



# Invitation to 45th TF-CSIRT Meeting in Poznań 21-22.05.2015

Tomasz A. Nowocień

## Venue



Hosted by PSNC



Location: Poznań, Poland



POZNAŃ SUPERCOMPUTING AND NETWORKING CENTER

PSNC



## MISSION

### Center of e-Infrastructure

- National Research and Education Network PIONIER
- Research Metropolitan Area Network - POZMAN
- HPC Center
- Data repositories and Digital Libraries Federation
- Security

### Center for R & D

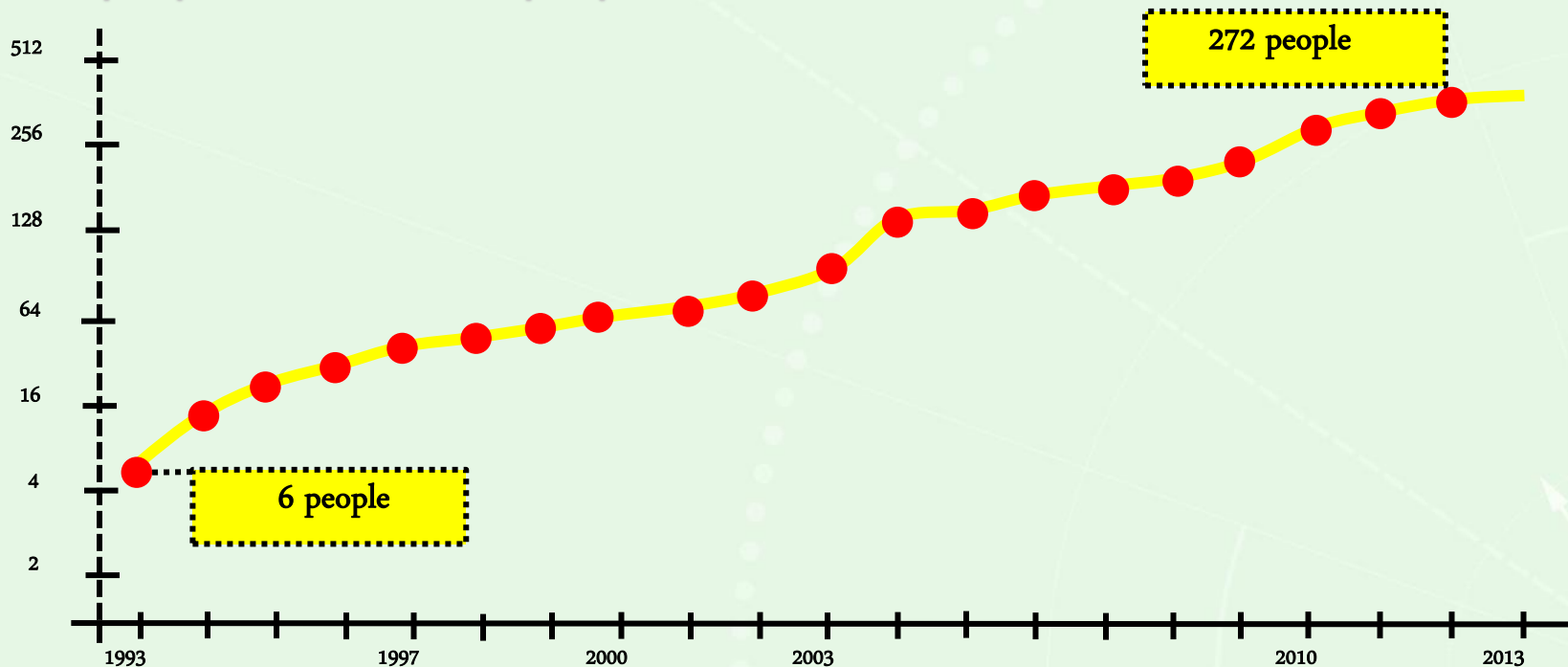
- New Generation Networks
- HPC, Grids & Clouds
- Grand challenge applications
- New media and visualization technologies
- Knowledge Platforms



