School on the Cloud

Innovative learning network

www.innovativelearning.co.uk

'24/7/365 @Learning'

What Challenges for Education and Culture on the Cloud?

Prof. Karl Donert, Director: Innovative Learning Network Ltd.
Director: European Centre of Excellence: digital-earth.eu
President EUROGEO
kdonert@yahoo.com

How important is education to Science 2.0 and the Cloud to education?

Go to **www.govote.at** and use the code **46 08 79**

How important is education to Science 2.0

Mentimeter

0	0	0	0
not at all	a bit	quite a lot	indispensible

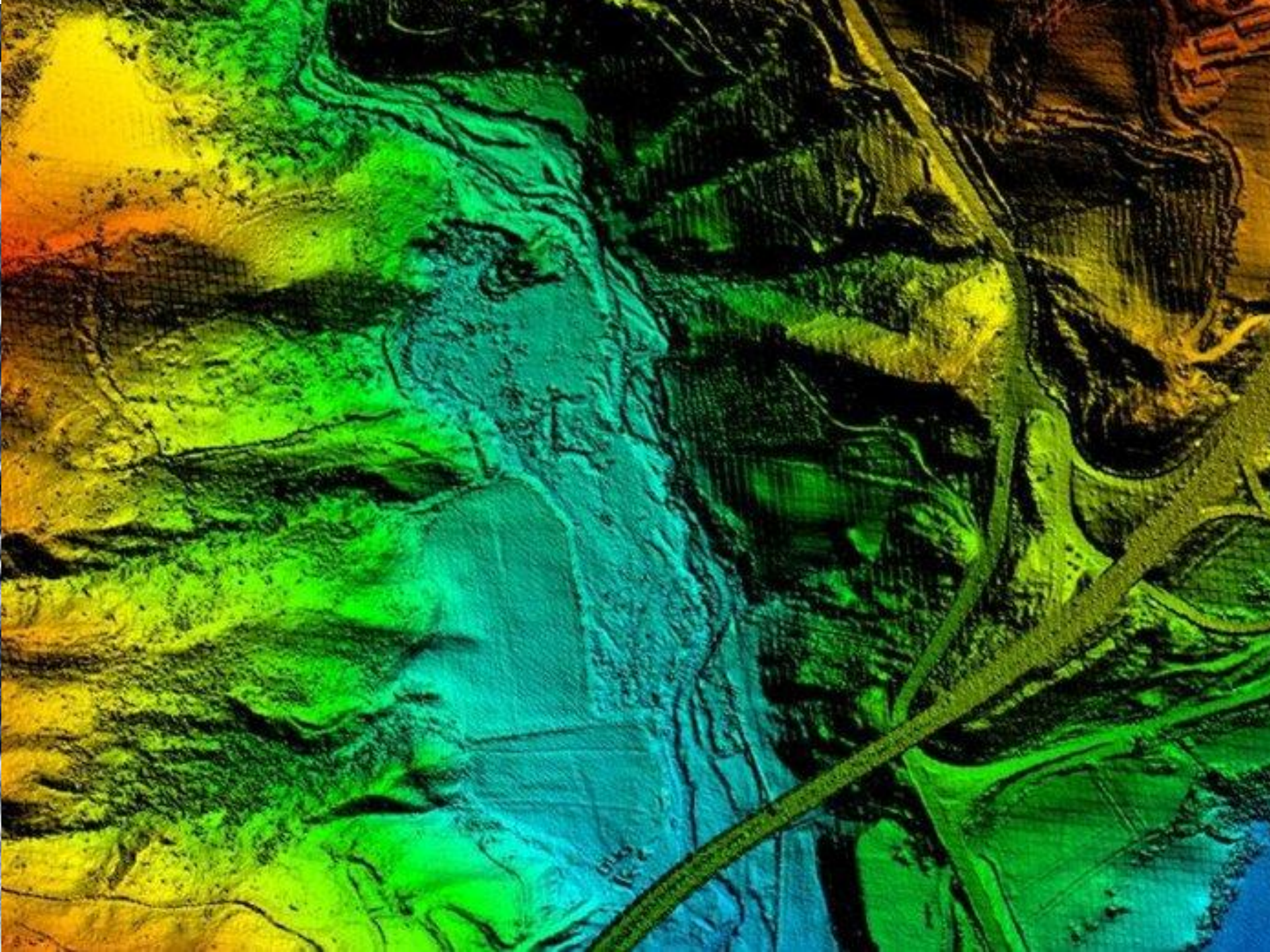
Votes: 0

Share one idea in the Cloud

(about the future of education) …

As experts in the field ….

- What do **you** (*your organisation*) **want** from education / culture **in the future**?
- Try to write down ONE thing
- **Share it on http://tinyurl.com/socfuture**



Uebung_5 - ArcMap

Edit View Bookmarks Insert Selection Geoprocessing Customize Windows Help

1:46.104

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  - Buffer_100m
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    - Landkreise_Mittelfranken
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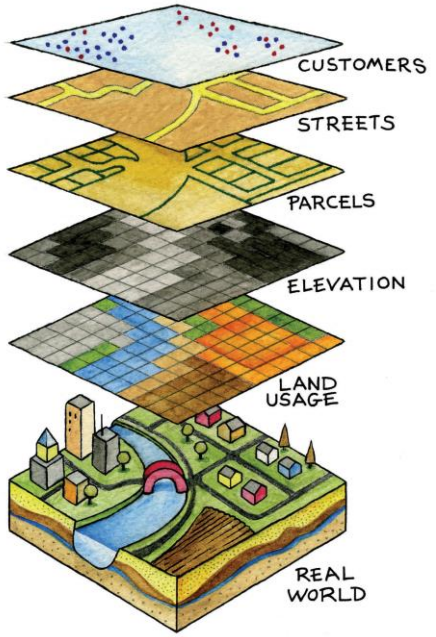
    - Fluesse
    - Stehende_Gewaesser
  - Verkehr
    - Dissolve_Autobahnen
    - Autobahnen_Mittelfranken
    - Bahnstrecken
    - Hauptstraßen_Mittelfranken
  - Landbedeckung
    - Sonstige_Vegetation
    - Wald
  - Landnutzung
    - Landwirtschaft
    - Ortschaften



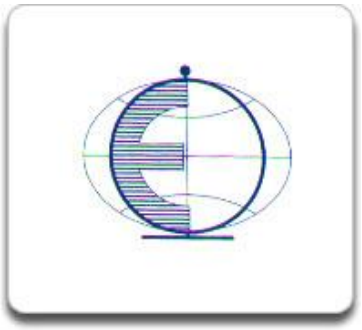
School on the Cloud

EUROGEO

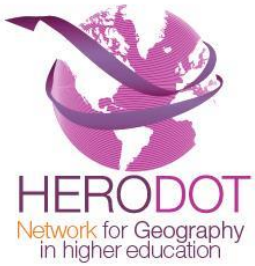
- European Association of Geographers
- Legally based in Belgium
- NGO – **established 1979**
- **Professional association**
- Participatory status at **Parliamentary Assembly**, **Council of Europe**
- Position to lobby and influence in Europe and to protect and promote geographical interests

DEVELOPMENT AND RESEARCH

AWARENESS RAISING, NETWORKING



digital-earth.eu



EUROGEO
Conference
2016
UNIVERSIDAD
DE MALAGA
"Geographic Information:
for a better world"
http://www.eurogeography.eu
29 September - 30 September 2016, Malaga, Spain

Presentation Aims

- Examine **EU policy**
- Describe the situation – **state of the art**
- Provide an account of **some activities** of the European School on the Cloud network (http://www.schoolonthecloud.net/)
- Assess some of the **challenges** facing education (and culture)
- **Mandate for the future**

Digital-earth.eu

digital-earth.eu

digital-earth.eu

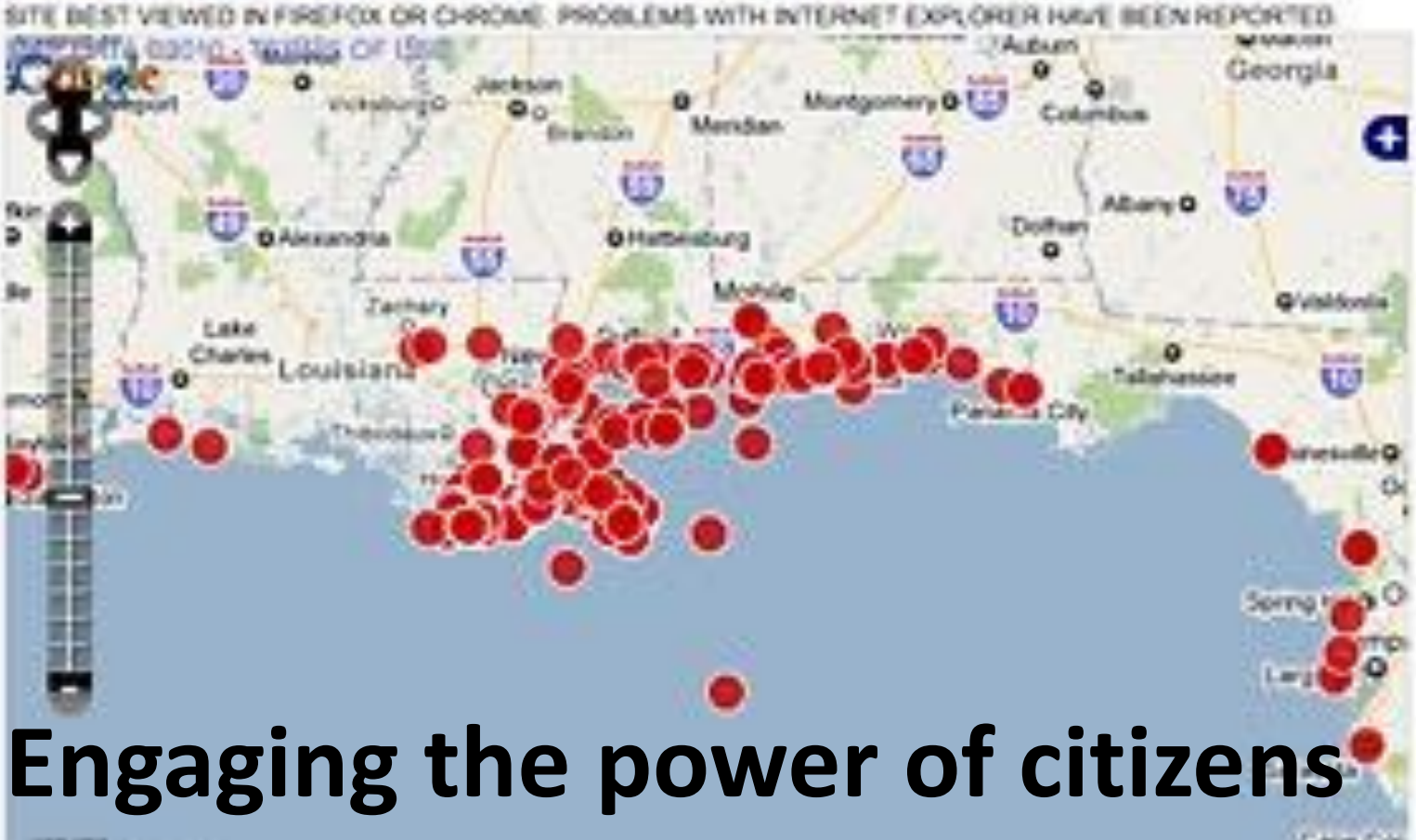
Digital Agenda (https://ec.europa.eu/digital-agenda/)

Technological changes, real-time open data: transforming society
Victoria train to Brixton [217]
(left Green Park Station,
expected Oxford Circus Station in 2.5 minutes)

Oil Spill Crisis Map

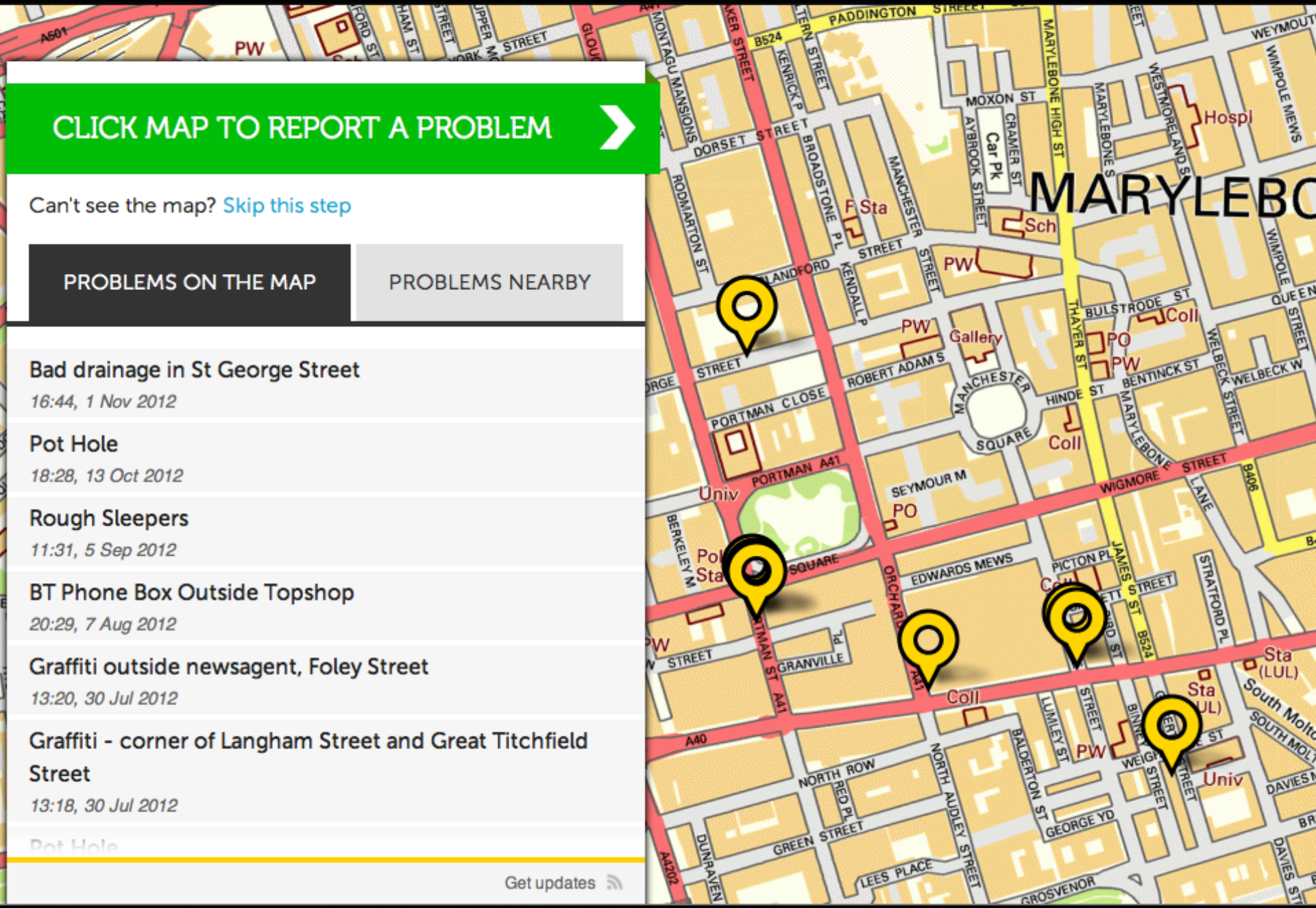
DONATE

HOME | REPORTS | SUBMIT AN INCIDENT | GET ALERTS | CONTACT US | RESOURC



Engaging the power of citizens

School on the Cloud Network



CLICK MAP TO REPORT A PROBLEM

Can't see the map? Skip this step

PROBLEMS ON THE MAP | PROBLEMS NEARBY

- **Bad drainage in St George Street**
  16:44, 1 Nov 2012
- **Pot Hole**
  18:28, 13 Oct 2012
- **Rough Sleepers**
  11:31, 5 Sep 2012
- **BT Phone Box Outside Topshop**
  20:29, 7 Aug 2012
- **Graffiti outside newsagent, Foley Street**
  13:20, 30 Jul 2012
- **Graffiti - corner of Langham Street and Great Titchfield Street**
  13:18, 30 Jul 2012
- Pot Hole

