

## Open Educational Resources in Germany State of development and some initial lessons learned

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### 1. INTRODUCTION

Germany can be described as a late-comer to OER. With rare exceptions, the international debate was largely ignored in Germany during the early years of OER. The turning point appeared 2012, when two independent incidents generated new stimuli for both the development of a civil-society based grassroots movement as well as for the policy driven promotion of OER. The coexistence and interaction of bottom-up and top-down driven activity is characteristic for the German OER movement. In the following a very short overview of both developing lines will be provided.

The beginning of the bottom-up OER-movement can be dated to late 2011 when some bloggers and practitioners published details on a leaked agreement between textbook companies and the administration on the use of copyrighted materials in schools. A software was planned to be installed on school computers to search for illegal copies of the publishers' contents — this was termed the “School trojan virus” (“Schultrojaner”) because of the modality of its introduction. A community against this practice and for the open use of learning materials was initiated. This community can be seen as the nucleus of the German OER movement.

Early examples of grassroots OER initiatives are the wiki-based [ZUM initiative](#) (see below 4.2), the [RPI Virtueller platform](#), which is provided by the Protestant Church, the social bookmarking tool [edutags](#) as well as the [Schulbuch-O-Mat](#) project, which delivered Germany's first OER-Textbook combining crowdsourced financing with reusing existing [CK-12](#) materials.

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Submetido em 02 de maio de 2018.

Aceito para publicação em 25 de junho de 2018.

#### POLÍTICA DE ACESSO LIVRE

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The early community found a forum with the Educamps and especially the [OERcamps](#) (see below 5.4), which started 2012 and took place till 2016 on a yearly basis<sup>1</sup>. In 2013 [Wikimedia](#) organized its first major OER conference, [OERde13](#), which was succeeded by the [OERde14](#) conference one year later. Since Wikimedia did not continue the conferences, [Jöran & Konsorten](#), a Hamburg based agency organized the [OERde Festival 2016](#) and [2017](#), which focussed strongly on connecting policy makers and the OER community.

Roughly at the same time as the “school trojan virus”, the first [UNESCO OER World Congress](#) took place 2012 in Paris - essentially without German participation. While other countries like the Netherlands or the [United Kingdom](#) started major OER programs back in 2007, Germany seemed to have missed the starting gun. In order to catch up with the development in other countries, governmental agencies started investigation.

After several expert consultations, a working group was set up late 2013 by the educational administrations of the 16 Länder and the federal ministry. They published a position paper in January 2015 outlining first policy measures for Germany (Kultusminister Konferenz, & Bundesministerium für Bildung und Forschung, 2015). The paper was largely supportive of OER, although the policy focus was on compliance and quality assurance.

As the preliminar highlight of this dynamic development, Germany saw the first funding programme for OER on a federal level by the end of 2016 (see below 5.). Within “[OERinfo](#)” the development of a [central information website](#) and 21 train-the-trainer projects from different educational sectors are being funded. The central aim is to raise awareness and build capacity through train-the-trainer exercises.

This article is based on a comprehensive report published by UNESCO IITE in September 2018 (Orr, Neumann, Muuß-Merholz, 2017). It summarizes the current state of OER in Germany and its development within the last five years. After a short introduction to the German educational system and its wider policy environment (see below 2), a short quantitative overview of the German OER landscape (see below 3) as well as a exemplary review of several OER initiatives will be provided (see below 4). Following, special emphasis will be given to an introduction to the current OERinfo-funding line (see below 5).

## 2. POLITICAL FRAMING

The Federal Republic of Germany has a population of roughly 80 million. The republic is a federation of sixteen states, called Länder (singular: “Land”), five of which were joined to the Federal Republic after the breakdown of the German Democratic Republic in 1990. Educational legislation and administration of the education system are primarily the responsibility of the Länder. This particularly applies to the school system, higher education and the further education sector. The heads of the ministries for education assemble regularly in the Standing Conference of the Ministers of Education (Kultusministerkonferenz, KMK) for coordinating purposes.

