A challenging perspective:

Offering best-in-class infrastructure & support for research and education

RedIRIS Conference - 13 June 2017 - Walter van Dijk

SURF

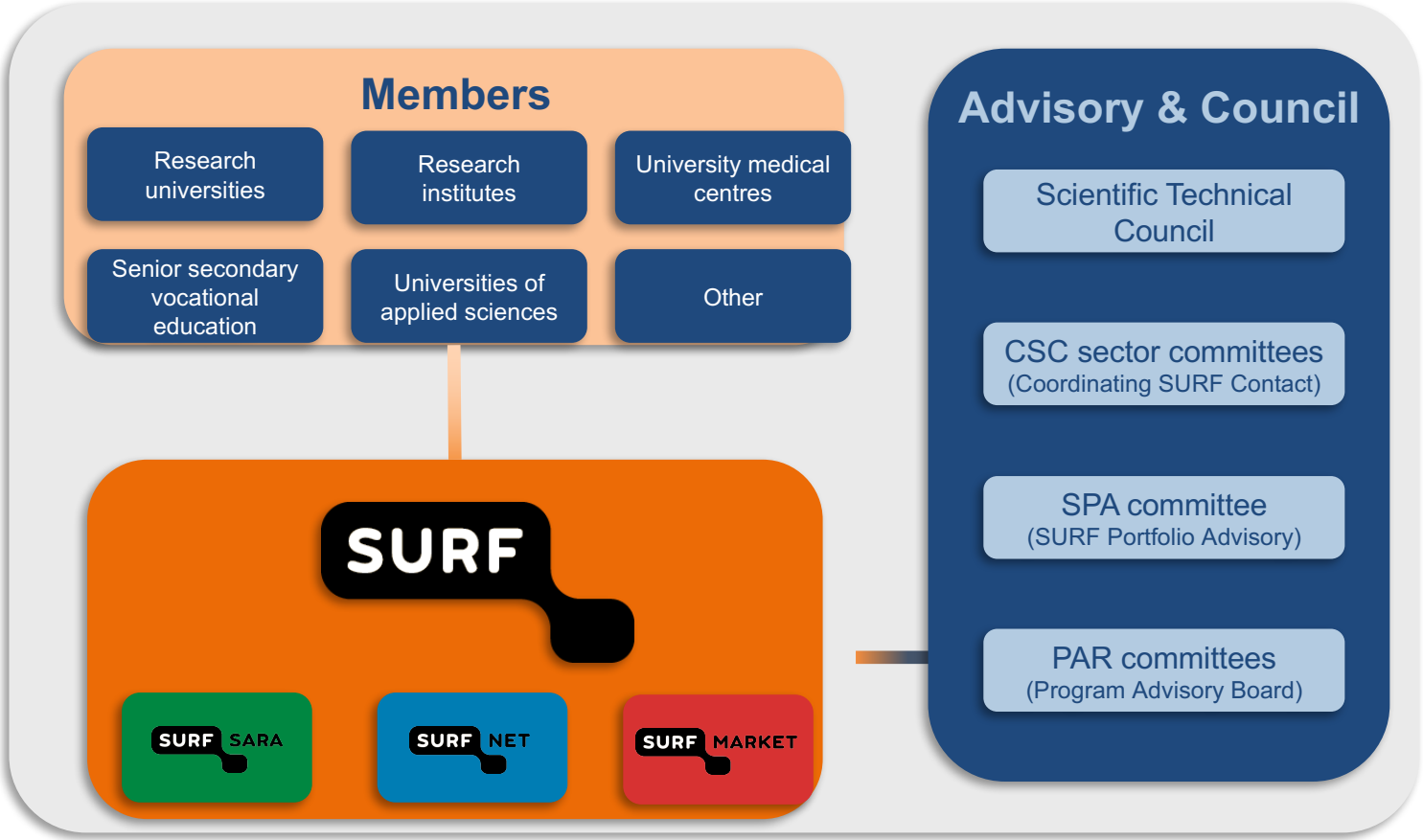
Higher Education & research in The Netherlands:

Serving 180 institutions & ~1.5 million end-users

SURF

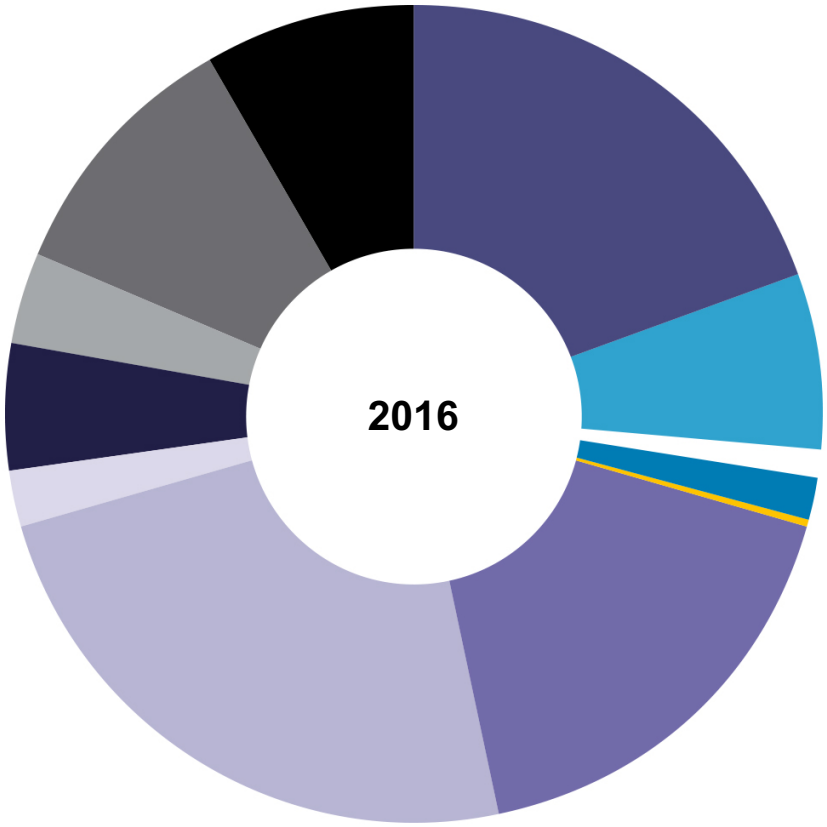
120 fte	140 fte	80 fte
SURF SARA	SURF NET	SURF MARKET
High Performance computing & data infrastructure	Connecting users and ICT services & creating new possibilities	The ICT marketplace for higher education and research

