JUX (Java Universal eXplorer)

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Workshop on Interoperability of Digital Repositories

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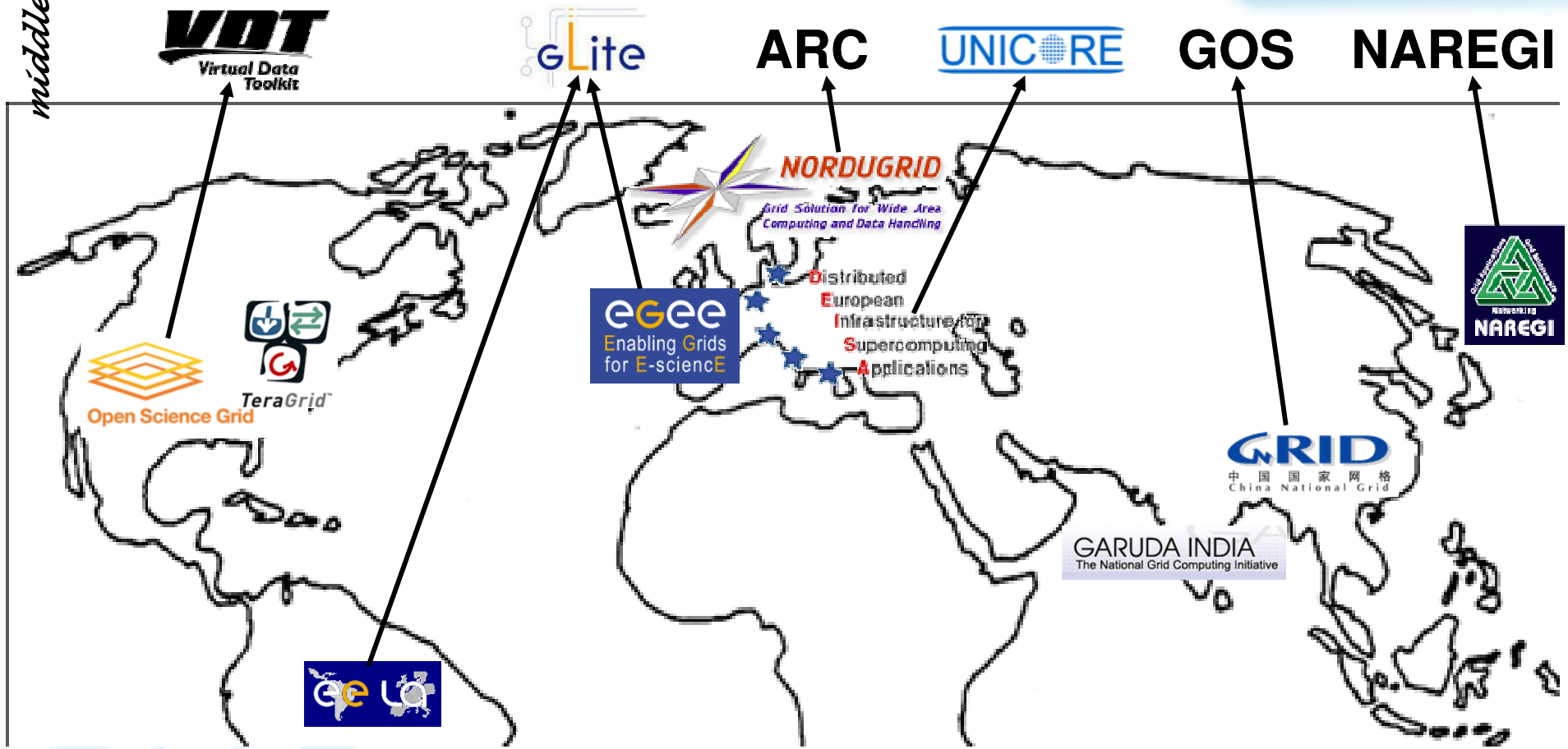
SCIENTIFIQUE

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)
  - VBrowser (Holland)

based on Apache Commons VFS

JUX – Overview

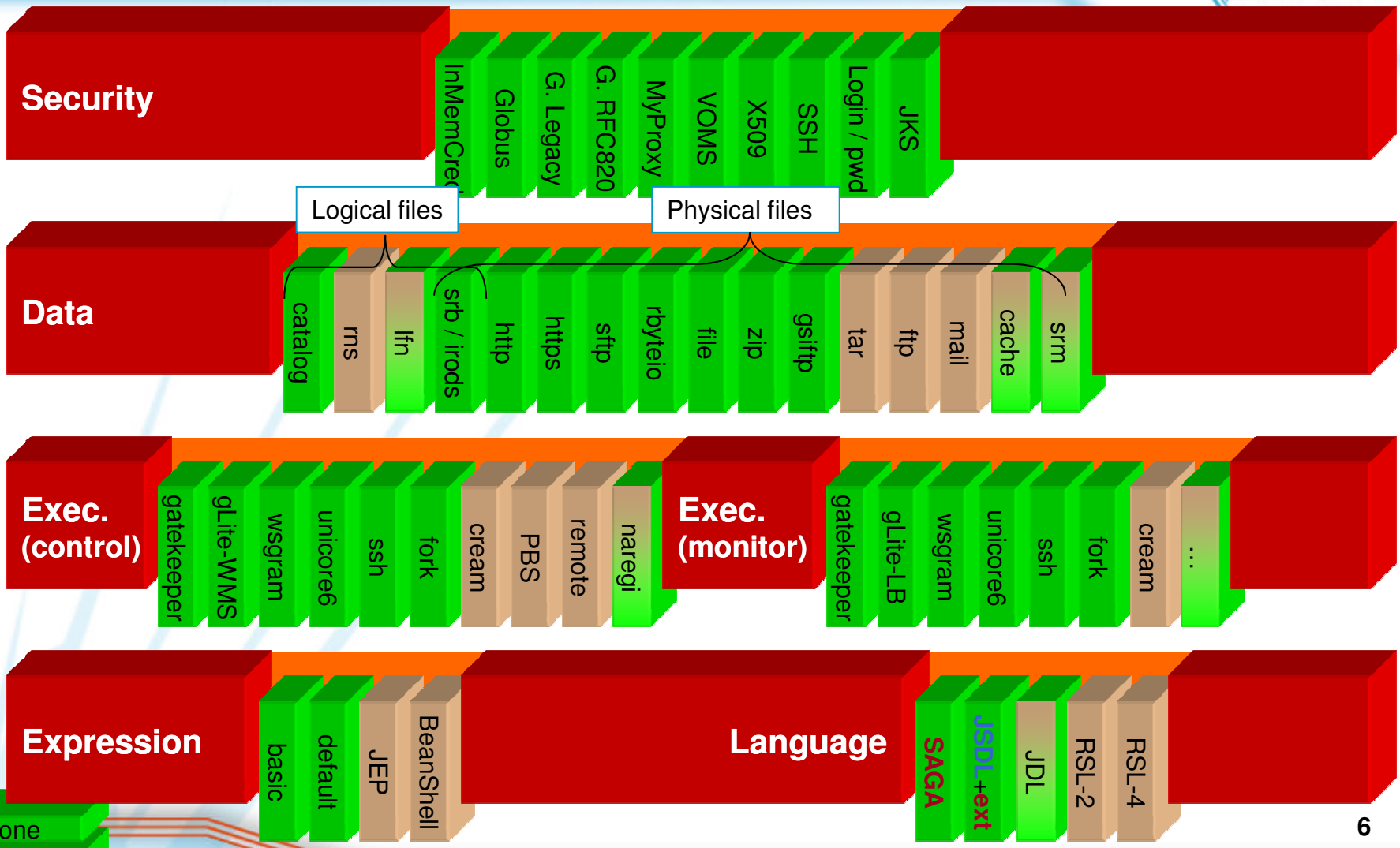
- JUX is a **file explorer** written in full java to be **independent** of the operating systems
  - Tested on Windows, Scientific Linux, Ubuntu, Mac

