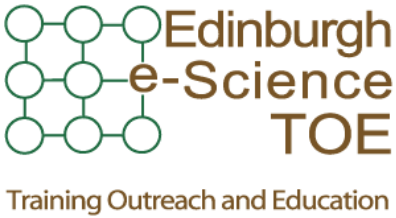


http://www.nesc.ac.uk/training

http://www.ngs.ac.uk

OGSA-DAI

PPARC

http://www.pparc.ac.uk/

http://www.eu-egee.org/

Policy for re-use

- This presentation can be re-used for academic purposes.

- However if you do so then please let training-support@nesc.ac.uk know. We need to gather statistics of re-use: no. of events, number of people trained. Thank you!!

Acknowledgments

- Matt Ford, NGS Induction Workshop (Dec. 2004, NeSC)
- Neil Chue Hong , OGSA-DAI Tutorial GGF13
- OGSA-DAI website, www.ogsadai.org

Data services on NGS

Simple data files

- Middleware supporting
  - **Replica files**
  - **Logical filenames**
  - **Catalogue**: maps logical name to physical storage device/file
  - **Virtual filesystems**, POSIX-like I/O
- **Storage Resource Broker**

Structured data

  - RDBMS, XML databases
- Require *extendable* middleware tools to support
  - Move computation near to data
  - easy access, controlled by AA
  - integration and federation
- **OGSA -DAI**

What is OGSA-DAI?

- The Open Grid Services Architecture Data Access and Integration project is concerned with constructing middleware to assist with access and integration of data from separate data sources via the grid.

- The project was conceived by the UK Database Task Force and is working closely with the Global Grid Forum DAIS-WG and the Globus team.