On the federal level, the [Federal Ministry of Education and Research](#) (Bundesministerium für Bildung und Forschung, BMBF) has a mandate to support scientific research and company-based vocational training, but also to support national matters of higher education development. The ministry offers a host of programmes in support of research activities involving higher education institutions (HEI) and other institutions.

In general too, there are provisions in the Basic Law for particular forms of cooperation between the Federation and the Länder within the scope of the so-called joint tasks. These joint tasks have to be agreed consensually and usually involve the Federal Government providing funding for infrastructure, whilst the state level (Länder) focus on didactic reforms and the related reforms to the teaching and learning environment.

A good example of this is the Digital Agenda, a major strategic document from the Federal government on digitalisation in all societal spheres, which set priorities for the period from 2014 till 2017<sup>ii</sup>. It names seven areas of work, one of them being education. While it does not use the term “Open Educational Resources” it mentions frequently in the text that knowledge should be made freely available “in a way that does not infringe copyright”, which could equally be applied to the use of OER.

Following the Digital Agenda, KMK and BMBF announced the ‘Digital Pact School’ in December 2016, which is expected to provide five Billion Euro for the digitalisation of schools, especially for hardware, access to high speed Wifi and secure cloud storage. A joint paper (Kultusminister Konferenz & Bundesministerium für Bildung und Forschung, 2017) has already been published setting out the cornerstones of further discussions. The seven-page paper mentions OER twice: measures should be launched to improve the dissemination of OER and new quality assurance mechanisms should be developed for digital media and OER.

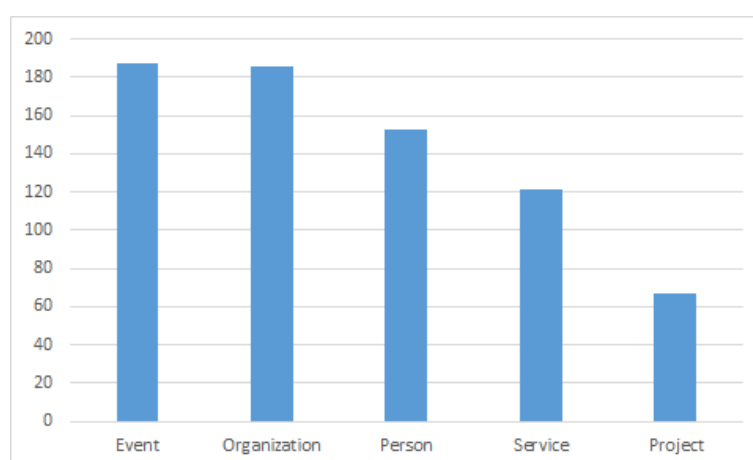
So while the paper remains reserved in relation to OER the hope remains the programme will contribute the infrastructure needed for the mainstreaming of OER in the school sector.

But currently, the planned Digital Pact between the Federal Government and the states is not yet agreed, which means that the five billion Euros offered by the Federal government to this programme cannot be spent. Due to the (for Germany historically unique) delay of the coalition agreement after the federal election in September 2017 the final agreement of the Digital Pact is still outstanding. Nevertheless chances for fast progress can be considered to remain high, since the recently agreed coalition treaty expresses commitment for OER stronger than ever before (CDU, CSU & SPD, 2018):

Within the scope of a comprehensive Open Educational Resources strategy, we want to promote the emergence and availability, the dissemination and the didactically substantiated use of open licensed and freely available teaching and learning materials and established an appropriate quality assurance.

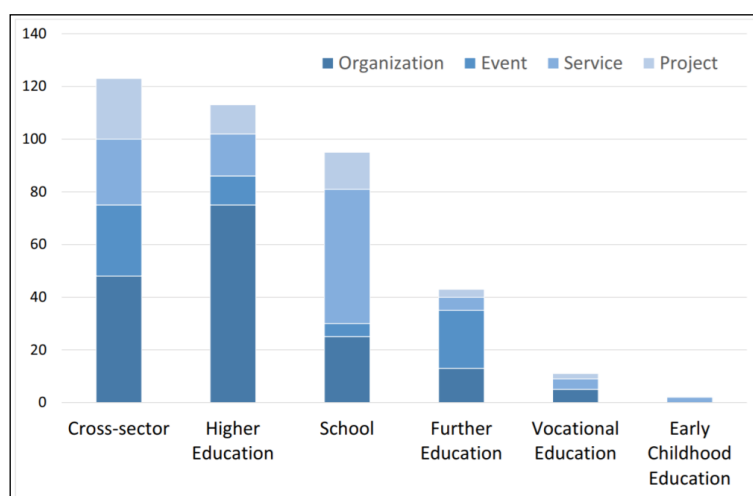
### 3. The German OER Landscape in numbers

