

Open Data and Higher Education: future gains and current practice

1st Open Data Working Group

Pisa, Italy, 2014

ERCIM 25th anniversary meeting

Su White, Web and internet Science, ECS,

University of Southampton, UK

Su White



@suukii



UNIVERSITY OF
Southampton

Web and Internet Science Research Group

Southampton: home to open data



The screenshot shows the Southampton Open Data Blog homepage. The header features the University of Southampton logo and a search bar. The main content area has a dark background with white text. On the left, a sidebar menu includes links for Home, Open Data Blog, Data Catalog, Contact Us, Web Team Blog, and University Home. The main content area has a title 'Southampton Open Data Blog' with an RSS icon. Below the title is a post by Ash Smith on 'Building Entrance Data' from August 7, 2014. The post discusses the annual 'WAIS Fest' and its benefits for researchers. The footer contains navigation links for About, Get involved, Learning & courses, What's happening, and News & blog. A large graphic at the bottom right promotes the 'ODI SUMMIT 2014' with the tagline 'Knowledge for everyone'.

UNIVERSITY OF Southampton

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This site University

Home 

Open Data Blog

Data Catalog

Contact Us

Web Team Blog

University Home 

Southampton Open Data Blog



Building Entrance Data

 August 7, 2014
by Ash Smith

The University's Web and Info had their annual "WAIS Fest". which the researchers all down interesting. It gives them all a may not always work with – it also it allows the group to try get done in their normal line productive. In the past, WAIS prize-winning research public Data Service have benefited fi always make a point of gettin

This year, I ran my own them good at getting information fn usually by showing its parts. But there

ODI open data institute

Search ODI Contact us

About Get involved Learning & courses What's happening

News & blog

ODI SUMMIT 2014
3-4 NOV
BOOK NOW

ODI SUMMIT 2014

Knowledge for everyone

<http://data.southampton.ac.uk>



Open scholarship and research

Eprints, Dspace, etc

Adventures in semantic publishing,
Shotton et al 2009

Self archiving mandates

Data as well as publications

Observational lessons
from the OS
community

Increasingly a matter of principle



FORCE11

The Future of Research Communications and e-Scholarship

Home About Community Members Groups Resources News + Events Publications Contact

Force 11 Manifesto

Attachment:
 [Force11Manifesto20120219.pdf](#)

[Go to the discussion area](#)

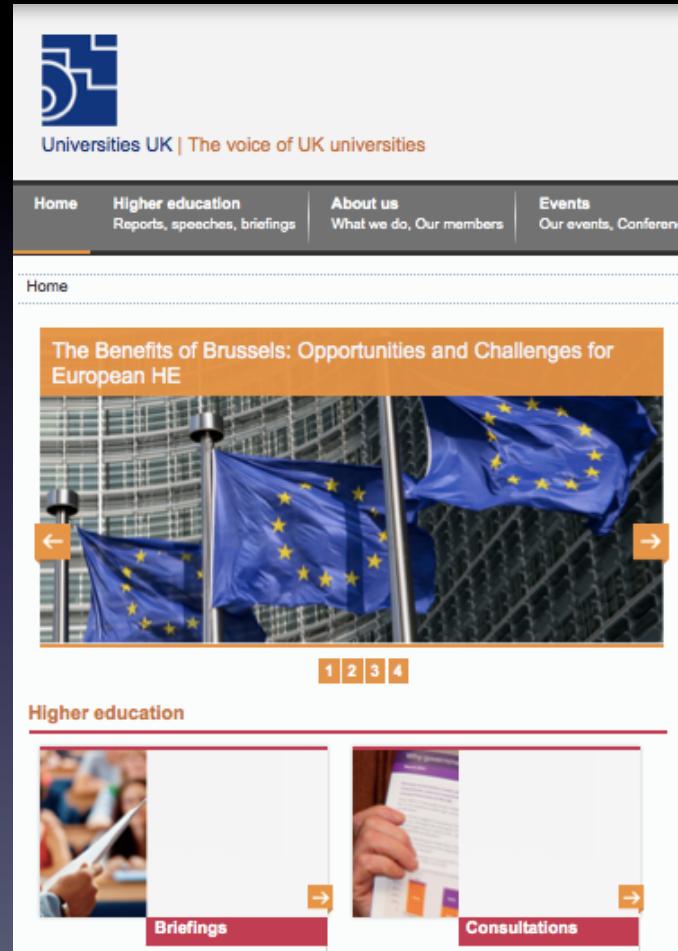
Improving Future Research Communication and e-Scholarship

Editors: Phil E. Bourne^a, Tim Clark^b, Robert Dale^c, Anita de Waard^d, Ivan Herman^e, Eduard Hovy^f, and David Shotton^g

Contributors: Bradley P. Allen^d, Aliaksandr Birukou^h, Judith A. Blakeⁱ, Philip E. Bourne^a, Simon Buckingham Shum^j, Gully A.P.C. Burns^f, Leslie Chan^k, Olga Chiarcos^l, Paolo Ciccarese^b, Tim Clark^b, Laura Czerniewicz^m, Robert Dale^c, Anna De Liddo^l, David De Roure^g, Anita de Waard^d, Stefan Deckerⁿ, Alex Garcia Castro^o, Carole Goble^p, Eve Gray^m, Paul Groth^q, Udo Hahn^r, Ivan Herman^e, Eduard H. Hovy^f, Michael J. Kurtz^s, Fiona Murphy^t, Cameron Neylon^u, Steve Pettifer^p, Mike W. Rogers^v, David S. H. Rosenthal^w, David Shotton^g, Jarkko Siren^v, Herbert van de Sompel^x, Peter van den Besselaar^q and Todd Vision^y

According to Universities UK

- Decision making and organisational change
- Student choice and recruitment
- The research process
- Teaching and learning
- Driving economic growth



