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Opening up science, knowledge  
and getting paid to develop  
FLOSS

# Exciting stuff!

## Open Knowledge

Science

FOOD!

Medicine

Government

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Civilisation

## Partnership of developers

Interested in education

Everything open

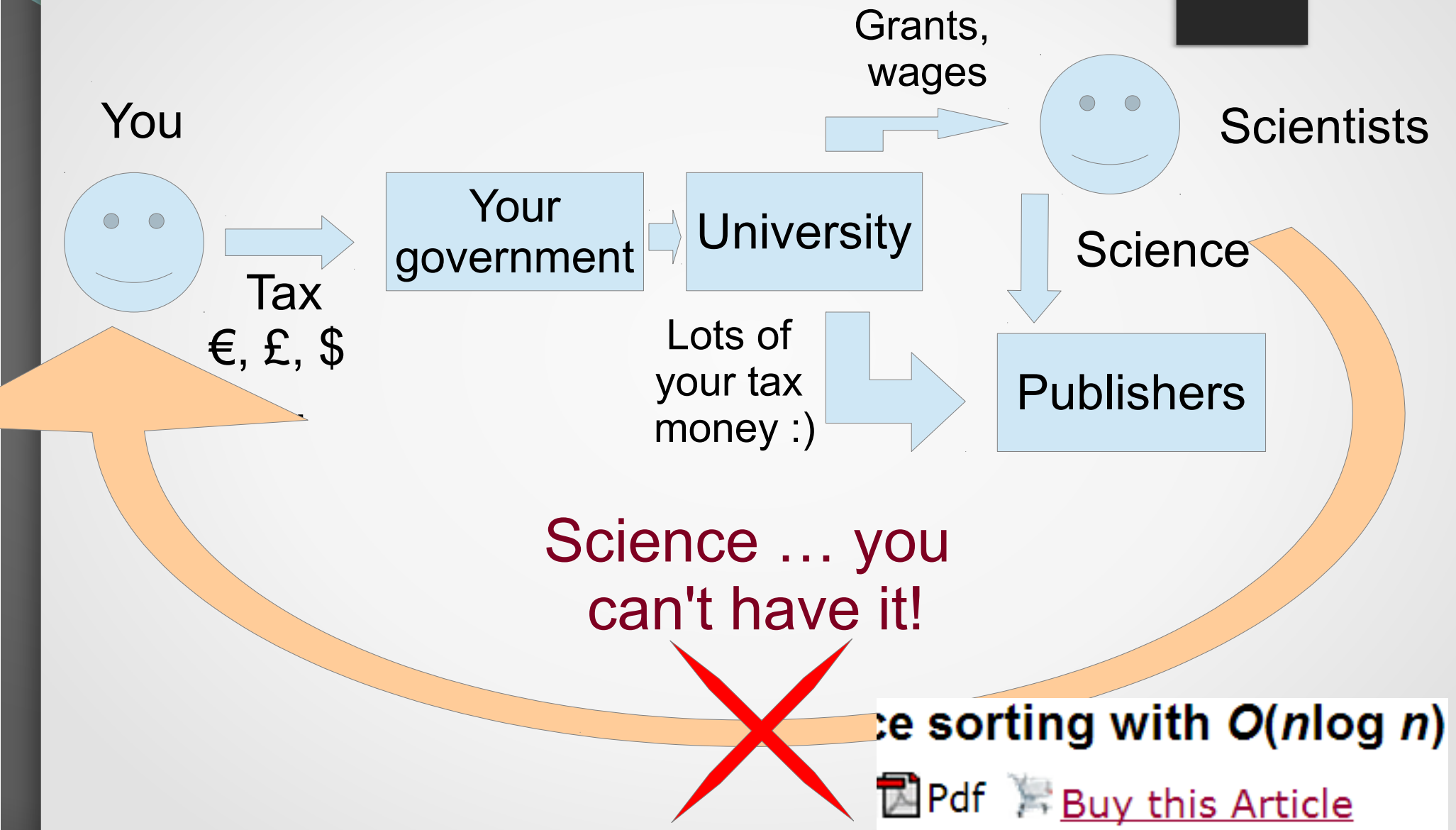
Build FLOSS together

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Need to eat though. How?

