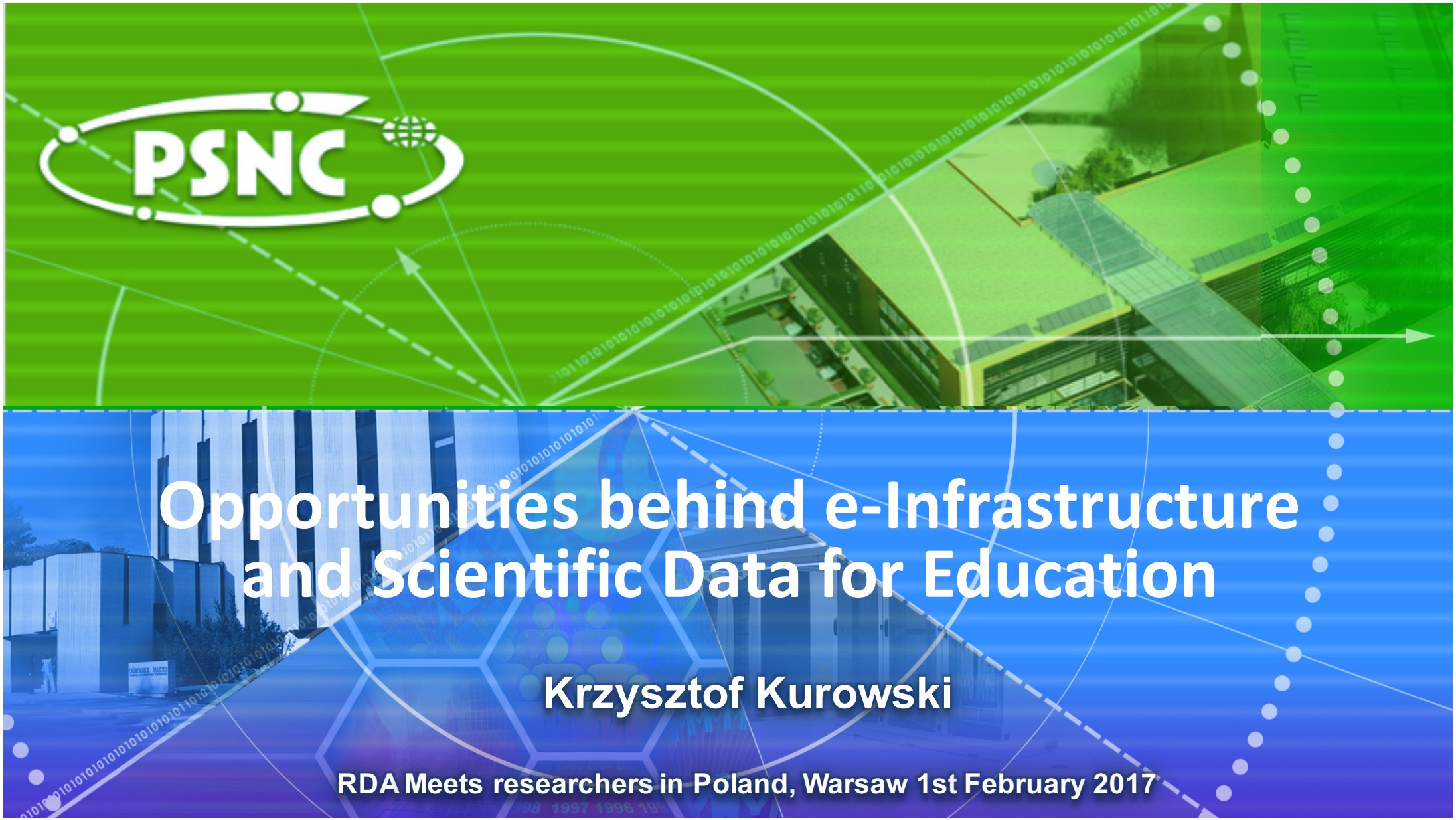
