



A real use for e-Infrastructure: the multimedia edition

Dr Michael Fraser, Project Director

Leaping Hurdles: Planning IT Provision for Researchers
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Preface

- Aims to develop an understanding of the e-Infrastructure services currently available ... how they are used by the research community across main subject disciplines ... broaden participation in the use and future development of e-infrastructure.
- "Demythologising e-Infrastructure"
- Main outputs are:
 - Video trailers (up to 10, with Engage Project)
 - Use cases (user scenarios, 15+)
 - Experience reports (derived from interviews,)
 - Service Usage Models (business process analysis)
- Led by Oxford University Computing Services (OUCS) in partnership with National Centre for e-Social Science (NCeSS)



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The e-Infrastructure Use Cases and Service Usage Models (eUS) Project is releasing short films highlighting how advanced information technology (IT) is being used in academic research. Disciplines covered include archaeology, bioinformatics, materials science, chemistry, dance and engineering. The eUS Project is funded by the JISC and supported by the University of Oxford and the University of Manchester.

Name: eUS
The e-Infrastructure Use Cases and Service Usage Models (eUS) Project is raising awareness about the successful use of advanced IT within academic research.

Home town: Oxford
Country: United Kingdom
Interests and Hobbies: Engaging with academic research groups using e-Infrastructure as an integral part of their research lifecycle.

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The Interviews

Tell me about your research
Take me through the process
(and I'll note the tools you use
and how times have changed)

I don't want to do that over and over again

homologous to one another, and then I do that all the way along it I run out of homology between the two, so that means I doing the same analysis to each piece of data, but I don't want to go back to the same webpage and do that over and over again I want to just give it a whole list of human genes and say

buildings were constructed, and some of those excavations produced truly complex sets of data; everything was done by hand, everything, and forty years on, there is no more publications; it's almost become too much of a challenge to manipulate those datasets to produce the publications that you'd want, they're just huge challenges, and so with this project, we'll try to avoid

Everything was done by hand, everything

We have access to every journal I can think of

So it's really maybe approaching one hundred percent digital really?
Yes, it certainly is for me, I can't speak for biologists, maybe old habits die hard, but yeah, and especially at the university we have access to every journal I can think of it's very rare that I get an abstract for a name and then find that

It would be true to say that most archaeological publications represent a sample of what's been found, or a sample and a synthesis, so that there are categories of data which are not easily available, and some of those datasets are deposited with the archaeology data service based at York, some of them repose in the museums where the finds are deposited, and some just simply are

Most publications represent a sample of what's been found

Some are very good programmers, some are very good biologists

Yeah, or they write more programmes which will connect to the web page, but you have to then be a programmer as well and so the reason that Taverna is becoming popular in bioinformatics is, some bioinformaticians are very good programmers, some are very good biologists who know about biological data,

development of their career, different stages in the development of their comfort with Information Technology, so they feel that the traditional printed publication is absolutely the best; they're a bit nervous about how their peers will regard publications which are solely electronic. Do you understand what I mean?

Do you understand what I mean?

Experience reports

- Anonymised extracts from interviews
- Material arranged according to basic lifecycle
 - Research profile
 - Initiation (e.g. literature review)
 - Data collection
 - Analysis
 - Collaboration
 - Dissemination
- Record of experience, success and otherwise
- Evidence base for developing use cases

Where is the data collected from?



In the olden days, people would go to web pages and cut and paste pieces of data into web forms and wait for the result, and then take them and put them in another web form and wait for the result ... but we're talking about whole regions of genome now, so that would take weeks to do one region, whereas with the Taverna workflow you can do that in a few hours.

....When you sort of weigh out chemicals on a balance, in the old days, you'd take along your lab book and write 1.2 grams, now they take along their mobile phone and tap in 1.2 grams, and rather than writing up experiments, they write it up in txt...

Our students use their mobile phones and then take little photos of the reactions; I mean, it's all they know how to do these days...

Yes, perhaps I have a slightly non-academic view of it, but I find literature reviews to be a complete waste of space and I just hate going into meetings with people and saying, you know, let's think about doing this, let's meet again in three months time; I'm a great believer that these things in a Web 2.0 world have a very short shelf life and you should just go and do it there and then.

How is analysis done?



...These days I tend to design things on the computer and go and try and make them in the lab, but things never work out quite as you plan, so you get molecules that you hadn't expected, so you have to try and understand why. **Generally, the computational side of things is just another technique, you constantly use lots of different techniques when you're doing chemistry.**

I could have run it, just on my computer, left it going for a year, and come back. In that sense, it is fully automatic. It is just waiting a year for what I could have done in a day; it is not very sensible, isn't it? ... It is about the fact of being able to run four hundred simulations at the same time instead of one. That is the thing.

We've got two dancers in one space, one camera's on the lower half of their body and the other camera's on their upper half, then in another space you replicate that. **You put the live streams together into a grid and you create two virtual beings ...** Can we now build a duet between these two composites? And so we made this whole piece that was about this set of relationships...

