberOfCollection xmlns="info:fedora/fedora-system:def/relations-external#" rdf:resource="info:fedora/islandora:root"/>	
	<hasModel xmlns="info:fedora/fedora-system:def/model#" rdf:resource="info:fedora/islandora:collectionCModel"/>	

Add a second collection child of root collection

PID	fgramsci:collezioni	[8.3.17]
Datastreams	DC, RELS-EXT, COLLECTION_POLICY, TN, SetInfo.xml	
RELS-EXT	<isMemberOfCollection xmlns="info:fedora/fedora-system:def/relations-external#" rdf:resource="info:fedora/islandora:root"/>	
	<hasModel xmlns="info:fedora/fedora-system:def/model#" rdf:resource="info:fedora/islandora:collectionCModel"/>	

@FE

Browse to Drupal repository root at URL

```
http://demo.bess-piemonte.it/fedora/repository
```

to check the new collections container.

- Custom TABs in book view

@BE

Modify datastream DSID ISLANDORACM of object PID islandora:bookCModel [8.3.4] to disable MODS and enable custom code

```
REMOVE <datastream dsid="MODS">...</datastream>

<datastreams>
  <datastream dsid="DC">
    <display_method class="IslandoraBook" file="tocnr_book.inc" method="showFieldSets"
      module="islandora_book"></display_method>
  </datastream>
```

Add new datastream DSID ISLANDORACM to object PID islandora:pageCModel [8.3.3] for single page view

```
<content_model xmlns="http://www.islandora.ca"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" name="book"
  xsi:schemaLocation="http://www.islandora.ca
  http://137.149.200.50/sites/all/modules/islandora/islandoracm.xsd">
  <mimetypes>
    <type>image/tiff</type>
  </mimetypes>
  <datastreams>
    <datastream dsid="DC">
      <display_method class="IslandoraBook" file="tocnr_book.inc" method="showFieldSets"
        module="islandora_book"/>
    </datastream>
```

@FE

Edit tocnr_book.inc to define TABs and add new TAB Index

```
nano -w /usr/share/demo.bess-piemonte.it/sites/
  all/modules/islandora_solution_pack_book/tocnr_book.inc [8.2.1]

$tabset['third_tab'] = array(
  // #type and #title are the minimum requirements.
  '#type' => 'tabpanel',
  '#title' => 'Index',
  '#content' => islandora_book_create_book_index($this->pid),
);
```

Edit islandora_book.module to disable MODS, load DC and RELS-EXT data, set parameters for custom style sheet tocnr_book_view.xsl

```
nano -w /usr/share/demo.bess-piemonte.it/sites/
  all/modules/islandora_solution_pack_book/islandora_book.module [8.2.2]

...
function islandora_book_create_book_view($pid, $query = NULL) {
  ...
  // $xml = $objectHelper->getStream($pid, 'MODS');
  $xml = $objectHelper->getStream($pid, 'DC');
  $dc_xml = $objectHelper->getStream($pid, 'DC');
  $rels_xml = $objectHelper->getStream($pid, 'RELS-EXT');
  ...
  $simpleRELSxml = simplexml_load_string($rels_xml);
  $modello = $simpleRELSxml->xpath('//rdf:RDF/rdf:Description/fedora-
  model:hasModel/@rdf:resource');
  $modello = $modello[0];
  ...
  //inject into xsl stylesheet
  $proc->setParameter('', 'userID', $user->uid);
  $proc->setParameter('', 'objectsPage', base_path());
  $proc->setParameter('', 'pid', $pid);
  $proc->setParameter('', 'ingested', $ingested);
  $proc->setParameter('', 'modello', $modello);
  ...
  $xsl = new DomDocument();
  $test = $xsl->load($path . '/xsl/tocnr_book_view.xsl');
  ...
}
```

add new function to create Index TAB content

```

...
function islandora_book_create_book_index($pid, $query = NULL) {
  global $user;
  module_load_include('inc', 'fedora_repository', 'ObjectHelper');
  $path = drupal_get_path('module', 'islandora_book');
  $objectHelper = new ObjectHelper;
  $rels_xml = $objectHelper->getStream($pid, 'RELS-EXT');
  $simpleRELSxml = simplexml_load_string($rels_xml);
  $modello = $simpleRELSxml->xpath('//rdf:RDF/rdf:Description/fedora-
model:hasModel/@rdf:resource');
  $modello = $modello[0];
  if ($modello == 'info:fedora/islandora:bookCModel') {
    $index_html = $objectHelper->getStream($pid, 'INDEX');
    $ix_html = $objectHelper->getStream($pid, 'INDEX');
    $piddelbook = $pid;
    if (!$index_html) {
      drupal_set_message(t('Object does not exist.'), 'error');
      return '';
    }
  }
  else {
    $piddelbook = substr($pid, 0, -5);
    $index_html = $objectHelper->getStream($piddelbook, 'INDEX');
    $ix_html = $objectHelper->getStream($piddelbook, 'INDEX');
    if (!$index_html) {
      drupal_set_message(t('Object does not exist.'), 'error');
      return '';
    }
  }
  $str_html = "<table cellpadding=\"3\" cellspacing=\"2\" valign=\"top\" >";
  $str_html = $str_html."<tr><td valign=\"top\"";
  $str_html = $str_html."<img src=\"".base_path().".fedora/repository/".$pid."/TN\"></img>";
  $str_html = $str_html."</td><td><div style=\"align:left\"><table cellpadding=\"3\"
cellspacing=\"2\" width=\"90%\"";
  $str_html = $str_html."<tbody><tr><th colspan=\"3\"><h3>Index</h3></th></tr>";
  $selenco = explode("|", $ix_html);
  $nvoci = sizeof($selenco);
  $voce = explode("|", $selenco[0]);
  $str_html = $str_html."<tr><td><a href=\"".base_path().".fedora/repository/".$voce[0]."\"><h2>".
$voce[1]."</h2>";
  $str_html = $str_html."</a></td><td></td></tr>";
  $i=1;
  while($i<$nvoci)
  {
    $voce = explode("|", $selenco[$i]);
    $str_html = $str_html."<tr><td><a href=\"".base_path().".fedora/repository/".$voce[0]."\">".
$voce[1];
    $numpa = substr($voce[0], -4);
    $str_html = $str_html."</a></td><td>page ".intval($numpa)."</td></tr>";
    $i++;
  }
  $str_html = $str_html."</tbody></table></div></td></tr></table>";
  return $str_html;
}
...

```

Edit tocnr_book_view.xsl to format output for book and page and link to pdf, tiff and txt files

```

nano -w /usr/share/demo.bess-piemonte.it/sites/
all/modules/islandora_solution_pack_book/xsl/tocnr_book_view.xsl [8.2.3]

...
<xsl:if test="$MODELLO = 'info:fedora/islandora:bookCModel'">
<tr>
  <td><strong>Full PDF</strong></td>
  <td><a href="{ $OBJECTSPAGE }fedora/repository/{ $PID }/PDF/
{ $COLLEZIONEID }_{ $RECORDID }.pdf">PDF</a></td>
...
<xsl:if test="$MODELLO = 'info:fedora/islandora:pageCModel'">
<tr>
  <td><strong>HD TIFF</strong></td>
  <td><a href="{ $OBJECTSPAGE }fedora/repository/{ $PID }/TIFF/
{ $COLLEZIONEID }_{ $RECORDID }.tif">TIFF</a></td>
</tr>
<tr>
  <td><strong>TEXT</strong></td>
  <td><a href="{ $OBJECTSPAGE }fedora/repository/{ $PID }/OCR/
{ $COLLEZIONEID }_{ $RECORDID }.txt">TXT</a></td>
...

```

Disable TAB “view details”

```
nano -w /usr/share/demo.bess-piemonte.it/sites/
all/modules/islandora-github/plugins/FedoraObjectDetailedContent.inc

// $tabset['fedora_object_details'] = array(
// '#type' => 'tabpanel',
// '#title' => t('Object Details'),
// '#selected' => $show_purge_tab,
// );
// $tabset['fedora_object_details']['tabset'] = array(
// '#type' => 'tabset',
// );
// $dc_html = $objectHelper->getFormattedDC($this->item);
// $ds_list = $objectHelper->get_formatted_datastream_list($this->pid, NULL, $this->item);
// $tabset['fedora_object_details']['tabset']['view'] = array(
// '#type' => 'tabpanel',
// '#title' => t('View'),
// '#content' => $dc_html . $ds_list . $purge_form,
// );
...
// $editform = drupal_get_form('fedora_repository_edit_qdc_form', $this->pid, 'DC');
// $tabset['fedora_object_details']['tabset']['edit'] = array(
// '#type' => 'tabpanel',
// '#title' => t('Edit'),
// '#selected' => $show_edit_tab,
// '#content' => $editform,
// );
```

Disable TAB “add child collections”

```
nano -w /usr/share/demo.bess-piemonte.it/sites/
all/modules/islandora-github/CollectionClass.inc

// $tabset['add_collection_tab'] = array(
// '#type' => 'tabpanel',
// '#title' => t('Add Child Collection'),
// '#content' => drupal_get_form('collection_creation_form', $this->pid),
// );
```

- Increase maximum number of book pages to 9999

@FE

Edit Islandora_solution_pack_book include module

```
nano -w /usr/share/demo.bess-piemonte.it/sites/
all/modules/islandora_solution_pack_book/tocnr_book.inc [8.2.1]

$first_page = new Fedora_Item($this->pid . '-0001');
```

5.3 Viewer customization

- IIV scripts

@BE

Create new files cloning originals

```
cd /var/lib/tomcat6/webapps/iiv
cp -a viewer.jsp tocnr_viewer.jsp
cp -a page_viewer.jsp tocnr_page_viewer.jsp
cp -a js/iiv.js js/tocnr.js
```

Edit book viewer script

```
nano -w tocnr_viewer.jsp [8.1.19]

<title>ToCNR IIV Image Viewer: ${param.pid}</title>

<script src="/iiv/js/tocnr.js"></script>
```


Edit page viewer script

```
nano -w tocnr_page_viewer.jsp [8.1.20]

<title>ToCNR IIV Image Viewer: ${param.pid}</title>

<script src="/iiv/js/tocnr.js"></script>

REMOVE alert("initializing")

cmodel: 'islandora:pageCModel',
```

Edit viewer core

```
nano -w js/tocnr.js [8.1.21]
```

configure OCR as datastream for text

```
textUrl: function(pid) {
  switch(this.cmodel) {
    case 'islandora:bookCModel':
      dsid = 'OCR';
      break;
    case 'islandora:pageCModel':
      dsid = 'OCR';
      break;
  }
}
```

change URL to absolute

```
createUI: function() {
  var container = jQuery(this.viewer.iivContainer);
  // container.append('<link rel="stylesheet" href="/iiv/css/jquery-ui/smoothness/jquery-ui-1.7.2.custom.css" type="text/css" />');
  // container.append('<link rel="stylesheet" href="/iiv/css/iiv.css" type="text/css"/>');
  // container.append('<!--[if IE]><link rel="stylesheet" href="/iiv/css/ie6.css" type="text/css"><![endif-->');
  container.append('<link rel="stylesheet" href="http://'+location.host+'/iiv/css/jquery-ui/smoothness/jquery-ui-1.7.2.custom.css" type="text/css" />');
  container.append('<link rel="stylesheet" href="http://'+location.host+'/iiv/css/iiv.css" type="text/css"/>');
  container.append('<!--[if IE]><link rel="stylesheet" href="http://'+location.host+'/iiv/css/ie6.css" type="text/css"><![endif-->');
}
```

switch from ilives to islandora models

```
initialize: function(options) {
  if (!this.query) {
    if (this.cmodel == 'islandora:bookCModel') {
      this.query = 'select $object from <#ri> '
        + 'where ($object <fedora-model:hasModel> <fedora:islandora:pageCModel> '
        + 'and $object <fedora-rels-ext:isMemberOf> <fedora:' + this.pid + '> '
        + 'order by $object';
    }
    ...
    else if (this.cmodel == 'islandora:pageCModel') {
      this.query = 'select $parent '
        + 'subquery ('
        + '  select $sibling from <#ri> '
        + '  where $sibling <fedora-rels-ext:isMemberOf> $parent '
        + '  and $sibling <fedora-model:hasModel> <fedora:islandora:pageCModel> '
        + '  order by $sibling) '
        + 'from <#ri> '
        + 'where $child <mulgara:is> <fedora:' + this.pid + '> '
        + 'and $child <fedora-rels-ext:isMemberOf> $parent '
        + 'and $parent <fedora-model:hasModel> <fedora:islandora:bookCModel>';
    }
  }
}
```

Minor changes

```
// OpenLayers.Layer.OpenURL.viewerWidth = jQuery('.iiv-canvas').width();
// OpenLayers.Layer.OpenURL.viewerHeight = jQuery('.iiv-canvas').height();

iiv.Viewer.UI = new iiv.Class({
  ...
  // buttonZoomIn: null,
  // buttonZoomOut: null,
  ...
  // buttonPrint: null,

  createZoomControls: function(toolbar) {
    var controls = this.createControlSet(toolbar, 'zoom');
    // this.buttonZoomIn = this.createButton(controls, 'zoom-in', 'Zoom in', 'ui-icon-plus');
    // this.buttonZoomOut = this.createButton(controls, 'zoom-out', 'Zoom out', 'ui-icon-minus');

    createOtherControls: function(toolbar) {
```

```

var controls = this.createControlSet(toolbar, 'other');
this.buttonText = this.createButton(controls, 'text', 'Show text', 'iiv-icon-text');
// this.buttonPrint = this.createButton(controls, 'print', 'Print page', 'ui-icon-print');

addEventHandlers: function() {
    var viewerUI = this;
    // viewerUI.buttonZoomIn.click(function() {
    //     viewerUI.viewer.map.zoomIn();
    // });
    // viewerUI.buttonZoomOut.click(function() {
    //     viewerUI.viewer.map.zoomOut();
    // });
    // viewerUI.buttonPrint.click(function() {
    //     viewerUI.printPage();
    // });

    updateZoomControls: function(zoom) {
        this.sliderZoom.slider('value', zoom);
        if (zoom == this.sliderZoom.slider('option', 'min')) {
            // this.disable(this.buttonZoomOut);
        }
        else {
            // this.enable(this.buttonZoomOut);
        }
        if (zoom == this.sliderZoom.slider('option', 'max')) {
            // this.disable(this.buttonZoomIn);
        }
        else {
            // this.enable(this.buttonZoomIn);
        }
    }
}

```

• Islandora CModels

@BE

Edit models to apply customized scripts

PID	islandora:viewerSdep-bookCModel	[8.3.7]
DSID	WSDL	

```

<wsdl:service name="viewer_service">
  <wsdl:port binding="this:viewer_binding" name="viewer_port">
    <http:address location="http://local.fedora.server/iiv/tochr_viewer.jsp"/>
  </wsdl:port>
</wsdl:service>

```

PID	islandora:viewerSdep-pageCModel	[8.3.8]
DSID	WSDL	

```

<wsdl:service name="viewer_service">
  <wsdl:port binding="this:viewer_binding" name="viewer_port">
    <http:address location="http://local.fedora.server/iiv/tochr_page_viewer.jsp"/>
  </wsdl:port>
</wsdl:service>

```

5.4 Islandora Solr search base and custom module

The base module provides search function. The custom module allows personalized search result page and highlighting function.

@FE

• Intallation

Modules from git

```

cd /tmp/git
git clone git://github.com/Islandora/islandora_solr_search.git
cp -R islandora_solr_search /usr/share/demo.bess-piemonte.it/sites/all/modules/
git clone https://github.com/DannyJoris/islandora_solr_custom.git
cp -R islandora_solr_custom /usr/share/demo.bess-piemonte.it/sites/all/modules/

```

Solr php client

```

wget http://solr-php-client.googlecode.com/files/SolrPhpClient.r60.2011-05-04.tgz
tar xzvf SolrPhpClient.r60.2011-05-04.tgz
cp -R SolrPhpClient/Apache/Solr /usr/share/demo.bess-piemonte.it/sites/all/modules/islandora_solr_search/

```

- **Configuration**

Enable modules and configure base module browsing to URL

```
http://demo.bess-piemonte.it/admin/settings/islandora_solr_search
```

set parameters

```
Solr url:                fcl.to.cnr.it:8080/solr
Request Handler:         Standard
Limit results to namespace: (empty)
Default Display Profile: Custom
Secondary Display Profiles: (none)
Search Field Repetition: 1
Search Terms:           dc.title ~ Title
                        dc.description ~ Description
                        dc.creator ~ Creator
                        dc.publisher ~ Publisher
                        dc.subject ~ Subject
                        OCR.OCR ~ FullText

Facet Fields:           dc.title ~ Title
                        dc.description ~ Description
                        dc.creator ~ Creator
                        dc.publisher ~ Publisher
                        dc.subject ~ Subject

Labels for Returned Fields:
                        dc.title ~ Title
                        dc.description ~ Description
                        dc.creator ~ Creator
                        dc.publisher ~ Publisher
                        dc.subject ~ Subject
                        OCR.OCR ~ FullText

Limit results to fields listed above? False
Minimum Results to Display Facet:      2
Maximum Facets returned:                10
Results per page:                       20
Debug Mode?                             False
```

Override the template files to configure custom module.

Edit base module IslandoraSolrQueryProcessor.inc to enable highlighting

```
nano -w /usr/share/demo.bess-piemonte.it/sites/all/modules/
islandora_solr_search/IslandoraSolrQueryProcessor.inc [8.2.4]

...
$solr->setCreateDocuments(0);
$this->solrParams['hl'] = 'true';
$this->solrParams['hl.fl'] = '*';
$this->solrParams['hl.requireFieldMatch'] = 'true';
$this->solrParams['hl.snippets'] = '10';
$this->solrParams['hl.simple.pre'] = '<b>';
$this->solrParams['hl.simple.post'] = '</b>';
...

```

custom build query

```
...
function buildAndExecuteQuery($query, $fq=null, $dismax=null) {
  if (variable_get('islandora_solr_search_block_request_handler', NULL) == 'standard') {
    $namespace = trim(variable_get('solr_namespace_restriction', NULL));
    if (!$query || $query == '-') {
      $query = '%252F';
    }
    else{
      if ( (strpos($query, 'OCR.OCR')) === FALSE ){
        if (strpos($fq, "rels.hasModel:bookCModel") === FALSE) {
          if ($fq != NULL && $fq != '-') {
            $fq .= $this->facetSeparator."rels.hasModel:bookCModel";
          }else{
            $fq = "rels.hasModel:bookCModel";
          }
        }
      }
    }
  }
  $this->buildQuery($query, $fq, $dismax);
  return $this->executeQuery();
}
...

```

Edit custom module theme/islandora-solr-custom.tpl.php to customize search results

```
nano -w /usr/share/demo.bess-piemonte.it/sites/all/modules/
islandora_solr_custom/theme/islandora-solr-custom.tpl.php [8.2.5]

...
<?php $modello = $result['rels.hasModel']['value']; ?>.
<?php if ($modello == "info:fedora/islandora:pageCModel"):?>
...
<?php elseif ($modello == "info:fedora/islandora:bookCModel"): ?>
...
<?php endif; ?>
```

Add code to custom module theme/islandora_solr_custom.theme.inc to extract highlight word as full-text result search

```
nano -w /usr/share/demo.bess-piemonte.it/sites/all/modules/
islandora_solr_custom/theme/islandora_solr_custom.theme.inc [8.2.6]

...
$hl=$variables['results_raw']->highlighting;
// go over each search result object
foreach ($variables['results_raw']->response->docs as $doc) {
    $resultsArray = array();
    // go over each field within a search result object
    foreach ($db_values as $db_value) {
        $field = $db_value['field'];
        if (isset($doc->$db_value['field'])) {
            $value = $doc->$db_value['field'];
            if (is_array($value)) {
                $value = implode(" ", $value);
            }
            if ($field!="OCR.OCR") {
                $resultsArray[$field]['value'] = $value;
            }
        }
        else {
            $resultsArray[$field]['value'] = '';
        }
    }
    if ($field=="PID") {
        $hlv = $hl->$value;
        foreach ($hlv as $singlef) {
            $linee = "";
            foreach ($singlef as $linea) {
                $linee = $linee."... ".$linea."... <br>";
            }
            $resultsArray['OCR.OCR']['value'] = $linee;
        }
    }
}
...
```

6 Automation scripts

6.1 Configuration

@BE

Java parameters must be modified to allow import and export of large files.

Edit Tomcat startup option

```
nano -w /etc/default/tomcat6 [8.1.3]
JAVA_OPTS="-Djava.awt.headless=true -Xmx1g -Xms128m"
```

@Client

Edit Fedora Commons client script option

```
nano -w /usr/local/fedora/client/bin/env-client.sh [8.1.24]
exec_cmd="exec \"\$java\" -Xms128m -Xmx1g \  
    ...
```

Set environment variable FEDORA_HOME

```
export FEDORA_HOME=/usr/local/fedora
```

NOTE: Client IP address must be enable in policy file deny-apim-if-not-localhost.xml [8.1.5] for API-M access and must have access to @BE server port 8080.

6.2 Export/ingest/modify basic examples

Some examples using REST API-M and command line client.

- REST API-M

Export object in FOXML format:

```
wget --user=fedoraAdmin --password=***  
http://fcl.to.cnr.it:8080/fedora/objects/fgramsci:TO024-00001/export?  
context=archive
```

- Command line client

Export object in FOXML format:

```
cd fedora/client/bin  
./fedora-export.sh fcl.to.cnr.it:8080 fedoraAdmin *** fgramsci:TO024-00001  
info:fedora/fedora-system:FOXML-1.1 archive export/ http
```

Ingest object in FOXML format:

```
./fedora-ingest.sh f fgramsci_TO024-00001.xml info:fedora/fedora-system:FOXML-1.1  
fcl.to.cnr.it:8080 fedoraAdmin *** http
```

Modify object datastream, content is replaced by new data:

- create directive file with new data

```
nano -w bmodify.xml

<?xml version="1.0" encoding="utf-8"?>
<fbm:batchModify xmlns:fbm="http://www.fedora.info/definitions/"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.fedora.info/definitions/ http://www.fedora-
  commons.org/definitions/1/0/api/batchModify-1.1.xsd">
  <fbm:modifyDatastream pid="openbess:TO043-00003" dsID="RELS-EXT" dsControlGroupType="X"
  logMessage="BatchModify - modifyDatastream">
    <fbm:xmlData>
      <rdf:RDF xmlns:dc="http://purl.org/dc/elements/1.1/" xmlns:fedora="info:fedora/fedora-
      system:def/rerelations-external#" xmlns:fedora-model="info:fedora/fedora-system:def/model#"
      xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#">
```

```

xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:oai="http://www.openarchives.org/OAI/2.0/">
  <rdf:Description rdf:about="info:fedora/openbess:T0043-00003">
    <fedora:isMemberOfCollection rdf:resource="info:fedora/openbess:cognetti-C002"/>
    <fedora-model:hasModel rdf:resource="info:fedora/islandora:bookCModel"/>
    <oai:itemID>oai:fcl.to.cnr.it:openbess:T0043-00003</oai:itemID>
  </rdf:Description>
</rdf:RDF>
</fbm:xmlData>
</fbm:modifyDatastream>
</fbm:batchModify>
    
```

– validate directive file

```

./fedora-modify.sh fcl.to.cnr.it:8080 fedoraAdmin **** bmodify.xml ../logs/log http

CONNECTING to Fedora server...
----- VALIDATING DIRECTIVES FILE ONLY -----
Modify Directives File in
bmodify.xml same number of files in two folder
is Valid !
Time elapsed: 0 seconds
A detailed log file was created at
../logs/log
    
```

– execute batch modify directives

```

./fedora-modify.sh fcl.to.cnr.it:8080 fedoraAdmin ****
bmodify.xml ../logs/log http YES
    
```

Edit object datastream, update content:

– read DC datastream content, add new DC element and save directive file (*edit.php*)

```

#!/usr/bin/php

<?php
    if ($argc != 2 || in_array($argv[1], array('--help', '-help', '-h', '-?'))) {
        ?>
        This is a command line PHP script with one option.
    <?php
        exit;
    } else {
        $PID = $argv[1];
    }
    $indoc = new DOMDocument();
    $indoc->formatOutput = true;
    $indoc->preserveWhiteSpace = false;
    $indoc->load('http://fcl.to.cnr.it:8080/fedora/objects/'.$PID.'/datastreams/DC/content');
    $innode = $indoc->
>getElementsByTagNameNS('http://www.openarchives.org/OAI/2.0/oai_dc/', 'dc')->item(0);
    $existid = $indoc->
>getElementsByTagNameNS('http://purl.org/dc/elements/1.1/', 'identifier')->item(0);
    $newidentifier = $indoc->
>createElement('dc:identifier', 'http://www.digibess.it/fedora/repository/'.$PID);
    if ($existid->nextSibling) {
        $existid->parentNode->insertBefore($newidentifier, $existid->nextSibling);
    } else {
        $existid->parentNode->appendChild($newidentifier);
    }
    $dom = new DOMDocument('1.0', 'utf-8');
    $dom->formatOutput = true;
    $dom->preserveWhiteSpace = false;

    $element = $dom->createElement('fbm:batchModify');
    $element->setAttribute('xmlns:fbm', 'http://www.fedora.info/definitions/');
    $element->setAttribute('xmlns:xsi', 'http://www.w3.org/2001/XMLSchema-instance');
    $element->setAttribute('xsi:schemaLocation', 'http://www.fedora.info/definitions/
http://www.fedora-commons.org/definitions/1/0/api/batchModify-1.1.xsd');
    $dom->appendChild($element);

    $element1 = $dom->createElement('fbm:modifyDatastream');
    $element1->setAttribute('pid', $PID);
    $element1->setAttribute('dsID', 'DC');
    $element1->setAttribute('dsControlGroupType', 'X');
    $element1->setAttribute('logMessage', 'BatchModify - modifyDatastream');
    $element->appendChild($element1);

    $element2 = $dom->createElement('fbm:xmlData');
    $element1->appendChild($element2);
    
```

```

$newnode = $dom->importNode($innode, true);
$element2->appendChild($newnode);

print $dom->saveXML()."\n";
print "=====\n";
print 'Wrote: ' . $dom->save("bmodify.xml") . ' bytes'. "\n";
?>

```

- use batch modify to replace DC datastream content

```

./fedora-modify.sh fcl.to.cnr.it:8080 fedoraAdmin ****
bmodify.xml ../logs/log http YES

```

- to edit more objects

```

#!/bin/bash
for (( nbook=2; nbook<=30; nbook++ ))
do
    snbook=$(printf "%05d" $nbook)
    PID="openbess:T0043-"$snbook
    echo ">>>>>>> $PID"
    ./edit.php $PID
    risultato=$(./fedora-modify.sh fcl.to.cnr.it:8080 fedoraAdmin $1 bmodify.xml ../logs/log
http)
    if [[ "$risultato" == *Valid* ]]
    then
        echo "Is Valid"
    else
        echo "ERROR XML $risultato"
        exit
    fi
    #
    # echo -n "Procedo alle modifiche? (Y,N) "
    # read -e RISPO
    # if ![ $RISPO == "Y" ]
    # then
    #     echo "STOP"
    #     exit
    # fi
    ./fedora-modify.sh fcl.to.cnr.it:8080 fedoraAdmin $1 bmodify.xml ../logs/log http YES
done
exit

```

6.3 Book ingest scripts

6.3.1 Input data

- **Collection directory structure**

Collection directory must contain one or more book directories, whatever directory name is allowed.

Books must have the same collection membership.

- **Book directory structure**

Book directory name must be the book PID value with underscore (_) instead of colon (:), e.g. fgramsci_TO024-00001.

Each book directory must contain:

- as many tiff files as pages, file name must be *somethingNNNN.tif*, where NNNN is from 0001 to total page number, e.g. page0001.tif, page0002.tif, ..., page0123.tif
- one PDF file, file name must have .pdf extension, e.g. book12.pdf
- one DublinCore and Index file, file name must have .txt extension, e.g. book12.txt
- one subdirectory, directory name doesn't matter, e.g. OCR
- subdirectory must contain as many txt files as pages, file name must be *somethingNNNN.txt*, where NNNN is from 0001 to total page number, e.g. page0001.txt, page0002.txt, ..., page0123.txt

- **Dublin Core and Index file**

The DCIndex file must be formatted as follow

```

TITLE:Monografie di soci e allievi del laboratorio di economia politica.
CREATOR:R. Università di Torino
SUBJECT:Economia, Lavoro, Società

```

```

PUBLISHER:s.n.
DATE:2012-01-24
TYPE:Text
FORMAT:
LANGUAGE:it
0005:L'industria dei fiammiferi in Italia e all'estero : Tesi di laurea, di Giuseppe Barberi
0359:Questioni relative al risanamento delle monete : economia finanziaria, di Arrigo Caroni
0447:Il concetto di «ragion di stato» in Giovanni Botero e la filosofia della politica, di Mario
De Bernardi
0471:Appunti bibliografici intorno a Giovanni Botero, di Mario De Bernardi
0493:Di un particolare aspetto delle imposte sul consumo, di Mauro Fasiani
0523:Riflessioni su di un punto della teoria dell'illusione finanziaria, di Mauro Fasiani
    
```

The first part contains DC metadata, each line starts with element name, a colon and the value. The index is below DC metadata, without any blank line, each line starts with page number in NNNN format, a colon and the item description.

6.3.2 Templates

Ingesting is made by per-formatted templates in FOXML format. Script substitutes variables in template with values extract from the files in the book directory and executes ingest command.

Book template variables [8.4.3]:

```

[PID]           Book object PID
[PIDLABEL]      Book object label
[DCTITLE]       \
[DCCREATOR]     |
[DCSUBJECT]     |
[DCDESCRIPTION] |
[DCTYPE]        > Dublin Core matadata values
[DCDATE]        | + <dc:identifler> = [PID]
[DCPUBLISHER]  | + <dc:identifler> = http://www.digibess.it/fedora/repository/[PID]
[DCFORMAT]     |
[DCLANGUAGE]   /
[COLLEZIONE]   Book membership collection PID
[FILETN]       Thumbnail file URL relative to file system
[FILEINDEX]    Index file URL relative to file system
[FILEPDF]      PDF file URL relative to file system
    
```

Page template variables [8.4.4]:

```

[PID]           Page object PID
[PIDLABEL]      Page object label
[DCTITLE]       \
[DCCREATOR]     |
[DCSUBJECT]     |
[DCDESCRIPTION] |
[DCTYPE]        > Dublin Core matadata values
[DCDATE]        | + <dc:identifler> = [PID]
[DCPUBLISHER]  |
[DCFORMAT]     |
[DCLANGUAGE]   /
[PIDBOOK]      Page membership book PID
[FILETN]       Thumbnail file URL relative to file system
[FILEJ2]       Jpeg2000 image file URL relative to file system
[FILEOCR]      OCR text file URL relative to file system
[FILETIFF]     Tiff image file URL relative to file system
    
```

6.3.3 Main script

The main script (*ingpiubook.sh* [8.4.2]) is very simple: it calls core script for each book in the collection directory.

The script must be invoked with 4 parameters:

- \$1 = absolute base directory of collection, e.g. “/scansioni/cognetti_collezioni/direttori/”
- \$2 = collection PID, e.g. “openbess:cognetti-C001”
- \$3 = fedoraAdmin password to ingest or “test”
- \$4 = number of pages to ingest or “0” for all, e.g. “5” from page 1 to 5

6.3.4 Core script

The core script (*ingbookepages.sh* [8.4.1]) manages single book ingesting: files are verified, converted, formatted and ingested.

The script must be invoked with 4 parameters:

- \$1 = absolute base directory of book, e.g. “/scansioni/fgramsci_collezioni/sisifo/fgramsci_TO024-00001”
- \$2 = collection PID, e.g. “openbess:fgramsci-C001”
- \$3 = fedoraAdmin password to ingest or “test”
- \$4 = number of pages to ingest or “0” for all, e.g. “5” from page 1 to 5

First step verifies the number of tiff and txt files, their correct naming and pdf file presence.

```
## MAIN CHECK ##
#
# check TIFF files #
...
#
# check subdirectory #
...
#
# check TXT files #
...
#
# check TIFF and TXT number of files #
...
#
# check PDF file #
...
```

DCIndex file is verified, DC metadata extracted to array and Index formatted into temporary file.

```
#
## DC INDEX CHECK, EXTRACT ##
#
# check file DCIndex #
...
#convert from dos to unix
...
#check utf-8
...
#remove first 3 special chars if exist
...
#
# DC check and extract to array #
...
#
# check DC TITLE #
...
#
# show DC metadata #
...
#
# check Index #
...
#
# create datastream INDEX file #
...
```

Next step creates datastream content for book, parameters are added to the book template and ingesting or test is executed.

```
#
## BOOK ##
#
# create thumbnail image from TIFF 0001 #
...
#remove tiff compression
...
#convert to gray scale
...
#resize image
...
#
# prepare book template #
...
#
# ingest book or nothing if test #
...
```

The number of pages to ingest or test is evaluated and loop parameter set.

```
#
## PAGES ##
```

```

#
# evaluate number of pages to ingest #
...
# cycle single page #
...
    
```

PID is derived from book PID for each page, files are checked, datastream content is created, parameters are added to the page template and ingesting or test is executed.

```

#
# define PID and Label #
...
#
# check tiff #
...
#
# remove tiff compression #
...
#
# convert tiff to gray scale #
...
#
# create page thumbnail #
...
#
# create page jpeg2000 #
...
#
# prepare txt file #
...
    #convert from dos to unix
...
    #check utf-8
...
    #remove first 3 special chars if exist
...
#
# prepare page template #
...
#
# ingest page or nothing if test #
...
    
```

NOTE: call the script by nohup command to avoid break, due to long execution time, e.g.:

```

nohup ./ingpiubook.sh /srv/storage/direttori/ openbess:cognetti-C001 password 0 &

nohup ./ingbookepages.sh /srv/storage/direttori/openbess_TO043-00073
openbess:cognetti-C001 test 0 &
    
```

7 Webography

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8 Appendix

8.1 Back-end Server

8.1.1 /etc/iscsi/nodes/iqn.d/192.168.1.105\,3260\,1/default

```

# BEGIN RECORD 2.0-871
node.name = iqn.d
node.tpgt = 1
node.startup = automatic
iface.iscsi_ifacename = default
iface.transport_name = tcp
node.discovery_address = 192.168.1.105
node.discovery_port = 3260
node.discovery_type = send_targets
node.session.initial_cmds_n = 0
node.session.initial_login_retry_max = 4
node.session.xmit_thread_priority = -20
node.session.cmds_max = 128
node.session.queue_depth = 32
node.session.auth.authmethod = CHAP
node.session.auth.username = user
node.session.auth.password = password
node.session.timeo.replacement_timeout = 120
node.session.err_timeo.abort_timeout = 15
node.session.err_timeo.lu_reset_timeout = 20
node.session.err_timeo.host_reset_timeout = 60
node.session.iscsi.FastAbort = Yes
node.session.iscsi.InitialR2T = No
node.session.iscsi.ImmediateData = Yes
node.session.iscsi.FirstBurstLength = 262144
node.session.iscsi.MaxBurstLength = 262144
node.session.iscsi.DefaultTime2Retain = 0
node.session.iscsi.DefaultTime2Wait = 2
node.session.iscsi.MaxConnections = 1
node.session.iscsi.MaxOutstandingR2T = 1
node.session.iscsi.ERL = 0
node.conn[0].address = 192.168.1.105
node.conn[0].port = 3260
node.conn[0].startup = manual
node.conn[0].tcp.window_size = 524288
node.conn[0].tcp.type_of_service = 0
node.conn[0].timeo.logout_timeout = 15
node.conn[0].timeo.login_timeout = 15
node.conn[0].timeo.auth_timeout = 45
node.conn[0].timeo.noop_out_interval = 15
node.conn[0].timeo.noop_out_timeout = 10
node.conn[0].iscsi.MaxRecvDataSegmentLength = 131072
node.conn[0].iscsi.HeaderDigest = None
node.conn[0].iscsi.DataDigest = None
node.conn[0].iscsi.IFMarker = No
node.conn[0].iscsi.OFMarker = No
# END RECORD
    
```

8.1.2 /etc/tomcat6/tomcat-users.xml

```
<?xml version='1.0' encoding='utf-8'?>
<!--
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contributor license agreements. See the NOTICE file distributed with
this work for additional information regarding copyright ownership.
The ASF licenses this file to You under the Apache License, Version 2.0
(the "License"); you may not use this file except in compliance with
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distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
-->
<tomcat-users>
<!--
<role rolename="tomcat"/>
<role rolename="role1"/>
<user username="tomcat" password="tomcat" roles="tomcat"/>
<user username="both" password="tomcat" roles="tomcat,role1"/>
<user username="role1" password="tomcat" roles="role1"/>
-->
<role rolename="admin"/>
<role rolename="manager"/>
<user username="*****" password="*****" roles="admin,manager"/>

</tomcat-users>
```

8.1.3 /etc/default/tomcat6

```

# Run Tomcat as this user ID. Not setting this or leaving it blank will use the
# default of tomcat6.
#TOMCAT6_USER=tomcat6

# Run Tomcat as this group ID. Not setting this or leaving it blank will use
# the default of tomcat6.
#TOMCAT6_GROUP=tomcat6

# The home directory of the Java development kit (JDK). You need at least
# JDK version 1.5. If JAVA_HOME is not set, some common directories for
# OpenJDK, the Sun JDK, and various J2SE 1.5 versions are tried.
#JAVA_HOME=/usr/lib/jvm/openjdk-6-jdk
JAVA_HOME=/usr/lib/jvm/java-6-sun

# Directory where the Tomcat 6 binary distribution resides. This a read-only
# directory that can be shared by all Tomcat instances running on the machine.
# Default: /usr/share/tomcat6
#CATALINA_HOME=/usr/share/$NAME

# Directory for per-instance configuration files and webapps. It contains the
# directories conf, logs, webapps, work and temp. See RUNNING.txt for details.
# Default: /var/lib/tomcat6
#CATALINA_BASE=/var/lib/$NAME

# You may pass JVM startup parameters to Java here. If unset, the default
# options (-Djava.awt.headless=true -Xmx128m) will be used.
JAVA_OPTS="-Djava.awt.headless=true -Xmx1g -Xms128m"

# Use a CMS garbage collector for improved response time
JAVA_OPTS="${JAVA_OPTS} -XX:+UseConcMarkSweepGC -XX:MaxPermSize=256m"

# When using the CMS garbage collector, you should enable the following option
# if you run Tomcat on a machine with exactly one CPU chip that contains one
# or two cores.
#JAVA_OPTS="${JAVA_OPTS} -XX:+CMSIncrementalMode"

# To enable remote debugging uncomment the following line.
# You will then be able to use a java debugger on port 8000.
#JAVA_OPTS="${JAVA_OPTS} -Xdebug
-Xrunjdpw:transport=dt_socket,address=8000,server=y,suspend=n"

# Java compiler to use for translating JavaServer Pages (JSPs). You can use all
# compilers that are accepted by Ant's build.compiler property.
#JSP_COMPILER=javac

# Use the Java security manager? (yes/no, default: no)
TOMCAT6_SECURITY=no

# Number of days to keep logfiles in /var/log/tomcat6. Default is 14 days.
#LOGFILE_DAYS=14

# Location of the JVM temporary directory
# WARNING: This directory will be destroyed and recreated at every startup !
#JVM_TMP=/tmp/tomcat6-temp

# If you run Tomcat on port numbers that are all higher than 1023, then you
# do not need authbind. It is used for binding Tomcat to lower port numbers.
# NOTE: authbind works only with IPv4. Do not enable it when using IPv6.
# (yes/no, default: no)
#AUTHBIND=no

# Stuff for Fedora Commons
export FEDORA_HOME=/usr/local/fedora
PATH=$PATH:$FEDORA_HOME/server/bin:$FEDORA_HOME/client/bin:
    $JAVA_HOME/bin:/bin:/usr/bin:/sbin:/usr/sbin

# Stuff for Adore-Djatoka-1.1
. /opt/adore-djatoka-1.1/bin/envinit.sh
    
```

8.1.4 /var/lib/tomcat6/conf/server.xml

```

<?xml version="1.0" encoding="UTF-8"?>
<!--
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contributor license agreements. See the NOTICE file distributed with
this work for additional information regarding copyright ownership.
The ASF licenses this file to You under the Apache License, Version 2.0
(the "License"); you may not use this file except in compliance with
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distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
-->
<!-- Note: A "Server" is not itself a "Container", so you may not
define subcomponents such as "Valves" at this level.
Documentation at /docs/config/server.html
-->
<Server port="8005" shutdown="SHUTDOWN">
  <!--APR library loader. Documentation at /docs/apr.html -->
  <!--
  <Listener className="org.apache.catalina.core.AprLifecycleListener" SslEngine="on" />
  -->
  <!--Initialize Jasper prior to webapps are loaded. Documentation at /docs/jasper-howto.html -->
  <Listener className="org.apache.catalina.core.JasperListener"/>
  <!-- Prevent memory leaks due to use of particular java/javax APIs-->
  <Listener className="org.apache.catalina.core.JreMemoryLeakPreventionListener"/>
  <!-- JMX Support for the Tomcat server. Documentation at /docs/non-existent.html -->
  <Listener className="org.apache.catalina.mbeans.ServerLifecycleListener"/>
  <Listener className="org.apache.catalina.mbeans.GlobalResourcesLifecycleListener"/>
  <!-- Global JNDI resources
  Documentation at /docs/jndi-resources-howto.html
  -->
  <GlobalNamingResources>
    <!-- Editable user database that can also be used by
    UserDatabaseRealm to authenticate users
    -->
    <Resource name="UserDatabase" auth="Container" type="org.apache.catalina.UserDatabase" description="User
    database that can be updated and saved" factory="org.apache.catalina.users.MemoryUserDatabaseFactory"
    pathname="conf/tomcat-users.xml" />
  </GlobalNamingResources>
  <!-- A "Service" is a collection of one or more "Connectors" that share
  a single "Container" Note: A "Service" is not itself a "Container",
  so you may not define subcomponents such as "Valves" at this level.
  Documentation at /docs/config/service.html
  -->
  <Service name="Catalina">
    <!--The connectors can use a shared executor, you can define one or more named thread pools-->
    <!--
    <Executor name="tomcatThreadPool" namePrefix="catalina-exec-"
    maxThreads="150" minSpareThreads="4"/>
    -->
    <!-- A "Connector" represents an endpoint by which requests are received
    and responses are returned. Documentation at :
    Java HTTP Connector: /docs/config/http.html (blocking & non-blocking)
    Java AJP Connector: /docs/config/ajp.html
    APR (HTTP/AJP) Connector: /docs/apr.html
    Define a non-SSL HTTP/1.1 Connector on port 8080
    -->
    <Connector port="8080" protocol="HTTP/1.1" connectionTimeout="20000" URIEncoding="UTF-8" redirectPort="8443"
    enableLookups="true" acceptCount="100" maxThreads="150" minSpareThreads="25" maxSpareThreads="75"/>
    <!-- A "Connector" using the shared thread pool-->
    <!--
    <Connector executor="tomcatThreadPool"
    port="8080" protocol="HTTP/1.1"
    connectionTimeout="20000"
    redirectPort="8443" />
    -->
    <!-- Define a SSL HTTP/1.1 Connector on port 8443
    This connector uses the JSSE configuration, when using APR, the
    connector should be using the OpenSSL style configuration
    described in the APR documentation -->
    <!--
    <Connector port="8443" protocol="HTTP/1.1" SSLEnabled="true"
    maxThreads="150" scheme="https" secure="true"
    clientAuth="false" sslProtocol="TLS" />
    -->
    <!-- Define an AJP 1.3 Connector on port 8009 -->
    <!--
    -->
    <Connector port="8009" protocol="AJP/1.3" redirectPort="8443"/>
    <!-- An Engine represents the entry point (within Catalina) that processes
    every request. The Engine implementation for Tomcat stand alone
    analyzes the HTTP headers included with the request, and passes them
    on to the appropriate Host (virtual host).
    Documentation at /docs/config/engine.html -->
    <!-- You should set jvmRoute to support load-balancing via AJP ie :
    <Engine name="Catalina" defaultHost="localhost" jvmRoute="jvm1">
    -->
    <Engine name="Catalina" defaultHost="localhost">
    <!--For clustering, please take a look at documentation at:

```

```

        /docs/cluster-howto.html (simple how to)
        /docs/config/cluster.html (reference documentation) -->
    <!--
    <Cluster className="org.apache.catalina.ha.tcp.SimpleTcpCluster"/>
    -->
    <!-- The request dumper valve dumps useful debugging information about
    the request and response data received and sent by Tomcat.
    Documentation at: /docs/config/valve.html -->
    <!--
    <Valve className="org.apache.catalina.valves.RequestDumperValve"/>
    -->
    <!-- This Realm uses the UserDatabase configured in the global JNDI
    resources under the key "UserDatabase". Any edits
    that are performed against this UserDatabase are immediately
    available for use by the Realm. -->
    <Realm className="org.apache.catalina.realm.UserDatabaseRealm" resourceName="UserDatabase"/>
    <!-- Define the default virtual host
    Note: XML Schema validation will not work with Xerces 2.2.
    -->
    <Host name="localhost" appBase="webapps" unpackWARs="true" autoDeploy="true" xmlValidation="false"
    xmlNamespaceAware="false">
        <!-- SingleSignOn valve, share authentication between web applications
        Documentation at: /docs/config/valve.html -->
        <!--
        <Valve className="org.apache.catalina.authenticator.SingleSignOn" />
        -->
        <!-- Access log processes all example.
        Documentation at: /docs/config/valve.html -->
        <!--
        <Valve className="org.apache.catalina.valves.AccessLogValve" directory="logs"
        prefix="localhost_access_log." suffix=".txt" pattern="common" resolveHosts="false"/>
        -->
    </Host>
</Engine>
</Service>
</Server>

```

8.1.5 data/fedora-xacml-policies/repository-policies/default/deny-apim-if-not-localhost.xml

```

<?xml version="1.0" encoding="UTF-8"?>
<Policy xmlns="urn:oasis:names:tc:xacml:1.0:policy" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
PolicyId="deny-apim-if-not-localhost" RuleCombiningAlgId="urn:oasis:names:tc:xacml:1.0:rule-combining-
algorithm:first-applicable">
<Description>deny apim access if client ip address is not 127.0.0.1 (or IPv6 equivalent)</Description>
<Target>
<Subjects>
<AnySubject/>
</Subjects>
<Resources>
<AnyResource/>
</Resources>
<Actions>
<Action>
<ActionMatch MatchId="urn:oasis:names:tc:xacml:1.0:function:string-equal">
<AttributeValue
DataType="http://www.w3.org/2001/XMLSchema#string">urn:fedora:names:fedora:2.1:action:api-m</AttributeValue>
<ActionAttributeDesignator DataType="http://www.w3.org/2001/XMLSchema#string"
AttributeId="urn:fedora:names:fedora:2.1:action:api"/>
</ActionMatch>
</Action>
</Actions>
</Target>
<Rule RuleId="1" Effect="Deny">
<Condition FunctionId="urn:oasis:names:tc:xacml:1.0:function:not">
<Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:or">
<Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:string-at-least-one-member-of">
<EnvironmentAttributeDesignator
AttributeId="urn:fedora:names:fedora:2.1:environment:httpRequest:clientIpAddress"
DataType="http://www.w3.org/2001/XMLSchema#string"/>
<Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:string-bag">
<AttributeValue DataType="http://www.w3.org/2001/XMLSchema#string">127.0.0.1</AttributeValue>
<AttributeValue DataType="http://www.w3.org/2001/XMLSchema#string">::1</AttributeValue>
<AttributeValue DataType="http://www.w3.org/2001/XMLSchema#string">150.145.48.41</AttributeValue>
<AttributeValue
DataType="http://www.w3.org/2001/XMLSchema#string">2a00:1620:0:0:0:0:41</AttributeValue>
<AttributeValue DataType="http://www.w3.org/2001/XMLSchema#string">150.145.48.45</AttributeValue>
<AttributeValue
DataType="http://www.w3.org/2001/XMLSchema#string">2a00:1620:0:0:0:0:45</AttributeValue>
<AttributeValue DataType="http://www.w3.org/2001/XMLSchema#string">0:0:0:0:0:0:0:1</AttributeValue>
</Apply>
</Apply>
<Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:regex-string-match">
<AttributeValue DataType="http://www.w3.org/2001/XMLSchema#string">0:0:0:0:0:0:0:1%.*</AttributeValue>
<Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:string-one-and-only">
<EnvironmentAttributeDesignator
AttributeId="urn:fedora:names:fedora:2.1:environment:httpRequest:clientIpAddress"
DataType="http://www.w3.org/2001/XMLSchema#string"/>
</Apply>
</Apply>
<Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:regex-string-match">
<AttributeValue DataType="http://www.w3.org/2001/XMLSchema#string">2a00:1620:0:fff0.*</AttributeValue>
<Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:string-one-and-only">
<EnvironmentAttributeDesignator
AttributeId="urn:fedora:names:fedora:2.1:environment:httpRequest:clientIpAddress"
DataType="http://www.w3.org/2001/XMLSchema#string"/>
</Apply>
</Policy>

```



```

</Apply>
<Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:regexp-string-match">
  <AttributeValue DataType="http://www.w3.org/2001/XMLSchema#string">2a00:1620:0:ff20.*</AttributeValue>
  <Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:string-one-and-only">
    <EnvironmentAttributeDesignator
      AttributeId="urn:fedora:names:fedora:2.1:environment:httpRequest:clientIpAddress"
      DataType="http://www.w3.org/2001/XMLSchema#string"/>
    </Apply>
  </Apply>
<Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:regexp-string-match">
  <AttributeValue DataType="http://www.w3.org/2001/XMLSchema#string">150\.\.145\.\.48\.\.*</AttributeValue>
  <Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:string-one-and-only">
    <EnvironmentAttributeDesignator
      AttributeId="urn:fedora:names:fedora:2.1:environment:httpRequest:clientIpAddress"
      DataType="http://www.w3.org/2001/XMLSchema#string"/>
    </Apply>
  </Apply>
<Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:regexp-string-match">
  <AttributeValue DataType="http://www.w3.org/2001/XMLSchema#string">10\.\.1\.\.48\.\.*</AttributeValue>
  <Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:string-one-and-only">
    <EnvironmentAttributeDesignator
      AttributeId="urn:fedora:names:fedora:2.1:environment:httpRequest:clientIpAddress"
      DataType="http://www.w3.org/2001/XMLSchema#string"/>
    </Apply>
  </Apply>
</Apply>
</Condition>
</Rule>
</Policy>