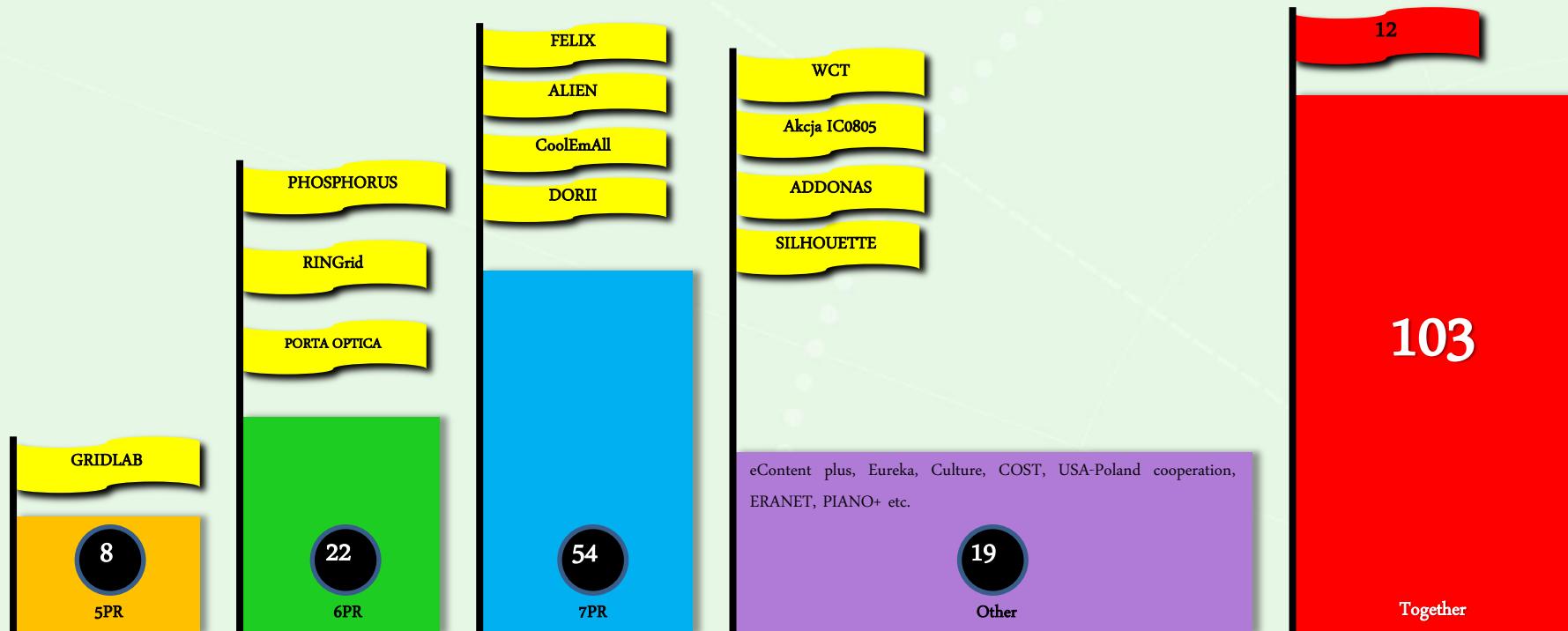


## PSNC in numbers

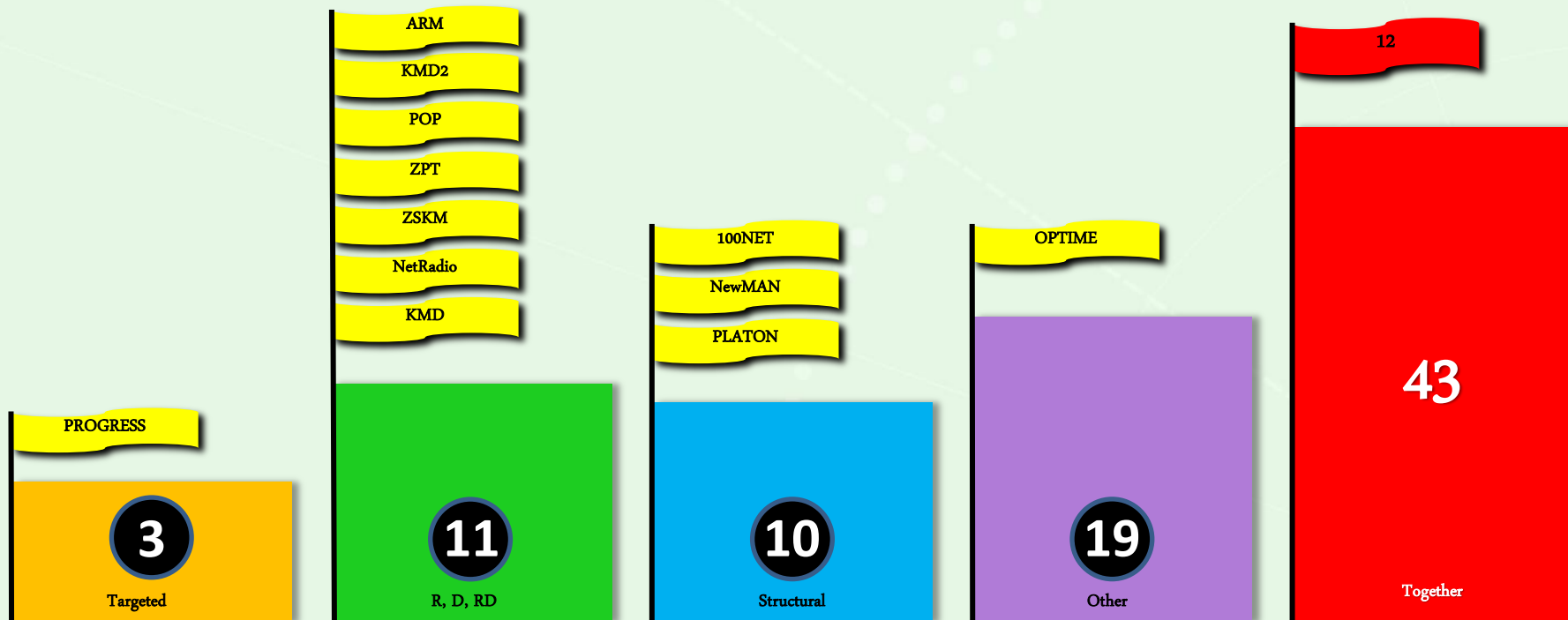
- From 6 people in 