

MRC e-Science projects featuring PsyGrid

www.psygrid.org

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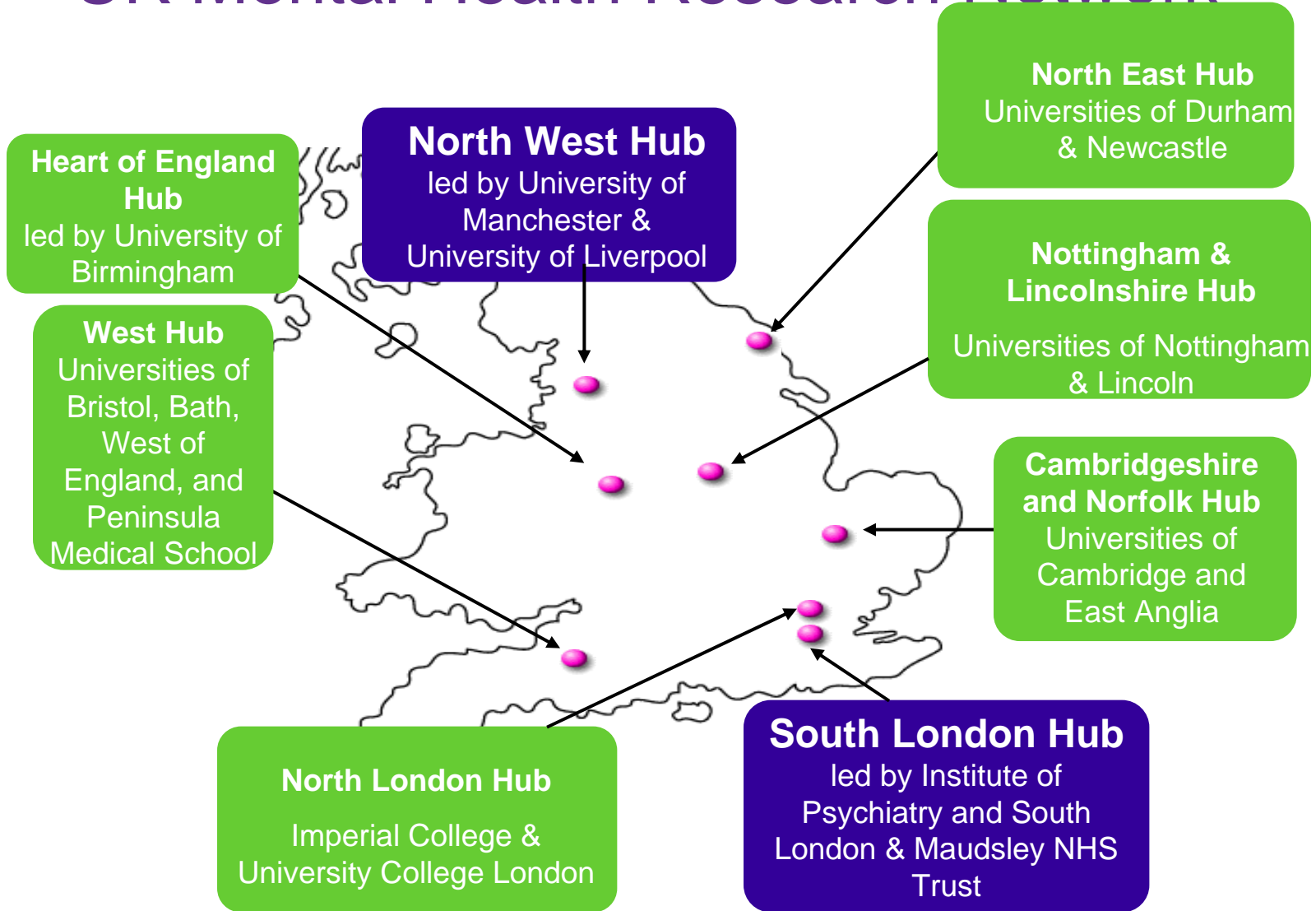
MRC e-Science Projects