- 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



done
construction
planned

JUX – Architecture

- 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="irodsl">
                <schemeAlias>irods</schemeAlias>
        </data>
</GRID>
```

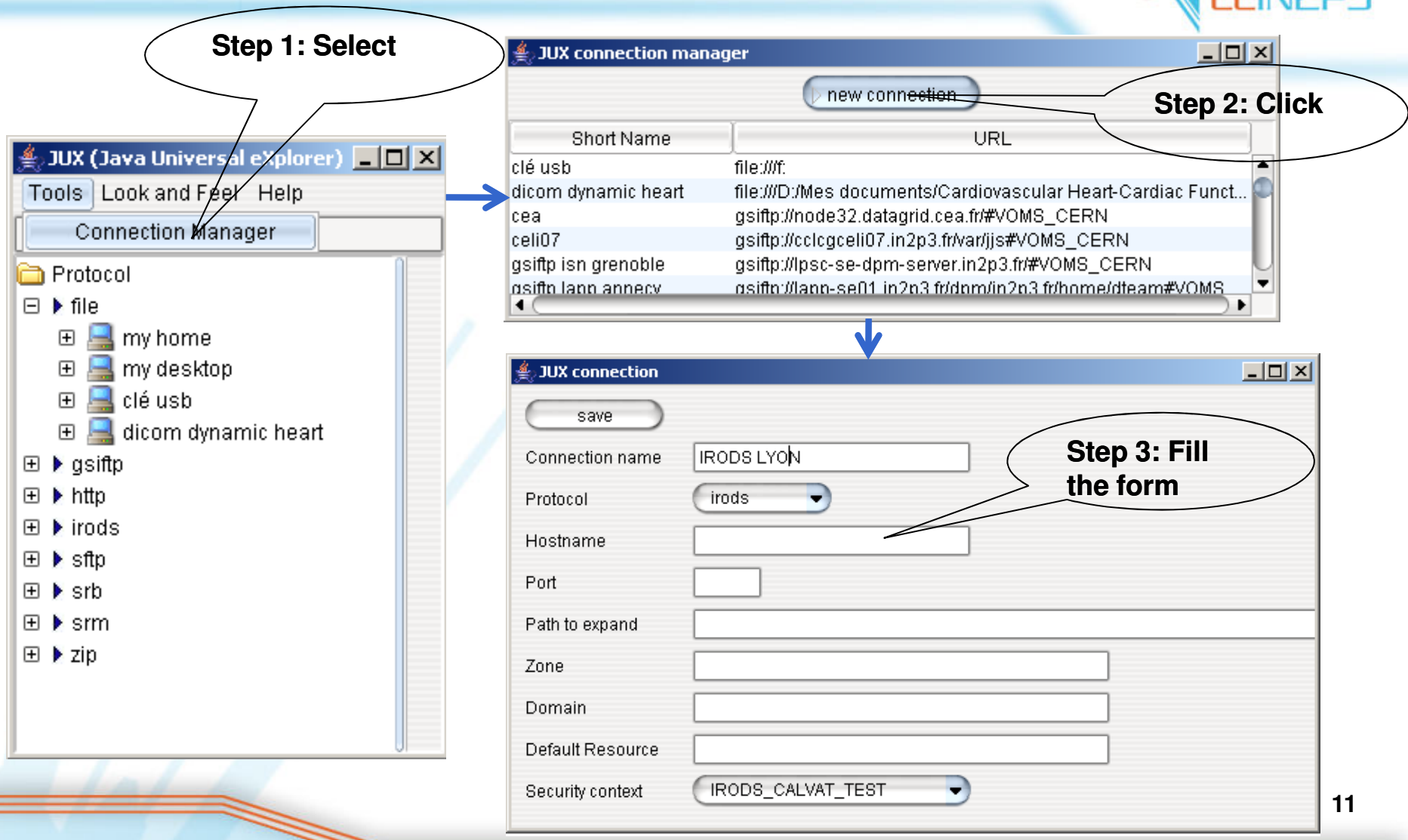
JUX – Security context

- 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="irodsl">
                <schemeAlias>irods</schemeAlias>
        </data>
</GRID>
```