One special characteristic of the German situation is the intensive use of the [OER World Map](#) which allows to collect and document ongoing activities related to OER. The project has been funded by [The William and Flora Hewlett Foundation](#) since the end of 2014 and is capable of providing statistics based on the collected information. Since additional funding was provided by the [OERinfo funding line](#) (see below 5.) for the collection of OER related data, Germany is currently the best covered country on the OER World Map.



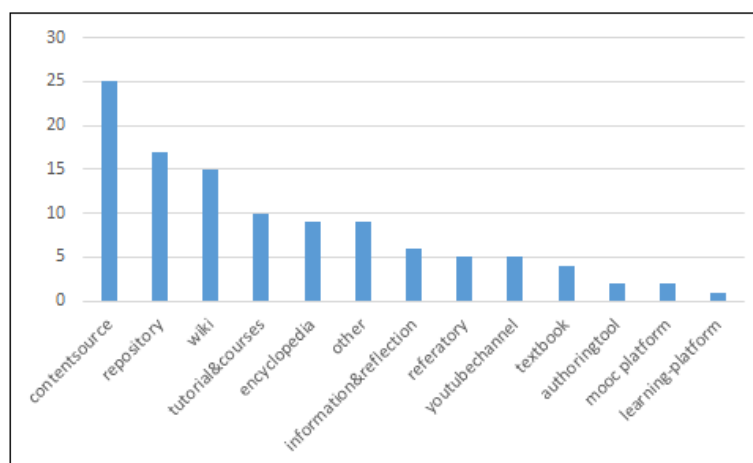
**Figure 1: Number of OER World Map entries related to Germany according to main data types (as at April 2018).**

At the time of writing this report the World Map includes more than 730 entries related to Germany. The main data types are organisations and persons (actors) as well as services, projects and events (activities). As can be seen in Figure 1, the data types with the most entries are 'event' and 'organisation'. But, as will be shown later, activity-related data, especially services and projects is more meaningful.



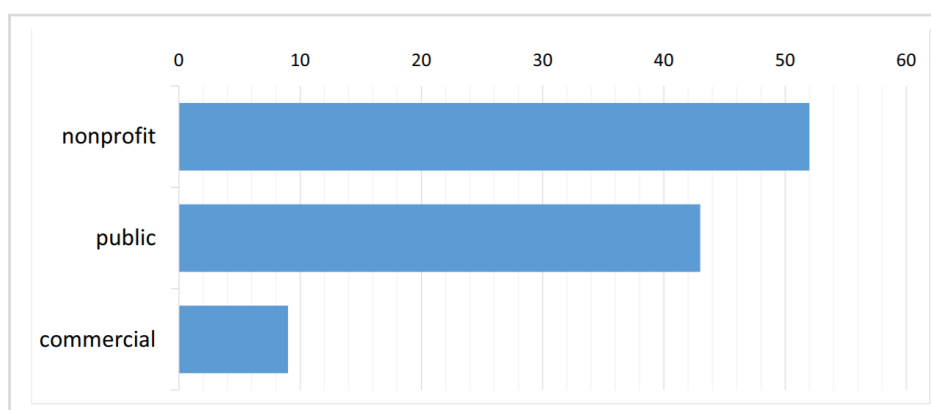
**Figure 2: Number of entries by educational sector, subdivided by data types. (As at September 2017)**

As Figure 2 shows the most populated sectors on the OER World Map are Higher Education and “Cross-sector”. Looking deeper, it can be noticed that around half of the entries in the higher education sector are organizations while the number of services is significantly lower. One explanation for this could be that the higher education sector exports its expertise into other educational sectors, e.g. by providing services for the school sector or leading projects within the OERinfo funding line. While by absolute numbers the school sector appears to be smaller than the higher education sector, the number of services is significantly higher in the school sector: while only 18 services target the higher education sector, there are roughly three times more (57) services addressing the school sector. This shows that the school sector is not only the oldest, but also still the strongest OER sector in Germany up to date.