1993 to 272 people in 2013



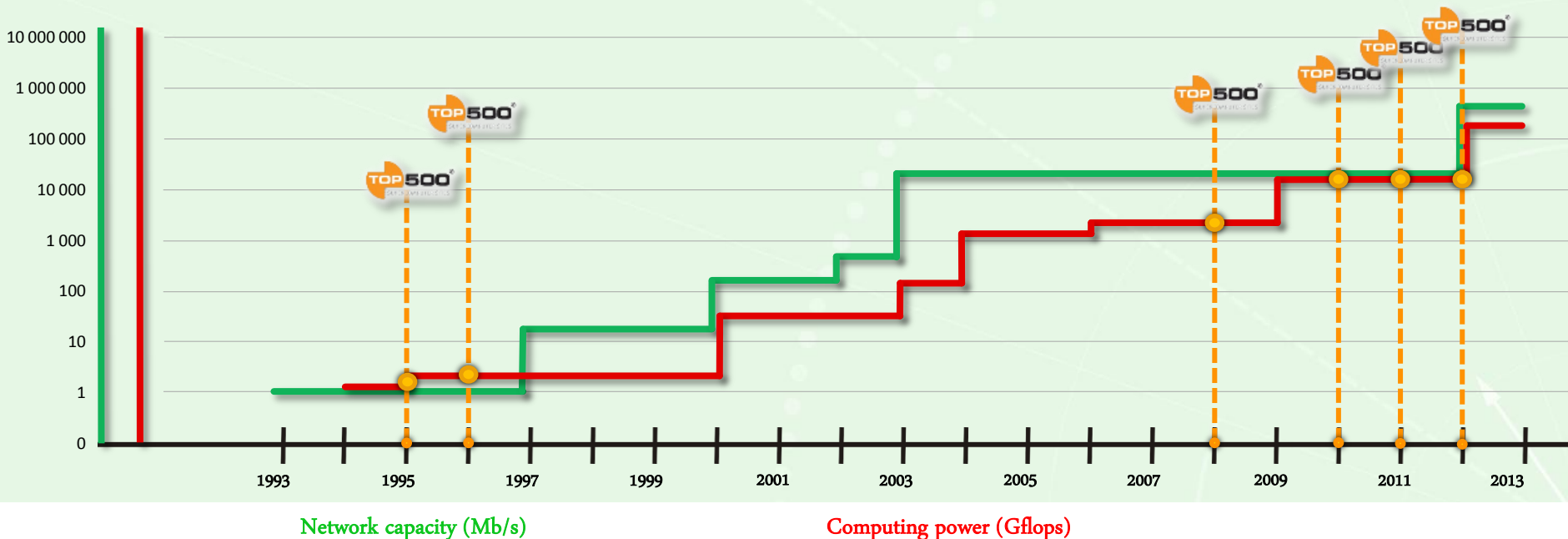
## PSNC in numbers – international R+D projects



