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D6.4 Education on the Cloud 2014: State of the Art

Editor (s) : Karl Donert (ILN Ltd.)

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Abstract: This report documents the state of the art concerning the Cloud in education in partner countries across Europe. It describes policy perspectives, agencies and organisations promoting the Cloud in education, initiatives, projects and developments in different countries, it offers a list of relevant events and activities taking place in Europe, as well as key publications related to the project's scope. The report indicates that the Cloud is developing rapidly in business but in many countries education has not recognised the advantages offered.

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Contributors

Aikaterini Apostolopoulou, 3rd Primary School of Agia

Aikaterina Klonari, University of the Aegean

Alfons Koller, PH-Linz, University College of Education of the Diocese Linz

André Suls, KOGEKA

Andries Valcke, GO! Education of the Flemish Community

Angela Cotoara, Professional Foundation

Anita Pöckl, Bundesgymnasium und Bundesrealgymnasium Waidhofen an der Thaya

Antonina Bliorț, National College

Aurelija Adomavičiūtė, VšĮ Socialinių inovacijų centras

Célia Nunes, University of Beira Interior

Chryssanthe Sotiriou, Doukas School

Cinzia Colaiuda, Italian Ministry of Education

Cláudia Ribeiro, University of Porto

Cristiana Martinha, University of Porto

Dalibor Radovan PhD, Geodetic Institute of Slovenia, Ljubljana

Daniela Schmeinck, Prof. Dr., University of Cologne

Dário Ferreira, University of Beira Interior

David Burger, Department of Human Geography, Goethe University Frankfurt am Main, Germany

Detlef Kanwischer, Department of Human Geography, Goethe University Frankfurt am Main, Germany

Dimitris Primalis, Doukas School

Durval Vieira Silva, Escola Básica de Santa Maria, Beja, Agrupamento nº 1 de Beja

Elena Shoikova, State University of Library Sciences and Information Technologies

Elmo De Angelis, TRAINING 2000

Elpida Christou, Thales Foundation

Elżbieta Wołoszyńska-Wiśniewska, UNEP/GRID-Warsaw Centre

Fabiana Gomes, Companhia de Ideias

Federica Lo Cascio, P.M.F. S.r.l.

Flurina Jenal, Kantonsschule Solothurn

Gregory Makrides, European Association of Career Guidance

Ingo Bosse, Prof. Dr., TU Dortmund University, School of Rehabilitation Sciences

Ionela Lungu, ASSIST Software

Isaac Buzo Sánchez, IES San Roque

Jan Buytaert, GO! Education of the Flemish Community,

Karl Donert, Innovative Learning Network Ltd.
Kateřina Tuicu, Komunikujeme o.s.
Kostis Koutsopoulos, European Association of Geographers
Ladina Jörger, Kantonsschule Solothurn
Luc Zwartjes University Gent,
María Jesús González González PhD, Universidad de León
María Luisa de Lázaro y Torres PhD & María del Carmen Mínguez García
PhD, Universidad Complutense de Madrid
Maria Meletiou-Mavrotheris, European University Cyprus
Niamh Armstrong, Mary Immaculate College, University of Limerick
Nicole Vandeborne BSGO! Zavelberg,
Nikos Lambrinos, Aristotle University of Thessaloniki, School of Education,
Department of Primary Education
Panos Papoutsis, Doukas School
Rafael de Miguel González PhD, Real Sociedad Geográfica
Ramazan Kizilarlan, Kecioren District Directorate of National Education
Renata Šolar PhD, National and University Library, Ljubljana
Salvo Mica, Salvo Fallica E-Ludo Interactive di Salvatore Mica & C.snc
Sandra Ferreira, University of Beira Interior
Sérgio Alexandre Rocha, Escola Básica de Santa Maria, Beja, Agrupamento
nº 1 de Beja
Silvia Ciaperoni, Centro Studi ed Iniziative Europeo
Simonetta Leonardi, Istituto Comprensivo Assisi 3
Sofie De Cupere, GO! Education of the Flemish Community
Tiago Reigad, University of Porto
Ulrich Michel, University of Education, Heidelberg
Vassilis Economu, Doukas School
Yannis Kotsanis, Doukas School
Zuzana Brotánková, Komunikujeme o.s.

Table of Contents

SUMMARY	5
1. INTRODUCTION: THE CLOUD IN EDUCATION: A EUROPEAN PERSPECTIVE	6
2. CLOUD POLICY AND EDUCATION	8
3. WHO IS PROMOTING THE CLOUD?	20
4. USING THE CLOUD FOR EDUCATION	30
5. OTHER INFORMATION	54
6. CONCLUSIONS	59
7. CONCLUSIONS: COUNTRY PERSPECTIVES	60
8. REFERENCES	68
ANNEX 1: EUROPEAN EVENTS AND ACTIVITIES	74
ANNEX 2: NATIONALLY-IDENTIFIED EVENTS	83
ANNEX 3: RECENT RESEARCH PUBLICATIONS	93
ANNEX 4: NATIONALLY IDENTIFIED PUBLICATIONS	95

Summary

Cloud computing is everywhere. In its various forms, it is being adopted across all sectors. From the range of perspectives demonstrated in this report education can benefit from Cloud deployment, but the appropriate use of technology requires careful consideration.

Education on the Cloud 2014: State of the Art confirms that Cloud computing is rapidly becoming a highly pervasive delivery method for IT services across the public and private sectors in Europe. Benefits such as a wide range of customised solutions and increased efficiency savings make Cloud computing an extremely attractive prospect for education.

Education on the Cloud 2014: State of the Art illustrates that a shift towards a greater use of Cloud computing in education is well underway in some countries. Other countries appear to be lagging behind, they are slow to implement policy or encourage innovation in education.

Education on the Cloud 2014: State of the Art highlights national and international initiatives. It suggests innovative products, mobile access to data and affordable pricing structures will be key drivers for education organisations to consider when moving to Cloud computing. Cloud services will also offer an affordable route for education and training organisations seeking to cope with rapid change.

The needs of economic development and sustained growth in Europe will only be ensured if measures to develop and widely implement innovative education are encouraged so that people can obtain relevant Cloud-based skills and the capability to exploit them.

The ***School on Cloud: connecting education to the Cloud for digital citizenship*** network will address three key questions:

- i) How should education respond to the potential of Cloud-based tools and technologies;
- ii) What is the impact on education stakeholders and
- iii) What might the situation be like in the future?

To explore these questions, ***School on Cloud: connecting education to the Cloud for digital citizenship*** network has 4 working groups:

- 1) Transition from ground to Cloud: infrastructure, mentality, innovation and change - **iManager**
- 2) **i-Teacher**: the role of the teacher, teacher training
- 3) Integrating the Cloud: personalised learning, formal and informal education, special needs - **iLearner**
- 4) Future prospects: visions on open education, interactivity, impact and communicating the Cloud - **iFutures**

1. Introduction: The Cloud in Education: a European perspective

In the ICT cluster report "Learning, Innovation and ICT", Van den Brande, Carlberg & Good (2011) reported on lessons learned through the Lifelong Learning Programme up until 2010. They identified i) digital leadership, ii) placing the learner at the centre; iii) a change of mindset in teacher training and iv) reinforcing the evidence base and research on use and impact of ICT for learning as most important features. Six future actions for the future of learning in Europe were recommended:

1. Leadership and institutional change for a renewed strategy on learning
2. Digital competences and new transversal skills as core life and employability skills
3. Towards a new learning paradigm
4. Professional development – the teacher as learner at the centre
5. Research on learning in a digital society
6. Envisioning the future of learning in a digital society

The working groups organised under the School on Cloud KA 3 network embrace all these areas and the **Education on the Cloud 2014: State of the Art** report indicates how different European countries are making their transition to using the Cloud in education.

The EC's new strategy for "Unleashing the potential of Cloud computing in Europe" outlines actions to deliver a net gain of 2.5 million new European jobs, and an annual boost of EUR 160 billion to EU GDP (around 1%), by 2020. It is designed to speed up and increase the use of Cloud computing in private and public sectors across the economy (EC, 2012). The Strategy also urges action in areas where government stakeholders can act, like education. Vice-President Neelie Kroes said:

"Cloud computing is a game-changer for our economy. Without EU action, we will stay stuck in national fortresses and miss out on billions in economic gains. We must achieve critical mass and a single set of rules across Europe. We must tackle the perceived risks of cloud computing head-on."

School on Cloud relates to key actions of this strategy, like cutting through and clarifying the jungle of technical standards so that cloud users get interoperability, data portability and reversibility, open resources, tools and data protection in a dynamic and trusted environment.

The real benefits of the Cloud come from its economies of scale, as 80% of organisations will achieve cost savings of at least 10-20% together with significant productivity gains. However, DG CONNECT (Ducatel, 2012) commented there is reason to believe that the public sector (and education in particular) may suffer from higher barriers to Cloud adoption than the private sector. Their analysis confirms that the real problem is the cumulative impact of barriers like security, portability, trust, accessibility and legal uncertainty. One purpose of SoC is to examine the barriers and find ways to encourage the use of the Cloud for innovative learning and teaching in education. There has never been a network on this theme before, at a critical moment in the ET2020 initiative.

Education requires efficient resource management and reliable provisions of key services. Indeed, the increasing importance of cutting-edge technology in education is reflected by the fact that a large number of major firms, like Google, HP, Intel, Microsoft, Sony and Toshiba, are looking to offer solutions to education.

Though simplicity and reliability are obvious benefits for organisations deploying Cloud solutions, the rise of the Cloud still offers some concerns. Security, in particular, is frequently cited as a major issue especially after the well –publicised leaks and loss of data. However many different things exist within the Cloud.

Matt Britland (2013), writing in the Guardian, suggested that schools only need one major thing to be prepared for the future, a fast robust internet connection. This infrastructure, as advocated by the Digital Agenda is paramount to the future of technology in education.

He said, “We don't know what the new 'in' device will be in the future. What we do know, is that it will need the Cloud. Schools and other educational institutions will need to ‘futureproof’ their infrastructure the best they can.

.... All devices, no matter which ones we will use in the future will need to access the Cloud. Each student will have their own. Either a device specified by the school or one they have chosen to bring in themselves.

School classrooms are going to change. Thanks to the Cloud and mobile devices, technology will be integrated into every part of school.

With the Cloud, the world will be our classroom. E-learning will change teaching and learning. Students can learn from anywhere and teachers can teach from anywhere.

Rather than being 'taught' students can learn independently and in their own way. There is also a massive amount of resources online that students can find and use themselves, without the help of the teacher.

This of course means the role of the teacher will change. Any initiative is doomed to failure without well trained, confident staff who can see how technology can support and benefit teaching and learning.

Plenty of schools have already embraced this, but there's still a way to go to ensure all schools are ready for the future of technology. It is time for all schools to embrace the Cloud.”

Education on the Cloud 2014: State of the Art introduces the situation in different countries in early 2014 as researched and presented by **School on Cloud: connecting education to the cloud for digital citizenship** project partners.

2. Cloud Policy and Education

Austria:

The implementation of Cloud in public administration is a big issue in Austria. The Austrian Federal Data Processing Centre (“Bundesrechenzentrum”) has already implemented the Cloud technology e. g. for the land register with access to law courts, lawyers and solicitors, banks etc., for governments as well as for education. A number of Austrian municipalities use Cloud technology for their public services. The government and the administration of Vienna has an own IT-group for cloud-computing.

The Austrian Chamber of Commerce and the Austrian Chamber of Industry are supporting cloud technology for their interest groups e.g. SME, commerce and industry enterprises as well.

Belgium (Flanders):

There is no policy from the Ministry of Education about Cloud-services (VLOR, 2013). In the context of IT-integration in education there is an advisory-question answered by the department VLOR (VLaamse OnderwijsRaad = Flemish Counselling of Education) where Cloud-services are mentioned as solutions to the following topics:

- Innovation
- Privacy and security
- Infrastructure
- Collaboration

These guidelines could evolve in the next legislation of the Flemish Government to general policy on the Cloud in education.

Bulgaria:

Bulgarian legislation on data protection is harmonized with European standards. It should be noted, however, that legislation was created before the boom of Internet usage (when the processing of personal data was very limited and centralized) and full account of modern specifics when processing personal data (especially the massive shift from physical to digital media data and the specifics of storage). Regulation in Bulgaria is currently much more restrictive than in other countries. Not coincidentally, the European Commission is seeking to analyze and discuss in depth many legislative changes that would introduce a clear regulation of the processing of personal data when using cloud services.

The Republic of Bulgaria has an active official policy about the Information and Communication Technologies including Cloud computing. There are many strategic documents that are in the process of development or approved as follows:

- Strategy for Effective Implementation of Information and Communication Technologies in Education and Science of the Republic of Bulgaria (hereinafter - the Strategy) (2014-2020)
- Strategy for E-government in the Republic of Bulgaria (2014-2020);
- Operational Programme "Science and Education for Smart Growth" (2014-2020.)

- Operational Programme "Competitiveness and Innovation" (2014-2020);
- Operational Programme "Human Resources Development" (2014-2020);
- National Strategy for Pedagogical Staff Development (2014- 2020);
- Innovation Strategy for Smart Specialization of Bulgaria (2014-2020);
- Law on Vocational Education and Training;
- Higher Education Act.
- National roadmap for research infrastructure;
- National Program for Development of School and Pre-school Education 2006 - 2015;
- National Programme "Digital Bulgaria 2015";
- National Strategy for Development of Broadband Access in the Republic of Bulgaria (2012-2015);
- National Strategy for the Development of Research 2020;
- National Strategy for Lifelong Learning (2014-2020);

The National Strategy sets out the basic goals, objectives, directions for 'informatization' of the system of education and science in Bulgaria to 2020 and also establishes the basic principles, approaches and conditions for successful realization of this process. In turn, this process provides an impetus to develop ICT in Education and Science.



Figure 1 Strategy for the effective implementation of information and communication technologies in education and science in the Republic of Bulgaria (2014 - 2020).

The analysis of the 'informatization' process in education and science allows the Strategy to identify some trends:

1. Gradually bringing ICT to consumers: first - terminal for interactive work, then - PC class, and later - at home, and finally - mobility portable device as laptop, tablet, and smartphone;
2. Growth of functionality - from processing digital information to the processing of text and graphics, and finally - multimedia capabilities (photo, audio, video) and the latest trends (3D and virtual reality);
3. Convergence of technical devices - in functionality and performance notebooks already practically not inferior to stationary computers.

4. Development of ICT cloud infrastructures, technologies and services - it is enough to mention names became household as Google, Facebook, Youtube, Wikipedia and Skype, as the trend of offering affordable, efficient, flexible and scalable cloud services increasingly growing and gradually becoming standards of corporate work, study and leisure.

The Strategy Mission involves the comprehensive modernization and transformation of the fields of education and science by means of ICT and achieving measurable and consistent values of indicators to improve the quality of education and research in the country as a result of the implementation of the Strategy.

Cyprus

Cyprus does not have a clear existing or on-going official Cloud policy and ranks among the lowest countries in Europe in implementing and deploying Governmental Clouds. Similarly, in Education, the use of the Cloud is extremely limited.

While there is an intention to implement some form of Cloud strategy in the future it is mostly related to the potential benefits that it could provide to business activity and for attracting investments. In this context it can be said that any will to implement the Cloud is based on potential economic gains "rather than being a benefit mainly for the governmental body itself and for the citizens".

Czech Republic:

The EU's opinion 05/2012 on Cloud Computing, adopted in July 1st 2012, is known in the Czech Republic. Even though it was not translated from English to Czech, there is a reference to this document on webpage of The Office for Personal Data Protection (<http://www.uoou.cz/evropsti-ochranci-dat-vydali-stanovisko-k-systemu-cloud-computing/ds-1847/archiv=0&p1=2850>). Most attention is given to the following topics: safety, transparency and legal certainty in using cloud computing.

There is no specific policy related to education. However, there are a number of publications and articles describing advantages and disadvantages of using Cloud computing in elementary schools; these works are mainly done by academics and researchers.

Germany:

The Federal Government recognized Cloud computing as one of the most significant trends in the information and communication technology. Germany's economy as a whole will benefit from the advantages of cloud computing. Accordingly, the Federal Ministry of Economy and Energy has initiated a program of action called Cloud computing. Four fields are indicated: 1. innovation and market potentials (best practice models), 2. security, confidence, 3. legal certainty and 4. international standards and orientation knowledge. Politics, economy and sciences operate cooperatively in these fields.

The Federal Ministry of Economic Affairs of the Federal Republic of Germany proclaims data protection a key variable in the use of cloud computing. Accordingly, a milestone project was initiated which includes the certification

of Cloud services. The project involved actors from data protection authorities and IT companies as well as users and providers of cloud services (BUND, 2013).

A policy at the federal level regarding the topic Cloud or Cloud computing in education could not be identified. Through extensive research it has been made clear that a more detailed investigation of the privacy policy is necessary. To investigate further issues, the program Trusted Cloud was initiated (BMWi2). At the federal state level there are insular provisions of the Ministries of Education. Exemplarily, provisions are committed by the state of Baden–Württemberg. Educational institutions are responsible for the outsourced personal data of the learners in the Cloud (KPBW). The following criteria must be determined to ensure the privacy of learners and teachers in schools of the state of Baden-Württemberg when information is outsourced from the own educational institution. If these criteria are not complied, the use of the cloud is not recommended (KPBW2).

- Denotation of the hardware, networking and software;
- presentation of the adopted organizational and technical data protection measures;
- the school must be allowed to issue directives for the processing of personal data;
- the terms and conditions are not unilaterally changeable;
- a list of the actors which are involved in the data transmission is necessary;
- the school needs to assure itself of the technical and organizational measures, or use certificates from recognized and independent testing organizations.

The German Bundestag's Enquete Commission „Internet and Digital Society“ recommends the e-learning activities of the universities should be clustered in one university Cloud. That offers new possibilities to share IT infrastructure and teaching materials. Open-Source and virtual research environments shall be developed and established (Deutscher Bundestag 2012). Furthermore cloud computing is a relevant topic for school policies. It is embedded in the discussion about media education. In the meantime media education is a part of the school curricula of all of the 16 federal states (Länder), but there is a big variety in their form, the range and the comprehensiveness.

At the primary school level there is no Cloud policy. Most of the schools do use Internet and various software for education but information and advice on Cloud computing is rare.

Greece:

Recent years have witnessed significant progress in introducing Cloud initiatives in the Greek educational system, both in public and private sector.

Greece both in primary and secondary educational level follows a number of Educational Institutions around the World which use information technology to service their business requirements. Digital School (<http://dschool.edu.gr>) is the basis of most actions, being a complete digital environment, safe while at the same time open to learn, communicate, collaborate and connecting all members of the school community.

There is no clear official Cloud policy in Greece. It seems that Cloud is not very well known among most teachers and educators. What they usually follow is the “traditional way” of communication, based on the network and known web addresses. There is no Cloud policy related to education. Instead, there is a tendency to proceed with the Cloud in other areas such as Open Data offered by the Public Sector. The effort started through the INSPIRE project but it is not clear if the Data are on the Cloud or they remain in the servers of civil services.

This does not mean that no Cloud applications exist. There is at least one that exists, related to education, which started from the last three months of 2013 and will continue until early April 2014. The application is made by the Hellenic digital earth Centre of Excellence and supports geography teaching.

Ireland:

The National Digital Strategy for Ireland provides a commitment by the Irish Government to embrace a digitally empowered and enabled society. “The strategy will be iterative, reflecting the rapid development of technology and on the dynamic manner in which it is changing models for social and business interaction.”

In the first two years there is a commitment to implement deliverable under the headings: Cross –Government measures, Trading online and Entrepreneurship, Citizen Engagement and Education & Learning.

One of the deliverable in the National Digital Strategy is Education and Learning. “Strand 3 – Education & eLearning: to utilise ICT to its full potential across the education system including the use of the internet in learning. Some actions in this area include:-

- Completion of the rollout of 100mbs to all post primary schools
- Peer to peer teacher supports including “Switch on” exemplar workshops and case studies
- Professional development and eLearning initiatives for teachers
- Development of a new ICT Strategy for Schools
- New Framework for Junior Cycle in which ICT plays a role
- Initiatives both inside and outside the school environment focusing on development of digital skills relevant to the workplace
- Development of eLearning opportunities at post leaving certificate level and in third level Education and for the labour market
- New research on the nature and extent of children’s internet and social network use including issues of internet risks and safety for young people.
- Provision of eLearning opportunities nationally in the further education and training sector.

Source: <http://www.dcenr.gov.ie/NR/rdonlyres/54AF1E6E-1A0D-413F-8CEB-2442C03E09BD/0/NationalDigitalStrategyforIreland.pdf>

Italy:

In the past 15 years reforms concerning the digitisation of the Italian Public Administration have had a strong influence on Italian society and on the Italian educational system: the use of new technologies and electronic devices has

been often seen as the only way to escape from the global economic crisis and to solve existential problems of teenagers, teachers and parents. These newest social trends and the inexorable spread of new technologies derive also from a previous Law (law no. 66 in 2001) that has configured the move of analogue devices into digital networks.

In this context The Italian Ministry of Education launched in 2007 a National Plan for Digital Schools (Piano Nazionale Scuola Digitale) to mainstream Cloud computing in Italian classrooms and use technology as a catalyser of innovation in Italian education, hopefully conducing to new teaching practices, new models of school organisation, new products and tools to support quality teaching. The plan was to phase in ICT teaching tools in order to develop innovative teaching methods and new educational paradigms.

The “National Digital Agenda” consultation identified the scaling up of the “National Plan for Digital Schools” as a priority for all levels of government. As a consequence, in July 2012 the government and regions agreed to allocate EUR 20 millions from the ministry of education’s funds proportionately to school enrolments in each region for initiatives related to the “National Plan”.

The degree of digitalisation and networking of schools are the most important open questions in Italy. Effectively, since “Italian school is not very digital” according to the Minister of Education, disclosed a new Decree (decree no. 804/2013) in October 2013. It allocates €400 million for school, university and research: €15 million immediately for wireless connections in secondary schools; €8 million usable to buy textbooks and e-Books. Furthermore Decree no. 104/2013, published in September 2013, forseees free online educational support to students in a poor economic condition and professional development courses on new technologies are mandatory for school staff.

The current national policy for large-scale introduction of ICT in all schools (PNSD) marks a clear discontinuity with previous national efforts to introduce ICT in schools: it aims at introducing the use of ICT equipment directly in the standard, everyday classroom, rather than in separated computer labs that have to be booked in advance; and it transcends disciplinary boundaries by seeking ICT adoption in all subject fields and at all levels of education.

In general in Italy, Cloud computing policies have stalled, as indicated by the Global Cloud Computing Scorecard report of Bsa 2013. Guidelines for adoption of ICT in schools and education are dictated by MIUR - Ministero dell’Istruzione dell’Università e della Ricerca (Ministry of Education University and Research) which since 2007 launched the PNSD - Piano Nazionale Scuola Digitale (National Plan for Digital Schools) which aims to introduce and increase use of ICT in Italian Schools.

The potential of technology for transforming education goes well beyond equipping each classroom with an interactive whiteboard or other comparable technology. Two initiatives of the national plan give selected teachers and schools the possibility to pilot a variety of pedagogic uses of ICT and reinvent teaching and learning in a technology-rich environment: cl@sse 2.0 grants a lump sum for one classroom within a school, and scuol@ 2.0, for the entire school. These initiatives have two objectives: showcase the power of educational technology and make it even more desirable; pilot new schooling

models for the Italian education system, instead Editoria digitale scolastica supports the development of new products.

Lithuania:

Lithuania uses Cloud computing and focuses its policy on personal data protection. Personal data means any information related to a particular person, i.e. his/her private, professional or public life. Thus, personal information placed in the “Cloud” can be personal data (when talking about individual users) – photos, information about personal life, notes, diaries or any other information from which it is possible to identify a person.

Lithuanian Cloud computing service providers must follow the applicable Personal Data Protection Legislation (e.g. the act of Ministry of Personal Data protection). The legislation provides a list with the requirements for data security. The legislation indicates what must be discussed in the contract, such as:

- The security and confidentiality of institutions managed information;
- Liability of the parties;
- The contingency analysis;
- Regulations and standards governing the processing of personal data;
- The list of personal data ends with the purpose of processing.

Poland

The need of common ICT use in Polish schools and raising ICT competences among teachers and students is expressed in all national documents connected to digital society and educational policy development. However, there is no official policy dedicated to the Cloud-based education.

As an example... for the last 2 years (2012-2013) the governmental program to develop the competence of students and teachers in the use of ICT (called Digital School) was implemented (<http://www.cyfrowaszkola.men.gov.pl>). It was aimed for 380 primary schools in Poland. The goal was to determine the best selection of ICT equipment and methods for raising teachers' competences in teaching with the use of ICT.

The program was divided into four segments: e-school (infrastructure and equipment for schools), e-teacher (teacher training), e-student (ICT equipment for students) and e-resources (creating open textbooks, redesign of Scholaris, the national platform for educational resources and the production of ICT tools for school management). Thus, the only part of these segments which can be directly related to a Cloud-based approach is Scholaris, a national “knowledge base for teachers” (<http://www.scholaris.pl>).

