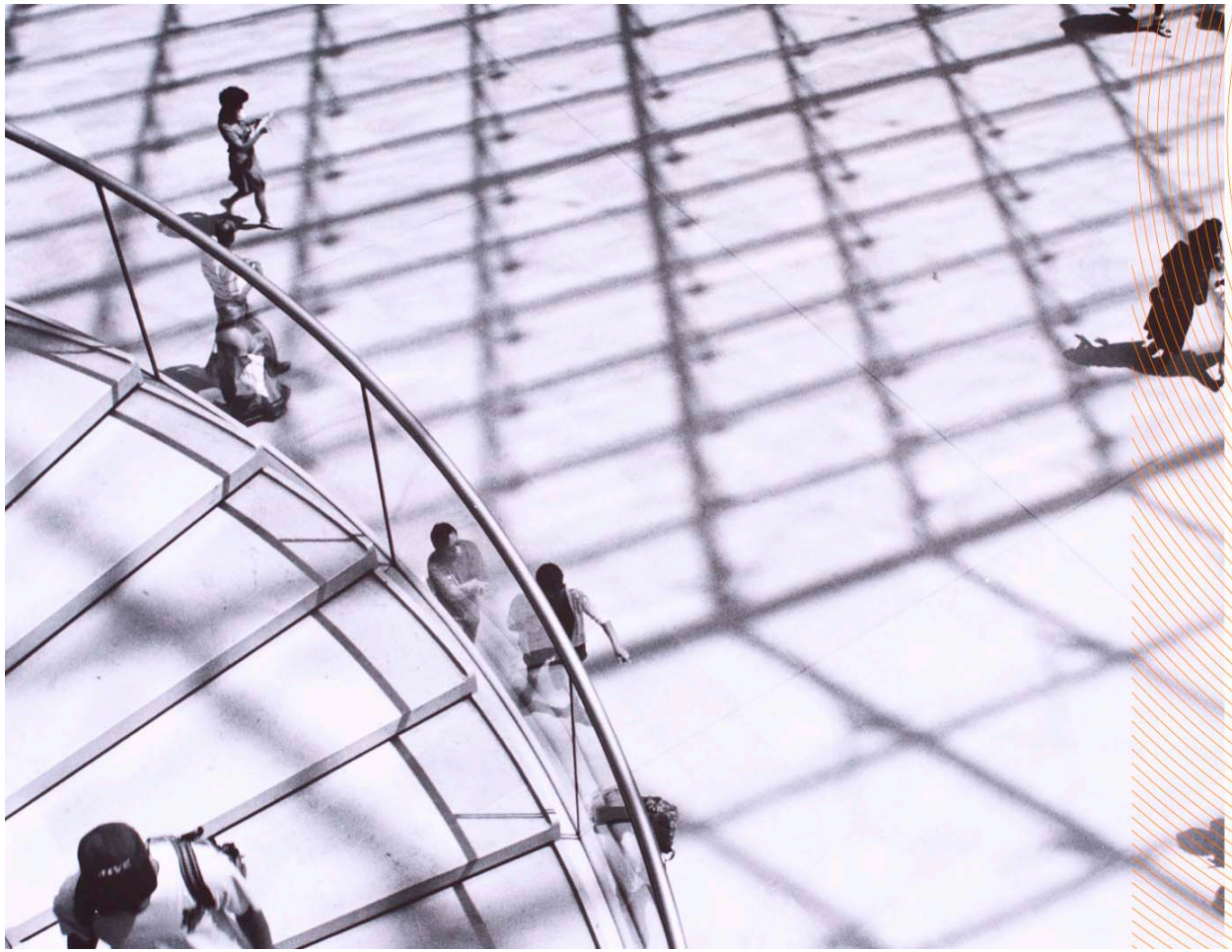
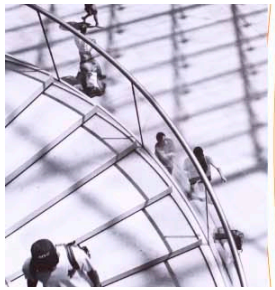


SURFnet: The NREN for The Netherlands

Erik-Jan Bos, SURFnet CTO

Wien, AT – June 9, 2010 – 20 Jahre ACOnet Infrastruktur

CC BY



Some early signs...

Ref: ripe-178
Title: RIPE Routing-WG Recommendation for coordinated route-flap damping parameters
Author: Tony Barber, Sean Doran, Daniel Karrenberg, Christian Panigl, Joachim Schmitz
Date: 5 february 1998

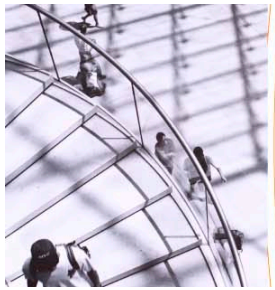
Draft Minutes: RIPE 21, Database-WG
Rome, 8.5.1995
Chair: Wilfried Woeber, Scribe: Wilfried Woeber
---

0. Administrative stuff

Unfortunately nobody volunteered to take the minutes. I had to guide the discussions and to take the notes at the same time. Thus these minutes are probably not as comprehensive as we are used to. Apologies.

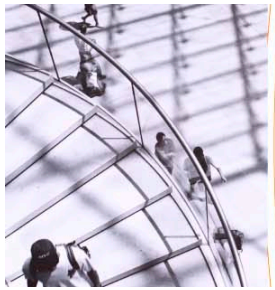
From press release at website TU Wien, November 1994:
"On 2 November 1994 the Ebone Association was formed under French law. Its first Executive Committee officers are:

Christian Michau from Renater, France, President,
Peter Rastl from ACONET, Austria, Vice-President,
Dave Morton from ECRC, Germany, Treasurer and
Dennis Jennings from HEANET, Ireland, Secretary."

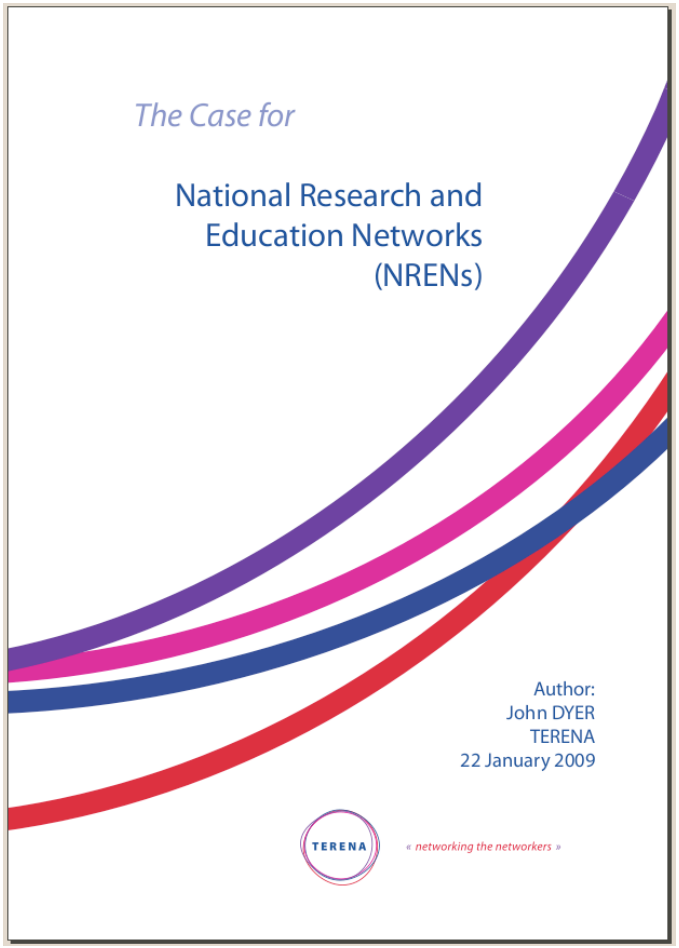


SURFnet Congratulates ACOnet...