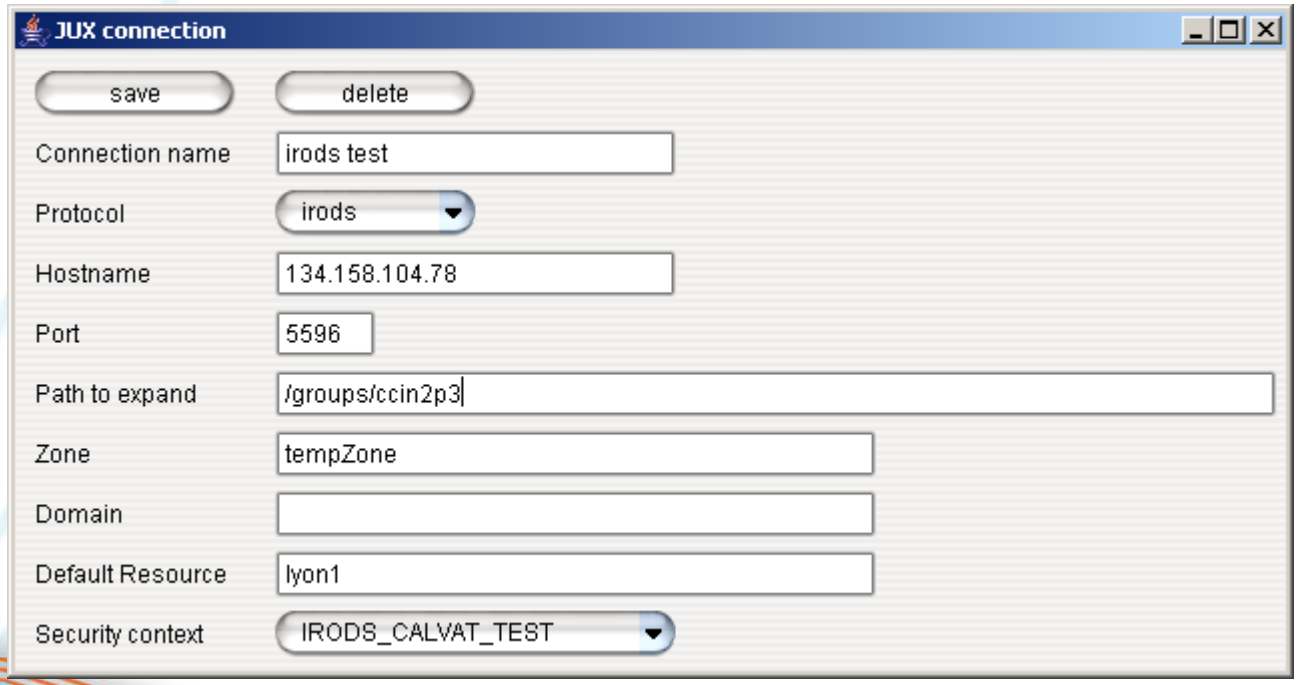
JUX – Create connection



JUX – Create connection

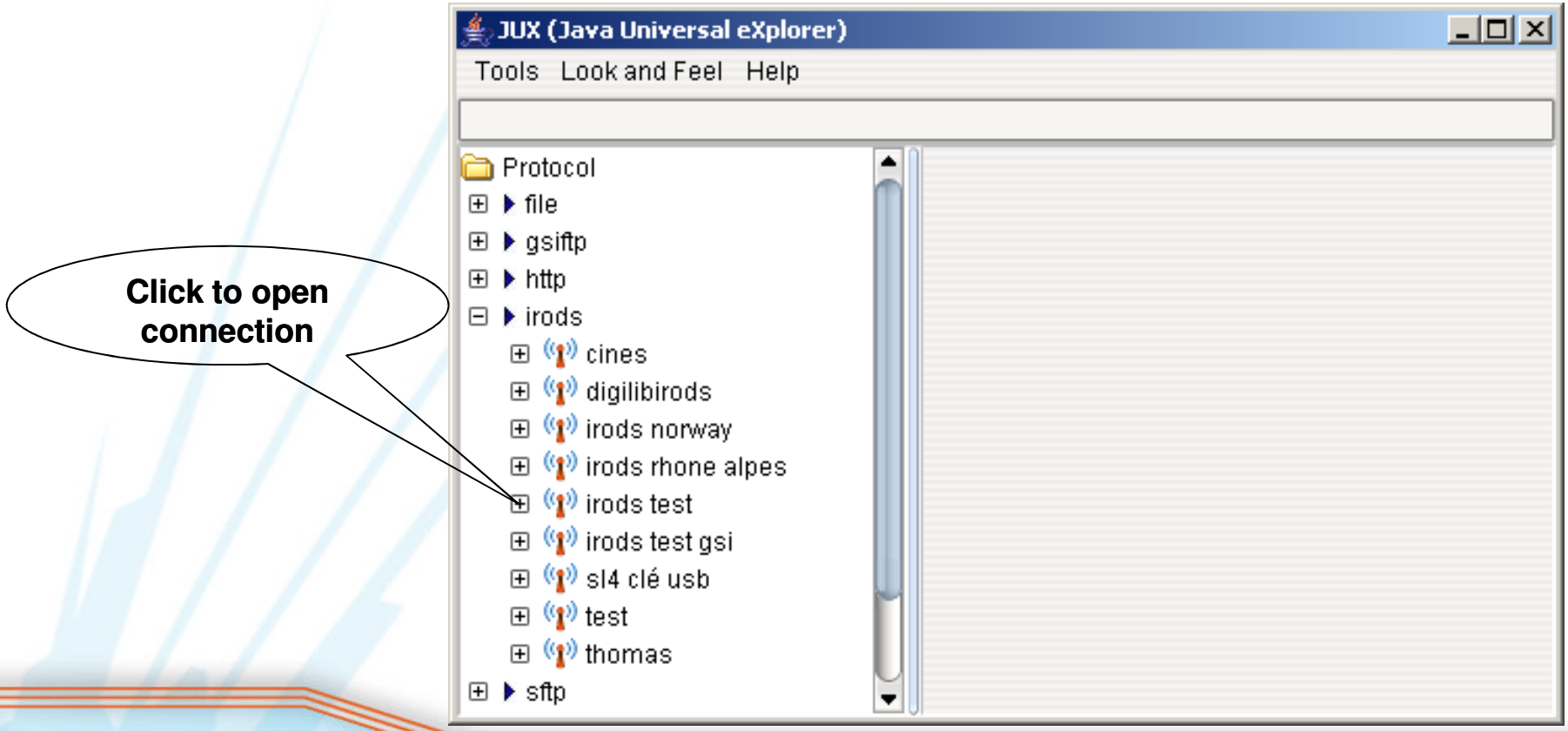
Before creating a connection, it is mandatory to define the security context into the jsaga-universe.xml. Only the security contexts compatible with the selected protocol appear in the popup list.