Get updates

Navigating places
How should education respond?
Piazza del Duomo, Milan

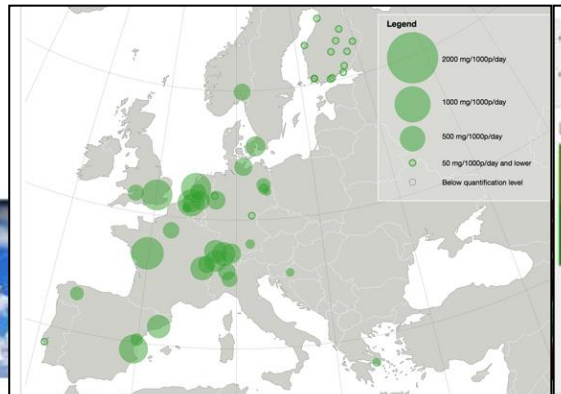
Web: http://www.youthmetre.eu

News http://tinyurl.com/YouthMetre1

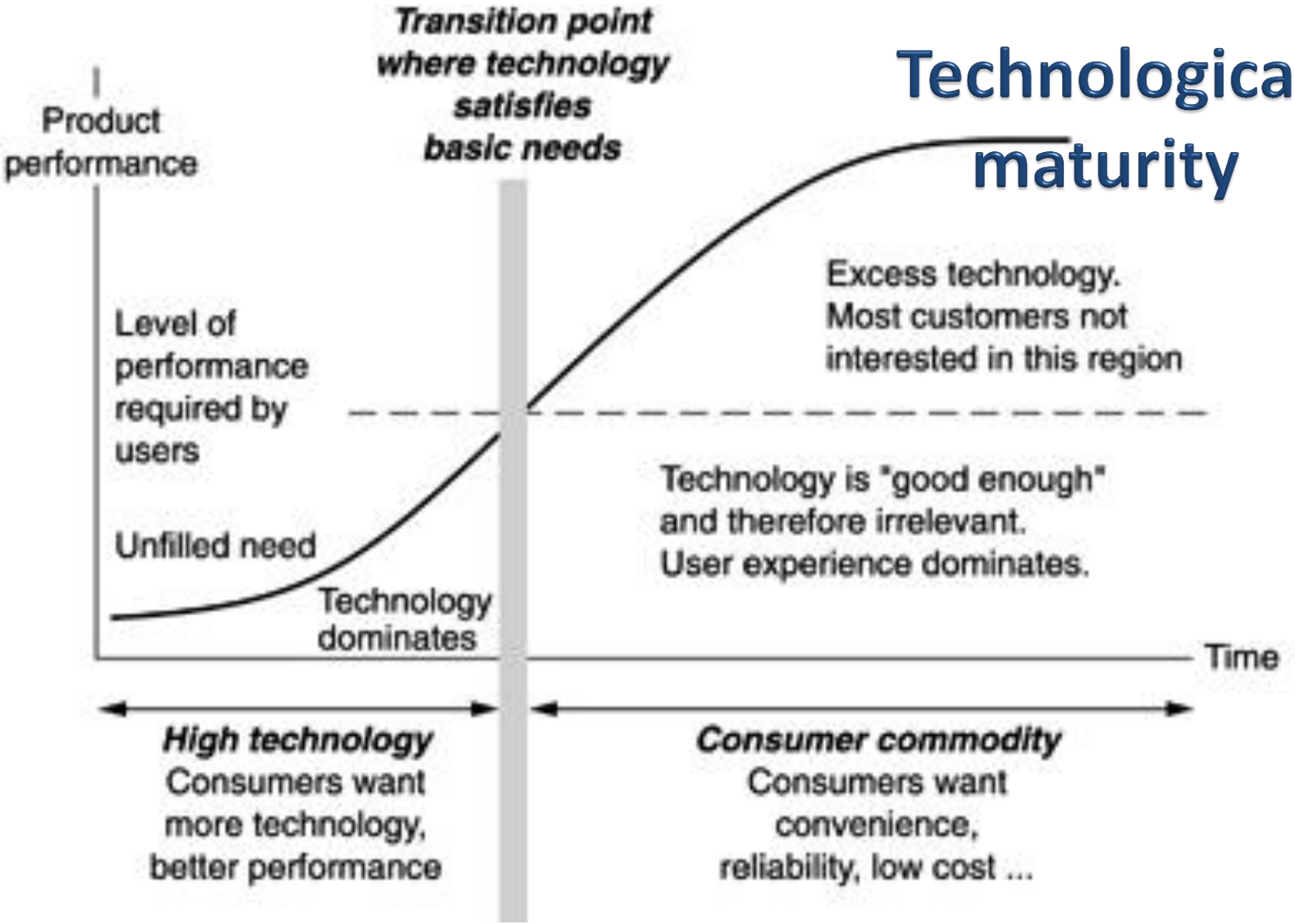
Email: j.mahlerova@youthpress.org

School on the Cloud

Network



Technological maturity

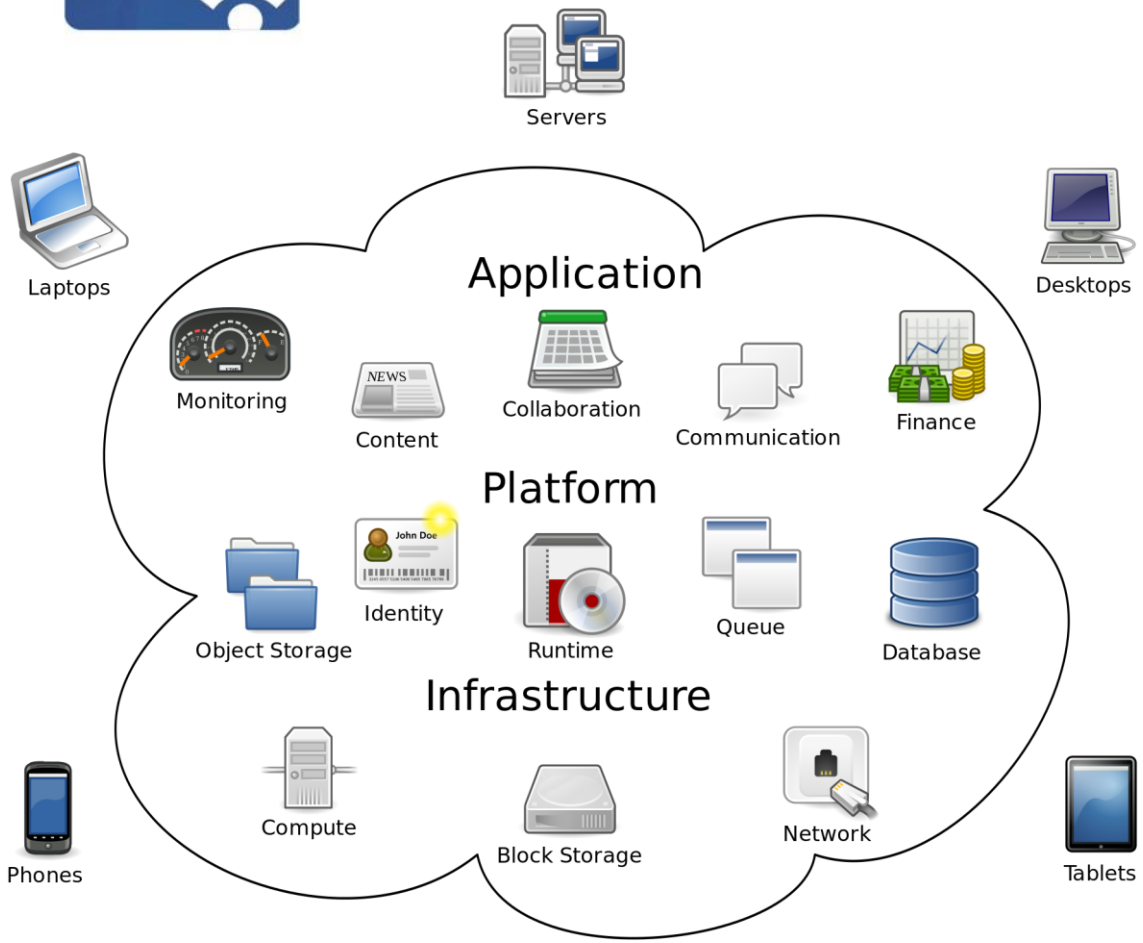


School on the Cloud

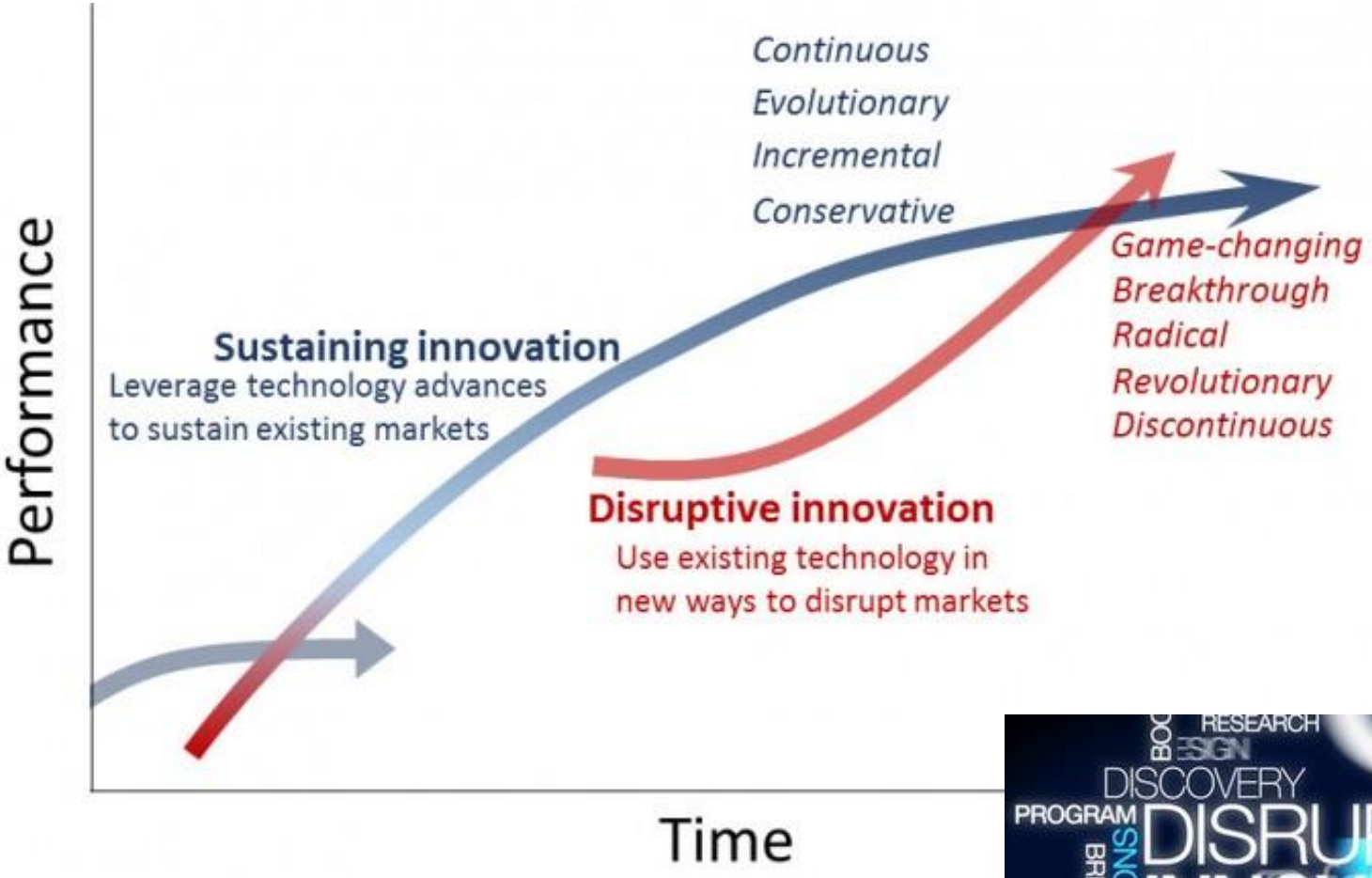
Network

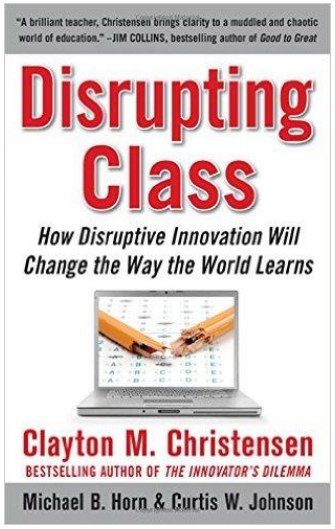
Norman, D. A. (1998). The invisible computer: Why Good Products Can Fail, the Personal Computer Is So Complex, and Information Appliances Are the Solution. Cambridge, MA: MIT Press.

Cloud Computing

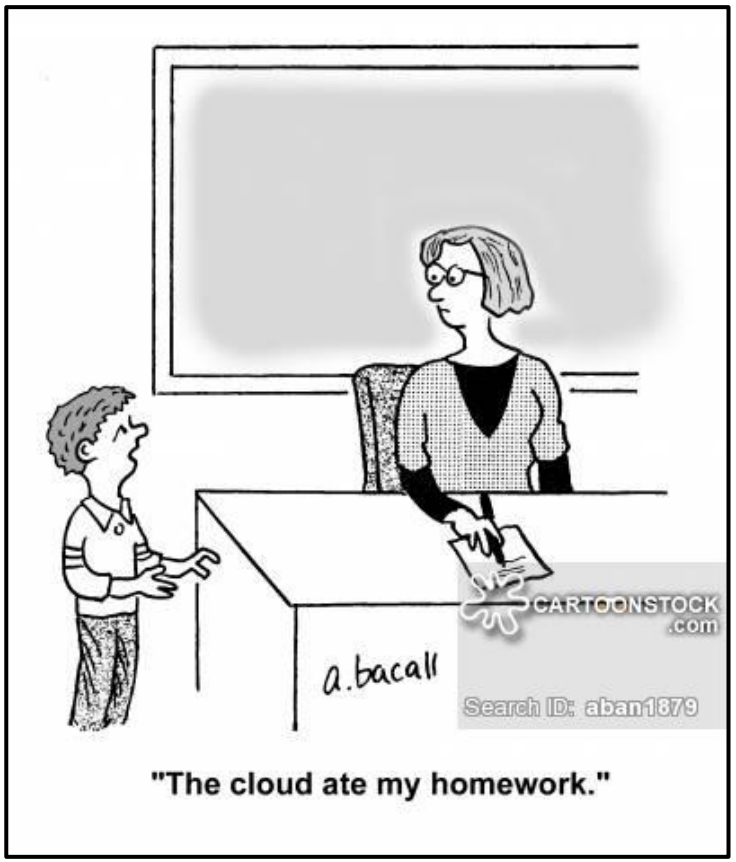


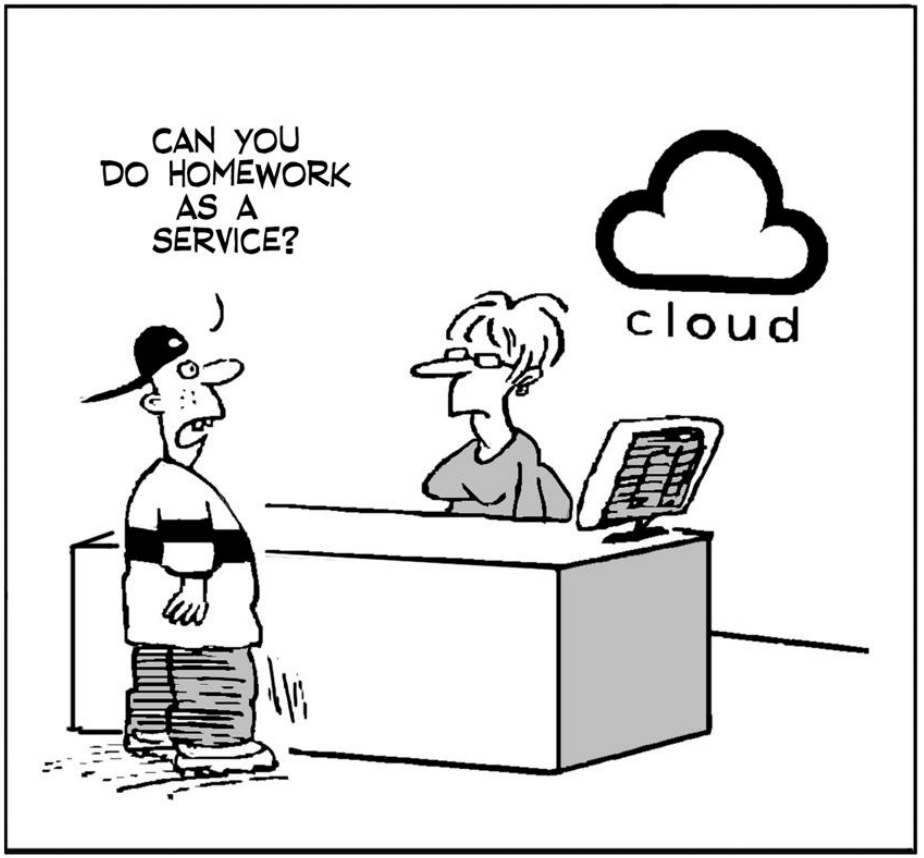
Disruptive Innovation





Education could be very different today..