```

8.1.6 data/fedora-xacml-policies/repository-policies/default/deny-unallowed-file-resolution.xml

```

<?xml version="1.0" encoding="UTF-8"?>
<Policy xmlns="urn:oasis:names:tc:xacml:1.0:policy" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  PolicyId="deny-file-resolve-if-not-allowed-dir" RuleCombiningAlgId="urn:oasis:names:tc:xacml:1.0:rule-
  combining-algorithm:first-applicable">
  <Description>deny any file datastream resolution if not in allowed file patterns</Description>
  <Target>
    <Subjects>
      <AnySubject/>
    </Subjects>
    <Resources>
      <AnyResource/>
    </Resources>
    <Actions>
      <Action>
        <ActionMatch MatchId="urn:oasis:names:tc:xacml:1.0:function:string-equal">
          <AttributeValue
            DataType="http://www.w3.org/2001/XMLSchema#string">urn:fedora:names:fedora:2.1:action:id-
            retrieveFile</AttributeValue>
          <ActionAttributeDesignator DataType="http://www.w3.org/2001/XMLSchema#string"
            AttributeId="urn:fedora:names:fedora:2.1:action:id"/>
          </ActionMatch>
        </Action>
      </Actions>
    </Target>
    <!-- uncomment (and change the deny rule id) if access via the file protocol is desired.
    The regular expression determines the locations and files allowed for retrieval; it must match the canonical
    file URI for a resource.
    Restricting access to administrators will allow datastreams in control group 'M' to be ingested from the file
    system.
    Restricting access by URI only will allow datastreams in control group 'E' to be located on the file system.
    -->
    <Rule RuleId="1" Effect="Permit">
      <Condition FunctionId="urn:oasis:names:tc:xacml:1.0:function:and">
        <Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:regexp-string-match">
          <AttributeValue
            DataType="http://www.w3.org/2001/XMLSchema#string">^file://srv/storage/scansioni/.*</AttributeValue>
          <Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:string-one-and-only">
            <ResourceAttributeDesignator AttributeId="urn:fedora:names:fedora:2.1:resource:datastream:fileUri"
              DataType="http://www.w3.org/2001/XMLSchema#string"/>
            </Apply>
          </Apply>
          <Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:string-is-in">
            <AttributeValue
              DataType="http://www.w3.org/2001/XMLSchema#string">administrator</AttributeValue>
            <SubjectAttributeDesignator AttributeId="fedoraRole"
              DataType="http://www.w3.org/2001/XMLSchema#string"/>
            </Apply>
          </Condition>
        </Rule>
      <!--
      <Rule RuleId="1" Effect="Deny">
      </Rule>
    -->
  </Policy>

```

8.1.7 server/config/fedora.fcfg

```

<?xml version="1.0" encoding="UTF-8"?>
<server xmlns="http://www.fedora.info/definitions/1/0/config/" class="org.fcrepo.server.BasicServer">
  <param name="datastreamExtensionMappingSource" value="mime-to-extensions.xml">
    <comment>Source of mappings from MIMETYPE to file extension</comment>
  </param>
  <param name="datastreamExtensionMappingId" value="ifmissing">
    <comment>Controls filename extension mapping when the datastream ID is used
      as the source of the filename. Values are as above.</comment>
  </param>
  <param name="httpClientMaxConnectionsPerHost" value="5">
    <comment>Maximum number of Fedora http client connections allowed to a given host.</comment>
  </param>
  <param name="httpClientSocketTimeoutSecs" value="120">
    <comment>Number of seconds Fedora http client will wait for data coming across an
      established http connection.</comment>
  </param>
  <param name="fedoraServerHost" value="fcl.to.cnr.it">
    <comment>Defines the host name for the Fedora server, as seen from the
      outside world.</comment>
  </param>
  <param name="datastreamExtensionMappingLabel" value="always">
    <comment>Controls filename extension mapping when the datastream label is used
      as the source of the filename. Values are always: always generate an extension
      based on the MIMETYPE, using the default extension if none can be determined;
      ifmissing: generate an extension if the filename obtained from the source does not
      already contain one (again returning the default if there is no MIMETYPE-to-extension
      mapping is found); never: never generate an extension, use the filename from the source
      as-is</comment>
  </param>
  <param name="httpClientMaxFollowRedirects" value="3">
    <comment>Maximum number of redirects the Fedora http client will follow (only if
      httpClientFollowRedirects is set to true.)</comment>
  </param>
  <param name="httpClientUserAgent" value="Fedora">
    <comment>The value to be set for the User-Agent HTTP request header.</comment>
  </param>
  <param name="httpClientMaxTotalConnections" value="5">
    <comment>Maximum number of total Fedora http client connections allowed at once.</comment>
  </param>
  <param name="datastreamFilenameSource" value="rels label id">
    <comment>determines the source of the filename generated when download=true
      on a datastream dissemination. Value is space separated list of label: use the datastream label;
      id: use the datastream ID; rels: use the value defined in RELS-INT. Each
      source is checked in order, and the first containing a value is used. Omit
      any of the sources if that source is never to be used. If no sources are to be used,
      and just the default filename and extension below are to be used, specify " ".</comment>
  </param>
  <param name="adminEmailList" value="g.birello@ceris.cnr.it supportto@to.cnr.it">
    <comment>Defines one or more email addresses for server administrators;
      list is space delimited.</comment>
  </param>
  <param name="datastreamMediationLimit" value="5000">
    <comment>Determines the time interval in which external mechanisms must
      respond to requests by the Fedora server. The value is specified in
      milliseconds. The value specified should be set high enough to allow
      for an average response time from any single external mechanisms. Note
      this value must be less than the limit specified for the
      datastreamExpirationLimit.</comment>
  </param>
  <param name="fedoraServerPort" value="8080">
    <comment>Defines the port number on which the Fedora server runs;
      default is 8080.</comment>
  </param>
  <param name="fedoraRedirectPort" value="8443">
    <comment>Defines the redirect port of the Fedora sever; default is 8443.</comment>
  </param>
  <param name="httpClientFollowRedirects" value="true">
    <comment>Should the Fedora http client follow redirects?</comment>
  </param>
  <param name="datastreamExtensionMappingDefault" value="never">
    <comment>Controls filename extension mapping when no filename can be determined from
      the sources listed in datastreamFilenameSource. Values are always: always generate an extension
      based on the MIMETYPE (using the default if no appropriate mapping is specified);
      never: never generate an extension.</comment>
  </param>
  <param name="datastreamContentDispositionInlineEnabled" value="true">
    <comment>determines if a content-disposition header specifying "inline" and
      a filename is added to the response for the REST API getDatastreamDissemination
      when no query parameter of download=true is specified. Browser support for
      recognising a filename in case of "inline" content disposition is patchy,
      so you may wish to disable the content disposition header in this case and only
      have it provided when download=true is specified, in which case the content disposition
      of "attachment" will be used; which is generally supported.</comment>
  </param>
  <param name="fedoraAppServerContext" value="fedora">
    <comment>Defines the context name for the Fedora server within the
      application server. If set to eg "myfedora" the URL for Fedora will result
      in http[s]://fedoraServerHost[:fedoraServerPort]/myfedora.</comment>
  </param>
  <param name="fedoraShutdownPort" value="8005">
    <comment>Defines the port number used to shutdown the Fedora sever;
      default is 8005.</comment>
  </param>
  <param name="datastreamDefaultExtension" value="bin">

```

```

<comment>Extension to use when none can be determined from mappings</comment>
</param>
<param name="datastreamDefaultFilename" value="download">
<comment>Filename to use for datastream downloads when none can be determined from the
sources listed in datastreamFilenameSource.</comment>
</param>
<param name="datastreamExpirationLimit" value="300">
<comment>Controls the size of the datastream mediation hash by removing
entries outside the specified threshold. The value is specified in
seconds. Note this value must be greater than the limit specified for
the datastreamMediationLimit.</comment>
</param>
<param name="datastreamExtensionMappingRel" value="never">
<comment>Controls filename extension mapping when RELS-INT is used
as the source of the filename. Values are as above.</comment>
</param>
<param name="httpClientTimeoutSecs" value="20">
<comment>Number of seconds Fedora http client will wait for a connection before timing
out.</comment>
</param>
<param name="repositoryName" value="Fedora Repository">
<comment>Defines a human readable name for the Fedora server; default is
Fedora Repository.</comment>
</param>
<module role="org.fcrepo.server.security.Authorization"
class="org.fcrepo.server.security.DefaultAuthorization">
<comment>Builds and manages Fedora's authorization structure.</comment>
<param name="REPOSITORY-POLICY-GUITOOL-POLICIES-DIRECTORY" value="data/fedora-xacml-policies/repository-
policies-generated-by-policyguitool" isFilePath="true">
<comment>This parameter is for future use.</comment>
</param>
<param name="POLICY-SCHEMA-PATH" value="xsd/cs-xacml-schema-policy-01.xsd"/>
<param name="ENFORCE-MODE" value="enforce-policies"/>
<param name="VALIDATE-OBJECT-POLICIES-FROM-DATASTREAM" value="false"/>
<param name="XACML-COMBINING-ALGORITHM" value="com.sun.xacml.combine.OrderedDenyOverridesPolicyAlg"/>
<param name="VALIDATE-OBJECT-POLICIES-FROM-FILE" value="false"/>
<param name="VALIDATE-REPOSITORY-POLICIES" value="true"/>
<param name="REPOSITORY-POLICIES-DIRECTORY" value="data/fedora-xacml-policies/repository-policies"
isFilePath="true"/>
</module>
<module role="org.fcrepo.server.security.BackendSecurity"
class="org.fcrepo.server.security.DefaultBackendSecurity">
<comment>Description: Interface to the backend service security
configuration. This module initializes backend service security
information in the server by parsing the beSecurity configuration file.
This file is located in the distribution in
$FEDORA_HOME/dist/server/config/beSecurity.xml. The configuration file
is read once at server startup.</comment>
<param name="beSecurity_char_encoding" value="utf-8">
<comment>The character encoding used for the beSecurity
configuration file. The default is "utf-8". The value
specified must correspond to the character encoding used in the
beSecurity configuration file.</comment>
</param>
<param name="beSecurity_validation" value="false">
<comment>Controls whether beSecurity config file is validated
against the beSecurityDescription schema. The default is
"false". Valid values are "true" or
"false".</comment>
</param>
</module>
<module role="org.fcrepo.server.storage.DOManager" class="org.fcrepo.server.storage.DefaultDOManager">
<comment>The interface to the storage subsystem. This provides
context-appropriate DOReaders and DOWriters for reflecting on and
writing to the objects stored in the repository. It also provides
methods for reflecting on the contents of the repository as a whole.</comment>
<param name="defaultDCControlGroup" value="X">
<comment>The control group to use for the system-generated DC datastream
if no DC datastream is present on ingest. Must be "X" or "M".</comment>
</param>
<param name="gSearchPassword" value="examplePassword">
<comment>The associated password for accessing the REST endpoint
of the Fedora Generic Search service. This parameter is only
required if GSearchDOManager is used, and the service requires
authentication.</comment>
</param>
<param name="storageCharacterEncoding" value="UTF-8">
<comment>If the serialization format is text-based, this is the
character encoding that should be used. Default is UTF-8.</comment>
</param>
<param name="gSearchUsername" value="exampleUsername">
<comment>The username for accessing the REST endpoint of the
Fedora Generic Search service. This parameter is only required if
GSearchDOManager is used, and the service requires
authentication.</comment>
</param>
<param name="storagePool" value="localMySQLPool">
<comment>The named connection pool from which read/write database
connections are to be provided for the storage subsystem (see the
ConnectionPoolManager module). Default is the default provided by the
ConnectionPoolManager.</comment>
</param>
<param name="gSearchRESTURL" value="http://localhost:8080/fedoragsearch/rest">
<comment>The REST endpoint of the Fedora Generic Search service.
This parameter is only required if GSearchDOManager is
used.</comment>

```

```

</param>
<param name="defaultExportFormat" value="info:fedora/fedora-system:FOXML-1.1"/>
<param name="defaultRELSControlGroup" value="X">
    <comment>The control group to use for system-generated RELS-EXT and
        RELS-INT datastreams where these are not already present when
        adding relationships via addRelationship. Must be "X" or "M".</comment>
</param>
<param name="pidNamespace" value="OpenBess">
    <comment>This is the namespace id for pids of newly-created objects.
        This should be unique for a repository. It can be from 1 to 17
        characters, and may only contain A-Z, a-z, 0-9, '.', or '-' (dash).</comment>
</param>
</module>
<module role="org.fcrepo.server.management.Management" class="org.fcrepo.server.management.ManagementModule">
    <comment>The management subsystem. This implements the methods necessary
        to fulfill API-M requests without regard to:
        - how the service is exposed
        - how bytestreams and java types might be marshalled/demarshalled over the wire
        - how the storage subsystem is implemented.</comment>
    <param name="purgeDelayInMillis" value="60000">
        <comment>Optional, default is 60000 (1 minute).
            This specifies the amount of time between checks to remove
            temporary files uploaded via the API-M upload interface. During
            each check, old files whose age exceeds uploadStorageMinutes
            will be removed.</comment>
    </param>
    <param name="decorator1" value="org.fcrepo.server.messaging.NotificationInvocationHandler"/>
    <param name="checksumAlgorithm" value="MD5">
        <comment>Specifies which checksumming algorithm is to be used when
            automatically computing checksums as specified by the above
            parameter. Valid values are: MD5 SHA-1 SHA-256 SHA-384 SHA-512.</comment>
    </param>
    <param name="uploadStorageMinutes" value="5">
        <comment>Optional, default is 5.
            This specifies the minimum amount of time that each uploaded
            file should be kept in temporary storage.</comment>
    </param>
    <param name="autoChecksum" value="false">
        <comment>Controls whether a checksum is automatically computed for
            every datastream as the datastream is added to the repository. This
            will allow the integrity of datastream contents to be periodically
            checked to insure the object is not corrupted.</comment>
    </param>
</module>
<module role="org.fcrepo.server.access.Access" class="org.fcrepo.server.access.DefaultAccess">
    <comment>Description: The access subsystem. This implements the methods
        necessary to fulfill API-A requests without regard to:
        - how the service is exposed
        - how bytestreams and java types might be marshalled/demarshalled
        over the wire.</comment>
    <param name="doMediateDatastreams" value="false">
        <comment>A boolean switch indicating whether Datastream Mediation is
            activated or not. Datastream Mediation is required if using basic
            authentication for API-A. When basic authentication is enabled for
            API-A, backend services used by custom disseminations may or may not be
            capable of authenticating with the Fedora server. Datastream mediation
            coupled with the backend service configuration information in the
            beSecurity.xml file enables the Fedora server to determine which backend
            services are required to authenticate and which ones are allowed to
            connect without authentication. Datastream mediation provides additional
            repository security by not exposing the physical location of Referenced
            Content datastreams to external mechanisms (services). Instead of
            exposing the actual physical location of Referenced Content datastreams,
            Datastream Mediation functions as a proxy requiring all external
            services to communicate through the Fedora server to resolve the
            location of Referenced Content datastreams.

            IMPORTANT: For Datastream Mediation to function, the Fedora server must
            be internet accessible using the configured name for fedoraServerHost
            and fedoraServerPort. For example, using the default fedoraServerHost
            value of "localhost" will not work if you have remote backend services
            since the hostname of "localhost" will not be resolvable as the Fedora
            server by the remote backend services. This requirement can be difficult
            to satisfy if the Fedora server is located behind a firewall and you do
            not have ready access to the firewall's configuration to enable the
            required access. If the Fedora server is behind a firewall and you have
            no access to the firewall's configuration, you are limited to keeping
            Datastream Mediation turned off. Note that this will also prevent you
            from using basic authentication with API-A. The default value of
            doMediateDatastreams is false.</comment>
    </param>
</module>
<module role="org.fcrepo.server.access.DynamicAccess" class="org.fcrepo.server.access.DynamicAccessModule">
    <comment>The dynamic behavior module for the access subsystem. This
        implements the methods necessary to fulfill API-A requests without
        regard to:
        - dynamically associating a default behavior definition and mechanism with objects
        - (Future) dynamically associating other behavior definitions and mechanisms
        with objects
        - running disseminations of dynamic behaviors</comment>
    <param name="fedora-system:1" value="org.fcrepo.server.access.internalservices.Bootstrap">
        <comment>The interface that defines the methods of the bootstrap
            disseminator. These methods are "built-in" to the Fedora system, and
            are dynamically associated with every behavior definition and
            behavior mechanism object.</comment>
    </param>
</module>
</param>

```

```

<param name="fedora-system:2" value="org.fcrepo.server.access.internalservices.BootstrapImpl">
  <comment>The class that implements the methods of the bootstrap
  disseminator. These method implementations are "built-in" to the
  Fedora system, and are dynamically associated with every behavior
  definition and behavior mechanism object. This class can be thought
  of as implementing an "internal service" whereas other disseminators
  use external services (described by WSDL) to do their work.</comment>
</param>
<param name="fedora-system:3" value="org.fcrepo.server.access.defaultdisseminator.DefaultDisseminator">
  <comment>The interface that defines the methods of the default
  disseminator. These methods are "built-in" to the Fedora system, and
  are dynamically associated with every object.</comment>
</param>
<param name="fedora-system:4" value="org.fcrepo.server.access.defaultdisseminator.DefaultDisseminatorImpl">
  <comment>The class that implements the methods of the default
  disseminator. These method implementations are "built-in" to the
  Fedora system, and are dynamically associated with every object.
  This class can be thought of as implementing an "internal service"
  whereas other disseminators use external services (described by
  WSDL) to do their work.</comment>
</param>
</module>
<module role="org.fcrepo.server.search.FieldSearch" class="org.fcrepo.server.search.FieldSearchSQLModule">
  <comment>Supports the API-A simpleSearch and advancedSearch methods.</comment>
  <param name="indexDCFields" value="true">
    <comment>(optional, default is true) Whether the content of the DC
    datastream should be examined and the contents indexed, for each object.
    You may wish to save time and space by disabling DC field indexing,
    particularly if you have an external search service (such as Fedora
    Generic Search) that already fulfills this need.
    Note: If you change this value on a Fedora repository that has been
    running for some time, you will need to perform a SQL rebuild using the
    Fedora Rebuilder tool if you want to change objects that have already
    been ingested.</comment>
  </param>
  <param name="connectionPool" value="localMySQLPool">
    <comment>(optional) To make unspecified, comment out or delete the
    whole param line as opposed to using an empty string,
    default=ConnectionFactory's default) The connectionPool
    providing the connection to the database to be used. Warning: When
    setting these values, keep in mind that while a session is not timed
    out (maxSecondsPerSession seconds haven't elapsed, and not all
    results have been requested), a connection from the pool is tied up.
    Therefore, the connectionPool should be at least of size n, large
    enough to accomodate n simultaneous search sessions. The longer
    maxSecondsPerSession is, the more chance you have of tying up all
    available connections from the pool. Therefore, keep
    maxSecondsPerSession fairly low, but still reasonable for an
    automated program or user to serially get a long list of results,
    and make sure you have a connectionPool large enough to accomodate
    your users.</comment>
  </param>
  <param name="maxSecondsPerSession" value="500">
    <comment>(required, must be > 0)
    The maximum number of seconds that the server guarantees subsequent
    search results may be obtained. This is only used in cases where the
    number of results is greater than maxResults (as specified by the
    server [above] or the client [in the search request]).</comment>
  </param>
  <param name="maxResults" value="100">
    <comment>(required, must be > 0)
    The maximum number of records to
    return as the result of a search. Even if a client requests more
    results at a time, this is the cutoff value.</comment>
  </param>
</module>
<module role="org.fcrepo.server.resourceIndex.ResourceIndex"
  class="org.fcrepo.server.resourceIndex.ResourceIndexModule">
  <comment>Supports the ResourceIndex.</comment>
  <param name="level" value="1">
    <comment>(required)
    Index level. Currently, only 0, and 1 are supported levels.
    0 = off and 1 = on.
    WARNING: changing the level (except to 0) requires
    running the Resource Index Rebuilder.</comment>
  </param>
  <param name="syncUpdates" value="false">
    <comment>(optional, default is false)
    Whether to flush the triple buffer before
    returning from object modification operations.
    Specifying this as true will ensure that RI queries
    immediately reflect the latest triples.
    Specifying false will not provide this guarantee,
    but can significantly reduce roundtrip time for
    API-M operations (depending on the triplestore
    implementation).</comment>
  </param>
  <param name="datastore" value="localMulgaraTriplestore">
    <comment>(required)
    Name of the triplestore to use. WARNING: changing the
    triplestore running the Resource Index Rebuilder.</comment>
  </param>
  <param name="alias:test" value="http://example.org/terms#">
    <comment>(optional) Aliases that can be used for queries. The param
    name of an alias starts with the string "alias:" and is followed by
    the name of the alias (shortcut) for the value, which is a URI
  </comment>
  </param>

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        prefix. For example: name="alias:test"
        value="http://example.org/terms#" will allow a query to use
        test:apple instead of http://example.org/terms#apple</comment>
    </param>
</module>
<module role="org.fcrepo.oai.OAIProvider" class="org.fcrepo.server.oai.FedoraOAIProviderModule">
    <comment>Description: Exposes the repository for OAI harvesters.</comment>
    <param name="maxRecords" value="100"/>
    <param name="friends" value="http://arXiv.org/oai2 http://memory.loc.gov/cgi-bin/oai2_0"/>
    <param name="adminEmails" value="g.birello@ceris.cnr.it supporto@to.cnr.it"/>
    <param name="repositoryDomainName" value="to.cnr.it"/>
    <param name="maxHeaders" value="100"/>
    <param name="repositoryName" value="Fedora Repository _at_ To.CNR.IT"/>
</module>
<module role="org.fcrepo.server.storage.translation.DOTranslator"
class="org.fcrepo.server.storage.translation.DOTranslatorModule">
    <comment>Supports translation from DigitalObject to a stream of some
        format, and vice-versa. The parameters below specify
        serializer/deserializer classes to be used for a given format. Those
        classes must implement the DOSerializer/DODeserializer interfaces.</comment>
    <param name="serializer_info:fedora/fedora-system:ATOM-1.1"
value="org.fcrepo.server.storage.translation.Atom1_IDOSerializer"/>
    <param name="deserializer_info:fedora/fedora-system:FOXML-1.1"
value="org.fcrepo.server.storage.translation.FOXML1_IDODeserializer"/>
    <param name="serializer_info:fedora/fedora-system:METSFedoraExt-1.0"
value="org.fcrepo.server.storage.translation.METSFedoraExt1_ODOSerializer"/>
    <param name="deserializer_info:fedora/fedora-system:METSFedoraExt-1.1"
value="org.fcrepo.server.storage.translation.METSFedoraExt1_IDODeserializer"/>
    <param name="serializer_info:fedora/fedora-system:METSFedoraExt-1.1"
value="org.fcrepo.server.storage.translation.METSFedoraExt1_IDOSerializer"/>
    <param name="deserializer_info:fedora/fedora-system:METSFedoraExt-1.0"
value="org.fcrepo.server.storage.translation.METSFedoraExt1_ODODeserializer"/>
    <param name="serializer_info:fedora/fedora-system:FOXML-1.0"
value="org.fcrepo.server.storage.translation.FOXML1_ODOSerializer"/>
    <param name="deserializer_info:fedora/fedora-system:ATOMZip-1.1"
value="org.fcrepo.server.storage.translation.AtomZip1_IDODeserializer"/>
    <param name="serializer_info:fedora/fedora-system:FOXML-1.1"
value="org.fcrepo.server.storage.translation.FOXML1_IDOSerializer"/>
    <param name="deserializer_info:fedora/fedora-system:ATOM-1.1"
value="org.fcrepo.server.storage.translation.Atom1_IDODeserializer"/>
    <param name="deserializer_info:fedora/fedora-system:FOXML-1.0"
value="org.fcrepo.server.storage.translation.FOXML1_ODODeserializer"/>
    <param name="serializer_info:fedora/fedora-system:ATOMZip-1.1"
value="org.fcrepo.server.storage.translation.AtomZip1_IDOSerializer"/>
</module>
<module role="org.fcrepo.server.management.PIDGenerator"
class="org.fcrepo.server.management.BasicPIDGenerator">
    <comment>The pid generator.</comment>
    <param name="pidgen_log_dir" value="pidgen"/>
</module>
<module role="org.fcrepo.server.messaging.Messaging" class="org.fcrepo.server.messaging.MessagingModule">
    <comment>Fedora's Java Messaging Service (JMS) Module</comment>
    <param name="enabled" value="true"/>
    <param name="java.naming.factory.initial" value="org.apache.activemq.jndi.ActiveMQInitialContextFactory"/>
    <param name="java.naming.provider.url" value="vm:(broker:(tcp://localhost:61616))"/>
    <param name="datastore1" value="apimUpdateMessages">
    <comment>A datastore representing a JMS Destination for APIM events which update the repository</comment>
    </param>
    <param name="datastore2" value="apimAccessMessages">
    <comment>A datastore representing a JMS Destination for APIM events which do not update the
    repository</comment>
    </param>
</module>
<module role="org.fcrepo.server.storage.ConnectionPoolManager"
class="org.fcrepo.server.storage.ConnectionPoolManagerImpl">
    <comment>This module facilitates obtaining ConnectionPools</comment>
    <param name="defaultPoolName" value="localMySQLPool"/>
    <param name="poolNames" value="localMySQLPool"/>
</module>
<module role="org.fcrepo.server.validation.DOVValidator" class="org.fcrepo.server.validation.DOVValidatorModule">
    <comment>Description: Supports validation of digital objects, including
        XML Schema validation, Schematron validation (to Fedora Rules schema
        written in Schematron language), and other programatic validation
        including referential integrity checking of existence and
        availability of distributed data and/or services.</comment>
    <param name="tempDir" value="work">
    <comment>(required)
        This is a directory that the validation module can use as a work space, as
        when it must write a temporary file.</comment>
    </param>
    <param name="rules_info:fedora/fedora-system:ATOM-1.1" value="schematron/atom-bogus.xml">
    <comment>The local path to the Schematron Rules used for
        Fedora-specific on Atom XML files.</comment>
    </param>
    <param name="schtron_preprocessor" value="schematron/preprocessor.xslt"/>
    <param name="rules_info:fedora/fedora-system:ATOMZip-1.1" value="schematron/atom-bogus.xml">
    <comment>The local path to the Schematron Rules used for
        Fedora-specific on Atom Zip files.</comment>
    </param>
    <param name="rules_info:fedora/fedora-system:FOXML-1.1" value="schematron/foxmlRules1-1.xml">
    <comment>The local path to the Schematron Rules used for
        Fedora-specific validation on FOXML 1.1 XML files.</comment>
    </param>
    <param name="rules_info:fedora/fedora-system:FOXML-1.0" value="schematron/foxmlRules1-0.xml">
    <comment>The local path to the Schematron Rules used for
        Fedora-specific validation on FOXML 1.0 XML files.</comment>
    </param>

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</param>
<param name="xsd_info:fedora/fedora-system:METSFedoraExt-1.1" value="xsd/mets-fedora-ext1-1.xsd">
  <comment>The local path for the Fedora-METS XML
    schema used to do XML schema validation of digital objects.</comment>
</param>
<param name="xsd_info:fedora/fedora-system:METSFedoraExt-1.0" value="xsd/mets-fedora-ext.xsd">
  <comment>The local path for the Fedora-METS 1.0 XML
    schema used to do XML schema validation of digital objects.</comment>
</param>
<param name="xsd_xacml_policy1.0" value="xsd/cs-xacml-schema-policy-1.0.xsd">
  <comment>The local path for the OASIS XACML XML policy schema
    used to do XML schema validation of XACML policies.</comment>
</param>
<param name="xsd_info:fedora/fedora-system:FOXML-1.1" value="xsd/foxml1-1.xsd">
  <comment>The local path for the Fedora FOXML 1.1 XML schema
    used to do XML schema validation of digital objects</comment>
</param>
<param name="xsd_info:fedora/fedora-system:FOXML-1.0" value="xsd/foxml1-0.xsd">
  <comment>The local path for the Fedora FOXML 1.0 XML schema
    used to do XML schema validation of digital objects</comment>
</param>
<param name="xsd_info:fedora/fedora-system:ATOM-1.1" value="xsd/atom.xsd">
  <comment>The local path for the Atom XML schema used to do XML
    schema validation of digital objects</comment>
</param>
<param name="rules_info:fedora/fedora-system:METSFedoraExt-1.0" value="schematron/metsExtRules1-0.xml">
  <comment>The local path to the Schematron Rules used for
    Fedora-specific validation on Fedora-METS 1.0 XML files.</comment>
</param>
<param name="xsd_info:fedora/fedora-system:ATOMZip-1.1" value="xsd/atom.xsd">
  <comment>The local path for the Atom XML schema used to do XML
    schema validation of digital objects</comment>
</param>
<param name="rules_info:fedora/fedora-system:METSFedoraExt-1.1" value="schematron/metsExtRules1-1.xml">
  <comment>The local path to the Schematron Rules used for
    Fedora-specific validation on Fedora-METS XML files.</comment>
</param>
</module>
<module role="org.fcrepo.server.storage.ExternalContentManager"
  class="org.fcrepo.server.storage.DefaultExternalContentManager">
  <comment>This module facilitates obtaining external content via HTTP</comment>
</module>
<datastore id="localMySQLPool">
  <comment>MySQL database on localhost with db name of fedora3. Each
    connection pool instance has several configuration parameter that
    can be used to tune the options for the connection pool. It is
    recommended that you not change the default values unless you are
    trying to address a specific performance issue. For additional
    information regarding connection pool options, refer to the Apache
    Commons Pool API documentation at
    http://jakarta.apache.org/commons/pool/apidocs/index.html.</comment>
  <param name="maxIdle" value="10">
    <comment>The maximum number of idle instances in pool.</comment>
  </param>
  <param name="testOnBorrow" value="true">
    <comment>When true objects are validated before borrowed from the
    pool.</comment>
  </param>
  <param name="testWhileIdle" value="true">
    <comment>When true, objects are validated by the idle object evictor
    thread.</comment>
  </param>
  <param name="validationQuery" value="select 1">
    <comment>The query to run when validating connections.
    Connections are validated according to the testOnBorrow,
    testOnReturn, and testWhileIdle configuration values.
    If this is specified, it must be a SQL SELECT statement
    that returns at least one row. If this is NOT specified,
    validation tests will not be run.</comment>
  </param>
  <param name="ddlConverter" value="org.fcrepo.server.utilities.MySQLDDLConverter"/>
  <param name="dbUsername" value="fedoraAdmin">
    <comment>The database user name.</comment>
  </param>
  <param name="testOnReturn" value="true">
    <comment>When true, objects are validated before returned to the
    pool.</comment>
  </param>
  <param name="maxActive" value="100">
    <comment>The maximum number of active instances in pool.</comment>
  </param>
  <param name="dbPassword" value="BaldiGari45">
    <comment>The database password.</comment>
  </param>
  <param name="jdbcURL" value="jdbc:mysql://localhost/fcrepo01?useUnicode=true&amp;amp;characterEncoding=UTF-
    8&amp;amp;autoReconnect=true">
    <comment>The JDBC connection URL.</comment>
  </param>
  <param name="whenExhaustedAction" value="1">
    <comment>Action to take when a new object is requested and the the pool has
    reached maximum number of active objects. Valid values are:
    0 (fail i.e., throw Exception)
    1 (block i.e., wait until pool resources are freed)
    2 (grow i.e., increase the size of the pool).</comment>
  </param>
  <param name="numTestsPerEvictionRun" value="3">

```

```

        <comment>The number of objects to be examined on each run of idle
        evictor thread (if applicable). A value less than zero indicates
        that ceil(numIdle)/abs(numTestsPerEvictionRun) will be run.</comment>
    </param>
    <param name="jdbcDriverClass" value="com.mysql.jdbc.Driver">
        <comment>The JDBC driver class name.</comment>
    </param>
    <param name="maxWait" value="-1">
        <comment>The maximum amount of time in milliseconds the
        borrowObject() method should wait before throwing an Exception when
        whenExhaustedAction is set to WHEN_EXHAUSTED_BLOCK. A value less
        than zero indicates block indefinitely.</comment>
    </param>
    <param name="minIdle" value="0">
        <comment>The minimum of idle instances in pool.</comment>
    </param>
    <param name="minEvictableIdleTimeMillis" value="1800000">
        <comment>The minimum amount of time in milliseconds an object can be
        idle in pool before eligible for eviction (if applicable). A value
        less than zero indicates no object will be evicted due to idle time
        alone.</comment>
    </param>
    <param name="timeBetweenEvictionRunsMillis" value="-1">
        <comment>The time in milliseconds to sleep between runs of the idle
        object evictor thread. A value less than zero indicates no idle
        evictor thread is run.</comment>
    </param>
</datastore>
<datastore id="localDerbyPool">
    <comment>Derby database on localhost running on port 1527 Each
    connection pool instance has several configuration parameter that
    can be used to tune the options for the connection pool. It is
    recommended that you not change the default values unless you are
    trying to address a specific performance issue. For additional
    information regarding connection pool options, refer to the Apache
    Commons Pool API documentation at
    http://jakarta.apache.org/commons/pool/apidocs/index.html.</comment>
    <param name="maxIdle" value="10">
        <comment>The maximum number of idle instances in pool.</comment>
    </param>
    <param name="testOnBorrow" value="true">
        <comment>When true objects are validated before borrowed from the
        pool.</comment>
    </param>
    <param name="testWhileIdle" value="true">
        <comment>When true, objects are validated by the idle object evictor
        thread.</comment>
    </param>
    <param name="ddlConverter" value="org.fcrepo.server.utilities.DerbyDDLConverter"/>
    <param name="dbUsername" value="fedoraAdmin">
        <comment>The database user name.</comment>
    </param>
    <param name="testOnReturn" value="true">
        <comment>When true, objects are validated before returned to the
        pool.</comment>
    </param>
    <param name="maxActive" value="100">
        <comment>The maximum number of active instances in pool.</comment>
    </param>
    <param name="dbPassword" value="fedoraAdmin">
        <comment>The database password.</comment>
    </param>
    <param name="jdbcURL" value="jdbc:derby:/opt/fedora/current/derby/fedora3;create=true">
        <comment>The JDBC connection URL.</comment>
    </param>
    <param name="whenExhaustedAction" value="1">
        <comment>Action to take when a new object is requested and the the pool has
        reached maximum number of active objects. Valid values are:
        0 (fail i.e., throw Exception)
        1 (block i.e., wait until pool resources are freed)
        2 (grow i.e., increase the size of the pool).</comment>
    </param>
    <param name="numTestsPerEvictionRun" value="3">
        <comment>The number of objects to be examined on each run of idle
        evictor thread (if applicable). A value less than zero indicates
        that ceil(numIdle)/abs(numTestsPerEvictionRun) will be run.</comment>
    </param>
    <param name="jdbcDriverClass" value="org.apache.derby.jdbc.EmbeddedDriver">
        <comment>The JDBC driver class name.</comment>
    </param>
    <param name="maxWait" value="-1">
        <comment>The maximum amount of time in milliseconds the
        borrowObject() method should wait before throwing an Exception when
        whenExhaustedAction is set to WHEN_EXHAUSTED_BLOCK. A value less
        than zero indicates block indefinitely.</comment>
    </param>
    <param name="minIdle" value="0">
        <comment>The minimum of idle instances in pool.</comment>
    </param>
    <param name="minEvictableIdleTimeMillis" value="1800000">
        <comment>The minimum amount of time in milliseconds an object can be
        idle in pool before eligible for eviction (if applicable). A value
        less than zero indicates no object will be evicted due to idle time
        alone.</comment>
    </param>
    <param name="timeBetweenEvictionRunsMillis" value="-1">

```



```

    <comment>The time in milliseconds to sleep between runs of the idle
    object evictor thread. A value less than zero indicates no idle
    evictor thread is run.</comment>
  </param>
</datastore>
<datastore id="localOraclePool">
  <comment>Oracle database on localhost with SID=fedora3 Each
  connection pool instance has several configuration parameter that
  can be used to tune the options for the connection pool. It is
  recommended that you not change the default values unless you are
  trying to address a specific performance issue. For additional
  information regarding connection pool options, refer to the Apache
  Commons Pool API documentation at
  http://jakarta.apache.org/commons/pool/apidocs/index.html.</comment>
  <param name="maxIdle" value="10">
    <comment>The maximum number of idle instances in pool.</comment>
  </param>
  <param name="testOnBorrow" value="true">
    <comment>When true objects are validated before borrowed from the
    pool.</comment>
  </param>
  <param name="testWhileIdle" value="true">
    <comment>When true, objects are validated by the idle object evictor
    thread.</comment>
  </param>
  <param name="validationQuery" value="select 'validationQuery' from dual">
    <comment>The query to run when validating connections.
    Connections are validated according to the testOnBorrow,
    testOnReturn, and testWhileIdle configuration values.
    If this is specified, it must be a SQL SELECT statement
    that returns at least one row. If this is NOT specified,
    validation tests will not be run.</comment>
  </param>
  <param name="ddlConverter" value="org.fcrepo.server.utilities.OracleDDLConverter"/>
  <param name="dbUsername" value="fedoraAdmin">
    <comment>The database user name.</comment>
  </param>
  <param name="connection.SetBigStringTryClob" value="true"/>
  <param name="testOnReturn" value="true">
    <comment>When true, objects are validated before returned to the
    pool.</comment>
  </param>
  <param name="maxActive" value="100">
    <comment>The maximum number of active instances in pool.</comment>
  </param>
  <param name="dbPassword" value="fedoraAdmin">
    <comment>The database password.</comment>
  </param>
  <param name="jdbcURL" value="jdbc:oracle:thin:@localhost:1521:fedora3">
    <comment>The JDBC connection URL.</comment>
  </param>
  <param name="whenExhaustedAction" value="1">
    <comment>Action to take when a new object is requested and the the pool has
    reached maximum number of active objects. Valid values are:
    0 (fail i.e., throw Exception)
    1 (block i.e., wait until pool resources are freed)
    2 (grow i.e., increase the size of the pool).</comment>
  </param>
  <param name="numTestsPerEvictionRun" value="3">
    <comment>The number of objects to be examined on each run of idle
    evictor thread (if applicable). A value less than zero indicates
    that ceil(numIdle)/abs(numTestsPerEvictionRun) will be run.</comment>
  </param>
  <param name="jdbcDriverClass" value="oracle.jdbc.OracleDriver">
    <comment>The JDBC driver class name.</comment>
  </param>
  <param name="maxWait" value="-1">
    <comment>The maximum amount of time in milliseconds the
    borrowObject() method should wait before throwing an Exception when
    whenExhaustedAction is set to WHEN_EXHAUSTED_BLOCK. A value less
    than zero indicates block indefinitely.</comment>
  </param>
  <param name="minIdle" value="0">
    <comment>The minimum of idle instances in pool.</comment>
  </param>
  <param name="minEvictableIdleTimeMillis" value="1800000">
    <comment>The minimum amount of time in milliseconds an object can be
    idle in pool before eligible for eviction (if applicable). A value
    less than zero indicates no object will be evicted due to idle time
    alone.</comment>
  </param>
  <param name="timeBetweenEvictionRunsMillis" value="-1">
    <comment>The time in milliseconds to sleep between runs of the idle
    object evictor thread. A value less than zero indicates no idle
    evictor thread is run.</comment>
  </param>
</datastore>
<datastore id="localPostgreSQLPool">
  <comment>PostgreSQL database on localhost with db name of fedora3. Each
  connection pool instance has several configuration parameter that
  can be used to tune the options for the connection pool. It is
  recommended that you not change the default values unless you are
  trying to address a specific performance issue. For additional
  information regarding connection pool options, refer to the Apache
  Commons Pool API documentation at
  http://jakarta.apache.org/commons/pool/apidocs/index.html.</comment>

```

```

<param name="maxIdle" value="10">
  <comment>The maximum number of idle instances in pool.</comment>
</param>
<param name="testOnBorrow" value="true">
  <comment>When true objects are validated before borrowed from the
    pool.</comment>
</param>
<param name="testWhileIdle" value="true">
  <comment>When true, objects are validated by the idle object evictor
    thread.</comment>
</param>
<param name="validationQuery" value="select 1">
  <comment>The query to run when validating connections.
    Connections are validated according to the testOnBorrow,
    testOnReturn, and testWhileIdle configuration values.
    If this is specified, it must be a SQL SELECT statement
    that returns at least one row. If this is NOT specified,
    validation tests will not be run.</comment>
</param>
<param name="ddlConverter" value="org.fc.repo.server.utilities.PostgresDDLConverter"/>
<param name="dbUsername" value="fedoraAdmin">
  <comment>The database user name.</comment>
</param>
<param name="testOnReturn" value="true">
  <comment>When true, objects are validated before returned to the
    pool.</comment>
</param>
<param name="maxActive" value="100">
  <comment>The maximum number of active instances in pool.</comment>
</param>
<param name="dbPassword" value="fedoraAdmin">
  <comment>The database password.</comment>
</param>
<param name="jdbcURL" value="jdbc:postgresql:fedora3">
  <comment>The JDBC connection URL.</comment>
</param>
<param name="whenExhaustedAction" value="1">
  <comment>Action to take when a new object is requested and the pool has
    reached maximum number of active objects. Valid values are:
    0 (fail i.e., throw Exception)
    1 (block i.e., wait until pool resources are freed)
    2 (grow i.e., increase the size of the pool).</comment>
</param>
<param name="numTestsPerEvictionRun" value="3">
  <comment>The number of objects to be examined on each run of idle
    evictor thread (if applicable). A value less than zero indicates
    that ceil(numIdle)/abs(numTestsPerEvictionRun) will be run.</comment>
</param>
<param name="jdbcDriverClass" value="org.postgresql.Driver">
  <comment>The JDBC driver class name.</comment>
</param>
<param name="maxWait" value="-1">
  <comment>The maximum amount of time in milliseconds the
    borrowObject() method should wait before throwing an Exception when
    whenExhaustedAction is set to WHEN_EXHAUSTED_BLOCK. A value less
    than zero indicates block indefinitely.</comment>
</param>
<param name="minIdle" value="0">
  <comment>The minimum of idle instances in pool.</comment>
</param>
<param name="minEvictableIdleTimeMillis" value="1800000">
  <comment>The minimum amount of time in milliseconds an object can be
    idle in pool before eligible for eviction (if applicable). A value
    less than zero indicates no object will be evicted due to idle time
    alone.</comment>
</param>
<param name="timeBetweenEvictionRunsMillis" value="-1">
  <comment>The time in milliseconds to sleep between runs of the idle
    object evictor thread. A value less than zero indicates no idle
    evictor thread is run.</comment>
</param>
</datastore>
<datastore id="localMulgaraTriplestore">
  <comment>local Mulgara Triplestore used by the Resource Index</comment>
  <param name="poolInitialSize" value="3">
    <comment>The initial size of the session pool used for queries.
      Note: A value of 0 will cause the Resource Index to operate in
      synchronized mode: concurrent read/write requests are put in a queue
      and handled in FIFO order; this will severely impair performance and
      is only intended for debugging.</comment>
  </param>
  <param name="bufferSafeCapacity" value="40000">
    <comment>The maximum size the buffer can reach before being forcibly
      flushed. If this threshold is reached, flushing will occur in the
      foreground and the buffer will be locked for writing until it is
      finished. This should be larger than autoFlushBufferSize.</comment>
  </param>
  <param name="autoCreate" value="true">
    <comment>Create the model if it doesn't already exist.
      At startup, the model will be automatically created. In addition, an
      XML schema datatype model named "xsd" will also be automatically
      created.</comment>
  </param>
  <param name="bufferFlushBatchSize" value="20000">
    <comment>The number of updates to send to the triplestore at a time.
      This should be the same size as, or smaller than
    </comment>
  </param>

```

```

        autoFlushBufferSize.</comment>
</param>
<param name="autoTextIndex" value="false">
  <comment>Whether to propagate adds/deletes to a full-text
  [Full-Text] model automatically. While a very useful feature,
  enabling full-text indexing adds significantly to object ingest
  times. If true, the text model will be named modelName-fullText.
  Note that if this is true and autoCreate is true, the text model
  will also be created if it doesn't already exist.</comment>
</param>
<param name="poolMaxGrowth" value="-1">
  <comment>Maximum number of additional sessions the pool may add. If
  specified as -1, no limit will be placed on pool growth.</comment>
</param>
<param name="remote" value="false">
  <comment>Tells the connector to communicate with Mulgara in remote or
  local mode. If true, the host parameter must be defined. If false,
  the path parameter must be defined.</comment>
</param>
<param name="autoFlushDormantSeconds" value="5">
  <comment>Seconds of buffer inactivity that will trigger an
  auto-flush. If this threshold is reached, flushing will occur in the
  background, during which time the buffer is still available for
  writing.</comment>
</param>
<param name="serverName" value="fedora">
  <comment>The server name for rmi binding.</comment>
</param>
<param name="autoFlushBufferSize" value="20000">
  <comment>The size at which the buffer should be auto-flushed. If
  this threshold is reached, flushing will occur in the background,
  during which time the buffer is still available for
  writing.</comment>
</param>
<param name="modelName" value="ri">
  <comment>The name of the model to use.</comment>
</param>
<param name="readOnly" value="false">
  <comment>Whether the triplestore should be read-only. Most Fedora
  repositories will set this to false.</comment>
</param>
<param name="path" value="data/resourceIndex" isFilePath="true">
  <comment>The local path to the main triplestore directory.</comment>
</param>
<param name="connectorClassName" value="org.trippi.impl.mulgara.MulgaraConnector">
  <comment>The name of the Trippi Connector class used to communicate
  with the triplestore.</comment>
</param>
</datastore>
<datastore id="localPostgresMPTTriplestore">
  <comment>Example local MPTStore backed by Postgres.
  To use this triplestore for the Resource Index:
  1) In fedora.fcfg, change the "datastore" parameter of the
  ResourceIndex module to localPostgresMPTTriplestore.
  2) Login to your Postgres server as an administrative user and
  run the following commands:
  CREATE ROLE "fedoraAdmin" LOGIN PASSWORD 'fedoraAdmin'
  NOINHERIT CREATEDB
  VALID UNTIL 'infinity';
  CREATE DATABASE "riTriples"
  WITH ENCODING='SQL_ASCII'
  OWNER="fedoraAdmin";
  3) Make sure you can login to your Postgres server as fedoraAdmin.
  4) Download the appropriate Postgres JDBC 3 driver from
  http://jdbc.postgresql.org/download.html
  and make sure it's accessible to your servlet container.
  If you're running Tomcat, putting it in common/lib/ will work.</comment>
  <param name="fetchSize" value="1000"/>
  <param name="poolInitialSize" value="3"/>
  <param name="bufferSafeCapacity" value="2000"/>
  <param name="bufferFlushBatchSize" value="1000"/>
  <param name="backslashIsEscape" value="true"/>
  <param name="autoFlushDormantSeconds" value="5"/>
  <param name="password" value="fedoraAdmin"/>
  <param name="autoFlushBufferSize" value="1000"/>
  <param name="username" value="fedoraAdmin"/>
  <param name="poolMaxSize" value="10"/>
  <param name="jdbcURL" value="jdbc:postgresql://localhost/riTriples"/>
  <param name="ddlGenerator" value="org.nsd.mptstore.impl.postgres.PostgresDDLGenerator"/>
  <param name="connectorClassName" value="org.trippi.impl.mpt.MPTConnector"/>
  <param name="jdbcDriver" value="org.postgresql.Driver"/>
</datastore>
<datastore id="apimUpdateMessages">
  <comment>Messaging Destination for API-M events which update the repository</comment>
  <param name="messageTypes" value="apimUpdate">
    <comment>A space-separated list of message types that will be
    delivered to this Destination. Currently, "apimUpdate" and
    "apimAccess" are the only supported message types.</comment>
  </param>
  <param name="name" value="fedora.apim.update"/>
  <param name="type" value="topic">
    <comment>Optional, defaults to topic.</comment>
  </param>
</datastore>
<datastore id="apimAccessMessages">
  <comment>Messaging Destination for API-M events which did not make changes to the repository</comment>

```

```
<param name="messageTypes" value="apimAccess">
  <comment>A space-separated list of message types that will be
    delivered to this Destination. Currently, "apimUpdate" and
    "apimAccess" are the only supported message types.</comment>
</param>
<param name="name" value="fedora.apim.access"/>
<param name="type" value="topic">
  <comment>Optional, defaults to topic.</comment>
</param>
</datastore>
</server>
```

8.1.8 /etc/solr/conf/solrconfig.xml

```

<?xml version="1.0" encoding="UTF-8"?>
<!--
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contributor license agreements. See the NOTICE file distributed with
this work for additional information regarding copyright ownership.
The ASF licenses this file to You under the Apache License, Version 2.0
(the "License"); you may not use this file except in compliance with
the License. You may obtain a copy of the License at

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distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
-->
<config>
  <!-- Set this to 'false' if you want solr to continue working after it has
  encountered a severe configuration error. In a production environment,
  you may want solr to keep working even if one handler is mis-configured.

  You may also set this to false using by setting the system property:
    -Dsolr.abortOnConfigurationException=false
  -->
  <abortOnConfigurationException>${solr.abortOnConfigurationException:true}</abortOnConfigurationException>
  <!-- Used to specify an alternate directory to hold all index data
  other than the default ./data under the Solr home.
  If replication is in use, this should match the replication configuration. -->
  <dataDir>/srv/storage/solr/data</dataDir>
  <indexDefaults>
    <!-- Values here affect all index writers and act as a default unless overridden. -->
    <useCompoundFile>false</useCompoundFile>
    <mergeFactor>10</mergeFactor>
    <!--
    If both ramBufferSizeMB and maxBufferedDocs is set, then Lucene will flush based on whichever limit is hit
    first.

    -->
    <!--<maxBufferedDocs>1000</maxBufferedDocs>-->
    <!-- Tell Lucene when to flush documents to disk.
    Giving Lucene more memory for indexing means faster indexing at the cost of more RAM

    If both ramBufferSizeMB and maxBufferedDocs is set, then Lucene will flush based on whichever limit is hit
    first.

    -->
    <ramBufferSizeMB>32</ramBufferSizeMB>
    <maxMergeDocs>2147483647</maxMergeDocs>
    <maxFieldLength>10000</maxFieldLength>
    <writeLockTimeout>1000</writeLockTimeout>
    <commitLockTimeout>10000</commitLockTimeout>
    <!--
    Expert: Turn on Lucene's auto commit capability.
    This causes intermediate segment flushes to write a new lucene
    index descriptor, enabling it to be opened by an external
    IndexReader.
    NOTE: Despite the name, this value does not have any relation to Solr's autoCommit functionality
    -->
    <!--<luceneAutoCommit>false</luceneAutoCommit>-->
    <!--
    Expert:
    The Merge Policy in Lucene controls how merging is handled by Lucene. The default in 2.3 is the
    LogByteSizeMergePolicy, previous
    versions used LogDocMergePolicy.

    LogByteSizeMergePolicy chooses segments to merge based on their size. The Lucene 2.2 default,
    LogDocMergePolicy chose when
    to merge based on number of documents

    Other implementations of MergePolicy must have a no-argument constructor
    -->
    <!--<mergePolicy>org.apache.lucene.index.LogByteSizeMergePolicy</mergePolicy>-->
    <!--
    Expert:
    The Merge Scheduler in Lucene controls how merges are performed. The ConcurrentMergeScheduler (Lucene 2.3
    default)
    can perform merges in the background using separate threads. The SerialMergeScheduler (Lucene 2.2 default)
    does not.
    -->
    <!--<mergeScheduler>org.apache.lucene.index.ConcurrentMergeScheduler</mergeScheduler>-->
    <!--
    This option specifies which Lucene LockFactory implementation to use.

    single = SingleInstanceLockFactory - suggested for a read-only index
    or when there is no possibility of another process trying
    to modify the index.
    native = NativeFSLockFactory
    simple = SimpleFSLockFactory

    (For backwards compatibility with Solr 1.2, 'simple' is the default
    if not specified.)
    -->
    <lockType>single</lockType>