## PSNC in numbers – national R&D projects

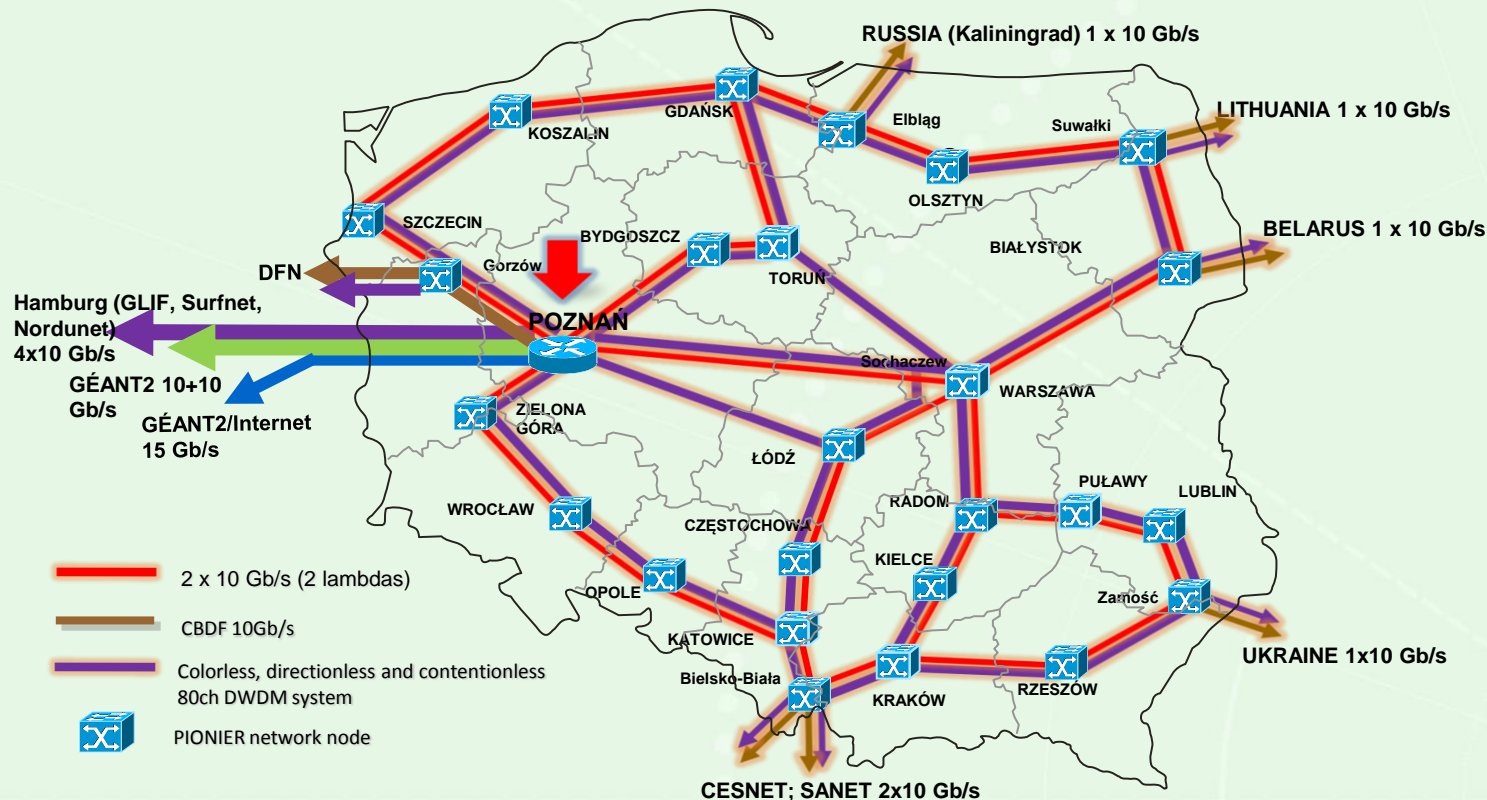


## Increase in network capacity and computing power





# National Research and Education Network - PIONIER (transmission)



# National Research and Education Network - PIONIER (topology) 2012



• Area	312k sq km
• Population	38M
• Main academic centers	21
• State universities	165+
• Students	2M+
• R&D institutions and Univ. interconnected via PIONIER network	700+

6467 km of fiber infrastructure in Poland

763 km of fiber in Germany (IRU)

7230 km of fiber in total

22 MANs and 5 HPC Centers in PIONIER Consortium with PSNC as Operator

## Metropolitan Area Network – POZMAN

### 220 km of own Fiber Optic Cables in the city of Poznań

- ~550k city population

- 105 connections to R&D institutions & Univ.

- Transmission technologies

10 Gigabit Ethernet with MPLS

- Users access

10 Mbps, 100 Mbps, 155 Mbps, 1 Gbps

Wi-Fi access


Wireless Poznań (+ EDUROAM)


– a joint project Poznań City Hall and PSNC




## PLATON Project Service Platform for e-Science



service coordinator 

main service node 

service partner 

- HD Videoconference services
- Deployment of eduroam services
- Applications on Demand for campuses
- Archiving on Demand
- Science HDTV services



## HPC Center

- HPC infrastructure
- PC clusters
- GPGPU clusters
- Prototypes on future promising technologies
- Hierarchical data infrastructure
- Fast external source of data (computing)
- Part of National Data Storage
- Part of European Data Infrastructure