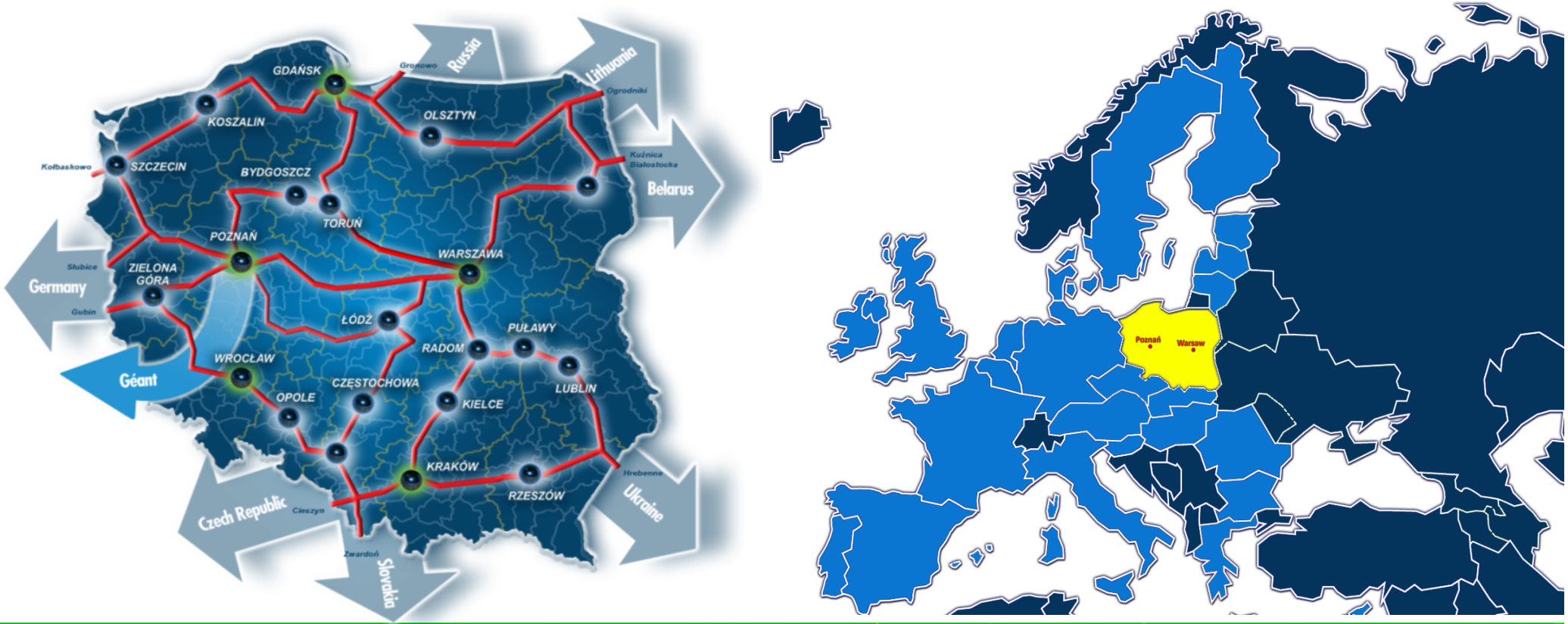


