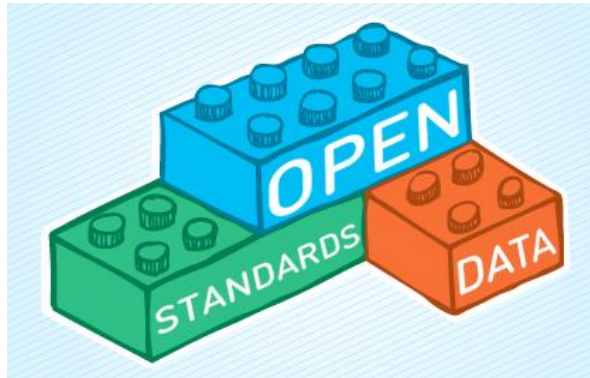SUNET
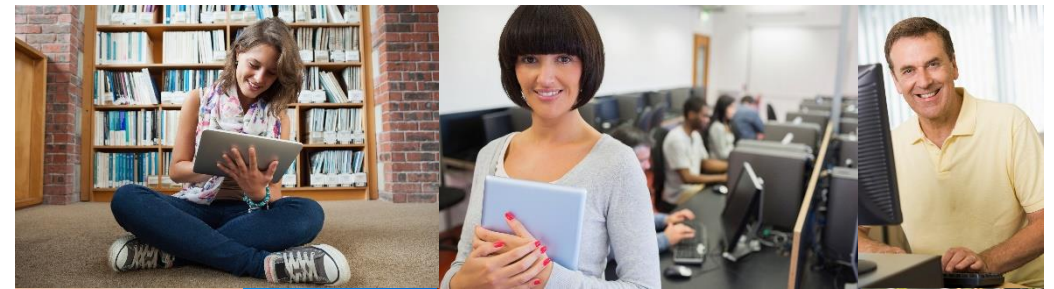
November 2019

Stimulating the adoption of open standards

About Sunet

~ 100 organisations
~ 650.000 users
~ 220.000.000 SEK turnover
~ 57 employees
~ 36 FTE

Vetenskapsrådet
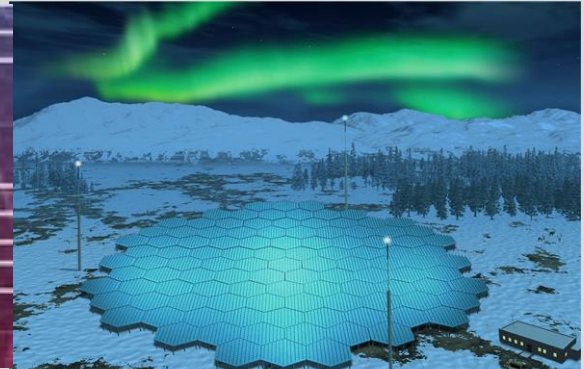
99,99%

ID

Financing of Sunet

Government grants

Fees network
Fees services

Sunet – one research network

Connections to international research networks, projects and infrastructures

Nationwide network, 8.200 km

- 3 fibre routes to all regions
  - To create good accessibility

- Can connect customers to our equipment in ~25 locations
  - Either downtown or at a university
  - Customers outside these locations can be connected to regional networks (of others)

