

ROADMAP			
TITLE OF THE INITIATIVE	Opening up Education – a proposal for an European Initiative to enhance education and skills development through new technologies		
LEAD DG – RESPONSIBLE UNIT	DG EAC – A3	DATE OF ROADMAP	04/2013
<p>This indicative roadmap is provided for information purposes only and is subject to change. It does not prejudice the final decision of the Commission on whether this initiative will be pursued or on its final content and structure.</p>			

A. Context and problem definition

- (1) What is the political context of the initiative?
- (2) How does it relate to past and possible future initiatives, and to other EU policies?
- (3) What ex-post analysis of existing policy has been carried out? What results are relevant for this initiative?

(1) At a time where our societies are digital, European education and training systems are still unable to integrate ICT in their mainstream practices. There is currently an enormous gap between the embedded use of ICT in all facets of our lives and its use at schools.

In the meantime, the digital revolution has led to an exponential growth in educational courses and other resources available via the Internet, either free as Open Educational Resources (OER)¹ or as paid-for resources. Knowledge is increasingly available for everyone, and very often for free.

Digital technologies can reduce barriers to education and allow more flexible and creative ways of learning, characterised by collaboration and bottom-up practices where the user is also a creator of learning content ("Open Educational Practices", or more widely "user-generated content").

However Europe is not fully reaping the potential offered by new technologies and the upsurge of digital content across the globe to improve the efficiency, accessibility and equity of its education, training and learning systems.

(2) Innovating in education and training is a key priority in several flagship initiatives of the Europe 2020 strategy, in particular *Agenda for New Skills and Jobs*, *Youth on the Move*, the *Digital Agenda* and *Innovation Union*. One of the main priorities under these Flagships initiatives is to support the Member States (MS) in integrating and taking-up ICT in their educational and training policies and practices. The Digital Agenda specifically called for MS to strengthening actions in this field.

Due to the economic crisis in Europe, an emphasis on skills for growth is critical for recovery. In the framework of the last European Semester and in line with the Annual Growth Survey 2012, the Commission has already proposed country-specific recommendations in the area of education and training to a large number of Member States. The Europe 2020 flagship initiative *An agenda for new skills and jobs* and, more recently, the *Employment Package*, set also a number of EU actions to better anticipate skills needs and promote a better matching between labour market requirements and skills. One of the priorities focuses on the importance of gaining appropriate ICT skills to overcome the skills mismatches in the ICT sector and the learning of digital literacy by all citizens for employability and active citizenship. This is in line with the Communication *A Digital Agenda for Europe*, which underlines the need for "enhancing digital literacy, skills and inclusion".

Next to the actions proposed in the Employment Package, in the last quarter of 2012 the Commission has presented a *Communication on Rethinking Education* whose aim is to increase the quantity, quality and relevance of skills supply for higher economic and social outcomes. The Communication tackles the challenge of increasing the levels and relevance of skills through modern education and training systems, stimulating open and flexible learning, securing smart funding and developing partnerships.

To complete and advance the agenda proposed by Rethinking Education, "*Opening up education - a proposal for an European Initiative to enhance education and skills development through new technologies*" should be launched in 2013. The Initiative has been announced in "*Rethinking Education*".

The Council *Recommendation on Recognition and validation of non-formal and informal learning* (adopted in December 2012) is also relevant for "Opening up Education". Learning through OER is very often informal and not recognized. Even for pupils and students in formal education, the use of OER does not necessarily relate to their curriculum; it is a learning done "aside" or "in parallel to" their main studies, without academic assessment. Educational provision will rely in the future increasingly on a blended form of formal and informal learning resources, and mixing of classroom, online and mobile learning environments. Open courses and educational

resources and practices will raise the need to support the recognition and validation of non-formal and informal learning modes.

Following the Communication from December 2012, the Commission has started to work on a two parallel tracks of action concerning the 2001 Copyright directive. In addition to the stakeholders' forum which has just begun, the Commission services are currently reviewing the current copyright framework on the basis of legal and economic studies. This is therefore outside the scope of the OER initiative.

