



JUX (Java Universal eXplorer)

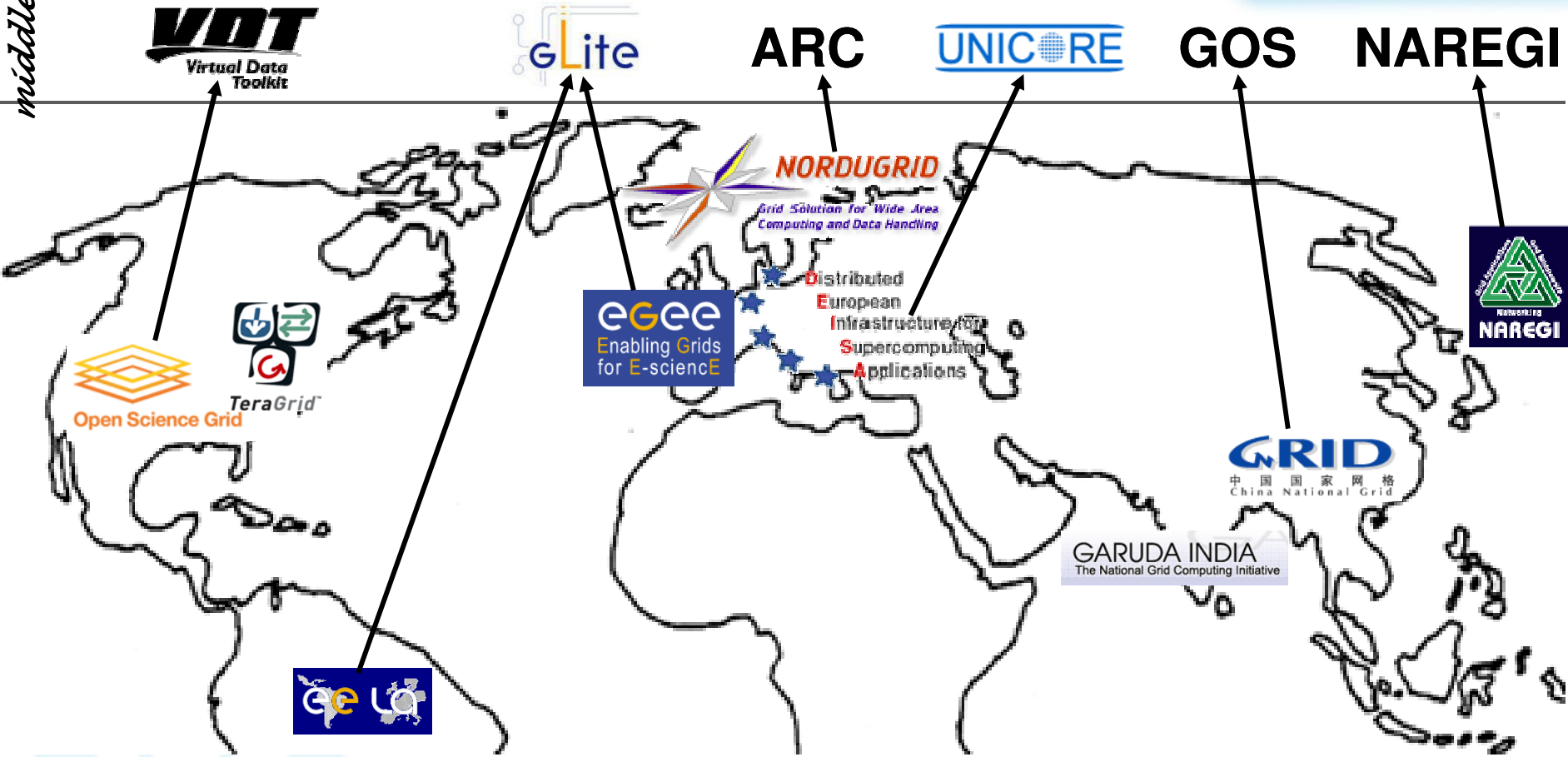
Pascal Calvat

Workshop on Interoperability of Digital Repositories

Several grid in the world



middleware



JUX – A single GUI for the grid



- The main purpose of JUX is to provide a single GUI for accessing and managing data on the grids
- With uncluttered interfaces, JUX tries to be intuitive and easy to use for non-expert users. Only few menus, drag-and-drop for copying data...
- The ergonomics is close to widely used explorer like the famous Windows explorer
- Similar tools exist
 - HERMES (Australia)
 - VBrower (Holland)



