GigaPort: the business-case

1-7-2009

Who is SURFnet?

- Dutch National Research & Education Network (NREN)
  - Not-for-profit organization, 70 employees
  - Owned by the research and education community
  - > 1.000.000 end-users from 160 connected institutions

- SURFnet provides advanced services to the research and education community
  - High performance networking
  - Authentication and authorization services
  - Advanced online multimedia collaboration

SURFnet6

- One of the most advanced networks in the world
- More than 8.000 km dark fiber pairs into the R&E institutes
- Own photonic network
- Hybryd networkservices: IP + lightpaths
- Dynamic lightpaths available from December 2008

What is GigaPort?

- GigaPort Next Generation network is a five-year collaboration between public and private organizations that started on 1 January 2004

- GigaPort's aim is strengthening the national knowledge infrastructure in The Netherlands

- The project is funded by:
  - The Dutch government
  - Industry partners (via public tender)
  - GigaPort Consortium (R&E)

GigaPort: best business case (Computable)

- The GigaPort project was elected the best business case in IT in the Netherlands in 2008 (out of 43 competing projects)

- Jury impressed by innovative platform for e-Science (e.g. e-VLBI OPN & LHC OPN) as well as societal value and impact (e.g. DigiBOB OPN)

- Jury complimented SURFnet for stakeholder management (intensive cooperation between government, HE&R and industry) and project management (on-time, within budget)

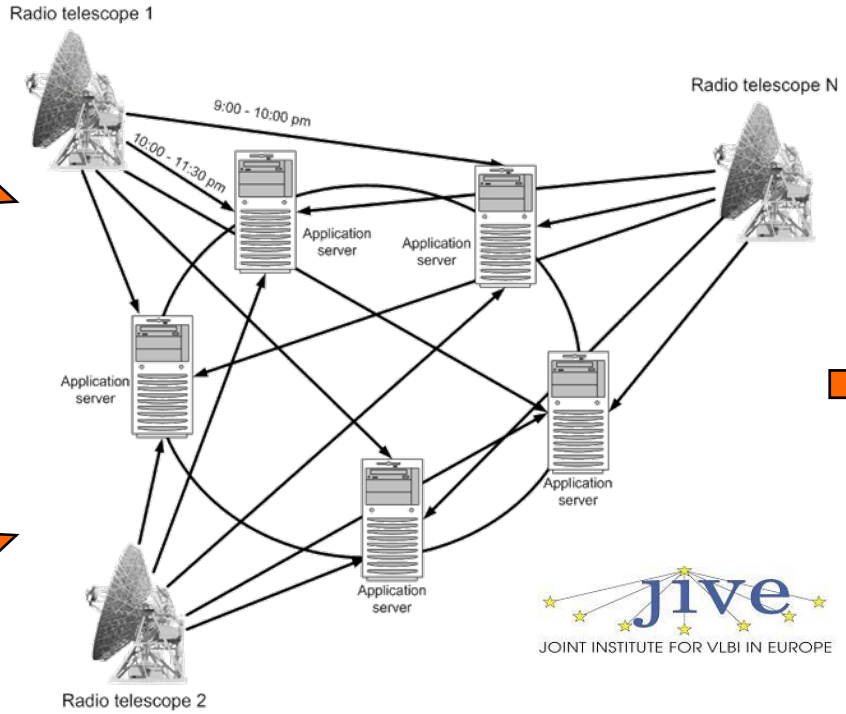
Hybrid networking

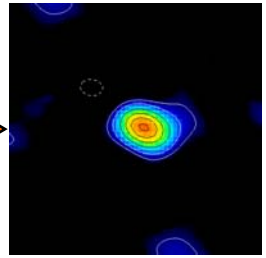
- Problem
  - How to accommodate needs of (scientific) users for high speed networking
  - While protecting the performance of the network for current users
  - And keeping the successful end-to-end model of the internet
- Solution:
  - Packet switched internet for regular many-to-many usage
  - Lightpaths for new high speed few-to-few usage
  - Optical Private Networks combine permanent lightpaths into transparent networks

Example-1: e-VLBI, a global radiotelescope

e-VLBI: global distributed radiotelescope

- Very long baseline virtual radiotelescope, created by correlating outputs of multiple actual radiotelescopes (e-VLBI)