Portugal:

Portugal belongs to the 2009 IETE project (Education's International Experiences with Technology in Education), which was developed under the guidance of U.S. Department of Education and Policy Development and the Office of Educational Technology. In that report, Portugal reported active, comprehensive plans in place to guide policy.

Since the novelty of this technology, national legislation that will regulate it is still far short of the kind of laws needed for this way of exchanging data.

Currently, the only law that legislates Cloud Computing is related to online data protection and regulation of electronic commerce (Decree-Law no. 7/2004, of 7 January). There are still getting some unprotected areas, such as trade data possible defense in international businesses and the users of cloud in relation to the service providers (in Portugal are Amazon, Apple, Google, PT, Vodafone, Microsoft, or Dropbox). In Portugal there is a political Cloud-based system supported by a public-private company that provides 16 GB each customer. In education there are no guidelines for the use of the Cloud.

For a decade there has been political will to implement a set of goods and services to encourage internet access and use by a large proportion of the Portuguese population. The internet has become part of the daily lives of the Portuguese. The policy has only been possible due to the initiatives of many private telecommunication companies that invested in the improvement of infrastructures and services, and also the action of many private entities that took advantage in this innovative impulse to explore the virtual market.

In education, the technological developments that occurred in educational institutions have been accompanied by strong government policy, visible at the level of creating an Education Technology Plan. Initially, it consisted in the modernization of hardware tools, to create a good base to develop the software.

Romania:

The Governing Program published by the Romanian Government in 2012 – The Official Gazette, no 877/2012 – in a special chapter mentions the fact that the e-governing should take into consideration the concept of Cloud computing. In this way it is expected that the citizens, the business enterprises and the public organization should fulfill their goals in a easier, faster and cheaper way. The Cloud is linked, in this document, with the main objective of The European Union concerning public administration.

Another important document, elaborated by the Romanian Government and published in October 2013, is The Romanian Strategy for European Funds that underline that the second objective is the improvement of the access to new technologies and the development of tools that use cloud computing for e-governance. It is mentioned that 55% of the major companies use Cloud technologies as underlined in the Cloud Adoption 2012 study. The same study mentioned that the large companies use public and private cloud as well.

Even if these documents do not write about the importance of Cloud for education, they give details about ICT and its major role in the future of education.

The Ministry of Education has collaborated with the company SIVCO Romania since 2001. SIVCO is one of top software companies trying to offer to users all advantages provided by Cloud computing: flexibility, easy deployment, instant access, and cutting costs. SIVCO is one of the pioneers of Cloud technology adoption in Romania, managing one of the most important National projects in Public Cloud: ADLIC which is an application dedicated to High Schools admission and management of National Exams (<http://admitere.edu.ro>), developed in partnership with Romanian Education

Ministry and accessed by anyone is interested in exams results and admission status of students from the neighbourhood.

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Noutăți

- 25 iulie 2013: **Rezultatele celei de-a II-a repartizări în licee ADLIC 2013.**
- 16 iulie 2013: **Rezultatele actualizate ale repartizării în licee ADLIC 2013.**
NOTĂ: Repartizarea absolvenților din județul Alba a fost modificată după afișarea pe internet a rezultatelor repartizării computerizate, urmare a adresei nr. 4166/15.07.2013, prin care ISJ Alba a solicitat corectarea unei erori materiale comise de comisia județeană de admitere, care a introdus în aplicația informatică pentru admiterea computerizată o clasă, în loc de 2 clase, la Colegiul Național "Avram Iancu" Cîmpeni, profilul Real, domeniul Științe ale Naturii, cod 165.
- 11 iulie 2013: Au fost actualizate rapoartele privind **Ierarhia la nivel județean/ a municipiului București**. Modificările apărute sunt în rapoartele care prezintă informații statistice privind candidații proveniți din alte județe.
- 5 iulie 2013: A fost publicată **Ierarhia la nivel județean/ a municipiului București** a absolvenților claselor a VIII-a.
- 17 iunie 2013: În secțiunea **Planul de scolarizare 2013** au fost publicate listele cu specializarile, liceele și scollile din județe, precum și numărul de locuri disponibile pentru Admiterea în licee 2013. Datele sunt parțiale și pot suferi modificări.
- 22 martie 2013: Au fost publicate **Ghidul admiterii computerizate** și clarificări privind **Algoritmul de repartizare în licee 2013**.
- 22 martie 2013: Site-ul ADMITERE 2013 a fost publicat.

Site-urile Admitere 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011 și 2012 sunt disponibile în continuare la această adresă (Admitere 2004), această adresă (Admitere 2005), această adresă (Admitere 2006), această adresă (Admitere 2007), această adresă (Admitere 2008), această adresă (Admitere 2009), această adresă (Admitere 2010), această adresă (Admitere 2011), și această adresă (Admitere 2012).

- **Modul de completare al fișei de înscriere în anul școlar 2013-2014**

The Admitere Portal 2013 <http://admitere.edu.ro>

Slovenia:

Slovenia has been a member of EuroCloud since 2010. A partner from Slovenia in EuroCloud is Zavod eOblak – EuroCloud Slovenia, a competence center in the frame of the Chamber of Commerce and Industry of Slovenia. The center is active in all aspects of cloud computing from safety, promotion, to EU and global business. Slovenian public administration is increasingly cooperating with the center.

The following documents represent the Slovenian policy about the Cloud:

Slovenian guidelines for protection of personal data in the case of Cloud computing. Prepared by the Information Commissioner, EuroCloud Slovenia, Slovenian Institute for Revision, Cloud Security Alliance Slovenia, and Slovenian branch of ISACA. https://www.ip-rs.si/fileadmin/user_upload/Pdf/smernice/Smernice_rac_v_oblaku.pdf

Slovenian guidelines for cloud computing. Prepared by EuroCloud Slovenia. Topics covered: legislation, protection of personal data, conformance. <http://eurocloud.si/wp-content/uploads/EuroCloud-smernice-prevedeno-in-prilagojeno.pdf>

Slovenian Gov-Cloud - Vision of the Slovenian public administration for the transition to cloud computing. Prepared by the director general of the Directorate for IT and e-Services at the Ministry of the Interior. http://www.cloudconference.eu/media/filer_public/2013/11/05/jurij_bertok.pdf

In 2012, the government decided that all local computer centres should be connected in the cloud and issued a Strategy for effective government information systems (e-justice, e-health, e-archives, e-government, e-support to business).

EuroCloud Slovenia, the Chamber of Commerce and Industry of Slovenia, and Simobil, have developed a program to help startup companies the

introduction of cloud computing. <http://eurocloud.si/2013/10/27/startup-podjetnistvu-v-eu/>; <http://startcloud.si>

There is no official policy concerning the education in Cloud directly. However, the national e-learning strategy defines different strategic fields, which will help assure faster development of e-learning (where Cloud-based education is part of e-learning). The groundwork for the strategy was the strategic EU document i2010 and Slovenian Development Strategy. The strategy considers all social groups and claims that all Slovenian citizens must have the best access to the knowledge by means of e-learning.

In November 2011, the Minister of Education, Science and Sport appointed the Coordination of the implementation of the strategic objectives in the field of Education and Training 2020 (KIU2020). Among strategic objectives are:

- To improve the quality and efficiency of education and training;
- To encourage creativity and innovation and entrepreneurship at all levels of education and training.

Spain:

There is no specific policy for education on the Cloud. The National Institute of Educational Technology and Teacher Education (Instituto Nacional de Tecnologías Educativas y de Formación del Profesorado) is the unit of the Ministry of Education, Culture and Sport responsible for the integration of ICT in non-university educational stages. It belongs to the Ministry of Education, Training and Universities.

Every Autonomous Community has an Education Unit with the same aim such as EducaMadrid (<http://www.educa2.madrid.org/educamadrid/>); Escuela 2.0 Extremadura (http://v2.educarex.es/web/guest/escuela2.0/que_es). Many Spanish schools use the Cloud for educational aims, but few of them use the Cloud as an extensive way of learning.

Switzerland:

There is Cloud policy in Switzerland. The Swiss authorities have issued a set of goals, strategies and measures in dealing with Cloud computing in Switzerland. The catalogue of measures defines the implementation steps to achieve the strategic goals of cloud computing strategy. There are six strategic thrusts:

1. Gradual deployment of cloud services
2. Promoting responsible colloquial with cloud
3. Adaptation of the legal framework
4. Construction of dedicated cloud offerings for public authorities
5. Building cloud services for private and economy
6. Cooperation with industry and the international environment

The strategic principles are personal responsibility, National sovereignty, security, open market, Cloud first, comprehensive ICT Management, ICT service provider as integrators, standards and no single-handedly by the authorities. (<http://www.isb.admin.ch>)

About Cloud policy in Swiss education: The Swiss academy of engineering sciences (SATW) wrote the White Paper “Cloud Computing” commissioned by

the State. The paper based on the workshop in April 2012 “Opportunities of cloud computing for Switzerland - with special emphasis on education priorities and public sector”. The paper gives recommendation for using Cloud in education and research.

In conversation with computer science managers in schools or in discussions with school principals and authorities reveals that cloud solutions are only gradually known in education. An "EduCloud" would help the schools economically and organizationally, but also didactic advantages over university servers and local software installation. (<http://www.satw.ch>)

Turkey:

In terms of legislation, article, 5651 on the issuing of the publication on the web and struggling the crime committed by means of that online publication (TBMM, 2014). This legislation was put forth for safety purposes. It targets protecting the privacy of the personal life of citizens and reducing the potential of Cloud-based business crime. The service providers should offer a safe Internet deals to families in cooperation with the government in order to protect the families from the unethical web pages such as child pornography etc. This legislation does not include anything special for education.

UK:

In 2013, the UK Government Digital Services (GDS) officially launched the “fourth iteration” of its cloud procurement strategy with a Cloud First policy for public sector IT (Sweeney, 2013). This strategy requires agencies to firstly consider the Cloud when buying goods and services. This policy supports a wider adoption of cloud computing. Central agencies (like education authorities) must develop Cloud transition plans. These plans detail how and when they will shift each aspect of their IT portfolio to the Cloud and review and revise IT portfolios to take full advantage of Cloud offerings. Discounted Cloud solutions must now be considered before exploring other options. Cloud policies have to be openly shared with the public sector. This information sharing helps build a reference library of “good practice.” By 2020, Cloud augmented shared services are expected to be fully consolidated. Shared services support cheaper and quicker procurement of IT for the public sector. The UK government’s commitment to adopt greater use of Cloud services is demonstrated in the G-Cloud programme which has put together a catalogue of cloud information and communications services available to the UK public sector.

UK national policy seeks to implement Cloud Computing facilities in higher education institutions through HEFCE (The Higher Education Funding Council). HEFCE distributes public money for higher education to universities and colleges in England, and ensures that this money is used to deliver the greatest benefit to students and the wider public. In 2013 an initiative to develop shared Cloud Computing facilities was launched. All elements of this initiative aim to enable institutions to benefit from shared service approaches to computing applications and data storage in a core virtual server infrastructure or ‘cloud’.

Intended outcomes are:

- all higher education institutions (HEIs) to have easy and competitively priced access to cloud services for data storage either through their own direct procurement brokered by a HEFCE/JISC service; or through a HEFCE/JISC procured cloud space
- a sustainable cloud services brokerage facility 'owned' by the higher education (HE) sector whose ongoing management and development beyond the available funding would be in the trusted hands of a consortium
- the creation of a body of expertise to help HEIs exploit cloud-based approaches in the procurement of administrative computing applications.

For schools, in 2011, the UK Government announced that the IT curriculum for pupils aged 14-16 would be given a dramatic overhaul to make the subject more focused on the needs of business. Cloud-based education was to be included as the government would work with IBM, Cisco, Deloitte, HP, Microsoft, National Grid, Proctor and Gamble, and Capgemini to pilot the new curriculum. The pilot is intended to create a greater emphasis on designing software and writing computer programs. The British Computer Society (BCS) warned that the government would need to encourage schools to do more to improve IT beyond focusing on league table results.

"The UK needs professionals who can invent new digital technologies, professionals who can integrate those inventions into technology platforms, and professionals who can build software applications that address business needs. We also need professionals capable of protecting our information, our digital infrastructure and our intellectual property,"

3. Who is promoting the Cloud?

Austria:

The Austrian Ministry of Education is providing several services for using Cloud in education. The data is mainly stored at "Bundesrechenzentrum", a part of public administration. Several data services are developed.

Mail-, Web- and file-services of several schools and other educational institutions like universities are outsourced to global services from Google, Microsoft etc. This is a decision of each institution itself.

Belgium (Flanders):

Many private organisations try to promote their products in the educational environment by presenting them as services on the cloud, like apps, collaboration tools. One of them is Microsoft, who has an agreement with the educational sector which can use their services at discount prices (including the cloud services like Onedrive with Sharepoint service, Office 365).

Another promotion is done on the use of e-learning platforms. The two major players in Flanders are Smartschool (a Belgian development, used in almost all schools of the GO!) and eloV (a version of Blackboard, used by about half of the schools of the VVKSO) but it will be finished by the end of 2014 (schools using it can change for free to CourseSites developed by Blackboard).

Many schools already use a wide range of Cloud systems for the administration, grade books of pupils. As an umbrella organisation GO! tries to minimize the complexity of ICT-infrastructure at school- and school community level, by organising the services on a higher level in the cloud.

Bulgaria:

The government is promoting Cloud computing through the Strategy for the Effective Implementation of Information and Communication Technologies in Education and Science of the Republic of Bulgaria (2014-2020). This was developed in accordance with the legislation of the Republic of Bulgaria. Implementation of the Strategy envisages improvement of the legislation or initiation of new legislative measures. The Strategy has been prepared in accordance with a methodology for strategic planning adopted by the Council for Administrative Reform at the Council of Ministers on the basis of the orders, and RD09-1223/23.09.2013 RD09-1676/15.11.2013 of the Minister of Education and Science.

The Strategy was developed by an expert working group composed of representatives of the Ministry of Education and Science, University Rectors Council, Bulgarian Academy of Sciences, Bulgarian Industrial Capital Association, innovative faculty and teachers.

A lot of companies in IT sector are promoting different Cloud services. Some of them include:

Daticum (<https://www.daticum.com>), Microsoft, TeleGroup (<http://www.telegroup.bg>), HOST.BG (<http://host.bg>), SUPERHOSTIN.BG (www.superhosting.bg), etc.

Meanwhile various Universities and Academies like Sofia University, Technical University, Telerik Academy, etc. offer a variety of courses and training related to Cloud computing.

Cyprus

There is not any sort of official endorsement or wide-scale promotion of the Cloud by organizations. There are though, private software companies that offer Cloud-based services (mostly for commercial use). Additionally, there are few initiatives/policies from Ministries related to Cloud-based services/technologies, but these are not referred always as such, probably because the Cloud as a term is quite recent. The Ministry of Education can be considered a promoter of the Cloud for the public educational system, but it does not have any official policy or agenda explicitly related to the Cloud.

Czech Republic:

The main promoters of the Cloud in the Czech Republic are the following companies: HP, T-Systems, Forspi, K2, IBM, Adobe, Microsoft.

These organisations mainly highlight benefits of Cloud technologies for business purposes.

Germany:

On ministerial websites Cloud computing is not promoted at all but there is at least ministerial advice on the different tools available (e.g. to use TeamDrive instead of Dropbox). Also they offer a list of Cloud Services – located in Germany and therefor following Germans safety rules (Boster GmbH, Ccloud.de, CloudGermany.de, CloudSafe GmbH, DTS Systeme GmbH, Dunkel GmbH, ICO, Itenos, Jiffy Box, Kamp, Mesh Netfiles, Nionex, Pironet GmbH Quality Hosting, T-Systems). Again, warning are given against using services such as iCloud, Amazon Web Services, Microsoft Cloud Services, etc.

Most important for the German discussion is the Federal Ministry of Economics and Technology. Cloud computing is an important topic in the campaign “Science Year 2014: the digital society” and for the IT-strategy of the government. Most important for education on the federal level is the Enquete Commission of Deutscher Bundestag “Internet and Digital Citizenship”.

Microsoft proclaims the use of their Cloud solution for educational institutions. In this context, cooperation exists with the University of Paderborn and their computing center in order to allow students to access future-oriented cloud technologies (MS). This educational cooperation has to be regarded critically, since the above criteria set by the federal state of Baden-Württemberg are not complied and the data is spread worldwide on stationary random servers.

The Cloud service Team Drive was recommended in version three with a seal of quality by the data protection officer of the federal state of Schleswig-Holstein for the usage in schools (ULDSH). An alternative Cloud service that can be applied in the educational sector is izmycloud. This service is provided by the computer science center of the federal state administration of Baden-Württemberg. Both Cloud solutions meet the above criteria (KPBW3).

There is an organisation offering a special system called “Schulclouds™” (<http://schulclouds.de>) but there is no data available on how many schools are using the system.

Greece:

The Cloud is promoted by research institutes and the Greek Schools' Network (GSN - www.sch.gr), which is the educational Internet of the Ministry of Education and Religious Affairs (www.ypepth.gr). This platform by interlinking all schools while providing basic and advanced telematics' services, contributes to the creation of a new generation of educational communities. In that sense it takes advantage of the latest Informatics' and Communication Technologies in the educational procedure. Cloud is also promoted by ICT companies, as well as by public and private institutions, such as Doukas School and its Cloud-Based Culture.

The Hellenic digital earth Centre of Excellence is involved in the Cloud and promotes the benefits derived from the use of it. This promotion is achieved through seminars designed not for the Cloud itself but in using Cloud-based technologies for geography education. The seminars are addressed to teachers, school principals and education consultants and directors. These people use the Cloud as a mean for saving and editing their work during the seminars and also at their schools after the end of the seminars. So, we can say that some teachers have started using the Cloud from the beginning of academic year 2013-14.

Ireland:

Ireland has a national broadband plan to deliver a connected society. <http://www.dcenr.gov.ie/Communications/Communications+Development/Next+Generation+Broadband/>

The National Digital Strategy for Ireland first phase focuses on “doing more with digital” and future phases will focus on further digital opportunities. <http://www.dcenr.gov.ie/NR/rdonlyres/54AF1E6E-1A0D-413F-8CEB-2442C03E09BD/0/NationalDigitalStrategyforIreland.pdf>

The Irish Centre for Cloud Computing and Commerce (IC4) is multi-institutional (Dublin City University, University College Cork and Athlone Institute of Technology) research centre. <http://www.ic4.ie/>

Italy:

Italy's government through the “Digital Agenda” identified digital solutions as a major source of government savings and pointed to the digital economy as a strategic sector to revitalize Italy's fragile growth. The national digital agenda identified scaling up of the “National Plan for Digital Schools” as a priority for all levels of government. In addition to the “National Plan” Italy should promote other national initiatives to encourage the use of Cloud computing in education. As a consequence, ICT is being introduced massively in school administration. An integration of Cloud solutions for administrative and pedagogic purposes may be the next step for Italy's national plan for digital education.

An additional objective of the National Plan for Digital Schools is to stimulate innovation in the tools and content industries serving education. All of the projects of the National Plan for Digital Schools, and particularly the most intensive initiatives (cl@sse 2.0, scuol@ 2.0), call for closer cooperation between schools and the business sector – be it content providers or hardware and software developers. Within the project Impres@ Scuola the business sector has been invited to collaborate with schools involved in the cl@ssi 2.0 project and to use these classes as a test-bed for strongly innovative products and solutions.

- At institutional level: MIUR (Ministry of Education, university and research). Indire, Ministry of Education, Regional administration.

- At private level: big companies in the ICT sector (Telecom, Cisco etc...)

There are a few big organizations involved in promoting the Cloud in Italian schools. Telecom Italia is trying to promote this ICT innovative point of view in education assessing several experimental projects. Its choice is to focus on “Saas – Software as a service” on cloud in order to sponsor the use of Cloud Computing in a different way and not regarding only the storage characteristic of this one.

INDIRE – Istituto Nazionale di Documentazione, Innovazione e Ricerca Educativa (National Institute of Documentation, Innovation and Educational Research) is the national board of educational research and teacher development and supports all initiatives related to digital school plans by promoting training and self-training, reducing the distance between pedagogical practices and everyday life.

In September 2012, the Ministry signed cooperation agreements with 12 regions concerning the innovation in the local schools. Each regional agreement is different in the actions selected that replicated those of “National Plan” :Piano LIM, Cl@sse 2.0,Scuol@ 2.0. For example, in the Umbria Region the administration has committed in realize the “Dorsale Appenninica” an infrastructure to deliver broadband covering to all Umbrian schools.

In many regions also small mountain schools received dedicated funding to get over the digital divide. Some agreements between the Ministry and the regions assigns funds to provide IWBs in schools that have the lowest equipment levels in the region. Other regions allocated almost equal shares to the main three actions: piano LIM, cl@sse 2.0 and scuol@. 2.0. The regional school offices (the local office of the Ministry of Education) are responsible of the process of fund management.

Lithuania:

In Lithuania Cloud computing is promoted and used in state institutions, in public sector and business. Business companies offering Cloud computing services are gaining popularity in Lithuania, especially in business fields.

Cloud computing in Lithuania is used both in formal and informal education systems. The majority of education institutions use Moodle system, electronic student’s evaluation books, e-forums for discussions and sharing information and so on.

Poland:

The Cloud in education is still weakly promoted in Poland. Some actions are undertaken:

- a) by regional organisation/institutions taking part in different projects;
- b) in the media – especially via educational portals;
- c) by companies such as Microsoft, Intel, Google, Adobe, Apple. They prepare dedicated offers for education (i.e. Office 365 for academics) and organise events promoting Cloud-based approaches.

Portugal:

In Portugal, one of the most important organizations in the promotion of the Cloud is the AMA entity (Agency for Administrative Modernization), belonging to the Presidency of the Council of Ministers. The AMA aims to facilitate the relationship between citizens and the Portuguese State, being a privileged channel access to services provided by the Public Administration. At the moment is trying to implement the Cloud in Public Administration, thus including the Ministry of Education and their national education posts in this project.

The EuroCloud Portugal Association is a non-profitable organization aiming to promote and develop services and technologies presented by the Cloud computing paradigm. Integrated in the European EuroCloud network, the association also maintains as a goal the stimulation of projects and ideas, among national companies, and between them and the companies that integrate the European network. As an additional goal, the EuroCloud Portugal Association intends to serve as an interface for the transfer of knowledge between Investigation and Development Centres, of the national academic world, and the entrepreneurial world, promoting national and pan-european partnership projects. Together with the FCCN they have created a program called Cloud@RCTS which aims to explore the use of cloud computing within the national academic network.

Another important entity in monitoring the Cloud in Portugal is APDC - Portuguese Association for the Development of Communications, which has held several conferences and meetings with the service providers and various entities that have adopted it as a working business.

In Portugal the use of the Cloud is not well disseminated to the general population, most of which, are still unfamiliar with the concept. For now, the biggest users of this technology are the IT companies or new businesses beginning to internationalise their products. They are adopting the Cloud as an easier, quickly and practical way of exchanging content between their employees or with other companies.

In Portugal there are several organizations involved, for instance:

“Cloud Computing Portugal - Microsoft PME”: an example of how the “Cloud Computing” can increase the productivity of a company is to see email from anywhere and synchronize calendars and meetings with co-workers on the go. See more in: <http://www.microsoft.com/business/pt-pt/Solucoes/Solucoes-Cloud/Paginas/default.aspx#&panel2-1>

“Portugal Telecom (PT) 2013”: EuroCloud Portugal strengthens the position of PT as a reference in Information Technology, particularly in the area of provision of cloud computing. PT is on the list of the five Portuguese companies to tender for EuroCloud Europe 2013 Awards, which honor the best projects of cloud computing in Europe. See more at:

http://www.telecom.pt/InternetResource/PTSite/PT/Canais/Media/DestaquesHP/Destaques_2013/EuroCloudPortugal.htm

“Data Center Pt Covilhã”: One of the largest databases of Portugal acquires cloud solutions of virtual data center. The PT Data Center puts Portugal in the world in the accommodation capacity and management of IT (Information Technology) and Cloud Computing infrastructure, of innovative and efficient manner. More at: <https://cloud.ptempresas.pt/Pages/Datacenter/DCC.aspx>

“EMC”: EMC brings vast experience delivering cloud computing solutions for corporate, government, and service provider environments, large and small, to meet the specific needs of your organization.

<http://portugal.emc.com/industry/public-sector/education-it.htm>

Promotion is being done through TV and via the Internet.

Romania:

Until now, the promotion of the Cloud in Romania has been done by institutions like EuroCloud Romania, RoCloud and CloudMania.

EuroCloud Romania is an independent, non-governmental, non-profit, which works by Romanian law associations and foundations. It acts as a collective voice of Romanian Cloud computing industry to enable the development of a local Cloud ecosystem, and increase the visibility of the Romanian market in the context of European cloud industry.

