Open science, citizen science, crowd science – promises and challenges

Nordic Perspectives on Open Access and Open Science 15.10.2013

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Opetus- ja kulttuuriministeriö
Undervisnings- och kulturministeriet

produces
changes
research
education
infrastructure
process
benefit
available
potential
valuable
open
disciplines
use
collaboration
enables
access
knowledge
crossing
science
discoveries
open
data
new
networks
repositories
developing
encourage
unleashed

What are we talking about

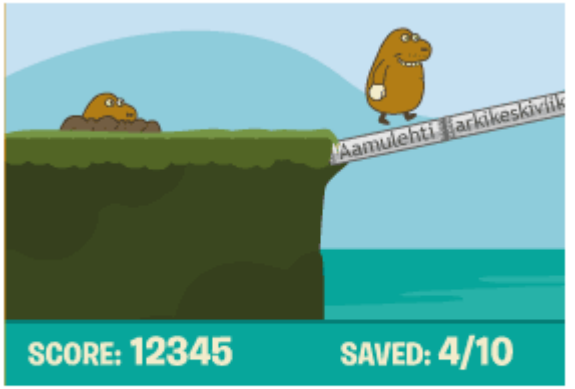
- **Open science:** […] to make scientific research, data and dissemination accessible to all levels of an inquiring society, amateur or professional