- Cross-border links
  - Kiruna-Narvik
  - Kalix-Kemi
  - Malmö-Copenhagen
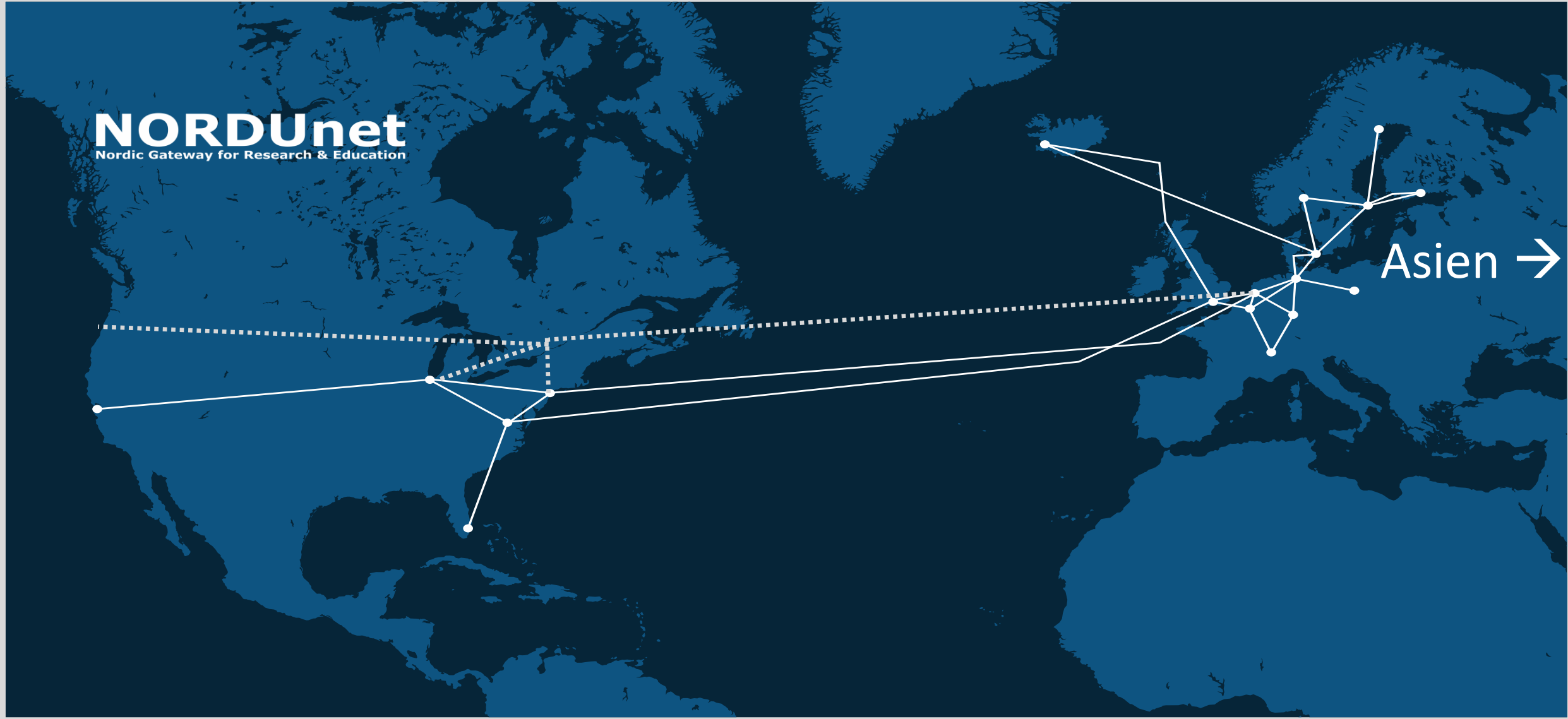
