OpenData and OpenScience

Opportunities and Responsible Research and Innovation

Claude Kirchner

Inria

CC BY NC

Lirima@Tunis, September 13, 2017

Teasing

Teasing

ALICE– For our projects, we need data, but they are so difficult to be found

Teasing

ALICE– For our projects, we need data, but they are so difficult to be found

CLAUDE– Yes, that's unfortunately true in general

Teasing

ALICE– For our projects, we need data, but they are so difficult to be found

CLAUDE– Yes, that's unfortunately true in general

CLAUDE– Btw, what are you doing with the data you produce and you have control on?

PRELUDE

theadcloud
rbloc.com
cafepress
Renkoo
standpoint
pixagogo
meebo
EXTRA TASTY!
last.fm
gather
YEDDA
dabble
Writeboard
SHOUTWIRE
KaNoodle
AirSet
tech.
Suprgl
zigtag
Findory
backfence
gOFFICE
AllPeers
Zoozio
blogbeat
Ziggs
Boltfolio
wink
riya
Audible Wordcast
Opinity
Because your reputation matters!
reddit
measure map
gumshoo
bluepulse
imvu BETA
STREAMLOAD
Freedom for Your Digital Lifestyle
Google
FeedTier
phanfare
Fruitcast
PubSub
nativetext
CONGOO
dPolls
flickr
zoominfo
AC
BLOOP BETA
ProjectSpaces
FeedBurner
Bloglines
purevolume
Yub.com
Spot Runner
Allmydata.com
gabt
YouTube
riffs
ajchat alpha
Jambo
ClipShack
PROTOPAGE
squishr
WebJay
PLAZES
Noodly
box
Jots
Xdrive
W Hazel St
W Bella St
N 32nd St
N Rose St
0.30 miles
2:00
33 mph
1:54

We are in a much deeper revolution that most of us imagine

A formidable opportunity

Source of innovations unimaginable yesterday

ALIX, LOOK A LITTLE TO WHAT YOU MAKE ME DO. FOR YOU, I HACKED THE SERVICE OF ADVERTISEMENT PANELS, COME BACK

I LOVE YOU,

GREG

Information, a fundamental concept

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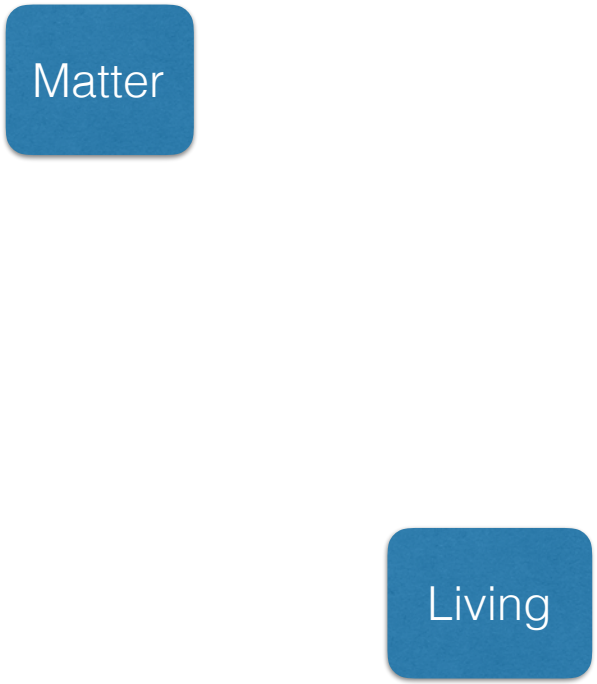
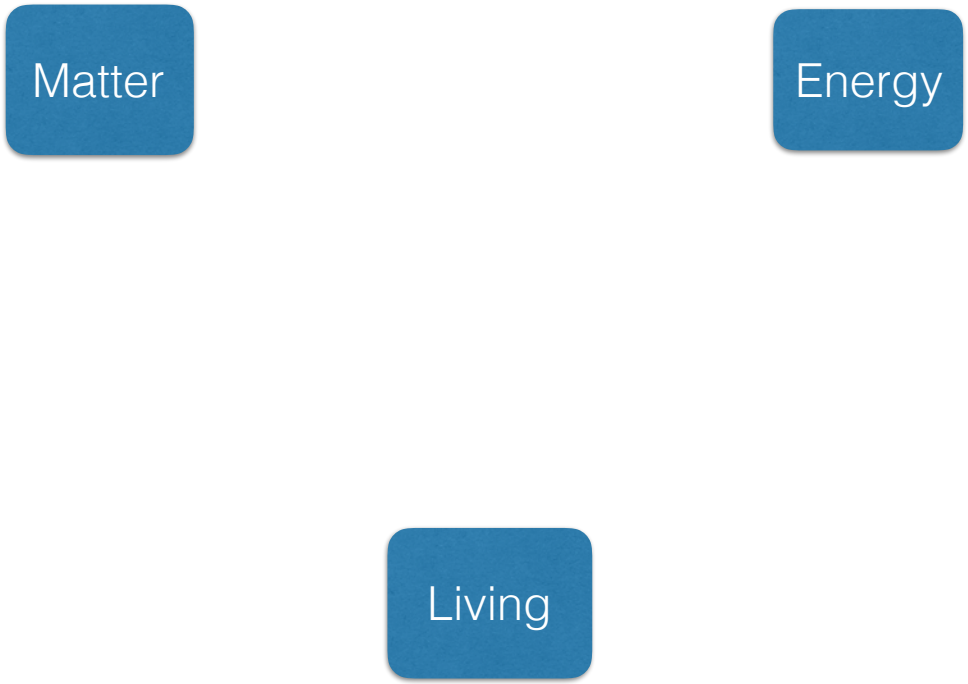


Information, a fundamental concept



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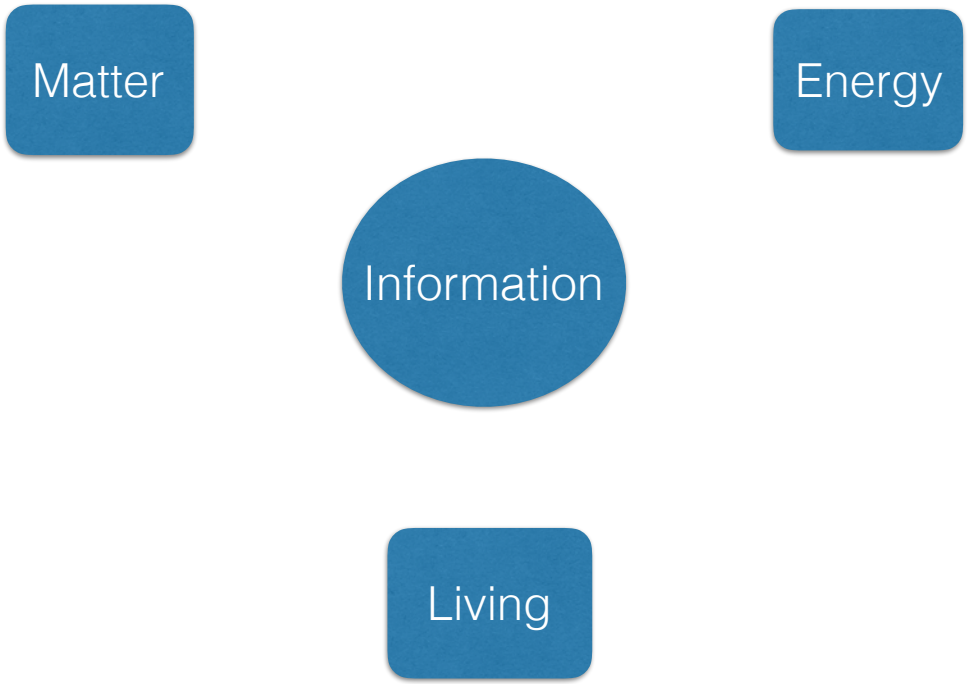
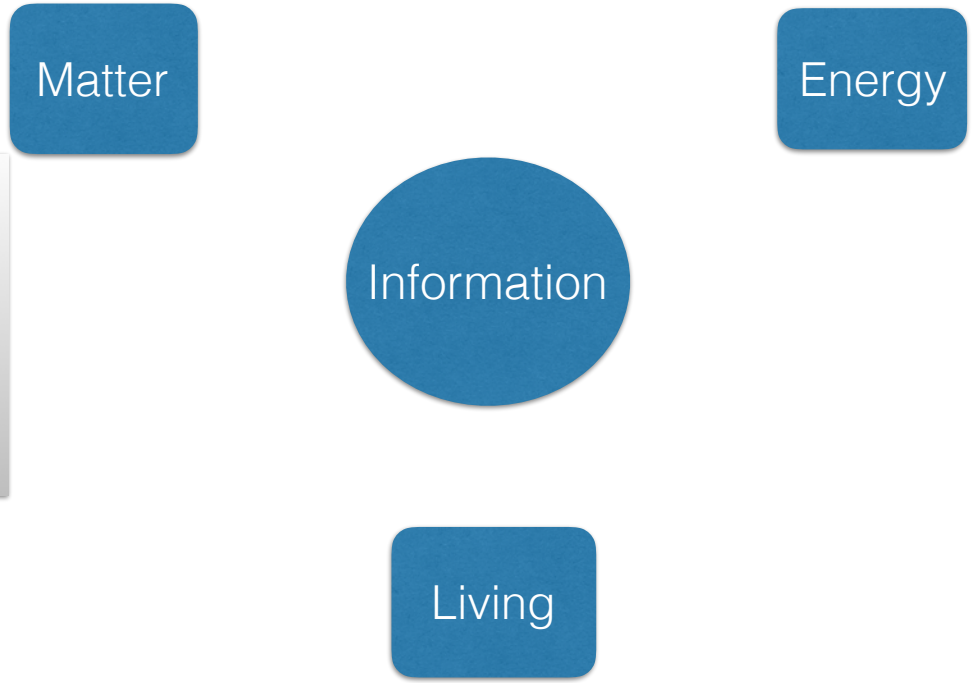


Information, a fundamental concept

Any entity:

- gets
- sends
- transforms
- memorizes informations



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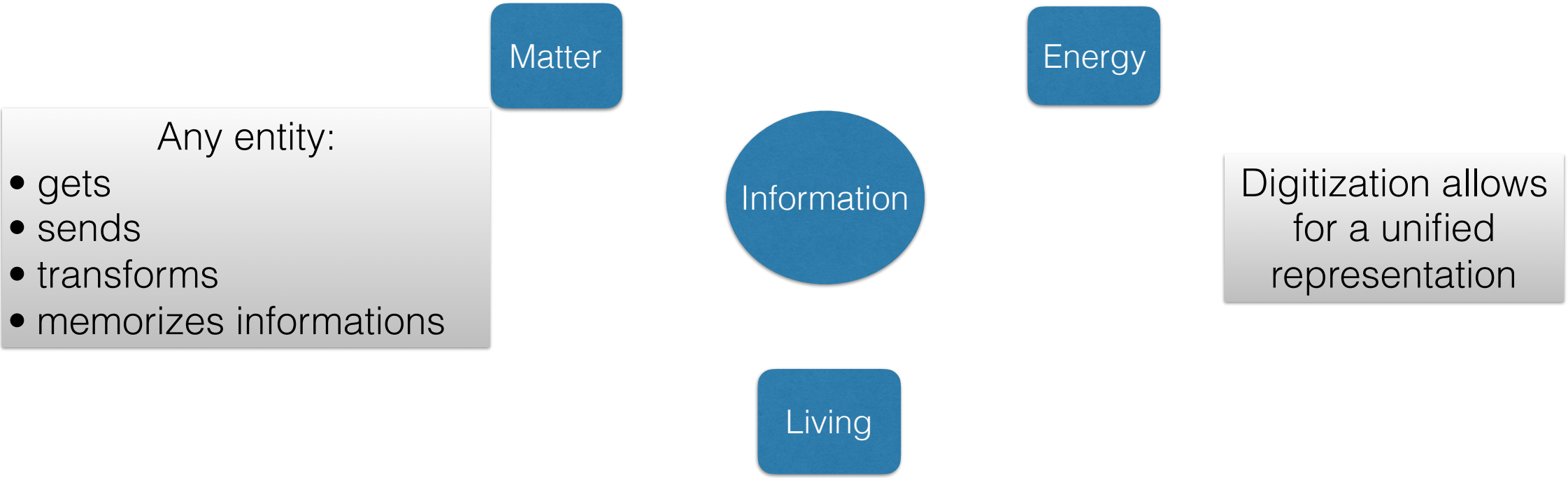
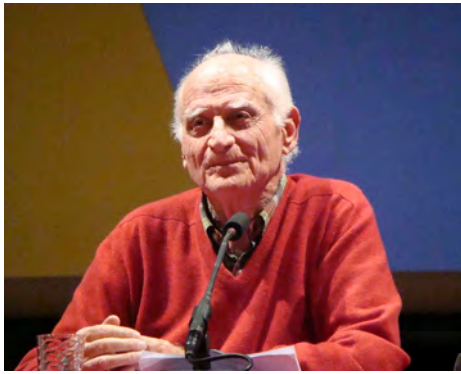