# Current Science workflow

1. **YOU** Pay tax
2. University library pays **6-7 digit figures** to get previous science
3. Scientist uses past science, gets **money** to do more
4. Scientists writes up results in paper, sends to other scientists to review
5. Publisher does NOT pay reviewers
6. Publisher doesn't give **YOU** access to science, demands **more \$** from libraries

# Current Science workflow – visualised



# Results from current Science

- You paid for it, twice.
- You can't get it.
- Individual article prices can be astronomical (you need to read many to get useful ideas) – avg. €15-30
- Publishers have an established monopoly
- People stuck in closed mindset or don't care
- Fear, Uncertainty, Doubt
- Some “adopt” open ways but actually twist them
- Sound familiar?

Sorting with  $O(n \log n)$



Pdf



[Buy this Article](#)

# Open Knowledge & Open Data

- This is not good. Developing countries, individuals, business – can't afford the Paywall, no science for you!

## **Open Knowledge Foundation**

*(main principles of what's “open”)*

1. Free and open access to the material
2. Freedom to redistribute the material
3. Freedom to reuse the material
4. No restriction of the above based on who someone is (e.g. their nationality) or their field of endeavour (e.g. commercial or non-commercial)

# Open Knowledge, not just Science

## Open Government & Economics

[PublicWhip](#), [WhereDoesMyMoneyGo](#), [OpenSpending](#)

Official UK Open Government Data: [Data.gov.uk](#)

& the data sharing piece of FLOSS, [CKAN](#)

You can have anything:

- Open Nutrition data,
- Open Medicine
- Open Lobbying data (hot topic in EU atm)

# Why care about Open Knowledge?

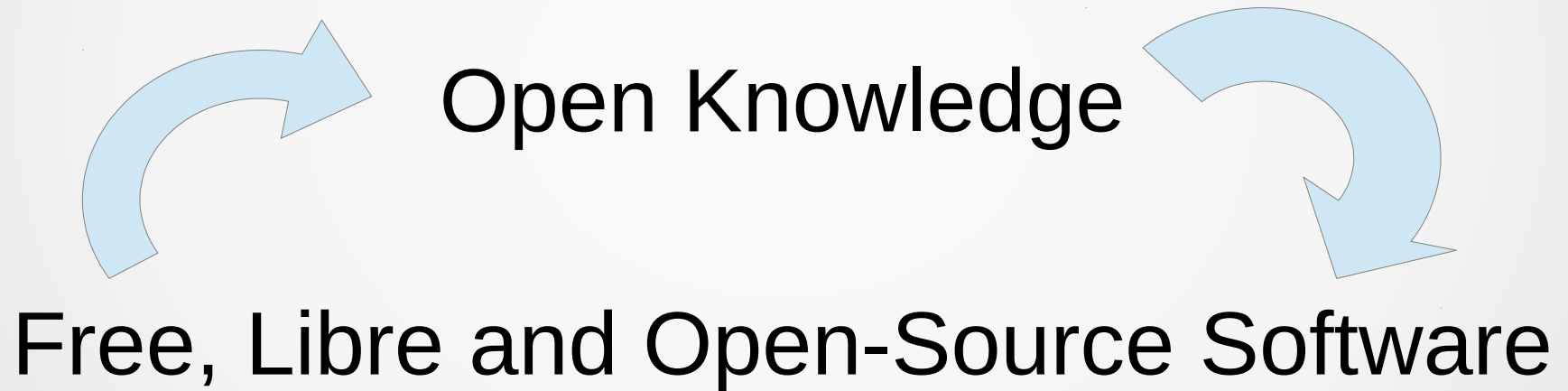
We build FLOSS, right?

