INCF Cyberinfrastructure
- storage layer -
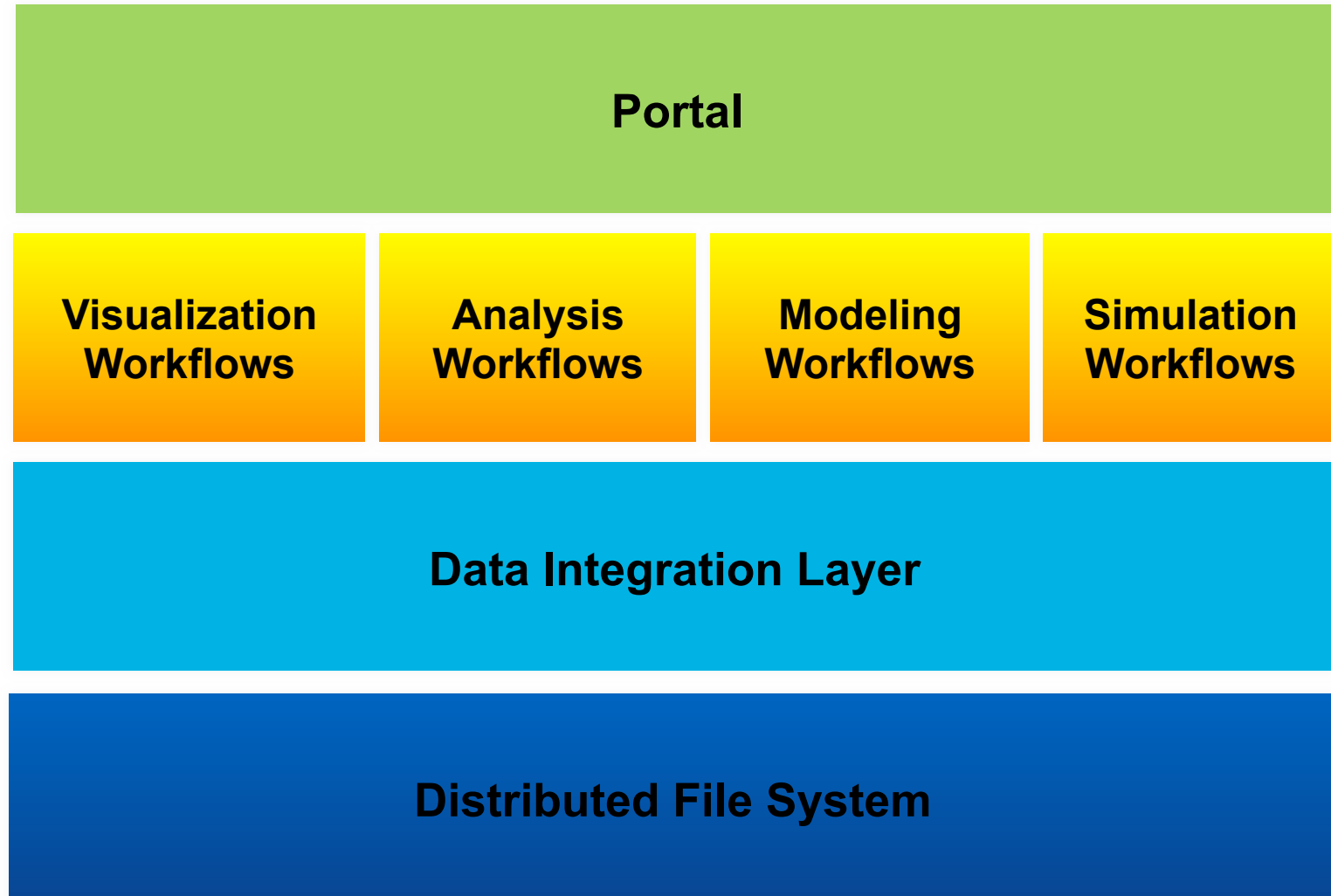
Raphael Ritz
INCF Secretariat, Stockholm, Sweden