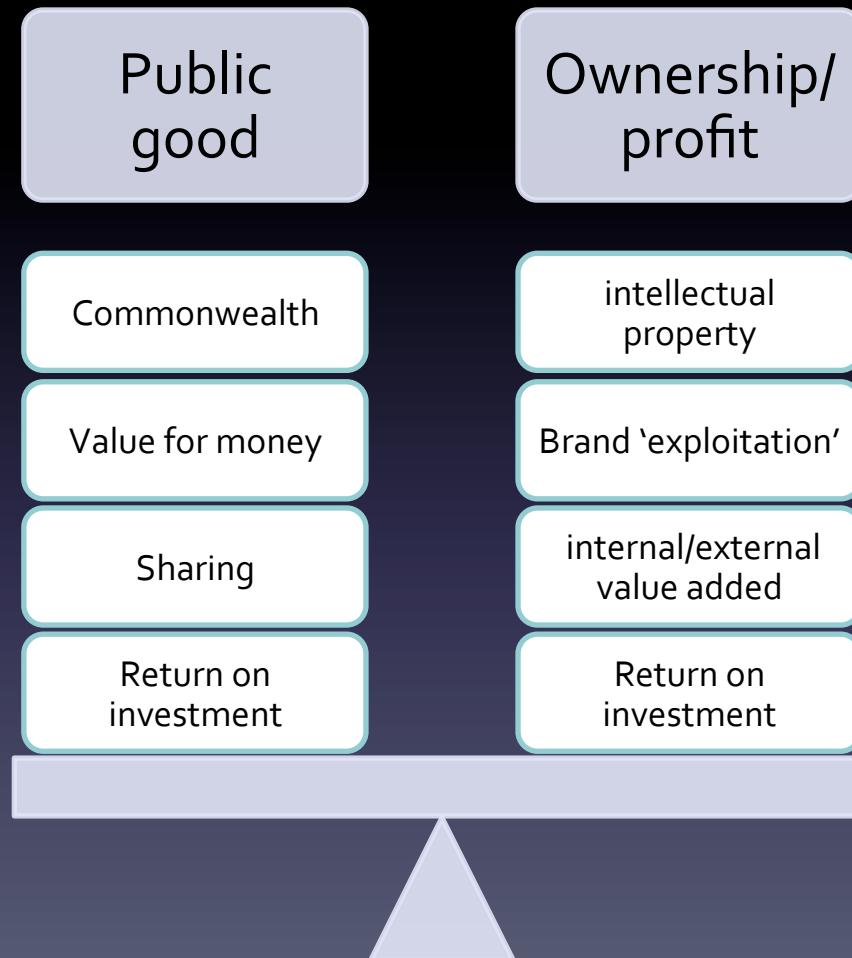
Education Advisory Board 2010

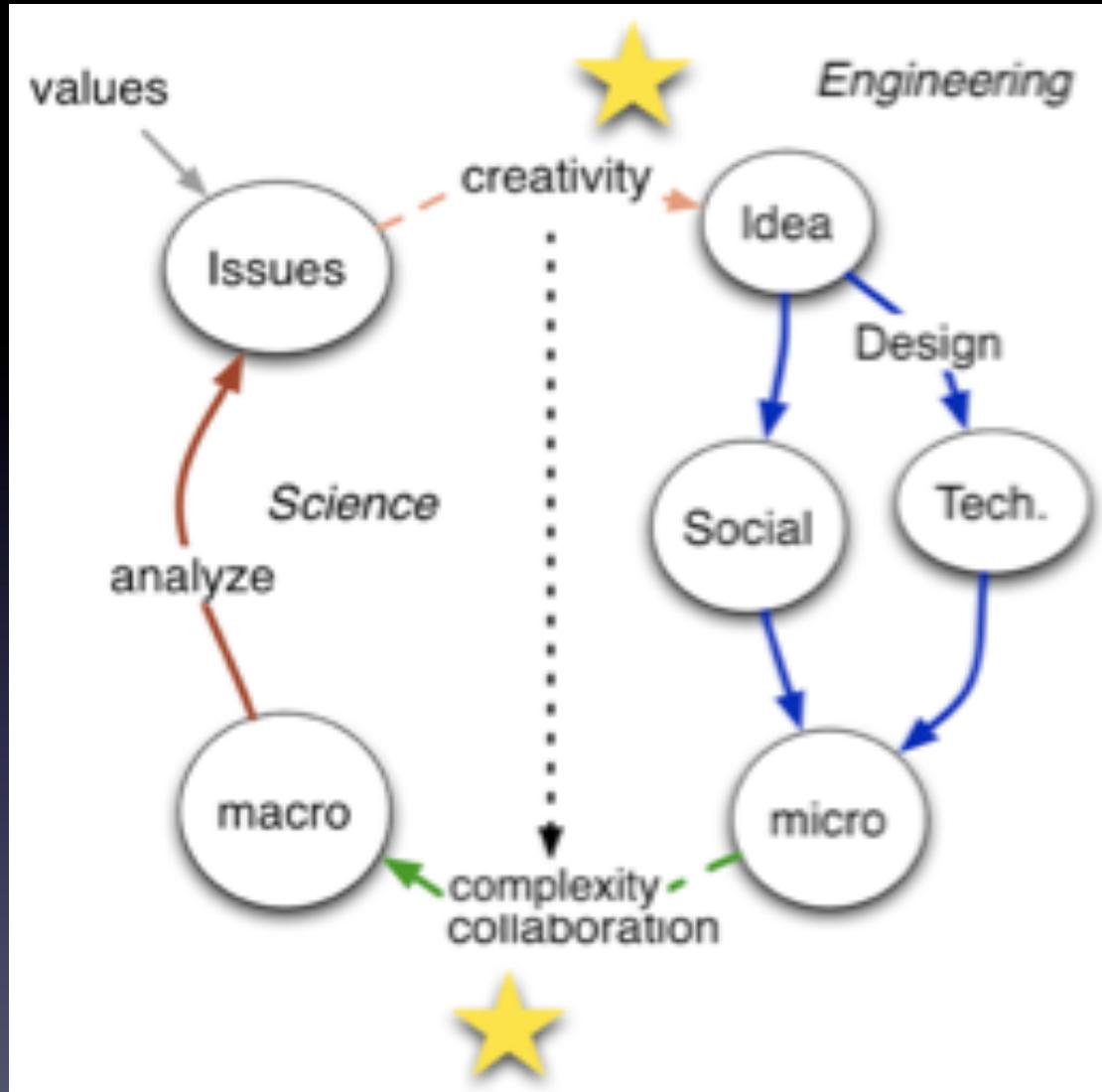
- “Profile of the dashboards, key performance indicators, and business intelligence capabilities that are emerging as the new gold standard for university decision support as a growing number of institutions are investing in data and analytics as critical change-management tools”.

[Developing a Data-Driven University](#)