- …for having been at the forefront of research networking in Europe
- …for having been a driving force to the development of the Internet in Austria
- …with 20 years of hard work making this all possible
- …Peter Rastl for his excellent leadership for so many years

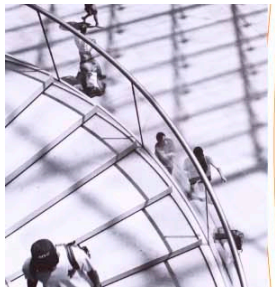


The Case for NRENs



- NRENs are special, providing advanced services to (H)E&R
- Spill-over of results into commercial sector of country
- Country should cherish the NREN
- Can lead to large advances in knowledge economy of country

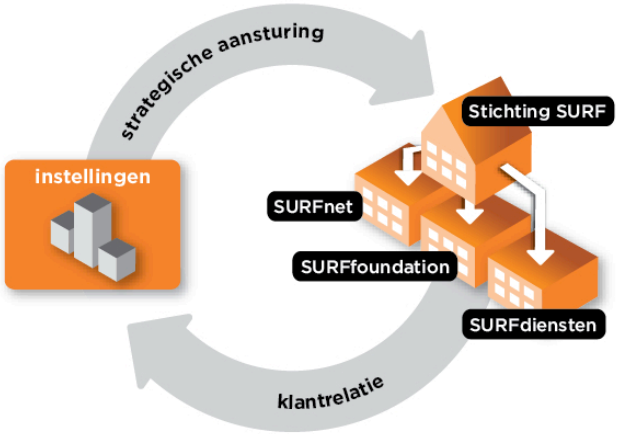
URL: http://www.terena.org/publications/files/20090127-case-for-nrens.pdf

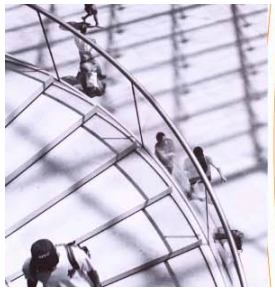


SURFnet (1)

- Owned by and working for the users in Higher Education and Research in The Netherlands: On the demand side of the market

- Part of SURF Family:
  - Established in 1988
  - Not for profit “BV” (GmbH)
  - 80 employees
  - 160 connected organisations

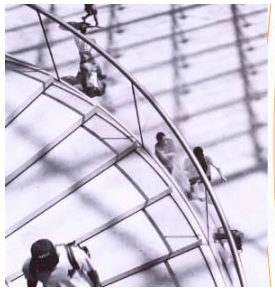




SURFnet (2)

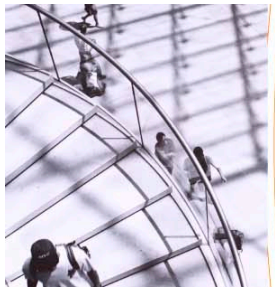
- Overall Vision:
  - SURFnet enables simple and powerful collaboration facilities for researchers, educators and students by seamlessly interconnecting ICT Services and by stimulating and developing new ICT Services

- Current focus areas:
  - Hybrid end-to-end Network
  - Trusted Identity
  - Innovative Collaboration Environment



Hybride end-to-end network

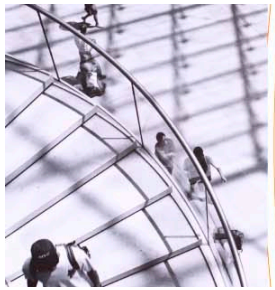
- 11.000+ km dark fiber, into connected organisations
- Own photonic network
- Network Services:
  - IPv4 and IPv6
  - Fixed and dynamic Lightpaths
- Collapsed IP backbone with routers at only 2 locations



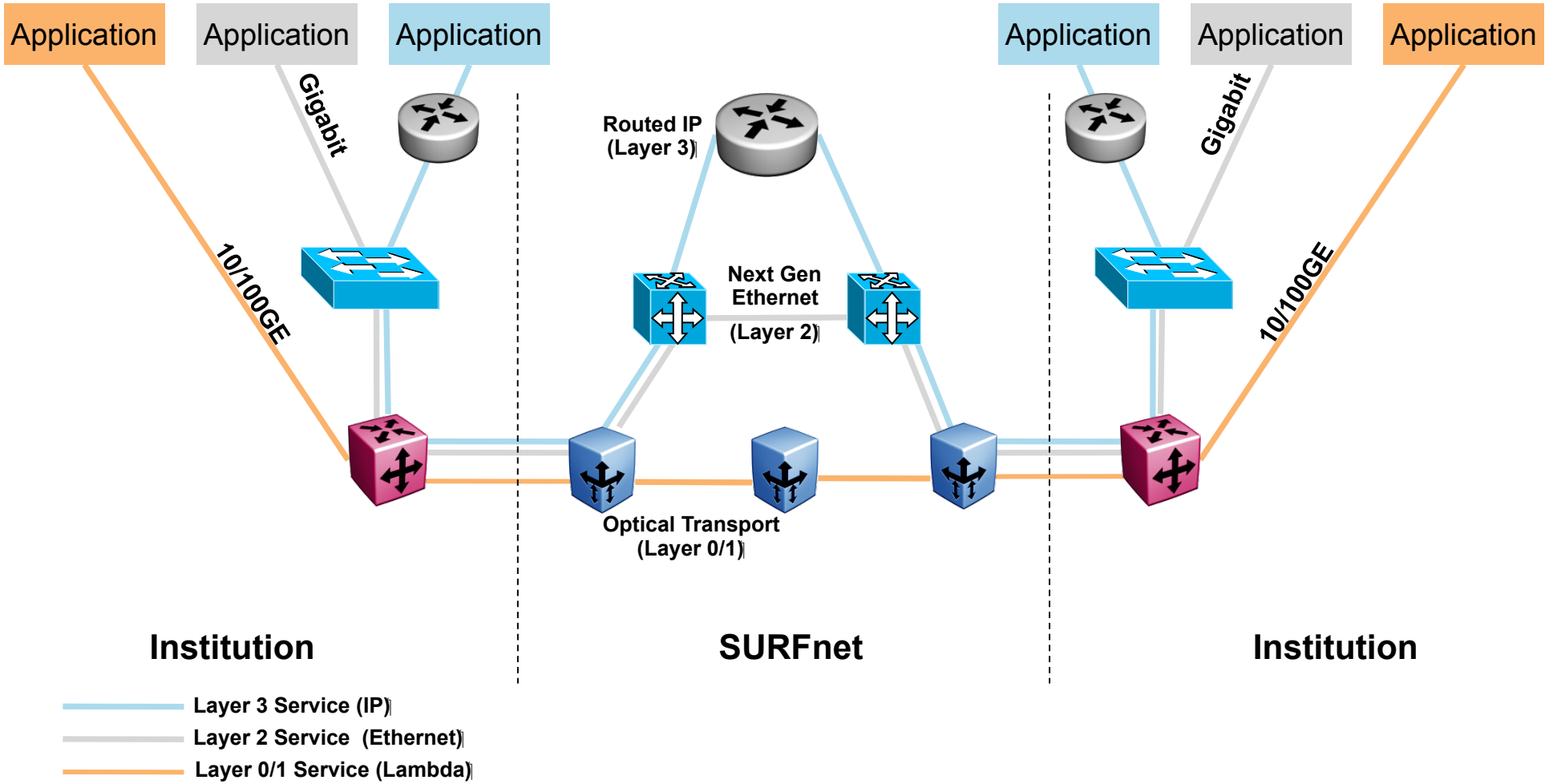
GigaPort3 (2009-2013) Ambition

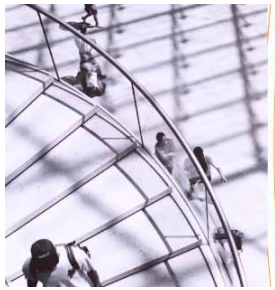
- SURFnet7: A next step in bandwidth and flexibility
- Lichtpaths: scalable and under control of users and their applications
- New architecture: Next Generation Ethernet
- Enabling Dynamic Services: middleware for safe and user-friendly integration of ICT infrastructure components en instruments
- Research into improvements in mobility solutions and the integration with next gen wireless communications such as 802.11ac and LTE (and beyond)
- Stimulating the use of novel and advanced services and knowledge dissimination

