

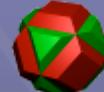
# Physical Science (Virtual) Research Spaces

Jeremy G. Frey  
School of Chemistry  
University of Southampton, UK



# Talk

- Where do we do research?
- How and where do we find, access and interact with, research materials?
- How do we deposit research data (and what do we deposit)?
- The e-World



# Smart Places & Things

We need Smart Labs and Smart Libraries



© The New Yorker Collection. All rights reserved.  
From The New Yorker Book of Technology Cartoons.



9 June 2006

Jeremy G. Frey  
University of Southampton

CURL Exploring Research  
Space Workshop



# UCB Guidelines

- Precise campus standards for space utilization are elusive, due to the enormous variety and complexity of research space: but precision is not the point. What UC Berkeley requires is a simple and objective, but flexible, set of guidelines to ensure space is responsibly used and equitably distributed.
- Research space is a more complex problem. Changes over the past decade have no doubt been even more profound for research space than office space: but those changes are unique to each discipline, and to identify and characterize them would be a significant project in itself, on the scale of the original CPEC study.
- However, the original CPEC taxonomy remains valid in terms of the basic types of research space. While specific factors may need to be recalibrated – for example, to reflect the increased use of simulation rather than field experiments – this may be done iteratively, as new program data become available from actual projects.

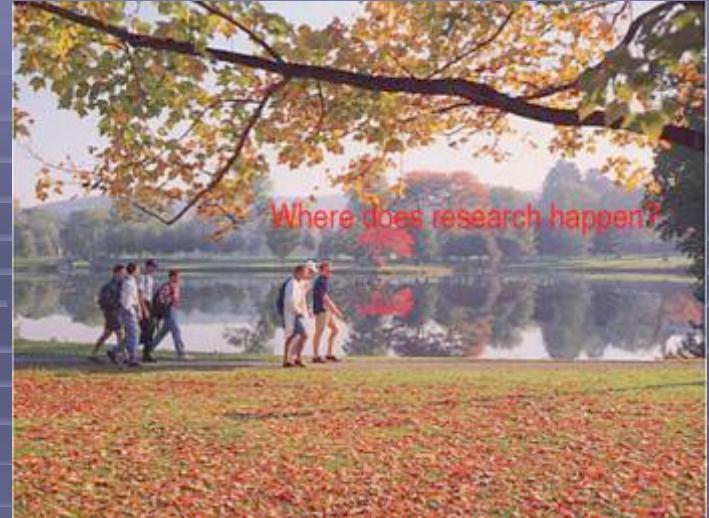


Specialized equipment may have specific infrastructure requirements

9 June 2006

Jeremy G. Frey  
University of Southampton

CURL Exploring Research  
Space Workshop



Write-up space adjacent to the laboratory



Some information needed in the lab

9 June 2006

Jeremy G. Frey  
University of Southampton

CURL Exploring Research  
Space Workshop



# Virtual Organisation

- Virtual Research Collaborations
  - Much research is now global
  - Much research crosses academic industrial sectors
  - Concerns of how to find people
  - How to keep information flowing to keep the communities together



# Wireless Technology

- Location independence? Is this always a good idea
- Library material can be brought to all places but knowledge & experience about the information available is more difficult
- Still have limitation on the speed, quantity and quality of access.



The changing face of annotation....



Information is provided in new ways, but ways that have the potential for much great automatic curation.

Research Students - are involved in learning  
Undergraduates - involved in research  
Staff - Continuing Education!



But what  
about the  
laboratory  
environment?



© 2002 The New Yorker collection. All rights reserved.  
From *The New Yorker Book of Technology Cartoons*.