- NeuroGrid
 - Image storage, retrieval and analysis
- CLEF
 - Extraction, visualisation of routine medical data
- VOTES
 - Virtual Organisations for Trials and Epidemiological Studies
- CancerGrid
 - Clinical trial design and meta-data management
- ... and PsyGrid

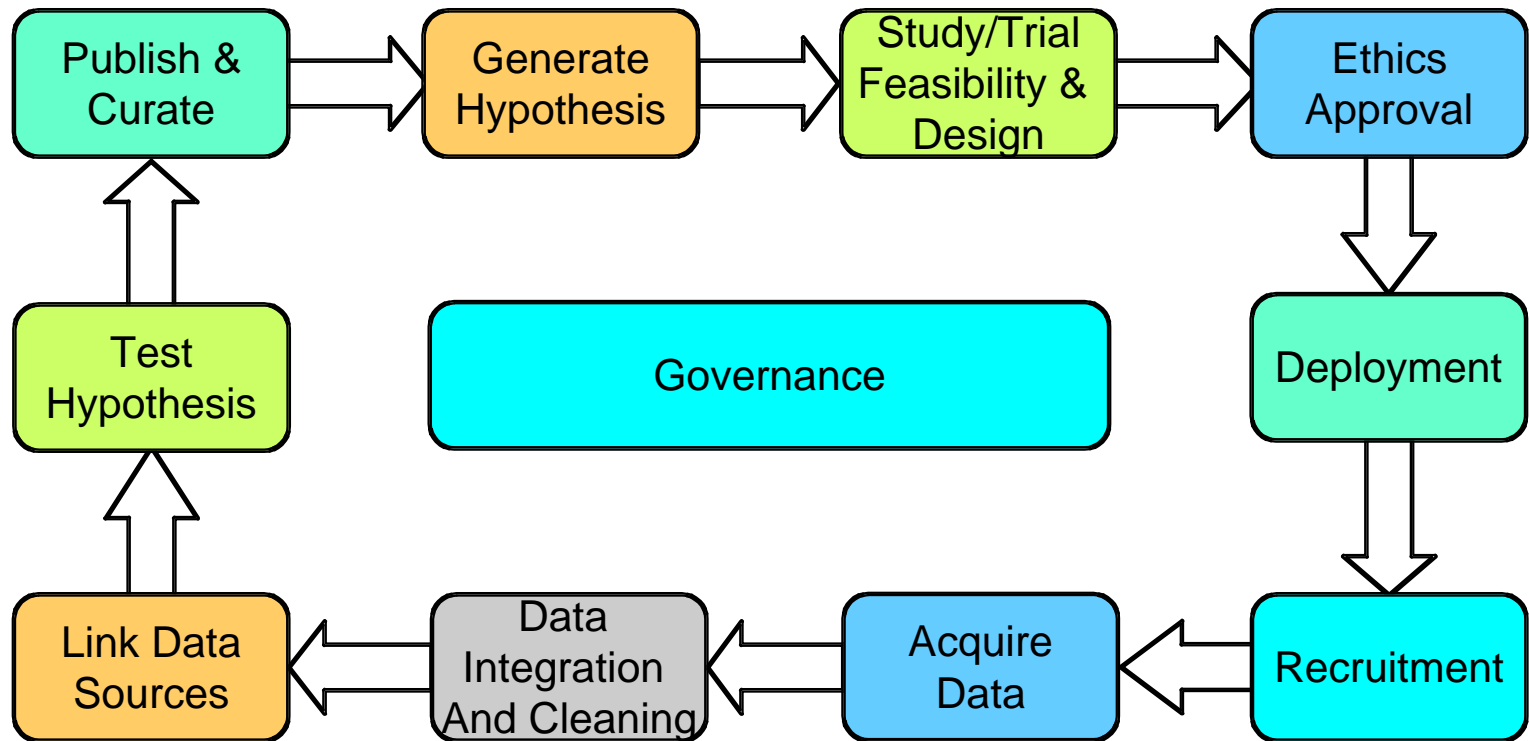
PsyGrid Aims

- **Aim 1 (Technological):** Develop open source applications and middleware to support studies and clinical trials in mental health
 - Software
 - A supported operational system
- **Aim 2 (Clinical):** Use outputs of ‘Aim 1’ to assemble longitudinal cohort study of patients with First Episode Psychosis over 2 years and study epidemiology of schizophrenia