SURF Cooperation: change of structure & culture



SURF integrally manages Dutch research e-Infrastructure

Sources of income SURF



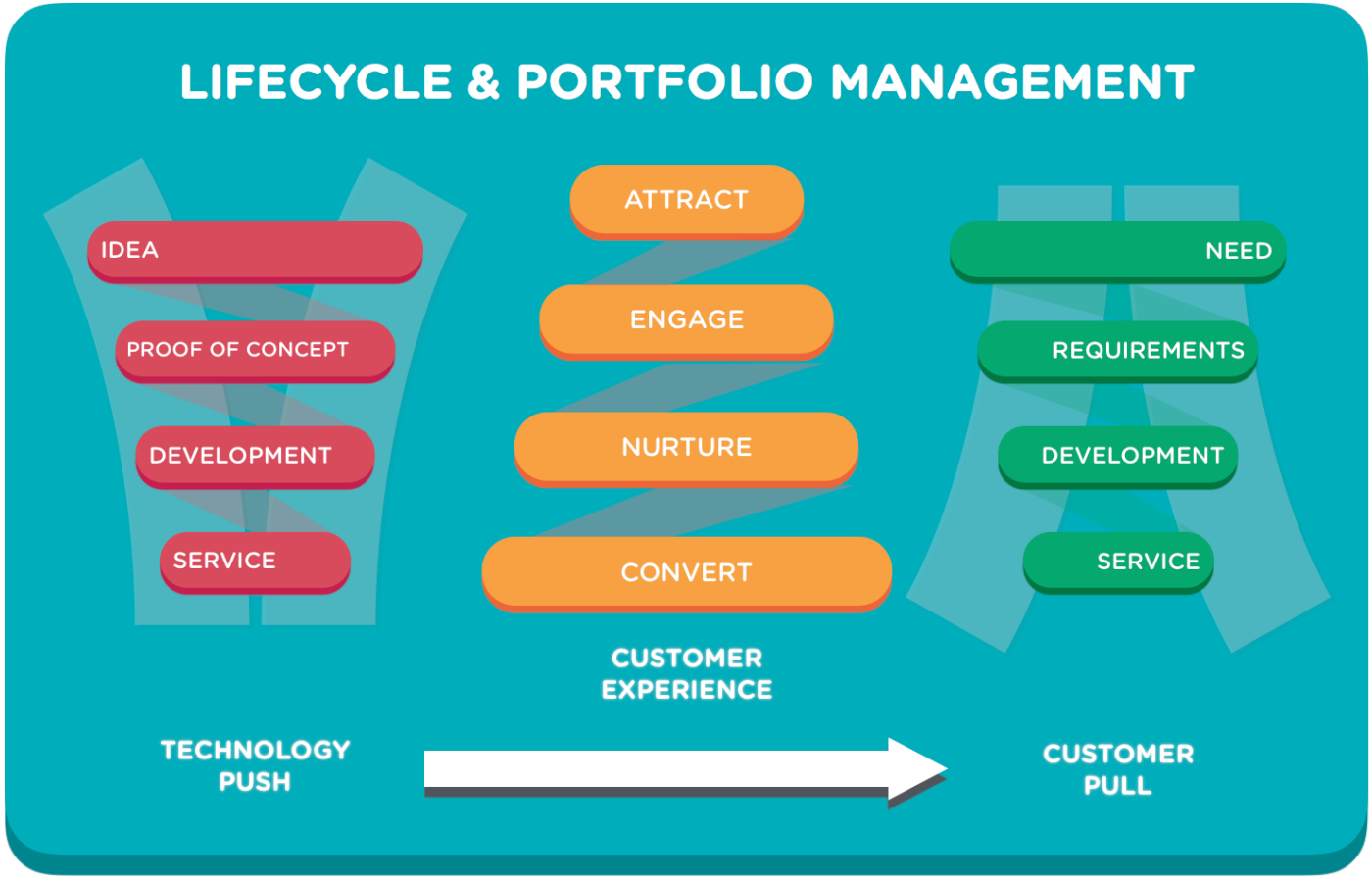
Min. of Education, Culture, Science subsidies	20.007.000
Min. of Education, Culture, Science (via covenant with institutions) subsidies	7.008.000
Min of Econ. Aff. subsidies	1.200.000
EU subsidies	1.866.000
Other subsidies	65.000
ICT services	1.772.000
Network services	24.263.000
Licences	2.403.000
Media sales	4.983.000
Collaboration contributions	3.643.000
Other income	10.509.000
Release of equalisation reserves	8.503.000
Total	**86.222.000**

It’s all about services: SURFnet Service Philosophy

- Innovation (government funded) is focused on creating operational services
- Portfolio with infrastructure services and application services
- Infrastructure services (e.g. internet, federation) charged to customers via lump-sum fees. Application services offered via “service menu”: charges based on actual usage
- Development of new services and roadmaps organized in close collaboration with institutions and users
- Active support for communities of practice and lead-users
- Investing in marketing and communications where applicable (e.g. security awareness)

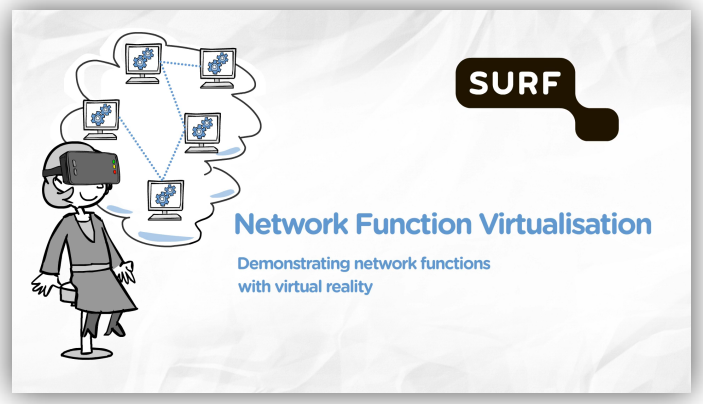
Active portfoliomanagement crucial for fast adoption:

SURFnet uses both push and pull methods



Let’s not forget our roots and unique selling point:

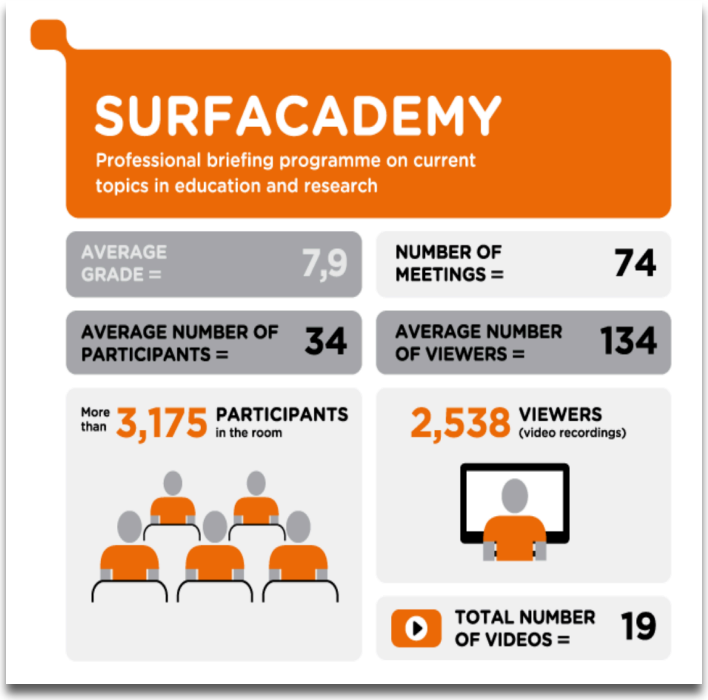
Keep innovating and create market-push



Polymorphic encryption and Pseudonimisation

5GRONINGEN

The magic triangle of NREN's:
services, innovation & knowledge exchange



Major challenge 1 ahead for universities…

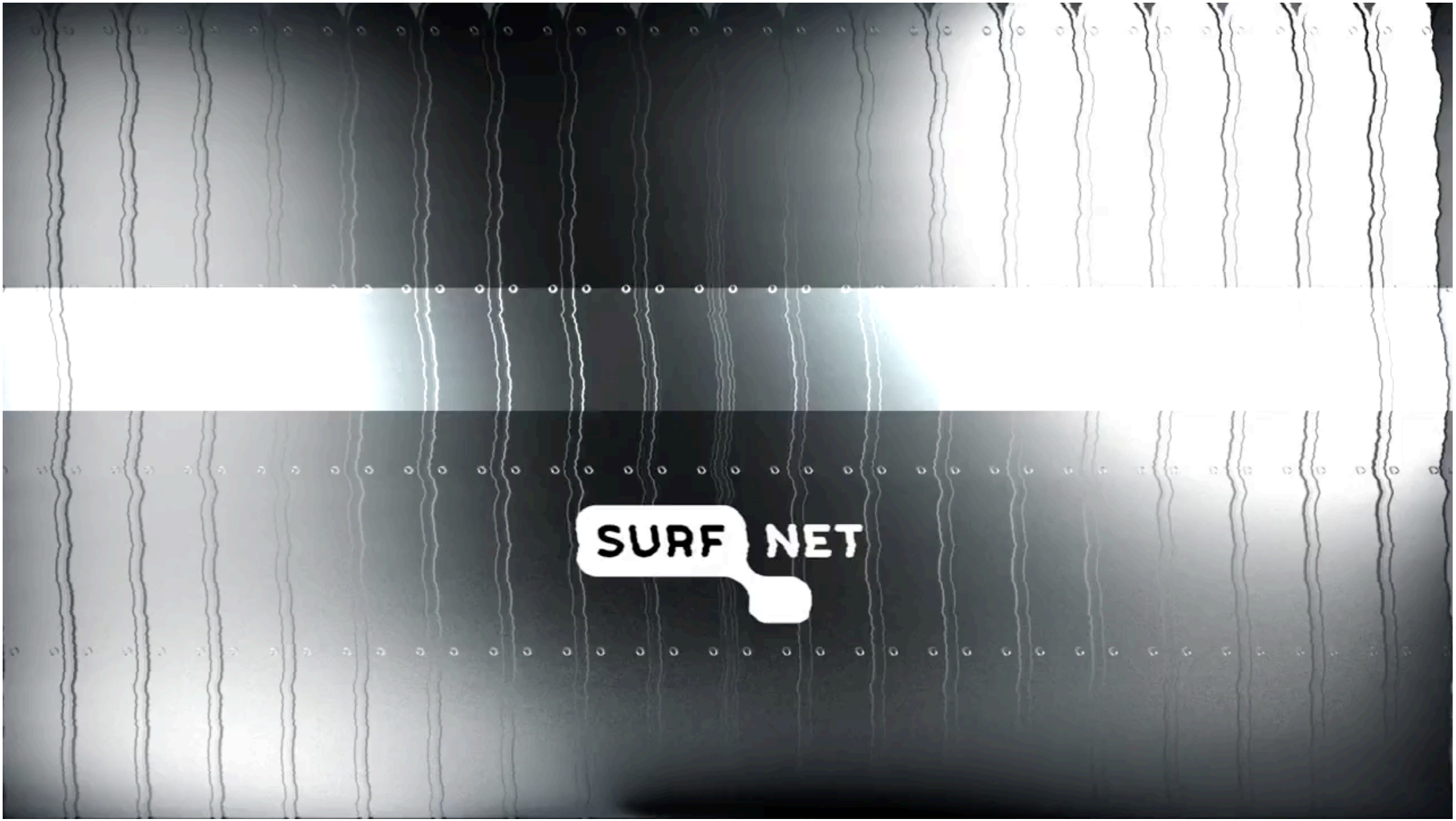
A landscape with a range of serious security threats

Bottom-line: too many threats versus limited budgets and too few qualified professionals

NREN's can support universities:

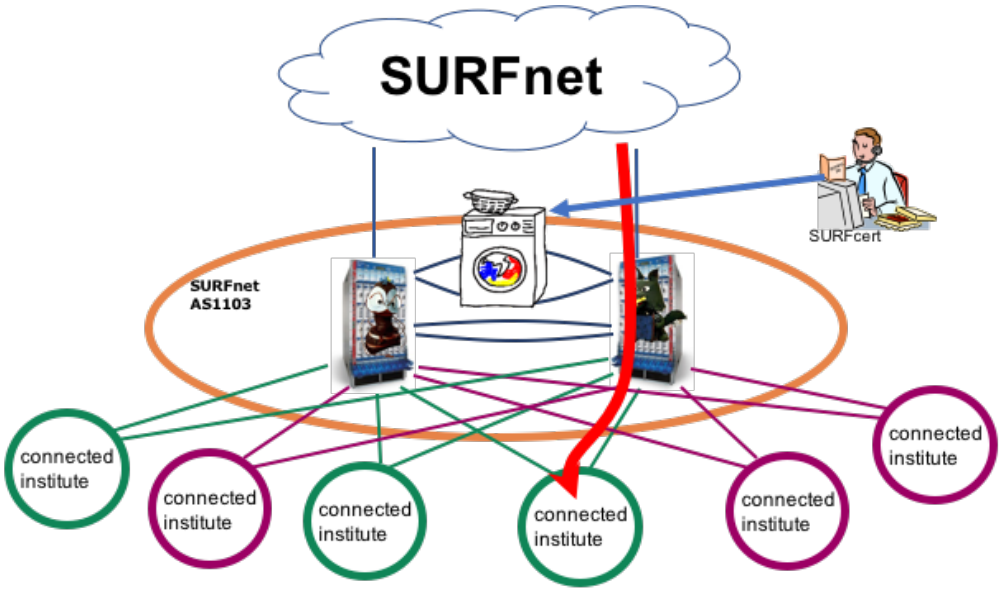
community building

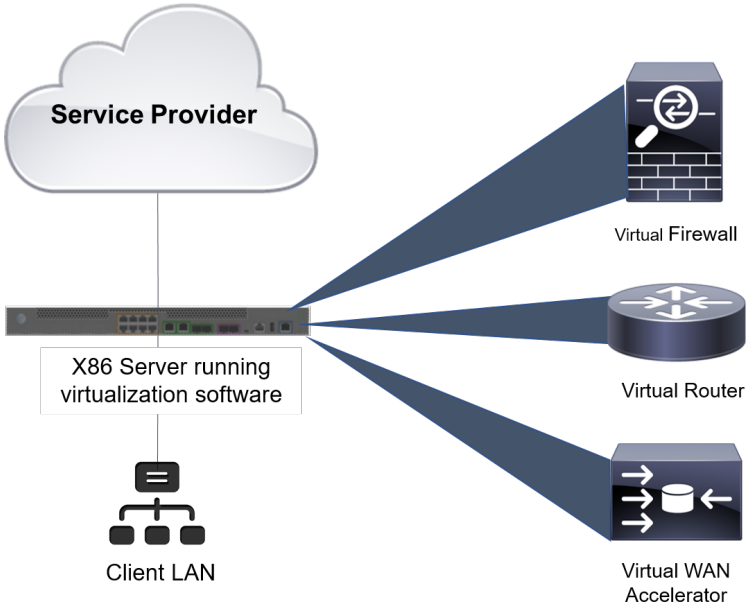
Bottom-line: collectively the sector has a lot of expertise and communities can increase impact


SURF NET

NREN's can support universities:

offering protection and efficient campus services





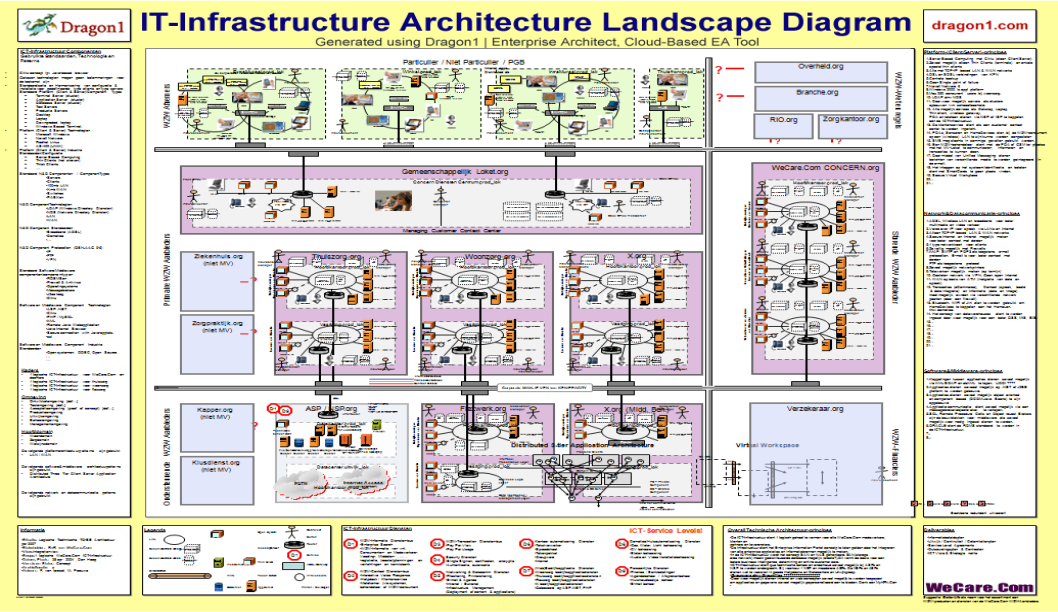
Network Function Virtualization WAN

Bottom-line: expertise to manage firewalls no longer needed on campus: e.g. firewall-as-a-service

Major challenge 2 ahead for universities…

ICT becomes more complicated and diverse and…

…hard to attract and retain qualified staff



Bottom-line: universities have to combine forces in any future-proof scenario

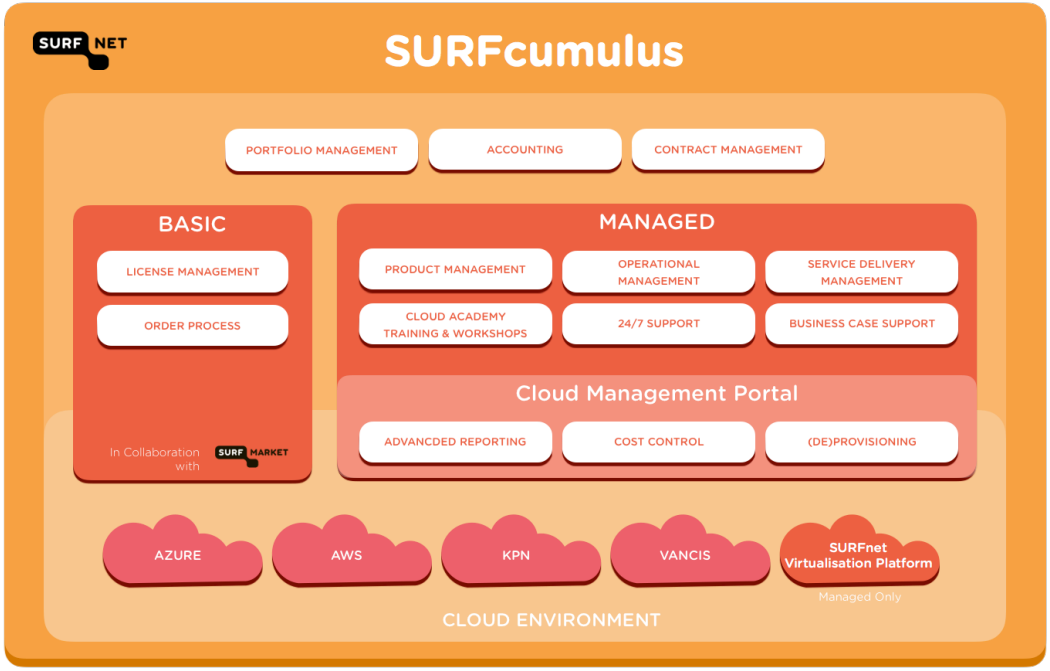
Opportunity:
joint development of campus services…

