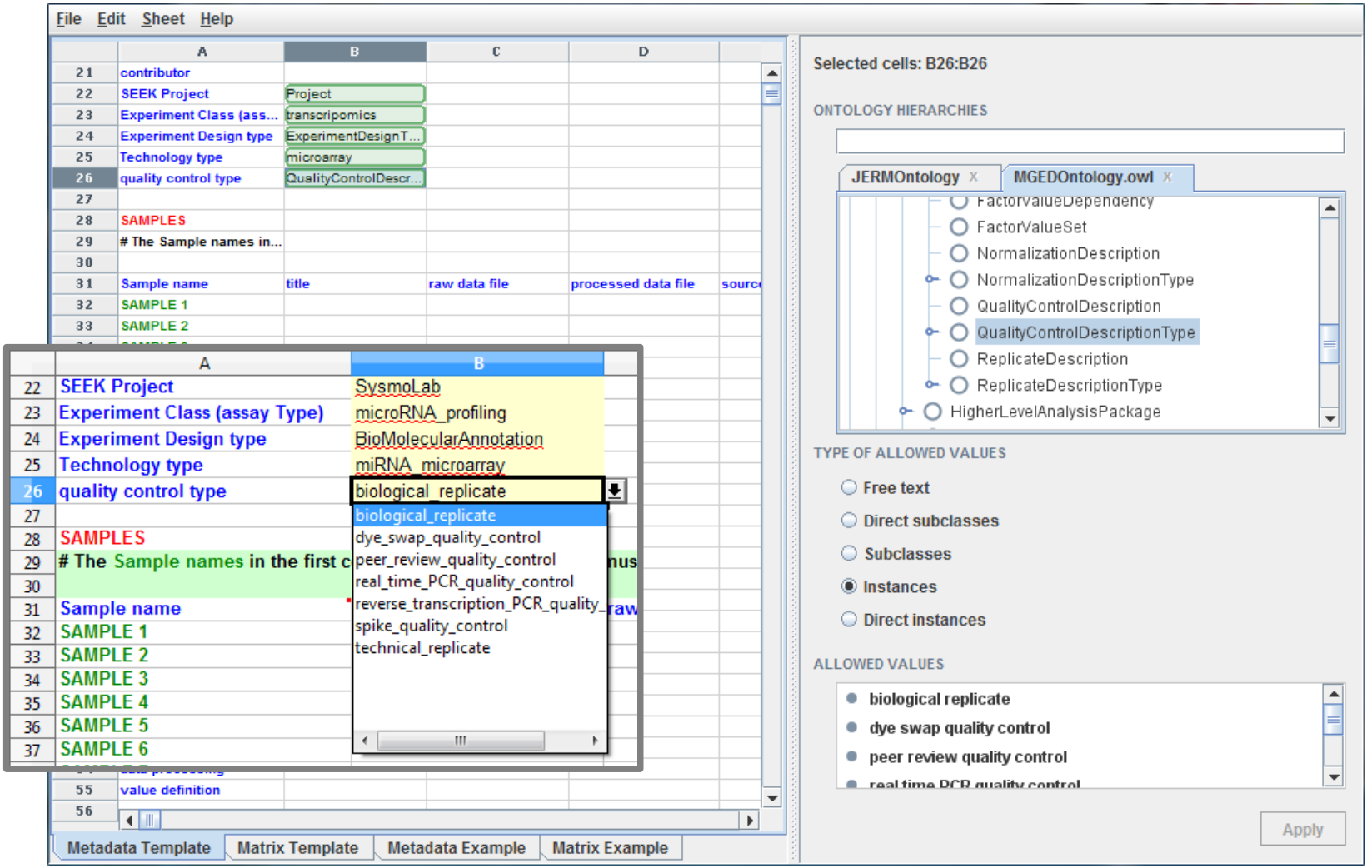
Spreadsheet Science





http://www.sysmo-db.org/rightfield

For more examples of spreadsheet-related tooling:
http://www.mygrid.org.uk/spreadsheetscience

NGS Champions

Campus Champions

- 17 institutions represented

Us to them

- Training in using the NGS, grid resources, cloud, providing certificates etc
- Knowledge building to become a source of expertise in grid and e-infrastructure
- Bi-monthly phone calls to ensure that the Champions are up to date with news from the NGS and other major projects
- Mailing list for news dissemination, discussion and promo materials
- Champion meetings at UK events

Them to us

- Promote the NGS within their institution through offering advice and guidance to researchers, giving presentations, representing the NGS at local IT events, ensuring that IT management are aware of the NGS and any other mechanisms possible
- To pass onto the NGS requirements from their institution and researchers
- To liaise between researchers, the institution and the NGS
- Publicise their role as Campus Champion on their personal institutional web page and through advertising

Community Champions

- 7 funded Community Champions
  - David Wallom
  - Rebecca Notman
  - Philip Fowler
  - Pamela Greenwell
- Monthly meetings
  - News from the NGS / EGI e.g. funding, events
  - New research bids they are applying for
  - New calls for funding in their research areas
  - Events they are attending
  - Conference reports, papers, posters etc
- Publicise the NGS within their institution and research area through display of advertising material / logos.
- Workshops and meetings at UK events e.g. UK e-Science All Hands Meeting

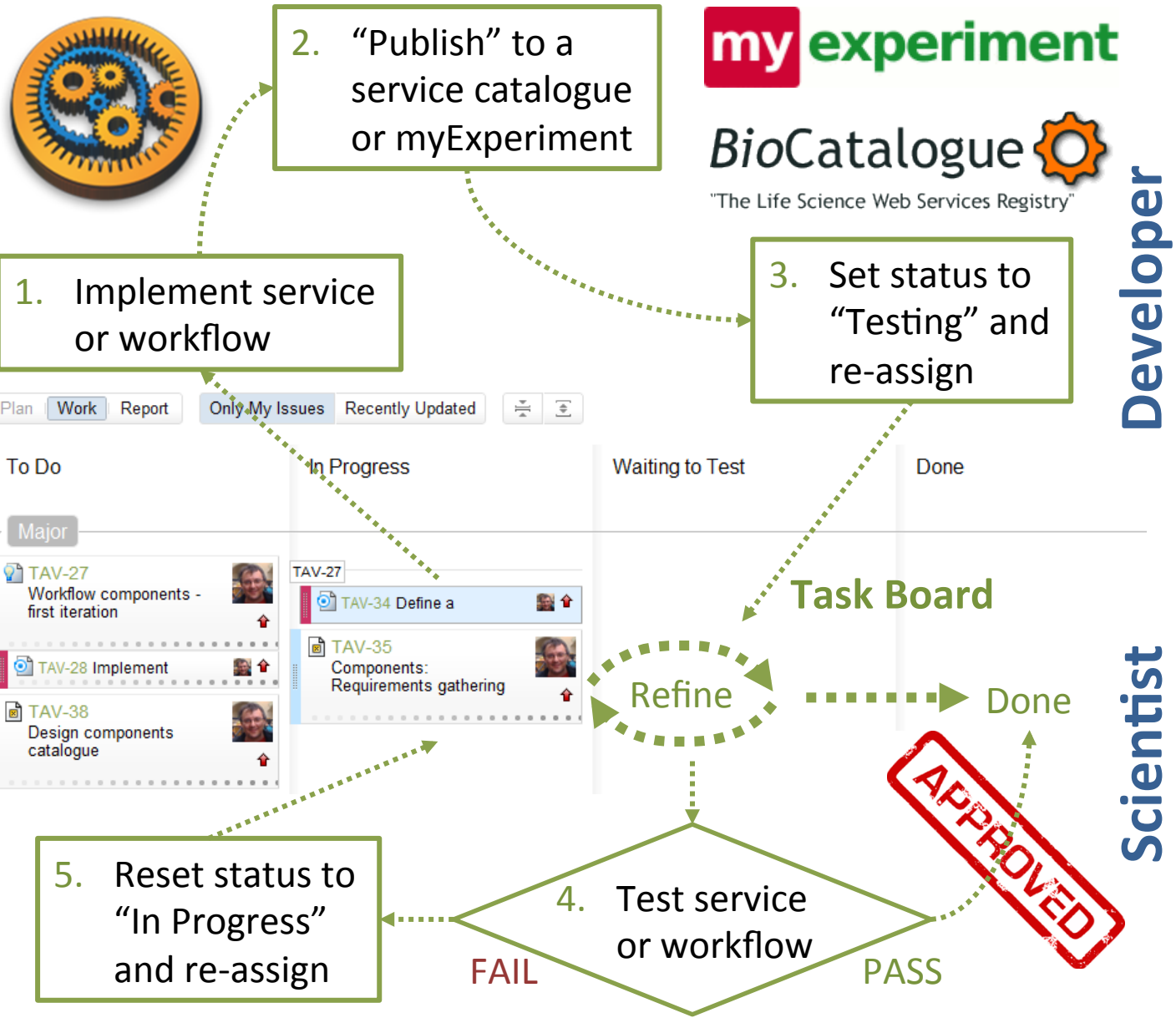
Using Agile Methods in Collaboration with Domain Scientists