School on the Cloud

School on the Cloud Network

http://www.schoolonthecloud.net/

@schoolon_cloud

https://www.facebook.com/SchoolOntheCloud

Linkedin group schooloncloud-7426807

School on the Cloud

http://www.schoolonthecloud.net/

Network of 57 partners:
21 universities/teacher training, 9 NGOs, 8 schools, SMEs, research institutes, adult education and VET providers, a European professional association, a library

Partners from 20 countries

School On The Cloud Project Aims

SoC considers answers to three key questions:

- What is the **impact of the Cloud** on education stakeholders? *(**policy**, **teaching** practices, and facilitating individualized **learning** processes)*
- **How should education respond** to the potential of the Cloud?
- What might the **situation** be like **in the future**?

School On The Cloud Project Tasks

- **Research** the “state-of-the-art”
- Establish methods and means for network members to **share** their **findings and expertise**
- Produce a series of core **publications** on the exploitation of Cloud in different educational contexts
- Develop **guidance resources**
- **Disseminate** outputs within and beyond the confines of the network, and
- **Establish links** with other European-wide or nation-wide initiatives.

State of the art survey

Cloud Policy And Action

- Huge variation between countries – from digital and Cloud Strategies, to Public Cloud developments, to nothing

Promoting the Cloud in Education

- Many actors – from national and regional government to private companies and NGOs

State of the art survey

Using the Cloud

- Lots of isolated, small-scale initiatives
- Some national and regional developments eg N. Ireland, Italy, Romania
- Some countries lagging a long way behind

Other information

- Many research groups, publications
- Higher education is very active
- Lots of events about education and the Cloud

SoC: Why should the Cloud be used in education? (n=57)

Easy access.
Stability.
Security.
Shareability.
Trackability.
Collaboration.
No more photocopying
Chances of losing content are quite small.

SoC: State of the art

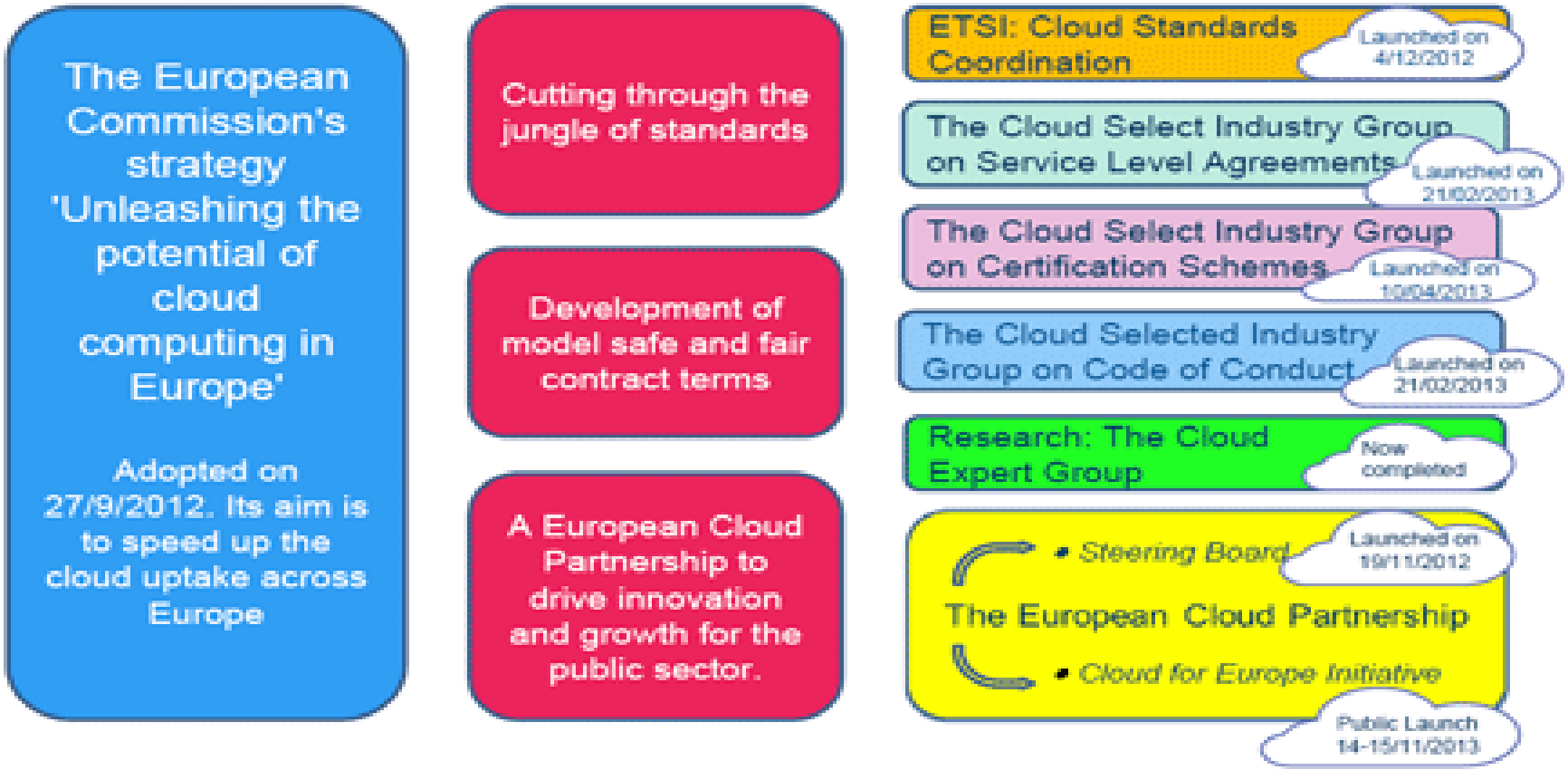
- Partners **could not define** what the Cloud was
- They were **not aware of** all Cloud Computing characteristics
- They **confused reality with perception** in Cloud characteristics
- They **used the Cloud** themselves
- But **not within their organisations**

State of the art / User needs

On the other hand, Cloud computing promises to:

- **improve the efficiency** of education organizations
- **optimize** the technology-enhanced **learning experiences** in an **affordable way**

DG CONNECT: European Cloud Computing Strategy



Digital Agenda: European Cloud Computing Strategy

ETSI: Cloud **Standards** Coordination

The Cloud Select Industry Group on **Service Level Agreements**

ENISA: European Cloud Computing Strategy - **Security**

Development of model 'safe and fair' **contract** terms and conditions

The Cloud Select **Industry** Group on **Certification** Schemes

The Cloud Select Industry Group on **Code of Conduct**

Establishing a **European Cloud Partnership**

http://ec.europa.eu/digital-agenda/en/cloud-computing-strategy-working-groups

European Cloud Computing Strategy

- ”**Unleashing the Potential of Cloud Computing** in Europe”
- outlines actions to deli gain of 2.5 million **new Euro s**, and an **annual boost of €16 n** to the European Union GDP (a %), by 2020
- d to **speed up and increase** the **use of oud Computing** across all economic sectors

educational perspectives are not included

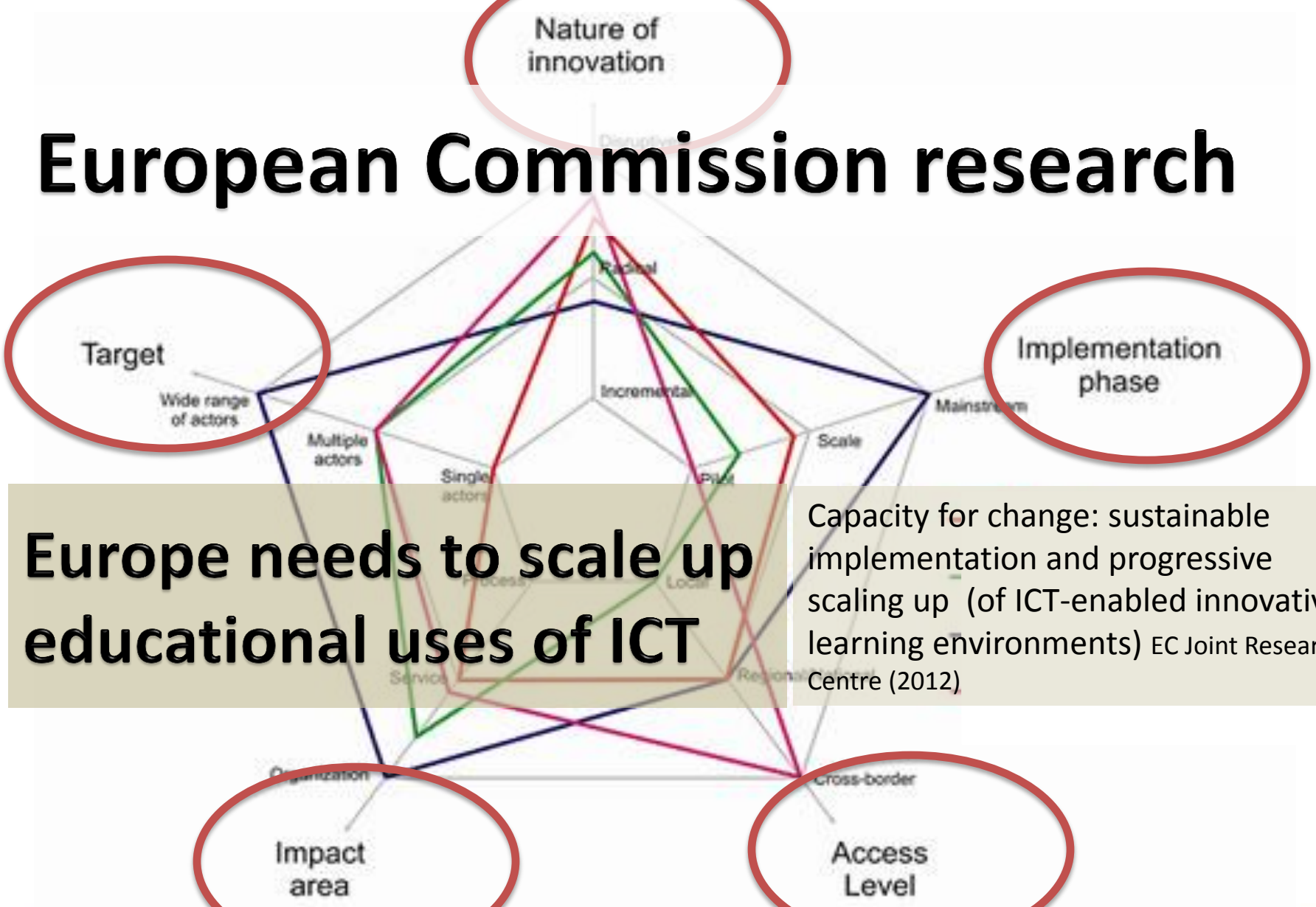
European Cloud Partnership

- **Established** in **2012**
- Interested in **certification, sta… interoperability, open s… …oud**, the digitalisation of **in… …**
- **Policy** rec… …ations
- Led t… …d-for-Europe (C4E) initiative for **public administration**, and HNScicloud focusing on the Cloud for **public research and innovation**

skills and jobs were included

European Cloud Partnership, https://ec.europa.eu/digital-single-market/en/european-cloud-partnership

European Commission research



Europe needs to scale up educational uses of ICT

Capacity for change: sustainable implementation and progressive scaling up (of ICT-enabled innovative learning environments) EC Joint Research Centre (2012)

Creative classrooms

JRC (2012) "Challenges of implementing Creative Classrooms practices", http://is.jrc.ec.europa.eu/pages/EAP/documents/_6_Etwinning_WS1_March2012.pdf, eTwinning conference, Tampere Finland

ICT in Education Policy

- Agenda for **New Skills and Jobs** - **Europe 2020**
- **Digital Agenda Action 68** – **mainstream elearning**
- **Communication on Rethinking Education**, skills for better socio-economic outcomes, **scale-up ICT**
- **Communication on Opening Up Education**: setting a European agenda for **new ways of learning**
- **Learning and skills for youth**, DG CONNECT
- **Education, Audiovisual and Culture**, DG EAC

DG Education & Culture

Connexio

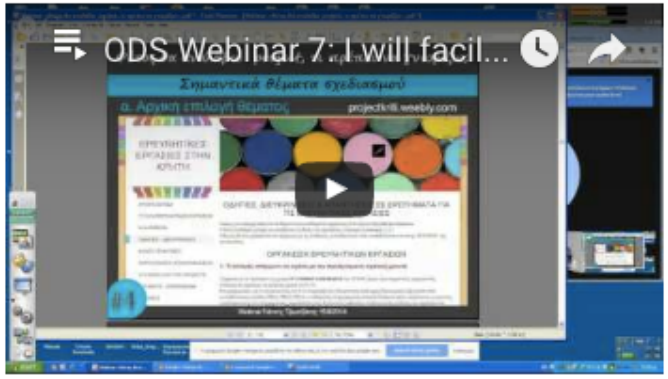
OPEN DISCOVERY SPACE

Home | Project | Blog | Documentation | Events | Community | Contact

Events map

No event found.

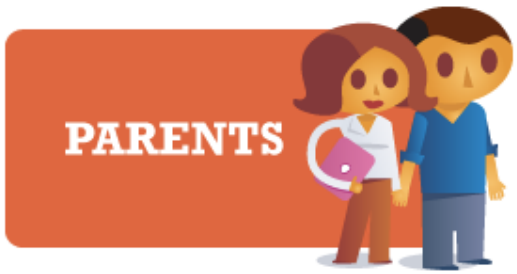
1 2 3 4 5 6 7 8 9 ... next › last »



Latest Tweets

twitter

Tweets by @ods_eu



Welcome to Open Discovery Space

EDEN Open Classroom Conference in Athens

18-21 September 2015, Athens, Greece

Organised in collaboration with: Ellinogermaniki Agogi

OpenEducationEuropa

The gateway to European innovative learning

An initiative of the European Commission

Find

MOOCs | Courses | Resources | Institutions

Share

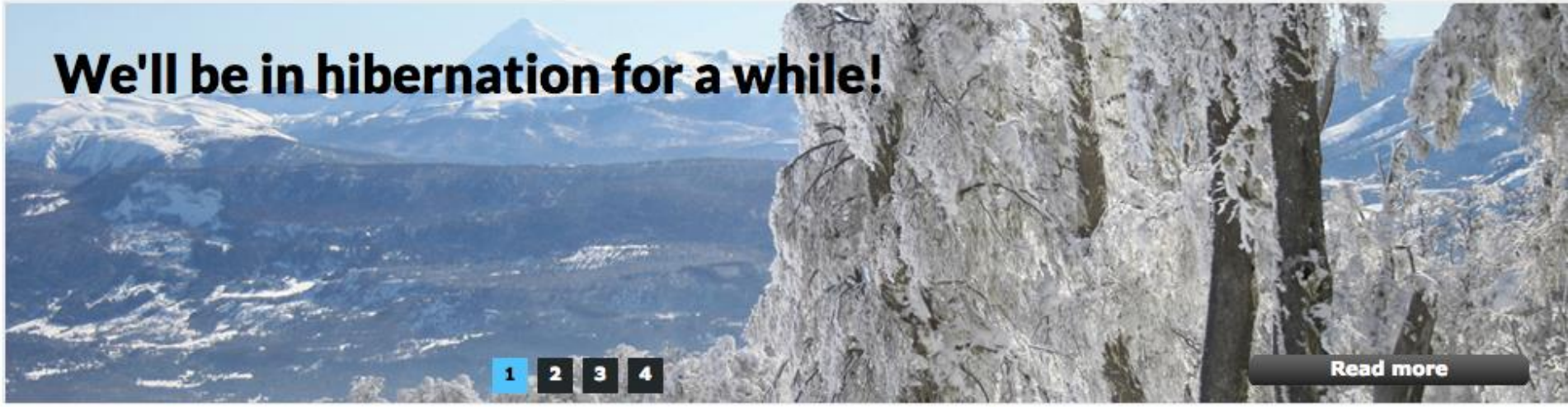
Groups | Blogs | Good Practices | Events

In-depth

eL Papers | EU Projects | News | Articles

Search: Open Education: Courses, MOOCs, Resources, Institutions and more...

Advanced Search



Most popular | **Latest** | **Editor's Choice**

Download here our OER repositories list!

Open Educational

EVENTS

17 November 2015-20 November 2015

D4Learning 2015 - International Conference on

SoC: Four Working Groups

WG1: Managing, leading the Cloud in education

iLeader – inspirational leadership

- Leaflet (for leaders/managers)
- Report: policy issues
- Change guidelines
- Workshop

http://tinyurl.com/kr4rzcq

WG2: iTeachers: Getting Smart?