- ✓ Let's not forget: research & education are the primary processes for universities
- ✓ ICT-staff should make a difference by supporting researchers, teachers and students
- ✓ Standard services readily available from commercial (cloud) providers
- ✓ Collaboration (demand aggregation, joint procurement) is essential to acquire services with the right conditions
- ✓ NREN's can support universities: aggregating demand, joint tendering, vendor management etc
- ✓ First examples: SURFwireless and SURFcumulus (IaaS)

Bottom-line: universities should not compete with the market but instead make a difference for users

Examples:
recently developed demand-driven campus services

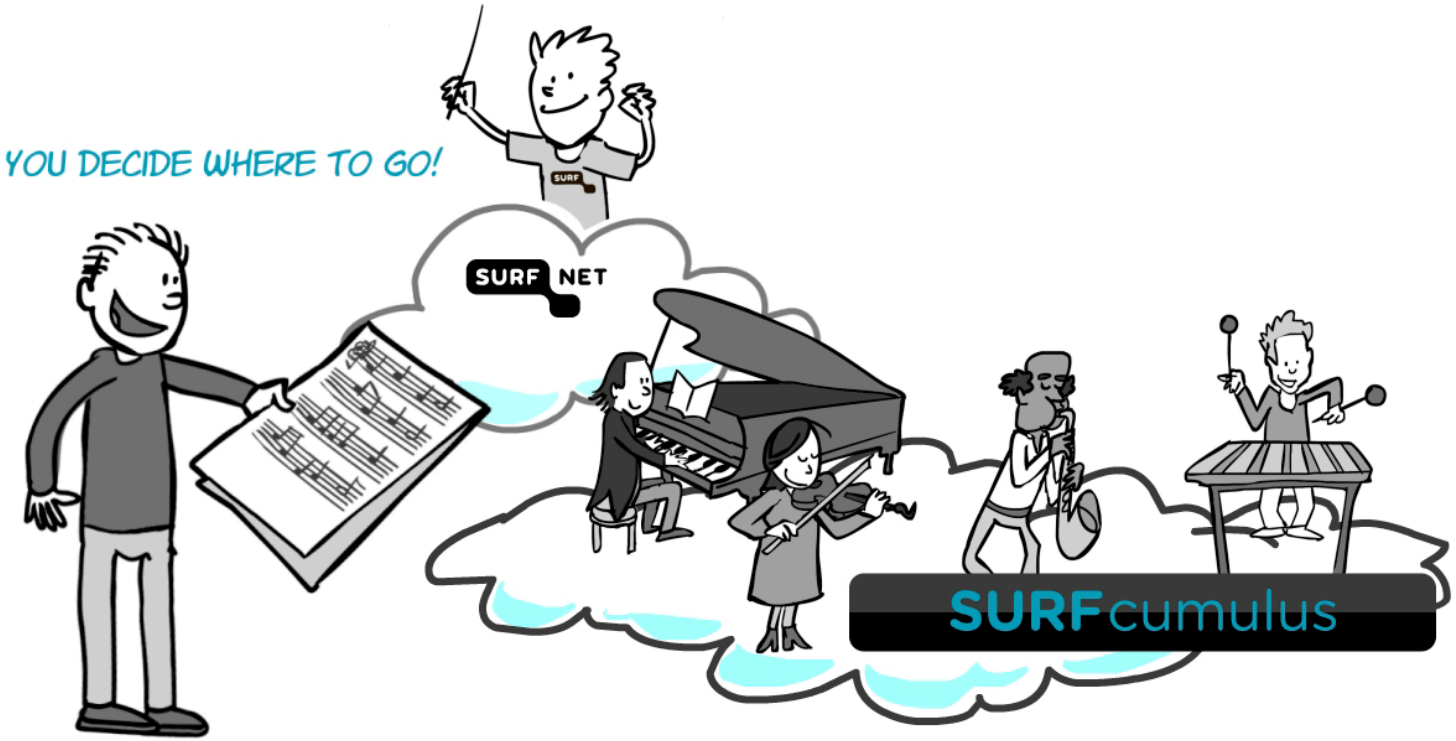
Example 1: Infrastructure-as-a-Service



Example 2: Wireless-as-a-Service

Bottom-line: joining forces can lead to improved service-quality at a lower TCO for universities

SURFcumulus:
an alternative for datacenters on campus



SURFwireless:
excellent Wi-Fi on campus

- ✓ Excellent Wi-Fi on campus
- ✓ Centrally managed, locally organized
- ✓ User-focused service chain
- ✓ Continuous innovation

Hardware Vendor
Includes management system

Aerohive NETWORKS

Wentzo Wireless

Innovation Partner
Expert op wireless technology. Has a Wireless Operating Center (WOC)