EuroCloud Romania performs the following promotion activities:

- Informs about the trends and news in the Cloud
- Conducts promotion and information campaigns on the benefits of cloud services, targeted to specific industries or areas of the Romanian public administration
- Assists to develop strategies to market the solutions and cloud applications
- Organizes events and promoting awareness of services / applications of Romanian Cloud: EuroCloud Awards Romania, Romanian catalogue of cloud solutions, webinars, roundtables, technical events related to various topics cloud industry
- Organizes workshops about legal and regulatory aspects of the cloud and use cloud services market internationally

EuroCloud Romania is positioned as a strategic partner for multinational and Romanian companies that want to increase awareness of cloud services in Romania, awareness raising, educating users and by moderating an active community cloud computing industry in Romania. They encourage the growth of the local IT industries. EuroCloud is a partner for national and international companies that are promoting a Cloud computing industry in Romania.

The Romanian Association for Cloud Computing (<http://rocloud.ro/>) is an organization which promotes the the Cloud through conferences, meetings

and competition but through the first on-line magazine about Cloud computing. Their objectives are to provide access to a wider audience in Romania to information on Cloud computing; to sustain and develop a positive attitude to the suppliers and users, but also at government level on Cloud computing in Romania; and offer assistance and support for members of the Association to develop their own initiatives, training and certification in the field of cloud computing related topics. Their promotion tools are Cloud Magazine <http://cloudmag.ro/home/> and Romanian Cloud Forum <http://www.cloudforum.ro/>

CloudMania has published, in partnership with AGORA Group, the first edition of the Catalog Cloud Computing 2014 Romania. As the editor underlines in one of the articles, the catalogue is divided into three parts: a guide for the users of cloud, some public data about the Romanian market of cloud, services and cloud solutions offered in Romania. One of the major companies presented in the catalogue is SIVCO, one of the first that promoted the Cloud in Romania and the one who designed the ADLIC, the on-line system for admission in secondary school. The ADLIC is used from 2001 by The Educational Minister and in 2013, won the EuroCloud Prize for "The Best Cloud Project for the Public Area".

Increasingly, many local companies have developed services launched on Cloud Computing technologies and those already present in the Cloud and have strengthened and diversified offer in order to attract new customers. A natural development, given that predictions regarding the evolution of local demand for Cloud services developed are optimistic.

The Ministry of Information Society seeks to ensure the strategic framework of reference in relation to the European Union and the "National Strategy for the Digital Agenda for Romania ". Concrete actions that contribute to achieving consistent with the objectives are in e-Governance, Interoperability, Cloud Computing, Social Media, Ensure interoperability of information systems of public institutions for the provision of electronic public services and trans-European public services by appropriate governance and processes in accordance with the policies and objectives of the European Union and the secure exchange of information; the promotion and implementation of collaborative online tools and electronic services of public or governmental participatory initiatives for citizens and businesses.

The Ministry are also concerned with ICT in the service of Education, Health and Culture, by stimulating the development of content / digital educational resources, integration of Web 2.0 and OER in learning, supporting digital cultural heritage, support for initiatives to promote the implementation and interoperability of e-health at national and European and stimulation of publication and dissemination of digital cultural heritage of Romania

Slovenia:

Many IT and research organizations are promoting the Cloud in Slovenia, among them: EuroCloud Slovenija as a leading networking institution, Jožef Stefan Institute, University of Ljubljana - Faculty Of Electrical Engineering And Computer Science, University of Primorska - Primorska Institute of Science and Technology, University Of Maribor- FERi, Microsoft Slovenija, Alpineon

d.o.o., Infotehna d.o.o., SMART COM d.o.o., Studio Moderna d.o.o., Turboinštitut d.d., NIL d.o.o., etc.

Three conferences were organized: Microsoft NT conference 2012; Mladipodjetnik.si (MP.si) 2010; SIRikt 2010-2014 International Conference

Spain:

Industries involved on telecommunications are very interested on this topic, led by Telefónica Fundation, a telephone company, with the educational portal EducaRed (<http://www.educared.org>).

Switzerland:

In Switzerland there are different organisations involved in promoting the Cloud. On the one hand, there are national authorities “Federal IT Steering Unit FITSU” (<http://www.isb.admin.ch>). On the other hand, there are several organisations, such as schools or universities but also private organisations. An important platform is <http://www.educa.ch>.

Turkey:

As mentioned, there is a law article about internet safety and The TIB (The Presidency of Telecommunication and communication and is in charge with the promoting of the Cloud in Turkey. Internet companies also promote facilities.

UK:

A variety of organisations are promoting the use of the Cloud in education in the UK. These range from vendors and companies, to trade magazines and blogs and even charities. Technology giants like Google and Microsoft are providers of Cloud-based productivity applications. They seek to offer tailored pricing models for schools, allowing them to pay for software on a subscription basis, rather than larger, licence costs. Microsoft even has their own blog for schools.



Microsoft UK Schools Blog

<http://blogs.msdn.com/b/ukschools/archive/2012/04/12/cloud-computing-for-schools.aspx>

Many UK education organisations are adopting Cloud technologies, such as Scottish schools' Intranet Glow, Norfolk and Warwickshire councils' schools as well as E-ACT, a leading, independent academy sponsor who manage, maintain and develop many thousands of school academies and Free Schools in England. These are examples of early adopters of Cloud apps. E-ACT has also started switching schools to Chromebooks, which are available on a rental model. A report by Market Intelligence company Kable (2013) suggests that many more schools will follow this trend, as PCs have in the past been a large part of schools' IT spend.

Tablets for schools (<http://www.tabletsforschools.org.uk/>) is a charitable organisation specifically set up to promote the use of the Cloud in education. Tablets for Schools (2014) is a not-for-profit campaign that commissions the largest independent research programme in the world on how tablets impact learning and attainment. They make the results of this research available, and use it as a basis for best practices for schools implementing tablet technology. The long-term goal of the association is to provide tablets for each student in the UK. Tablets for schools focus on tablets because of their mobility, and ability to offer significant cost-savings.

All types of news and media are strongly promoting the use of Cloud Computing in education. As early as 2011, Computer Weekly, a leading UK technology magazine reported on the advantages Cloud Computing could bring to the UK public sector (Criss, 2011), including education departments. They suggested schools can enjoy the same benefits of virtualisation and cloud services that commercial organisations will have. But were concerned that school IT departments were overlooking a strategic view of how to use Cloud Computing in education.

Many official organisations are also promoting Cloud-based developments in education. These are predominantly connected to technology and savings that can be made, rather than educational advantages. Professional associations, researchers and the educational press are keen to praise the developments and even schools are advertising what they are doing online.

Finally, the Charity Cloud (2014) is a not-for-profit organisation seeking to provide Cloud Computing services for schools and charities. Since 2010 they have been providing Cloud solutions to charities as diverse as the Royal Association for Deaf People, Compass and Maggie's Cancer Caring Centres. They monitor developments and start to recommend them to their customers when they are convinced of their usefulness and reliability. The comment that Cloud solutions have now matured to just such an extent and the benefits of such a solution are so great that they offer a realistic alternative to the often very high capital cost of physical infrastructure.

the charity cloud

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Cloud Computing in Schools

In any educational environment, keeping your records secure and always available is key to ensuring your students gain the best education they can. By using **Cloud Desktops**, accessed from PCs and thin clients around the school, you can be sure that the information can only be accessed by you and will be available wherever you go. What's more, because all information sent between the device and the Cloud Desktop is encrypted, it can't be snooped by the trainee hackers who are meant to be learning Shakespeare!

We offer total solutions to the educational sector, including **lge1 thin client** hardware. lge1 thin clients are essentially out-down PCs connected to the network that deliver applications and data via a centralised computing model with the majority of processing carried out by the server(s). Typically, the thin client terminal sends key strokes and mouse clicks to the server and the server sends screen updates to the terminal device.

Whereas previously, organisations may have come across thin clients when using Remote Desktop connections over Terminal Services (or Citrix), this technology is now being used to access Cloud Desktops in a truly virtualised environment, offering highly resilient services to customers over the Internet. This leap in technology not only reduces the amount of servers housed on site, offering access anywhere and lowering the overall cost of IT, it also helps to reduce your organisation's carbon emissions by reducing the amount of power consumed by IT.



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4. Using the Cloud for education

Austria:

The most important education service providers in Austria are the EduGroup in Upper Austria: <http://www.schule.at>, <http://www.eduhi.at>, <http://www.edumoodle.at>, they have the Virtual School <http://www.edugroup.at/education-group/detail/virtual-school.html>, TV for Education <http://www.bildungs.tv> etc.

Two learning platforms are available in Austria

- EduMoodle, serviced by the EduGroup in Upper Austria. It is among Top-Ten of the moodle-administration globally. – www.edumoodle.at
Impressum: <http://www.edumoodle.at/moodle/mod/page/view.php?id=518>
- LMS – Learning Management System, serviced by a local administration in Burgenland. – www.lms.at Impressum: <https://lms.at/impressum>

In addition, the University College of Education in Burgenland also provides a virtual in-service-training college for teachers especially in the field of ICT, called “Virtuelle PH” - <http://www.virtuelle-ph.at/>.

Specially for the use in Mathematics the **GeoGebraCube** was developed. It offers teaching materials in German languages for all levels of education. - <http://www.geogebraTube.org/>

Several networks of teachers and schools exist in Austria:

- eLSA – “E-Learning im Schul-Alltag” (translation: E-Learning in daily school), a network of some hundreds of schools in general education, mainly in secondary education - <http://elsa.schule.at/>
- ELC – “E-Learning-Cluster”, a network of more than 100 schools, mainly in vocational education - <http://www.elearningcluster.com/>
- ENIS – “European Network of Innovative Schools”, a network of some tens of schools, working in a European context- <http://www.enis.at/>
- IMST-program for a competent use of digital media in learning science, a network and supporting system for teachers concerning Innovations in Mathematics, Science and Technology (acronym: IMST)- <http://www.imst.ac.at>
- DigiComp, an initiative in general education which defines digital competencies at class-level 4, 8, 9 and 12 and offers learning materials for all subjects - <http://www.digikomp.at/>

The Austrian Federal Ministry of Education developed together with the library of the University of Vienna the service “bildungsmedien.tv”. A free of charge streaming service for all schools in Austria provides officially approved media, e.g. films, DVD, slices-shows etc. for teaching in nearly all subjects, <http://www.bildungsmedien.tv/>. Additionally there exists also the platform <http://www.bildungs.tv> supported by the Federal State of Lower Austria, but with a smaller offer.

Belgium (Flanders):

In Belgium there is experience in using the Cloud for educational purposes in higher education and adult education in general. Learning at a distance,

online learning and blended learning are examples where good practices are common.

One of the initiatives taken by the government is Toll-net, a network of professionals within adult education. They share experiences and knowledge about e-learning and blended learning. Also in prisons, the benefits of blended learning are explored.

In compulsory education many initiatives have been taken through the last decade. Learning platforms are introduced in a lot of schools, often letting parents take part of the monitoring process. This probably was the most important realization within compulsory education regarding the use of the cloud in the last years. For sick children the government launched a project to enable them to take part in class sessions from a distance.

Note of interest: In search of new Cloud-tools, the collaboration between education and the private sector is often driven by commercial purposes. Education should take the lead in this partnership and set out the goals.

Name	Description	Relation to the Cloud
Use of tablets in the classroom	Samsung, Apple, Microsoft, ...	Apps, shared information
BYOD software	IBM, Microsoft Office 365, ...	Management-tools to manage the devices through the cloud
Learning platform	Smartschool, eloV, Moodle, CourseSites, ...	Virtual classroom
Research about blended learning, ICT-integration	Edubit, ...	Shared knowledge
Collaboration between classes	Prowise, Smartboard, ...	Exchange of methodologies, didactics, ...
Networking	Toll-net, GO!, ...	Collaboration
Administration	SchoolOnline, ...	Grade system

Bulgaria: The trend in Bulgarian higher education is clearly toward the adoption of Cloud services. University IT organizations are expected to keep up with a long list of competing demands, such as:

- Deploying applications and delivering web-based student services at a rapidly accelerating rate, often without a proportionate increase in budget for hardware, software, and personnel
- Drastically reducing costs while maintaining the highest levels of security and privacy
- Maintaining a traditional IT infrastructure increasingly unable to accommodate the growing number of personal devices — including

tablets, smartphones, and laptops — that students bring into the campus environment

- Offering sufficient bandwidth to accommodate huge swings in network usage, from the high activity of autumn to the lull of summer
- Competing against other universities, many of which attempt to differentiate themselves in the market based on the services they offer to students

Security is an especially pressing issue for institutions of higher education. With many faculty members pursuing patent-pending research, and with student privacy safeguarded by strict regulations, universities seek to minimize exposure to legal risk and compliance risk. A secure and reliable networking infrastructure is therefore a flat-out requirement. Fortunately, many higher education institutions have found a way to meet these competing demands - for greater agility, less risk, and lower cost - by migrating much of their IT infrastructure to the Cloud.

There are various programs and tools for financing the development of research and educational IT infrastructure, including the transformation to cloud solutions, such as the following: National Science Fund at the Ministry of Education and Science; European Framework Programme for research, technological development and demonstration activities as the most effective instruments for building ERA. They are the main national and foreign sources of funding for research and technological infrastructure development (cloud computing, shared IT infrastructure, and support to deliver virtual servers, storage, and data management applications for universities) in the last 10 years (revenue from FP amounted to more than 100 million euros in Bulgaria).

Projects include:

- Research project "Study and Implementation of Platforms for Cloud Computing and Development of an Integrated Environment for Research and Education" funded by the Ministry of Education and Science (2014), SULSIT. The main goal of the project is to investigate the possibilities and pilot implementation of cloud computing (FI-Ware, Microsoft Private Cloud, VMWare) in the design and implementation of a highly effective environment for research and training in the context of SULSIT.
- Research project "Education and Knowledge Management Supported by Cloud Computing", funded by the Ministry of Education and Science (2011), TU-Sofia. The project aim is carrying out scientific research and technological development based on the concept of software as a service and implement integrated advanced solutions (SharePoint2010, ILIAS, Mac OS X Server, TENTube) for collaboration and knowledge management at the University.
- METASPEED Project funded by the Bulgarian National Science Fund under the thematic priority Information and Communication Technologies (2009). The main objective of the project is the creation and testing of advanced technologies, methods and tools for automated specification documents with different electronic format (text, image, etc.), content (cultural and historical artefacts, training materials - including results of the e-training, geospatial information systems, scientific publications, etc..) and location (local multimedia repositories, Web pages, etc.).

Other initiatives in education include:

- i) Live@Edu – Microsoft initiative (<http://www.liveedu.bg/>)
- ii) Sofia University "St. Kliment Ohridski" research projects - Intensive program: Cloud Technologies - Information, innovation, cooperation and shared knowledge (<http://projects.uni-sofia.bg/>)
- iii) Telerik Academy - offered a course "Web Services and Cloud Technologies"

Cyprus

The use of Cloud for education is relatively new and not very common in Cyprus. Nonetheless, there is ongoing and past research in the field of Cloud technology in general, mostly driven by academic institutions, often funded by European programmes. Additionally, private and public Universities build their own Cloud services that range from using e-learning platforms such as Moodle and Blackboard to portals for faculty and students. The European University Cyprus, a private institution based in Nicosia, uses Microsoft Office 365 and offers Cloud services to students such as e-mail, shared calendar, storage, uses e-learning systems Moodle and Blackboard and provides student portals (web, mobile) to get informed about events, their grades, etc. Similarly Grammar School, a secondary education establishment will soon start using the MS Office 365 suite. In public education there is the web portal Dias (www.dias.ac.cy), which is still in pilot phase. This project aims to connect schools, students, parents and teachers alike and offers a Virtual Learning Environment in which Digital Educational Content is hosted.

Czech Republic:

The following examples are concerned with the Cloud in education:

- a website <http://spomocnik.rvp.cz/>. This is specialized website for teachers on elementary and secondary schools. Hints, tips and experience with Cloud technologies in education are collected on this website for teachers; ICT in education (including Cloud Computing): <http://www.itveskole.cz/> , <http://spomocnik.rvp.cz/>
- there appear to be no known Czech projects in this field.
- teachers mostly have to educate themselves by searching for articles on the Internet.
Microsoft provided Office 365 for free for schools.
SlideShare (www.slideshare.net) organizes half-day long workshops for teachers.
- A little research has been published in the area (see publications).
- other items include an online conference, Ing. Jan Šedivý, CSc. is talking about cloud computing in education:
<https://www.youtube.com/watch?v=LQp4uPBMOP0>

The SaaS model is the one most used in schools in CR. For other models, schools are not equipped enough, yet there are not architects ready to apply other models in schools.

Germany:

Main cloud for education actions in Germany include:

Federal Ministry of Economics and Technology: study on educational Clouds for vocational training (Bildungsclouds für Berufskollegs)

Cloudcycle: educational cloud: The educational cloud offers web based cloud services especially for the requirements of schools. The special needs of schools and the public sector for compliance and security are taken into account. Cloudcycle has a focus on vocational training. (www.cloudcycle.de)

Federal Ministry of Justice and Consumer Protection: Irights Cloud (<http://cloud.irights.info>)

Information portal about legal, technical and cultural aspects of cloud computing (cloud.irights.info).

European Commission: *Opening up education through new technologies. The European Commission focuses on 3 drivers of change: teaching methods, digital content and infrastructures.* (<http://openeducationeuropa.eu>)

Gesellschaft für wissenschaftliche Datenverarbeitung (Universität Göttingen/ Max Planck Gesellschaft) www.gwdg.de, www.gwdg.de/cloudshare

Fraunhofer Institut für sichere Informationstechnologie (www.sit.fraunhofer.de)

Universität Stuttgart, Institute für Parallele und Verteilte Systeme und Architektur von Anwendungssystemen (www.informatik.uni-stuttgart.de)

The following initiatives also exist:

Company driven: <http://schule-und-cloud.de/>: searching for the most suitable cloud computer of Germany which is to be configured with freeware for pedagogical aims and <http://schule-und-cloud.de/>: find the best-designed Cloud Computer in Germany, which is to be equipped with freeware for educational purposes.

Company and state driven: <http://Unit21.de>: cloud based connection of all twenty schools of Unna city. The project won the E-Learning Award in the year of 2011.

Project, state driven: <http://www.cloudcycle.org/>: offers a basis for cost-benefit of standard, scalable solutions and services on open cloud platforms to SMEs and the public sector.

There is a Doctoral project for the development of security extensions for cloud computing (ProSeCCo): future cloud solutions are to be designed, implemented and evaluated in terms of the Privacy-by-design concept and PET. Federal Ministry of Education and Research Project of the Month January 2014 (BMBF, 2014).

There is nothing special for primary schools in Germany. The actual activities mainly focus on Internet safety (e.g. projects like "Internet scouts").

Greece:

Cloud technology involves a distributed computing model that provides software and hardware through Internet. It offers storage, computational platform and infrastructure according to the user's requirements (Saju, 2012). The development of Cloud computing services in primary education in Greece is in its early stages.

Cloud computing is increasingly applied in large and medium sized organizations and businesses in Greece. Research focuses on the development of the reliability and the resolution of security issues of Cloud computing systems. The purpose is the creation of green Data Centres based on low cost commodity infrastructures.

The National Technical University of Athens has developed a Cloud storage service, Pithos (<https://pithos.grnet.gr>) and Pithos + and its successor Oceanos. Pythos provided 50 GB of Cloud storage and featured in iPhone and Android clients, sync and version control. Synnefo (<http://www.synnefo.org/>) stands for the greek word cloud, powers GRNET's Oceanos public Cloud service and is a complete open source cloud stack. It provides computing, network, image, volume and storage services. In the field of networking Oceanos offers the possibility to Greek Academic or Research Organizations, Institutions of Faculties to run their own projects remotely on a virtual infrastructure with minimized cost and simple accessibility.

At the Primary school education level, a private school, Doukas School, situated in Athens has introduced a one-to-one computing environment. Each student between 4th and 6th grade (10-12 years old) is equipped with a personal laptop with Windows 7 Professional operating system, the Microsoft Office 2010 productivity suite and SharePoint Server 2010 collaboration software. In the beginning of the school year the IT department of the school uploads e-books, interactive software and educational games stored on a centralized portal using Microsoft SharePoint Server 2010. It was reported that the school intends to utilise Microsoft Office 365, one connected Cloud solution that unifies familiar Microsoft Office applications with Microsoft Exchange Online, Microsoft SharePoint Online, and Microsoft Lync Online (Panton, 2012).

In terms of collaborative platforms, Edmodo is used, an online social learning and communications network for teachers and students is a free service that allows teachers to create and maintain their own safe, collaborative classroom communities. It is similar to Facebook although it is especially designed for classroom use, given the fact that it is completely private and secure. Therefore, a number of educators and schools in Greece use it so as to share educational content, manage projects and assignments, conduct quizzes and facilitate various learning experiences with their students. Greek teachers find it very useful to build profile pages on Edmodo, which they use to meet and stay in contact with other educators around the world. In that way, they can share best practices and top resources. Students, on the other hand, can use Edmodo to interact with their teacher or classmates asking questions and more.

E-class, is a dynamic teaching environment is frequently used in many schools but mostly in academic institutions. It is a complete Course Management System that supports Asynchronous eLearning Services, aiming to incorporate and constructively use the Internet and web technologies in general, in the teaching and learning process. Teaching materials are stored and presented, independently of the spatial and time limiting factors of conventional teaching, giving unlimited opportunities to learn. It shares the

same philosophy with MOOC's, Moodle, Coursera and similar open source learning platforms.

Moodle ranks towards the top of LMS products in Greece (which is the case internationally). Being a free open source application, it is used by numerous teachers in Greece to organize their lessons; a fact that has contributed to its popularity within the education industry. LMS services through Microsoft Office 365 has recently been developed in Greece (e.g. InEdu company) with tremendous potential in the niche market for national and international educational institutions. The Microsoft Office 365 is a prime example of the use of Cloud Computing, which offers access to office applications Office via the Internet without the need to install applications locally on a computer.

iTunes U is used by more and more educators in Greece, helping them to share ideas in a dynamic way, while students immerse themselves into a rich learning experience. They can play video of audio lectures (many of them being prepared by university experts in Stanford, Yale, MIT etc) and take notes that are synchronized with the lectures. They can experience courses created on a personalized basis.

Other collaborative platforms worth being mentioned, not being able to be rated at that stage due to limited number of people within the Greek educational community using them. Example is Schoology, another cloud-based collaborative platform similar to Edmodo, which provides tools to manage an online classroom, school analytics also included. This Learning Management System is also free of charge for individuals and schools.

A range of text and voice chat tools are used like Skype in the classroom and Lync, are synchronous environments to provide an interactive way of communication among students, classes, educators and/or experts all over the world. Learning becomes more authentic while students get engaged in different cultural and ethnic backgrounds understanding cultural differences and learning about history and social norms. A number of lessons are presented in this platform. Many Greek schools, Doukas School being one of the first to have introduced , use it as a form of flipped teaching together with Ted Ed platform of virtual lessons. Goggle+ and hangouts is another form of social networking and video meeting space which is also used at a limited range, up to now.

Google maps should also be mentioned as they are frequently used by many Greek educators as a means of virtual tours, especially in Geography lessons. Google Lit Trips is a site dedicated to the use of Google Earth to "travel" the destinations that are often mentioned or used in books and novels.

Social network and micro-blogging sites are used by some teachers in Greece, blogs are probably the most widespread feature of Clouding in education. Thousands of educators have their personal blogs, students create and post content on their blogs or on their teachers' or school's. Schools post a tremendous amount of educational material for inbound or public, local or international use. All the stakeholders in the educational process exploit, cooperate and share the educational information.

The use of Facebook is widely used by individuals - very often by users who are younger than 13 years old- and is hardly exploited in the educational process. Many schools, like Doukas, maintain their own pages - mainly to disseminate information - where they post their course of action and various activities or interesting links and to a lesser extent they share educational material. The SoC project has followed the trend to disseminate information about the cloud as follows: a Facebook page was launched on January 8th, 2014 aiming at providing a forum for exchange of useful posts, ideas and views, the aim of the project as well as the URL of the project's website. Within days after its launch, it reached the vicinity of 500 likes. On February 11th, a Facebook event page was created in order to invite partners and prospective partners to the kick off "First Summit Meeting" in Athens on March 22nd, 2014.

Twitter has not been so widely used as a tool within the Greek classroom walls, however a number of educators believe that this 140-character microblog can do more for the education industry. An example can be seen in efforts made by teachers asking their students to apply their creative writing skills to this restrictive social media network while organizing on-line writing contests. It also provides an excellent way for students to research ideas, opinions and movements as they happen following educational sites and hashtags. It has also been used in field trips as an evaluation tool in conjunction with Survey monkey. It is noticeable that more and more Greek educators and other educational staff use Twitter as their main Personal Learning Network (PLN) tool, which helps them to share best practices with innovative educators around the world and be informed first-hand of new developments, tools, conferences etc in education.