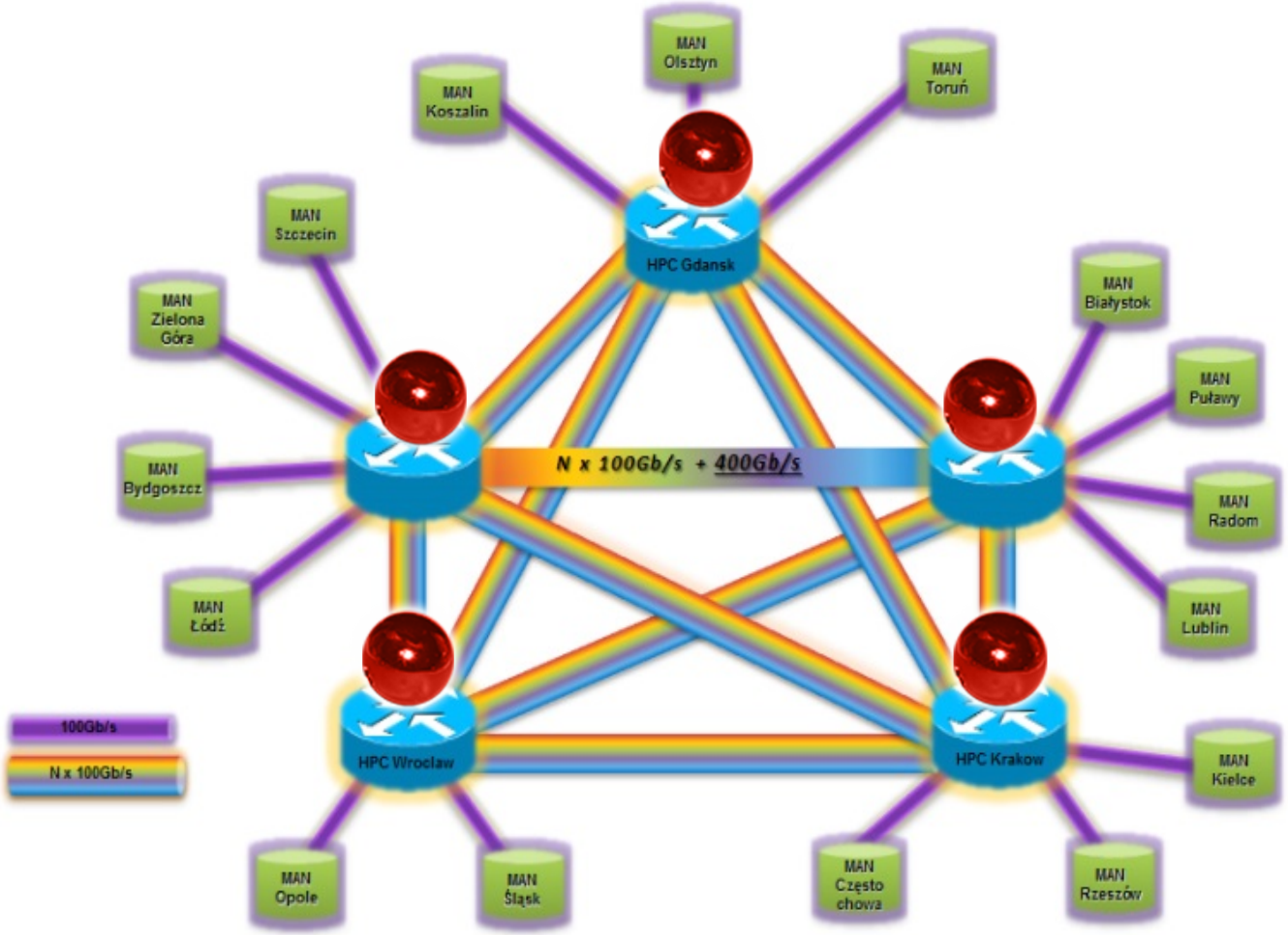
Opportunities behind e-Infrastructure and Scientific Data for Education

