

Type of session

Presentation - Evidence Track

Title of session

Mapping OER using Semantic Wiki and Semantic Maps

Names, titles and institutions

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Goals or intended outcomes

This presentation will describe the technical and process lessons learned from the approach that POERUP and its successor activities took for collecting, tabulating and mapping over 500 OER and MOOC initiatives across the world.

Short description (140 characters)

A description of how the POERUP project used Semantic Wiki and Semantic Maps technology to tabulate and map OER and MOOC initiatives

Clear description of what will be covered (1000-2000 words)*Overview*

This presentation describes the approach taken by an externally-funded series of analytic projects in OER, first POERUP and then the successor studies on SharedOER and Adult Education & OER, to "solve" the requirement, first posed by UNESCO in 2012 (D'Antoni, 2013), but later taken up by the Hewlett Foundation (2013), of geographic mapping of OER initiatives, policies and other related entities. There are of course several such "solutions", all with their strengths and weaknesses, but the POERUP database is larger than most so far, more multi-sector (HE,VET and K-12) and more global in coverage - in part because it could leverage on a series of well-funded EU projects over several years, each unusually (for EU projects) taking a global viewpoint.

The presentation will consider the decisions taken by POERUP and its successor studies on technology, databases, mapping and user interface, looking both at the distribution and the collection aspects.

For the means of both widespread distribution and collection the particular solution eventually decided on, after several trials of other technologies (which will be described) was the use of semantic wikis, specifically Semantic MediaWiki, with the Semantic Maps extensions. This toolkit has the advantage of being both widely available (either via service providers or as an institution-installable software suite) and very similar in approach to Wikipedia and WikiEducator, thus familiar to a large community of educators. In our view, this makes it a wise choice for OER map projects. Semantic Wiki is the collection wiki of choice for POERUP, and interestingly it is also the technology used by the long-standing EduTech wiki at the University of Geneva.

For the curation aspects, requiring painstaking editing of metadata, it became clear that the use of spreadsheet software (be it Excel or open source) offered the best trade-offs, having an easy learning curve for many educational users yet being powerful enough to use to curate and then load even a "large" database of OER initiatives. (In the world of OER initiatives, 1000 is a large database; in the wider world of open access, 5000 is a large database. Both numbers are in fact quite modest in terms of modern spreadsheets and databases.) However, collection of data was done in Word (see later).

Selection of relevant fields for the database was a key aspect, requiring many tactical decisions. For example, it is relatively easy to agree on a standard list of countries, but when it comes to regions and subregions there is much less stability, a fact which North Americans find challenging, used as they are to years of fixed borders in state/province boundaries and even county boundaries. Languages, educational levels, and subject taxonomies all require careful handling if (as we required) the curation is expected to be done by the generality of the educational OER community rather than a cadre of information scientists.

On the rendering of maps there are many issues to consider, including pin clustering (an institution may have several OER initiatives with effectively the same geolocation).

Linked Open Data is increasingly important and the decisions taken there will also be reviewed.

POERUP

As background, POERUP was an EU-funded project of nearly three years duration, with a budget of around US\$700,000, which started in November 2011 and reported finally in October 2014. The overall aim of POERUP was to carry out research to understand how governments can stimulate the uptake of OER by policy means, not excluding financial means but recognising that in the ongoing economic situation the scope for government financial support for such activities is much less than it was in the past.

POERUP made its policy recommendations based on evidence from country reports (33 were created), tables of initiatives (501 geocoded with 200 more collected), case studies (eight) and over 10 policy reports, each going through over a year of drafting in most cases. POERUP tried to take an approach of dispassionate analysis: it strove to take a balanced view within an overall positive orientation, in respect of OER specifically, and opening up education, more generally.

POERUP achieved this by:

- studying a range of countries in Europe and others across the world seen as relevant to Europe (mainly in the Commonwealth and Latin America), in order to understand what OER activities and initiatives are under way, and why they are continuing (or stopping, or more starting) - and taking account of reports from other agencies and projects studying OER in other countries;
- researching case studies of the end-user/producer communities behind OER initiatives in order to refine and elaborate recommendations to formulate a set of action points that can be applied to ensuring the realisation of successful, lively and sustainable OER communities;

- developing informed ideas on policy formulation using evidence from POERUP and (the few) other policy-oriented studies, POERUP staff's own experience in related projects, and ongoing advice from other experts in the field.

These results were disseminated in over two dozen public reports. The POERUP project has a web site <http://www.poerup.info> and a wiki <http://poerup.referata.com> on which country reports and other outputs were developed. This wiki will remain active indefinitely and will continue to be enhanced, as OER, under a Creative Commons license (CC 4.0).

POERUP map technologies

As a relatively small but important part of the overall POERUP project, a series of OER mapping approaches were developed, in three main technological phases.