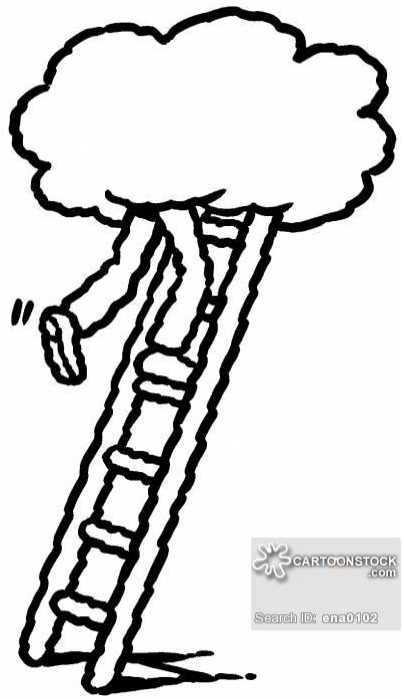
An iTeacher should be able to do the following

- Open minded, making the right decisions
- Be original and creative, introduce new ideas
- Capable of critical thinking
- Understands curricular and cross-curricular issues
- Able to problem solve, manage time
- Can share ideas and cooperate, build a team
- Maximise capacity
- Employ suitable methodologies
- Able to take responsibility
- Act as a role model to others, display leadership

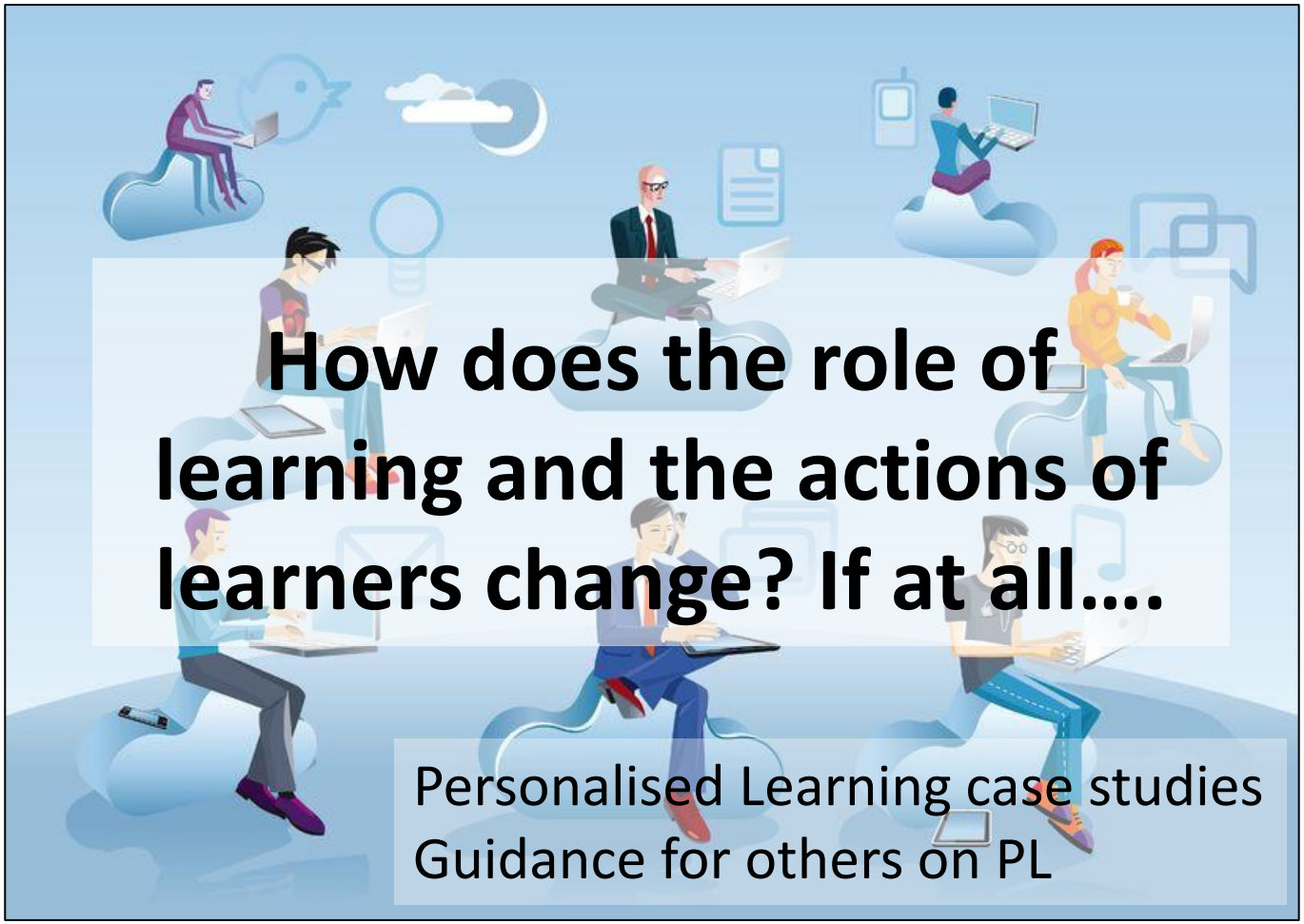
What does it mean to be an iTeacher? *(innovative teacher)*

http://tinyurl.com/gu8cncx

iLearner(s) *in the Cloud*



independent learner



How does the role of learning and the actions of learners change? If at all….

Personalised Learning case studies
Guidance for others on PL

WG4: Dealing with the Future

Building **future scenarios** for education – **what do we want?**

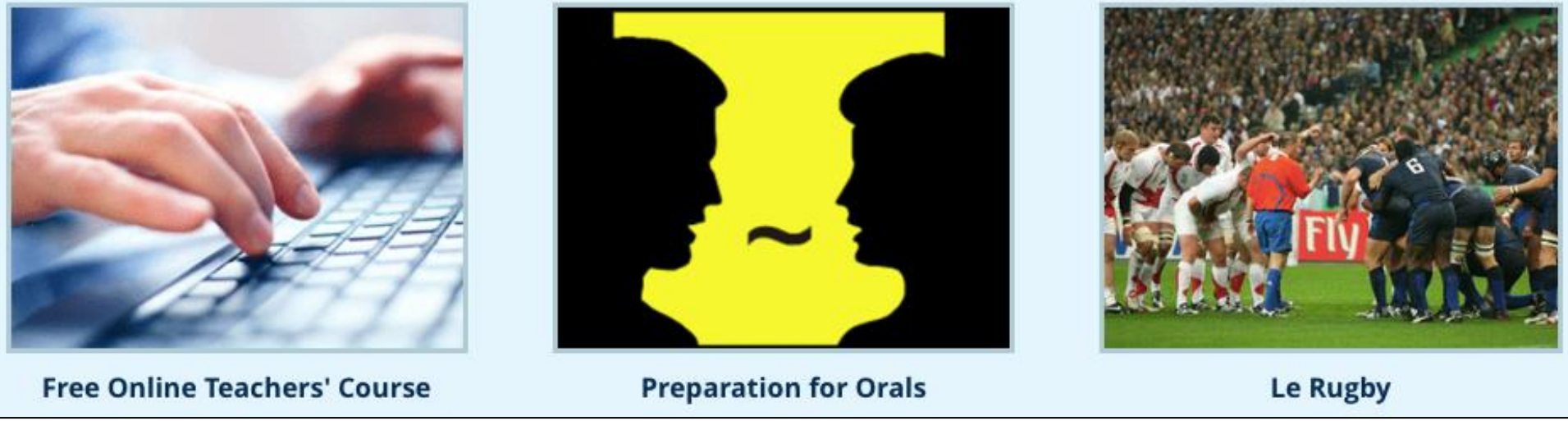
- Review of 'futures research'
- **Futures workshop** – potential and drawbacks (Delphi, 6 Hats)
- Scenarios for the future

Education on the Cloud 2015: State of the Art

- **59 examples** of Cloud Computing developments
- tested, piloted, implemented in education around Europe
- varied from **national assessments** and reviews, to **public and private sector** developments.
- advantages and benefits of Cloud Computing illustrated, as potential barriers are overcome

Scoilnet – portal for Ireland

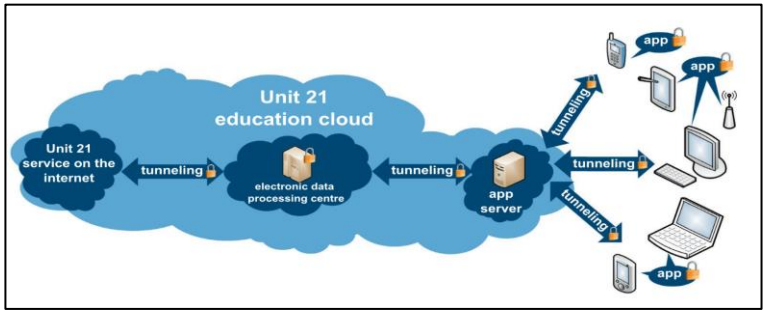
- National e-learning platform



http://www.scoilnet.ie

Unit.schule.21

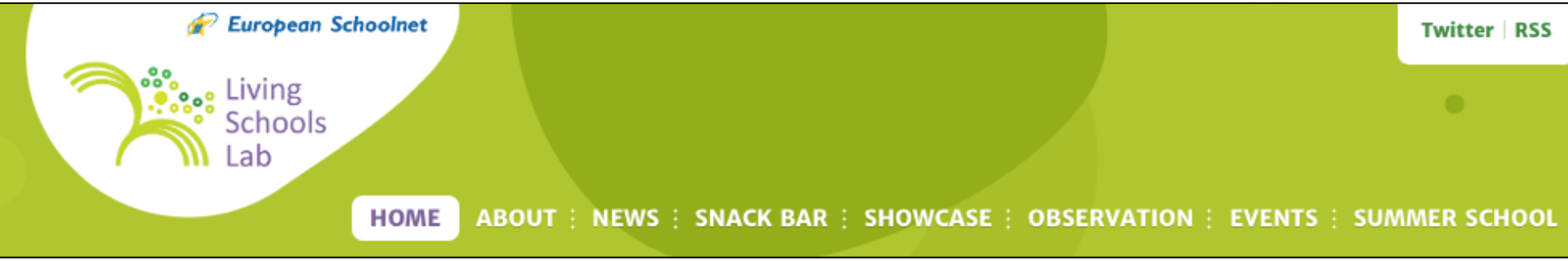
- School district Cloud, Unna
- Sustainable infrastructure
- 21 schools, 10,000 students



http://www.unit21.de/medientag-unit21/

Living Schools Lab

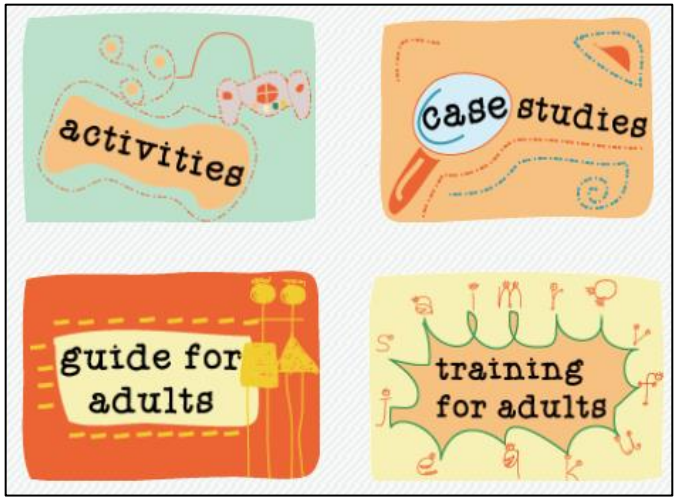
- whole-school approach to ICT
- highly innovative pedagogical practices
- rethink learning and teaching strategies
- network of living schools

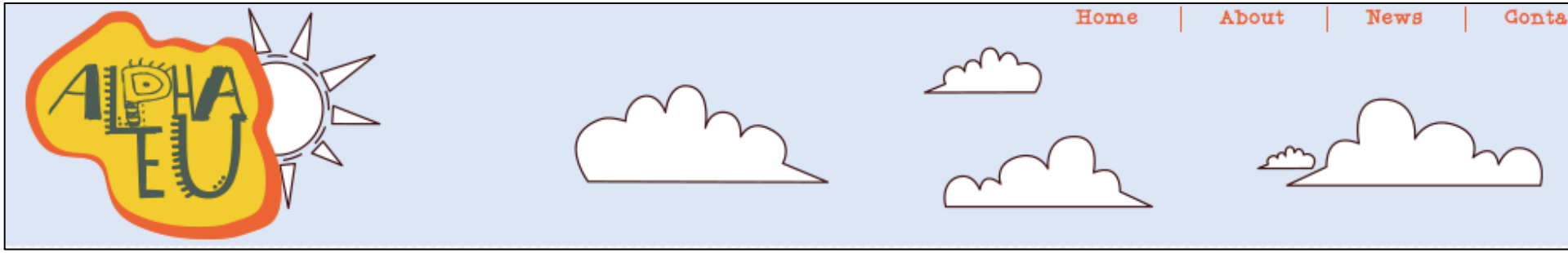


http://tinyurl.com/o6kvxvp

Alphabets of Europe

- **multilingual** awareness
- creative **language learning**
- **kindergarden**
- digital books and activities

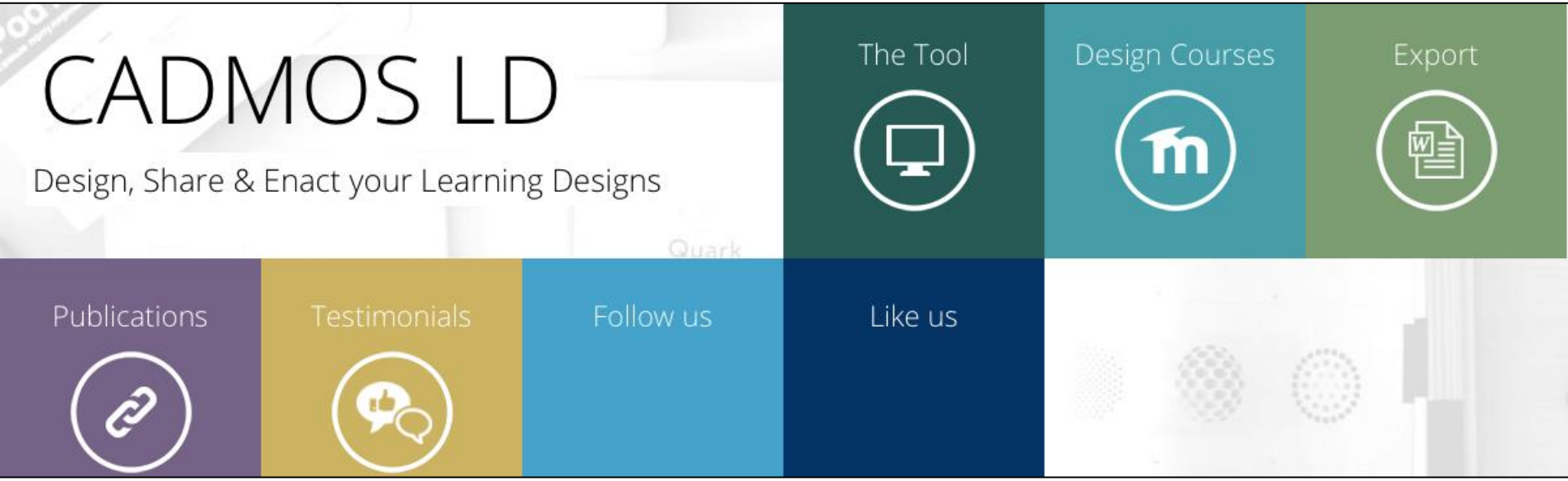




http://www.alphaeu.org/

CADMOS LD: personalised learning

- learning design tool, graphical personalisation
- conceptual and flow models



http://cadmosld.com

RACMA: Augmented Reality

- app designed and developed for the American Museum of Spain

How sustainable are these initiatives?

http://www.mecd.gob.es/museodeamerica/espacio-interactivo/Tanto-que-disfrutar-jugando---/RACMA.html