Results

- SURFnet connects upto 16 radiotelescopes to JIVE (main correlator), located in Dwingeloo

Example-2: DigiBOB

- Breastcancer screening fully digitized (900.000 women/year)

- Improves quality:
  - image resolution (20 MB/picture)
  - process (2nd opinion, 1 set of copies)
  - research (correlation of data)
  - environment (no chemicals)

- SURFnet connects regional organizations to central database using lightpaths (fixed bandwidth, fixed delay)

- Compliments received from Minister of Health

The SURFnet approach

- Business philosophy:
  - Requirements of scientific applications are ahead of the general network markets
  - Research networks are driving network innovation

- Architectural principles:
  - Keep It Simple!
  - Bandwidth should be like oxygen (no scarcity!)

- Financing approach:
  - Operations paid by connected institutions
  - Innovation paid through subsidies and industry contributions

Build your own network

- Incumbents operators are reluctant to provide the services required by NREN's:
  - Try to sell leased lines or IP-VPN, instead of dark fiber or lambdas
  - Impose limitations on transparency and performance

- Therefore:
  - Use a commercial operator willing to go lower in the stack (e.g. a carrier's carrier) or build your own fiber
  - Implement neutral exchanges (IP & optical)

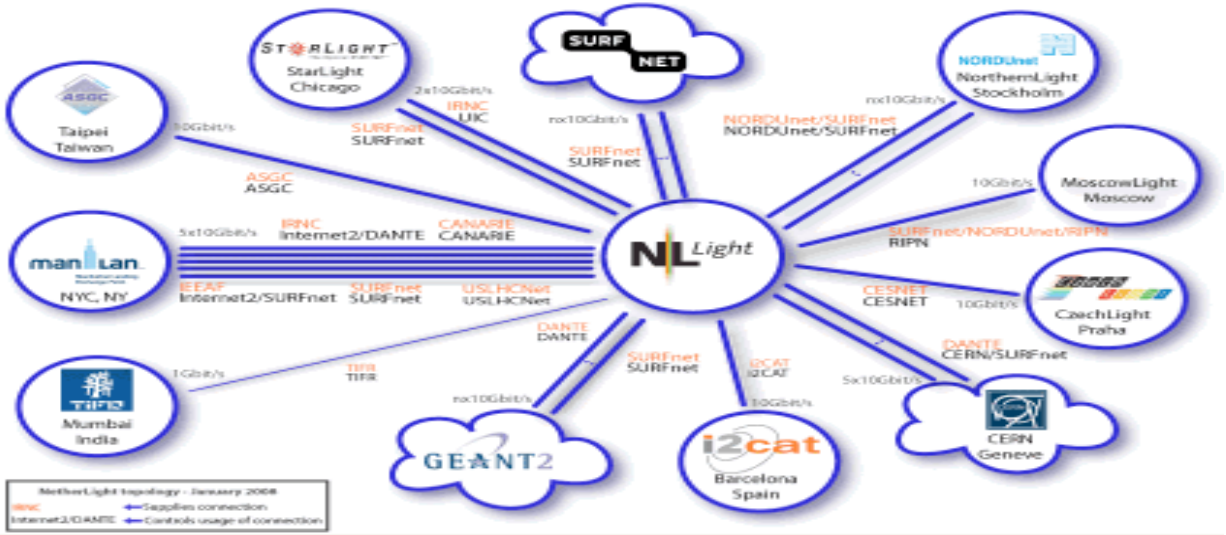
SURFnet developed both:

amsix
amsterdam internet exchange

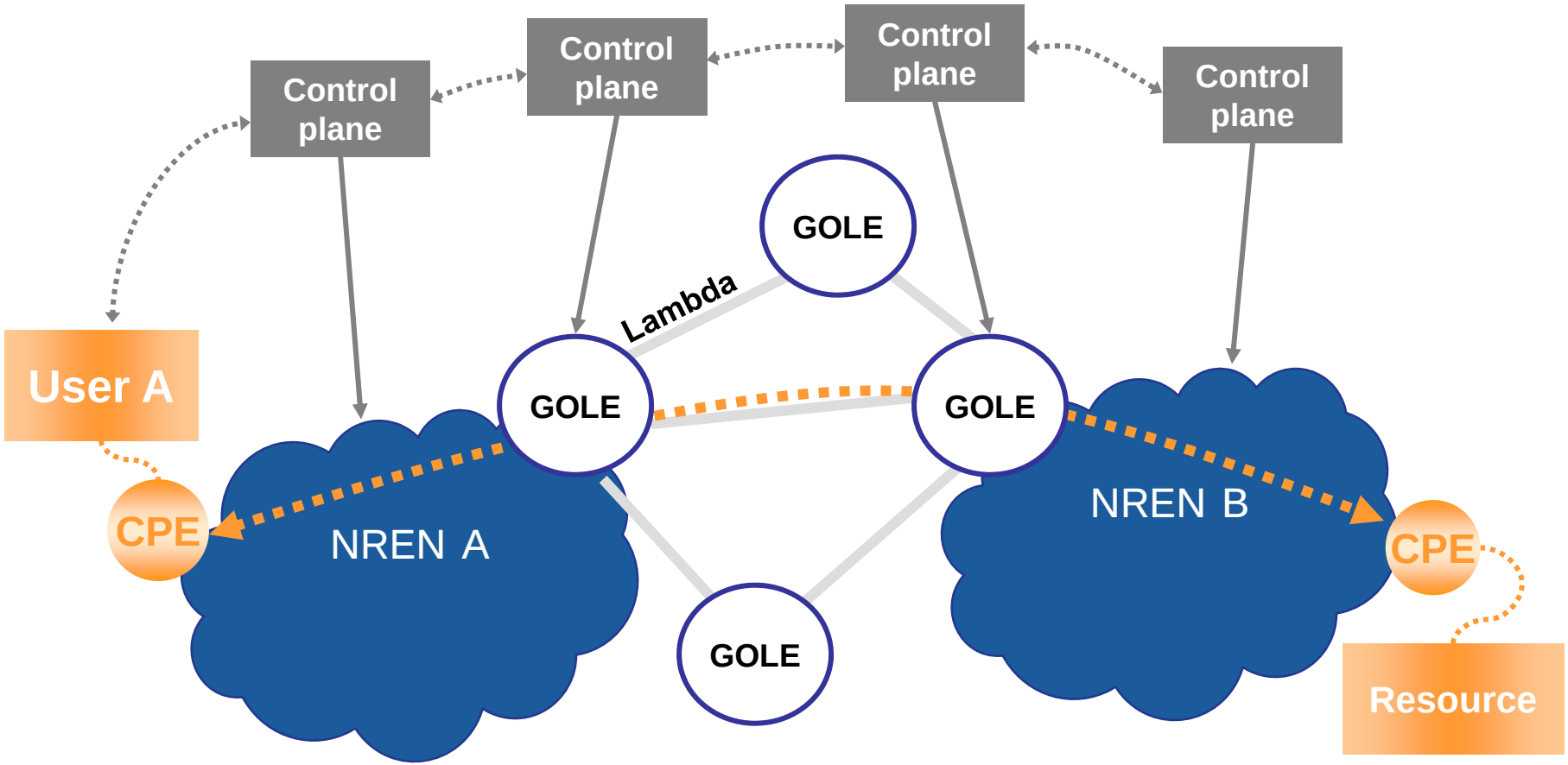
- Neutral & open internet exchange
- Not-for-profit exploitation
- 300+ connected ISP's
- Largest IX in the world !