SURFnet
SURFnet is responsible for service delivery to the institutes

SURF NET

Edu/research
Contracts SURFnet for SURFwireless delivery

Users

Major challenge 3 ahead for universities…

open science & education require access to resources for anyone

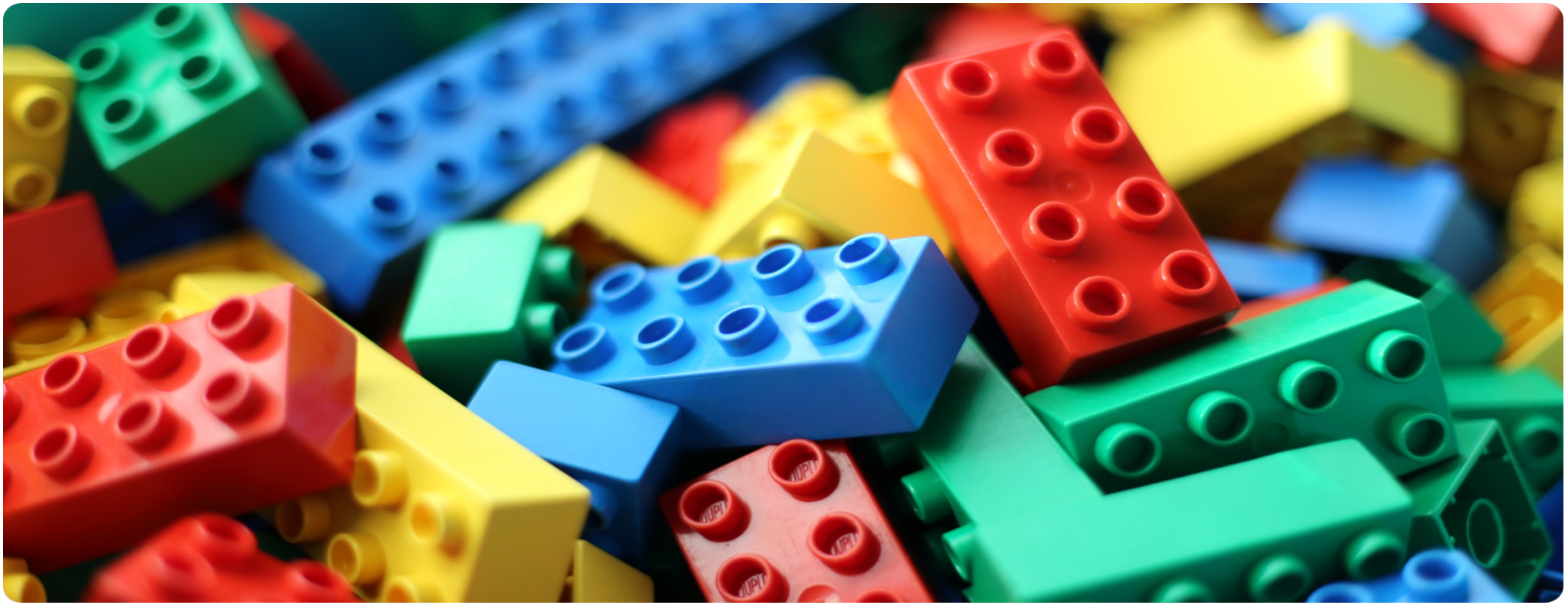
open science

OPEN EDUCATIONAL RESOURCES

Bottom-line: political and societal pressure to ‘open up’ the academy is expected to increase

NREN’s possess an essential ’building block’:

Identity federations



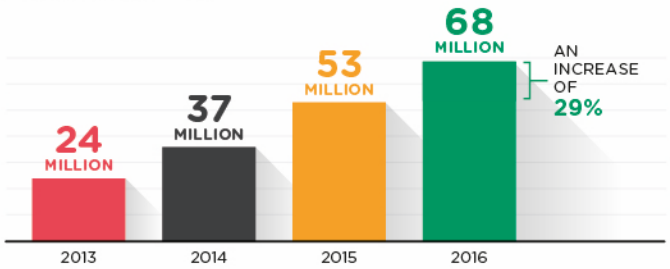
Bottom-line: open and standard-based interconnection framework supports open science & education

SURFCONEXT 2016

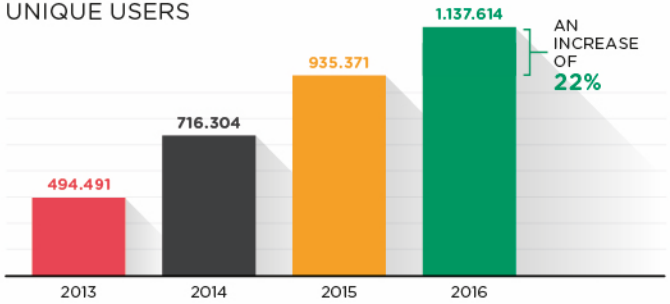
MORE THAN 68 MILLION LOG-INS WITH SURFCONEXT IN 2016

USAGE

NUMBER OF UNIQUE LOG-INS

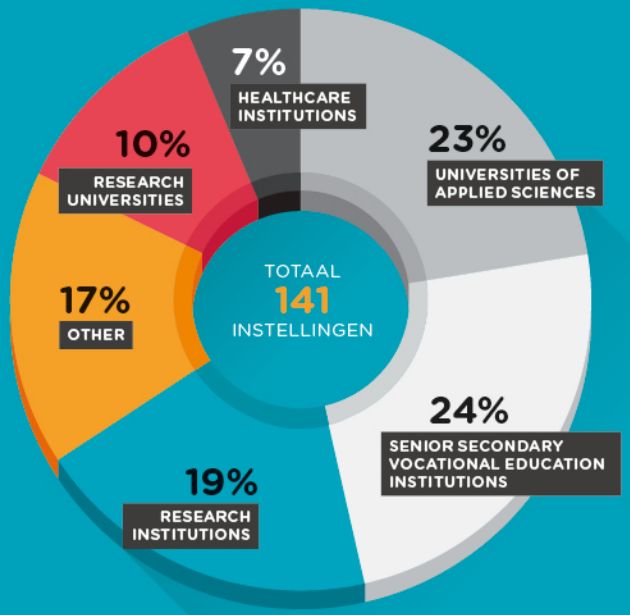


NUMBER OF UNIQUE USERS



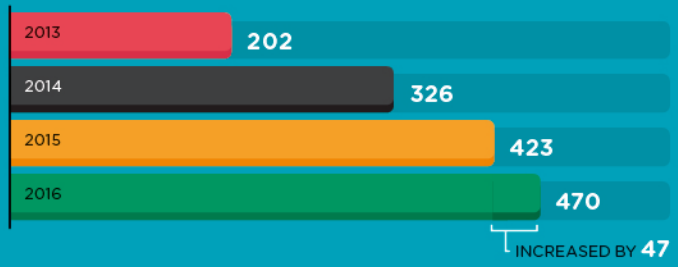
TARGET

MEMBER INSTITUTIONS

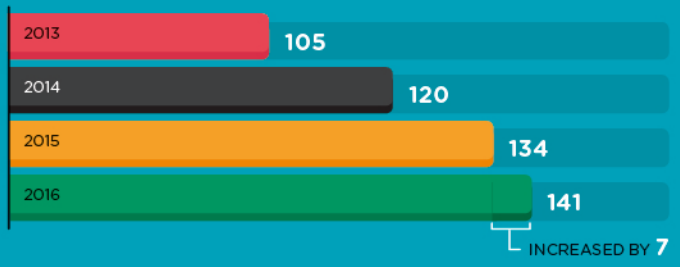


SERVICES

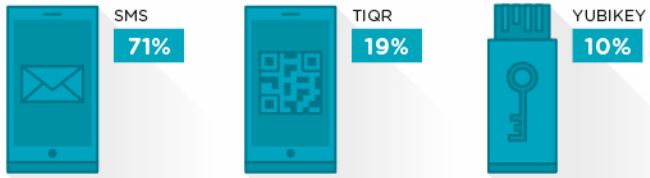
NUMBER OF SERVICE PROVIDERS



NUMBER OF IDENTITY PROVIDERS



NUMBER OF LOG-INS VIA SURFCONEXT STRONG AUTHENTICATION



USED BY AVANS, HVA, INHOLLAND & UVA

RECORD

RECORD NUMBER OF LOG-INS

PERIOD: WEEK 46
(14-11-2016)