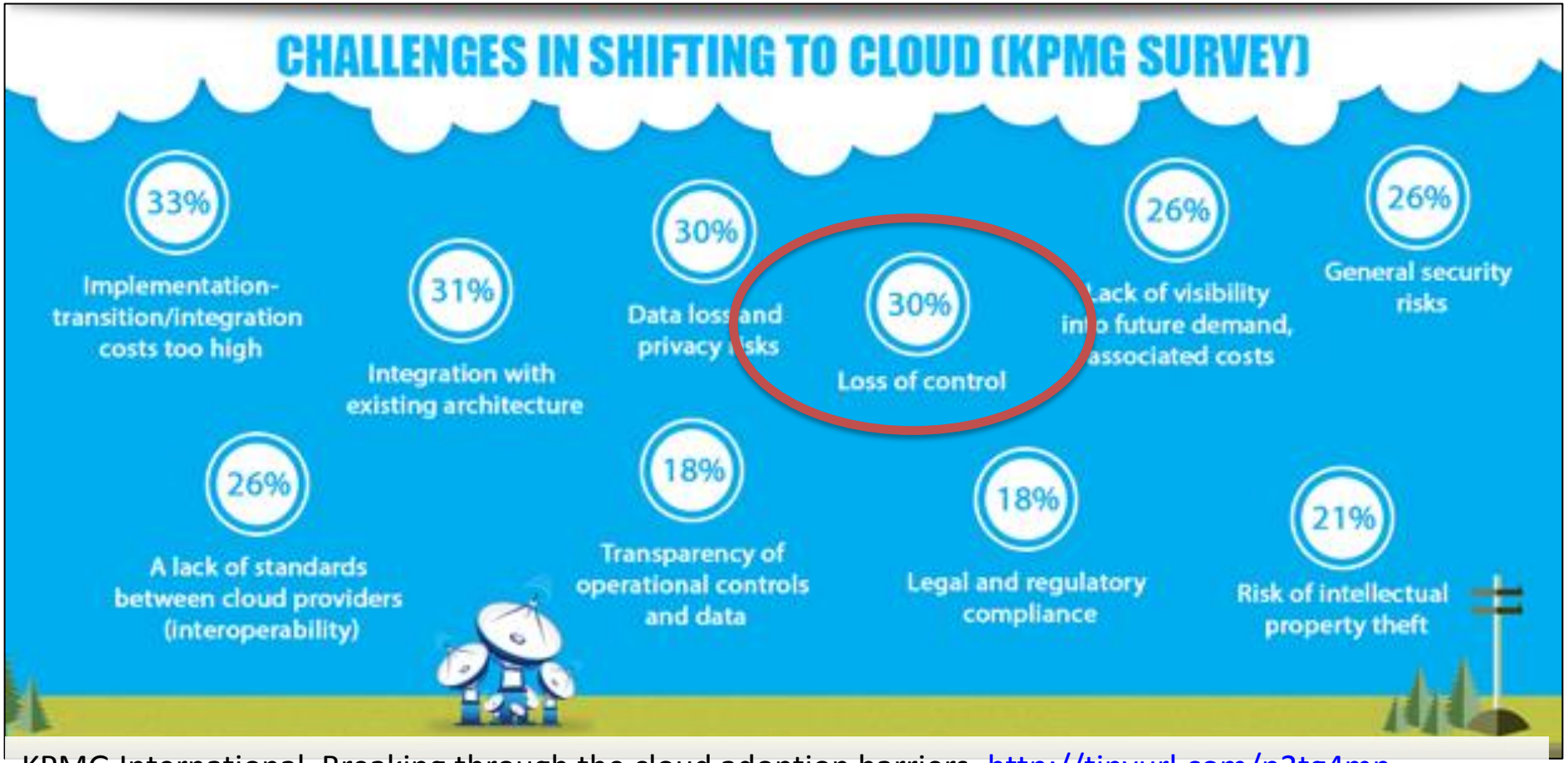
Education on the Cloud 2015: State of the Art

- **local**, **regional**, **national** and **international**
- **funded projects** to support experimentation and development
- **private sector developments**
- **innovative products** (entrepreneurs) and **mobile access** to information

Education on the Cloud 2015: State of the Art

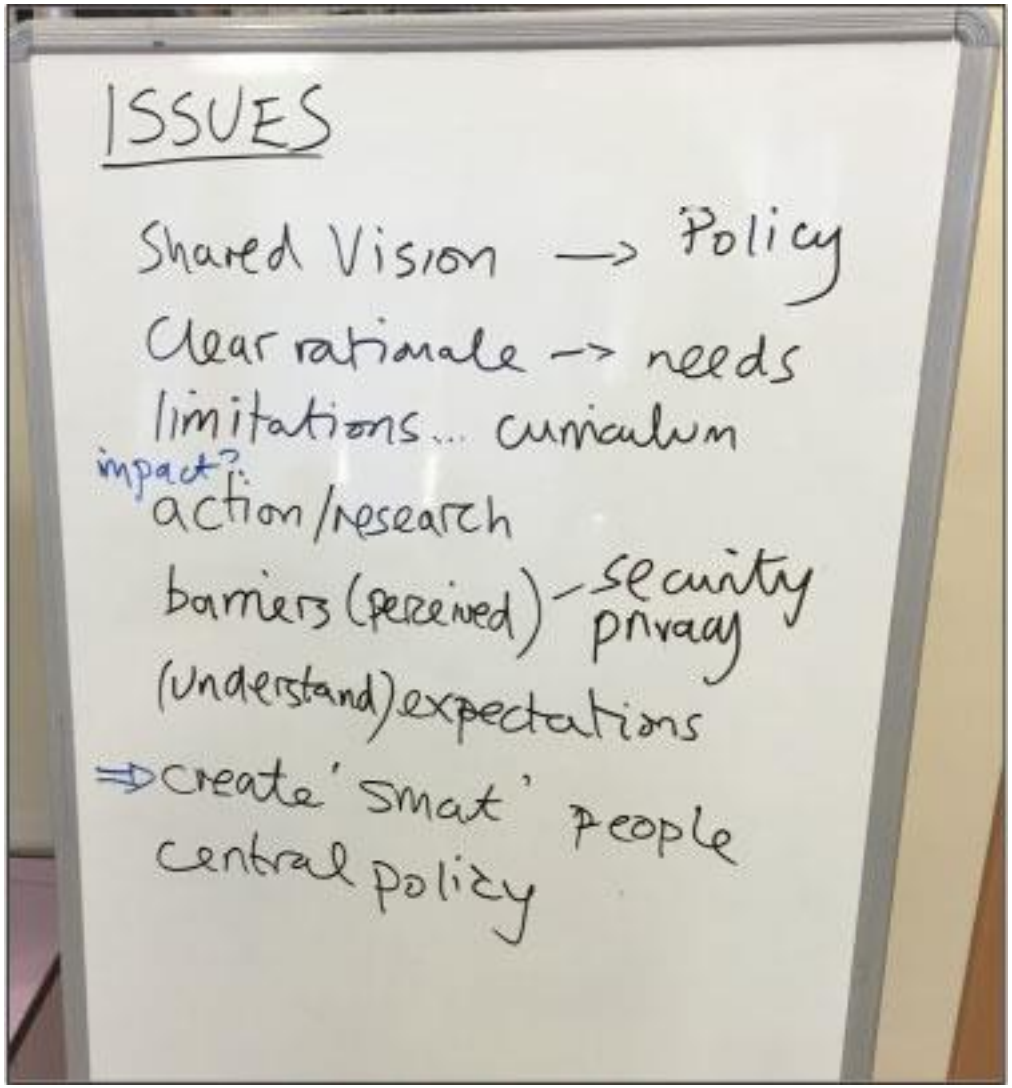
- Cloud Computing is being used as a **delivery method for IT services**
- wide range of **customised solutions** and **individual / collective actions**
- **piecemeal** rather than coordinated
- **some** teachers and learners are enjoying **education benefits**

Challenges for Education?



KPMG International, Breaking through the cloud adoption barriers, http://tinyurl.com/p2tg4mn

Big Issues


ISSUES
Shared Vision → Policy
Clear rationale → needs
limitations... curriculum
impact?
action/research
barriers (perceived) - security
privacy
(understand) expectations
⇒ create 'smart' people
central policy

Network

Challenges

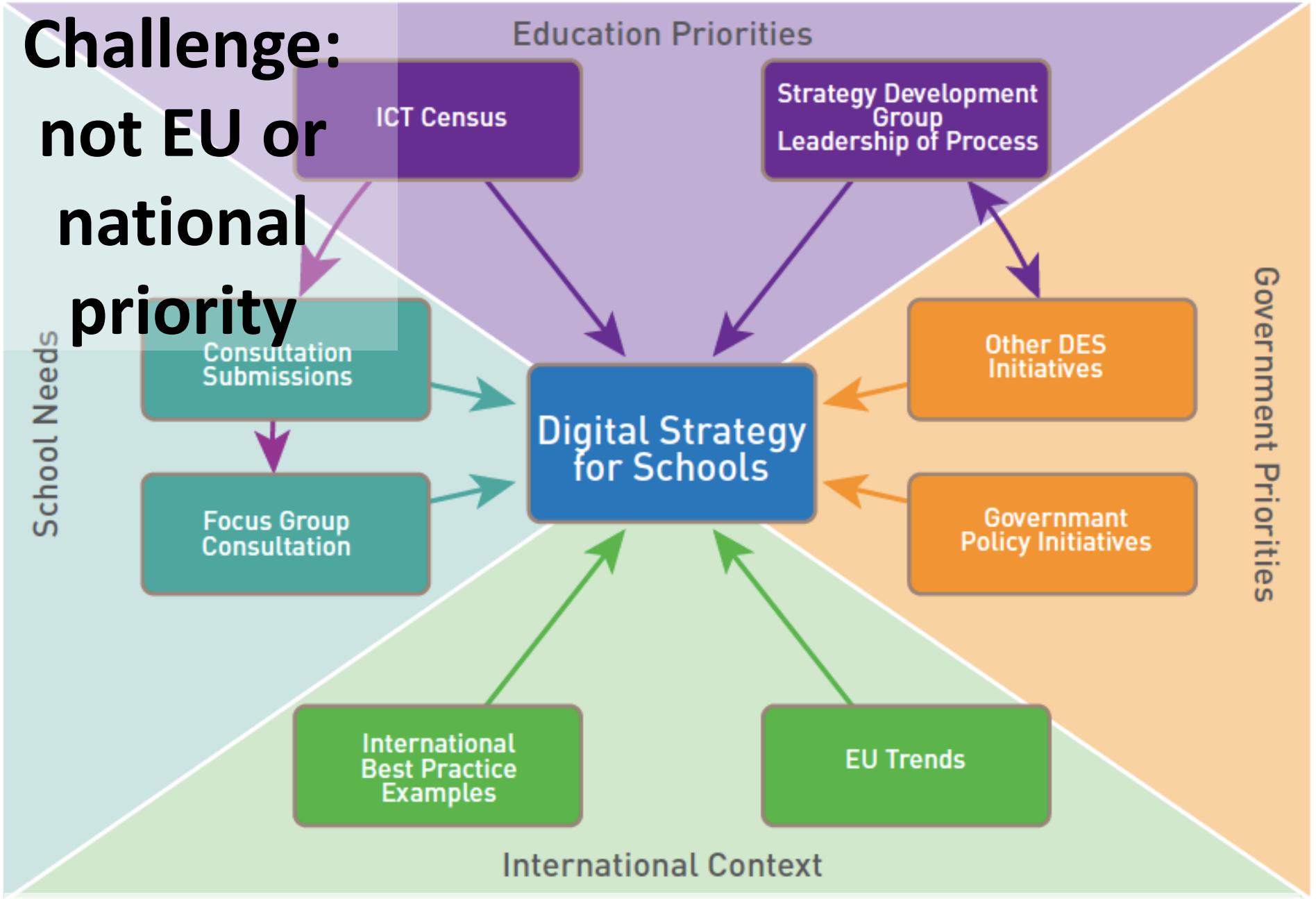
3 barriers / limitations

- no information (general, technical, cost/benefit,
- no example (some of other organization)
- no best practice
- no guidelines
- no partner
- no vision (
- no knowledge
- no leadership / no
- no view of the benefit (not only financial)
- no regulation (inside organization / outside)
- no evaluation of the risk
- no trainee for a team
- no budget
- technical barriers (infrastructure, tools, security
- no ethic behavior about data in the Cl
- no participation of stakeholder (accessib
- no communication in the design
- no motivation (
- no jobs- security (security)
- no common language / no definition
- no adaptive quality management system
- no e-learning exp

Lots of Challenges

- **EU focus** entirely **outside education**
- Main goal – **clear policy** – national education – **subsidiarity**
- **No vision** – to meet C21 needs
- Clear **decision making**
- **Disruption** – reactive – closed systems
- **e-Leadership** for change
- **curriculum** – **qualifications** – slow to change
- What's in it for me? – is there a **pedagogical added value**
- **Future**, smart city learning needed – smart citizens

Challenge: not EU or national priority



Digital Strategy for Schools 2015-2020: Enhancing Teaching, Learning and Assessment, https://www.education.ie/en/Publications/Policy-Reports/Digital-Strategy-for-Schools-2015-2020.pdf

Challenge: Clear Vision / Policy

School on the Cloud Mandate

Right of **access to Cloud a basic requirement**

Connected school as a 24/7 **learning community** – involving all stakeholder - families / parents

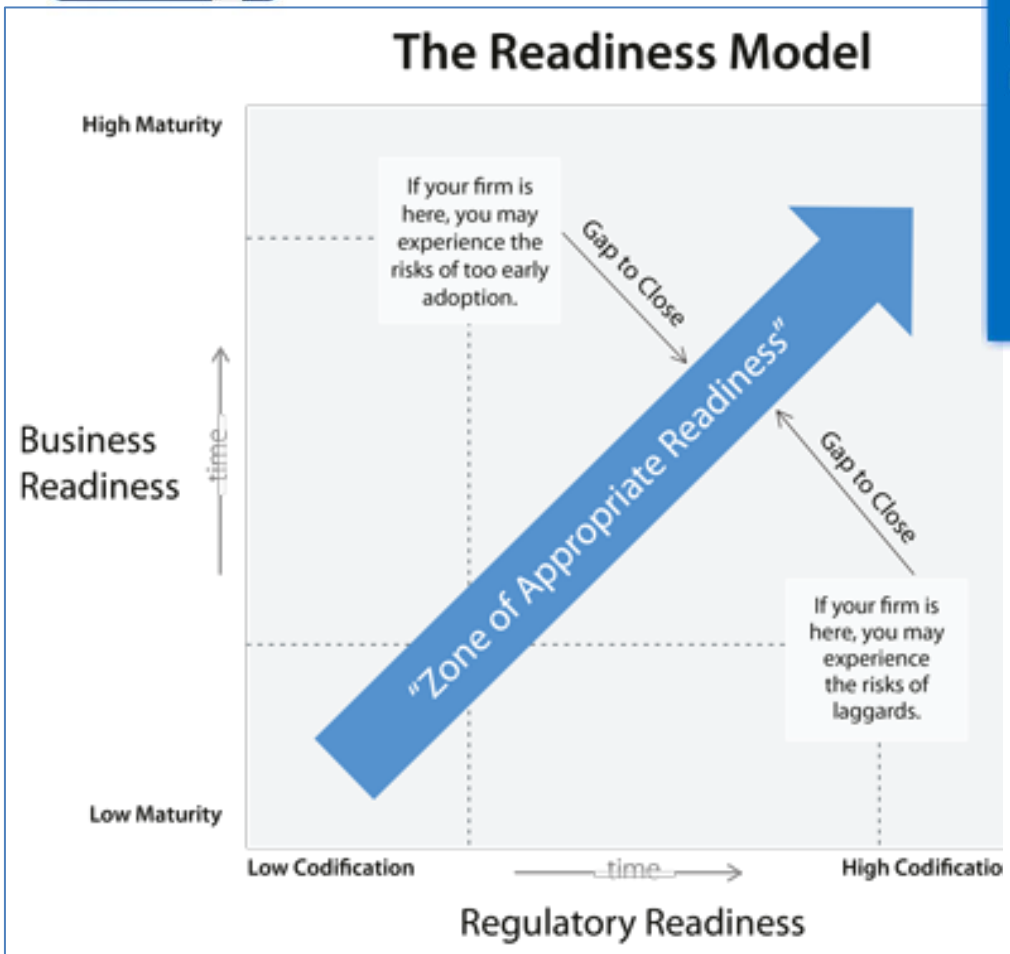
Cloud use to create your **own personal learning** network

Vision starts from **a pedagogical concept** – urgency and potential - based on **21c skills** and **Cloud literacy**

Prepare educators **for a different role** (loss of perceived monopoly on knowledge)

Less is more - pay **attention to quality** – not abundance

Challenge: Cloud Readiness

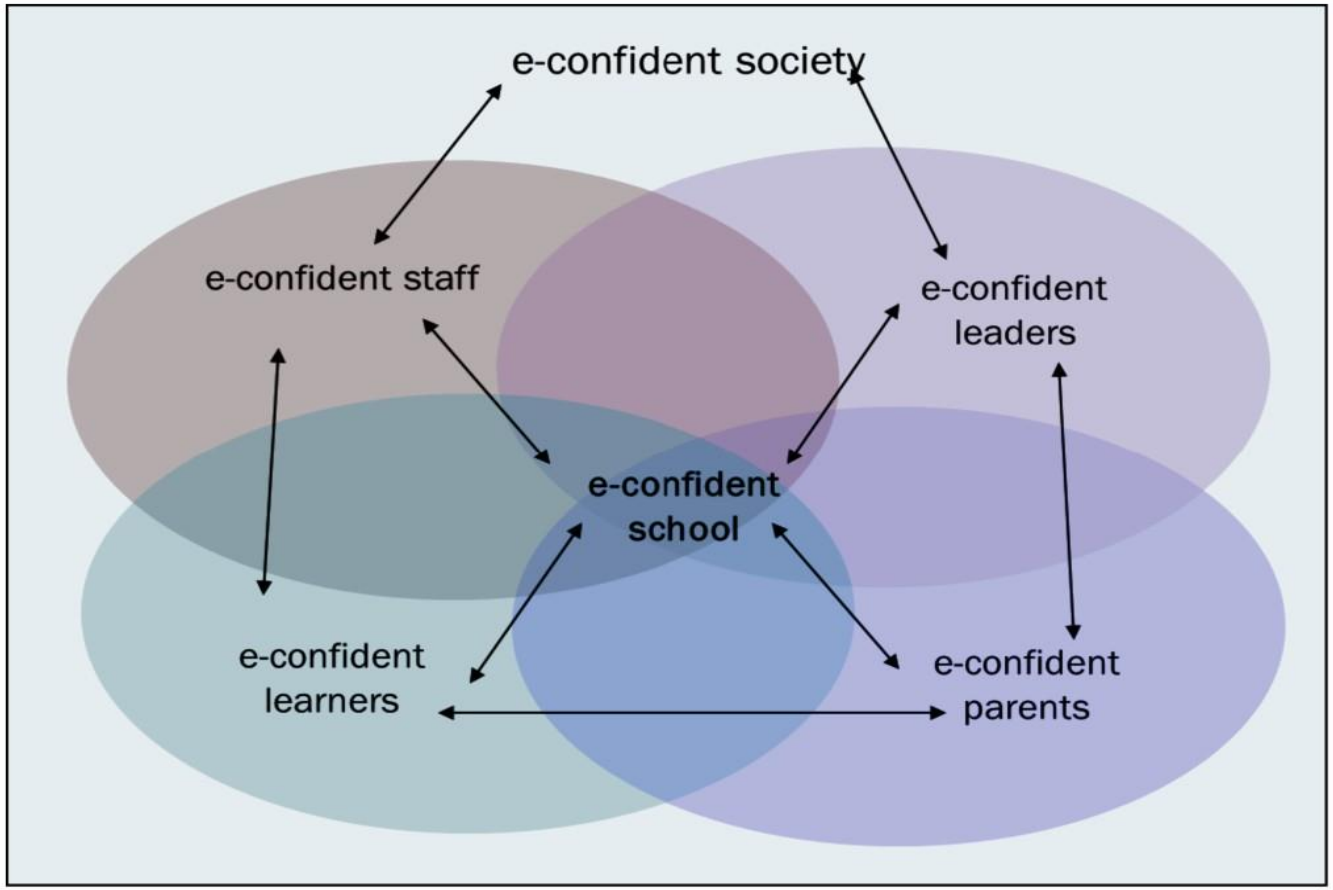


Is your organization ready for the cloud?