```

```

</indexDefaults>
<mainIndex>
  <!-- options specific to the main on-disk lucene index -->
  <useCompoundFile>false</useCompoundFile>
  <ramBufferSizeMB>32</ramBufferSizeMB>
  <mergeFactor>10</mergeFactor>
  <!-- Deprecated -->
  <!--<maxBufferedDocs>1000</maxBufferedDocs>-->
  <maxMergeDocs>2147483647</maxMergeDocs>
  <maxFieldLength>10000</maxFieldLength>
  <!-- If true, unlock any held write or commit locks on startup.
       This defeats the locking mechanism that allows multiple
       processes to safely access a lucene index, and should be
       used with care.
       This is not needed if lock type is 'none' or 'single'
  -->
  <unlockOnStartup>>false</unlockOnStartup>
</mainIndex>
<!-- Enables JMX if and only if an existing MBeanServer is found, use
      this if you want to configure JMX through JVM parameters. Remove
      this to disable exposing Solr configuration and statistics to JMX.

      If you want to connect to a particular server, specify the agentId
      e.g. <jmx agentId="myAgent" />

      If you want to start a new MBeanServer, specify the serviceUrl
      e.g <jmx serviceurl="service:jmx:rmi:///jndi/rmi://localhost:9999/solr" />

      For more details see http://wiki.apache.org/solr/SolrJmx
  -->
<jmx/>
<!-- the default high-performance update handler -->
<updateHandler class="solr.DirectUpdateHandler2">
  <!-- A prefix of "solr." for class names is an alias that
       causes solr to search appropriate packages, including
       org.apache.solr.(search|update|request|core|analysis)
  -->
  <!-- Perform a <commit/> automatically under certain conditions:
       maxDocs - number of updates since last commit is greater than this
       maxTime - oldest uncommitted update (in ms) is this long ago
  <autoCommit>
    <maxDocs>10000</maxDocs>
    <maxTime>1000</maxTime>
  </autoCommit>
  -->
  <autoCommit>
    <maxDocs>1</maxDocs>
    <maxTime>1</maxTime>
  </autoCommit>
  <!-- The RunExecutableListener executes an external command.
       exe - the name of the executable to run
       dir - dir to use as the current working directory. default="."
       wait - the calling thread waits until the executable returns. default="true"
       args - the arguments to pass to the program. default=nothing
       env - environment variables to set. default=nothing
  -->
  <!-- A postCommit event is fired after every commit or optimize command
  <listener event="postCommit" class="solr.RunExecutableListener">
    <str name="exe">solr/bin/snapshooter</str>
    <str name="dir">.</str>
    <bool name="wait">>true</bool>
    <arr name="args"> <str>arg1</str> <str>arg2</str> </arr>
    <arr name="env"> <str>MYVAR=vall</str> </arr>
  </listener>
  -->
  <!-- A postOptimize event is fired only after every optimize command, useful
       in conjunction with index distribution to only distribute optimized indicies
  <listener event="postOptimize" class="solr.RunExecutableListener">
    <str name="exe">snapshooter</str>
    <str name="dir">solr/bin</str>
    <bool name="wait">>true</bool>
  </listener>
  -->
</updateHandler>
<query>
  <!-- Maximum number of clauses in a boolean query... can affect
       range or prefix queries that expand to big boolean
       queries. An exception is thrown if exceeded. -->
  <maxBooleanClauses>1024</maxBooleanClauses>
  <!-- Cache used by SolrIndexSearcher for filters (DocSets),
       unordered sets of *all* documents that match a query.
       When a new searcher is opened, its caches may be prepopulated
       or "autowarmed" using data from caches in the old searcher.
       autowarmCount is the number of items to prepopulate. For LRUcache,
       the autowarmed items will be the most recently accessed items.
       Parameters:
       class - the SolrCache implementation (currently only LRUcache)
       size - the maximum number of entries in the cache
       initialSize - the initial capacity (number of entries) of
       the cache. (see java.util.HashMap)
       autowarmCount - the number of entries to prepopulate from
       and old cache.
  -->
  <filterCache class="solr.LRUcache" size="512" initialSize="512" autowarmCount="128"/>
  <!-- queryResultCache caches results of searches - ordered lists of
       document ids (DocList) based on a query, a sort, and the range
    
```

```

of documents requested. -->
<queryResultCache class="solr.LRUCache" size="512" initialSize="512" autowarmCount="32"/>
<!-- documentCache caches Lucene Document objects (the stored fields for each document).
Since Lucene internal document ids are transient, this cache will not be autowarmed. -->
<documentCache class="solr.LRUCache" size="512" initialSize="512" autowarmCount="0"/>
<!-- If true, stored fields that are not requested will be loaded lazily.

This can result in a significant speed improvement if the usual case is to
not load all stored fields, especially if the skipped fields are large compressed
text fields.
-->
<enableLazyFieldLoading>true</enableLazyFieldLoading>
<!-- Example of a generic cache. These caches may be accessed by name
through SolrIndexSearcher.getCache(),cacheLookup(), and cacheInsert().
The purpose is to enable easy caching of user/application level data.
The regenerator argument should be specified as an implementation
of solr.search.CacheRegenerator if autowarming is desired. -->
<!--
<cache name="myUserCache"
class="solr.LRUCache"
size="4096"
initialSize="1024"
autowarmCount="1024"
regenerator="org.mycompany.mypackage.MyRegenerator"
/>
-->
<!-- An optimization that attempts to use a filter to satisfy a search.
If the requested sort does not include score, then the filterCache
will be checked for a filter matching the query. If found, the filter
will be used as the source of document ids, and then the sort will be
applied to that.
<useFilterForSortedQuery>true</useFilterForSortedQuery>
-->
<!-- An optimization for use with the queryResultCache. When a search
is requested, a superset of the requested number of document ids
are collected. For example, if a search for a particular query
requests matching documents 10 through 19, and queryWindowSize is 50,
then documents 0 through 49 will be collected and cached. Any further
requests in that range can be satisfied via the cache. -->
<queryResultWindowSize>50</queryResultWindowSize>
<!-- Maximum number of documents to cache for any entry in the
queryResultCache. -->
<queryResultMaxDocsCached>200</queryResultMaxDocsCached>
<!-- This entry enables an int hash representation for filters (DocSets)
when the number of items in the set is less than maxSize. For smaller
sets, this representation is more memory efficient, more efficient to
iterate over, and faster to take intersections. -->
<HashDocSet maxSize="3000" loadFactor="0.75"/>
<!-- a newSearcher event is fired whenever a new searcher is being prepared
and there is a current searcher handling requests (aka registered). -->
<!-- QuerySenderListener takes an array of NamedList and executes a
local query request for each NamedList in sequence. -->
<listener event="newSearcher" class="solr.QuerySenderListener">
<arr name="queries">
<lst>
<str name="q">solr</str>
<str name="start">0</str>
<str name="rows">10</str>
</lst>
<lst>
<str name="q">rocks</str>
<str name="start">0</str>
<str name="rows">10</str>
</lst>
<lst>
<str name="q">static newSearcher warming query from solrconfig.xml</str>
</lst>
</arr>
</listener>
<!-- a firstSearcher event is fired whenever a new searcher is being
prepared but there is no current registered searcher to handle
requests or to gain autowarming data from. -->
<listener event="firstSearcher" class="solr.QuerySenderListener">
<arr name="queries">
<lst>
<str name="q">fast_warm</str>
<str name="start">0</str>
<str name="rows">10</str>
</lst>
<lst>
<str name="q">static firstSearcher warming query from solrconfig.xml</str>
</lst>
</arr>
</listener>
<!-- If a search request comes in and there is no current registered searcher,
then immediately register the still warming searcher and use it. If
"false" then all requests will block until the first searcher is done
warming. -->
<useColdSearcher>false</useColdSearcher>
<!-- Maximum number of searchers that may be warming in the background
concurrently. An error is returned if this limit is exceeded. Recommend
1-2 for read-only slaves, higher for masters w/o cache warming. -->
<maxWarmingSearchers>2</maxWarmingSearchers>
</query>
<!--
Let the dispatch filter handler /select?qt=XXX

```

```

handleSelect=true will use consistent error handling for /select and /update
handleSelect=false will use solr1.1 style error formatting
-->
<requestDispatcher handleSelect="true">
  <!--Make sure your system has some authentication before enabling remote streaming! -->
  <requestParsers enableRemoteStreaming="false" multipartUploadLimitInKB="2048"/>
  <!-- Set HTTP caching related parameters (for proxy caches and clients).

  To get the behaviour of Solr 1.2 (ie: no caching related headers)
  use the never304="true" option and do not specify a value for
  <cacheControl>
  -->
  <!-- <httpCaching never304="true"> -->
  <httpCaching lastModifiedFrom="openTime" etagSeed="Solr">
    <!-- lastModFrom="openTime" is the default, the Last-Modified value
    (and validation against If-Modified-Since requests) will all be
    relative to when the current Searcher was opened.
    You can change it to lastModFrom="dirLastMod" if you want the
    value to exactly correspond to when the physical index was last
    modified.

    etagSeed="..." is an option you can change to force the ETag
    header (and validation against If-None-Match requests) to be
    different even if the index has not changed (ie: when making
    significant changes to your config file)

    lastModifiedFrom and etagSeed are both ignored if you use the
    never304="true" option.
    -->
    <!-- If you include a <cacheControl> directive, it will be used to
    generate a Cache-Control header, as well as an Expires header
    if the value contains "max-age="

    By default, no Cache-Control header is generated.

    You can use the <cacheControl> option even if you have set
    never304="true"
    -->
    <!-- <cacheControl>max-age=30, public</cacheControl> -->
  </httpCaching>
</requestDispatcher>
<!-- requestHandler plugins... incoming queries will be dispatched to the
correct handler based on the path or the qt (query type) param.
Names starting with a '/' are accessed with the a path equal to the
registered name. Names without a leading '/' are accessed with:
  http://host/app/select?qt=name
If no qt is defined, the requestHandler that declares default="true"
will be used.
-->
<requestHandler name="standard" class="solr.SearchHandler" default="true">
  <!-- default values for query parameters -->
  <lst name="defaults">
    <str name="echoParams">explicit</str>
    <!--
    <int name="rows">10</int>
    <str name="fl">*</str>
    <str name="version">2.2</str>
    -->
  </lst>
</requestHandler>
<!-- DisMaxRequestHandler allows easy searching across multiple fields
for simple user-entered phrases. It's implementation is now
just the standard SearchHandler with a default query type
of "dismax".
see http://wiki.apache.org/solr/DisMaxRequestHandler
-->
<requestHandler name="dismax" class="solr.SearchHandler">
  <lst name="defaults">
    <str name="defType">dismax</str>
    <str name="echoParams">explicit</str>
    <float name="tie">0.01</float>
    <str name="qf">
      text^0.5 features^1.0 name^1.2 sku^1.5 id^10.0 manu^1.1 cat^1.4
    </str>
    <str name="pf">
      text^0.2 features^1.1 name^1.5 manu^1.4 manu_exact^1.9
    </str>
    <str name="bf">
      ord(popularity)^0.5 recip(rord(price),1,1000,1000)^0.3
    </str>
    <str name="fl">
      id,name,price,score
    </str>
    <str name="mm">
      2<lt;-1 5<lt;-2 6<lt;90%
    </str>
    <int name="ps">100</int>
    <str name="q.alt">*</str>
    <!-- example highlighter config, enable per-query with hl=true -->
    <str name="hl.fl">text features name</str>
    <!-- for this field, we want no fragmenting, just highlighting -->
    <str name="f.name.hl.fragmenter">0</str>
    <!-- instructs Solr to return the field itself if no query terms are
    found -->
    <str name="f.name.hl.alternateField">name</str>
    <str name="f.text.hl.fragmenter">regex</str>

```



```

<!-- defined below -->
</lst>
</requestHandler>
<!-- Note how you can register the same handler multiple times with
different names (and different init parameters)
-->
<requestHandler name="partitioned" class="solr.SearchHandler">
  <lst name="defaults">
    <str name="defType">dismax</str>
    <str name="echoParams">explicit</str>
    <str name="qf">text^0.5 features^1.0 name^1.2 sku^1.5 id^10.0</str>
    <str name="mm">2<math>\&lt;!-- This is an example of using Date Math to specify a constantly
moving date range in a config...
-->
    <str name="bq">incubationdate_dt:[* TO NOW/DAY-1MONTH]^2.2</str>
  </lst>
  <!-- In addition to defaults, "appends" params can be specified
to identify values which should be appended to the list of
multi-val params from the query (or the existing "defaults").

In this example, the param "fq=instock:true" will be appended to
any query time fq params the user may specify, as a mechanism for
partitioning the index, independent of any user selected filtering
that may also be desired (perhaps as a result of faceted searching).

NOTE: there is *absolutely* nothing a client can do to prevent these
"appends" values from being used, so don't use this mechanism
unless you are sure you always want it.
-->
  <lst name="appends">
    <str name="fq">instock:true</str>
  </lst>
  <!-- "invariants" are a way of letting the Solr maintainer lock down
the options available to Solr clients. Any params values
specified here are used regardless of what values may be specified
in either the query, the "defaults", or the "appends" params.

In this example, the facet.field and facet.query params are fixed,
limiting the facets clients can use. Faceting is not turned on by
default - but if the client does specify facet=true in the request,
these are the only facets they will be able to see counts for;
regardless of what other facet.field or facet.query params they
may specify.

NOTE: there is *absolutely* nothing a client can do to prevent these
"invariants" values from being used, so don't use this mechanism
unless you are sure you always want it.
-->
  <lst name="invariants">
    <str name="facet.field">cat</str>
    <str name="facet.field">manu_exact</str>
    <str name="facet.query">price:[* TO 500]</str>
    <str name="facet.query">price:[500 TO *]</str>
  </lst>
</requestHandler>
<!--
Search components are registered to SolrCore and used by Search Handlers

By default, the following components are available:

<searchComponent name="query"      class="org.apache.solr.handler.component.QueryComponent" />
<searchComponent name="facet"      class="org.apache.solr.handler.component.FacetComponent" />
<searchComponent name="mlt"        class="org.apache.solr.handler.component.MoreLikeThisComponent" />
<searchComponent name="highlight"  class="org.apache.solr.handler.component.HighlightComponent" />
<searchComponent name="debug"      class="org.apache.solr.handler.component.DebugComponent" />

Default configuration in a requestHandler would look like:
<arr name="components">
  <str>query</str>
  <str>facet</str>
  <str>mlt</str>
  <str>highlight</str>
  <str>debug</str>
</arr>

If you register a searchComponent to one of the standard names, that will be used instead.
To insert handlers before or after the 'standard' components, use:

<arr name="first-components">
  <str>myFirstComponentName</str>
</arr>

<arr name="last-components">
  <str>myLastComponentName</str>
</arr>
-->
<!-- The spell check component can return a list of alternative spelling
suggestions.
-->
<searchComponent name="spellcheck" class="solr.SpellCheckComponent">
  <str name="queryAnalyzerFieldType">textSpell</str>
  <lst name="spellchecker">
    <str name="name">default</str>
    <str name="field">spell</str>
    <str name="spellcheckIndexDir">./spellchecker1</str>
  </lst>

```

```

<lst name="spellchecker">
  <str name="name">jarowinkler</str>
  <str name="field">spell</str>
  <!-- Use a different Distance Measure -->
  <str name="distanceMeasure">org.apache.lucene.search.spell.JaroWinklerDistance</str>
  <str name="spellcheckIndexDir">./spellchecker2</str>
</lst>
<lst name="spellchecker">
  <str name="classname">solr.FileBasedSpellChecker</str>
  <str name="name">file</str>
  <str name="sourceLocation">spellings.txt</str>
  <str name="characterEncoding">UTF-8</str>
  <str name="spellcheckIndexDir">./spellcheckerFile</str>
</lst>
</searchComponent>
<!-- a request handler utilizing the spellcheck component -->
<requestHandler name="/spellCheckCompRH" class="solr.SearchHandler">
  <lst name="defaults">
    <!-- omp = Only More Popular -->
    <str name="spellcheck.onlyMorePopular">>false</str>
    <!-- exr = Extended Results -->
    <str name="spellcheck.extendedResults">>false</str>
    <!-- The number of suggestions to return -->
    <str name="spellcheck.count">1</str>
  </lst>
  <arr name="last-components">
    <str>spellcheck</str>
  </arr>
</requestHandler>
<!-- a search component that enables you to configure the top results for
a given query regardless of the normal lucene scoring.-->
<searchComponent name="elevator" class="solr.QueryElevationComponent">
  <!-- pick a fieldType to analyze queries -->
  <str name="queryFieldType">string</str>
  <str name="config-file">elevate.xml</str>
</searchComponent>
<!-- a request handler utilizing the elevator component -->
<requestHandler name="/elevate" class="solr.SearchHandler" startup="lazy">
  <lst name="defaults">
    <str name="echoParams">explicit</str>
  </lst>
  <arr name="last-components">
    <str>elevator</str>
  </arr>
</requestHandler>
<!-- Update request handler.

Note: Since solr1.1 requestHandlers requires a valid content type header if posted in
the body. For example, curl now requires: -H 'Content-type:text/xml; charset=utf-8'
The response format differs from solr1.1 formatting and returns a standard error code.

To enable solr1.1 behavior, remove the /update handler or change its path
-->
<requestHandler name="/update" class="solr.XmlUpdateRequestHandler"/>
<!--
Analysis request handler. Since Solr 1.3. Use to return how a document is analyzed. Useful
for debugging and as a token server for other types of applications
-->
<requestHandler name="/analysis" class="solr.AnalysisRequestHandler"/>
<!-- CSV update handler, loaded on demand -->
<requestHandler name="/update/csv" class="solr.CSVRequestHandler" startup="lazy"/>
<!--
Admin Handlers - This will register all the standard admin RequestHandlers. Adding
this single handler is equivalent to registering:

<requestHandler name="/admin/luke" class="org.apache.solr.handler.admin.LukeRequestHandler" />
<requestHandler name="/admin/system" class="org.apache.solr.handler.admin.SystemInfoHandler" />
<requestHandler name="/admin/plugins" class="org.apache.solr.handler.admin.PluginInfoHandler" />
<requestHandler name="/admin/threads" class="org.apache.solr.handler.admin.ThreadDumpHandler" />
<requestHandler name="/admin/properties" class="org.apache.solr.handler.admin.PropertiesRequestHandler" />
<requestHandler name="/admin/file" class="org.apache.solr.handler.admin.ShowFileRequestHandler" />

If you wish to hide files under ${solr.home}/conf, explicitly register the ShowFileRequestHandler using:
<requestHandler name="/admin/file" class="org.apache.solr.handler.admin.ShowFileRequestHandler" >
  <lst name="invariants">
    <str name="hidden">synonyms.txt</str>
    <str name="hidden">anotherfile.txt</str>
  </lst>
</requestHandler>
-->
<requestHandler name="/admin/" class="org.apache.solr.handler.admin.AdminHandlers"/>
<!-- ping/healthcheck -->
<requestHandler name="/admin/ping" class="PingRequestHandler">
  <lst name="defaults">
    <str name="qt">standard</str>
    <str name="q">solrpingquery</str>
    <str name="echoParams">all</str>
  </lst>
</requestHandler>
<!-- Echo the request contents back to the client -->
<requestHandler name="/debug/dump" class="solr.DumpRequestHandler">
  <lst name="defaults">
    <str name="echoParams">all</str>
    <!-- for all params (including the default etc) use: 'all' -->
    <str name="echoHandler">>true</str>
  </lst>

```

```

</requestHandler>
<highlighting>
  <!-- Configure the standard fragmenter -->
  <!-- This could most likely be commented out in the "default" case -->
  <fragmenter name="gap" class="org.apache.solr.highlight.GapFragmenter" default="true">
    <lst name="defaults">
      <int name="hl.fragsize">100</int>
    </lst>
  </fragmenter>
  <!-- A regular-expression-based fragmenter (f.i., for sentence extraction) -->
  <fragmenter name="regex" class="org.apache.solr.highlight.RegexFragmenter">
    <lst name="defaults">
      <!-- slightly smaller fragsizes work better because of slop -->
      <int name="hl.fragsize">70</int>
      <!-- allow 50% slop on fragment sizes -->
      <float name="hl.regex.slop">0.5</float>
      <!-- a basic sentence pattern -->
      <str name="hl.regex.pattern">[-w ,/\n\']{20,200}</str>
    </lst>
  </fragmenter>
  <!-- Configure the standard formatter -->
  <formatter name="html" class="org.apache.solr.highlight.HtmlFormatter" default="true">
    <lst name="defaults">
      <str name="hl.simple.pre"><![CDATA[<em>]]></str>
      <str name="hl.simple.post"><![CDATA[</em>]]></str>
    </lst>
  </formatter>
</highlighting>
<!-- queryResponseWriter plugins... query responses will be written using the
writer specified by the 'wt' request parameter matching the name of a registered
writer.
The "default" writer is the default and will be used if 'wt' is not specified
in the request. XMLResponseWriter will be used if nothing is specified here.
The json, python, and ruby writers are also available by default.

<queryResponseWriter name="xml" class="org.apache.solr.request.XMLResponseWriter" default="true"/>
<queryResponseWriter name="json" class="org.apache.solr.request.JSONResponseWriter"/>
<queryResponseWriter name="python" class="org.apache.solr.request.PythonResponseWriter"/>
<queryResponseWriter name="ruby" class="org.apache.solr.request.RubyResponseWriter"/>
<queryResponseWriter name="php" class="org.apache.solr.request.PHPResponseWriter"/>
<queryResponseWriter name="phps" class="org.apache.solr.request.PHPSerializedResponseWriter"/>

<queryResponseWriter name="custom" class="com.example.MyResponseWriter"/>
-->
<!-- XSLT response writer transforms the XML output by any xslt file found
in Solr's conf/xslt directory. Changes to xslt files are checked for
every xsltCacheLifetimeSeconds.
-->
<queryResponseWriter name="xslt" class="org.apache.solr.request.XSLTResponseWriter">
  <int name="xsltCacheLifetimeSeconds">5</int>
</queryResponseWriter>
<!-- example of registering a query parser
<queryParser name="lucene" class="org.apache.solr.search.LuceneQParserPlugin"/>
-->
<!-- example of registering a custom function parser
<valueSourceParser name="myfunc" class="com.mycompany.MyValueSourceParser" />
-->
<!-- config for the admin interface -->
<admin>
  <defaultQuery>solr</defaultQuery>
  <!-- configure a healthcheck file for servers behind a loadbalancer
<healthcheck type="file">server-enabled</healthcheck>
-->
</admin>
</config>

```

8.1.9 /etc/solr/solr-tomcat.xml

```

<?xml version="1.0"?>
<!--
  Context configuration file for the Solr Web App
-->
<Context path="/solr" docBase="/usr/share/solr" debug="0" privileged="true" allowLinking="true"
crossContext="true">
  <Resources className="org.apache.naming.resources.FileDirContext" allowLinking="true"/>
  <Environment name="solr/home" type="java.lang.String" value="/usr/share/solr" override="true"/>
  <Valve className="org.apache.catalina.valves.RemoteAddrValve"
allow="127\.\0\.\0\.\1,150\.\145\.\48\.\45,2a00\:\:1620\:\:0\:\:0\:\:0\:\:0\:\:0\:\:0\:\:0\:\:0\:\:0\:\:1,150\.\145\.\48\.\41,2a00\:\:0\:\:0\:\:0\:\:0\:\:0\:\:0\:\:0\:\:0\:\:0\:\:0\:\:41,2a00\:\:1620\:\:0\:\:1234.*"/>
</Context>

```

8.1.10 fedoragsearch/WEB-INF/classes/config/fedoragsearch.properties

```
# $Id: fedoragsearch.properties 5719 2006-10-13 14:17:53Z gertsp $

#fedoragsearch.soapBase      = PROTOCOL://SOAPHOSTPORT/WEBAPPNAME/AXISSERVLETNAME #from web.xml
#fedoragsearch.soapBase     = http://localhost:8080/fedoragsearch/services
fedoragsearch.soapBase     = http://fcl.to.cnr.it:8080/fedoragsearch/services
fedoragsearch.soapUser     = fedoraAdmin
fedoragsearch.soapPass     = password

fedoragsearch.deployFile = CONFIGPATH/deploy.wsdd

#rest
fedoragsearch.defaultNoXslt      = copyXml
fedoragsearch.defaultUpdateIndexRestXslt = demoUpdateIndexToHtml
fedoragsearch.defaultGfindObjectsRestXslt = demoGfindObjectsToHtml
fedoragsearch.defaultBrowseIndexRestXslt = demoBrowseIndexToHtml
fedoragsearch.defaultGetRepositoryInfoRestXslt = demoGetRepositoryInfoToHtml
fedoragsearch.defaultGetIndexInfoRestXslt = demoGetIndexInfoToHtml

#resultPage
fedoragsearch.maxPageSize           = 50
fedoragsearch.defaultBrowseIndexTermPageSize = 20
fedoragsearch.defaultGfindObjectsHitPageSize = 10
#fedoragsearch.defaultGfindObjectsSnippetsMax = 0 means no snippet generation
fedoragsearch.defaultGfindObjectsSnippetsMax = 3
#fedoragsearch.defaultGfindObjectsFieldMaxLength = 0 means no max length
fedoragsearch.defaultGfindObjectsFieldMaxLength = 100

#fedoragsearch.mimeTypes = text/plain text/html application/pdf -potential
#fedoragsearch.mimeTypes = text/plain text/html application/pdf -supported
fedoragsearch.mimeTypes = text/plain text/html application/pdf

#fedoragsearch.repositoryNames = MyRep1 MyRepN configured in config/repository/MyRepI
fedoragsearch.repositoryNames = gsearch_solr

#fedoragsearch.indexNames = MyIndex1 MyIndexN configured in config/index/MyIndexI
fedoragsearch.indexNames = gsearch_solr

# Configuration of updates through Fedora notifications. If this
# property is removed updates through notifications are disabled.
#
#fedoragsearch.updaterNames = MyUpdaters1 MyUpdatersN configured in config/updater/MyUpdaters
fedoragsearch.updaterNames = BasicUpdaters
```

8.1.11 fedoragsearch/WEB-INF/classes/config/repository/gsearch_solr/repository.properties

```
# $Id: repository.properties 5732 2006-11-27 15:26:04Z gertsp $

fgsrepository.repositoryName = gsearch_solr

fgsrepository.fedoraSoap     = http://fcl.to.cnr.it:8080/fedora/services
fgsrepository.fedoraUser    = fedoraAdmin
fgsrepository.fedoraPass    = password
fgsrepository.fedoraObjectDir = /srv/storage/data/objectStore
fgsrepository.fedoraVersion = 3.5

fgsrepository.defaultGetRepositoryInfoResultXslt = copyXml

fgsrepository.trustStorePath = /usr/local/fedora/server/truststore
fgsrepository.trustStorePass = tomcat
```

8.1.12 fedoragsearch/WEB-INF/classes/config/index/gsearch_solr/index.properties

```
# $Id: index.properties 6569 2008-02-08 15:16:13Z gertsp $

# Properties for the DemoOnSolr index

fgsindex.indexName          = gsearch_solr
fgsindex.operationsImpl     = dk.defxws.fgssolr.OperationsImpl

fgsindex.defaultUpdateIndexDocXslt    = demoFoxmlToSolr
fgsindex.defaultUpdateIndexResultXslt = updateIndexToResultPage
fgsindex.defaultGfindObjectsResultXslt = gfindObjectsToResultPage
fgsindex.defaultBrowseIndexResultXslt = browseIndexToResultPage
fgsindex.defaultGetIndexInfoResultXslt = copyXml

#fgsindex.indexBase      = http://localhost:8983/solr # the Solr server base url
fgsindex.indexBase      = http://fcl.to.cnr.it:8080/solr

#fgsindex.indexDir      = <...> The directory must exist, it is used for browseIndex and gfindObjects
fgsindex.indexDir      = /srv/storage/solr/data/index

# the next two properties have their counterpart in the Solr config file schema.xml,
# make sure they match, else you get different search behaviour from the same query
# sent to Solr versus sent to GSearch.
fgsindex.analyzer       = org.apache.lucene.analysis.standard.StandardAnalyzer
fgsindex.defaultQueryFields = dc.description dc.title

# for queries sent to Solr, sorting is determined in the Solr config files
# for queries sent to GSearch, sortFields may be given as parameter to gfindObjects, or as config default.
#####
# as parameter:           ?operation=gfindObjects&sortFields=[sortFieldsValue]&...
# as config default:
#fgsindex.defaultSortFields      = sortFieldsValue
#examples:
#fgsindex.defaultSortFields      = PID,AUTO,true
#fgsindex.defaultSortFields      = sf1,SCORE;sf2,cy-GB-var,true
#fgsindex.defaultSortFields      = dc.title,dk.defxws.fedoragsearch.test.ComparatorSourceTest"
#fgsindex.defaultSortFields      = dc.title,dk.defxws.fedoragsearch.test.ComparatorSourceTest (1-
9)"
# sortFieldsValue          ::= [sortField[';sortField']*]
# sortField                ::= sortFieldName['(sortType | locale | comparatorClass)['_reverse]]]
# sortFieldName            ::= #the name of an index field, which is UN_TOKENIZED and contains a single term
#                           per document
# sortType                 ::= 'AUTO' (default) | 'DOC' | 'SCORE' | 'INT' | 'FLOAT' | 'STRING'
# locale                   ::= language['-'country['-'variant]]
# comparatorClass          ::= package-path'.className['(param['-'param**'])']
# reverse                  ::= 'false' (default) | 'true' | 'reverse'
# Briefly, one or more sortFields will determine the sequence of search results,
# as defined either by sortType or by locale, and it may be in reverse.
# If no sortFieldsValue is given, then this code from GSearch 1.1.1 is run
# Hits hits = searcher.search(query); // in dk.defxws.fgslucene.Statement.java
# where the sequence is by default.
# If a sortFieldsValue is given, then this code is run
# Hits hits = searcher.search(query, sort);
# where sort is an instance of org.apache.lucene.search.Sort, see
# http://lucene.apache.org/java/2_2_0/api/index.html
# The sortType, locale and reverse values come from the class constructors
# for org.apache.lucene.search.SortField.

#fgsindex.untokenizedFields      = list of index fields created as UN_TOKENIZED
#####
# Effect: during search the KeywordAnalyzer is used for untokenized fields,
# while the fgsindex.analyzer is used for other fields.
# Only untokenized fields, which do not occur in every index document,
# need be listed here.
# example:
#fgsindex.untokenizedFields      = fgs.contentModel uf1 uf2

# snippets
#####
#fgsindex.snippetBegin          = <span class="highlight">
## this value is default if not specified
#fgsindex.snippetEnd           = </span>
## this value is default if not specified

# optimization see e.g. http://www.onjava.com/pub/a/onjava/2003/03/05/lucene.html
#####
# fgsindex.mergeFactor          = 10
## 10 is default if not specified
# fgsindex.maxBufferedDocs      = 10
## 10 is default if not specified
# from http://lucene.apache.org/java/2_2_0/api/IndexWriter.html :
## mergeFactor
## determines how often segment indices are merged by addDocument().
## With smaller values, less RAM is used while indexing, and searches on unoptimized indices are faster,
## but indexing speed is slower. With larger values, more RAM is used during indexing,
## and while searches on unoptimized indices are slower, indexing is faster.
## Thus larger values (> 10) are best for batch index creation,
## and smaller values (< 10) for indices that are interactively maintained.
## maxBufferedDocs
## determines the minimal number of documents required
## before the buffered in-memory documents are merged and a new Segment is created.
## Since Documents are merged in a RAMDirectory, large value gives faster indexing.
## At the same time, mergeFactor limits the number of files open in a FSDirectory.
# ...?operation=updateIndex&action=optimize
```

```
## will perform IndexWriter.optimize()
## which merges all segments together into a single segment, optimizing an index for search.
```

8.1.13 fedoragsearch/WEB-INF/classes/config/updater/BasicUpdaters/updater.properties

```
java.naming.factory.initial =org.apache.activemq.jndi.ActiveMQInitialContextFactory
java.naming.provider.url    =tcp://localhost:61616
connection.factory.name     =ConnectionFactory
topic.fedoraAPIM            =fedora.apim.update
client.id                   =fedoragsearch0
```

8.1.14 /etc/solr/conf/schema.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<!--
Licensed to the Apache Software Foundation (ASF) under one or more
contributor license agreements. See the NOTICE file distributed with
this work for additional information regarding copyright ownership.
The ASF licenses this file to You under the Apache License, Version 2.0
(the "License"); you may not use this file except in compliance with
the License. You may obtain a copy of the License at

    http://www.apache.org/licenses/LICENSE-2.0

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distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
-->
<!--
This is the Solr schema file. This file should be named "schema.xml" and
should be in the conf directory under the solr home
(i.e. ./solr/conf/schema.xml by default)
or located where the classloader for the Solr webapp can find it.

This example schema is the recommended starting point for users.
It should be kept correct and concise, usable out-of-the-box.

For more information, on how to customize this file, please see
http://wiki.apache.org/solr/SchemaXml
-->
<schema name="DemoOnSolr" version="1.1">
  <!-- attribute "name" is the name of this schema and is only used for display purposes.
  Applications should change this to reflect the nature of the search collection.
  version="1.1" is Solr's version number for the schema syntax and semantics. It should
  not normally be changed by applications.
  1.0: multiValued attribute did not exist, all fields are multiValued by nature
  1.1: multiValued attribute introduced, false by default -->
  <types>
    <!-- field type definitions. The "name" attribute is
    just a label to be used by field definitions. The "class"
    attribute and any other attributes determine the real
    behavior of the fieldType.
    Class names starting with "solr." refer to java classes in the
    org.apache.solr.analysis package.
    -->
    <!-- The StrField type is not analyzed, but indexed/stored verbatim.
    - StrField and TextField support an optional compressThreshold which
    limits compression (if enabled in the derived fields) to values which
    exceed a certain size (in characters).
    -->
    <fieldType name="string" class="solr.StrField" sortMissingLast="true" omitNorms="true"/>
    <!-- boolean type: "true" or "false" -->
    <fieldType name="boolean" class="solr.BoolField" sortMissingLast="true" omitNorms="true"/>
    <!-- The optional sortMissingLast and sortMissingFirst attributes are
    currently supported on types that are sorted internally as strings.
    - If sortMissingLast="true", then a sort on this field will cause documents
    without the field to come after documents with the field,
    regardless of the requested sort order (asc or desc).
    - If sortMissingFirst="true", then a sort on this field will cause documents
    without the field to come before documents with the field,
    regardless of the requested sort order.
    - If sortMissingLast="false" and sortMissingFirst="false" (the default),
    then default lucene sorting will be used which places docs without the
    field first in an ascending sort and last in a descending sort.
    -->
    <!-- numeric field types that store and index the text
    value verbatim (and hence don't support range queries, since the
    lexicographic ordering isn't equal to the numeric ordering) -->
    <fieldType name="integer" class="solr.IntField" omitNorms="true"/>
    <fieldType name="long" class="solr.LongField" omitNorms="true"/>
    <fieldType name="float" class="solr.FloatField" omitNorms="true"/>
    <fieldType name="double" class="solr.DoubleField" omitNorms="true"/>
    <!-- Numeric field types that manipulate the value into
    a string value that isn't human-readable in its internal form,
    but with a lexicographic ordering the same as the numeric ordering,
    so that range queries work correctly. -->
    <fieldType name="sint" class="solr.SortableIntField" sortMissingLast="true" omitNorms="true"/>
    <fieldType name="slong" class="solr.SortableLongField" sortMissingLast="true" omitNorms="true"/>
    <fieldType name="sfloat" class="solr.SortableFloatField" sortMissingLast="true" omitNorms="true"/>
    <fieldType name="sdouble" class="solr.SortableDoubleField" sortMissingLast="true" omitNorms="true"/>
    <!-- The format for this date field is of the form 1995-12-31T23:59:59Z, and
    is a more restricted form of the canonical representation of dateTime
    http://www.w3.org/TR/xmlschema-2/#dateTime
    The trailing "Z" designates UTC time and is mandatory.
    Optional fractional seconds are allowed: 1995-12-31T23:59:59.999Z
    -->
```

```

All other components are mandatory.

Expressions can also be used to denote calculations that should be
performed relative to "NOW" to determine the value, ie...

    NOW/HOUR
    ... Round to the start of the current hour
    NOW-1DAY
    ... Exactly 1 day prior to now
    NOW/DAY+6MONTHS+3DAYS
    ... 6 months and 3 days in the future from the start of
        the current day

Consult the DateField javadocs for more information.
-->
<fieldType name="date" class="solr.DateField" sortMissingLast="true" omitNorms="true"/>
<!-- solr.TextField allows the specification of custom text analyzers
specified as a tokenizer and a list of token filters. Different
analyzers may be specified for indexing and querying.

The optional positionIncrementGap puts space between multiple fields of
this type on the same document, with the purpose of preventing false phrase
matching across fields.

For more info on customizing your analyzer chain, please see
http://wiki.apache.org/solr/AnalyzersTokenizersTokenFilters
-->
<!-- One can also specify an existing Analyzer class that has a
default constructor via the class attribute on the analyzer element
<fieldType name="text_greek" class="solr.TextField">
  <analyzer class="org.apache.lucene.analysis.el.GreekAnalyzer"/>
</fieldType>
-->
<!-- A text field that only splits on whitespace for exact matching of words -->
<fieldType name="text_fgs" class="solr.TextField" positionIncrementGap="100">
  <analyzer>
    <tokenizer class="solr.StandardTokenizerFactory"/>
    <filter class="solr.LowerCaseFilterFactory"/>
  </analyzer>
</fieldType>
<!-- A text field that only splits on whitespace for exact matching of words -->
<fieldType name="text_ws" class="solr.TextField" positionIncrementGap="100">
  <analyzer>
    <tokenizer class="solr.WhitespaceTokenizerFactory"/>
  </analyzer>
</fieldType>
<!-- A text field that uses WordDelimiterFilter to enable splitting and matching of
words on case-change, alpha numeric boundaries, and non-alphanumeric chars,
so that a query of "wifi" or "wi fi" could match a document containing "Wi-Fi".
Synonyms and stopwords are customized by external files, and stemming is enabled.
Duplicate tokens at the same position (which may result from Stemmed Synonyms or
WordDelim parts) are removed.
-->
<fieldType name="text" class="solr.TextField" positionIncrementGap="100">
  <analyzer type="index">
    <tokenizer class="solr.WhitespaceTokenizerFactory"/>
    <!-- in this example, we will only use synonyms at query time
    <filter class="solr.SynonymFilterFactory" synonyms="index_synonyms.txt" ignoreCase="true"
expand="false"/>
-->
    <filter class="solr.StopFilterFactory" ignoreCase="true" words="stopwords.txt"/>
    <filter class="solr.WordDelimiterFilterFactory" generateWordParts="1" generateNumberParts="1"
catenateWords="1" catenateNumbers="1" catenateAll="0"/>
    <filter class="solr.LowerCaseFilterFactory"/>
    <filter class="solr.EnglishPorterFilterFactory" protected="protwords.txt"/>
    <filter class="solr.RemoveDuplicatesTokenFilterFactory"/>
  </analyzer>
  <analyzer type="query">
    <tokenizer class="solr.WhitespaceTokenizerFactory"/>
    <filter class="solr.SynonymFilterFactory" synonyms="synonyms.txt" ignoreCase="true" expand="true"/>
    <filter class="solr.StopFilterFactory" ignoreCase="true" words="stopwords.txt"/>
    <filter class="solr.WordDelimiterFilterFactory" generateWordParts="1" generateNumberParts="1"
catenateWords="0" catenateNumbers="0" catenateAll="0"/>
    <filter class="solr.LowerCaseFilterFactory"/>
    <filter class="solr.EnglishPorterFilterFactory" protected="protwords.txt"/>
    <filter class="solr.RemoveDuplicatesTokenFilterFactory"/>
  </analyzer>
</fieldType>
<!-- Less flexible matching, but less false matches. Probably not ideal for product names,
but may be good for SKUs. Can insert dashes in the wrong place and still match. -->
<fieldType name="textTight" class="solr.TextField" positionIncrementGap="100">
  <analyzer>
    <tokenizer class="solr.WhitespaceTokenizerFactory"/>
    <filter class="solr.SynonymFilterFactory" synonyms="synonyms.txt" ignoreCase="true" expand="false"/>
    <filter class="solr.StopFilterFactory" ignoreCase="true" words="stopwords.txt"/>
    <filter class="solr.WordDelimiterFilterFactory" generateWordParts="0" generateNumberParts="0"
catenateWords="1" catenateNumbers="1" catenateAll="0"/>
    <filter class="solr.LowerCaseFilterFactory"/>
    <filter class="solr.EnglishPorterFilterFactory" protected="protwords.txt"/>
    <filter class="solr.RemoveDuplicatesTokenFilterFactory"/>
  </analyzer>
</fieldType>
<!-- This is an example of using the KeywordTokenizer along
With various TokenFilterFactories to produce a sortable field
that does not include some properties of the source text
-->

```

```

<fieldType name="alphaOnlySort" class="solr.TextField" sortMissingLast="true" omitNorms="true">
  <analyzer>
    <!-- KeywordTokenizer does no actual tokenizing, so the entire
         input string is preserved as a single token
    -->
    <tokenizer class="solr.KeywordTokenizerFactory"/>
    <!-- The LowerCase TokenFilter does what you expect, which can be
         when you want your sorting to be case insensitive
    -->
    <filter class="solr.LowerCaseFilterFactory"/>
    <!-- The TrimFilter removes any leading or trailing whitespace -->
    <filter class="solr.TrimFilterFactory"/>
    <!-- The PatternReplaceFilter gives you the flexibility to use
         Java Regular expression to replace any sequence of characters
         matching a pattern with an arbitrary replacement string,
         which may include back references to portions of the original
         string matched by the pattern.

         See the Java Regular Expression documentation for more
         information on pattern and replacement string syntax.

         http://java.sun.com/j2se/1.5.0/docs/api/java/util/regex/package-summary.html
    -->
    <filter class="solr.PatternReplaceFilterFactory" pattern="([\^a-z]" replacement="" replace="all"/>
  </analyzer>
</fieldType>
<!-- since fields of this type are by default not stored or indexed, any data added to
     them will be ignored outright
-->
<fieldType name="ignored" stored="false" indexed="false" class="solr.StrField"/>
</types>
<fields>
  <!-- Valid attributes for fields:
       name: mandatory - the name for the field
       type: mandatory - the name of a previously defined type from the <types> section
       indexed: true if this field should be indexed (searchable or sortable)
       stored: true if this field should be retrievable
       compressed: [false] if this field should be stored using gzip compression
                (this will only apply if the field type is compressable; among
                the standard field types, only TextField and StrField are)
       multiValued: true if this field may contain multiple values per document
       omitNorms: (expert) set to true to omit the norms associated with
                 this field (this disables length normalization and index-time
                 boosting for the field, and saves some memory). Only full-text
                 fields or fields that need an index-time boost need norms.
  -->
  <field name="PID" type="string" indexed="true" stored="true" required="true"/>
  <!-- catchall field, containing all other searchable text fields (implemented
       via copyField further on in this schema -->
  <field name="text" type="text" indexed="true" stored="false" multiValued="true"/>
  <field name="OCR.OCR" type="text_fgs" indexed="true" stored="true" multiValued="true"/>
  <field name="OBJ.OBJ" type="text_fgs" indexed="true" stored="true" multiValued="true"/>
  <!-- non-tokenized version of manufacturer to make it easier to sort or group
       results by manufacturer. copied from "manu" via copyField
  <field name="manu_exact" type="string" indexed="true" stored="false"/>
-->
  <!-- Here, default is used to create a "timestamp" field indicating
       When each document was indexed.
  -->
  <field name="timestamp" type="date" indexed="true" stored="true" default="NOW" multiValued="false"/>
  <!--nuovo pezzo -->
  <!--
       <copyField source="rels.isMemberOf" dest="collection" />
       <field name="rels.isMemberOf" type="text" indexed="true" stored="false" multiValued="true"/>
       <copyField source="rels.isMemberOfCollection" dest="collection" />
       <field name="rels.isMemberOfCollection" type="text" indexed="true" stored="false" multiValued="true"/>
       <field name="collection" type="string" maxChars="300" indexed="true" stored="true" multiValued="true"/>
  -->
  <field name="rels.isMemberOfCollection" type="string" indexed="true" stored="true" multiValued="true"/>
  <!-- Dynamic field definitions. If a field name is not found, dynamicFields
       will be used if the name matches any of the patterns.
       RESTRICTION: the glob-like pattern in the name attribute must have
       a "*" only at the start or the end.
       EXAMPLE: name="*_i" will match any field ending in _i (like myid_i, z_i)
       Longer patterns will be matched first. If equal size patterns
       both match, the first appearing in the schema will be used.
  -->
  <dynamicField name="*_i" type="sint" indexed="true" stored="true"/>
  <dynamicField name="*_s" type="string" indexed="true" stored="true"/>
  <dynamicField name="*_l" type="slong" indexed="true" stored="true"/>
  <dynamicField name="*_t" type="text" indexed="true" stored="true"/>
  <dynamicField name="*_b" type="boolean" indexed="true" stored="true"/>
  <dynamicField name="*_f" type="sfloat" indexed="true" stored="true"/>
  <dynamicField name="*_d" type="sdouble" indexed="true" stored="true"/>
  <dynamicField name="*_dt" type="date" indexed="true" stored="true"/>
  <!-- uncomment the following to ignore any fields that don't already match an existing
       field name or dynamic field, rather than reporting them as an error.
       alternately, change the type="ignored" to some other type e.g. "text" if you want
       unknown fields indexed and/or stored by default -->
  <field name="dc.identifier" type="text_fgs" indexed="true" stored="true" multiValued="true"/>
  <field name="dc.description" type="text_fgs" indexed="true" stored="true" multiValued="true"/>
  <field name="dc.title" type="text_fgs" indexed="true" stored="true" multiValued="true"/>
  <field name="dc.creator" type="text_fgs" indexed="true" stored="true" multiValued="true"/>
  <field name="dc.subject" type="text_fgs" indexed="true" stored="true" multiValued="true"/>
  <field name="dc.publisher" type="text_fgs" indexed="true" stored="true" multiValued="true"/>
  <dynamicField name="rels.*" type="text_fgs" indexed="true" stored="true" multiValued="true"/>
  <dynamicField name="*" type="ignored" indexed="false" stored="false" multiValued="false"/>
    
```



```

</fields>
<!-- Field to use to determine and enforce document uniqueness.
    Unless this field is marked with required="false", it will be a required field
-->
<uniqueKey>PID</uniqueKey>
<!-- field for the QueryParser to use when an explicit fieldname is absent -->
<defaultSearchField>dc.description</defaultSearchField>
<!-- SolrQueryParser configuration: defaultOperator="AND|OR" -->
<solrQueryParser defaultOperator="OR"/>
<!-- copyField commands copy one field to another at the time a document
    is added to the index. It's used either to index the same field differently,
    or to add multiple fields to the same field for easier/faster searching. -->
<!-- Similarity is the scoring routine for each document vs. a query.
    A custom similarity may be specified here, but the default is fine
    for most applications. -->
<!-- <similarity class="org.apache.lucene.search.DefaultSimilarity"/> -->
</schema>

```

8.1.15 fedoragsearch/WEB-INF/classes/config/index/gsearch_solr/demoFoxmlToSolr.xslt

```

<?xml version="1.0" encoding="UTF-8"?>
<!-- $Id: demoFoxmlToLucene.xslt 5734 2006-11-28 11:20:15Z gertsp $ -->
<xsl:stylesheet xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
    xmlns:exts="xalan://dk.defxws.fedoragsearch.server.GenericOperationsImpl"
    xmlns:zs="http://www.loc.gov/zing/srw/" xmlns:foxml="info:fedora/fedora-system:dc/foxml#"
    xmlns:dc="http://purl.org/dc/elements/1.1/" xmlns:oai_dc="http://www.openarchives.org/OAI/2.0/oai_dc/"
    xmlns:tei="http://www.tei-c.org/ns/1.0" xmlns:mods="http://www.loc.gov/mods/v3"
    xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#" xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
    xmlns:fedora="info:fedora/fedora-system:dc/relations-external#" xmlns:rel="info:fedora/fedora-
    system:dc/relations-external#" xmlns:fractions="http://vre.upei.ca/fractions/"
    xmlns:compounds="http://vre.upei.ca/compounds/" xmlns:critters="http://vre.upei.ca/critters/"
    xmlns:dwc="http://rs.tdwg.org/dwc/xsd/simpledarwincore/" xmlns:fedora-model="info:fedora/fedora-
    system:dc/model#" xmlns:pb="http://www.pbcore.org/PBCore/PBCoreNamespace.html"
    xmlns:uvalibdesc="http://dl.lib.virginia.edu/bin/dtd/descmeta/descmeta.dtd"
    xmlns:uvalibadmin="http://dl.lib.virginia.edu/bin/admin/admin.dtd" version="1.0" exclude-result-
    prefixes="exts">
<xsl:output method="xml" indent="yes" encoding="UTF-8"/>
<!--
    This xslt stylesheet generates the Solr doc element consisting of field elements
    from a FOXML record. The PID field is mandatory.
    Options for tailoring:
    - generation of fields from other XML metadata streams than DC
    - generation of fields from other datastream types than XML
    - from datastream by ID, text fetched, if mimetype can be handled
    currently the mimetypes text/plain, text/xml, text/html, application/pdf can be handled.
-->
<xsl:param name="REPOSITORYNAME" select="repositoryName"/>
<xsl:param name="FEDORASOAP" select="repositoryName"/>
<xsl:param name="FEDORAUSER" select="repositoryName"/>
<xsl:param name="FEDORAPASS" select="repositoryName"/>
<xsl:param name="TRUSTSTOREPATH" select="repositoryName"/>
<xsl:param name="TRUSTSTOREPASS" select="repositoryName"/>
<xsl:variable name="PID" select="/foxml:digitalObject/@PID"/>
<xsl:variable name="docBoost" select="1.4*2.5"/>
<!-- or any other calculation, default boost is 1.0 -->
<xsl:template match="/">
  <add>
    <doc>
      <xsl:attribute name="boost">
        <xsl:value-of select="$docBoost"/>
      </xsl:attribute>
      <!-- The following allows only active demo FedoraObjects to be indexed. -->
      <xsl:if test="foxml:digitalObject/foxml:objectProperties/foxml:property[@NAME='info:fedora/fedora-
      system:dc/model#state' and @VALUE='Active']">
        <xsl:if test="not(foxml:digitalObject/foxml:datastream[@ID='METHODMAP'] or
        foxml:digitalObject/foxml:datastream[@ID='DS-COMPOSITE-MODEL'])">
          <!--
            <xsl:if test="starts-with($PID, 'demo')"> -->
            <xsl:apply-templates mode="activeDemoFedoraObject"/>
          </!--
            </xsl:if> -->
          </xsl:if>
        </xsl:if>
      </doc>
    </add>
  </xsl:template>
  <xsl:template match="/foxml:digitalObject" mode="activeDemoFedoraObject">
    <field name="PID" boost="2.5">
      <xsl:value-of select="$PID"/>
    </field>
    <xsl:for-each select="foxml:objectProperties/foxml:property">
      <field>
        <xsl:attribute name="name">
          <xsl:value-of select="concat('fgs.', substring-after(@NAME, '#'))"/>
        </xsl:attribute>
        <xsl:value-of select="@VALUE"/>
      </field>
    </xsl:for-each>
    <xsl:for-each select="foxml:datastream/foxml:datastreamVersion[last()]/foxml:xmlContent/oai_dc:dc/*">
      <field>
        <xsl:attribute name="name">
          <xsl:value-of select="concat('dc.', substring-after(name(), ':'))"/>
        </xsl:attribute>
        <xsl:value-of select="text()"/>
      </field>
    </xsl:for-each>
    <!--nuovo per indicare rels -->
    <xsl:for-each select="foxml:datastream[@ID='RELS-
    EXT']/foxml:datastreamVersion[last()]/foxml:xmlContent//rdf:Description/*">

```