- **Citizen science:** (also known as crowd science, crowd-sourced science, or networked science) is scientific research conducted, in whole or in part, by amateur or nonprofessional scientists, often by crowdsourcing and crowdfunding.

Source of definitions: Wikipedia

Case: DigiTalkoot.fi at National Library of Finland (ended Nov 29, 2012)

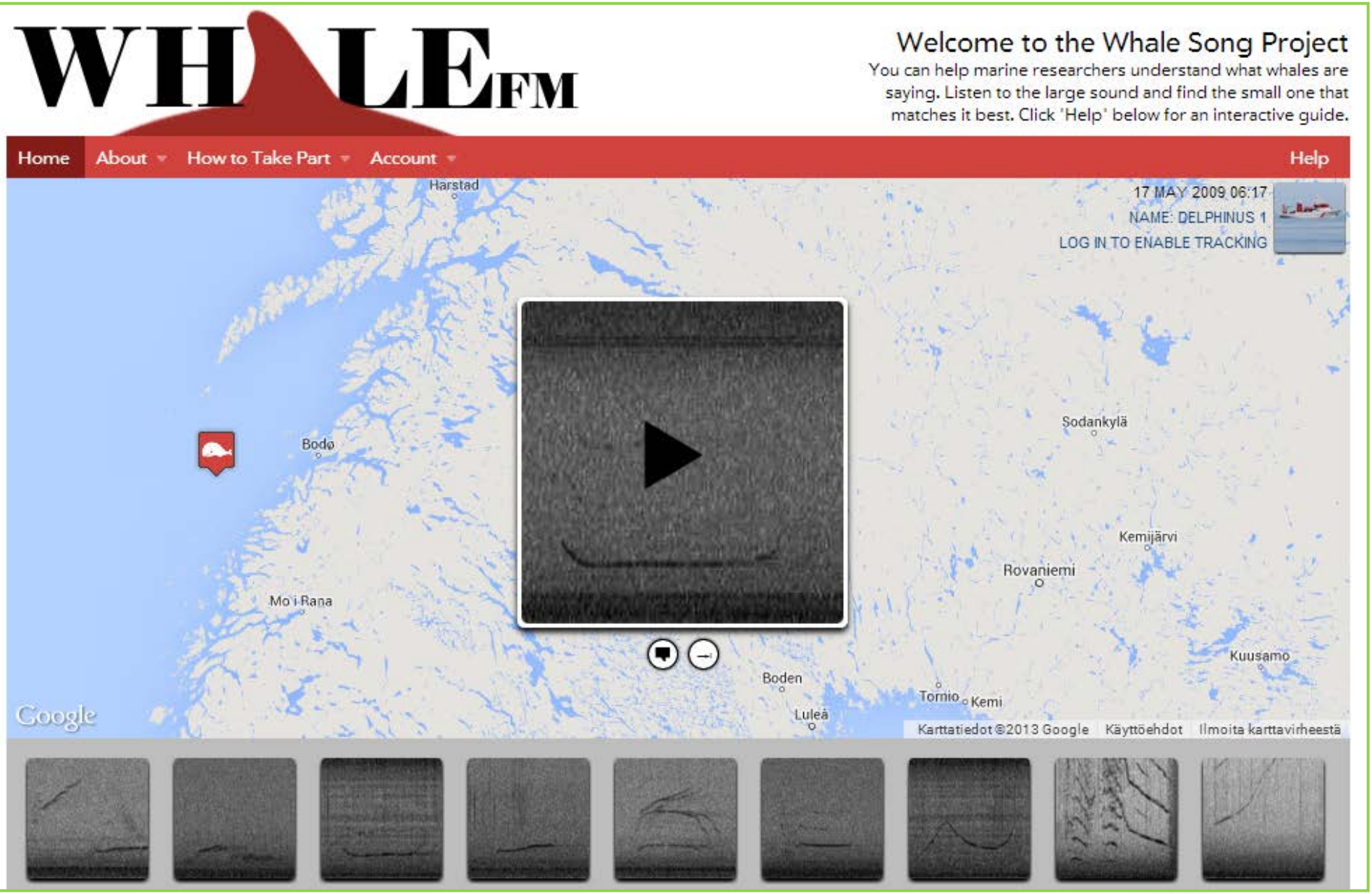
- "…to index the library's enormous archives so that they are searchable …"
- "… computers fail to recognize all the words. … DigiTalkoot enabled volunteers to participate in this fixing work by playing games."