BioVeL

Warm up
- Planning
- Defining tasks
- Ranking
- Assigning

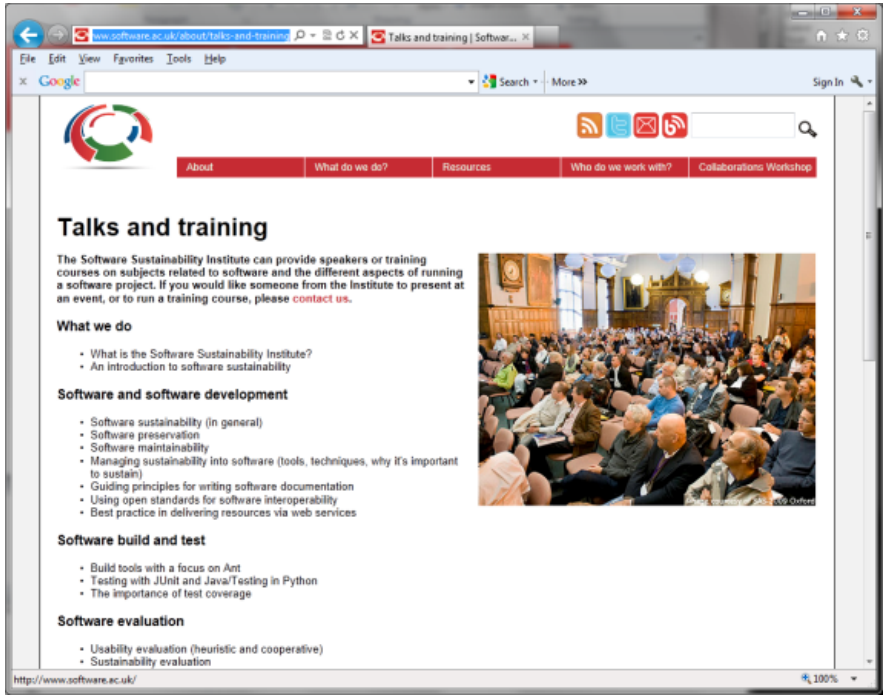
Sprint!
- Two weeks
- Tight collaboration
- Work on tasks
- Update task board

Warm down
- Showcase progress
- Reassess priorities



Help us to help everyone

www.software.ac.uk



"There are known knowns…

there are known unknowns…

there are also unknown unknowns"



- http://www.software.ac.uk/about/talks-and-training
- What are our unknowns?
- Write them on a Post-It and stick them to the board!

Image from http://en.wikipedia.org/wiki/File:Rumsfeld1.jpg

Documentation for scientific software: engaging the user community

www.software.ac.uk

Aleksandra Pawlik, PhD Student
Supervisors: Judith Segal, Helen Sharp, Marian Petre

The Open University

Issues with documentation in scientific software

Poor documentation - or lack of it - affects maintenance and use.

Producing documentation is no fun.

Solution – user community?

Sharing knowledge and collaborating is common in a research environment.

A lot of scientific software is open source.

Users are often developers.

How to engage the user community effectively?

Open the documentation to the users:
Infrastructure: wikis, documentation repositories.
Management and support: managers, editors, reviewers, proofers.
Explicit standards and best practices.

Enable users to build their own knowledge source:
Set-up: a mailing list, discussion forum.
Run or support user meetings, regular tutorials and attend conferences.
Learn from their discussions and queries.

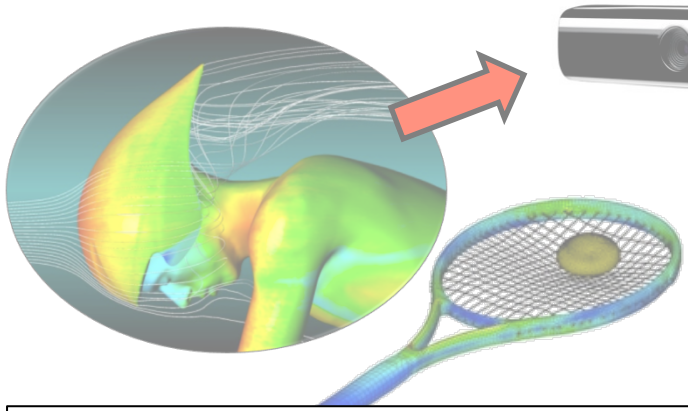
A benchmark:
Numpy/SciPy documentation
http://docs.scipy.org/doc/





Software Sustainability Institute

www.software.ac.uk







HTTP://WWW.KINECTHACKS.NET

HTTP://WWW.DEPTHBIOMECHANICS.CO.UK

Engineering Sport







Sheffield Hallam University | Centre for Sports Engineering Research

www.software.ac.uk

info@software.ac.uk

The Genomic Standards Consortium

- Aims to **support scientists by ensuring that genomic data can be** used and **re-used by everyone**
- Maintains **lists of** the most important (minimum) **things to capture**
  - MIGS: Minimum Information about a Genome Sequence
  - MIMS: Minimum Information about a Metagenome Sequence
  - MIMARKS: Minimum Information about an Environmental Sequence (marker genes)
- Has gained **widespread community adoption**
  - MIGS/MIMS/MIMARKS to DDBJ/EMBL/GenBank, GOLD, MG-Rast, CAMERA, BII, VAMPS and more
- Is continuing to **rise to new challenges**
  - Globally over the next year we are looking at hundreds of thousands of new genomes and tens of petabytes of data.