EAB, Washington DC

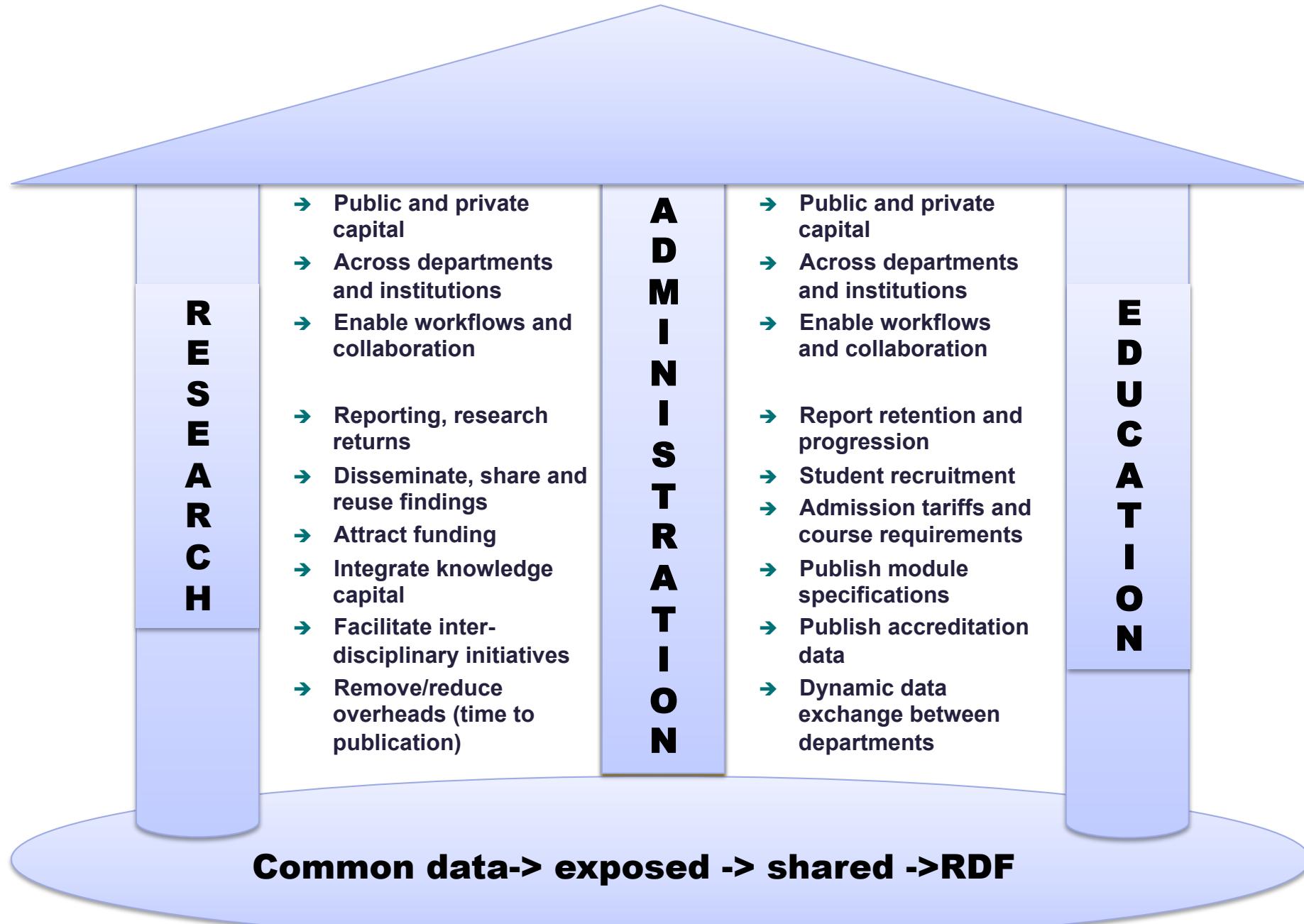
A view of current motivations?



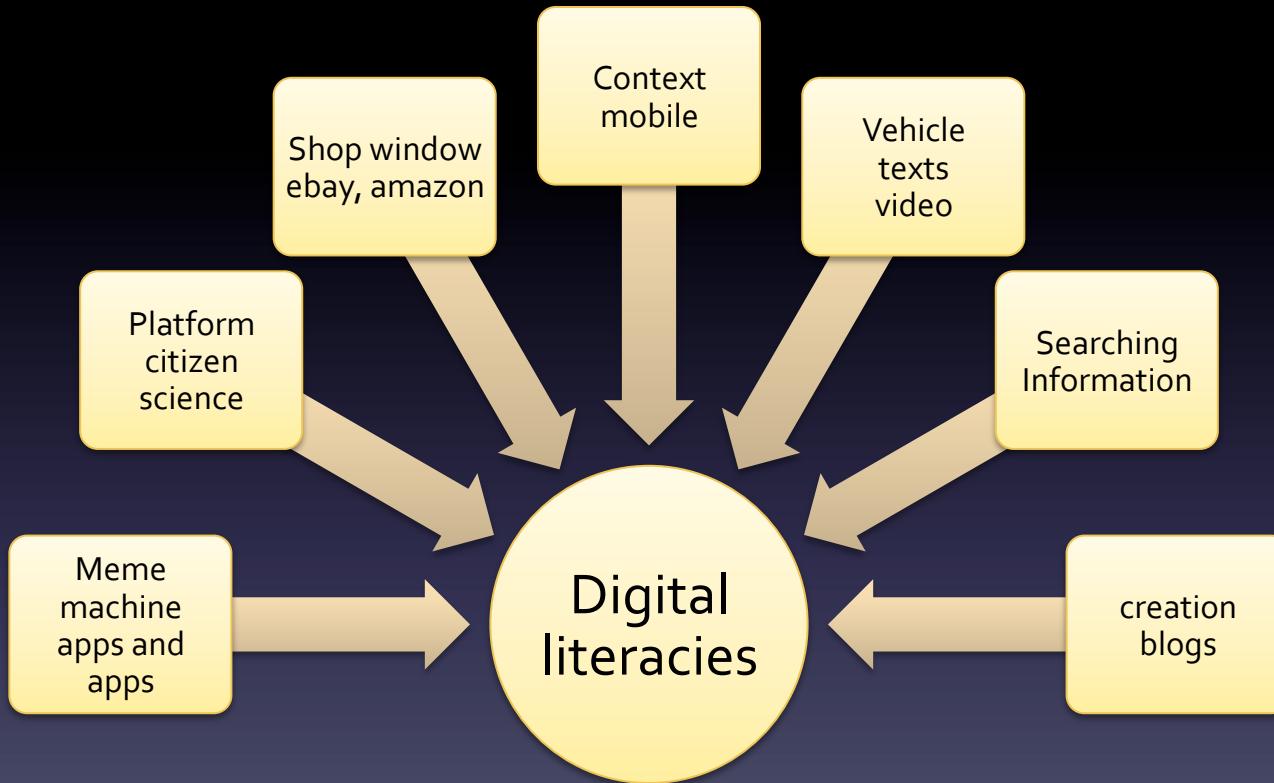


The two magics

(Tim Berners Lee, 2006, 2007)



Educational landscape



From rent a coder, to wikilogia, from flikr to Pinterest, itunesu to Tedx sharing, ownership, micro-charging, new models, Tripit meme machines borrow from business

Making things work smoothly

Apps & Tools

[Open Data Map](#)

[What Week Is It?](#)

[Bus Information](#)

[iSolutions Workstations](#)

[Room Finder](#)