Krzysztof Kurowski

RDA Meets researchers in Poland, Warsaw 1st February 2017

National Research and Educational Network in Poland





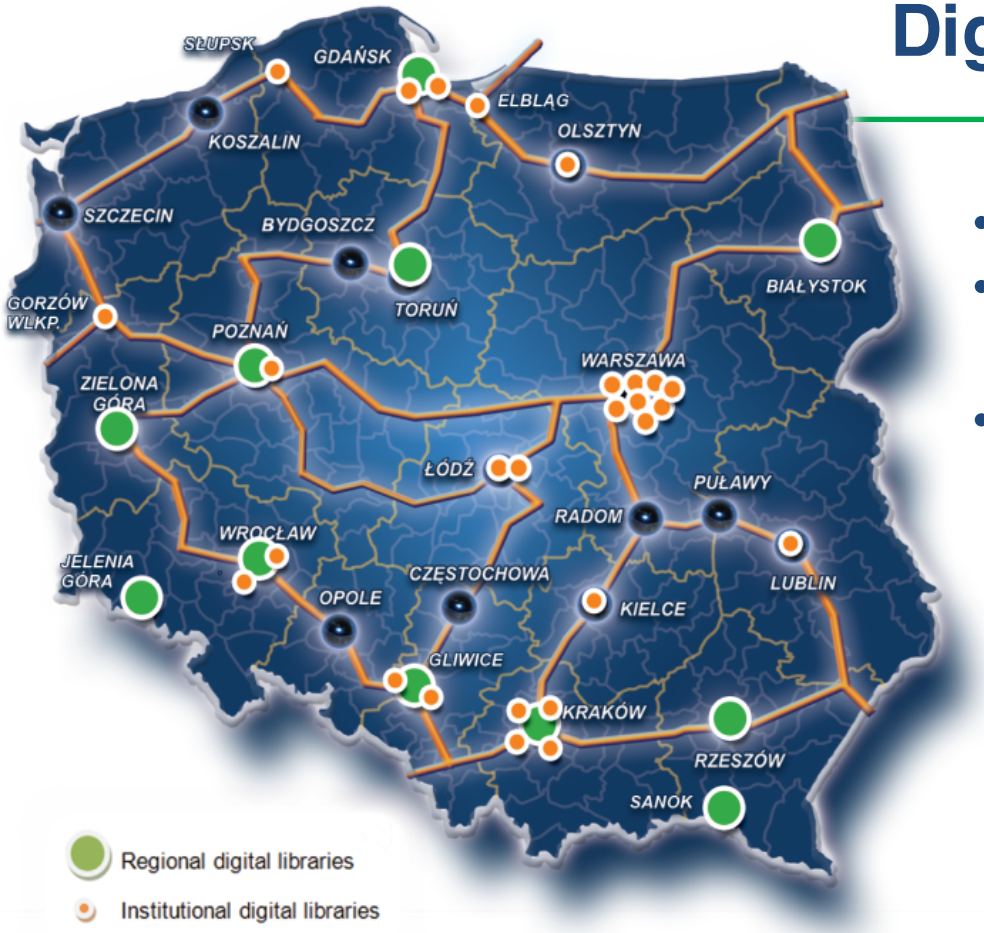
HPC Centers
& Storage facilities

PIONIER POLSKI INTERNET OPTYCZNY

Added-value services in PIONIER NREN

- HD Videoconference and services
- Deployment of AAI & eduroam services
- Applications on Demand for campuses
- Archiving on Demand
- Science HDTV and MOOC services

Digital libraries in PIONIER NREN



- ~ 100 digital libraries
- Several hundreds of cultural and scientific institutions
- 3 mln+ digital objects and growing…

dLibra
DIGITAL LIBRARY FRAMEWORK

EUROPEANA

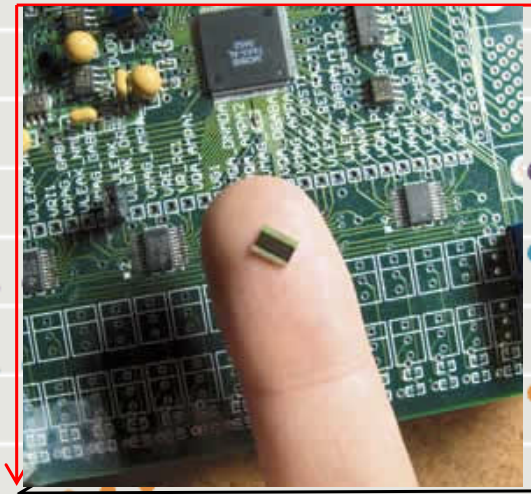
- Huawei systems based on Intel Haswell
- 1,4 Pflops, 80th Top500
- 1300+ nodes, 90K+ cores, Xeon E5 v3
- First Direct Liquid Cooling installation with Huawei systems
- Supports HPC (national & EU-wide in PRACE)
- HPC in the cloud (OpenStack)

PERFORMANCE DEVELOPMENT

PROJECTED

1 Eflop/s
100 Pflop/s
10 Pflop/s
1 Pflop/s
100 Tflop/s
10 Tflop/s
1 Tflop/s
100 Gflop/s
10 Gflop/s
1 Gflop/s

3 days = 1 sec.