WWW.SURFCONEXT.NL

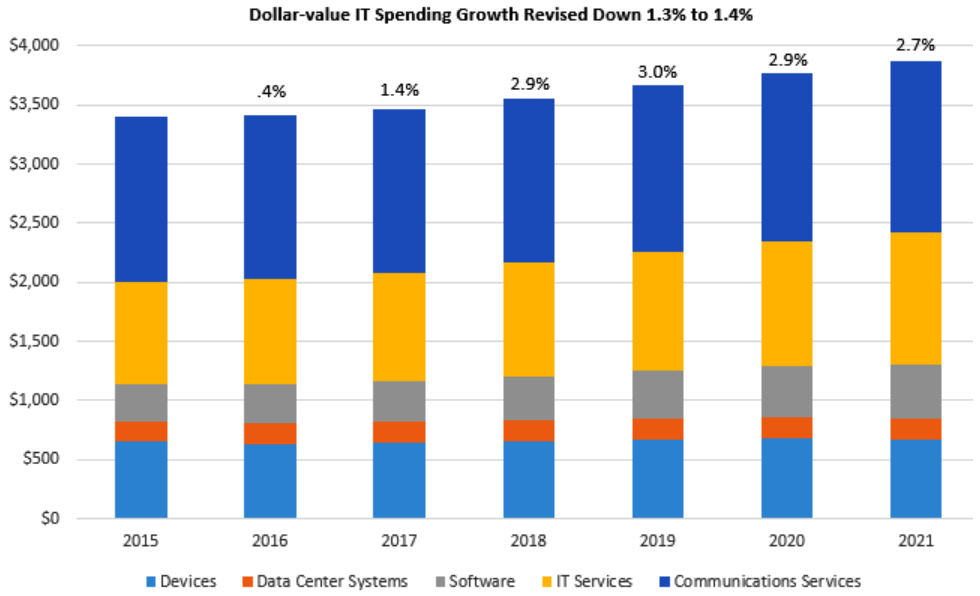
Major challenge 4 ahead for universities…

Vendors are becoming bigger and bigger

UNIVERSIDAD DE CANTABRIA

Total budget University of Cantabria 2016: 106M euro

Total ICT budget UC 2016: estimated at ~6M euro



Source: Gartner
In trillion dollars/year

Bottom-line: individual universities typically do no longer have the required buying power and expertise

NREN’s can support in role of trusted partner

- Economies of scale in case of commodities: e.g. software licences
- Economies of process: e.g. centralizing purchasing
- Sharing of knowledge: e.g. European tendering regulations
- Quality improvement: e.g. privacy framework towards cloud providers

Bottom-line: return to ‘level playing field’ by combining forces nationally and internationally

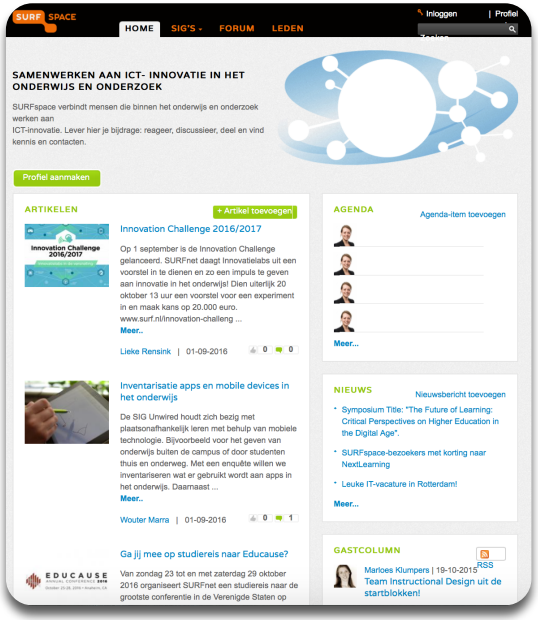
Major challenge 5 ahead for universities…

Demand and supply of ICT-tooling is evolving continually

Bottom-line: impossible to support any ICT-tool for research & education

NREN can support by facilitating Special Interest Groups (e.g. on research data), Support4Research and with National Coordinating Role for RDM