Five Challenges to Overcome in the Cloud

Figure 1

Challenge: e-Confident System

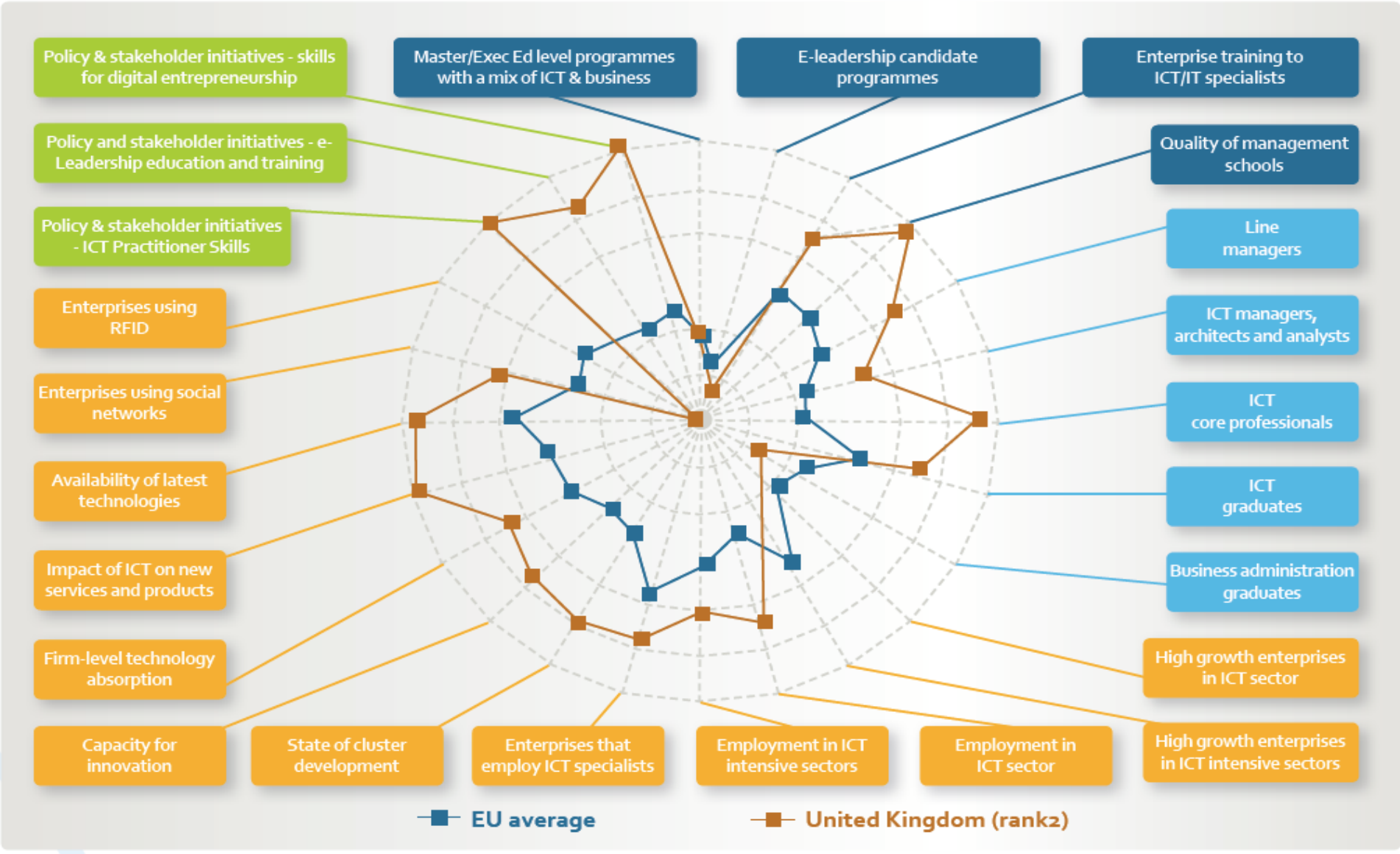


Morris D (2010), E-confidence or incompetence: Are teachers ready to teach in the 21st century? World Journal on Educational Technology, 2(2), http://www.world-education-center.org/index.php/wjet/article/viewArticle/180

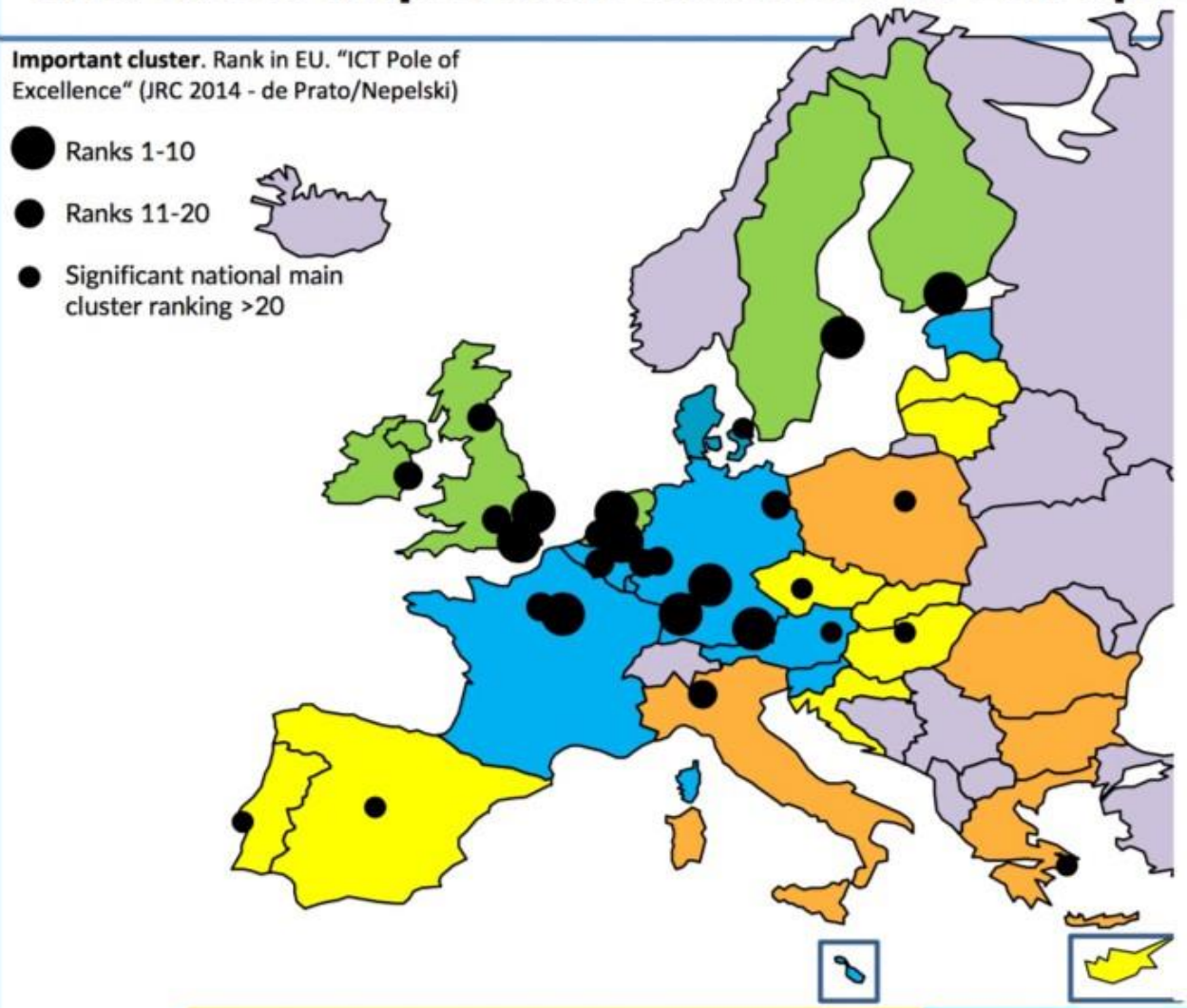
Challenge: e-Leadership

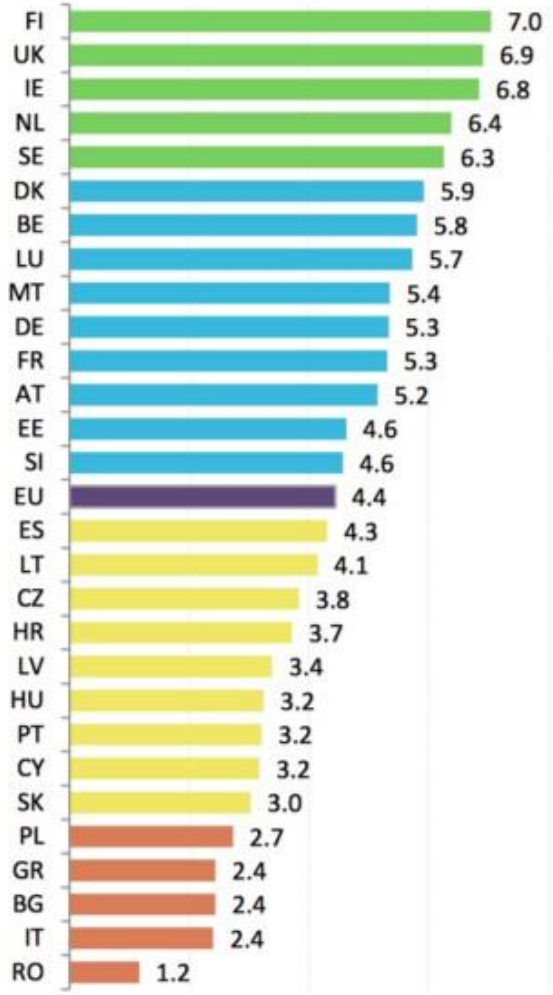
- **EU initiative: e-leadership scoreboard and index**
- monitor and benchmark
- indicators on business, policy infrastructure, related outcomes
- need for metrics and practices to understand e-leadership
- identify role models
- How policies affect practice

Challenge: e-Leadership

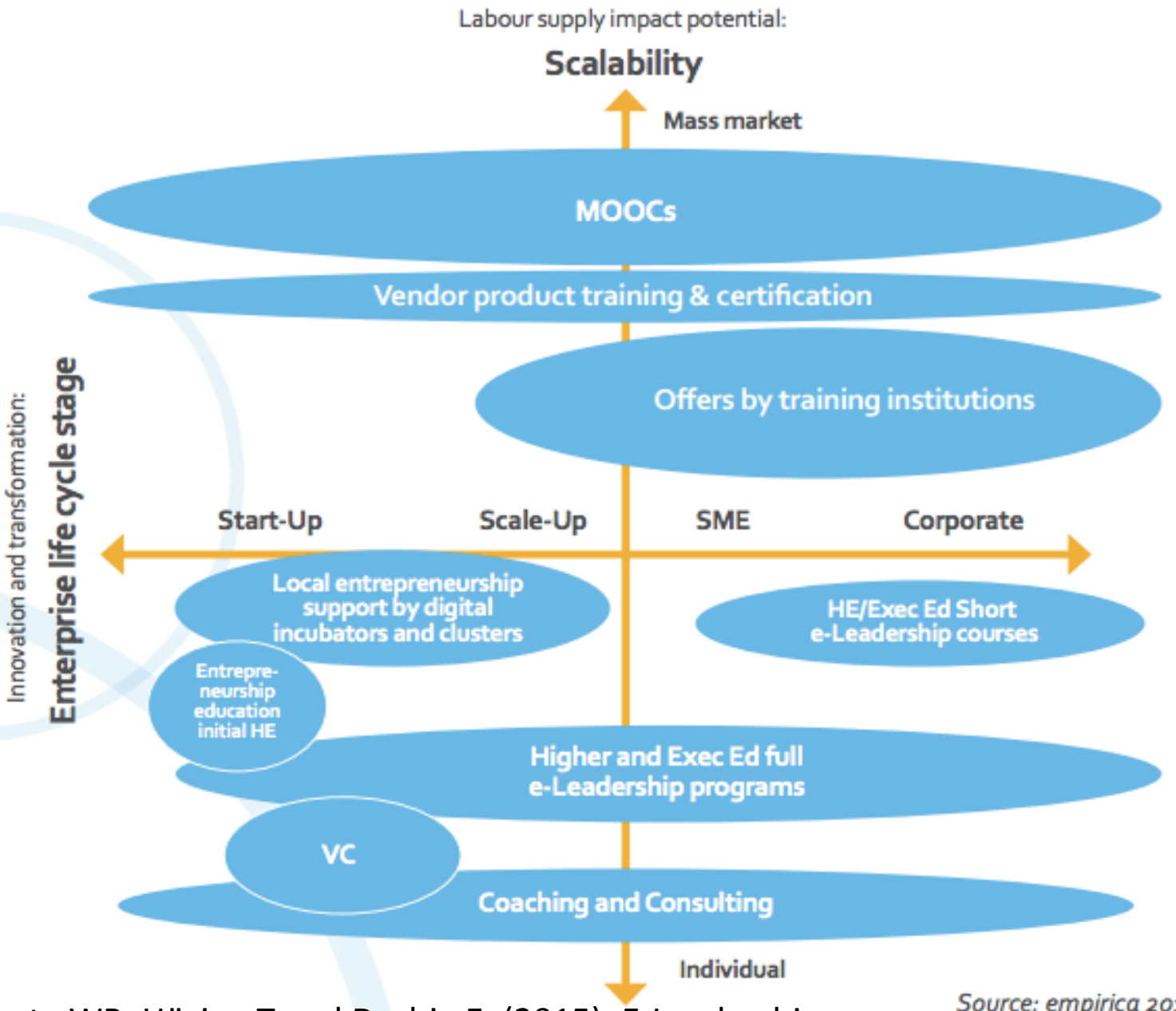


e-Leadership Index ranging from 0 to 10 and most important Clusters in Europe





Group 1: more than 35% below EU average	**Group 3:** less than 35% above
Group 2: less than 35% below	**Group 4:** more than 35% above EU average