In the "Mole Bridge" game players typed words not recognized by computers. Watch the video!

Volunteer top 10

Name	Tasks	Hours	Name	Tasks	Hours
1. Petri M	348 422	395	6. Timo H	96 838	48
2. Kari K	188 128	169	7. Tea R	90 346	76
3. Vesa S	176 519	209	8. Jukka N	73 476	61
4. Anja S	133 600	106	9. Mikko V	61 129	94
5. Kirsti K	98 533	50	10. Anne-Maarit J	40 763	51


WHALE FM
Welcome to the Whale Song Project
You can help marine researchers understand what whales are saying. Listen to the large sound and find the small one that matches it best. Click 'Help' below for an interactive guide.
Home
About
How to Take Part
Account
Help
17 MAY 2009 06:17
NAME: DELPHINUS 1
LOG IN TO ENABLE TRACKING
Harstad
Bodø
Mo i Rana
Sodankylä
Kemijärvi
Rovaniemi
Kuusamo
Boden
Luleå
Tornio
Kemi
Google
Karttatiedot ©2013 Google
Käyttöehdot
Ilmoita karttavirheestä

Case: FoldIt - folding proteins without knowing virtually anything about biochemistry

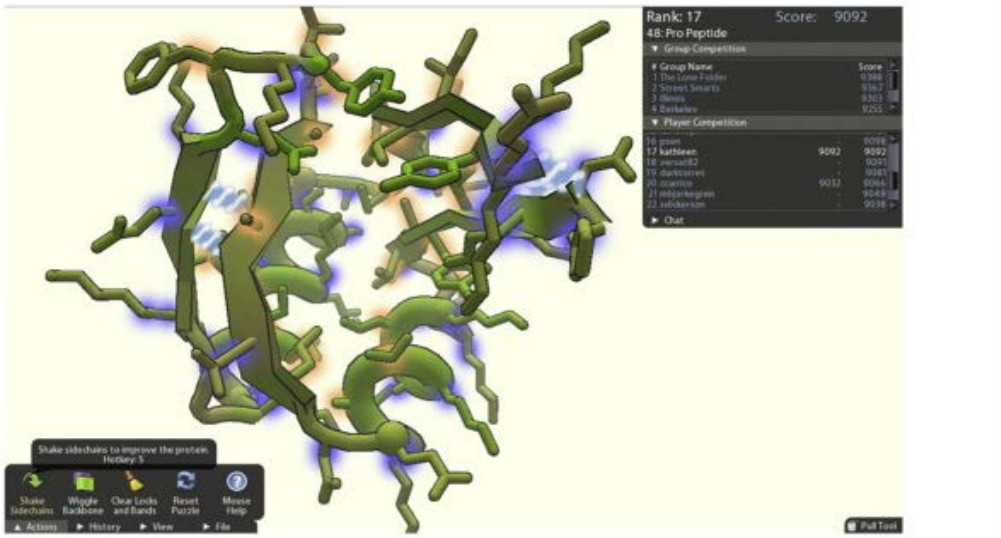


Fig. 1. Foldit user interface. *Source*: http://fold.it/portal/info/about.

Figure options

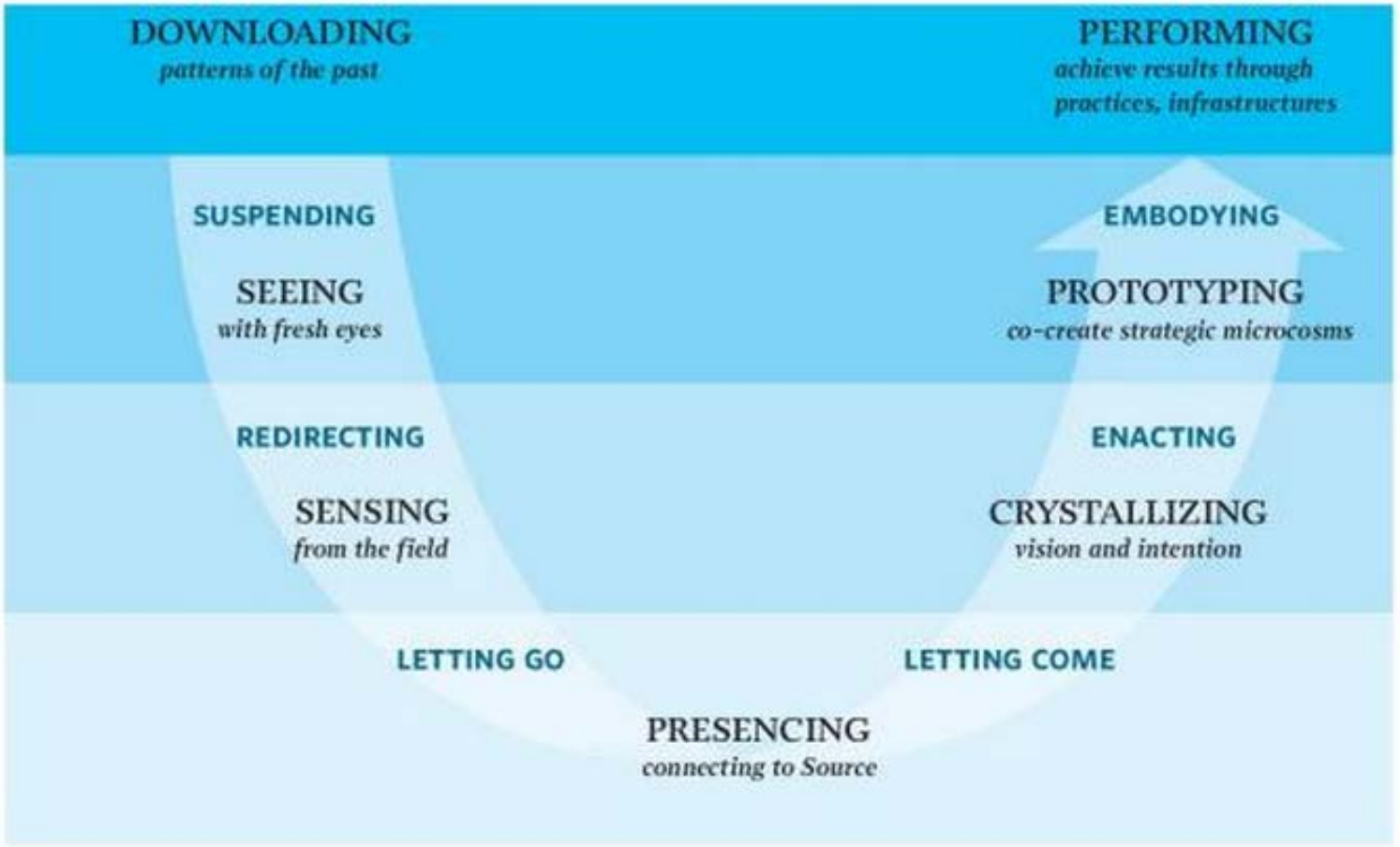
- *Crowd science: The organization of scientific research in open collaborative projects*. Chiara Franzonia and Henry Sauermann. *Research Policy*, forthcoming. http://www.sciencedirect.com/science/article/pii/S0048733313001212