SURFspace.nl



MasterClass Support4Research

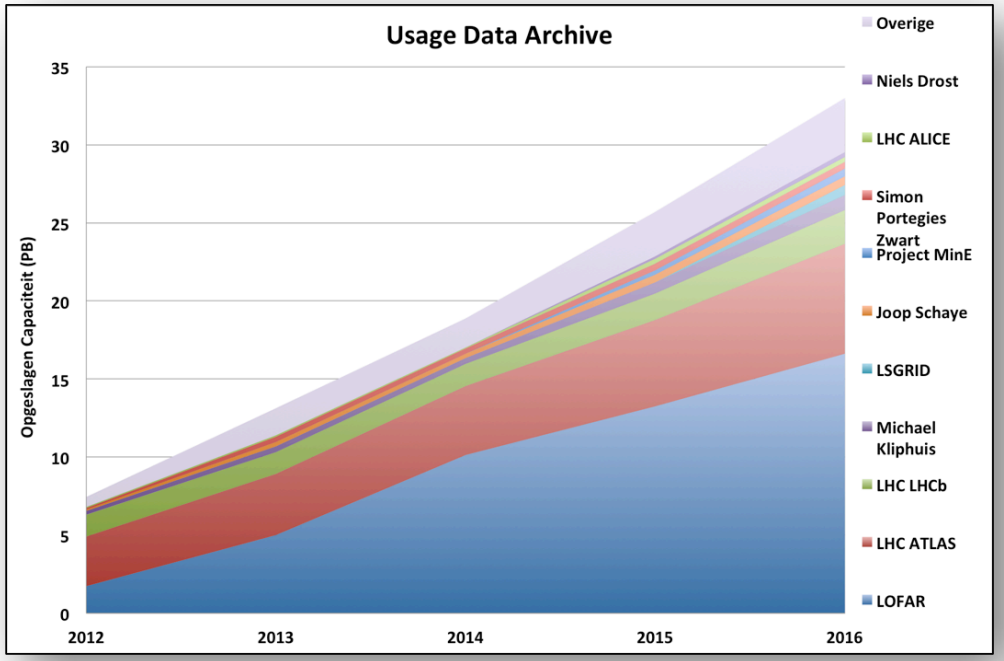
LCRDM

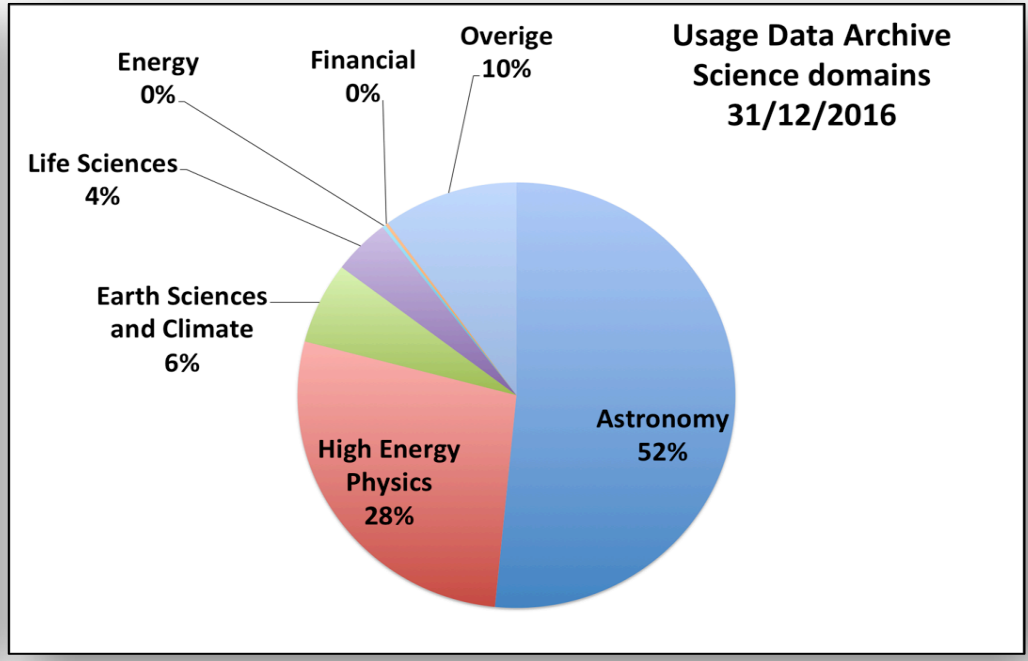
Landelijk Coördinatiepunt Research Data Management

Bottom-line: universities should exchange knowledge and standardize

Major challenge 6 ahead for universities…

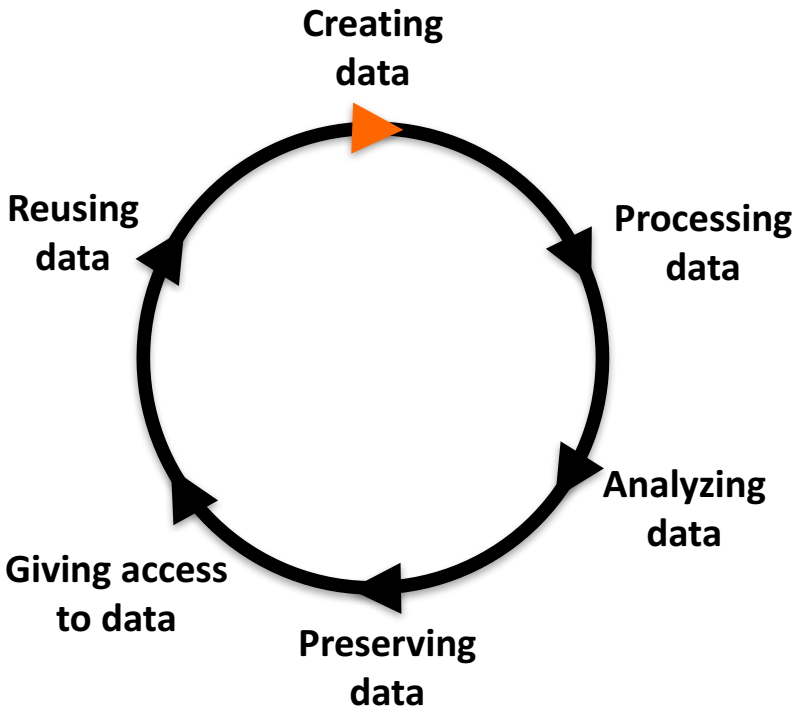
Data volumes grow exponentially

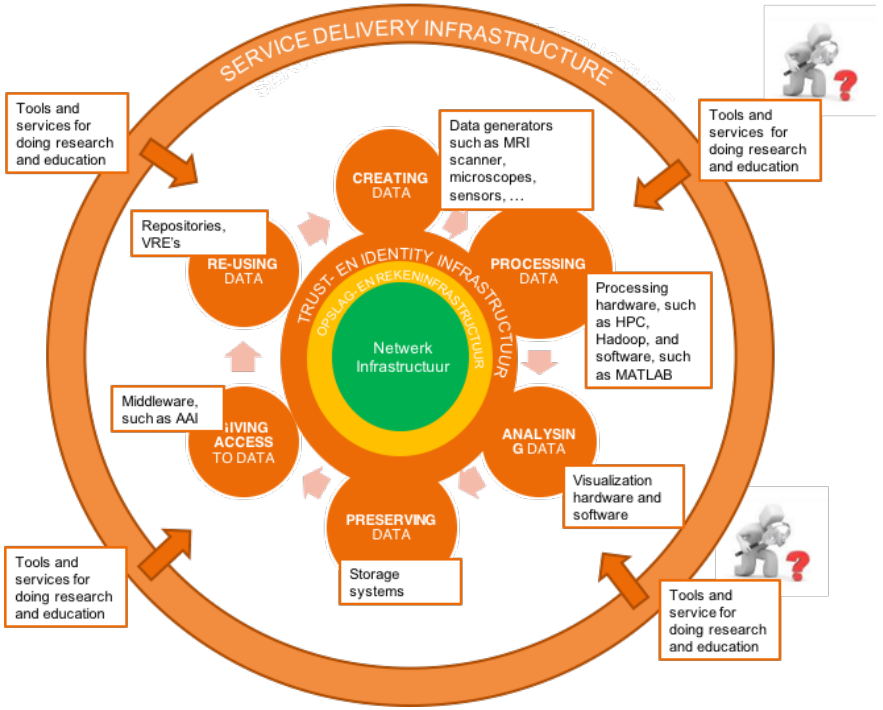




Bottom-line: data volumes grow exponentially while universities typically have constraint budgets

NREN can support by offering an integrated e-infrastructure, including compute & storage services





Bottom-line: network, compute and storage are interdependent and should be managed as such

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WHAT SURF CAN DO