### Environment:

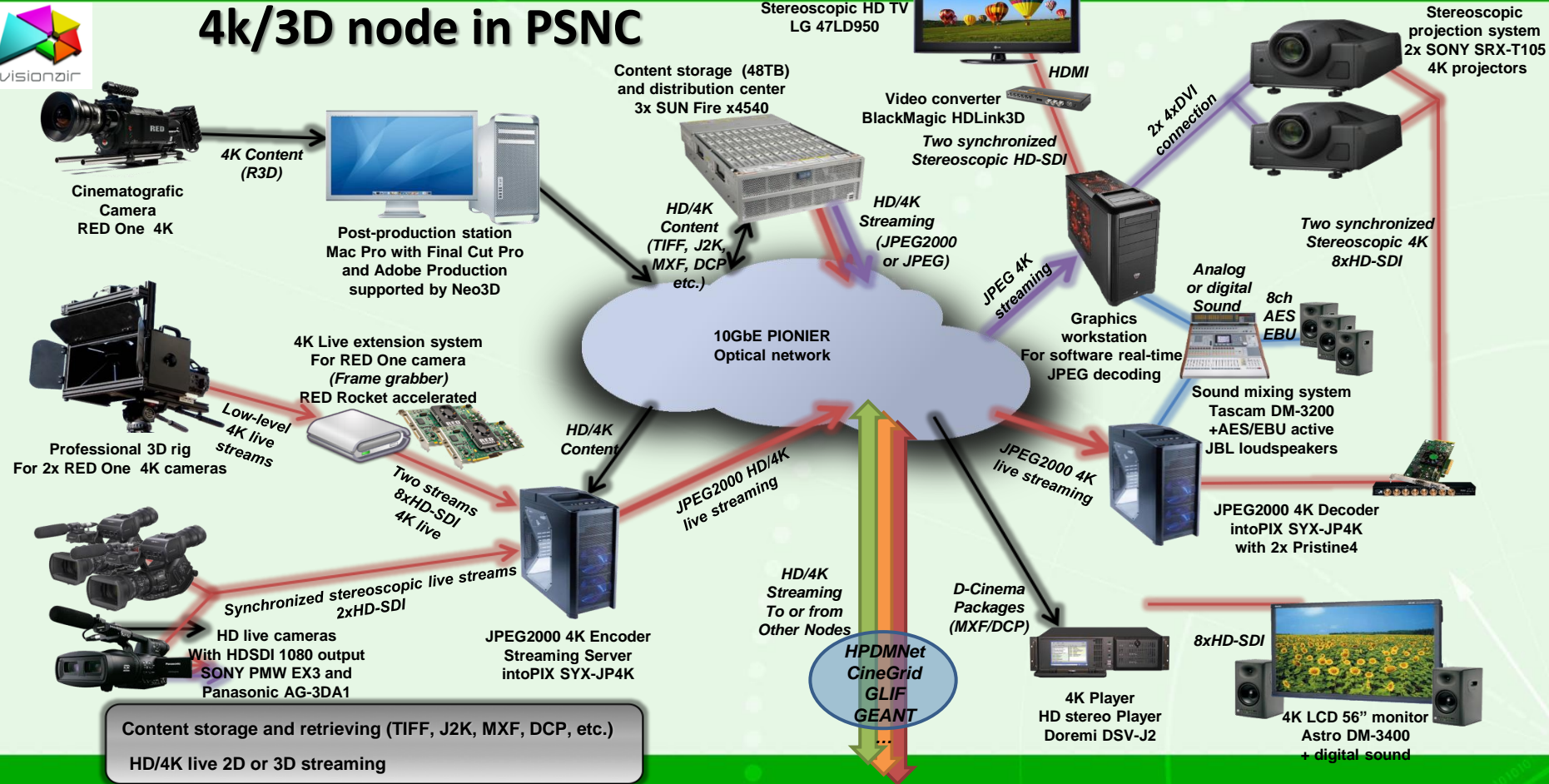
- 300+ sqm of data center
- Air, liquid cooled systems
- Video monitoring, fire protection
- 24h monitoring

### PSNC is part of:

- European HPC infrastructure (PRACE)
- European and national grid infrastructure (EGI, PL-GRID)
- National (Platon, NDS) and European data infrastructure (EUDAT)



## 4k/3D node in PSNC



## 16K/4K/3D node in PSNC (new setup since 2011)

### Ultra high visualization -16K:

- 64 Full HD LCDs
- 4 PC with ATI cards
- Advanced scientific visualization
- Molecular structures (bio- and nanotechnology)
- Geografical data

Software: SAGE, Vitral, etc.

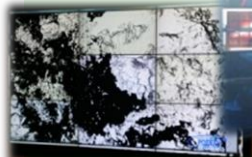
### A new GPU cluster:

- 160TFlops in total,
- about 220 nodes
- 2x AMD 12-core per node
- nVidia Tesla M2070 acceleration
- Infiniband QDR FatTree
- Applications: radioastronomy, physics, visualizations



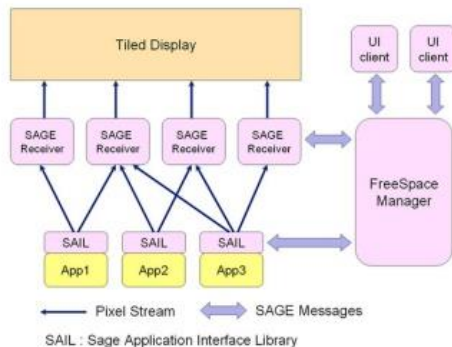


## New media



Science HD TV Services

## 16K visualisation





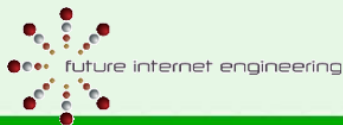
## Telemedicine & e-Health

### E-Health applications in Future Internet

- patient-oriented medical information management in content aware networks
- technical, semantic and organizational interoperability of telemedicine
- usability of distributed telemedical applications

### Supporting activity of the elderly

- health safety, novel communication and out-of-home support
- innovative care services in urban areas

