

Some personal impressions on data preservation, re-use and (open) access in (some) other fields



Sünje Dallmeier-Tiessen, Salvatore Mele
CERN – Scientific Information Service – Open Access
DPHEP@FNAL May 16th 2011



Some pseudoscience...

"Believe me, folks, you'll want to read this important new evidence on the effects of smoking. Then you'll say, as I do... **MUCH MILDER**

**CHESTERFIELD
IS BEST FOR ME!"**

Arthur Godfrey



NOW...Scientific Evidence on Effects of Smoking!

A MEDICAL SPECIALIST is making regular bi-monthly examinations of a group of people from various walks of life. 45 percent of this group have smoked Chesterfield for an average of over ten years.

After ten months, the medical specialist reports that he observed...

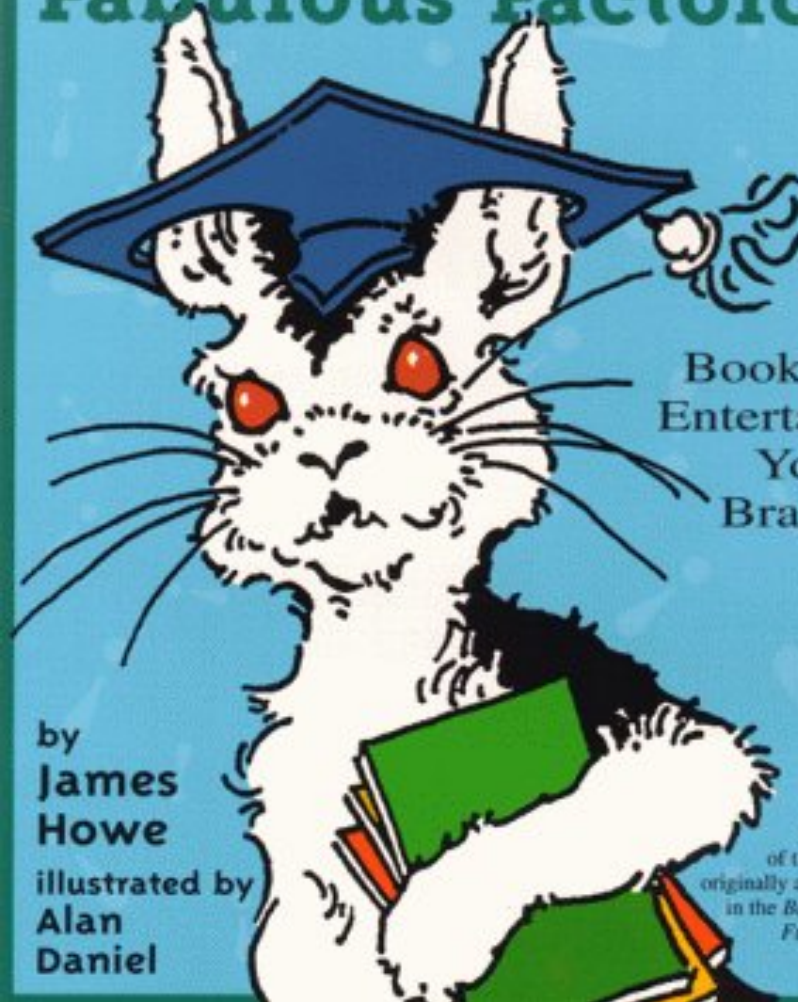
no adverse effects on the nose, throat and sinuses of the group from smoking Chesterfield.

**First and Only Premium Quality
Cigarette in Both Regular and
King-Size**



Bunnicula's

Frightfully Fabulous Factoids

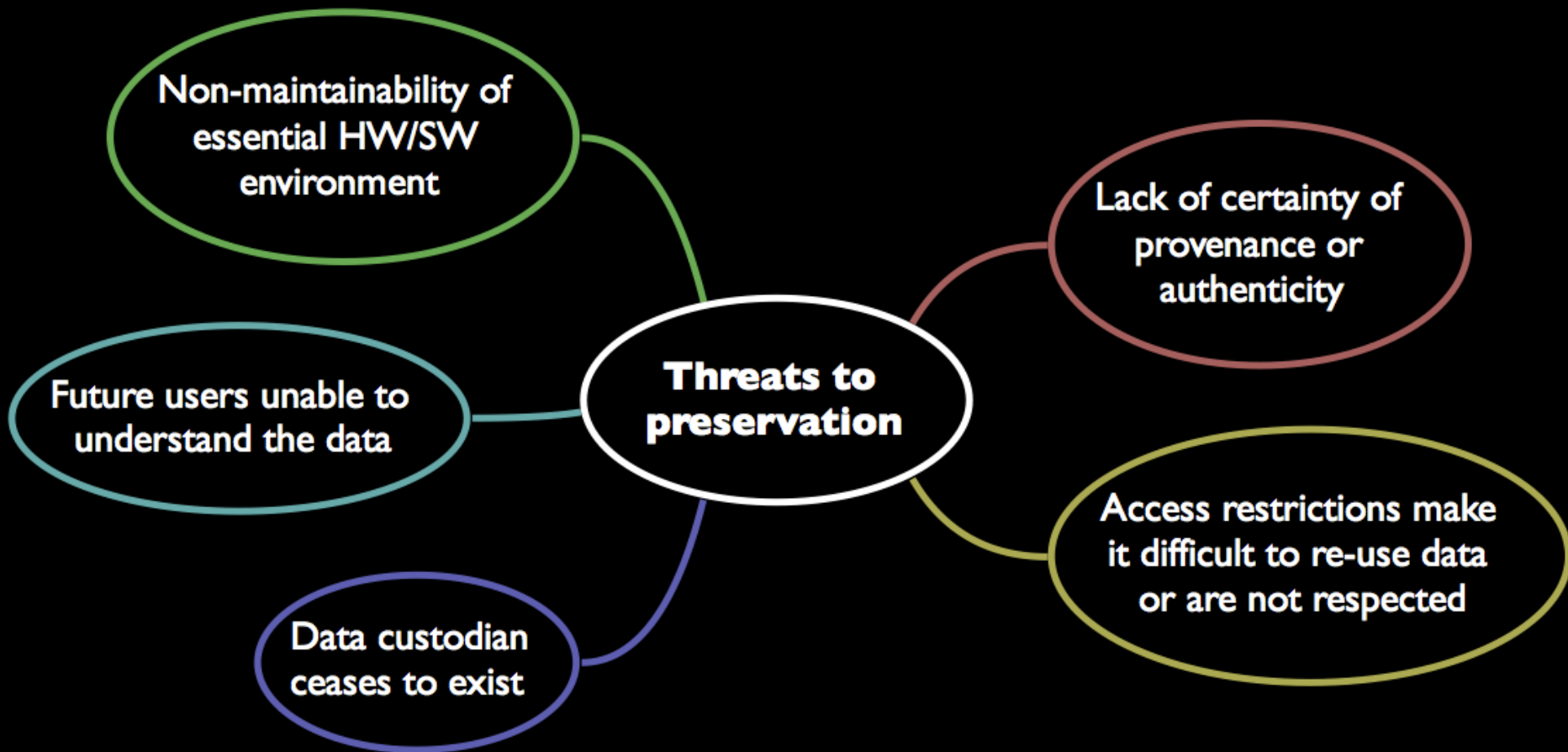


A
Book to
Entertain
Your
Brain!

by
**James
Howe**
illustrated by
**Alan
Daniel**

Portions
of this book
originally appeared
in the *Bunnicula
Fun Book*.

Threats to preservation



Non-maintainability of essential HW/SW environment

Future users unable to understand the data

Data custodian ceases to exist

Threats to preservation

Lack of certainty of provenance or authenticity

Access restrictions make it difficult to re-use data or are not respected

No, that's not DPHEP

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Dirk Schulze-Makuch & David Darling



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Alone

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Opportunities for Data Exchange



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ALLIANCE FOR
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Usability



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29-Apr-2011

While much has been done to integrate environmental concerns into agriculture and improve the institutional framework, Turkey's farm policies are still too protectionist, with high levels of support to farmers and heavy protection against imported foodstuffs, according to a new OECD report.

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OECD at 50

OECD Week 2011



How to create a stronger, cleaner and fairer world? This question will be at the heart of OECD Week 2011, when government, business and civil society come together at the OECD on May 24-26. This year marks the Organisation's 50th Anniversary – 50 years of creating better policies for better lives.

» [Read more](#)

OECD Forum 2011

Key issues

Restoring public finances



Boosting jobs and skills

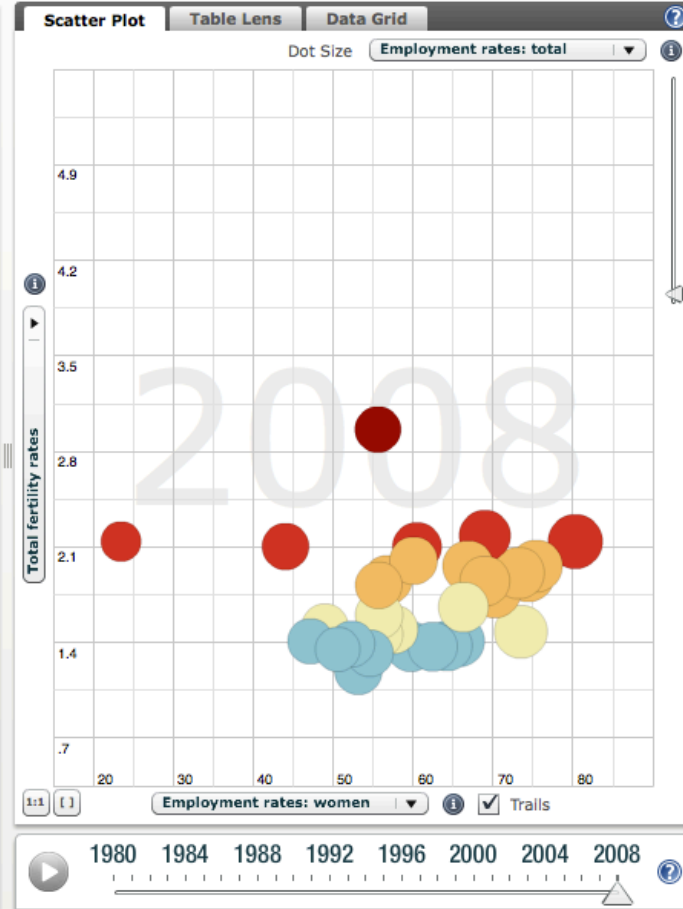
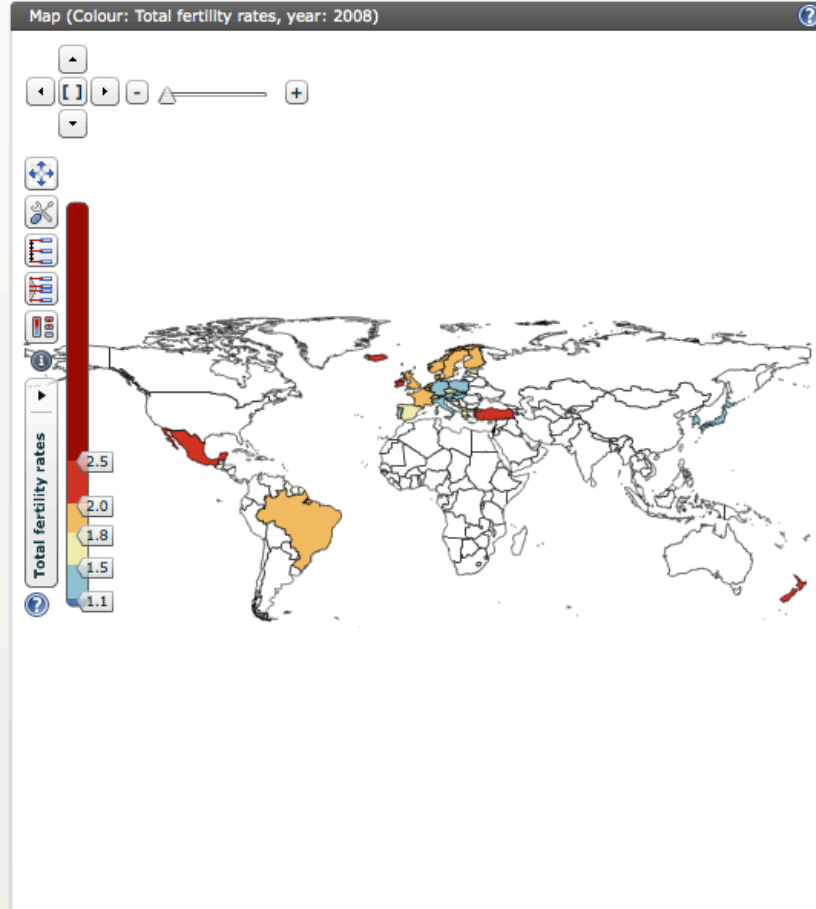