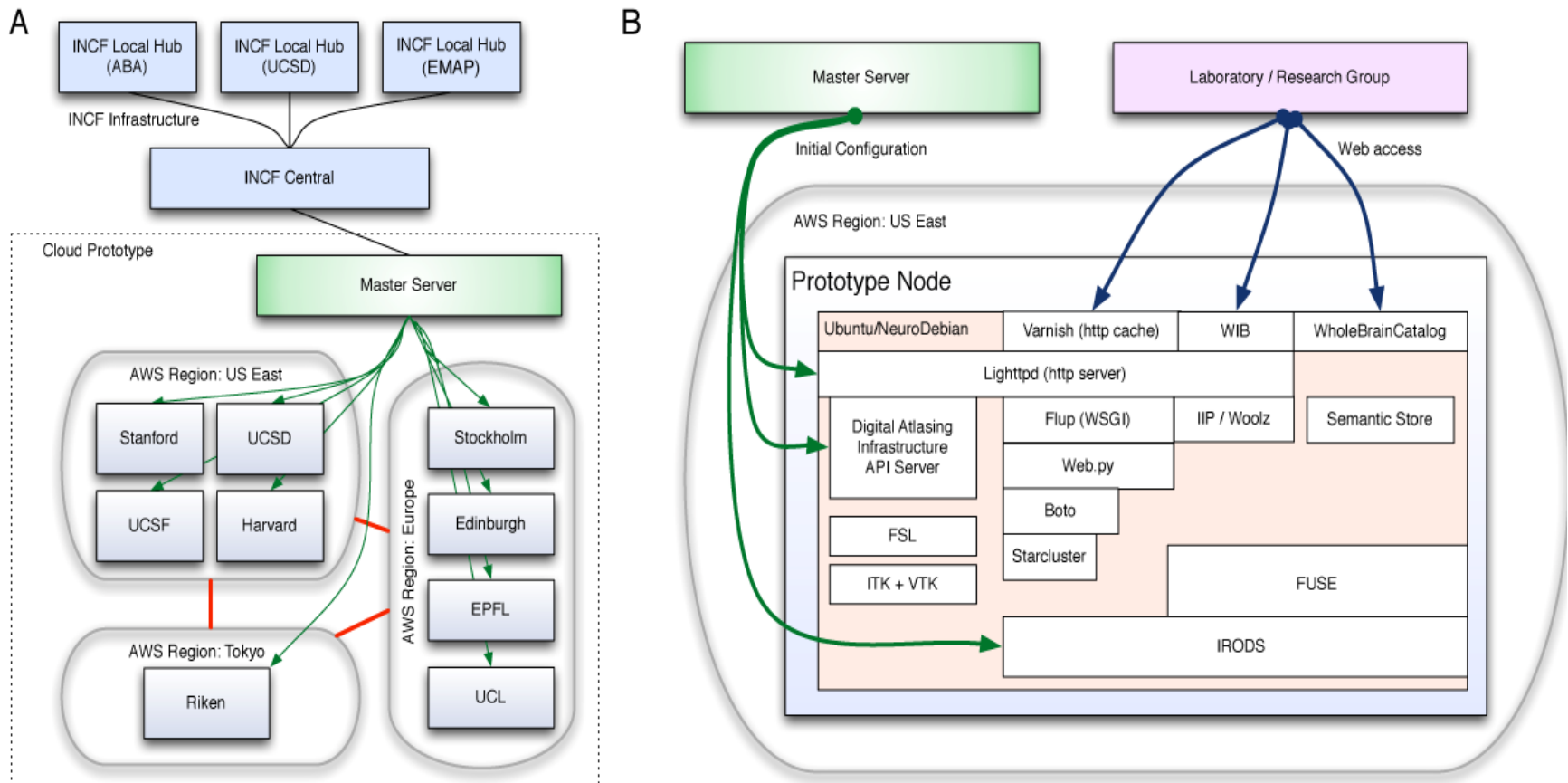Code Jam V, Edinburgh, UK, March 16, 2012