```

<field index="TOKENIZED" store="YES" termVector="NO">
  <xsl:attribute name="name">
    <xsl:value-of select="concat('rels.', substring-after(name(), ':'))"/>
  </xsl:attribute>
  <xsl:value-of select="@rdf:resource"/>
</field>
</xsl:for-each>
<!--
<!--nuovo per indicizzare fulltext DSID OCR -->
<!--
<xsl:for-each select="foxml:datastream[@CONTROL_GROUP='M']"> -->
<xsl:for-each select="foxml:datastream[@ID='OCR']/foxml:datastreamVersion[last()]>
  <field index="TOKENIZED" store="YES" termVector="NO">
    <xsl:attribute name="name">
      <xsl:value-of select="concat('OCR.', 'OCR')"/>
    </xsl:attribute>
    <xsl:value-of select="exts:getDatastreamText($PID, $REPOSITORYNAME, 'OCR', $FEDORASOAP, $FEDORAUSER,
    $FEDORAPASS, $TRUSTSTOREPATH, $TRUSTSTOREPASS)"/>
  </field>
</xsl:for-each>
<!--
<!--nuovo per indicizzare fulltext DSID OBJ -->
<!--
<xsl:for-each select="foxml:datastream[@ID='OBJ']/foxml:datastreamVersion[last()]>
  <field index="TOKENIZED" store="YES" termVector="NO">
    <xsl:attribute name="name">
      <xsl:value-of select="concat('OBJ.', 'OBJ')"/>
    </xsl:attribute>
    <xsl:value-of select="exts:getDatastreamText($PID, $REPOSITORYNAME, 'OBJ', $FEDORASOAP, $FEDORAUSER,
    $FEDORAPASS, $TRUSTSTOREPATH, $TRUSTSTOREPASS)"/>
  </field>
</xsl:for-each>
<!--
<!--commento parte estrae tutti i DSID -->
<!--
      <xsl:for-each select="foxml:datastream[@CONTROL_GROUP='M']">
        <field index="TOKENIZED" store="YES" termVector="NO">
          <xsl:attribute name="name">
            <xsl:value-of select="concat('dsm.', @ID)"/>
          </xsl:attribute>
          <xsl:value-of select="exts:getDatastreamText($PID, $REPOSITORYNAME, @ID,
          $FEDORASOAP, $FEDORAUSER, $FEDORAPASS, $TRUSTSTOREPATH, $TRUSTSTOREPASS)"/>
        </field>
      </xsl:for-each>
-->
</xsl:template>
</xsl:stylesheet>

```

8.1.16 fedoragsearch/WEB-INF/classes/log4j.xml

```

<?xml version="1.0" encoding="UTF-8"?>
<!-- $Id: log4j.xml 6643 2008-02-22 16:09:25Z gertsp $ -->
<!DOCTYPE log4j:configuration SYSTEM "log4j.dtd">
<log4j:configuration xmlns:log4j="http://jakarta.apache.org/log4j/">
  <appender name="STDOUT" class="org.apache.log4j.ConsoleAppender">
    <layout class="org.apache.log4j.PatternLayout">
      <param name="ConversionPattern" value="%p %d (%c{1}) %m%n"/>
    </layout>
  </appender>
  <appender name="FILEOUT" class="org.apache.log4j.FileAppender">
    <param name="File" value="/var/log/tomcat6/fedoragsearch.log"/>
    <layout class="org.apache.log4j.PatternLayout">
      <param name="ConversionPattern" value="%p %d (%c{1}) %m%n"/>
    </layout>
  </appender>
  <logger name="dk.defxws.fedoragsearch" additivity="false">
    <!-- <level value="DEBUGLEVELG" /> -->
    <level value="WARN"/>
    <appender-ref ref="FILEOUT"/>
  </logger>
  <logger name="dk.defxws.fgszebra" additivity="false">
    <!-- <level value="DEBUGLEVELZ" /> -->
    <level value="INFO"/>
    <appender-ref ref="FILEOUT"/>
  </logger>
  <logger name="dk.defxws.fgsrucene" additivity="false">
    <!-- <level value="DEBUGLEVELL" /> -->
    <level value="INFO"/>
    <appender-ref ref="FILEOUT"/>
  </logger>
  <logger name="dk.defxws.fgsoslr" additivity="false">
    <!-- <level value="DEBUGLEVELS" /> -->
    <level value="INFO"/>
    <appender-ref ref="FILEOUT"/>
  </logger>
  <root>
    <level value="WARN"/>
    <appender-ref ref="STDOUT"/>
  </root>
</log4j:configuration>

```

8.1.17 fedoragsearch/WEB-INF/classes/config/index/gsearch_solr/indexInfo.xml

```

<?xml version="1.0" encoding="UTF-8"?>
<resultPage indexName="DemoOnLucene">
  <indexInfo>
    <IndexShortName>Solr@FC1</IndexShortName>
  </indexInfo>
</resultPage>

```

```

<IndexLongName>Index on Solr at fcl.to.cnr.it</IndexLongName>
<EngineUrl>http://lucene.apache.org/</EngineUrl>
<EngineShortName>Solr</EngineShortName>
<EngineLongName>Apache Lucene project</EngineLongName>
<EngineDescription>The Apache Solr project develops open-source search software.</EngineDescription>
<EngineTags>solr lucene apache open-source search software</EngineTags>
<EngineImage>http://solr.apache.org/solr_green_300.gif</EngineImage>
<QueryLanguage>See e.g. http://lucene.apache.org/java/docs/queryparsersyntax.html</QueryLanguage>
<SampleSearch>dc.title:fedora AND dc.creator:"thornton staples"</SampleSearch>
<IndexFieldNameList>PID, repositoryName,<BR/>
    property.label, property.contentModel, property.createdDate,<BR/>
    property.lastModifiedDate, property.state, property.type,<BR/>
    dc.creator, dc.date, dc.description, dc.format, dc.identifier,<BR/>
    dc.publisher, dc.relations, dc.right, dc.source,<BR/>
    dc.subject, dc.title,<BR/>
    DS2.text,<BR/>
    others depending on the indexing stylesheet.
</IndexFieldNameList>
<EngineDeveloper>Apache Lucene Solr project</EngineDeveloper>
<EngineContact>info@lucene.apache.org/solr</EngineContact>
<EngineAttribution>The Apache Lucene Solr project © 2005, The Apache Lucene Solr project,
All Rights Reserved</EngineAttribution>
</indexInfo>
</resultPage>

```

8.1.18 fedoragsearch/WEB-INF/classes/config/repository/gsearch_solr/repositoryInfo.xml

```

<?xml version="1.0" encoding="UTF-8"?>
<resultPage>
  <repositoryInfo>
    <RepositoryShortName>To.CNR.IT</RepositoryShortName>
    <RepositoryLongName>Fedora Repository _at_ To.CNR.IT</RepositoryLongName>
    <RepositoryDeveloper>Ufficio IT Ceris CNR</RepositoryDeveloper>
    <RepositoryContact>g.birello@ceris.cnr.it</RepositoryContact>
  </repositoryInfo>
</resultPage>

```

8.1.19 /var/lib/tomcat6/webapps/iiv/tocnr_viewer.jsp

```

<?xml version="1.0" encoding="ISO-8859-1" ?>
<%@ page language="java" contentType="text/html; charset=ISO-8859-1"
    pageEncoding="ISO-8859-1"%>
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="Content-Type" content="text/html; charset=UTF-8" />
<title>ToCNR IIV Image Viewer: ${param.pid}</title>
<style>
    html, body {margin: 0; padding: 0; }
</style>
</head>
<body style="margin: 0;">
  <!-- begin iiv code -->
  <script src="/iiv/js/OpenLayers-2.7/OpenLayers.js"></script>
  <script src="/iiv/js/jquery-1.3.2.min.js"></script>
  <script src="/iiv/js/jquery-ui-1.7.2.custom.min.js"></script>
  <script src="/iiv/js/tocnr.js"></script>
  <script>

    document.write('<div class="iiv"></div>');
    $(document).ready(function() {
      var viewer = new iiv.Viewer({
        pid: '${param.pid}',
        cmodel: '${param.cmodel}',
        dsid: 'JP2',
        uid: '${param.uid}')
    });
  </script>
  <!-- end iiv code -->
</body>
</html>

```

8.1.20 /var/lib/tomcat6/webapps/iiv/tocnr_page_viewer.jsp

```

<?xml version="1.0" encoding="ISO-8859-1" ?>
<%@ page language="java" contentType="text/html; charset=ISO-8859-1"
    pageEncoding="ISO-8859-1"%>
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="Content-Type" content="text/html; charset=UTF-8" />
<title>ToCNR IIV Image Viewer: ${param.pid}</title>
<style>
    html, body {margin: 0; padding: 0; }
</style>
</head>
<body style="margin: 0;">
  <!-- begin iiv code -->
  <script src="/iiv/js/OpenLayers-2.7/OpenLayers.js"></script>
  <script src="/iiv/js/jquery-1.3.2.min.js"></script>
  <script src="/iiv/js/jquery-ui-1.7.2.custom.min.js"></script>
  <script src="/iiv/js/tocnr.js"></script>
  <script>

    document.write('<div class="iiv"></div>');
    $(document).ready(function() {

      var viewer = new iiv.Viewer({
        pid: '${param.pid}',

```

```

        cmodel: 'islandora:pageCModel',
        dsid: 'JP2',
        uid: '${param.uid}')
    });
</script>
<!-- end iiv code -->
</body>
</html>

```

8.1.21 /var/lib/tomcat6/webapps/iiv/js/tochr.js

```

// $Id$

var iiv = {};

iiv.Class = function(prototype) {
    var c = function(options) {
        jQuery.extend(this, options);
        this.initialize.apply(this);
    };

    c.prototype = prototype;
    return c;
};

iiv.Viewer = new iiv.Class({
    ui: null,
    iivContainer: '.iiv',
    mapContainer: 'iiv-image-panel',
    fedoraUrl: 'http://' + location.host + '/fedora',
    pids: null,
    pageIndex: 0,
    map: null,

    initialize: function(options) {
        this.ui = new iiv.Viewer.UI({viewer: this});
        this.riSearch = new iiv.Viewer.RISearch(this.riSearchOptions());
        this.riSearch.search();
        jQuery.iiv = this;
    },

    intercept: function(object, method, interceptor) {
        object[method + '_without_interceptor'] = object[method];
        object[method] = interceptor;
    },

    riSearchOptions: function() {
        var viewer = this;
        return {
            pid: this.pid,
            cmodel: this.cmodel,
            dsid: this.dsid,
            fedoraUrl: this.fedoraUrl,
            uid: this.uid,
            searchCallback: this.createSearchCallback()
        }
    },

    createSearchCallback: function() {
        var viewer = this;

        return function(results) {
            viewer.pids = results;
            for (i = 0; i < viewer.pids.length; i++) {
                if (viewer.pids[i] == viewer.pid) {
                    viewer.pageIndex = i;
                    break;
                }
            }

            viewer.loadText();
            viewer.initializeMap();
            viewer.ui.initializeUI();
        };
    },

    initializeMap: function() {
        // OpenLayers.Layer.OpenURL.viewerWidth = jQuery('.iiv-canvas').width();
        // OpenLayers.Layer.OpenURL.viewerHeight = jQuery('.iiv-canvas').height();

        var imageLayer = this.createImageLayer();
        var mapOptions = this.createMapOptions(imageLayer);
        mapOptions.controls = this.createMapControls();
        this.map = new OpenLayers.Map(this.mapContainer, mapOptions);
        this.map.addLayer(imageLayer);
        var lon = this.map.maxExtent.width / 2;
        var lat = this.map.maxExtent.height / 2;
        this.map.setCenter(new OpenLayers.LonLat(lon, lat), 0);
    },

    createMapControls: function() {
        var controls = [
            new OpenLayers.Control.MouseDefaults(),
            new OpenLayers.Control.KeyboardDefaults()
        ];
    }
});

```

```

    return controls;
  },

  createMapOptions: function(imageLayer) {
    var metadata = imageLayer.getImageMetadata();
    var resolutions = imageLayer.getResolutions();
    var maxExtent = new OpenLayers.Bounds(0, 0, metadata.width, metadata.height);
    var tileSize = imageLayer.getTileSize();
    return options = {resolutions: resolutions, maxExtent: maxExtent, tileSize: tileSize};
  },

  createImageLayer: function() {
    var pid = this.currentPid();
    var djatokaUrl = this.djatokaUrl(pid);

    var imageLayer = new iiv.Viewer.ImageLayer('OpenURL', '', {
      isBaseLayer : true,
      layername : 'basic',
      format : 'image/jpeg',
      rft_id : this.rftUrl(pid),
      metadataUrl : djatokaUrl + '/getMetadata?uid=' + this.uid
    });

    imageLayer.djatokaUrl = djatokaUrl;
    imageLayer.uid = this.uid;

    return imageLayer;
  },

  rftUrl: function(pid) {
    return this.djatokaUrl(pid) + '/JP2?uid=djatoka';
  },

  currentPid: function() {
    return this.pids[this.pageIndex];
  },

  djatokaUrl: function(pid) {
    return this.pidUrl(pid) + '/islandora:jp2Sdef';
  },

  pidUrl: function(pid) {
    return this.fedoraUrl + '/get/' + pid;
  },

  textUrlIsHtml: function(url) {
    return /tei2html/.test(url);
  },

  textUrl: function(pid) {
    switch(this.cmodel) {
      case 'islandora:bookCModel':
        dsid = 'OCR';
        break;
      case 'islandora:pageCModel':
        dsid = 'OCR';
        break;
      case 'ilives:slideCModel':
        dsid = '/ilives:tei2htmlSdef/tei2html';
        break;
      case 'newspapers:issueCModel':
      case 'newspapers:pageCModel':
        dsid = 'OCR';
        break;
      case 'islandora-dm:po-document-cmodel':
      default:
        dsid = 'text';
        break;
    }

    return this.fedoraUrl + '/get/' + pid + '/' + dsid + '?uid=' + this.uid;
  },

  setPage: function(index) {
    if (index != this.pageIndex && index >= 0 && index < this.pids.length) {
      this.pageIndex = index;
      this.loadText();

      var nextLayer = this.createImageLayer();
      var options = this.createMapOptions(nextLayer);
      this.map.resolutions = options.resolutions;
      this.map.maxExtent = options.maxExtent;
      this.map.tileSize = options.tileSize;

      var baseLayer = this.map.baseLayer;

      this.map.addLayer(nextLayer);
      this.map.setBaseLayer(nextLayer);
      this.map.removeLayer(baseLayer);
      this.ui.updatePageControls(index);
    }
  },

  nextPid: function() {

```

```

        this.setPage(this.pageIndex + 1);
    },

    previousPid: function() {
        this.setPage(this.pageIndex - 1);
    },

    loadText: function() {
        var container = this.ui.textContainer;
        container.html('');

        url = this.textUrl(this.currentPid());
        html = this.textUrlIsHtml(url);

        if (html) {
            jQuery.get(url, function(data) {
                container.html(data);
            }, 'html');
        }
        else {
            jQuery.get(url, function(data) {
                container.html('<pre>' + data + '</pre>');
            }, 'html');
        }
    },

    printUrl: function () {
        if (this.cmodel == 'newspapers:issueCModel') {
            url = this.fedoraUrl + '/get/' + this.currentPid() + '/PagePDF?uid=' + this.uid;
        }
        else if (this.cmodel == 'islandora-dm:po-document-cmodel') {
            url = this.fedoraUrl + '/get/' + this.currentPid() + '/pdf?uid=' + this.uid;
        }
        else {
            url = this.djatokaPrintUrl();
        }

        return url;
    },

    djatokaPrintUrl: function() {
        var imageExtent = this.map.getMaxExtent();
        var aspect = imageExtent.getWidth() / imageExtent.getHeight();
        var scale = aspect > 1.3333 ? "600,0" : "0,800";
        var level = '3'; // TODO calculate

        // assemble url
        var imageUrl = this.djatokaUrl(this.currentPid()) + '/getRegion?uid=' + this.uid + '&level=' + level +
            '&scale=' + scale;
        var printUrl = '/iiv/print.html?pid=' + this.currentPid() + '&image=' + escape(imageUrl);

        return printUrl;
    }
});

iiv.Viewer.UI = new iiv.Class({
    viewer: null,
    sliderPage: null,
    buttonPagePrevious: null,
    buttonPageNext: null,
    sliderZoom: null,
    // buttonZoomIn: null,
    // buttonZoomOut: null,
    buttonZoomMax: null,
    buttonText: null,
    imagePanel: null,
    textPanel: null,
    textContainer: null,
    // buttonPrint: null,

    initialize: function(options) {
        this.createUI();
    },

    createDiv: function(parent, cssClass) {
        var div = jQuery('<div class="' + cssClass + '"></div>');
        parent.append(div);
        return div;
    },

    createUI: function() {
        var container = jQuery(this.viewer.iivContainer);
        // container.append('<link rel="stylesheet" href="/iiv/css/jquery-ui/smoothness/jquery-ui-1.7.2.custom.css" type="text/css" />');
        // container.append('<link rel="stylesheet" href="/iiv/css/iiv.css" type="text/css"/>');
        // container.append('<!--[if IE]><link rel="stylesheet" href="/iiv/css/ie6.css" type="text/css"><![endif]-->');
        container.append('<link rel="stylesheet" href="http://'+location.host+'/iiv/css/jquery-ui/smoothness/jquery-ui-1.7.2.custom.css" type="text/css"/>');
        container.append('<link rel="stylesheet" href="http://'+location.host+'/iiv/css/iiv.css" type="text/css"/>');
        container.append('<!--[if IE]><link rel="stylesheet" href="http://'+location.host+'/iiv/css/ie6.css" type="text/css"><![endif]-->');

        var ui = this.createDiv(container, 'iiv-ui ui-corner-all');
        var toolbar = this.createDiv(ui, 'iiv-toolbar');
    }
});

```

```

this.createZoomControls(toolbar);
this.createPageControls(toolbar);
this.createOtherControls(toolbar);

var canvas = this.createDiv(ui, 'iiv-canvas')
this.textPanel = this.createDiv(canvas, 'iiv-text-panel');
this.textContainer = this.createDiv(this.textPanel, 'iiv-text-container');

this.imagePanel = this.createDiv(canvas, 'iiv-image-panel');
this.imagePanel.attr('id', 'iiv-image-panel');

var clear = this.createDiv(container, 'iiv-clear');

jQuery('.ui-state-default').hover (
    function(){
        jQuery(this).addClass("ui-state-hover");
    },
    function(){
        jQuery(this).removeClass("ui-state-hover");
    }
);

createZoomControls: function(toolbar) {
    var controls = this.createControlSet(toolbar, 'zoom');
    // this.buttonZoomIn = this.createButton(controls, 'zoom-in', 'Zoom in', 'ui-icon-plus');
    // this.buttonZoomOut = this.createButton(controls, 'zoom-out', 'Zoom out', 'ui-icon-minus');
    this.buttonZoomMax = this.createButton(controls, 'zoom-max', 'Reset zoom level', 'ui-icon-refresh');
    this.sliderZoom = this.createZoomSlider(controls, 'zoom-slider', 'Change zoom level');

    return controls;
},

createPageControls: function(toolbar) {
    var controls = this.createControlSet(toolbar, 'page');
    this.buttonPagePrevious = this.createButton(controls, 'page-previous', 'Previous page', 'ui-icon-arrowthick-1-w');
    this.createPageNumberDisplay(controls);
    this.buttonPageNext = this.createButton(controls, 'page-next', 'Next page', 'ui-icon-arrowthick-1-e');
    this.sliderPage = this.createPageSlider(controls, 'page-slider', 'Change page');
    return controls;
},

createOtherControls: function(toolbar) {
    var controls = this.createControlSet(toolbar, 'other');
    this.buttonText = this.createButton(controls, 'text', 'Show text', 'iiv-icon-text');
    // this.buttonPrint = this.createButton(controls, 'print', 'Print page', 'ui-icon-print');
    return controls;
},

createPageNumberDisplay: function(parent) {
    var container = this.createDiv(parent, 'iiv-page-number');
    this.currentPageSpan = jQuery('<span class="current">-</span>');
    this.maxPageSpan = jQuery('<span class="max">-</span>');
    container.append(this.currentPageSpan);
    container.append('<span class="separator"> / </span>');
    container.append(this.maxPageSpan);
    return container;
},

createControlSet: function(parent, name) {
    var controls = this.createDiv(parent, 'iiv-controlset ' + name);
    parent.append(controls);
    return controls;
},

createButton: function(parent, name, title, iconClass) {
    var button = jQuery('<button class=" ' + name + ' ui-corner-all ui-state-default" title=" ' + title + '"><span class="ui-icon ' + iconClass + '"></span></button>');
    parent.append(button);
    return button;
},

createZoomSlider: function(parent, name, tooltip, sliderOptions) {
    var container = this.createDiv(parent, 'iiv-slider-container ui-corner-bottom');
    container.attr('title', tooltip);

    var slider = this.createDiv(container, 'iiv-slider ' + name);
    slider.slider(sliderOptions);

    parent.append(slider);
    return slider;
},

createPageSlider: function(parent, name, tooltip, sliderOptions) {
    var container = this.createDiv(parent, 'iiv-slider-container ui-corner-bottom');
    container.attr('title', tooltip);

    var slider = this.createDiv(container, 'iiv-slider-page ' + name);
    slider.slider(sliderOptions);

    parent.hover(
        function() {
            container.show();
            parent.height(84);
        }
    );
}

```

```

    },

    function() {
        parent.height(32);
        container.hide();
    }
    );

    return slider;
},

initializeUI: function() {
    this.addInterceptors();

    this.maxPageSpan.text(this.viewer.pids.length);
    this.sliderPage.slider('option', 'min', 0);
    this.sliderPage.slider('option', 'max', this.viewer.pids.length - 1);
    this.updatePageControls(this.viewer.pageIndex);

    this.sliderZoom.slider('option', 'min', 0);
    this.sliderZoom.slider('option', 'max', this.viewer.map.getNumZoomLevels() - 1);
    this.updateZoomControls(this.viewer.map.getZoom());

    this.addEventHandlers();
},

addInterceptors: function() {
    var ui = this;
    ui.viewer.intercept(this.viewer.map, 'setCenter', function(lonlat, zoom, dragging, forceZoomChange) {
        if (zoom != null && zoom != ui.viewer.map.getZoom()) {
            ui.updateZoomControls(zoom);
        }

        ui.viewer.map.setCenter_without_interceptor(lonlat, zoom, dragging, forceZoomChange);
    });
},

addEventHandlers: function() {
    var viewerUI = this;

    // viewerUI.buttonZoomIn.click(function() {
    //     viewerUI.viewer.map.zoomIn();
    // });

    // viewerUI.buttonZoomOut.click(function() {
    //     viewerUI.viewer.map.zoomOut();
    // });

    viewerUI.buttonZoomMax.click(function() {
        viewerUI.viewer.map.zoomToMaxExtent();
    });

    viewerUI.sliderZoom.bind('slidestop', function(event, ui) {
        viewerUI.viewer.map.zoomTo(ui.value);
    });

    viewerUI.buttonPagePrevious.click(function() {
        viewerUI.viewer.previousPid();
    });

    viewerUI.buttonPageNext.click(function() {
        viewerUI.viewer.nextPid();
    });

    viewerUI.sliderPage.bind('slidestop', function(event, ui) {
        viewerUI.viewer.setPage(ui.value);
    });

    viewerUI.buttonText.click(function() {
        viewerUI.toggleText();
    });

    // viewerUI.buttonPrint.click(function() {
    //     viewerUI.printPage();
    // });
},

printPage: function() {
    var url = this.viewer.printUrl();

    // open popup window
    var popupWidth = Math.max(800, Math.min(624, window.screen.availWidth));
    var popupHeight = Math.max(600, Math.min(824 / 2, window.screen.availHeight));
    var features = 'width=' + popupWidth + ',height=' + popupHeight + ',toolbar=1';
    window.open(url, '_blank', features);
},

updatePageControls: function(page) {
    this.sliderPage.slider('value', page);
    this.currentPageSpan.text(page + 1);

    if (page == 0) {
        this.disable(this.buttonPagePrevious);
    }

    else {

```



```

    this.enable(this.buttonPagePrevious);
  }

  if (page == this.sliderPage.slider('option', 'max')) {
    this.disable(this.buttonPageNext);
  }

  else {
    this.enable(this.buttonPageNext);
  }
},

updateZoomControls: function(zoom) {
  this.sliderZoom.slider('value', zoom);

  if (zoom == this.sliderZoom.slider('option', 'min')) {
    // this.disable(this.buttonZoomOut);
  }

  else {
    // this.enable(this.buttonZoomOut);
  }

  if (zoom == this.sliderZoom.slider('option', 'max')) {
    // this.disable(this.buttonZoomIn);
  }

  else {
    // this.enable(this.buttonZoomIn);
  }
},

disable: function(button) {
  button.attr('disabled', 'disabled');
},

enable: function(button) {
  button.removeAttr('disabled');
},

toggleText: function() {
  this.buttonText.toggleClass('ui-state-active');
  this.buttonText.toggleClass('ui-state-default');
  this.imagePanel.toggleClass('narrow');
  this.textPanel.toggle();
  this.viewer.map.updateSize();
}
});

iiv.Viewer.RISearch = new iiv.Class({
  type: 'tuples',
  lang: 'itql',
  format: 'csv',
  query: null,
  results: null,

  initialize: function(options) {
    if (!this.query) {
      if (this.cmodel == 'islandora:bookCModel') {
        this.query = 'select $object from <#ri> '
          + 'where ($object <fedora-model:hasModel> <fedora:islandora:pageCModel> '
          + 'and $object <fedora-rels-ext:isMemberOf> <fedora:' + this.pid + '>)' '
          + 'order by $object';
      }
      else if (this.cmodel == 'newspapers:issueCModel') {
        this.query = 'select $object from <#ri> where ('
          + '$object <fedora-model:hasModel> <fedora:newspapers:pageCModel>'
          + ' and $object <info:fedora/fedora-system:def/relations-external#isPartOf>'
          + '<info:fedora/' + this.pid + '>)'
          + ' order by $object';
      }
      else if (this.cmodel == 'islandora:pageCModel') {
        this.query = 'select $parent '
          + 'subquery ('
          + ' select $sibling from <#ri> '
          + ' where $sibling <fedora-rels-ext:isMemberOf> $parent '
          + ' and $sibling <fedora-model:hasModel> <fedora:islandora:pageCModel> '
          + ' order by $sibling) '
          + 'from <#ri> '
          + 'where $child <mulgara:is> <fedora:' + this.pid + '> '
          + 'and $child <fedora-rels-ext:isMemberOf> $parent '
          + 'and $parent <fedora-model:hasModel> <fedora:islandora:bookCModel>';
      }
      else if (this.cmodel == 'newspapers:pageCModel') {
        this.query = 'select $parent '
          + 'subquery ('
          + ' select $sibling from <#ri> '
          + ' where $sibling <fedora-rels-ext:isPartOf> $parent '
          + ' and $sibling <fedora-model:hasModel> <fedora:newspapers:pageCModel> '
          + ' order by $sibling) '
          + 'from <#ri> '
          + 'where $child <mulgara:is> <fedora:' + this.pid + '> '
          + 'and $child <fedora-rels-ext:isPartOf> $parent '
          + 'and $parent <fedora-model:hasModel> <fedora:newspapers:issueCModel>';
      }
      else if (this.cmodel == 'islandora:slideCModel') {

```

```

        this.query = 'select $parent '
        + 'subquery ('
        + '  select $sibling from <#ri> '
        + '  where $sibling <fedora-rels-ext:isMemberOf> $parent '
        + '  and $sibling <fedora-model:hasModel> <fedora:islandora:slideCModel> '
        + '  order by $sibling) '
        + 'from <#ri> '
        + 'where $child <mulgara:is> <fedora:' + this.pid + '> '
        + 'and $child <fedora-rels-ext:isMemberOf> $parent '
        + 'and $parent <fedora-model:hasModel> <fedora:islandora:collectionCModel>;
    }
    else if (this.cmodel == 'islandora-dm:po-document-cmodel') {
        this.query = 'select $object from <#ri> '
        + 'where ($object <fedora-model:hasModel> <fedora:islandora-dm:po-page-cmodel> '
        + 'and $object <fedora-rels-ext:isMemberOf> <fedora:' + this.pid + '>) '
        + 'order by $object';
    }
    else {
        // no query -- pid will be used alone.
    }
    },
    search: function() {
        if (this.query == null) {
            this.results = [this.pid];
        }
        else {
            options = {
                type: this.type,
                lang: this.lang,
                format: this.format,
                query: this.query,
                uid: this.uid
            };
            jQuery.post(this.fedoraUrl + '/risearch', options, this.createCallback(), 'text');
        }
    },
    extractPid: function(riSearchResult) {
        return riSearchResult.replace(/^.*/\//, '');
    },
    createCallback: function() {
        var riSearch = this;
        return function(data, status) {
            var results = [];
            if ('success' == status) {
                var lines = data.split("\n");
                for (i = 0; i < lines.length; i++) {
                    if (i > 0 && lines[i] != '') {
                        results.push(riSearch.extractPid(lines[i]));
                    }
                }
            }
            riSearch.searchCallback(results);
        }
    }
});

/* monkey patch OpenLayers.Layer.OpenURL */
iiv.Viewer.ImageLayer = OpenLayers.Class(OpenLayers.Layer.OpenURL, {
    djatokaUrl: null,
    uid: null,

    /**
     * this implementation is the same as the superclass, except that we use a
     * fedora service as the url base, not djatoka itself
     */
    getURL: function(bounds) {
        bounds = this.adjustBounds(bounds);
        this.calculatePositionAndSize(bounds);
        var z = this.map.getZoom() + this.zoomOffset;

        // uid and djatokaUrl set in createImageLayer
        var path = this.djatokaUrl + '/getRegion?uid=' + this.uid + '&level=' + z
            + '&region=' + this.tilePos.lat + "," + this.tilePos.lon + "," + this.imageSize.h + "," + this.imageSize.w;

        var url = this.url;
        if (url instanceof Array) {
            url = this.selectUrl(path, url);
        }
        return url + path;
    }
});

```

8.1.22 oaiprovider/WEB-INF/classes/proai.properties

```

#
#                               Proai Configuration
#
#####

```

```

# Front-End OAI-PMH Behavior #
#####
# For multi-part OAI responses, this specifies the maximum time to wait
# between requests before cleaning up the session.
#
proai.secondsBetweenRequests = 600
# The maximum number of records to include in each part of a
# ListRecords response.
#
proai.incompleteRecordListSize = 250
# The maximum number of record headers to include in each part of a
# ListIdentifiers response.
#
proai.incompleteIdentifierListSize = 500
# The maximum number of sets to include in each part of a
# ListSets response.
#
proai.incompleteSetListSize = 500
#####
# Back-End Update Behavior #
#####
# How often Proai should poll the driver for updates.
#
proai.driverPollSeconds = 120
# Set this to false to start the service without polling enabled.
# Note: You can also change polling behavior while the service is running
# by executing the following SQL against the database:
#
# <pre>
# UPDATE rcAdmin SET pollingEnabled = 0 (or 1 to enable it)
# </pre>
#
# The value configured via this property will always be put into effect
# when the service is started.
#
proai.driverPollingEnabled = true
# The maximum number of worker threads to use while retrieving new/updated
# OAI records from the driver.
#
proai.maxWorkers = 5
# How many requests each worker thread should make before returning the
# batch to the database to be committed.
#
proai.maxWorkBatchSize = 10
# If a request of the driver for a specific record fails for any reason,
# this is the maximum number of times that record should be automatically
# retried before giving up on that record. If this is exceeded, the
# record information will remain in the rcFailure table until it is dealt
# with manually.
#
proai.maxFailedRetries = 3
# The maximum size the in-memory record commit queue is allowed to reach.
# If this threshold is reached, it means that worker threads are returning
# results faster than they can be committed to the database by the commit
# thread. If this occurs, workers will have to wait until more items have
# been committed before they can add any more to the queue.
#
proai.maxCommitQueueSize = 120
# The maximum number of record updates (from the in-memory commit queue)
# that should be committed to the database at one time.
#
proai.maxRecordsPerTransaction = 60
# Whether to run schema validation during the update process.
# This defaults to true.
#
proai.validateUpdates = false
#####
# File Storage Locations #
#####
# The directory where cache files should be stored. This will be created
# if it doesn't exist. IMPORTANT: You should change this from /tmp to
# a permanent directory of your choosing. The default value here is
# just used for testing.
#
proai.cacheBaseDir = /srv/storage/proai/cache
# Where OAI-PMH session data will be stored when needed.
# This directory will be created at startup if it doesn't already exist.
#
# Each session consists of a series of small data files in a uniquely-named
# subdirectory beneath this one. They are automatically created and
# removed as needed.
#
proai.sessionBaseDir = /srv/storage/proai/sessions
# Where to store schema files if validation is enabled.
#
proai.schemaDir = /srv/storage/proai/schemas
#####
# Primary Database Configuration #
#####
# The JDBC connection URL for the database that will be used by the cache.
#
# <p>Embedded McKoi example:<br/>
# <code>jdbc:mckoi:local://build/test/mckoi/mckoi.conf?create_or_boot=true</code>
# </p>
# <p>Local McKoi example:<br/>
# <code>jdbc:mckoi://localhost/</code>

```

```

# </p>
# <p>Local MySQL example:<br/>
#   <code>jdbc:mysql://localhost/proai?useUnicode=true&characterEncoding=UTF-8&autoReconnect=true</code>
# </p>
# <p>Local Oracle example:<br/>
#   <code>jdbc:oracle:thin:@localhost:1521:proai</code>
# </p>
# <p>Local Postgres example:<br/>
#   <code>jdbc:postgresql://localhost/proai</code>
# </p>
#
proai.db.url = jdbc:mysql://localhost/proai?useUnicode=true&characterEncoding=UTF-8&autoReconnect=true
# The class name of the JDBC driver appropriate for use
# with the connection url. The appropriate library must be
# in the classpath.
#
# <p>Mckoi example:<br/>
#   <code>proai.db.driverClassName = com.mckoi.JDBCDriver</code>
# </p>
# <p>MySQL example:<br/>
#   <code>proai.db.driverClassName = com.mysql.jdbc.Driver</code>
# </p>
# <p>Oracle example:<br/>
#   <code>proai.db.driverClassName = oracle.jdbc.driver.OracleDriver</code>
# </p>
# <p>Postgres example:<br/>
#   <code>proai.db.driverClassName = org.postgresql.Driver</code>
# </p>
#
proai.db.driverClassName = com.mysql.jdbc.Driver
# If using MySQL, this indicates whether to stream query results
# one-at-a-time from the database to conserve memory. If unspecified,
# this defaults to false.
#
# <p>
# Background: For large repositories, MySQL's default behavior of reading
# all results into memory can cause <code>OutOfMemory</code> errors in
# Proai. If this value is set to true, memory requirements for Proai
# will be lower, but query performance will suffer. For more detail,
# please see the
# <a href="http://dev.mysql.com/doc/connector/j/en/cj-implementation-notes.html">Connector-J
# Implementation Notes</a>.
# </p>
#
proai.db.mySQLResultTrickling = true
# The database user. This user should already exist in the database
# and must have permission to create, modify, and query tables.
#
proai.db.username = proaiAdmin
# The password for the database user.
#
proai.db.password = *****
#####
# Advanced Database Configuration #
#####
# The maximum number of connections from the pool that may be active
# (leased) at once. If unspecified, this defaults to 8.
#
proai.db.maxActive = 16
# The maximum number of milliseconds to wait for a connection from the
# pool if none are available. If unspecified, this defaults to -1,
# which means "indefinite".
#
proai.db.maxWait = 5000
proai.db.*
#
# Any other properties defined by the Apache commons-DBCP project
# can be specified. See the full list (and documentation) at
# http://jakarta.apache.org/commons/dbcp/configuration.html
#
# To use standard DBCP properties, just prefix them with "proai.db."
# here.
# proai.db.connection.*
#
# To use JDBC driver-specific properties (in DBCP, these
# are called "connectionProperties"), prefix them with
# "proai.db.connection.".
# The Java class responsible for creating the database tables required
# by Proai's record cache.
#
# <p>The name of the property should be the driverClassName of the JDBC
# driver you're using, plus ".ddlConverter".</p>
#
###com.mckoi.JDBCDriver.ddlConverter = proai.util.McKoiDDLConverter
com.mysql.jdbc.Driver.ddlConverter = proai.util.MySQLDDLConverter
###oracle.jdbc.driver.OracleDriver.ddlConverter = proai.util.OracleDDLConverter
###org.postgresql.Driver.ddlConverter = proai.util.PostgresDDLConverter
# Whether the database interprets backslashes in SQL strings as
# escape characters. This is needed to that Proai can formulate
# proper queries against the database.
#
# <p>The name of the property should be the driverClassName of the JDBC
# driver you're using plus ".backslashIsEscape". If unspecified,
# backslashIsEscape will be assumed true.</p>
#
###com.mckoi.JDBCDriver.backslashIsEscape = true
    
```

```

com.mysql.jdbc.Driver.backslashIsEscape = true
##oracle.jdbc.driver.OracleDriver.backslashIsEscape = false
##org.postgresql.Driver.backslashIsEscape = true
#####
# Fedora Driver: General Settings #
#####
# The class name of the proai.driver.OAIDriver implementation to use.
#
# This value should never need changing -- it just informs Proai that
# we're using the Fedora driver.
#
proai.driverClassName = fedora.services.oaiprovider.FedoraOAIDriver
# The class name of the fedora.services.oaiprovider.QueryFactory
# implementation to use.
#
# This allows the OAI Provider to work with Fedora's Resource Index
# whether it's backed by Kowari or MPTStore. If the RI uses Kowari,
# the value here should be fedora.services.oaiprovider.ITQLQueryFactory
# If it uses MPTStore, the value should be
# fedora.services.oaiprovider.MPTQueryFactory
#
driver.fedora.queryFactory = fedora.services.oaiprovider.ITQLQueryFactory
# The base URL of the Fedora repository to query and get records from.
#
driver.fedora.baseURL = http://fcl.to.cnr.it:8080/fedora/
# Identifies a Fedora user that has privileges to do a resource index
# query via the research interface, and can get all needed disseminations
# that represent OAI records in the Fedora repository.
#
driver.fedora.user = admin
# Password for the Fedora user.
#
driver.fedora.pass = *****
# When querying the resource index, the maximum number of seconds to
# wait for the http connection to be established before giving up.
#
driver.fedora.queryConnectionTimeout = 30
# When querying the resource index, the maximum number of seconds of
# socket inactivity to allow before giving up.
#
driver.fedora.querySocketTimeout = 600
# When getting xml data from Fedora, the maximum number of seconds to
# wait for the http connection to be established before giving up.
#
driver.fedora.disseminationConnectionTimeout = 30
# When getting xml data from Fedora, the maximum number of seconds of
# socket inactivity to allow before giving up.
#
driver.fedora.disseminationSocketTimeout = 120
# The location of the XML that should be used to respond to OAI
# "Identify" requests.
#
# This can be any URL, but typically it points to a manually-created
# datastream within the same Fedora repository that hosts the OAI records.
#
driver.fedora.identify = http://fcl.to.cnr.it:8080/fedora/get/fclrepo:OAIRepository/Identify.xml
# The name of the RELS-EXT property whose value (a plain literal)
# contains the OAI item ID for records that are provided by an object.
#
# A value for this property *must* exist in RELS-EXT before any of an
# object's disseminations will be considered to be OAI records.
#
driver.fedora.itemID = http://www.openarchives.org/OAI/2.0/itemID
#####
# Fedora Driver: Metadata Format Configuration #
#####
# Metadata formats to make available.
#
# This is a space-delimited list of all formats provided,
# identified by OAI metadata prefix.
#
driver.fedora.md.formats = oai_dc
# The location of the W3C schema for each format.
#
# Example property name:
# <code>driver.fedora.md.format.your_format.loc</code>.
#
driver.fedora.md.format.oai_dc.loc = http://www.openarchives.org/OAI/2.0/oai_dc.xsd
# The namespace URI for each format.
#
# Example property name:
# <code>driver.fedora.md.format.your_format.uri</code>.
#
driver.fedora.md.format.oai_dc.uri = http://www.openarchives.org/OAI/2.0/oai_dc/
# The Fedora dissemination type for each format.
#
# <p>A Fedora dissemination type is a URI starting with
# <code>info:fedora/*</code> and ending with a datastream ID (such as "DC"),
# a Behavior Definition PID followed by "/methodName",
# or a Behavior Definition PID followed by "/methodName?name=value".</p>
#
# <p>The disstyp is the key to mapping an OAI metadata format to
# a kind of Fedora dissemination. Here are a few examples:</p>
#
# <pre>
# info:fedora/*/DC ; identifies the "DC" datastream

```

```

#
# info:fedora/*/demo:1/getDC           ; identifies the "getDC" method of the
#                                     ; demo:1 behavior definition
#
# info:fedora/*/demo:1/getMD?fmt=dc   ; identifies the "getMD" method of the
#                                     ; demo:1 behavior definition, when
#                                     ; invoked with the required "fmt"
#                                     ; parameter
# </pre>
#
# When the OAI provider queries Fedora for records in your_format,
# it uses this special value to constrain the query to only those
# disseminations that are in the expected format.
# Thus, all records that the OAI provider considers to be in
# your_format must have this dissemination type.
#
# Example property name:
# <code>driver.fedora.md.format.your_format.dissType</code>.
#
####driver.fedora.md.format.oai_dc.dissType = info:fedora/*/oai_dc
driver.fedora.md.format.oai_dc.dissType = info:fedora/*/DC
# The Fedora dissemination type for each format.
#
# This optional property identifies the OAI "about" dissemination
# type for your format. If specified for your_format, then the OAI provider
# will attempt to find disseminations of this type for each object
# that has a matching your_format.dissType. If such a dissemination
# is found, for that particular object, the information therein
# will be used as the "about" metadata for the record.
#
# Example property name:
# <code>driver.fedora.md.format.your_format.about.dissType</code>.
#
####driver.fedora.md.format.oai_dc.about.dissType = info:fedora/*/about_oai_dc
#####
# Fedora Driver: Set Membership Configuration #
#####
# The name of the RELS-EXT property that indicates the unique setSpec
# string of a Fedora object representing an OAI set.
# This property must exist on any Fedora object that should
# represent an OAI set.
#
driver.fedora.setSpec = http://www.openarchives.org/OAI/2.0/setSpec
# The name of the RELS-EXT property that indicates the name of
# a Fedora object representing an OAI set.
# In addition to setSpec, this property must also exist on any
# Fedora object that should represent an OAI set.
#
driver.fedora.setSpec.name = http://www.openarchives.org/OAI/2.0/setName
# The dissemination type for the XML that describes a set.
# If a dissemination of this type is available for a Fedora object
# representing an OAI set, the content of the dissemination will
# be used in ListSets responses.
#
driver.fedora.setSpec.desc.dissType = info:fedora/*/SetInfo.xml
# The "triple pattern" identifying the path from objects to the
# setSpecs (short names) of sets they are members of.
#
# <p>The path must contain $item and $setSpec, with the $item
# variable representing a Fedora object in the resource index,
# and the $setSpec representing the setSpec name.</p>
#
driver.fedora.itemSetSpecPath = $item <info:fedora/fedora-system:def/relations-external#isMemberOfCollection>
    $set $set <http://www.openarchives.org/OAI/2.0/setSpec> $setSpec
#####
# Fedora Driver: MPTStore Configuration #
#####
# The values below only need to be configured if using
# MPTQueryFactory (Fedora's Resource Index is backed by MPTStore).
#
NOTE=.
# The JDBC driver class for connecting to the MPTStore database.
#
driver.fedora.mpt.db.driverClassName = org.postgresql.Driver
# The database-specific DDLGenerator to use for MPTStore.
#
driver.fedora.mpt.db.ddlGenerator = org.nsdml.mptstore.impl.postgres.PostgresDDLGenerator
# The JDBC URL for connecting to the MPTStore database.
#
driver.fedora.mpt.jdbc.url = jdbc:postgresql://localhost/riTriples
# The user to connect to the MPTStore database as.
#
driver.fedora.mpt.jdbc.user = fedoraAdmin
# The MPTStore database user's password.
#
driver.fedora.mpt.jdbc.password = fedoraAdmin
# This configuration value is necessary to initialize the MPTStore library,
# and should not need to be changed.
#
driver.fedora.mpt.db.map = tmap
# This configuration value is necessary to initialize the MPTStore library,
# and should not need to be changed.
#
driver.fedora.mpt.db.prefix = t
#####
# Fedora Driver: Advanced Configuration #

```

```
#####
# driver.fedora.deleted
# This is the name of the RELS-EXT predicate that indicates the state
# of all records within the object.
#
# <p>The normal behavior is that the Fedora-controlled "state" property
# of the dissemination (or datastream) itself indicates the oai deleted
# status. This can be used to specify the status via any object
# property, if desired.</p>
#
###driver.fedora.deleted = info:fedora/fedora-system:def/model#state
```

8.1.23 oaiprovider/WEB-INF/classes/log4j.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE log4j:configuration SYSTEM "log4j.dtd">
<log4j:configuration xmlns:log4j="http://jakarta.apache.org/log4j/">
  <!-- Use this appender to have logs go to STDOUT
  <appender name="Console" class="org.apache.log4j.ConsoleAppender">
    <layout class="org.apache.log4j.PatternLayout">
      <param name="ConversionPattern"
        value="%p %d{yyyy-MM-dd} 'HH:mm:ss.SSS' [%t] (%c{1}) %m%n" />
    </layout>
  </appender>
-->
  <!-- Use this appender to have logs go to one big log file
  <appender name="File" class="org.apache.log4j.FileAppender">
    <param name="File" value="/tmp/proai/log/proai.log" />
    <layout class="org.apache.log4j.PatternLayout">
      <param name="ConversionPattern"
        value="%p %d{yyyy-MM-dd} 'HH:mm:ss.SSS' [%t] (%c{1}) %m%n" />
    </layout>
  </appender>
-->
  <!-- Use this appender to have logs go to a rolling set of log files -->
  <appender name="RollingFile" class="org.apache.log4j.RollingFileAppender">
    <param name="File" value="/srv/storage/proai/log/proai.log"/>
    <param name="MaxFileSize" value="20MB"/>
    <param name="MaxBackupIndex" value="5"/>
    <layout class="org.apache.log4j.PatternLayout">
      <param name="ConversionPattern" value="%p %d{yyyy-MM-dd} 'HH:mm:ss.SSS' [%t] (%c{1}) %m%n"/>
    </layout>
  </appender>
  <!-- Category-specific settings -->
  <category name="fedora.test">
    <priority value="INFO"/>
    <appender-ref ref="RollingFile"/>
  </category>
  <category name="fedora.services.oaiprovider">
    <priority value="INFO"/>
    <appender-ref ref="RollingFile"/>
  </category>
  <category name="org.nsd1.mptstore">
    <priority value="WARN"/>
    <appender-ref ref="RollingFile"/>
  </category>
  <category name="org.trippi">
    <priority value="WARN"/>
    <appender-ref ref="RollingFile"/>
  </category>
  <category name="fedora.client.FedoraClient">
    <priority value="WARN"/>
    <appender-ref ref="RollingFile"/>
  </category>
  <category name="proai">
    <priority value="WARN"/>
    <appender-ref ref="RollingFile"/>
  </category>
  <!-- Note: DEBUG level for this category will log ALL SQL! -->
  <category name="proai.cache.RCDatabase">
    <priority value="WARN"/>
    <appender-ref ref="RollingFile"/>
  </category>
  <category name="org.apache.commons.httpclient.HttpMethodBase">
    <priority value="WARN"/>
    <appender-ref ref="RollingFile"/>
  </category>
  <!-- Default level and appender if not explicitly defined -->
  <root>
    <priority value="WARN"/>
    <appender-ref ref="RollingFile"/>
  </root>
</log4j:configuration>
```

8.1.24 /usr/local/fedora/client/bin/env-client.sh

```

#-----
# Common environment checks and launcher for Fedora client scripts.
#
# Environment Variables:
#   FEDORA_HOME: Required. Used to determine the location of client classes
#                 and other resources required to run the utilities.
#   JAVA_HOME   : Optional. Used to determine the location of java.
#                 If JAVA_HOME is unspecified, will use FEDORA_JAVA_HOME.
#                 If FEDORA_JAVA_HOME is unspecified, will use java in PATH.
#-----

if [ -z "$FEDORA_HOME" ]; then
    echo "ERROR: The FEDORA_HOME environment variable is not defined."
    exit 1
fi

if [ ! -f "$FEDORA_HOME/client/fcrepo-client-admin-3.5.jar" ]; then
    echo "ERROR: fcrepo-client-admin-3.5.jar not found in $FEDORA_HOME/client"
    exit 1
fi

if [ -z "$JAVA_HOME" ]; then
    if [ -z "$FEDORA_JAVA_HOME" ]; then
        java="java"
    else
        java="$FEDORA_JAVA_HOME/bin/java"
    fi
else
    java="$JAVA_HOME/bin/java"
fi

cmdline_args=
for arg in "$@" ; do
    cmdline_args="$cmdline_args \"$arg\""
done

execWithCmdlineArgs() {
    execWithTheseArgs $1 "$cmdline_args"
    return $?
}

execWithTheseArgs() {
    exec_cmd="exec \"$java\" -Xms128m -Xmx1g \
    -cp \"$FEDORA_HOME/client/bin:$FEDORA_HOME/client/fcrepo-client-admin-3.5.jar \
    -Djava.endorsed.dirs=\"$FEDORA_HOME/client/lib \
    -Djavax.net.ssl.trustStore=\"$FEDORA_HOME/client/truststore \
    -Djavax.net.ssl.trustStorePassword=tomcat \
    -Djavax.xml.parsers.DocumentBuilderFactory=org.apache.xerces.jaxp.DocumentBuilderFactoryImpl \
    -Djavax.xml.parsers.SAXParserFactory=org.apache.xerces.jaxp.SAXParserFactoryImpl \
    -Dfedora.home=\"$FEDORA_HOME\" \
    $1 $2"
    eval $exec_cmd
    return $?
}
    
```