- Research on Networks is essential to realize this high ambition



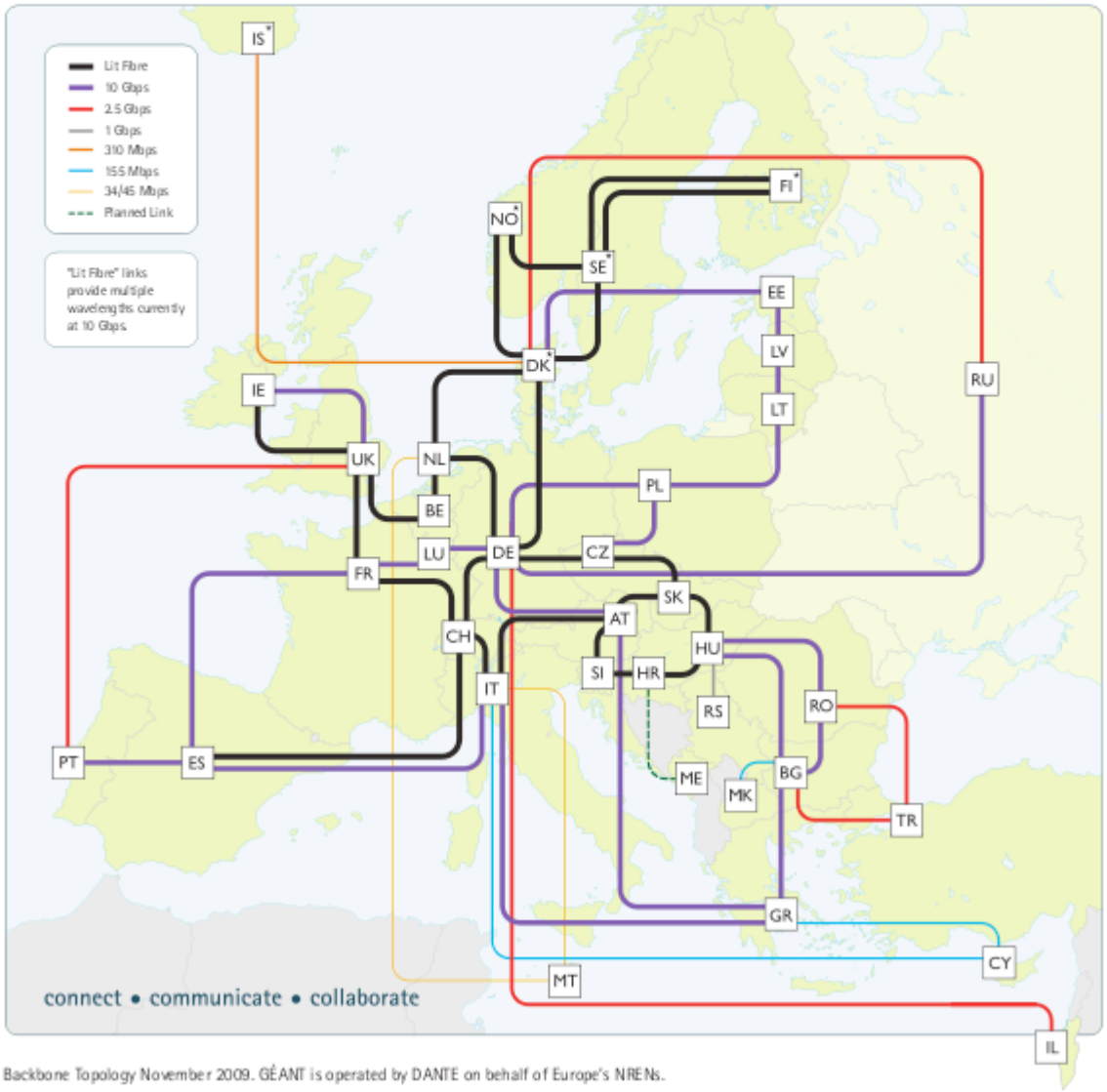
SURFnet7: the scalable hybrid network



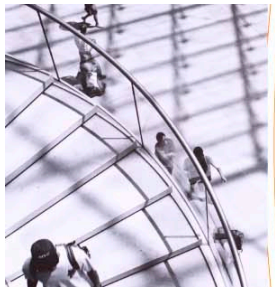


GÉANT the pan-European research and education network

Transforming the way users collaborate



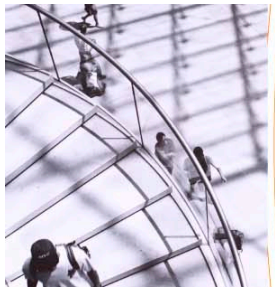
Backbone Topology November 2009. GÉANT is operated by DANTE on behalf of Europe's NRENs.



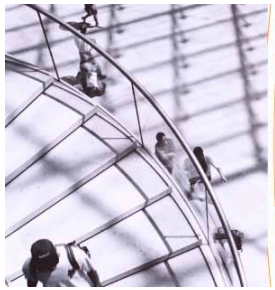
Use of NREN owned and operated resources

- Many advanced NRENs run their own fibers nationally, often easily extended to interconnect near borders: CBF
- GLIF Open Lightpath Exchanges (GOLE) have emerged worldwide, and are being coordinated in GLIF
- NREN owned and operated resources, such as CBFs & GOLEs, are planned to be part of the future GÉANT
- GN3 White Paper:

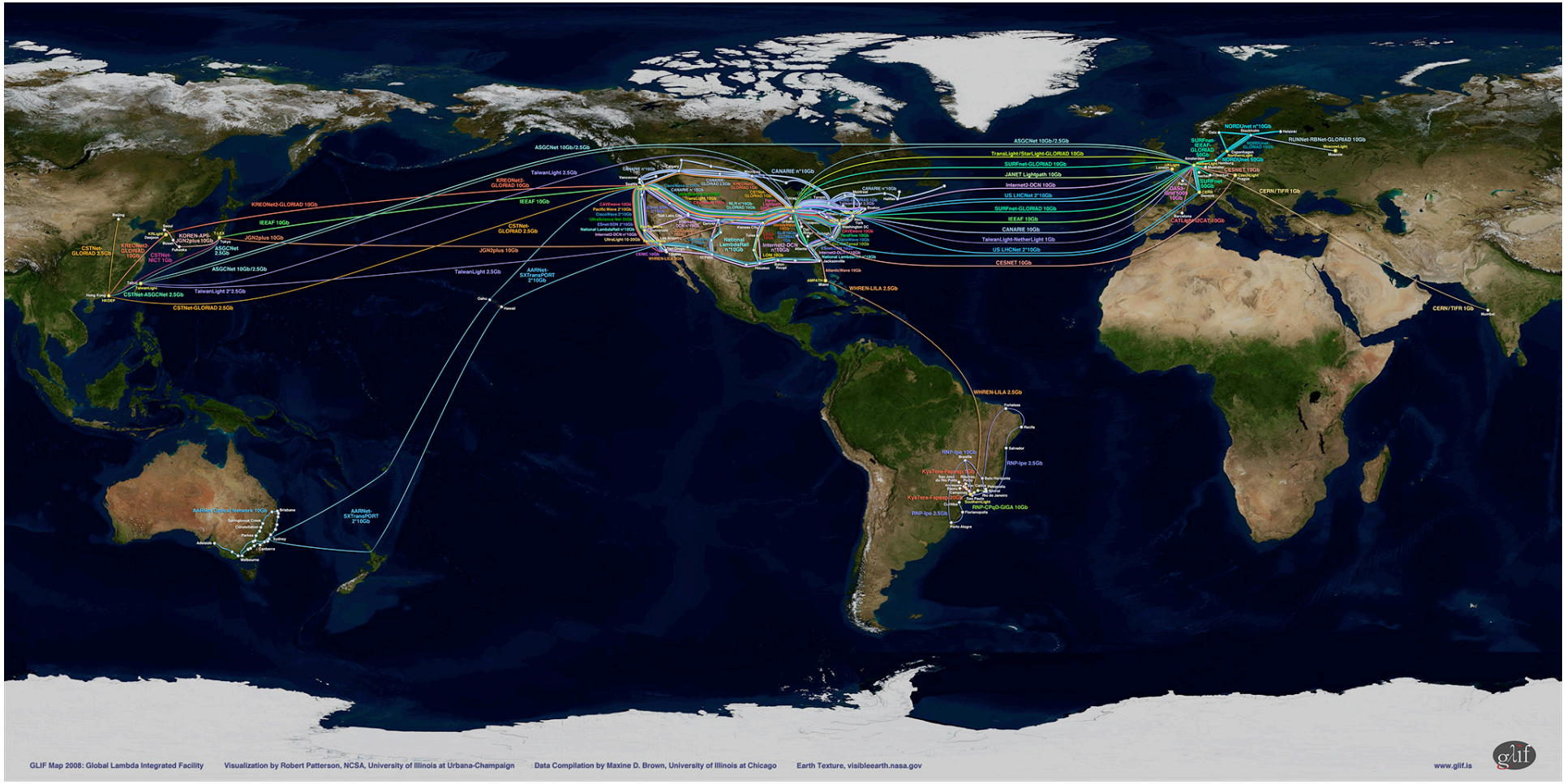
  http://www.dante.net/upload/pdf/GN3-08-034-GN3-White-Paper.pdf