GSC 13, BGI, 2012

MIxS

For more information, please visit the GSC's web site at http://gensc.org/

UNIVERSITY OF WEST LONDON

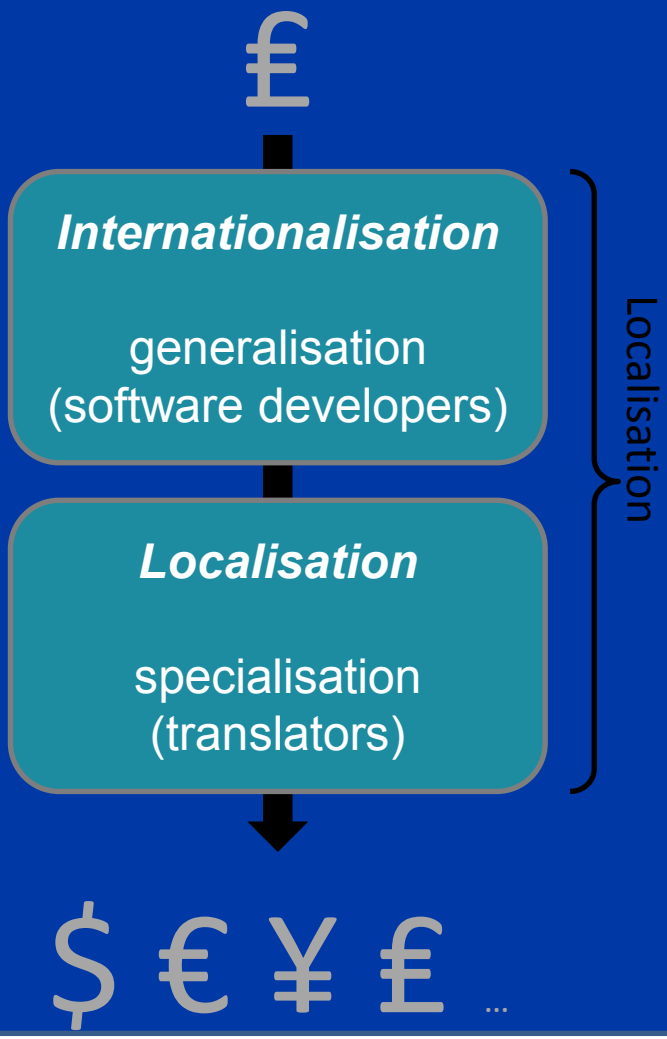
Software localisation (l10n)

L10n & development:

- l10n creates a bit complexity
- can be:
  - inexpensive
  - uncomplicated
  - successful

Localised elements:

- text
- images, symbols
- colours
- layout
- functionality
- features
- ...



Development fallacies:

"Text files + Unicode = done"

"Everybody thinks/feels same "

"A usability problem"

"Requirement engineering"

"Separate l10n from dev"

Content pipeline:

magic happens

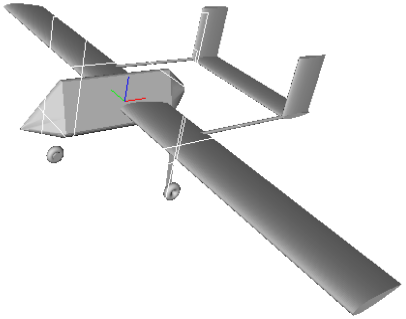
1. source data → localiser
2. localiser → localised data

