Slovenia as a role model for open education in knowledge based Europe

Mitja Jermol
Jozef Stefan Institute
Slovenia
The future of learning is...
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Rigidness of the Education System

- Typical education reform lasts from 5-10 years, but....
Rigidness of the Education System

Typical education reform lasts from 5-10 years, but…. 

THE WORLD'S CAPACITY TO STORE INFORMATION

This chart shows the world's growth in storage capacity for both analog data (books, newspapers, videotapes, etc.) and digital data (CDs, DVDs, computer hard drives, smartphone drives, etc.)

In gigabytes or estimated equivalent

1980
2.62 billion

1993
ANALOG STORAGE

DIGITAL

2000

2007

18.86 billion gigabytes

Paper, film, audiotape and vinyl: 6.2%
Analog videotapes: 93.8%

Other digital media: 0.8%
Portable media players, flash drives: 2%
Portable hard disks: 2.4%

CDs and minidisks: 6.6%

Computer servers and mainframe hard disks: 8.0%

Digital tapes: 11.8%

DVD/Blu-ray: 22.8%

2007

276.12 billion gigabytes

*Other includes chip cards, memory cards, floppy disks, mobile phones, PDAs, consoles/arcade, video games.

PEC hard drives: 44.5%

123 billion gigabytes

Digital

In 1986, pocket calculators accounted for much of the world's data-processing power.

Percentage of available processing power by device:

<table>
<thead>
<tr>
<th>Year</th>
<th>Pocket Calculators</th>
<th>Personal Computers</th>
<th>Video Game Consoles</th>
<th>Servers, Mainframes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1986</td>
<td>41%</td>
<td>23%</td>
<td>9%</td>
<td>17%</td>
</tr>
<tr>
<td>2007</td>
<td>22%</td>
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Rigidness of the Education System

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- 2.62 billion (1980)
- 0.02 billion (2000)

COMPUTING POWER

In 1986, pocket calculators accounted for much of the world’s data-processing power.

Percentage of available processing power by device:

- 1986: 41% pocket calculators, 33% personal computers, 9% video game consoles, 17% servers, mainframes
- 2007: 0.3% supercomputers, 3% mobile phones, PDAs, 25% video game consoles, 36% servers, mainframes

*Other includes chip cards, memory cards, floppy disks, mobile phones, PDAs, consumer electronics, video games

276.12 billion gigabytes
Rigidness of the Education System

Typical education reform lasts from 5-10 years, but…
Emerging scientific disciplines

- Neuroethics
- Neuroparasitology
- Exo-meteorology
- Neuroepigenetics
- Synthetic Biology
- Pharmacometrics
- Organic Electronics
- Medical Geology
- Nutrigenomics
- Quantum Biology
- Computational Social Science
- Recombinant Memetics
- Human Macroecology
- Quantitative Biology
- Cliodynamics
- Molecular Gastronomy
- Affective Science
- Cognitive Economics
- Aeroecology
- Data Science
Open scientific evenings at University of Nova Gorica

School-wide vimeo channel

Enhancing the capacity of e-learning for educational institutions

Teachers in the Digital Age

Online Presence for Learning

Comenius-EduMedia-Awards

Blend.FL

ITC Euromaster

Innovative 1:1 Pedagogy

http://www.glasba.videofon.si/

http://svarog.org/

http://www.egradiva.si/

http://www.astra.si/
Obstacles...
Obstacles...

Fragmentary results - fragmentary research and development
Obstacles...

Fragmentary results - fragmentary research and development

Disintegration:
- Cross-domain and cross-level divide
- Bottom up (needs) detached from the top down (legislation)
Obstacles...

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Implementation barriers (from social to value added)
Obstacles...

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Missing critical mass: the absence of large and systemic testbeds
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<p>| Personalised (learner centric) | vs. | Mass |</p>
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OpeningUp Slovenia
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- Based on:
  - EC communication titled ‘Opening up Education’ (DG EAC, Connect), Sept 2013
  - Videolectures.net success
  - Open education projects at Universities
  - E-education program supported by the Ministry
  - Many successful elearning technology developers and providers and
  - Industry lead initiative for Smart Specialisation
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• Slovenia is proposing to take a lead in OpeningUpEducation initiative set by EU by:
  • Providing EU state level commitment for the programme by all stakeholders
  • Offering Slovenia as a testbed to develop, test and deploy best practices
Opening Up Slovenia

- Develop open educational system
  - Step1: Parallel to the formal one
Opening Up Slovenia

• Develop open educational system
  • Step1: Parallel to the formal one
  • Step2: Connected to the formal one
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- Targeting:
  - Step 1: National level
Opening Up Slovenia

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• Targeting:
  • Step1: National level
  • Step2: SouthEast Europe
Opening Up Slovenia

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• Targeting:
  • Step1: National level
  • Step2: SouthEast Europe
  • Step3: Europe
Open education