Pinterest, even though not widely known, is starting to be exploited it in an educational context. It is worth mentioning indicatively some functions such as: curate content, organize ideas, collaborate with others, allow students to use Pinterest (16 ways to use Pinterest for education). An indicative example of the above is the creation of boards with material that students are asked to use in the learning process without requiring any kind of registration.

File storage services are in use, such as Google Docs, a free online program offering Cloud storage .It is used by educators and students to share their work with others, collaborate on assignments, and save documents online for access at school or at home. It is really easy to use; however there is no clear indication of preference against Dropbox, widely used as a file hosting service. A few teachers have noted down the use of SkyDrive in similar cases both by their students and themselves.

Other interactive cloud tools include Lino, a cloud-based sticky note service that is used as an online web canvas. Students enjoy posting notes, photos, presentations or even videos as part of their projects. They also use Wordle to give greater prominence to words that appear more often in the texts they prepare and Glogster to create online posters, alternatively.

Ireland:

Since 1998, the Department of Education has actively pursued the integration of ICT into teaching and learning and the development of pupils' digital literacy, primarily through its ICT in Schools programme.

<http://www.education.ie/en/Schools-Colleges/Information/Information-Communications-Technology-ICT-in-Schools/Information.html>

The Professional Development Service for Teachers (PDST) provides professional development and support for teachers and schools.

<http://www.pdst.ie/>

PDST Technology in Education's e-Learning Handbook outlines the process of planning for e-Learning in your school -

<http://www.pdsttechnologyineducation.ie/en/Planning/e-Learning-Handbook/The-e-Learning-Handbook.html>

Scoilnet is the Department of Education and Skills official portal for Irish education. The portal provides a Resource Finder, Web Sites specific relevance to the Irish curricula, an Online Encyclopaedia and a Webhosting/Blogging area for Irish teachers, students and parents. The site is maintained by the Professional Development Service for Teachers (PDST).

<http://www.scoilnet.ie/>

The report from the minister's (Education and Science) Strategy Group to advise on the priorities for investing effectively in Information and Communication Technology in Schools, 2008 – 2013.

http://www.ncte.ie/media/Final%20ICT%20Strategy_group_report.pdf

Smart Schools = Smart Economy, Report of ICT in Schools Joint Advisory Group to the Minister for Education and Science

<http://www.into.ie/ROI/Publications/OtherPublications/OtherPublicationsDownloads/SmartSchools=SmartEconomy.pdf>

Science Foundation Ireland (SFI) is the national foundation for investment in scientific and engineering research. <http://www.sfi.ie>

Discover Science & Engineering (DSE) awareness programme managed by Science Foundation Ireland aims to develop creativity in our children and show them how important science is in our everyday lives.

http://www.primaryscience.ie/activities_web_links.php

Cloud-based projects include:

Broadband connectivity: The government announcement of a rollout of 100Mbps connectivity to all post-primary schools by the end of 2014

<http://www.dcenr.gov.ie/Communications/Communications+Development/Schools+Broadband+Access+Programme/>

“The NDLR (or National Digital Learning Resources) is a collaborative community of Higher Education academics in Ireland who are interested in developing and sharing digital teaching resources and promoting a new teaching and learning culture.” <http://www.ndlr.ie/>

Microsoft Ireland has partnered with textbook publisher CJ Fallon to make school books available in the cloud. <http://www.cjfallon.ie/news/cj-fallon-and-microsoft-ireland-join-forces-to-make-school-books-available-in-the-cloud/>

ALISON and Macmillan in partnership provided a free, interactive online maths resource for students and teachers in Ireland. The lessons are aligned with the Leaving Certificate Project Maths Syllabus. The companies provide other resources for students and teachers in Ireland - ALISON

<http://alison.com/projectmaths/> and Macmillan <http://www.mathsdoctor.co.uk/>

The main education organisations are:

HEAnet provides Internet Services to Educational and Research Institutions and Organisations throughout Ireland. <http://www.heanet.ie/> and <http://heanet.ie/sites/default/files/HEAnet%20Services%20Catalogue%202009.pdf>

The Professional Development Service Technology in Education promotes and supports the integration of ICT in Education by providing up-to-date information and good practice resources on their website.

<http://www.pdsttechnologyineducation.ie/en/>

The Computers in Education Society of Ireland supports the development of methodologies that help to marry new technologies with a sound pedagogy.

<http://www.cesi.ie/>

Other information includes Data Protection in the Cloud

<http://www.dataprotection.ie/viewdoc.asp?DocID=1221&m=f>

The Irish Internet Association is the professional body for those conducting business via the Internet from Ireland. <http://www.ia.ie/>

Italy:

At school level the following main actions have been developed in Italy:

- *Editoria digitale scolastica* (“Digital School Textbooks”): digital textbooks, e-books or digital versions of textbooks are the main aims of this initiative devoted to the principles of the “European Digital Agenda” in order to foster the development of digital skills and active inclusion in the digital world. The plan is to promote closer cooperation between schools and the business sector that provides digital content, hardware and software for education purposes.
- *LIM* (acronym: *Lavagna interattiva multimediale*, “Interactive Whiteboard”): this action has been started by the lower secondary school with the introduction of interactive whiteboards. Gradually upper secondary schools and primary schools have been also involved in this project. http://hubmiur.pubblica.istruzione.it/web/istruzione/piano_scuola_digitale/lm
- *Cl@ssi 2.0* (“Classroom 2.0”): aims to change the learning environment and experiment in new models of teaching and school organisation in 416 selected classes of all grades, but with a relatively low penetration rate in the whole school system, http://hubmiur.pubblica.istruzione.it/web/istruzione/piano_scuola_digitale/cl@ssi_2_0. Ten schools have already been selected in relation to the National Plan *Scuola digitale* (“Digital school”), as a further development of the action *Classroom 2.0*. http://hubmiur.pubblica.istruzione.it/web/istruzione/prot2221_11

- **Scuol@ 2.0** started in 2011 many common objectives with Cl@sse 2.0 but it involves entire schools. Each selected school receives €250 000 from the Ministry. Schools are encouraged to raise additional funds from local institutions or private organizations.
- **HSH@Network** (“Hospital School Home Network”): the main aims of this action are the didactic individualization of critically ill children through the personalisation of their learning process and, at the same time, their socialisation with other students.
http://hubmiur.pubblica.istruzione.it/web/istruzione/piano_scuola_digitale/hsh_network

Though these actions and projects are not only Cloud based, they do imply the use of Cloud tools and resources. The use of Cloud computing strategies seeks to integrate students with special needs or for disadvantaged pupils (nationwide projects: *@urora*, *Oltre l’@urora*), for parental involvement (national project: *Scuolamia*, “My school”)
<https://scuolamia.pubblica.istruzione.it/web/guest/home.jsessionid=A4BA07F62C81DB78562E5A3AEBDEEA64> and for school or classroom management (e.g. electronic attendance register, etc).

The main Cloud based project from the Italian Ministry of Education is addressed at administrative management, based on the decree law 95/2012 to reduce government spending and save administrative costs. Since the 2013 school year enrolment in schools is possible only using online forms, only electronic communication is used between school, pupils and families. Unfortunately some of these actions have been delayed and aren’t yet achieved. Since 2010, a national information system, the “Anagrafe Nazionale degli Studenti” exists, with electronic student records.

A Cloud-based development for schools has the objective of introducing savings in the administrative costs related to student enrolment, student transfers, and the production of certificates. Starting with the 2012/3 school year, families enrolled their children exclusively using online forms; schools also communicate end-of-term reports electronically; and schools adopt electronic registry applications and activate electronic communication modes with pupils and families. The Ministry has imposed interoperability standards to the industry, so that all data are transferable to the central longitudinal information system (Anagrafe studenti), whose data content will be considerably enriched by this policy
http://hubmiur.pubblica.istruzione.it/web/istruzione/prot1682_12bis

In parallel, the Ministry also promotes the **scuola in chiaro** (“school uncoded”) policy, an e-government initiative whereby school-level information is shared with families using the online tool “cerca la tua scuola” (“find your school”). http://archivio.pubblica.istruzione.it/anagrafica_scuole/statali.shtml Each school provides online information about its school plan (Piano Offerta Formativa), ICT equipment, size, average class size by year of study, school transfers and dropout rates, school’s results at national evaluations etc.

In addition to resources developed by the publishing industry, there are some interesting Italian initiatives support the production and sharing of digital learning objects: educ@Tlon (software which incorporates different types of Cloud applications useful to the schools), Generazione web Lombardia (a pilot

regional programme which promotes Cloud projects on schools), [Book in Progress](#) (where teachers can collaborate in a wiki mode to produce (digital) textbooks), [Net in Progress project](#) (which uses a **cloud Microsoft BPOS** platform to allow a cooperation between schools, teachers and students).

There are also lots of private initiatives mainly from Telecom Italia with the collaboration of MIUR and several universities are trying to change students' habits and, in general, citizens' information through a massive dissemination that starts from schools. The main Telecom project in the field ICT in schools is called Educ@Tlon. It's a solution that brings usefulness to every kind of device (linux, windows, macintosh ,tablets, android iOS) full of integrated modules that offer an extremely sophisticated and comprehensive teaching functionality like iLibrary : intelligent library of teaching contents, iManager : users management, iBoard : virtual board for school inclusion and interactive lessons, iSchool : editorial mash-up, iSchoogle : controlled semantic research, iMind : concept maps, iChart : dashboard control and iEdit : tools for content production.

Other interesting projects where MIUR is mainly involved are:

- Smart Inclusion 2.0 - An advanced technological system that allows hospitalized children to participate in social life by connecting with the outside world in a simple and immediate way. The project is based on open source technologies, adhering to the recommendations of the European Union and permit to achieve high performance.
- @urora - This project aims to set up distance learning facilities for adolescents in the penitentiary system, in order to promote social inclusion. This project serve also a pilot to develop distance-learning models for isolated students.
- eSchooling - Started in February 2013 in collaboration with Trento University, aims to define and validate a new model for digital school in support of teaching skills shared with various actors in the world inclusive for vulnerable and/or not present. In addition it aims also to facilitate the transition from the traditional book to the full-digital one

Lithuania:

There are several examples of Cloud computing in state institutions:, the Lithuanian National Mažvydas Library – it is used for information storage, administration of Moodle system and for instance in Vilnius municipality for making additional data copies for administration.

Lithuanian education institutions use cloud computing in practice. However users do not indicate that they specifically use this technological innovation. It may be that this trend prevails, because in Lithuania the definition of Cloud computing is new one. This trend reflects the implemented survey among employees working in education institutions, where 63,2% of respondents had not heard about the term Cloud computing.

Vocational educational institutions widely use the cloud computing to support the counseling of students from. All information is available online, tests and its results are stored in database. Employment agencies also use Cloud computing opportunities, they store employees CV's, which can be seen by

the employers, they just need to connect to the database. And they have the opportunity to choose the most suitable employee.

Poland:

A number of regional projects exist, such as Opolska eSzkoła (e-School of Opole, a future oriented school and e-School of Opole, a future oriented school, stage II) <https://www.eszkola.opolskie.pl/Strony/Witamy.aspx>. It is financed from the Regional Operational Programme for District of Opole in 2007-2013 (EU funds). The lead partner is the Regional Centre for Education Development in Opole (regional In-Service Teacher Training Centre)

The project consists of two main components, i) the construction of an ICT infrastructure: network and hardware based on advanced ICT technologies. The infrastructure will allow easy and practically zero cost connection of subsequent educational establishments online. Concerning the delivered infrastructure, the project will be open to all telco operators and can be extended in future thanks to the use of advanced ICT technologies. It will provide an open and free of charge access to the infrastructure to all users; and ii) investment in the information society, consisting of development of the e-School portal allowing provision of electronic education services to residents of the Opole District. To assure efficient implementation and utilization of the developed infrastructure the Beneficiary has planned series of trainings: type A, teaching the end users how to use the new system, and type B supporting the administration, management and education all staff in managing the “e-School of Opole”

Małopolska Chmura Edukacyjna (Cloud Education in Malopolska Region – pilot project) <http://e-chmura.malopolska.pl/>. This is financed from the Regional Operational Programme for Malopolska Region in 2007-2013 (EU funds). The partnership includes six universities in Cracow, Malopolska Voivodeship, secondary school boards in 15 districts.

The main goal of the "Cloud Education in Malopolska Region – pilot project" is to enable collaboration between leading universities and secondary schools in Malopolska Voivodeship by supporting the transfer of knowledge and scientific achievements from the universities to the secondary school students. This collaboration will be supported by ICT tools, a dedicated educational environment (based on Cloud concept) will be developed within the project.

Portugal:

Currently there are many initiatives, research centers and universities interested in promoting the diffusion of Cloud Computing in the educational environment. These include:

- The Portuguese University was the first public institute creating a post-graduation degree in Cloud Computing (2011/2012) focusing the importance to anticipate the profound changes that the migration to the cloud will cause in the short term and that will impact businesses in the areas of management, data security and law.
- The Education Institute of University of Lisbon is the prosecutor of the International Conference on ICT and Education that gathers every year

several education experts like the University of Trás-os-Montes and Alto Douro, António Damásio Secondary School, Ciência Viva Agency and the Católica University.

- The AMA actions involving Cloud Computing and Public Administration;
- EuroCloud, an NGO promoting and developing the services necessary for the correct use and implementation of the Cloud in Portuguese organisations, focusing in focusing on training professionals from the universities and research centers to prepare them for the business environment and research. EuroCloud also carried out research about Consolidation Strategies of the Cloud in Public Administration.
- InfoEscola (a Governmental website who deal directly with students with a practical and accessible language) made a short introduction/explanation to the Cloud Computing context showing, for example, how easy it would be for a student to make his homework accessible without having to print it. <http://www.infoescola.com/informatica/computacao-em-nuvem/>
- “Aprender e inovar com TIC”, developed by Direção Geral de Educação, which promotes the use of platforms of management of learning by the educative community and the production and share of digital educative resources.
- “SeguraNet” aims to promote a secure and responsible utilisation of the internet. “Open Education Challenge”, promoted by Ministério da Educação in a partnership with European Commission, to reward the development of projects related with ICT.

The Portuguese telecommunications company, PT, built a data center in Covilhã and now provides Cloud solutions (<https://cloud.ptempresas.pt/Pages/Default.aspx?language=pt-PT>).

Regarding universities, in addition to Open University providing online support, other universities provide cloud solutions. Namely, University of Beira Interior uses Moodle with some of its possibilities, such as providing all necessary materials for the disciplines and creating discussion forums on the subjects (<https://moodle.ubi.pt/moodle/>).

From 2007 to 2008 University of Beira Interior had a Learning project funded by the Science and Innovation Operational Program (POCI 2010), the UBI-Active. The goal was to produce study material in the Cloud.

In March 2013, New University of Lisbon served as stage for the organization of IDC Cloud Leadership Forum, where issues relating to Cloud were raised and discussed (http://www.portalidc.com/2013/Resumo_Eventos/IDC%20Cloud%20Leadership%20Forum%20-%20Resumo.pdf).

Higher education institutions are equipped with e-learning platforms that add great value to the process of teaching-and-learning. However, these platforms are characterized by being private, thus revealing the timid opening of these institutions in sharing their knowledge and resources. In this context, the Cloud Computing paradigm represents a solution for the creation of a federation of Clouds capable of contemplating heterogeneous solutions and ensuring the interoperability between the various institutions platforms, therefore meeting the objectives proposed by the Bologna Process. Universities in Portugal support Moodle platforms that can also be used by

secondary schools. This is considered to be rather outdated and less practical compared to the current model of Cloud, revealing the most recent studies. That ideally, would be the Personal Learning Environment that APDC - Portuguese Association for the Development of Communications is monitoring and promoting in Portugal, which has held several conferences and meetings with the service providers.

In collaboration with Microsoft, 50 schools (at all school levels) are starting to use Office 365. The schools will be supported by the nine ICT Competence Centers of the Directorate-General for Education.

Portugal has a national network of 25 ICT Resource Centers for Special Education based on a policy of inclusion of students with special educational needs in regular education. The Resource Centers are based in school clusters, with the aim of as-sessing and supporting students with adequate technologies in order to identify and support their specific needs, providing information/training for teachers, families and professionals on the problems related to different kinds of disability. Each center supports other groups of schools at district level. The network covers the whole country, with seven centers in the north, six in the center, seven in the Lisbon Tagus Valley region, four in Alentejo and one in the Algarve. More: <http://insight.eun.org>

E-content is developed mainly by educational publishers. The two main players are: LeYa - developed Platform 20, providing access to learning resources such as digital textbooks, videos, animations, games and interactive tests, see www.leya.com and Porto Editora, runs the Virtual School portal where it sells multimedia products and maintains the largest collection of commercial interactive online resources for all subjects in the Portuguese curriculum, see www.portoeditora.pt

In Portugal there have been several initiatives to promote the use of web 2.0 tools in schools for teaching and learning, see http://www.crie.min-edu.pt/publico/web20/man-ual_web20-professores.pdf .

The Escola Móvel (Mobile School) project – now called Ensino a Distância para a Itinerância (Distance Edu-cation for Itinerant Students) – emerged as a distance learning project using the Moodle learning management system (LMS). On the Portal das Escolas (Schools Portal), teachers can find relevant information about schools and their educational communities as well as a repository of over a thousand digital educa-tional resources that can be used in teaching.

Professor TIC is a blog related with ICT and Education and this post the author writes about the migrating from paper to online in class rooms, including the use of the Cloud as a future mean to avoid all the books and papers, having then in just one place <http://www.professortic.com/2011/12/15-coisas-que-serao-obsoleteas-na-educacao-ate-2020/>

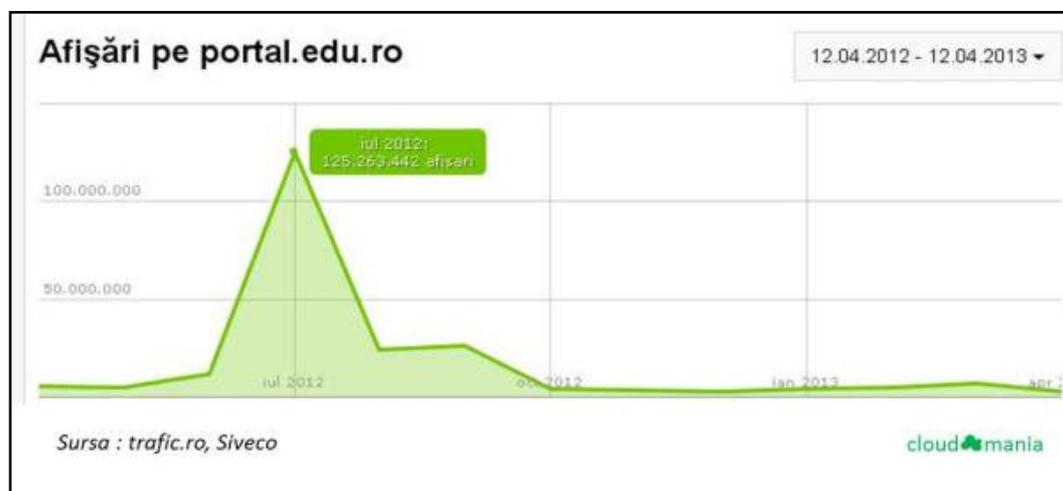
Weduc: Portuguese Social Network for Parents and teachers, a “Cloud form” platform, Weduc enables schools and teachers to communicate with caregivers using different means, either through messages, photos, videos, files and reviews, showing what is happening throughout the school day in total privacy and security. Weduc intended to be used for curriculum schools,

from nursery to higher education, schools activities and tutors to communicate with students and guardians. Access to Weduc is multiplatform and can be done via computer, tablet or mobile smartphone.

In addition to education, there are initiatives in which the cloud is used for research such as, for example, in the European Organisation for Nuclear Research, where apart from several international institutions University of Lisbon and University of Beira Interior have participated through SIM, Laboratory of Systems, Instrumentation and Modelling for Environment and Space Sciences and Technologies,
<http://cloud.web.cern.ch/cloud/People/Institutions.html>

Romania:

SIVECO is a prestigious company which has been awarded a national prize for its ADLIC portal (EuroCloud Romania 2013 "The best project for public sector") ". Its utility was demonstrated by best practices, high-performance being improved step-by-step during the time. More than 200.000 young school graduates are booking every year their high school option forms here. On the official registration day, online traffic grows to more 24 Million views. In order to provide better access in high traffic situation, in 2011 SIVECO migrated ADLIC registration solution on an infrastructure offered by the Microsoft Windows Azure platform, which is offering permanent availability, infinite processing power, and professional security functions. Using technology performances offered by the Cloud platform, the ADLIC system demonstrated his powerful to securely and transparency manage billion of access requests sent every year by more than 2.5Million students.

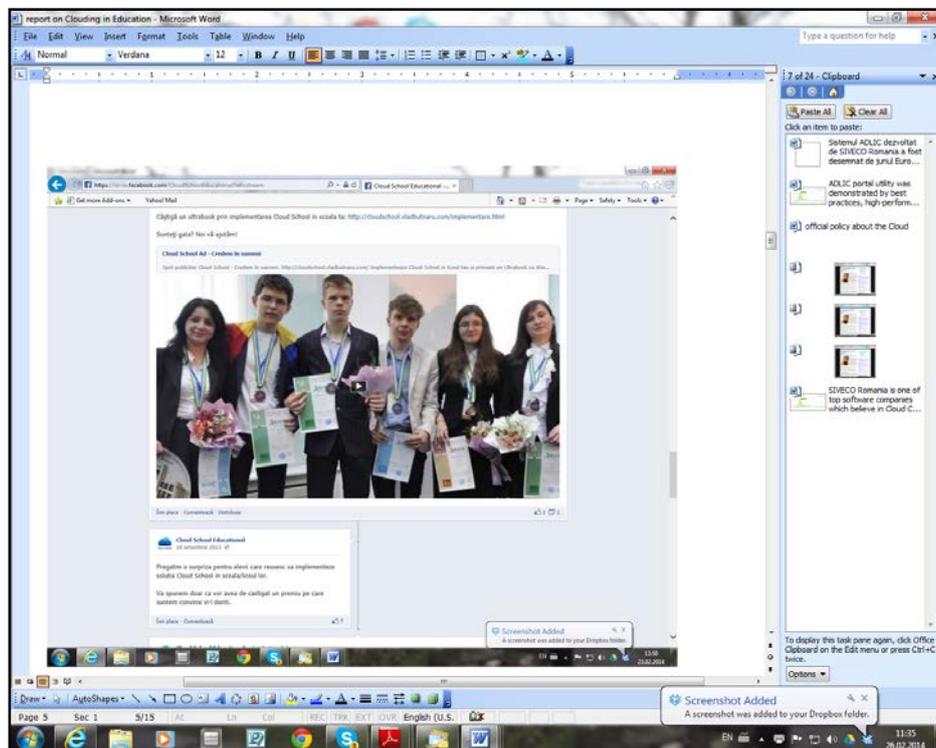


Number of views on portal.edu.ro during National Exams admission on the ADLIC school registration system; Source: trafic.ro, SIVECO Romania

ADLIC is not the only cloud solution offered by SIVECO. A dedicated education eTraining portal is offered as Cloud services. More than giving easy access to information, the main benefit offered by these Cloud services is the budgeting flexibility, because the client is paying every month only for multimedia interactive training modules accessed, without a minimum amount or a regular subscription fee. Web Sites dedicated to the national exams
<http://admitere.edu.ro>, <http://titularizare.edu.ro>, <http://bacalaureat.edu.ro>

Another ambitious project started by SIVECO is cloud migration of his Siveco Application 2020 ERP system. Considering technical and functional issues of enterprise applications and development trends from the next period, SIVECO Applications 2020 ^{Project:Cloud} is integrating a large spectrum of applications with major effect for any organization business efficiency: accounting, financial, purchasing, contracts, production, stocks, sales, projects, payroll, transportation, logistics, recycling management, etc. The SIVECO solution is remarkable for module management versatility and for his large performances in parameterisation and localization for every client needed model and considering business practices. Cloud infrastructure is ensuring low maintenance costs of hardware and software platforms, and data security is compliant with any technical and international standards.

Even school students are contributing to introducing the Cloud in school assessment and time management. This is an example of a Romanian School Team who developed CLOUD SCHOOL EDUCATIONAL and advertised it on Facebook to raise their national colleagues awareness of using their Student Workstation. It is very innovative in terms of evaluation and the allotted to studying. They created a unitary system of assessing students' abilities by introducing a universal scheme to quantify the school activity of each student. "Cloud School" is an educational concept, which tries to realise a transition from the classical education to the digital environment using the Cloud. "Optimum Learning" is the core of a Student Workstation, being an app which recommends the students how they should make the process of studying the most efficient for the best results. "Cloud School Learning Sessions" is an educational concept of organising your study programme. Each chapter(from any subject) has a certain optimum time allotted for study in order to save time and extra effort.