UNIVERSITY OF Southampton

Open Data Service

Room 2/1035 - Lecture Room L

<http://id.southampton.ac.uk/room/2-1035> ← This is the URI

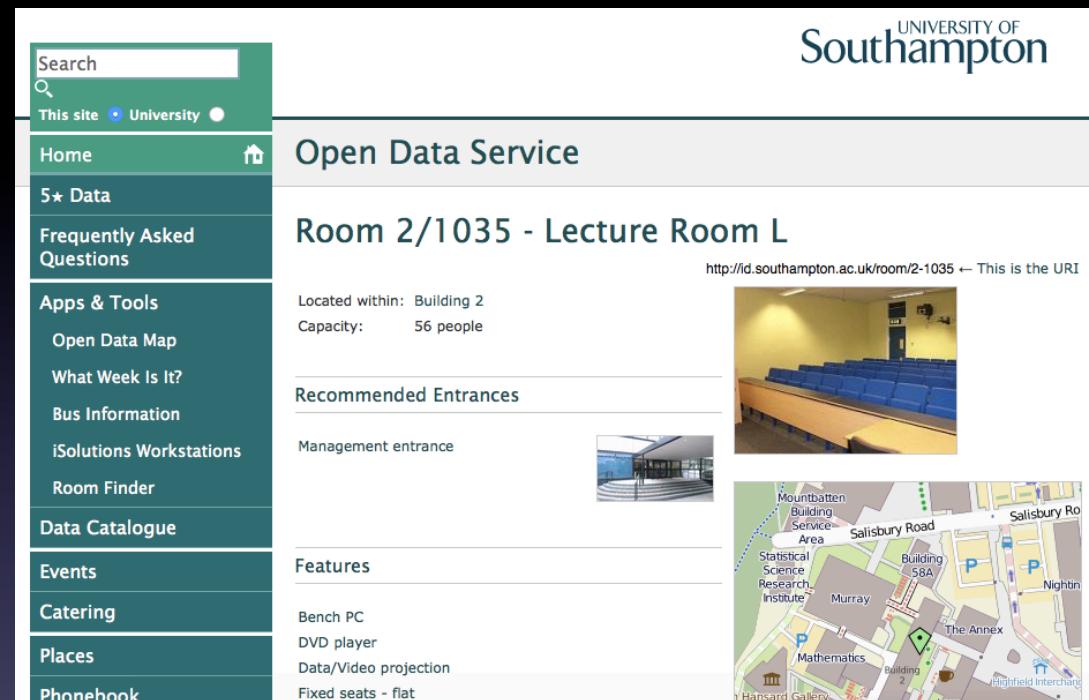
Located within: Building 2
Capacity: 56 people

Recommended Entrances

Management entrance

Features

Bench PC
DVD player
Data/Video projection
Fixed seats - flat

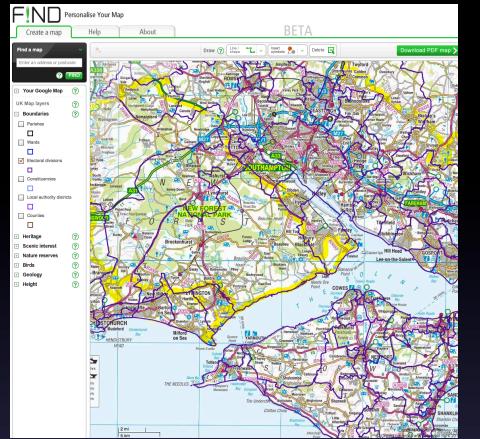


“The people who will do cool stuff with your data... will not be you”

Look to the ‘wild’



the educational contexts will emerge
the issues are ones of scale



UK Dentists

Find your nearest NHS dentist quickly and easily!

The National Health Service has over 7,500 dental surgeries across England but finding one can be a difficult and time consuming task. This app is based on data provided by the UK's Health and Social Care Information Centre (HSCIC)* and covers 99.4% of all registered NHS dental surgeries in England.

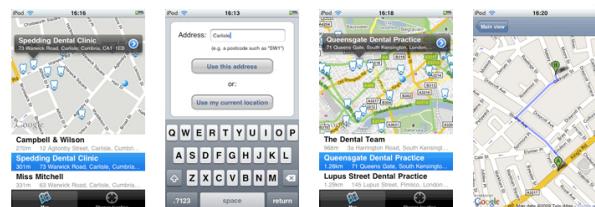
Search for an NHS dentist around your current location, or look for one in another area (where you may be moving to, or for a friend) via a simple place name or postcode search. Distances can be displayed in metric or imperial units (configured in the application preferences).

UK Dentists uses the built in GPS on the iPhone to get your current location, but can also locate an iPod Touch in built-up WiFi areas. If your location cannot be determined automatically then you can always enter your post code to get started. Please note that an internet connection is required to get location and map data.

* Data reproduced under the terms of the Office of Public Sector Information (OPSI) Click-Use Licence.

Application Screenshots

Click on any of the images to see a larger version



A black rectangular button with a white border. Inside, there is a white silhouette of an iPhone on the left, and to its right, the text "Available on the" on top and "App Store" below it, all in white.

[Buy on iTunes](#)

Students as producers and learners

london.gov.uk

london datastore

Search Datastore → RSS feeds

GREATER LONDON AUTHORITY

A first step towards freeing London's data

Visualisation by TO_WHO using London Transport data

Welcome to the London Datastore

The London Datastore has been created by the Greater London Authority (GLA) as an innovation towards freeing London's data. We want citizens to be able access the data that the GLA and other public sector organisations hold, and to use that data however they see fit – free of charge. The GLA is committed to influencing and coaxing other public sector organisations into releasing their data here too.

Releasing data though is just half the battle. Raw data often doesn't tell you anything until it has been presented in a meaningful way. We want to encourage the masses of technical talent that we have in London to transform rows of text and numbers into apps, websites or mobile products which people can actually find useful.

Join the conversation via [Google](#), [Twitter](#) or [email](#) and give us your thoughts and feedback – we want to make this site work for you!

Latest Datasets Popular Datasets

Place of Residence by Place of Work, Region
NOVEMBER 2010 | Employment and Skills
Number of people in work by place of residence and work (main job). This matrix displays travel to work patterns.
Average:

Workless Households, Borough
NOVEMBER 2010 | Employment and Skills
Tables show numbers and proportions of households that are

DC.gov Service Request Center Area Residents Business & Non-Profit Visitors

Data Catalog

For years the District of Columbia has provided public access to city operational data through the Internet. Now the District provides centralized access to data from various agencies, catalyst encouraging agencies to live data feed in Atom format and access data in XML, Text/CSV, KML or ESRI Shapefile formats. Please note that by accessing the data catalog and feeds, you agree to our [Terms of Use](#). Please read before accessing the data. All data visualizations on maps should be considered approximate. The visualizations provided by this application include only records that can be mapped. If you have any questions or comments about the DC Data Catalog, please contact us at citydw@dc.gov. Visit [DC FOIA](#) page for information on FOIA requests.

Create Your Own Visualizations using DC datasets

Free websites such as Swivel and Many Eyes allow you to create and share a variety of data visualizations. Below are the links to some interactive graphs and charts created based on DC datasets. You can create your own visualization using already uploaded datasets or slice and dice the data the way no one did before. Please email us at citydw@dc.gov if you want your visualization to be featured on this page.

2009 Service Requests
Building Services Paid Fees
Assessment Roll
Report Crime in DC
Crime Statistics by Offence Type
Crime Statistics by Police District
Crimes - tag cloud

To learn more about these visualization tools, [click here](#).

Disclaimer...