} based on Apache Commons VFS

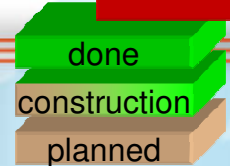
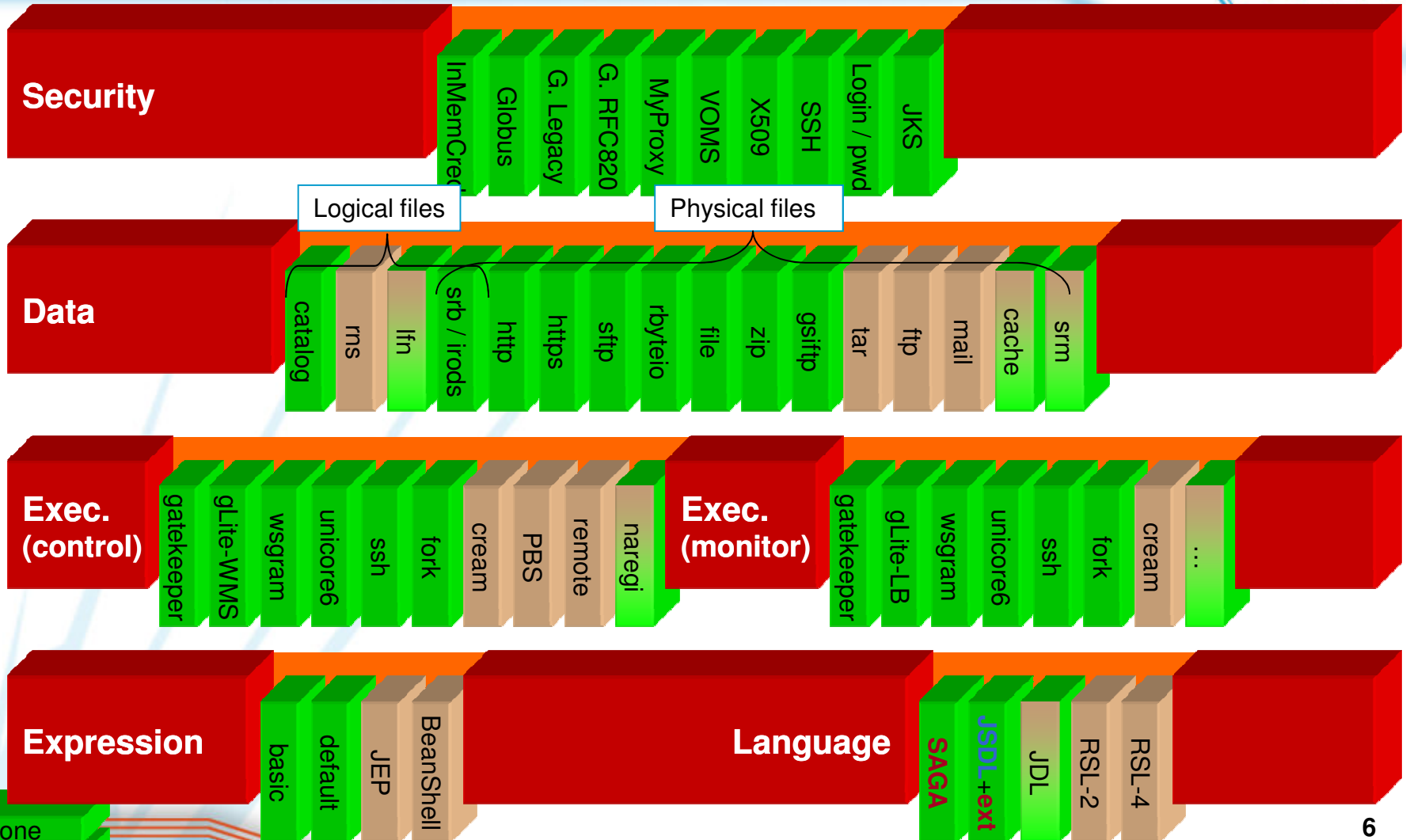
- JUX is a **file explorer** written in full java to be **independent** of the operating systems
 - Tested on Windows, Scientific Linux, Ubuntu, Mac
- In latest version, all jar files are compiled for java 1.5
- The installation is made with a GUI installer
- JUX is distributed under the french license Cecill 2 close to GPL licence but corresponding to the french law.
- Manpower: Only one person for developing JUX
- Download url: <https://forge.in2p3.fr/wiki/jux>

JUX – Architecture



- JUX is based on the JSAGA API developed at ccin2p3 by Sylvain Reynaud
- JSAGA provides the data management layer:
 - Protocols: srb, irods, gsiftp, srm, http, file, sftp, zip
- JSAGA provides security mechanisms:
 - Globus proxy, VOMS proxy, Login/Password, X509

JSAGA plug-ins list



- JUX uses the JSAGA introspection API to discover...
 - list of available protocols
 - list of configured security contexts
- JSAGA allows JUX to be completely independent of technologies used
 - **just copy your own JSAGA plug-in in JUX "lib/" directory to add the support for a new technology !**

JUX – Security context



- The security context setup is the most complex task for the end-user
- Contexts are described into a xml file called “jsaga-universe.xml” in JUX “etc” directory. At present time, the xml code is modified by hand.
- As people can not manage easily xml syntax, we plan to develop a GUI for entering security contexts (*not yet available*).