SUM
N=1
N=500

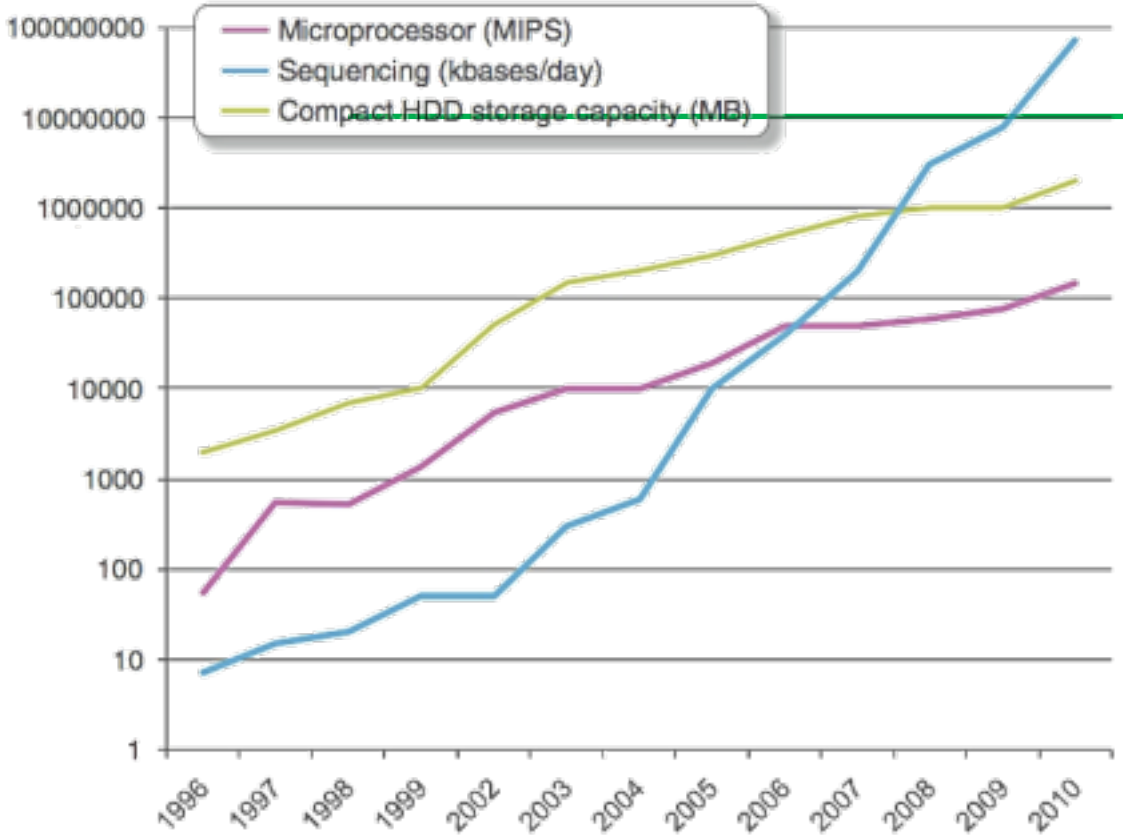
1.17 Tflop/s
59.7 Gflop/s
0.4 Gflop/s

74.2 Pflop/s
Sequoia (20PF)
10.5 Pflop/s
50.9 Tflop/s

'93 '94 '95 '96 '97 '98 '99 '00 '01 '02 '03 '04 '05 '06 '07 '08 '09 '10 '11 '12 '13 '14

ATARI

~ Enough to send people to the moon in 1969!


Microprocessor (MIPS)
Sequencing (kbases/day)
Compact HDD storage capacity (MB)
100000000
10000000
1000000
100000
10000
1000
100
10
1
1996
1997
1998
1999
2002
2003
2004
2005
2006
2007
2008
2009
2010