Facebook page of Cloud School Educational

EFQUEL, European Foundation for Quality in eLearning, an initiative of the European Commission, which proposes to increase the quality of your eLearning programs at European level. (www.qualityfoundation.org).
Institutional members: TEHNE(http://tehne.ro/educatie/tehne_ngo.html);
University Politechnic of Bucharest

Elearning.Romania program, is a national initiative that aims to create a forum for all stakeholders in the effective use of new information and communication technologies for education and training. (www.elearning.ro)

Romanian Cultural Institute initiates the creation of a national system of online books. (<http://www.elearning.ro/realizarea-unui-sistem-national-al-cartilor-online>)

SEI Educational Portal <http://portal.edu.ro>. The largest education community in Romania, being the main source of information, collaboration and communication in the Romanian education system. The portal includes a wide range of individual web-sites, an educational forum, <http://forum.edu.ro>, educational resources, interactive digital education content, information on projects in the field of education, communication and mass collaboration tools

eComunitate Portal www.ecomunitate.ro. is a complex collection of websites, providing a wide range of information and online services.

Portal dedicated to the project "The teacher - creator of educational software", <http://profesorulcreator.siveco.ro>

Future Steps/Jobs Project promotes the need for education, primarily for students but also for parents and teachers, orientation towards fundamental values, discipline and teamwork and how community orientation Romanian Business Leaders to engage in various educational programs are priorities tactical leaders which were part of business at Romanian Business Leaders

Development of a platform for e-education that will support electronic educational process conducted by Stefan cel Mare University of Suceava "<http://www.e-educatie.usv.ro/>"

The main education organisations involved are:

- Center Education 2000+, a non-governmental, apolitical and independent organization offering educational consultancy. Center Education 2000+ has been developing projects in more than 70% of the Romanian counties, as well as international projects. <http://www.cedu.ro/en/institutional-portfolio.html>;
- European Educational Cooperation Network of South East Europe - SEE ECN. The network has developed a website which presents educational systems of the countries of Southeast and studies or reports from the region and other countries. The purpose of this project is to improve access to current information about developments of education, facilitating access to databases on education legislation, curriculum, policies and educational strategies in the countries of the region in particular and in other countries, in general. (www.see-educoop.net) http://www.see-educoop.net/portal/id_rom.htm
- Centre for Development and Innovation in Education- TEHNE is an active organisation education scrolling elearning programs and projects,

curriculum development, education for democratic citizenship, lifelong learning and continuous training of teachers. Nongovernmental organization without political or religious purposes, promotes the principles and values in education through technology and innovative approaches.
http://tehne.ro/educatie/tehne_ngo.html

Slovenia:

EuroCloud Slovenia leads many initiatives, projects, networking events, legislation actions, competitions, support for startups, business contacts with China and India, certification schemes, and conferences. Some of them are related to education. Web: <http://eurocloud.si/>

A big research project called “KC Class, Cloud assisted services” will be concluded by March 2014. The beneficiary is EuroCloud Slovenia. The project is being held under public call for proposals and the development of competence centres in the period 2010-2013. The operation is partially financed by the European regional development fund. It has 17 partners from Slovenia and 29 supporting institutions. Total costs of the project are €9.331.120. Duration: 12/2010-3/2014. Web: http://www.kc-class.eu/?set_language=en

The goal of the project is a development of services and products in the area of cloud computing. Phase no. 5 “E-learning services in the cloud” is dedicated to cloud education. Many different applications and results for cloud education are available here: <http://www.kc-class.eu/packages/p5-e-learning-services-in-the-cloud>

The University of Ljubljana - Faculty Of Electrical Engineering And Computer Science - LTFE laboratory, is particularly active in the project phase »E-Learning Services in the Cloud«, which focuses on cloud-enabled learning support and course execution. Building on the PaaS solution, the project is offering novel services and tools supporting accessibility of existing materials as well as simple creation of new learning content. The built-in option for cloud deployment is expected to help solve issues related to infrastructure.

The KC Class project, Phase 5: <http://www.kc-class.eu/packages/p5-e-learning-services-in-the-cloud>

Spain:

There are institutional projects such as the national Escuela 2.0 <http://www.ite.educacion.es/escuela-20>, the Andalusian Project Escuela TIC 2.0. or the Moodle portal in Extremadura: <http://moodle.educarex.es/evex/> (more virtual learning)

Many universities have Innovation and Improvement of Teaching Quality Projects. Some of them are research projects focusing on Cloud computing such as: Tecnología Cloud en la innovación docente (ID11/071) (University of Salamanca)

http://gredos.usal.es/jspui/bitstream/10366/120527/1/MID_11_071.pdf;
Colaboración del alumnado en la nube: una experiencia con Google Docs (University of Cádiz, 2011-2012)
<http://rodin.uca.es/xmlui/bitstream/handle/10498/15033/Colaboracion%20del%20alumnado%20en%20la%20nube%20>

[%20una%20experiencia%20con%20GoogleDocs.pdf?sequence=1](#); Aprender Geografía con la Web 2.0 (Complutense University of Madrid)
<https://cv2.sim.ucm.es/moodle/course/view.php?id=30082>;

Many schools are using platforms for learning on the Cloud and for communications inside the educational community, eg. Educamos platform. Some of them use their own pedagogical Cloud Project, for example the EBI Project: <http://www.proyectoebi.es/> (this project works in Latin America also).

There are an increasing number of publishers with text books on the Cloud, such as Santillana: <http://www.santillana.es/material-digital/>, Anaya: <http://www.anayadigital.com/>, etc. but not all of them are advisable for changing learning methodology for learning on the Cloud.

Many teachers are pioneers in Spain in using the Cloud for learning and teaching; they share their materials on the Cloud, for example:

Isaac Buzo: leading "Geografía" in Facebook with more than 5500 people: <https://www.facebook.com/groups/62146897459/>; teaching through a Webpage: <http://www.isaacbuzo.com> with Cloud links.

Martín García Valle: <http://luz-tic.blogspot.com.es/2014/01/trabajo-colaborativo-y-evaluacion.html> and <http://www.enlanubetic.com.es/2013/10/trabajo-colaborativo-y-evaluacion.html#.UwIQgIVnibM>

Using ArcGIS Online for mapping: Digital-earth.eu network. RSG-DE CoE: Maximun dwelling prices in municipalities with more than 25.000 inhabitants and number of dwellings.
<http://digitaleartheu.maps.arcgis.com/home/webmap/viewer.html?webmap=195b145b76e042719a8f68fe402dcbb9>

Complutense University Platform (is the second in work-flooding in Spain)
Many maps for learning Spanish geography through the landscape and geographical itineraries
<http://ucmadrid.maps.arcgis.com/apps/PublicGallery/index.html?appid=e855e451f33d4d8d97b71ac22a0b7521&group=8a3cfca16dc74e70aebdb0e0a3d0cf39>:

World conflicts and peace missions:
<http://ucmadrid.maps.arcgis.com/apps/OnePane/basicviewer/index.html?appid=c7596cfb21614903b36d49fa096bb553>

Agriculture collaborative map:
<http://ucmadrid.maps.arcgis.com/apps/OnePane/basicviewer/index.html?appid=db455dc4e4214f58a491b8858b9e0af5>

Story maps about weather and population:
<http://www.arcgis.com/apps/MapTour/index.html?appid=0b8ddc2885324daabaf0d0cf75c44dee>
<http://www.arcgis.com/home/item.html?id=5a8c0d3a285d4b80a46f545c95c4d6ff>

Switzerland:

Agencies involved in Cloud-based education:

Organization	Responsibilities
Priorisiertes Vorhaben Cloud Computing	Strategies and surveys, coordination and escorting the implementation
agency E-Government	Monitoring of the strategy implementation
Implementation	
Government / cantons / communities	Examination of the statutory provision and the internal strategy Responsible use of cloud-offers Collaboration with the private economy and the international environment
SIK eCH (professional groups)	Identification and promotion of SaaS-services Provide standards and appliances

The possibilities for collaboration with the EU are going to be examined in a survey founded by the government. Based on this survey implementation measures are going to be identified.

The "Schweizerische Konferenz für Erziehungsdirektoren (EDK)" created in 2000 a national ICT-strategy. Since the 1990s the integration of ICT in schools is a permanent process. Every canton has its own competence centre regarding ICT. The overall aims of the EDK are the integration of ICT in every level of education (kindergarten till university) and every pupil should have basic skills in handling ICT

There are six fields of action in Switzerland:

1. To involve ICT in the cantons curriculums and to coordinate the ICT-activities between the different levels of education
2. To promote the eContents and to disburden the access to the Swiss education server
3. To promote the advanced teacher training regarding ICT
4. To organize and develop the Swiss education server together with the Federal Government and the cantons
5. To create convenient framework conditions for schools and cantons

Turkey:

The Cloud is used for education by Turkish universities. In recent years, Internet-based distance education by universities has become important. Some vocational education providers are developing distance education, with associate degree programs, undergraduate programs, master's degree programs and even doctoral programs provided by universities.

In Turkey Anadolu University is the pathfinder in cloud-based education in Turkey. Anadolu University is an institution, promoting universal higher education values and blazing trails in the Turkish higher education with its 16 faculties (3 of which offer distance education), 4 applied schools, 4 vocational schools, 9 graduate schools, 25 research centres, and 15 research, development and application units. The successful launch of the distance

education system ranks at the top of innovative initiatives of Anadolu University. Today the total number of students in three faculties offering distance education is over one million. This system has been taken as a model by many countries. For example: the e-MBA offered by Anadolu University – Empire State College, State University of New York (SUNY), as a dual degree e-MBA program designed for working professionals. This innovative degree program provides students who are not free to attend classes regularly with an opportunity to earn both an Anadolu University and an Empire State College e-MBA degree through a mixture of interactive, online courses and periodic residencies in Turkey.

The Cloud is used by The Ministry of National Education with the UZEM portal, <http://uzem.eba.gov.tr>, this can carry all the educational informatics system of the Ministry. UZEM uses a portal infrastructure offering a web-based distance education system. It addresses to the educational needs of approximately 700.000 teachers.

The Fatih Project, <http://fatihprojesi.meb.gov.tr/tr/english.php> is a Turkish government project that aims to Increase opportunities to use technology (Turkish: Fırsatları Artırma ve Teknolojiyi İyileştirme Hareketi). It seeks to integrate state-of-the-art computer technology into Turkey's public education system. With the initiation of the Fatih project, classes will receive smart boards, students will receive tablet computers and classes will be enriched with the use of e-books. The project has been designed by Turkish engineers. All state schools spanning from preschools all the way to high school level will receive a total of 620,000 smart boards, while tablet computers will be distributed to 17 million students and approximately one million teachers and administrators. This project, which is being conducted by the Ministry of National Education and supported by the Ministry of Transportation is expected to be completed in 2015.

Some NGOs are also using the Cloud for Education, for instance IDEA e-learning solutions: <http://www.ideaegitim.com>, Enocta : Vocational Training, <http://www.meslekegitimleri.com>, Online Kariyer Okulu, <http://www.onlinekariyerokulu.com/?gclid=CMyhjaTc5LwCFPItAodBUEAmA> and distance education for profession exam preparation <http://www.uzaktanegitim.gen.tr/default.aspx>.

UK:

Recent reports (by SafeGov.org and Kable Market Intelligence) show that UK schools are rapidly adopting cloud computing. In colleges of Further Education £1 million has been made available to progress Cloud Computing in Further Education colleges (AoC Blog, 2013). The aim is to progress Cloud Computing in Further Education colleges through a range of specific project activities. Through the HEFCE (2013) university modernisation fund a new cloud higher education computing programme is being funded to offer shared services. The programme encourages universities and colleges to share flexible computing resources delivered over the Internet by external service providers. The main elements are an investment of up to £10 million to deliver virtual servers, storage and data management applications and support and investment of up to £2.5 million to establish cloud computing and shared services in central administration functions to support learning, teaching and

research. The aim to to help universities and colleges achieve efficiency savings in terms of cost, time and quality improvement as well as to benefit from aggregated purchasing and reduced implementation and hosting costs, and streamlined processes. As a result, 18 million students and academics will get fast cloud-computing at UK universities (IEEE, 2013). The agreement, which will see staff and students use Windows Azure to provide better access to applications, allowing faster access to virtual learning environments and research projects.

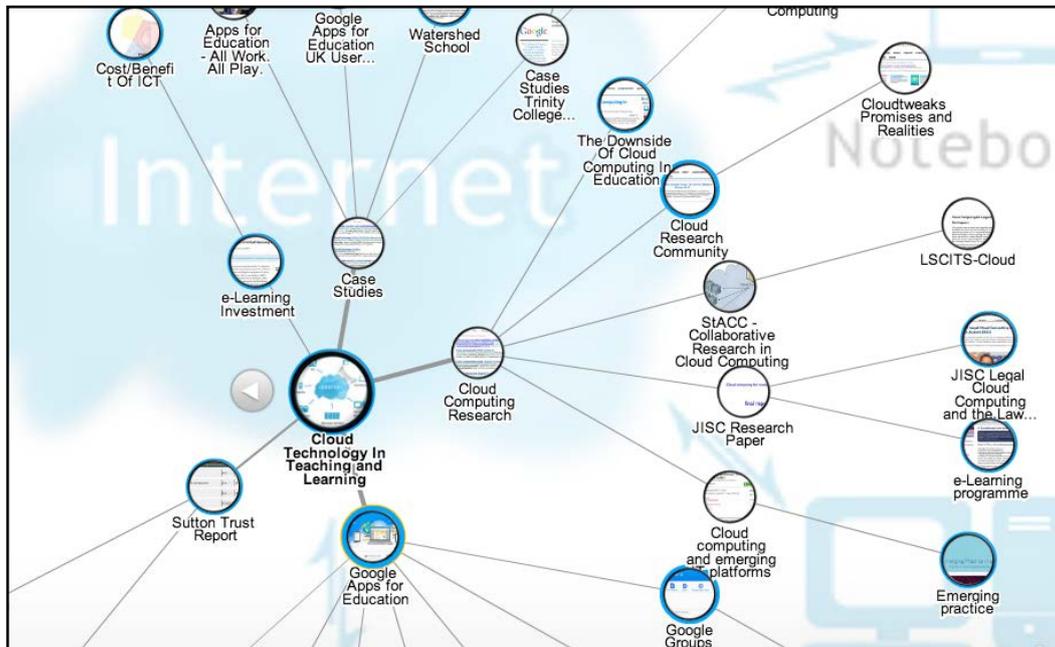
In 2013, Professor of Educational Technology Sugata Mitra of Newcastle University opened the doors of the world's first School in the Cloud. It is located inside the George Stephenson High School in Killingworth, England. This is a one-room learning lab is a space where students can embark on their own learning adventures, exploring whatever questions most intrigue them. Students even designed the interior. Sugata Mitra has initiated the SOLE (Self-Organized Learning Environment) project. This is a concept drawn from Mitra's TED Prize wish, in which he offered up a new vision of education that pairs the vast resources of the Internet with children's innate sense of curiosity. SOLE uses minimally invasive education techniques that allows kids to puzzle through big questions on their own, teaching each other in the process. He suggests this method can have stunning results. Since his TED Talk was posted online, more than 40,000 people have downloaded the SOLE Toolkit to bring the method into their homes and classrooms.

In 2013, Northern Ireland became the first agency to put all its schools on the Cloud (The Journal, 2012). All 1,200 primary schools in Northern Ireland will now have access to Europe's first Education Cloud, a network providing WiFi connectivity to over 350,000 students and teachers. The new network is part of the Classroom 2000 (C2k) project, whose mission is to provide the infrastructure and services to support the use of information and communication technology (ICT) in Northern Ireland schools. The Education Cloud will provide schools with secure access to online resources 24/7 from a wide range of devices, including smart phones, iPads, tablets, and laptops. School staff will be able to install and provision the access points as needed, and teachers and students will be able access applications, educational resources, and other tools through a learning portal. "The new service has been designed to recognize the educational requirements of schools in Northern Ireland, deliver technology-driven learning environments, and incorporate the very latest innovations in technology," said Jimmy Stewart, Director of Classroom 2000 (C2k), in a prepared statement. In another Northern Ireland initiative, the Cloud Academy was set up in Belfast to provide graduates with the skills and experience required to take up exciting new ICT opportunities in Cloud computing with training designed and delivered by Belfast Metropolitan College (Northern Ireland Executive, 2013).

In late 2013 IT firm Innovate announced it was introducing its own cloud computing solution, Cloud9, to the education sector (Higgitt, 2013). Cloud9 offers schools major cost-saving benefits, eliminating the need to spend on IT equipment and support charges, the latest software and anti-virus and anti-spam annual renewals. Cloud9 is delivered through a the size of a DVD which sits beside each PC screen; these rented devices replace all school

servers and PC tower units, saving both space and power. With Cloud9, schools can rent their IT, adding and removing capacity as and when required – extremely useful for schools that have their computers unused for approximately 20 weeks per year.

At the moment there has been little research on the learning and teaching impacts of the Cloud in Education. However one repository has been set up on Pearltrees to gather and archive documents, current information and links.



Cloud Technology in Teaching and Learning http://www.pearltrees.com/#/N-p=35936051&N-s=1_4423826&N-u=1_530788&N-fa=4353559&N-play=0&N-f=1_4423826

5. Other information

Belgium (Flanders):

The central administration has built a state of the art ICT infrastructure. The concept of this architecture is virtualisation. Together with the HRM department, IT has set up an environment where flexible working and interface independency are the primary targets. They enhance the mobility and accessibility in the daily work of our employees. By combining Private with Public Cloud, an example for our educational community is being set out. VDI (Virtual Desktop Infrastructure) MS Lync and other video driven tools are used to explore the possibilities of distant learning.

About 90% of the schools are using a Cloud based working environment "Smartschool". The pedagogical department has his own "Smartschool" environment connected to all the school platforms. The virtual classes are enhancing the collaboration between teachers and the pedagogical advisers.

Most schools use Cloud computing for their administration (already obligatory from the Ministry), for communication between parents & school many schools are experimenting (e.g. system where parents can see the grade center of their child with all feedback of the teachers).

Some schools - mostly depending on the enthusiasm of the individual – already developed a higher standard of cloud computing, using among others elearning platforms for learning lines, examinations and so on. Some schools chose tablets to reach this goal.

Germany:

The interdisciplinary research group inclusive media education, member of the Society for Media Education and Communication Culture has a special research focus of the innovation potential of cloud computing for inclusive education (<http://www.gmk-net.de/index.php?id=370>).

Greece:

The Hellenic digital earth Centre of Excellence is supported by the Aristotle University of Thessaloniki and particularly by the Department of Primary Education is using the Cloud in its activities. The use of Cloud depends on how much the primary schools are informed about it and on what kind of applications they can find on Cloud. The Centre acts as the coordinator of a project that involves any primary school in the State who would like to participate in learning how they can keep their geography work on the Cloud and show to others what the pupils can do with the Cloud. Working with ArcGIS OnLine in a project the pupils learned about their local history and made a new map of their village with all the historical sites of their community. Their work was presented at the EUROGEO Conference in Bruges in 2013.

Doukas School, apart from its intranet where all the school's internal information and data is circulated, has created dozens of blogs covering a wide range of activities such as class newspapers, sharing and exploitation of the educational material, display of projects, and student creations in cooperation with other schools, events etc (e.g. Doukas Staff Blogs and Doukas Social Media Profile). Indicative examples are: Quel Musee, Students

For Learning, Green Bridges, BTEC, blogs that Doukas School teachers and students have created so that they can use it as a platform to share views, ideas and projects. This is also to act as a medium to promote collaboration, communication and networking between schools from Greece and abroad. A school from Northern Ireland and a school from Turkey have already expressed interest.

The Department of Geography of the University of the Aegean utilizes Cloud computing in the field of data storage of IT programs. Moreover collaboration with other Universities is facilitated through Cloud computing (Oceanos) <https://oceanos.grnet.gr/home/>. Professor Kalabokidis has developed an innovative approach using Cloud computing to predict and manage wildfires. The prediction application utilizes Microsoft's Bing Maps, Microsoft Silverlight and Windows Azure for managing the Cloud computing resources.

Italy:

School autonomy and digital challenges: Since 1 September 2000 educational institutes have enjoyed greater organizational, methodological and didactic autonomy on the basis of the so called Bassanini Law (Law 59/1997, Article 21) . In relation to the improvement of quality of education, Decree/Law no. 275/1999 foresees that schools or networks of educational institutions (universities, schools, etc) can collaborate in order to achieve common educational goals mainly through teacher and school staff professional development (D./L. 275/1999, Articles 6,7).

On the basis of this reform of the Italian school system, the introduction of decentralisation processes and bottom-up procedures, Italian schools are free to accept or refuse new challenges posed by new technologies and digital worlds. .

In Italy there isn't a clear policy promoting the Cloud in education led by an authority and the absence of broadband is particularly acute at all grades of the schools and very few schools are "highly digitally equipped schools" so even local initiatives are rare and involved few schools. Usually schools provide for themselves just web sites or Moodle platforms to support their teaching/learning activities and institutional communication.

In relation to the main educational trends coming from these erratic and dynamics worlds, online research shows that at the moment there isn't a homogeneous situation both at regional and at national level. The main differences are based on the following aspects:

- School curricula: school curricula of the upper secondary school (in particular, technical and vocational institutions) contain official indications about the development of digital skills in specific subjects (Mathematics, Computer science). School curricula of primary schools and lower secondary schools foresee the development of digital skills as a transversal aim of all subjects . In the lower secondary school the subject Tecnologia ("Technology") is focused mainly on generic, theoretical aspects.

- Regional/local educational policies: in regions located in the north of Italy the influence of international trends in education and of European educational policies is more visible.

Since educational institutions are autonomous and are free to choose their methodological - didactic pathways, we can observe that over the last few years ITC teachers or teachers with particular interests or expertise in the use of new technologies in education (e.g eTwinning ambassadors or teachers) have been developing cloud based school projects with their students, sometimes also through the involvement of other European countries (eTwinning or Comenius projects developed through the eTwinning platform).

An example of a successful school implementing the Cloud through partnerships with external bodies is the Istituto Comprensivo Assisi 3. They have successfully complemented state funds received by the national project Cl@sse 2.0 with external funding. The project "A scuola nella nuvola, un'esperienza di cloud computing nella scuola in Umbria" (At school in the cloud, a cloud computing experience in an Umbrian school) has been funded by a local bank. This allowed the purchase of many laptops and IWBs and students have had the possibility to use an eLearning platform dedicated for English as foreign language at school and at home. The growth of devices in the institute has facilitated Moodle based training for teachers focusing on learning environments.

Lithuania:

VšĮ Socialinių inovacijų centras efficiently use the cloud computing. Organization uses such databases: pbworks, dropbox. Organization implements Moodle system, which helps organize various informal training.

Portugal:

Companhia de Ideias (CI) is a multidisciplinary Portuguese SME. Since 2001, they have developed significant experience, as coordinators or partners, in 13 EU projects in diverse fields including regional development, capacity building, environment, lifelong learning, business support, education, econtent, among others. One such project was in the e-learning area: EduTube.

With a staff of 47, around 50% of CI's work is with governmental agencies. CI works on a national level in Portugal and on an international level in all African Portuguese speaking countries (Angola, Mozambique, Cape Vert, Saint Tome and Prince, Guinea-Bissau).

Their main activity at present is television production, web content and new media. They develop content for several media, as detailed: in press we work with several publishers of periodicals in order to include some of our content in their titles; for the internet we develop design and programming solutions in order to achieve goals of effective communication and innovation. Apart from the media work, we also develop some PR and Marketing services, arranging and producing events and exploring and announcing some activities publicly.

Their most relevant experience with Cloud based education is the EU project EDUTUBE (www.edutubeplus.info). Edutube is developing a European hybrid, multilingual video-based service for schools. This service will integrate

thousands of multi-lingual curriculum-related video-clips by major European educational TV & video providers, with tools enabling educators to enrich the library with user-generated clips. The EduTubePlus service enable users to develop, translate and share video-based learning scenarios and lessons, to search resources using terms related to their national curriculum and to use video in a pedagogically relevant manner in-class.

By integrating an on-line Learning Scenario Design tool within the system, teachers are encouraged to develop and share video-based learning scenarios and activities, using suggested customizable templates or modifying existing ones, based on a sound pedagogical framework for video-based active learning. With the support of a Learning Content Management System linked to the EduTubePlus video-clip library (AeL LCMS), teachers are able to develop and share on-line lessons, combining all types of learning objects.

This hybrid European video-based e-service is also in the process of developing new business models for the Educational TV and video market and the market of Internet based services for schools.

The EduTubePlus project is co-funded under the European eContentPlus programme which makes digital content in Europe more accessible, usable and exploitable.

The EduTubePlus consortium consists of 17 European organisations and companies: RA.CTI (GR, project coordinator), France5/Lesite.tv (FR), Hellenic Ministry of Education/Educational RadioTelevision (GR), UNED (ES), Companhia de Ideias Anonimas (PT), RAI Radiotelevisione Italiana/RAI Educational (IT), EDUCATION HIGHWAY (AT), EduCentrum (BE), Klett (DE), The University of HULL/Institute For Learning (UK), MENON Network (BE), SIVECO (RO), CEDETEL (ES), ATiT (BE), The University of Jyväskylä (FI), Fondazione Maddalena Di Canossa (IT), SZÁMALK (HU).