JUX – Security context



- Example of user/pass security context for irods:

jsaga-universe.xml

```
<GRID name="IRODS_CALVAT_TEST" contextType="UserPass">
  <attribute name="UserID" value="calvat"/>
  <attribute name="UserPass" value="a1vR3Thn"/>
  <data type="irods"/>
  <data type="irods">
    <schemeAlias>irods</schemeAlias>
  </data>
</GRID>
```

JUX – Security context



- Example of VOMS security context for irods:

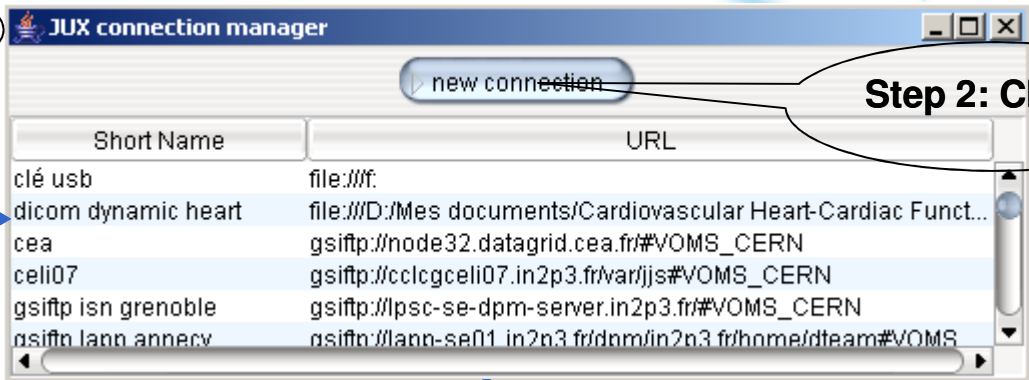
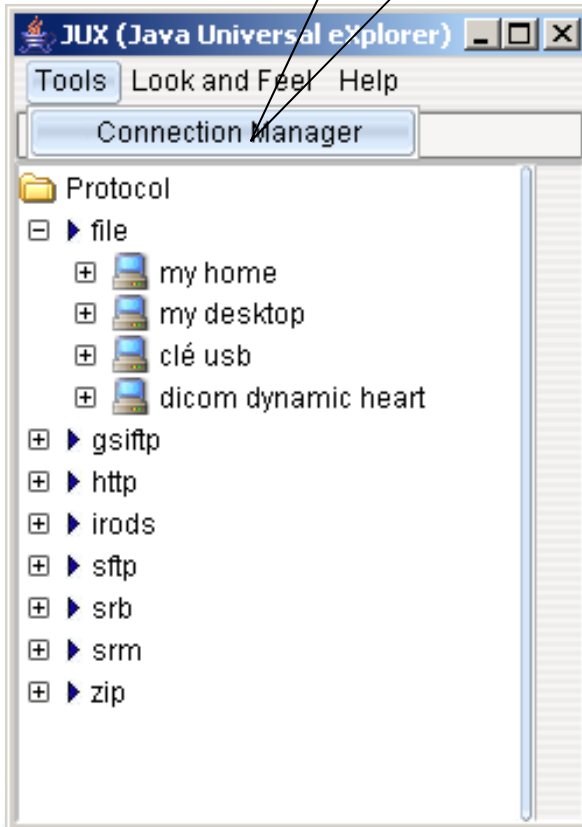
jsaga-universe.xml

```
<GRID name=" IRODS_CALVAT_TEST_VOMS" contextType="VOMS">
  <attribute name="Server"
    value="voms://lcg-voms.cern.ch:15004/DC=ch/DC=cern/..."/>
  <attribute name="VomsDir" value="etc/vomsdir"/>
  <attribute name="UserVO" value="dteam"/>
  <data type="irods">
    <attribute name="UserID" value="calvat"/>
  </data>
  <data type="irodsI">
    <schemeAlias>irods</schemeAlias>
  </data>
</GRID>
```