Restoring public trust



New sources of growth





Stories

Preloaded Stories

- Factbook eXplorer

Factbook eXplorer

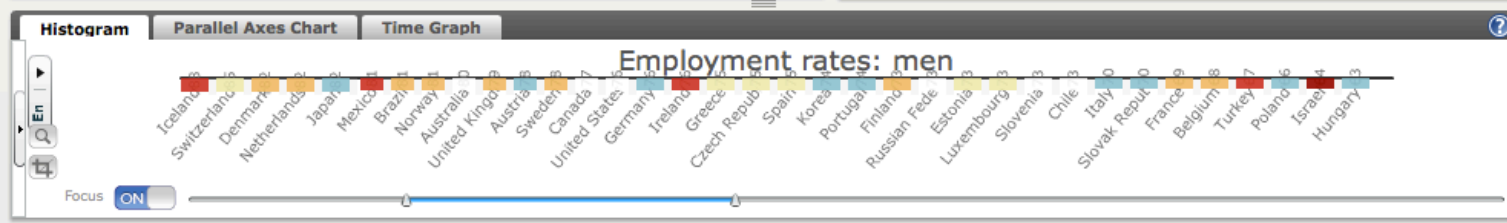
on 26 May 2010

for countries that are in the process of accession to the OECD (Estonia, Israel, the Russian Federation and Slovenia). The dataset also cover some key emerging economies with which the OECD has developed an enhanced partnership (Brazil, China, India, Indonesia and South Africa). The user can easily compare each indicator of a country with those of other OECD countries.

You can also load indicators from the main menu: **Indicators** >

Create Edit

Import Export Delete

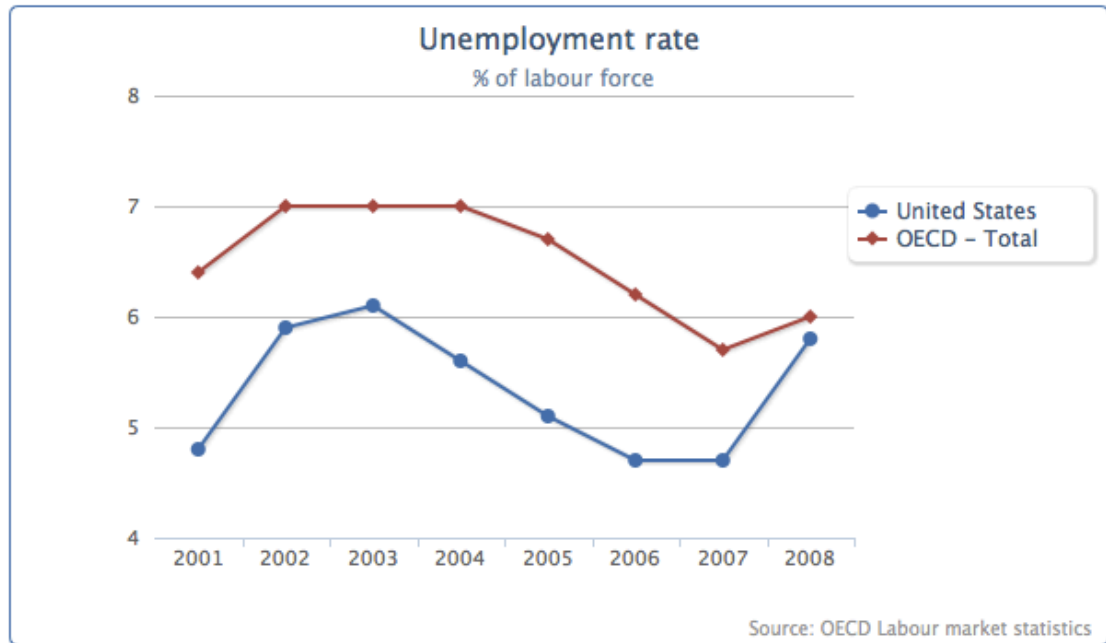


oecd keytable visualization

available tables

- Agriculture and Food (3)
 - Producer support estimates (subsidies)
 - Wheat production
 - Consumer support estimates (subsidies)
- Development
- Economics
- Education
- Employment and labour markets (1)
 - Unemployment rate**
- Environment
- Finance and investment
- Health (1)
 - Suicides
- Industry and services
- Insurance and pensions
- Nuclear energy

time series



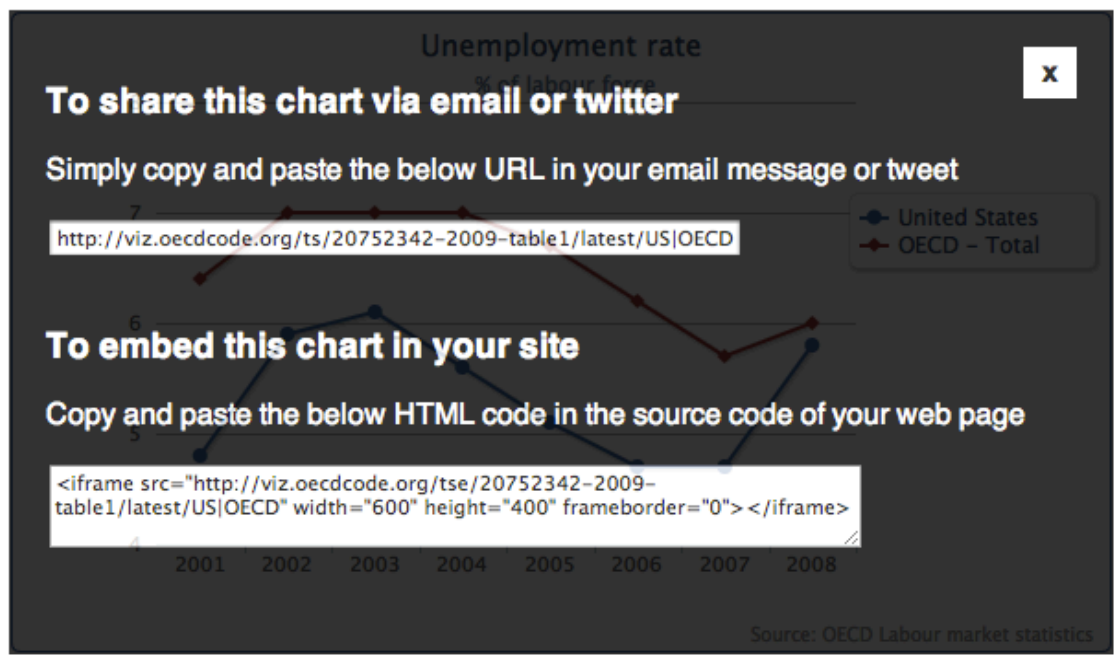
select → AU AT BE CA CZ DK FI FR DE GR HU IS IE IT JP KR LU MX NL NZ **US** **OECD** share ↑

oecd keytable visualization

available tables

- Agriculture and Food (3)
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 - Suicides
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- Nuclear energy

time series



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Standardisation



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Climate Data and Monitoring

Themes > Climate > Climate Data and Monitoring

Climate Data Management and Exchange

Information about the weather has been recorded in manuscript form for many centuries. The early records included notes on extreme and, sometimes, catastrophic events and also on phenomena such as the freezing and thawing dates of rivers, lakes and seas, which have taken on a higher profile with recent concerns about climate change.

Specific journals for the collection and retention of climatological information have been used over the last two or three centuries. The development of instrumentation to quantify meteorological phenomenon and the dedication of observers in maintaining methodical, reliable and well-documented records paved the way for the organized management of climate data. Since the 1940s, standardized forms and procedures gradually became more prevalent and, once computer systems were being used by [National Meteorological and Hydrological Services \(NMHSs\)](#), these forms greatly assisted the computerized data entry process and consequently the development of computer data archives and dedicated software for modern Climate Data Management. The 1960s and 1970s saw several NMHSs



Related Items

- Climate System
- Climate Data and Monitoring
- Climate Prediction and Outlooks
- Climate Change
- Climate Research
- Climate Services
- Climate Applications
- Climate Risk Management
- Partnerships in Climate
- World Climate Programme
- Commission for Climatology

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Climate Data and Monitoring

Themes > Climate > Climate Data and Monitoring

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- Climate Services
- Climate Applications
- Climate Risk Management
- Partnerships in Climate
- World Climate Programme
- Commission for Climatology

Exchange of data between NMHSs is essential for climate monitoring and applications. This may cover both the storage and use of data (and metadata) from other countries in the database of one NMHS, and the transmission of data to [Global and Regional data centres](#).

WMO Member states have the obligation to share data and metadata with other members of WMO, and the conditions under which these may be passed to third parties, is covered under [WMO Resolution 40 \(Cg-XIII\)](#) and [WMO Resolution 25 \(Cg-XIV\)](#). These embody the concepts of "essential" and "additional" data, with a specification of a minimum set of data that should be made available with "free and unrestricted access". Members may decide to declare as "essential" more than this minimum set.

RASMUSSEN REPORTS POLL

Did scientists falsify research to support their own theories on Global Warming?

59%

SOMEWHAT LIKELY

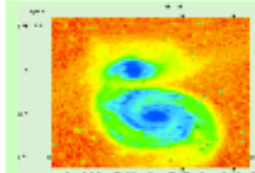
35%

VERY LIKELY

26%

NOT VERY LIKELY





FITS

The Astronomical
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Flexible Image Transport System

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The FITS Support Office

at NASA/GSFC

What is FITS?

- The standard data format used in astronomy
- Stands for 'Flexible Image Transport System'
- Endorsed by NASA and the International Astronomical Union
- Much more than just another image format (such as JPEG or GIF)
- Used for the transport, analysis, and archival storage of scientific data sets
 - Multi-dimensional arrays: 1D spectra, 2D images, 3D+ data cubes
 - Tables containing rows and columns of information
 - Header keywords provide descriptive information about the data
- See also the [Wikipedia entry](#)

Information about FITS

- [News](#): current FITS activities and issues
- [Documentation](#): user's guides, definition documents and other FITS papers
- [World Coordinate System](#) (WCS) documents and software
- [Sample](#) FITS files
- [FITS I/O libraries](#) to read and write FITS files from various computer languages
- [FITS image viewers](#) and image format converters
- [General FITS Utility software](#) including a [FITS conformance verifier](#)



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The Data Centre

The ICES Data Centre accepts a wide variety of marine data and meta-data types into its databases. The data formats, guidelines and vocabularies are specific to the type of data and whether it is associated with a marine convention monitoring programme. To make it as easy as possible for data to get to the right place in the right shape, please follow the guided route below.