NL Light

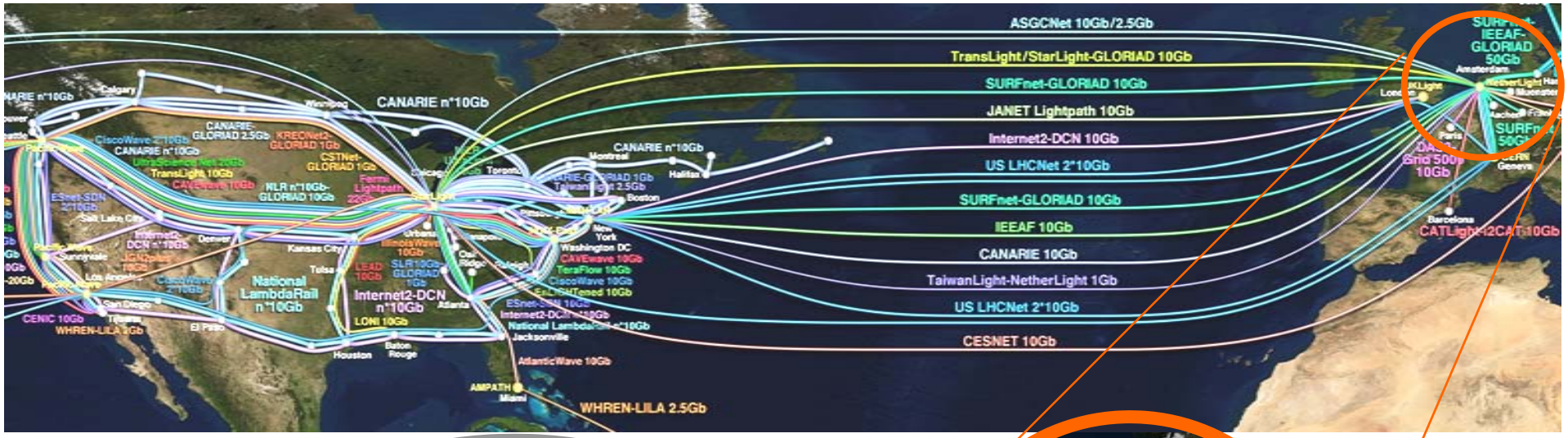
- Neutral & open optical infrastructure
- Switching facility for (wavelenght) circuits