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Joint work with …

- Sean Hill (INCF, Stockholm)
- Ruggero Cucchiani (INCF, Stockholm)
- Stephen Larson (UCSD, San Diego)
- Rich Stoner (UCSD, San Diego)
- various community members …

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Neuroinformatics cyberinfrastructure

Portal

Visualization Workflows | **Analysis Workflows** | **Modeling Workflows** | **Simulation Workflows**

Data Integration Layer

Distributed File System

Under development!

More detailed design

Specific infrastructure objectives

- Integration of current INCF member and community efforts

- Data, workflow and model publishing

- Common object model for multiscale/ multimodal data representation

- Workflow description and standardization with provenance tracking

- Development of portal for queries, analysis, modeling, visualization and simulation

- Supercomputing grid for Neuroscience

Storage back end: iRODS

i **R**ule **O**riented **D**ata **S**ystems

1. Data grid architecture based on a client/server model and distributed storage and compute resources.

2. A database system for maintaining the attributes and states of data and operations.

3. A rule system for enforcing and executing adaptive rules.

Supports command line, desktop and web interface

iRODS – command line

- **iinit** Initialize - Store your password in a scrambled form for automatic use by other icommands.
- **iput** Store a file
- **iget** Get a file
- **imkdir** Like mkdir, make an iRODS collection (similar to a directory or Windows folder)
- **ichmod** Like chmod, allow (or later restrict) access to your data objects by other users.
- **icp** Like cp or rcp, copy an iRODS data object
- **irm** Like rm, remove an iRODS data object
- **ils** Like ls, list iRODS data objects (files) and collections (directories)
- …

https://www.irods.org/index.php/icommands

iRODS - Environment

```
$ cat .irods/.irodsEnv
irodsHost 'irods.g-node.org'
irodsPort 1247
irodsHome=/G-NODE/home/ritz
irodsCwd=/G-NODE/home/ritz
irodsUserName 'ritz'
```

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iRODS – iDROP

Desktop client (think Dropbox for iRODS)

Available for testing from

https://code.renci.org/gf/project/irodsidrop

Screen cast at

http://youtu.be/YhciVQCZuBY?hd=1

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iRODS Demo

- Show iDROP
- Show some icommands

iRODS – some considerations

- Authentication – federated?
- Authorization – granular enough?
- Group management – middleware?
- Anonymous access – necessary?
- Resource types – S3, RDBMS, WebDAV, HDF5…?
- Adding resources – by whom?
- Federation – who, what, where and how?
- Naming conventions – prefer LCUS? ASCII only?
- …

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Client Application (cloud app)

- Based on NeuroDebian

- Uses Fabric to manage installation and configuration

- Installs some basic development packages

- Installs some client apps

- Sets up default access to the backend (???)

- …

(show source at http://dev.incf.org/trac/incf-cloud-app/browser/trunk/fabfile.py)

Project Areas

For the storage back end:

http://dev.incf.org/trac/infrastructure

Mailing list: irods@incf.org

For the client

http://dev.incf.org/trac/incf-cloud-app

http://software.incf.org/software/incf-cloud-app

Want to join us?

If you find this interesting and if you are looking for a job consider joining us in Stockholm – we are hiring a developer to work full-time on the infrastructure and client (closing March 31).

- Contact me or jobs@incf.org

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INCF Google Summer of Code

Want Google to pay a student working for you during the summer?

Like last year, INCF has applied to become a mentoring organization within GSoC 2012. The decision is expected Friday/Saturday this week.

Proposals and ideas page: http://www.incf.org/gsoc

Questions? Contact raphael.ritz@incf.org

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Question

- Do you think this could be useful?
  - If no, what's wrong/missing?
- Do you think you might use it?
  - If no, why?
- What would you like to use it for?

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