Popular Downloads

311 Service Requests
CJIS Juvenile Arrests and Charges 2009
CJIS Juvenile Arrests and Charges 2008
Crime Incidents (ASAP) 2010
Crime Incidents (ASAP) 2009
Crime Incidents (ASAP) 2008
Crime Incidents (ASAP) 2007
Crime Incidents (ASAP) 2006
Purchase Orders 2010
Purchase Orders 2009
Purchase Orders 2008
Purchase Orders 2007
Purchase Orders 2004-2007
Public Space Permits 2008
Public Space Permits 2004-2007
ITSA Current Awarded Engagements
Purchase Card Transactions
ITSA Current Open Requirements
311 Service Requests

Live Data Feeds

311 Service Requests
Building Permits
CBEs active in ITSA Program
Completed Construction Projects 2007
Completed Construction Projects 2008
Completed Construction Projects 2009
Completed Construction Projects 2010
Crime Incidents (ASAP)
Current Construction Projects
DCPS Computer Deployment
Housing Code Enforcement
ITSA Current Awarded Engagements
Public Space Permits

Get updates in other formats...

See it on Google Maps

311 Service Requests
Building Permits
CBEs active in ITSA Program
Completed Construction Projects 2007
Completed Construction Projects 2008
Completed Construction Projects 2009
Completed Construction Projects 2010
Crime Incidents (ASAP)
Current Construction Projects
DCPS Computer Deployment
Housing Code Enforcement
ITSA Current Awarded Engagements
Public Space Permits

Custom Downloads

311 Service Requests
Building Permits
CJIS Juvenile Arrests and Charges
Completed Construction Projects 2010
Crime Incidents (ASAP)
Current Construction Projects
DCPS Computer Deployment
Housing Code Enforcement
ITSA Current Awarded Engagements
Public Space Permits

Browse Catalog

Category: All categories

Source	Metadata	XML	Text/CSV	Atom (GeoRSS support)	KML/ESRI Shapefile	Maps	Download
OCTO	District Payments To All Vendors, By CBE Status, FY10, Q1		08/04/2010				
OCTO	District Payments To All Vendors, By CBE Status, FY10, Q2		08/04/2010				
OCTO	District Payments To All Vendors, By CBE Status, FY10, Q3		07/30/2010				
OCTO	District Payments To All Vendors, By CBE Status, FY10, Q4		10/06/2010				

RegardsCitoyens.org

Diffusion et Partage de l'Information Politique

CONTRIBUER

PayPal visa mastercard

Le blog Qui sommes nous ? Revue de presse Nous aider Nous contacter

Go

État des lieux de l'OpenData en France

Lundi 1 février 2010

Cet état de l'art a été initialement publié en anglais sur le site de l'Open Knowledge Foundation, le 20 janvier 2010. L'OKFN est une organisation anglaise en pointe sur l'OpenData. Elle est notamment à l'origine du projet [WhereDoesMyMoneyGo.org](#), de l'[OpenDefinition](#) pour des standards de données ouvertes et du registre de données participatif [CKAN](#). Ce registre, en cours de traduction dans plusieurs pays européens, est repris par le gouvernement anglais pour l'architecture de son projet [data.gov.uk](#).

La France traîne des pieds...

Aucun doute possible : pour ce qui est d'ouvrir ses données, la France est largement en retard par rapport à de nombreux pays. Pourtant si fière de son modèle démocratique, la France a longtemps traîné des pieds pour rejoindre le mouvement de l'OpenData. Le premier [OpenDataCamp](#) organisé à Paris en décembre dernier illustre bien que les choses peuvent changer.

Alors que les États-Unis et le Royaume-Uni ont énormément avancé au cours des deux dernières années en dévoilant leurs projets [data.gov](#) et [data.gov.uk](#), la France et la plupart des pays d'Europe méditerranéenne restent très conservateurs en matière de données publiques. Rattraper le retard demandera un peu plus que de saupoudrage politique. Les institutions ont besoin d'un changement radical dans leur approche de production et de dissémination des données officielles. C'est pourquoi un engagement important de la part des citoyens est nécessaire, afin de mettre en évidence l'importance des attentes, mais également pour soutenir et conseiller les projets existants et en gestation.

Quelques projets très intéressants – et généralement peu connus – ont déjà ouvert la voie. Les [Archives HAL](#) recensent et proposent librement les publications scientifiques de la recherche, tandis que l'[IREP](#) donne accès aux données concernant la pollution. Mais ce ne sont que quelques fragments de l'immense quantité de données publiques existantes : dans leur grande majorité, les documents et bases de données officiels restent inaccessibles au grand public. Il peut même s'avérer très difficile pour un citoyen de demander l'accès à des documents spécifiques. Bien que la [CADA](#) ait été créée en 1978 pour documenter et faciliter les procédures de

Nos initiatives

NOS DÉPUTÉS.FR Observatoire citoyen de l'activité parlementaire

Simplifions la loi 2.0

Etude sur le redécoupage électoral

Nous télécharger

Explications
Les logiciels
Les données

Nous suivre

Flux RSS
Courriel
identi.ca
twitter
Facebook

Big Data

Students might contribute to collecting assembling open data e.g. vocabularies geographic data, plant census, open mapping, disease and health markers opportunities for authentic activities, situated learning, reward, contribution

Working in the open

Individually

Lisa Harris
teaches online marketing at the University of Southampton. Fascinated by the disruptive effect of technology on business, education, politics, life...
Follow @lisaharris

Curated Topics Curated Scoops Followed Topics Followed Scoops Lisa Harris Community (178)

Soton Digital Marketing Comms
a set of useful resources for digital marketing M...
266 views Last update: January 5, 7:18 PM

We are social

Social Scholarship
impact of social technologies on academic rese...

social media qualitative research met...
how qualitative research projects can be carried...

Whole Foods
Aldi 4.79 1477
Which popcorn in...
Pour de Sel C
Salted C
Salty C
Caramel
Sea Salt C

International collaborators

- Alternative online open and connected framework (OOC)
- building global learning communities
 - using mobile social media

And in groups

CT231 Student Showcase
Digital media produced by CT231 Professional Skills students (2011-14)
Curated by Catherine Cronin