- Submitting Data**
- Submitting Meta Data
- ICES Reference Codes (RECO)
- Web Services

Is the dataset part of a monitoring programme? [\(Read more..\)](#)

What is the theme of the dataset? [\(Read more..\)](#)

What are the parameters in the dataset? [\(Read more..\)](#)

Submit your data here

Commercial Fish Catches

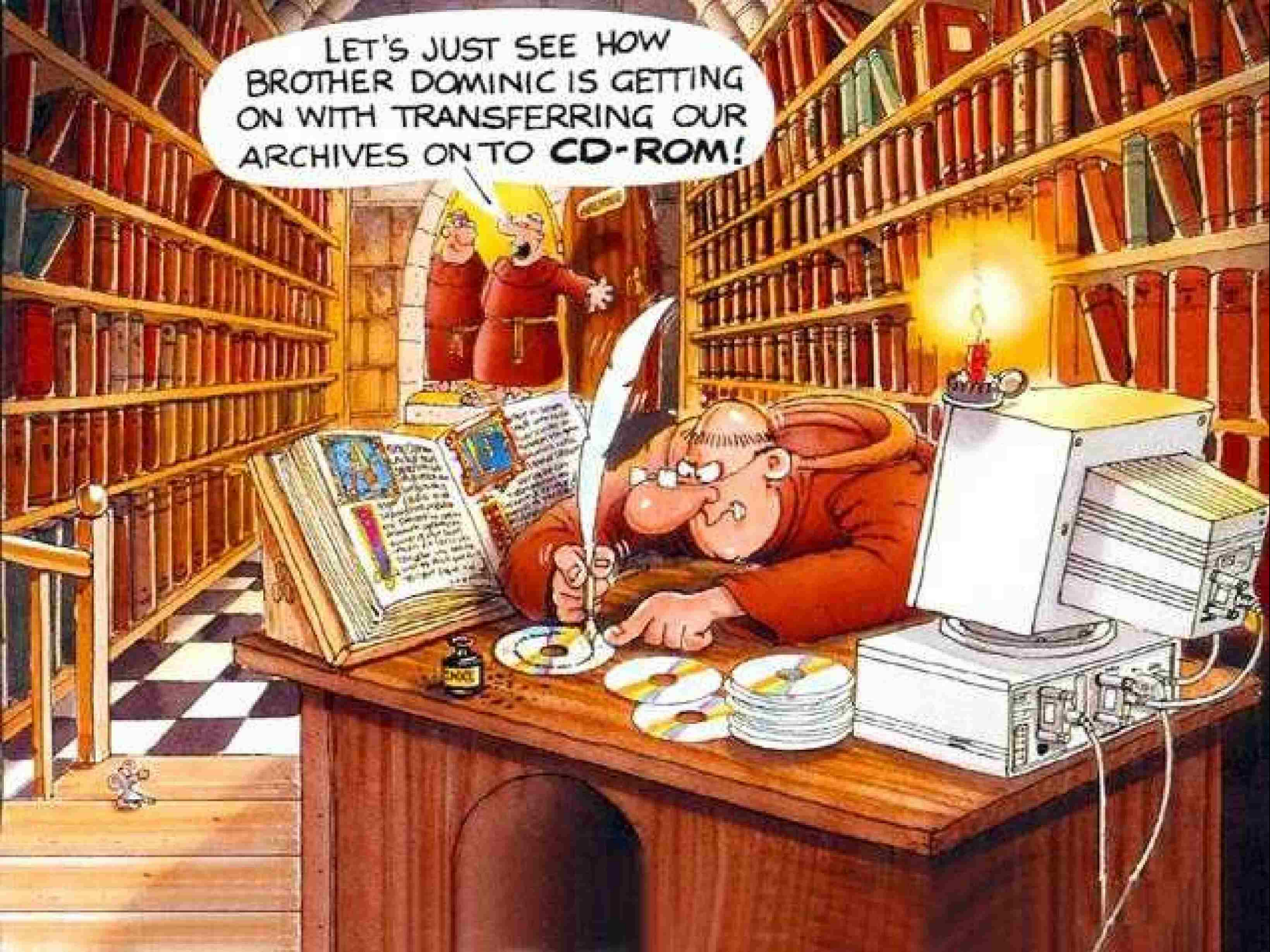
Trawl Survey

Oceanographic

Environmental

Who does the work?

LET'S JUST SEE HOW
BROTHER DOMINIC IS GETTING
ON WITH TRANSFERRING OUR
ARCHIVES ON TO **CD-ROM!**



A word cloud of data-related roles and services on a black background. The words are arranged in a roughly cross-like shape. The largest words are 'data editor' and 'data curator'. Other prominent words include 'data librarian', 'data manager', and 'research data manager'. Smaller words include 'data sharer', 'data management support service', and 'data archivist'.

data editor
data curator
data librarian
data manager
research data manager
data management support service
data sharer
data archivist

sustainable

long-term

through archives

as much as archive

interface

with scientists

with infrastructure

with other archives

data jobs

curation

(meta)data standards

citability

discoverability

ingestion

formatting

consistency

licensing

Sustainability



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Sizes of the Largest Fossils in the Geological Record

When using this data, please cite the original article:

Payne JL, Boyer AG, Brown JH, Finnegan S, Kowalewski M, Krause RA Jr, Lyons SK, McClain CR, McShea DW, Novack-Gottshall PM, Smith FA, Stempien JA, Wang SC (2008) Two-phase increase in the maximum size of life over 3.5 billion years reflects biological innovation and environmental opportunity. Proc Natl Acad Sci USA 106(1): 24-27. doi:10.1073/pnas.0806314106

Additionally, please cite the Dryad data package:

Payne JL, Boyer AG, Brown JH, Finnegan S, Kowaleski M, Krause Jr. RA, Lyons SK, McClain CR, McShea DW, Novack-Gottshall PM, Smith FA, Stempien JA, Wang SC (2008) Data from: Two-phase increase in the maximum size of life over 3.5 billion years reflects biological innovation and environmental opportunity. Dryad Digital Repository. doi:10.5061/dryad.223

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Dryad File Identifier doi:10.5061/dryad.223/1 137 views 243 downloads

Description This table contains taxonomic, size, and source information describing the largest known fossil plants, animals, protists, and prokaryotes in the fossil record. The prokaryote record covers only the Archaean and early Paleoproterozoic. The protist, animal, and vascular plant records cover all relevant geological periods from the Paleoproterozoic through the Neogene. See also http://bodysize.nescent.org.

Contained in Data Package Data from: Two-phase increase in the maximum size of life over 3.5 billion years reflects biological innovation and environmental opportunity.

Temporal Coverage Cambrian Precambrian

Files in this item

Table with 4 columns: Files, Size, Format, View. Row 1: Supplementary Dataset FINAL 3.xls, 81.40Kb, Microsoft Excel, View/Open

To the extent possible under law, the authors have waived all copyright and related or neighboring rights to this data.





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Dryad Partners

Partner journals are represented on the Dryad Consortium Board, and participate in strategic development of the repository. If you represent a journal, society or publisher and are interested in learning more about **Dryad** partnership, please [contact us](#).

Current interim Dryad partners are:

- o [The American Naturalist](#) (American Society of Naturalists)
- o [The Biological Journal of the Linnean Society](#) (Linnean Society of London)
- o [Ecological Monographs](#) (Ecological Society of America)
- o [Evolution](#) (Society for the Study of Evolution)
- o [Evolutionary Applications](#)
- o [Heredity](#) (The Genetics Society)
- o [Journal of Evolutionary Biology](#) (European Society for Evolutionary Biology)
- o [Journal of Heredity](#) (The American Genetic Association)
- o [Molecular Biology and Evolution](#) (Society for Molecular Biology and Evolution)
- o [Molecular Ecology](#)
- o [Molecular Ecology Resources](#)
- o [Molecular Phylogenetics and Evolution](#)
- o [Paleobiology](#) (The Paleontological Society)
- o [Systematic Biology](#) (Society for Systematic Biology)

Additional journals, societies and publishers involved in the Dryad repository:

- o [British Ecological Society](#) (Journal of Ecology, Journal of Applied Ecology, Journal of Animal Ecology, Functional Ecology)
- o [BMJ Open](#) (British Medical Association)
- o [BioMed Central](#)

Start-up: grants from the Institute for Museum and Library Services (USA), the JISC (UK) and NSF (USA)

Future: yearly contribution from partner journals
deposit fees for authors in non-participating journals

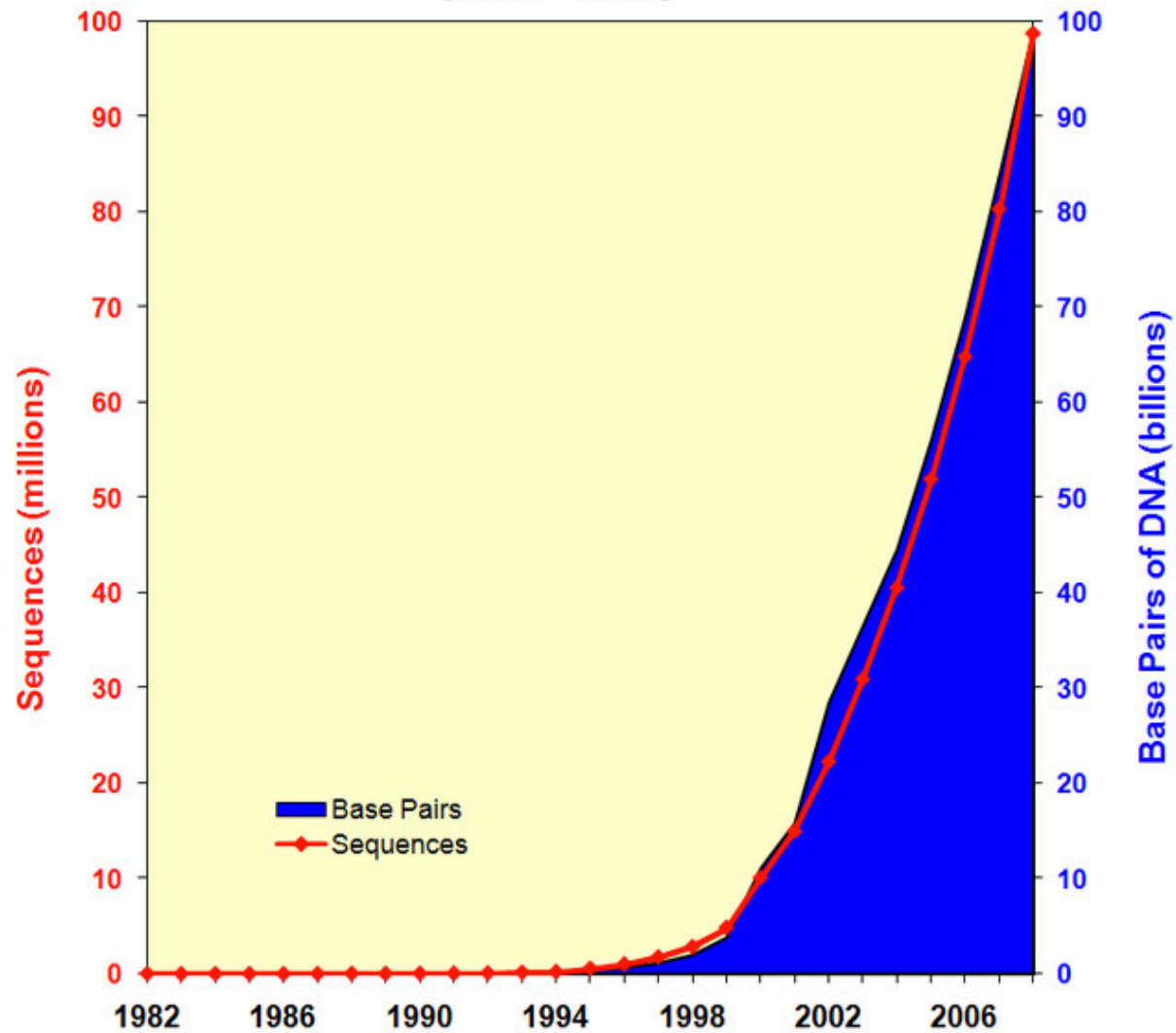
Too much of a good thing

The “Data Deluge”