8.2 Front-end server

8.2.1 sites/all/modules/islandora_solution_pack_book/tocnr_book.inc

```

<?php
// $Id$

class IslandoraBook {

  function __construct($pid = '') {
    module_load_include('inc', 'fedora_repository', 'api/fedora_item');
    if (!empty($pid)) {
      $this->pid = $pid;
      $this->item = new Fedora_Item($pid);
    }
  }

  public function showFieldSets() {
    module_load_include('inc', 'fedora_repository', 'plugins/tagging_form');
    module_load_include('inc', 'fedora_repository', 'plugins/DarwinCore');
    module_load_include('module', 'islandora_book');
    global $base_url;
    $show_purge_tab = (!empty($_POST['form_id']) && ($_POST['form_id'] == 'islandora_book_purge_pages_form'));
    $first_page = new Fedora_Item($this->pid . '-0001');
    $hasPage = $first_page->exists();
    $tabset = array();

    global $user;
    $qs = '';
    if ($user->uid != 0) {
      $qs = '?uid=' . base64_encode($user->name . ':' . $user->pass);
    }
    $viewer_url = variable_get('fedora_base_url', '') . '/get/' . $this->pid . '/islandora:viewerSdef/getViewer'
    . $qs;
    // $viewer_url = 'http://fcl.to.cnr.it/fedora' . '/get/' . $this->pid . '/islandora:viewerSdef/getViewer' .
    $qs;
    // $html = '<iframe src="' . $viewer_url . '" scrolling="0" frameborder="0" style="width: 100%; height:
    800px;">Errors: unable to load viewer</iframe>';
    $html = '<iframe src="' . $viewer_url . '" scrolling="no" frameborder="0" style="width: 100%; height:
    802px;">Errors: unable to load viewer</iframe>';

    $tabset['first_tab'] = array(
      // #type and #title are the minimum requirements.
      '#type' => 'tabpanel',
      '#title' => 'Metadata',
      '#content' => islandora_book_create_book_view($this->pid),
    );

    $tabset['second_tab'] = array(
      '#type' => 'tabpanel',
      '#title' => t('Read'),
      '#content' => $html
    );

    $tabset['third_tab'] = array(
      // #type and #title are the minimum requirements.
      '#type' => 'tabpanel',
      '#title' => 'Index',
      '#content' => islandora_book_create_book_index($this->pid),
    );

    return $tabset;
  }
}

```

8.2.2 sites/all/modules/islandora_solution_pack_book/islandora_book.module

```

<?php
// $Id$

function islandora_book_menu() {
  $items = array();
  $items['fedora/book'] = array(
    'title' => t('Book view'),
    'page callback' => 'islandora_book_create_book_view',
    'type' => MENU_CALLBACK,
    'access arguments' => array('view fedora collection'),
  );
  $items['fedora/book_viewer'] = array(
    'title' => t('Book viewer'),
    'page callback' => 'islandora_book_book_viewer',
    'type' => MENU_CALLBACK,
    'access arguments' => array('view fedora collection'),
  );
  $items['admin/settings/islandora_book'] = array(
    'title' => 'Islandora Book Admin',
    'description' => 'Configuration Islandora Book Module',
    'page callback' => 'drupal_get_form',
    'page arguments' => array('islandora_book_admin_settings'),
  );
}

```

```

        'access arguments' => array('administer site configuration'),
        'file' => 'islandora_book.admin.inc',
        'type' => MENU_NORMAL_ITEM,
    );

    $items['islandora/book/ocr'] = array(
        'page callback' => 'update_ocr_div',
        'access arguments' => array('view fedora collection'),
        'file' => 'islandora_book.admin.inc',
        'type' => MENU_CALLBACK,
    );
    return $items;
}

function islandora_book_book_viewer($pid) {
    global $user;
    $qs = '';
    if ($user->uid != 0) {
        $qs = '?uid=' . base64_encode($user->name . ':' . $user->pass);
    }

    $viewer_url = variable_get('fedora_base_url', '') . '/get/' . $pid . '/islandora:viewersDef/getViewer' . $qs;
    $html = "<iframe src=\"$viewer_url\" frameborder=\"0\" scrolling=\"no\" style=\"width: 100%; height: 800px;\">Errors: unable to load viewer</iframe>";
    $fieldset = array(
        '#title' => t('Viewer - ') . $pid,
        '#collapsible' => TRUE,
        '#collapsed' => FALSE,
        '#value' => $html);
    drupal_add_css(path_to_theme() . '/header-viewer.css', 'theme');
    return theme('fieldset', $fieldset);
}

function islandora_book_create_book_index($pid, $query = NULL) {
    global $user;
    module_load_include('inc', 'fedora_repository', 'ObjectHelper');
    $path = drupal_get_path('module', 'islandora_book');
    $objectHelper = new ObjectHelper;
    $rels_xml = $objectHelper->getStream($pid, 'RELS-EXT');
    $simpleRELSxml = simplexml_load_string($rels_xml);
    $modello = $simpleRELSxml->xpath('//rdf:RDF/rdf:Description/fedora-model:hasModel/@rdf:resource');
    $modello = $modello[0];

    if ($modello == 'info:fedora/islandora:bookCModel') {
        $index_html = $objectHelper->getStream($pid, 'INDEX');
        $ix_html = $objectHelper->getStream($pid, 'INDEX');
        $piddelbook = $pid;
        if (!$index_html) {
            drupal_set_message(t('Object does not exist.'), 'error');
            return '';
        }
    }
    else {
        $piddelbook = substr($pid, 0, -5);
        $index_html = $objectHelper->getStream($piddelbook, 'INDEX');
        $ix_html = $objectHelper->getStream($piddelbook, 'INDEX');
        if (!$index_html) {
            drupal_set_message(t('Object does not exist.'), 'error');
            return '';
        }
    }

    $str_html = "<table cellpadding=\"3\" cellspacing=\"2\" valign=\"top\" >";
    $str_html = $str_html."<tr><td valign=\"top\">";
    $str_html = $str_html."<img src=\"\".base_path().\"fedora/repository/\". $pid.\"/TN\"></img>";
    $str_html = $str_html."</td><td><div style=\"align:left\"><table cellpadding=\"3\" cellspacing=\"2\" width=\"90%\">";
    $str_html = $str_html."<tbody><tr><th colspan=\"3\"><h3>Index</h3></th></tr>";

    $elenco = explode("|", $ix_html);
    $nvoci = sizeof($elenco);
    $voce = explode("|", $elenco[0]);
    $str_html = $str_html."<tr><td><a href=\"\".base_path().\"fedora/repository/\". $voce[0].\"\"><h2>".
    $voce[1]."</h2>";
    $str_html = $str_html."</a></td><td></td></tr>";

    $i=1;
    while($i<$nvoci)
    {
        $voce = explode("|", $elenco[$i]);
        $str_html = $str_html."<tr><td><a href=\"\".base_path().\"fedora/repository/\". $voce[0].\"\">. $voce[1];
        $numpa = substr($voce[0], -4);
        $str_html = $str_html."</a></td><td>page ".intval($numpa)."</td></tr>";
        $i++;
    }

    $str_html = $str_html."</tbody></table></div></td></tr></table>";

    return $str_html;
}

```

```

//loads an xslt for the main book page uses mods for most of the display.  if there is a $query parameter
// it will execute it against the book.
function islandora_book_create_book_view($pid, $query = NULL) {
  global $user;
  module_load_include('inc', 'fedora_repository', 'ObjectHelper');
  $path = drupal_get_path('module', 'islandora_book');
  $objectHelper = new ObjectHelper;
  // $xml = $objectHelper->getStream($pid, 'MODS');
  $xml = $objectHelper->getStream($pid, 'DC');
  $dc_xml = $objectHelper->getStream($pid, 'DC');
  $rels_xml = $objectHelper->getStream($pid, 'RELS-EXT');

  if (!$rels_xml) {
    drupal_set_message(t('Object does not exist.'), 'error');
    return '';
  }
  $simpleRELSxml = simplexml_load_string($rels_xml);
  // $modello = $simpleRELSxml->xpath('//fedora-model:hasModel@rdf:resource');
  // $modello = $simpleRELSxml->xpath('//rdf:RDF/rdf:Description/@rdf:about')."pippo";
  $modello = $simpleRELSxml->xpath('//rdf:RDF/rdf:Description/fedora-model:hasModel/@rdf:resource');
  $modello = $modello[0];

  if (!$dc_xml) {
    drupal_set_message(t('Object does not exist.'), 'error');
    return '';
  }
  $simpleDCxml = simplexml_load_string($dc_xml);
  $types = $simpleDCxml->xpath('//dc:type');
  $ingested = 'false';
  if (!empty($types)) {
    foreach ($types as $type) {
      if ($type == 'ingested') {
        $ingested = 'true';
      }
    }
  }

  if (!isset($pid)) {
    drupal_set_message(t('Error getting book view, no identifier specified.'));
    return;
  }
  $proc = NULL;
  try {
    $proc = new XsltProcessor();
  } catch (Exception $e) {
    drupal_set_message(t('Error loading Book View XSLT: %e', array('!e' => $e->getMessage())));
    return;
  }

  //inject into xsl stylesheet
  $proc->setParameter('', 'userID', $user->uid);
  $proc->setParameter('', 'objectsPage', base_path());
  $proc->setParameter('', 'pid', $pid);
  $proc->setParameter('', 'ingested', $ingested);
  $proc->setParameter('', 'modello', $modello);

  $xsl = new DomDocument();
  $test = $xsl->load($path . '/xsl/tocnr_book_view.xsl');
  if (!isset($test)) {
    drupal_set_message(t('Error loading search results XSLT.'));
    return t('Error loading search results XSLT.');
```

```

function convert_query_to_page_query($query, $pid) {
    $newQuery = substr($query, 0, strlen($query) - 23);
    $pid = str_replace(':', '?', $pid);
    $newQuery = $newQuery . " AND PID:$pid* AND dc.type:Text";
    return $newQuery;
}

/**
 * Custom form element to do our nice images.
 */
function islandora_book_elements() { // Change this line
    $type['imagebutton'] = array(
        '#input' => TRUE,
        '#button_type' => 'submit',
        '#executes_submit_callback' => TRUE,
        '#name' => 'op',
        '#process' => array('hook_imagebutton_process' => array()),
    );
    return $type;
}

function theme_imagebutton($element) {
    return '<input style="background:url(\'); border:0px; width:10px; padding:0px,0px,0px,0px;" type="image"
    class="form-' . $element['#button_type'] . '" name="' . $element['#name'] . '" id="' . $element['#id'] . '"
    value="" . check_plain($element['#default_value']) . '" ' . drupal_attributes($element['#attributes']) . '
    src="' . $element['#image'] . '" alt="' . $element['#title'] . '" title="' . $element['#title'] . '" />\n';
}

/**
 * Implementation of hook_theme() to register how to theme image buttons.
 */
function islandora_book_theme() {
    return array(
        'imagebutton' => array(
            'arguments' => array('form' => NULL),
        ),
        'islandora_book_book_search_form' => array(
            'arguments' => array('form' => NULL),
        ),
        'islandora_book_simple book search form' => array(
            'arguments' => array('form' => NULL),
        )
    );
}

/**
 * Implementation of hook_requirements().
 *
 * @return
 *   An array describing the status of the site regarding available updates.
 *   If there is no update data, only one record will be returned, indicating
 *   that the status of core can't be determined. If data is available, there
 *   will be two records: one for core, and another for all of contrib
 *   (assuming there are any contributed modules or themes enabled on the
 *   site). In addition to the fields expected by hook_requirements ('value',
 *   'severity', and optionally 'description'), this array will contain a
 *   'reason' attribute, which is an integer constant to indicate why the
 *   given status is being returned (UPDATE_NOT_SECURE, UPDATE_NOT_CURRENT, or
 *   UPDATE_UNKNOWN). This is used for generating the appropriate e-mail
 *   notification messages during update_cron(), and might be useful for other
 *   modules that invoke update_requirements() to find out if the site is up
 *   to date or not.
 *
 * @see _update_message_text()
 * @see _update_cron_notify()
 */
function islandora_book_requirements($phase) {
    global $base_url;
    if ($phase == 'runtime') {
        module_load_include('inc', 'fedora_repository', 'api/fedora_utils');
        $requirements['iiv-war'] = array();
        $requirements['iiv-war']['title'] = t("Islandora OpenLayers image viewer web app");
        if (!islandora_book_viewer_available()) {
            $requirements['iiv-war']['value'] = ("Not available");
            $requirements['iiv-war']['severity'] = REQUIREMENT_ERROR;
            $requirements['iiv-war']['description'] = t('Ensure that Fedora is running and that the <a href="@iiv-home">IIV</a> app is deployed.',
                array('@iiv-home' => 'http://github.com/islandora/iiv'));
        }
        else {
            $requirements['iiv-war']['value'] = ("Available");
            $requirements['iiv-war']['severity'] = REQUIREMENT_OK;
        }
    }
    return $requirements;
}

function _islandora_book_viewer_available() {
    $url = parse_url(variable_get('fedora_base_url', 'http://localhost:8080/fedora'));
    $fedora_host = ("{$url['scheme']}://{ $url['host']}". (!empty($url['port']) ? ":{ $url['port']}" : '/'));
    $response = drupal_http_request("$fedora_host/iiv/images/loading.gif");
    return empty($response->error);
}

function islandora_book_required_fedora_objects() {

```

```

$module_path = drupal_get_path('module', 'islandora_book');
//add default mods form to formbuilder table
$result = db_result(db_query('Select name from {xml_forms} where name = "%s"', 'Islandora Books MODS Form'));
if (!$result) {
  $filename = "$module_path/xml/islandora_book_default_mods.xml";
  $form_as_string = file_get_contents($filename);
  $object = new stdClass();
  $object->name = 'Islandora Books MODS Form';
  $object->form = $form_as_string;
  $result = drupal_write_record('xml_forms', $object);
}

$result = db_result(db_query('Select name from {xml_forms} where name = "%s"', 'Upload Existing Books Mods'));
if (!$result) {
  $filename = "$module_path/xml/mods_upload.xml";
  $form_as_string = file_get_contents($filename);
  $object = new stdClass();
  $object->name = 'Upload Existing Books Mods';
  $object->form = $form_as_string;
  $result = drupal_write_record('xml_forms', $object);
}

$result = db_result(db_query('Select content_model from {islandora_content_model_forms} where content_model = "%s" and form_name = "%s"', 'islandora:bookCModel', 'Islandora Books MODS Form'));
if (!$result) {
  $object = new stdClass();
  $object->content_model = 'islandora:bookCModel';
  $object->form_name = 'Islandora Books MODS Form';
  $object->dsid = 'MODS';
  $object->title_field = "[titleInfo][title]";
  $object->transform = 'mods_to_dc.xsl';
  $result = drupal_write_record('islandora_content_model_forms', $object);
}

$result = db_result(db_query('Select content_model from {islandora_content_model_forms} where content_model = "%s" and form_name = "%s"', 'islandora:bookCModel', 'Upload Existing Books Mods'));
if (!$result) {
  $object = new stdClass();
  $object->content_model = 'islandora:bookCModel';
  $object->form_name = 'Upload Existing Books Mods';
  $object->dsid = 'MODS';
  $object->title_field = "[title]";
  $object->transform = 'mods_to_dc.xsl';
  $result = drupal_write_record('islandora_content_model_forms', $object);
}
// array('path-to-foxml-file', 'pid', 'dsid', 'path-to-datastream-file', int dsversion, boolean required)
// make database insertions here.

return array(
  'islandora_book' => array(
    'module' => 'islandora_book',
    'title' => 'Islandora Books',
    'objects' => array(
      array(
        'foxml_file' => "$module_path/xml/islandora_book_pageCModel.xml",
        'pid' => 'islandora:pageCModel',
        'dsid' => NULL,
        'datastream_file' => NULL,
        'dsversion' => NULL,
      ),
      array(
        'foxml_file' => "$module_path/xml/islandora_book_bookCModel.xml",
        'pid' => 'islandora:bookCModel',
        'dsid' => NULL,
        'datastream_file' => NULL,
        'dsversion' => NULL,
      ),
      array(
        'foxml_file' => "$module_path/xml/islandora_book_jp2sdef.xml",
        'pid' => 'islandora:jp2Sdef',
        'dsid' => NULL,
        'datastream_file' => NULL,
        'dsversion' => NULL,
      ),
      array(
        'foxml_file' => "$module_path/xml/islandora_book_viewerSdef.xml",
        'pid' => 'islandora:viewerSdef',
        'dsid' => NULL,
        'datastream_file' => NULL,
        'dsversion' => NULL,
      ),
      array(
        'foxml_file' => "$module_path/xml/islandora_book_viewerSdep-bookCModel.xml",
        'pid' => 'islandora:viewerSdep-bookCModel',
        'dsid' => NULL,
        'datastream_file' => NULL,
        'dsversion' => NULL,
      ),
      array(
        'foxml_file' => "$module_path/xml/islandora_book_viewerSdep-pageCModel.xml",
        'pid' => 'islandora:viewerSdep-pageCModel',
        'dsid' => NULL,
        'datastream_file' => NULL,
        'dsversion' => NULL,
      ),
    )
  )
);

```

```

    ),
    array(
      'foxml_file' => "$module_path/xml/islandora_book_tei2htmlSdef.xml",
      'pid' => 'islandora:tei2htmlSdef',
      'dsid' => NULL,
      'datastream_file' => NULL,
      'dsversion' => NULL,
    ),
    array(
      'foxml_file' => "$module_path/xml/islandora_book_tei2htmlSdep-pageCModel.xml",
      'pid' => 'islandora:tei2htmlSdep-pageCModel',
      'dsid' => NULL,
      'datastream_file' => NULL,
      'dsversion' => NULL,
    ),
    array(
      'foxml_file' => "$module_path/xml/islandora_book_collection.xml",
      'pid' => 'islandora:collection',
      'dsid' => NULL,
      'datastream_file' => NULL,
      'dsversion' => NULL,
    ),
    array(
      'foxml_file' => "$module_path/xml/islandora_book_jp2Sdep-pageCModel.xml",
      'pid' => 'islandora:jp2Sdep-pageCModel',
      'dsid' => NULL,
      'datastream_file' => NULL,
      'dsversion' => NULL,
    ),
    array(
      'foxml_file' => "$module_path/xml/islandora_book_CollectionModel.xml",
      'pid' => 'islandora:CollectionModel',
      'dsid' => NULL,
      'datastream_file' => NULL,
      'dsversion' => NULL,
    ),
    array(
      'pid' => 'books:collection',
      'label' => 'Book Collection',
      'cmodel' => 'islandora:collectionCModel',
      'parent' => 'islandora:demos',
      'datastreams' => array(
        array(
          'dsid' => 'COLLECTION_POLICY',
          'datastream_file' => "$module_path/xml/book_collection_policy.xml",
        ),
        array(
          'dsid' => 'TN',
          'datastream_file' => "$module_path/images/Crystal_Clear_mimetype_man.png",
          'mimetype' => 'image/png',
        ),
      ),
    ),
  ),
),
);
}

function islandora_book_purge_pages_form(&$form_state, $pid, $referrer = NULL) {
  global $base_url;
  if (!user_access('purge objects and datastreams')) {
    return NULL;
  }
  if ($pid == NULL) {
    return NULL;
  }
  $form['pid'] = array(
    '#type' => 'hidden',
    '#value' => "$pid"
  );
  if (!strstr(drupal_get_destination(), urlencode('fedora/repository'))) {
    $form['referrer'] = array(
      '#type' => 'hidden',
      '#value' => $referrer,
    );
  }
  if (!isset($form_state['storage']['confirm'])) {
    // do your normal $form definition here

    $form['submit'] = array(
      '#type' => 'image_button',
      '#src' => drupal_get_path('module', 'fedora_repository') . '/images/purge_big.png',
      '#value' => t('Purge'),
      '#suffix' => 'Purge all pages associated with this book',
    );

    return $form;
  }
  else {
    // ALSO do $form definition here. Your final submit handler (after user clicks Yes, I Confirm) will only see
    $form_state info defined here. Form you create here passed as param1 to confirm_form

    return confirm_form($form, 'Confirm Purge ALL pages?', $referrer, 'Are you sure you want to delete these
    objects? This action cannot be undone.', 'Purge Pages', 'Cancel'); //Had better luck leaving off last param
    'name'
  }
}

```

```

    }
    return $form;
  }

function islandora_book_purge_pages_form_submit($form, &$form_state) {
  module_load_include('inc', 'fedora_repository', 'ConnectionHelper');
  $pid = $form_state['values']['pid'];
  if (!isset($form_state['storage']['confirm'])) {
    $form_state['storage']['confirm'] = TRUE; // this will cause the form to be rebuilt, entering the confirm
    part of the form
    $form_state['rebuild'] = TRUE; // along with this
  }
  else {
    $query = <<<XML
select \Object \Title from <#ri>
  where (\Object <dc:title> \Title
        and \Object <fedora-rels-ext:isMemberOf> <info:fedora/$pid>
        and \Object <fedora-model:state> <info:fedora/fedora-system:def/model#Active>)
order by \Title
XML;

    // this is where you do your processing after they have pressed the confirm button
    module_load_include('inc', 'fedora_repository', 'CollectionClass');
    $collection = new CollectionClass($pid);
    $contents = $collection->getRelatedItems($pid, $query);
    $results_xml = simplexml_load_string($contents);
    $resultsarray = array();
    foreach ($results_xml->results->result as $result) {
      $pid_to_delete = str_replace('info:fedora/', '', $result->object->attributes()->uri);

      //parse contents

      $params = array(
        "pid" => $pid_to_delete,
        "logMessage" => "Purged",
        "force" => ""
      );
      try {
        $soapHelper = new ConnectionHelper();
        $client = $soapHelper->getSoapClient(variable_get('fedora_soap_manage_url',
'http://localhost:8080/fedora/services/management?wsdl'));
        $object = $client->__soapCall('purgeObject', array($params));
        unset($form_state['storage']['confirm']);
      } catch (exception $e) {
        if (preg_match('/org\.fedora\.server\.security\.xacml\.pep\.AuthzDeniedException/', $e->getMessage())) {
          drupal_set_message(t('Error: Insufficient permissions to purge object.'), 'error');
        }
        else {
          drupal_set_message(t($e->getMessage()), 'error');
        }
      }
      return;
    }
  }
  if (!empty($form_state['values']['referrer'])) {
    $form_state['redirect'] = $form_state['values']['referrer'];
  }
  elseif (empty($collectionPid) && !empty($_SESSION['fedora_collection']) && $_SESSION['fedora_collection'] !=
$pid) {
    $collectionPid = $_SESSION['fedora_collection'];
  }
  $form_state['redirect'] = "fedora/repository/$collectionPid/";
  }
  else {
    $form_state['redirect'] = 'fedora/repository/';
  }
}

function islandora_book_help($path, $arg) {
  switch ($path) {
    case 'admin/help#islandora_book':
      return t(
        '<p>
The Islandora Book Module allows users to create digital representations of books within the Fedora
Repository.
A book object is created using !mods data. A collection of associated page objects may then be created
created. Page objects
are created by ingesting a zipped folder of TIFF images, each representing a distinct page.
Page TIFFs are used to create a series of Fedora datastreams on ingestion. These streams include
derivative images
for display - JPEGs, Thumbnails, and JP2s, and one ore more OCR streams for text display and analysis.
</p>
<p>
<h3>Configuration</h3>
The page datastreams may be created on this server, or on an external processing server with !
microservices.<br/>
To process images from TIFFS on this server check <strong>Create derivative images locally?</strong> on
the admin page. (Link at the bottom of this page).<br />
TO create OCR streams on this server check <strong>Perform OCR on incoming TIFF images?</strong>. <br
/><br />
',

```

```

        array(
            '!microservices' => 1("Fedora Microservices", 'https://github.com/Islandora/fedora_microservices'),
            '!mods' => 1('MODS', 'http://www.loc.gov/standards/mods/'),
        )
    );
}
}

```

8.2.3 sites/all/modules/islandora_solution_pack_book/xsl/tocnr_book_view.xsl

```

<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet xmlns:xsl="http://www.w3.org/1999/XSL/Transform" version="1.0">

    <xsl:variable name="OBJECTSPAGE">
        <xsl:value-of select="$ObjectsPage"/>
    </xsl:variable>
    <xsl:variable name="PID">
        <xsl:value-of select="$pid"/>
    </xsl:variable>
    <xsl:variable name="MODELLO">
        <xsl:value-of select="$modello"/>
    </xsl:variable>
    <xsl:variable name="RECORDID">
        <xsl:value-of select='substring-after($PID,":")' />
    </xsl:variable>
    <xsl:variable name="COLLEZIONEID">
        <xsl:value-of select='substring-before($PID,":")' />
    </xsl:variable>

<xsl:template match="/">

    <table cellpadding="3" cellspacing="2" valign="top" >
        <tr>
            <td valign="top">
                <img>
                    <xsl:attribute name="src"><xsl:copy-of
                        select="$OBJECTSPAGE"/>fedora/repository/<xsl:copy-of select="$PID"/>/TN
                    </xsl:attribute>
                </img>
            </td>
            <td >
                <div style="align:left"><table cellpadding="3" cellspacing="2" width="90%" >
                    <tbody>
                        <tr><th colspan="3"><h3>Dublin Core - MetaData </h3></th>
                        </tr>
                    <xsl:for-each select="/*/*">
                        <xsl:variable name="FULLFIELD" select="name()" />
                        <xsl:variable name="FIELD" select="substring-after(name(),':')"/>
                        <xsl:variable name="DATA" select="text()" />

                        <xsl:if test="$DATA != ' '">
                            <tr>
                                <td valign="top"><strong><xsl:value-of select="substring-after(name(),':')"/></strong></td>
                                <td><xsl:value-of select="text()" />
                                    <xsl:for-each select="*">
                                        <div>
                                            <xsl:value-of select="substring-after(name(),':')"/> = <xsl:value-of select="text()" />
                                        </div>
                                    </xsl:for-each>
                                </td>
                            </tr>
                            <!--
                                <td><a href="{ $baseUrl }/search/fedora_repository/dc.{ $FIELD }:{ $DATA }"></a></td>
                            -->
                        </tr>
                    </xsl:if>

                    </xsl:for-each>
                </tbody>
                <tr><th colspan="3"><h3></h3></th></tr>
                <tr><th colspan="3"><h3>Download</h3></th></tr>
                <xsl:if test="$MODELLO = 'info:fedora/islandora:bookCModel'">
                    <tr>
                        <td><strong>Full PDF</strong></td>
                        <td><a href="http://fcl.to.cnr.it:8080/fedora/objects/
                            { $PID }/datastreams/PDF/content">PDF</a></td>
                    </tr>
                    <tr>
                        <td><a href="{ $OBJECTSPAGE }fedora/repository/{ $PID }/PDF/
                            { $COLLEZIONEID }_{ $RECORDID }.pdf">PDF</a></td>
                    </tr>
                </xsl:if>

                <xsl:if test="$MODELLO = 'info:fedora/islandora:pageCModel'">
                    <tr>
                        <td><strong>HD TIFF</strong></td>
                        <td><a href="{ $OBJECTSPAGE }fedora/repository/{ $PID }/TIFF/
                            { $COLLEZIONEID }_{ $RECORDID }.tif">TIFF</a></td>
                    </tr>
                    <tr>
                        <td><strong>TEXT</strong></td>
                        <td><a href="{ $OBJECTSPAGE }fedora/repository/{ $PID }/OCR/
                            { $COLLEZIONEID }_{ $RECORDID }.txt">TXT</a></td>
                    </tr>
                </xsl:if>
            </table></div>
        </td>
    </tr>
</table>

```



```

        </tr>
    </table>

</xsl:template>

</xsl:stylesheet>

```

8.2.4 sites/all/modules/islandora_solr_search/IslandoraSolrQueryProcessor.inc

```

<?php
/**
 * @file
 * Contains methods to build and execute a solr query.
 * Depends on Apache_Solr_Php client.
 */

/**
 * Islandora Solr Query Processor
 * @todo Stop using global vars, start using this object's vars.
 * The module itself should initially create an instance of this
 * object and reference the query vars inside that object when calling
 * other output display functions.
 */
class IslandoraSolrQueryProcessor {
    static $facetSeparator = '~'; //used to separate facets in url
    static $slashReplacement = '~slsh~'; // a pattern used to replace / in url's the slash breaks drupal clean
    url's
    public static $SEARCH_CLASS_ADVANCED_SEARCH_NUMBER_FIELDS = 5;
    public $solrQuery;
    public $solrParams;
    public $solrStart;
    public $solrLimit;
    public $solrDefType;
    public $solrFilters;
    public $solrResult;
    /**
     * Constructor
     */
    function IslandoraSolrQueryProcessor() {
        module_load_include('php', 'islandora_solr_search', 'SolrPhpClient/Apache/Solr/Service');
        module_load_include('inc', 'islandora_solr_search', 'includes/common');
    }
    /**
     * Build and execute a query
     * @param type $query
     * @param type $fq
     * @param type $dismax
     * @return type
     */
    function buildAndExecuteQuery($query, $fq=null, $dismax=null) {
    /***/
    if (variable_get('islandora_solr_search_block_request_handler', NULL) == 'standard') {
        $namespace = trim(variable_get('solr_namespace_restriction', NULL));
        if (!$query || $query == '') {
            $query = '%252F';
        }
        else{
            if ( (strpos($query, 'OCR.OCR')) === FALSE ){
                if (strpos($fq, "rels.hasModel:bookCModel") === FALSE) {
                    if ($fq != NULL && $fq != '-') {
                        $fq .= $this->facetSeparator."rels.hasModel:bookCModel";
                    }
                    else{
                        $fq = "rels.hasModel:bookCModel";
                    }
                }
            }
        }
    }
    /***/
    // if ($namespace) {
    //     if ($fq == '-') {
    //         $fq = '';
    //     }
    //     if (strpos($fq, "PID:$namespace") === FALSE) {
    //         if ($fq) {
    //             $fq .= $this->facetSeparator;
    //         }
    //         $fq .= "PID:$namespace*";
    //     }
    // }
    $this->buildQuery($query, $fq, $dismax);
    return $this->executeQuery();
}
/**
 * Default implementation for solr search. You can configure others in the block config settings
 * @todo Get rid of the global $facetArray? It is the only global yet relied upon.
 */
function buildQuery($query, $fq=null, $dismax=null) {
    // Get pager variable
    $startPage = isset($_GET['page']) ? $_GET['page'] : 0;
    $this->solrLimit = variable_get('islandora_solr_search_num_of_results', 20);
    global $base_url, $facetArray; //used by facet Block as well
    // -- cut here --
    // Get display profile
    $islandora_solr_primary_display = variable_get('islandora_solr_primary_display', 'default');
    $profiles = module_invoke_all("islandora_solr_primary_display");
    if (isset($profiles[$islandora_solr_primary_display])) {

```

```

        drupal_set_message("There is an error in the solr search configuration: the display profile is not found.",
        'error');
        return "";
    }
    $profile = $profiles[$islandora_solr_primary_display];
    // Include the file for the display profile
    require_once(drupal_get_path('module', $profile['module']) . '/' . $profile['file']);
    // Set display class and function vars
    $solrClass = $profile['class'];
    $solrFunction = $profile['function'];
    // -- end cut here --
    //fix the query as some characters will break the search : and / slash are examples
    $this->solrQuery = restoreSlashes($query);
    if (empty($this->solrQuery)) {
        // $this->solrQuery = '%20'; //so we can allow empty queries to dismax
    }
    $facetArray = array();
    $facetFields = '';
    $rawFacetVals = variable_get('islandora_solr_search_block_facets', 'dc.subject,dc.type');
    $facetArray = islandora_build_substitution_list($rawFacetVals);
    $facetFields = implode(",", array_keys($facetArray));
    $facetLimit = variable_get('islandora_solr_search_block_facet_limit', '12');
    $facetMinCount = variable_get('islandora_solr_search_block_facet_min_count', '2');
    $requestHandler = variable_get("islandora_solr_search_block_request_handler", "standard");
    $this->solrParams = array(
        'facet' => 'true',
        'facet.mincount' => $facetMinCount,
        'facet.limit' => $facetLimit,
        'qt' => $requestHandler,
        'facet.field' => explode(',', $facetFields), //comma separated list configured in the block config
    );
    $debugQuery = (variable_get('islandora_solr_search_debug_mode', 0) ? "true" : null); //any val incl. 'false'
    is treated as true by Solr
    // $fq = preg_replace('/PID:.*\/', '', $fq);
    if ($fq != NULL && $fq != '-') {
        $fq = restoreSlashes($fq); //put the slash back
        $fq = csv_explode(IslandoraSolrQueryProcessor::$facetSeparator, $fq, "", true); //to filter by more than
        one facet we will separate them by~ for nowseparate them by~ for now
        $this->solrParams['fq'] = $fq;
        $islandora_fq = replaceSlashes($fq); //remove the slash here as we will be using this in url's
    }
    if (empty($islandora_fq)) {
        $islandora_fq = '-';
    }
    if ($dismax != NULL) {
        $this->solrDefType = $dismax;
        $this->solrParams['defType'] = $dismax;
    }
    $this->solrStart = max(0, $startPage) * $this->solrLimit;
    // The breadcrumb should go in the display class
    $queryurl = "islandora/solr/search/" . replaceSlashes($this->solrQuery);
    $breadcrumb_fq = $islandora_fq;
    if (strcmp($islandora_fq, "-")) {
        foreach (csv_explode(IslandoraSolrQueryProcessor::$facetSeparator, $islandora_fq, "", true) as $facet) {
            $field = substr($facet, 0, strpos($facet, ":"));
            $value = restoreSlashes(trim(substr($facet, strpos($facet, ":") + 1, "")));
            $options = array('html' => true);
            $options['attributes']['title'] = $facet;
            $crumbLink = $queryurl . "/" . $breadcrumb_fq . (empty($this->solrDefType) ? '' : '/' . $this->
            >solrDefType);
            $cut_fq = $this->delete_filter($islandora_fq, $facet);
            $cutLink = $queryurl . "/" . $cut_fq . (empty($this->solrDefType) ? '' : '/' . $this->solrDefType);
            if (!strcmp("-", $facet, 1)) {
                $options['attributes']['class'] = "strikethrough";
            }
            $breadcrumb[] = l($value, $crumbLink, $options) .
            " <span class='islandora_solr_search_breadcrumb_super'>(" . l("x", $cutLink, array('attributes' =>
            array('title' => "Remove " . $facet))) . ")</span>";
            $breadcrumb_fq = $this->delete_filter($breadcrumb_fq, $facet);
        }
    }
    if (!empty($this->solrQuery) && strcmp($this->solrQuery, '')) {
        $cutLink = "islandora/solr/search/" . $islandora_fq . "/dismax";
        $queryval = $this->solrQuery;
        $tokens = explode(" ", $queryval);
        foreach ($tokens as $token) {
            preg_match("/^.*:/", $token, $matches);
            $queryval = str_replace($matches[0], "", $queryval);
        }
        if ($queryval != '%252F') {
            $breadcrumb[] = l($queryval, $queryurl . "/-", array('attributes' => array('title' => $this->solrQuery)))
            . " <span class='islandora_solr_search_breadcrumb_super'>(" . l("x", $cutLink, array('attributes' =>
            array('title' => "Remove " . $facet))) . ")</span>";
        }
    }
    $breadcrumb[] = l(t('Home'), NULL);
    if (!empty($breadcrumb))
        $breadcrumb = array_reverse($breadcrumb);
    drupal_set_breadcrumb($breadcrumb);
    $this->solrFilters = $islandora_fq;
    // if (strpos($fq, "rels.hasModel%253AbookCModel") === FALSE) {
    //     if ($fq) {
    //         $fq .= $this->facetSeparator;
    //     }
    //     $fq = "rels.hasModel%253AbookCModel";
    // }

```

```
//
//
// At this point let's invoke a hook for third-party modules to mess about
// with the query parameters if they need to. Third party modules may alter
// this object's query parameters if they wish.
// module_invoke_all("islandora_solr_search_query_processor", &$this);
return;
}
/**
 * Reset Results
 */
function resetResults() {
  unset($this->solrResult);
}

/**
 * Execute the query
 * @return type
 */
function executeQuery() {
  ////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////
  // Right here the function should be split. One function to execute the query, //
  // another to set up pager variables and generate display. //
  ////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////
  $url = variable_get('islandora_solr_search_block_url', 'http://localhost:8080/solr');
  $pathParts = parse_url($url);
  $solr = new Apache_Solr_Service($pathParts['host'], $pathParts['port'], $pathParts['path'] . '/');
  $solr->setCreateDocuments(0);
  $this->solrParams['hl'] = 'true';
  $this->solrParams['hl.fl'] = '**';
  $this->solrParams['hl.requireFieldMatch'] = 'true';
  $this->solrParams['hl.snippets'] = '10';
  $this->solrParams['hl.simple.pre'] = '<b>';
  $this->solrParams['hl.simple.post'] = '</b>';
  // This is where the query gets executed and output starts being created.
  try {
    $results = $solr->search($this->solrQuery, $this->solrStart, $this->solrLimit, $this->solrParams);
  } catch (Exception $e) {
    drupal_set_message(t('error searching ') . $e->getMessage());
  }
  $this->solrResult = $results;
  if (empty($results)) {
    drupal_set_message(t('Error searching solr index. Is the solr search block configured properly?'),
    'error');
    return;
  }
  unset($results);
  unset($solr);
  return;
}

/**
 * Function delete_filter
 *
 * Deletes one filter from a multi-filter string
 *
 * @param <string> $facets
 * @param <string> $facet
 */
function delete_filter($filters, $filter) {
  $filters = str_replace($filter, "", $filters);
  $filters = str_replace("~~", "~", $filters);
  $filters = trim($filters, "~");
  return $filters;
}
}
}
```

8.2.5 sites/all/modules/islandora_solr_custom/theme/islandora-solr-custom.tpl.php

```
<?php
/**
 * @file islandora-solr-custom.tpl.php
 * Islandora solr search results template
 *
 * Variables available:
 * - $variables: all array elements of $variables can be used as a variable. e.g. $base_url equals
 * $variables['base_url']
 * - $base_url: The base url of the current website. eg: http://example.com .
 * - $user: The user object.
 *
 * - $style: the style of the display ('div' or 'table'). Set in admin page by default. Overridden by the query
 * value: ?display=foo
 * - $results: the array containing the solr search results
 * - $table_rendered: If the display style is set to 'table', this will contain the rendered table.
 * For theme overriding, see: theme_islandora_solr_custom_table()
 * - $switch_rendered: The rendered switch to toggle between display styles
 * For theme overriding, see: theme_islandora_solr_custom_switch()
 */
?>
<?php print $switch_rendered; ?>
<?php if ($style == 'div'): ?>
<ul class="islandora_solr_results">
<?php if ($results == ''): print '<p>' . t('Your search yielded no results') . '</p>'; ?>
<?php else: ?>
<?php foreach ($results as $id => $result): ?>
<li class="islandora_solr_result">
<?php $zebra = 'even'; ?>
<?php $modello = $result['rels.hasModel']['value']; ?>
</li>
</foreach>
</ul>
</div>
</table>
</div>
```

```

        <?php if ($modello == "info:fedora/islandora:pageCModel"):?>
            <div class="solr-field <?php print $class . ' ' . $zebra ?>">
                <?php $zebra = ($zebra == 'odd'? 'even' : 'odd' ); ?>
                <div class="label">
                    <?php print "<img src=\"".base_path().\"fedora/repository/\".$result['PID']
                    ['value'].\"/TN\"></img>"; ?>
                </div>
                <div class="value">
                    <?php print "<a href=\"".base_path().\"fedora/repository/\".$result['PID']['value'].\"\"><b>".
                    $result['dc.title']['value'].\"</b></a>"; ?><br>
                </div>
                <div class="value">
                    <i><?php print $result['dc.description']['value']; ?></i><br><br>
                </div>
                <div class="value">
                    <?php print $result['OCR.OCR']['value']; ?>
                </div>
            </div>
        <?php elseif ($modello == "info:fedora/islandora:bookCModel"): ?>
            <div class="solr-field <?php print $class . ' ' . $zebra ?>">
                <?php $zebra = ($zebra == 'odd'? 'even' : 'odd' ); ?>
                <div class="label">
                    <?php print "<img src=\"".base_path().\"fedora/repository/\".$result['PID']
                    ['value'].\"/TN\"></img>"; ?>
                </div>
                <div class="value">
                    <?php print "<a href=\"".base_path().\"fedora/repository/\".$result['PID']['value'].\"\"><b>".
                    $result['dc.title']['value'].\"</b></a>"; ?><br>
                </div>
                <div class="value">
                    <i><?php print $result['dc.description']['value']; ?></i><br><br>
                </div>
            </div>
        <?php endif; ?>
    </li>
</ul>
<?php endforeach; ?>
</ul>
<?php endif; ?>
<?php elseif ($style == 'table'): ?>
    <?php print $table_rendered; ?>
<?php endif; ?>

```

8.2.6 sites/all/modules/islandora_solr_custom/theme/islandora_solr_custom.theme.inc

```

<?php
/**
 * @file
 * This file holds all of islandora_solr_custom's theme functions
 */
/**
 * Theme function for theming the admin table
 * @return rendered table
 */
function theme_islandora_solr_custom_admin_settings($form) {
    $rows = array();
    foreach ($form['islandora_solr_custom_table'] as $key) {
        $row = array();
        // check if $key is really the array we need. we shouldn't select the #parent array for example.
        if (isset($key['field']['#type'])) {
            $row[] = array('data' => drupal_render($key['field']));
            $row[] = array('data' => drupal_render($key['label']));
            $row[] = array('data' => drupal_render($key['exclude_label']));
            $row[] = array('data' => drupal_render($key['markup']));
            $rows[] = $row;
        }
    }
    $form['islandora_solr_custom_table']['#access'] = FALSE; // don't unset $form['anything'] , use
    $form['anything']['#access'] = FALSE; instead!
    // Individual table headers.
    $header = array();
    $header[] = t('solr field');
    $header[] = t('label');
    $header[] = t('exclude label?');
    $header[] = t('show markup when empty?');
    // put the rendered table in another fieldset.
    $form['islandora_solr_custom_table_output']['table_output_markup']['#value'] = theme('table', $header, $rows);
    $output = '';
    $output .= drupal_render($form);
    return $output;
}
/**
 * Theme function for theming the solr search results
 *
 * @param $results
 * The raw search results
 *
 * @return variables to be used in the template file.
 */
function islandora_solr_custom_preprocess_islandora_solr_custom(&$variables) {
    // base url
    global $base_url;
    $variables['base_url'] = $base_url;
    // include solr field order generated from solrconfig.xml
    $variables['field_order'] = islandora_solr_custom_solrconfig(); // not sure if this is really needed, but I'll
    keep it in for now.
    // this variable might be more useful as the db values are parsed in the solrconfig order using the results of
    islandora_solr_custom_solrconfig().
}

```

```

// get the solrconfig.xml and DB results. Don't check or fix any differences between solrconfig.xml and the DB
$variables['db_values'] = _islandora_solr_custom_db_values($check = FALSE);
$db_values = $variables['db_values'];
$variables['display'] = variable_get('islandora_solr_custom_display', 'div');
$variables['display_url'] = (isset($_GET['display']) ? $_GET['display'] : NULL);
$variables['table_rendered'] = ''; // set the variable. If the table style is selected, this variable will be
populated with a rendered table.
$variables['switch'] = variable_get('islandora_solr_custom_switch', 0);
$variables['switch_rendered'] = ''; // set the variable. If the display switch is enabled, this variable will
be populated with a rendered link.
$variables['css'] = variable_get('islandora_solr_custom_css', 1);
// set $variables['style'];
$variables['style'] = '';
if ($variables['display_url'] != NULL) {
  if ($variables['display_url'] == 'div') {
    $variables['style'] = 'div';
  }
  elseif ($variables['display_url'] == 'table') {
    $variables['style'] = 'table';
  }
  else {
    $variables['style'] = $variables['display'];
  }
}
else {
  $variables['style'] = $variables['display'];
}
// include css or not
$css = variable_get('islandora_solr_custom_css', 1);
if ($css == 1) {
  drupal_add_css(drupal_get_path('module', 'islandora_solr_custom') . '/css/islandora_solr_custom_tpl.css');
}
$hl=$variables['results_raw']->highlighting;
// go over each search result object
foreach ($variables['results_raw']->response->docs as $doc) {
  $resultsArray = array();
  // go over each field within a search result object
  foreach ($db_values as $db_value) {
    $field = $db_value['field'];
    /***
    // if ($field == 'rels.hasModel') {
    //   $modello = $doc->$db_value['field'];
    // }
    /***
    if (isset($doc->$db_value['field'])) {
      $value = $doc->$db_value['field'];
      if (is_array($value)) {
        $value = implode(" ", $value);
      }
      if ($field!="OCR.OCR") {
        $resultsArray[$field]['value'] = $value;
      }
    }
    else {
      $resultsArray[$field]['value'] = '';
    }
    if ($field=="PID") {
      $hlv = $hl->$value;
      foreach ($hlv as $singlef) {
        $linee = "";
        foreach ($singlef as $linea) {
          $linee = $linee."... ".$linea."... <br>";
        }
        $resultsArray['OCR.OCR']['value'] = $linee;
      }
    }
    // set the fields
    $resultsArray[$field]['label'] = $db_value['label'];
    $resultsArray[$field]['class'] = strtolower(preg_replace('/^[A-Za-z0-9]/', '-', $db_value['field'])); //
turn the field name in a string that is appropriate to use as a class name.
    $resultsArray[$field]['exclude_label'] = $db_value['exclude_label'];
    $resultsArray[$field]['markup'] = $db_value['markup'];
  }
  /***
  //if ($fulltxt == "") {
  //   if ($modello == "info:fedora/islandora:bookCModel") {
  //     $variables['results'][] = $resultsArray;
  //   }
  // }
  /***
}
// if 'display' is set to table, render the table.
if ($variables['style'] == 'table') {
  $db_values = $variables['db_values'];
  $results = $variables['results'];
  $output = theme('islandora_solr_custom_table', $db_values, $results);
  $variables['table_rendered'] = $output;
}
// if display switch is set, render the link
if ($variables['switch'] == 1 AND $variables['results'] != '') {
  $display = ''; // set $display
  $db_display = $variables['display'];
  $switch_style = ''; // this is will be the oposite display style than then one enabled.
  if ($db_display == 'table') {
    $switch_style = 'div';
  }
}

```

```

        elseif ($db_display == 'div') {
            $switch_style = 'table';
        }
        if (isset($_GET['display'])) {
            if ($_GET['display'] == 'table') {
                $display = 'div';
            }
            elseif ($_GET['display'] == 'div') {
                $display = 'table';
            }
            else {
                $display = $switch_style; // if the display style is not properly set in the url, choose the opposite of
                // the one enabled in the DB.
            }
        }
        else {
            $display = $switch_style; // if the display style is not set in the url, choose the opposite of the one
            // enabled in the DB.
        }
    }
    $curr_url = $base_url . request_uri();
    if (isset($_GET['page'])) {
        $curr_url = str_replace('&display=' . $_GET['display'], '', $curr_url);
        $curr_url = $curr_url . '&display=' . $display;
    }
    else {
        $curr_url = str_replace('?display=' . $_GET['display'], '', $curr_url);
        $curr_url = $curr_url . '?display=' . $display;
    }
    $variables['switch_rendered'] = theme('islandora_solr_custom_switch', $curr_url);
}
// $variables['template_file'] = 'islandora-solr-custom-test';
}
/**
 * Theme function for theming the switch link.
 * The theme function is really minimal, but allows for overriding the way the switch is themed.
 *
 * @return rendered switch link
 */
function theme_islandora_solr_custom_switch($curr_url) {
    return t('Switch display', $curr_url);
}
/**
 * Theme function for theming the table display.
 *
 * @return rendered table display
 */
function theme_islandora_solr_custom_table($db_values, $results) {
    $output = '';
    if ($results == '') {
        $output = '<p>' . t('Your search yielded no results') . '</p>';
    }
    else {
        // Table headers.
        $header = array();
        foreach ($db_values as $key => $result) {
            if ($result['exclude_label'] == 0) {
                $header[] = array(
                    'data' => t($result['label']),
                    // 'field' => $result['field'], // I guess sorting is only possible when the result is
                    // fetched from the DB.
                );
            }
            else {
                $header[] = '';
            }
        }
        // Table rows
        $rows = array();
        foreach ($results as $key => $result) {
            $row = array();
            foreach ($result as $key => $value) {
                $row[] = array(
                    'data' => $value['value'],
                );
            }
            $rows[] = $row;
        }
        $output = theme('table', $header, $rows);
    }
    return $output;
}
/**
 * Theme function for setting the values of the <item> elements for the RSS secondary display.
 *
 * @tutorial http://feed2.w3.org/docs/rss2.html#hrelementsOfItemmgmt
 * @return variable that holds all values to be rendered into <item> elements
 */
function theme_islandora_solr_custom_rss_item($doc, $feed) {
    // set the variables to be rendered as elements in the <item> element
    $result['title'] = $doc['dc.title'];
    $result['link'] = $base_url . '/fedora/repository/' . htmlspecialchars($doc['PID'], ENT_QUOTES, 'utf-8');
    $result['description'] = $doc['dc.description'];
    $result['items'] = array(
        array('key' => 'author', 'value' => $doc['dc.creator']),
        array('key' => 'guid', 'value' => $doc['PID'], 'attributes' => array('isPermaLink' =>
            'false',)),
    );
}

```

```
        array('key' => 'pubDate', 'value' => $doc['figs.createdDate']),
        array('key' => 'category', 'value' => $doc['dc.subject']),
        array('key' => 'enclosure', 'value' => '', 'attributes' => array('url' => '', 'length' =>
    '', 'type' => '')),
        array('key' => 'comments', 'value' => ''),
        array('key' => 'source', 'value' => ''),
    );
return $result;
}
/**
 * Theme function for setting the values of the <channel> elements for the RSS secondary display.
 *
 * @tutorial http://feed2.w3.org/docs/rss2.html#requiredChannelElements
 * @return variable that holds all values to be rendered into <channel> elements
 */
function theme_islandora_solr_custom_rss_channel($query, $feed) {
    global $base_url;
    // set the variables to be rendered as elements in the <channel> element
    $result['title'] = t('@site_name aggregator', array('@site_name' => variable_get('site_name', 'Drupal')));
    $result['url'] = $base_url;
    $result['description'] = t('Aggregated search results of:') . ' ' . $query;
    $result['langcode'] = NULL;
    $result['args'] = array();
    return $result;
}
```