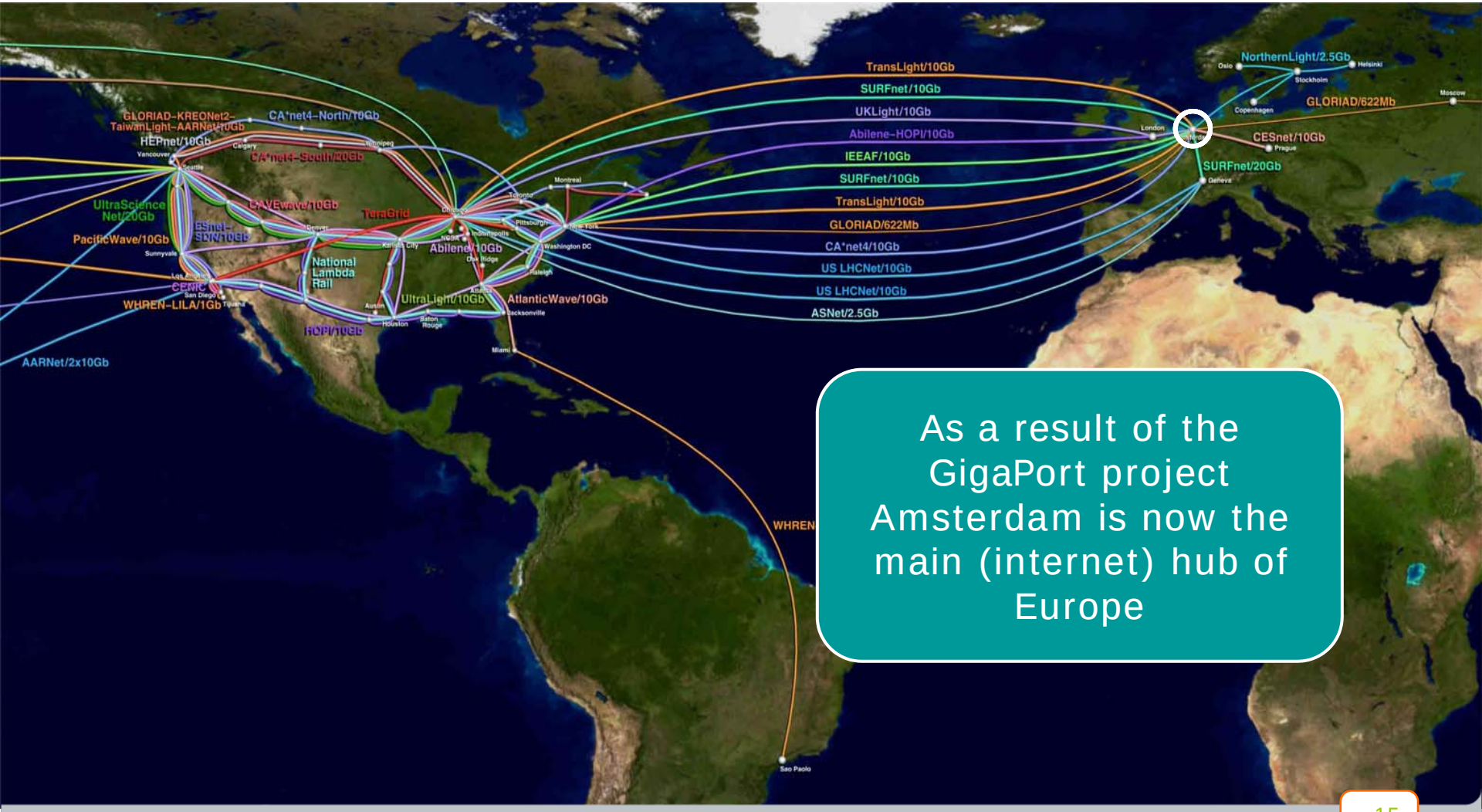
The GLIF approach to lambda networking



GLIF: global multi-domain lambda networking



Leidend in lichtpaden



As a result of the GigaPort project Amsterdam is now the main (internet) hub of Europe

Strategic impact of Research Networks

- Create a focal point for international cooperation in data intensive science projects (e-VLBI, LOFAR, LHC)
- Breeding place for innovative use of networking and advanced applications (e.g. DigiBOB, CineGrid)
- Create broad demand pull in society for advanced products and services (e.g. dark fiber)
- Challenge industry players to develop innovative products and services (e.g. dynamic lightpaths)

Research Networks:
Engines for Innovation

Strategic impact – Cont'd

The GigaPort-project created a network that offers:

- connections with the highest capacity to most destinations;
- attractively priced connections;
- extensive functionality on the network.

Based on this success a new project (GigaPort3) will be funded by the Dutch government (2009-2012).

Customer satisfaction

- SURFnet provides (network) services that are used for business critical applications in both education, research and administration (finance, HRM etc.)

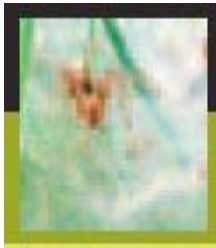
- Network is developed from tech-push orientation but in close cooperation with customers (both ICT-management and end-users)

- Visible in professional NOC-services, SLS, usage-based tariffs etc.

- Results in (very) high scores for customer satisfaction

Best networking company 2009

- Highest score of all service providers in networking on every aspect
- Survey under 1.913 ICT-managers in The Netherlands



Netwerken

	KENNIS/-KNOWHOW	PRIJS	KWALITEIT VAN DE DIENSTVERLENING	BETROUWBAARHEID	NAKOMEN VAN DE TIJDSPLANNING	BINNEN OVEREEN-GEKOMEN BUDGET BLIJVEN	MANIER VAN COMMU-NICEREN MET KLANTEN	GEMIDDELD CIJFER
Surfnet	8,3	7,8	8,0	7,9	8,0	7,9	8,1	8,0
HP	7,7	7,4	7,6	7,8	7,5	7,4	7,4	7,6
Imtech ICT	7,4	7,0	7,3	7,4	7,2	7,3	7,3	7,3
Triple P	7,0	7,4	7,0	7,3	7,3	7,6	7,3	7,2
IBM	7,5	6,1	7,1	7,4	6,9	7,1	6,7	7,0
Simac	7,1	6,5	6,7	6,9	6,7	7,0	6,6	6,8
AAC Cosmos	7,2	6,3	6,6	6,9	6,7	6,3	6,6	6,7
Atos Origin	7,1	6,8	6,7	6,9	6,1	6,5	6,5	6,7
KPN/Getronics	7,0	6,2	6,7	6,9	5,9	6,4	5,9	6,5
BT	6,9	6,3	6,5	6,5	6,2	6,3	6,3	6,5
Avaya	6,9	5,7	6,5	6,3	6,3	6,3	6,6	6,4
							Gemiddelde score in dit topic	7,0

Questions

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http://www.surfnet.nl/
http://www.gigaport.nl/