Digital Media Projects
Scooped by Catherine Cronin

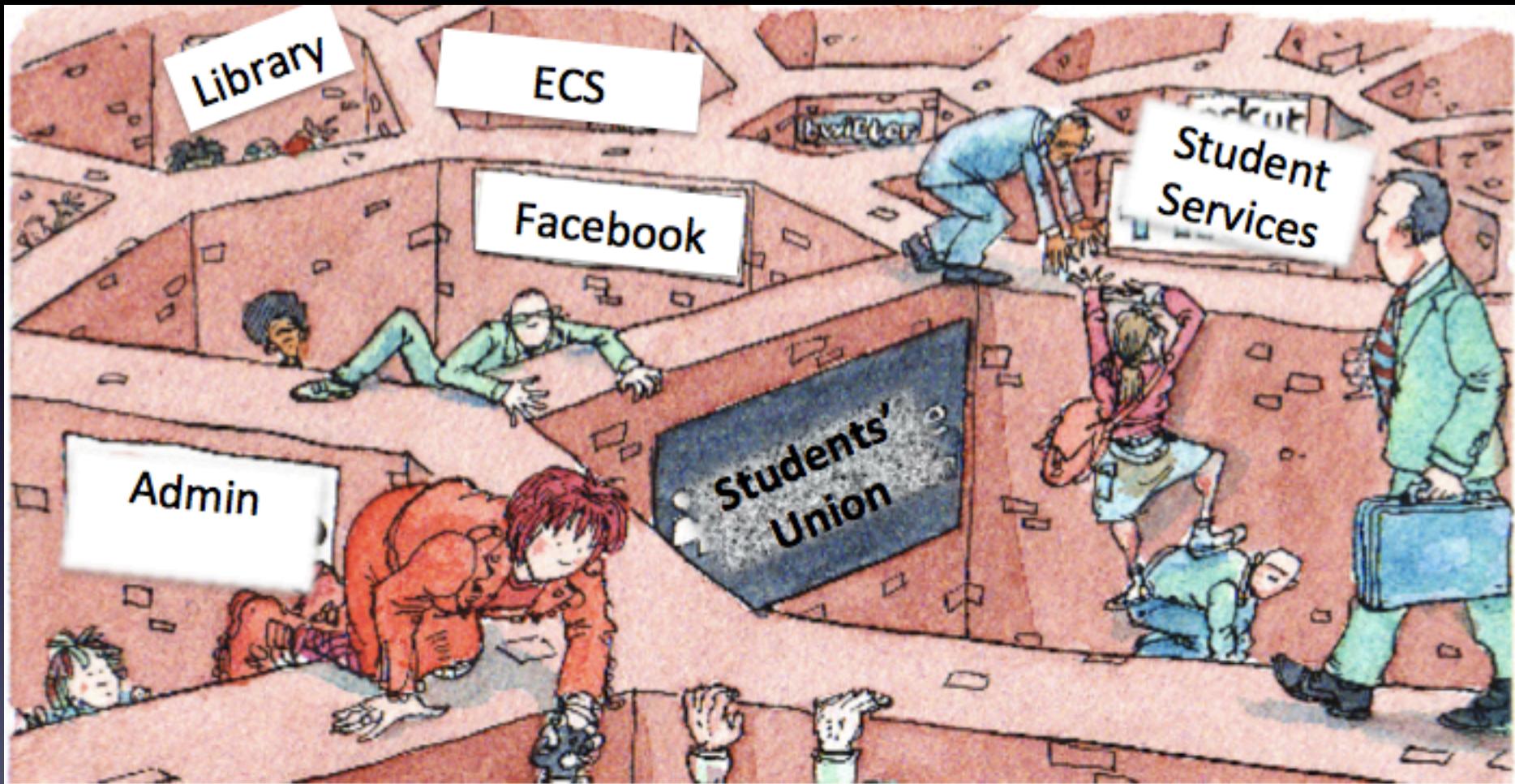
From ct231.wordpress.com - May 15, 9:33 PM
" Over seventy students recently completed the year-long CT231 module in Professional Skills. For their final Digital Media Projects, students were asked to develop a resource for an audience beyond ..." Catherine Cronin's insight: ...a complete list of Digital Media Projects completed by CT231 students in Spring 2014, including blogs, videos, audio podcasts, and more.

Motoring into the Future
Scooped by Catherine Cronin

Motoring into the Future
by Anthony Jackson

A collection of vintage cars, likely from the early 20th century, parked in a row. The cars are light-colored with dark roofs and have large, spoked wheels. The background is slightly blurred, suggesting an outdoor exhibition or a classic car show.

We want to climb over the walls...



With apologies....

Adapted from image used by [tbl](#), originally from the economist I think

Backbone concepts

- Reworking Shotton's concept of semantic publication into the educational context
 - semantic publication
 - to include anything that enhances the meaning of a published information
 - facilitates its automated discovery
 - enables its linking to semantically related information
 - provides access to associated data in actionable form
 - facilitates the integration of associated data
- We are talking situated learning

EdShare – Repositories meet Web

EdShare

UNIVERSITY OF Southampton

Home Browse About Help

Search... Advanced search

Login

Welcome to EdShare

Organise Organise your learning materials into collections and groups according to their subject matter

Share Share your learning materials with other users of the EdShare system

Collaborate Work together to produce new and more exciting learning materials

Tag cloud

chemistry, eportfolio, filtering, statistics, european, average, rate, option, branching, chains, rational, integration, grad, vector, fields, residues, singularities, labyrinth, pdf, correlation, differential, equations, applications, decision, trees, intentional, structures, undergraduate, projectiles, independent, brownian, motions, mentor, generators, relations, words, autism, sd31, management, analytic, tableau, hybermedia, continuity, limits, remax, professional, issues, the web, graph, critical, path, decision, trees, differentiation, inverse, visually, impaired, photoshop, leopard, oceanography, first, isomorphism, theorem, riemann, integration, unions, intersections, measurable, sets, equations, transformations, conformal, maps, joukowski, transformations, complex, functions, poles, residues, technical, reports, birth, death, process, points, hyperbolic, line, post, graduate, info1010

Latest additions

INFO2009 - workplace perspectives law and responsibilities
Slides, scenario and links which discusses the broad scope of workplace legislation
Dr Susan White Shared with: World

Collection - class exercise in group presentations with associated materials
slides plus mark scheme and link to group work videos
Dr Susan White Shared with: World

INFO1010 Presentations - small group exercise
quick in class exercise to familiarise students with key points in presentation. timing is tight, but possible to run four groups with

Sign up for a free account, or take a look at what's already inside.

Recently uploaded resources

UNSPECIFIED
Added On: 20 Nov 2010 18:53
Added By: Miss Kristina Pla Fernandez

Bengali fill in the blanks with names.
Added On: 10 Nov 2010 11:29
Added By: Mr Sarwar Jamil
Tags: Internet

Home **Browse** **About** **Help**

Search... Advanced search

Login | Create Account

Welcome to HumBox

The HumBox is a new way of storing, managing and publishing your Humanities teaching resources on the web. Share handouts, exercises, podcasts, videos and anything else you can imagine!

Sign up for a free account, or take a look at what's already inside.

Language Box

Sign up for a free account, or take a look at what's already inside.

Languagebox Activities

Language Box is being used by participants in the Community Cafe project. This project is funded by the JISC and is working to create a collection of resources for use by community languages teachers across the UK. If you are a teacher of a community language, working in a supplementary school or Saturday school, please join the site and share your work!