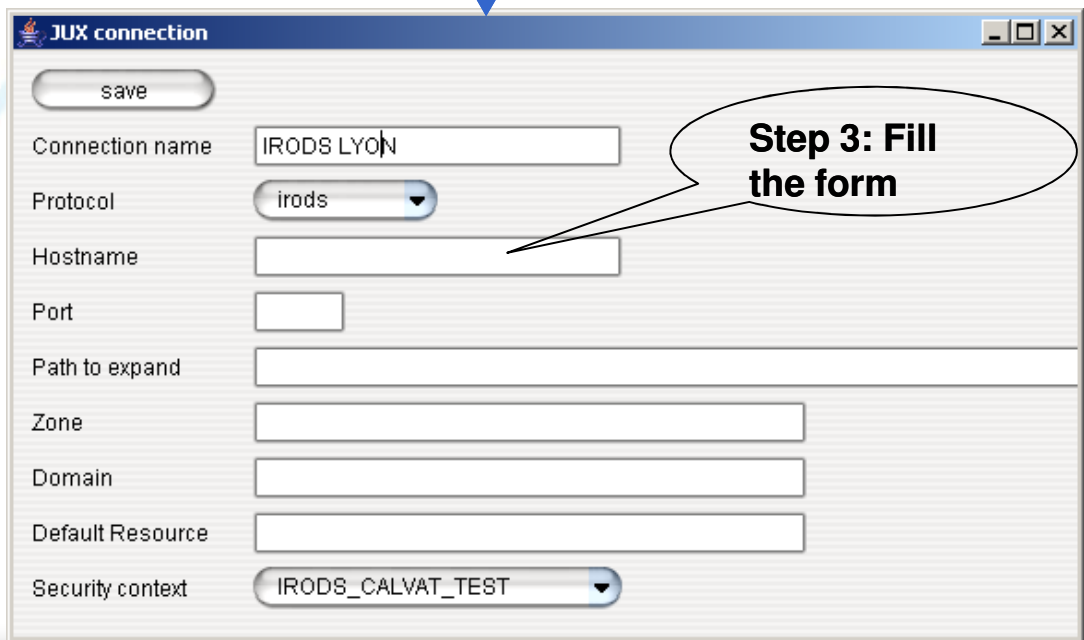
JUX – Create connection



Step 1: Select



Step 2: Click



Step 3: Fill the form

JUX – Create connection



Before creating a connection, it is mandatory to define the security context into the jsaga-universe.xml. Only the security contexts compatible with the selected protocol appear in the popup list.

JUX MUST BE RELOADED AFTER MODIFYING jsaga-universe.xml

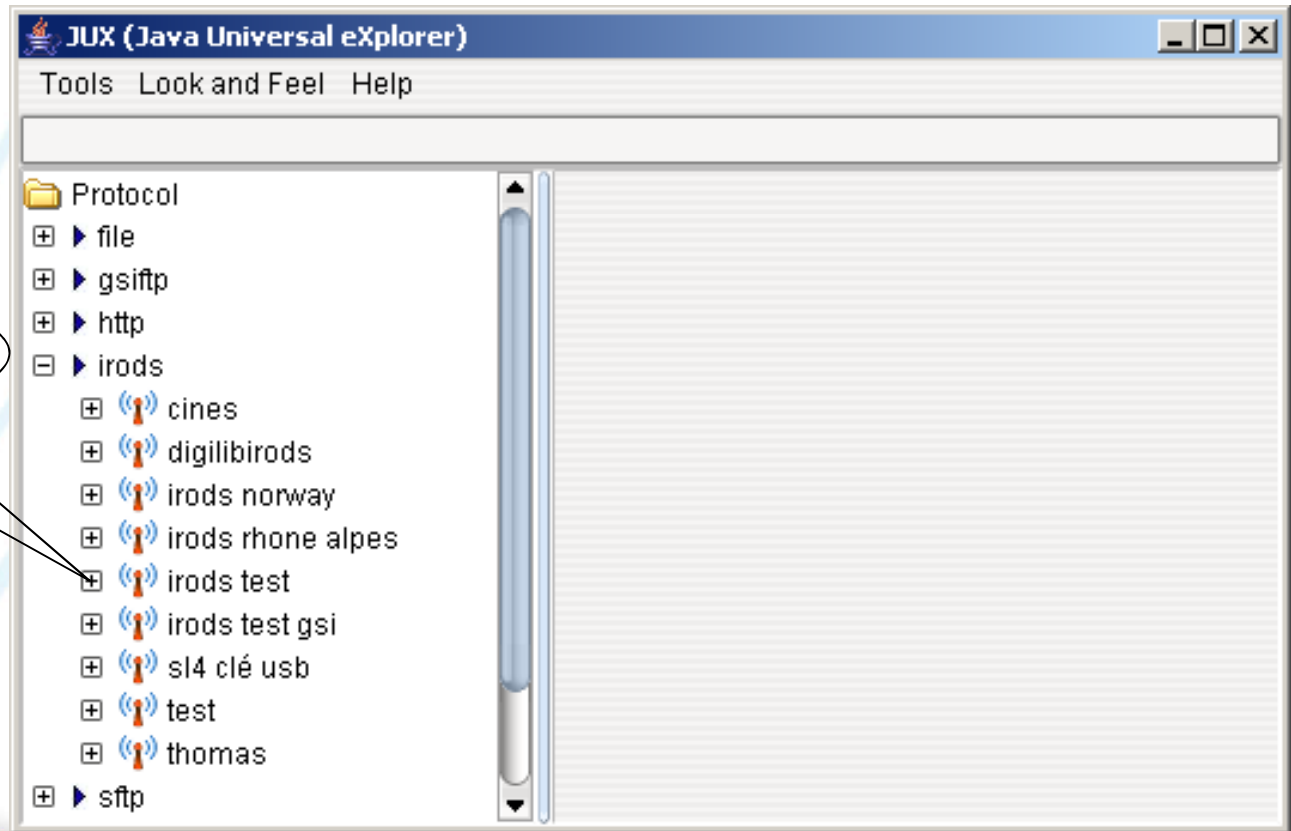
A screenshot of a Java Swing dialog box titled "JUX connection". The dialog has a title bar with standard window controls (minimize, maximize, close). Below the title bar are two buttons: "save" and "delete". The main area contains several labeled text fields and dropdown menus:

- Connection name: irods test
- Protocol: irods (dropdown menu)
- Hostname: 134.158.104.78
- Port: 5596
- Path to expand: /groups/ccin2p3
- Zone: tempZone
- Domain: (empty field)
- Default Resource: lyon1
- Security context: IRODS_CALVAT_TEST (dropdown menu)

JUX – Establish connection



A permanent connection is open when clicking on the plus icon corresponding to the connection name



Click to open
connection

JUX – Browse files and directories



The main window is uncluttered to avoid loosing users in details.
Connection is kept open until the nodes are collapsed (left side).

The screenshot shows the JUX (Java Universal eXplorer) window. The title bar reads "JUX (Java Universal eXplorer)". The menu bar includes "Tools", "Look and Feel", and "Help". The address bar shows the path: "irods://134.158.104.78:5596/tempZone/home/calvat/dicom/".

The left pane displays a tree view of the file system:

- Protocol
 - file
 - gsiftp
 - http
 - irods
 - cines
 - digilibirods
 - irods norway
 - irods rhone alpes
 - irods test
 - home
 - antilogus
 - calvat
 - BIRNy
 - dicom
 - caspa_ima

26 files (2 537 690 bytes)

JUX – Copy files and directories



Select file names in tabular form at right, and, drag and drop the selection into the destination directory at left

JUX (Java Universal eXplorer)

Tools Look and Feel Help

srb://ccsrb01_in2p3.fr:5591/ccin2p3/home/calvat.isc/musique/peter gabriel/

Name	Size (bytes)	Extension	Last modified
01-solbury hill.mp3	5 901 524	mp3	mer., 17 déc. 2008 14:02:53
02-I don't remember.mp3	4 642 191	mp3	mer., 17 déc. 2008 14:02:56
03-Sledgehammer.mp3	6 615 926	mp3	mer., 17 déc. 2008 14:02:59
04-family snapshot.mp3	5 381 556	mp3	mer., 17 déc. 2008 14:03:00
05-Mercy street.mp3	5 697 453	mp3	mer., 17 déc. 2008 14:03:03
06-Shaking the tree.mp3	7 843 424	mp3	mer., 17 déc. 2008 14:03:05
07-Don't give up.mp3	6 342 196	mp3	mer., 17 déc. 2008 14:03:07
08-San jacinto.mp3	8 474 603	mp3	mer., 17 déc. 2008 14:03:10
09-Here comes the flood.mp3	5 301 776	mp3	mer., 17 déc. 2008 14:03:11
10-Red rain.mp3	7 647 009	mp3	mer., 17 déc. 2008 14:03:13
11-Games without frontiers.mp3	5 010 152	mp3	mer., 17 déc. 2008 14:03:15
12-Shock the monkey.mp3	4 889 585	mp3	mer., 17 déc. 2008 14:03:16
13-I have the touch.mp3	4 291 673	mp3	mer., 17 déc. 2008 14:03:18
14-Big time.mp3	6 274 606	mp3	mer., 17 déc. 2008 14:03:20
15-Zaar.mp3	3 827 787	mp3	mer., 17 déc. 2008 14:03:21
16-Biko.mp3	8 431 838	mp3	mer., 17 déc. 2008 14:03:23

9 files selected (54 149 029 bytes)

JUX – Copy files and directories



A transfer window shows the status of current transfers. It's possible to transfer files or directories.