UK Mental Health Research Network



E-Infrastructure for studies and trials



Project History

- Began in May 2005
- Electronic data collection began May 2006
- Now support 5 studies in mental health; 2 studies in diabetes imminent; over 100 users; over 1500 subjects
- Number of studies growing monthly
- Adopted by the UK MHRN for all studies and trials

Risk Analysis

- The first thing we did
- Can inform all aspects of the project ...
 - Development process
 - Technology decisions
 - Operations
 - Deployment
 - Support

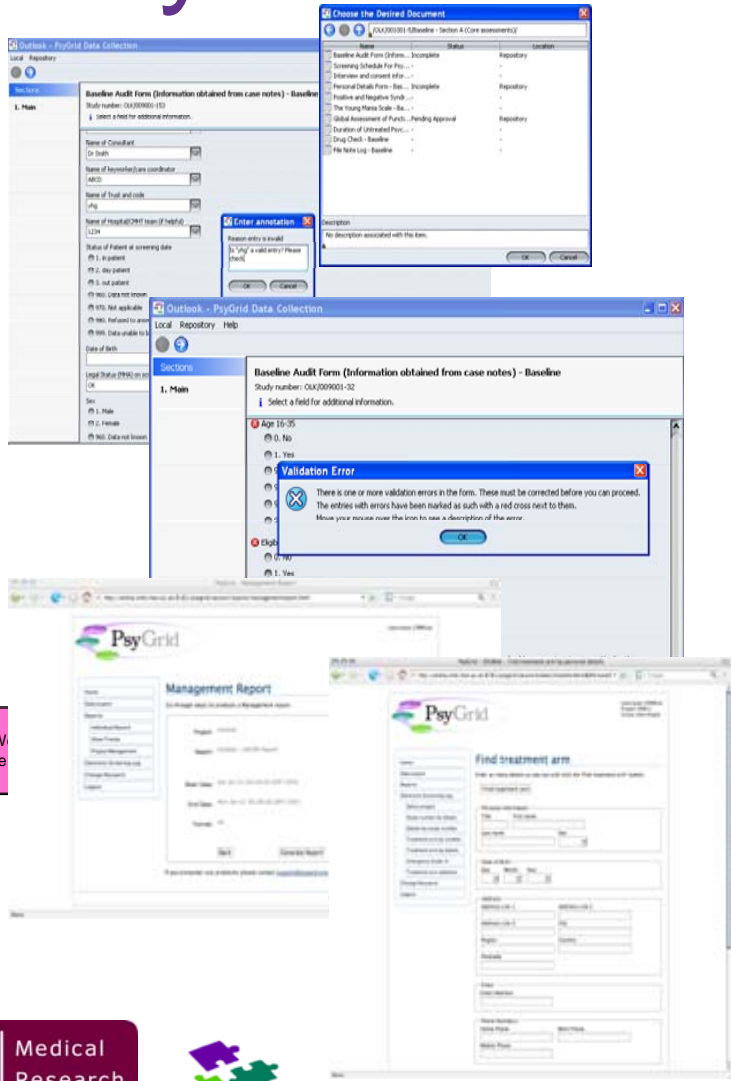
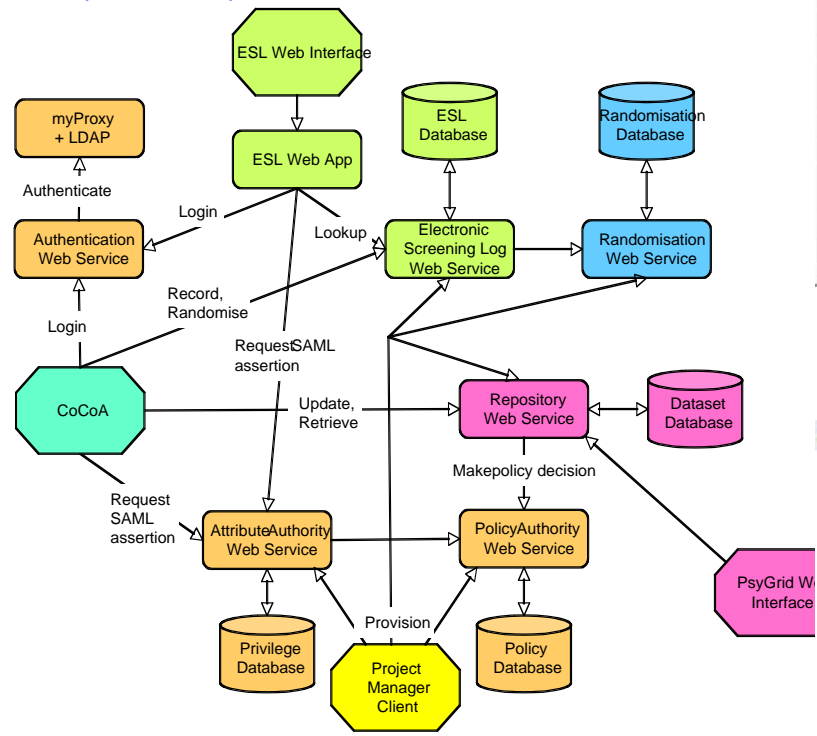
Risk Identification (1)