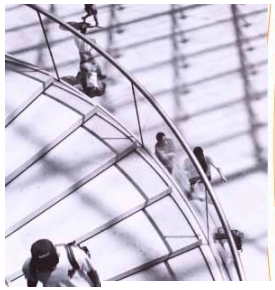


NREN Cross Border Fibers in Europe

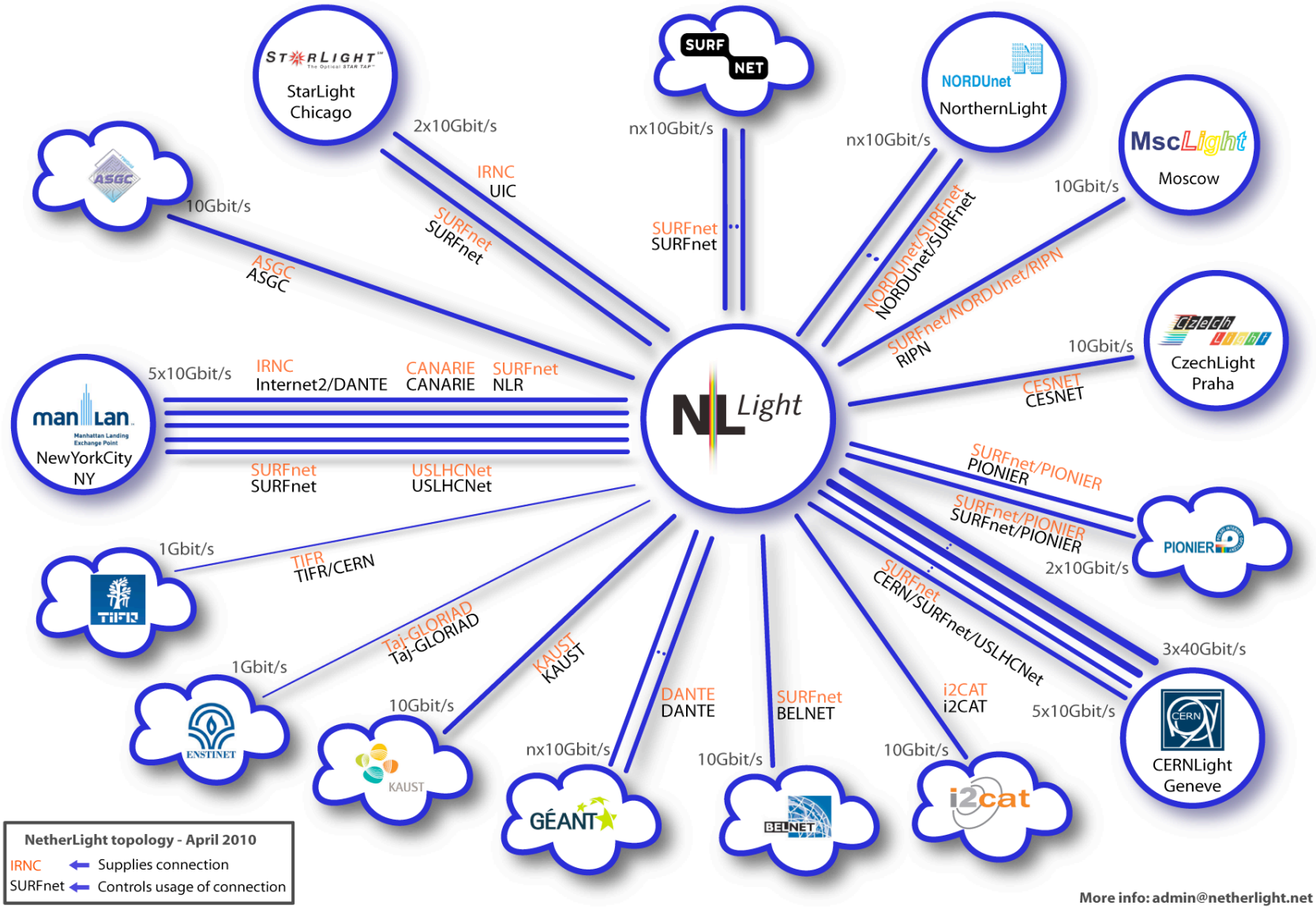


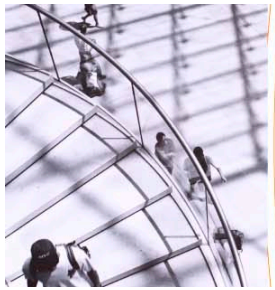
Global Lambda Integrated Facility



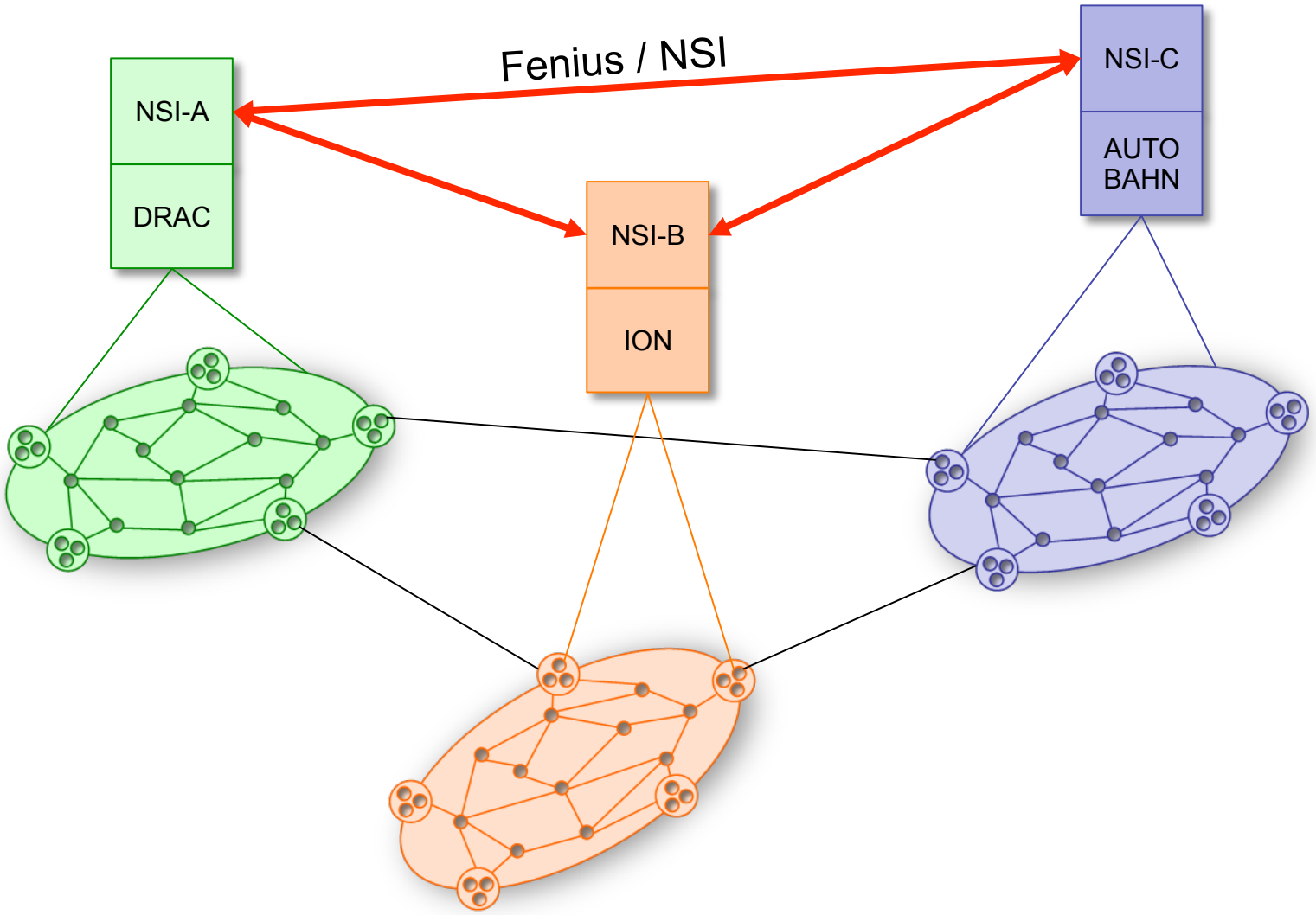


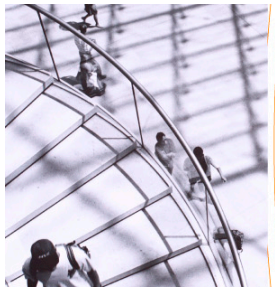
NetherLight: The GOLE in Amsterdam





Federated Multi-Domain Networking