Think about your data…

(1990) 20 years = 1000 pictures =4GB

(2012) 6 months = 1000 picts + 1000 movies = 64GB

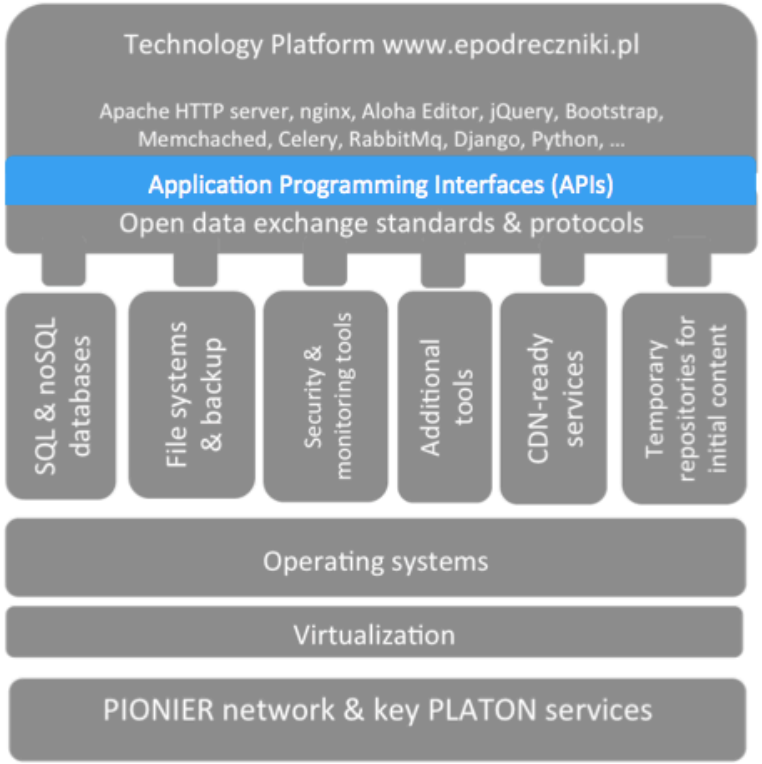
Open Educational Resources and e-textbook project

- Project supported by Ministry of Education, implemented in partnership with 3 selected Universities, one publisher and PSNC as technology and e-infrastructure provider (storage & computing facilities)
- All the resources available as OERs on CC-BY-… licenses to be used, re-used, modified, …
- Project is constantly evaluated, testing resources are publicly available (surveys, interviews, click/eye tracking, comments, questions, …) and will be extended…

Open Educational Resources and e-textbook project

- Services and OERs available now at **www.epodreczniki.pl**
- APIs and matadata schemas (english) http://dev.epodreczniki.pl
- UNESCO report on OERs in Poland

http://iite.unesco.org/pics/publications/en/files/3214727.pdf

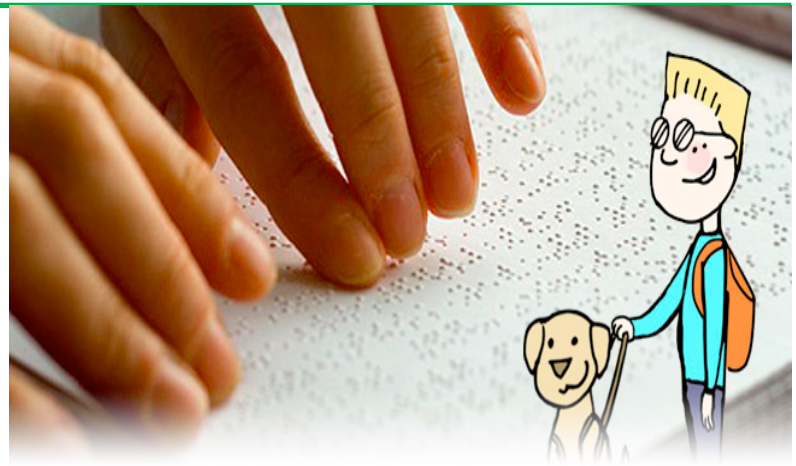


Open Educational Resources and e-textbook project

- Different data formats available to support thanks to the separation of data sources from presentation layers
- HTML5/JS/CSS3 for cross-platform support, no software to install and maintain
- Tested in various web browsers and HW
- Additional native apps for Android, iOS and Windows to synchronize on/off-line e-textbooks and personal notes
- Extensions possible to various edu service providers and cloud providers