8.3 Fedora Commons objects by PID

8.3.1 islandora:collectionCModel

```

<?xml version="1.0" encoding="UTF-8"?>
<foxml:digitalObject xmlns:foxml="info:fedora/fedora-system:def/foxml#"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" VERSION="1.1" PID="islandora:collectionCModel"
  xsi:schemaLocation="info:fedora/fedora-system:def/foxml# http://www.fedora.info/definitions/1/0/foxml1-1.xsd">
  <foxml:objectProperties>
    <foxml:property NAME="info:fedora/fedora-system:def/model#state" VALUE="Active"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#label" VALUE="Islandora Collection Content Model"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#ownerId" VALUE="fedoraAdmin"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#createdDate" VALUE="2011-09-17T14:01:17.526Z"/>
    <foxml:property NAME="info:fedora/fedora-system:def/view#lastModifiedDate" VALUE="2011-09-17T14:01:18.759Z"/>
  </foxml:objectProperties>
  <foxml:datastream ID="AUDIT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
    ...
  </foxml:datastream>
  <foxml:datastream ID="DC" STATE="A" CONTROL_GROUP="X" VERSIONABLE="true">
    <foxml:datastreamVersion ID="DC1.0" LABEL="Dublin Core Record for this object" CREATED="2011-09-
    17T14:01:17.526Z" MIMETYPE="text/xml" FORMAT_URI="http://www.openarchives.org/OAI/2.0/oai_dc/" SIZE="413">
      <foxml:xmlContent>
        <oai_dc:dc xmlns:oai_dc="http://www.openarchives.org/OAI/2.0/oai_dc/"
          xmlns:dc="http://purl.org/dc/elements/1.1/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
          xsi:schemaLocation="http://www.openarchives.org/OAI/2.0/oai_dc/
          http://www.openarchives.org/OAI/2.0/oai_dc.xsd">
          <dc:title>Islandora Collection Content Model</dc:title>
          <dc:identifier>islandora:collectionCModel</dc:identifier>
        </oai_dc:dc>
      </foxml:xmlContent>
    </foxml:datastreamVersion>
  </foxml:datastream>
  <foxml:datastream ID="RELS-EXT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="true">
    ...
    <foxml:datastreamVersion ID="RELS-EXT.1" LABEL="Fedora Object-to-Object Relationship Metadata" CREATED="2011-
    09-17T14:01:18.658Z" MIMETYPE="text/xml" SIZE="299">
      <foxml:xmlContent>
        <rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
          <rdf:Description rdf:about="info:fedora/islandora:collectionCModel">
            <hasModel xmlns="info:fedora/fedora-system:def/model#" rdf:resource="info:fedora/fedora-
            system:ContentModel-3.0"/>
          </rdf:Description>
        </rdf:RDF>
      </foxml:xmlContent>
    </foxml:datastreamVersion>
  </foxml:datastream>
  <foxml:datastream ID="ISLANDORACM" STATE="A" CONTROL_GROUP="M" VERSIONABLE="true">
    <foxml:datastreamVersion ID="ISLANDORACM.0" LABEL="ISLANDORACM" CREATED="2011-09-17T14:01:18.759Z"
    MIMETYPE="text/xml" SIZE="5256">
      <foxml:contentLocation TYPE="INTERNAL_ID"
      REF="http://fcl.to.cnr.it:8080/fedora/get/islandora:collectionCModel/ISLANDORACM/2011-09-17T14:01:18.759Z"/>
    </foxml:datastreamVersion>
  </foxml:datastream>
</foxml:digitalObject>
    
```

8.3.2 islandora:root

```

<?xml version="1.0" encoding="UTF-8"?>
<foxml:digitalObject xmlns:foxml="info:fedora/fedora-system:def/foxml#"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" VERSION="1.1" PID="islandora:root"
  xsi:schemaLocation="info:fedora/fedora-system:def/foxml# http://www.fedora.info/definitions/1/0/foxml1-1.xsd">
  <foxml:objectProperties>
    <foxml:property NAME="info:fedora/fedora-system:def/model#state" VALUE="Active"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#label" VALUE="Islandora Top-level Collection"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#ownerId" VALUE="fedoraAdmin"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#createdDate" VALUE="2011-09-17T14:01:19.551Z"/>
    <foxml:property NAME="info:fedora/fedora-system:def/view#lastModifiedDate" VALUE="2011-11-28T15:52:37.003Z"/>
  </foxml:objectProperties>
  <foxml:datastream ID="AUDIT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
    ...
  </foxml:datastream>
  <foxml:datastream ID="DC" STATE="A" CONTROL_GROUP="X" VERSIONABLE="true">
    <foxml:datastreamVersion ID="DC1.0" LABEL="Dublin Core Record for this object" CREATED="2011-09-
    17T14:01:19.551Z" MIMETYPE="text/xml" FORMAT_URI="http://www.openarchives.org/OAI/2.0/oai_dc/" SIZE="397">
      <foxml:xmlContent>
        <oai_dc:dc xmlns:oai_dc="http://www.openarchives.org/OAI/2.0/oai_dc/"
          xmlns:dc="http://purl.org/dc/elements/1.1/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
          xsi:schemaLocation="http://www.openarchives.org/OAI/2.0/oai_dc/
          http://www.openarchives.org/OAI/2.0/oai_dc.xsd">
          <dc:title>Islandora Top-level Collection</dc:title>
          <dc:identifier>islandora:root</dc:identifier>
        </oai_dc:dc>
      </foxml:xmlContent>
    </foxml:datastreamVersion>
  </foxml:datastream>
  <foxml:datastream ID="RELS-EXT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="true">
    ...
    <foxml:datastreamVersion ID="RELS-EXT.2" LABEL="Fedora Object-to-Object Relationship Metadata" CREATED="2011-
    11-28T15:52:37.003Z" MIMETYPE="text/xml" SIZE="532">
      <foxml:xmlContent>
        <rdf:RDF xmlns:rdf="info:fedora/fedora-system:def/model#"
          xmlns:oai="http://www.openarchives.org/OAI/2.0/" xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
          xmlns:rel="info:fedora/fedora-system:def/relations-external#">
    
```



```

    <rdf:Description rdf:about="info:fedora/islandora:root">
      <hasModel xmlns="info:fedora/fedora-system:def/model#"
rdf:resource="info:fedora/islandora:collectionCModel"/>
      <oi:setSpec>digibess</oi:setSpec>
      <oi:setName>DigiBess</oi:setName>
    </rdf:Description>
  </rdf:RDF>
</foxml:xmlContent>
</foxml:datastreamVersion>
</foxml:datastream>
<foxml:datastream ID="COLLECTION_POLICY" STATE="A" CONTROL_GROUP="M" VERSIONABLE="true">
  <foxml:datastreamVersion ID="COLLECTION_POLICY.0" LABEL="COLLECTION_POLICY" CREATED="2011-09-
17T14:01:20.226Z" MIMETYPE="text/xml" SIZE="1211">
    <foxml:contentLocation TYPE="INTERNAL_ID"
REF="http://fcl.to.cnr.it:8080/fedora/get/islandora:root/COLLECTION_POLICY/2011-09-17T14:01:20.226Z"/>
  </foxml:datastreamVersion>
</foxml:datastream>
<foxml:datastream ID="TN" STATE="A" CONTROL_GROUP="M" VERSIONABLE="true">
  <foxml:datastreamVersion ID="TN.0" LABEL="TN" CREATED="2011-09-17T14:01:20.351Z" MIMETYPE="image/png"
SIZE="16243">
    <foxml:contentLocation TYPE="INTERNAL_ID" REF="http://fcl.to.cnr.it:8080/fedora/get/islandora:root/TN/2011-
09-17T14:01:20.351Z"/>
  </foxml:datastreamVersion>
</foxml:datastream>
<foxml:datastream ID="SetInfo.xml" STATE="A" CONTROL_GROUP="X" VERSIONABLE="true">
  <foxml:datastreamVersion ID="SetInfo.xml.0" LABEL="Description of this set" CREATED="2011-11-
28T15:50:48.881Z" MIMETYPE="text/xml" SIZE="262">
    <foxml:xmlContent>
      <setDescriptions>
        <setDescription>
          <oi:dc:dc xmlns:dc="http://purl.org/dc/elements/1.1/"
xmlns:oi_dc="http://www.openarchives.org/OAI/2.0/oi_dc/">
            <dc:description>Digi BESS</dc:description>
          </oi:dc:dc>
        </setDescription>
      </setDescriptions>
    </foxml:xmlContent>
  </foxml:datastreamVersion>
</foxml:datastream>
</foxml:digitalObject>

```

8.3.3 islandora:pageCModel

```

<?xml version="1.0" encoding="UTF-8"?>
<foxml:digitalObject xmlns:foxml="info:fedora/fedora-system:def/foxml#"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" VERSION="1.1" PID="islandora:pageCModel"
xsi:schemaLocation="info:fedora/fedora-system:def/foxml# http://www.fedora.info/definitions/1/0/foxml1-1.xsd">
  <foxml:objectProperties>
    <foxml:property NAME="info:fedora/fedora-system:def/model#state" VALUE="Active"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#label" VALUE="Page Content Model"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#ownerId" VALUE="fedoraAdmin"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#createdDate" VALUE="2009-02-11T19:36:02.739Z"/>
    <foxml:property NAME="info:fedora/fedora-system:def/view#lastModifiedDate" VALUE="2011-09-27T11:49:59.381Z"/>
  </foxml:objectProperties>
  <foxml:datastream ID="AUDIT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
    ...
  </foxml:datastream>
  <foxml:datastream ID="RELS-EXT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
    <foxml:datastreamVersion ID="RELS-EXT.3" LABEL="RDF Statements about this object" CREATED="2009-05-
21T03:21:13.054Z" MIMETYPE="application/rdf+xml" FORMAT_URI="info:fedora/fedora-system:FedoraRELSExt-1.0"
SIZE="717">
      <foxml:xmlContent>
        <rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
<rdf:Description rdf:about="info:fedora/islandora:pageCModel">
          <hasModel xmlns="info:fedora/fedora-system:def/model#" rdf:resource="info:fedora/fedora-
system:ContentModel-3.0"/>
          <hasService xmlns="info:fedora/fedora-system:def/model#"
rdf:resource="info:fedora/islandora:viewerSdef"/>
          <hasService xmlns="info:fedora/fedora-system:def/model#"
rdf:resource="info:fedora/islandora:jp2Sdef"/>
          <hasService xmlns="info:fedora/fedora-system:def/model#"
rdf:resource="info:fedora/islandora:tei2htmlSdef"/>
        </rdf:Description>
      </rdf:RDF>
    </foxml:xmlContent>
  </foxml:datastreamVersion>
</foxml:datastream>
  <foxml:datastream ID="DS-COMPOSITE-MODEL" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
    <foxml:datastreamVersion ID="DS-COMPOSITE-MODEL.2" LABEL="Datastream Composite Model" CREATED="2009-02-
11T19:56:48.895Z" MIMETYPE="text/xml" FORMAT_URI="info:fedora/fedora-system:FedoraDSCompositeModel-1.0"
SIZE="1738">
      <foxml:xmlContent>
        <dsCompositeModel xmlns="info:fedora/fedora-system:def/dsCompositeModel#"
<comment xmlns="info:fedora/fedora-system:def/comment#">
          This DS-COMPOSITE-MODEL datastream is included as a starting point to
assist in the creation of a content model. The DS-COMPOSITE-MODEL
should define the datastreams that are required for any objects
conforming to this content model.
          For more information about content models, see:
          http://fedora-commons.org/confluence/x/dgBI.
          For examples of completed content model objects, see the demonstration
objects included with your Fedora distribution, such as:
          demo:CMImage, demo:UVA_STD_IMAGE, demo:DualResImageCollection,
          demo:TEI_TO_PDFDOC, and demo:XML_TO_HTMLDOC.
          For more information about the demonstration objects, see:
          http://fedora-commons.org/confluence/x/AwFI.
        </comment>
      </foxml:xmlContent>
    </foxml:datastreamVersion>
  </foxml:datastream>

```

```

        <dsTypeModel ID="DSID">
            <form MIME="text/xml"/>
        </dsTypeModel>
        <dsTypeModel ID="MIX">
            <form MIME="text/xml"/>
        </dsTypeModel>
        <dsTypeModel ID="MODS">
            <form MIME="text/xml"/>
        </dsTypeModel>
        <dsTypeModel ID="PAGE_OCR">
            <form MIME="text/plain"/>
        </dsTypeModel>
        <dsTypeModel ID="PAGE_TEI">
            <form MIME="text/xml"/>
        </dsTypeModel>
        <dsTypeModel ID="JPG">
            <form MIME="image/JPG"/>
        </dsTypeModel>
        <dsTypeModel ID="wordsXY">
            <form MIME="text/xml"/>
        </dsTypeModel>
    </dsCompositeModel>
</foxml:xmlContent>
</foxml:datastreamVersion>
</foxml:datastream>
<foxml:datastream ID="DC" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
    <foxml:datastreamVersion ID="DC1.0" LABEL="Dublin Core Record for this object" CREATED="2009-02-
    11T19:36:02.739Z" MIMETYPE="text/xml" FORMAT_URI="http://www.openarchives.org/OAI/2.0/oai_dc/" SIZE="391">
        <foxml:xmlContent>
            <oai_dc:dc xmlns:oai_dc="http://www.openarchives.org/OAI/2.0/oai_dc/"
            xmlns:dc="http://purl.org/dc/elements/1.1/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
            xsi:schemaLocation="http://www.openarchives.org/OAI/2.0/oai_dc/
            http://www.openarchives.org/OAI/2.0/oai_dc.xsd">
                <dc:title>Page Content Model</dc:title>
                <dc:identifier>islandora:pageCModel</dc:identifier>
            </oai_dc:dc>
        </foxml:xmlContent>
    </foxml:datastreamVersion>
</foxml:datastream>
<foxml:datastream ID="ISLANDORACM" STATE="A" CONTROL_GROUP="X" VERSIONABLE="true">
    <foxml:datastreamVersion ID="ISLANDORACM.0" LABEL="" CREATED="2011-09-27T11:49:59.381Z" MIMETYPE="text/xml"
    SIZE="939">
        <foxml:xmlContent>
            <content_model xmlns="http://www.islandora.ca" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
            name="book" xsi:schemaLocation="http://www.islandora.ca
            http://137.149.200.50/sites/all/modules/islandora/islandoracm.xsd">
                <mimetypes>
                    <type>image/tiff</type>
                </mimetypes>
                <datastreams>
                    <datastream dsid="DC">
                        <display_method class="IslandoraBook" file="tocnr_book.inc" method="showFieldSets"
                        module="islandora_book"/>
                    </datastream>
                    <datastream dsid="POLICY"/>
                    <datastream dsid="ABBY"/>
                    <datastream dsid="KML"/>
                    <datastream dsid="TEI"/>
                    <datastream dsid="Permission"/>
                    <datastream dsid="MARCXML"/>
                    <datastream dsid="RELS-EXT"/>
                    <datastream dsid="PDF"/>
                    <datastream dsid="OCR"/>
                    <datastream dsid="TN"/>
                </datastreams>
            </content_model>
        </foxml:xmlContent>
    </foxml:datastreamVersion>
</foxml:datastream>
</foxml:digitalObject>
    
```

8.3.4 islandora:bookCModel

```

<?xml version="1.0" encoding="UTF-8"?>
<foxml:digitalObject xmlns:foxml="info:fedora/fedora-system:def/foxml#"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" VERSION="1.1" PID="islandora:bookCModel"
    xsi:schemaLocation="info:fedora/fedora-system:def/foxml# http://www.fedora.info/definitions/1/0/foxml-1.xsd">
    <foxml:objectProperties>
        <foxml:property NAME="info:fedora/fedora-system:def/model#state" VALUE="Active"/>
        <foxml:property NAME="info:fedora/fedora-system:def/model#label" VALUE="BookCModel"/>
        <foxml:property NAME="info:fedora/fedora-system:def/model#ownerId" VALUE="fedoraAdmin"/>
        <foxml:property NAME="info:fedora/fedora-system:def/model#createdDate" VALUE="2008-12-14T00:12:52.636Z"/>
        <foxml:property NAME="info:fedora/fedora-system:def/view#lastModifiedDate" VALUE="2011-09-27T11:38:28.459Z"/>
    </foxml:objectProperties>
    <foxml:datastream ID="AUDIT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
        ...
    </foxml:datastream>
    <foxml:datastream ID="RELS-EXT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
        <foxml:datastreamVersion ID="RELS-EXT.5" LABEL="RDF Statements about this object" CREATED="2009-05-
        18T19:58:26.781Z" MIMETYPE="application/rdf+xml" FORMAT_URI="info:fedora/fedora-system:FedoraRELSExt-1.0"
        SIZE="456">
            <foxml:xmlContent>
                <rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
                <rdf:Description rdf:about="info:fedora/islandora:bookCModel">
                    <hasModel xmlns="info:fedora/fedora-system:def/model#" rdf:resource="info:fedora/fedora-
                    system:ContentModel-3.0"/>
                    <hasService xmlns="info:fedora/fedora-system:def/model#"
    
```

```

rdf:resource="info:fedora/islandora:viewerSdef"/>
</rdf:Description>
</rdf:RDF>
</foxml:xmlContent>
</foxml:datastreamVersion>
</foxml:datastream>
<foxml:datastream ID="DS-COMPOSITE-MODEL" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
  <foxml:datastreamVersion ID="DS-COMPOSITE-MODEL.7" LABEL="Datastream Composite Model" CREATED="2009-03-
11T19:16:18.656Z" MIMETYPE="text/xml" FORMAT_URI="info:fedora/fedora-system:FedoraDSCompositeModel-1.0"
SIZE="2378">
    <foxml:xmlContent>
      <dsCompositeModel xmlns="info:fedora/fedora-system:def/dsCompositeModel#">
        <comment xmlns="info:fedora/fedora-system:def/comment#">
          This DS-COMPOSITE-MODEL datastream is included as a starting point to
          assist in the creation of a content model. The DS-COMPOSITE-MODEL
          should define the datastreams that are required for any objects
          conforming to this content model.
          For more information about content models, see:
          http://fedora-commons.org/confluence/x/dgBI.
          For examples of completed content model objects, see the demonstration
          objects included with your Fedora distribution, such as:
          demo:CMImage, demo:UVA_STD_IMAGE, demo:DualResImageCollection,
          demo:TEI_TO_PDFDOC, and demo:XML_TO_HTMLDOC.
          For more information about the demonstration objects, see:
          http://fedora-commons.org/confluence/x/AwFI.
        </comment>
        <dsTypeModel ID="ABBY_XML" ORDERED="false">
          <form MIME="text/xml"/>
        </dsTypeModel>
        <dsTypeModel ID="ABBY_OCR" ORDERED="false">
          <form MIME="text/plain"/>
        </dsTypeModel>
        <dsTypeModel ID="TEI" ORDERED="false">
          <form MIME="text/xml"/>
        </dsTypeModel>
        <dsTypeModel ID="MARCXML" ORDERED="false">
          <form MIME="text/xml"/>
        </dsTypeModel>
        <dsTypeModel ID="MODS" ORDERED="false">
          <form MIME="text/xml"/>
        </dsTypeModel>
        <dsTypeModel ID="METSRights" ORDERED="false">
          <form MIME="text/xml"/>
        </dsTypeModel>
        <dsTypeModel ID="StructMap" ORDERED="false">
          <form MIME="text/xml"/>
        </dsTypeModel>
        <dsTypeModel ID="PDF" ORDERED="false">
          <form MIME="application/pdf"/>
        </dsTypeModel>
        <dsTypeModel ID="Correspondence" ORDERED="false">
          <form MIME="application/pdf"/>
        </dsTypeModel>
        <dsTypeModel ID="Permission Letter" ORDERED="false">
          <form MIME="application/pdf"/>
        </dsTypeModel>
        <dsTypeModel ID="CoverTN" ORDERED="false">
          <form MIME="image/JPG"/>
        </dsTypeModel>
      </dsCompositeModel>
    </foxml:xmlContent>
  </foxml:datastreamVersion>
</foxml:datastream>
<foxml:datastream ID="DC" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
  <foxml:datastreamVersion ID="DC.2" LABEL="Dublin Core Record for this object" CREATED="2009-02-
13T17:57:45.873Z" MIMETYPE="text/xml" FORMAT_URI="http://www.openarchives.org/OAI/2.0/oai_dc/" SIZE="391">
    <foxml:xmlContent>
      <oai_dc:dc xmlns:oai_dc="http://www.openarchives.org/OAI/2.0/oai_dc/"
xmlns:dc="http://purl.org/dc/elements/1.1/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.openarchives.org/OAI/2.0/oai_dc/
http://www.openarchives.org/OAI/2.0/oai_dc.xsd">
        <dc:title>Book Content Model</dc:title>
        <dc:identifier>islandora:bookCModel</dc:identifier>
      </oai_dc:dc>
    </foxml:xmlContent>
  </foxml:datastreamVersion>
</foxml:datastream>
<foxml:datastream ID="ISLANDORACM" STATE="A" CONTROL_GROUP="X" VERSIONABLE="true">
  ...
  <foxml:datastreamVersion ID="ISLANDORACM.14" LABEL="Islandora content model information" CREATED="2011-09-
27T11:38:28.459Z" MIMETYPE="text/xml" SIZE="19131">
    <foxml:xmlContent>
      <content_model xmlns="http://www.islandora.ca" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" name="book"
xsi:schemaLocation="http://www.islandora.ca
http://137.149.200.50/sites/all/modules/islandora/islandoracm.xsd">
        <mimetypes>
          <type>application/pdf</type>
        </mimetypes>
        <ingest_rules>
          <rule>
            <applies_to>application/pdf</applies_to>
            <ingest_methods>
              <ingest_method class="ImageManipulation" dsid="TN" file="plugins/ImageManipulation.inc"
method="createThumbnailFromPDF" modified_files_ext="jpg" module="">
                <parameters>

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        <parameter name="width">100</parameter>
        <parameter name="height">120</parameter>
    </parameters>
</ingest_method>
</ingest_methods>
</rule>
</ingest_rules>
<datastreams>
  <datastream dsid="DC">
    <display_method class="IslandoraBook" file="tocnr_book.inc" method="showFieldSets"
    module="islandora_book"></display_method>
  </datastream>
  <datastream dsid="POLICY"></datastream>
  <datastream dsid="ABBY"></datastream>
  <datastream dsid="KML"></datastream>
  <datastream dsid="TEI"></datastream>
  <datastream dsid="Permission"></datastream>
  <datastream dsid="MARCXML"></datastream>
  <datastream dsid="RELS-EXT"></datastream>
  <datastream dsid="PDF"></datastream>
  <datastream dsid="OCR"></datastream>
  <datastream dsid="TN"></datastream>
</datastreams>
<ingest_form dsid="QDC" hide_file_chooser="true" page="2">
  <form_builder_method class="FormBuilder" file="plugins/FormBuilder.inc" handler="handleQDCForm"
  method="buildQDCForm" module="fedora_repository"></form_builder_method>
  <form_elements>
    <element label="Title/Caption/Object Name" name="dc:title" required="true" type="textfield">
      <description>The name given to the resource</description>
    </element>
    <element label="Creator/Photographer/Author" name="dc:creator" type="textfield">
      <description>An entity primarily responsible for making the content of the resource such as a person,
      organization or service.</description>
    </element>
    <element label="Subject" name="dc:subject" type="select">
      <description>An entity primarily responsible for making the content of the resource such as a person,
      organization or service.</description>
      <authoritative_list>
        <item>experiment session</item>
        <item>home recording</item>
        <item>image</item>
        <item>meeting</item>
        <item>presentation</item>
        <item>sound</item>
        <item>text</item>
      </authoritative_list>
    </element>
    <element label="Description" name="dc:description" required="true" type="textarea">
      <description>Examples include an abstract, table of contents, or free-text account of the content of the
      resource.</description>
    </element>
    <element label="Publisher" name="dc:publisher" type="textfield">
      <description>An entity, (including persons, organizations, or services), responsible for making the
      resource available.</description>
    </element>
    <element label="Contributor" name="dc:contributor" type="textfield">
      <description>An entity responsible for contributing to the content of the resource such as a person,
      organization or service.</description>
    </element>
    <element label="Date" name="dc:date" type="textfield">
      <description>Temporal scope of the content if known. Date format is YYYY-MM-DD (e.g. 1890,1910-10, or
      2007-10-23)</description>
    </element>
    <element label="Resource Type" name="dc:type" type="select">
      <description>Genre of the content of the resource. Examples include: home page, novel, poem, working
      paper, technical report, essay, dictionary.</description>
      <authoritative_list>
        <item>none</item>
        <item>collection</item>
        <item>dataset</item>
        <item>event</item>
        <item>image</item>
        <item>interactive resource</item>
        <item>model</item>
        <item>party</item>
        <item>physical object</item>
        <item>place</item>
        <item>service</item>
        <item>software</item>
        <item>sound</item>
      </authoritative_list>
    </element>
    <element label="Source" name="dc:source" type="textfield">
      <description>A reference to a resource from which the present resource is derived.</description>
    </element>
    <element label="Identifier" name="dc:identifier" type="textfield">
      <description>A unique reference to the resource; In this instance, the accession number or collection
      number.</description>
    </element>
    <element label="Language" name="dc:language" type="select">
      <description>The language of the intellectual content of the resource.</description>
      <authoritative_list>
        <item field="eng">English</item>
        <item field="fre">French</item>
      </authoritative_list>
    </element>
  </form_elements>
</ingest_form>

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</element>
<element label="Relation" name="dc:relation" type="textfield">
  <description>Reference to a related resource.</description>
</element>
<element label="Rights Management" name="dc:rights" type="textarea">
  <description>Information about intellectual property rights, copyright, and various property
rights.</description>
</element>
</form_elements>
</ingest_form>
<forms>
<form class="ModsDocument" dsid="MODS" file="ModsDocument.inc" module="islandora_form_builder" name="basic">
  <textfield xmlns:default="http://www.islandora.ca">
    <title>Title</title>
    <required>true</required>
    <form_builder>
      <xpath>
        <path full="true">/mods:mods/mods:titleInfo[not(@type)]/mods:title</path>
        <parent_path>/mods:mods</parent_path>
        <xml>&lt;titleInfo&gt;&lt;title&gt;%value&lt;/title&gt;&lt;/titleInfo&gt;&lt;/xml>
      </xpath>
      <require_value>>false</require_value>
    </form_builder>
  </textfield>
  <textfield>
    <title>Statement of Responsibility</title>
    <form_builder>
      <xpath>
        <path full="true">/mods:mods/mods:note[@type=&quot;statement of responsibility&quot;]</path>
        <parent_path>/mods:mods</parent_path>
        <xml>&lt;note type=&quot;statement of responsibility&quot;&gt;%value&lt;/note&gt;
          &lt;/xml>
      </xpath>
      <require_value>>false</require_value>
    </form_builder>
  </textfield>
  <tabpanel xmlns:default="http://www.islandora.ca">
    <title>Creator</title>
    <content>
      <textfield>
        <title>Creator</title>
        <form_builder>
          <xpath>
            <path full="false">mods:namePart[not(@type)]</path>
            <element>namePart</element>
          </xpath>
          <require_value>>false</require_value>
        </form_builder>
      </textfield>
      <textfield>
        <title>Creator Dates</title>
        <form_builder>
          <xpath>
            <path full="false">mods:namePart[@type=&apos;date&apos;]</path>
            <xml>&lt;namePart type=&quot;date&quot;&gt;%value&lt;/namePart&gt;&lt;/xml>
          </xpath>
          <require_value>>false</require_value>
        </form_builder>
      </textfield>
    </content>
    <form_builder>
      <xpath>
        <path
full="true">(/mods:mods/mods:name[@type=&apos;personal&apos;]/mods:role[mods:roleTerm=&apos;creator&apos;]/..)
</path>
        <parent_path>/mods:mods</parent_path>
        <xml>&lt;name type=&apos;personal&apos;&gt;&lt;role&gt;&lt;roleTerm
authority=&quot;marcrelator&quot;
type=&quot;text&quot;&gt;creator&lt;/roleTerm&gt;&lt;/role&gt;&lt;/name&gt;
          &lt;/xml>
      </xpath>
      <require_value>>false</require_value>
    </form_builder>
  </tabpanel>
  <tabpanel xmlns:default="http://www.islandora.ca">
    <title>Contributor</title>
    <content>
      <textfield>
        <title>Contributor</title>
        <form_builder>
          <xpath>
            <path full="false">mods:namePart[not(@type)]</path>
            <element>namePart</element>
          </xpath>
          <require_value>>false</require_value>
        </form_builder>
      </textfield>
    </content>
    <form_builder>
      <xpath>
        <path
full="true">(/mods:mods/mods:name[@type=&apos;personal&apos;]/mods:role[mods:roleTerm=&apos;contributor&apos;]
/..)
</path>
        <parent_path>/mods:mods</parent_path>
        <xml>&lt;name type=&apos;personal&apos;&gt;&lt;role&gt;&lt;roleTerm
authority=&quot;marcrelator&quot;

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        type=&quot;text&quot;&gt;&gt;contributor&lt;/roleTerm&gt;&lt;/role&gt;&lt;/name&gt;
    </xml>
</xpath>
<require_value>>false</require_value>
</form_builder>
</tabpanel>
<tabpanel xmlns:default="http://www.islandora.ca">
  <title>Corporate Creator</title>
  <content>
    <textfield>
      <title>Name</title>
      <form_builder>
        <xpath>
          <path full="false">mods:namePart[not (@type)]</path>
          <element>namePart</element>
        </xpath>
        <require_value>>false</require_value>
      </form_builder>
    </textfield>
  </content>
  <form_builder>
    <xpath>
      <path
full="true">(/mods:mods/mods:name[@type=&apos;corporate&apos;]/mods:role[mods:roleTerm=&apos;creator&apos;]/.
)</path>
      <parent_path>/mods:mods</parent_path>
      <xml>&lt;name type=&apos;corporate&apos;&gt;&lt;/role&gt;&lt;/roleTerm
authority=&quot;marcrelator&quot;
type=&quot;text&quot;&gt;&gt;creator&lt;/roleTerm&gt;&lt;/role&gt;&lt;/name&gt;
      </xml>
    </xpath>
    <require_value>>false</require_value>
  </form_builder>
</tabpanel>
<tabpanel xmlns:default="http://www.islandora.ca">
  <title>Corporate Contributor</title>
  <content>
    <textfield>
      <title>Name</title>
      <form_builder>
        <xpath>
          <path full="false">mods:namePart[not (@type)]</path>
          <element>namePart</element>
        </xpath>
        <require_value>>false</require_value>
      </form_builder>
    </textfield>
  </content>
  <form_builder>
    <xpath>
      <path
full="true">(/mods:mods/mods:name[@type=&apos;corporate&apos;]/mods:role[mods:roleTerm=&apos;contributor&apos;
]/..)</path>
      <parent_path>/mods:mods</parent_path>
      <xml>&lt;name type=&apos;corporate&apos;&gt;&lt;/role&gt;&lt;/roleTerm
authority=&quot;marcrelator&quot;
type=&quot;text&quot;&gt;&gt;contributor&lt;/roleTerm&gt;&lt;/role&gt;&lt;/name&gt;
      </xml>
    </xpath>
    <require_value>>false</require_value>
  </form_builder>
</tabpanel>
<fieldset>
  <title>Origin Information</title>
  <collapsible>true</collapsible>
  <content>
    <textfield xmlns:default="http://www.islandora.ca">
      <title>Place of Publication</title>
      <form_builder>
        <xpath>
          <path full="false">mods:place/mods:placeTerm[@type=&apos;text&apos;]</path>
          <xml>&lt;place&gt;&lt;/placeTerm
type=&apos;text&apos;&gt;&value&lt;/placeTerm&gt;&lt;/place&gt;
          </xml>
        </xpath>
        <require_value>>false</require_value>
      </form_builder>
    </textfield>
    <textfield xmlns:default="http://www.islandora.ca">
      <title>Publisher</title>
      <form_builder>
        <xpath>
          <path full="false">mods:publisher</path>
          <element>publisher</element>
        </xpath>
        <require_value>>false</require_value>
      </form_builder>
    </textfield>
    <textfield xmlns:default="http://www.islandora.ca">
      <title>Date Issued</title>
      <form_builder>
        <xpath>
          <path full="false">mods:dateIssued</path>
          <xml>&lt;dateIssued keyDate=&quot;yes&quot;&gt;&value&lt;/dateIssued&gt;</xml>
        </xpath>
        <require_value>>false</require_value>
      </form_builder>
    </textfield>
  </content>

```

```

</form_builder>
  </textfield>
  <set xmlns:default="http://www.islandora.ca">
    <title>Other Date</title>
    <form_builder>
      <xpath>
        <path full="false">mods:dateOther</path>
        <element>dateOther</element>
      </xpath>
      <require_value>>false</require_value>
    </form_builder>
  </set>
</content>
<form_builder>
  <xpath>
    <path full="true">/mods:mods/mods:originInfo</path>
    <parent_path>/mods:mods</parent_path>
    <element>originInfo</element>
  </xpath>
  <require_value>>false</require_value>
</form_builder>
</fieldset>
<set xmlns:default="http://www.islandora.ca">
  <title>Genre</title>
  <description>MARC Genre Term List (marcgt):
    http://www.loc.gov/standards/valuelist/marcgt.html
  </description>
  <form_builder>
    <xpath>
      <path full="true">/mods:mods/mods:genre[@type=&apos;marcgt&apos;]</path>
      <parent_path>/mods:mods</parent_path>
      <xml>&lt;genre type="marcgt"&gt;&value&lt;/genre&gt;</xml>
    </xpath>
    <require_value>>false</require_value>
  </form_builder>
</set>
<textfield>
  <title>Language</title>
  <form_builder>
    <xpath>
      <path full="true">/mods:mods/mods:language/mods:languageTerm[@type=&apos;text&apos;]</path>
      <parent_path>/mods:mods</parent_path>
      <xml>&lt;language&gt;&lt;languageTerm
        type="text"&gt;&value&lt;/languageTerm&gt;&lt;/language&gt;
      </xml>
    </xpath>
    <require_value>>false</require_value>
  </form_builder>
</textfield>
</fieldset>
<title>Physical Description</title>
<collapsible>true</collapsible>
<content>
  <textfield xmlns:default="http://www.islandora.ca">
    <title>Extent</title>
    <description>Include units (e.g., pages)</description>
    <form_builder>
      <xpath>
        <path full="false">mods:extent</path>
        <element>extent</element>
      </xpath>
      <require_value>>false</require_value>
    </form_builder>
  </textfield>
  <textfield xmlns:default="http://www.islandora.ca">
    <title>Form</title>
    <form_builder>
      <xpath>
        <path full="false">mods:form</path>
        <element>form</element>
      </xpath>
      <require_value>>false</require_value>
    </form_builder>
  </textfield>
  <textfield xmlns:default="http://www.islandora.ca">
    <title>Note - General</title>
    <description>general physical note</description>
    <form_builder>
      <xpath>
        <path full="false">mods:note[not (@type)]</path>
        <element>note</element>
      </xpath>
      <require_value>>false</require_value>
    </form_builder>
  </textfield>
</content>
<form_builder>
  <xpath>
    <path full="true">/mods:mods/mods:physicalDescription</path>
    <parent_path>/mods:mods</parent_path>
    <element>physicalDescription</element>
  </xpath>
  <require_value>>false</require_value>
</form_builder>
</fieldset>
<textarea xmlns:default="http://www.islandora.ca">

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```

        <title>Description</title>
        <form_builder>
            <xpath>
                <path full="true"/>/mods:mods/mods:abstract</path>
                <parent_path>/mods:mods</parent_path>
                <element>abstract</element>
            </xpath>
            <require_value>>false</require_value>
        </form_builder>
    </textarea>
    <textarea>
        <title>Rights Statement</title>
        <form_builder>
            <xpath>
                <path full="true"/>/mods:mods/mods:accessCondition[@type=&apos;useAndReproduction&apos;]</path>
                <parent_path>/mods:mods</parent_path>
                <xml>&lt;accessCondition
                    type=&apos;useAndReproduction&apos;&gt;%value&lt;/accessCondition&gt;
                </xml>
            </xpath>
            <require_value>>false</require_value>
        </form_builder>
    </textarea>
    <fieldset>
        <title>Subject(s)</title>
        <collapsible>true</collapsible>
        <content>
            <set>
                <title>Topic</title>
                <description>key topic describing the photo (tab to add a new topic)</description>
                <form_builder>
                    <xpath>
                        <path full="false">mods:topic</path>
                        <element>mods:topic</element>
                    </xpath>
                    <require_value>>false</require_value>
                </form_builder>
            </set>
        </content>
    </fieldset>
    <select>
        <title>Type of Resource</title>
        <required>>false</required>
        <options ignoreFirstOption="false">
            <option>text</option>
            <option>cartographic</option>
            <option>notated music</option>
            <option>sound recording</option>
            <option>still image</option>
            <option>moving image</option>
            <option>three dimensional object</option>
            <option>software, multimedia</option>
            <option>mixed material</option>
        </options>
        <form_builder>
            <xpath>
                <path full="false">/mods:mods/mods:typeOfResource</path>
                <element>typeOfResource</element>
            </xpath>
            <require_value>>false</require_value>
        </form_builder>
    </select>
    <select>
        <title>Status</title>
        <description>the status of the ingest</description>
        <required>>false</required>
        <options ignoreFirstOption="false">
            <option>bib-only</option>
            <option>ingested</option>
        </options>
        <form_builder>
            <xpath>
                <path full="false">/mods:mods/mods:note[@type=&quot;status&quot;]</path>
                <xml>&lt;note type=&quot;status&quot;&gt;%value&lt;/note&gt;</xml>
            </xpath>
            <require_value>>false</require_value>
        </form_builder>
    </select>
</form>
</forms>
</content_model>

</foxml:xmlContent>
</foxml:datastreamVersion>
</foxml:datastream>
</foxml:digitalObject>
    
```

8.3.5 islandora.jp2Sdef

```

<?xml version="1.0" encoding="UTF-8"?>
<foxml:digitalObject xmlns:foxml="info:fedora/fedora-system:def/foxml#"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" VERSION="1.1" PID="islandora:jp2Sdef"
    xsi:schemaLocation="info:fedora/fedora-system:def/foxml# http://www.fedora.info/definitions/1/0/foxml1-1.xsd">
    <foxml:objectProperties>
        <foxml:property NAME="info:fedora/fedora-system:def/model#state" VALUE="Active"/>
        <foxml:property NAME="info:fedora/fedora-system:def/model#label" VALUE="islandora:jp2Sdef"/>
    
```



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<foxml:property NAME="info:fedora/fedora-system:def/model#ownerId" VALUE="fedoraAdmin"/>
<foxml:property NAME="info:fedora/fedora-system:def/model#createdDate" VALUE="2009-05-18T15:07:42.398Z"/>
<foxml:property NAME="info:fedora/fedora-system:def/view#lastModifiedDate" VALUE="2011-09-19T10:06:48.909Z"/>
</foxml:objectProperties>
<foxml:datastream ID="AUDIT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
  ...
</foxml:datastream>
<foxml:datastream ID="RELS-EXT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
  <foxml:datastreamVersion ID="RELS-EXT1.0" LABEL="RDF Statements about this object" CREATED="2009-05-
18T15:07:42.487Z" MIMETYPE="application/rdf+xml" FORMAT_URI="info:fedora/fedora-system:FedoraRELSExt-1.0"
SIZE="366">
  <foxml:xmlContent>
    <rdf:RDF xmlns:fedora-model="info:fedora/fedora-system:def/model#"
xmlns:rdp="http://www.w3.org/1999/02/22-rdf-syntax-ns#">
      <rdf:Description rdf:about="info:fedora/islandora:jp2Sdef">
        <fedora-model:hasModel rdf:resource="info:fedora/fedora-system:ServiceDefinition-3.0"/>
      </rdf:Description>
    </rdf:RDF>
  </foxml:xmlContent>
</foxml:datastreamVersion>
</foxml:datastream>
<foxml:datastream ID="DC" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
  <foxml:datastreamVersion ID="DC1.0" LABEL="Dublin Core Record for this object" CREATED="2009-05-
18T15:07:42.398Z" MIMETYPE="text/xml" FORMAT_URI="http://www.openarchives.org/OAI/2.0/oai_dc/" SIZE="387">
  <foxml:xmlContent>
    <oai_dc:dc xmlns:oai_dc="http://www.openarchives.org/OAI/2.0/oai_dc/"
xmlns:dc="http://purl.org/dc/elements/1.1/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.openarchives.org/OAI/2.0/oai_dc/
http://www.openarchives.org/OAI/2.0/oai_dc.xsd">
      <dc:title>islandora:jp2Sdef</dc:title>
      <dc:identifier>islandora:jp2Sdef</dc:identifier>
    </oai_dc:dc>
  </foxml:xmlContent>
</foxml:datastreamVersion>
</foxml:datastream>
<foxml:datastream ID="METHODMAP" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
  <foxml:datastreamVersion ID="METHODMAP.3" LABEL="Abstract Method Map" CREATED="2009-05-18T20:08:16.294Z"
MIMETYPE="text/xml" FORMAT_URI="info:fedora/fedora-system:FedoraSDefMethodMap-1.0" SIZE="245">
  <foxml:xmlContent>
    <fmm:MethodMap xmlns:fmm="http://fedora.com/nsdlib.org/service/methodmap" name="methodmap">
      <fmm:Method operationName="getMetadata"/>
      <fmm:Method operationName="getRegion"/>
    </fmm:MethodMap>
  </foxml:xmlContent>
</foxml:datastreamVersion>
</foxml:datastream>
</foxml:digitalObject>

```

8.3.6 islandora:viewerSdef

```

<?xml version="1.0" encoding="UTF-8"?>
<foxml:digitalObject xmlns:foxml="info:fedora/fedora-system:def/foxml#"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" VERSION="1.1" PID="islandora:viewerSdef"
xsi:schemaLocation="info:fedora/fedora-system:def/foxml# http://www.fedora.info/definitions/1/0/foxml1-1.xsd">
  <foxml:objectProperties>
    <foxml:property NAME="info:fedora/fedora-system:def/model#state" VALUE="Active"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#label" VALUE="islandora:viewerSdef"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#ownerId" VALUE="fedoraAdmin"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#createdDate" VALUE="2009-05-18T15:07:42.398Z"/>
    <foxml:property NAME="info:fedora/fedora-system:def/view#lastModifiedDate" VALUE="2011-09-19T10:02:54.273Z"/>
  </foxml:objectProperties>
  <foxml:datastream ID="AUDIT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
    ...
  </foxml:datastream>
  <foxml:datastream ID="RELS-EXT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
    <foxml:datastreamVersion ID="RELS-EXT1.0" LABEL="RDF Statements about this object" CREATED="2009-05-
18T15:07:42.487Z" MIMETYPE="application/rdf+xml" FORMAT_URI="info:fedora/fedora-system:FedoraRELSExt-1.0"
SIZE="369">
      <foxml:xmlContent>
        <rdf:RDF xmlns:fedora-model="info:fedora/fedora-system:def/model#"
xmlns:rdp="http://www.w3.org/1999/02/22-rdf-syntax-ns#">
          <rdf:Description rdf:about="info:fedora/islandora:viewerSdef">
            <fedora-model:hasModel rdf:resource="info:fedora/fedora-system:ServiceDefinition-3.0"/>
          </rdf:Description>
        </rdf:RDF>
      </foxml:xmlContent>
    </foxml:datastreamVersion>
  </foxml:datastream>
  <foxml:datastream ID="DC" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
    <foxml:datastreamVersion ID="DC1.0" LABEL="Dublin Core Record for this object" CREATED="2009-05-
18T15:07:42.398Z" MIMETYPE="text/xml" FORMAT_URI="http://www.openarchives.org/OAI/2.0/oai_dc/" SIZE="393">
    <foxml:xmlContent>
      <oai_dc:dc xmlns:oai_dc="http://www.openarchives.org/OAI/2.0/oai_dc/"
xmlns:dc="http://purl.org/dc/elements/1.1/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.openarchives.org/OAI/2.0/oai_dc/
http://www.openarchives.org/OAI/2.0/oai_dc.xsd">
        <dc:title>islandora:viewerSdef</dc:title>
        <dc:identifier>islandora:viewerSdef</dc:identifier>
      </oai_dc:dc>
    </foxml:xmlContent>
  </foxml:datastreamVersion>
</foxml:datastream>
<foxml:datastream ID="METHODMAP" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
  <foxml:datastreamVersion ID="METHODMAP.3" LABEL="Abstract Method Map" CREATED="2009-05-18T20:08:16.294Z"
MIMETYPE="text/xml" FORMAT_URI="info:fedora/fedora-system:FedoraSDefMethodMap-1.0" SIZE="181">
  <foxml:xmlContent>
    <fmm:MethodMap xmlns:fmm="http://fedora.com/nsdlib.org/service/methodmap" name="methodmap">

```

```

        </fmm:Method operationName="getView"/>
    </fmm:MethodMap>
</foxml:xmlContent>
</foxml:datastreamVersion>
</foxml:datastream>
</foxml:digitalObject>
    
```

8.3.7 islandora:viewerSdep-bookCModel

```

<?xml version="1.0" encoding="UTF-8"?>
<foxml:digitalObject xmlns:foxml="info:fedora/fedora-system:def/foxml#"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" VERSION="1.1" PID="islandora:viewerSdep-bookCModel"
  xsi:schemaLocation="info:fedora/fedora-system:def/foxml# http://www.fedora.info/definitions/1/0/foxml1-1.xsd">
  <foxml:objectProperties>
    <foxml:property NAME="info:fedora/fedora-system:def/model#state" VALUE="Active"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#label" VALUE="islandora:viewerSdep-bookCModel"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#ownerId" VALUE="fedoraAdmin"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#createdDate" VALUE="2009-05-18T19:50:00.488Z"/>
    <foxml:property NAME="info:fedora/fedora-system:def/view#lastModifiedDate" VALUE="2011-09-21T08:55:03.105Z"/>
  </foxml:objectProperties>
  <foxml:datastream ID="AUDIT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
    ...
  </foxml:datastream>
  <foxml:datastream ID="DC" STATE="A" CONTROL_GROUP="X" VERSIONABLE="true">
    <foxml:datastreamVersion ID="DC1.0" LABEL="Dublin Core Record for this object" CREATED="2009-05-
    18T19:50:00.488Z" MIMETYPE="text/xml" FORMAT_URI="http://www.openarchives.org/OAI/2.0/oai_dc/" SIZE="415">
      <foxml:xmlContent>
        <oai_dc:dc xmlns:oai_dc="http://www.openarchives.org/OAI/2.0/oai_dc/"
          xmlns:dc="http://purl.org/dc/elements/1.1/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
          xsi:schemaLocation="http://www.openarchives.org/OAI/2.0/oai_dc/
          http://www.openarchives.org/OAI/2.0/oai_dc.xsd">
          <dc:title>islandora:viewerSdep-bookCModel</dc:title>
          <dc:identifier>islandora:viewerSdep-bookCModel</dc:identifier>
        </oai_dc:dc>
      </foxml:xmlContent>
    </foxml:datastreamVersion>
  </foxml:datastream>
  <foxml:datastream ID="RELS-EXT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
    <foxml:datastreamVersion ID="RELS-EXT.1" LABEL="RDF Statements about this object" CREATED="2009-05-
    18T19:50:37.927Z" MIMETYPE="application/rdf+xml" FORMAT_URI="info:fedora/fedora-system:FedoraRELSExt-1.0"
    SIZE="619">
      <foxml:xmlContent>
        <rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
          <rdf:Description rdf:about="info:fedora/islandora:viewerSdep-bookCModel">
            <hasModel xmlns="info:fedora/fedora-system:def/model#" rdf:resource="info:fedora/fedora-
            system:ServiceDeployment-3.0"/>
            <isDeploymentOf xmlns="info:fedora/fedora-system:def/model#"
              rdf:resource="info:fedora/islandora:viewerSdef"/>
            <isContractorOf xmlns="info:fedora/fedora-system:def/model#"
              rdf:resource="info:fedora/islandora:bookCModel"/>
          </rdf:Description>
        </rdf:RDF>
      </foxml:xmlContent>
    </foxml:datastreamVersion>
  </foxml:datastream>
  <foxml:datastream ID="DSINPUTSPEC" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
    <foxml:datastreamVersion ID="DSINPUTSPEC.1" LABEL="Datastream Input Specification" CREATED="2009-05-
    18T19:52:55.042Z" MIMETYPE="text/xml" FORMAT_URI="info:fedora/fedora-system:FedoraDSInputSpec-1.1" SIZE="404">
      <foxml:xmlContent>
        <fbs:DSInputSpec xmlns:fbs="http://fedora.com/nsdlib.org/service/bindspec" label="viewerSdepInputSpec">
          <fbs:DSInput DSMax="1" DSMin="1" DSOrdinality="false" wsdlMsgPartName="DC">
            <fbs:DSInputLabel>DC</fbs:DSInputLabel>
            <fbs:DSMIME>text/xml</fbs:DSMIME>
            <fbs:DSInputInstruction/>
          </fbs:DSInput>
        </fbs:DSInputSpec>
      </foxml:xmlContent>
    </foxml:datastreamVersion>
  </foxml:datastream>
  <foxml:datastream ID="METHODMAP" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
    <foxml:datastreamVersion ID="METHODMAP.2" LABEL="Deployment Method Map" CREATED="2009-05-19T13:34:53.687Z"
    MIMETYPE="text/xml" FORMAT_URI="info:fedora/fedora-system:FedoraSDepMethodMap-1.1" SIZE="958">
      <foxml:xmlContent>
        <fmm:MethodMap xmlns:fmm="http://fedora.com/nsdlib.org/service/methodmap" name="methodmap">
          <fmm:Method operationName="getView" wsdlMsgName="getViewRequestMsg">
            <fmm:DefaultInputParm defaultValue="$PID" label="fedora object pid" paramName="PID" passBy="VALUE"
              required="true"/>
            <fmm:DefaultInputParm defaultValue="islandora:bookCModel" label="content model" paramName="CModel"
              passBy="VALUE" required="true"/>
            <fmm:DefaultInputParm defaultValue="JP2" label="content model" paramName="DSID" passBy="VALUE"
              required="true"/>
            <fmm:UserInputParm defaultValue="" paramName="uid" passBy="VALUE" required="false"/>
            <fmm:MethodReturnType wsdlMsgName="getViewResponseMsg" wsdlMsgTOMIME="text/html"/>
          </fmm:Method>
        </fmm:MethodMap>
      </foxml:xmlContent>
    </foxml:datastreamVersion>
  </foxml:datastream>
  <foxml:datastream ID="WSDL" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
    <foxml:datastreamVersion ID="WSDL.5" LABEL="WSDL Bindings" CREATED="2011-09-21T08:55:03.105Z"
    MIMETYPE="text/xml" FORMAT_URI="http://schemas.xmlsoap.org/wsdl/" SIZE="1815">
      <foxml:xmlContent>
        <wsdl:definitions xmlns:http="http://schemas.xmlsoap.org/wsdl/http/"
          xmlns:mime="http://schemas.xmlsoap.org/wsdl/mime/" xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
          xmlns:soapenc="http://schemas.xmlsoap.org/wsdl/soap/encoding" xmlns:this="viewerSdep"
          xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/" xmlns:xsd="http://www.w3.org/2001/XMLSchema" name="viewerSdep"
    