# Physical Space

- Need equipment! Not possible in just any room
- Use more reconfigurable systems but services (water, power, extract) make this much more of a problem
- The Network
  - Very high density of connections
  - Provides the ability to track people and functions
  - Monitoring but less useful feedback as yet

BBC NEWS | Science/Nature | Chemists escape labs via mobiles - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Print Copy Paste Address <http://news.bbc.co.uk/1/hi/sci/tech/4233757.stm>

bbc.co.uk Home TV Radio Talk Where I Live A-Z Index Search Contact us | Help

Low Graphics version | Change edition

**BBC NEWS UK EDITION**

News Front Page Last Updated: Friday, 4 February, 2005, 08:47 GMT

E-mail this to a friend Printable version

**Chemists escape labs via mobiles**

By Jo Twist  
BBC News science and technology reporter

**A blend of mobile technology and award-winning software is letting scientists finally escape the lab.**

The software, called "middleware", lets different computer systems talk to each other securely and instantaneously.

As part of a national e-Science project in the UK, it is being used to let Southampton University chemists monitor experiment conditions from mobiles.

Sensors in the lab pick up any changes in the environment so the system can alert chemists, wherever they are.

"It replaces the traditional notebook with some electronic

The system is not smart enough to actually buy a round yet.

SEE ALSO:

- Top UK innovation prize for IBM 11 Jun 04 | Technology
- Boon times ahead for smartphones 27 Aug 04 | Technology
- E-mail provides Arctic lifeline 09 May 04 | Technology
- Heart treatment from a distance 11 Aug 04 | Health

RELATED INTERNET LINKS:

- Dr Frey's group
- University of Southampton
- Combechem (e-Science project)
- IBM Hursley Labs
- EPRSC

The BBC is not responsible for the content of external internet sites

**TOP SCIENCE/NATURE STORIES NOW**

- New Asian quake threat warning
- Lab fireball 'may be black hole'
- Female chromosome has X factor
- Atmosphere seen on Saturn moon

Chemists enjoy a drink at the bar while keeping an eye on the lab

9 June 2006

IBM won the Royal Academy of Engineering's MacRobert prize which rewards technological and engineering innovation for the program in June last year.

Used by top global banks, the WebSphere MQ family is a decade old.

University of Southampton

Space Workshop



Increasing demand for access to information from remote places, even from home or the train

9 June 2006

Jeremy G. Frey  
University of Southampton

Even run our labs from home....or the arctic...



CURL Exploring Research Space Workshop



Space for model building.....

Until 10 years ago my Chemistry Department had a library but space charges put an end to this.

Few people have personal paper copies of journals - no space to hold them, with pdf etc we can hold a personal copy on the computer.

9 June 2006

Jeremy G. Frey  
University of Southampton

The tea room is the ‘heart’ of the department - plans to create a more interdisciplinary equivalent for the Life Science Interface