Why?

Open Knowledge can be the heart of a lot more FLOSS. Visualising data & communicating can really help improve life, push for progress, and FLOSS is the way to go.



Open data breeds more FLOSS!



## So how does this help us devs?

Enlarging the Open movement good - more opportunity:

- apply programming skills
- and Open development practices
- get paid (when enough people want Open)

So, what ***can*** you do in this area?

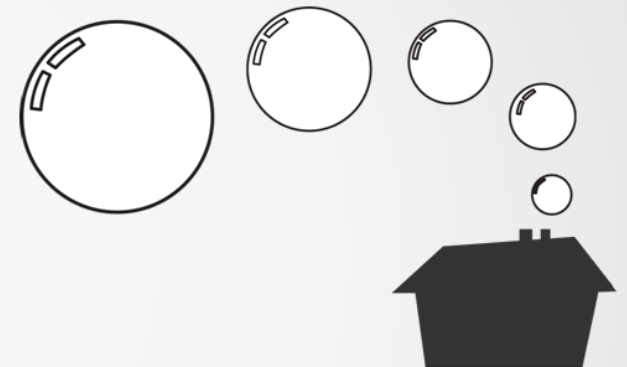
# Things devs do Open for a living

- Visualising data (interactive maps, Javascript visualisations)
- Creating new Open tools ([OKFN employs 10+ devs](#))
- Creating new Open services to expose Open data (web services, API-s) (devs were needed to code each of [these!](#))
- Quite a lot of integration work – ReSTful services nowadays but also often interact with older systems or slightly unconventional databases like Research Data Repositories
- Reports – report on potential FLOSS uses to organisations which hire you ([examples of reports we've done](#))
- Consulting work - purely because of Open-source software dev. Experience and because of work in the relevant field.

# Actually, you can do this

## Cottage Labs LLP (Limited Liability Partnership)

- Close-knit group of freelancers
- Look for work together, bid together.
- Share profits.
- We can take on more projects even if an individual runs out of time – other people could start developing the opportunity.
- Based on Community of Practice and Learning Community concepts (we do, learn, *think* together)