JUX MUST BE RELOADED AFTER MODIFYING jsaga-universe.xml



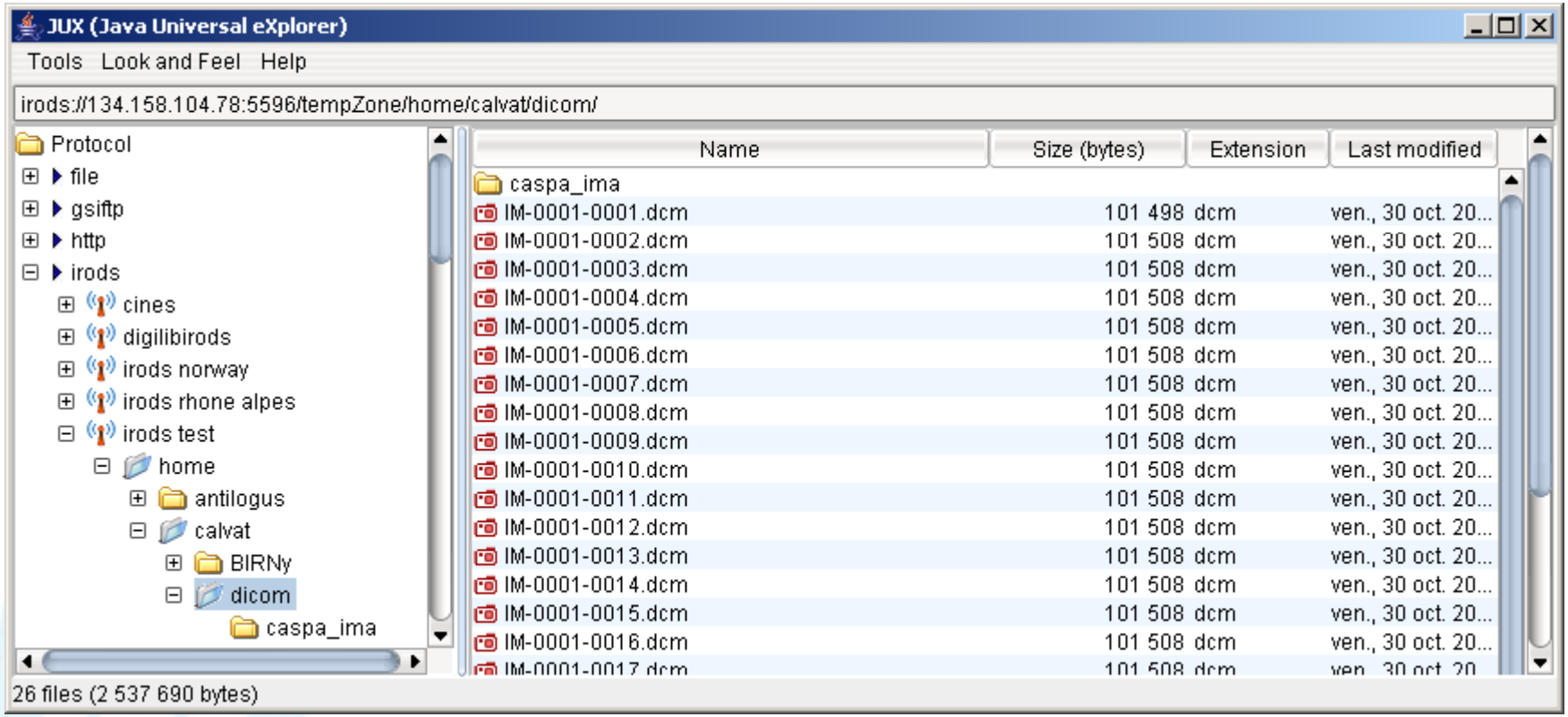
JUX – Establish connection

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



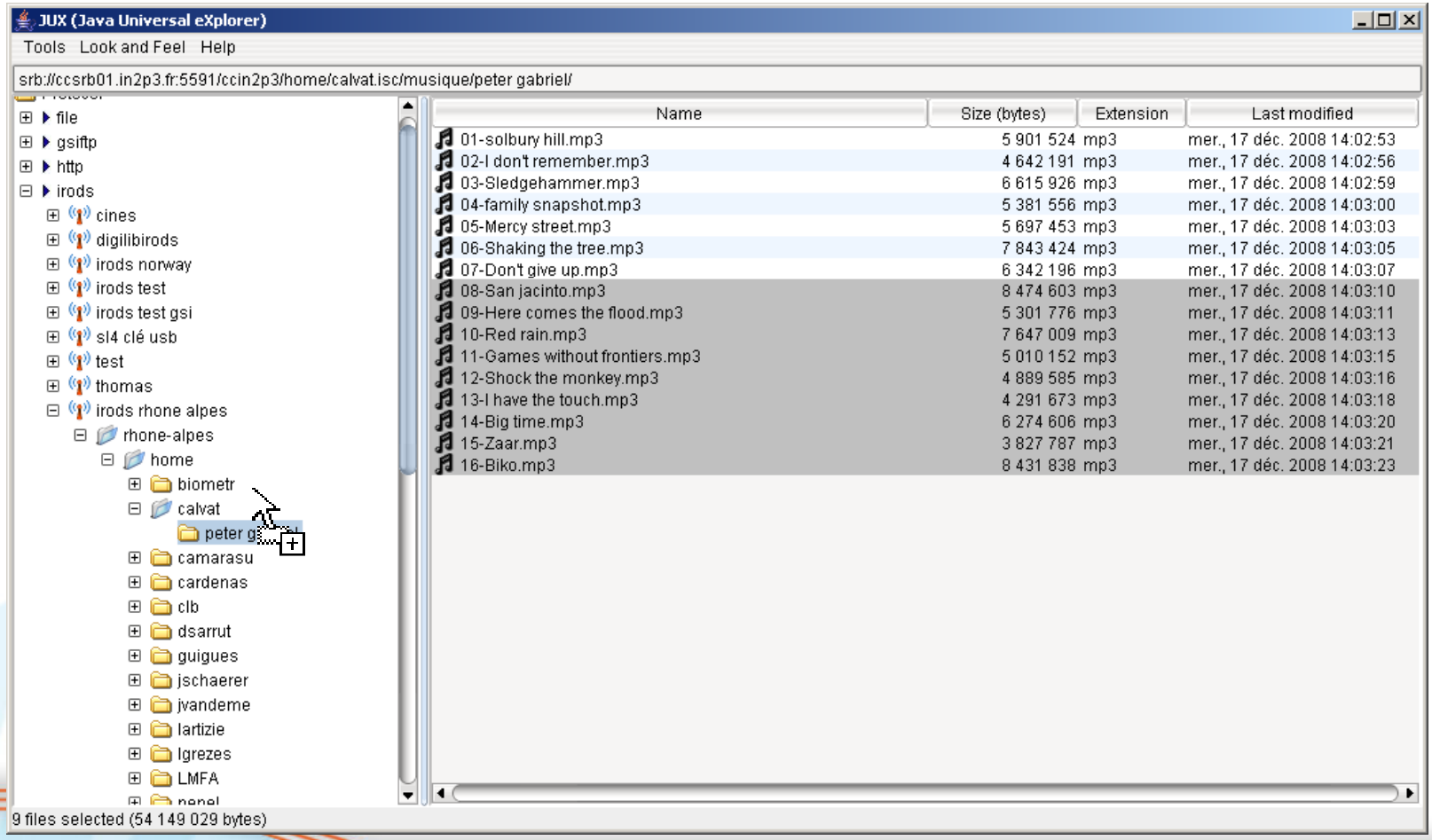
JUX – Browse files and directories

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



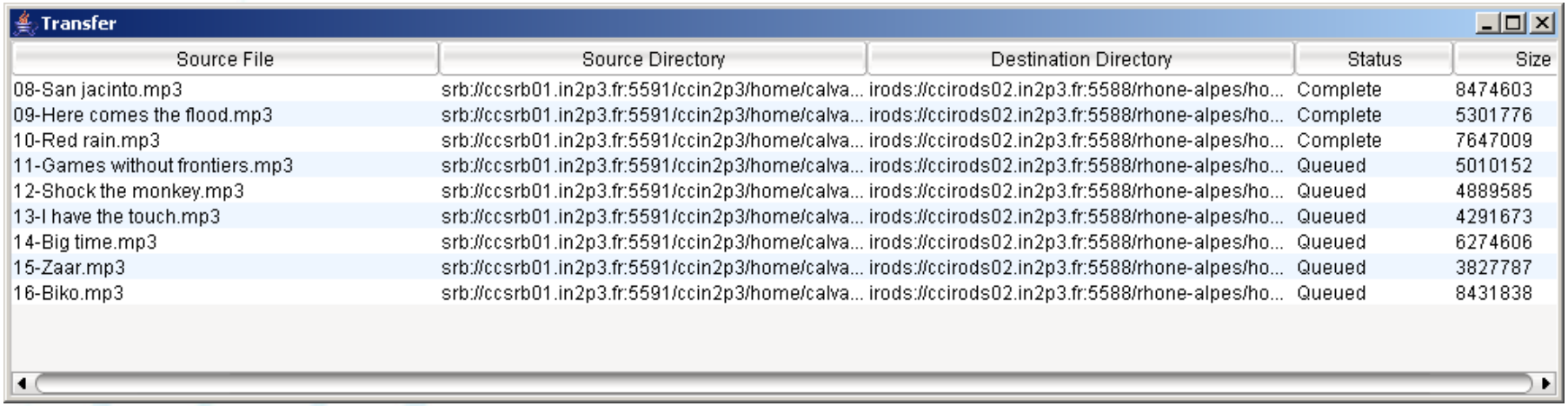
JUX – Copy files and directories