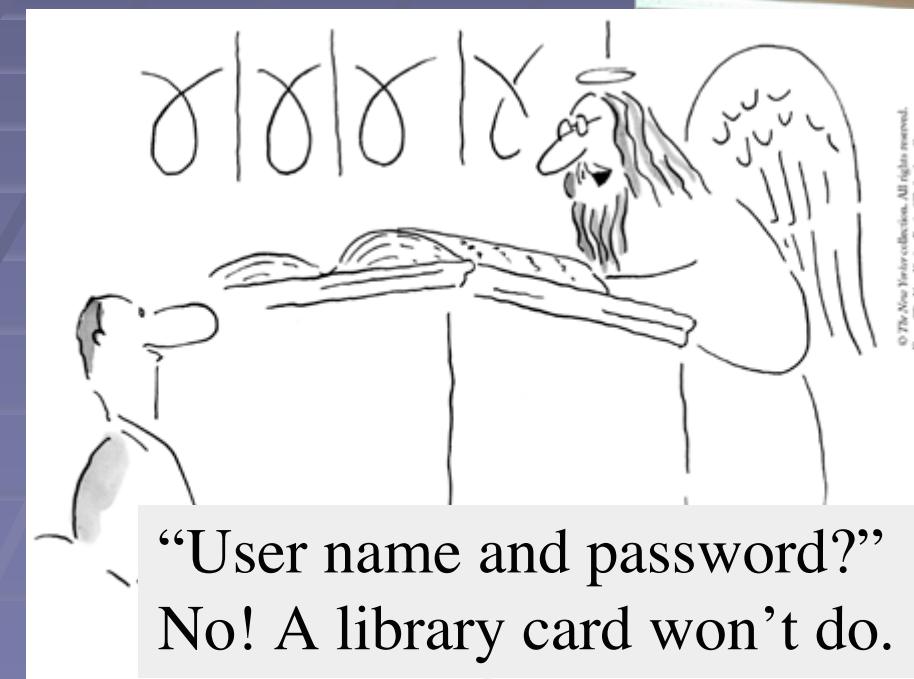
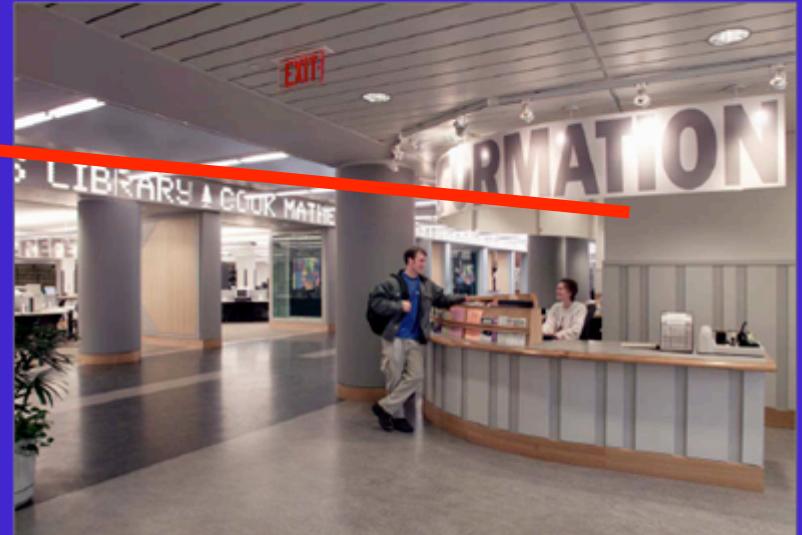
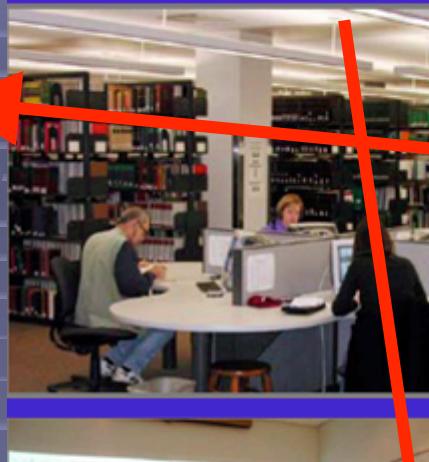
CURL Exploring Research Space Workshop



# Dartmouth College

Humanities and Social Sciences: "the Library is our laboratory"

Scientists deposit and  
retrieve information  
from libraries



But access is  
changing

The Laboratory and the  
Office have become our  
routine access to the  
Library.....



# The *e*- Library the main resource for *e*-research?



© The New Yorker collection. All rights reserved.  
From The New Yorker Book of Technology Cartoons.

Can I call you back? I'm looking  
up the journals in the library



# Publication

- No longer so clear what this means
- So no longer clear what we expect to “find” in a library
- Speed of access may be an issue



# Access to Information

- More e-journals
- Improved automatics linking of citations
- Does bias information to the more recent publications
- The web has done this anyway
- Version control & archiving of web pages



Need to make  
the data  
available

Need to be  
able to find it

But how to  
expose it?



© The New Yorker collection. All rights reserved.  
From The New Yorker Book of Technology Cartoons.