Source: empirica 2015

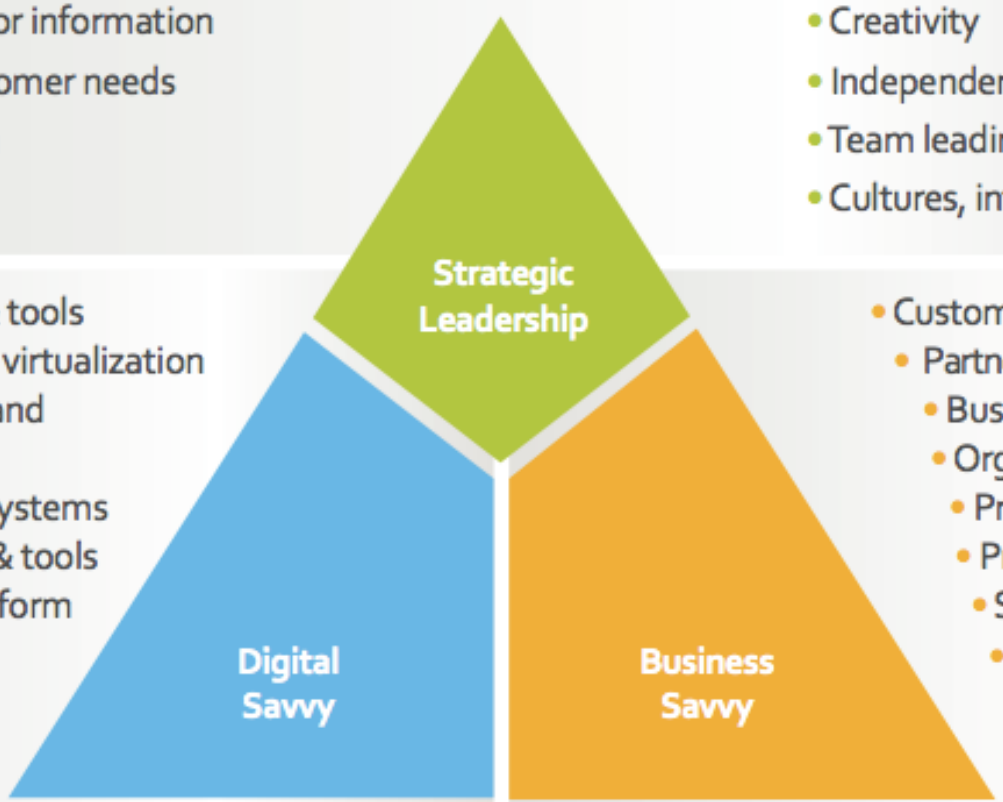
Graphic: Tobias Hüsing, empirica, Kecheng Liu, Maks Belitski, Weizi Li, Henley Business School, Alvaro Arenas, IE Business School, 2015

Korte WB, Hüsing T and Dashja E, (2015), E-Leadership: Digital Skills for SMEs, European Communities, www.eskills-lead.eu

Challenge: e-Leadership Skills

- Forecasting needs for information
- Understanding customer needs
- Solution orientation
- Communication

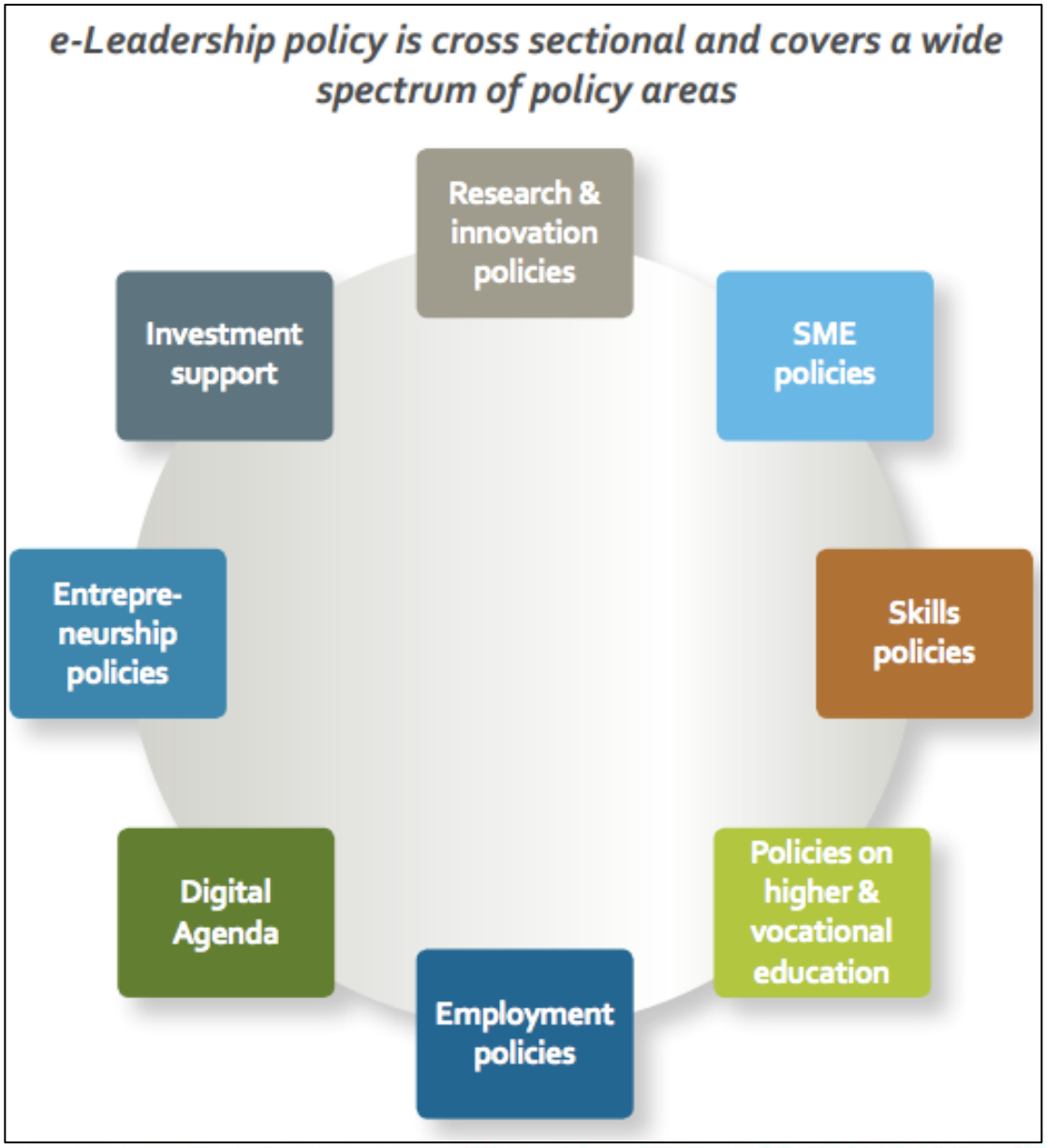
- Creativity
- Independent learner
- Team leading
- Cultures, internationalization



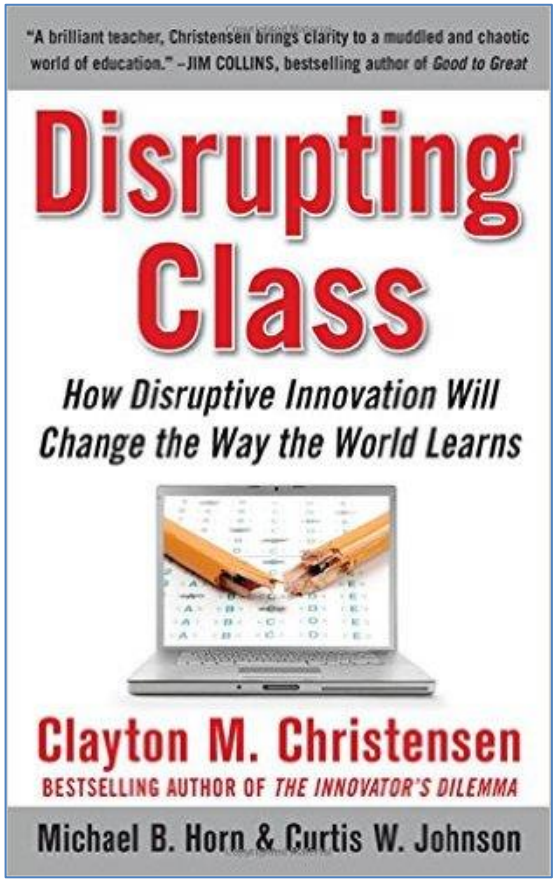
- Big data analytics & tools
- Cloud computing & virtualization
- Mobile app design and development
- Complex business systems
- Web development & tools
- IT architecture, platform architecture
- Security skills
- ERP systems
- Social media

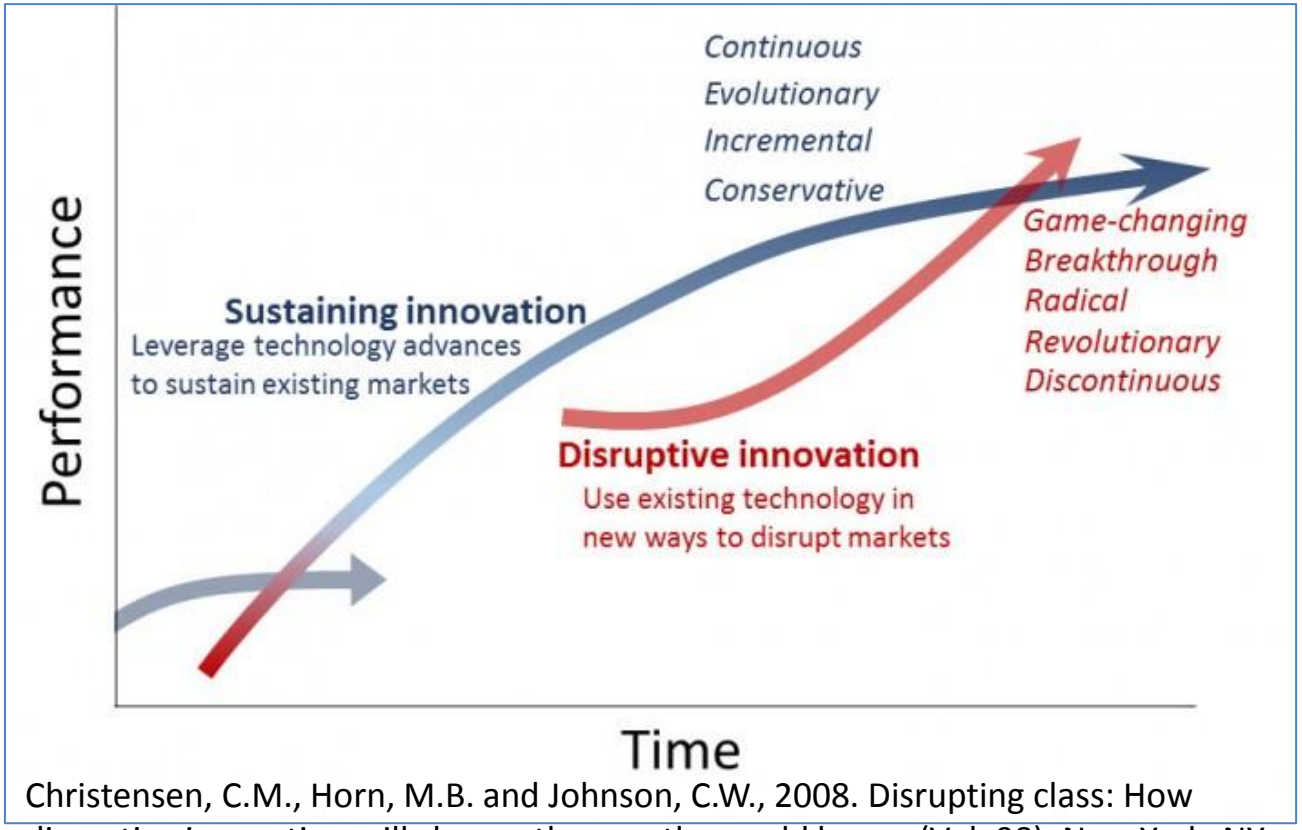
- Customer relations & sales
- Partnership establishment
- Business development
- Organisational change
- Project management
- Process optimisation
- Strategic marketing
- Agile methodology
- Business analytics
- Market analysis
- Financial skills

e-Leadership Policy Areas for SMEs



Challenge: Disruptive





Christensen, C.M., Horn, M.B. and Johnson, C.W., 2008. Disrupting class: How disruptive innovation will change the way the world learns (Vol. 98). New York, NY: McGraw-Hill. http://www.christenseninstitute.org/publications/disrupting-class/

Disruption: opportunities

- **Full control** – monitoring learning process and outcomes
- **Adjust** expenditure
- **Improve organisation**
- **System change** – different roles
- Move **forward** – better assessment

- **Empowerment**
- **Motivation** – exciting – attractive
- **Flexibility** of organisations
- **Competitive**
- **Optimise** – greater efficiency

Disruption: threats and consequences

Threats

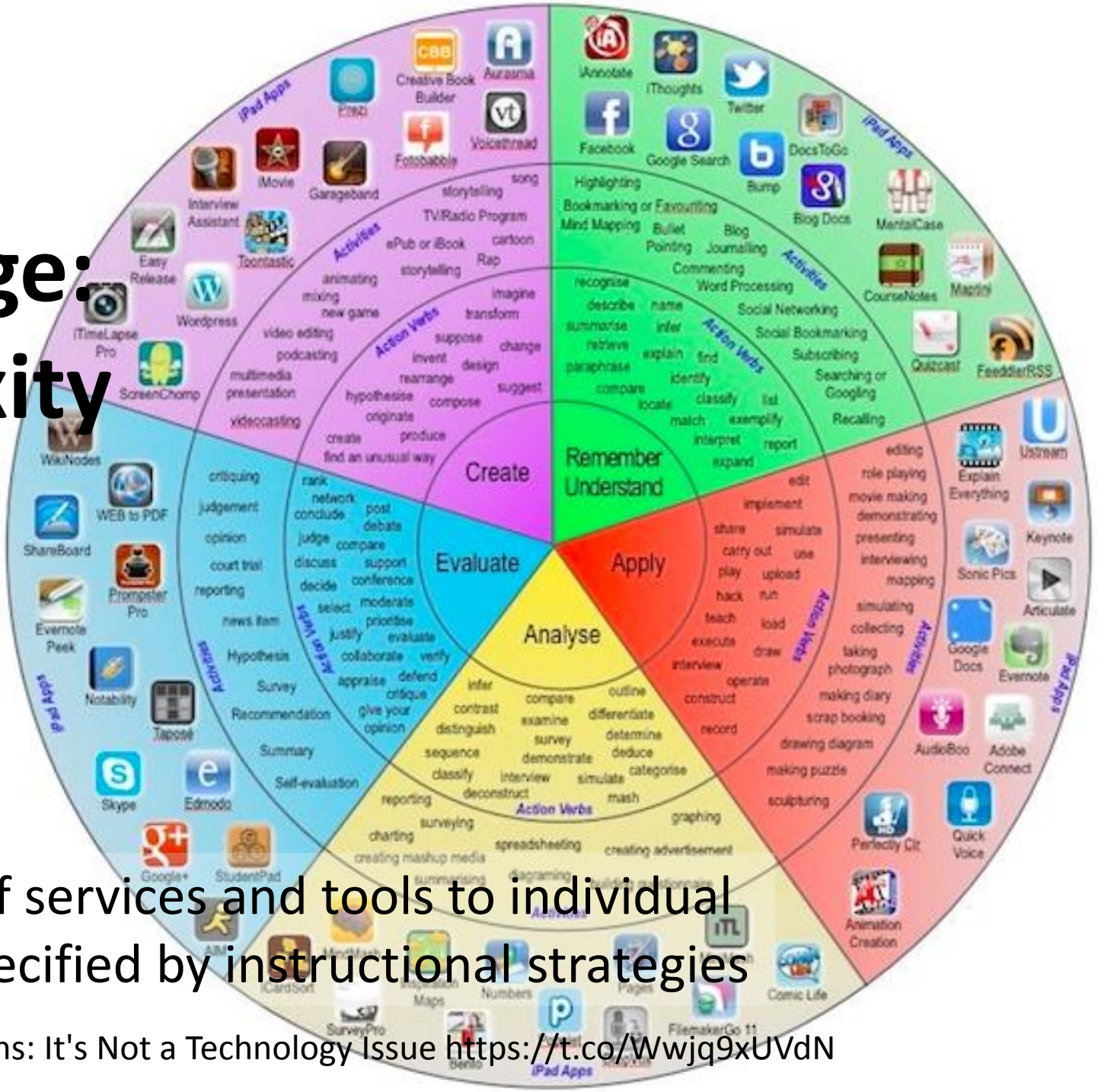
- **Chaos** – instability - change routine
- Initial **investment**
- Resistance – **fear**
- **Loss of control**
- Ownership - **security**
- **Quality**

Consequences

- New **learning** processes
- Change **administration**
- Different **decision making**
- **Integrated** ecosystems
- **Exchange** of knowledge
- Better **assessment**

School on the Cloud

Challenge: Complexity



Linking use of services and tools to individual learners – specified by instructional strategies

A Principal's Reflections: It's Not a Technology Issue https://t.co/Wwjq9xUVdN

Challenge: What's next? Smart Cities , IoT

The **whole city as a learning environment**

- Connecting
- Creating
- Collaborating
- Crowdsourcing

Some conclusions (Panoutsopoulos et al, 2015)

- **Paradigm shift** (fundamental change in methods of delivering education) (Koutsopoulos & Kotsanis, 2014)
- **Vision** = Cloud-based **learner-centred** approach
- Exploit **powerful services** like video-on-demand and simulations (Gonzalez-Martinez et al., 2015)
- **Quality** learning experiences (Silva & Donert, 2015)

Gonzalez-Martinez J.A. et al, 2015. Cloud computing and education: A state-of-the-art survey. *In Computers & Education*, Vol. 80, pp 131-152.