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



JUX – Copy files and directories

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

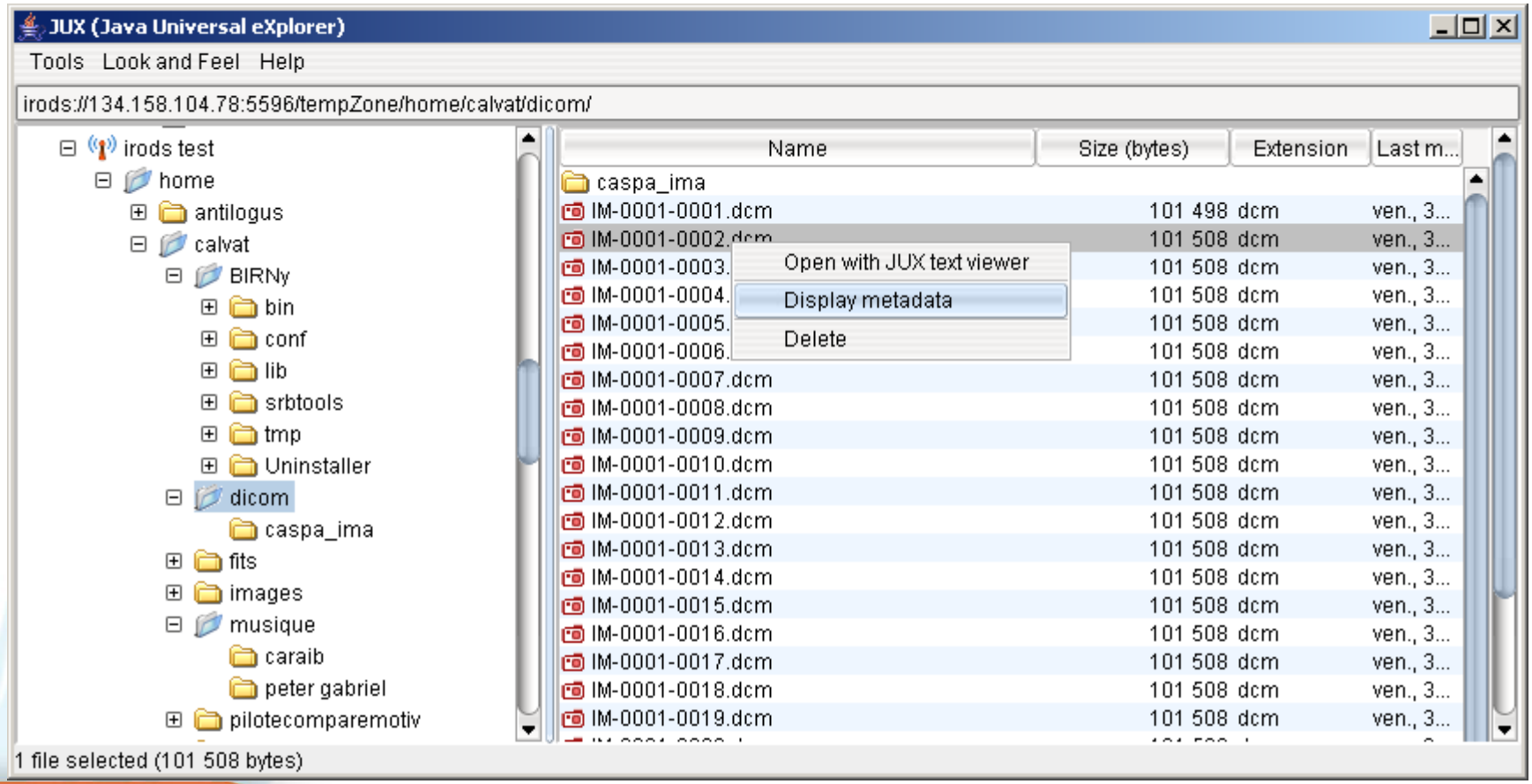


Source File	Source Directory	Destination Directory	Status	Size
08-San jacinto.mp3	srb://ccsrb01.in2p3.fr:5591/ccin2p3/home/calva...	irods://ccirods02.in2p3.fr:5588/rhone-alpes/ho...	Complete	8474603