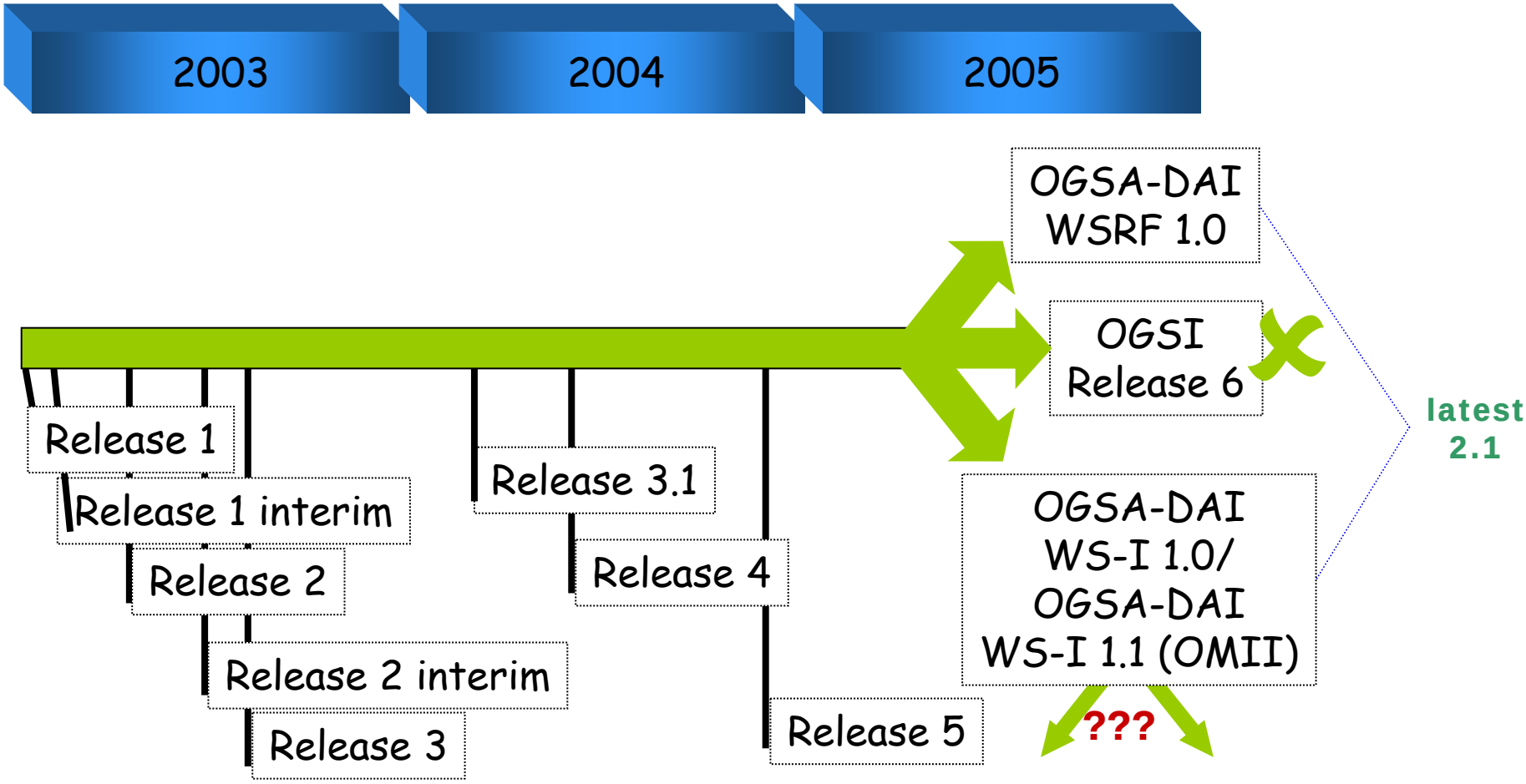
OGSA-DAI Design Principles – I

- Efficient client-server communication
  - Minimise where possible
  - One request specifies multiple operations
- No unnecessary data movement
  - Move computation to the data
  - Utilise third-party delivery
  - Apply transforms (e.g., compression)
- Build on existing standards
  - Fill-in gaps where necessary

OGSA-DAI Design Principles – II

- Do not hide underlying data model
  - Users must know where to target queries
  - Data virtualisation is hard
- Extensible architecture
  - Modular and customisable
  - e.g., to accommodate stronger security
- Extensible activity framework
  - Cannot anticipate all desired functionality
  - Activity = unit of functionality
  - Allow users to plug-in their own

OGSA-DAI Timeline



OGSA-DAI Motivation

- OGSA-DAI is motivated by the need to:
  - Provide an extensible framework for easily integrating data resources on to Grids.
  - Provide for data discovery from previously unknown locations.
  - Allow different types of data models from distributed data resources to be easily integrated to Grid applications.
  - Allow data to be accessed through uniform interfaces.
  - Facilitate the integration of data from various sources to obtain the required information.
  - …

OGSA-DAI Provides

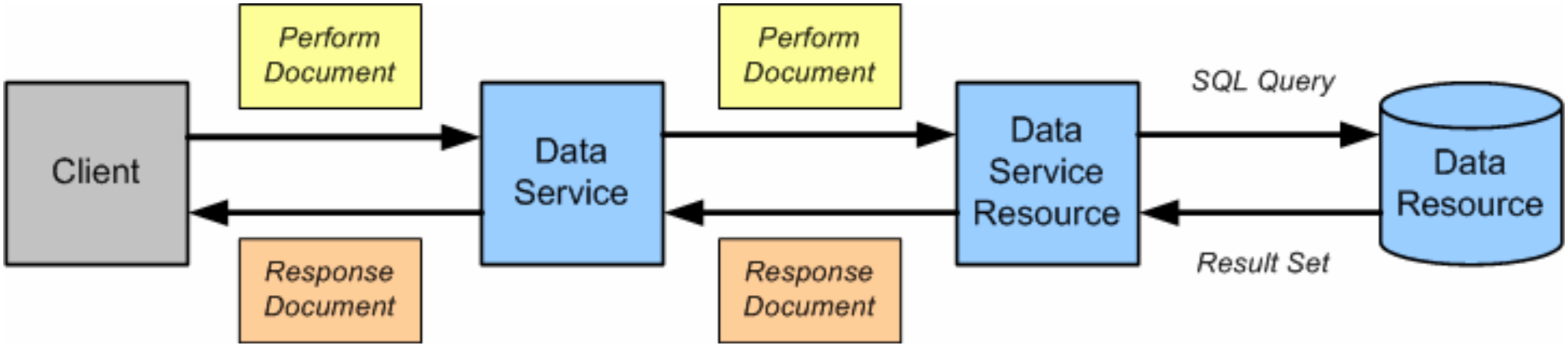
- Access to and updating of data resources
- Exposure of Data Resources to the Grid
- Additional data manipulation functionality at the service level
- Uniform access to disparate, heterogeneous data resources
  - Does not hide underlying data model
- Data resources exposed through services
  - Clients interact with these services