- PsyGrid to be deployed on NHS
- Stakeholders: NHS Trust IT directors
 - Deployment and operation must not require any changes to a Trust's existing network security policy
 - The system must not deny resources to existing clinical systems or require any support from NHS IT personnel
 - Assume the most restrictive infrastructure exists
 - It does! Only port 80 and 443 reliably open across the NHS. Some Trust's web proxies use Microsoft proprietary NTLM authentication.

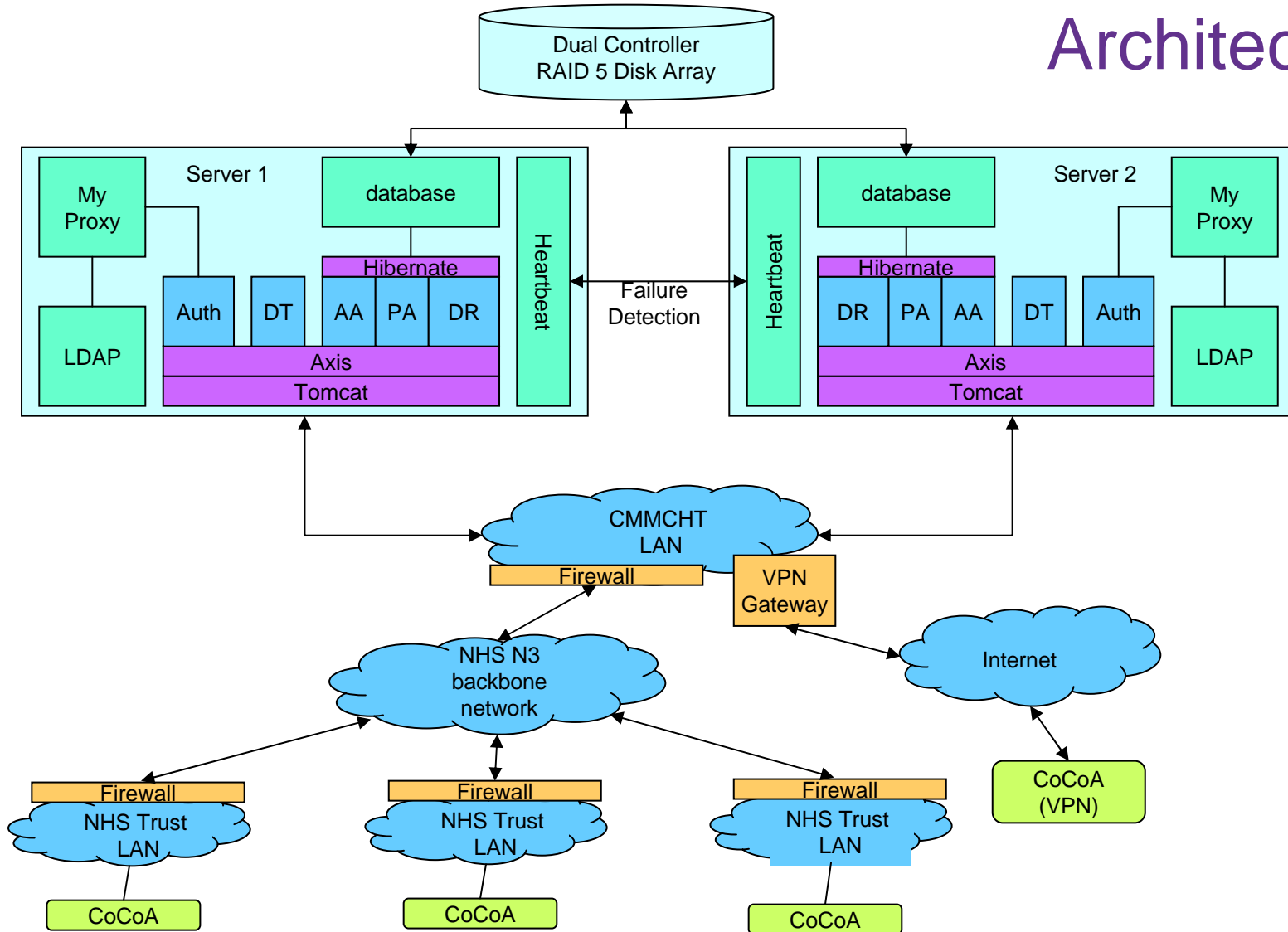
PsyGrid CoCoA

PsyGrid CoCoA is a complete system for remote clinical data capture for studies and trials. It is open source and its feature set is comparable with commercial systems.