(3) The external evaluations of the European Commission's *Life Long Learning* and *eLearning* programmes reported very positive impacts at micro level (for participants), in terms of development of innovative ICT-based contents, pedagogies, practices, networking and knowledge-sharing for lifelong learning, but they just had moderated strategic effects (at country and European levels), and concluded that the Life Long Learning programme is not always matching the goals of ICT integration and mainstreaming in education systems. One important lesson from these experiences is that a strategic approach is needed to upscale the positive results obtained in small-scale research and pilot-tests and that a focus is needed for developing and implementing innovative pedagogies. Within the eLearning and the Life Long Learning programmes, *eTwinning* aims at increasing the network of participating schools, teachers and pupils, contributing to professional development. An evaluation is ongoing. Initial findings seem to confirm the benefits *eTwinning* for teachers, pupils and schools that participate, but there are obstacles to increase the societal impact of such activities (e.g. time constraints, rigid curricula, lack of official recognition of the work invested, insufficient ICT infrastructure).

It may be concluded that national and EU policies are not being fully successful on promoting the use of ICT in education and training systems at large scale. A disconnection between the use of ICT in our societies and their use at schools persists. If not properly addressed, the issues of digital literacy, ICT skills and the anarchic and often inappropriate use of technologies by (young) learners, may have serious consequences on European economy.

What are the main problems which this initiative will address?

The main problem this initiative will address is that Europe is not fully reaping the potential offered by new technologies and the upsurge of digital content across the globe to improve the efficiency, accessibility and equity of its education, training and learning systems. This implies digital skill gaps and shortages, an increasing digital divide, an inefficient use of resources in education and training systems and the lack of exploitation of opportunities coming from new phenomena like OER, with a negative impact on European innovation capacities and leadership.

This core problem has its root causes in three main areas: ICT infrastructure, digital content and teaching and learning environments. In each area, we can identify several drivers that have led to the current situation in the EU:

1. Drivers related to ICT infrastructure

1.2. Uneven availability of ICT infrastructures and tools, including connectivity, across Member States

Infrastructures are a precondition for integrating ICT in education and training systems. Studies show that there is greater availability of ICT equipment at schools, although disparities between countries and regions remain. Digital technologies evolve very fast and they require constant efforts to be updated in order to respond to increasing demands. Students expect to have Wifi connections everywhere in their schools or campus, tablets and other mobile devices are replacing traditional desktops, software and cloud applications (even course-specific) replace traditional materials, etc. Providing such facilities requires huge investments from education and training institutions and public authorities. Heterogeneous availability of infrastructures leads to inequality problems and increases the gap between teaching practices and ICT in society.

1.2. Absence of open interoperability standards

Lack of interoperability standards creates problems related to access to contents, which cannot be accessed from all devices and operating systems. This may create dominant positions in the market of some (not European) companies.

2. Drivers related to digital contents:

3.1. Insufficient supply of quality digital contents across languages, subjects and needs

There is an insufficient collaboration between stakeholders with complementary know-how (e.g. E&T institutions, publishers and ICT companies), at a moment where the traditional model of textbooks production, based on a strong intervention and funding from the State, is challenged by the combination of economic and financial crisis, the appearance of new actors and by emerging phenomena like OER. There are not enough incentives to change models, as it is happening in industries like software (challenged by open source), scientific publishing (with open access) or even music.

The issue of unclear business models is also true for education and training institutions, in particular European universities that are lagging behind emerging phenomena like Massive Open Online Courses (MOOC).

3.2. Perceived uncertain legal framework conditions for producing, using, re-using and sharing educational contents

The current copyright framework is considered by stakeholders as difficult to understand and therefore this creates a barrier to develop and implement innovative teaching and learning practices based on collaboration and individualisation, through the re-use and sharing of contents. Users (e.g. teachers) feel that regulations are not transparent enough and are scared about the perceived uncertain legal consequences of re-using and sharing educational materials.

3.3. Difficult access to relevant, quality digital resources, in particular OER

Uncertain quality, adequateness and the fragmented nature of digital resources like OER are obstacles to extend their use. It is difficult to discover and identify quality contents adapted to the own needs.