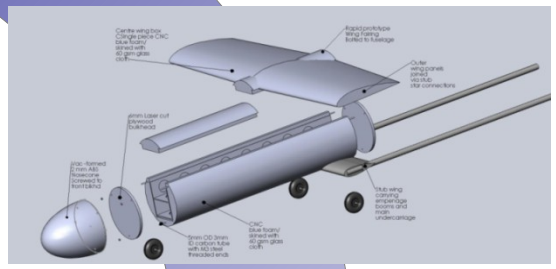
magic happens

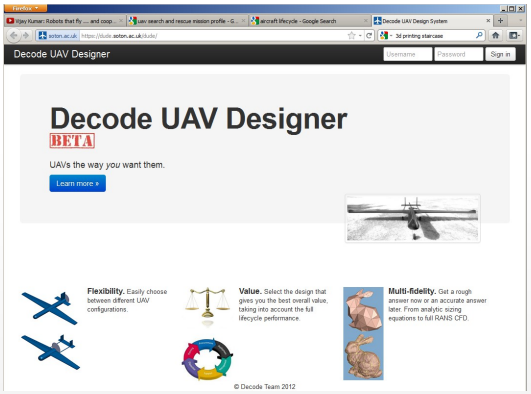
3. localised product

UNIVERSITY OF Southampton
School of Engineering Sciences

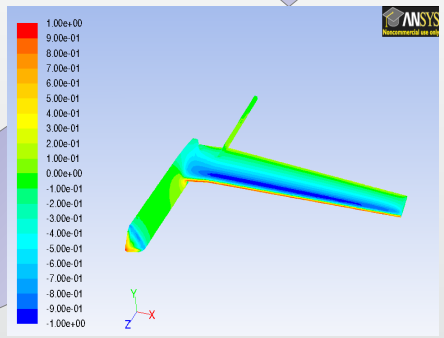


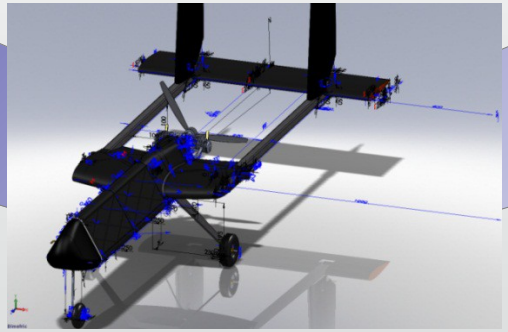


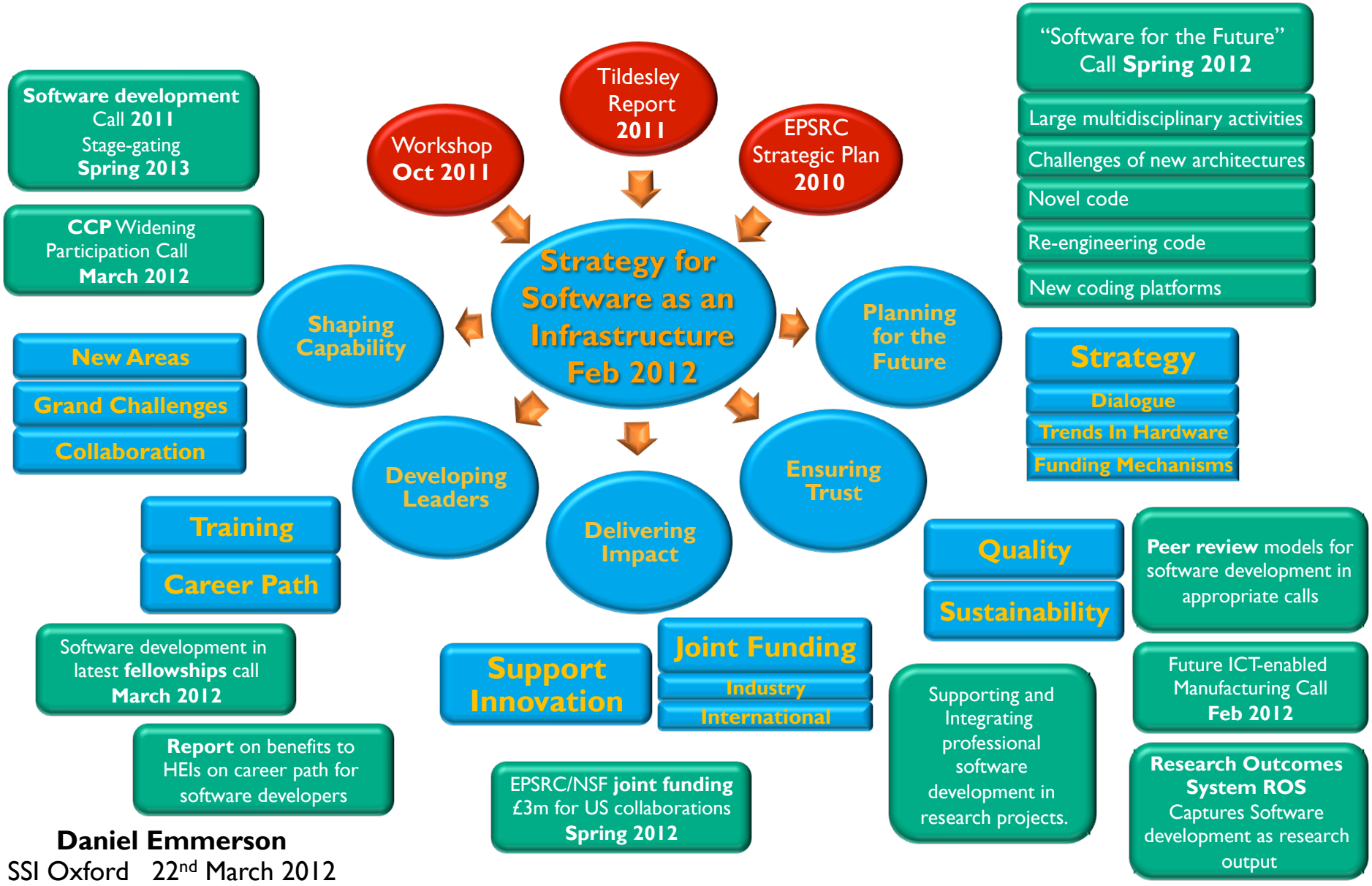








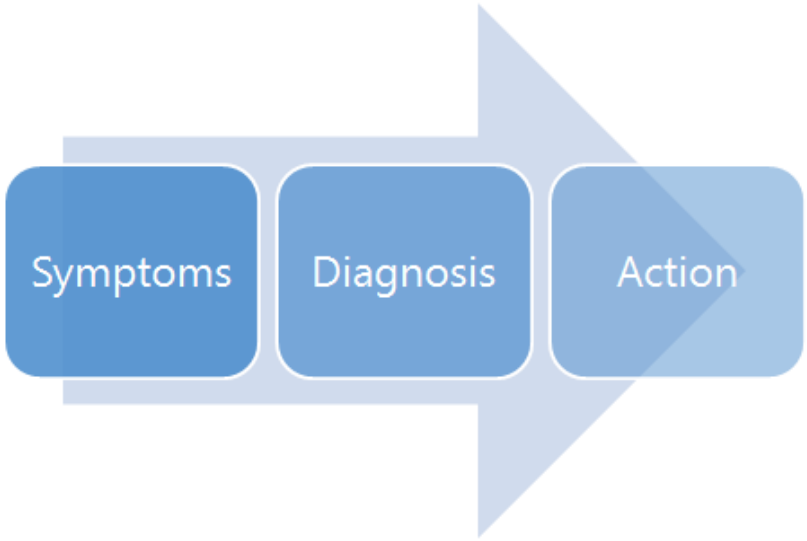


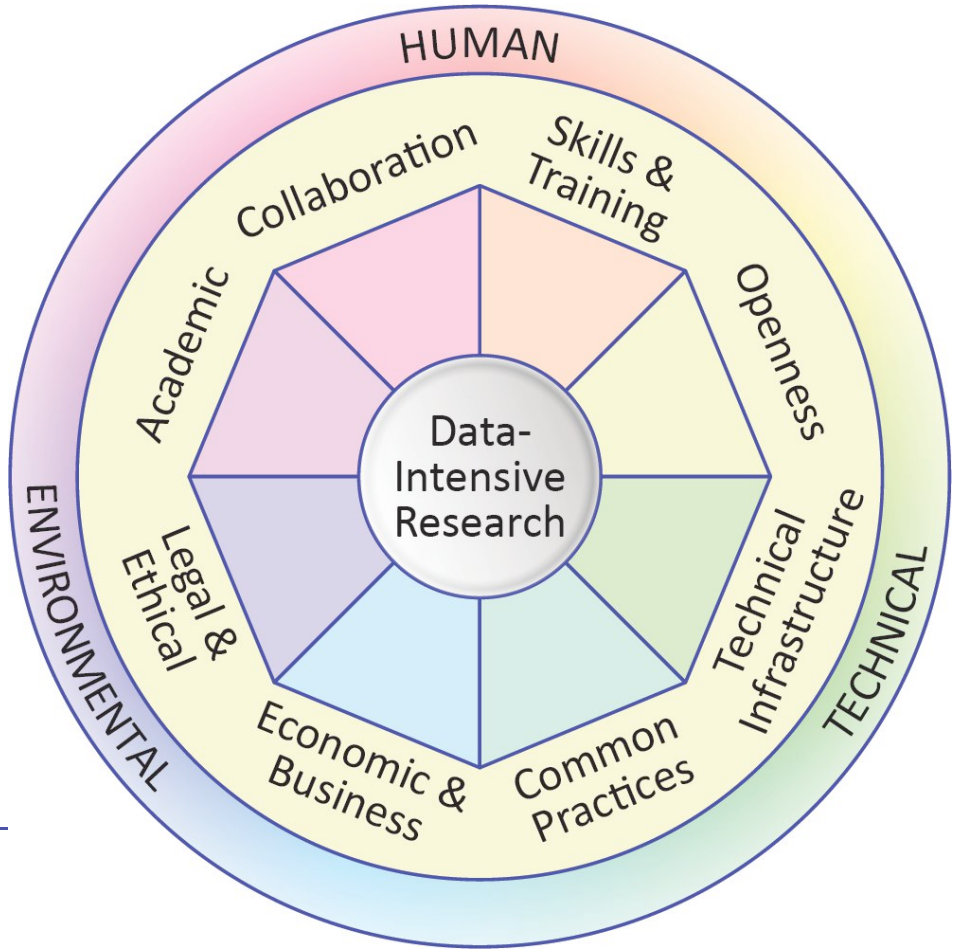


Daniel Emmerson
SSI Oxford 22nd March 2012

EPSRC
Pioneering research and skills

How to enable data-intensive research communities?