Research data – Typical practice in the mid-1990s

A young astronomer saw a data set in a published journal and wanted to reanalyze it, so he asked his colleague for the numbers. The scholar who published the paper refused, so the junior scholar took the published scatterplot, guessed the numbers, and published his own analysis. The original scholar was so upset that he called for the second journal to retract the young scholar's paper.

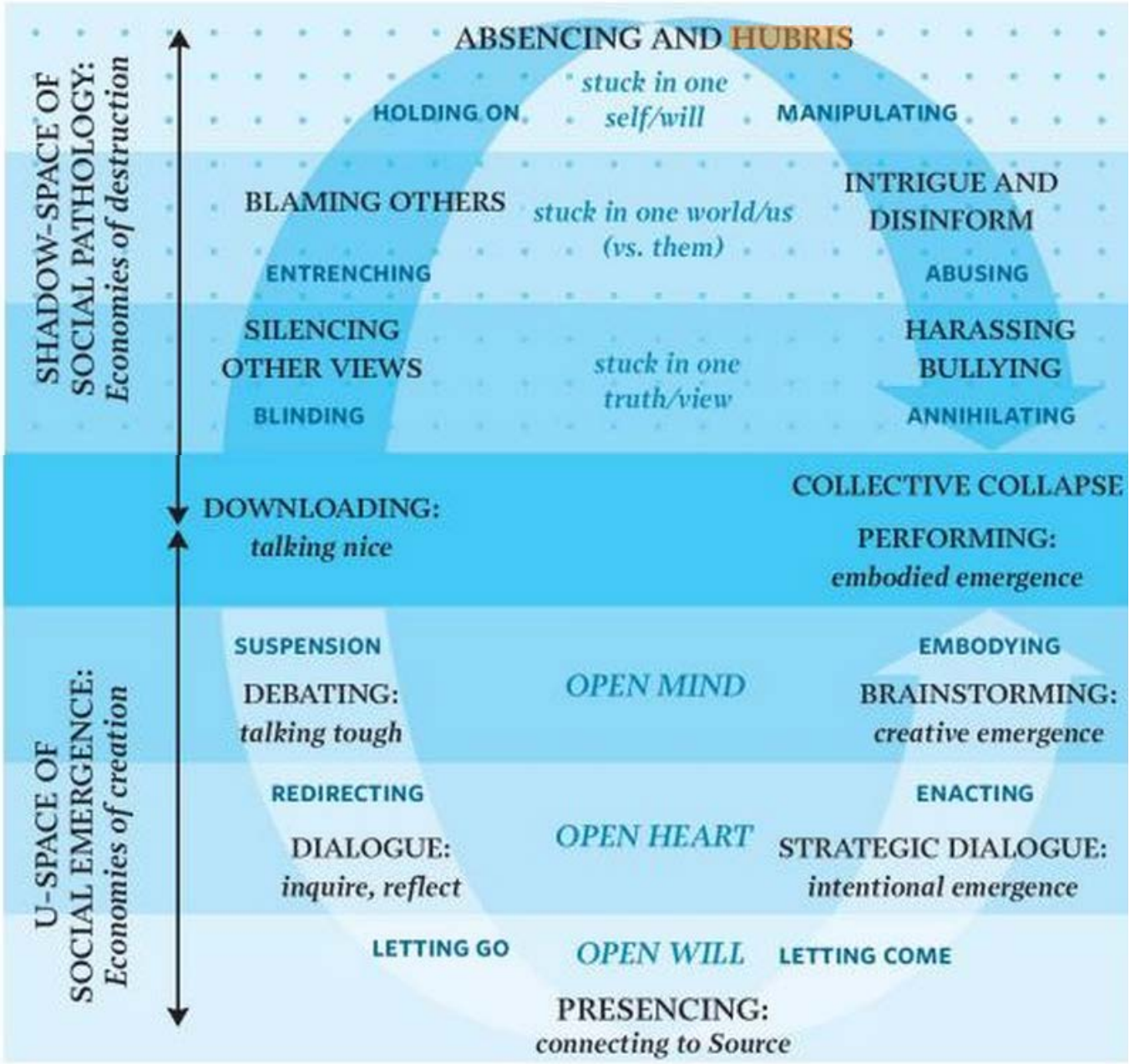
"Crowd Science Reaches New Heights" by Jeffrey R. Young, http://chronicle.com/article/The-Rise-of-Crowd-Science/65707/