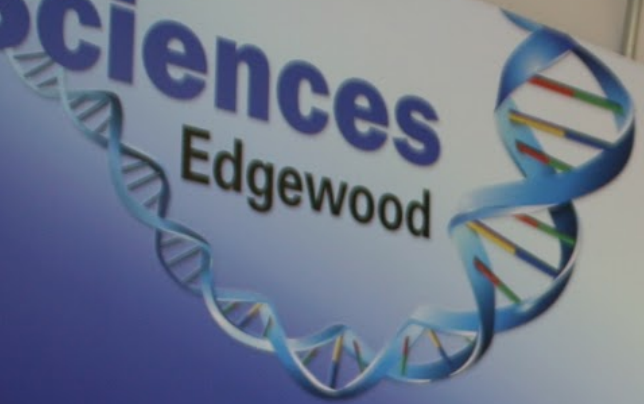
The
Economist



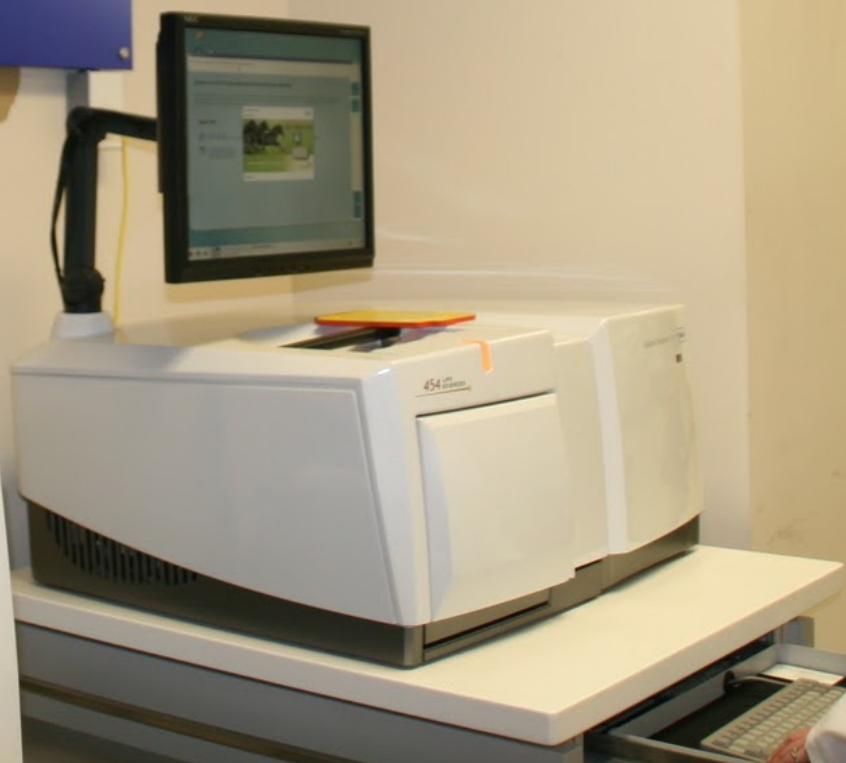
Growth of GenBank (1982 - 2008)



Sciences Edgewood



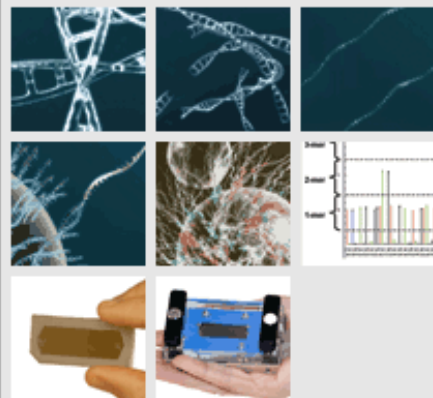
454 GS FLX Next Generation High Throughput Sequencers



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Photos - *Click to expand*



Instrument & Workflow

Workflow

The GS Junior System offers an end-to-end sequencing solution from sample preparation and sequence generation through data analysis. Robust protocols with minimal handling steps make the workflow ideally suited for individual labs.

- **Produce libraries in less than half a day** with easy-to-follow sample preparation protocols
- **Use only general laboratory equipment** without the need to purchase tons of additional supplies
- **Perform overnight sequencing and data processing** with a quick 10-hour instrument run time
- **Go from sequence data to publishable result** with straightforward tools for de novo assembly, mapping and amplicon variant analysis

How It Works

1. Sample Input and Fragmentation

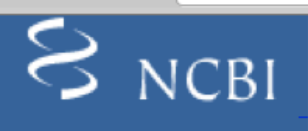
The GS Junior System supports the sequencing of samples from a wide variety of starting materials including genomic DNA, PCR products, BACs, and cDNA. Samples such as genomic DNA and BACs are randomly fragmented into small, 300- to 800-basepair pieces. For smaller samples, such as small non-coding RNA or PCR amplicons, fragmentation is not required. Instead, PCR products amplified using Genome Sequencer fusion primers

For life science research use only. Not for use in diagnostic procedures.

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Sequence Read Archive (SRA) is still in service.

Recently, NCBI announced that due to budget constraints, it would be discontinuing its Sequence Read Archive (SRA) and Trace Archive repositories for high-throughput sequence data. However, NIH has since committed interim funding for SRA in its current form until October 1, 2011. In addition, NCBI has been working with staff from other NIH Institutes and NIH grantees to develop an approach to continue archiving a widely used subset of next generation sequencing data after October 1, 2011.

We now plan to continue handling sequencing data associated with:

1. RNA-Seq, ChIP-Seq, and epigenomic data that are submitted to GEO
2. Genomic and Transcriptomic assemblies that are submitted to GenBank
3. Genomic assemblies to GenBank/WGS
4. 16S ribosomal RNA data associated with metagenomics that are submitted to GenBank

In addition, NCBI will continue to provide access to existing SRA and Trace Archive data for the foreseeable future. NCBI is also continuing to discuss with NIH Institutes approaches for handling other next-generation sequencing data associated with specific large-scale studies.

preservation & sharing

preservation \neq sharing

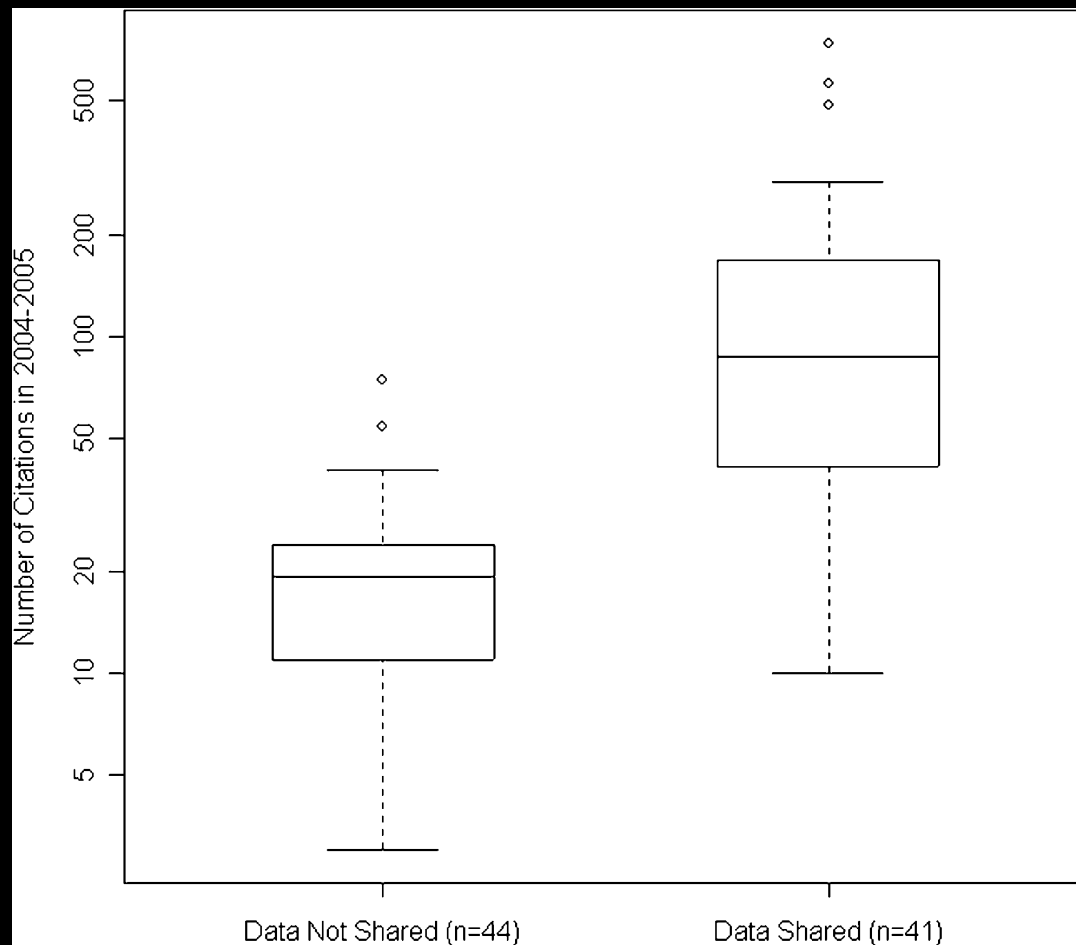
sharing \Rightarrow preservation

sharing \supset preservation

Closed access



What happens to papers when the associated data is re-usable ?



Citations to articles on cancer microarray clinical trials

Piwovar HA, Day RS, Fridsma DB (2007)

PLoS ONE 2(3): e308. doi:10.1371/journal.pone.0000308

More about citations...

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Palaeogeography, Palaeoclimatology, Palaeoecology 253 (2007) 1–7

www.elsevier.com/locate/palaeo

Miocene climate in Europe — Patterns and evolution A first synthesis of NECLIME

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Laboratory of Palaeobotany and Palynology, Budapestlaan 4, 3584 CD Utrecht, The Netherlands*

Received in revised form 23 February 2007; accepted 5 March 2007

Abstract

To improve our understanding of long-term climate changes during the Neogene in Eurasia, the international research network NECLIME — *Neogene Climate Evolution in Eurasia* was established in the year 2000. In this first synthesis, results of NECLIME activities focussing on the Miocene of Europe as one key area are combined to present a summary of the climate evolution in time and space. More than 300 Miocene fossil floras have been compiled and quantitatively analysed in terms of several climatic parameters during the last few years. In this volume alone, about 75 new data sets are available. To synthesize the results of this volume, quantitative climate maps for Europe are generated on palaeogeographic maps for Langhian and early Tortonian for the first time. Characteristic climate patterns appear for each time interval and can be related to both global climate change and Alpine tectonics. Generally, the climate maps combine and support the individual results discussed in this volume for the individual regions.