Information representations and human revolutions

Language, drawing

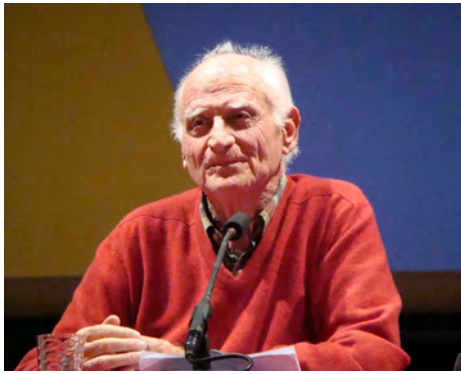


Michel Serres

Information representations and human revolutions

Language, drawing

Writing



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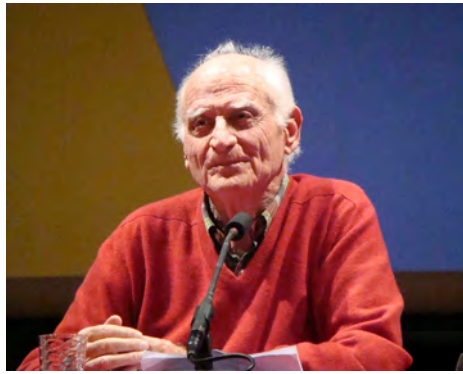

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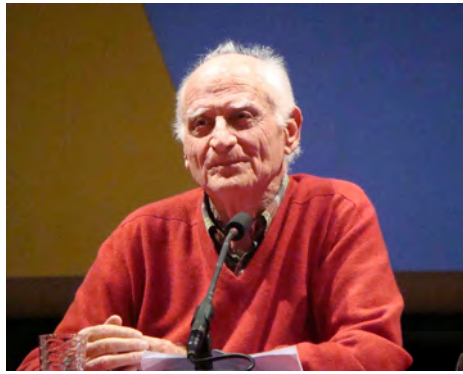


Michel Serres

Humans and societies are deeply impacted

- The consequences of the digital reality induces deep transformations
- Laws are no more adapted
- Digitisation of all human activities: memory, image, health, administration, history, war, relations, economy, finance, industry, employment, education, science, …

Digital deeply transforms the way we do science

It has a major impact on

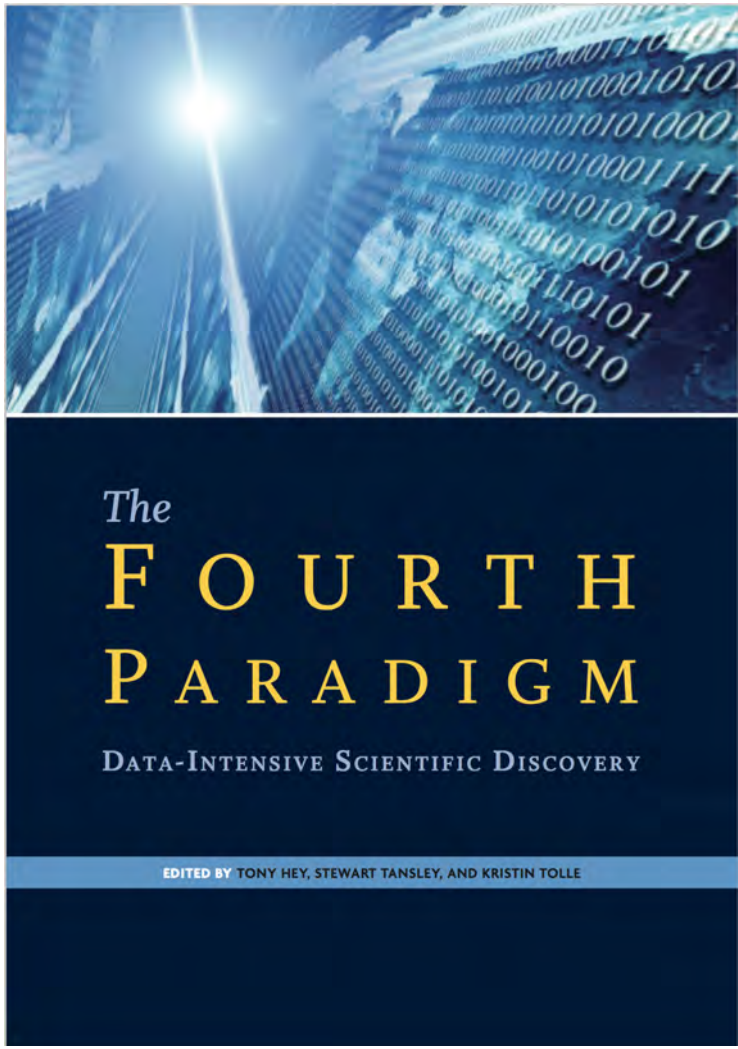
- The scientific discipline development
- The ways researches are conducted
- The publication and communication acts

Jim Gray (eScience / Science-2.0, 2007) shows in particular how the initial scientific paradigms of

- observation,
- theory elaboration and
- experimentation

are completed and even replaced by

- digital simulation and
- data digital exploration



Deep consequences on all sciences and their developments

- New horizons
- New methods
- New scientific vision
- New instruments
- New scientific experiences
- …

Main missions of scientists

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- **Discover**

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- **Communicate**

  Journals, conferences, social networks, projet calls, etc.

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Main missions of scientists

- **Discover**
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- **Teach**
- **Transfer, administrate and manage**
- **New! re-think and re-invent** the scientific information system

The scientists needs rely on the access and the control of data, informations and knowledges

- Access to information: **read a book, a journal article, conference proceedings, access to corpuses of images or to discussions**
- Search into informations: **search in ALL full texts and other available data**
- Agregate, analyse, structure **informations: e.g. what do we know today about digital viruses or on the synthesis of the human genome?**
- Publish informations: **Results, programs, data, MOOCs**
- Share, qualify, certify **professional informations**

New tools and services are available

- HAL, ISTEX, arXiv, Openaire, …
- ResearchGate, Mendeley, Academia.edu, PeerEvaluation, Twitter, …
- LinkedIn (26,2 billions dollars - 13 juin 2016)
- Digital lab books : eg the french start-up Shazino
- But also…

Get started with Watson

Businesses

Partner with IBM to bring your Powered by Watson app to market

Join the Watson Ecosystem

Healthcare

See how Watson's improving healthcare through cognitive computing tools

Check out Watson Health

Developers

Experiment with Watson APIs in the Watson Developer Cloud

Start building

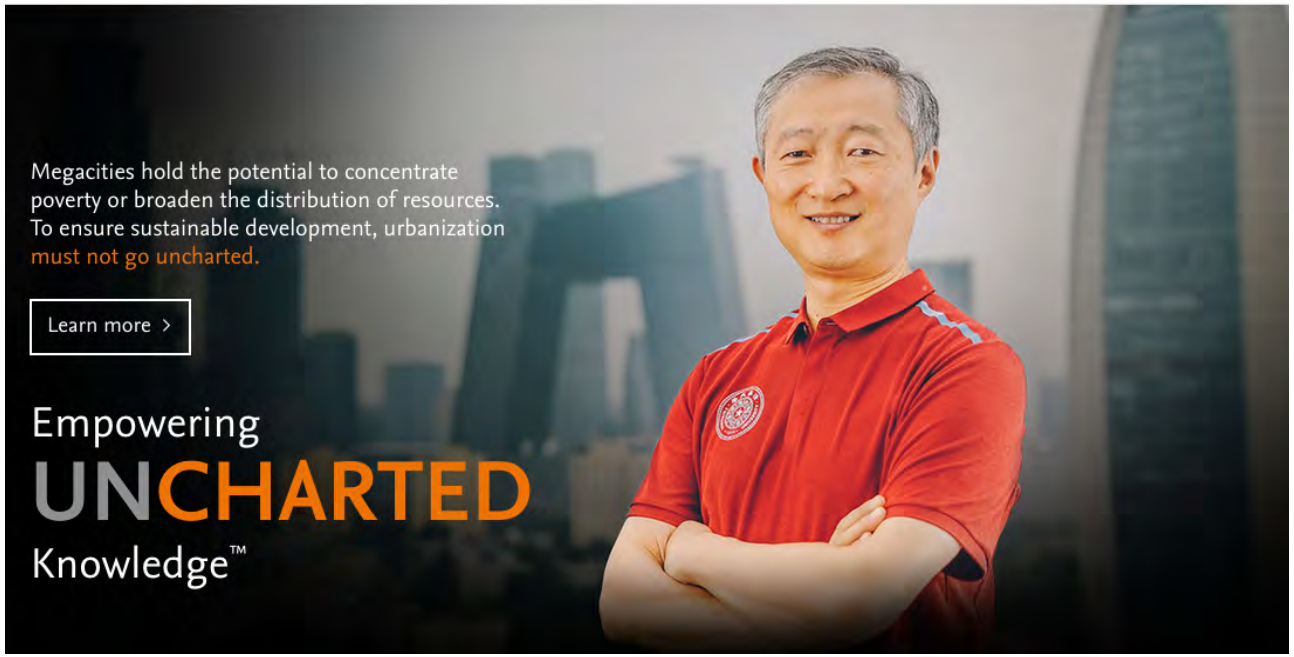
Universities

Are you a student? Participate in a Watson hackathon or enroll in a course

Explore University programs

ELSEVIER

SEARCH MENU



Elsevier is a world-leading provider of information solutions that help you make better decisions, deliver better care, and sometimes make groundbreaking discoveries in science, health, and technology.

We provide web-based, digital solutions — among them ScienceDirect, Scopus, Evolve, Knovel, Reaxys and ClinicalKey — and publish over 2,500 journals and more than 33,000 book titles.

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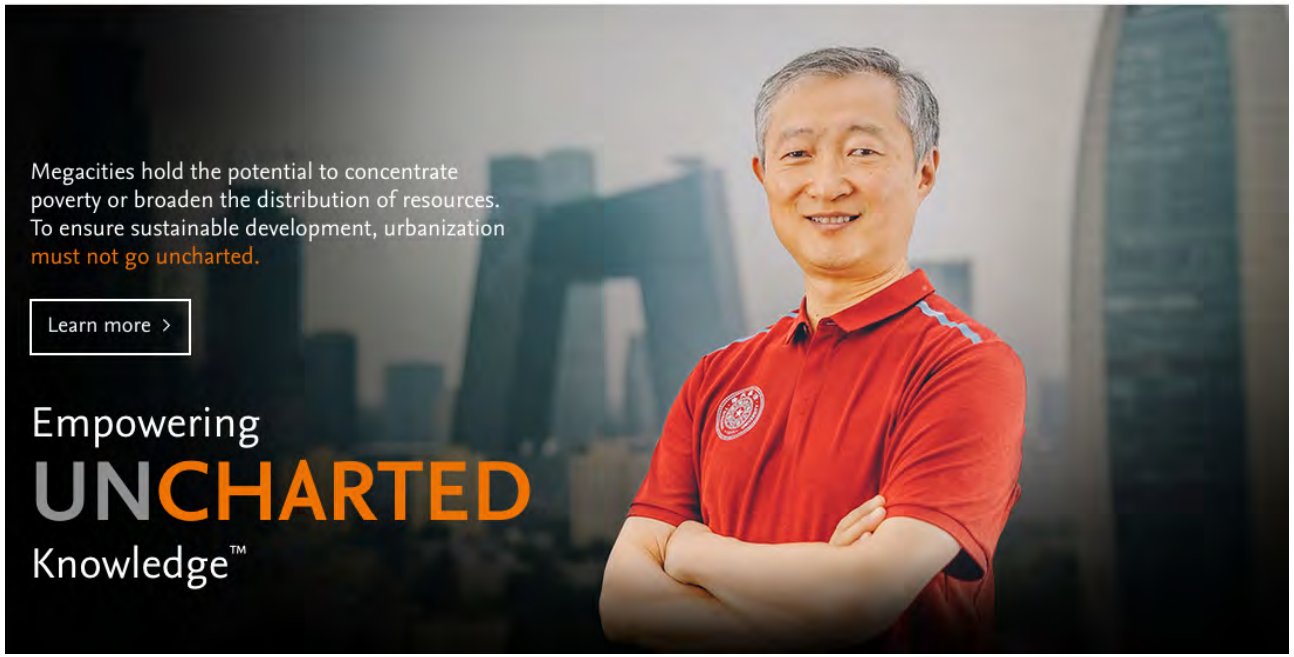