# But who would want to hire us?

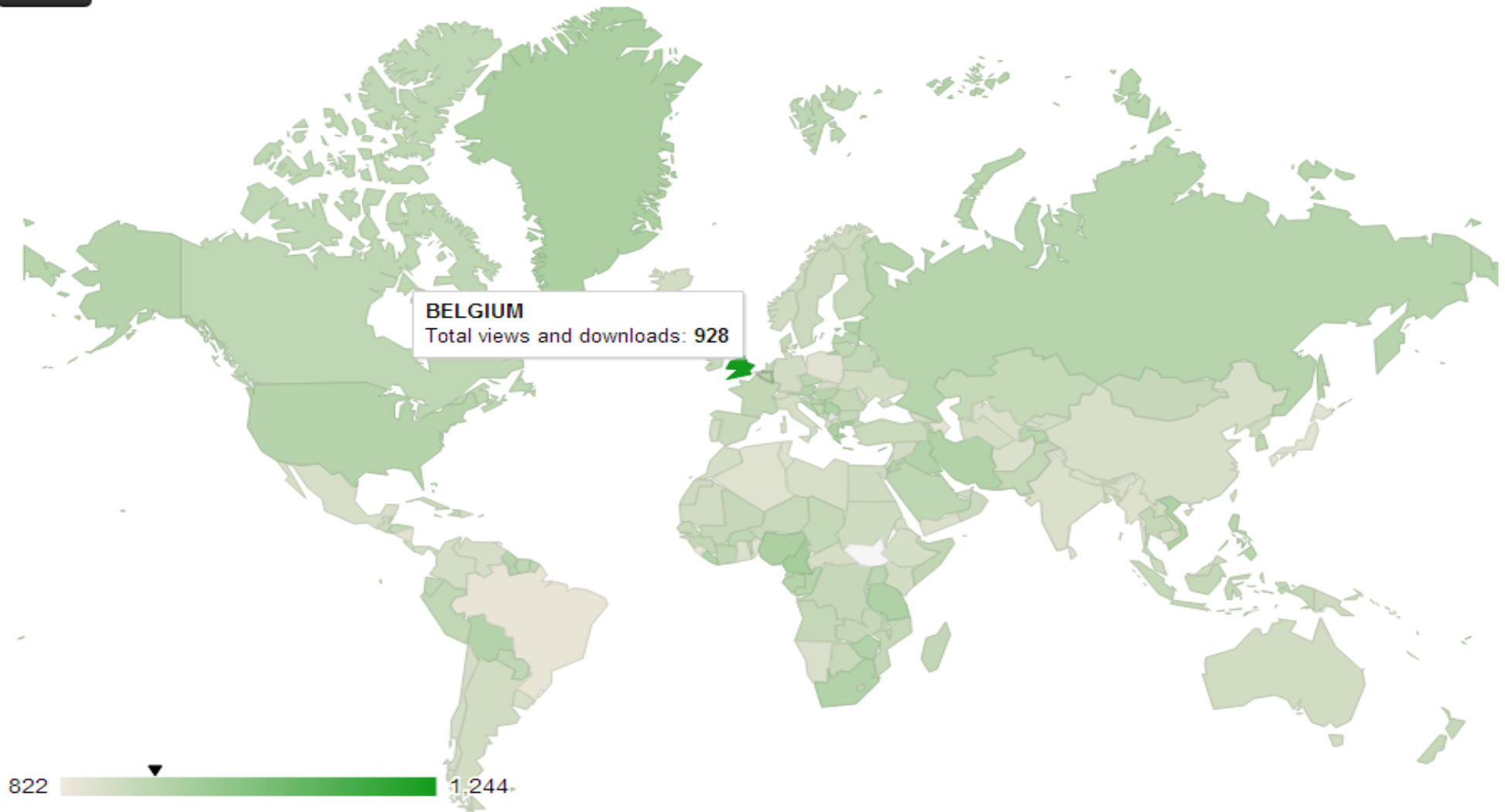
- Partners have (shared!) decades of experience in the Higher Education software development sector
- UK Gov't hires us quite often to help out with Research infrastructure for that experience & because we're not shy about open-sourcing all our work
- We don't sell products, we trade our skills & release the results of the work openly.
- Universities hire us, companies have started hiring us (we do high-speed quality catalogue-style systems, visualisations, web services & other things quite well)
- Been at it for 2+ years!

# Tech we use

- Elasticsearch, an advanced search server
  - eats JSON, spews out JSON
  - very, very fast search and faceting ([faceting example](#))
- Python (+ the Flask web framework, often)
- D3 Javascript data visualisation library
- Facetview (pure Javascript front-end to Elasticsearch and Apache Solr – basically build a fully-fledged, paginated catalogue in minutes just by writing 1x HTML page)
- DSpace – repository software. Think of as a special database geared for storing and describing individual files (resources).