The screenshot shows a window titled "Transfer" with a table of file transfer details. The table has five columns: Source File, Source Directory, Destination Directory, Status, and Size. The data is as follows:

Source File	Source Directory	Destination Directory	Status	Size
08-San jacinto.mp3	srb://ccsrb01.in2p3.fr:5591/ccin2p3/home/calva...	irods://ccirods02.in2p3.fr:5588/rhone-alpes/ho...	Complete	8474603
09-Here comes the flood.mp3	srb://ccsrb01.in2p3.fr:5591/ccin2p3/home/calva...	irods://ccirods02.in2p3.fr:5588/rhone-alpes/ho...	Complete	5301776
10-Red rain.mp3	srb://ccsrb01.in2p3.fr:5591/ccin2p3/home/calva...	irods://ccirods02.in2p3.fr:5588/rhone-alpes/ho...	Complete	7647009
11-Games without frontiers.mp3	srb://ccsrb01.in2p3.fr:5591/ccin2p3/home/calva...	irods://ccirods02.in2p3.fr:5588/rhone-alpes/ho...	Queued	5010152
12-Shock the monkey.mp3	srb://ccsrb01.in2p3.fr:5591/ccin2p3/home/calva...	irods://ccirods02.in2p3.fr:5588/rhone-alpes/ho...	Queued	4889585
13-I have the touch.mp3	srb://ccsrb01.in2p3.fr:5591/ccin2p3/home/calva...	irods://ccirods02.in2p3.fr:5588/rhone-alpes/ho...	Queued	4291673
14-Big time.mp3	srb://ccsrb01.in2p3.fr:5591/ccin2p3/home/calva...	irods://ccirods02.in2p3.fr:5588/rhone-alpes/ho...	Queued	6274606
15-Zaar.mp3	srb://ccsrb01.in2p3.fr:5591/ccin2p3/home/calva...	irods://ccirods02.in2p3.fr:5588/rhone-alpes/ho...	Queued	3827787
16-Biko.mp3	srb://ccsrb01.in2p3.fr:5591/ccin2p3/home/calva...	irods://ccirods02.in2p3.fr:5588/rhone-alpes/ho...	Queued	8431838

During file copy, the transfer stream spend by the user laptop, so JUX is not designed for transferring a big amount of data

JUX – Metadata



Use right mouse click to visualize files or directories metadata.

The screenshot shows the JUX (Java Universal eXplorer) application window. The title bar reads "JUX (Java Universal eXplorer)". The menu bar includes "Tools", "Look and Feel", and "Help". The address bar shows the path: "irods://134.158.104.78:5596/tempZone/home/calvat/dicom/".

The left pane displays a tree view of the file system. The "dicom" directory is selected, and its subdirectory "caspa_ima" is expanded. The right pane shows a list of files in the "caspa_ima" directory. A context menu is open over the file "IM-0001-0004.dcm", with the "Display metadata" option highlighted.

Name	Size (bytes)	Extension	Last m...
caspa_ima			
IM-0001-0001.dcm	101 498	dcm	ven., 3...
IM-0001-0002.dcm	101 508	dcm	ven., 3...
IM-0001-0003.dcm	101 508	dcm	ven., 3...
IM-0001-0004.dcm	101 508	dcm	ven., 3...
IM-0001-0005.dcm	101 508	dcm	ven., 3...
IM-0001-0006.dcm	101 508	dcm	ven., 3...
IM-0001-0007.dcm	101 508	dcm	ven., 3...
IM-0001-0008.dcm	101 508	dcm	ven., 3...
IM-0001-0009.dcm	101 508	dcm	ven., 3...
IM-0001-0010.dcm	101 508	dcm	ven., 3...
IM-0001-0011.dcm	101 508	dcm	ven., 3...
IM-0001-0012.dcm	101 508	dcm	ven., 3...
IM-0001-0013.dcm	101 508	dcm	ven., 3...
IM-0001-0014.dcm	101 508	dcm	ven., 3...
IM-0001-0015.dcm	101 508	dcm	ven., 3...
IM-0001-0016.dcm	101 508	dcm	ven., 3...
IM-0001-0017.dcm	101 508	dcm	ven., 3...
IM-0001-0018.dcm	101 508	dcm	ven., 3...
IM-0001-0019.dcm	101 508	dcm	ven., 3...

1 file selected (101 508 bytes)

JUX – Metadata



Metadata are displayed in two tabs.

Name	Value
Name	IM-0001-0002.dcm
Type	file
Size	101508 bytes
URL	irods://134.158.104.78:5596/tempZone/home/calv...
sex	male
study	IRM
age	35
position	HFS