```

```

targetNamespace="viewerSdep">
  <wsdl:message name="getViewRequestMsg">
    <wsdl:part name="PID" type="xsd:string"/>
    <wsdl:part name="CMODEL" type="xsd:string"/>
    <wsdl:part name="DSID" type="xsd:string"/>
    <wsdl:part name="uid" type="xsd:string"/>
  </wsdl:message>
  <wsdl:message name="getViewResponseMsg">
    <wsdl:part name="RESPONSE" type="xsd:string"/>
  </wsdl:message>
  <wsdl:portType name="viewer_portType">
    <wsdl:operation name="getView">
      <wsdl:input message="this:getViewRequestMsg"/>
      <wsdl:output message="this:getViewResponseMsg"/>
    </wsdl:operation>
  </wsdl:portType>
  <wsdl:service name="viewer_service">
    <wsdl:port binding="this:viewer_binding" name="viewer_port">
      <http:address location="http://local.fedora.server/iiv/tocnr_viewer.jsp"/>
    </wsdl:port>
  </wsdl:service>
  <wsdl:binding name="viewer_binding" type="this:viewer_portType">
    <http:binding verb="GET"/>
    <wsdl:operation name="getView">
      <http:operation location="?pid=(PID) &amp;cmodel=(CMODEL) &amp;dsid=(DSID) &amp;uid=(uid)"/>
    <wsdl:input>
      <http:urlReplacement/>
    </wsdl:input>
    <wsdl:output>
      <mime:content type="text/html"/>
    </wsdl:output>
  </wsdl:binding>
</wsdl:definitions>
</foxml:xmlContent>
</foxml:datastreamVersion>
</foxml:datastream>
</foxml:digitalObject>

```

8.3.8 islandora:viewerSdep-pageCModel

```

<?xml version="1.0" encoding="UTF-8"?>
<foxml:digitalObject xmlns:foxml="info:fedora/fedora-system:def/foxml#"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" VERSION="1.1" PID="islandora:viewerSdep-pageCModel"
  xsi:schemaLocation="info:fedora/fedora-system:def/foxml# http://www.fedora.info/definitions/1/0/foxml1-1.xsd">
  <foxml:objectProperties>
    <foxml:property NAME="info:fedora/fedora-system:def/model#state" VALUE="Active"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#label" VALUE="islandora:viewerSdep-pageCModel"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#ownerId" VALUE="fedoraAdmin"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#createdDate" VALUE="2009-05-21T03:24:05.906Z"/>
    <foxml:property NAME="info:fedora/fedora-system:def/view#lastModifiedDate" VALUE="2011-09-21T08:55:51.544Z"/>
  </foxml:objectProperties>
  <foxml:datastream ID="AUDIT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
    ...
  </foxml:datastream>
  <foxml:datastream ID="RELS-EXT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
    <foxml:datastreamVersion ID="RELS-EXT.1" LABEL="RDF Statements about this object" CREATED="2009-05-
    21T03:25:04.961Z" MIMETYPE="application/rdf+xml" FORMAT_URI="info:fedora/fedora-system:FedoraRELSExt-1.0"
    SIZE="619">
      <foxml:xmlContent>
        <rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#">
          <rdf:Description rdf:about="info:fedora/islandora:viewerSdep-pageCModel">
            <hasModel xmlns="info:fedora/fedora-system:def/model#" rdf:resource="info:fedora/fedora-
            system:ServiceDeployment-3.0"/>
            <isDeploymentOf xmlns="info:fedora/fedora-system:def/model#"
            rdf:resource="info:fedora/islandora:viewerSdep"/>
            <isContractorOf xmlns="info:fedora/fedora-system:def/model#"
            rdf:resource="info:fedora/islandora:pageCModel"/>
          </rdf:Description>
        </rdf:RDF>
      </foxml:xmlContent>
    </foxml:datastreamVersion>
  </foxml:datastream>
  <foxml:datastream ID="DC" STATE="A" CONTROL_GROUP="X" VERSIONABLE="true">
    <foxml:datastreamVersion ID="DC1.0" LABEL="Dublin Core Record for this object" CREATED="2009-05-
    21T03:24:05.906Z" MIMETYPE="text/xml" FORMAT_URI="http://www.openarchives.org/OAI/2.0/oai_dc/" SIZE="415">
      <foxml:xmlContent>
        <oai_dc:dc xmlns:oai_dc="http://www.openarchives.org/OAI/2.0/oai_dc/"
          xmlns:dc="http://purl.org/dc/elements/1.1/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
          xsi:schemaLocation="http://www.openarchives.org/OAI/2.0/oai_dc/
          http://www.openarchives.org/OAI/2.0/oai_dc.xsd">
          <dc:title>islandora:viewerSdep-pageCModel</dc:title>
          <dc:identifier>islandora:viewerSdep-pageCModel</dc:identifier>
        </oai_dc:dc>
      </foxml:xmlContent>
    </foxml:datastreamVersion>
  </foxml:datastream>
  <foxml:datastream ID="METHODMAP" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
    <foxml:datastreamVersion ID="METHODMAP.1" LABEL="Deployment Method Map" CREATED="2009-05-21T03:26:21.830Z"
    MIMETYPE="text/xml" FORMAT_URI="info:fedora/fedora-system:FedoraSdepMethodMap-1.1" SIZE="958">
      <foxml:xmlContent>
        <fmm:MethodMap xmlns:fmm="http://fedora.com/nsdlib.org/service/methodmap" name="methodmap">
          <fmm:Method operationName="getView" wsdlMsgName="getViewRequestMsg"
            wsdlMsgOutput="getViewResponseMsg">
            <fmm:DefaultInputParm defaultValue="$PID" label="fedora object pid" paramName="PID" passBy="VALUE"
            required="true"/>
            <fmm:DefaultInputParm defaultValue="islandora:pageCModel" label="content model" paramName="CMODEL"

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passBy="VALUE" required="true"/>
  <fmm:DefaultInputParm defaultValue="JP2" label="content model" paramName="DSID" passBy="VALUE"
required="true"/>
  <fmm:UserInputParm defaultValue="" paramName="uid" passBy="VALUE" required="false"/>
  <fmm:MethodReturnType wsdlMsgName="getViewerResponseMsg" wsdlMsgTOMIME="text/html"/>
</fmm:Method>
</fmm:MethodMap>
</foxml:xmlContent>
</foxml:datastreamVersion>
</foxml:datastream>
<foxml:datastream ID="DSINPUTSPEC" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
  <foxml:datastreamVersion ID="DSINPUTSPEC.1" LABEL="Datastream Input Specification" CREATED="2009-05-
21T03:26:44.151Z" MIMETYPE="text/xml" FORMAT_URI="info:fedora/fedora-system:FedoraDSInputSpec-1.1" SIZE="404">
    <foxml:xmlContent>
      <fbs:DSInputSpec xmlns:fbs="http://fedora.com.nsdlib.org/service/bindspec" label="viewerSdepInputSpec">
        <fbs:DSInput DSMax="1" DSMin="1" DSOrdinality="false" wsdlMsgPartName="DC">
          <fbs:DSInputLabel>DC</fbs:DSInputLabel>
          <fbs:DSMIME>text/xml</fbs:DSMIME>
          <fbs:DSInputInstruction/>
        </fbs:DSInput>
      </fbs:DSInputSpec>
    </foxml:xmlContent>
  </foxml:datastreamVersion>
</foxml:datastream>
<foxml:datastream ID="WSDL" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
  <foxml:datastreamVersion ID="WSDL.2" LABEL="WSDL Bindings" CREATED="2011-09-21T08:55:51.544Z"
MIMETYPE="text/xml" FORMAT_URI="http://schemas.xmlsoap.org/wsdl/" SIZE="1821">
    <foxml:xmlContent>
      <wsdl:definitions xmlns:http="http://schemas.xmlsoap.org/wsdl/http"
xmlns:mime="http://schemas.xmlsoap.org/wsdl/mime/" xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap"
xmlns:soapenc="http://schemas.xmlsoap.org/wsdl/soap/encoding" xmlns:this="viewerSdep"
xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/" xmlns:xsd="http://www.w3.org/2001/XMLSchema" name="viewerSdep"
targetNamespace="viewerSdep">
        <wsdl:message name="getViewerRequestMsg">
          <wsdl:part name="PID" type="xsd:string"/>
          <wsdl:part name="CMODEL" type="xsd:string"/>
          <wsdl:part name="DSID" type="xsd:string"/>
          <wsdl:part name="uid" type="xsd:string"/>
        </wsdl:message>
        <wsdl:message name="getViewerResponseMsg">
          <wsdl:part name="RESPONSE" type="xsd:string"/>
        </wsdl:message>
        <wsdl:portType name="viewer_portType">
          <wsdl:operation name="getViewer">
            <wsdl:input message="this:getViewerRequestMsg"/>
            <wsdl:output message="this:getViewerResponseMsg"/>
          </wsdl:operation>
        </wsdl:portType>
        <wsdl:service name="viewer_service">
          <wsdl:port binding="this:viewer_binding" name="viewer_port">
            <http:address location="http://local.fedora.server/iiv/tocnr_page_viewer.jsp"/>
          </wsdl:port>
        </wsdl:service>
        <wsdl:binding name="viewer_binding" type="this:viewer_portType">
          <http:binding verb="GET"/>
          <wsdl:operation name="getViewer">
            <http:operation location="?pid=(PID)&amp;cmodel=(CMODEL)&amp;dsid=(DSID)&amp;uid=(uid)"/>
            <wsdl:input>
              <http:urlReplacement/>
            </wsdl:input>
            <wsdl:output>
              <mime:content type="text/xhtml"/>
            </wsdl:output>
          </wsdl:operation>
        </wsdl:binding>
      </wsdl:definitions>
    </foxml:xmlContent>
  </foxml:datastreamVersion>
</foxml:datastream>
</foxml:digitalObject>

```

8.3.9 islandora:tei2htmlSdef

```

<?xml version="1.0" encoding="UTF-8"?>
<foxml:digitalObject xmlns:foxml="info:fedora/fedora-system:def/foxml#"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" VERSION="1.1" PID="islandora:tei2htmlSdef"
xsi:schemaLocation="info:fedora/fedora-system:def/foxml# http://www.fedora.info/definitions/1/0/foxml-1.xsd">
  <foxml:objectProperties>
    <foxml:property NAME="info:fedora/fedora-system:def/model#state" VALUE="Active"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#label" VALUE="islandora:tei2htmlSdef"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#ownerId" VALUE="fedoraAdmin"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#createdDate" VALUE="2009-05-18T15:07:42.398Z"/>
    <foxml:property NAME="info:fedora/fedora-system:def/view#lastModifiedDate" VALUE="2011-09-19T10:02:55.279Z"/>
  </foxml:objectProperties>
  <foxml:datastream ID="AUDIT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
    ...
  </foxml:datastream>
  <foxml:datastream ID="RELS-EXT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
    <foxml:datastreamVersion ID="RELS-EXT1.0" LABEL="RDF Statements about this object" CREATED="2009-05-
18T15:07:42.487Z" MIMETYPE="application/rdf+xml" FORMAT_URI="info:fedora/fedora-system:FedoraRELSExt-1.0"
SIZE="371">
      <foxml:xmlContent>
        <rdf:RDF xmlns:fedora-model="info:fedora/fedora-system:def/model#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#">
          <rdf:Description rdf:about="info:fedora/islandora:tei2htmlSdef">
            <fedora-model:hasModel rdf:resource="info:fedora/fedora-system:ServiceDefinition-3.0"/>
          </rdf:Description>

```

```

</rdf:RDF>
</foxml:xmlContent>
</foxml:datastreamVersion>
</foxml:datastream>
<foxml:datastream ID="DC" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
  <foxml:datastreamVersion ID="DC1.0" LABEL="Dublin Core Record for this object" CREATED="2009-05-18T15:07:42.398Z" MIMETYPE="text/xml" FORMAT_URI="http://www.openarchives.org/OAI/2.0/oai_dc/" SIZE="397">
    <foxml:xmlContent>
      <oai_dc:dc xmlns:oai_dc="http://www.openarchives.org/OAI/2.0/oai_dc/"
xmlns:dc="http://purl.org/dc/elements/1.1/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.openarchives.org/OAI/2.0/oai_dc/
http://www.openarchives.org/OAI/2.0/oai_dc.xsd">
        <dc:title>islandora:tei2htmlSdef</dc:title>
        <dc:identifier>islandora:tei2htmlSdef</dc:identifier>
      </oai_dc:dc>
    </foxml:xmlContent>
  </foxml:datastreamVersion>
</foxml:datastream>
<foxml:datastream ID="METHODMAP" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
  <foxml:datastreamVersion ID="METHODMAP.3" LABEL="Abstract Method Map" CREATED="2009-05-18T20:08:16.294Z"
MIMETYPE="text/xml" FORMAT_URI="info:fedora/fedora-system:FedoraSDefMethodMap-1.0" SIZE="180">
    <foxml:xmlContent>
      <fmm:MethodMap xmlns:fmm="http://fedora.comms.ndlib.org/service/methodmap" name="methodmap">
        <fmm:Method operationName="tei2html"/>
      </fmm:MethodMap>
    </foxml:xmlContent>
  </foxml:datastreamVersion>
</foxml:datastream>
</foxml:digitalObject>

```

8.3.10 islandora:tei2htmlSdep-pageCModel

```

<?xml version="1.0" encoding="UTF-8"?>
<foxml:digitalObject xmlns:foxml="info:fedora/fedora-system:def/foxml#"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" VERSION="1.1" PID="islandora:tei2htmlSdep-pageCModel"
xsi:schemaLocation="info:fedora/fedora-system:def/foxml# http://www.fedora.info/definitions/1/0/foxml1-1.xsd">
  <foxml:objectProperties>
    <foxml:property NAME="info:fedora/fedora-system:def/model#state" VALUE="Active"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#label" VALUE="islandora:tei2htmlSdep-pageCModel"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#ownerId" VALUE="fedoraAdmin"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#createdDate" VALUE="2009-05-21T03:24:05.906Z"/>
    <foxml:property NAME="info:fedora/fedora-system:def/view#lastModifiedDate" VALUE="2011-09-19T10:02:55.593Z"/>
  </foxml:objectProperties>
  <foxml:datastream ID="AUDIT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
    ...
  </foxml:datastream>
  <foxml:datastream ID="RELS-EXT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
    <foxml:datastreamVersion ID="RELS-EXT.1" LABEL="RDF Statements about this object" CREATED="2009-05-21T03:25:04.961Z" MIMETYPE="application/rdf+xml" FORMAT_URI="info:fedora/fedora-system:FedoraRELSExt-1.0"
SIZE="623">
      <foxml:xmlContent>
        <rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
        <rdf:Description rdf:about="info:fedora/islandora:tei2htmlSdep-pageCModel">
          <hasModel xmlns="info:fedora/fedora-system:def/model#" rdf:resource="info:fedora/fedora-
system:ServiceDeployment-3.0"/>
          <isDeploymentOf xmlns="info:fedora/fedora-system:def/model#"
rdf:resource="info:fedora/islandora:tei2htmlSdef"/>
          <isContractorOf xmlns="info:fedora/fedora-system:def/model#"
rdf:resource="info:fedora/islandora:pageCModel"/>
        </rdf:Description>
      </rdf:RDF>
    </foxml:xmlContent>
  </foxml:datastreamVersion>
</foxml:datastream>
<foxml:datastream ID="DC" STATE="A" CONTROL_GROUP="X" VERSIONABLE="true">
  <foxml:datastreamVersion ID="DC1.0" LABEL="Dublin Core Record for this object" CREATED="2009-05-21T03:24:05.906Z" MIMETYPE="text/xml" FORMAT_URI="http://www.openarchives.org/OAI/2.0/oai_dc/" SIZE="419">
    <foxml:xmlContent>
      <oai_dc:dc xmlns:oai_dc="http://www.openarchives.org/OAI/2.0/oai_dc/"
xmlns:dc="http://purl.org/dc/elements/1.1/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.openarchives.org/OAI/2.0/oai_dc/
http://www.openarchives.org/OAI/2.0/oai_dc.xsd">
        <dc:title>islandora:tei2htmlSdep-pageCModel</dc:title>
        <dc:identifier>islandora:tei2htmlSdep-pageCModel</dc:identifier>
      </oai_dc:dc>
    </foxml:xmlContent>
  </foxml:datastreamVersion>
</foxml:datastream>
<foxml:datastream ID="DSINPUTSPEC" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
  <foxml:datastreamVersion ID="DSINPUTSPEC.3" LABEL="Datastream Input Specification" CREATED="2009-09-17T02:47:11.226Z" MIMETYPE="text/xml" FORMAT_URI="info:fedora/fedora-system:FedoraDSInputSpec-1.1" SIZE="721">
    <foxml:xmlContent>
      <fbs:DSInputSpec xmlns:fbs="http://fedora.comms.ndlib.org/service/bindspec"
label="tei2htmlSdepInputSpec">
        <fbs:DSInput DSMax="1" DSMin="1" DSOrdinality="false" wsdlMsgPartName="TEI">
          <fbs:DSInputLabel>TEI</fbs:DSInputLabel>
          <fbs:DSMIME>text/xml</fbs:DSMIME>
          <fbs:DSInputInstruction/>
        </fbs:DSInput>
        <fbs:DSInput DSMax="1" DSMin="1" DSOrdinality="false" pid="islandora:tei2htmlSdep-pageCModel"
wsdlMsgPartName="XSL">
          <fbs:DSInputLabel>XSL</fbs:DSInputLabel>
          <fbs:DSMIME>text/xml</fbs:DSMIME>
          <fbs:DSInputInstruction/>
        </fbs:DSInput>
      </fbs:DSInputSpec>
    </foxml:xmlContent>
  </foxml:datastreamVersion>
</foxml:datastream>

```

```

</foxml:datastreamVersion>
</foxml:datastream>
<foxml:datastream ID="WSDL" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
  <foxml:datastreamVersion ID="WSDL.3" LABEL="WSDL Bindings" CREATED="2009-09-17T02:47:56.422Z"
    MIMETYPE="text/xml" FORMAT_URI="http://schemas.xmlsoap.org/wsdl/" SIZE="1938">
    <foxml:xmlContent>
      <wsdl:definitions xmlns:http="http://schemas.xmlsoap.org/wsdl/http/"
        xmlns:mime="http://schemas.xmlsoap.org/wsdl/mime/" xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap"
        xmlns:soapenc="http://schemas.xmlsoap.org/wsdl/soap/encoding" xmlns:this="tei2htmlSdep"
        xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/" xmlns:xsd="http://www.w3.org/2001/XMLSchema" name="tei2htmlSdep"
        targetNamespace="tei2htmlSdep">
        <wsdl:message name="tei2htmlRequestMsg">
          <wsdl:part name="TEI" type="xsd:string"/>
          <wsdl:part name="XSL" type="xsd:string"/>
        </wsdl:message>
        <wsdl:message name="response">
          <wsdl:part name="exhibit" type="xsd:base64Binary"/>
        </wsdl:message>
        <wsdl:portType name="tei2html_portType">
          <wsdl:operation name="tei2html">
            <wsdl:input message="this:tei2htmlRequestMsg"/>
            <wsdl:output message="this:response"/>
          </wsdl:operation>
        </wsdl:portType>
        <wsdl:service name="tei2html_service">
          <wsdl:port binding="this:tei2html_binding" name="tei2html_port">
            <http:address location="http://local.fedora.server/saxon"/>
          </wsdl:port>
        </wsdl:service>
        <wsdl:binding name="tei2html_binding" type="this:tei2html_portType">
          <http:binding verb="GET"/>
          <wsdl:operation name="tei2html">
            <http:operation location="SaxonServlet?source=(TEI) & style=(XSL) & clear-stylesheet-
              cache=yes"/>
            <wsdl:input>
              <http:urlReplacement/>
            </wsdl:input>
            <wsdl:output>
              <mime:content type="text/html"/>
            </wsdl:output>
          </wsdl:operation>
        </wsdl:binding>
      </wsdl:definitions>
    </foxml:xmlContent>
  </foxml:datastreamVersion>
</foxml:datastream>
<foxml:datastream ID="METHODMAP" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
  <foxml:datastreamVersion ID="METHODMAP.6" LABEL="Deployment Method Map" CREATED="2009-09-17T02:51:06.102Z"
    MIMETYPE="text/xml" FORMAT_URI="info:fedora/fedora-system:FedoraSDepMethodMap-1.1" SIZE="695">
    <foxml:xmlContent>
      <fmm:MethodMap xmlns:fmm="http://fedora.com.nsdlib.org/service/methodmap" name="methodmap">
        <fmm:Method operationName="tei2html" wsdlMsgName="tei2htmlRequestMsg" wsdlMsgOutput="response">
          <fmm:DatastreamInputParm parmName="TEI" passBy="URL_REF" required="true"/>
          <fmm:DatastreamInputParm parmName="XSL" passBy="URL_REF" required="true"/>
          <fmm:UserInputParm defaultValue="" parmName="uid" passBy="VALUE" required="false"/>
          <fmm:MethodReturnTypes wsdlMsgName="response" wsdlMsgTOMIME="text/html"/>
        </fmm:Method>
      </fmm:MethodMap>
    </foxml:xmlContent>
  </foxml:datastreamVersion>
</foxml:datastream>
<foxml:datastream ID="XSL" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
  <foxml:datastreamVersion ID="XSL.2" LABEL="XSL stylesheet for tei2html conversion" CREATED="2009-12-
    11T19:22:11.096Z" MIMETYPE="text/xml" SIZE="3537">
    <foxml:xmlContent>
      <xsl:stylesheet xmlns:tei="http://www.tei-c.org/ns/1.0" xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
        exclude-result-prefixes="tei" version="2.0">
        <xsl:output doctype-public="-//W3C//DTD HTML 4.01 Strict//EN" doctype-
          system="http://www.w3.org/TR/html4/strict.dtd" indent="yes" method="html" omit-xml-declaration="yes"/>
        <xsl:template match="tei:TEI">
          <html>
            <head>
              <title>
                <xsl:value-of select="normalize-space(tei:teiHeader/tei:fileDesc/tei:titleStmnt/tei:title)"/>
              </title>
            </head>
            <body>
              <xsl:apply-templates/>
            </body>
          </html>
        </xsl:template>
        <xsl:template match="tei:body">
          <div class="tei">
            <xsl:apply-templates/>
          </div>
        </xsl:template>
        <xsl:template match="tei:p">
          <p>
            <xsl:apply-templates/>
          </p>
        </xsl:template>
        <xsl:template match="tei:date">
          <span class="date">
            <xsl:value-of select="normalize-space(.)"/>
          </span>
        </xsl:template>
      </xsl:stylesheet>
    </foxml:xmlContent>
  </foxml:datastreamVersion>
</foxml:datastream>

```

```

<xsl:template match="tei:persName">
  <xsl:choose>
    <xsl:when test="(./tei:surname) and (./tei:forename)">
      <span class="persName">
        <a>
          <xsl:attribute name="class">search persName</xsl:attribute>
          <xsl:attribute name="target"> blank</xsl:attribute>
          <xsl:attribute name="href">http://islandlives.net/fedora/ilives_book_search/tei.persNameTERM:
%22
          <xsl:value-of select="//tei:surname"/>+
          <xsl:value-of select="//tei:forename"/>%22+AND+dc.type:collection
        </xsl:attribute>
        <xsl:apply-templates select="*|node()"/>
      </a>
    </span>
  </xsl:when>
  <xsl:otherwise>
    <xsl:apply-templates select="*|node()"/>
  </xsl:otherwise>
</xsl:choose>
</xsl:template>
<xsl:template match="tei:placeName">
  <a>
    <xsl:attribute name="class">search placeName</xsl:attribute>
    <xsl:attribute name="target"> blank</xsl:attribute>
    <xsl:attribute name="href">http://islandlives.net/fedora/ilives_book_search/tei.placeNameTERM:%22
    <xsl:value-of select="normalize-space(.)"/>%22+AND+dc.type:collection
  </xsl:attribute>
  <xsl:value-of select="normalize-space(.)"/>
</a>
</xsl:template>
<xsl:template match="tei:orgName">
  <a>
    <xsl:attribute name="class">search orgName</xsl:attribute>
    <xsl:attribute name="target"> blank</xsl:attribute>
    <xsl:attribute name="href">http://islandlives.net/fedora/ilives_book_search/tei.orgNameTERM:%22
    <xsl:value-of select="normalize-space(.)"/>%22+AND+dc.type:collection
  </xsl:attribute>
  <xsl:value-of select="normalize-space(.)"/>
</a>
</xsl:template>
<xsl:template match="tei:teiHeader"/>
</xsl:stylesheet>
</foxml:xmlContent>
</foxml:datastreamVersion>
</foxml:datastream>
</foxml:digitalObject>

```

8.3.11 islandora:collection

```

<?xml version="1.0" encoding="UTF-8"?>
<foxml:digitalObject xmlns:foxml="info:fedora/fedora-system:def/foxml#"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" VERSION="1.1" PID="islandora:collection"
xsi:schemaLocation="info:fedora/fedora-system:def/foxml# http://www.fedora.info/definitions/1/0/foxml-1.xsd">
  <foxml:objectProperties>
    <foxml:property NAME="info:fedora/fedora-system:def/model#state" VALUE="Active"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#label" VALUE="IslandLives Collection"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#ownerId" VALUE="fedoraAdmin"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#createdDate" VALUE="2009-05-14T19:32:21.132Z"/>
    <foxml:property NAME="info:fedora/fedora-system:def/view#lastModifiedDate" VALUE="2011-09-19T10:02:55.871Z"/>
  </foxml:objectProperties>
  <foxml:datastream ID="AUDIT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
    ...
  </foxml:datastream>
  <foxml:datastream ID="DC" STATE="A" CONTROL_GROUP="X" VERSIONABLE="true">
    <foxml:datastreamVersion ID="DC1.0" LABEL="Dublin Core Record for this object" CREATED="2009-05-
14T19:32:21.132Z" MIMETYPE="text/xml" FORMAT_URI="http://www.openarchives.org/OAI/2.0/oai_dc/" SIZE="395">
      <foxml:xmlContent>
        <oai_dc:dc xmlns:oai_dc="http://www.openarchives.org/OAI/2.0/oai_dc/"
xmlns:dc="http://purl.org/dc/elements/1.1/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.openarchives.org/OAI/2.0/oai_dc/
http://www.openarchives.org/OAI/2.0/oai_dc.xsd">
          <dc:title>IslandLives Collection</dc:title>
          <dc:identifier>islandora:collection</dc:identifier>
        </oai_dc:dc>
      </foxml:xmlContent>
    </foxml:datastreamVersion>
  </foxml:datastream>
</foxml:digitalObject>

```

8.3.12 islandora:jp2Sdep-pageCModel

```

<?xml version="1.0" encoding="UTF-8"?>
<foxml:digitalObject xmlns:foxml="info:fedora/fedora-system:def/foxml#"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" VERSION="1.1" PID="islandora:jp2Sdep-pageCModel"
xsi:schemaLocation="info:fedora/fedora-system:def/foxml# http://www.fedora.info/definitions/1/0/foxml-1.xsd">
  <foxml:objectProperties>
    <foxml:property NAME="info:fedora/fedora-system:def/model#state" VALUE="Active"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#label" VALUE="islandora:jp2Sdep-pageCModel"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#ownerId" VALUE="fedoraAdmin"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#createdDate" VALUE="2009-05-21T03:24:05.906Z"/>
    <foxml:property NAME="info:fedora/fedora-system:def/view#lastModifiedDate" VALUE="2011-09-19T10:02:56.307Z"/>
  </foxml:objectProperties>
  <foxml:datastream ID="AUDIT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
    ...
  </foxml:datastream>
  <foxml:datastream ID="DC" STATE="A" CONTROL_GROUP="X" VERSIONABLE="true">

```

```

<foxml:datastreamVersion ID="DC1.0" LABEL="Dublin Core Record for this object" CREATED="2009-05-
21T03:24:05.906Z" MIMETYPE="text/xml" FORMAT_URI="http://www.openarchives.org/OAI/2.0/oai_dc/" SIZE="409">
  <foxml:xmlContent>
    <oai_dc:dc xmlns:oai_dc="http://www.openarchives.org/OAI/2.0/oai_dc/"
    xmlns:dc="http://purl.org/dc/elements/1.1/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xsi:schemaLocation="http://www.openarchives.org/OAI/2.0/oai_dc/
    http://www.openarchives.org/OAI/2.0/oai_dc.xsd">
      <dc:title>islandora:jp2Sdep-pageCModel</dc:title>
      <dc:identifier>islandora:jp2Sdep-pageCModel</dc:identifier>
    </oai_dc:dc>
  </foxml:xmlContent>
</foxml:datastreamVersion>
</foxml:datastream>
<foxml:datastream ID="METHODMAP" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
  <foxml:datastreamVersion ID="METHODMAP.1" LABEL="Deployment Method Map" CREATED="2009-05-21T03:26:21.830Z"
  MIMETYPE="text/xml" FORMAT_URI="info:fedora/fedora-system:FedoraSDepMethodMap-1.1" SIZE="2498">
    <foxml:xmlContent>
      <fmm:MethodMap xmlns:fmm="http://fedora.com.nsdlib.org/service/methodmap" bDefPID="djatoka:bDef"
      name="MethodMap - djatoka Service Methods">
        <fmm:Method operationName="getMetadata" wsdlMsgName="getMetadataRequest" wsdlMsgOutput="response">
          <fmm:DefaultInputParm defaultValue="$PID" label="fedora object pid" paramName="PID" passBy="VALUE"
          required="true"/>
          <fmm:DefaultInputParm defaultValue="JP2" label="content model" paramName="DSID" passBy="VALUE"
          required="true"/>
          <fmm:DefaultInputParm defaultValue="info:lanl-repo/svc/getMetadata" paramName="svc_id" passBy="VALUE"
          required="true"/>
          <fmm:UserInputParm defaultValue="" paramName="uid" passBy="VALUE" required="false"/>
          <fmm:MethodReturnTyp wsdlMsgName="response" wsdlMsgTOMIME="application/json"/>
        </fmm:Method>
        <fmm:Method operationName="getRegion" wsdlMsgName="getRegionRequest" wsdlMsgOutput="response">
          <fmm:DefaultInputParm defaultValue="$PID" label="fedora object pid" paramName="PID" passBy="VALUE"
          required="true"/>
          <fmm:DefaultInputParm defaultValue="JP2" label="content model" paramName="DSID" passBy="VALUE"
          required="true"/>
          <fmm:DefaultInputParm defaultValue="info:lanl-repo/svc/getRegion" paramName="svc_id" passBy="VALUE"
          required="true"/>
          <fmm:UserInputParm defaultValue="" paramName="uid" passBy="VALUE" required="false"/>
          <fmm:UserInputParm defaultValue="" paramName="region" passBy="VALUE" required="false"/>
          <fmm:UserInputParm defaultValue="0" paramName="rotate" passBy="VALUE" required="false"/>
          <fmm:UserInputParm defaultValue="-1" paramName="level" passBy="VALUE" required="false"/>
          <fmm:UserInputParm defaultValue="" paramName="scale" passBy="VALUE" required="false"/>
          <fmm:UserInputParm defaultValue="" paramName="clayers" passBy="VALUE" required="false"/>
          <fmm:UserInputParm defaultValue="image/jpeg" paramName="format" passBy="VALUE" required="false"/>
          <fmm:MethodReturnTyp wsdlMsgName="response" wsdlMsgTOMIME="image/jpeg"/>
        </fmm:Method>
      </fmm:MethodMap>
    </foxml:xmlContent>
  </foxml:datastreamVersion>
</foxml:datastream>
<foxml:datastream ID="DSINPUTSPEC" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
  <foxml:datastreamVersion ID="DSINPUTSPEC.1" LABEL="Datastream Input Specification" CREATED="2009-05-
  21T03:26:44.151Z" MIMETYPE="text/xml" FORMAT_URI="info:fedora/fedora-system:FedoraDSInputSpec-1.1" SIZE="401">
    <foxml:xmlContent>
      <fbs:DSInputSpec xmlns:fbs="http://fedora.com.nsdlib.org/service/bindspec" label="jp2SdepInputSpec">
        <fbs:DSInput DSMax="1" DSMin="1" DSOrdinality="false" wsdlMsgPartName="DC">
          <fbs:DSInputLabel>DC</fbs:DSInputLabel>
          <fbs:DSMIME>text/xml</fbs:DSMIME>
          <fbs:DSInputInstruction/>
        </fbs:DSInput>
      </fbs:DSInputSpec>
    </foxml:xmlContent>
  </foxml:datastreamVersion>
</foxml:datastream>
<foxml:datastream ID="WSDL" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
  <foxml:datastreamVersion ID="WSDL.1" LABEL="WSDL Bindings" CREATED="2009-05-21T03:27:46.103Z"
  MIMETYPE="text/xml" FORMAT_URI="http://schemas.xmlsoap.org/wsdl/" SIZE="3258">
    <foxml:xmlContent>
      <wsdl:definitions xmlns:http="http://schemas.xmlsoap.org/wsdl/http/"
      xmlns:mime="http://schemas.xmlsoap.org/wsdl/mime/" xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap"
      xmlns:soapenc="http://schemas.xmlsoap.org/wsdl/soap/encoding" xmlns:this="djatoka"
      xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/" xmlns:xsd="http://www.w3.org/2001/XMLSchema" name="Fedora Local
      Djatoka Service" targetNamespace="jp2SDep">
        <wsdl:message name="getMetadataRequest">
          <wsdl:part name="PID" type="xsd:string"/>
          <wsdl:part name="DSID" type="xsd:string"/>
          <wsdl:part name="svc_id" type="xsd:string"/>
        </wsdl:message>
        <wsdl:message name="getRegionRequest">
          <wsdl:part name="PID" type="xsd:string"/>
          <wsdl:part name="DSID" type="xsd:string"/>
          <wsdl:part name="svc_id" type="xsd:string"/>
        </wsdl:message>
        <wsdl:message name="response">
          <wsdl:part name="exhibit" type="xsd:base64Binary"/>
        </wsdl:message>
        <wsdl:portType name="FedoraDjatokaPortType">
          <wsdl:operation name="getMetadata">
            <wsdl:input message="this:getMetadataRequest"/>
            <wsdl:output message="this:response"/>
          </wsdl:operation>
          <wsdl:operation name="getRegion">
            <wsdl:input message="this:getRegionRequest"/>
            <wsdl:output message="this:response"/>
          </wsdl:operation>
        </wsdl:portType>
        <wsdl:service name="FedoraDjatoka">

```



```

<wsdl:port binding="this:FedoraDjatoka_http" name="FedoraDjatoka_port">
  <http:address location="http://local.fedora.server/" />
</wsdl:port>
</wsdl:service>
<wsdl:binding name="FedoraDjatoka_http" type="this:FedoraDjatokaPortType">
  <http:binding verb="GET" />
  <wsdl:operation name="getMetadata">
    <http:operation location="adore-djatoka/resolver?url_ver=Z39.88-
2004&amp;rft_id=http://local.fedora.server/fedora/get/(PID)/(DSID)&amp;svc_id=(svc_id)"/>
    <wsdl:input>
      <http:urlReplacement />
    </wsdl:input>
    <wsdl:output>
      <mime:content type="application/json" />
    </wsdl:output>
  </wsdl:operation>
  <wsdl:operation name="getRegion">
    <http:operation location="adore-djatoka/resolver?url_ver=Z39.88-
2004&amp;rft_id=http://local.fedora.server/fedora/get/(PID)/(
DSID)&amp;svc_id=(svc_id)&amp;svc_val_fmt=info:ofi/fmt:kev:mtx:jpeg2000&amp;svc.format=(format)&amp;svc.level
=(level)&amp;svc.rotate=(rotate)&amp;svc.region=(region)&amp;svc.scale=(scale)&amp;svc.clayers=(clayers)"/>
    <wsdl:input>
      <http:urlReplacement />
    </wsdl:input>
    <wsdl:output>
      <mime:content type="image/jpeg" />
    </wsdl:output>
  </wsdl:operation>
</wsdl:binding>
</wsdl:definitions>
</foxml:xmlContent>
</foxml:datastreamVersion>
</foxml:datastream>
<foxml:datastream ID="RELS-EXT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
  <foxml:datastreamVersion ID="RELS-EXT.2" LABEL="RDF Statements about this object" CREATED="2010-06-
01T00:48:39.302Z" MIMETYPE="application/rdf+xml" FORMAT_URI="info:fedora/fedora-system:FedoraRELSExt-1.0"
SIZE="753">
    <foxml:xmlContent>
      <rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#">
        <rdf:Description rdf:about="info:fedora/islandora:jp2Sdep-pageCModel">
          <hasModel xmlns="info:fedora/fedora-system:def/model#" rdf:resource="info:fedora/fedora-
system:ServiceDeployment-3.0"/>
          <isDeploymentOf xmlns="info:fedora/fedora-system:def/model#"
rdf:resource="info:fedora/islandora:jp2Sdef"/>
          <isContractorOf xmlns="info:fedora/fedora-system:def/model#"
rdf:resource="info:fedora/islandora:pageCModel"/>
          <isContractorOf xmlns="info:fedora/fedora-system:def/model#"
rdf:resource="info:fedora/newspapers:pageCModel"/>
        </rdf:Description>
      </rdf:RDF>
    </foxml:xmlContent>
  </foxml:datastreamVersion>
</foxml:datastream>
</foxml:digitalObject>

```

8.3.13 islandora:CollectionModel

```

<?xml version="1.0" encoding="UTF-8"?>
<foxml:digitalObject xmlns:foxml="info:fedora/fedora-system:def/foxml#"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" VERSION="1.1" PID="islandora:collectionCModel"
xsi:schemaLocation="info:fedora/fedora-system:def/foxml# http://www.fedora.info/definitions/1/0/foxml1-1.xsd">
  <foxml:objectProperties>
    <foxml:property NAME="info:fedora/fedora-system:def/model#state" VALUE="Active"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#label" VALUE="Islandora Collection Content Model"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#ownerId" VALUE="fedoraAdmin"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#createdDate" VALUE="2011-09-17T14:01:17.526Z"/>
    <foxml:property NAME="info:fedora/fedora-system:def/view#lastModifiedDate" VALUE="2011-09-17T14:01:18.759Z"/>
  </foxml:objectProperties>
  <foxml:datastream ID="AUDIT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
    ...
  </foxml:datastream>
  <foxml:datastream ID="DC" STATE="A" CONTROL_GROUP="X" VERSIONABLE="true">
    <foxml:datastreamVersion ID="DC1.0" LABEL="Dublin Core Record for this object" CREATED="2011-09-
17T14:01:17.526Z" MIMETYPE="text/xml" FORMAT_URI="http://www.openarchives.org/OAI/2.0/oai_dc/" SIZE="413">
      <foxml:xmlContent>
        <oai_dc:dc xmlns:oai_dc="http://www.openarchives.org/OAI/2.0/oai_dc/"
xmlns:dc="http://purl.org/dc/elements/1.1/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.openarchives.org/OAI/2.0/oai_dc/
http://www.openarchives.org/OAI/2.0/oai_dc.xsd">
          <dc:title>Islandora Collection Content Model</dc:title>
          <dc:identifier>islandora:collectionCModel</dc:identifier>
        </oai_dc:dc>
      </foxml:xmlContent>
    </foxml:datastreamVersion>
  </foxml:datastream>
  <foxml:datastream ID="RELS-EXT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="true">
    ...
    <foxml:datastreamVersion ID="RELS-EXT.1" LABEL="Fedora Object-to-Object Relationship Metadata" CREATED="2011-
09-17T14:01:18.658Z" MIMETYPE="text/xml" SIZE="299">
      <foxml:xmlContent>
        <rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#">
          <rdf:Description rdf:about="info:fedora/islandora:collectionCModel">
            <hasModel xmlns="info:fedora/fedora-system:def/model#" rdf:resource="info:fedora/fedora-
system:ContentModel-3.0"/>
          </rdf:Description>
        </rdf:RDF>
      </foxml:xmlContent>
    </foxml:datastreamVersion>
  </foxml:datastream>

```

```

</foxml:datastreamVersion>
</foxml:datastream>
<foxml:datastream ID="ISLANDORACM" STATE="A" CONTROL_GROUP="M" VERSIONABLE="true">
  <foxml:datastreamVersion ID="ISLANDORACM.0" LABEL="ISLANDORACM" CREATED="2011-09-17T14:01:18.759Z"
    MIMETYPE="text/xml" SIZE="5256">
    <foxml:contentLocation TYPE="INTERNAL_ID"
      REF="http://fcl.to.cnr.it:8080/fedora/get/islandora:collectionCModel/ISLANDORACM/2011-09-17T14:01:18.759Z"/>
    </foxml:datastreamVersion>
  </foxml:datastream>
</foxml:digitalObject>
    
```

8.3.14 books:collection

```

<?xml version="1.0" encoding="UTF-8"?>
<foxml:digitalObject xmlns:foxml="info:fedora/fedora-system:def/foxml#"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" VERSION="1.1" PID="books:collection"
  xsi:schemaLocation="info:fedora/fedora-system:def/foxml# http://www.fedora.info/definitions/1/0/foxml1-1.xsd">
  <foxml:objectProperties>
    <foxml:property NAME="info:fedora/fedora-system:def/model#state" VALUE="Active"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#label" VALUE="Book Collection"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#ownerId" VALUE="fedoraAdmin"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#createdDate" VALUE="2011-09-19T10:02:56.759Z"/>
    <foxml:property NAME="info:fedora/fedora-system:def/view#lastModifiedDate" VALUE="2011-09-19T10:02:57.441Z"/>
  </foxml:objectProperties>
  <foxml:datastream ID="AUDIT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
    ...
  </foxml:datastream>
  <foxml:datastream ID="DC" STATE="A" CONTROL_GROUP="X" VERSIONABLE="true">
    <foxml:datastreamVersion ID="DC1.0" LABEL="Dublin Core Record for this object" CREATED="2011-09-
      19T10:02:56.759Z" MIMETYPE="text/xml" FORMAT_URI="http://www.openarchives.org/OAI/2.0/oai_dc/" SIZE="384">
      <foxml:xmlContent>
        <oai_dc:dc xmlns:oai_dc="http://www.openarchives.org/OAI/2.0/oai_dc/"
          xmlns:dc="http://purl.org/dc/elements/1.1/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
          xsi:schemaLocation="http://www.openarchives.org/OAI/2.0/oai_dc/
            http://www.openarchives.org/OAI/2.0/oai_dc.xsd">
          <dc:title>Book Collection</dc:title>
          <dc:identifier>books:collection</dc:identifier>
        </oai_dc:dc>
      </foxml:xmlContent>
    </foxml:datastreamVersion>
  </foxml:datastream>
  <foxml:datastream ID="RELS-EXT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="true">
    ...
    <foxml:datastreamVersion ID="RELS-EXT.2" LABEL="Fedora Object-to-Object Relationship Metadata" CREATED="2011-
      09-19T10:02:57.217Z" MIMETYPE="text/xml" SIZE="436">
      <foxml:xmlContent>
        <rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
          <rdf:Description rdf:about="info:fedora/books:collection">
            <hasModel xmlns="info:fedora/fedora-system:def/model#"
              rdf:resource="info:fedora/islandora:collectionCModel"/>
            <isMemberOfCollection xmlns="info:fedora/fedora-system:def/relations-external#"
              rdf:resource="info:fedora/islandora:demos"/>
          </rdf:Description>
        </rdf:RDF>
      </foxml:xmlContent>
    </foxml:datastreamVersion>
  </foxml:datastream>
  <foxml:datastream ID="COLLECTION_POLICY" STATE="A" CONTROL_GROUP="M" VERSIONABLE="true">
    <foxml:datastreamVersion ID="COLLECTION_POLICY.0" LABEL="COLLECTION_POLICY" CREATED="2011-09-
      19T10:02:57.286Z" MIMETYPE="text/xml" SIZE="1175">
      <foxml:contentLocation TYPE="INTERNAL_ID"
        REF="http://fcl.to.cnr.it:8080/fedora/get/books:collection/COLLECTION_POLICY/2011-09-19T10:02:57.286Z"/>
      </foxml:datastreamVersion>
    </foxml:datastream>
  <foxml:datastream ID="TN" STATE="A" CONTROL_GROUP="M" VERSIONABLE="true">
    <foxml:datastreamVersion ID="TN.0" LABEL="TN" CREATED="2011-09-19T10:02:57.441Z" MIMETYPE="image/png"
      SIZE="7787">
      <foxml:contentLocation TYPE="INTERNAL_ID"
        REF="http://fcl.to.cnr.it:8080/fedora/get/books:collection/TN/2011-09-19T10:02:57.441Z"/>
      </foxml:datastreamVersion>
    </foxml:datastream>
  </foxml:digitalObject>
    
```

8.3.15 fc1repo:OAIRepository

```

<?xml version="1.0" encoding="UTF-8"?>
<foxml:digitalObject xmlns:foxml="info:fedora/fedora-system:def/foxml#"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" VERSION="1.1" PID="fc1repo:OAIRepository"
  xsi:schemaLocation="info:fedora/fedora-system:def/foxml# http://www.fedora.info/definitions/1/0/foxml1-1.xsd">
  <foxml:objectProperties>
    <foxml:property NAME="info:fedora/fedora-system:def/model#state" VALUE="Active"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#label" VALUE="FC1 Repository"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#ownerId" VALUE=""/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#createdDate" VALUE="2011-11-28T10:02:41.307Z"/>
    <foxml:property NAME="info:fedora/fedora-system:def/view#lastModifiedDate" VALUE="2011-11-28T20:36:31.922Z"/>
  </foxml:objectProperties>
  <foxml:datastream ID="AUDIT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
    ...
  </foxml:datastream>
  <foxml:datastream ID="DC" STATE="A" CONTROL_GROUP="X" VERSIONABLE="true">
    <foxml:datastreamVersion ID="DC1.0" LABEL="Dublin Core Record for this object" CREATED="2011-11-
      28T10:02:41.307Z" MIMETYPE="text/xml" FORMAT_URI="http://www.openarchives.org/OAI/2.0/oai_dc/" SIZE="388">
      <foxml:xmlContent>
        <oai_dc:dc xmlns:oai_dc="http://www.openarchives.org/OAI/2.0/oai_dc/"
          xmlns:dc="http://purl.org/dc/elements/1.1/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
          xsi:schemaLocation="http://www.openarchives.org/OAI/2.0/oai_dc/
            http://www.openarchives.org/OAI/2.0/oai_dc.xsd">
        
```

```

    <dc:title>FC1 Repository</dc:title>
    <dc:identifier>fclrepo:OAIRepository</dc:identifier>
  </oai_dc:dc>
</foxml:xmlContent>
</foxml:datastreamVersion>
</foxml:datastream>
<foxml:datastream ID="Identify.xml" STATE="A" CONTROL_GROUP="X" VERSIONABLE="true">
  ...
  <foxml:datastreamVersion ID="Identify.xml.4" LABEL="OAI Identification Response for this repository"
  CREATED="2011-11-28T20:36:31.922Z" MIMETYPE="text/xml" SIZE="577">
    <foxml:xmlContent>
      <Identify>
        <repositoryName>FC1 Repository @ to.cnr.it</repositoryName>
        <baseURL>http://fcl.to.cnr.it/oaiprovider/</baseURL>
        <protocolVersion>2.0</protocolVersion>
        <adminEmail>g.birello@ceris.cnr.it</adminEmail>
        <earliestDatestamp>2011-11-28T12:00:00Z</earliestDatestamp>
        <deletedRecord>persistent</deletedRecord>
        <granularity>YYYY-MM-DDThh:mm:ssZ</granularity>
        <scheme>oai</scheme>
        <repositoryIdentifier>fcl.to.cnr.it</repositoryIdentifier>
        <delimiter></delimiter>
        <sampleIdentifier>oai:fcl.to.cnr.it:openbess:T0029-00001</sampleIdentifier>
      </Identify>
    </foxml:xmlContent>
  </foxml:datastreamVersion>
</foxml:datastream>
</foxml:digitalObject>

```

8.3.16 openbess:collezioni

```

<?xml version="1.0" encoding="UTF-8"?>
<foxml:digitalObject xmlns:foxml="info:fedora/fedora-system:def/foxml#"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" VERSION="1.1" PID="openbess:collezioni"
  xsi:schemaLocation="info:fedora/fedora-system:def/foxml# http://www.fedora.info/definitions/1/0/foxml1-1.xsd">
  <foxml:objectProperties>
    <foxml:property NAME="info:fedora/fedora-system:def/model#state" VALUE="Active"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#label" VALUE="Collezioni BESS"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#ownerId" VALUE="admindemobess"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#createdDate" VALUE="2011-09-19T14:07:19.293Z"/>
    <foxml:property NAME="info:fedora/fedora-system:def/view#lastModifiedDate" VALUE="2012-01-17T14:12:50.189Z"/>
  </foxml:objectProperties>
  <foxml:datastream ID="AUDIT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
    ...
  </foxml:datastream>
  <foxml:datastream ID="DC" STATE="A" CONTROL_GROUP="X" VERSIONABLE="true">
    ...
    <foxml:datastreamVersion ID="DC.1" LABEL="Dublin Core Record for this object" CREATED="2011-09-
    26T08:09:00.777Z" MIMETYPE="text/xml" FORMAT_URI="http://www.openarchives.org/OAI/2.0/oai_dc/" SIZE="387">
      <foxml:xmlContent>
        <oai_dc:dc xmlns:dc="http://purl.org/dc/elements/1.1/"
          xmlns:oai_dc="http://www.openarchives.org/OAI/2.0/oai_dc/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-
          instance" xsi:schemaLocation="http://www.openarchives.org/OAI/2.0/oai_dc/
          http://www.openarchives.org/OAI/2.0/oai_dc.xsd">
          <dc:title>Collezioni BESS</dc:title>
          <dc:identifier>openbess:collezioni</dc:identifier>
        </oai_dc:dc>
      </foxml:xmlContent>
    </foxml:datastreamVersion>
  </foxml:datastream>
  <foxml:datastream ID="RELS-EXT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="true">
    ...
    <foxml:datastreamVersion ID="RELS-EXT.3" LABEL="Fedora Object-to-Object Relationship Metadata" CREATED="2012-
    01-17T14:09:50.429Z" MIMETYPE="text/xml" SIZE="705">
      <foxml:xmlContent>
        <rdf:RDF xmlns:fedora-model="info:fedora/fedora-system:def/model#"
          xmlns:oai="http://www.openarchives.org/OAI/2.0/" xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
          xmlns:rel="info:fedora/fedora-system:def/relations-external#">
          <rdf:Description rdf:about="info:fedora/openbess:collezioni">
            <isMemberOfCollection xmlns="info:fedora/fedora-system:def/relations-external#"
              rdf:resource="info:fedora/islandora:root"/>
            <hasModel xmlns="info:fedora/fedora-system:def/model#"
              rdf:resource="info:fedora/islandora:collectionCModel"/>
            <oai:setSpec>digibess:openbess</oai:setSpec>
            <oai:setName>DigiBESS OpenBESS</oai:setName>
          </rdf:Description>
        </rdf:RDF>
      </foxml:xmlContent>
    </foxml:datastreamVersion>
  </foxml:datastream>
  <foxml:datastream ID="COLLECTION_POLICY" STATE="A" CONTROL_GROUP="M" VERSIONABLE="true">
    ...
    <foxml:datastreamVersion ID="COLLECTION_POLICY.1" LABEL="COLLECTION_POLICY" CREATED="2011-09-
    26T08:09:58.702Z" MIMETYPE="text/xml" SIZE="558">
      <foxml:contentLocation TYPE="INTERNAL_ID"
        REF="http://fcl.to.cnr.it:8080/fedora/get/openbess:collezioni/COLLECTION_POLICY/2011-09-26T08:09:58.702Z"/>
    </foxml:datastreamVersion>
  </foxml:datastream>
  <foxml:datastream ID="TN" STATE="A" CONTROL_GROUP="M" VERSIONABLE="true">
    <foxml:datastreamVersion ID="TN.0" LABEL="TN" CREATED="2011-09-19T14:07:19.726Z" MIMETYPE="image/png"
    SIZE="5137">
      <foxml:contentLocation TYPE="INTERNAL_ID"
        REF="http://fcl.to.cnr.it:8080/fedora/get/openbess:collezioni/TN/2011-09-19T14:07:19.726Z"/>
    </foxml:datastreamVersion>
  </foxml:datastream>
  <foxml:datastream ID="SetInfo.xml" STATE="A" CONTROL_GROUP="X" VERSIONABLE="true">
    <foxml:datastreamVersion ID="SetInfo.xml.0" LABEL="" CREATED="2012-01-17T14:12:50.189Z" MIMETYPE="text/xml">

```