- Open Universities
- Open accreditation
- Open badges
- Open content
- Open textbook
- MOOCs
- Open Context Aware Environments
- Open source
- Open software
- Open curriculum
- OCW
- Open access
- Open licenses
- Open software
- OER
Open education

- Open Universities
- Large scale reasoning
- Open licenses
- Machine learning
- Open source
- Information retrieval
- Knowledge discovery

Interoperability models and solutions
Open accreditation
Language technologies
Open content
Open textbook
Open software
Open curriculum
Open access

- MOOCs
- Semantic and Context technologies
- Self-awareness
- Open badges
- Ubiquitous sensing
- Cognitive systems
- Multimodal interfaces
- Open Context Aware Environments
- Data collection and storage

OER

Internet of things (everything)
OCW
Open education matrix

- Learning Architecture
- Incentive models
- Value added models
- Didactic, pedagogy methodology
- Tools and Services
- Content
- Infrastructure
- Pre-school
- School
- Higher
- Further
- Life long
- General
- Learners and Teachers
- Type
  - Formal
  - Informal
Open education matrix

Infrastructure
Content
Tools and Services

Formal
Informal

Pre-school
School
Higher
Further
Life long

General

Research
Development
Testing
Validation and quality
Deployment

Learning Architecture

Value added models
Didactic, pedagogy methodology
Incentive models

Learners and Teachers
Type
Bottom up initiative

• Knowledge 4 All Foundation Ltd.
• Jožef Stefan Institute
• University of Maribor
• University of Primorska
• University of Ljubljana
• University of Nova Gorica
• Ministry of Education, Science and Sport of Slovenia
• OS Savsko Naselje primary school, representative of the national primary schools cluster
• Vrtec Trnovo kindergarten, representative of the national kindergarten cluster
• Chamber of Commerce and Industry of Slovenia
• Slovenian National Post – system integrator
Why Slovenia?

• Little big country
• Personalisation – gaining from cultural richness
• Excellent background and raised awareness
• Critical mass of advanced technology, content, projects, networks
• Needs and interests from major stakeholders
• Strategically committed
Associated institutions

- **Austria**: Faculty of Computer Science, Graz University of Technology
- **Belgium**: Department of Educational Sciences, Vrije Universiteit Brussel
- **Croatia**: University of Zadar, Josip Juraj Strossmayer University of Osijek, University of Rijeka
- **Estonia**: Institute of Informatics, Tallinn University
- **France**: University of Nantes, INRIA - the French Institute for Research in Computer Science and Control
- **Greece**: SingularLogic SA, NTUA
- **Italy**: International Centre for Genetic Engineering and Biotechnology (ICGEB), Trieste, Interdipartimental Center of Research in Urban Planning "Alberto Calza Bini", Università degli Studi di Napoli Federico II, IAES International Academy of Environmental Sciences, Venice, Department of Mathematics and Computer Science, University Udine, University of Trieste
- **Germany**: Karlsruhe Institute of Technology
- **Lithuania**: Vilnius Business College
- **Netherlands**: UNESCO OER Chair, Open University Netherlands, EADTU, European Association of Distance Teaching Universities
- **Poland**: Lublin University of Technology, University of Natural Sciences and Humanities in Siedlce
- **Portugal**: Faculty of Science and Technology of Universidade Nova de Lisboa, UNINOVA (Institute for the Development of New Technologies)
- **Slovenia**: Karst Research Institute, Postojna, Slovenia, British Council Slovenia, IAM - Institute and Academy of Multimedia, School centre Kranj, Slovenian institute for Adult Education, National School of Leadership in Education, Geodetic Institute, Slovenia National Examinations centre
- **Spain**: Madrid Open University, Universidad Complutense de Madrid, Universitat Politècnica de València
- **Turkey**: Department of Computer Education & Instructional Technology, Middle East Technical University
- **United Kingdom**: The Open University UK, University College London
- **United States**: OpenCourseWare Consortium, Opencast Matterhorn
Running Activities
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  - President of republic of Slovenia Borut Pahor and UNESCO as Honorary Patrons
  - Slovenian Minister for Education Jernej Pikalo as promotor of the OuS
  - EC commissioner Androulla Vassiliou (Education, Culture, Multilingualism and Youth) as supporter of OuE
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- Running projects
  - Shared Open Universities (U, PS, IJS)
  - National videolectures.net and scienceatlas.si
  - RTD center for schools (OS, IJS, PS)
  - RTD center for kindergardens (VT, IJS, OS)
  - Mymachine (OS, IJS, U, VT)
  - Slovenian Educational Network: e-textbook library (50+), teachers training (40.000)
  - “OpenYota” – holistic OS solution for Open Education
  - Contextual Microlearning with AI
  - On-the-job competencies adaptation
Let’s start opening...!

http://www.k4all.org/openingupslovenia/