LanguageBox unaffected by HEA cut of subject centres

Learn from the success and methods of collections in the wild

Crowd sourced open data map

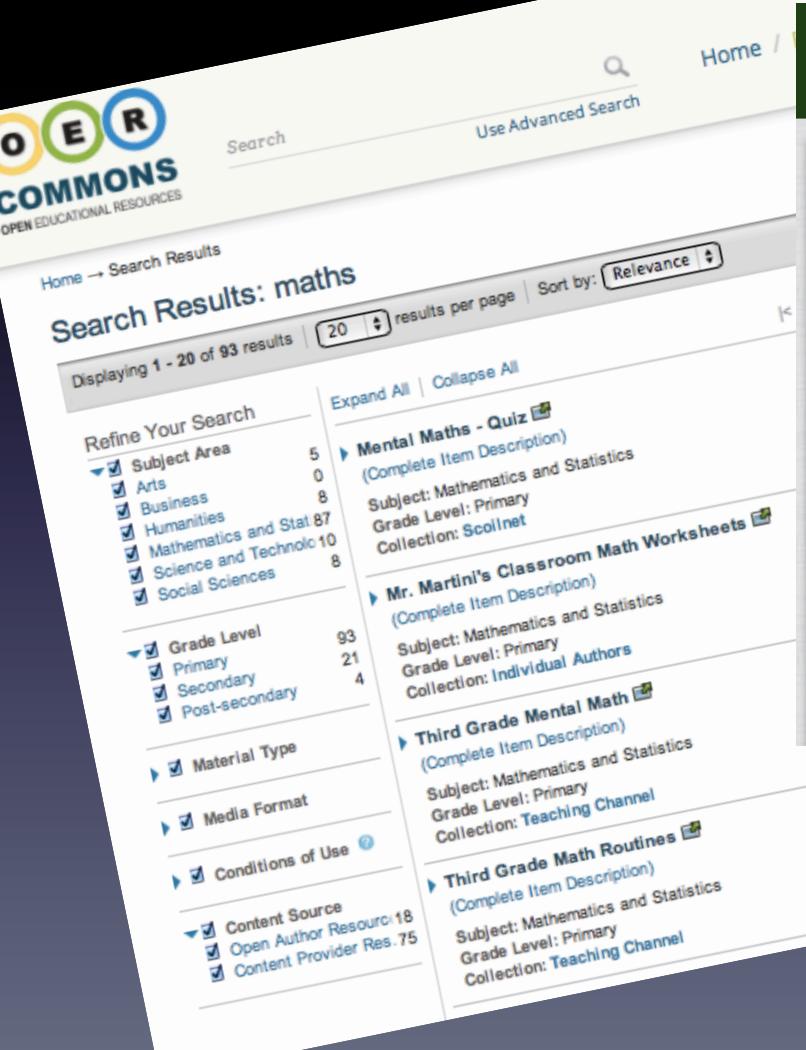
- Mashup of crowd sourced data plus official data
- Crowd sourced contributions
- Useful and visible
- Interrogate the data points interactively
- Flip the process with treasure hunts



OERs, OCW and MOOCs

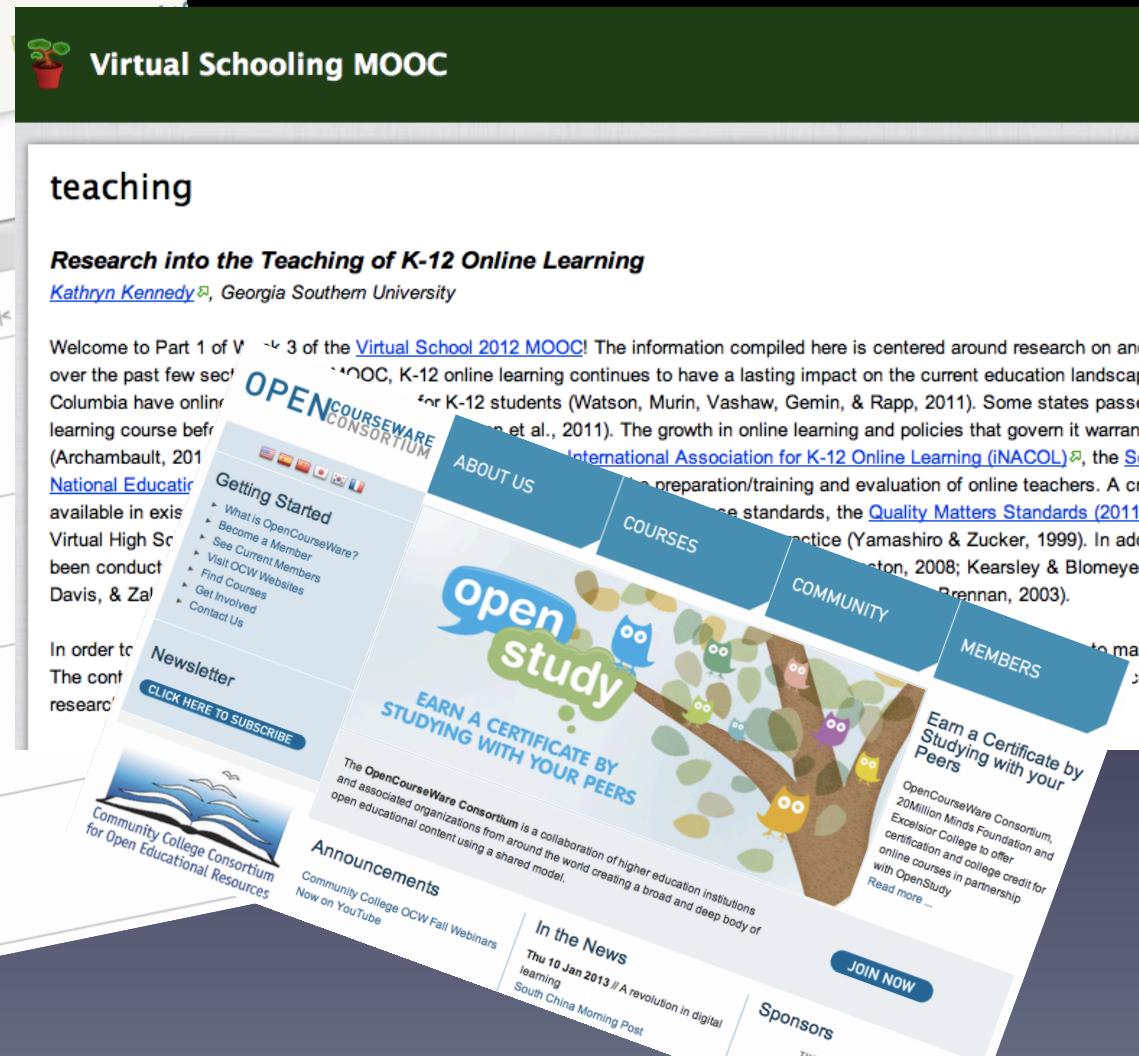
open educational resources

massively open online courses



The screenshot shows the OER Commons search results for the query "maths". The results are displayed in a grid format, with each item including a thumbnail, title, description, subject, grade level, and collection. The results are sorted by relevance. The interface includes a search bar, a "Use Advanced Search" link, and a navigation bar with "Home" and "Search".

Subject Area	Grade Level	Collection
Arts	Primary	Virtual High School
Business	Primary	Virtual High School
Humanities	Primary	Virtual High School
Mathematics and Stats	Primary	Virtual High School
Science and Technology	Primary	Virtual High School
Social Sciences	Primary	Virtual High School
Arts	Secondary	Virtual High School
Business	Secondary	Virtual High School
Humanities	Secondary	Virtual High School
Mathematics and Stats	Secondary	Virtual High School
Science and Technology	Secondary	Virtual High School
Social Sciences	Secondary	Virtual High School
Arts	Post-secondary	Virtual High School
Business	Post-secondary	Virtual High School
Humanities	Post-secondary	Virtual High School
Mathematics and Stats	Post-secondary	Virtual High School
Science and Technology	Post-secondary	Virtual High School
Social Sciences	Post-secondary	Virtual High School



The screenshot shows the homepage of the Virtual Schooling MOOC. The page features a green header with the title "Virtual Schooling MOOC" and a magnifying glass icon. Below the header, there is a section titled "teaching" and a featured article titled "Research into the Teaching of K-12 Online Learning" by Kathryn Kennedy, Georgia Southern University. The main content area discusses the impact of K-12 online learning on the education landscape and the role of the International Association for K-12 Online Learning (INACOL). The page also includes a sidebar for the OpenCourseWare Consortium, featuring links to "About Us", "Courses", "Community", and "Members". The footer contains information about the OpenCourseWare Consortium, the OpenStudy platform, and news articles.