Open Educational Resources and e-textbook project

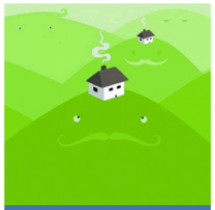
- Improved accessibility for disabled users thanks to XML/XSLT schemas and transformations (**cnx.org** based)
- Additional metadata and alternative descriptions for the collected edu content to meet WCAG2.0 requirements
- The presentation layer tested on various specific reading devices for disabled users
- Ready for Braille support

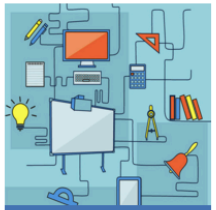


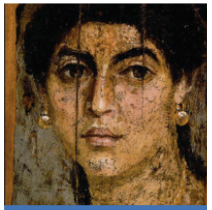
W3C® WCAG 2.0

POZNAŃSKIE CENTRUM SUPERKOMPUTEROWO – SIECIOWE

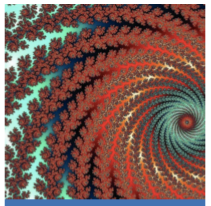
Open Educational Resources and e-textbook project

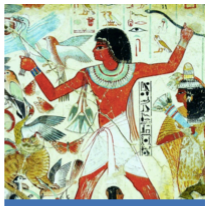

Język polski 4


Matematyka 4

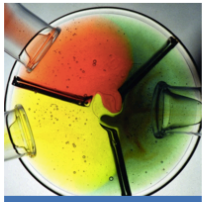