# First, they do an online search



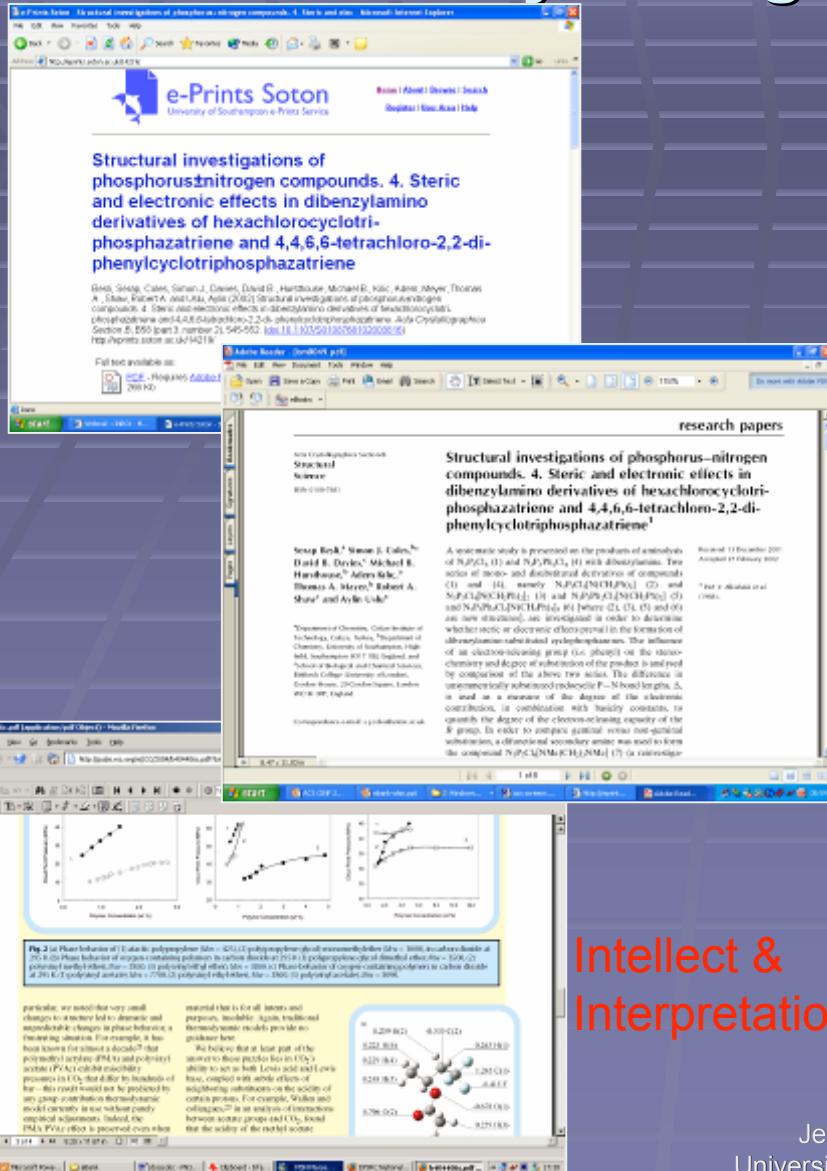
He is charged with expressing contempt for meta-data



# The Data!

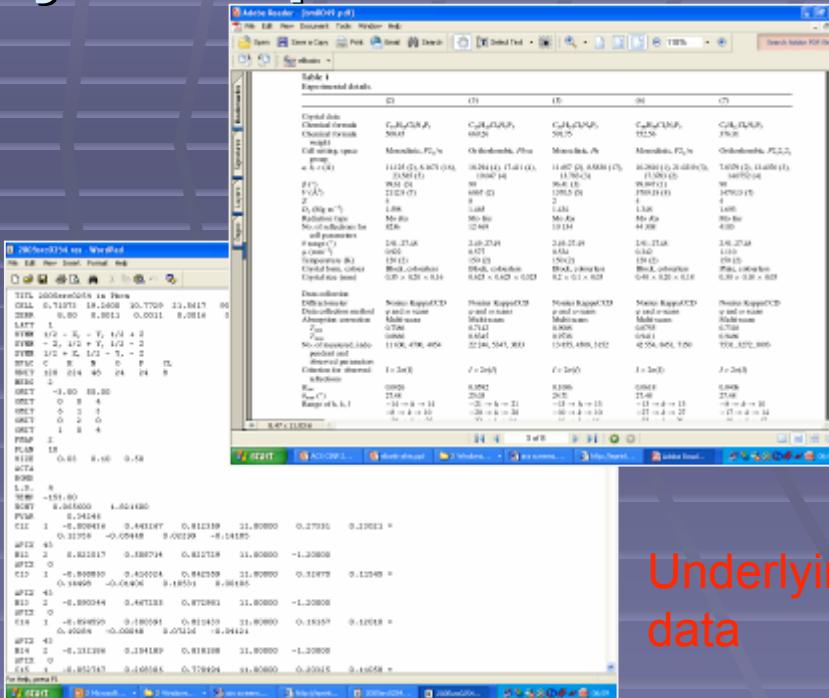
- What is the issue here?
- The paper and the data (sets) are not the same thing
- Web removes space constraints (may be) and allows richer range of data resources to be disseminated publicly.
- Metadata, Attribution, Citation