3. Drivers related to teaching and learning environments:

3.1. Lack of teachers' skills for a real digital pedagogy

Among the key factors for success, the role of teachers and of other trainers is essential to provoke a paradigm shift in the way children and adults are taught. Nevertheless, when a digital native generation is fast emerging, today's educators are not properly trained to embed ICT in their pedagogical practices in order to increase personalisation and collaboration. Previous initiatives to promote ICT in education failed on addressing teachers' and trainers' concerns about the added value of using ICT (and/or OER) in their everyday teaching practices.

3.2. Organisational barriers for developing innovative and personalised pedagogies and assessment practices

Education and training institutions often lack the vision and/or capacities to promote innovative teaching methods and an extensive and integrated use of technologies. Frameworks (e.g. curricula, assessment, funding) are often too restrictive, especially for schools, and rarely innovation-friendly.

3.3. Lack of validation and recognition mechanisms for online-acquired skills

The validation of skills and competences acquired online or through OER also needs to be stepped up since learning normally takes place in an informal setting and is seldom accompanied by any assessment or certification. Assessment and accreditation would allow individuals to demonstrate the skills they have acquired through informal or non-formal OER-based training to potential employees. This may constitute a strong incentive to participate in life-long learning and may push for a more effective functioning of the labour market.

Who will be affected by it?

Policy-makers, learners in formal, non-formal and informal education, "disadvantaged" learners (e.g. early school leavers that may be re-attracted to education and training), teachers and trainers, education and training institutions, educational publishers, researchers and authors of education and training materials, ICT industry and European enterprises in general.

Is EU action justified on grounds of subsidiarity? Why can Member States not achieve the objectives of the proposed action sufficiently by themselves? Can the EU achieve the objectives better?

All MS are implementing policies aimed at mainstreaming ICT in education and training. However they are not equally succeeding on integrating technology in education and training for the promotion of innovative ways of teaching and learning. National initiatives and projects are often fragmented, isolated and not always financially sustainable. They are rarely successful in creating meaningful changes and often lack a holistic and coordinated approach. Despite the promotion of ICT in education by public authorities in the past decade, disparities between countries on infrastructures and the use of ICT at schools persist. In times of economic crisis, some public authorities are even tempted to stop their support to initiatives aimed at promoting innovative ways of teaching and learning through the use of digital technology and digital content, which means that investments already done and the know-how acquired are lost.

Fragmentation is an obstacle to develop economies of scale at European level and to exploit opportunities coming from public investments. "Market players", be it education and training institutions (ex: universities) or private players (ex: publishers and ICT industry), may not have the sufficient incentives to develop new business models for a more efficient and equitable the provision of education and training and/or to promote the supply of quality digital content, including quality OER. Incipient markets remain mainly national or even sub-national, with a scarce cross-border component.

The disparities between MS have also negative implications for the functioning of the European labour market and challenge the mobility of workers in the internal market. The divide in terms of access to innovative teaching and learning supported through the use of digital technologies and content - and therefore of access to quality education - may favour the concentration of a digitally-skilled workforce only in certain regions or countries of the EU. Such conditions do not constitute incentives for learners and workers to move across regions. Many countries will have a reduced capacity to attract talent to stimulate a competitive national, regional or local economy.

Furthermore the absence of common framework conditions across MS, as for example the validation and recognition mechanisms for skills acquired through digital learning undermines progress towards a European Area for Skills and Qualifications. Due to this lack of skills recognition, many individuals will not be able to move into further learning or working and the potential of the skills already acquired through digital learning will remain untapped.

A strategic intervention at European level should therefore bring the following added-value:

– Education and training have increasingly a cross-border and international character. The global competition for highly skilled staff implies that European education and training need to remain attractive for the best students and researchers and deliver excellent outcomes. Increasing coordination through a holistic approach allow to tap into economies of scale allowed by technology and digital content which, in turn, increase the opportunities to access to quality education for a wider range of learners and foster EU leadership with a more efficient use of resources.

–European-wide framework conditions stimulate the creation of digital technology tailored to education and training purposes and the supply of quality digital content, including OER. This will allow individuals, schools, training institutions and universities to be better equipped to capitalise on (past or present) public investments made on upgrading ICT infrastructure. European framework conditions will also boost synergies across countries in the development of innovative practices and by that stimulate an increase of quality of European education.

B. Objectives of the initiative

What are the main policy objectives?