**Figure 3: Types of services (As at September 2017)**

A service is characterized by providing some kind of value for its users on a continuous basis. When the concept was first introduced, the primary focus was on repositories and other content sources. However, by now we found out that several other types of services exist as well and that it is challenging to come up with a clear distinction of service types<sup>iii</sup>. Figure 3 gives an overview of different existing service types and their quantitative distribution.



**Figure 4: Services according to business model (As at September 2017)**

Figure 4 provides initial insights into how the German OER movement has been funded so far. The distinction is rather rough and relates to the constitution of the provider of the service. For example, services, which are provided by a public university, are classified as publicly financed services. Out of 104 services in total, 52 belong to the non-profit sector, which indicates a heavy contribution by volunteers as well as in some cases the acquisition of external funds. On the other hand, 43 services are based on public funding and it can be expected that this number will continue to increase, since government activity of the Länder have been triggered by the OERinfo programme.

#### 4. HIGHLIGHTED INITIATIVES

Within section four some selected good practice examples are provided to complement the quantitative overview given in section three. Due to space restrictions, it is impossible to provide a comprehensive overview of the activity so far in this article<sup>iv</sup>. Following examples have been chosen not only due to their success and wide acceptance, but also to illustrate the variety of different financing models which can be found in the German OER landscape.

##### 4.1 Bildungsserver

Most German schools are hardly (at most partly) digitised yet, meaning that neither the didactical nor the administrative processes at schools and central institutions are strongly supported by digital tools. Nevertheless, there has been governmental activity in the past like the initial development of a wider infrastructure of educational platforms. As education is a decentral responsibility of the Länder, it follows that each of it has a platform for teaching and learning media which are called 'Bildungsserver'. While their offers differ, most of them provide materials like teaching plans, curricula, learning resources as well as general information on (digital) education.

In addition to the [15 Bildungsservers of the Länder<sup>v</sup>](#), the national education platform ([Deutscher Bildungsserver<sup>vi</sup>](#)) aims to pool resources provided by the different Länder, amongst others by providing the joint educational search engine [Elixier](#). The Bildungsserver have been supporters of OER from the beginning. This led the managers of the 16 educational platforms to formulate a [voluntary commitment to OER](#) in 2016 (Landesbildungsserver & Deutscher Bildungsserver, 2016).

All in all, the Bildungsserver can be seen as a first step into the development of a broader OER-infrastructure of connected repositories<sup>vii</sup>. In this model, each of the Länder would provide a central repository. These repositories would ideally be horizontally connected to each other as well as vertically connected to the Learning Management Systems of the related schools beneath.

One huge obstacle — the agreement of a joint metadata standard — has already been overcome. But despite all achievements one issue of highest priority remains open: the existing Bildungsserver do not allow teachers or other users to

upload and share their material. Since there is no other general repository, which allows doing this, the German OER infrastructure is still missing a substantial part.

### **ZUM**

[ZUM.e.V.](#) is a collaborative platform providing teaching and learning resources created by its members as well as web space to create wikis and etherpads for educational purposes. ZUM covers a wide range of topics for all grades of primary and secondary schools. It is member-driven and most content is provided by professional teachers. ZUM.e.V. is probably the oldest (founded 1997) and largest grassroots educational project in Germany. It attracts a great number of users and promotes the idea of OER. The members of the ZUM community are very active in advocating activities. ZUM.e.V. might be considered as the best example of a truly grassroots and collaborative effort for OER by educators in Germany, if not worldwide.