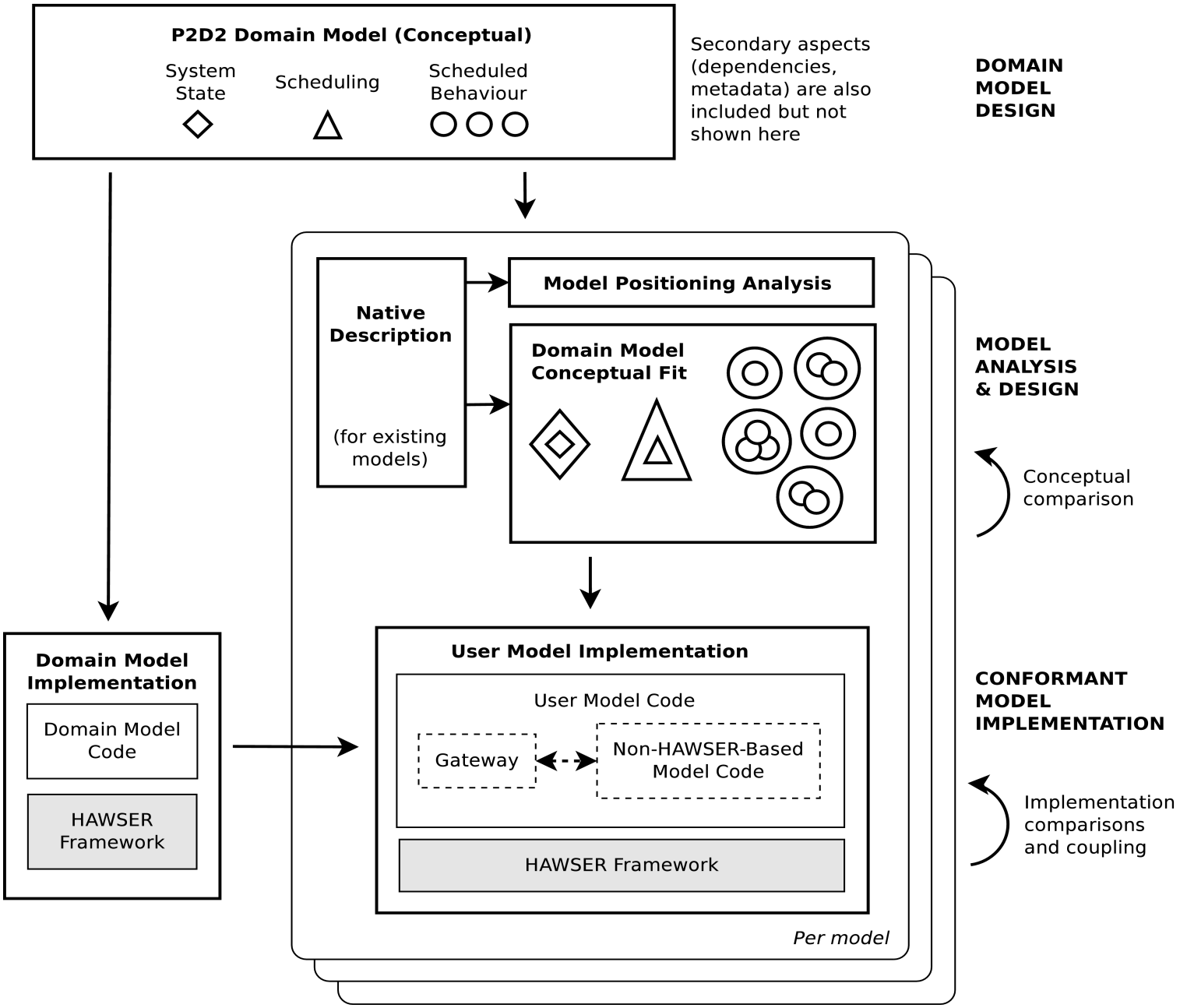


Call to action – white paper feedback
http://communitymodel.sharepoint.com/

Kenji Takeda – kenjitak@microsoft.com
Liz Lyon – e.lyon@ukoln.ac.uk

UKOLN
UNIVERSITY OF BATH
Microsoft Research Connections

A computational-domain-model-centric process for comparative social simulation

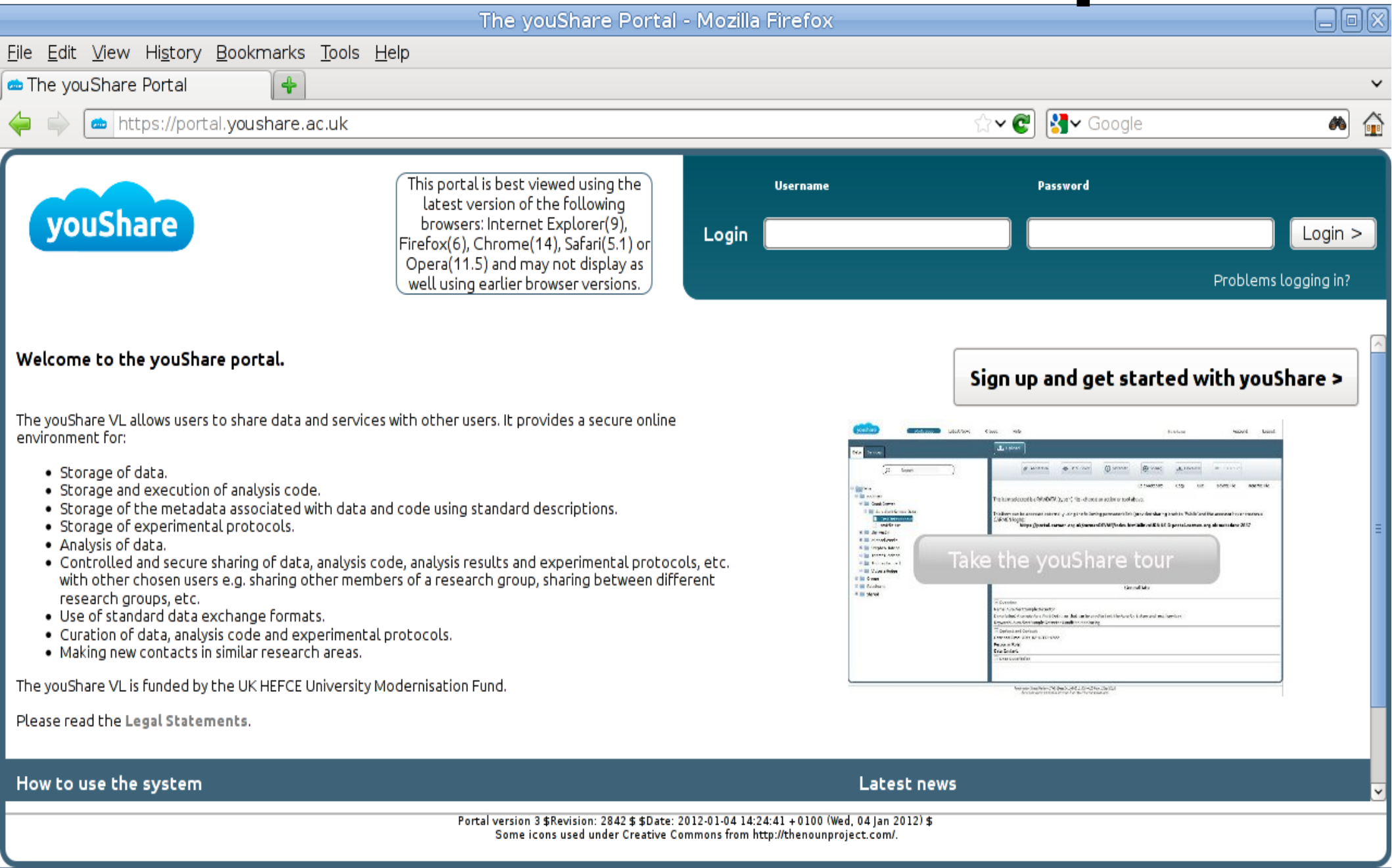


CW12 Lightning Talk

Stuart Rossiter

University of Southampton

YouShare For Developers



Sarbjit Bakhshi, Technology Strategy Board

The importance of ethnography and epistemology on system (hardware & software) design

- Ubiquitous computing (world of the future) =
  - hardware everywhere
  - Connected everywhere and everything

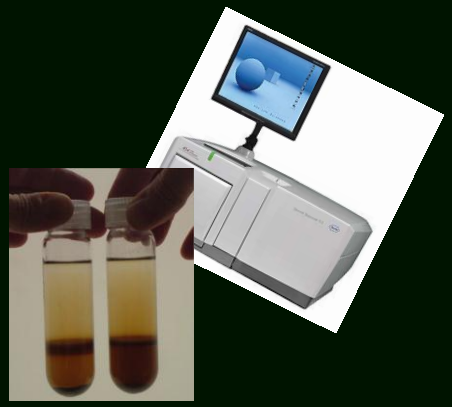
- Theories of knowledge (epistemology) important
  - Insufficient thought given to this; models are usually western/Northern European concepts
  - Different types of knowledge (public/private too simple for most cultures); Google Circles almost right.
  - Different senses of what is the lowest common unit in society (family, ethnic group, person)