The main policy objective is: *Strengthen the integration of digital technologies and contents in formal, non-formal and informal education and training, in order to ensure the provision of skills needed by the current and future generations of students and workers, and increase efficiency of the delivery of education and training in the EU.*

In order to achieve this, three specific objectives can be raised:

- On Infrastructures: Improve and update digital infrastructures for education and training, including connectivity.
- On Content: Up-scale the creation, use, re-use and sharing of quality digital education contents, including Open Educational Resources.
- On Teaching and Learning Environments: Modernise learning, teaching and assessment practices through digital technologies and increase equity.

Do the objectives imply developing EU policy in new areas?

The Commission is involved in the area of ICT in education and training for years, through for instance the former eLearning programme and current Life Long Learning one, as well as through a limited number of projects funded by FP7. However the main responsibility for designing, developing and implementing reforms in education and training systems lies with MS.

Opening up Education aims at providing a political impulse to stimulate a coordinated action at MS level. This requires improving the framework conditions for digital education and training, through an enhanced coordination with stakeholders and MS. Actions shall be supported through existent instruments like "Erasmus for all" and "Horizon 2020".

C. Options

- (1) What are the policy options (including exemptions/adapted regimes e.g. for SMEs) being considered?
- (2) What legislative or 'soft law' instruments could be considered?
- (3) How do the options respect the proportionality principle?

(1) The initiative includes the following options:

Option 1: Business as usual (baseline scenario)

Option 2: A coherent set of EU incentives to exploit the potential of digital technologies and content for better access and quality of education

This option would imply joint action from Commission, MS and other stakeholders, in line with their respective competences in the field of education. The Commission would devise and implement, with MS, a more coherent strategy for stimulating the integration of digital technologies and content (including OER) in mainstream education and training, to stimulate open educational practices and innovative learning environments. Supportive actions would be based on incentives financed by the new generation of funds and programmes of the Multiannual Financial Framework (MFF) and on the establishment of reference framework at EU level which should sustain the political guidance provided to MS. The Commission would thus provide a policy impulse to

stimulate a coordinated action at MS level through a strategic use of the future Multi-Annual Financial Framework, setting European framework conditions in order to:

(i) Improve and update digital infrastructures for education and training, including connectivity

The Commission would support MS to upgrade ICT infrastructures and high-speed broadband connections through the use of Structural Funds. This would support the development of national digital learning platforms and improve school and educational institutional ICT infrastructures. The Commission would also fund research on and implement open frameworks and standards for systems, services, applications and content operability.

(ii) Up-scale the creation, use, re-use and sharing of quality digital education contents, including OER

In order to incentivise the collaboration between different stakeholders for the production of quality digital educational materials, the Commission would support (public-private) partnerships between creators of educational content (ex: teachers, publishers, ICT companies); it would also ensure the open access to educational materials funded by Erasmus for All. As a follow up the Commission could also promote the open access to publicly –funded educational resources at national level through the adoption of a recommendation to Member States; this would however require further analysis to fully measure the specific impact of such action.

In order to ensure quality of OER produced in Europe, the Commission would support the development of European quality frameworks for OER, support the development of dedicated tools for improving searches and raise awareness and access to recognised quality content by supporting an EU-wide federated OER platform.

Finally, in order to increase transparency and awareness among users of digital resources on the rights and obligations inherent to the copyright or licencing regime applied in each educational resource, the Commission would support the development of technological methods to provide more information on IPR to the users of digital educational content and explore with stakeholders ways of stimulating the use of educational content via internet or other digital solutions in cross-border contexts.

(iii) Modernise learning, teaching and assessment practices through digital technologies.

The Commission would support the development of new business models for education and training institutions through the development of EU consortia for high quality online open course; it would also support schemes for education and training institutions to assess their level of e-maturity and establish educational strategies including digital technologies and content. In order to stimulate cross-border synergies, the Commission would collect best practices of business models developed on the basis of open content (with or without learning services, free or against charges) and provide guidance to institutions on the development of their own business models. The future business models of education and training institutions are yet not fully comprehended given the recent and exponential phenomena of MOOCs and open courses: an important action would therefore entail a better understanding of the impact of MOOCs on the future delivery of education and training.