First, Sero created a Custom Map Tool driven by the sophisticated "noSQL" database MongoDB to allow display of and search for OER initiatives - <http://oer.poerup.org.uk> - as part of a wider initiative to document and allow search for open education initiatives, including MOOCs, available at <http://www.poerup.org.uk>. The core database technology and approach were chosen to be scalable to high performance as well as being open source and Linked Data-ready. The Open API it makes available facilitates future use by different groups working collaboratively on problems of collecting, mapping and analysing open education initiatives, including but not only eMundus, SharedOER, D-TRANSFORM, OER Africa and we hope, the Hewlett-funded initiative now being operated by the German organisation hbz and its partners

Second, Sero created a number of Google Map Tools consisting of ad hoc maps and charts, using Google Map Engine Pro and Google Charts. This is a very useful technology with an easy learning curve and very suitable for ad hoc maps.

Third and finally, Sero created a suite of Semantic Map Tools using Semantic Maps, a module of Semantic MediaWiki, hosted on the Referata wiki farm to support the POERUP wiki - <http://poerup.referata.com>. Semantic Wiki is a powerful extension of the MediaWiki software. (MediaWiki is used also for WikiEducator and Wikipedia.) These technologies are easy to master for anyone used to the MediaWiki software (and so in particular tens of thousands of Wikipedia contributors and hundreds of contributors to WikiEducator). These are now our technologies of choice for ongoing OER study projects.

Coupled with the Semantic Map Tools goes a set of Search Tools. Examples of these can be seen on the POERUP wiki at <http://poerup.referata.com/wiki/Search>

We also developed a set of Data Entry Tools so that individuals and organisations can create new entries on the wiki without having to use the wiki editor or learn wiki mark-up. However, the bulk update tools driven by our spreadsheets remain the preferred route. The next section goes into such process aspects in more detail.

Organisational and process lessons learned

For those interested in global mapping, perhaps the most important aspects are not the technical aspects but the organisational and process lessons learned about large projects trying to get an

overview of the global scene in OER. We hope these conclusions will be useful to the new round of projects taking forward OER mapping and related studies.

1. There are still a large number of countries in the world for which there is no up to date report on the country's OER activities and OER-relevant policies, set in the educational, regulatory, technical and political context of the country. POERUP has established that when procurement is unconstrained, the market price for each such study is a few thousand dollars - not a lot, but there are a lot of countries in the world. While one may be able to find volunteer labour, and we did find some, it is useful to know what such volunteer labour is worth on the open market. It is noteworthy that almost all OER analytic projects - run from POERUP, UNESCO IITE and others - have actually paid for their studies, and there are very few free studies available.
2. We had a great deal of success, eventually, in working with our partners, to get them to develop tables of OER initiatives. Experience demonstrated, after various false starts, that, contrary to our initial theories, it is easiest and fastest to create these, not online, but by typing directly into a large Word table with over 20 columns on a "page" with a very large (virtual) paper size. For a variety of subtle reasons, it is actually quicker to do this in Word rather than Excel - though we convert the completed Word tables to Excel. It is hopelessly slow to use any but the largest monitors one can get hold of - there is so much cut and paste involved. There are also many hard lessons we learned about how various interface techniques online (such as drop-down lists) actually seriously slow down data entry.
3. However, the tables produced by our partners and consultants, expert though they were (by the end of the project), needed a large amount of central editing and curation. Data on institution addresses, institution names, URLs, in-country structure of regions, etc all had to be carefully checked. We feel the long term answer is to set up customised macros for each of the major countries
4. Geocoding is by no means as simple or reliable as the current crop of open source tools try to claim, even apart from the issues of what actual coordinate one is trying to compute, and why. We set an ideal target of one geocode per minute, but we rarely achieved that except with well-structured US material. While prestige universities are well handled, lesser-known or lower-level institutions (especially schools), or institutions in lesser-known countries, are often very difficult to find addresses for. Local knowledge is very helpful. We evolved a whole set of backup tactics for situations when we could not find the "actual" geocode.

The full paper will go into such points in more detail and will also update the report Bacsich (2014a), produced at the end of POERUP, to take account of the six months additional work that will have gone into refining the POERUP systems and collecting many more initiatives for the new studies undertaken by Sero in the OER area.

Selected references

Bacsich, P. (2014a). *Transversal and categorised inventory of OER Programmes and Initiatives - on maps*. POERUP Deliverable 2.1 Edition 2, June 2014. Available at http://poerup.referata.com/wiki/File:POERUP_D2.1_edition_2.pdf

Bacsich, P. (2014b). *POERUP: Policies for OER Uptake - Final Report*. POERUP, October 2014. Available at http://poerup.referata.com/wiki/File:2011_4021_FR_POERUP_pub.pdf

D'Antoni, S. (2013). *A world map of Open Educational Resources initiatives: Can the global OER community design and build it together?* Summary report of an international conversation: 12–30 November 2012. Available at <https://oerknowledgecloud.org/?q=content/world-map-open-educational-resources-initiatives-can-global-oer-community-design-and-build-i>

Hewlett Foundation (2013). *Launching the development of an OER World Map: Phase 1*. RFP released 15 November 2013. Available at <https://docs.google.com/file/d/0B5FQbmPL4C6TV21uT09CRXdIYnM/edit>

Intended audience

OER researchers interested in evidence of impact and policy matters.