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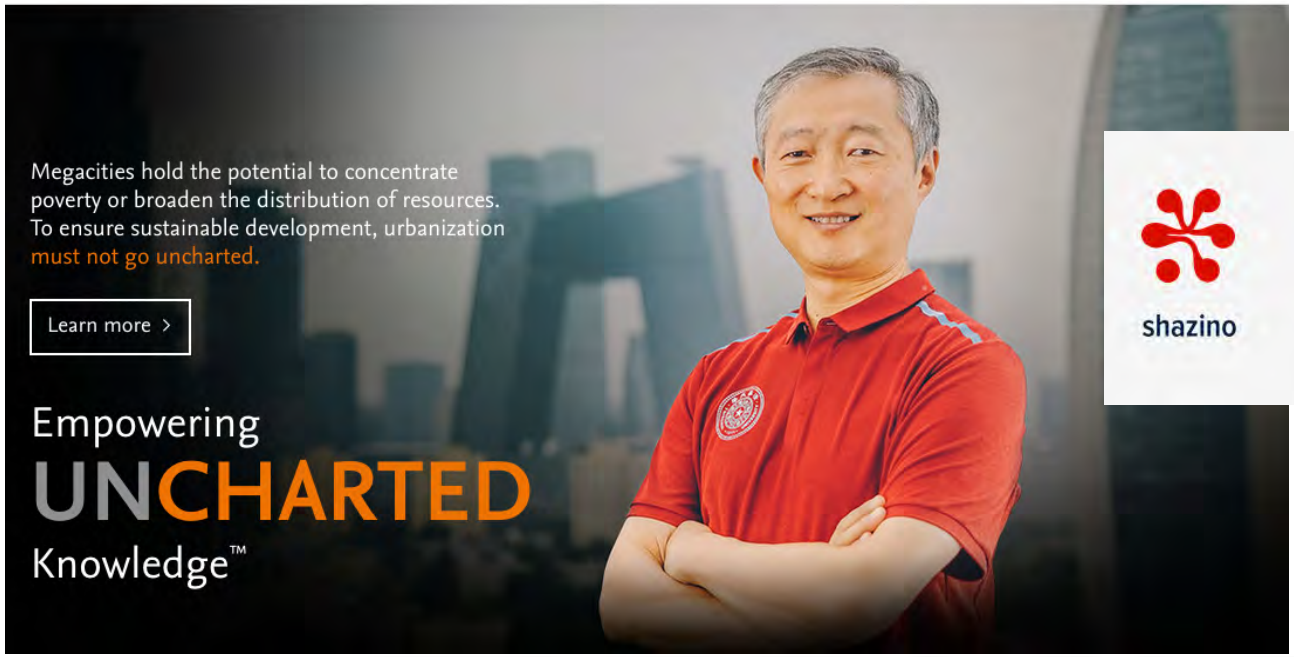

shazino

Elsevier Acquires Laboratory Data Management Tool Hivebench

Tuesday, 7 June 2016 in Hivebench by Julien Therier

Integration with Elsevier's Research Data Management portfolio helps researchers prepare, conduct and analyze experiments, methods, and protocols in one place, saving them valuable time.

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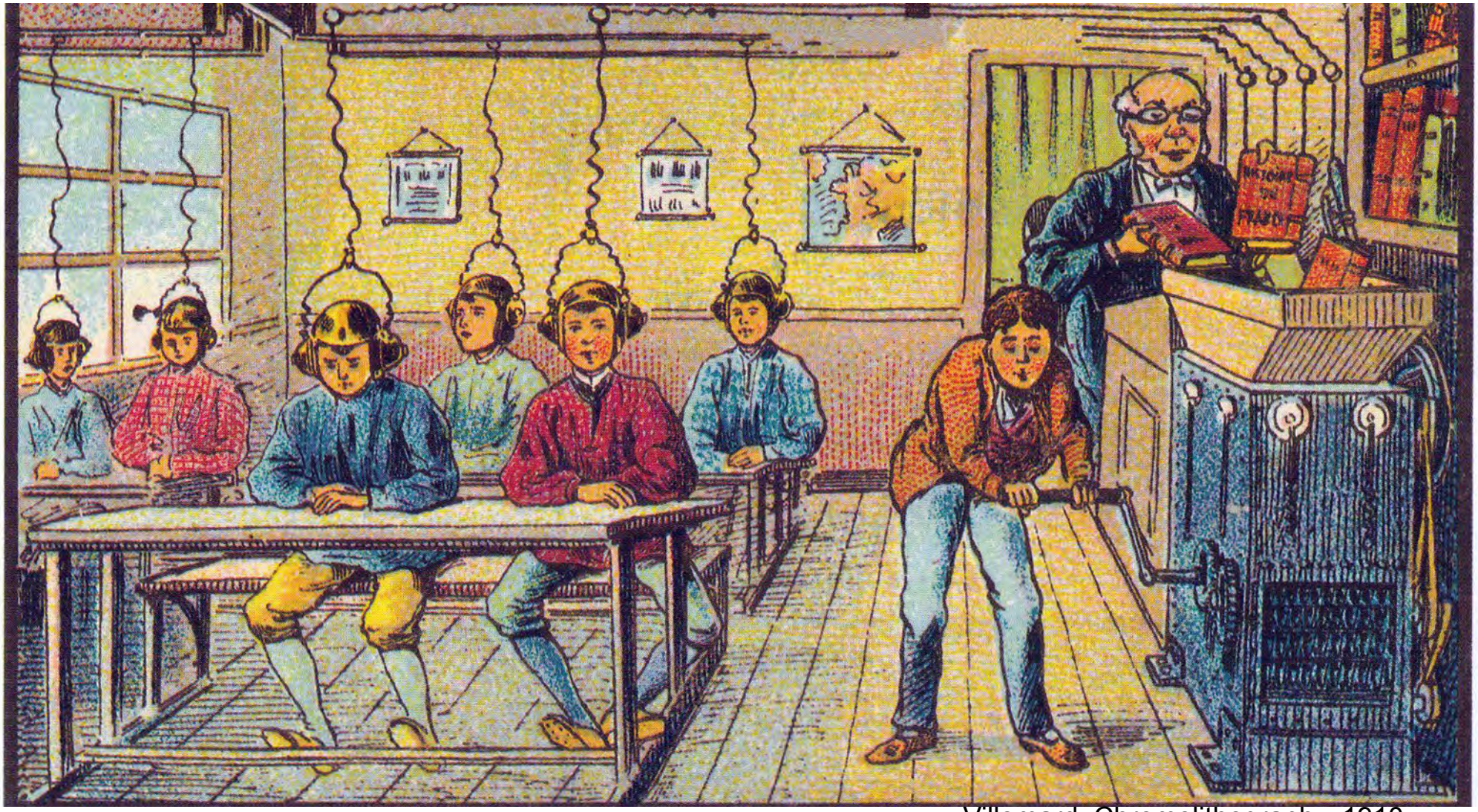
TEACH AND LEARN



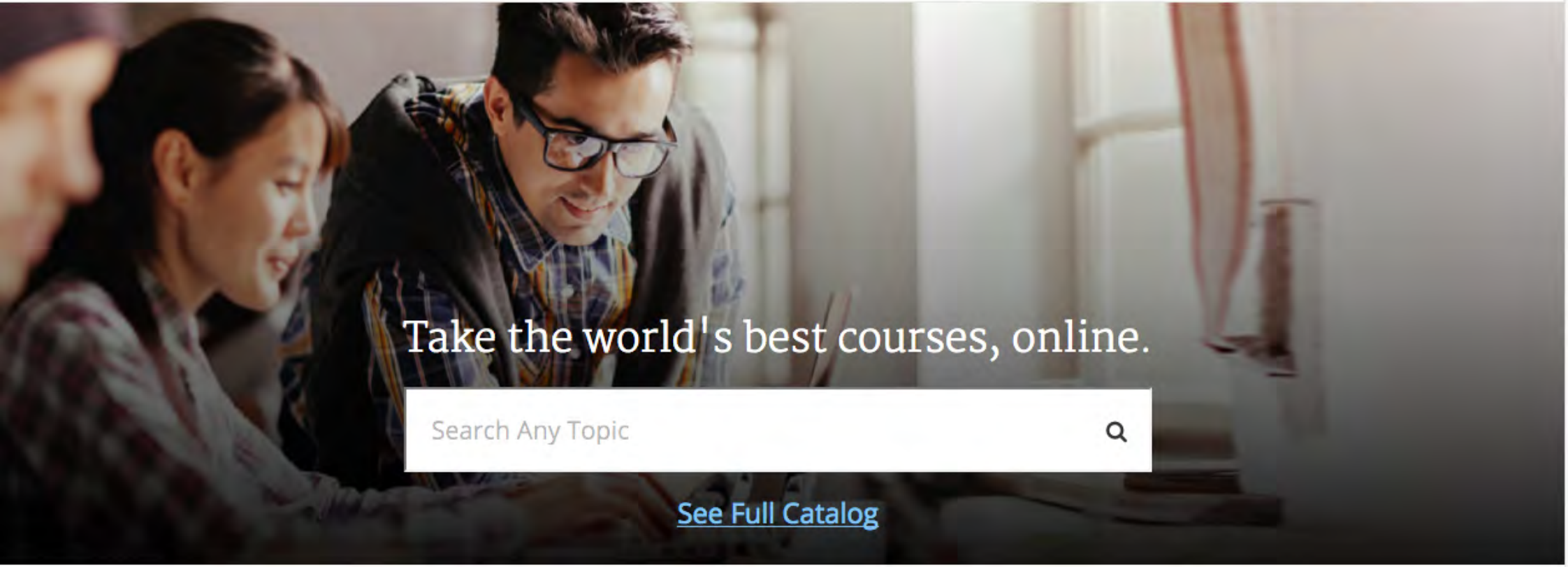
Villemard, Chromolithography, 1910

Harvard pour tous

Les cours des grandes universités sont accessibles en ligne. Une révolution

coursera

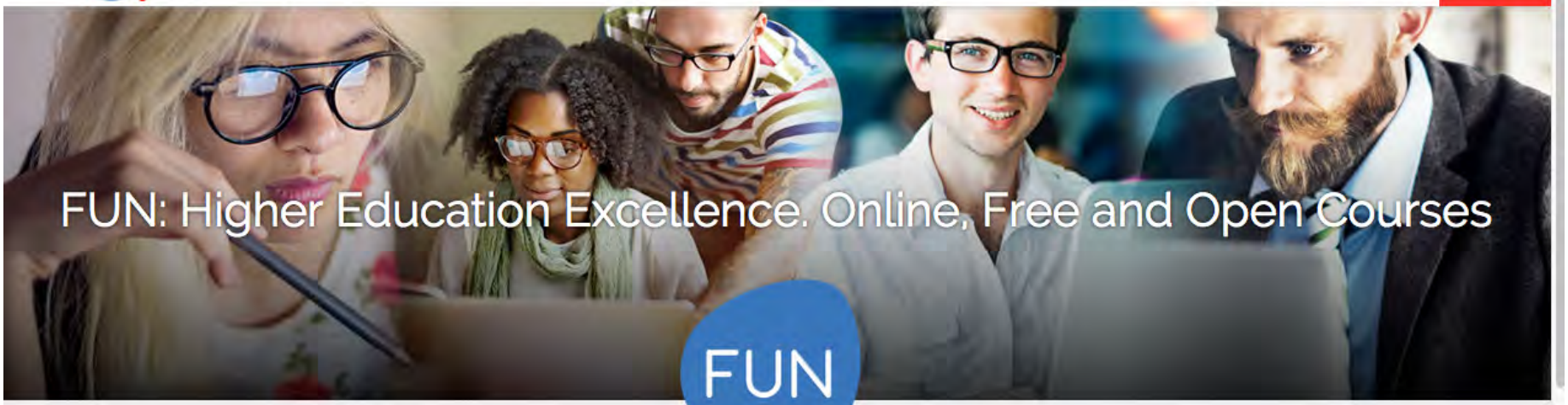
Institutions Log In Sign Up



Penn JOHNS HOPKINS UNIVERSITY UNIVERSITY OF MICHIGAN Stanford UC San Diego Duke UNIVERSITY

FUN The Freedom to Study

Search courses Sign up Login



Highlighted courses

Concevoir un emballage responsable (ECORESP)

Ecole Centrale Lyon

Starts oct 05 2016 Learn more

Introduction à la statistique avec R

Université Paris-Sud

Starts sep 12 2016 Learn more

Online learning provides a huge amount of data

Online learning provides a huge amount of data

- On knowledge itself

Online learning provides a huge amount of data

- On knowledge itself
- On learners

Online learning provides a huge amount of data

- On knowledge itself
- On learners
- On teachers

Is there a fundamental difference between these various platforms?