The Commission would also support the development and uptake of online continuous professional teachers' development programmes and provide incentive schemes for teachers for professional development through digital technologies. The support to large-scale transnational projects, including experimentations on innovative pedagogical approaches, curriculum development and skills assessment, would also be ensured in order to stimulate innovation in learning. In the same vein, the Commission would explore in more detail the possibility of incentivising the production and use of digital content (including OER) through a recommendation to Member States. However, more detailed analysis and evidence are necessary at this stage to fully assess the impact of such action.

Finally, the Commission would promote the development of open frameworks for validation and recognition of skills acquired informally and online (ex: open badges²).

In addition, if appropriate, the Commission could also make country-specific recommendations to the MS in the framework of the EU 2020 Strategy and the European Semester, concerning their reforms to promote ICT and OER in their education and training systems.

All these actions would not need to be launched simultaneously. Some actions are an extension of already existent ones, for example support to networking and collaboration, pilot projects, etc.; in other cases as identified above, the implementation would require further analysis to sustain an informed action.

Option 3: A set of new EU-level instruments to exploit the potential of ICTs for better access and quality of education

Building on the actions proposed in option 2, the Commission would adopt, within the remit of its competencies defined by the Treaty, a more prescriptive set of actions vis-à-vis MS. This further step of intervention at EU level would focus on the same policy objectives of Option 2, adding to it a number of new, EU-level bodies and instruments:

(i) Improve and update digital infrastructures for education and training, including connectivity

The Commission would establish a dedicated EU financial instrument, ring-fenced for intervention in upgrading

ICT infrastructures in education and training. It would be an amount reserved in full respect of MFF, and possibly within Structural Funds, to the upgrade of digital infrastructures in education and training institutions. The goal of such instrument would be to fully equip all education and training institutions in all MS.

(ii) *Up-scale the creation, use, re-use and sharing of quality digital education contents, including Open Educational Resources*

The Commission would create a body responsible for certifying quality of digital educational contents, including OER. It would be a central organisation aimed at:

- Delivering a European quality label for contents produced in Europe.
- Support the production of quality OER.
- Validate skills acquired online.

(iii) *Modernise learning, teaching and assessment practices through digital technologies*

The Commission would create an EU centre for ICT training of teachers in Europe.

Option 3 is not an alternative to previous options, but cumulative to Option 2, aimed at reinforcing its effects.

D. Initial assessment of impacts

What are the benefits and costs of each of the policy options?

– **Option 1** is likely to reproduce or even aggravate the current problems: uneven infrastructures and integration of ICT in education and training systems, inefficient use of existing digital investments, digital divide and digital skill gaps. Under this option, Europe will probably continue to lag behind in emerging phenomena like MOOC and the business opportunities that are already appearing.

– **Option 2** proposes an incremental approach. It is built on the lessons learnt from current and past supportive actions. In order to increase their efficiency, option 2 proposes to establish better reference framework at EU-level, in particular through an intense collaboration with stakeholders, as well as a stronger commitment from Member States through soft legislation. This holistic approach is expected to give a political impulse for the integration of ICT and OER in education and training systems, which will lead to positive impacts on access and equity, quality of educational resources and practices, improved business opportunities at micro level, enhanced European competitiveness, as well as social benefits like employability or better access to learning. Option 2 proposes practical measures and a common rationale within existing OMC and funding structures, with the major advantage of launching a strong political message at a moment when OER like MOOC are at the heart of the public debate.

– **Option 3** proposes a more centralised approach. The main risks of this option are the high cost of measures proposed (i.e. massive investment on ICT infrastructures, new bodies for certification or teacher training), compared with the uncertain added-value compared with Option 2. Option 3 would increase administrative burden, can lead to potential duplications of work and may even create inconsistencies with existent policies (e.g. Council Recommendation on validation of non-formal and informal learning).

Could any or all of the options have significant impacts on (i) simplification, (ii) administrative burden and (iii) on relations with other countries, (iv) implementation arrangements? And (v) could any be difficult to transpose for certain Member States?

(i) No significant impact is expected on simplification.

(ii) Option 2 would add some administrative burden for beneficiaries of "Erasmus for all" grants, because they should deposit educational materials they produced in repositories or platforms.

(iii) No significant impact is expected.