SURFfederatie: Federating access through web of trust

1-1:

Business: SAML 1.x

N x M:

Shared trust, pt2pt

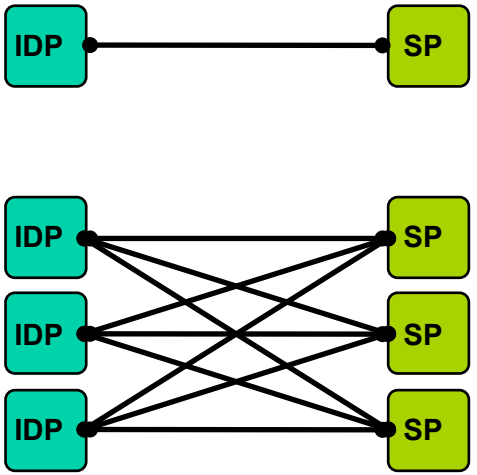
N + M:

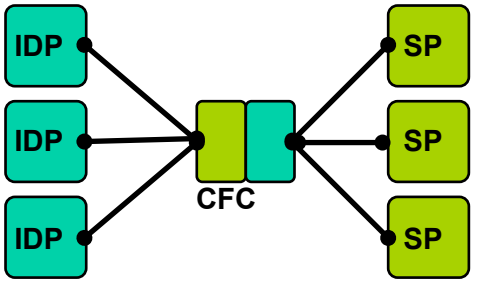
Central gateway

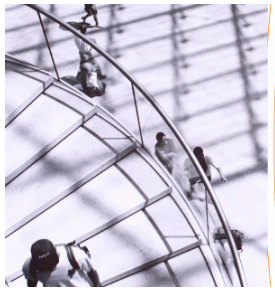
Protocol translation

SURFfederatie:

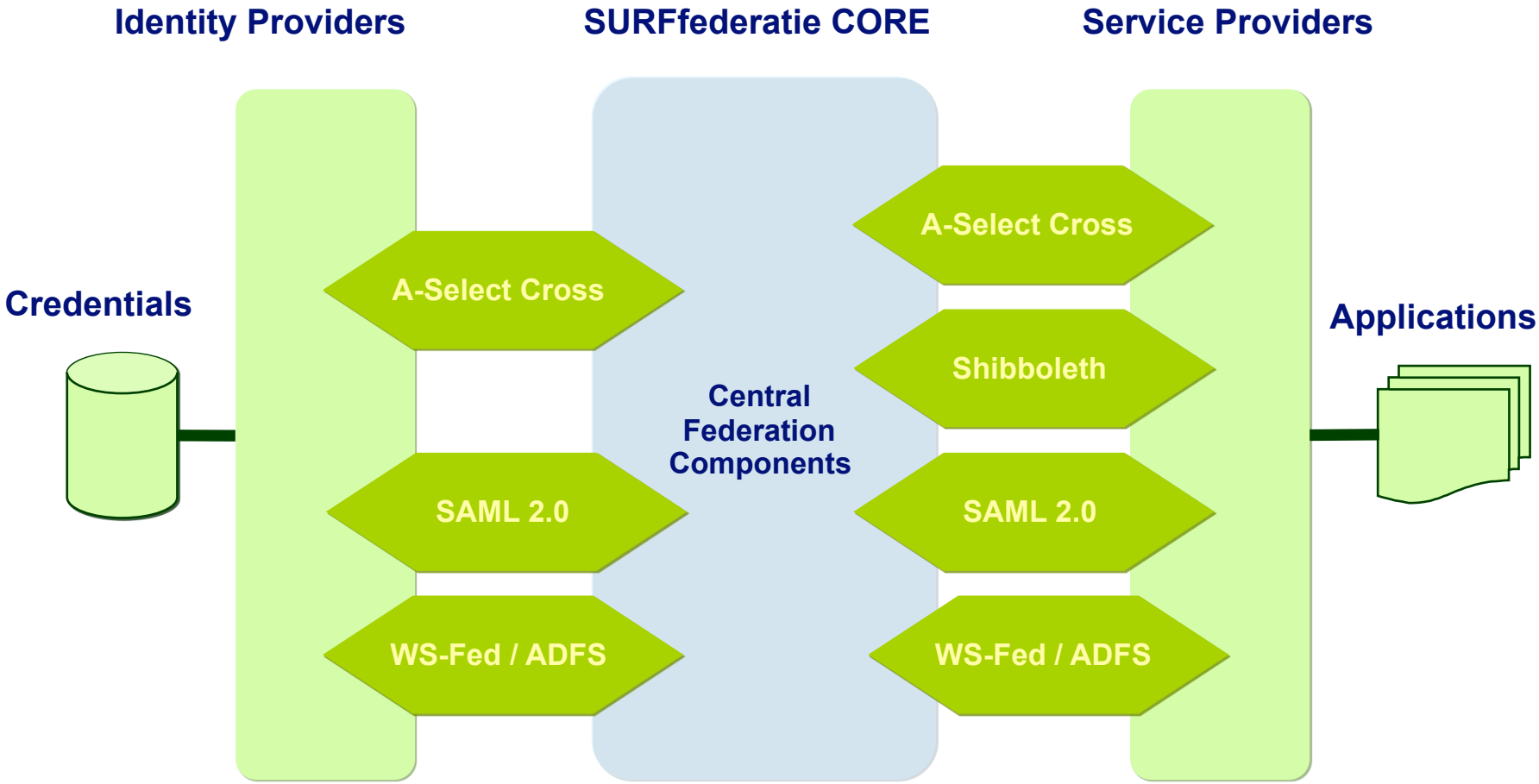
- All universities in NL
- ~600.000 identities