### **Serlo**

Similar but different to [ZUM e.V.](#) is the Munich based [Serlo initiative](#). Like ZUM it is one of Germany's most successful bottom-up initiatives. But while ZUM is driven mainly by teachers, Serlo was funded by students. Another difference is that while ZUM is solely driven by volunteers, Serlo successfully managed to acquire external funding, which allows it to run the core organization based on professional standards. Like on Wikipedia, every user can create new content or improve existing materials. Serlo provides 840 explanatory entries, 4,600 solved exercises, 120 courses and videos for math and other school subjects. More than 700,000 school and university students use Serlo each month.

### **Siemens Stiftung**

The [media portal of the Siemens Stiftung](#) supports educational professionals with a wide range of teaching and learning materials related to science and technology. The portal offers more than 5,500 media in German, English, and Spanish. The free materials are designed for use in preschools, primary and secondary schools. The repository was the first prominent OER project founded, financed and operated directly by a large foundation. It also went through the process of making existing content available as OER by newly licensing it under a Creative Commons license (CC BY SA 4.0). Currently more than 800 resources are openly licensed. Siemens Stiftung also supports the OER movement by sponsoring events in Germany. It also supported the '[OE Global 2017](#)' conference in Cape Town.

### **Tutory**

[Tutory](#) is a rare example of a German edtech startup that is known beyond Germany. In July 2017 it had 3,500 registered users and 700 active users per month. It is an authoring tool, which supports teachers in producing working sheets in PDF format. Therefore, Tutory is often mentioned as a solution for making authoring and adapting OER easier for teachers. The [tutory UG](#) (entrepreneurial company with limited liability) is a start-up based in Leipzig and Berlin. The company was supported

by a grant from the European Social Fund (ESF) until March 2017. They provide a freemium model for teachers and educators.

## 5. THE OERinfo FUNDING LINE

The [OERinfo funding programme](#) (Figure 5) was prepared by a number of consultations, studies and recommendations, which took place between 2012 and 2016. It is the most significant German government action in the field of OER so far. It aims at “a broad demonstration of the potentials inherent to OER and the development of the skills needed for the use, development and distribution of open learning resources. The funding line is designed with two pillars at its core:

- A [central information website](#), which provides high quality information about OER to the interested (professional) public;
- 21 train-the-trainer-projects which aim at the development of the required skills to create, use and distribute OER.

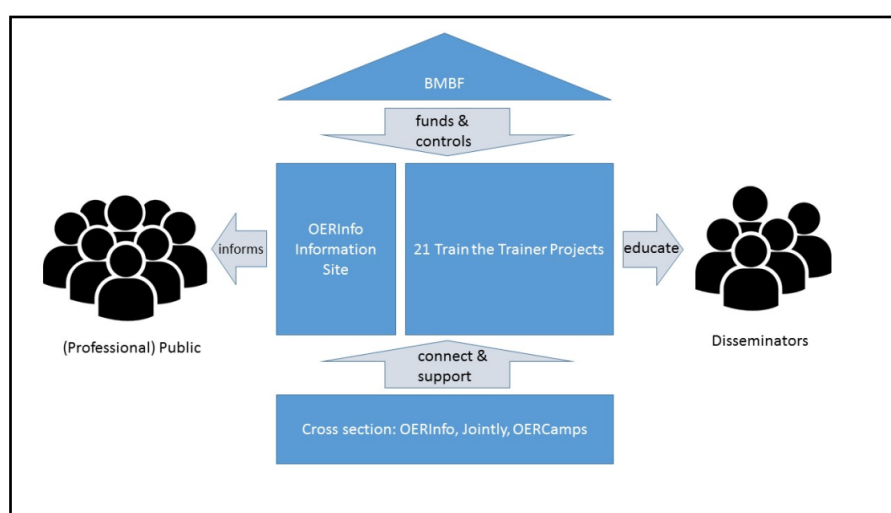


Figure 5: Architecture of the OERinfo funding programme

The programme is funded and controlled by the [Federal Ministry of Education and Research](#). [Three cross-sector projects](#) aim at connecting, coordinating and supporting the activities of the overall programme. The complete programme will be funded with 6.6 Mio Euro (Surmann, 2017). The development of the OERinfo website is funded for 24 months with 1.2 Mio Euro. The other projects are usually funded for 18 months, with sums ranging from 95,000 Euro to 460,000 Euro. The projects were chosen among an unknown number of submissions after an open call in early 2016.