# Separating Data from Interpretations: A crystallography example

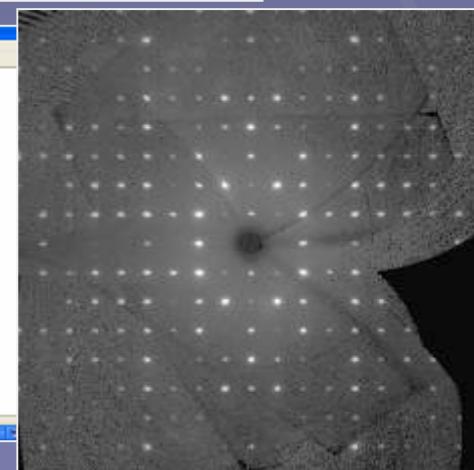


## Intellect & Interpretation

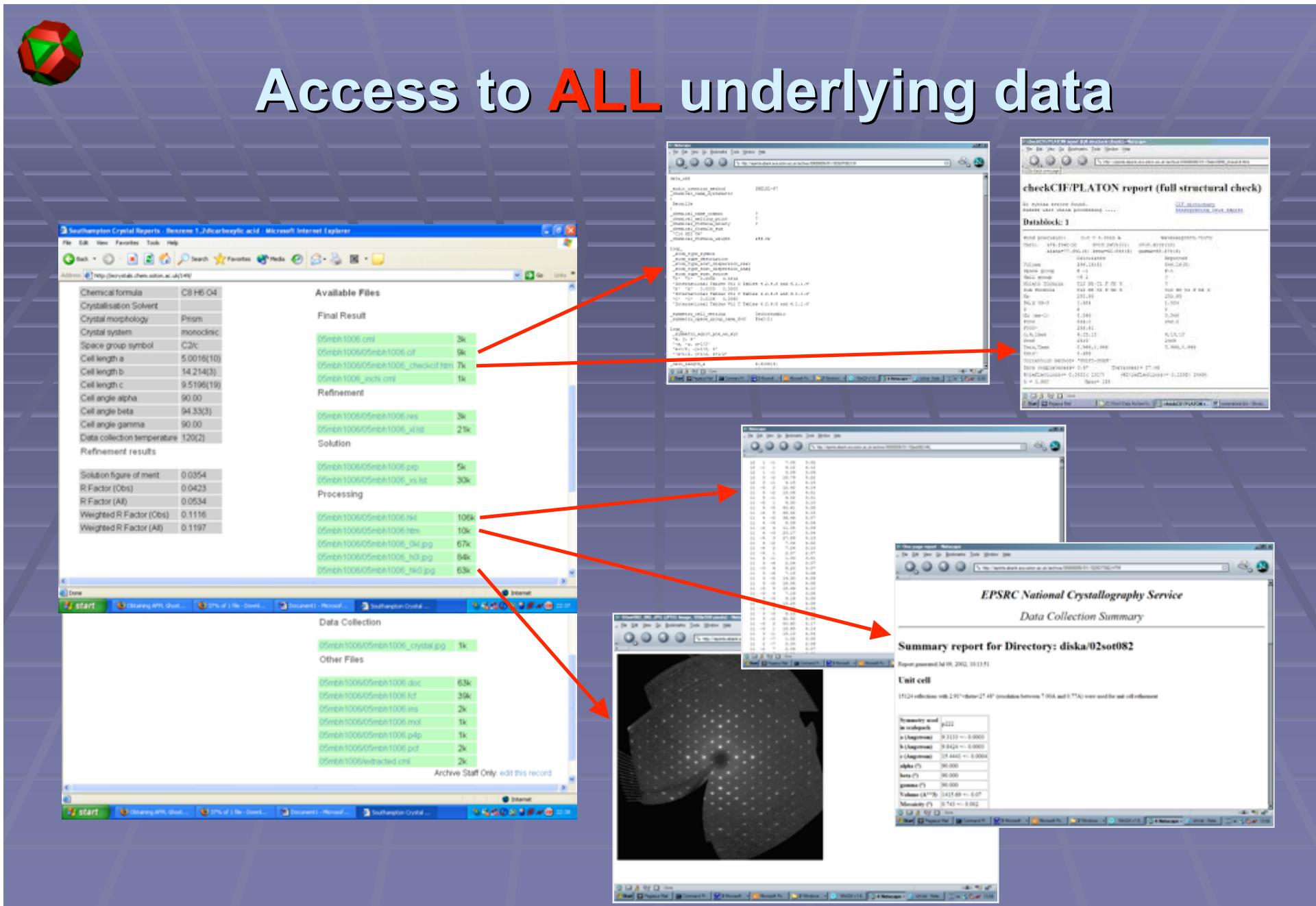
Jeremy G. Frey  
University of Southampton