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Keywords: Miocene; Vegetation; Climate; Quantification; Spatial pattern; Europe

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Keywords: Miocene; Vegetation; Climate; Quantification; Spatial pattern; Europe

1. Introduction

The Neogene climate system represents the transition from the greenhouse climate of the Paleogene to the ice-house climate of the Quaternary. Within the Neogene the Miocene is considered the most critical interval in the build-up of ice masses on land. In the early Miocene a uni-polar glaciation existed with an ice volume on Antarctica comparable to today and a largely ice-free

Northern hemisphere. Still within the Miocene, however, the first indications of the onset of the Northern hemisphere glaciation appeared leading to the formation of the Greenland ice shield in the Pliocene (Moran et al., 2006). Although the general global climate evolution of the Neogene is relatively well understood for the marine realm, little information on the Neogene evolution of spatial climate patterns on the continents is yet available. Moreover, it is well known that severe environmental changes occurred both on the continents and in the oceans especially during the Late Miocene. First of all, a global intensification of orogenic movements considerably influenced the climate system; especially the rapid uplift of the Tibetan Plateau seems to have caused a

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volume as a whole. Additionally, we thank our editor-in-chief Peter Kershaw, as well as Femke Wallien and Tonny Smit of Elsevier Science Editorial Office for their valuable advices and patient support.

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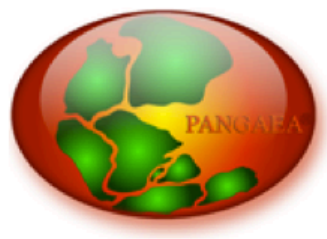
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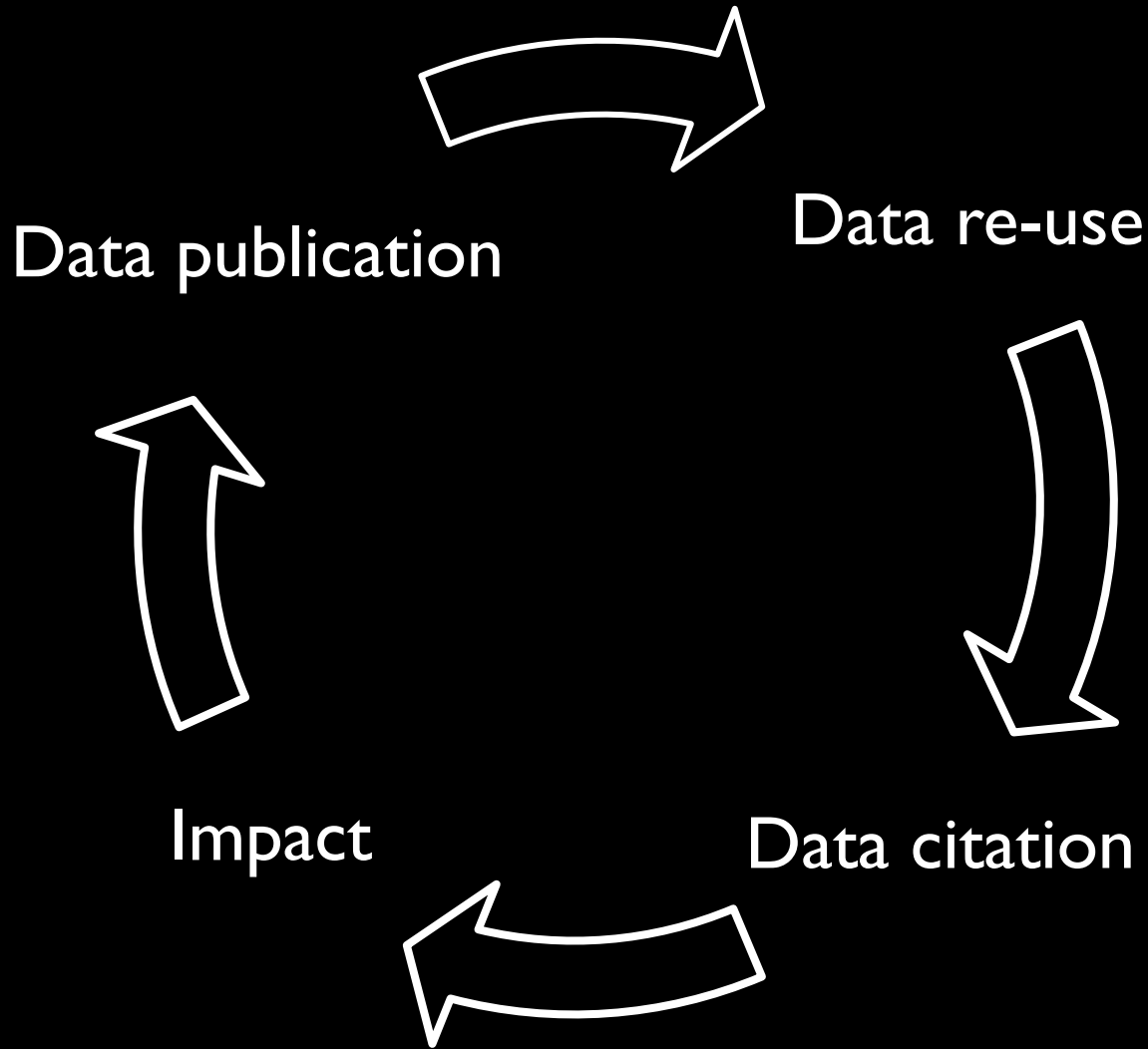
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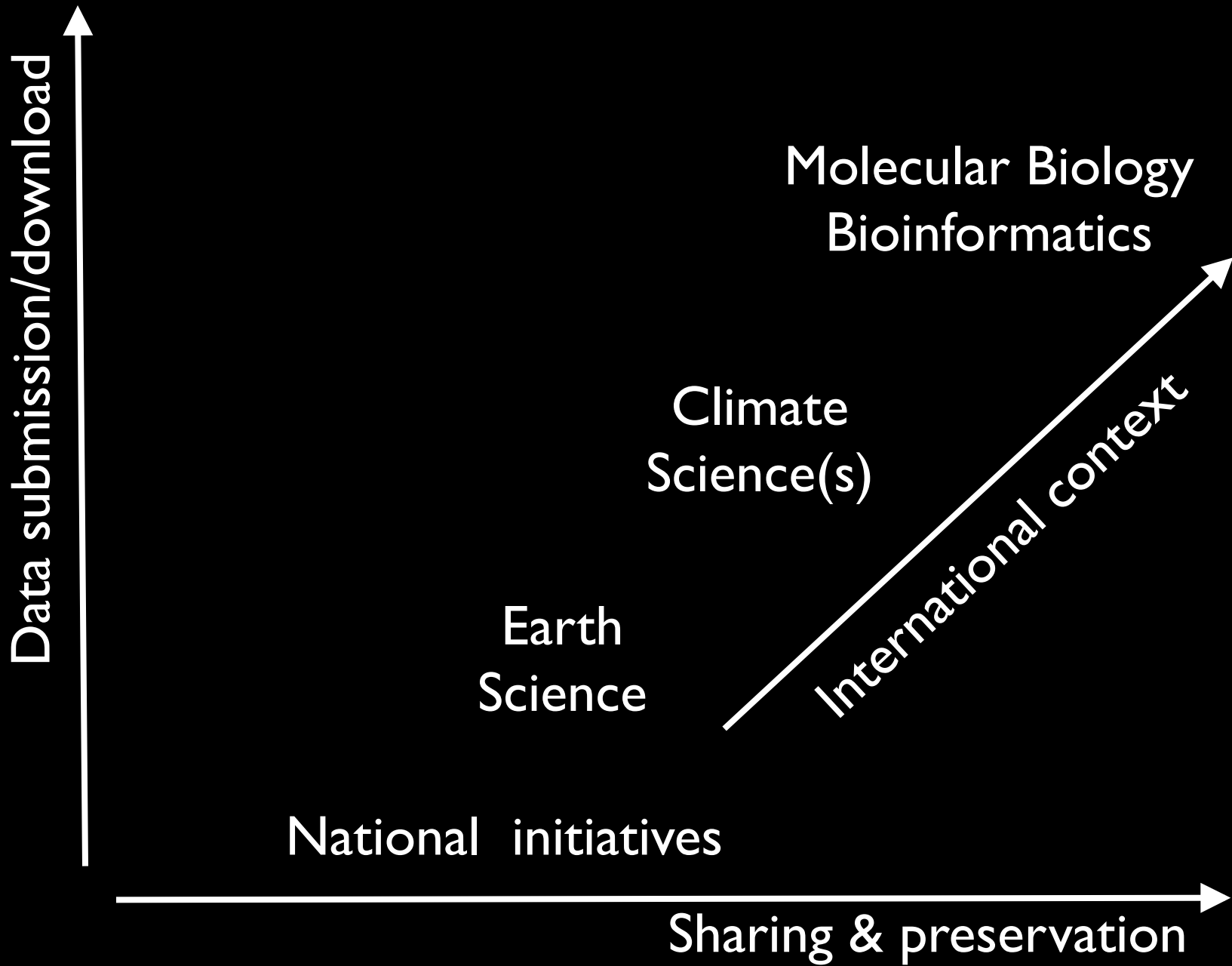
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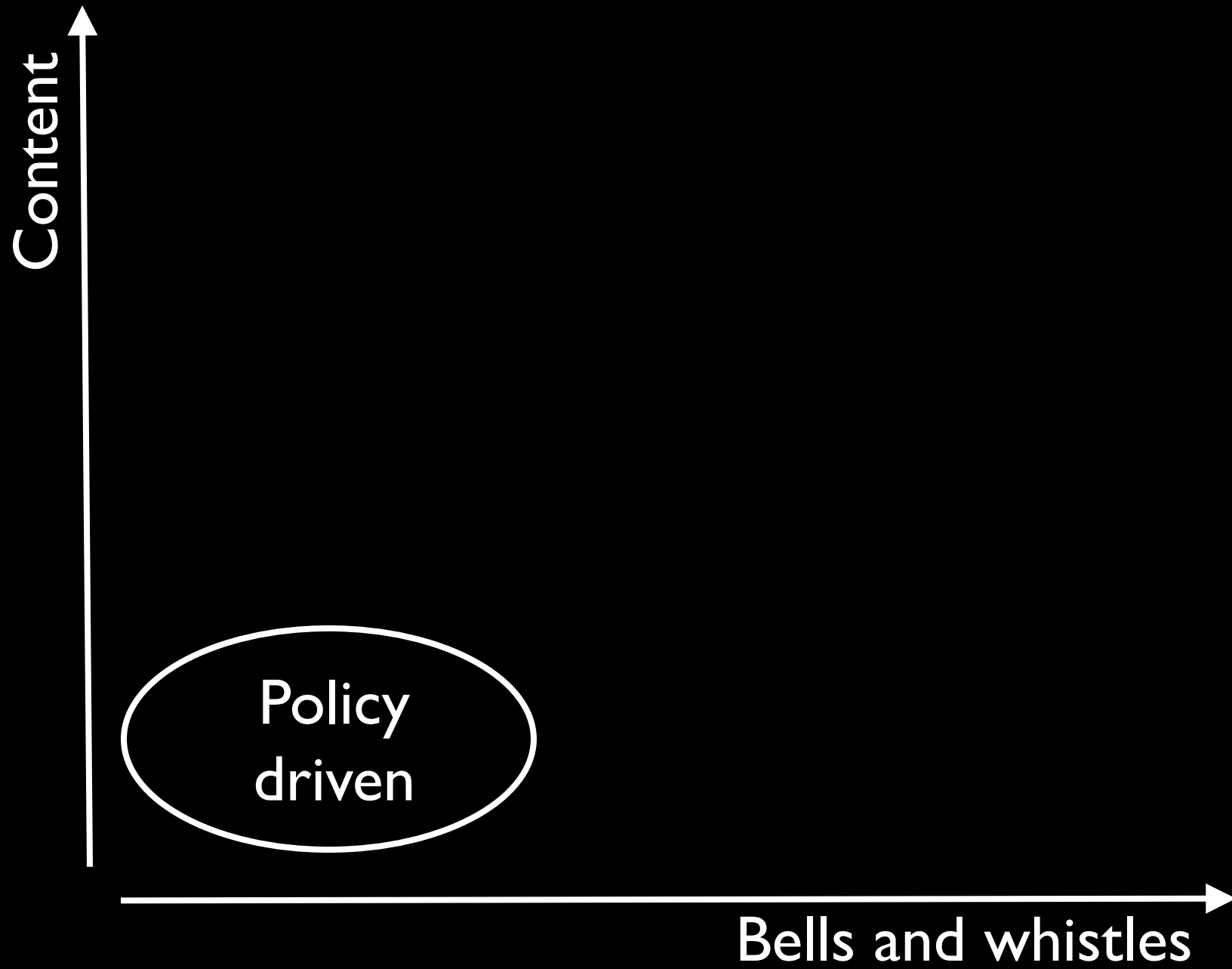
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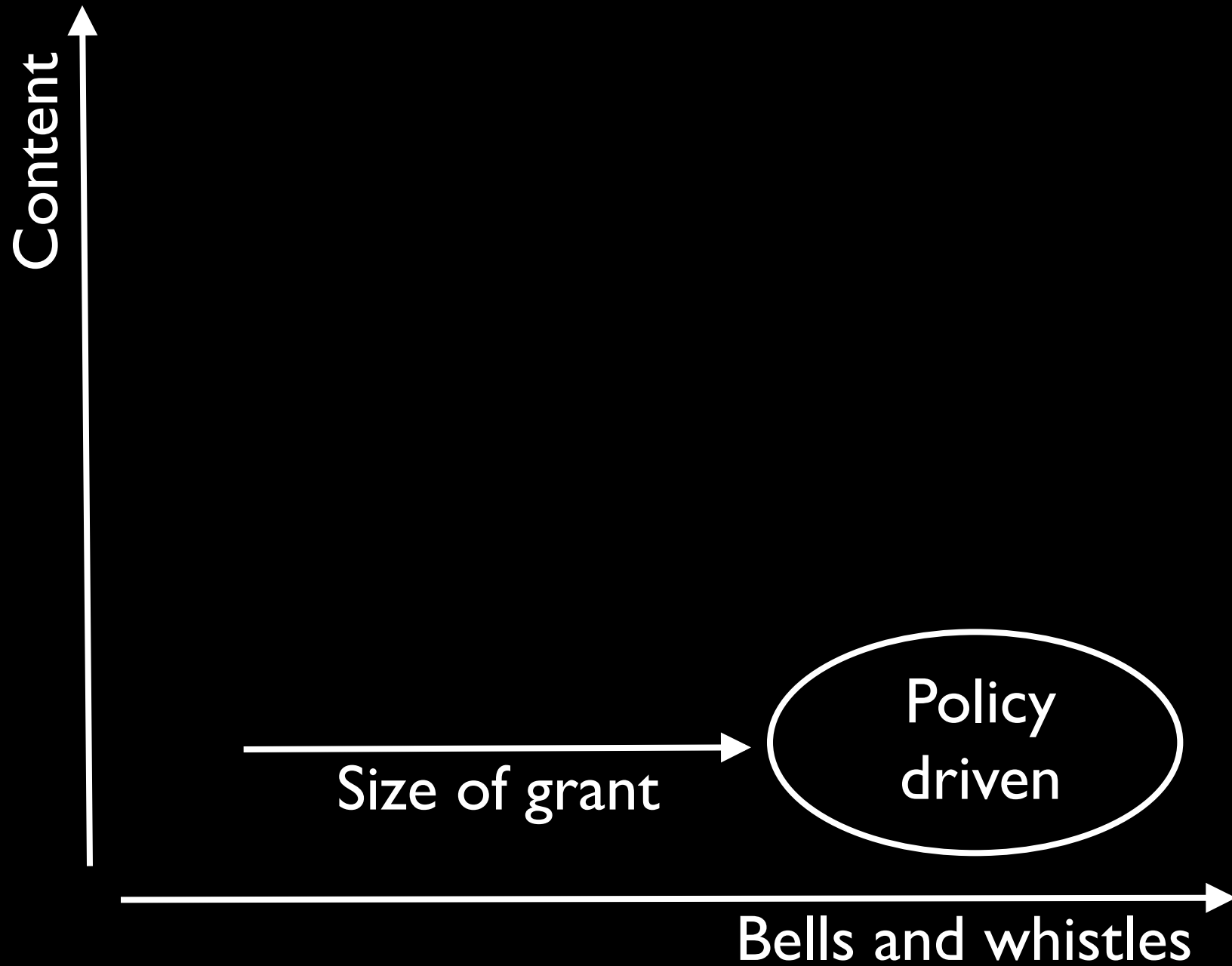
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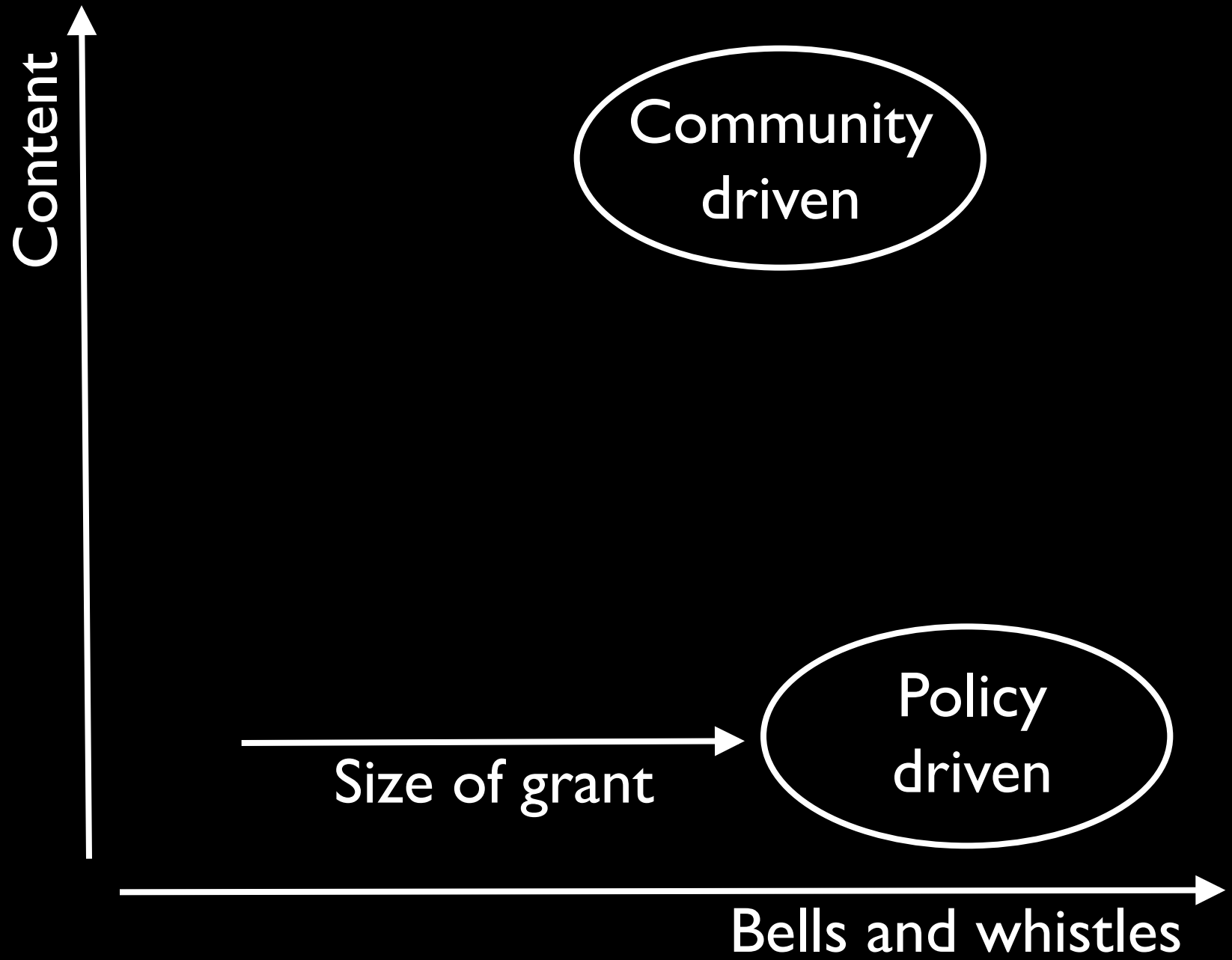