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he allows the platform to access to the learner profiles

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he takes the responsibility to oblige (sic) his learners to use the platform

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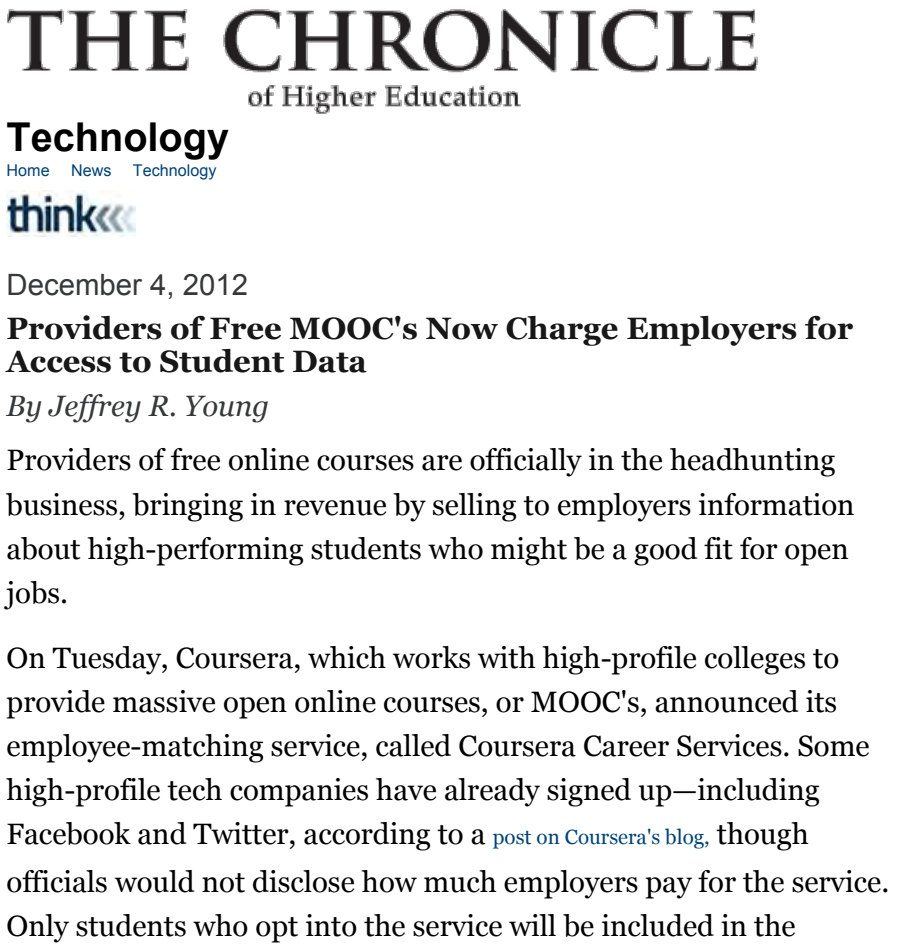

THE CHRONICLE
of Higher Education

Technology

Home News Technology

think

December 4, 2012

Providers of Free MOOC's Now Charge Employers for Access to Student Data

By Jeffrey R. Young

Providers of free online courses are officially in the headhunting business, bringing in revenue by selling to employers information about high-performing students who might be a good fit for open jobs.

On Tuesday, Coursera, which works with high-profile colleges to provide massive open online courses, or MOOC's, announced its employee-matching service, called Coursera Career Services. Some high-profile tech companies have already signed up—including Facebook and Twitter, according to a post on Coursera's blog, though officials would not disclose how much employers pay for the service. Only students who opt into the service will be included in the

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YES, the way usage data are controlled and used

Deep profiles represent people

- Deep profiles are strategic information today and forever
- Who has the responsibility to make them available:

✓ The authors?

✓ The universities / schools?

✓ The nations?

Deep profiles are not facebook ones

Pedagogical and health data

1) are particularly sensible and the profiles issued from them are extremely precise

2) as personal data, they concern each individual but also its social neighborhoods and in particular its ascendants and descendants, immediately and forever

3) the PMF (personal medical file) and the PPF (personal pedagogical file) should be strongly protected, in particular their digital version

4) their provide an unprecedented scientific richness

Two periods in the history of every science

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- Astronomy before and after Galilleo's telescope

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- Biology before and after Leenvenhoek's microscope

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- Astronomy before and after Galilleo's telescope
- Biology before and after Leenvenhoek's microscope
- Mathematics before and after computers
- Pedagogy before and after eLearning and the data it provides (MOOCS, …)

CONTROL THE SCIENTIFIC DATA

Set-up a new project in cooperation

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- Organize audio or visio conferences

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  ★ not always in the main language of your country ;-)

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- Share documents

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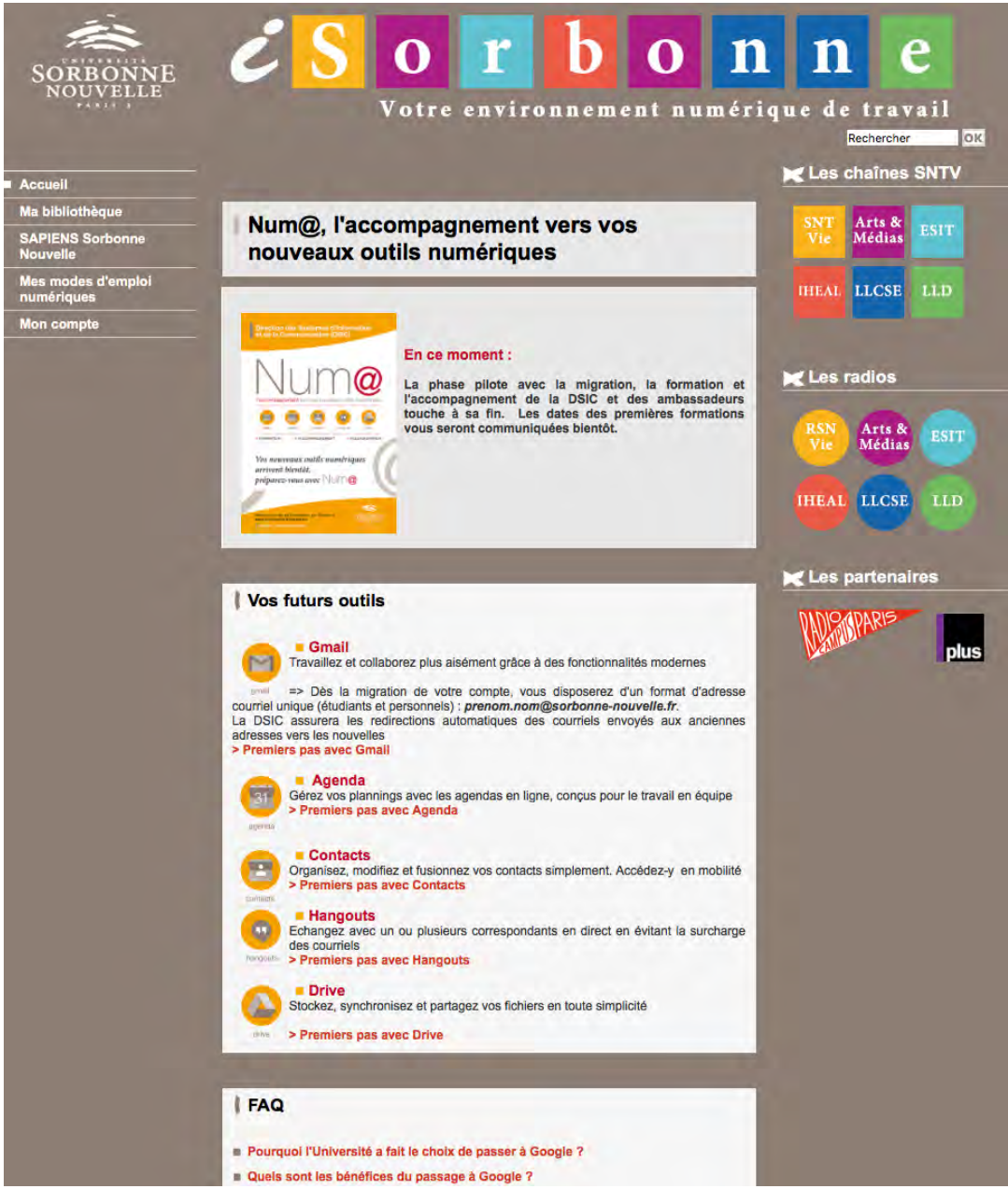
  - ★ Shall we give everything to dropbox ?
- Write collaborative documents
  - ★ mail ? googledoc ? …

What tools or services to keep control on our data?

Is this a problem to give all the contents of a project proposal to Google or Dropbox?



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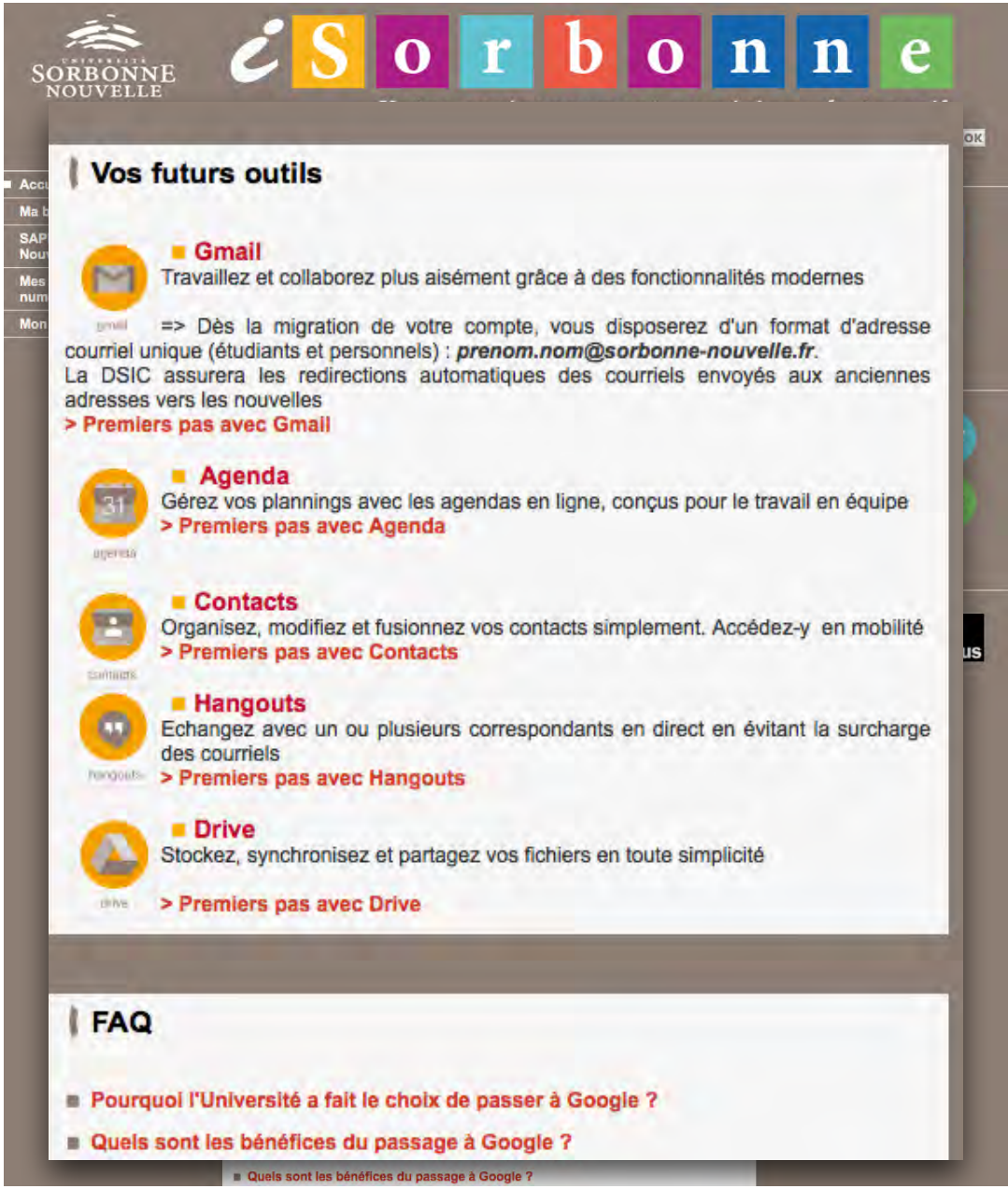

DIGITAL AND SCIENTIFIC SOVEREIGNTIES

Sovereignties

Sovereignties

The historical concept of sovereignty refers to **the capacity of the sovereign to control attributes** that he claims to have the control of: frontiers, army, police, money, language, …

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What are the digital sovereignties?