Metadata from irods file system

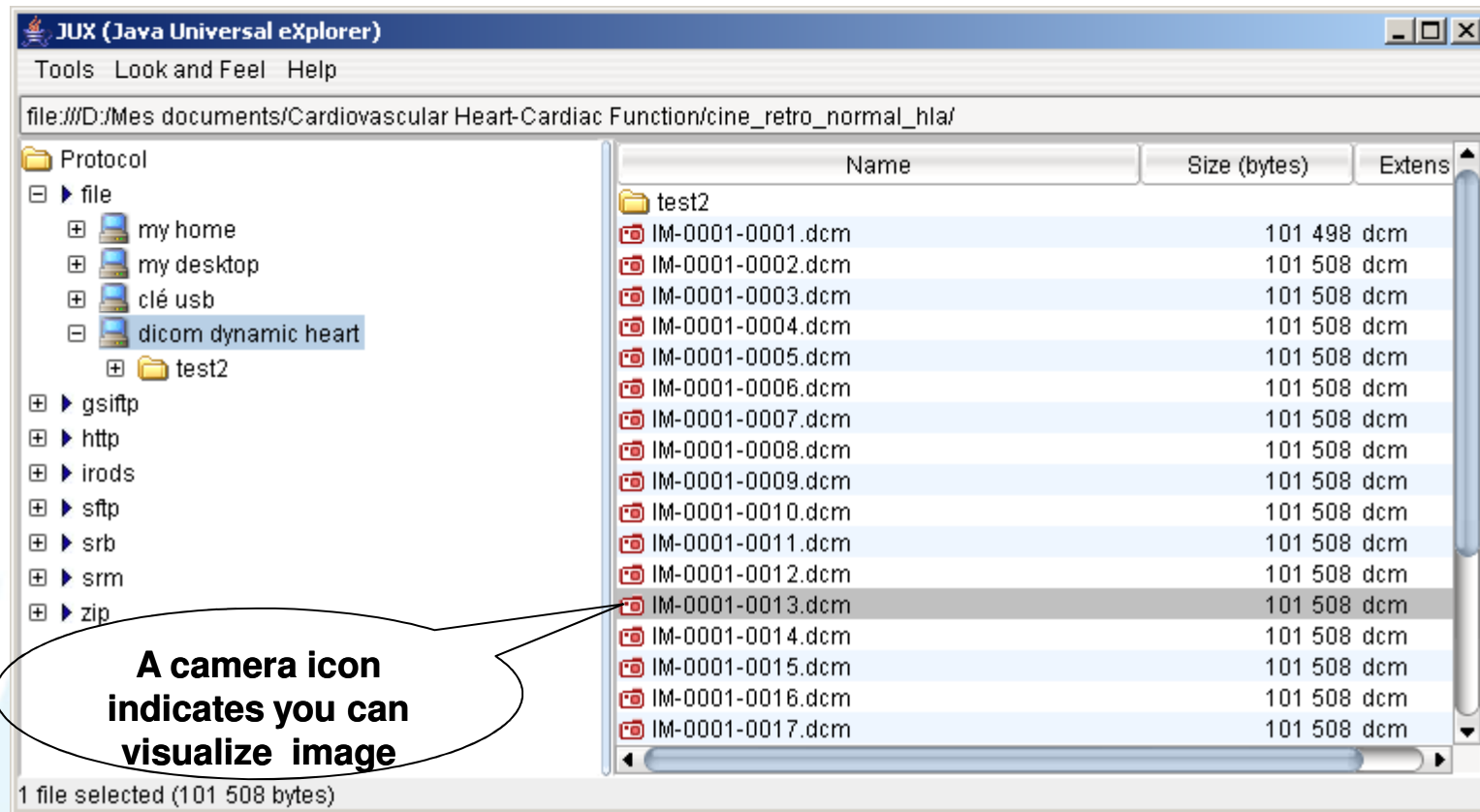
Metadata extracted directly from the file format

Name	Value
0002,0002 (Media Stora...	1.2.840.10008.5.1.4.1.1.4
0002,0003 (Media Stora...	1.3.12.2.1107.5.2.30.25016.300000041117175316140000...
0002,0010 (Transfer Sy...	1.2.840.10008.1.2
0002,0012 (Implement...	1.3.6.1.4.1.19291.2.1
0002,0013 (Implement...	OSIRIX001
0002,0016 (Source App...	OSIRIX
0008,0008 (Image Type)	ORIGINAL^PRIMARY^MND^RETRO
0008,0016 (SOP Class ...	1.2.840.10008.5.1.4.1.1.4
0008,0018 (SOP Instan...	1.3.12.2.1107.5.2.30.25016.300000041117175316140000...
0008,0020 (Study Date)	20041101
0008,0021 (Series Date)	20041101
0008,0022 (Acquisition ...	20041117
0008,0023 (Image Date)	20041117
0008,0030 (Study Time)	120000.000000
0008,0031 (Series Time)	120000.000000
0008,0032 (Acquisition ...	161942.765006
0008,0033 (Image Time)	161953.343000
0008,0050 (Accession ...	2171716
0008,0060 (Modality)	MR
0008,0070 (Manufactur...	SIEMENS
0008,0080 (Institution N...	UCLA 300 MP
0008,0081 (Institution A...	300Medical Plaza, Los Angeles -343C6E-11/15/05, Los Ang...
0008,0090 (Referring P...	OREN^AMI

