University of Leicester

Towards a cloud-enabled Translational Research IT platform

BRISSkit – The Biomedical Research Infrastructure Software Service kit

BRICCS & BRISSkit: Open Source Medical Research

Undertaking translational research requires extensive use of computer software to collate, record, integrate and analyse data. At the Leicester Cardiovascular BRU we have embarked on the widespread use of Free and Open Source Software (FOSS) in our translational research to develop 'BRICCS' – our **Biomedical Research Informatics Centre for Cardiovascular Science** - to provide end-to-end informatics support for the research process.

Deploying an array of FOSS applications to support clinical and translational research is unusual in the NHS, but more common elsewhere in the world. FOSS promotes the use of open standards for data interchange, increases the potential for national and international collaboration, and offers significant savings.

The core of BRICCS is a dedicated research database linked to clinical data repositories, blood and DNA samples, genomic data and knowledge extraction from documents and image stores.

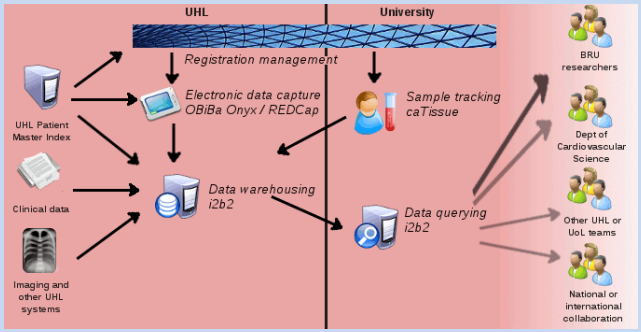
BRISSkit seeks to share the benefits of BRICCS by providing easily configurable cloud-hosted software as a modular service. Researchers can deploy as much, or as little, of the BRISSkit toolset as they need, for as long, or as short, as they need it.

Development of BRISSkit is funded by the JISC UMF Shared Services and the Cloud programme. Its main aim is to design, deliver and begin to exploit a national data hosting service for researchers in the field of Biomedicine and Bioinformatics. Components will be provided based on open source solutions which can be hosted locally or externally as appropriate, and accessed securely over the JANET academic network.

Is Open Source a viable alternative?

Benefits from using open source software:

- Freedom to adapt or alter the software
- Lower costs of ownership
- Long term software stability and options for support
- Lower barriers to integration and data sharing



i2b2

I2b2 – Informatics for Integrating Biology and the Bedside – is a scalable informatics framework that uses existing clinical data for discovery research, combined with genomic data to facilitate the design of targeted therapies. Developed under an open source license by Partners Healthcare Systems, Boston, Mass.

www.i2b2.org

At home in the cloud?

Cloud computing can be seen as the use of computing resources and/or software as a utility, in the same way that you use familiar utilities, such as electricity, water, gas. Cloud computing enables you to pay for computing resources as you need them, and benefit from large-scale provision, backup and services, even for small-scale individual deployments.

Benefits from accessing cloud services:

- Flexible services which can scale to meet demand
- Lower costs, with no front-loading of cost
- Reliability and stability in the face of hardware failure
- Lower barriers to integration and data sharing

caTissue

caTissue is a tool for biospecimen inventory management, track and annotation. Developed through the National Cancer Institute's caBIG initiative, it permits users to manage data on collection, storage, quality and distribution of specimens. Scalable and configurable, caTissue can support multiple sites.

https://cabig.nci.nih.gov/tools/catissuesuite

OBiBa Onyx

OBiBa is a collaborative international project whose mission is to build high-quality open source software for biobanks. OBiBa is a core project of the Population Project in Genomics Consortium (P3G), an international organisation fostering collaboration and knowledge sharing for population genomic studies.

http://www.obiba.org/

REDCap

REDCap is a secure web application designed exclusively to support data capture for research studies. The REDCap application allows users to build and manage online surveys and databases quickly and securely, and is currently in production or development status for more than 23,530 studies.

http://project-redcap.org/

C3PR

For decades, clinical study sites have used paper and Excel spreadhseets to track registration information when enrolling patients into clinical trials. C3PR, part of the caBIG initiative, is an open-source, web-based system enabling efficient and streamlined registration of participants into trials and studies.

https://cabig.nci.nih.gov/tools/c3pr

http://www.le.ac.uk/brisskit

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Based on 'BRICCS' developed by LCBRU

Leicester Cardiovascular Biomedical Research Unit

University Hospitals of Leicester NHS

NHS National Institute for Health Research