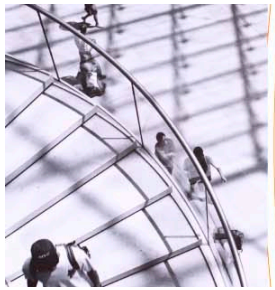




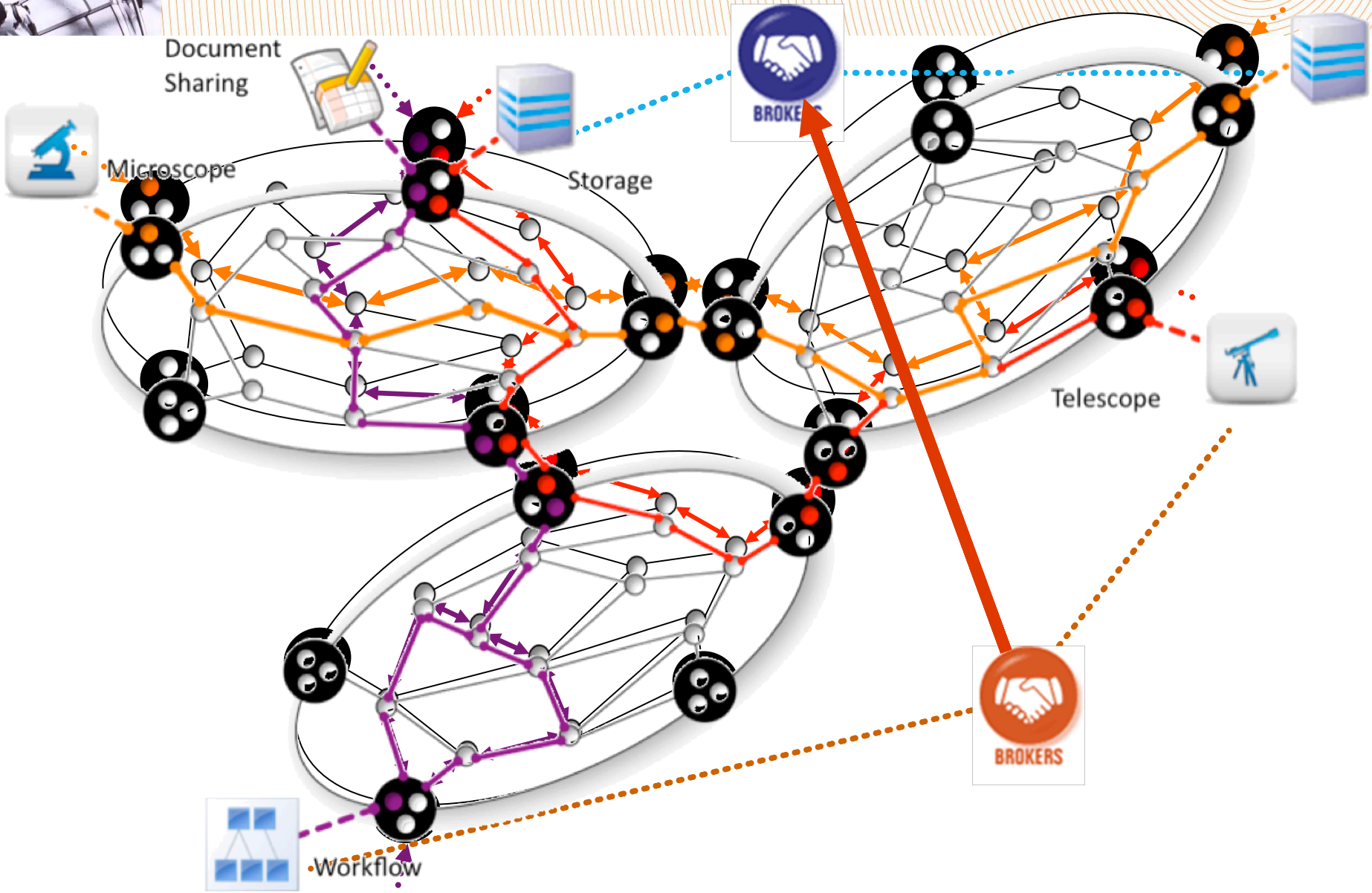


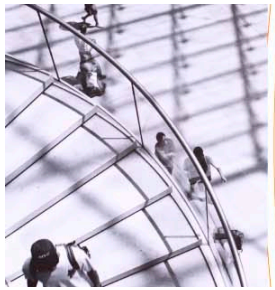
SURFfederatie Functional View





Enabling Dynamic Services





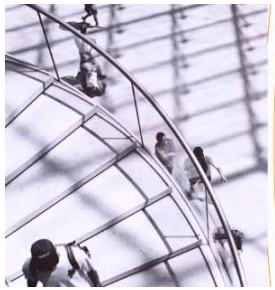
The Environment is Changing, Rapidly...

- ICT has become an integral part of the core processes within institutes for HE & R, and primary processes rely on the availability and continuity of ICT services

- High demands coming from ICT-competent users and scarce internal resources at institutes

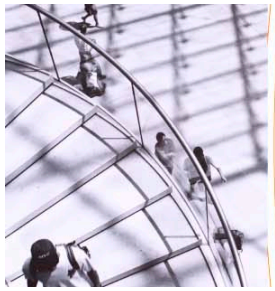
- Huge amount of ICT-service offerings outside of the institute, the innovation continues at fast pace

- Complex and quickly moving technology makes it hard to stay up to date

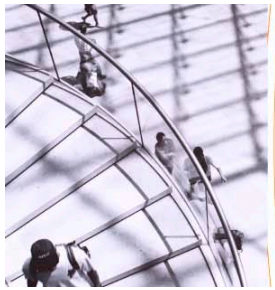


...Hence:

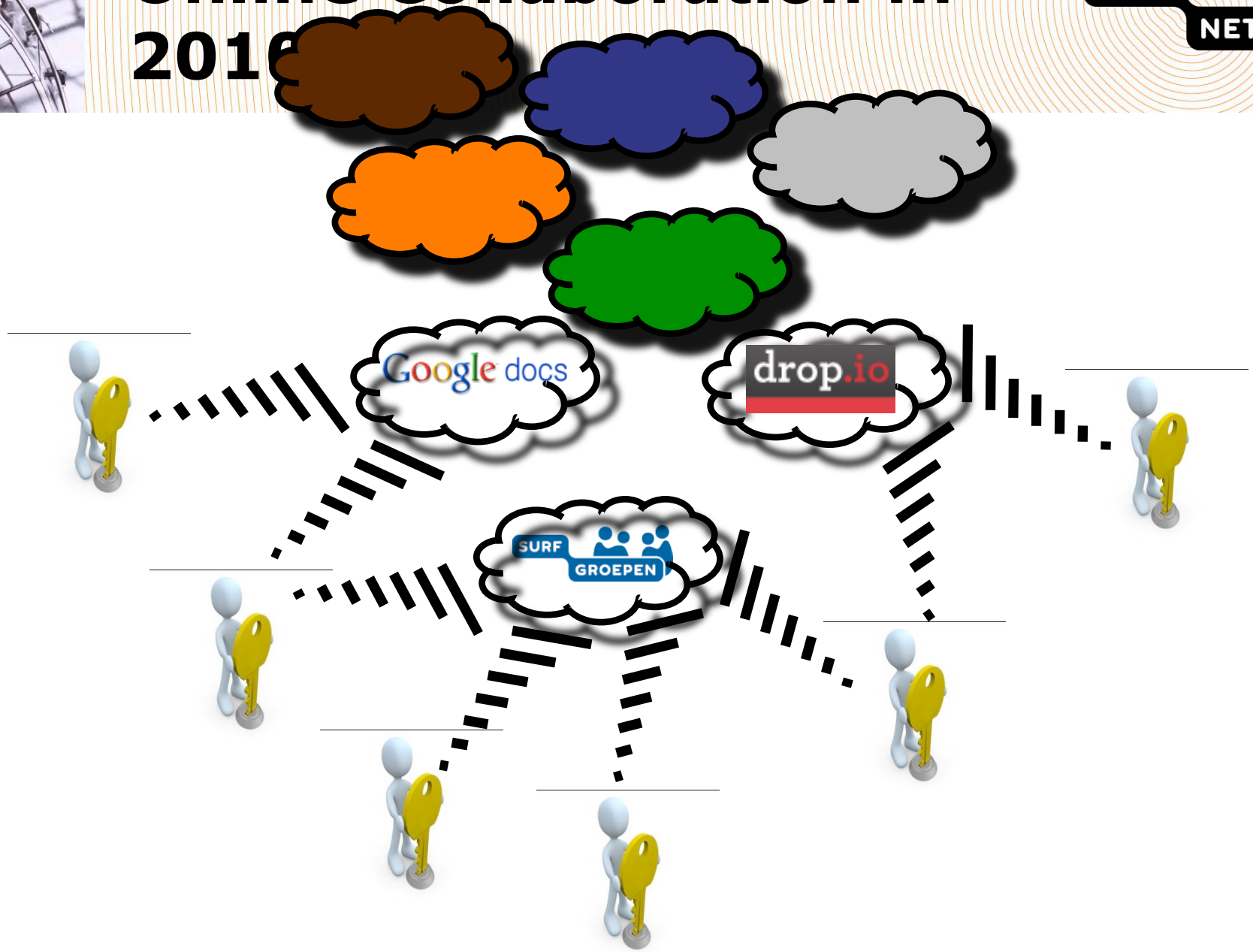
- Services are becoming more important
- Closer collaboration needed with users and other e-Infrastructure providers
- Coordination at a worldwide scale should be our focus