Opening or closing doors?



Source: C. Otto Scharmer: *Theory U: Leading from the Future as It Emerges*. Berrett-Koehler Publishers, 2009

?



Source: C. Otto Scharmer: *Theory U: Leading from the Future as It Emerges.* Berrett-Koehler Publishers, 2009

Knowledge and the development of society

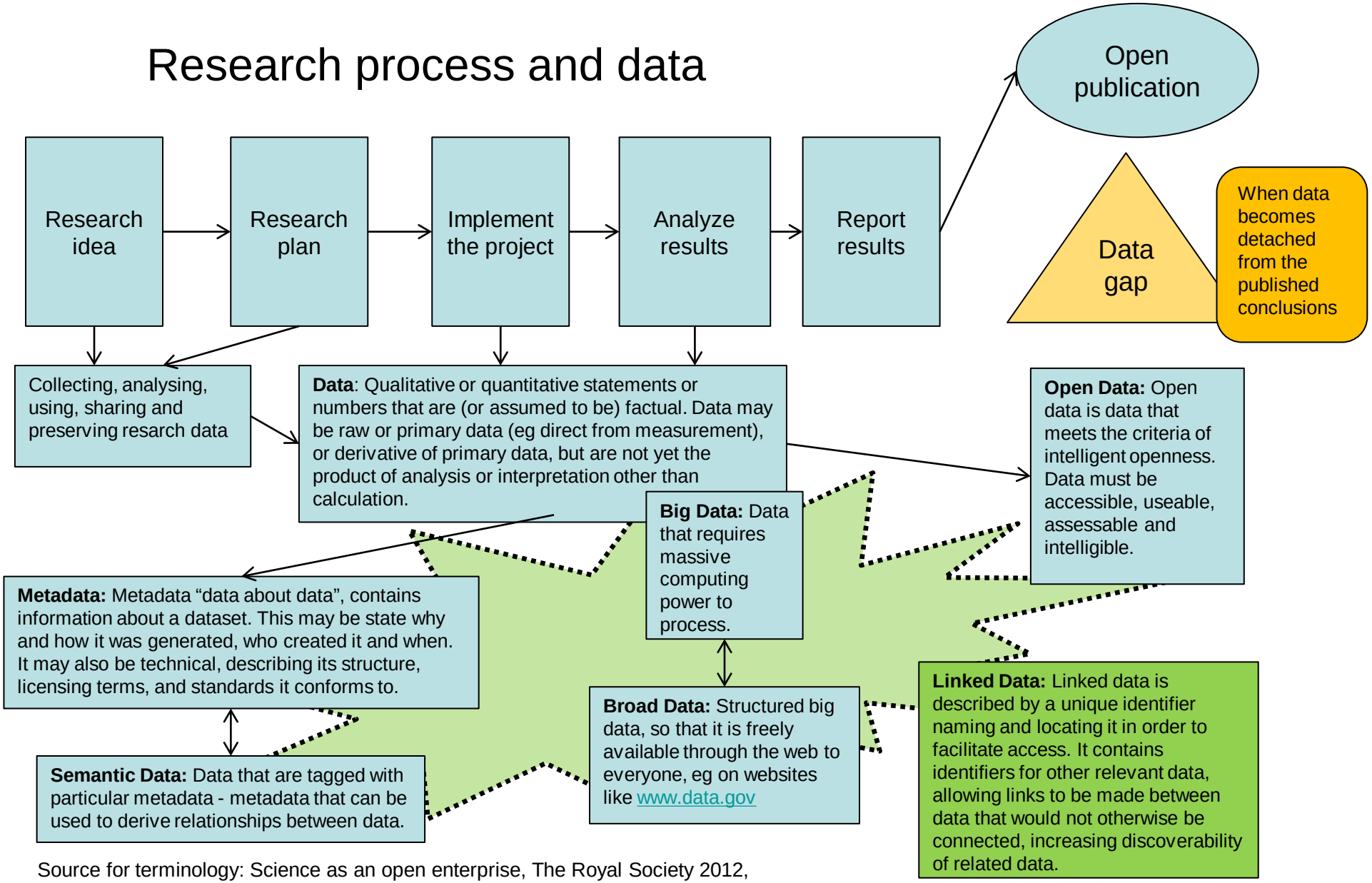
- Knowledge as an enabler
  - science and research build up knowledge which increases competence via education and experience
- Impact on innovation
  - better access to knowledge and research results enhances innovation and supports economic growth and well-being in society
- Better decision-making in society
  - knowledge produced by scientific research enables better decision-making
- Open science
  - opening research results and data used creates possibilities for new research and commercial use

Opening the Data of the Public Sector – Open Knowledge Program 2013-2015

- Developing the practices, such as the general terms of use and licences (Public Administration Recommendation is in the making)
- The Public Sector agencies will be asked and guided to evaluate their information resources from the point of view of Open Data as a part of their information architecture and the frame budget formulation procedure
- Developing structures and Information Architecture, Common Metadata model for Open Data, Common Public Sector data portal, Supporting services and training
- Developing methods to monitor the development and the impacts of Open Data