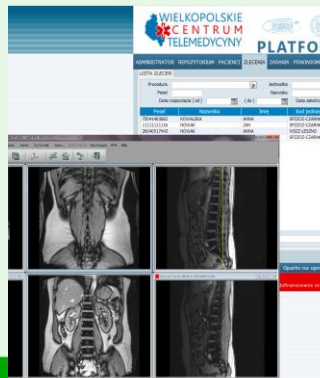


### Teleconsultations

- store-and-forward teleconsultations
- videoconferencing
- telemedical process management in service oriented environments

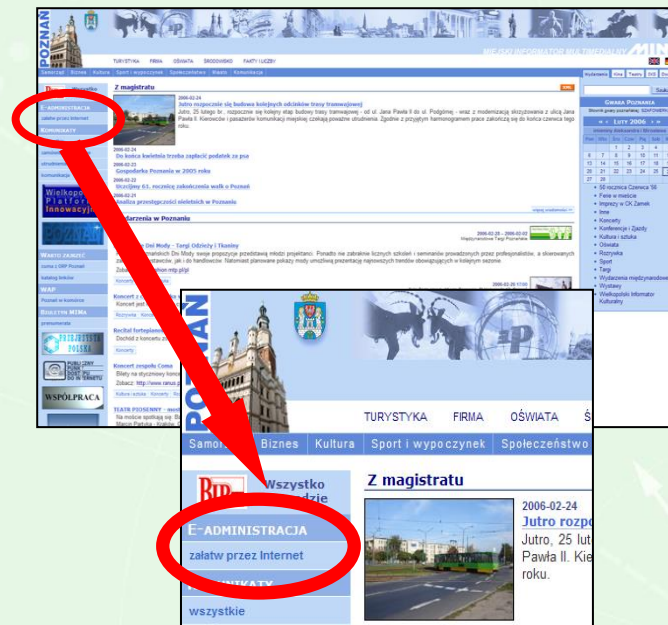
### Medical teleeducation

- educational registry of medical cases
- live transmission of surgical operations
- high definition and 3D multimedia courses



## E-Government

- **Multimedia City Guide**, developed since 1998 in co-operation with the Poznan Municipal Office:  
<http://www.poznan.pl>
- **Platform servicing the City Hall, its departments and units**
  - 1000+ editors, managing information and services
- **The platform of e-Government services for citizens and businesses**
- **Examples of eServices**
  - For SMEs  
(e.g. online business registration)
  - For education  
(e.g. Intake via Internet)
  - For citizens  
(Registry of Vital Statistics)
  - For open and transparent democracy  
(e.g. On-line consultation platform)
  - The city map (with Interactive maps and searching of cemeteries)
- **Public Internet Access Points (PIAPs)**

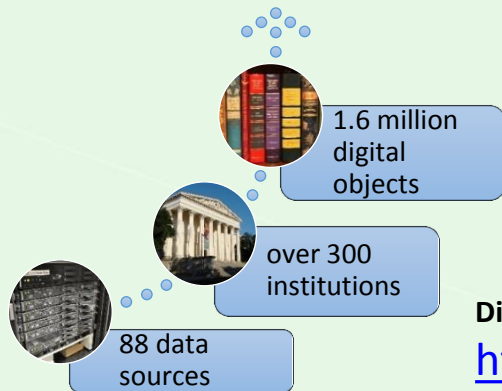


## Virtual Laboratories



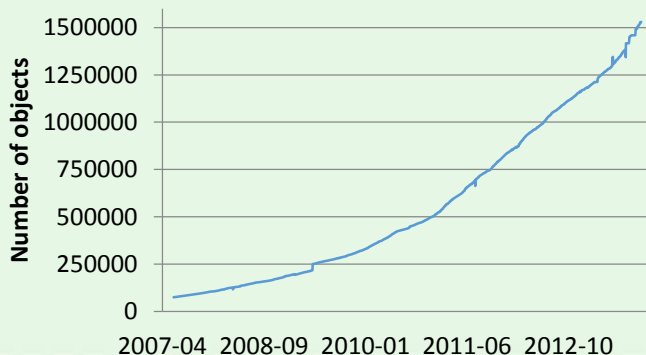


## PIONIER Network Digital Libraries Federation



Digital libraries in the PIONIER Network

<http://fbc.pionier.net.pl/>





## PIONIER Network Digital Libraries Federation

**19th International Conference on Theory and Practice of Digital Libraries**  
**14-18.09.2015, Poznań, Poland**

**<http://tpdl2015.info>**

## MOOC platform for K12

PSNC now acts as the **main technology partner** in the “Digital School” programme, sponsored by the **Ministry of National Education in Poland**