Koutsopoulos, K. and Kotsanis, Y., 2014. School on the Cloud: Towards a Paradigm Shift. *In Themes in Science & Technology Education*, Vol. 7, No. 1, pp 47-62

Silva, D. and Donert, K., 2015. Communicating Geography Through the Cloud. *In GI_Forum – Journal for Applied Geoinformatics*, Vol. 1, pp 315-319

Some conclusions (Panoutsopoulos et al, 2015)

- School on the Cloud network formed to explore **how education should respond**

Learning from:

- available Cloud **technologies**
- existing Cloud-based educational **initiatives**
- network **expertise** and **experiences**

To provide **guidance and support** to stakeholders

Panousopoulos H, Donert, K., Papoutsis, P, Kotsanis I. 2015. Education on the Cloud: Researching Student-Centred, Cloud-based Learning Prospects in the context of a European Network, Proc. CELDA 2015, http://tinyurl.com/nghy5ay

Future Perspectives (Panoutsopoulos et al, 2015)

- Seeking links with other research initiatives
- Stimulation of further projects, such as:

(i) evaluate **future education scenarios**

(ii) design, application, and evaluation of **context-specific Cloud-based educational solutions** that span across all levels of education, and

(iii) develop and test Cloud-based services and tools able to cater for **special educational needs**

Panousopoulos H, Donert, K., Papoutsis, P, Kotsanis I. 2015. Education on the Cloud: Researching Student-Centred, Cloud-based Learning Prospects in the context of a European Network, Proc. CELDA 2015, http://tinyurl.com/nghy5ay

School on the Cloud 2016

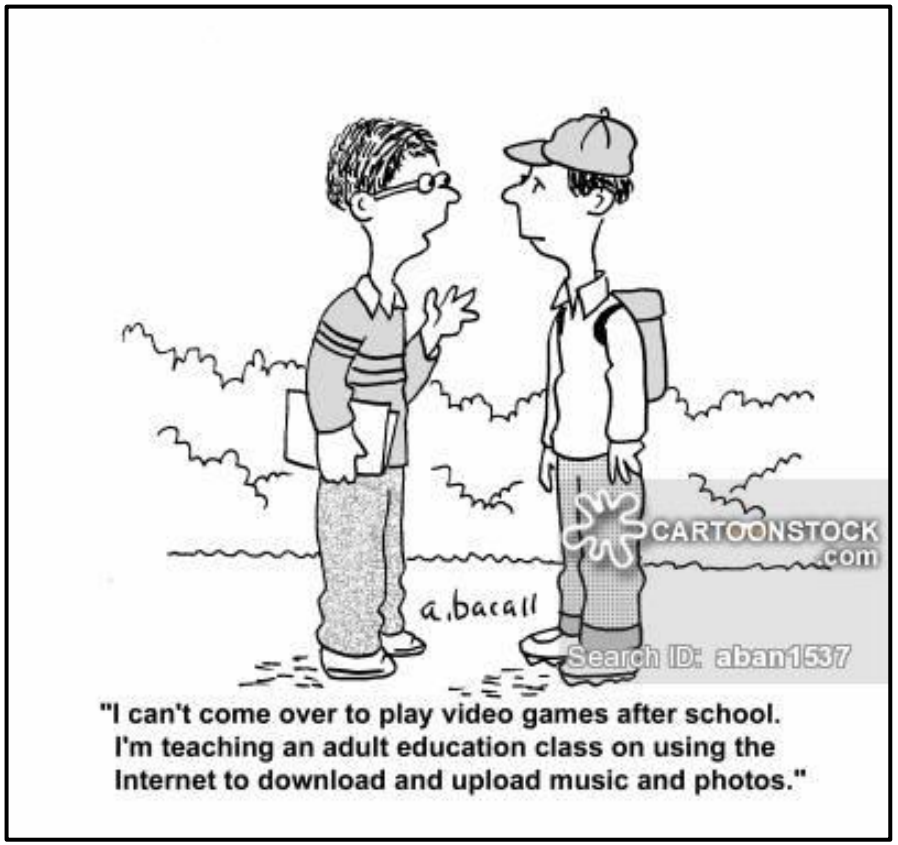
Join us for a free one day workshop

@ Third School on the Cloud Summit, Brussels, Belgium, 18th November 2016

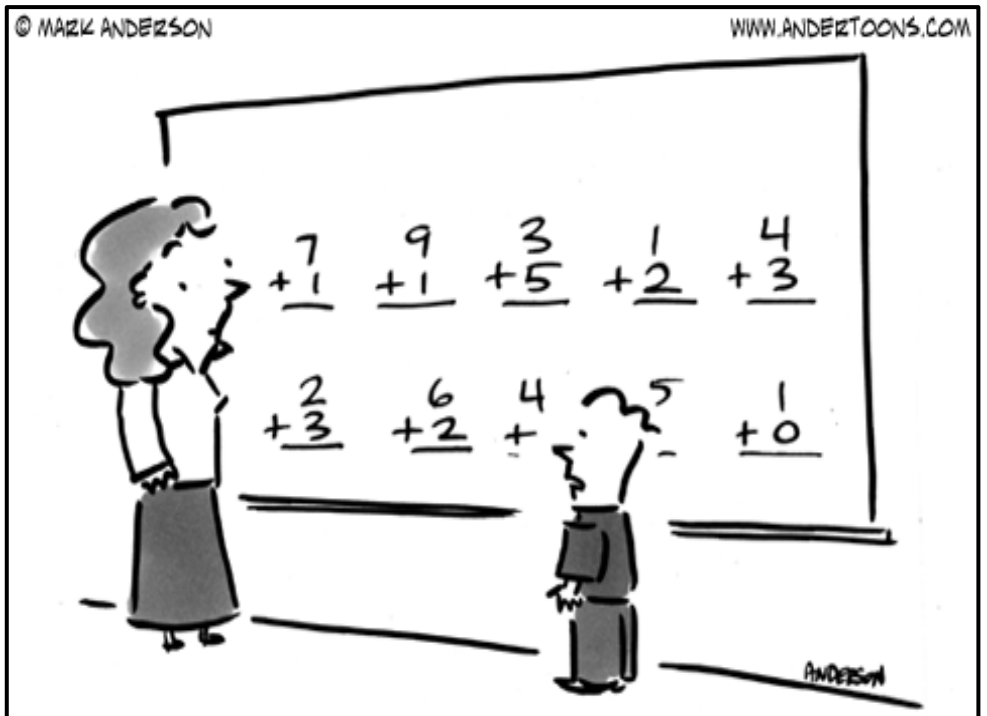
Follow SoC on social media

http://www.schoolonthecloud.eu

Schools, young people might never be the same



"I can't come over to play video games after school. I'm teaching an adult education class on using the Internet to download and upload music and photos."



"All I'm saying is we plug these into Excel, let it do its thing, and then we can all play until lunch!"

Cloudy Conclusions for Education

Potential

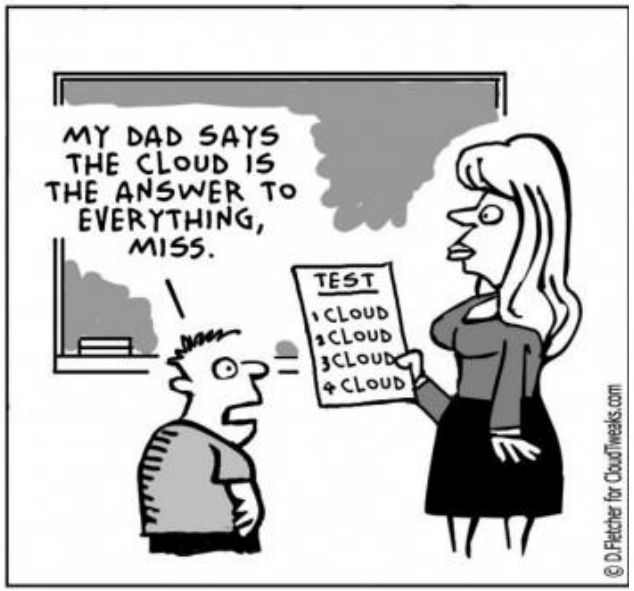
Amazing

Challenging

Persuasive

Disruptive

Ubiquitous



Presentation @ http://tinyurl.com/educoncloud1

Cartoons from: http://cloudtweaks.com/category/cloud-computing/cartoon/

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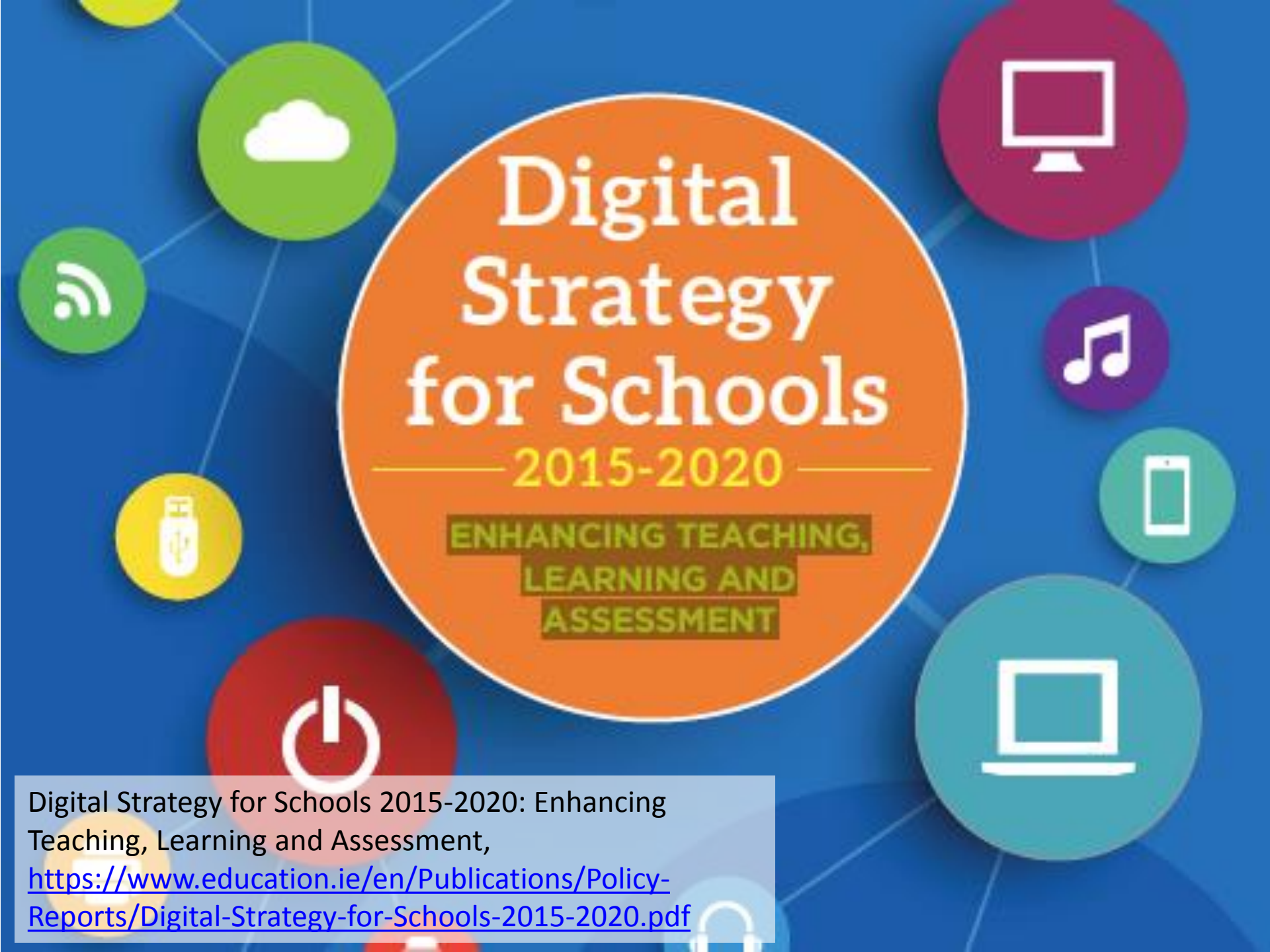
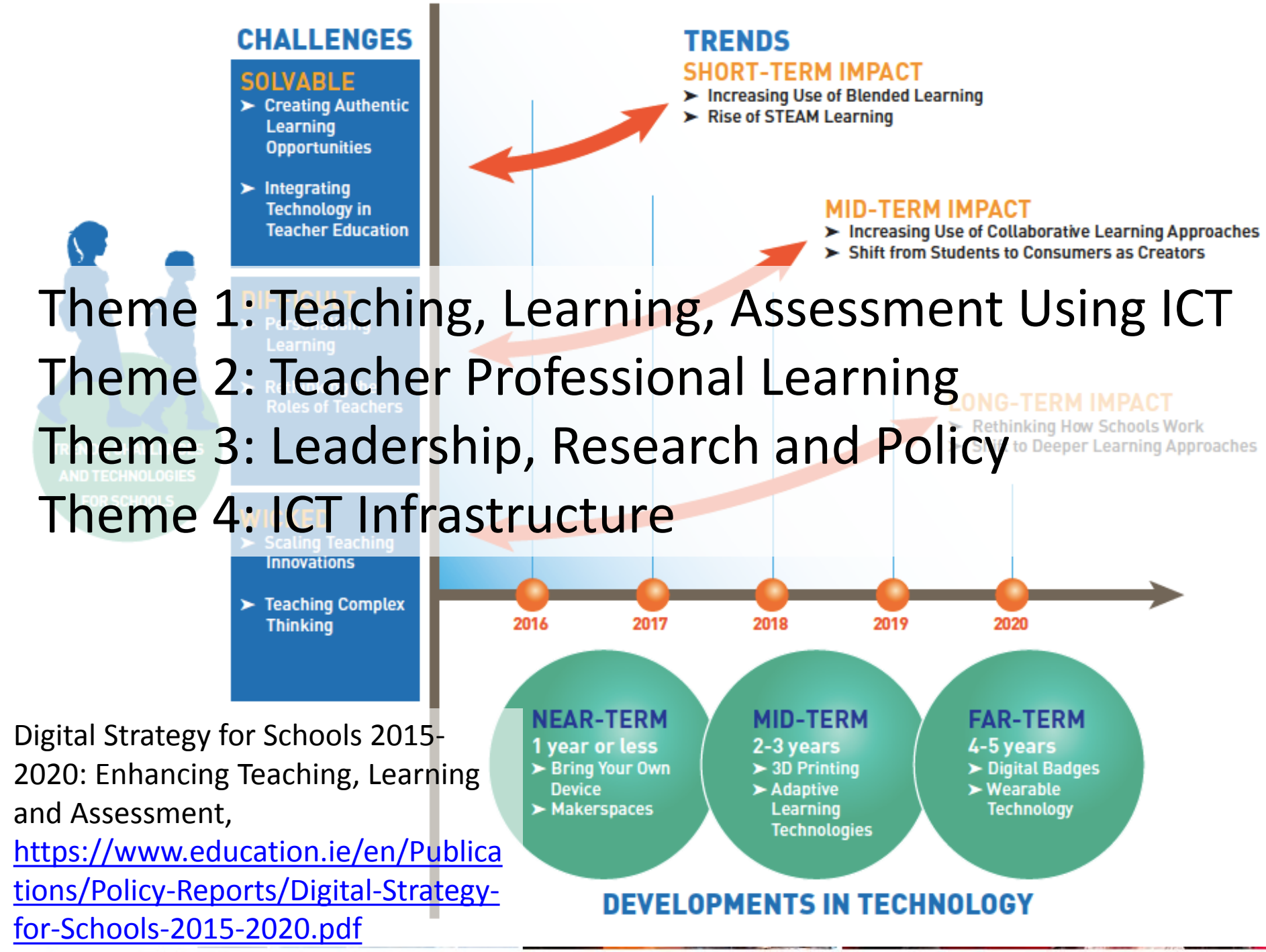


Digital Strategy for Schools 2015-2020: Enhancing Teaching, Learning and Assessment, https://www.education.ie/en/Publications/Policy-Reports/Digital-Strategy-for-Schools-2015-2020.pdf



Theme 1: Teaching, Learning, Assessment Using ICT

Theme 2: Teacher Professional Learning

Theme 3: Leadership, Research and Policy

Theme 4: ICT Infrastructure

Digital Strategy for Schools 2015-2020: Enhancing Teaching, Learning and Assessment, https://www.education.ie/en/Publications/Policy-Reports/Digital-Strategy-for-Schools-2015-2020.pdf