Historia i społeczeństwo 4

Język polski 1


Matematyka 1

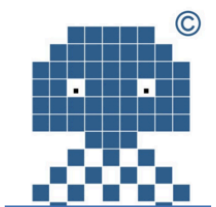

Historia 1

Fizyka 1

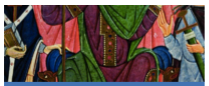

Chemia 1

Wiedza o społeczeństwie 1

Przyroda 4


Zajęcia komputerowe 4

www.epodreczniki.pl


Historia 1

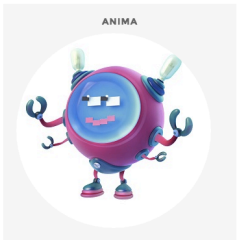
Biologia 1

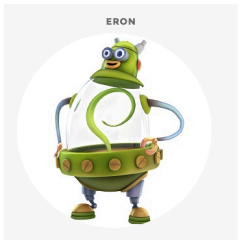
Geografia 1

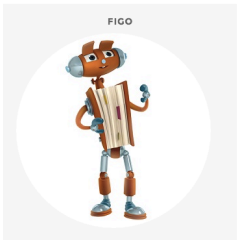
Wiedza o społeczeństwie

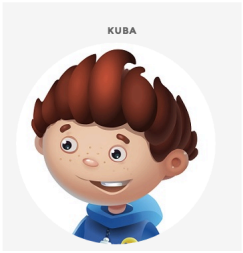
Informatyka

Edukacja dla bezpieczeństwa



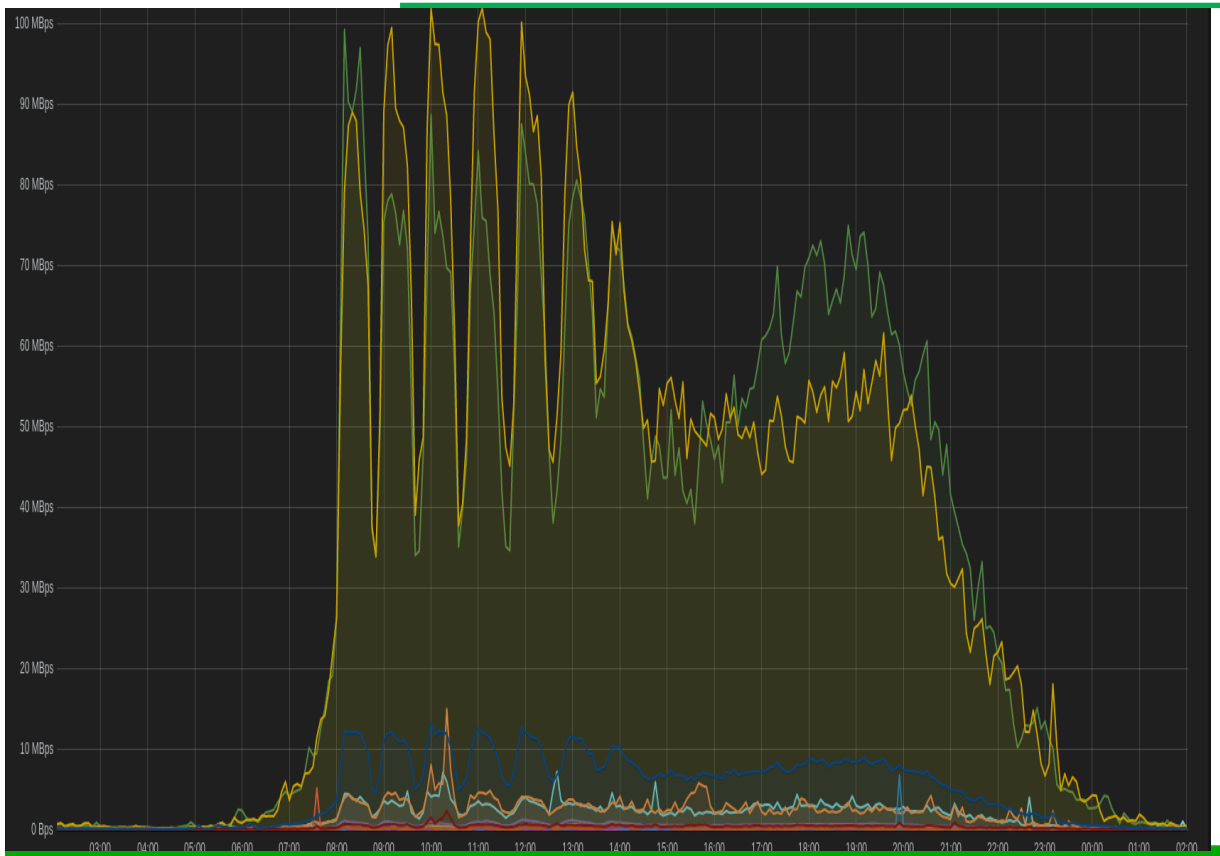


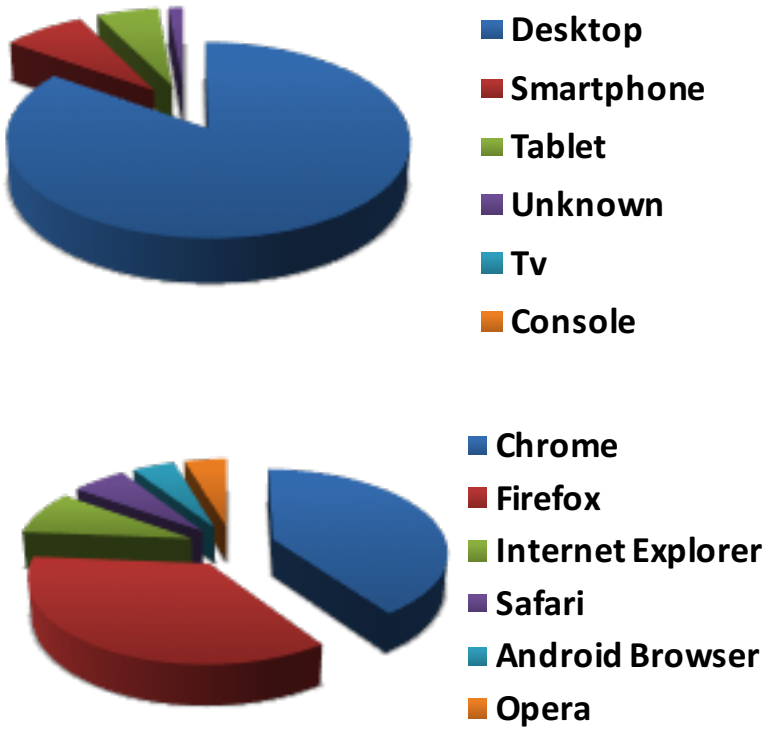




creative commons

… and additional data resources for research





past for future
SUPERCOMPUTING
POZNAŃ
NETWORKING
Thank You!