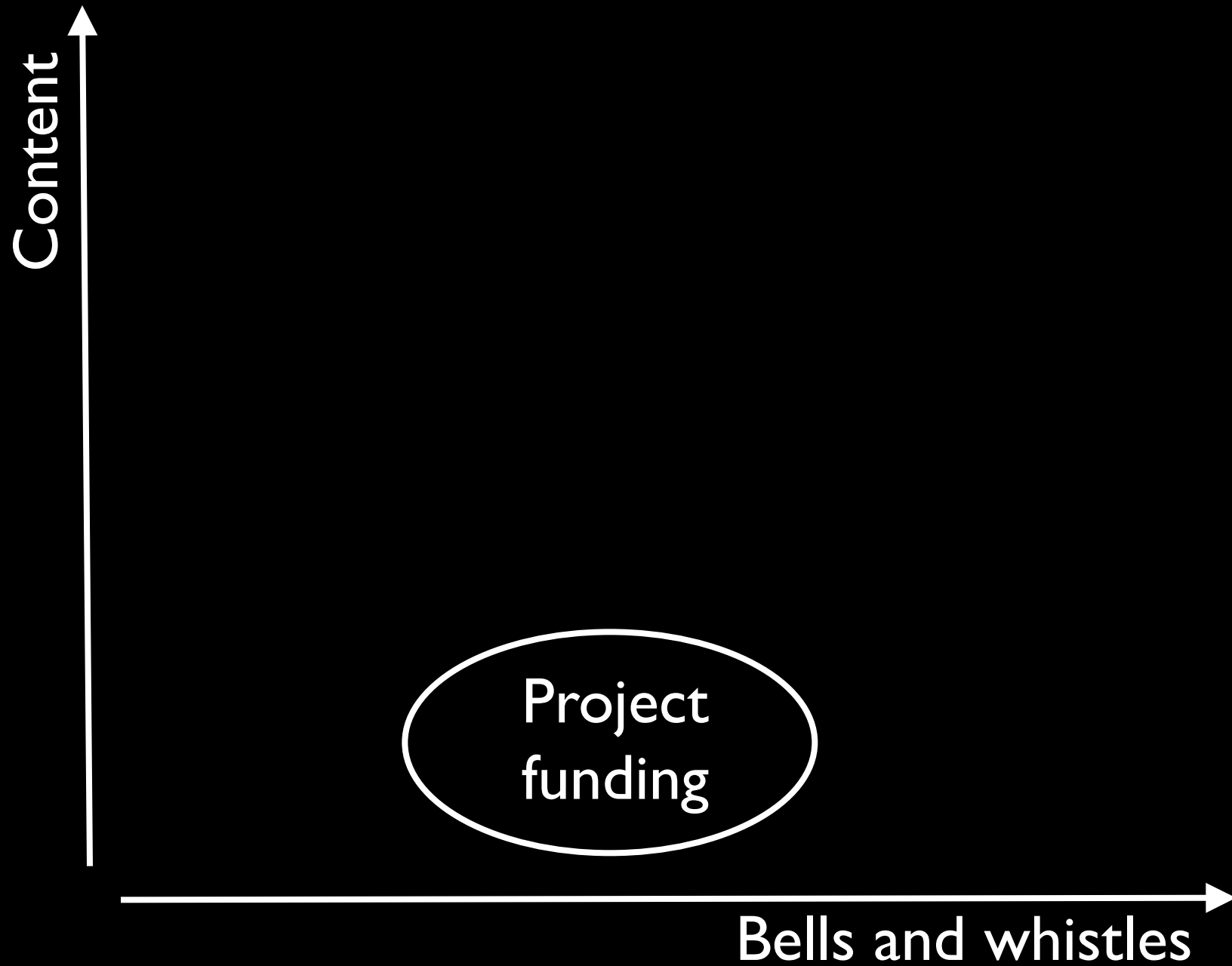


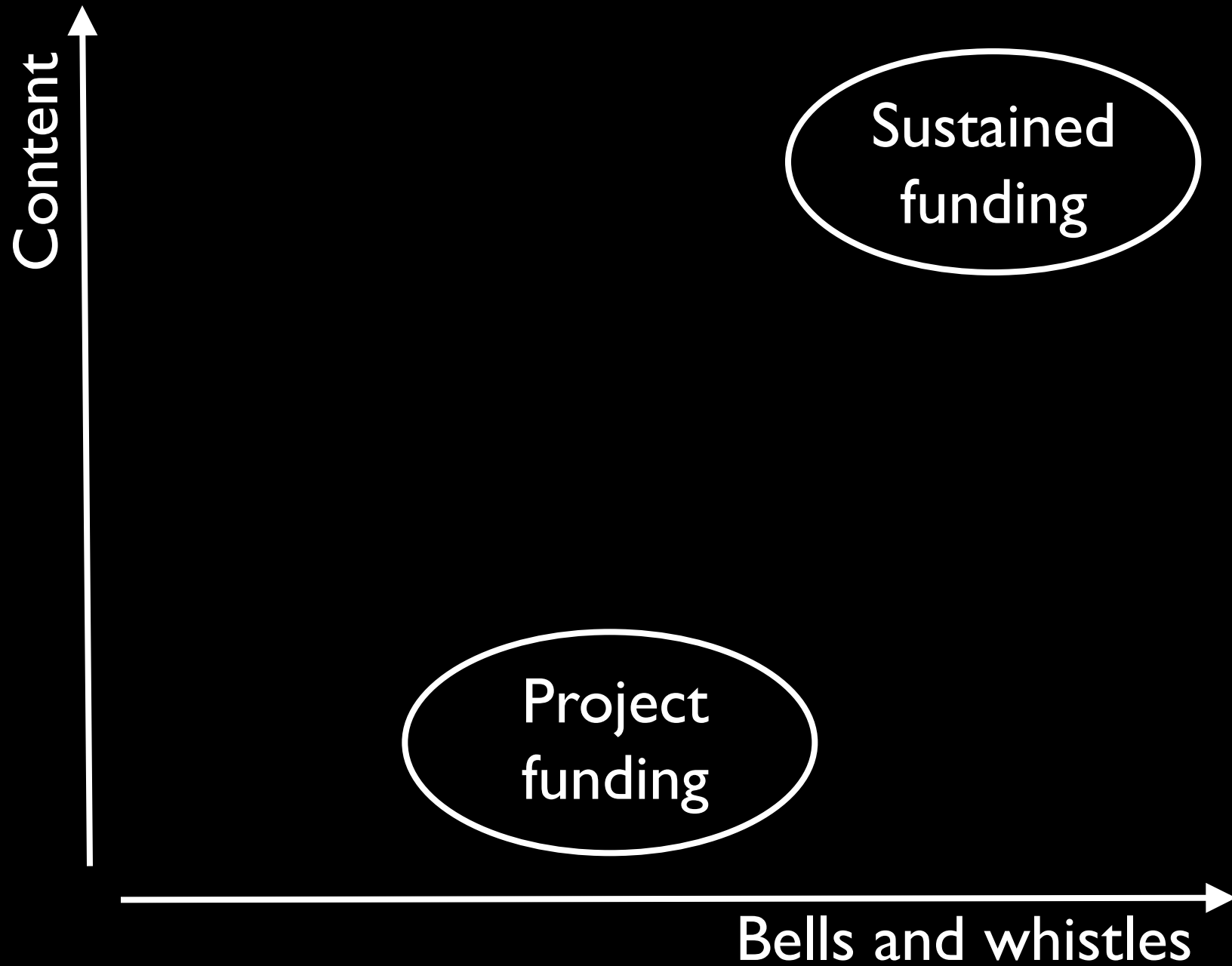
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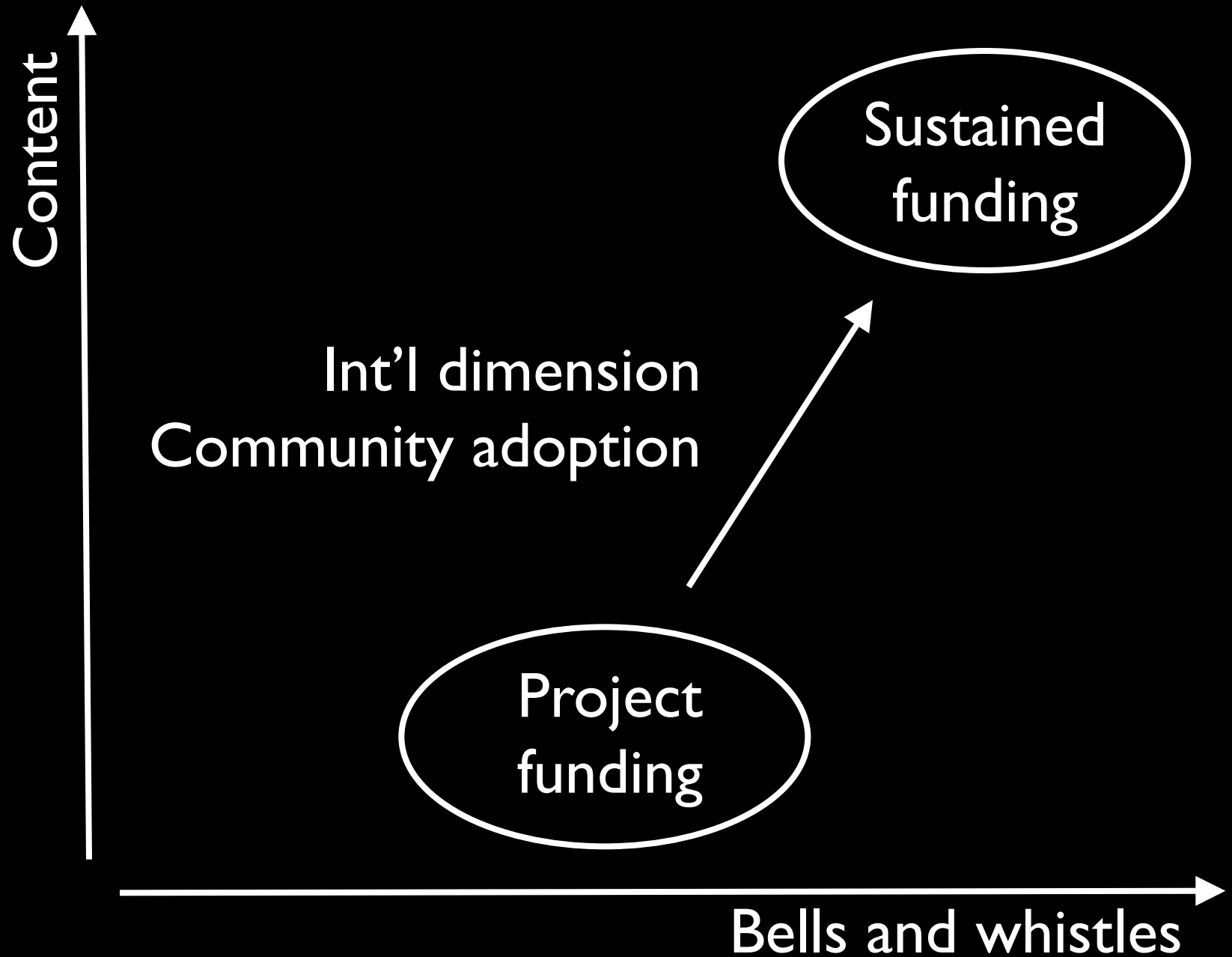






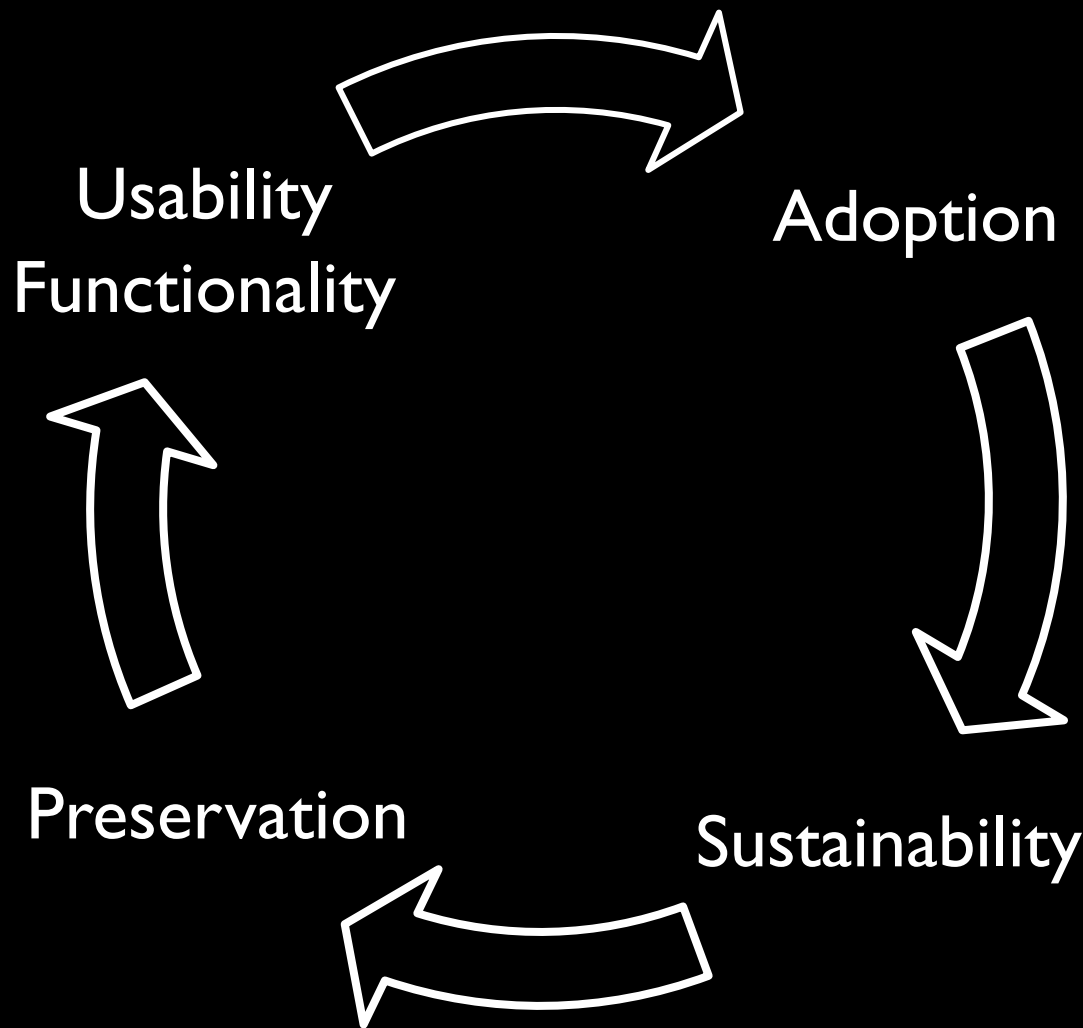






Where do we want to be?