## Underlying data



# Access to **ALL** underlying data



9 June 2006

Jeremy G. Frey  
University of Southampton

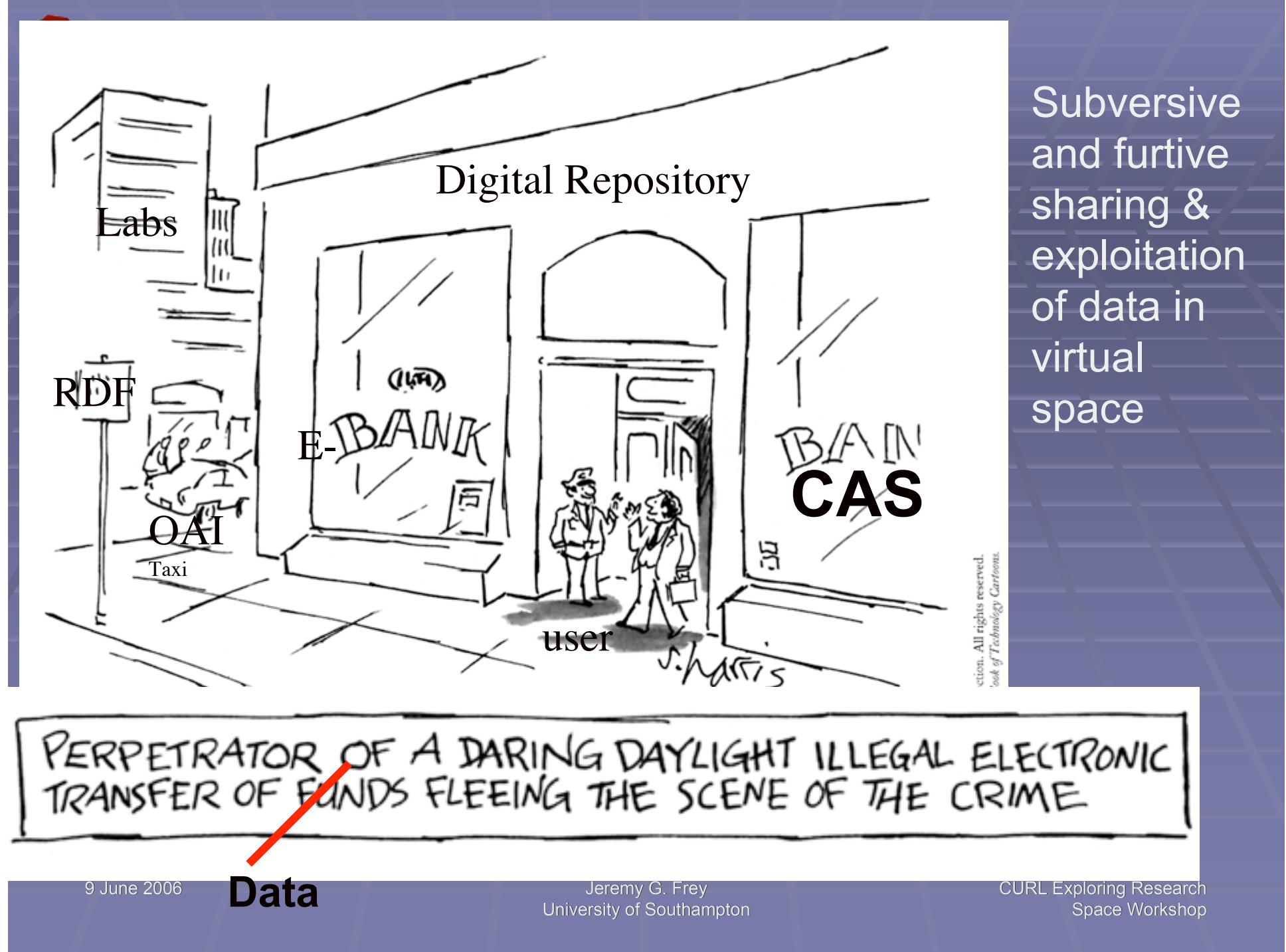
CURL Exploring Research  
Space Workshop