- Touch = new black
  - BUT touch not universal
    - Male and female spaces/objects exist
    - Caste distinctions exist
    - Clean/dirty perceptions exist.
  - Technology does not always move society forwards, often REINFORCE existing prejudice

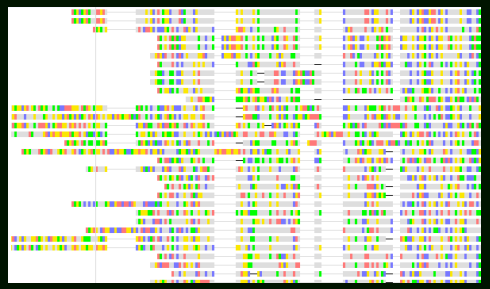
- Why is hardware and software being designed around one concept of openness, individual log ins instead of group/clan/family shared base?
- Already communities exist which repurpose technology in ways that were originally unintended 'Islamic mobile phone'

Statistical modeling of molecular sequence data



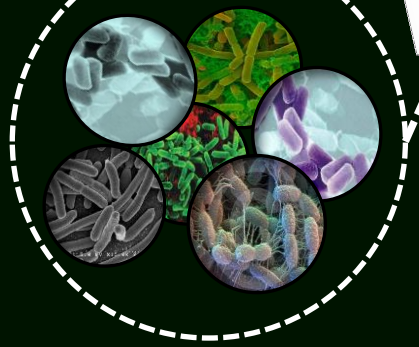


Data: thousands of DNA sequences from the total genomic content in the environment





What are they doing?

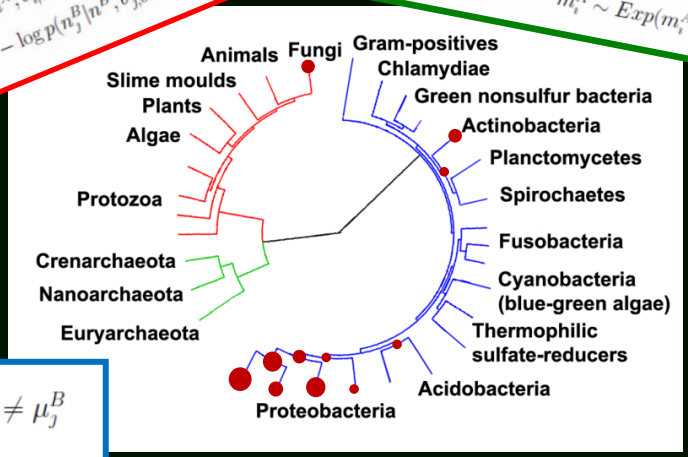


Who is there?

$$L(n_i^A, n_j^B | n^A, n^B) = \log p(n_i^A | n^A, \hat{\theta}_{i,1}^A) - \log p(n_i^A | n^A, \hat{\theta}_{i,0}^A) + \log p(n_j^B | n^B, \hat{\theta}_{j,1}^B) - \log p(n_j^B | n^B, \hat{\theta}_{j,0}^B)$$

Branch length m_i^A of tree A:

$$m_i^A \sim Exp(m_i^A; \mu_i^A)$$



$$H_0 : \mu_i^A = \mu_j^B \text{ and } H_1 : \mu_i^A \neq \mu_j^B$$

Elisa Loza ▪ Biomathematics & Bioinformatics ▪ Rothamsted Research ▪ elisa.loza@rothamsted.ac.uk

domesdaymap.co.uk

OPEN DOMESDAY

Book ❧ Places ❧ Names ❧ API

The first free online copy of Domesday Book

Find Domesday places near: Go

PLACE: OXFORD

Hundred: Headington

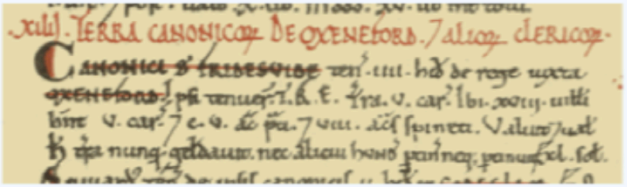
County: Berkshire / Buckinghamshire / Oxfordshire

Total population: 18 households (medium).

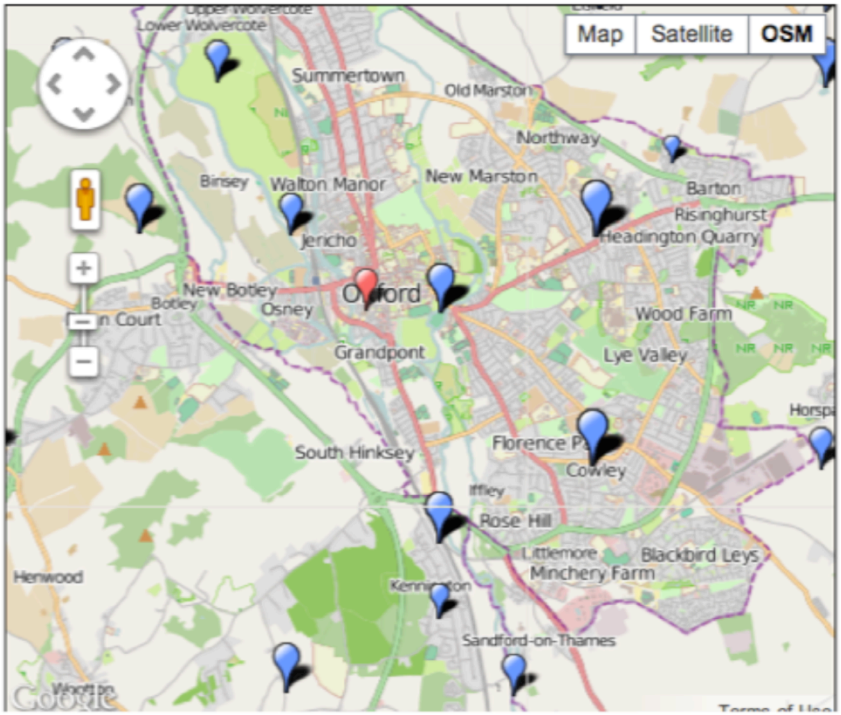
Total tax assessed: 4 exemption units (medium).

Oxford appears in 13 entries in Domesday Book (show all).