Summing it up



**Virtuous circle of
preservation, re-use and (open) access**

Where **do we want** to be?

Where **will we be told** to be?

Dirk Schulze-Makuch & David Darling



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NOT
Alone

WHY WE HAVE ALREADY FOUND
EXTRATERRESTRIAL LIFE



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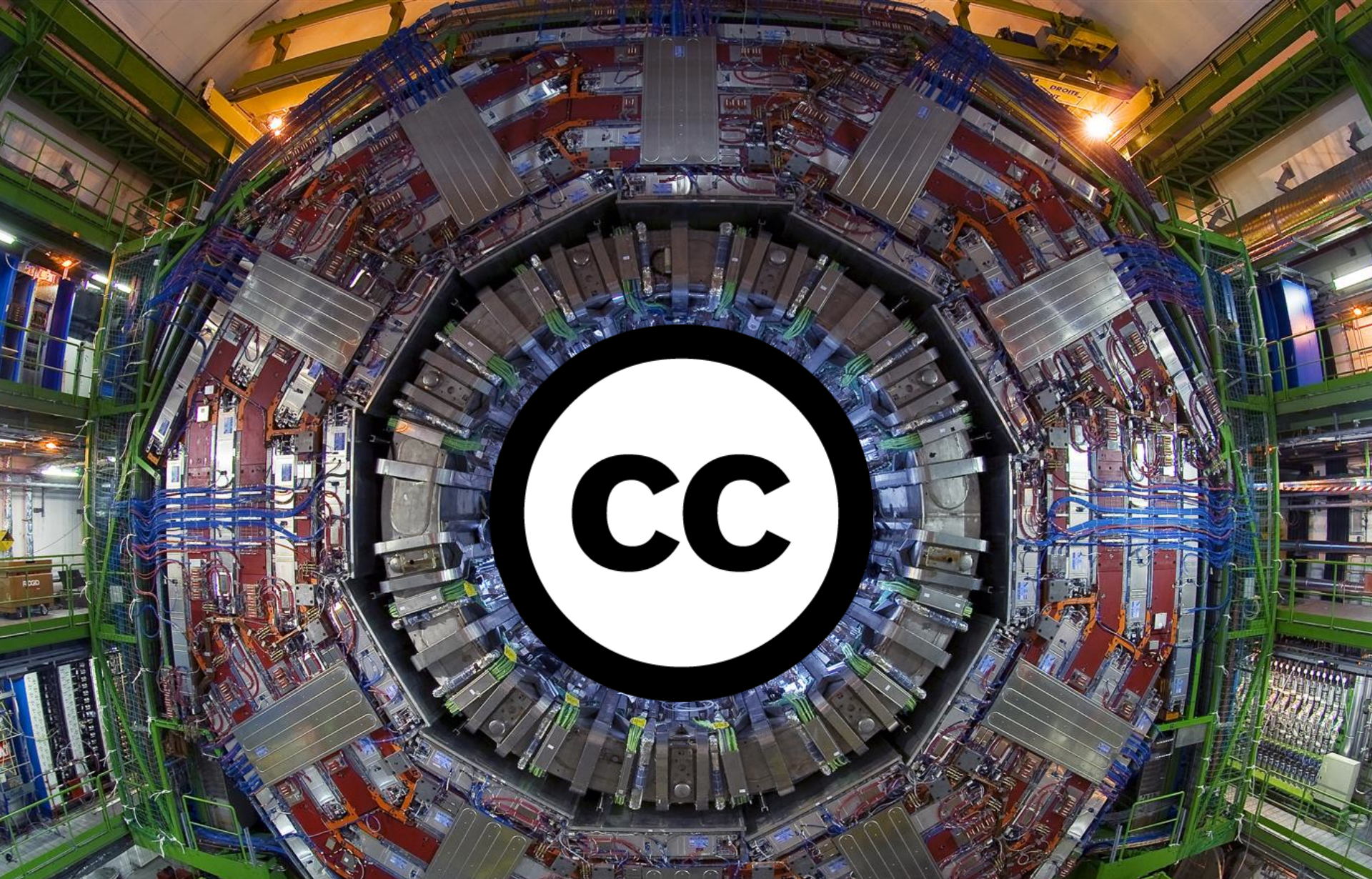
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Data policies

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We can do it... but will you fund it?

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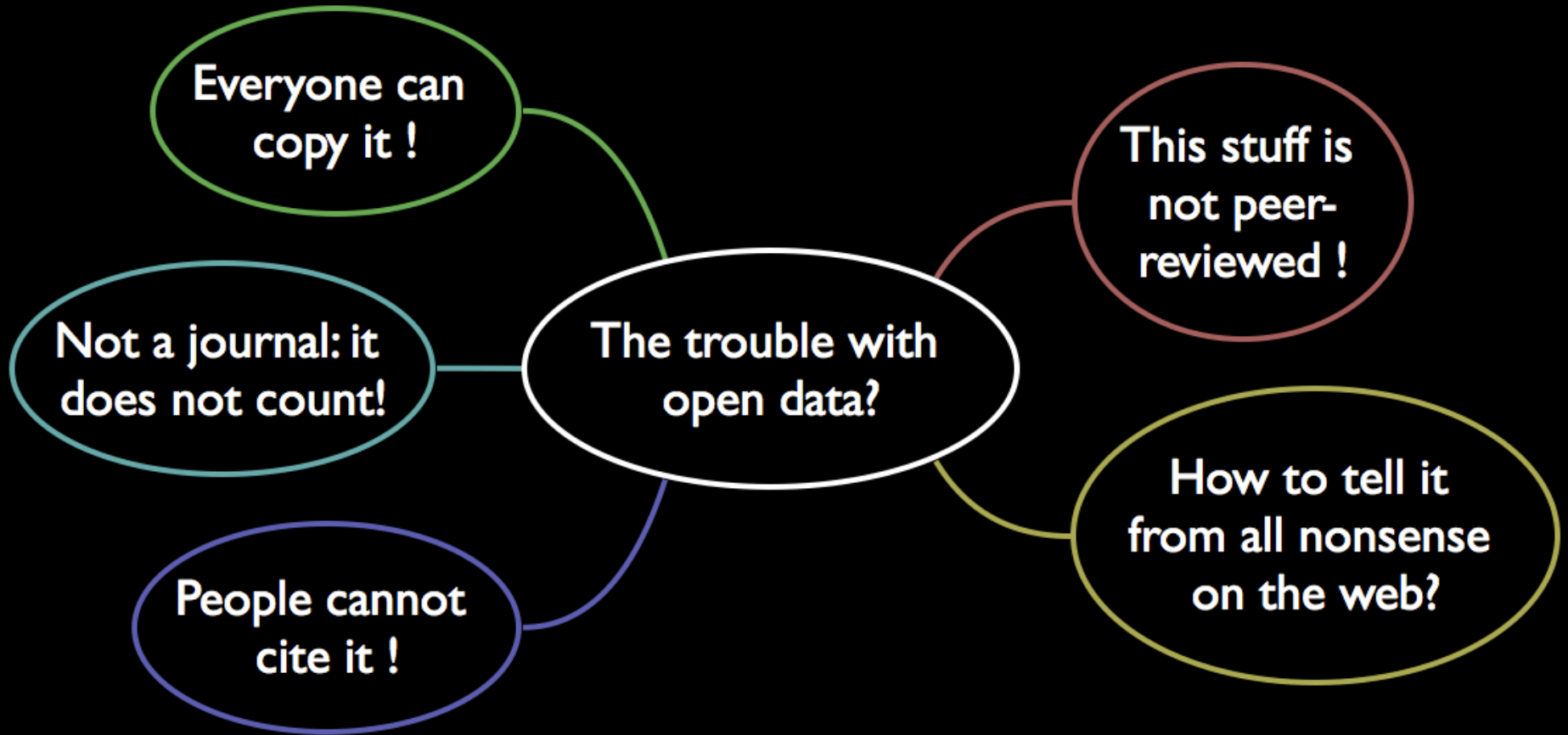
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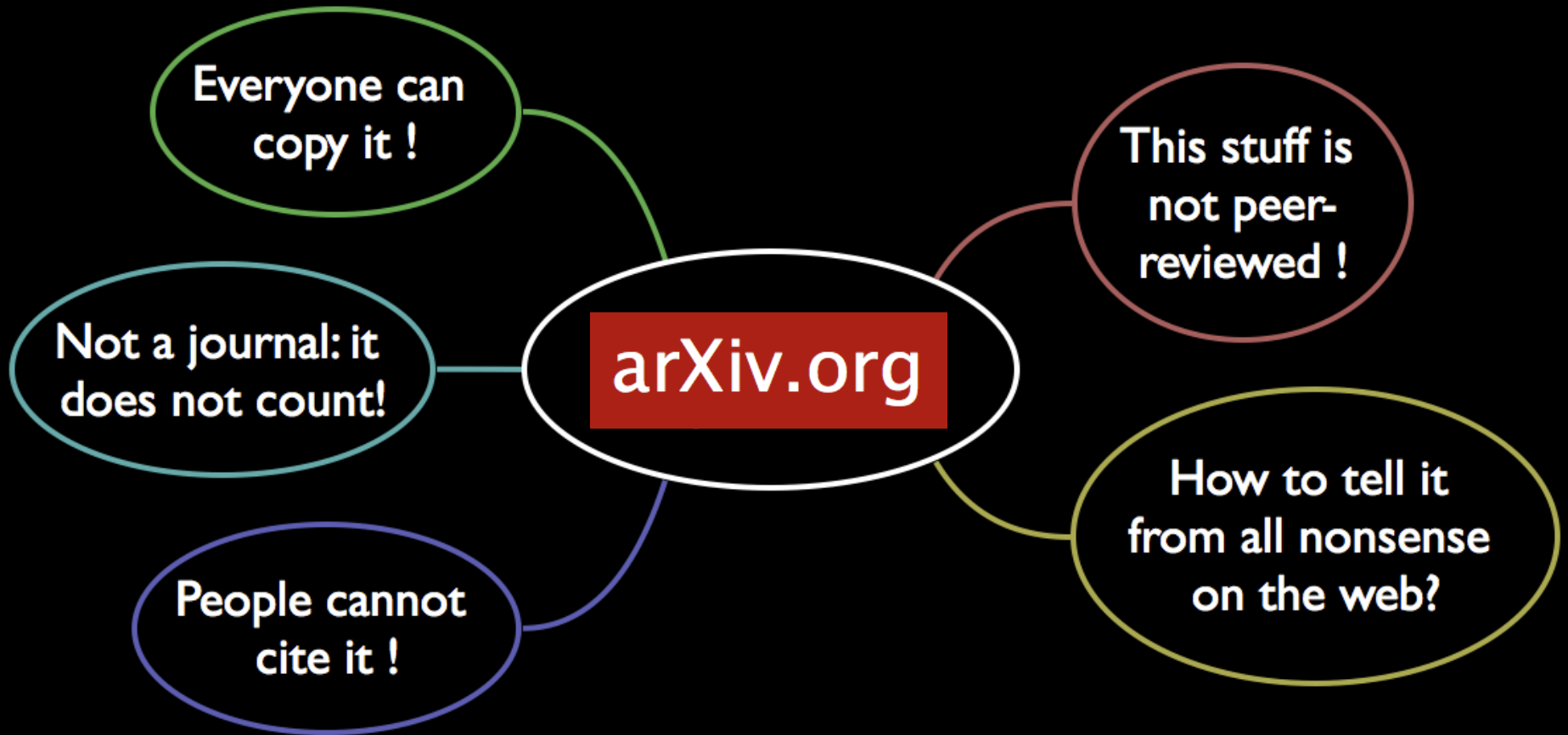
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