JUX – JUX image viewer



View images directly by double click on the file name

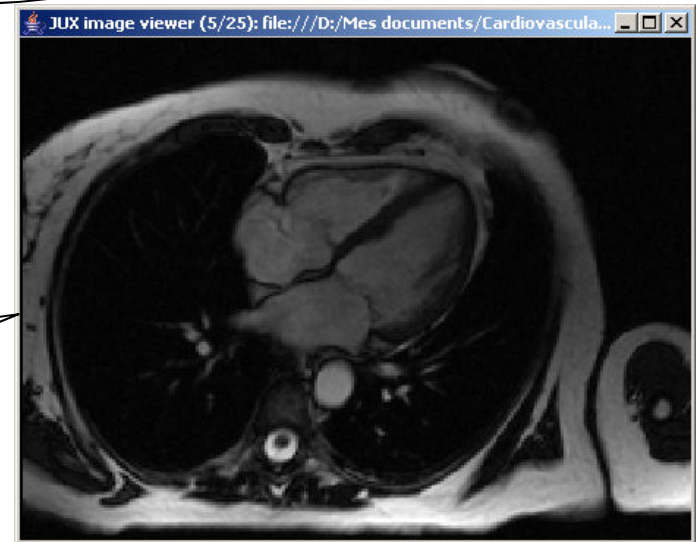


JUX – image viewer

View images directly by double click on the file name



**Standard images:
gif, jpeg, png, tiff**



**Medical images:
dicom format**

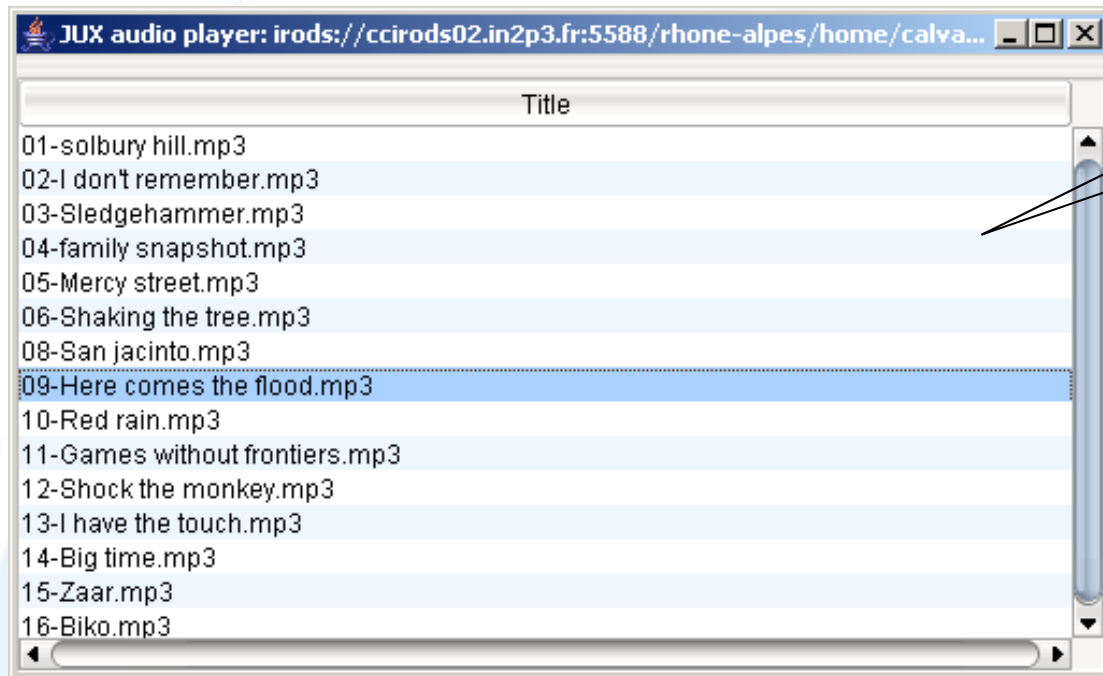
Zoom in/out with up/down arrow keyboard

Visualize next/previous images with leftward/rightward arrow keyboard

▶ JUX – audio player



Listen to music (mp3, wav) by clicking on files with a music icon 🎵



Audio files are played in loop.

Increase/decrease sound with the sound manager of the operating system

JUX – Conclusion



- JUX can work with potentially any
 - protocol
 - security mechanism
 - file content

} you can develop the plug-ins missing for your use-case
- JUX is easy to use
 - targeted users are scientists
- JUX is lightweight
 - currently 15 MB with all plug-ins

<https://forge.in2p3.fr/wiki/jux>

JUX – Perspectives (search window)



Not easy to implement with the actual jargon API.

Jargon API is sensitive case.

Not easy to construct complex search with AND and OR operator

SEARCH	
File name	<input type="text" value="*.txt"/>
Study Date	<input type="text"/>
Patient's Name	<input type="text" value="John S*"/>
Patient's Sex	<input type="text" value="M"/>
Patient's Age	<input type="text"/>
Size	<input type="text"/>
<input type="button" value="Execute"/>	

and

and

Questions



?