# Control of Access - not so simple in e-space



© The New Yorker collection. All rights reserved.  
From *The New Yorker Book of Technology Cartoons*.





# “Knowledge Management”

- The importance of “Knowledge Management” is becoming more recognized
- Many disciplines are developing and “Informatics” arm.
- These have many aspects in common and need coordinating.

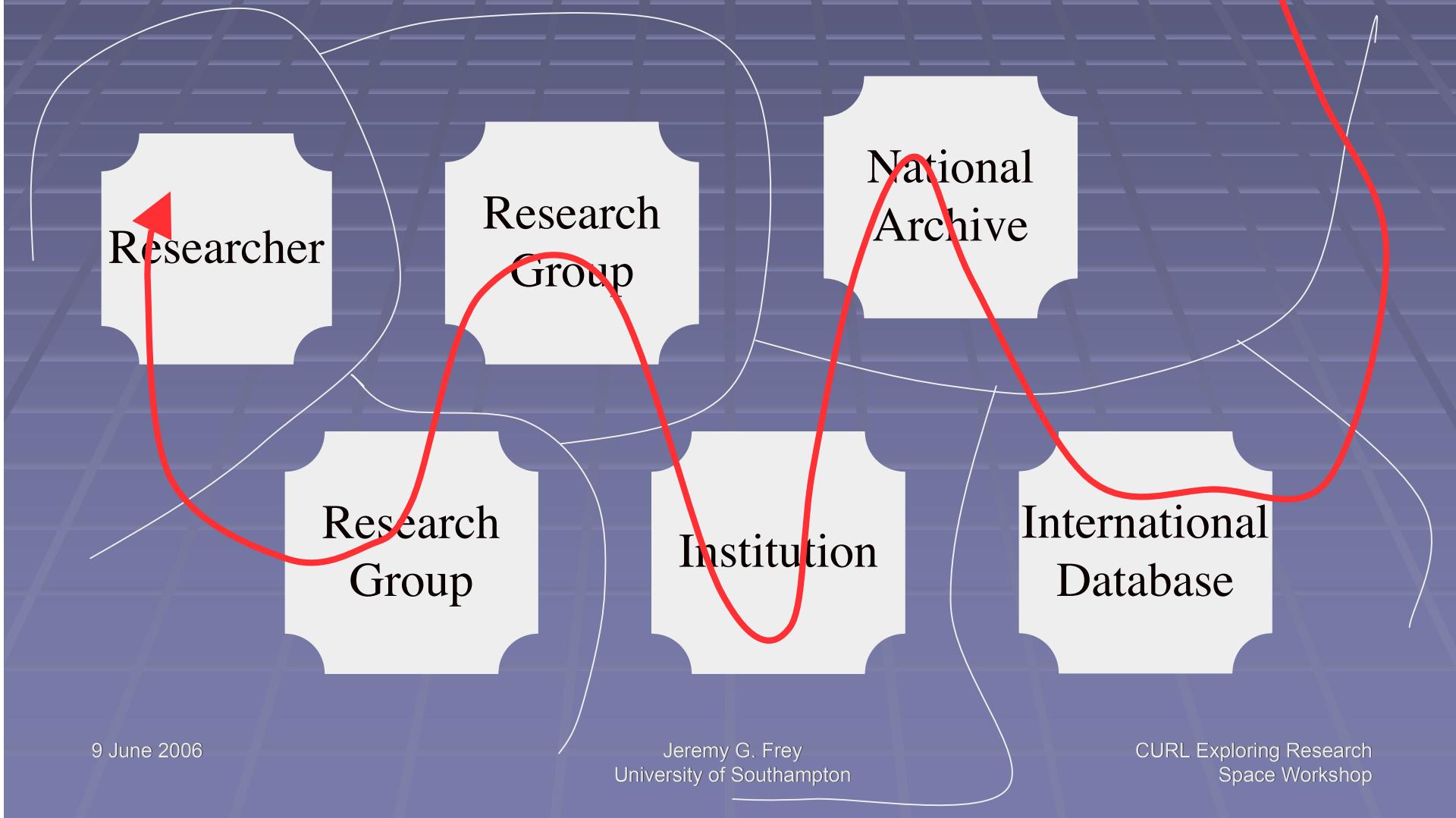


# Recognition of Academic Output

- Citation of more varied information sources
- Repositories for “e-information” - not just papers, include the data
- Visibility of this information
- Curation and Archiving issues