```

SIZE="272">
  <foxml:xmlContent>
    <setDescriptions>
      <setDescription>
        <foai_dc:dc xmlns:dc="http://purl.org/dc/elements/1.1/"
xmlns:foai_dc="http://www.openarchives.org/OAI/2.0/foai_dc/">
          <dc:description>OpenBESS Collection</dc:description>
        </foai_dc:dc>
      </setDescription>
    </setDescriptions>
  </foxml:xmlContent>
</foxml:datastreamVersion>
</foxml:datastream>
</foxml:digitalObject>
    
```

8.3.17 fgramsci:collezioni

```

<?xml version="1.0" encoding="UTF-8"?>
<foxml:digitalObject xmlns:foxml="info:fedora/fedora-system:def/foxml#"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" VERSION="1.1" PID="fgramsci:collezioni"
xsi:schemaLocation="info:fedora/fedora-system:def/foxml# http://www.fedora.info/definitions/1/0/foxml1-1.xsd">
  <foxml:objectProperties>
    <foxml:property NAME="info:fedora/fedora-system:def/model#state" VALUE="Active"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#label" VALUE="Fondazione Gramsci"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#ownerId" VALUE="admindemobess"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#createdDate" VALUE="2011-09-19T14:23:14.584Z"/>
    <foxml:property NAME="info:fedora/fedora-system:def/view#lastModifiedDate" VALUE="2011-11-28T16:17:34.871Z"/>
  </foxml:objectProperties>
  <foxml:datastream ID="AUDIT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
    ...
  </foxml:datastream>
  <foxml:datastream ID="DC" STATE="A" CONTROL_GROUP="X" VERSIONABLE="true">
    <foxml:datastreamVersion ID="DC1.0" LABEL="Dublin Core Record for this object" CREATED="2011-09-
19T14:23:14.584Z" MIMETYPE="text/xml" FORMAT_URI="http://www.openarchives.org/OAI/2.0/foai_dc/" SIZE="390">
      <foxml:xmlContent>
        <foai_dc:dc xmlns:foai_dc="http://www.openarchives.org/OAI/2.0/foai_dc/"
xmlns:dc="http://purl.org/dc/elements/1.1/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.openarchives.org/OAI/2.0/foai_dc/
http://www.openarchives.org/OAI/2.0/foai_dc.xsd">
          <dc:title>Fondazione Gramsci</dc:title>
          <dc:identifier>fgramsci:collezioni</dc:identifier>
        </foai_dc:dc>
      </foxml:xmlContent>
    </foxml:datastreamVersion>
  </foxml:datastream>
  <foxml:datastream ID="RELS-EXT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="true">
    ...
    <foxml:datastreamVersion ID="RELS-EXT.4" LABEL="Fedora Object-to-Object Relationship Metadata" CREATED="2011-
11-28T16:17:34.871Z" MIMETYPE="text/xml" SIZE="705">
      <foxml:xmlContent>
        <rdf:RDF xmlns:fedora-model="info:fedora/fedora-system:def/model#"
xmlns:foai="http://www.openarchives.org/OAI/2.0/" xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:rel="info:fedora/fedora-system:def/relations-external#">
          <rdf:Description rdf:about="info:fedora/fgramsci:collezioni">
            <isMemberOfCollection xmlns="info:fedora/fedora-system:def/relations-external#"
rdf:resource="info:fedora/islandora:root"/>
            <hasModel xmlns="info:fedora/fedora-system:def/model#"
xmlns:foai="http://www.openarchives.org/OAI/2.0/" xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
rdf:resource="info:fedora/islandora:collectionCModel"/>
            <foai:setSpec digibess:fgramsci</foai:setSpec>
            <foai:setName>DigiBESS FGramsci</foai:setName>
          </rdf:Description>
        </foxml:xmlContent>
      </foxml:datastreamVersion>
    </foxml:datastream>
    <foxml:datastream ID="COLLECTION_POLICY" STATE="A" CONTROL_GROUP="M" VERSIONABLE="true">
      ...
      <foxml:datastreamVersion ID="COLLECTION_POLICY.3" LABEL="COLLECTION_POLICY" CREATED="2011-09-
26T08:11:01.509Z" MIMETYPE="text/xml" SIZE="559">
        <foxml:xmlContent>
          <collection_policy xmlns="http://www.islandora.ca" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
name="" xsi:schemaLocation="http://www.islandora.ca http://syn.lib.umanitoba.ca/collection_policy.xsd">
            <content_models>
              <content_model dsid="ISLANDORACM" name="Islandora Collection Content Model" namespace="fgramsci:1"
pid="islandora:collectionCModel"/>
            </content_models>
            <search_terms>
            </search_terms>
            <staging_area/>
            <relationship>isMemberOfCollection</relationship>
          </collection_policy>
        </foxml:xmlContent>
      </foxml:datastreamVersion>
    </foxml:datastream>
    <foxml:datastream ID="TN" STATE="A" CONTROL_GROUP="M" VERSIONABLE="true">
      <foxml:datastreamVersion ID="TN.0" LABEL="TN" CREATED="2011-09-19T14:23:14.992Z" MIMETYPE="image/png"
SIZE="5137">
        <foxml:contentLocation TYPE="INTERNAL_ID"
REF="http://fcl.to.cnr.it:8080/fedora/get/fgramsci:collezioni/TN/2011-09-19T14:23:14.992Z"/>
      </foxml:datastreamVersion>
    </foxml:datastream>
    <foxml:datastream ID="SetInfo.xml" STATE="A" CONTROL_GROUP="X" VERSIONABLE="true">
      <foxml:datastreamVersion ID="SetInfo.xml.0" LABEL="Descriptio of this set" CREATED="2011-11-28T15:59:21.116Z"
MIMETYPE="text/xml" SIZE="271">
        <foxml:xmlContent>
          <setDescriptions>
            <setDescription>
    
```

```

    <foxml:xmlContent>
      <foxml:datastreamVersion>
        </foxml:datastreamVersion>
      </foxml:datastream>
    </foxml:digitalObject>
  
```

8.3.18 fgramsci:sisifo

```

<?xml version="1.0" encoding="UTF-8"?>
<foxml:digitalObject xmlns:foxml="info:fedora/fedora-system:def/foxml#"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" VERSION="1.1" PID="fgramsci:sisifo"
  xsi:schemaLocation="info:fedora/fedora-system:def/foxml# http://www.fedora.info/definitions/1/0/foxml1-1.xsd">
  <foxml:objectProperties>
    <foxml:property NAME="info:fedora/fedora-system:def/model#state" VALUE="Active"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#label" VALUE="Sisifo"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#ownerId" VALUE="admindemobess"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#createdDate" VALUE="2011-09-26T08:13:59.852Z"/>
    <foxml:property NAME="info:fedora/fedora-system:def/view#lastModifiedDate" VALUE="2011-11-28T16:21:40.687Z"/>
  </foxml:objectProperties>
  <foxml:datastream ID="AUDIT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
    ...
  </foxml:datastream>
  <foxml:datastream ID="DC" STATE="A" CONTROL_GROUP="X" VERSIONABLE="true">
    <foxml:datastreamVersion ID="DC1.0" LABEL="Dublin Core Record for this object" CREATED="2011-09-
    26T08:13:59.852Z" MIMETYPE="text/xml" FORMAT_URI="http://www.openarchives.org/OAI/2.0/oai_dc/" SIZE="374">
      <foxml:xmlContent>
        <oai_dc:dc xmlns:oai_dc="http://www.openarchives.org/OAI/2.0/oai_dc/"
          xmlns:dc="http://purl.org/dc/elements/1.1/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
          xsi:schemaLocation="http://www.openarchives.org/OAI/2.0/oai_dc/
          http://www.openarchives.org/OAI/2.0/oai_dc.xsd">
          <dc:title>Sisifo</dc:title>
          <dc:identifier>fgramsci:sisifo</dc:identifier>
        </oai_dc:dc>
      </foxml:xmlContent>
    </foxml:datastreamVersion>
  </foxml:datastream>
  <foxml:datastream ID="RELS-EXT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="true">
    ...
    <foxml:datastreamVersion ID="RELS-EXT.3" LABEL="Fedora Object-to-Object Relationship Metadata" CREATED="2011-
    11-28T16:21:40.687Z" MIMETYPE="text/xml" SIZE="720">
      <foxml:xmlContent>
        <rdf:RDF xmlns:fedora-model="info:fedora/fedora-system:def/model#"
          xmlns:oai="http://www.openarchives.org/OAI/2.0/" xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
          xmlns:rel="info:fedora/fedora-system:def/relations-external#">
          <rdf:Description rdf:about="info:fedora/fgramsci:sisifo">
            <isMemberOfCollection xmlns="info:fedora/fedora-system:def/relations-external#"
              rdf:resource="info:fedora/fgramsci:collezioni"/>
            <hasModel xmlns="info:fedora/fedora-system:def/model#"
              rdf:resource="info:fedora/islandora:collectionCModel"/>
            <oai:setSpec>digibess:fgramsci:sisifo</oai:setSpec>
            <oai:setName>DigiBESS FGramsci Sisifo</oai:setName>
          </rdf:Description>
        </rdf:RDF>
      </foxml:xmlContent>
    </foxml:datastreamVersion>
  </foxml:datastream>
  <foxml:datastream ID="COLLECTION_POLICY" STATE="A" CONTROL_GROUP="M" VERSIONABLE="true">
    <foxml:datastreamVersion ID="COLLECTION_POLICY.0" LABEL="COLLECTION_POLICY" CREATED="2011-09-
    26T08:14:00.602Z" MIMETYPE="text/xml" SIZE="536">
      <foxml:contentLocation TYPE="INTERNAL ID"
        REF="http://fcl.to.cnr.it:8080/fedora/get/fgramsci:sisifo/COLLECTION_POLICY/2011-09-26T08:14:00.602Z"/>
    </foxml:datastreamVersion>
  </foxml:datastream>
  <foxml:datastream ID="TN" STATE="A" CONTROL_GROUP="M" VERSIONABLE="true">
    <foxml:datastreamVersion ID="TN.0" LABEL="TN" CREATED="2011-09-26T08:14:00.757Z" MIMETYPE="image/png"
    SIZE="5137">
      <foxml:contentLocation TYPE="INTERNAL ID"
        REF="http://fcl.to.cnr.it:8080/fedora/get/fgramsci:sisifo/TN/2011-09-26T08:14:00.757Z"/>
    </foxml:datastreamVersion>
  </foxml:datastream>
  <foxml:datastream ID="SetInfo.xml" STATE="A" CONTROL_GROUP="X" VERSIONABLE="true">
    <foxml:datastreamVersion ID="SetInfo.xml.0" LABEL="Description of this set" CREATED="2011-11-
    28T16:20:51.611Z" MIMETYPE="text/xml" SIZE="278">
      <foxml:xmlContent>
        <setDescriptions>
          <setDescription>
            <oai_dc:dc xmlns:dc="http://purl.org/dc/elements/1.1/"
              xmlns:oai_dc="http://www.openarchives.org/OAI/2.0/oai_dc/">
              <dc:description>Fondazione Gramsci Sisifo</dc:description>
            </oai_dc:dc>
          </setDescription>
        </setDescriptions>
      </foxml:xmlContent>
    </foxml:datastreamVersion>
  </foxml:datastream>
</foxml:digitalObject>
  
```

8.3.19 fgramsci:TO024-00001

```

<?xml version="1.0" encoding="UTF-8"?>
<foxml:digitalObject xmlns:foxml="info:fedora/fedora-system:def/foxml#"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" VERSION="1.1" PID="fgramsci:TO024-00001"
  
```

```

xsi:schemaLocation="info:fedora/fedora-system:def/foxml# http://www.fedora.info/definitions/1/0/foxml1-1.xsd">
<foxml:objectProperties>
  <foxml:property NAME="info:fedora/fedora-system:def/model#state" VALUE="Active"/>
  <foxml:property NAME="info:fedora/fedora-system:def/model#label" VALUE="Sisifo 1"/>
  <foxml:property NAME="info:fedora/fedora-system:def/model#ownerId" VALUE=""/>
  <foxml:property NAME="info:fedora/fedora-system:def/model#createdDate" VALUE="2011-10-13T17:43:46.824Z"/>
  <foxml:property NAME="info:fedora/fedora-system:def/view#lastModifiedDate" VALUE="2011-11-29T13:39:17.450Z"/>
</foxml:objectProperties>
<foxml:datastream ID="AUDIT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
  ...
</foxml:datastream>
<foxml:datastream ID="DC" STATE="A" CONTROL_GROUP="X" VERSIONABLE="true">
  ...
  <foxml:datastreamVersion ID="DC.2" LABEL="Dublin Core Record for this object" CREATED="2011-11-29T13:39:17.450Z" MIMETYPE="text/xml" FORMAT_URI="http://www.openarchives.org/OAI/2.0/oai_dc/" SIZE="942">
    <foxml:xmlContent>
      <dc:dc dc:xmlns:dc="http://purl.org/dc/elements/1.1/"
      xmlns:oai_dc="http://www.openarchives.org/OAI/2.0/oai_dc/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-
      instance" xsi:schemaLocation="http://www.openarchives.org/OAI/2.0/oai_dc/
      http://www.openarchives.org/OAI/2.0/oai_dc.xsd">
        <dc:title>Sisifo 1</dc:title>
        <dc:creator>Istituto Gramsci piemontese</dc:creator>
        <dc:subject>sviluppo; industria; welfare; lavoro; sociale; ricerca; innovazione; cultura, Piemonte,
        Torino</dc:subject>
        <dc:description>Idee, ricerche, programmi dell'Istituto Gramsci piemontese. Gennaio
        1984</dc:description>
        <dc:publisher>Istituto Gramsci piemontese</dc:publisher>
        <dc:date>2011-10-09</dc:date>
        <dc:type>Text</dc:type>
        <dc:format/>
        <dc:identifier>fgramsci:TO024-00001</dc:identifier>
        <dc:identifier>http://www.digibess.it/fedora/repository/fgramsci:TO024-00001</dc:identifier>
        <dc:language>it</dc:language>
      </oai_dc:dc>
    </foxml:xmlContent>
  </foxml:datastreamVersion>
</foxml:datastream>
<foxml:datastream ID="RELS-EXT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="true">
  ...
  <foxml:datastreamVersion ID="RELS-EXT.1" LABEL="RDF Statements about this object" CREATED="2011-11-28T16:27:22.648Z" MIMETYPE="application/rdf+xml" FORMAT_URI="info:fedora/fedora-system:FedoraRELSExt-1.0"
  SIZE="706">
    <foxml:xmlContent>
      <rdf:RDF xmlns:dc="http://purl.org/dc/elements/1.1/" xmlns:fedora="info:fedora/fedora-
      system:def/relations-external#" xmlns:fedora-model="info:fedora/fedora-system:def/model#"
      xmlns:oai="http://www.openarchives.org/OAI/2.0/" xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
      xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#">
        <rdf:Description rdf:about="info:fedora/fgramsci:TO024-00001">
          <fedora:isMemberOfCollection rdf:resource="info:fedora/fgramsci:sisifo"/>
          <fedora-model:hasModel rdf:resource="info:fedora/islandora:bookCModel"/>
          <oai:itemID>oai:fcl.to.cnr.it:fgramsci:TO024-00001</oai:itemID>
        </rdf:Description>
      </rdf:RDF>
    </foxml:xmlContent>
  </foxml:datastreamVersion>
</foxml:datastream>
<foxml:datastream ID="TN" STATE="A" CONTROL_GROUP="M" VERSIONABLE="true">
  <foxml:datastreamVersion ID="TN.0" LABEL="Thumbnail" CREATED="2011-10-13T17:43:46.863Z" MIMETYPE="image/jpeg"
  SIZE="36592">
    <foxml:contentLocation TYPE="INTERNAL_ID" REF="http://fcl.to.cnr.it:8080/fedora/get/fgramsci:TO024-
    00001/TN/2011-10-13T17:43:46.863Z"/>
  </foxml:datastreamVersion>
</foxml:datastream>
<foxml:datastream ID="INDEX" STATE="A" CONTROL_GROUP="M" VERSIONABLE="true">
  <foxml:datastreamVersion ID="INDEX.0" LABEL="Index" CREATED="2011-10-13T17:43:46.863Z" MIMETYPE="text/plain"
  SIZE="2158">
    <foxml:xmlContent>
      fgramsci:TO024-00001|Sisifo 1||fgramsci:TO024-00001-0001|Perché Sisifo, di Mario Dogliani||fgramsci:TO024-
      00001-0002|Il lavoro oggi: trasformazioni nella sua organizzazione e nel suo significato, di Luciano Gallino a
      cura di Fiorenzo Ferrero||fgramsci:TO024-00001-0006|Le riforme istituzionali: quali aspettative dalla
      politica?||fgramsci:TO024-00001-0006|Politica per innovare o politica per convivere? Di Mario Dogliani||
      fgramsci:TO024-00001-0008|Il «dilemma di Ingrao», di Michele Salvati||fgramsci:TO024-00001-0010|Scorciatoia
      decisionista?, di Gian Enrico Rusconi||fgramsci:TO024-00001-0013|Valutazione e controllo dell'efficienza
      produttiva nel settore pubblico. Alcuni recenti filoni di indagine, di Pier Vincenzo Bondonio||fgramsci:TO024-
      00001-0015|Il nuovo ruolo della magistratura dopo l'emergenza, di Guido Neppi Modona||fgramsci:TO024-00001-
      0019|Innovazione, automazione e lavoro umano, di Angelo Dina||fgramsci:TO024-00001-0021|Forza lavoro, tecniche
      innovative e nuove tecnologie. Qualche dato sulla ristrutturazione in Piemonte, di Dunia Astrologo||
      fgramsci:TO024-00001-0023|La Finpiemonte: riflessioni su un'esperienza/1, di Gastone Cottino||fgramsci:TO024-
      00001-0027|Aspetti e problemi della cultura scientifica e positiva tra ottocento e novecento.||fgramsci:TO024-
      00001-0027|Divulgazione scientifica e costituzione del sapere urbano, di Mario Ricciardi||fgramsci:TO024-
      00001-0029|Per una storia delle «culture scientifiche», di Claudio Pogliano||fgramsci:TO024-00001-0032|Il
      Politecnico di Torino e le istituzioni della industrializzazione, di Carlo Olmo||fgramsci:TO024-00001-0034|
      Lavoratori dell'auto in Italia e Gran Bretagna: forme e storia della soggettività, di Luisa Passerini||
      fgramsci:TO024-00001-0038|Un intellettuale europeo del XX secolo: Piero Sraffa (1898/1983), di Giuseppe
      Berta||fgramsci:TO024-00001-0038|Lavoro mentalità cultura, di Carmine Donzelli||fgramsci:TO024-00001-0040|
      Guida alla documentazione sull'innovazione tecnologica, di Roberto Maglione||fgramsci:TO024-00001-0041|
      Materiali per la storia della contrattazione sindacale sotto il regime fascista, di Giulio Sapelli||
      fgramsci:TO024-00001-0052|Indice
    </foxml:xmlContent>
  </foxml:datastreamVersion>
</foxml:datastream>
<foxml:datastream ID="PDF" STATE="A" CONTROL_GROUP="M" VERSIONABLE="true">
  <foxml:datastreamVersion ID="PDF.0" LABEL="Reference PDF" CREATED="2011-10-13T17:43:46.863Z"
  MIMETYPE="application/pdf" SIZE="4826907">
    <foxml:contentLocation TYPE="INTERNAL_ID" REF="http://fcl.to.cnr.it:8080/fedora/get/fgramsci:TO024-
    00001/PDF/2011-10-13T17:43:46.863Z"/>
  </foxml:datastreamVersion>
</foxml:datastream>

```

```

</foxml:datastreamVersion>
</foxml:datastream>
</foxml:digitalObject>

```

8.3.20 fgramsci:TO024-00001-0001

```

<?xml version="1.0" encoding="UTF-8"?>
<foxml:digitalObject xmlns:foxml="info:fedora/fedora-system:def/foxml#"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" VERSION="1.1" PID="fgramsci:TO024-00001-0001"
  xsi:schemaLocation="info:fedora/fedora-system:def/foxml# http://www.fedora.info/definitions/1/0/foxml1-1.xsd">
  <foxml:objectProperties>
    <foxml:property NAME="info:fedora/fedora-system:def/model#state" VALUE="Active"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#label" VALUE="Sisifo 1 - page 0001"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#ownerId" VALUE=""/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#createdDate" VALUE="2011-10-13T17:43:53.008Z"/>
    <foxml:property NAME="info:fedora/fedora-system:def/view#lastModifiedDate" VALUE="2011-10-13T17:43:53.008Z"/>
  </foxml:objectProperties>
  <foxml:datastream ID="AUDIT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="false">
    ...
  </foxml:datastream>
  <foxml:datastream ID="DC" STATE="A" CONTROL_GROUP="X" VERSIONABLE="true">
    <foxml:datastreamVersion ID="DC.0" LABEL="Dublin Core Record for this object" CREATED="2011-10-13T17:43:53.054Z" MIMETYPE="text/xml" FORMAT_URI="http://www.openarchives.org/OAI/2.0/oai_dc/" SIZE="864">
      <foxml:xmlContent>
        <oai_dc:dc xmlns:oai_dc="http://www.openarchives.org/OAI/2.0/oai_dc/"
          xmlns:dc="http://purl.org/dc/elements/1.1/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
          xsi:schemaLocation="http://www.openarchives.org/OAI/2.0/oai_dc/
            http://www.openarchives.org/OAI/2.0/oai_dc.xsd">
          <dc:title>Sisifo 1 - page 0001</dc:title>
          <dc:creator>Istituto Gramsci piemontese</dc:creator>
          <dc:subject>sviluppo; industria; welfare; lavoro; sociale; ricerca; innovazione; cultura, Piemonte,
            Torino</dc:subject>
          <dc:description>Idee, ricerche, programmi dell'Istituto Gramsci piemontese. Gennaio
            1984</dc:description>
          <dc:publisher>Istituto Gramsci piemontese</dc:publisher>
          <dc:date>2011-10-09</dc:date>
          <dc:type>Text</dc:type>
          <dc:format/>
          <dc:identifier>fgramsci:TO024-00001-0001</dc:identifier>
          <dc:language>it</dc:language>
        </oai_dc:dc>
      </foxml:xmlContent>
    </foxml:datastreamVersion>
  </foxml:datastream>
  <foxml:datastream ID="RELS-EXT" STATE="A" CONTROL_GROUP="X" VERSIONABLE="true">
    <foxml:datastreamVersion ID="RELS-EXT.0" LABEL="RDF Statements about this object" CREATED="2011-10-13T17:43:53.054Z" MIMETYPE="application/rdf+xml" FORMAT_URI="info:fedora/fedora-system:FedoraRELSExt-1.0"
      SIZE="678">
      <foxml:xmlContent>
        <rdf:RDF xmlns:dc="http://purl.org/dc/elements/1.1/" xmlns:fedora="info:fedora/fedora-
          system:def/relations-external#" xmlns:fedora-model="info:fedora/fedora-system:def/model#"
          xmlns:oai_dc="http://www.openarchives.org/OAI/2.0/oai_dc/" xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-
          ns#" xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#">
          <rdf:Description rdf:about="info:fedora/fgramsci:TO024-00001-0001">
            <fedora:isMemberOf rdf:resource="info:fedora/fgramsci:TO024-00001"/>
            <fedora-model:hasModel rdf:resource="info:fedora/islandora:pageCModel"/>
          </rdf:Description>
        </rdf:RDF>
      </foxml:xmlContent>
    </foxml:datastreamVersion>
  </foxml:datastream>
  <foxml:datastream ID="TN" STATE="A" CONTROL_GROUP="M" VERSIONABLE="true">
    <foxml:datastreamVersion ID="TN.0" LABEL="Thumbnail" CREATED="2011-10-13T17:43:53.054Z" MIMETYPE="image/jpeg"
      SIZE="36592">
      <foxml:contentLocation TYPE="INTERNAL_ID" REF="http://fc1.to.cnr.it:8080/fedora/get/fgramsci:TO024-00001-
        0001/TN/2011-10-13T17:43:53.054Z"/>
    </foxml:datastreamVersion>
  </foxml:datastream>
  <foxml:datastream ID="JP2" STATE="A" CONTROL_GROUP="M" VERSIONABLE="true">
    <foxml:datastreamVersion ID="JP2.0" LABEL="Compressed JP2" CREATED="2011-10-13T17:43:53.054Z"
      MIMETYPE="image/jp2" SIZE="289868">
      <foxml:contentLocation TYPE="INTERNAL_ID" REF="http://fc1.to.cnr.it:8080/fedora/get/fgramsci:TO024-00001-
        0001/JP2/2011-10-13T17:43:53.054Z"/>
    </foxml:datastreamVersion>
  </foxml:datastream>
  <foxml:datastream ID="OCR" STATE="A" CONTROL_GROUP="M" VERSIONABLE="true">
    <foxml:datastreamVersion ID="OCR.0" LABEL="Scanned text" CREATED="2011-10-13T17:43:53.055Z"
      MIMETYPE="text/plain" SIZE="1229">
      <foxml:contentLocation TYPE="INTERNAL_ID" REF="http://fc1.to.cnr.it:8080/fedora/get/fgramsci:TO024-00001-
        0001/OCR/2011-10-13T17:43:53.055Z"/>
    </foxml:datastreamVersion>
  </foxml:datastream>
  <foxml:datastream ID="TIFF" STATE="A" CONTROL_GROUP="M" VERSIONABLE="true">
    <foxml:datastreamVersion ID="TIFF.0" LABEL="Reference HD image" CREATED="2011-10-13T17:43:53.055Z"
      MIMETYPE="image/tiff" SIZE="13879128">
      <foxml:contentLocation TYPE="INTERNAL_ID" REF="http://fc1.to.cnr.it:8080/fedora/get/fgramsci:TO024-00001-
        0001/TIFF/2011-10-13T17:43:53.055Z"/>
    </foxml:datastreamVersion>
  </foxml:datastream>
</foxml:digitalObject>

```

8.4 Scripts

8.4.1 ingbookepages.sh

```
#!/bin/bash

FEDORA_HOME="/usr/local/fedora"
export FEDORA_HOME
PATH=$PATH:$FEDORA_HOME/server/bin:$FEDORA_HOME/client/bin:$JAVA_HOME/bin:/bin:/usr/bin:/sbin:/usr/sbin
export PATH

#1 Book directory - e.g. "/srv/storage/fgramsci_T0024-00001"
IMPORT_BASE_DIR=$1
#2 Collection PID - e.g. "openbess:cognetti-C001"
COLLEZIONE=$2
#3 fedoraAdmin password OR "test"
#4 number of pages OR "0" for all

IMPORT_VOL_DIR=${IMPORT_BASE_DIR##*/}
bookPID=${IMPORT_VOL_DIR/" /":"/"}
imagedir="${IMPORT_BASE_DIR}"/

echo "=====
Book PID: $bookPID
dir: $imagedir
=====
#
## MAIN CHECK ##
#
# check TIFF files #
SAVEIFS=$IFS
IFS=$(echo -en "\n\b")
ntiff=0
for nfile in $(find "$imagedir"*.tif -type f);
do
    let "ntiff += 1"
    sn=$(printf "%04d" $ntiff)
    if [[ "$nfile" != *$sn.tif ]]
    then
        echo "ERROR file $nfile NotEqual $sn"
        exit
    fi
done
IFS=$SAVEIFS
#
# check subdirectory #
n=0
for ndir in $(find "$imagedir"* -type d);
do
    let "n += 1"
done
if [ $n -gt 1 ] || [ $n -lt 1 ]
then
    echo "ERROR subdirectory NotUnique OR NotExist"
    exit
fi
occrdir=$(find "$imagedir"* -type d)
#
# check TXT files #
ntxt=0
SAVEIFS=$IFS
IFS=$(echo -en "\n\b")
for nfile in $(find "$occrdir"/*.txt -type f);
do
    let "ntxt += 1"
    st=$(printf "%04d" $ntxt)
    if [[ "$nfile" != *$st.txt ]]
    then
        echo "ERROR file $nfile NotEqual $st"
        exit
    fi
done
IFS=$SAVEIFS
#
# check TIFF and TXT number of files #
if [ $ntiff -ne $ntxt ]
then
    echo "ERROR files $ntiff TIFF NotEqual $ntxt TXT"
    exit
fi
#
# check PDF file #
n=0
SAVEIFS=$IFS
IFS=$(echo -en "\n\b")
for nfile in $(find "$imagedir"*.pdf -type f);
do
    let "n += 1"
    filepdf="$nfile"
done
if [ $n -gt 1 ] || [ $n -lt 1 ]
then
    echo "ERROR file PDF NotUnique OR NotExist"
```



```

exit
fi
IFS=$SAVEIFS
cp $filepdf "/srv/temp/pdf.pdf"
filepdf="/srv/temp/pdf.pdf"
#
## DC INDEX CHECK, EXTRACT ##
#
# check file DCIndex #
n=0
SAVEIFS=$IFS
IFS=$(echo -en "\n\b")
for nfile in $(find "$imagedir"*.txt -type f);
do
    let "n += 1"
    filedcindice="$nfile"
done
if [ $n -gt 1 ] || [ $n -lt 1 ]
then
    echo "ERROR file DCIndex NotUnique OR NotExist"
    exit
fi
IFS=$SAVEIFS
cp "$filedcindice" "/srv/temp/fdci.dci"
chmod +w "/srv/temp/fdci.dci"
#convert from dos to unix
fromdos "/srv/temp/fdci.dci"
filedcindice="/srv/temp/fdci.dci"
#check utf-8
filetype=$(file -bi $filedcindice)
if [ ! -e $filedcindice ] || [ ! -f $filedcindice ] || [ ! -s $filedcindice ] || [ "$filetype" != *utf-8 ]
then
    echo "ERROR file $filedcindice Format"
    exit
fi
#remove first 3 special chars if exist
awk '{if(NR==1)sub(/^\xef\xbb\xbf/, "");print}' "/srv/temp/fdci.dci" > "/srv/temp/fdci.idx"
rm "/srv/temp/fdci.dci"
filedcindice="/srv/temp/fdci.idx"
#
# DC check and extract to array #
DCN=( [DCTITLE] [DCREATOR] [DCSUBJECT] [DCDESCRIPTION] [DCPUBLISHER] [DCDATE] [DCTYPE] [DCFORMAT] [DCLANGUAGE] )
DCV[0]=" "
linind=""
ndc=0
nind=0
while read line; do
    lline=${#line}
    if [ $lline -gt 0 ]
    then
        dcvar="${line%:*}"
        dcval="${line#*:}"
        pc=${line:0:1}
        if [[ "$pc" < "0" ]] || [[ "$pc" > "9" ]]
        then
            let "ndc += 1"
            case $dcvar in
                TITLE)
                    DCV[0]="$dcval"
                    ;;
                CREATOR)
                    DCV[1]="$dcval"
                    ;;
                SUBJECT)
                    DCV[2]="$dcval"
                    ;;
                DESCRIPTION)
                    DCV[3]="$dcval"
                    ;;
                PUBLISHER)
                    DCV[4]="$dcval"
                    ;;
                DATE)
                    case $dcval in
                        [0-9][0-9][0-9][0-9]-[0-9][0-9]-[0-9][0-9])
                            DCV[5]="$dcval"
                            ;;
                        *)
                            echo "ERROR DC Date Format: $dcval"
                            exit
                            ;;
                    esac
                    ;;
                TYPE)
                    DCV[6]="$dcval"
                    ;;
                FORMAT)
                    DCV[7]="$dcval"
                    ;;
                LANGUAGE)
                    DCV[8]="$dcval"
                    ;;
                *)
                    echo "ERROR DC metadata: $dcvar val: $dcval"
                    exit
                    ;;
            esac
        fi
    fi
done

```

```

                esac
            fi
        done < "$filedcindice"
        #
        # check DC TITLE #
        ldctitle=${#DCV[0]}
        if [ $ldctitle -gt 0 ]
        then
            linkind="$bookPID${DCV[0]}"
        else
            echo "ERROR DC TITLE NotExist"
            exit
        fi
        #
        # show DC metadata #
        for i in {0..8}
        do
            echo "${DCN[$i]} = ${DCV[$i]}"
        done
        #
        # check Index #
        while read line; do
            lline=${#line}
            if [ $lline -gt 0 ]
            then
                dcvar="${line%%:*}"
                dcval="${line#*:}"
                pc=${line:0:1}
                if !([[ "$pc" < "0" ]] || [[ "$pc" > "9" ]])
                then
                    case $dcvar in
                        [0-9][0-9][0-9][0-9])
                            echo "$dcval" page "$dcvar"
                            let "nind += 1"
                            linkind="$linkind"|$bookPID-$dcvar|$dcval"
                            ;;
                        *)
                            echo "ERROR Index: $dcval page $dcvar"
                            exit
                            ;;
                    esac
                fi
            fi
        done < "$filedcindice"
        rm "$filedcindice"
        #
        # create datastream INDEX file #
        fileindex="/srv/temp/idx.idx"
        if [ -e $fileindex ]; then
            rm $fileindex
        fi
        echo "$linkind" > $fileindex
        #
        ## BOOK ##
        #
        # create thumbnail image from TIFF 0001 #
        IFS=$(echo -en "\n\n")
        filetift=$(find "$imagedir"*0001.tif -type f)
        IFS=$SAVEIFS
        if [ ! -e $filetift ];
        then
            echo "ERROR file TIFF 0001 for TN $filetift"
            exit
        fi
        #remove tiff compression
        tiffcp -c none "$filetift" "/srv/temp/tiff.tmp"
        #convert to gray scale
        convert "/srv/temp/tiff.tmp" -colorspace Gray "/srv/temp/tiff.tif"
        rm "/srv/temp/tiff.tmp"
        filetn="/srv/temp/tnbook.jpg"
        #resize image
        risconvert=$(convert "/srv/temp/tiff.tif"[0] -thumbnail x450 -resize 50% -fuzz 1% -trim +repage -gravity center
        -format jpg -quality 100 "$filetn")
        if [ ! -e $filetn ] || [ ! -f $filetn ] || [ ! -s $filetn ]
        then
            echo "ERROR file $filetn : $risconvert"
            exit
        fi
        #
        # prepare book template #
        cp import/templateBookMaster.xml import/templateBook.xml
        pidlabel=${DCV[0]}
        sed -i "s/[PID]/$bookPID/g;s/[PIDLABEL]/$pidlabel/g;s/[COLLEZIONE]/$COLLEZIONE/g" import/templateBook.xml
        for i in {0..8}
        do
            var=${DCN[$i]//"/"/"}
            var=${var//"/"/"}
            valo=${DCV[$i]//"/"/"}
            sed -i "s/$var/$valo/g" import/templateBook.xml
        done
        ftn=${filetn//"/"/"}
        findex=${fileindex//"/"/"}
        fpdf=${filepdf//"/"/"}
        sed -i "s/[FILETN]/$ftn/g;s/[FILEINDEX]/$findex/g;s/[FILEPDF]/$fpdf/g" import/templateBook.xml
        #
    
```

```

# ingest book or nothing if test #
if [[ "$3" != test ]]
then
    risultato=$(/usr/local/fedora/client/bin/fedora-ingest.sh f import/templateBook.xml info:fedora/fedora-
system:FOXML-1.1 fcl.to.cnr.it:8080 fedoraAdmin $3 http)
    if [[ "$risultato" == Ingested* ]]
    then
        echo "$risultato"
    else
        echo "ERROR INGESTING $risultato"
        exit
    fi
else
    echo "-> INGESTED(test)"
fi
#
## PAGES ##
#
# evaluate number of pages to ingest #
if [ $4 -gt 0 ]
then
    finoa=$4
else
    finoa=ntiff
fi
# cycle single page #
for (( npage=1; npage<=finoa; npage++ ))
do
#
# define PID and Label #
    snpage=$(printf "%04d" $npage)
    pagePID="$bookPID"-"$snpage"
    pagePIDLabel="${DCV[0]}" - page "$snpage"
#
# check tiff #
    IFS=$(echo -en "\n\b")
    filetiff=$(find "$imagedir"*$snpage.tif -type f)
    IFS=$SAVEIFS
    if [ ! -e $filetiff ] || [ ! -f $filetiff ] || [ ! -s $filetiff ]
    then
        if [[ "$3" != test ]]
        then
            exit
        else
            echo "$snpage -> ERROR file $filetiff"
        fi
    fi
#
# remove tiff compression #
    tiffcp -c none "$filetiff" "/srv/temp/tiff.tmp"
#
# convert tiff to gray scale #
    convert "/srv/temp/tiff.tmp" -colorspace Gray "/srv/temp/tiff.tif"
    rm "/srv/temp/tiff.tmp"
    filetiff="/srv/temp/tiff.tif"
#
# create page thumbnail #
    filetn="/srv/temp/page-tn.jpg"
    risconvert=$(convert "$filetiff"[0] -thumbnail x450 -resize 50% -fuzz 1% -trim +repage -gravity center
-format jpg -quality 100 "$filetn")
    if [ ! -e $filetn ] || [ ! -f $filetn ] || [ ! -s $filetn ]
    then
        if [[ "$3" != test ]]
        then
            exit
        else
            echo "$snpage -> ERROR file $filetn : $risconvert"
        fi
    fi
#
# create page jpeg2000 #
    filej2="/srv/temp/jp2.jp2"
    riscompres=$(kdu compress -i "$filetiff" -o "$filej2" -rate 0.5 Clayers=1 Clevels=7
"Cpcreincts={256,256},{256,256},{256,256},{128,128},{128,128},{64,64},{64,64},{32,32},{16,16}" "Corder=RPCL"
"ORGgen_plt=yes" "ORGtparts=R" "Cblk={32,32}" Cuse_sop=yes)
    if [ ! -e $filej2 ] || [ ! -f $filej2 ] || [ ! -s $filej2 ]
    then
        if [[ "$3" != test ]]
        then
            exit
        else
            echo "$snpage -> ERROR file $filej2 : $riscompres"
        fi
    fi
#
# prepare txt file #
    IFS=$(echo -en "\n\b")
    fileocr=$(find "$ocdir"/*$snpage.txt -type f)
    IFS=$SAVEIFS
    #remove char FF &#12 oct 014
    tr -d '\014' < "$fileocr" > "/srv/temp/ocr.tmp"
    #convert from dos to unix
    fromdos "/srv/temp/ocr.tmp"
    fileocrtmp="/srv/temp/ocr.tmp"
    #check utf-8
    if [ ! -e $fileocrtmp ] || [ ! -f $fileocrtmp ] || [ ! -s $fileocrtmp ]

```

```

then
    if [[ "$3" != test ]]
    then
        exit
    else
        echo "$snpage -> ERROR file $fileocrtmp"
    fi
fi
filetype=$(file -bi $fileocrtmp)
if [[ "$filetype" != *utf-8 ]] && [[ "$filetype" != *us-ascii ]]
then
    if [[ "$3" != test ]]
    then
        exit
    else
        echo "$snpage -> ERROR file $fileocrtmp"
    fi
fi
#remove first 3 special chars if exist
awk '{if(NR==1)sub(/^\xef\xbb\xbf/, "");print}' "/srv/temp/ocr.tmp" > "/srv/temp/ocr.ocr"
rm "/srv/temp/ocr.tmp"
fileocrtmp="/srv/temp/ocr.ocr"
#
# prepare page template #
cp import/templatePageMaster.xml import/templatePage.xml
sed -i "s/[PID\]/$pagePID/g;s/[PIDLABEL\]/$pagePIDlabel/g" import/templatePage.xml
sed -i "s/[DCVTITLE\]/$pagePIDlabel/g;s/[PIDBOOK\]/$bookPID/g" import/templatePage.xml
for i in {1..8}
do
    var=${DCN[$i]//"/"/"}
    var=${var//"/"/"}
    valo=${DCV[$i]//"/"/"}
    sed -i "s/$var/$valo/g" import/templatePage.xml
done
ftn=${filetn//"/"/"}
fjp2=${filej2//"/"/"}
focr=${fileocrtmp//"/"/"}
ftiff=${filetiff//"/"/"}
sed -i "s/[FILETN\]/$ftn/g;s/[FILEJ2\]/$fjp2/g;s/[FILEOCR\]/$focr/g" import/templatePage.xml
sed -i "s/[FILETIFF\]/$ftiff/g" import/templatePage.xml
#
# ingest page or nothing if test #
if [[ "$3" != test ]]
then
    risultato=$(/usr/local/fedora/client/bin/fedora-ingest.sh f import/templatePage.xml
info:fedora/fedora-system:FOXML-1.1 fcl.to.cnr.it:8080 fedoraAdmin $3 http)
    if [[ "$risultato" == Ingested* ]]
    then
        echo "$snpage -> $risultato"
    else
        echo "$snpage -> ERROR INGESTING $risultato"
        exit
    fi
else
    echo "$snpage -> INGESTED(test)"
fi
done
exit
    
```

8.4.2 ingpiubook.sh

```

#!/bin/bash
FEDORA_HOME="/usr/local/fedora"
export FEDORA_HOME
PATH=$PATH:$FEDORA_HOME/server/bin:$FEDORA_HOME/client/bin:$JAVA_HOME/bin:/bin:/usr/bin:/sbin:/usr/sbin
export PATH

#1 Collection directory - e.g. "/srv/storage/cognetti_collezioni/direttori/"
IMPORT_BASE_DIR=$1
#2 Collection PID - e.g. "openbess:cognetti-C001"
IMPORT_COLLECTION=$2
#3 fedoraAdmin password OR "test"
#4 number of pages OR "0" for all

n=0
for ndir in $(find "$IMPORT_BASE_DIR" -maxdepth 0 -type d);
do
    echo "====> $nomedir"
    ./ingbookepages.sh "$ndir" $2 $3 $4
done
    
```

8.4.3 templateBookMaster.xml

```

<?xml version="1.0" encoding="UTF-8"?>
<foxml:digitalObject VERSION="1.1" PID="[PID]" xmlns:foxml="info:fedora/fedora-system:def/foxml#"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="info:fedora/fedora-system:def/foxml#
http://www.fedora.info/definitions/1/0/foxml1-1.xsd">
<foxml:objectProperties>
  <foxml:property NAME="info:fedora/fedora-system:def/model#state" VALUE="A"/>
  <foxml:property NAME="info:fedora/fedora-system:def/model#label" VALUE="[PIDLABEL]"/>
  <foxml:property NAME="info:fedora/fedora-system:def/model#ownerId" VALUE="fedoraAdmin"/>
</foxml:objectProperties>

<foxml:datastream ID="DC" STATE="A" CONTROL_GROUP="X">
  <foxml:datastreamVersion FORMAT_URI="http://www.openarchives.org/OAI/2.0/oai_dc/"
ID="DC.0" MIMETYPE="text/xml"
    
```

```

                                LABEL="Dublin Core Record for this object">
<foxml:xmlContent>
  <oai_dc:dc xmlns:oai_dc="http://www.openarchives.org/OAI/2.0/oai_dc/"
  xmlns:dc="http://purl.org/dc/elements/1.1/">
    <dc:title>[DCTITLE]</dc:title>
    <dc:creator>[DCCREATOR]</dc:creator>
    <dc:subject>[DCSUBJECT]</dc:subject>
    <dc:description>
      [DCDESCRIPTION]
    </dc:description>
    <dc:type>[DCTYPE]</dc:type>
    <dc:date>[DCDATE]</dc:date>
    <dc:publisher>[DCPUBLISHER]</dc:publisher>
    <dc:format>[DCFORMAT]</dc:format>
    <dc:language>[DCLANGUAGE]</dc:language>
    <dc:identifier>[PID]</dc:identifier>
    <dc:identifier>http://www.digibess.it/fedora/repository/[PID]</dc:identifier>
  </oai_dc:dc>
</foxml:xmlContent>
</foxml:datastreamVersion>
</foxml:datastream>

<foxml:datastream ID="RELS-EXT" CONTROL_GROUP="X">
  <foxml:datastreamVersion FORMAT_URI="info:fedora/fedora-system:FedoraRELSExt-1.0"
  ID="RELS-EXT.0" MIMETYPE="application/rdf+xml"
  LABEL="RDF Statements about this object">

    <foxml:xmlContent>
      <rdf:RDF xmlns:dc="http://purl.org/dc/elements/1.1/"
      xmlns:fedora="info:fedora/fedora-system:def/relations-external#"
      xmlns:fedora-model="info:fedora/fedora-system:def/model#"
      xmlns:oai="http://www.openarchives.org/OAI/2.0/"
      xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#" xmlns:rdfs="http://www.w3.org/2000/01/rdf-
      schema#">
        <rdf:Description rdf:about="info:fedora/[PID]">
          <fedora:isMemberOfCollection rdf:resource="info:fedora/[COLLEZIONE]"/>
          <fedora-model:hasModel rdf:resource="info:fedora/islandora:bookCModel"/>
          <oai:itemID>oai:fcl.to.cnr.it:[PID]</oai:itemID>
        </rdf:Description>
      </rdf:RDF>
    </foxml:xmlContent>
  </foxml:datastreamVersion>
</foxml:datastream>

<foxml:datastream CONTROL_GROUP="M" ID="TN" STATE="A">
  <foxml:datastreamVersion ID="TN.0" MIMETYPE="image/jpeg"
  LABEL="Thumbnail">
    <foxml:contentLocation REF="file:[FILETN]" TYPE="URL"/>
  </foxml:datastreamVersion>
</foxml:datastream>

<foxml:datastream CONTROL_GROUP="M" ID="INDEX" STATE="A">
  <foxml:datastreamVersion ID="INDEX.0" MIMETYPE="text/plain"
  LABEL="Index">
    <foxml:contentLocation REF="file:[FILEINDEX]" TYPE="URL"/>
  </foxml:datastreamVersion>
</foxml:datastream>

<foxml:datastream CONTROL_GROUP="M" ID="PDF" STATE="A">
  <foxml:datastreamVersion ID="PDF.0" MIMETYPE="application/pdf"
  LABEL="Reference PDF">
    <foxml:contentLocation REF="file:[FILEPDF]" TYPE="URL"/>
  </foxml:datastreamVersion>
</foxml:datastream>
</foxml:digitalObject>

```

8.4.4 templatePageMaster.xml

```

<?xml version="1.0" encoding="UTF-8"?>
<foxml:digitalObject VERSION="1.1" PID="[PID]" xmlns:foxml="info:fedora/fedora-system:def/foxml#"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="info:fedora/fedora-system:def/foxml#
  http://www.fedora.info/definitions/1/0/foxml1-1.xsd">
  <foxml:objectProperties>
    <foxml:property NAME="info:fedora/fedora-system:def/model#state" VALUE="A"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#label" VALUE="[PIDLABEL]"/>
    <foxml:property NAME="info:fedora/fedora-system:def/model#ownerId" VALUE="fedoraAdmin"/>
  </foxml:objectProperties>

  <foxml:datastream ID="DC" STATE="A" CONTROL_GROUP="X">
    <foxml:datastreamVersion FORMAT_URI="http://www.openarchives.org/OAI/2.0/oai_dc/"
    ID="DC.0" MIMETYPE="text/xml"
    LABEL="Dublin Core Record for this object">

      <foxml:xmlContent>
        <oai_dc:dc xmlns:oai_dc="http://www.openarchives.org/OAI/2.0/oai_dc/"
        xmlns:dc="http://purl.org/dc/elements/1.1/">
          <dc:title>[DCTITLE]</dc:title>
          <dc:creator>[DCCREATOR]</dc:creator>
          <dc:subject>[DCSUBJECT]</dc:subject>
          <dc:description>
            [DCDESCRIPTION]
          </dc:description>
          <dc:type>[DCTYPE]</dc:type>
          <dc:date>[DCDATE]</dc:date>
          <dc:publisher>[DCPUBLISHER]</dc:publisher>
          <dc:format>[DCFORMAT]</dc:format>
          <dc:language>[DCLANGUAGE]</dc:language>
          <dc:identifier>[PID]</dc:identifier>
        </oai_dc:dc>
      </foxml:xmlContent>
    </foxml:datastreamVersion>
  </foxml:datastream>

```

```

</oai_dc:dc>
</foxml:xmlContent>
</foxml:datastreamVersion>
</foxml:datastream>

<foxml:datastream ID="RELS-EXT" CONTROL_GROUP="X">
  <foxml:datastreamVersion FORMAT_URI="info:fedora/fedora-system:FedoraRELSExt-1.0"
    ID="RELS-EXT.0" MIMETYPE="application/rdf+xml"
    LABEL="RDF Statements about this object">

    <foxml:xmlContent>
      <rdf:RDF xmlns:dc="http://purl.org/dc/elements/1.1/"
        xmlns:fedora="info:fedora/fedora-system:def/relations-external#"
        xmlns:fedora-model="info:fedora/fedora-system:def/model#"
        xmlns:oai_dc="http://www.openarchives.org/OAI/2.0/oai_dc/"
        xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#" xmlns:rdfs="http://www.w3.org/2000/01/rdf-
        schema#">
        <rdf:Description rdf:about="info:fedora/[PID]">
          <fedora:isMemberOf rdf:resource="info:fedora/[PIDBOOK]"/>
          <fedora-model:hasModel rdf:resource="info:fedora/islandora:pageCModel"/>
        </rdf:Description>
      </rdf:RDF>
    </foxml:xmlContent>
  </foxml:datastreamVersion>
</foxml:datastream>

<foxml:datastream CONTROL_GROUP="M" ID="TN" STATE="A">
  <foxml:datastreamVersion ID="TN.0" MIMETYPE="image/jpeg"
    LABEL="Thumbnail">
    <foxml:contentLocation REF="file:[FILETN]" TYPE="URL"/>
  </foxml:datastreamVersion>
</foxml:datastream>

<foxml:datastream CONTROL_GROUP="M" ID="JP2" STATE="A">
  <foxml:datastreamVersion ID="JP2.0" MIMETYPE="image/jp2"
    LABEL="Compressed JP2">
    <foxml:contentLocation REF="file:[FILEJP2]" TYPE="URL"/>
  </foxml:datastreamVersion>
</foxml:datastream>

<foxml:datastream CONTROL_GROUP="M" ID="OCR" STATE="A">
  <foxml:datastreamVersion ID="OCR.0" MIMETYPE="text/plain"
    LABEL="Scanned text">
    <foxml:contentLocation REF="file:[FILEOCR]" TYPE="URL"/>
  </foxml:datastreamVersion>
</foxml:datastream>

<foxml:datastream CONTROL_GROUP="M" ID="TIFF" STATE="A">
  <foxml:datastreamVersion ID="TIFF.0" MIMETYPE="image/tiff"
    LABEL="Reference HD image">
    <foxml:contentLocation REF="file:[FILETIFF]" TYPE="URL"/>
  </foxml:datastreamVersion>
</foxml:datastream>
</foxml:digitalObject>

```