Virtual Schooling MOOC

teaching

Research into the Teaching of K-12 Online Learning

[Kathryn Kennedy](#), Georgia Southern University

Welcome to Part 1 of V ~ 3 of the [Virtual School 2012 MOOC](#)! The information compiled here is centered around research on and over the past few sec' OC, K-12 online learning continues to have a lasting impact on the current education landscape for K-12 students (Watson, Murin, Vashaw, Gemin, & Rapp, 2011). Some states passen et al., 2011). The growth in online learning and policies that govern it warrant the attention of the International Association for K-12 Online Learning (INACOL), the S

OPEN COURSEWARE CONSORTIUM

ABOUT US

COURSES

COMMUNITY

MEMBERS

open study

EARN A CERTIFICATE BY STUDYING WITH YOUR PEERS

The OpenCourseWare Consortium is a collaboration of higher education institutions and associated organizations from around the world creating a broad and deep body of open educational content using a shared model.

Community College Consortium for Open Educational Resources

Community College OCW Fall Webinars Now on YouTube

Announcements

In the News

Thu 10 Jan 2013 // A revolution in digital learning

South China Morning Post

JOIN NOW

Sponsors

Earn a Certificate by Studying with your Peers

OpenCourseWare Consortium, Excelsior College to offer 20Million Minds Foundation and certification and college credit for online courses in partnership with OpenStudy

Read more ...

Learning by example

Jisc

Why does this look different? News Blog Events Publications About Contact

Digital content Network & IT services Advice Research & development Search Jisc

Home > Publications > A guide to open educational resources

A guide to open educational resources

Contents:

- What are open educational resources?
- Open educational resources – the story so far
- Finding and sharing open educational resources
- Open licensing
- Approaches to releasing, using, reusing and repurposing open educational resources
- The rationale for adopting open educational resources
- Practical guidance: Manage, Find, Use and Reuse, Release, Share, License
- Benefits case studies: Teacher, Learner, Institution, Communities

What are open educational resources?

Open educational resources (OER) are learning and teaching materials, freely available online. Examples include full courses, course modules, lectures, games, teaching materials in the form of text, images, audio, video and may even be interactive.

Teachers, learners and the general public can access and make use of open educational resources regardless of their location or affiliation with any particular institution. Open educational resources are available from education providers and through public services like [iTunes U](#), [SlideShare](#), [YouTube](#) and [Jorum](#).

Individuals and organisations can create and share their own open educational resources. Once released, the resources can be used by a learner, reused by a teacher, remixed with other resources or repurposed to create new educational materials. While it is not essential to embrace all aspects – release, use, reuse and repurposing – involvement with one aspect tends to lead naturally to another.

JISC

The Open Agenda at the University of Salford

Case study October 2011

The University of Salford is at the heart of a network of research and innovation that extends from international partnerships to local engagement. As such, the university aims to create economic and social value through innovative ways of working together. A key element to this is openness.

Digital Futures

In this case study, I show how the decision to launch an Open Access repository – now increasingly common place in universities in Britain and

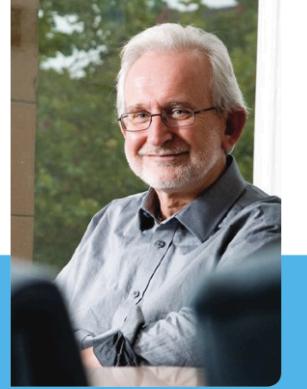
an early stage of what was to become a comprehensive restructuring of administrative and professional services, including establishing the library and all its functions as a division in its own right. It was also at a time

In consequence, the formal launch of the University of

Learning Resources

Strategic Themes

e-Learning



Challenges for the working group

Specify a research agenda

- What are the meaty questions?
- Can you find synergies?
 - Within your institution
 - Across like institutions
 - Within your existing research frameworks

Build communities of practice

- across open data practitioners
 - Identify good practice
 - Identify the art of the possible

Does institutional action/research offer an alternative route to funding/support?

Last words from Universities UK

- What is open data and why should we be interested?
 - Can you be the person to do that in your sphere of influence?
- How is the potential of open data translated into practice?
 - Not only know the examples but research and publish data
- Where are the problems and how can they be avoided?
 - We can gather the data and remember...
 - There is space for more than just quantitative analysis
- Where is good practice already happening in higher education?
 - We can look beyond research and education but
 - big data and learning analytics are likely to headline grabbers

Thank You 😊

Questions?

Discussions?

Questions?



References

Berners-Lee, T. The Process of Designing Things in a Very Large Space: Kenote Presentation WWW2007, Banff, Alberta, Canada, 2007 <http://www.w3.org/2007/Talks/0509-www-keynote-tbl/>

Berners-Lee, T., Hall, W., Hendler, J., Shadbolt, N., & Weitzner, D. J. (2006). Creating a Science of the Web. *Science*, 313(5788), 769–771. Retrieved from DOI: [10.1126/science.1126902](https://doi.org/10.1126/science.1126902)

Carr, L., Pope, C., & Halford, S. (2010). Could the Web be a Temporary Glitch ? In WebSci10: Extending the Frontiers of Society On-Line, Raleigh, US, 26 - 27 Apr 2010 (pp. 1–6). Raleigh, NC: US: Web Science Trust.

Halford, S., Pope, C., & Carr, L. (2010). A manifesto for Web Science? In WebSci10: Extending the Frontiers of Society On-Line. Raleigh, NC: US.: Web Science Trust. Retrieved from <http://journal.webscience.org/297/>

Hall, M. (2011). The Open Agenda at the University of Salford (p. 8). Bristol.

Miller, P. (2010). Linked Data Horizon Scan. (pp. 41). Joint Information Systems Committee , Bristol.

Shotton, D., Portwin, K., Klyne, G., & Miles, A. (2009). Adventures in semantic publishing: exemplar semantic enhancements of a research article. *PLoS Computational Biology*, 5(4), e1000361. doi:[10.1371/journal.pcbi.1000361](https://doi.org/10.1371/journal.pcbi.1000361)

Tiropanis, T., Davis, H., Millard, D., Weal, M., White, S., & Wills, G. (2009). JISC - SemTech Project Report. Knowledge Creation Diffusion Utilization (pp. 28). Joint Information Systems Committee, Bristol.

Tiropanis, T., Davis, H., Millard, D., & Weal, M. (2009). Semantic Technologies for Learning and Teaching in the Web 2.0 Era. *IEEE Society Online*, 24 (November/December), 49–53.

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