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What are the digital sovereignties?

What are the scientific sovereignties?

Examples

Scientific sovereignty of

- Organisations
  - ★ Research performing institutions, universities
- Communities
  - ★ neurosciences or network science or informatics or mathematics, …

…

Examples

Digital sovereignty:

- Of organisations
  - ★ nations, entreprises, organisations …
- Of communities
  - ★ individuals of any age or NGOs, …

…

``… We may not have the power to create the world we want immediately, but we can all start working on the long term today.

In times like these, the most important thing we at Facebook can do is develop the social infrastructure to give people the power to build a global community that works for all of us. …”

in

Building Global Community

MARK ZUCKERBERG·THURSDAY, FEBRUARY 16, 2017

Palantir Technologies

Airbus taps Silicon Valley expertise to speed production of A350

Aerospace group looks to make huge savings through deal with data mining company Palantir

An Airbus A350 XWB aircraft at the Farnborough air show in July © AFP

JANUARY 19, 2017 by: **Tim Bradshaw** in Davos and **Peggy Hollinger** in London

Airbus is tapping Silicon Valley data mining firm Palantir to help accelerate production of its new A350 aircraft, potentially saving the European aerospace group hundreds of millions of dollars over the coming years.

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Building Global Community

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ZERODIUM Payouts for Mobiles*

RJB: Remote Jailbreak with Persistence
RCE: Remote Code Execution
LPE: Local Privilege Escalation
SBX: Sandbox Escape or Bypass

iOS
Android
Any OS

Up to $1,500,000										1.001 iPhone RJB Zero Click (iOS)
Up to $1,000,000										1.002 iPhone RJB (iOS)
Up to $500,000	2.001 WeChat RCE+LPE (iOS/Android)	2.002 Viber RCE+LPE (iOS/Android)		2.003 FB Messenger RCE+LPE (iOS/Android)	2.004 Signal RCE+LPE (iOS/Android)	2.005 Telegram RCE+LPE (iOS/Android)	2.006 WhatsApp RCE+LPE (iOS/Android)	2.007 iMessage RCE+LPE (iOS)	2.008 SMS/MMS RCE+LPE (iOS/Android)	2.009 Email App RCE+LPE (iOS/Android)
Up to $150,000	3.001 Baseband RCE+LPE (iOS/Android)						2.010 Media Files RCE+LPE (iOS/Android)	2.011 Documents RCE+LPE (iOS/Android)	4.001 Chrome RCE+LPE (iOS/Android)	4.002 Safari RCE+LPE (iOS)
Up to $100,000	5.001 Code Signing Bypass (iOS)	3.002 WiFi RCE+LPE (iOS/Android)	3.003 SS7					6.001 LPE to Kernel (iOS/Android)	4.003 SBX for Chrome (Android)	4.004 SBX for Safari (iOS)
Up to $50,000	5.002 Code Signing Bypass (Android)	5.003 Secure Boot (iOS)	3.004 RCE via MitM (iOS/Android)			6.002 LPE to Root (iOS/Android)	4.005 Chrome RCE w/o SBX (iOS/Android)	4.006 Chrome UXSS/SOP (iOS/Android)	4.007 Safari UXSS/SOP (iOS)	4.008 Safari RCE w/o SBX (iOS)
	5.004	5.005			6.003	7.001	7.002	7.003	7.004	7.005

Globaly for scientists

The knowledge ecosystem is a scientific sovereignty issue, much more than a question of capitalistic revenues

Important and visible ➔

Fundamental but uneasy to see and delimitate ➔

Towards new models

- **Controlled** by scientists for the access to scientific production and data
- Strongly **connected** to scientific social networks
- Allowing to **publish** texts, specifications, data, protocols, programs, videos, MOOCs, slides, proposals, …
- **Archiving** forever
- **Respecting** the scientists and **augmenting** their capacities
- Objet of **ethical thinkings**

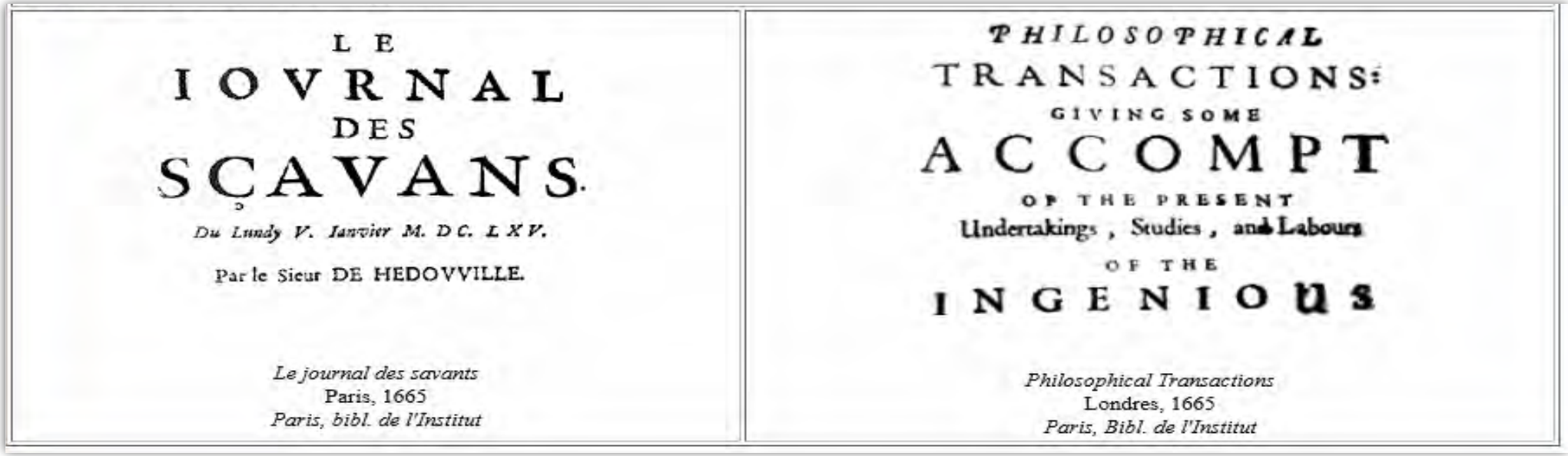
And… in practice

How to prepare, run, share and evaluate my scientific projects?

Open Access

First scientific journals

1665 : Denis de Sallo / Henry Oldenburg



L E
IOVRNAL
DES
SÇAVANS.

Du Lundy V. Janvier M. DC. LXV.

Par le Sieur DE HEDOVVILLE.

Le journal des savants
Paris, 1665
Paris, bibl. de l'Institut

PHILOSOPHICAL
TRANSACTIONS:
GIVING SOME
ACCOMPT
OF THE PRESENT
Undertakings, Studies, and Labours
OF THE
INGENIOUS

Philosophical Transactions
Londres, 1665
Paris, Bibl. de l'Institut

Journals evolutions

- Part of the research processes
- Set research results mpaternity
- Records and labels results
- Used to perform measures
- Used for “evaluating” people, teams, institutions, countries
- Provide a big data source of knowledge

Journals evolutions

Journals evolutions

- 28,000 active journals in 2012

Journals evolutions

- 28,000 active journals in 2012
- 1,8 million articles published per year [Mabe 2012]

Journals evolutions

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- Over lucrative market

Profits by Elsevier

- 2002: £429m profit on £1295m revenue: **33.18**%
- 2003: £467m profit on £1381m revenue: **33.82**%
- 2004: £460m profit on £1363m revenue: **33.75**%
- 2005: £449m profit on £1436m revenue: **31.25**%
- 2006: £465m profit on £1521m revenue: **30.57**%
- 2007: £477m profit on £1507m revenue: **31.65**%
- 2008: £568m profit on £1700m revenue: **33.41**%
- 2009: £693m profit on £1985m revenue: **34.91**%
- 2010: £724m profit on £2026m revenue: **35.74**%
- 2011: £768M profit on £2058M revenue: **37.3**%

Source: http://svpow.com/2012/01/13/the-obscene-profits-of-commercial-scholarly-publishers

The world is digital…
… so are the ways we do research

- Researchgate,
- Mendeley,
- Academia.edu,
- PeerEvaluation,
- etc

MENDELEY

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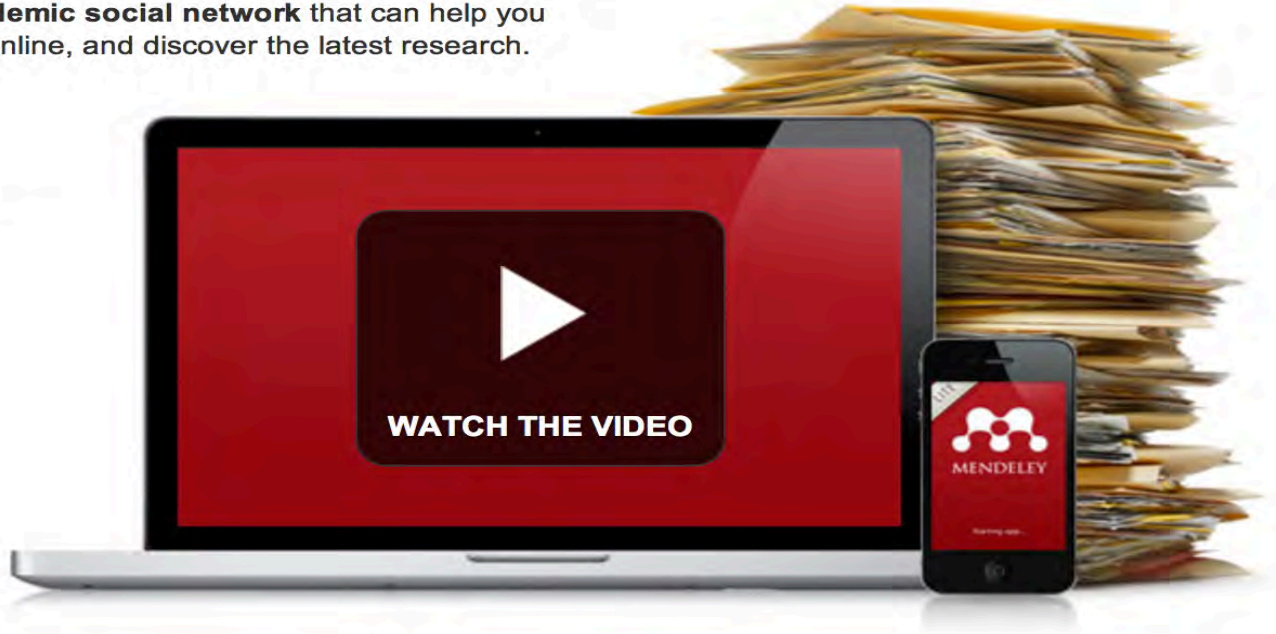
Papers | Search...

It's time to change the way we do research.

Mendeley is a free **reference manager** and **academic social network** that can help you organize your research, collaborate with others online, and discover the latest research.

- Automatically **generate bibliographies**
- **Collaborate easily** with other researchers online
- Easily **import papers** from other research software
- **Find relevant papers** based on what you're reading
- Access your papers from **anywhere online**
- Read papers on the go, with our new **iPhone app**
- View more features…



First name

Last name

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Overview | Discover Research | iPhone / iPad

"Mendeley Throws Open the Doors to Academic Data."