Nordic cooperation
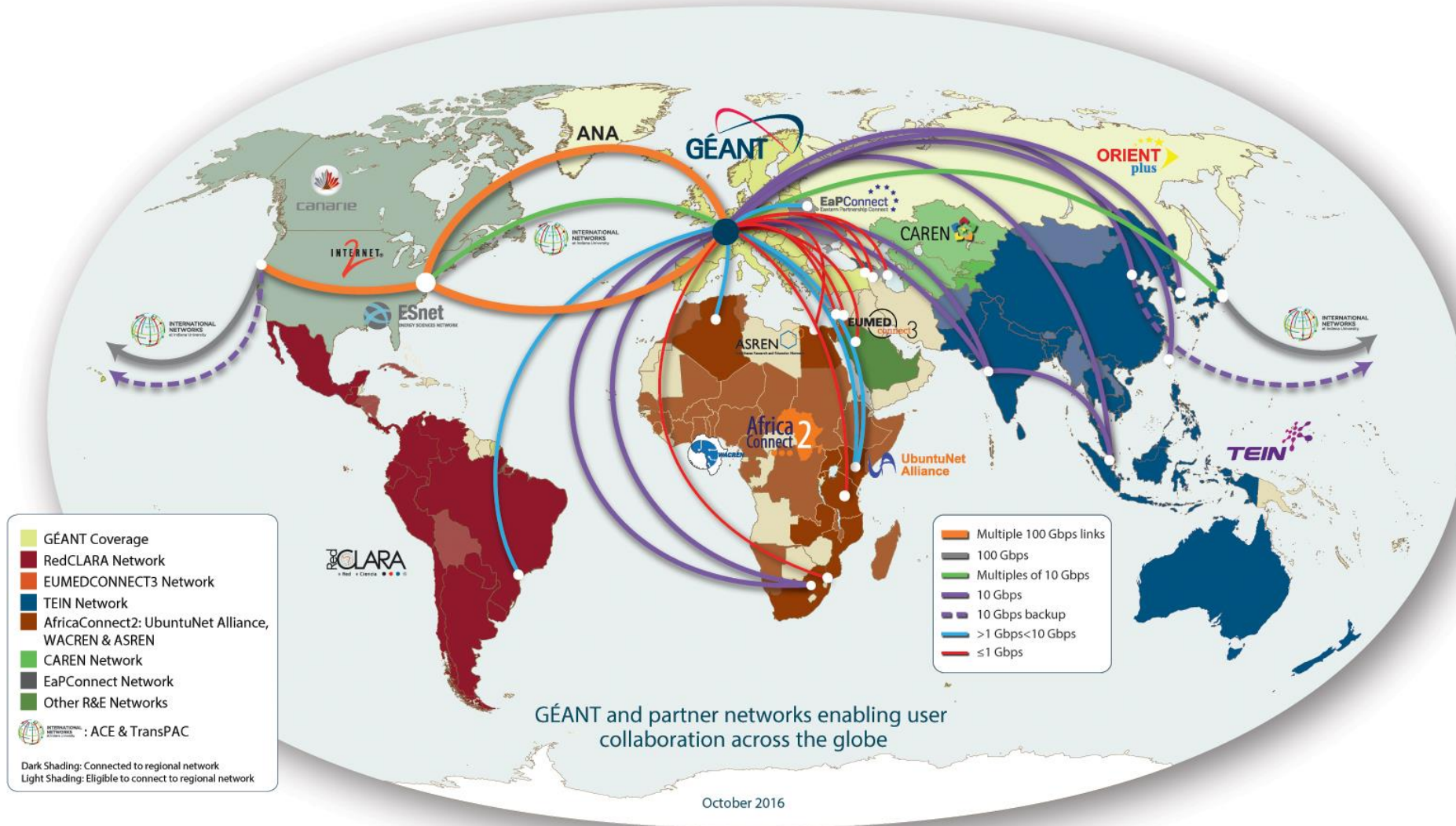
NORDUnet
Nordic Gateway for Research & Education