❧ ENTRY 1 ❧

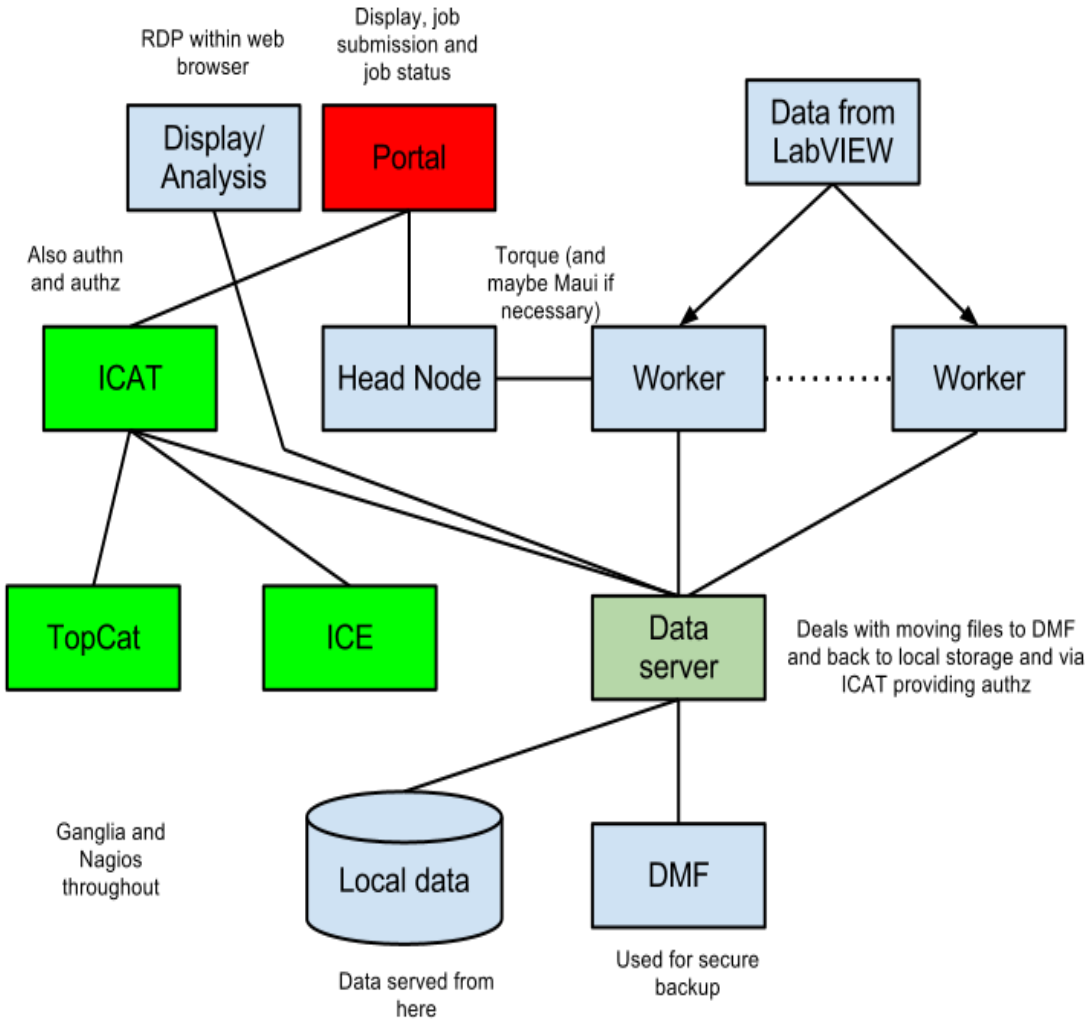


See larger image or on original page



Steve Fisher and Kevin Phipps

Data processing at the RCaH Lasers for Science Facility



Currently:

- Data from microscopes via LabVIEW
- Users log in to a machine which has been manually assigned to them.
- Users run programs - no batch system.
- "Cataloging" relies upon standard directory structures and program which examines files in a set of directories to populate a GUI.
  - Scaling problems.
- No convenient way to share files between those working on an experiment.

Introduced:

- Three generic components
- Two almost generic components
- One bespoke component

Prototype planned for end of month

ROTHAMSTED RESEARCH

The University of Manchester

MANCHESTER 1824

Imperial College London

CISBIC

syngenta

Universität Bielefeld

Newcastle University

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

gsk GlaxoSmithKline

BBSRC bioscience for the future



Small enough for your ideas. Big enough for your impact.

Visualisation & Analysis

Integration & biological context

Source: Centre for Integrative Systems Biology at Imperial College (CISBIC)

Email: Jan.Taubert@rothamsted.ac.uk

Open Source LGPL
JAVA 6, SF.NET SVN,
JIRA, HUDSON

http://ondex.org , http://sf.net/projects/ondex

Ondex
http://ondex.org

philip.fowler@bioch.ox.ac.uk,
@philipwfowler

matthieu.chavent@bioch.ox.ac.uk





email

..but we don't communicate very well



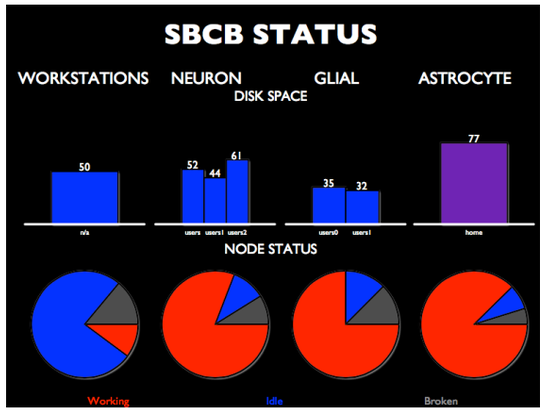


meetings seminars

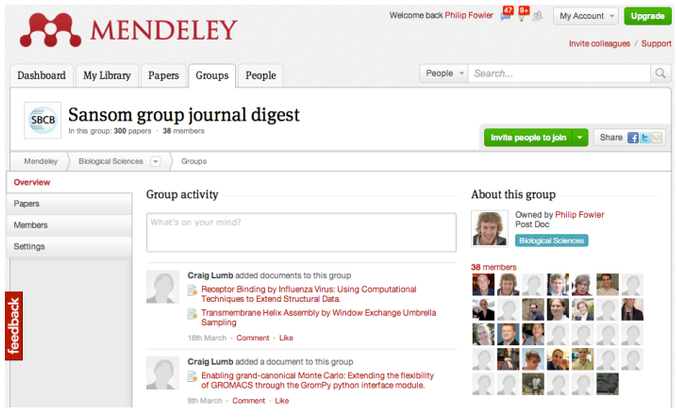


Wiki

**We've tried a few social tools...
but they don't "take off"**



Status board



Mendeley

Like to try something to glue these together but we don't know what...

cross-platform

real-time
searchable chat

cluster status

Mendeley feed

Wiki
updates

upcoming
meetings

Drupal Commons, Diaspora,
SharePoint, Yammer, GoogleWave?

ubiquity press metajournals

Software Sustainability Institute

Journal of open research software beta

ubiquity press open access

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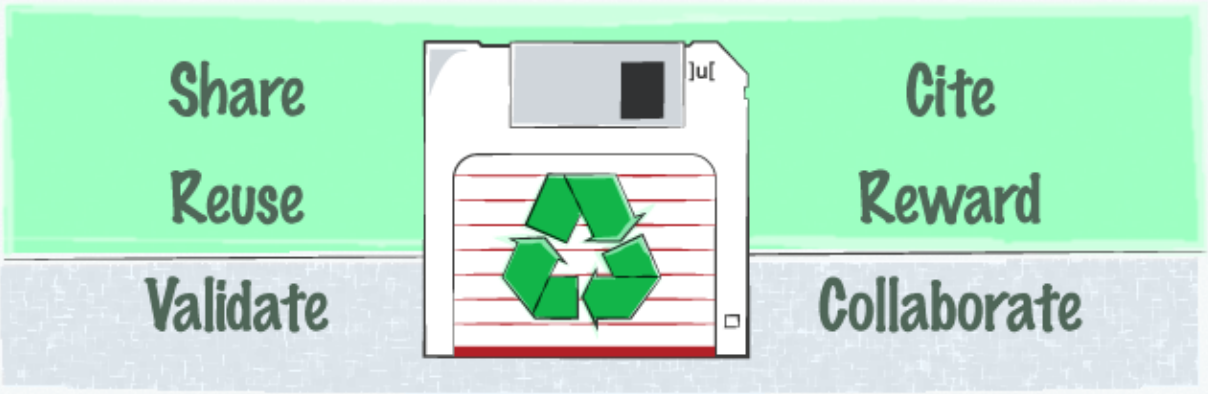