### 5.1 Train-the-trainer projects

The main idea of the 21 train-the-trainer projects is to educate disseminators, e.g. from the field of teacher training or central media and support units, which will then pass on their newly required skills to teachers and learners in a second step, which itself is not part of the programme.



The projects of the programme aim at all educational sectors. While four projects target exclusively the school sector, six aim at the higher education sector and three at the sectors of adult education and vocational training. Eight projects aim at several educational sectors. Nine of the projects aim, primarily or amongst other things, at expanding existing teacher education programmes, many of them being driven by universities.

The outcomes of the projects<sup>viii</sup> usually include face-to-face training as well as the production of learning resources. Common formats are workshops, informational events and consultancy. As far as the produced learning resources are concerned, a huge variety of formats can be identified, which include complete e-learning courses, educational videos, the generation of a CC-0 licensed book as well as the adaptation of an established university journal. The aggregated outcomes can be evaluated in late 2018 after all projects will have come to completion. First impressions suggest that OERinfo is a successful programme.

### **The OERinfo website**

The second major outcome of the programme has been the central information website, which provides high quality information on OER. The '[Information hub OER](#)' ([Informationsstelle OER— OERinfo<sup>ix</sup>](#)) is maintained by a multi-institutional team lead by the [German Institute for International Educational Research \(DIPF\)](#).

The composition of the staff is quite interesting. Besides four public partners, which are responsible for the transfer of the established educational sectors, J&K – Jöran and Konsorten, an agency specialized in (open) education, which strongly participated in the German OER movement from the beginning on and which ran a similar website in the past, provides a part of the editorial team.

OERinfo plans to deliver a wide range of different contents related to OER. This includes blog-posts, video-interviews, the announcement of events and other 'content nuggets'. At the same time, its aspiration is to provide more comprehensive information, like an OER 101 (introduction) and sector specific dossiers.

### **Country maps**

Another special feature of the OERinfo-website is the embedment of the [OER World Map](#), which supports the connectivity within the programme and contributes to its transparent documentation.

The OER World Map is provided by the [North Rhine-Westphalian Library Service Centre \(hbz\)](#) and has been funded by [The William and Flora Hewlett Foundation](#) since the end of 2014. The goal of the OER World Map is to illuminate the global Open Educational Resources movement by facilitating interaction and collaboration. It collects and shares open data about actors and activities related to OER. The supplied information supports a wide range of use cases including the identification of high quality repositories and other OER content sources.

For [OERinfo](#), a country map was developed, which includes only data and information related to Germany. One important lesson learned from the project so far is that the chosen approach to hire an editor to foster data collection in cooperation with the local community works well and provides high quality data at reasonable costs. The integration of the World Map into OERinfo can be considered as a proof of concept which will be rolled out globally by integrating country maps into other OER-websites provided by local partners.

### **Barcamps**

Since OER activities are mostly driven bottom-up, there has been a need for sharing questions, experiences and materials between players, who have been isolated in their own institutions. These players found opportunities for sharing in cross-sector events and within relevant communities. Especially the barcamp/unconference format turned out to fit well the goal of developing a strong German OER community.

Barcamps are rather informal organized meetings which often run over two days, during which the participants discuss a special topic. In difference to normal conferences there is no preset program and presenting is not restricted to experts only. Instead every participant of a barcamp is allowed (and expected) to initiate sessions they are interested in. Sessions can follow different kinds of structure but usually include lots of discussion. Barcamps can galvanise lots of creative energy and support the empowerment of the participants, which is why they align well with the values inherent to OER.