Owned together by the five nordic research networks
- DeiC   – Denmark
- Funet   – Finland
- Rhnet   – Iceland
- Sunet   – Sweden
- Uninett   – Norway

Main focus:
International connectivity
International projects

GÉANT
At the Heart of Global Research and Education Networking

SUNET

ANA
GÉANT
ORIENT plus
canarie
INTERNATIONAL NETWORKS at Indiana University
EaPConnect Eastern Partnership Connect
CAREN
INTERNET 2
INTERNATIONAL NETWORKS at Indiana University
ESnet ENERGY SCIENCES NETWORK
ASREN
EUMED connect 3
INTERNATIONAL NETWORKS at Indiana University
Africa Connect 2
WACREN
UbuntuNet Alliance
TEIN
RED CLARA
Red · Ciencia

Legend (network coverage):
- GÉANT Coverage
- RedCLARA Network
- EUMEDCONNECT3 Network
- TEIN Network
- AfricaConnect2: UbuntuNet Alliance, WACREN & ASREN
- CAREN Network
- EaPConnect Network
- Other R&E Networks

INTERNATIONAL NETWORKS at Indiana University : ACE & TransPAC

Dark Shading: Connected to regional network
Light Shading: Eligible to connect to regional network

Legend (link speeds):
- Multiple 100 Gbps links
- 100 Gbps
- Multiples of 10 Gbps
- 10 Gbps
- 10 Gbps backup
- >1 Gbps<10 Gbps
- ≤1 Gbps

GÉANT and partner networks enabling user collaboration across the globe

October 2016

GÉANT
Networks · Services · People
www.geant.org

Sunet connected organisations

Higher education

- Blekinge Tekniska Högskola
- Chalmers
- Ersta-Sköndals Högskola
- Gymnastik- och idrottshögskolan
- Göteborgs universitet
- Handelshögskolan i Stockholm
- Högskolan Dalarna
- Högskolan i Borås
- Högskolan i Gävle
- Högskolan i Halmstad
- Högskolan i Jönköping
- Högskolan i Skövde
- Högskolan Kristianstad
- Högskolan Väst
- Institutet för rymdfysik
- Johannelunds teologiska högskola
- Karlstads universitet
- Karolinska Institutet
- Konstfack
- Kungliga Tekniska högskolan
- Linköpings universitet
- Linnéuniversitetet
- Luleå tekniska universitet
- Lunds universitet
- Malmö högskola
- Mälardalens högskola
- Mittuniversitetet
- Röda Korsets Högskola
- Södertörns högskola
- Sveriges lantbruksuniversitet
- Stockholms universitet
- Sophiahemmet Högskola
- Teologiska högskolan Stockholm
- Umeå universitet
- Uppsala universitet (inkl. enheten på Gotland)
- Örebro universitet

Cultural institutions, state museums and libraries

- Arkitekturmuseet
- Armémuseum
- Etnografiska museet
- Flygvapenmuseum
- Kungl. Biblioteket
- Kungl. Konsthögskolan
- Kungl. Musikhögskolan
- Livrustkammaren och Skoklosters slott med Stiftelsen Hallwylska museet
- Moderna museet
- Nationalmuseum
- Naturhistoriska riksmuseet
- Nordiska museet
- Skansen
- Statens försvarshistoriska museer
- Statens historiska museer
- Statens maritima museer
- Statens musiksamlingar
- Statens museer för världskultur
- Stockholms konstnärliga högskola
- Stockholms Musikpedagogiska Institut
- Tekniska museet

Student housing

- Chalmers studenthem
- JUNET
- Mälardalens Datorförening
- SGS
- Studentnätet Skövde Högskola
- Studentnätet UpUnet-S Uppsala

Others

- Centrala etikprövningsnämnden
- ESS European Spallation Source AB
- Försvarshögskolan
- Universitetskanslersämbetet
- Institut Mittag-Leffler
- Institutet för språk och folkminnen (SOFI)
- Konstnärsnämnden
- Kungl. Ingenjörsvetenskapsakademien
- KK-stiftelsen
- Kungl. Vetenskapsakademien
- Myndigheten för tillgängliga medier
- Nordiskt Genresurscenter Riksantikvarieämbetet/Svensk Museitjänst
- Polarforskningssekretariatet
- Riksarkivet
- Riksdagsförvaltningen
- Riksutställningar
- Riksbankens Jubileumsfond
- Swedish Space Corporation SSC
- Statens Kulturråd
- Stiftelsen för Strategisk Forskning (SSF)
- SP Sveriges Tekniska Forskningsinstitut
- Stockholm International Peace Research Institute (SIPRI)
- Stockholms Akademiska Forum
- Swedish Institute of Computer Science (SICS)
- Svenska Akademien
- Sveriges universitets- och högskoleförbund (SUHF)
- Sveriges Utbildningsradio
- Tillväxtverket
- Universitets- och Högskolerådet
- World Maritime University
- Valmyndigheten
- Vetenskapsrådet
- VINNOVA