Editors updates from Elsevier <editor-relations@mail.elsevier-alerts.com>
To: Kirchner Claude
Reply-To: editorsupdate2@elsevier.com
Mendeley joins Elsevier

9 avril 2013 18:29
Hide Details
Inbox - CK-imap@zinria

Dear Dr. Kirchner,
We are delighted to announce that Elsevier has acquired the cloud-based research management and social collaboration platform, Mendeley.

We believe Mendeley is an outstanding company with a great culture and much talent. It is innovative, open, and collaborative - all attractive traits we value. Joining forces with Elsevier will only strengthen that offering and provide us both with a myriad of opportunities to better address the day to day challenges researchers face.

- **The opportunities to develop new researcher tools will be greatly enhanced.** Innovation will be spurred by a powerful blend of Elsevier's content, data analytics products, and long-standing publisher/society relationships with Mendeley's workflow tools, collaboration platform, and altmetrics data.
- **This acquisition will allow Mendeley's "Freemium" model to remain in place with expanded free categories and storage size.** We acquired Mendeley to enhance its products and its talent and to provide a better experience for researchers.

Editors updates from Elsevier <editor-relations@mail.elsevier-alerts.com>
To: Kirchner Claude
Reply-To: editorsupdate2@elsevier.com
Mendeley joins Elsevier

9 avril 2013 18:29
Hide Details
Inbox - CK-imap@zinria

Editors' Update
Your network for knowledge

Probable amount of the transaction between $69 million and $100 million

MENDELEY

ELSEVIER

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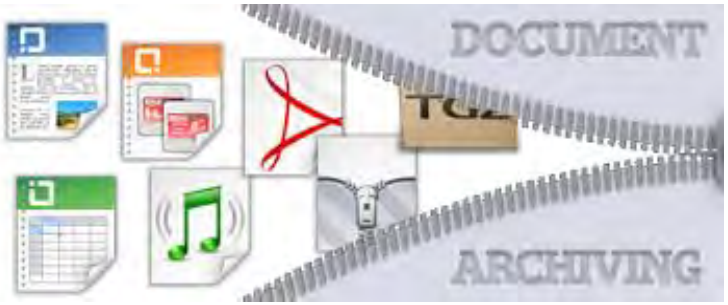
Towards other models

- Master access to scientific production and data
- Strongly connected to social networks
- Allow to publish data, experiments, programs, specs, videos, MOOCs, slides, …
- Forever archiving
- Respecting and empowering people



Overlay journals

Scientific Knowledge:
Four main complementary actions

Scientific Knowledge:
Four main complementary actions

Publish

Scientific Knowledge:
Four main complementary actions

Publish

Qualify

Scientific Knowledge:
Four main complementary actions

Publish

Qualify

Validate

Scientific Knowledge:
Four main complementary actions

Publish

Qualify

Validate

Communicate

Publish

- Blog
- Twitter
- Web page
- Journal
- Conference
- Public archive
- E-learning platform
- …

- Short note, Tweet
- Full article
- Images, Sounds, Videos
- Programs
- Experiments
- Data
- MOOCs
- …

Qualify a publication

- Originality
- Interest
- Writing quality
- Importance of topics and results
- Reproducibility of results
- …

Validate - Certify

- Give a label
- E.g. accepted for publication in

- Yes / No action

Overlay Journals

- On top of public archives (eg HAL. ArXiv, CWI, …)
- Strongly connected to social networks
- Open access
- Mass data access
- Ethical management of referee reports on the long term
- We are implementing this…

Cornell University Library

We gratefully acknowledge support from the Simons Foundation and member institutions

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arXiv.org

Search or Article ID | All papers

(Help | Advanced search)

Open access to 1,301,779 e-prints in Physics, Mathematics, Computer Science, Quantitative Biology, Quantitative Finance and Statistics

Subject search and browse: Physics | Search | Form Interface | Catchup

08 Aug 2017: A survey for users accessing arXiv programmatically
20 Apr 2017: Applied Physics subject area added to arXiv
10 Mar 2017: New members join arXiv Member Advisory Board
06 Mar 2017: arXiv Scientific Director Search
10 Feb 2017: Attention Submitters: our TeX processing system has been updated
See cumulative "What's New" pages. Read robots beware before attempting any automated download

Physics

- Astrophysics (**astro-ph** new, recent, find)
  includes: Astrophysics of Galaxies; Cosmology and Nongalactic Astrophysics; Earth and Planetary Astrophysics; High Energy Astrophysical Phenomena; Instrumentation and Methods for Astrophysics; Solar and Stellar Astrophysics
- Condensed Matter (**cond-mat** new, recent, find)
  includes: Disordered Systems and Neural Networks; Materials Science; Mesoscale and Nanoscale Physics; Other Condensed Matter; Quantum Gases; Soft Condensed Matter; Statistical Mechanics; Strongly Correlated Electrons; Superconductivity
- General Relativity and Quantum Cosmology (**gr-qc** new, recent, find)
- High Energy Physics - Experiment (**hep-ex** new, recent, find)
- High Energy Physics - Lattice (**hep-lat** new, recent, find)
- High Energy Physics - Phenomenology (**hep-ph** new, recent, find)
- High Energy Physics - Theory (**hep-th** new, recent, find)
- Mathematical Physics (**math-ph** new, recent, find)
- Nonlinear Sciences (**nlin** new, recent, find)
  includes: Adaptation and Self-Organizing Systems; Cellular Automata and Lattice Gases; Chaotic Dynamics; Exactly Solvable and Integrable Systems; Pattern Formation and Solitons
- Nuclear Experiment (**nucl-ex** new, recent, find)
- Nuclear Theory (**nucl-th** new, recent, find)

HAL archives-ouvertes.fr

The open archive HAL

HAL is an open archive where authors can deposit scholarly documents from all academic fields.

For the attention of the authors

- The deposit must be made in agreement with the co-authors and in the respect for the policy of the publishers.
- The deposit is subject of a control, HAL reserves the right to refuse items that do not meet the criteria of the archive.
- Any deposit is definitive, no withdrawals will be made after the on-line posting of the publication.
- Text files in pdf format or image files are sent to CINES for long-term archiving.

For the attention of the readers

- In a context of electronic distribution, each author keeps their intellectual property rights.

LAST SUBMISSIONS IN HAL

Boudjema Imarazene, Aude Andouche, Yann Bassaglia, Pascal-Jean Lopez, Laure Bonnaud-Ponticelli. Eye Development in Sepia officinalis Embryo: What the Uncommon Gene Expression Profiles Tell Us about Eye Evolution. Frontiers in Physiology, Frontiers, 2017, 8, pp.613. <10.3389/fphys.2017.00613>. <hal-01585156>

Bertrand Heib. Développement de vernis d'isolation électrique présentant des propriétés thermomécaniques améliorées

SEARCH

Termes de recherche

NUMBER OF RESOURCES

1 359 452

NUMBER OF FULLTEXTS

462 136

NEWS

INTRODUCING THE NEW REPOSITORY INTERFACE ON SEPTEMBER 20 *(7/24/17)*

HAL - Inria

Archive ouverte / Open archive

Submit | Browse | Search | Services | Help

Focus on...

Visibility of open archives : HAL-Inria is increasing

RANKING WEB OF REPOSITORIES

*The world Webometrics ranks Hal-Inria open archive as 5th for all categories and as **1st for institutional repositories**(See rankings)*

- Register on HAL - Inria
- Already registered?
- Need help?
- Contact us

Consult the latest documents deposited

Full texts of the latest publications by Inria teams in the field of computer science and mathematics.

Capital distribution and portfolio performance in the mean-field Atlas model

Sign in

Login: claude.kirchner

Password: ••••••

OK

register, recover password

Contact

- archive-ouverte@inria.fr

Links

- Inria researcher's information toolkit
- RoMEO : Publisher copyright policies & self-archiving

News

- **Create your own webpage using HAL** (2013-04-16)
- **Add a thumbnail, video or appendix** (2012-05-23)
- **XML export** (2012-03-13)

EPI-journal Principles

EPI-journal Principles

EPI-journal Principles

EPI-journal Principles

EPI-journal Principles

Evaluation Platform

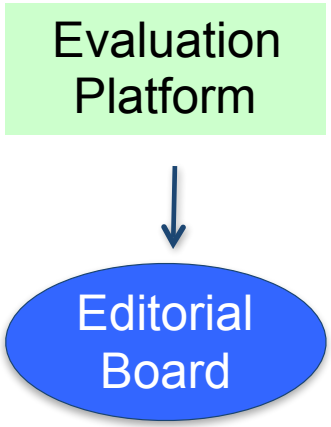
Cornell University Library
arXiv.org

HAL - Inria
Archive ouverte / Open archive

CWI

ProdINRA

EPI-journal Principles



EPI-journal Principles

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EPI-journal Principles

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write

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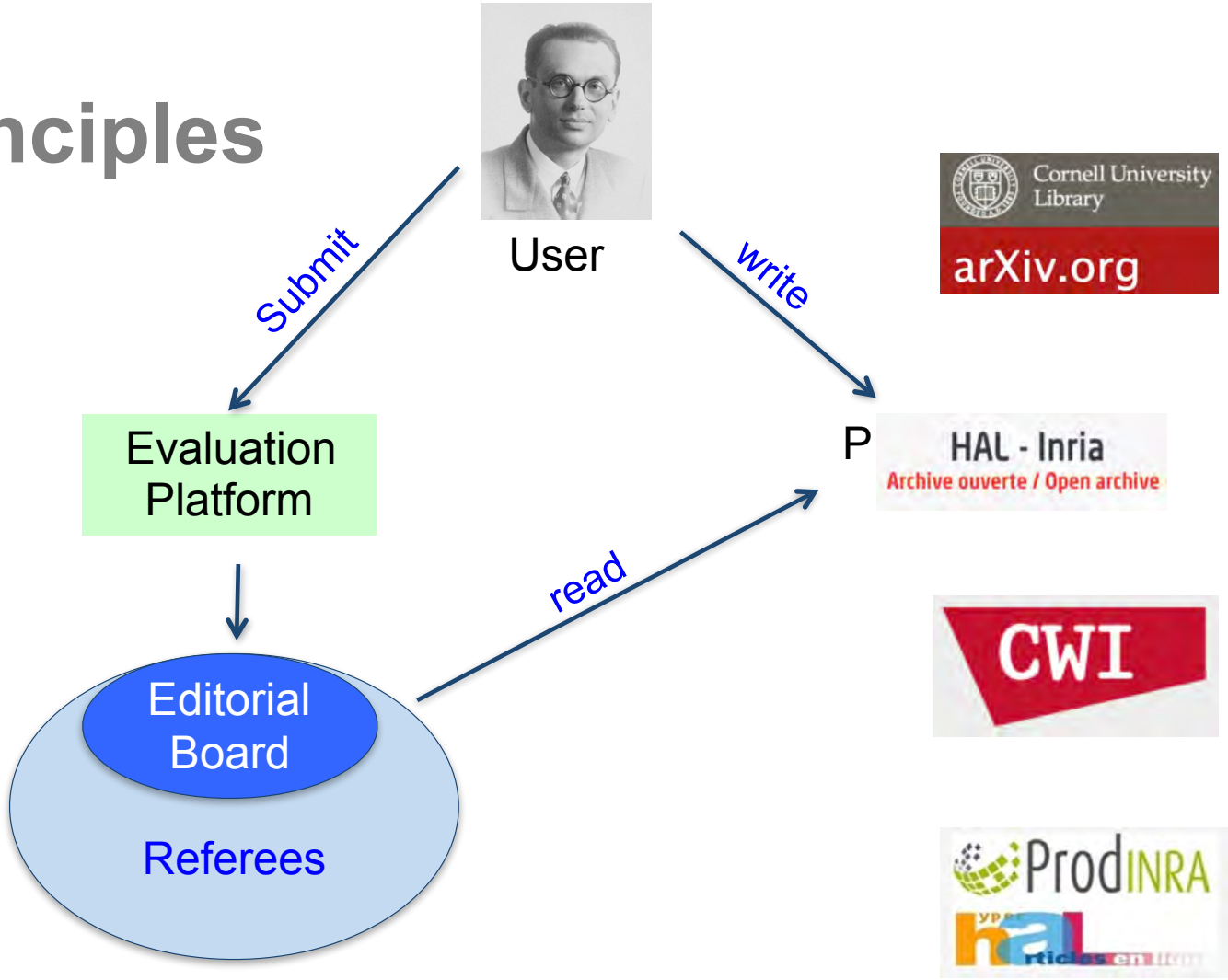