The [first OER barcamp](#) took place 2012 in Bremen. Since then, numerous unconferences took place and due to their success they have been funded within OERinfo as well. 2017 [Jöran and Konsorten](#) finally organized four 'OERCamps'. The standard format is that one half of the two-day-programme is organised as a barcamp unconference, the other half as workshops set up in advance. In four OERCamps 2017 there were 792 participants, 125 workshops and 128 barcamp sessions. Four more OERCamps have been announced for May and June 2018.

### **Interim Review of OERinfo**

Since most of the projects within the OERinfo funding line are funded till the end of 2018 it is too early to provide a comprehensive review of the programme yet. Nevertheless, several lessons learned have been identified. One of them is that while the focus on competence development turned out to be an overall good starting point for the engagement with OER, infrastructure development turned out to be missing. Future programmes therefore should make sure to provide at least basic tools like a repository, which allows to upload and share developed materials.

A crucial lesson learned is that many projects focussed primarily on teachers, seemingly neglecting students and learners. At the same time several projects which happened to include students reported excellent acceptance and response. This should encourage future programmes to focus more on students as potential users, creators and supporters of OER from the beginning.

One of the advantages of Germany's late entry into the field of OER was the possibility to learn from other countries like the United States, the United Kingdom or the Netherlands. The increased German participation in recent international conferences indicates the interest to foreign OER activity. However, analysis of existing experience in the field of training and education abroad happened more selectively than systematically. Future OER programs therefore should include the systematic evaluation of experiences and outcomes made in other countries. At the same time, programmes should document their outcomes carefully to facilitate reuse by others. The [OER World Map](#) turned out to be a helpful tool in this context.

## 6. CONCLUSION

In summary, it can be stated that the German OER development is characterized by interwoven bottom-up and top-down activities. Typical for the German Model is a strong emphasis on coordination by the combination of (un-)conferences, a central information site and the intensive use of the OER World Map. The OERinfo funding line stimulated the process and widened the audience, but true effect of the programme will become visible within the next years. Especially the often named goal of "innovation in education" is still pending.

While OER in Germany has not yet reached the mainstream, growing adoption can be expected. Amongst other things the OERinfo programme has led the topic to enter the agenda of the Länder and it can be assumed that this trend will continue, particularly within the school and the higher education sector. Further stimulation could emerge from the forthcoming "Digital Pact", which will contribute to the improvement of the infrastructure needed for digital education. Depending on the design of the programme and the emphasis given to OER and Open Education, mainstreaming could become a realistic scenario.

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<sup>i</sup> 2017 four OERCamps took place as a part of the OERinfo funding line. For 2018 another four OERCamps are planned.

<sup>ii</sup> See <https://www.digitale-agenda.de>

<sup>iii</sup> Actually a major working package within the World Map project refers to the definition of subcategories for all existing data types. A working document can be found online: <[https://docs.google.com/document/d/1vH4odAccnQhKdg-ra4\\_GHEt4hdBADLC7eZNTHpst92k/edit?usp=sharing](https://docs.google.com/document/d/1vH4odAccnQhKdg-ra4_GHEt4hdBADLC7eZNTHpst92k/edit?usp=sharing)>.

<sup>iv</sup> Probably the most important missing initiative, which could not be included here, since it needs more comprehensive presentation is the [Hamburg Open Online University \(HOOU\)](#).

<sup>v</sup> (Berlin and Brandenburg share a platform making 15 platforms for 16 Länder)

<sup>vi</sup> It is provided by the German Institute for International Educational Research (Deutsche Institut für Internationale Pädagogische Forschung, DIPF) in cooperation with the national Institute for Film and Pictures in Science and Education (FWU Institut für Film und Bild in Wissenschaft und Unterricht).

<sup>vii</sup> Connected repositories have been a major topic in Germany for a while. One important solution to address this problem is the [edusharing software](#), which allows to exchange OER between repositories and/or between a repository and Learning Management Systems.

<sup>viii</sup> The outcomes are collected in the [“Contentbuffet”-repository](#), which was installed by the [Jointly project](#) and is based on the [edusharing-software](#). Edusharing is a Alfresco based repository solution, which supports the integration of different learning management systems.

<sup>ix</sup> ‘OERinfo’ is used as an abbreviation for both the programme and its major project.