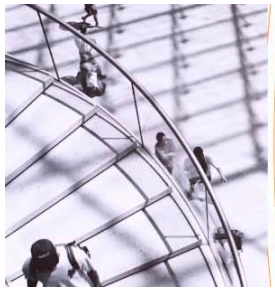


SURFgroepen

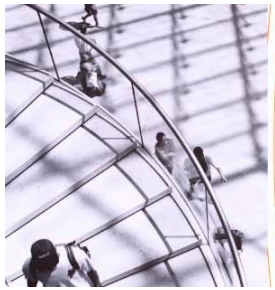


Online Collaboration in 201

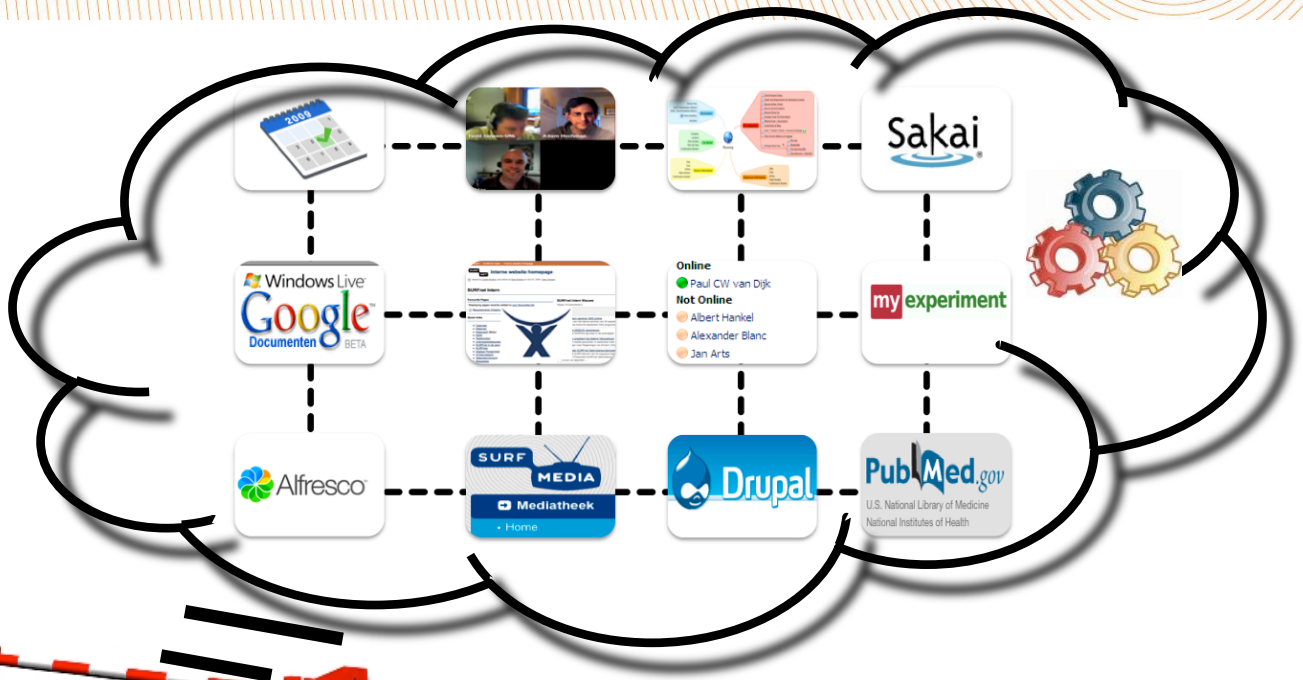


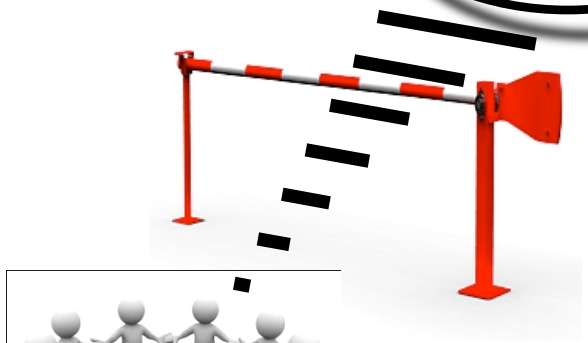


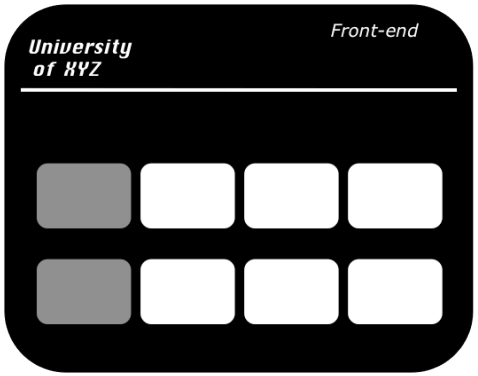
SURFfederatie

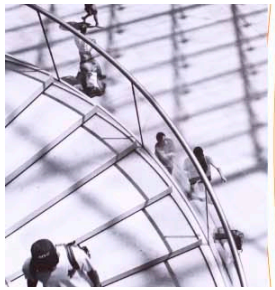


Collaboration Infrastructure







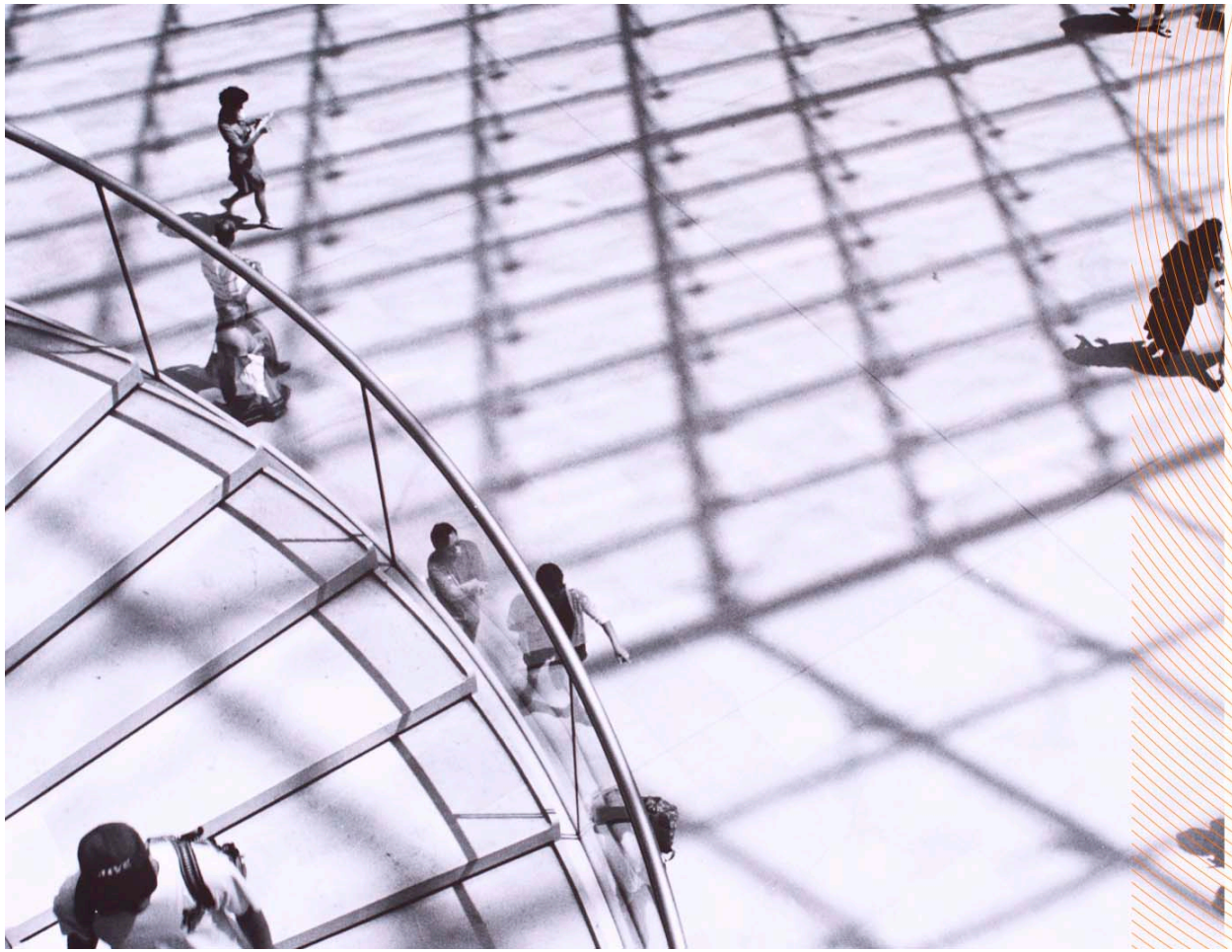


Conclusions

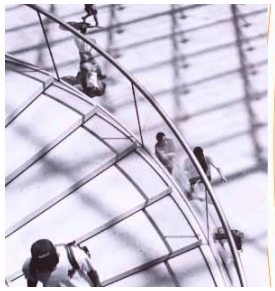
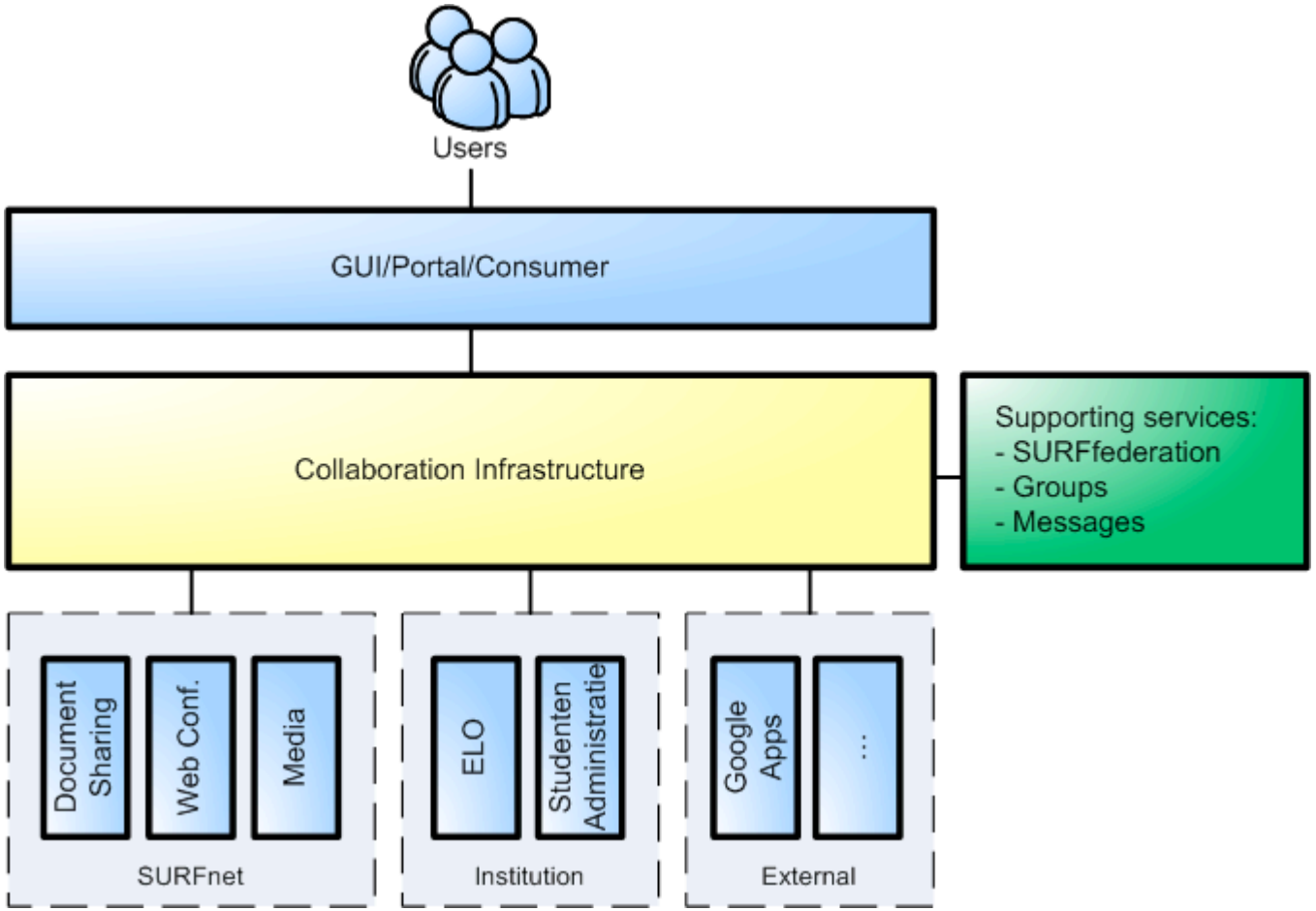
- Trends…
  - in scientific research and higher education
  - in the ICT market

- …Bring to the table new demands for the ICT Infrastructure for Research and Higher Education

- NRENs must prepare of this…
- …and Austria is lucky to be among the countries in Europe that has a forward looking NREN, but this needs constant care and feeding from institutions and government



Thank you!
Questions?



Collaboration Infra Architecture