Interacting with Data Resources

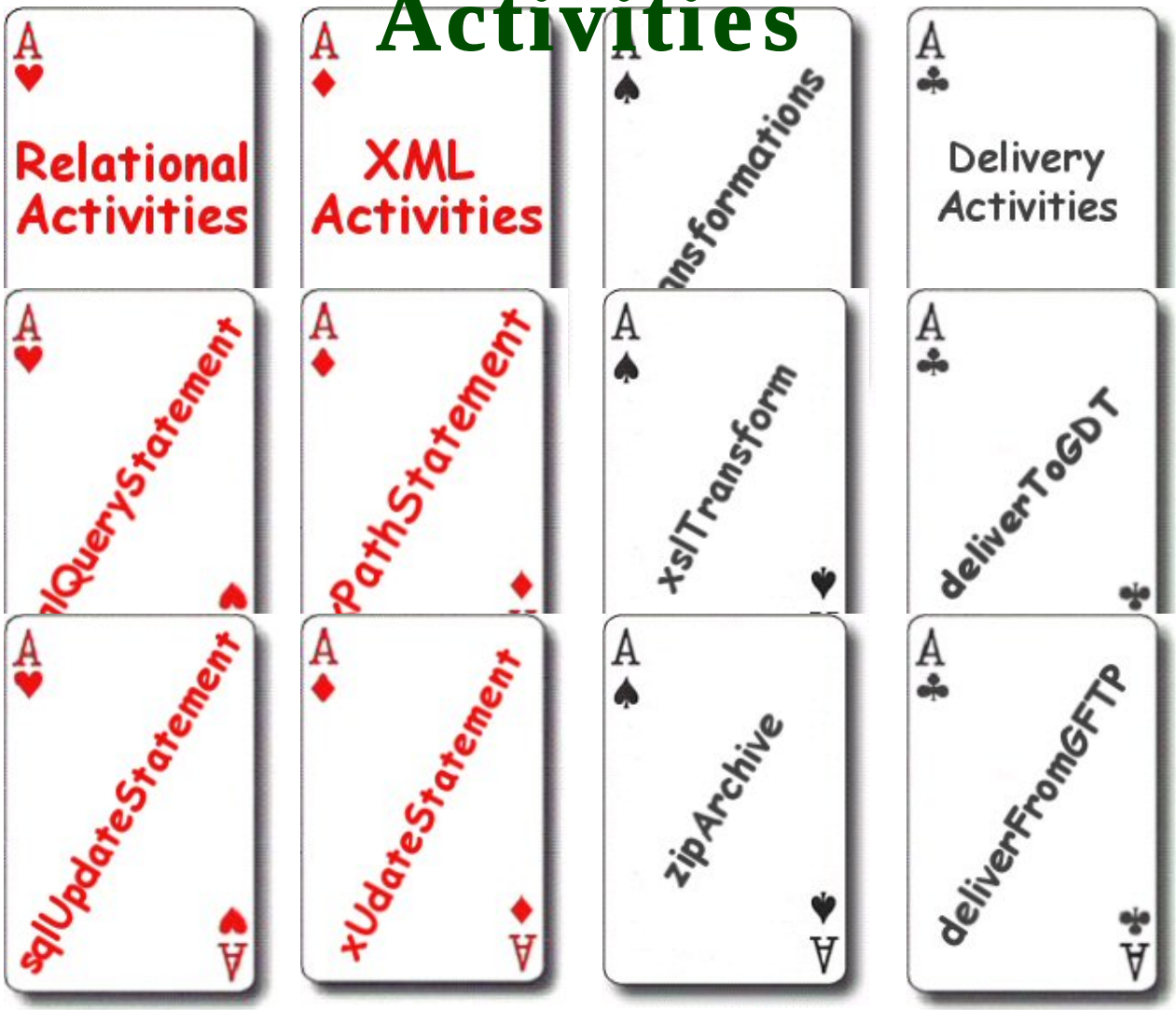
- **Activity**: The data resource manipulation, data transformation and delivery actions that the client wants the service to perform.
  - Think of sending the job to the data not the data to the job.
- **Perform documents**: Used by clients to specify to the services the activities they want executed.
  - Usually don't see/construct explicetly
- **Response documents**: Used by the services to inform clients as to the status of execution of their Perform documents and, often, to also return data to a client.