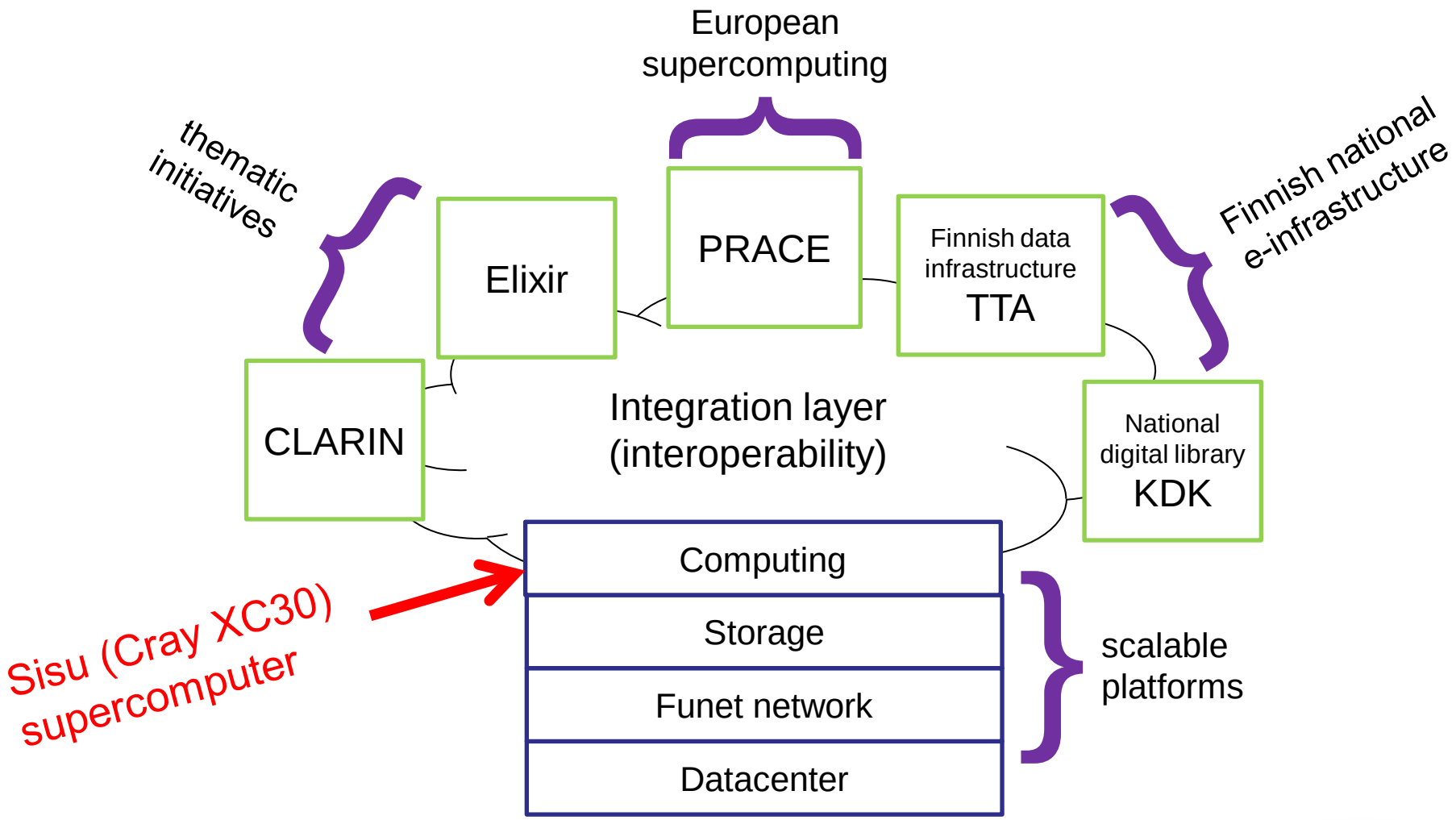
Source: Anne Kauhanen-Simanainen, Ministry of Finance, 3.6.2013

Research process and data



Source for terminology: Science as an open enterprise, The Royal Society 2012, http://royalsociety.org/uploadedFiles/Royal_Society_Content/policy/projects/sape/2012-06-20-SAOE.pdf

World-class infrastructure for science and research



Finnish research data collaboration (TTA)

- TTA is appointed and coordinated by Ministry of Education and Culture
  - empower the national user communities
  - remove existing constraints
  - use national and international standards
- TTA services
  - storage solution IDA
  - metadata catalog KATA
  - long term preservation (starting in 2013-2014), jointly with cultural heritage and research data
- Architecting information infrastructure and metadata management
  - establishing roadmaps, improving interoperability

“Data management should be woven into every course in science”

Attitudes to sharing!

Nature **461**, 145 (10 September 2009) | doi:10.1038/461145a