Status: Complete and in production



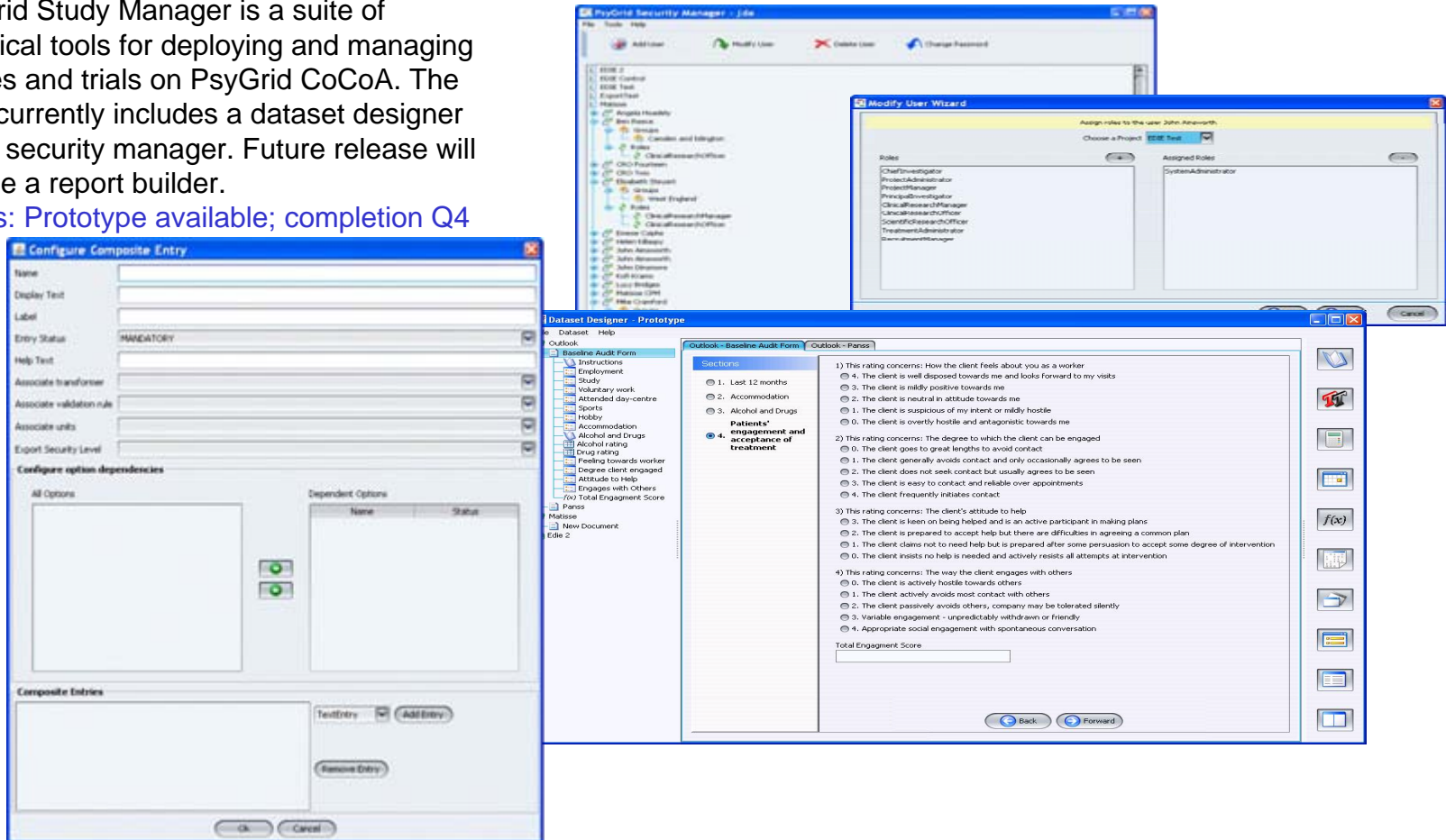
Deployment Architecture



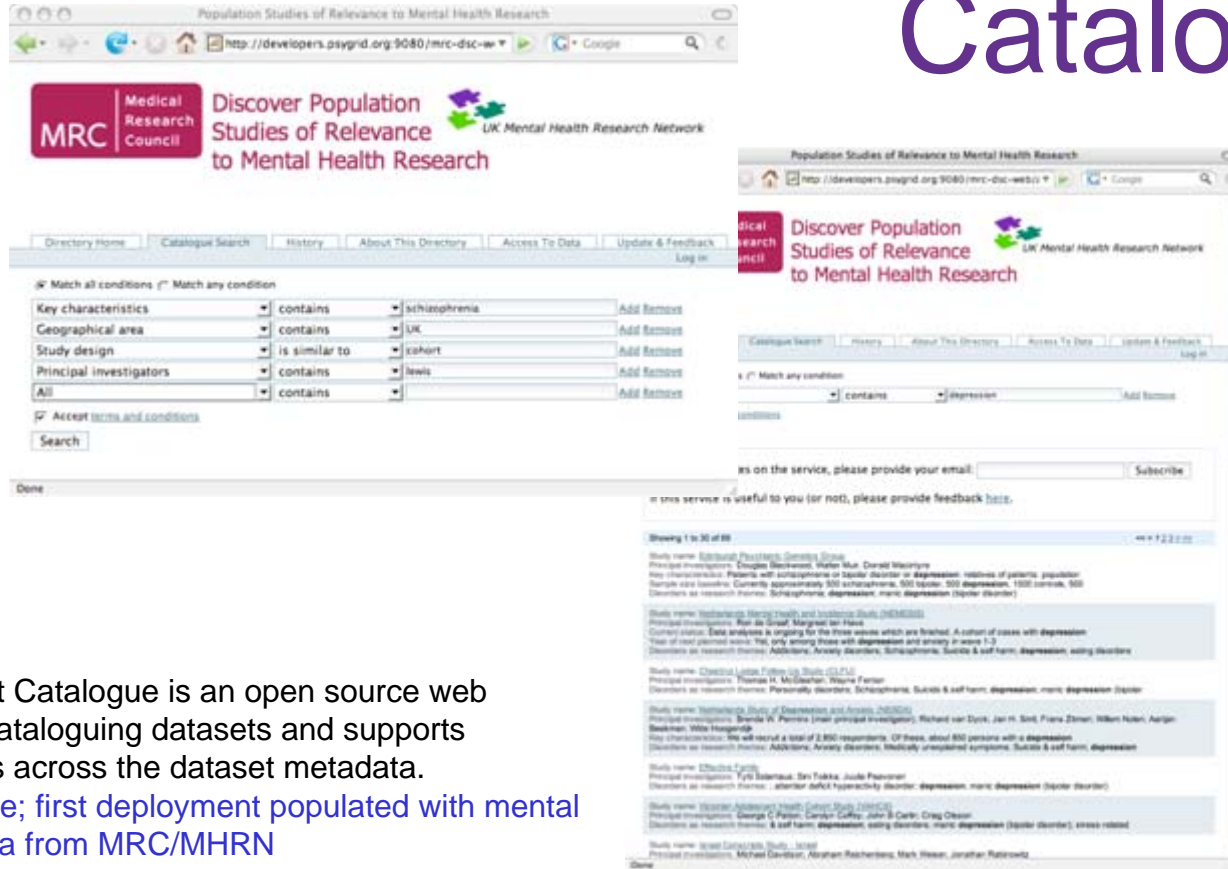
PsyGrid Study Manager

PsyGrid Study Manager is a suite of graphical tools for deploying and managing studies and trials on PsyGrid CoCoA. The suite currently includes a dataset designer and a security manager. Future release will include a report builder.