09-Here comes the flood.mp3	srb://ccsrb01.in2p3.fr:5591/ccin2p3/home/calva...	irods://ccirods02.in2p3.fr:5588/rhone-alpes/ho...	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

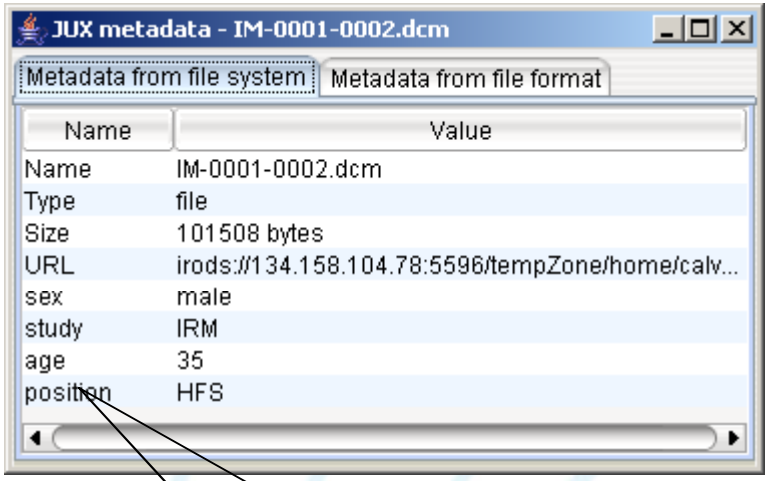
JUX – Metadata

Use right mouse click to visualize files or directories metadata.

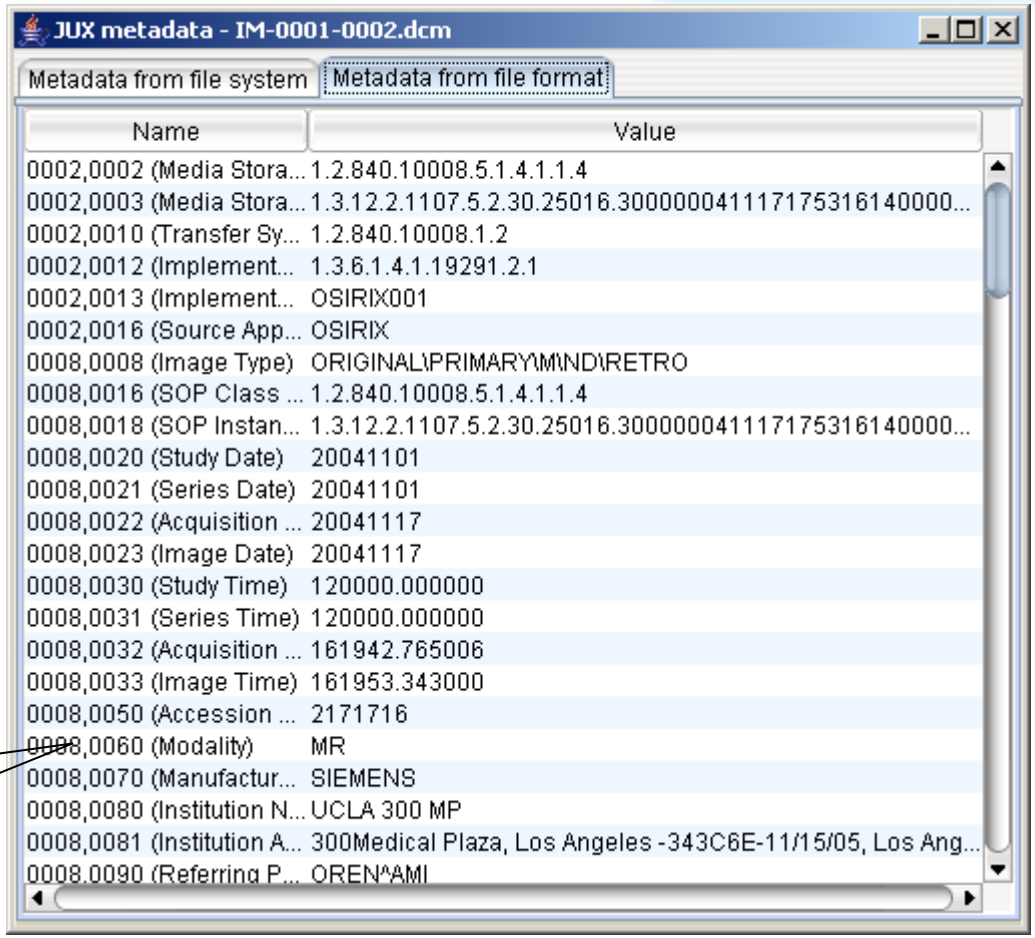


JUX – Metadata

Metadata are displayed in two tabs.