# Several groups making and analysing the library Administrative Domains transfer or share the data





© The New Yorker collection. All rights reserved.  
From The New Yorker Book of Technology Cartoons.



© Original Artist  
Reproduction rights obtainable from  
[www.CartoonStock.com](http://www.CartoonStock.com)

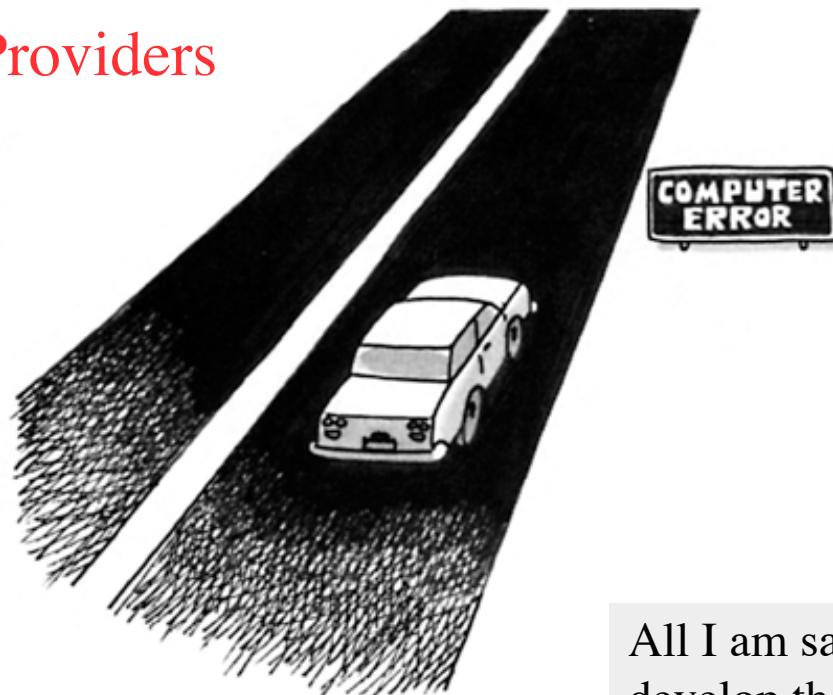
“Are we thinking here,  
or is this just so much pointing and clicking”

9 June 2006

Jeremy G. Frey  
University of Southampton

CURL Exploring Research  
Space Workshop

## Information Providers



## Information Consumers



© The New Yorker collection. All rights reserved.  
From *The New Yorker Book of Technology Cartoons*.