EPI-journal Principles

User

Submit

write

New Data:
-Evaluations
-Discutions

Evaluation Platform

P

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Referees

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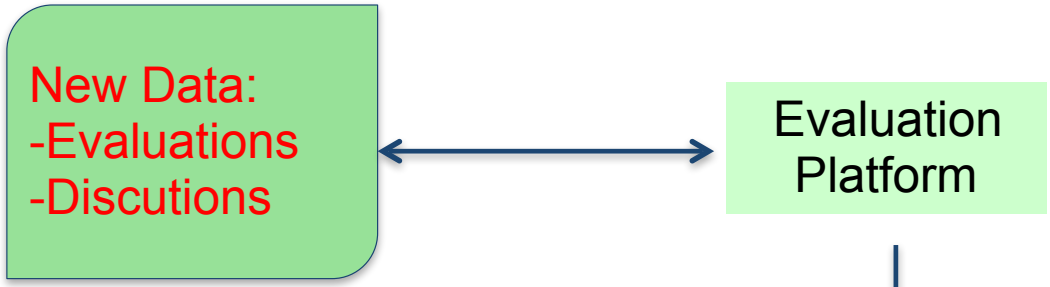
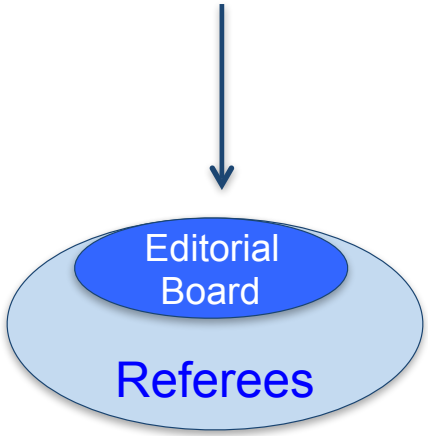
Families of EPI-Journals

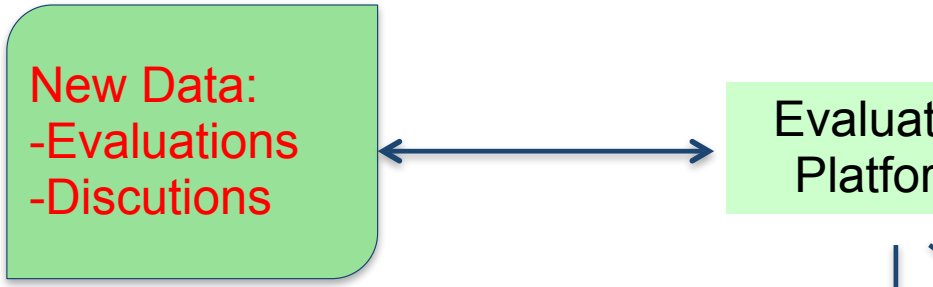
User

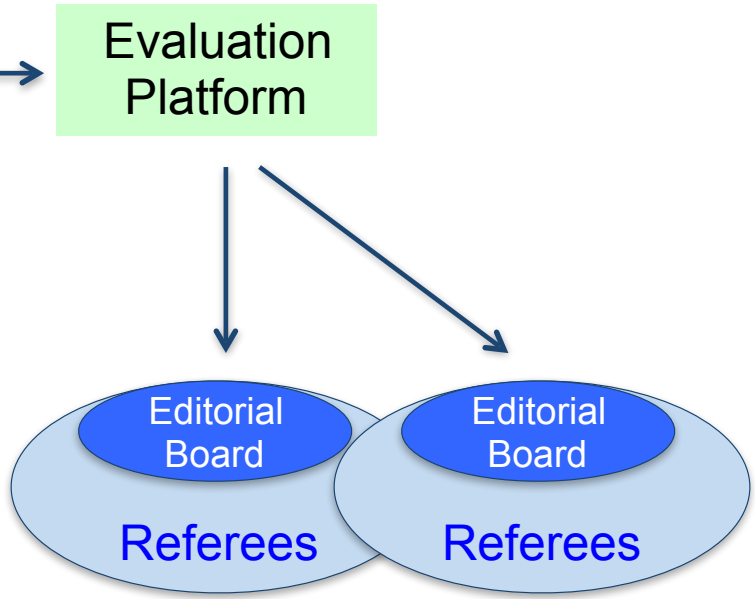




Families of EPI-Journals

User





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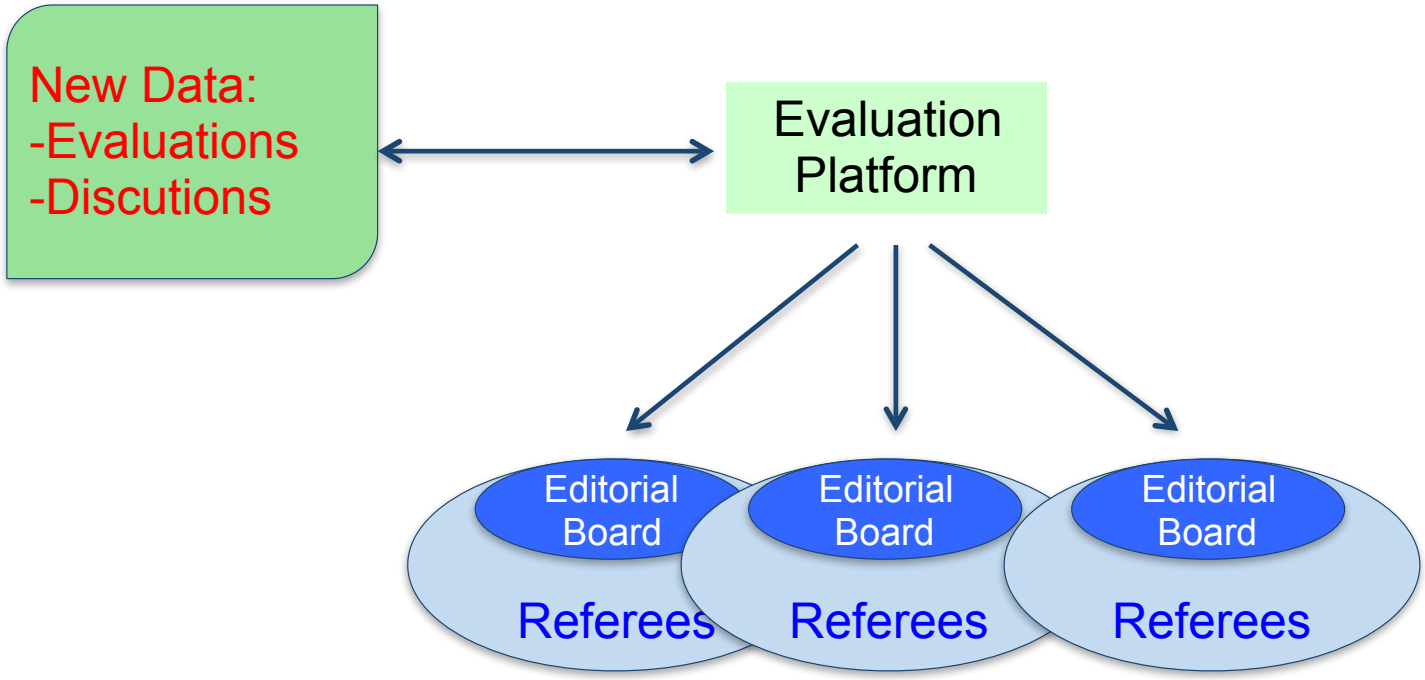

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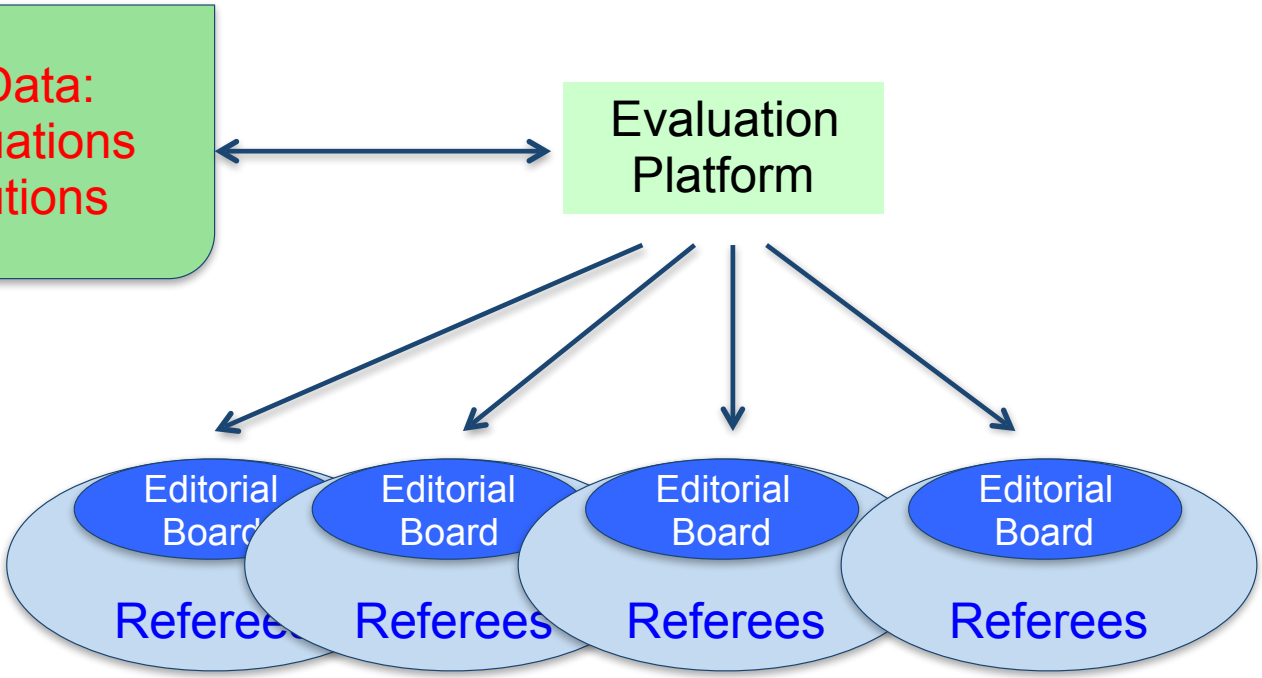


Several platforms

User

New Data:
-Evaluations
-Discutions

Evaluation Platform

Other

New Data:
-Evaluations
-Discutions

Evaluation Platform

CCSD

J1 J2 DMTCS JDMDH

Cornell University Library
arXiv.org

HAL - Inria
Archive ouverte / Open archive

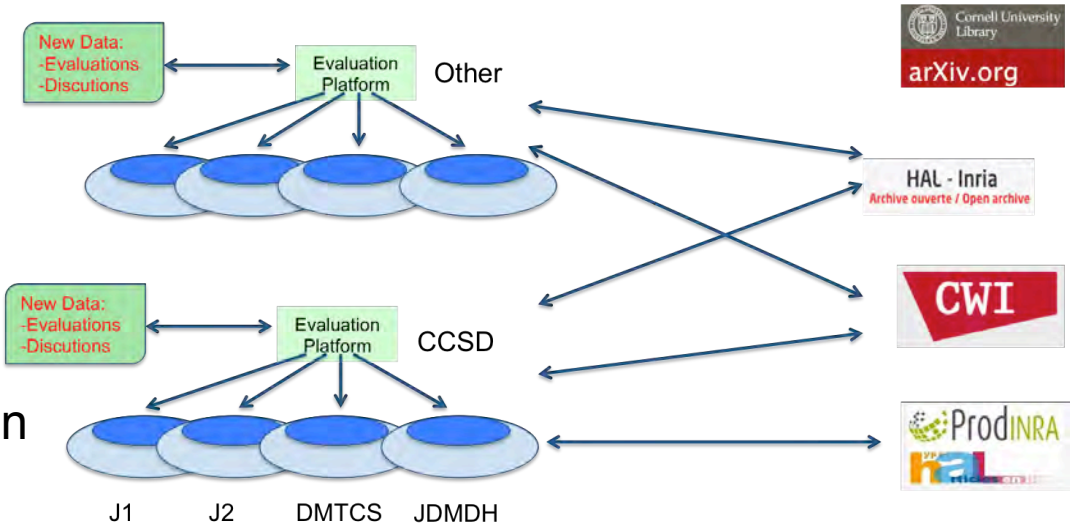
CWI

ProdINRA

Questions!