(iv) Option 2 would have impact on implementation arrangements because "Erasmus for all" regulations should be adapted to the proposed open access to educational materials funded. Similarly, country-specific recommendations under option 2 would have an impact on Member States' policies and budgets, as well as for the EC if the use of Structural Funds was necessary.

(v) Not all Member States are equally convinced about the potential benefits of OER. For instance, in an OECD country survey (June 2012)³, German respondents raised doubts about OER as a policy priority in the near future. German respondents questioned whether a lack of digital content prevents learning, particularly in the case of people with low qualifications, and whether well-educated people will benefit the most from OER. Furthermore, they ask if there are any sustainable business model for OER and consider that there are questions of standards, quality, technical interoperability, and legal questions concerning copyright that have not been solved yet. All questions related to disruptive phenomena like open access, open source or OER are always very controversial, since they challenge traditional stakeholders' business models.

<p>(1) Will an IA be carried out for this initiative and/or possible follow-up initiatives?</p> <p>(2) When will the IA work start?</p> <p>(3) When will you set up the IA Steering Group and how often will it meet?</p> <p>(4) What DGs will be invited?</p>
<p>(1) Yes.</p> <p>(2) The IA exercise started in June 2012.</p> <p>(3) The IA Steering Group met for the first time on September 12 to discuss the Roadmap and the initial results of the Public Consultation. Afterwards it met on 29 November 2012 and 28 February 2013, complemented by written consultations.</p> <p>(4) DG EAC, DG CNECT, DG EMPL, DG RTD, DG ENTR, DG JRC-IPTS, DG TRADE, DG REGIO and DG MARKT.</p>
<p>(1) Is any option likely to have impacts on the EU budget above € 5m?</p> <p>(2) If so, will this IA serve also as an ex-ante evaluation, as required by the Financial Regulation? If not, provide information about the timing of the ex-ante evaluation.</p>
<p>Option 2 would have financial impacts on EU budget, but they would be conducted under the future "Erasmus for all" and "Horizon 2020" programmes, both with already approved IA. Actions related to ICT infrastructures in education and training institutions would be supported by Structural Funds.</p>

E. Evidence base, planning of further work and consultation

<p>(1) What information and data are already available? Will existing IA and evaluation work be used?</p> <p>(2) What further information needs to be gathered, how will this be done (e.g. internally or by an external contractor), and by when?</p> <p>(3) What is the timing for the procurement process & the contract for any external contracts that you are planning (e.g. for analytical studies, information gathering, etc.)?</p> <p>(4) Is any particular communication or information activity foreseen? If so, what, and by when?</p>
<p>(1) There is an important amount of literature on the obstacles to fully integrate ICT in education and training. The OECD, UNESCO and EU institutions have also published different studies on these topics and stakeholders are active on producing analysis and policy papers⁴.</p> <p>Eurostat publishes periodically statistics on the use of ICT and digital skills. Annual editions of Eurostat's surveys include specific thematic modules (e.g. on cloud computing, on skills) that provide more detailed information about digital competencies and the use of ICT for learning. The OECD also refers to ICT in education in studies like PISA (for 15-years old pupils) and PIAAC (for adults). They provide contextual information on the use of ICT and self-assessments about digital skills. The European Commission has funded ambitious European-wide surveys on the use of ICT at schools⁵. Last but not least, the IEA is an "International Computer and Information Literacy Study" (ICILS) which aim is to assess actual digital literacy, to measure which factors influence it and to analyse what can education systems and schools do to improve students' computer and information literacy. For the first time, the actual capacities of students are going to be measured, based on tests and not on self-assessments only. There are also data available on OpenCourseWare contents and use, and more and more information and data about MOOC is constantly appearing in newspapers and scientific publications.</p> <p>Evaluations and IA mentioned above provide some useful clues, but further research is needed to find methodologies at national level enabling to evaluate properly the possible impacts of each policy option.</p> <p>(2) Further information will be gathered by the EC's JRC-Institute for Prospective Technological Studies (IPTS).</p> <p>(3) An administrative arrangement with JRC-IPTS was signed on 1/08/2012.</p> <p>(4) Only the information provided in the public consultation launched in August 2012, as well as some information provided in a survey to the Life Long Learning programme coordinators, launched to estimate the pros and cons of a policy of open access to educational materials produced with Erasmus for All funding.</p>
<p>Which stakeholders & experts have been or will be consulted, how, and at what stage?</p>
<p>The proposals will be tested with multiple stakeholders from government, education, work and societal bodies through:</p> <p>1. The <i>Thematic Working Group on 'ICT and education'</i>, with representatives of the Member States already discussed the scope and approach of the initiative, which was very welcomed.</p> <p>2. A first <i>EC Meeting of High Level Experts</i> took place on the 13th of July 2012. It discussed the scope, approach and proposed actions of this initiative. Participants included experts from the OECD and UNESCO; researchers</p>