Who are the collaborators?



I think it's obviously going to be easier for people with a similar scientific background because I do think we've become quite fixed in the ways that we think ... the challenge really comes when you've got people from different backgrounds, because **the language they use and the jargon that's used often makes that communication really difficult...**

[we] have no idea what the time implications or the technology implications are, and sometimes our wonderful technical people say to us 'oh yeah, that's easy' and sometimes they go 'only if you've got five years', and part of us asking them these questions is getting them to think differently about how they do things.

I found from playing around with the infrastructure was that trying to involve our collaborators with the experiment more, helped in their understanding and it enabled me to realise that actually, **we need to collect a lot more information about the experiments that we do** and I think we're very, very guilty of this across chemistry.

Where are the results?



If you publish anything in Nature then you have to give extra stuff that's offered online and there's descriptions of the data that you used etc. The other astronomy journals actually don't require that, and indeed **most of them actually make a real distinction between the description which is in the journal and the data which underlies it**, and I think actually that's a mistake.

...we have this site called My Experiment ... a workflows repository, and so we're trying to encourage people to upload their workflows there so that other people can reuse them in an easier way ... the social computing aspect of My Experiment means that people comment on each other's workflows.

...all of my writing is in the cloud somewhere and actually not on my local drive, which is actually worrying but it means that we can write all of our research papers online and we know wherever we log in at whatever time, it's always saved and it's always shared, and someone else has probably added another thousand words.

The Use Case (stories to demythologise)

Authentic use cases

- A form of user scenario (“story”) based on actual practice
- Practice derived from experience reports
- Designed to summarise a workflow and highlight role of e-infrastructure/ICT
 - Analysis and distillation
 - Identify characters
 - Sketch narrative
 - Flesh out, select key quotes
 - Check logical & temporal coherence
 - Validate by relevant interviewees
- Used as basis for business process analysis for Service Usage Model

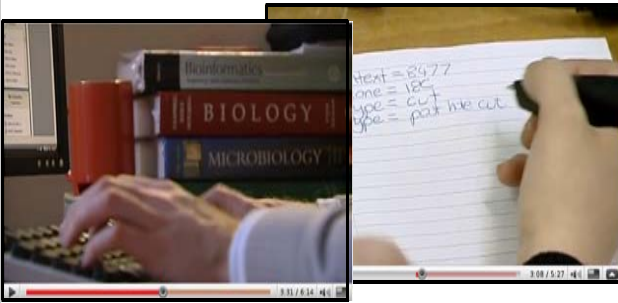
Tony is a Physics Research Fellow at a large UK university. One of his main research areas is the unusual behaviour of materials under particular conditions of temperature and pressure. Today on his way home Tony thinks of a paper he has read in the latest issue of 'Physics and Chemistry of Minerals'. Rose, a physicist at a prestigious Scottish university has published the preliminary results of her study...

After all the previous day's excitement, Clive has now got a chance to check whether the new find was properly documented. Clive looks up the database entry and notices that a piece of information entered via digital pen by a trainee is not fully accurate. He logs into the database and corrects the entry, while making a mental note to flag the error to the student who made it.

Back in the office Victoria finds an email with a question from a user who had seen one of her maps on **MapTube** where she *publishes her maps* – if the data is not confidential. The developments of **GMap Creator** and the **London Profiler** subsequently had led to the launch of a web-based map sharing community site hosted by CASA called **MapTube**.

From time to time Judy *logs in the NCS Interactive Services Portal* using the secure **authentication certificate** provided by the **NCS**. Here she *checks progress and results of the latest experiments by logging in*, a secure web-based system to access the services. After some time she receives an **automated email** informing her of the **first outcome of the structure determination** of one of her latest samples.

Research video trailers



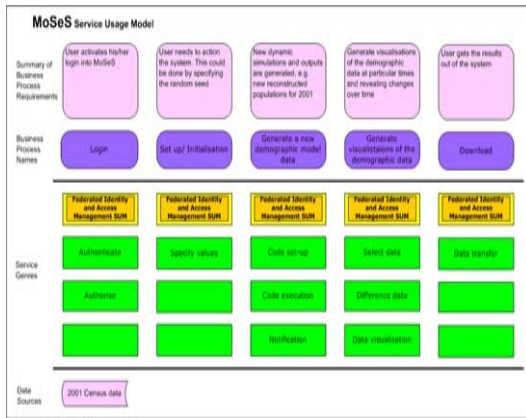
- 'trailers' to engage and inspire
- based on experience reports – visual use cases
- released on YouTube and podcasts.ox
- commissioned from Xube

Xube

Thanks to everyone who helped to produce this video

Service Usage Model

- Part of e-Framework service oriented architecture
- the relationship between technical services which together serve defined business processes



Visual template for SAM diagram, revised 2007/02/22
 Template © Copyright 2007, e-Framework Partners

Credits

Project team

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