# Visualisation example (1)

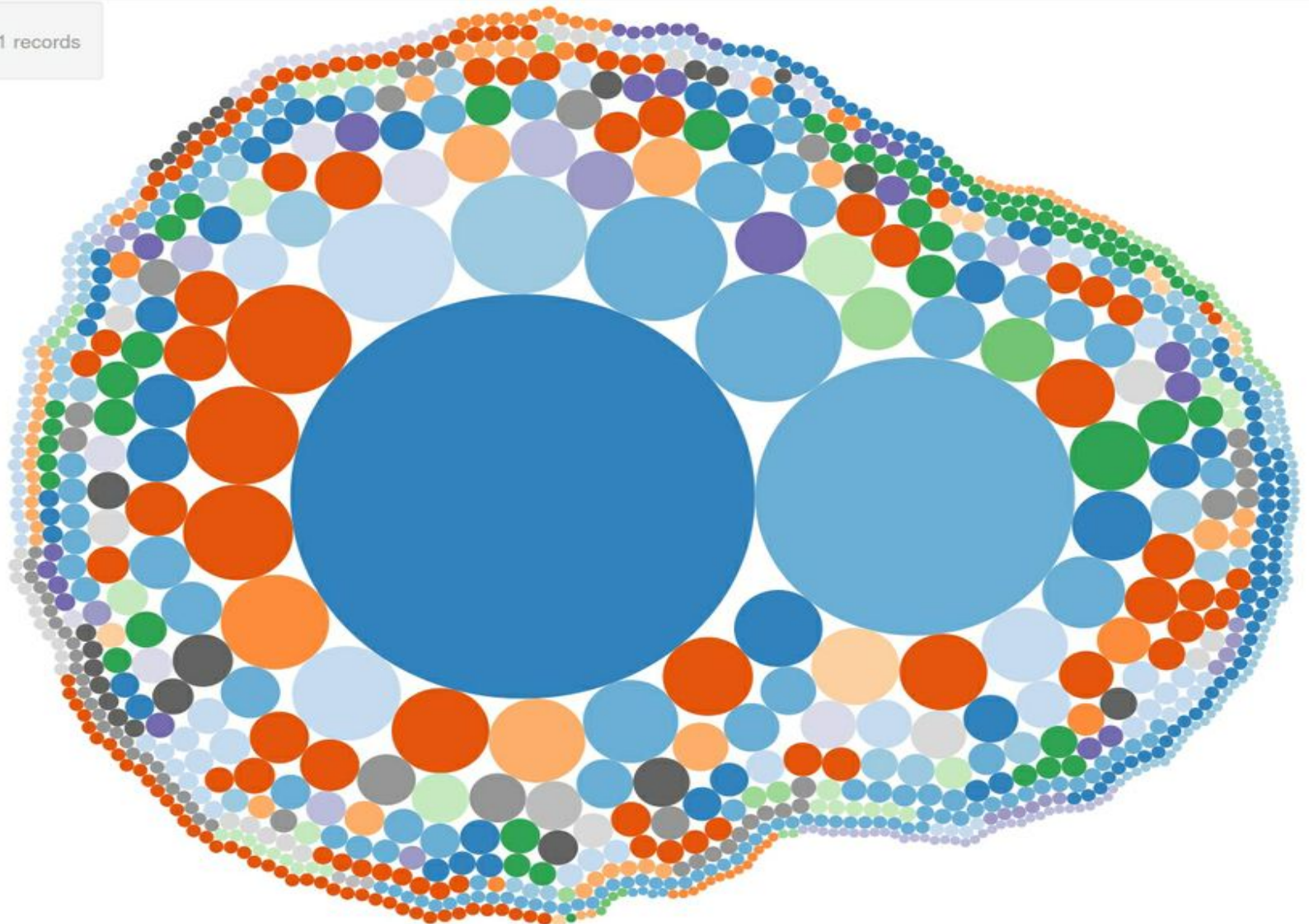
Image





# Visualisation example (2)

keyword **malaria** has 2011 records





# Faceted search example (part 1)

10  order by  search all  search term

+ Sector (HE/FE)

+ Institution / Publisher

+ Author

+ Keywords

+ File Format

+ Licence

+ HE Subject (JACS)

+ HE Subject (JACS code)

+ FE Subject (LearnDirect)

+ FE Subject (LearnDirect code)

.. 1 – 10 of 14918 next »