NGS
National Grid Service

Interacting with Data Service resources



OGSA-DAI Deck of Activities



OGSA-DAI and the NGS

- the OGSA-DAI deployment on the NGS is being actively developed
- users should expect that procedures may change – it does not reflect the commitment NGS has to providing a service.
- Initially the Manchester JISC data cluster has been charged with deploying the OGSA-DAI service

NGS
National Grid Service

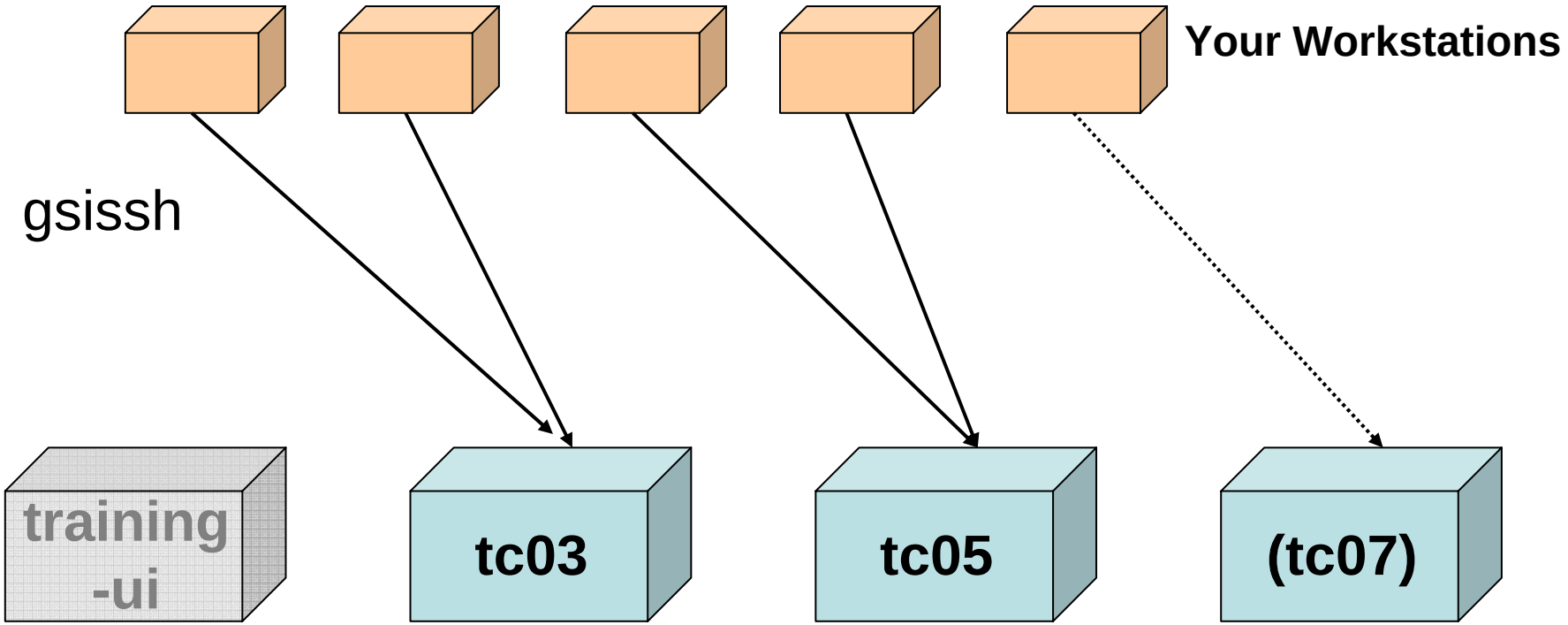
Why OGSA-DAI?

- Can embed additional functionality at the service end
  - Transformations, compressions, third party delivery
  - The extensible activity framework
- Avoiding unnecessary data movement
- Common interface to heterogeneous data resources
  - Relational, XML databases, and files
- Language independence at the client end
  - Do not need to use Java
- Platform independence
  - Do not have to worry about connection technology, drivers, etc