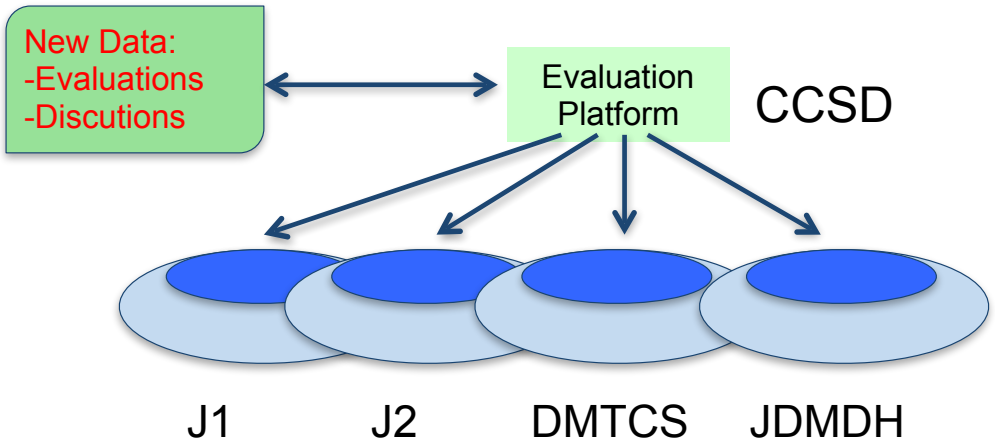
- Who decide supporting journals?
- What economic model?
- Who owns the new data collected?
- Who controls the access and persistence of the evaluation data?

- Who asserts the quality of the platforms?
- Who validates the relationship between the platforms and the archives?



Some answers

- Support by CNRS, Inria, University of Lyon, **new**: INRA is joining



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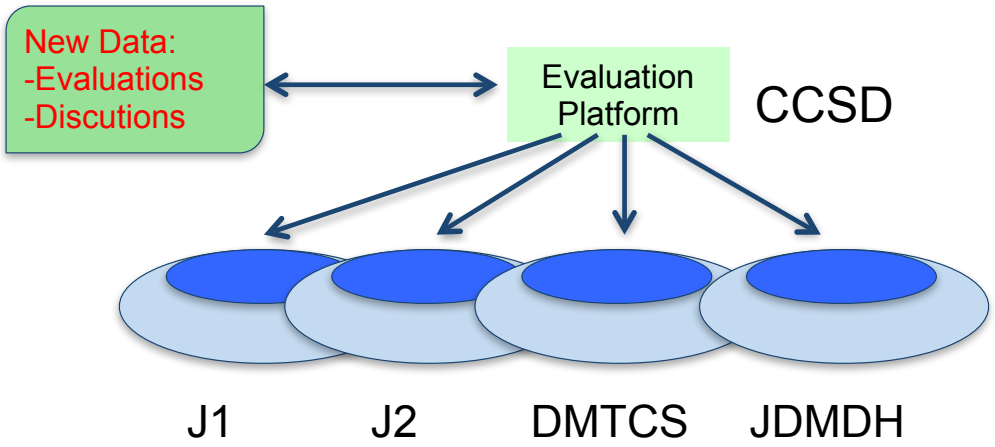

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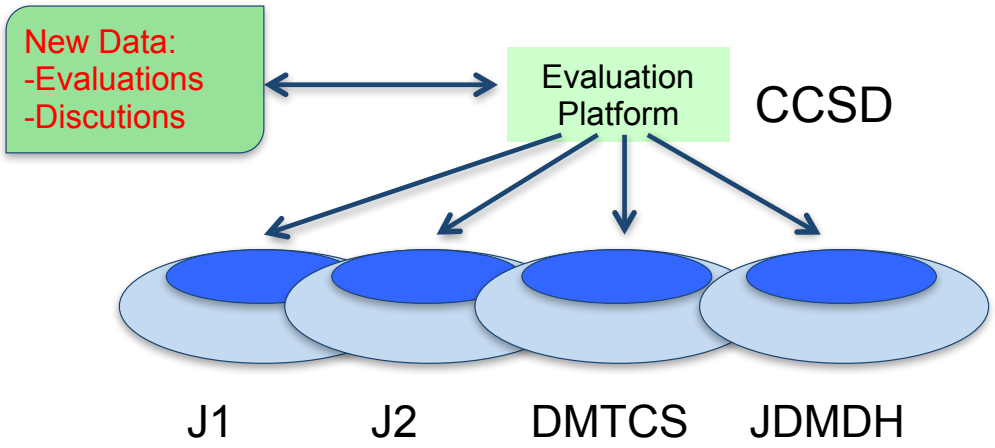

Some answers

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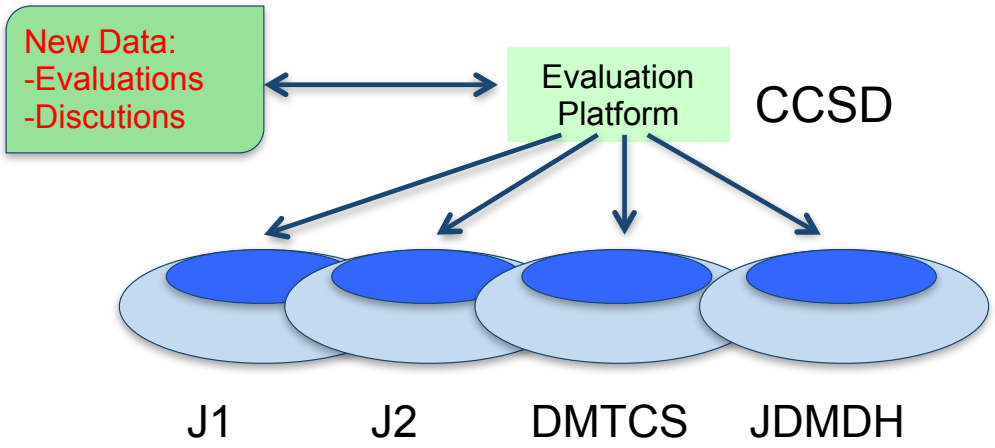
- Set-up of a meta editorial committee in charge of journal validation and periodic review
- Project to extend the schema to a general scientific social network
- Offer to host existing or new journals in Informatics or Applied Mathematics



LOGICAL METHODS IN COMPUTER SCIENCE

Recently published

Fair Simulation for Nondeterministic and Probabilistic Buechi Automata: a Coalgebraic Perspective

Authors: *Urabe, Natsuki* ; *Hasuo, Ichiro*.

> — Notions of simulation, among other uses, provide a computationally tractable and sound (but not necessarily complete) proof method for language inclusion. They have been comprehensively studied by Lynch and Vaandrager for nondeterministic and timed systems; for Büchi automata the notion of […]

Volume: Volume 13, Issue 3
Published on: September 6, 2017

Path Checking for MTL and TPTL over Data Words

Authors: *Feng, Shiguang* ; *Lohrey, Markus* ; *Quaas, Karin*.

> — Metric temporal logic (MTL) and timed propositional temporal logic (TPTL) are quantitative extensions of linear temporal logic, which are prominent and widely used in the verification of real-timed systems. It was recently shown that the path checking problem for MTL, when evaluated over finite […]

Managing Editors

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Editor-in-Chief

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Fabio Zanasi
Executive Editors

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ISSN: 1860-5974

A moving landscape…
We are in an exciting exploratory phase

A moving landscape…
We are in an exciting exploratory phase

→ **Institutional endeavor**

- The involvement of **scientists** is essential
- **Academics bodies** shall become more responsible of their scientific information policies/ strategies
- Foster **cross-institutional** initiatives

A moving landscape…
We are in an exciting exploratory phase

→ **Institutional endeavor**

- The involvement of **scientists** is essential
- **Academics bodies** shall become more responsible of their scientific information policies/ strategies
- Foster **cross-institutional** initiatives

→ **Towards new peer-review models**

- **Open peer-review**: Identification of the reviewer becomes possible, and reviews could become publication objects of their own
- **« Invisible college »** Social networks allows discussions, feedback and many other forms of knowledge sharing and building. **All data issued from these networks are a fundamental richness that should be deontologicaly open.**

CONCLUSIONS

Impressive new initiatives

- new access to publication: Open access
- new access to knowledge: eLearning
- new access to softwares: softwareheritage.org

We are building the universal software archive

Collect
Preserve
Share

We **collect** and **preserve** software in source code form, because software embodies our technical and scientific knowledge and humanity cannot afford the risk of losing it.

Software is a precious part of our cultural heritage. We curate and make accessible all the software we collect, because only by **sharing** it we can guarantee its preservation in the very long term.

Discover our mission

Do we already have your code?

We harvest publicly available source code from many software projects and keep up with development happening there. As of today our archive already contains and keeps safe for you:

Source files	Commits	Projects
3,666,486,366	838,772,669	65,321,448

Scientific knowledge and data are in joint ownership

- Knowledge and knowledge graphs are a deep richness
- These richness are often in hands of private entities
- New global organizations and funding models should be found to allow for the fair sharing of these richness

Open Access is part of a wider scientific information concept

- **Research organizations need a scientific information strategic plan**

  Open access to publications and research data is a component thereof

  A prerequisite to go for OpenScience

- **Need for a better coordination of scientific information policies**

  Shared e-Infrastructures;

  Joint endeavors to improve the dissemination of research assets

- **Exploring new models for scientific information**

  Financing schemes, attribution-based licensing,

  new modes of scholar assessment, virtual research environments

Some strategic questions

How to **raise awareness** of scientists, teachers and the students to the underlying issues?

How to **collaborate and mutualize** at the national, continental and international levels?

How to allow **new fields of innovation** and manage public-private interactions?

More globally, **what kind of knowledge ecosystem** do we want to implement?

Goal,
for a public scientific research institution

All data, informations and knowledges:

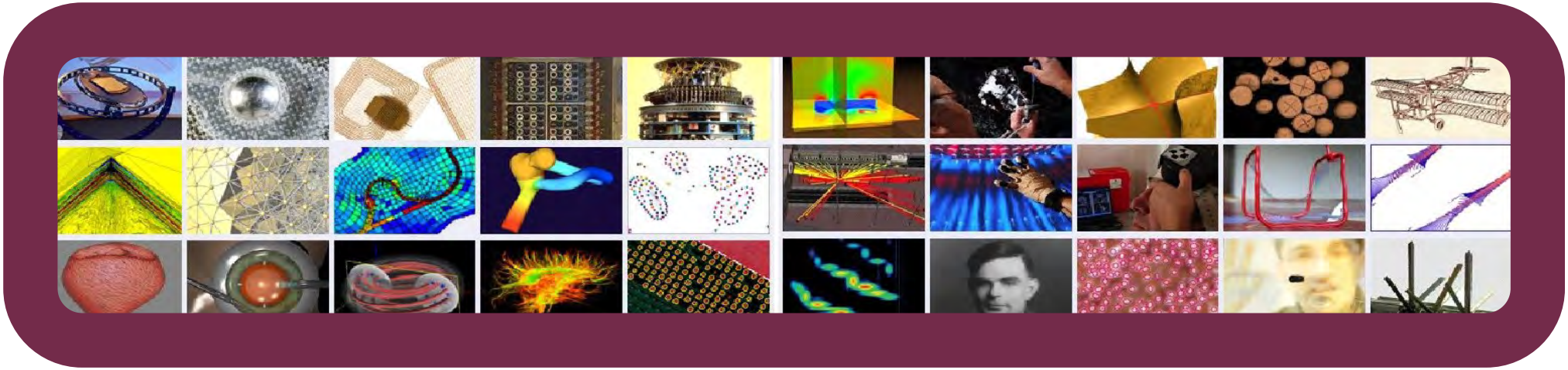
- **scientific**: writings, experimental data, programs, project proposals, contrats, discussions, …
- **organizational**: human ressources, administration, finance, budget, …

must be freely accessible to the institution:

- ✦ immediately
- ✦ forever
- ✦ in particular for analyses, evaluations and strategic purposes

For scientists, towards Responsible Research and Innovation

As scientists, this is our responsibility, present and future, to control all the digital elements allowing us to make science, now and tomorrow



Merci

شكرا

Thank you

claude.kirchner@inria.fr