involved in education, training and innovation; members of EU networks (e.g. European Schoolnet, Menon), representatives of industry (European Learning Industry Group) and open universities, as well as open education resources developers.

3. *International organisations* as OECD and UNESCO have been consulted. Consultations have been initially informal and then their representatives participated in the first EC Meeting of High Level Experts.

4. *Informal consultation of key stakeholders* started in July 2012. Ad hoc roundtables were organised (i.e. European publishers, on 6 November 2012; Digital Europe, on 22 March 2013), as well as bilateral meetings. Such stakeholders included ICT and publishing industry, representatives of education and training organisations, NGOs and public authorities.

5. A broader *public consultation* was launched in August 2012. It targeted individuals, public authorities and organisations involved in education and training (e.g. schools, universities, trade unions, industry and consumers associations).

6. A *Ministerial Conference* 9-11 December 2012 under the Cypriot Presidency (organised jointly by Cyprus and Norway) on 'Opening up education through technologies' discussed the scope and actions of the Open Education Initiative and forwarded the outcome of their debate through Presidency Conclusions.

¹ UNESCO defines OER as "teaching, learning or research materials that are in the public domain or released with an intellectual property license that allows for free use, adaptation, and distribution". The OECD provides a more complete definition: "digitised materials offered freely and openly for educators, students and self-learners to use and reuse for teaching, learning and research. OER includes learning content, software tools to develop, use and distribute content, and implementation resources such as open licences. (...) OER refers [also] to accumulated digital assets that can be adjusted and which provide benefits without restricting the possibilities for others to enjoy them". See: OECD (2007) *Giving education for free. The emergence of open educational resources*. Paris: OECD, p. 10, at: <http://www.oecd.org/edu/ceri/38654317.pdf>

² Open digital badges are indicators of accomplishment, skill, quality or interest that can be earned in various learning environments, based on meta-data.

³ Hylén, J. et al. (2012) "Open Educational Resources: Analysis of responses to the OECD Country Questionnaire", *OECD Education Working Papers*, No. 76, OECD Publishing, <http://dx.doi.org/10.1787/5k990rjhvtlv-en>

⁴ See for instance: Hylén, J. et al. (2012) op.cit.; OECD (2007) op.cit.; OECD (2011) *New Millennium Learners*. Paris: <http://www.oecd.org/dataoecd/39/51/40554230.pdf>; OECD (2012), *Connected Minds: Technology and Today's Learners*, Educational Research and Innovation, OECD Publishing: <http://dx.doi.org/10.1787/9789264111011-en>; Pennels, J. (2005) *Literacy, distance learning and ICT*. Paris, UNESCO. UNESCO (2011) *ICT in Teacher Education: Policy, Open Educational Resources and Partnership*, Moscow; Commonwealth of Learning/UNESCO (2011). *Guidelines for Open Educational Resources (OER) in Higher Education*; http://www.col.org/PublicationDocuments/Guidelines_OER_HE.pdf; Eurydice (2011) *Key Data on Learning and Innovation through ICT at School in Europe*. Luxembourg; European Learning Industry Group (2011) *White Paper 2001. Open Education: a wake-up call for the learning industry? Is open education fundamental to a sustainable learning industry or a noble but commercially flawed cause?*: http://www.elig.org/images/stories/docs/articles/openeducation_a4.pdf

⁵ European Schoolnet – Empirica (2010) *Study of the impact of technologies in primary schools*. Brussels, European Commission: <http://insight.eun.org/ww/en/pub/insight/minisites/steps.htm>; European Schoolnet – Université de Liège (forthcoming) *European Survey of Schools on ICT in Education*. Brussels, European Commission.