Status: Prototype available; completion Q4 2007



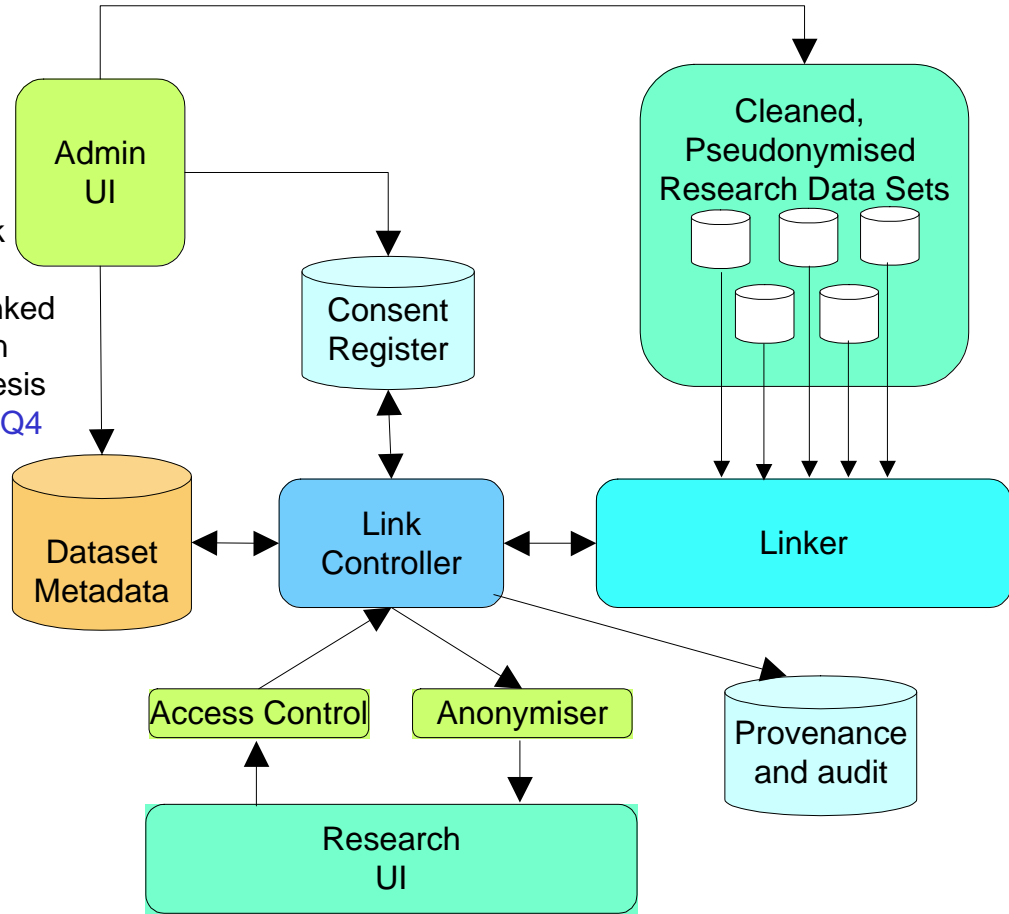
PsyGrid Dataset Catalogue



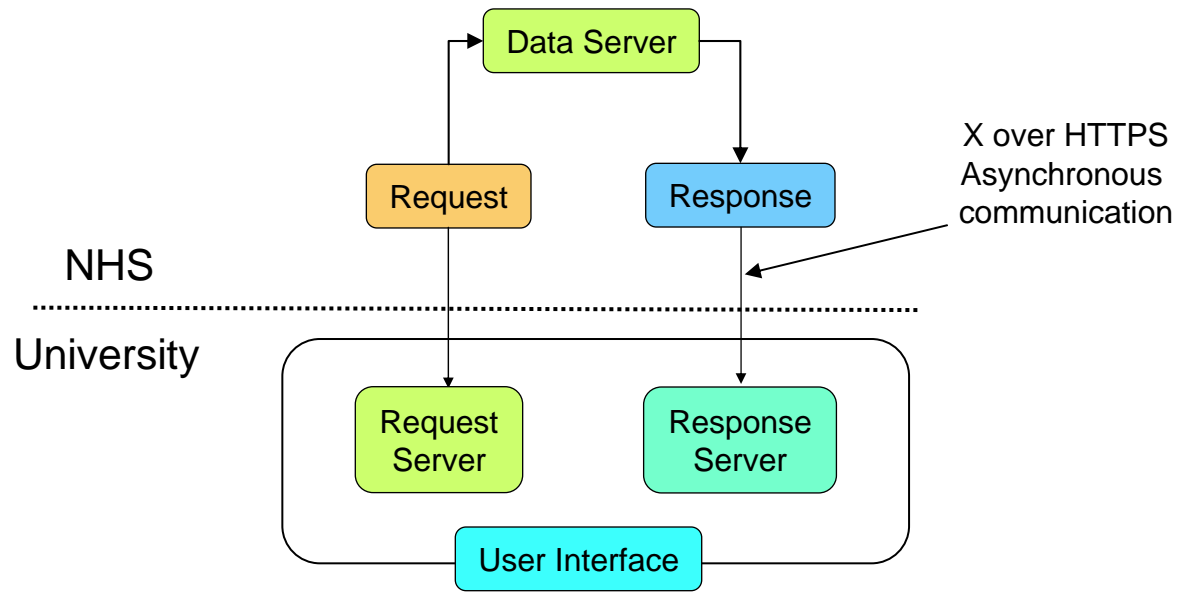
PsyGrid Dataset Catalogue is an open source web application for cataloguing datasets and supports complex queries across the dataset metadata.
 Status: Complete; first deployment populated with mental health study data from MRC/MHRN

PsyGrid Linker

PsyGrid Linker provides the capability to link datasets stored in the repository. The researcher can specify the datasets to be linked at the individual record level and receives an anonymised dataset for testing their hypothesis
 Status: In development; prototype available Q4 2007



Bridging the NHS-University Divide



Organization

- Single office base for the development team
 - Light weight, informal process
- One PM; 4 developers
- Shared ownership
 - Just as well - 60% staff turnover after 18 months

Development Process

- Users are clinical people
- Little knowledge of IT; do not know what is possible and what is not
- => Evolutionary Prototyping
- New ideas generated all the time
- => Agile development

Release Process

- Major functionality release every 6 months (approx)
 - Corresponding to work package deliverables
- Continuous development and release of minor features
 - Reflects need to respond positively to user feedback
- Each release soak tested on staging server before deployment to NHS
 - Approximately one release every two weeks
- Once deployed execute test suite on a test data set

Operations

- Developers do support (email & telephone)
 - More building relationships between users; no hiding when its not working!
 - Rotates throughout the team; one week shifts; improves knowledge of the system across the team
- Errors are reported automatically if possible
 - Some users do not report them because sending a log file was too difficult
- The majority of support requests (90%) are to do with either NHS connectivity problems or confusion about on-line/off-line operation

Operational Issues

- Patching
 - Modifying a live dataset
 - Mostly additions, but some deletions
- Online/offline mode issues
 - Causes confusion amongst users
 - Data synchronisation issues between local copy and repository ... especially when the dataset is patched

PsyGrid

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