At the University of Porto some activities have been developed in an effort to promote the utilisation of ICT and the Cloud. There are training sessions and workshops for university teachers about the use of technologies and it has been created a prize which aims to reward the technological innovation in the classroom, and an incentive to use Moodle and other tools that are accessible in the internet, and Icke Turnitin, intended to help control plagiarism. We should add that various libraries of the many faculties of Oporto University have their catalogues online and many of the works published by the University are accessible in databases.

Romania:

For our school (National College) and for our students as well, ICT methods become more and more important and many positive things have already happened as a result. We have teacher that were involved in the INSAM project supported by our national authorities that made an e-learning program that offered tools for evaluation in education. Most of our pupils are studying ICT and Informatics. During the last three years, in partnership with the Parents Association our school have introduced an on-line catalogue – ADSERVIO - that helps us to communicate with children and their parents as well.

Slovenia:

Geodetic Institute of Slovenia is provider of geolocational e-content for education for the Ministry of Education (<http://egradiva.gis.si/web/egradiva>, <http://www.youtube.com/gisfilmi>). Web: www.gis.si

National and University Library is provider of digital library services for education and other purposes (<http://www.dlib.si/>). Web: <https://www.nuk.uni-lj.si/>

UK:

Cambridge Assessment (2013) suggested developments such as Massive Open Online Courses (MOOCs) and 'schools in the cloud' are attracting a growing level of support for true learning happening without teachers. As experts in assessment, Cambridge Assessment believed that a sensible debate was needed on the future for face-to-face teaching and learning.

They brought together a panel of experts to debate the ways in which technology could – and should – transform the fundamentals of education and assessment. The delegates and online viewers shared their views on the opportunities – or threats – that new technologies could bring to schools in the future. And in the true spirit of 'cloud learning' the debate continued on Twitter long after the event had finished. The event concluded that, despite advances in technology, the role of the teacher remains a crucial one as a facilitator of learning.

6. Conclusions

There are many drivers of European policy commitments to nurturing innovation and change (European Commission, 2012: 2010; Granieri and Renda, 2010; Anvret et al, 2010). With a forecasted European ICT skills gap of 15% over the period 2012-2020 (Singh, 2012), encouraging innovative uses of technology for learning and collaboration is vital for ensuring the longer-term economic success in Europe (Wilson, 2013). Providing access to Cloud-based technologies has mutual benefits for students, citizens and European governments. ICT enables learners to tackle the 21st century head on and ensures they are better prepared to compete for the higher-skilled jobs demanded by today's knowledge economy. From a European policy perspective, Cloud-based developments will also modernise educational institutions and strengthen their reputations, helping to drive greater national and European competitiveness.

In general, moving to the Cloud usually means moving away from a CAPEX funding model where physical assets depreciate to an OPEX model which is pay per use. So Cloud services could be a cheaper option for education in the face of funding cuts. If education organisations currently store software and data locally, moving to the Cloud will allow them to spread out IT costs through flexible subscriptions. Such software as a service (or on-demand software) is a cheaper alternative to the large costs associated with upfront licences. However investment in technology and training is needed to enable Cloud-based developments to improve learning standards.

Cloud services complement what research has discovered about the benefits of tablets in education, their mobility and flexibility results in greater collaboration and engagement. With Cloud-based education, the programs used to create and share become even more mobile and less connected to a particular device. This greatly increases pedagogical benefits, learner engagement and productivity. The gap between education and the home is reduced.

The features that make Cloud computing ideal for education rely on hosting companies being able to control and manage privacy and security concerns, despite the demand for continuous access to data. However, rather than decide against Cloud computing, schools could ensure at the outset that adequate relevant privacy protections are put in place. Solutions like cryptography could be considered or by using more than one Cloud provider.

7. Conclusions: Country Perspectives

Austria:

Cloud computing has become partly established in public administration and to some extent in education in Austria. Several services have been developed and are now in use, though the development has to go further if it is to:

- Be used by a majority of teachers and pupils
- Share more information about risks and dependencies
- Develop real competence of using the Cloud for pupils, teachers and schools.

Belgium (Flanders):

There are a lot of ICT tools used in education that are Cloud dependent. The Cloud is primarily used for information sharing. In this way, cloud is not being ignored.

The possibilities through cloud are much bigger and should be explored thoroughly. There are a lot of experiments in using new ways of teaching. The technical evolution around Cloud computing is creating new opportunities and insights concerning these new ways of teaching.

We notice that schools are aware of the opportunities and challenges of Cloud computing, but the real big steps have still to be set. At the moment, It is mostly the work of some individuals who are well ahead of the 'majority' (the famous chasm).

We should generalise the concept of the "Cloud" to reinvent words like "classroom" "teachers", "lessons", ...

Bulgaria:

The trend in Bulgarian higher education is clearly towards the adoption of Cloud services. The main problem remains the underfunding of education and science. The value of cloud services is to help manage - and make immediately available and useful - information rather than infrastructure. Since universities are, after all, centres for the dissemination of information and knowledge, this emphasis enables university IT departments to focus on their unique priorities within the educational environment.

It is difficult to summarize how much Cloud computing is used in education in Bulgaria because every institution has its own approach, but in many of them there are different initiatives: courses, seminars, teachers publications, etc. so the basis is in place.

Cyprus

The Cloud is not actively being used in education in Cyprus. There are some limited applications of the technology, promoted by the Ministry of Education and Culture, but the opportunities it affords are generally largely ignored. The Cloud as a term is still relatively unknown and it is often not used even in programmes that make use of Cloud-based services. On the other hand, there is an increased use of new technologies in education in Cyprus, thus making the use of the Cloud more probable in the future.

Czech Republic:

From our point of view the Cloud is not being used very often, there are no official government supported initiatives on the subject. In schools the main issue with Cloud education is related to insufficient equipment. Nowadays Cloud education is growing more popular for universities and business organisations. Cloud education gained focus of the researchers and university workers mainly in their theoretical work.

There is one major and popular student initiative which grew into a private business based on the Cloud-based education – Skolnisesit.cz (the school book - <http://www.skolnisesit.cz/>), which is aimed mainly for middle school students and it has been translated into other languages as well. This initiative clearly shows there is huge potential for Cloud education in the Czech republic. However, The Czech republic is still at the beginning in dealing with this area.

Germany:

Cloud computing is an important topic for the German economy, especially the ICT-related sections. German institutions as the Fraunhofer Institute and some universities play an important role in the worldwide research about the innovative potential of Cloud computing. Although some universities recognize the advantages of Cloud computing and are using more and more of its innovative potential, the use of Cloud computing for education is not widespread in Germany. Schools in particular are hesitant, because of a lack of knowledge about teaching methods, digital content, and infrastructures. Many teachers and headmasters are concerned about security, legal certainty and compliance. But as more open-source environments are established, the more Cloud computing becomes a relevant topic for school policies.

As long as the legal conditions regarding data protection have not been fully investigated, the widespread utilization at the federal state level is not possible. After a final review concerning data protection, authorities on a higher level must be created to deal exclusively with the use of the Cloud in the respective educational institutions. This allows them to develop its full potential and thus to minimize costs for licenses and administration. It must be ensured that the financial burden of the educational institutions does not escalate through the new dependency structures using a pay per use licensing model. The potential of replacing the fragmented local infrastructure with a Cloud is enormous, but it must be open for private devices to enhance efficiency and effectiveness of teaching and utilization of modern shared data infrastructure.

At Primary school level the Cloud is only rarely used so far and especially not for education in classrooms. Plans for the future are not visible. The main reason for this is the uncertainty over safety.

Greece:

The basic issue in Greece is that all aspects related to Cloud are approached on an on individual base, while the educational system is centralized. That discrepancy has a detrimental impact on promotion and use but mainly on the absence of clear policies for the Cloud. So, the state of the Cloud in Education in Greece is predominantly poor, with some notable exceptions. It shows little overall progress so far.

Some organisations have adopted several important initiatives for Cloud-computing integration, both in public as well as private Greek education industry. There is still space for improvement in order to identify benefits and opportunities for switching to cloud services. The experience at Doukas School has shown that ensuring that the networking environment is ready for cloud computing is an important factor together with piloting and evaluating the different services. In that way security and quality of service will eventually stand out and therefore the idea of school on the cloud will become a reality.

Teachers have, by and large, not been informed about the benefits of using the Cloud in education. During the academic year 2013-14 many teachers and teacher consultants were informed about the Cloud through the seminars of the Hellenic digital earth Centre of Excellence. Although the seminars were not focused on the Cloud, the teachers involved found out how the Centre uses the Cloud and how they could also use it in teaching.

As with many other technical developments that occurred in the past, Cloud computing will grow rapidly in Greece when the teachers (and people in general) will be convinced about the cost benefit and the potential it brings. It will follow the same route as the Internet many years ago when the people were very reluctant about Internet. The private sector has already started adopting the Cloud but not yet for education.

Ireland:

The National Digital Strategy for Ireland has established a framework to maximise the potential of digital opportunities. The Professional Development Service Technology in Education promotes and supports the integration of ICT in Education in Ireland. The Higher Education Authority HEAnet provides Internet Services to Educational and Research Institutions and Organisations throughout Ireland. Cloud services and products are used in Irish schools to scaffold and complement our students' teaching and learning environment. Schools and colleges use a variety of different Virtual Learning Environments, software for school administration and a plethora of web based tools. It is important that students have a cloud-based experience as it means they are more mobile as learners and can access the learning experience and connectivity at any time and place.

Italy:

For many years in Italy, initiatives introducing ICT tools have been left to each individual school. Until a few years ago Italy did not have a common strategy for the implementation of methodologies and tools based on ICT or Cloud-based systems. Since 2007, the Italian Government through MIUR has started a plan for the diffusion of ICT. Since then different actions and initiatives have been put into place.

In Italy there is a relatively low penetration of ICT and Cloud computing in education compared to most other OECD countries, ICT skills in Italy have a limited place in the curriculum and are not embedded within subject fields. A reform of the curriculum could be used to align teachers' practice with ICT policies, with rapid effect and without significant budget implications. In addition to what is already done through the national plan, the Ministry of Education should continue to support innovation in education, the

development of new tools and practices by businesses and schools, and to strengthen knowledge management mechanisms within the system. However, in Italy, there is an interest by the public (government, schools, educational system) and private sectors (cloud computing providers) for Cloud computing solutions.

The debate on Cloud computing in education is still at an initial stage. In most cases teachers are still not ready to use ICT resources. The adoption of these tools is also difficult because of incomplete infrastructure, which often does not allow Cloud based tools to be used. There are however some cases where web 2.0 tools are constantly used.

According to “EnterTheCloud” (an informational blog that shares news and surveys about Cloud) articles, the Italian Cloud is still far from maturity and several steps back in Europe. There is still lack of understanding about possibilities offered by Cloud Computing in Italian Public Administration and schools, that visualise these technologies negatively in terms of both security and privacy. In contrast, there is a positive trend for the private organizations, to use Cloud computing but mainly as a storage service, completely ignoring the enormous potential of the technology.

The lack of a national Cloud policy and the scarce economic resources for schools force them to find private sources of funding to complement the state budget and to accelerate the penetration of ICT in schools. The Italian Ministry of Education encourages this approach and asks head teachers to be able to raise funds from bank foundations or other non-profit organisations for school renovation projects.

The “Review of the Italian Strategy for Digital Schools” commissioned by the Italian Ministry evaluated the national plan. This suggested the small budget of the plan has limited the effectiveness of its diverse initiatives. In its current design, a significant rise of the budget of the plan through public or private sources is a necessary condition for its success. Given current budgetary constraints, a significant budget increase may be difficult, and the report proposes to revise some features of the Plan in order to achieve two objectives: 1) speed up the uptake of ICT in Italian schools and classrooms; 2) create an Innovation Laboratory Network of test bed schools piloting and developing new pedagogic and organisational practices to improve Italian education, by refocusing the innovation projects on the school 2.0 (scuol@2.0) initiative.

Lithuania:

Lithuania effectively uses Cloud computing in the business field. Therefore it can be claimed that experts require necessary qualifications and skills needed in this area. Thus Lithuanian education institutions should use these resources and adapt IT innovations in their work and emphasize that Lithuania use IT innovations.

Poland:

The Cloud in education is relatively new concept in Poland. In everyday life more and more people use services or applications available in the Cloud (and probably they even don't know about it). However, as far as school

education is concerned, teachers “believe” in traditional solutions. Use of ICT is still closely related to (understood as) a “single-user” approach in which hardware (esp. laptops, PCs) and offline educational resources play the most important role. In many regions fast and non-disturbed access to the Internet is still a problem, limiting use of the Cloud. So teachers use Internet to find some interesting educational materials, download them into computers in the classroom and make available to students. Then they work “offline” during lesson.

Some innovative teachers try to change this situation by: (a) using students’ hardware (smartphones, tablets) during lesson – in most cases they have rather good Internet access based on GSM network, (b) introducing the idea of the Cloud-based education as a part of students’ homework (especially if Internet access at school is rather poor).

Portugal:

In general, the actions related to Cloud Computing are mainly focused on business and not so much for the educational environment; however, the use of the Internet as a research and information database is already widely used by most Portuguese students who are very receptive to new technologies of information. Hopefully, in the near future, we may see the Cloud as a platform for teaching and sharing of useful information and simple, perhaps essential.

At the school level, the results obtained by implementing the Cloud in secondary schools have been very positive with the use of Google apps or the Office 365, albeit with the same laws and legal procedures used to legislate the Cloud when it is used in other areas. However overall, Cloud computing in the school environment is still a bit disappointing and its potential for use, however, it is noted that more and more companies have come to adopt it as a way of sharing data. This evolution results in the need to train new professionals in Cloud Computing.

At present there is a gap between education and the Cloud, the lack of incentives and weak promotion of Cloud Computing at school, a situation that companies like Company ideas can undoubtedly help solve.

We live in a society that increasingly depends on information technology. The spread of systems integration technologies and communication services in education is a fact widely accepted by the scientific community, where access to equipment and network infrastructure in education and training in Portugal, by students and teachers, is now an undeniable and inescapable reality in most educational institutions at secondary level. However, access, in itself, doesn’t guarantee for effective learning with ICT, which demands for reflection and research on the introduction of Educational Technology and Cloud computing, as a system in particular.

Romania:

As world changes are shaped mostly by new technologies it is sure that Cloud computing will be important in education as in other fields as well. For Romania and for its future generations it will be important to cover the differences between its educational, economical systems and those of other European countries. The evolution from year to year shows that these things

are happening but it is not unlikely to think that only in 10 years the Romanian educational system will be able to leave the traditional way of teaching for digital books, as SIVECO, one of the major company for e-learning in Romania, predicts.

The Cloud in Education is currently a topic of great interest in Romania, especially in increasing the penetration of Cloud computing services as highlighted by Ipsos study on the use of Cloud technologies in the Member States of the European Union. Romania was at a higher level (39%), when compared with Hungary (17%) and Germany. It is true that the study shows that the majority of Europeans (86%) use Cloud computing for personal matters. But according to the study CIO Council, "Cloud Adoption 2012", 55% of large companies in Romania use Cloud technologies.

The successful use of Cloud Computing in education presupposes the existence of three key elements, namely virtualization, the intelligence from the network and a robust ecosystem (Bozzelli, 2009). These offer the basis for obtaining operational efficiency, security, activity continuance, scalability, interoperability leading in the end to innovation. In addition, a government involvement in organizing a centralized Cloud at the level of school education may stabilize the education field (Sasikala and Prema, 2010) and lead to fast results and innovation.

The first step consists of developing the knowledge base by participating at seminars, conferences, discussions with the suppliers and consulting the most recent researches in the field. The success of the phase depends on the allocation of sufficient resources for understanding how Cloud Computing functions in different organizational structures from universities/schools and between institutions (Wyld, 2009), the benefits and risks, policies and the best usage practices of Cloud Computing.

The main drawback in the use of Cloud Computing in school is the fact that most of the schools are under resourced and teachers are underpaid and overloaded with work. It is not an excuse but as being an efficient user of ICT is time consuming not all teachers can afford it. On the other hand, if we consult the European surveys, there is a need to become competent in the most advanced ICT tools. Many students from schools where there are ICT departments, and not only, are self-educated and are very fond of accessing the latest technologies and programs. Young generations are very open to all ICT devices and programs. What we need is innovative teachers who can cope with this extraordinary skill and the thirst for what is new.

Slovenia:

Provide a brief summary, from your perspective, of the state of the Cloud and its use in education in your country. Is it being used? Are there plans? Is the Cloud being ignored?

The KC Class project and EuroCloud Slovenia have made significant progress with tangible products in Cloud computing in general, and also in the field of education. A national strategy for 'school on the Cloud' has yet to be prepared.

Spain:

The Cloud is being used more and more, because teachers have seen its advantages. There are still many technical difficulties (speed of access, Wifi or broadband availability). We can add another serious difficulty: not many teachers and students have digital competences.

The main tools for using the Cloud in schools are: Google Drive, ArcGIS Online (in Geography), YouTube, Moodle Virtual Campus, Box. ICT for learning and blended learning are very common in Spain.

Switzerland:

The Cloud and its use in education in Switzerland are in a starting phase. At the moment the Cloud is mainly used in the universities (ilias, Moodle etc.). But the application of Cloud-based tools is also growing in high schools and primary schools. The platform Educa.ch is special for high schools and primary schools.

Turkey: Recently the Cloud has been widely used in Turkey. People use the Internet while doing shopping, ordering something to eat, buying tickets, etc. As in all the stages in education it is resorted to reach large masses by government organisations and NGOs. Especially with the latest and biggest project, FATİH, Cloud-based education is being introduced into the majority of the Turkish National Education System.

UK:

The UK coalition government has made significant cuts to schools' capital funding, which is used for infrastructure costs like IT hardware and software. However, news of a recent OECD report shows UK schools are falling behind the rest of the world (Daily Telegraph, 2013). They suggest the UK will need to continue to invest in technology to improve standards in learning. Cloud-based options offer a clear alternative being taken up by an increasing number of education establishments. A December 2013 report by Kable Market Intelligence found that UK schools were increasingly adopting Cloud computing (Innovate My School, 2013), including web thin clients like Google Chromebooks and productivity applications, such as Microsoft's Office365 for Education and Google Apps for Education. Kable's report shows Cloud computing, which spreads the cost of IT over time, is becoming an attractive proposition for schools.

However the Joint Information Systems Consortium (JISC) warns that alongside the benefits of Cloud computing, there are policy-related legal implications to consider (JISCLegal, 2011). While there are many potential benefits to Cloud service provision, it is important to be aware of the legal challenges it presents and to ensure that careful consideration is given as to how continuing legal obligations and responsibilities are handled. As with all outsourced provision, it is important to be aware of these at the outset before agreeing any contract, as well as ensuring that those staff and students who will be implementing and then using the services are aware of the manner in which these obligations are to be met.

These are not necessarily 'new' legal issues for institutions, and there is no specific 'Cloud computing' law; rather, as with any change in a core service delivery model, this may mean existing legal duties, regulations and

considerations have to be reframed to fit the new model. As the Cloud computing market stabilises, the risks will become clearer and standards set. The law may eventually be updated where required to meet the new technological needs

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Annex 1: European events and activities

There are a large number of conferences and other events taking place in Europe, but few of them are specifically for Cloud-based education.

April 2014

April 2-4, 2014 International Conference on Computer Supported Education (CESDU), 6th, sponsored by the Institute for Systems and Technologies of Information, Control and Communication (INSTICC), Barcelona, Spain. <http://www.csedu.org/>

April 3-5, 2014 European University Information Systems (EUNIS) Rectors Conference: The New Digital Era in Higher Education, Helsinki and Espoo, Finland. <http://www.eunis.org/blog/category/events/> or <http://eunisrectors2014.eunis.org/>

April 3-5, 2014 European Teacher Education Network (ETEN) Annual Conference, University of Leipzig, Leipzig, Germany. <http://www.eten-online.org/>

April 3-5, 2014 International Conference on Web Information Systems and Technologies (WEBIST), 10th, Barcelona, Spain. <http://www.webist.org/>

April 3-5, 2014 International Conference on Cloud Computing and Services Science (CLOSER), 4th, Barcelona, Spain. <http://closer.scitevents.org/>

April 7-9, 2014 Digital Media Europe, organized by the World Association of Newspapers and News Publishers, London, United Kingdom. <http://www.wan-iffra.org/events/digital-media-europe-2014>

April 7-9, 2014 International Conference on Networked Learning, 9th, biennial. Edinburgh, United Kingdom. <http://www.networkedlearningconference.org.uk/>

April 8-9, 2014 Swiss eLearning Conference (SeLC), Holiday Inn, Zurich, Switzerland. http://selc.ch/content/index_ger.html

April 10-12, 2013 Plymouth e-Learning Conference (PELeCON), 8th, University of Plymouth, Plymouth, UK. <http://pelecon.net> or <http://www.pelecon.co.uk/>

April 13-17, 2014 European Conference on Information Retrieval, 36th, Amsterdam, The Netherlands. <http://ecir2014.org/>

April 14-16, 2014 MoodleMoot Edinburgh, Edinburgh, United Kingdom. <http://moodlemoot.ie/>

April 17-19, 2013 International Conference on Information Science and Information Literacy, 4th, University of Sibiu, Sibiu, Romania. <http://bcu.ulbsibiu.ro/conference/>

April 22-24, 2014 Technology, Colleges, and Community (TCC) Worldwide Online Conference: Emerging Technologies for Learning – Open and Global

Learning, 19th, annual, to be held online. <http://tcchawaii.org/> or <http://tcc.kcc.hawaii.edu>

April 22-25, 2014 Conference on Animation, Effects, Games and Interactive Media, 19th, Stuttgart, Germany. www.fmx.de

April 23-25, 2014 Open Courseware Consortium (OCWC) Global 2014: Open Education for a Multicultural World, Ljubljana, Slovenia. <http://conference.ocwconsortium.org/2014/>

April 24-25, 2014 International Scientific Conference on eLearning and Software for Education (eLSE), 10th, Bucharest, Romania. <http://www.elseconference.eu/>

April 24-25, 2014 European Next Web Conference. Amsterdam, The Netherlands. <http://thenextweb.com/conference/europe/>

April 24-26, 2014 International Conference on Communication, Media, Technology and Design, Istanbul, Turkey. <http://www.cmdconf.net/>

April 24-27, 2014 International Congress and Exhibition on Current Trends on Science and Technology Education (SCITEED), Fethiye, Muğla, Turkey. <http://www.sciteed.org/>

April 25, 2014 Higher Education Academy Massive Open Online Courses in the Arts and Humanities – Opportunities, Challenges and Implications across UK Higher Education, School of Language, University of Central Lancashire, Lancashire, United Kingdom. http://www.heacademy.ac.uk/events/detail/2014/Seminars/AH/GEN911_UCLAN

April 25-27, 2014 International Conference on New Trends in Education and Their Implications (ICONTE), 5th, Konyaalti-Antalya, Turkey. <http://www.iconte.org/>

April 27-30, 2014 International Conference on Enterprise Information Systems, 16th, Lisbon, Portugal. <http://www.iceis.org/Home.aspx>

April 28-29, 2014 Open Educational Resources (OER14): Building Communities of Open Practice, The Centre for Life, Newcastle, United Kingdom. <http://oer14.org/>

April 28-30, 2014 Ireland International Conference on Education, Bewleys Hotel Ballsbridge, Dublin, Ireland. <http://www.iicedu.org/IICE-2014%20April/Index.html>

May 2014

May 5-7, 2014 International Future-Learning Conference on Innovations in Learning for the Future: e-Learning, 5th, Istanbul University, Istanbul, Turkey. <http://futurelearning.istanbul.edu.tr/>

May 7-8, 2014 ICTexpo, Helsingin Messukeskus, Helsinki, Finland.
http://www.easyfairs.com/events_216/ictexpo-helsinki2014_45506/ictexpo-helsinki-2014_45507/

May 7-9, 2014 Learning Innovations and Quality Conference, organized by European Foundation for Quality in e-Learning (EFQUEL) and Learning Innovations and Quality (LINQ), Crete, Greece. <http://www.learning-innovations.eu/>

May 13-15, 2013 Global University Network for Innovation (GUNi) Conference, 6th, Universitat Politècnica de Catalunya (UPC) Campus Nord, Barcelona, Spain. <http://www.guninetwork.org/guni.conference/2013-guni-conference>

May 14-16, 2014 European Association for Distance Learning (EADL): Change. No Excuses!, 30th, Carlton Hotel Edinburgh, Edinburgh, Scotland. <http://www.eadl.org/>

May 15-16, 2014 Effective Learning Infrastructure for Your Learners and Your Organization, organized by the eLearning Guild, offered online. <http://www.elearningguild.com/online-forums/content/1562/schedule-at-a-glance/>

May 19-22, 2014 International Conference on Education, 16th, annual, Athens, Greece. <http://www.atiner.gr/education.htm>