Sunet additional services

Service	Description
E-meetings	E-meetings and distance learning (*Adobe Connect* and Zoom)
Email filtering	Email spam filtering software (CanIt-Domain-PRO)
Box	Storage, sharing (cooperation) and synchronising data
Survey	Tool for surveys and evaluations (Survey&Report)
LMS	Learning Management System (Canvas)
Archiving (AaaS)	Cloud based archiving
Backup (BaaS)	Cloud based backup
Storage (STaaS)	Cloud based storage
Virtual servers (IaaS)	Cloud based virtual servers
Project tool	Project management (ProjectPlace)
Play	Recording, conversion and streaming of audio and video (Kaltura)
Orcid	System for providing researchers a permanent digital identifier

Procurement

~~Email filtering~~	~~Email spam filtering software (eanit Domain Pro)~~
Box	Storage, sharing (cooperation) and synchronising data
Survey	Tool for surveys and evaluations (Survey&Report)
LMS	Learning Management System (Canvas)
Archiving (AaaS)	Cloud based archiving
Backup (BaaS)	Cloud based backup
Storage (STaaS)	Cloud based storage

Within NORDUnet

Owned together by the five nordic r

networks

- DeiC   – Denmark
- Funet   – Finland ⟵
- Rhnet   – Iceland
- Sunet   – Sweden
- Uninett – Norway ⟵

M:
Interna
Interna

SUNET

Dialogue is important

LTI and API key elements

relationship between objects, for example inheritance between blocks within a course.

Q21   Describe how groups, collective groups and users are supported and structured.

2.2.2.6 Integrations and API

R14   **The service shall have an API.**

Q22   Please list which standards and versions from IMS Global Learning Consortium that are currently implemented.

Q23   Please describe which components and versions of the LTI Learning Tool Interoperability standard that are supported.

Q24   Please describe in detail all aspects of the API, or provide a copy of you API documentation

Q25   Please describe and list all existing integrations with third party applications and systems.

2.2.2.7 Archiving

R15   **The service shall support automated archiving of data.**

Q26   Please describe how archiving of data is supported in the proposed service ie. is there a system to archive courses (long term storage) and give the institution access to retrieve the data.

Process

Member

Stimulating the adoption of open standards

- In higher education, ICT is used more and more for collaboration and communication purposes. But not every institution uses the same software. Interoperability allows for improved compatibility between different systems, and makes it easier to share data.

Stimulating the adoption of open standards

- Using standards enables data to be exchanged simply, securely and reliably, which benefits the quality of the exchange. It is also more economical and efficient to create and maintain a single interface and to avoid supplier dependence. Reaping the full benefits of standards requires a widespread adoption; applications can only be interfaced simply if as many parties as possible commit to the standards.

Stimulating the adoption of open standards

- As NRENs we can play an important role in stimulating the application of standards at suppliers, who work cross border. We can also play a joint role in promoting standards at institutions by promoting standards that are important for organising future-proof education.

An example: LIS and Ladok

- ## Student administration system used in Swedish higher education

  - Developed by the universities and controlled by the Ladok Consortium
  - System integration on a national level between the national SIS/Ladok and LMS using LIS
  - The ambition is to make LIS a sectoral standard in the field
  - The information model itself is used and not the interaction model as such: we work event-based and put LIS messages on queue which the consuming systems can retrieve

SUNET

Another example: SALSA and ATI

- SALSA: Network of universities using the LMS (Canvas) within Sunet

- ATI: The Technical Integration Working Group: national network for architecture and technical integration in higher education

Within IMS Global

- Sunet participates in IMS EU Tech Task Force and IMS Edu-API Task Force

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