## [Fe, C 0.2 \(wt%\) steel, case hardened](#)

After initial casting of this steel it was subject to a process known as carburisation. The metal is heated to above the ferrite-austenite transition in a carbon atmosphere. This establishes a concentration gradient and hence carbon diffuses into the steel. Usually the steel is then hardened by quenching. This produces what is known as a case hardened steel - with a hard surface (case) surrounding a tough core. This micrograph has been taken from the bulk of the sample, showing that carbon does not diffuse significantly into the interior of a case hardened steel.

published by [Core-Materials](#), [University of Cambridge](#), [University of Leeds](#)  
30-Apr-2010

123456789/3770

## [Gender and society](#)

This module introduces the development of feminist theory during the last hundred years in industrial societies. It considers major topics and areas of debate within the sociology of gender by examining recent empirical research.

published by [Aston University](#)  
09-Apr-2010

123456789/2801

## [Bell and Howell Filmo Movie Projector](#)

:Film projector with own transformer. Maker: Bell and Howell - from the The Betty Smithers Design Collection at Staffordshire University.

published by [Staffordshire University](#)  
18-Aug-2010

123456789/7957

# Faceted search example (part 2)

✕ ? 10 ↓

order by ▼

search all ▼ search term

➔

Report

Sector (HE/FE)

Institution / Publisher

+ Author

Keywords

? 10 count ↓ OR

ukoer (12)

forensic computing (7)

computer security (5)

cybercrime (4)

information security (2)

forensic (1)

computer crime (1)

File Format

Licence

Staffordshire University ✕ Robert Shaw ✕ ukoer ✕

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Forensic Computing Concepts - the EnCase Process

Video lecture from a series on Forensic Computing Concepts delivered by Bob Shaw and Hatem Tamam. Running time approximately 50 minutes.  
published by [Staffordshire University](#)  
09-Apr-2010

123456789/2794

Forensic Computing Concepts - Malware and Hostile Code

Video lecture from a series on Forensic Computing Concepts delivered by Bob Shaw and Hatem Tamam. Running time approximately 48 minutes.  
published by [Staffordshire University](#)  
09-Apr-2010

123456789/2795

Forensic Computing Concepts - Introduction

Video lecture from a series on Forensic Computing Concepts delivered by Bob Shaw and Hatem Tamam. Running time approximately 47 minutes.  
published by [Staffordshire University](#)  
09-Apr-2010

123456789/2793

Forensic Computing Concepts - Intrusion Detection

We're all good

Think about what you can do.

We're developers. We have lots of experience developing software and also domain knowledge.

You **can do this** in **your** professional area, in **your** country, with **your** friends.

# Collaborating

- If you're interested by what you just heard about our partnership
- Want to start a similar thing
- Want to work with us on something
- Talk to me after this presentation! Or come [here](#).

# A bit of inspiration

*Mobile + web applications which people made to help their city/country/the EU and demonstrate the potential of Open Data:*

<http://publicdata.eu/app>

<http://opendatachallenge.org/#winners>

- Real-time underground train traffic map
- Bike share map
- Carbon Dioxide emissions map
- Connections between commercial companies
- Business influencing politics – state deals
- (Useful) list of all public financial transactions EVERYWHERE
- Air cleanliness & particles map

# Disruption

Free Software – disruptive.  
However, Disruptive -> Innovative!

But also:

- Useful
- Nice
- Respects users
- Respects their Freedom

## Disruption (2)

Science is very important. Public data is very important.

Both have some problems, but Free Software and Openness can help!

Disrupting these “knowledge” sectors with Open approaches will help spread the Openness philosophy.

Questions?

Thanks for listening!

Good luck!



## FAQ 1

How do you licence your stuff?  
(exactly..?)

*Any Open Licence the client agrees to.*

We personally like [Copyheart](#) :). Love isn't subject to law and we love our work. We've done MIT too.

- GPL: we could use it, but we don't push it, don't mind commercial companies using our software. Just means it's actually useful... Also, our sector is quite small software-wise.