May 19-22, 2014 International Conference on Information Technology and Computer Science, 10th, annual, Athens, Greece. <http://www.atiner.gr/computer.htm>

May 20-22, 2014 Thinking Digital: Technology, Ideas and Our Future, 7th, The Sage Gateshead, Gateshead, United Kingdom. <http://www.thinkingdigital.co.uk/>

May 20-22, 2014 Information Technology in Education Conference (ITEC): Defence, Training, Simulation, and Education, Cologne Messe, Germany. <http://www.itec.co.uk>

May 21-22, 2014 International Conference on Computer Communication and Management, 4th, Paris, France. <http://www.icccm.org/>

May 23-24, 2014 StudyWorld: International Fair for Higher and Continuing Education, Berlin, Germany. <http://www.studyworld2014.com/>

May 30-31, 2013 EdTech 2013: Educational Technology Conference of the Irish Learning Technology Association (ILTA) – Opening Up Education – Content, Learning and Collaboration, 14th, annual, University College Cork, Cork, Ireland. <http://ilta.ie/edtech/edtech-2013/>

June 2014

June 1-3, 2013 International Conference on Education and New Developments, Lisbon, Portugal. <http://www.end-educationconference.org/>

June 1-5, 2014 Learning in Higher Education (LiTHE): Technology Enhanced Learning in Higher Education, Kavos Bay Seafront Hotel, Aegina Island, Greece. <http://www.lihe.info/future-events/lihe14-greece-technology-enhanced-learning/>

June 2-3, 2014 International Conference on Computing and Computer Vision (ICCCV), 3rd, London, United Kingdom. <http://www.icccv.org/>

June 2-5, 2014 International Conference on Computer Graphics, Visualization and Computer Vision (WSCG), 22nd, Prague, Czech Republic. <http://www.wscg.eu/>

June 5-6, 2013 Supported Online Learning for Students Using Technology for Information and Communication in Their Education (SOLSTICE) eLearning and Centre for Learning and Teaching Research (CLTR) Teaching and Learning Conference: Effective Practices, Edge Hill University, Lancashire, United Kingdom. <http://www.edgehill.ac.uk/solstice/2013/>

June 9-13, 2014 International Conference on Open Repositories (OR), 9th, hosted by Helsinki University Library and National Library of Finland, Helsinki, Finland. <http://or2014.helsinki.fi/>

June 10-12, 2013 International Symposium on Science Education (ISSE): Environmental Global Challenges in Science Education, Helsinki, Finland. <http://www.helsinki.fi/luma/isse/2013/>

June 10-13, 2014 European Distance and e-Learning Network (EDEN) Annual Conference: From Education to Employment and Meaningful Work with ICTS – E-learning at work and the workplace, 23rd, University of Zagreb, Zagreb, Croatia. <http://www.eden-online.org/>

June 11-13, 2013 Enhancement and Innovation in Higher Education Conference, Crowne Plaza Hotel, Glasgow, United Kingdom. <http://www.enhancementthemes.ac.uk/enhancement-themes-conference>

June 11-13, 2014 European University Information Systems (EUNIS) Association Annual Congress: Higher Education in the Digital Era, Umeå, Sweden. <http://www.eunis.org/blog/category/events/>

June 15-18, 2014 International Conference on Cultural Attitudes towards Technology and Communication (CaTaC): Celebration, Transformation, New Directions, biennial, Department of Informatics, University of Oslo. <http://www.cataconference.org/>

June 15-20, 2014 Bulgarian Comparative Education Society: Education's Role in Preparing Globally Competent Citizens, 12th, Nessebar, Bulgaria. <http://bces.conference.tripod.com/>

June 17-18, 2014 Cloud World Forum, 6th, Olympia National Hall, London, United Kingdom. <http://Cloudwf.com/>

June 17-19, 2014 Internet World & The Big Data Show, ExCel Arena, London, United Kingdom. <http://www.internetworld.co.uk/>

June 18-20, 2014 International Workshop on Content-Based Multimedia Indexing, 12th, Klagenfurt, Austria. <http://cbmi2014.itec.aau.at/>

June 18-20, 2014 Intelligent Interactive Multimedia Systems and Services (IIMSS), 7th, Chania, Greece. <http://iimss-14.kesinternational.org/>

June 18-21, 2014 Iberian Conference on Information Systems and Technologies (CISTI), 9th, Barcelona, Spain.
<http://www.aisti.eu/cisti2014/index.php?lang=en>

June 19-20, 2014 International Conference on Electronic Publishing (ELPUB): Let's put data to use – digital scholarship for the next generation, 18th, Alexander Technological Education Institute of Thessaloniki, Thessaloniki, Greece. <http://www.elpub.net/> or <http://elpub2014.teithe.gr/>

June 20-21, 2013 Action Research Colloquium: Real World Research, 3rd, organized by the All Ireland Society for Higher Education (AISHE), hosted by the Institute of Technology Tralee, Ireland.
<http://www.aishe.org/2013/02/13/rd-action-research-colloquium-th-st-june/>

June 23-25, 2014 Innovation and Technology in Computer Science Education (ITiCSE) Conference, 19th, annual, Uppsala University, Uppsala Sweden.
<http://iticse2014.it.uu.se/>

June 23-27, 2014 ED-MEDIA 2014: World Conference on Educational Multimedia, Hypermedia and Telecommunications, sponsored by the Association for the Advancement of Computing in Education (AACE), Tampere, Finland. <http://aace.org/conf/>

June 24, 2014 Learning and Teaching Conference, Ealing Campus, Thames Valley University, London, United Kingdom.
<http://www.tvu.ac.uk/instil/Events.jsp>

June 24-25, 2014 Streaming Forum: Streaming Media, Park Plaza Victoria, London, United Kingdom.
<http://www.streamingmediaglobal.com/conference/2014/>

June 24-26, 2014 International Conference on Digital Security and Forensics, VSB-Technical University of Ostrava, Czech Republic.
<http://sdiwc.net/conferences/2014/digitsec2014/>

June 25-27, 2014 International Conference on New Horizons in Education, Hotel Novotel Paris Est, Paris, France. <http://www.int-e.net/>

June 25-28, 2014 Microsoft Tech-Ed Europe, Madrid, Spain.
<http://europe.msteched.com/#fbid=rTR0e6O1P72>

June 26-28, 2013 International Instructional Technologies and Teacher Education Symposium, 1st, hosted by Karadeniz Technical University, Trabzon, Turkey. http://ittes.org/ITTES_2013/

June 27-28 2014 15th International Conference on Computer Systems and Technologies CompSysTech'14, 27-28 June 2014, Ruse, Bulgaria
<http://www.compsystech.org/>

June 28, 2013 Information Technology and Education Development, Zrenjanin, Serbia. <http://www.tfzr.rs/itro/>

July 2014

July 2-4, 2014 Interactive Environments and Emerging Technologies for eLearning (IEETeL) Workshop, 5th, <https://sites.google.com/site/ieetel2014/about> will be part of the International Conference on Complex, Intelligent, and Software Intensive Systems (CSIS), 8th, Birmingham, United Kingdom. <http://voyager.ce.fit.ac.jp/conf/cisis/2014/index.html>

July 2-4, 2014 International Conference on Innovative, Mobile and Internet Services in Ubiquitous Computing (IMIS), 8th, Birmingham City University, Birmingham, United Kingdom. <http://voyager.ce.fit.ac.jp/conf/imis/2014/>

July 3-5, 2014 International Conference on Information Communication Technologies in Education (ICICTE), 14th annual, Kos, Greece. www.icicte.org

July 7-10, 2014 International Conference on Advanced Learning Technologies (ICALT): Advanced Technologies for Supporting Open Access to Formal and Informal Learning, 14th, organized by Institute of Electrical and Electronics Engineers (IEEE) Computer Society and IEEE Technical Committee on Learning Technology, Athens, Greece. <http://www.ask4research.info/icalt/2014/>

July 8, 2014 Academic Practice and Technology (APT) Conference: Connected Learning in an Open World, 12th, annual, University of Greenwich, Greenwich, United Kingdom. <https://showtime.gre.ac.uk/index.php/ecomcentre/apt2014>

July 8, 2014 Higher Education Academy New to Using Social Networking in Learning and Teaching, The Studio, Birmingham, United Kingdom. http://www.heacademy.ac.uk/events/detail/2014/NTT_SocialNetworking_Birmingham

July 8-10, 2014 Electronic Visualisation and Arts (EVA), sponsored by the Computer Arts Society and the British Computer Society, Covent Garden, London, United Kingdom. <http://www.eva-london.org/>

July 9-11, 2014 International Conference on Computers Helping People (ICCHP) with Special Needs, 14th, Université Paris 8, Saint-Denis, France. <http://www.icchp.org/>

July 9-11, 2014 ePIC: Evidence Based Learning – ePortfolio and Identity Conference, 12th, London, United Kingdom. <http://www.epforum.eu/>

July 9-11, 2014 Videogame Cultures and the Future of Interactive Entertainment Global Conference, 6th, sponsored by Inter-Disciplinary.Net, Mansfield College, Oxford, United Kingdom. <http://www.inter-disciplinary.net/critical-issues/cyber/videogame-cultures-the-future-of-interactive-entertainment/call-for-papers/>

July 9-13, 2014 European Conference on Technology in the Classroom (ECTC), Thistle Brighton Hotel, Brighton, United Kingdom. <http://www.ectc.iafor.org/>

July 9-13, 2014 European Conference on Education (ECE), 2nd, Brighton, United Kingdom. <http://iafor.org/events.html>

July 14-20, 2014 Creativity Workshop, Amsterdam, The Netherlands. <http://www.creativityworkshop.com/conferences.html>

July 21-25, 2014 International Computer Software and Applications Conference (COMPSAC): The Integration of Heterogeneous and Mobile Services in Smart Environments, 38th, annual, Vasteras, Sweden. <http://compsac.cs.iastate.edu/>

August 2014

August 11-13, 2014 International Computing Education Research (ICER) Conference, University of Glasgow, Glasgow, Scotland. <http://icer.hosting.acm.org/>

August 20-23, 2014 European Association for Computer-Assisted Language Learning (EUROCALL): CALL Design – Principles and Practice, 21st, University of Groningen, The Netherlands. http://www.eurocall-languages.org/news/items/2014conf_cfp.html or <http://www.eurocall2014.nl/>

August 25-27, 2014 Association for Teacher Education in Europe (ATEE) Annual Conference: Transitions in Teacher Education and Professional Identities, University of Minho, Braga, Portugal. <http://www.atee1.org/>

August 27-29, 2014 International Symposium on Open Collaboration (WikiSym, OpenSym), 10th, Berlin, Germany. <http://www.wikisym.org/>

August 28-30, 2014 International Joint Conference on e-Business and Telecommunications (ICETE), 11th, Vienna, Austria. <http://www.icete.org/>

August 28-30, 2014 International Conference on Wireless Information Networks and Systems (WINSYS), 11th, Vienna, Austria. <http://www.winsys.icete.org/>

September 2014

September 1-3, 2014 International Conference of the Association for Learning Technology (ALT-C 2013): Riding Giants – How to Innovate and Educate Ahead of the Wave, 21st, annual, Warwick, United Kingdom. <http://www.alt.ac.uk/alt-conference/altc2014>

September 1-5, 2014 European Conference on Educational Research (ECER): The Past, the Future and Present of Educational Research in Europe, organized by the European Educational Research Association, University of Porto, Porto, Portugal. <http://www.eera-ecer.de/ecer2014/>

September 1-5, 2014 International Conference on Digital Audio Effects, 17th, Erlangen, Germany. <http://www.dafx.de/>

September 4-5, 2014 European Conference on Knowledge Management (ECKM), 15th, The Polytechnic Institute of Santarém, Santarém, Portugal. <http://academic-conferences.org/eckm/eckm2014/eckm14-home.htm>

September 7-10, 2014 Federated Conference on Computer Science and Information Systems, (FedCSIS), Warsaw, Poland. <http://www.fedcsis.org/>

September 8-12, 2014 Association for Computing Machinery (ACM)/Institute of Electrical and Electronics Engineers (IEEE) Joint Conference on Digital Libraries, London, United Kingdom. <http://www.jcdl.org/>

September 11-12, 2014 European Conference on Information Management and Evaluation (ECIME), 8th, University of Ghent, Ghent, Belgium. <http://academic-conferences.org/ecime/ecime2014/ecime14-home.htm>

September 23-25, 2014 British Educational Research Association Conference, Institute of Education, University of London, United Kingdom. <http://www.bera.ac.uk/>

September 25-26, 2014 Internet, Politics, Policy Conference: Synchronizing Research Agendas for Public Policy in the Era of Big Data, Oxford Internet Institute, University of Oxford, Oxford, United Kingdom. <http://www.ipsonet.org/conferences/internet-politics-and-policy-conference>

September 30-October 1, 2014 World of Learning Conference and Exhibition, 22nd, Birmingham, United Kingdom. <http://www.learnevents.com/>

September ? 2014 Digital Memories, 6th, organized by Inter-Disciplinary.Net, Oxford, United Kingdom. <http://www.inter-disciplinary.net/critical-issues/cyber/digital-memories/call-for-papers/>

October 2014

October 1-3, 2014 International Association for the Study of Cooperation in Education (IASCE), Odense, Denmark. <http://www.iasce.net/home/events>

October 9-10, 2014 European Conference on Game Based Learning, 8th, Berlin, Germany. <http://academic-conferences.org/ecgbl/ecgbl2014/ecgbl14-home.htm>

October 21-22, 2014 Internet Librarian International, Olympia Conference Centre, London, United Kingdom. <http://www.internet-librarian.com/2013/>

October 22-15, 2014 Education and Educational Psychology, 5th, Kyrenia, Cyprus. <http://www.iceepsy.org/>

October 30-31, 2014 European Conference on e-Learning (ECEL), 13th. Aalborg University, Copenhagen, Denmark. <http://academic-conferences.org/ecel/ecel2014/ecel14-home.htm>

October 2014 Emerging Technologies in Academic Libraries (EMTACL). Previously held October 1-3, 2012 in Trondheim, Norway. <http://emtacl.com/>

November 2014

Forum Kommunikationskultur der GMK 2014. Doing politics: Acting political in a digital society. Concepts and strategies for media education. 21-23 November 2014, Berlin. www.gmk-net.de

June 2015

June 24-25, 2015 International Assessment in Higher Education Conference, 5th, Birmingham, United Kingdom. <http://aheconference.com/>

June? 2015 International Conference on Communities and Technologies, 6th, biennial. The previous conference was held June 29-July 2, 2013 in Munich, Germany. <http://www.ct2013.cnss.de/>

June ? 2015 Information: Interactions and Impact, 5th, biennial. The previous conference was held June 25-28, 2013 at Robert Gordon University, Aberdeen, United Kingdom. <http://www.i3conference.org.uk/>

July 2015

July 2015 International Study Association on Teachers and Teaching (ISATT), 17th, biennial. The previous conference was held July 2-5, 2013 at the University of Ghent, Ghent, Belgium. <http://isatt.net/dev/> or <http://www.isatt2013.ugent.be/>

Annex 2: Nationally-identified events

Austria:

E-Education-Conference, every second year, more than 200 participants:
<http://elsa20.schule.at/sommertagungen-archiv/> and for 2013
<http://eeducation.aau.at/>

E-Learning-Didactics-Conference, each year in Linz, more than 250 participants, see: <http://edidaktik.at/?site=archiv> and for 2013
<http://edidaktik.at/>

E-Learning-Cluster-Conference, each year. see:
http://www.elearningcluster.com/aktuell/index_archiv.php

Moodlemoot Austria Conference, each year, in 2014 at the University Campus in Krems (Lower Austria), see:
<http://www.edaktik.at/moodle/course/view.php?id=42>

Austrian Cloud Congress: each year, at the Austrian Chamber of Industry, Vienna, organizer: EuroCloud Austria, different field of Cloud technology e.g. governance, data safety and intelligence service, user cases, book presentation, EuroCloud Award for the best Cloud solutions/enterprises, next Austrian Cloud Congress: 13.10.2014, thematic field: digital transformation, compare: <http://www.Cloudkongress.at/>

Belgium (Flanders):

Integration of ICT in education <http://tinyurl.com/ICT-integratieGO>, a project of the collaborative network related to pedagogical counselling services (SNPB). Seven sessions about the integration of ICT in education based on the ICT-objectives of the Department of Education. There are web 2.0 and Cloud-tools used in the sessions.

Tackle, <http://tackle.eu>, <http://tackle2.eu/>, <http://www.g-o.be/internationalisering> TACCLE: Teachers' Aids on Creating Content for Learning Environments is a EU funded Comenius multilateral project. A key output of the first TACCLE project (www.tackle.eu) was a handbook for teachers wanting to introduce e-learning into their practice. There was also a series of training events for teachers based on the handbook. Both the handbook and the courses were rated highly by teachers but feedback from readers and from course participants was that there were still 'gaps' that needed to be filled. Tackle 2 will deal with the gaps and provide:

- 5 step-by-step guides to integrating ICT and e-learning in YOUR classroom: primary education, maths, science and technology, key competences, arts and culture and humanities
- practical materials and ideas customised for YOUR subject area and pupil age range
- complementary training courses based on the handbook
- access to web based materials for e-learning
- opportunities to join a network of like-minded colleagues across Europe
- a chance to join in and influence the work of the project as it develops
- free download of the popular E-learning Handbook for Classroom Teachers produced by the Tackle 1 project signposts to other banks of

open educational resources for your subject. The handbook contains good practices of using Cloud-tools in education. The TACCLE in-service training course is organised every year, uses a lot of Cloud applications as examples of integrated ICT teaching.

Circle <http://www.circe.be/index.php?lang=en> Circle is a Comenius multilateral project. Classical subjects have a special place in the European curriculum, though in many countries they face an uncertain future. Our common European heritage is founded on shared linguistic and cultural roots, so it is most important for us to support these studies by forward-thinking methodology. Traditional methods of teaching classics need to be cherished but also challenged in the 21st Century. The task of the CIRCE project is to support classics teachers by identifying good practice in ICT and bringing it to the front. Some Cloud applications are mentioned in the Circe materials and during the courses.

Training 'Mediacoach' <http://www.linc-vzw.be/projecten/mediacoach-een-mediawijs-traject-voor-professionelen>, Mediacoach is training for professionals who work with youth and want to integrate media literacy in their own work practice. The training is about media literacy by using the Cloud.

Mediawijs.be, <http://mediawijs.be/>, An initiative of the Minister of Media in collaboration with iMinds Media. It's a digital centre of knowledge for media literacy. Mediawijs.be aims to facilitate all people to participate in a mediatized community in a conscious, responsible and active way acting as a coordinating and inspiring body within the area of media literacy. In this project, the Cloud plays an important role, focusing on how to use (learning how to use) the Cloud responsibly.

L2T <http://www.learn2teach.eu/>, The Learn2Teach is a European project that aims to establish a new communication and collaboration paradigm in teaching and learning through the vehicle of social media. Whilst technology itself cannot teach, the Learn2Teach project can assist the process of learning through the design of pedagogical approaches by embedding social media, and thus providing a far reaching interactive social community that can promote creativity, peer discussion and collaboration. This project is about social media. It is a wiki for teachers who want to use social media. Cloud applications are mentioned.

E-twinning <http://www.etwinning.net/nl/pub/index.htm>

EPALE, The community for schools in Europe, a free and safe platform for teachers to connect, develop collaborative projects and share ideas in Europe. EPALE will offer similar Cloud based tools for adult education by the end of 2014. Collaboration between schools in the Cloud.

ICT-praktijkdag <http://www.ictdag.be/>, A day organised by different Belgian organisations, where you can follow sessions about ICT in education. You can choose between a large offer of activities, both technical and pedagogical.

Edushock, <http://www.edushock.be/>, Edushock invites people to explore their creativity in education in an innovative way. Innovation in education will be absolutely necessary to enable learning in the future. Evolve from 'go with the flow' to 'make the flow'. Edushock offers "shocking" good practices, hints and real-life cases for teachers, students and policy-makers. Innovation in education.

Living School Lab (LSL) <http://lsl.eun.org/>, started in October 2012, Living Schools Lab is a two-year project funded by the European Commission and coordinated by European Schoolnet. It includes 12 Ministries of Education and aims to create a sustainable, growing network of primary and secondary schools, based around regional clusters, that showcase and share best practice and ways to successfully embed the use of technology in teaching and learning (T&L) across the whole school; A strong community of practice, with supporting continuous professional development opportunities for teachers; opportunities for schools to get involved in action-based research, creating links with outside partners including industry and other pan-European projects. The project will also develop validation methodologies and a new turnkey validation service whereby schools in the network will be available to test and evaluate results of European Commission funded projects along with technologies, services and content provided by other stakeholders. The general idea is advanced ICT schools helping others with an integrated ICT approach in teaching. Cloud applications are part of what advanced schools use in teaching and of the know-how they transfer to other schools.

Training, <http://www.nascholing.be/2013-2014/index.aspx?type=16&modID=4346>, This training informs ICT-coordinators in schools about the possibilities of Cloud computing, as well as the practicalities (including privacy and security)

Training day Bring your own device (BYOD), This session provides an overview of the technologies needed to support BYOD and elaborates on the benefits, risks and challenges that this aspect of "New Work" poses for a school.

De Mare Radicaal Digitaal <http://www.demare.be/ipadproject/?p=441>, De Mare is a secondary school where all teachers and pupils use iPad tablets for all lessons. Therefore they use a variety of apps with Cloud computing. Every year they organise a training and information day. Cloud computing in the classroom.

Klascement <http://www.klascement.be/>, Klascement is an educational portal site where teachers share information, good practices and tools. Some of them deal with Cloud computing, Practical material ready-to-use

Bulgaria:

15th International Conference on Computer Systems and Technologies
CompSysTech'14, 27-28 June 2014, Ruse, Bulgaria
(<http://www.compsystech.org/>)

National Seminar on E-Learning (<http://www.bvu-bg.eu/>)

Fifth National Conference "Education in the Information Society", Cloud computing is one of the main topics. <http://sci-gems.math.bas.bg/jspui/bitstream/10525/1810/1/adis-may-2012-146p-153p.pdf>

National Conference "Cloud technologies before the test of reality" <http://events.idg.bg/bg/2013/Cloud/agenda>

CloudConf Varna <https://sites.google.com/a/agilemates.com/Cloudconf/Home>
<https://www.facebook.com/events/219912778178010/?ref=22>

Datacenters Transformation Roadshow Sofia2012 http://idc-cema.com/eng/events/48021-idc-datacenters-transformation-roadshow-2012?g_clang=BUL

Czech Republic:

There were not many big events/meetings/conferences/ organized regarding the subject in the Czech Republic. Some smaller conferences were conducted such as:

Cloud - ukládání, dostupnost a bezpečnost dat (Cloud – saving, availability and security of the data) – planned for 19.3.2014

Virtualizace a Cloud (virtualisation and Cloud) – 13.6.2014

both of these conferences are focused mainly on the Cloud education for businesses, especially using the Hitachi Content Platform Anywhere

Konference České vysoké školy "v Cloudu (Czech universities in the Cloud)" – 15.5.2012, focused on the education on the universities in the Czech Republic and on the advantages of the Cloud systems to increase the effects of the school management

Germany:

CEBIT – New perspectives in IT Business. Cloud computing is one of five thematic fields of the CEBIT. www.cebit.de

Learntec. Learning with Information Technology. www.learntec.de

Forum Kommunikationskultur der GMK 2014. Doing politics: Acting political in a digital society. Concepts and strategies for media education. 21-23 November 2014, Berlin. www.gmk-net.de

Kongress Digitale Didaktik 2014: lecture topics - teachers work with iPad, apps, Cloud, and the social network (http://www.schloss-neubeuern.de/includes/pdf/2013-14/Programm_KDD14.pdf).

Didacta 2014: the largest international education exhibition (<http://www.messe-stuttgart.de/didacta/>).

iPad Projekt der Waldschule Hatten: workshops/advanced training (<http://waldschulpads.wordpress.com/2014/01/18/anmeldungen-zur-fortbildungsveranstaltung-am-14-03-jetzt-moglich/>).

For science education in Germany there is a small working group of university colleagues focussing on IT in Primary science. So far Cloud technologies have not been in focus of the group.

Greece:

«Digital Trends 2011: Green ICT & Cloud Computing». 1st annual conference of Hellenic Professionals Informatics Society (HePIS) and the Council of European Professionals Informatics Society (CEPIS), Athens.

http://www.hepis.gr/en/events/Digital_Trends_2011/Pages/Digital_Trends_2011.aspx . This event was addressed to ICT professionals. No education.

Cloud Computing conference 2012 «Hands-on Cloud: Cloud transition in practice», Maroussi Plaza, Athens, April, 24. Organized by the “netweek” journal. No education topic.

InfoCom Green ICT 2013 Conference organized by Smart Press and co-organized by the official societies of Electrical and Electronic Engineers in Greece, April, 10, 2013, Athens. <http://www.infocomgreen.gr/> The 2nd session of the Conference covers: Data Centres & Cloud Era. It involves infrastructures, telecom companies etc. No education.