User: akumar Password: ••••••••• Log in

Remember me | Lost password? | Register as author

Recent Articles | Comments

The Journal of Open Research Software will be launching soon. In the meantime, please contact editor.jors@ubiquitypress.com if you'd like to know more.

http://openresearchsoftware.metajnl.com









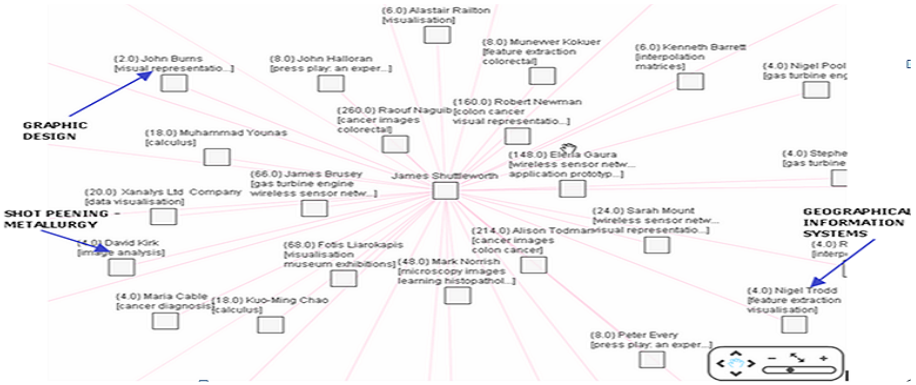
brian.hole@ubiquitypress.com

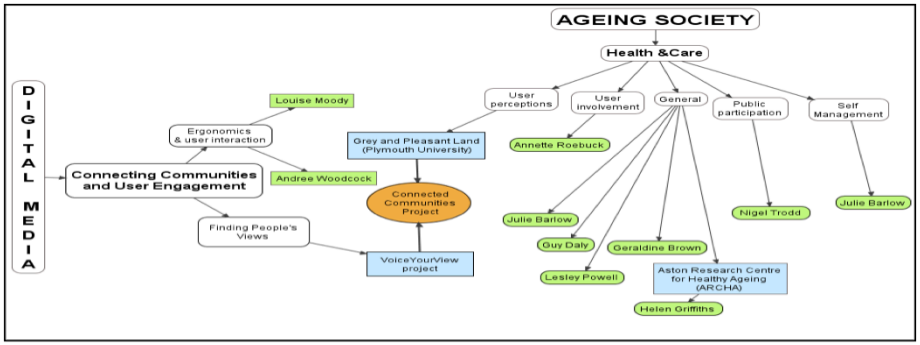
www.ubiquitypress.com / @ubiquitypress

Facilitating Collective Intelligence – New Connections & Collaborative Spaces – (*j.hensman @coventry.ac.uk*)

- Discovering new and unusual connections
- Mapping research and innovation to find new relationships for potential collaboration within and between communities (e.g. SPIRES [EPSRC], e-Research South)
- Immersive interactive spaces to facilitate collaborative discussion and collective intelligence (SurroundMind)

JISC VRE/Research Tools Brain and Inspires projects (with Oxford, Cambridge, Warwick, Leeds and Heriot-Watt Universities)



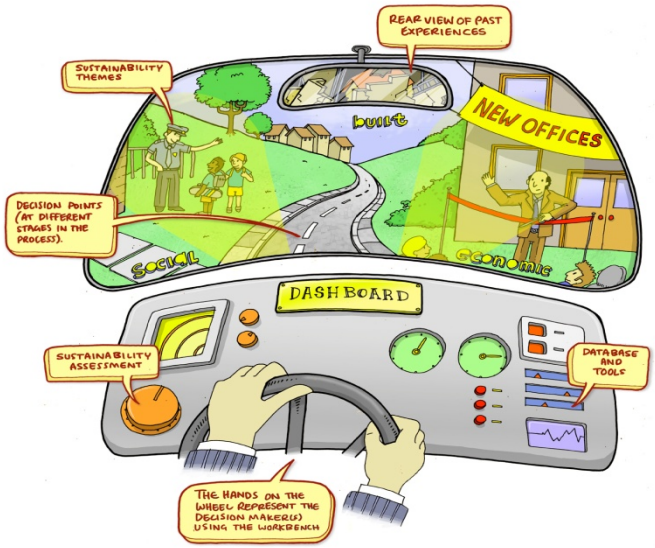




KM for Sustainable Urban Regeneration

SURegen
urban knowlege for regeneration

SURegen Workbench



Barriers to implementation - from prototype to functioning system:

1. Market constraints:
   - Size: 1,000's (of cities/towns) rather than millions (of individuals)
   - Displacement - planning staff overworked using existing system(s).
2. e-Government and e-Planning technology development, service implementation and back office reorganisation
3. Capacity development for politicians, civil servants, business and citizens to use e-systems
4. Deployment methodology(s?): Communities of Practice, Living Laboratories, PPPs, Best Practice Clubs, etc
5. Metrics: measuring the economic, social and environmental improvements.

Science & Technology Facilities Council

ICAT review by SSI - January 2012

What did we do? We asked SSI to review an open source collaboration project

What happened? Steve Crouch came to stay for a week

He interviewed 15 people

He recorded 105 observations

He collected the observations into the following categories:

- Overview
- Governance
- Communications and outreach
- Process
- Policies
- Infrastructure
- Software
- Requirements

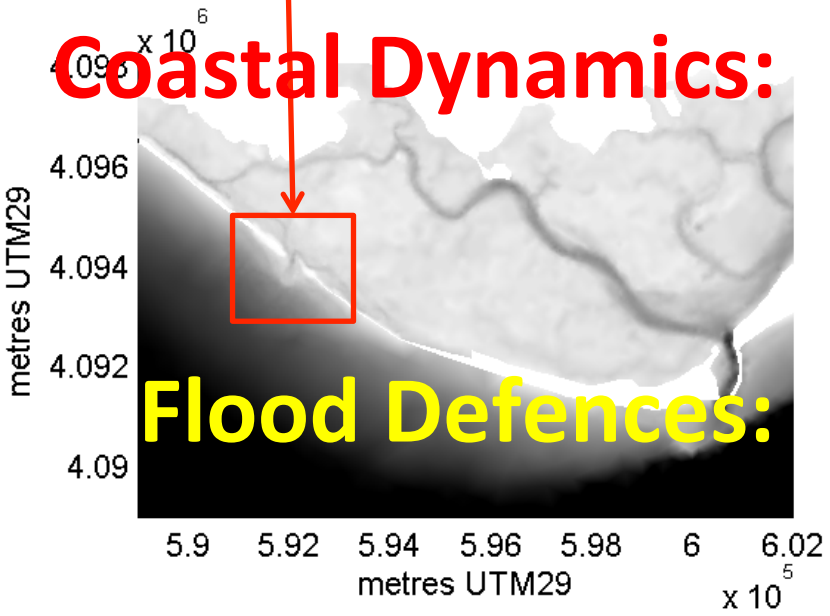
He made 34 recommendations for action

The outcome - the project has some good external advice about what to do

Alistair Mills, Rutherford Appleton Laboratory, Oxford alistair.mills@stfc.ac.uk

Research in Coastal Engineering, Dynamics and Marine Renewable Energy

Coastal Dynamics:



Flood Defences:



- Sediment transport models
- Long-term morphodynamics
- Storm damage
- Stochastic modelling

MRE:





- Flow-structure models
- Wave climatologies
- Environmental impacts

Email: vmagar@plymouth.ac.uk