The “Digital School” programme focuses on three parts: **e-teacher**, **e-school** and **e-books**

- e-teacher part focuses on training and preparing staff to teach students how to live in the digital society
- e-school part focuses on delivering ICT equipment to selected schools
- The technology platform designed and deployed by PSNC will have to deliver **18 complete, free and officially approved e-books** for K12 in Poland to **2 000 000** users by 2015
- The first beta release was available online **September 2013** with **example free math e-books**



HTML5, CSS3 & less for  
cross-platform support



Tested in various browsers



Additional native apps  
to download the content off-line



Data export to different  
easy-to-use data formats

## Pionier CERT

### Constituency: PIONIER network

#### **AS13293, AS8501 POL-34/155 National Network**

AS8286 Academic Metropolitan Area Network, Szczecin

AS8267, AS8323 CYFRONET AGH, Academic Computer Centre Cracow

AS12324, AS12346 LUBMAN, Lublin

AS8256 Metropolitan Area Network LODMAN

AS8865 Metropolitan Area Network, Bialystok

AS12423 Nicholas Copernicus University, Torun

AS15798 OLMAN Metropolitan Area Network

AS15373 Politechnika Czestochowska

AS9112, AS8364 Poznan Supercomputing And Networking Center, POZMAN

AS5550, AS12831 TASK, PL-GDANSK

AS9103, AS13065 Technical University of Zielona Gora

AS8326, AS12618 University of Technology and Agriculture in Bydgoszcz

AS8970, AS15851 WASK - Wroclawska Akademicka Siec Komputerowa



Established 2001: POL34-CERT

Renamed 2004/2005: Pionier CERT

<http://cert.pionier.gov.pl>

## New PSNC Headquarter





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## PSNC Security Team

- Since 1996, currently 9 persons
  - Within the PSNC Supercomputing Department
- Main tasks
  - Securing PSNC, PIONIER, POZMAN infrastructures
  - Security tasks in R&D projects
  - Preparing trainings and workshops
  - Security research
  - External services
- <http://security.psnc.pl/en>



## Usual activities in R&D projects

- Design and implementation of security systems (e.g. IDS)
- Critical infrastructure protection
- Security reviews and audits
  - Manual and automated source code analyses
  - Penetration testing
  - Clear box security tests
  - Concept assessments
- Security trainings
  - Secure programming principles
  - Hardening of systems and services
- Security consultancy





## Selected R&D projects





## Security research in PSNC

- IDS/IPS, Complex Event Processing
- Wireless networks in Poznań
- eBanking security (SSL configuration)
- eCommerce sites (session configuration)
- Web servers (Apache / IIS)
- Using biological sequence alignment tools for visualization of network protocols
- Handling HTTPS errors in popular browsers



## Other security activities in PSNC

- Knowledge transfer
  - Conferences and trainings
  - Articles and internal reports
- External services
  - Penetration tests, complex security reviews
  - for banks, SMEs, self-government, hospitals
  - Securing UNFCCC COP 14 and COP 18 Conferences



## Poznań

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## Poznań - localization

### Flights

- Oslo
- Frankfurt
- London
- Dublin
- Warsaw
- Rome
- Paris
- Munich
- Stockholm
- Copenhagen



By train: 2h30' from Warsaw; 2h30' from Berlin



## Poznań - curios



## Poznań - curios

- About 550k population (5th in Poland) – 1M in agglomeration
- Capital City of Greater Poland (Wielkopolska)
- One of medieval Capital Cities of Poland
- 28 Universities
- Marian Rejewski, Henryk Zygałski, Jerzy Różycki







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**See you at 45th TF-CSIRT Meeting in Poznań  
21-22.05.2015 ☺**