Cloud Computing conference 2013 «Beyond the “Cloud Hype” Realizing the true business benefits». Maroussi Plaza, Athens. Organized by the “netweek” journal. No education topic.

Cloud computing conference March, 14, 2014, Maroussi Plaza, Athens. Organized by the “netweek” journal. No education topics.

<http://www.Cloudforum.gr/default.asp?pid=1&la=1>

International Digital Storytelling Conference, Athens, May 8-10, 2014:

<http://dst.ntlab.gr>

1st International Conference on New Developments in Science and Technology Education, Corfu Island, Greece, May 29-31, 2014:

<http://ndste2014.weebly.com/>

9th Panhellenic Conference with International participation, "ICT in Education": <http://www.hcicte2014.edc.uoc.gr>

Ireland:

BT Young Scientist & Technology Exhibition is a competition which is open to all second level students from Ireland. In 2014 the exhibition celebrated 50 years making it one of the longest standing exhibitions of its kind in the world. <http://www.btyoungscientist.com/>

Digital Schools of Distinction programme, for primary schools to promote and acknowledge best practice use of ICT. <http://www.digitalschools.ie/>

The eLearning eircom Spiders category displays innovation and ingenuity for those involved in eLearning. <http://www.eircomspiders.ie/categories.php>

Techspace provides programmes for youth digital creators through network partners, Foróige, CrossCare and YMCA Ireland. <http://www.techspace.ie/>

The Computers in Education Society of Ireland annual conference, promotes the use of ICT in education. <http://www.cesi.ie/conference-2014>

Engineers Ireland's STEPS programme was established to encourage primary and post-primary students to explore the world of science and engineering. <http://www.steps.ie/steps---partners/about-us.aspx>

The Digital Hub Learning Programme offers members of the Dublin 8 community the opportunity to gain IT skills and digital media training. The programme has reached out to local schools, colleges and community groups with projects involving over 12,000 participants to date.

<http://www.thedigitalhub.com/learning/about-our-learning-programme/52>

DataCentres Ireland exhibition and conference, give attendees access to the latest in information, products, services, solutions and best practice.

<http://www.datacentres-ireland.com/Cloud/>

HEAnet conference 2013 featured topics on Big Data, Cloud, e-Learning, Networking, SDN and WiFi with the spotlight on “Strategies for e-Infrastructure Delivery”. <http://www.heanet.ie/conferences/2013/>

Italy:

The most important Italian event on education is an exhibition in Genoa, the “ABCD”. This is dedicated at the school of the third millennium, with 240 Exhibitors, 363 events and 45,000 visitors in the 2013 edition.

February 2014 a seminar organized by INDIRE and the ADI (Italian Head Teachers Association) took place. The international seminar “Acchiappanuvole. Studenti e scuole nell’era digitale” (Cloud catcher. Students and schools in the digital age) take inspiration from the Cloud potentialities to change education and how they work in practice. It showed as the most innovative schools and school systems at the international level are using Cloud to support learning environment.

Cloud Computing Summit: Milan 19/03/2014

<http://www.theinnovationgroup.it/eventi/Cloud-computing-summit-2014/>

“Book in progress, creative commons, elearning” Conference: Padova 10/02/2014 <http://www.istruzioneveneto.it/wpusr/archives/26351>

“Didattica digitale” Conference (Indire): Massa 31/01/2014

http://www.indire.it/content/index.php?action=read_news&id=2007

Cloud Computing Summit, 14 March 2014 in Rome, where education will be part of the discussion. <http://www.theinnovationgroup.it/eventi/Cloud-computing-summit-2014-roma/?lang=en>

Other events planned or already held in Italy are:

AcchiappaNuvole, 28-Feb-2014, Bologna. The seminary is inspired by the Cloud concept, and will analyze how the education is changing and explain how the most innovative school work. <http://www.indire.it/eventi/?p=3387>

Scuol@ 2.0 “così è se vi pare”, 13-15 Nov-2013, Geneva. The meetings, debates and conferences provided the opportunity for teachers and school leaders who participated, to describe their experiences thus activating the exchange of knowledge can create shared sustainable innovation for teaching. <http://www.indire.it/eventi/?p=2899>

Il future si fa @ula 3.0, 18-Oct-2013, Ancona. This research project aims to study and promote the development of space, physical and digital, to give new centrality of the school teachers and students, fostering collaboration,

research, reflection, construction and the sharing of knowledge.

<http://www.indire.it/eventi/?p=2772>

[Information Technology Forum](#), 25th February 2014

[Digital government Summit 2014](#), 26th November 2014, Rome

Lithuania:

14th of March, "E-commerce'14", main focus will be on business.

Lithuanian higher institutions, organizations which work in IT field regularly organize conferences and seminars in order to present and discuss about IT innovations. However, the term of Cloud computing is not emphasized, but the IT innovations are constantly presented in Lithuanian education field.

Poland:

There are lots of events dedicated to ICT for education in Poland. However, none of them are strictly dedicated to the Cloud-based education.

Presentations, lectures, workshops, etc. related to this topic are the part of events such as:

EduIncubator (conference, workshop, exhibition), <http://eduinkubator.gridw.pl> and <http://eduinkubator.gridw.pl/en/> - English version, organised by UNEP/GRID-Warsaw Centre

EduTrendy (conference, workshops, educational fair), <http://edu-trendy.pl>, organised by Wolters Kluwers.

Portugal:

Some big events/meetings/conferences occurred in Portugal

[VII Congresso Português de Sociologia: Cloud Computing Perspectives in Portugal.](#)

The Portuguese Association for the Development of the Telecommunications organized last year two major events: [Cloud Computing: an inevitability](#) and [Strategies do respond to the market challenges](#)

[II International Congress on ICT and Education](#) organized by the Education Institute of the Lisbon University

The [EuroCloud Portugal](#) organized many events like: Cloud Computing Conference 2009, EuroCloud Call for Business, Cloud Views 2010 – Call for Business, EuroCloud Portugal Awards 2011, Cloud Views 2011 – Cloud Computing & You, EuroCloud Award 2012 Portugal Edition, EuroCloud Day 2012, EuroCloud Award 2012 Portugal Edition

[Challenges 2011 - VII International Conference of ICT in Education.](#)

The II International Congress on ICT and Education is already scheduled:

<http://salaaberta.com/2014/02/06/ticeduca2014-iii-congresso-internacional-tic-e-educacao-sera-em-novembro/>

COIED: [Conferência Online de Informática Educacional 2012](#)

http://ptsi.pt/en-us/services/Cloud_computing/it_infrastructure_utility_en.aspx

<http://cicludeconferencias.blogspot.pt/2014/01/a-escola-da-era-digital-desorientacao.html>

<http://www.rbe.min-edu.pt/np4/1105.html>

<http://www.gppq.fct.pt/h2020/eventos.php>

Romania:

National Conference for Virtual Education, organised by The University from Bucharest in partnership with SIVCO, Intel and Tehne

Elearning Romania, www.elearning.ro

Catalog Cloud Computing 2014 Romania,

http://issu.com/agoramedia/docs/catalog_Cloud_computing_2014

"IT is Business" is an event for students passionate about IT technologies. It debuted in 2009 with "School Sales - IT is Business". For a week, the workshops, the students were trained by specialists in sales and marketing for a future career in the field. The 2010 edition focused on "IT Project Management". The event was organized with support from IBM, Karspersky, Mosaic Works, Nokia, Oracle. In the Cloud Computing theme, helped to familiarize students with the concept of great interest but little promoted. Aim to form a bridge between fans of Cloud Computing and IT industry leaders

<http://www.bosromania.ro/istoric-proiecte/>

Bucharest Business Days (<http://bucuresti2013.businessdays.ro>), the fourth event in the series organized in 2013 and was attended by over 800 participants. Education in Romania was the subject of debate in the edition in Bucharest. The focus on practical and innovative ways by which the business can get involved in reviving the education system.

"Teaching innovatively (with focus on ICT) and its impact on the quality of education", a Romanian project partner, <http://www.lbi.ro/teachinginnovatively/>

ITAAT Grundtvig Project, "Information Technology Applied to Adult Training" Good Practice Guide, <http://www.itaat.eu> (Professional Foundation a partner)

Slovenia:

SIRikt 2014 International Conference (26th-30th May 2014) <http://eng.sirikt.si/>

SIRikt 2013 http://skupnost.sio.si/sio_arhiv/sirikt/www.sirikt.si/index.html

SIRikt 2012 http://skupnost.sio.si/sio_arhiv/sirikt/www.sirikt.si/slo/2012.html

InfoKomTeh 2014 - International Expert Science Conference - The New Vision of Future Technologies. The 5th conference of this kind, educational IT and e-content is one of the key themes. <http://www.infokomteh.com/>

Spain:

Some Institutions which organize courses for a better use of the Cloud in geographical education are:

Excellence center Real Sociedad Geográfica-digital.earth.eu and Complutense University of Madrid: Seminars about WebGIS (April 2013), Geodata and other emerging technologies (October-November 2013). http://www.ucm.es/info/geodidac/doc/triptico_FINAL.pdf (April-2013) http://www.realsociedadgeografica.com/es/site/ver_actividades.asp and http://www.realsociedadgeografica.com/es/pdf/Geodatos_RSG_oct_nov_2013.pdf (October-November-2013)

Instituto Geográfico Nacional (IGN) (National Geographical Institute): Teacher's courses available online on Spatial Data Infrastructures (SDI) with student's activities. Two courses: 1. Advanced Thematic Cartography; 2. Spatial Data Infrastructures (SDI). (17/10/2011 to 25/11/2011, 40 hours each, in collaboration with Polytechnic University of Madrid). Educator and general public. <http://ign.go-learning.net/>

Asociación de Geógrafos Españoles (AGE) (Spanish Geographical Association). Seminars on Geography teaching in Secondary school. (Focused on ICT in Geography). This activity has been recognized by the Ministry of Education, Culture and Sport. It has been done every year on July, also next July, (40 hours, Carlos III University, Madrid) <http://www.age-geografia.es/?opcion=seminarios>

Other Spanish organizations that train teachers in Cloud computing skills, such as Colegio de Doctores y Licenciados (CDL) of Madrid <http://www.cdlnmadrid.org/cdl/index.html>; el Instituto de Estudios Pedagógicos Somosaguas <http://ieps.es/>; Instituto Calasanz de Ciencias de la Educación <http://www.icceciberaula.es/>;

Switzerland:

Workshop "Cloud Computing in education and research", 30.01.14

Workshop "implementation of the Cloud computing strategies from the Swiss government", 22.10.13

Workshop "Secure Mobile and Cloud Computing", 8. 6. 2013

UK:

Digital Media Europe, organized by the World Association of Newspapers and News Publishers, London, United Kingdom. <http://www.wan-iffra.org/events/digital-media-europe-2014>

International Conference on Networked Learning, 9th, biennial. Edinburgh, United Kingdom. <http://www.networkedlearningconference.org.uk/>

Plymouth e-Learning Conference (PELeCON), 8th, University of Plymouth, Plymouth, UK. <http://pelecon.net> or <http://www.pelecon.co.uk/>

Moodlemoot Edinburgh, Edinburgh, United Kingdom. <http://moodlemoot.ie/>

Higher Education Academy Massive Open Online Courses in the Arts and Humanities – Opportunities, Challenges and Implications across UK Higher Education, School of Language, University of Central Lancashire, Lancashire, United Kingdom. April 25 2014

<http://www.heacademy.ac.uk/events/detail/2014/Seminars/AH/GEN911> UCL AN

Open Educational Resources (OER14): Building Communities of Open Practice, The Centre for Life, Newcastle, United Kingdom. <http://oer14.org/>, April 28-29, 2014

European Association for Distance Learning (EADL): Change. No Excuses!, 30th, Carlton Hotel Edinburgh, Edinburgh, Scotland. <http://www.eadl.org/>, May 14-16, 2014

Thinking Digital: Technology, Ideas and Our Future, 7th, The Sage Gateshead, Gateshead, United Kingdom. <http://www.thinkingdigital.co.uk/> May 20-22, 2014

Cloud World Forum, 6th, Olympia National Hall, London, United Kingdom. <http://Cloudwf.com/> June 17-18, 2014

International Computing Education Research (ICER) Conference, University of Glasgow, Glasgow, Scotland. <http://icer.hosting.acm.org/>, August 11-13, 2014

International Conference of the Association for Learning Technology (ALT-C 2013): Riding Giants – How to Innovate and Educate Ahead of the Wave, 21st, annual, Warwick, United Kingdom. <http://www.alt.ac.uk/alt-conference/altc2014>, September 1-3, 2014

Annex 3: Recent Research Publications

The following are research publications on the use of the Cloud in education.

Bansal, P., & Sharma, D. M. (2013). Designing Issues for E-Learning Modules in Cloud Platform. *International Journal of Information Technology & Computer Sciences Perspectives*, 2(3), 661-666.

Beetham, H., & Sharpe, R. (Eds.). (2013). *Rethinking pedagogy for a digital age: Designing for 21st century learning*. Routledge.

Benson, V., & Morgan, S. (2013). Student experience and ubiquitous learning in higher education: impact of wireless and Cloud applications. *Creative Education*, 4, 1.

Caird, S., & Lane, A. (2013). Conceptualising the role of information and communication technologies in the design of higher education teaching models used in the UK. *British Journal of Educational Technology*.

Chang, V., & Wills, G. (2013). A University of Greenwich Case Study of Cloud Computing. *E-Logistics and E-Supply Chain Management: Applications for Evolving Business*, 232.

De Silva, S. (2013). Key Legal Issues with Cloud Computing: A UK Law Perspective. *Cloud Computing Service and Deployment Models: Layers and Management*, 242.

EACEA (2011), Key Data on Learning and Innovation through ICT at School in Europe 2011.

Ercan, T. (2010). Effective use of Cloud computing in educational institutions. *Procedia-Social and Behavioral Sciences*, 2(2), 938-942.

European Commission (2006) Recommendation 2006/962/EC of the European Parliament and of the Council on key competences for lifelong learning,

European Commission (2010), A Digital Agenda for Europe, Brussels

European Council (2009), Council conclusions of 12 May 2009 on a strategic framework for European cooperation in education and training ('ET 2020'), Official Journal of the European Union, C119/2, 2009

European Parliament's Committee on Civil Liberties, Justice and Home Affairs (Ed.)(2012): Fighting cybercrime and protecting privacy in the Cloud. [http://www.europarl.europa.eu/studies \(02/28/14\)](http://www.europarl.europa.eu/studies (02/28/14)).

Fernando, N., Loke, S. W., & Rahayu, W. (2013). Mobile Cloud computing: A survey. *Future Generation Computer Systems*, 29(1), 84-106.

Kemp, M. L., Robb, S., & Deans, P. C. (2013). The Legal Implications of Cloud Computing. *Cloud Computing Service and Deployment Models: Layers and Management*, 257.

Kshetri, N. (2013). Privacy and security issues in Cloud computing: The role of institutions and institutional evolution. *Telecommunications Policy*, 37(4), 372-386.

Li, Y. (2013, July). Cloud-based Resources and the Transformation of Learning. In *Advanced Learning Technologies (ICALT), 2013 IEEE 13th International Conference on* (pp. 514-514). IEEE.

Maddux, C. D. (2013). Information Technology in Education: Living in Interesting Times. *Computers in the Schools*, 30(3), 207-209.

Mahmood, N. (2013). *Cloud Computing*. Springer Publishing Company, Incorporated.

Panton, K. 2012. Using Cloud solutions to create a collaborative environment in 21st century schools, <http://www.microsoft.com/eu/impact-on-society/article/using-Cloud-solutions-to-create-a-collaborative-environment-in-21st-ce.aspx>

Saju, M. 2012. Implementation of Cloud Computing in Education - A Revolution, *International Journal of Computer Theory & Engineering*. 4: 3 . p 473-475.

Shishah, W., Hopkins, G., FitzGerald, E., & Higgins, C. (2013). Supporting Interaction in Learning Activities Using Mobile Devices in Higher Education. *QScience Proceedings*, (12th World Conference on Mobile and Contextual Learning [mLearn 2013]).

Sultan, N. (2010). Cloud computing for education: A new dawn?. *International Journal of Information Management*, 30(2), 109-116.

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Austria:

Emmerich Boxhofer, Stefan Hametner, Alfons Koller (2013) IMST-Themenprogramm – Kompetenzorientiertes Lernen mit digitalen Medien.- In : Peter Micheuz et al. Digitale Schule Österreich. p. 111 – 119.

Walter Steinkogler (2013) Ergebnisse der Education-Umfrage 2013.- In: Peter Micheuz et al. Digitale Schule Österreich.- p. 185 - 193

Peter Micheuz, Anton Reiter, Gerhard Brandhofer, Martin Ebner & Barbara Sabitzer (eds.) Digitale Schule Österreich. Eine analoge Standortbestimmung anlässlich der eEducation Sommertagung 2013.- Vienna. Österreichische Computer Gesellschaft. (= OCG Rote Reihe, Bd. 297).

See also:

<http://www.edugroup.at/praxis/portale/digitale-kompetenzen/detail/digitale-schule-oesterreich-tagungsband-zur-education-sommertagung-2013.html>
and <http://www.ocg.at/de/digitale-schule-%C3%B6sterreich>

Belgium (Flanders):

Sociale media op school, ISBN: 9789057182815,
http://www.politeia.be/article.aspx?a_id=SOCIAL048B

Clicksafe http://www.clicksafe.be/splash/nl_BE

Handboek Mediawijsheid

<http://mijnkindonline.nl/sites/default/files/uploads/Handboek%20Mediawijsheid%20versie%20website.pdf>

Facebook ziet alles

<http://www.davidsfonds.be/publisher/edition/detail.phtml?id=3213>

Veilig online <http://www.vlaanderen.be/nl/publicaties/detail/veilig-online-tips-voor-veilig-ict-gebruik-op-school>

Sociale media op de basisschool

http://mijnkindonline.nl/sites/default/files/uploads/boek%20%27Sociale%20media%20op%20de%20basisschool%27%20van%20Mijn%20Kind%20Online_0.pdf

Sociale media op school

http://www.kennisnet.nl/fileadmin/contentelementen/kennisnet/Dossier_media_wijsheid/Publicaties/handboek-sociale-media-op-school.pdf

Samen leren, tieners en sociale media

http://www.kennisnet.nl/fileadmin/contentelementen/kennisnet/Dossier_media_wijsheid/Publicaties/onderzoeksrapport-samen-leren-tieners-en-sociale-media.pdf

De beste gratis apps voor kinderen

http://www.kennisnet.nl/fileadmin/contentelementen/kennisnet/Dossier_media_wijsheid/Publicaties/Brochure_de_beste_gratis_apps_voor_kinderen.pdf

Digitaal leren in de basisschool <http://tackle2.eu/wp/wp-content/uploads/2014/01/Tackle2PrimaryNL.pdf>

Mediawijsheid voor schoolbestuurders

http://www.kennisnet.nl/fileadmin/contentelementen/kennisnet/Dossier_media_wijsheid/Publicaties/Brochure_Mediawijsheid_voor_schoolbestuurders.pdf

142 publications about ICT from the Belgian government

http://www.vlaanderen.be/nl/publicaties?thema=onderwijs+en+vorming&zoekerm=ict&publicatiedatum%5Bfrom%5D=&publicatiedatum%5Bto%5D=&uitgever=&publicatie_type=&taal

De school – een aantrekkelijke plek voor leren en werken in 2030? Mapping van perspectieven op leren en onderwijzen

http://www.ond.vlaanderen.be/onderwijs-2030/verkenning/Mapping_Perspectieven_Leren_Onderwijzen_2030.pdf

Advies over ICT-integratie in het leerplichtonderwijs

<http://www.vlor.be/advies/advies-over-ict-integratie-het-leerplichtonderwijs>

Onderzoek coöperatief leren en Cloud-computing

[https://friscris.vlaanderen.be/portal/nl/projects/cooeperatief-leren-en-Cloud-computing\(14e38a23-b458-4b7b-9a8d-e82e1f535381\).html](https://friscris.vlaanderen.be/portal/nl/projects/cooeperatief-leren-en-Cloud-computing(14e38a23-b458-4b7b-9a8d-e82e1f535381).html)

Folder about Cloud-computing and privacy

http://www.kennisnet.nl/fileadmin/contentelementen/kennisnet/Dossier_Cloud/Cloud-computing-wet-bescherming-persoonsgegevens.pdf

Het eindrapport van het OBPWO-project 11.02 'MICTIVO 2012: Monitor voor ICT-Integratie in het Vlaamse Onderwijs'

<http://www.mictivo.be/mictivo/Eindrapport.html>

Veilig online op school, een samenwerking tussen KlasCement en Child Focus <http://www.klascement.be/veiligonline/>

Toll-Net In Toll-communities worden docenten samen gebracht om via nascholing e-materiaal te leren ontwikkelen en ervaringen uit te wisselen.

<http://www.klascement.be/tollnet/>

BIS 4000 digi(taal) lessen brings together the course materials of BIS, the former distance learning from the Flemish government.

<http://www.klascement.be/bis/>

Leren met eTwinning http://www.etwinning.be/vlaanderen/echo_files/139-nl-srcPublicatie.pdf

eTwinning 2.0 Bouwen aan de community voor scholen in Europa (2010)

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Bulgaria:

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Peshev A., Security Best Practices in Cloud Computing, Scientific Journal E+E, 2012

Shoikova E., A. Peshev, “Research on Managing Private Cloud Computing Infrastructure”, Proceedings cd INTED2012, International Technology, Education and Development Conference, Valencia, Spain, 5-7 March 2012, ISBN: 978-84-615-5563-5 pp.0699-0708.

Shoikova E., M. Krumova, A. Peshev, "Knowledge Management, Learning and Professional Development Enhanced by Cloud Computing", Second International Conference "Education, Science, Innovations" ESI'2012

Shoikova E., M. Krumova, A. Peshev, "Enterprise 2.0 and Professional Development", 6th South East European Doctoral Student Conference (DSC 2011), Thessaloniki, Greece, 19-20.09.2011, pp. 192-216

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Authors: Sava Grozdev, Ivanka Marasheva, Emil Delinov

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10 million EUR will be invested in the new European Commission initiative European Cloud Partnership

http://computerworld.bg/39044_10 mln evro shte vlozhi ek v novata iniciativa european Cloud partnership

Students in Software Academy of Telerik approaching the finish line of their training <http://academy.telerik.com/about/news/software-academy/2013/08/21/telerik-academy-students-are-approaching-the-end-of-their-training>

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http://www.capital.bg/biznes/vunshni_analizi/2013/11/04/2174694_osobenosti_na_oblachnite_uslugi_-_chast_ii/

Start the software university: the first 2000 people will start free training for software engineers in March 2014, Svetli Nakov's Blog,

<http://www.nakov.com/blog/2014/01/29/software-university-officially-starts/>

Challenges of the "Cloud" to the protection of personal data – Prof. Dr. Radi Romanski, Technical University - Sofia <http://nauka.bg/>

Cloud Services, Mtel forum <http://forum.mtel.bg>

Transformation of SIEM in migrating to Cloud services

http://cio.bg/5799_transformaciya_na_siem_pri_migrirane_kam_oblachni_uslugi

Rice - new solutions for e-learning <http://www.rajs.bg/article/rajs-novi-resheniya-za-e-obrazovanie.html>

Useful Cloud services for students <http://www.ekak-tehno.bg/kak-da-jiveya-onlajn/polezni-oblachni-uslugi-za-uchashti>

Free Cloud services for NGOs from Microsoft

<http://www.tbmagazine.net/novini/bezplatni-oblachni-uslugi-za-npo-ot-maykrosoft>

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Ireland:

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Forás report Ireland's advanced broadband performance and policy priorities
<http://www.forfas.ie/media/Ngns%20final%20for%20web%20%28amended%20aurora%20text%29.pdf>

PDST Technology in Education's e-Learning Handbook outlines the process of planning for e-Learning in your school

<http://www.pdsttechnologyineducation.ie/en/Planning/e-Learning-Handbook/The-e-Learning-Handbook.html>

National Institute of Standards and Technology publications;

<http://csrc.nist.gov/publications/PubsSPs.html#800-145>

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Lithuania:

Information about Cloud computing innovations in business field can be found on Lithuanian websites. All information about Cloud usage can be found in: http://xn--debasis-9eb.lt/mano_Cloudas, here you can also find information about Cloud computing usage in Lithuanian education fields. There are many projects researching IT innovation, however so far there were just few articles about the usage of Cloud computing in education institutions, few examples:

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Education portal Edunews.pl (www.edunews.pl), published a series of articles related to Cloud-based education on the website dedicated to use of ICT at schools (<http://www.edunews.pl/nowoczesna-edukacja/ict-w-edukacji>) i.e. <http://www.edunews.pl/nowoczesna-edukacja/ict-w-edukacji/2189-szkola-w-chmurze>

EduStyle (<http://www.edustyle.pl>) – promotes use of Apple technology in education

Blog prepared by educators promoting use of ICT in education (<http://k12blog.edu.pl>)

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Portugal:

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