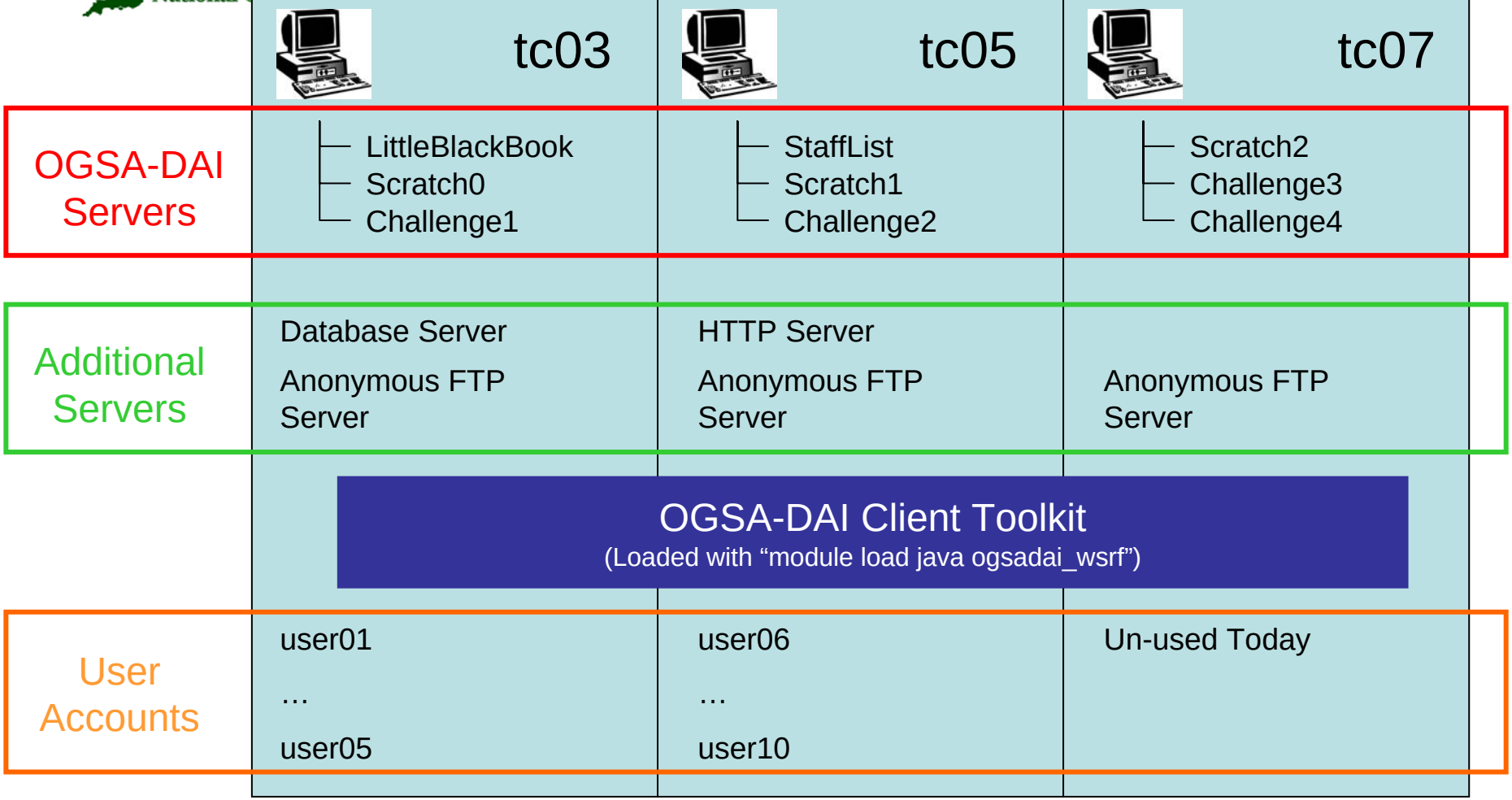
Standards Based

- **OGSA-DAI and DAIS**
  - The *DAIS - Database Access and Integration Services* - Working Group of the *Global Grid Forum* (GGF) is formulating standards for database access and integration services.
  - The development of OGSA-DAI has been occurring in parallel to the development of these specifications. OGSA-DAI influences, and is influenced by, this work. OGSA-DAI is currently based upon the DAIS specifications of March 2003. It is intended that OGSA-DAI will eventually provide a reference implementation of the final version of these standards.
- Further information on the GGF and DAIS are available from:
- DAIS Working Group:
  - http://forge.gridforum.org/projects/dais-wg.
- Global Grid Forum:
  - http://www.ggf.org

The Setup (1)



The Setup (2)


tc03
tc05
tc07
OGSA-DAI Servers
LittleBlackBook
Scratch0
Challenge1
StaffList
Scratch1
Challenge2
Scratch2
Challenge3
Challenge4
Additional Servers
Database Server
Anonymous FTP Server
HTTP Server
Anonymous FTP Server
Anonymous FTP Server
OGSA-DAI Client Toolkit
(Loaded with "module load java ogsadai_wsrf")
User Accounts
user01
...
user05
user06
...
user10
Un-used Today

OGSA-DAI Practical

- http://agenda.cern.ch/fullAgenda.php?ida=aa063420