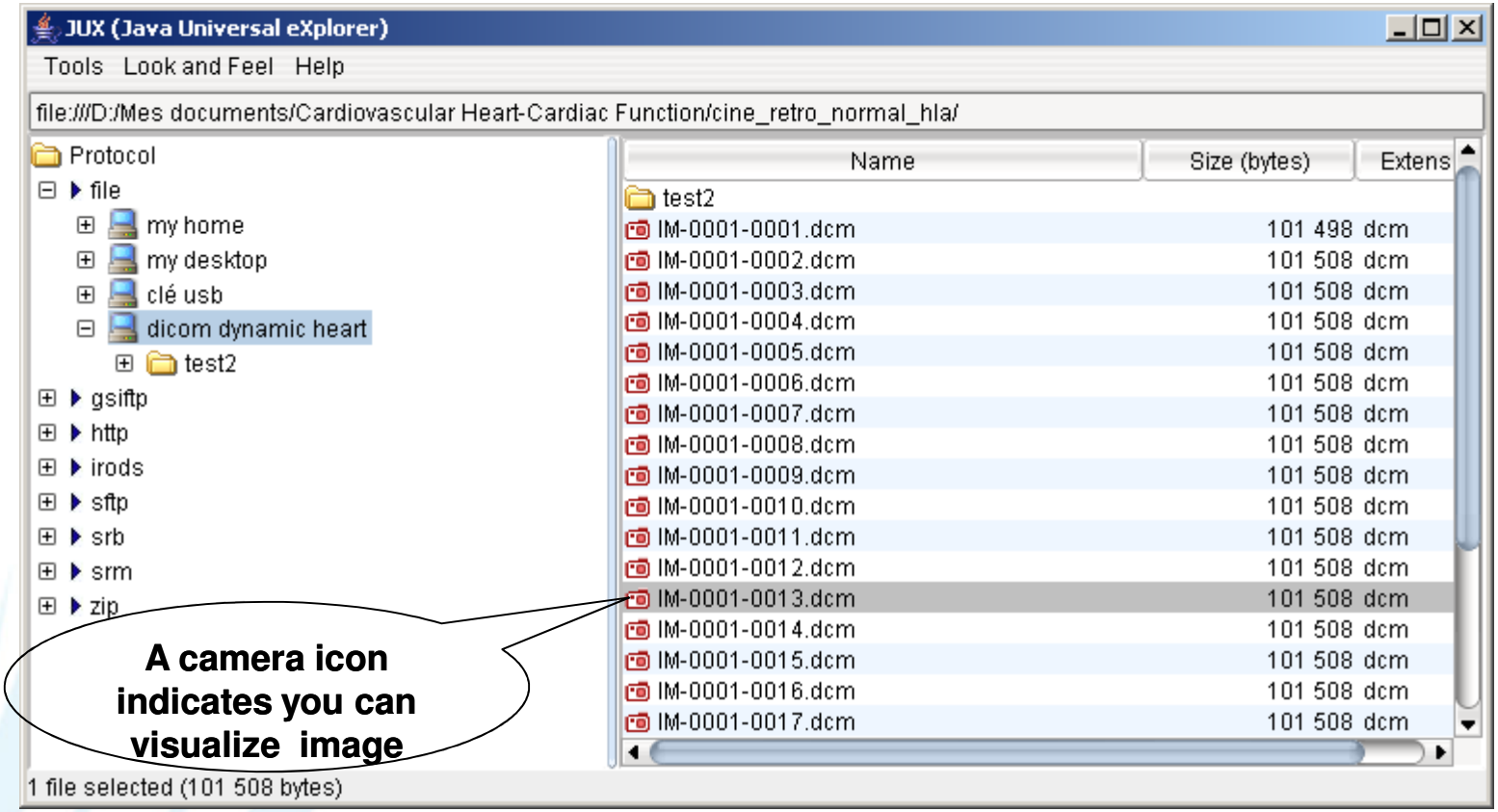
Metadata from irods file system



Metadata extracted directly from the file format

JUX – JUX image viewer

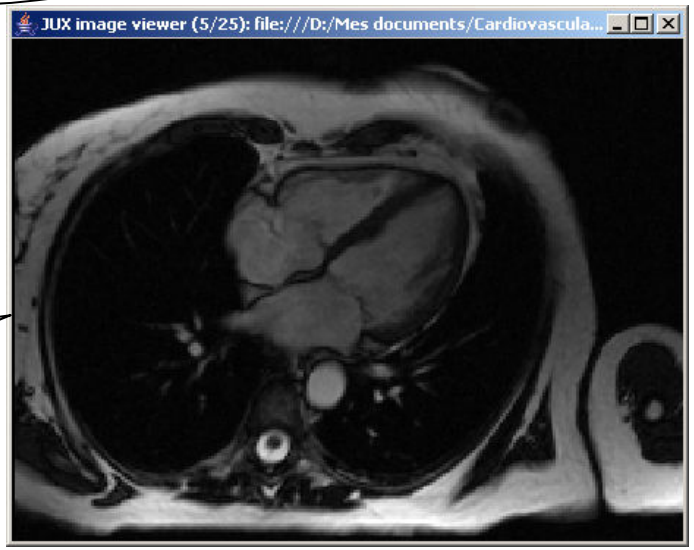
View images directly by double click on the file name



JUX – image viewer

View images directly by double click on the file name

Standard images:
gif, jpeg, png, tiff



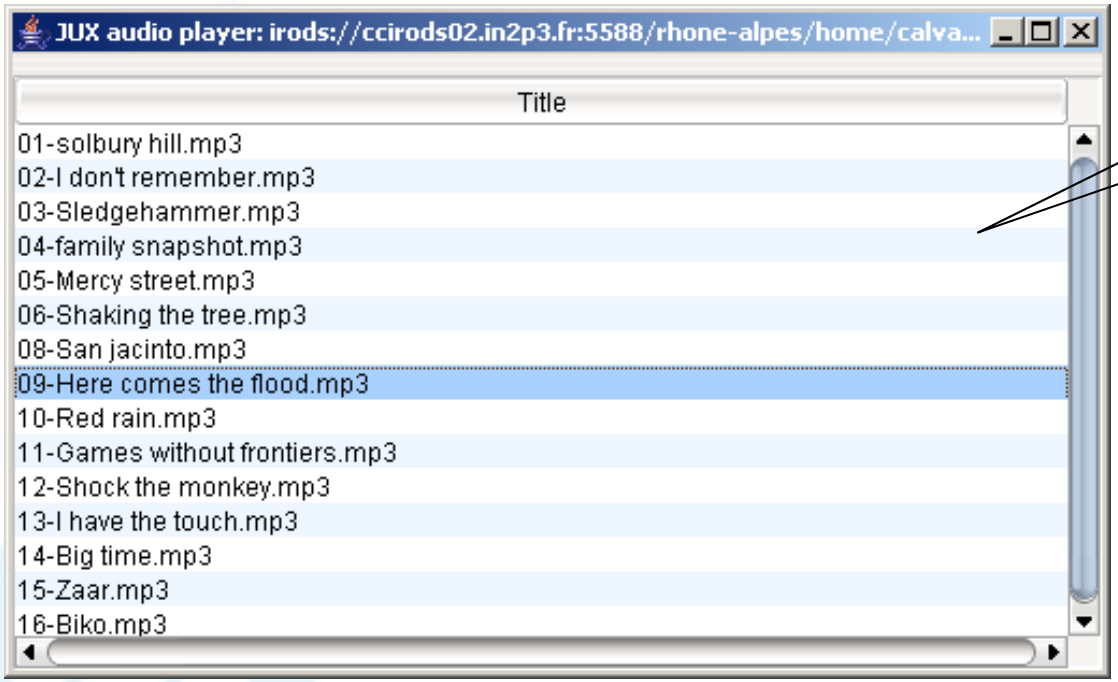
Madical images:
dicom format

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

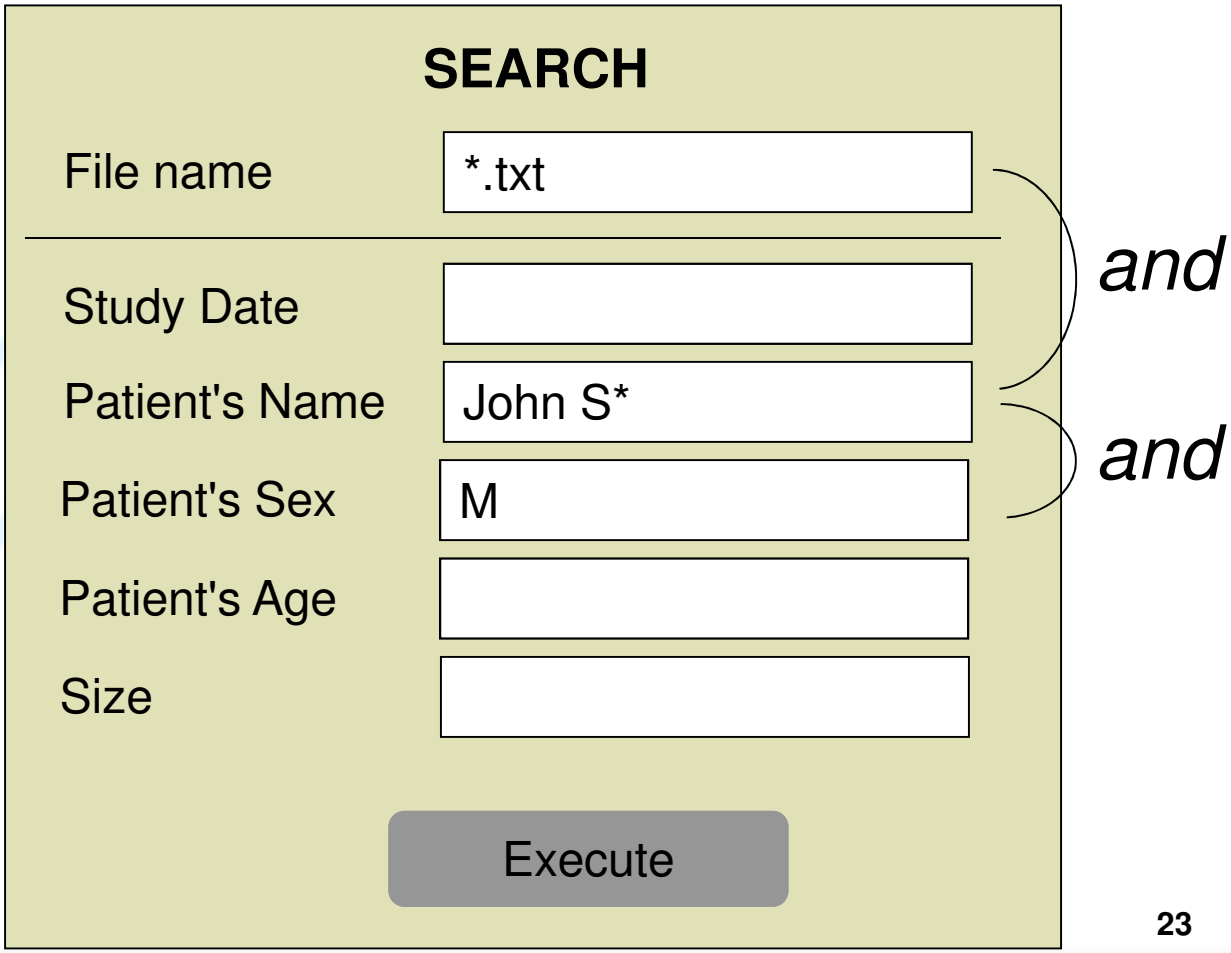
https://forge.in2p3.fr/wiki/jux

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



Questions

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