Schoolnet Report - Austria

What is a Schoolnet?

A schoolnet is a network or partnership of schools and educational institutions, connected through ICT (Information and Communication Technologies) to offer a great number of different services.

The basic structure for Austrian school networks is called "***Austrian School Network Plus***" or short "ASN+"
Below you find the detailed architecture of ASN+:

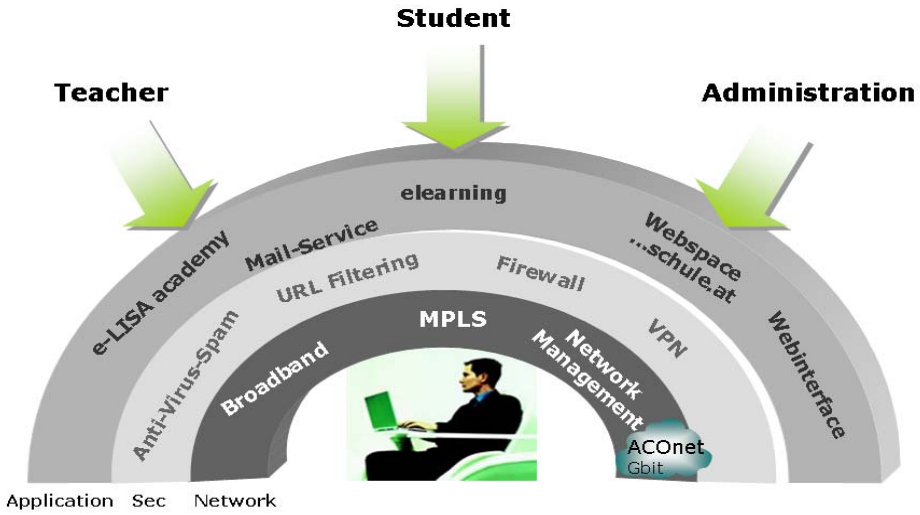

Figure 1: Architecture of ASN+

The Telecom Austria Corporation operates the platform ASN+ (figure 1). It is based on a MPLS platform (Multi Protocol Label Switching). In cooperation with the Federal Ministry of Education, Science and Culture (short: bm:bwk) the Telecom Austria offers through ASN+ a connection to the Internet for every educational institution.

It is realized with the use of a common VPN (Virtual Private Network) per federal state. Schools and educational institutions get access to the Internet via ASN+ knots and "ACOnet".

The offer is targeted at school authorities, the bm:bwk, uncommercial institutions for vocational training, public libraries, technical colleges and other educational institutions.

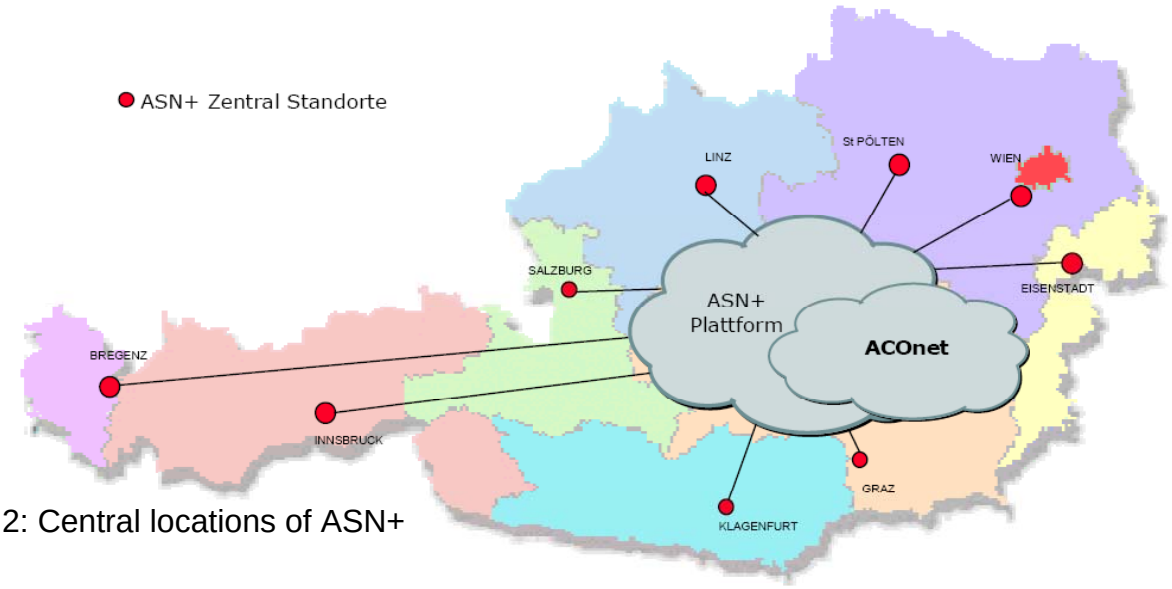

Figure 2: Central locations of ASN+

Below you can find the detailed technical background:

Package	**Features**	
ASN+ light	ADSL 768/128 (fair use 3GB)	Primary schools ↓ Secondary schools ↓ Universities
ASN+ small	ADSL 768/128 unlimited Substitute LL 128 kbit/s unlimited*	
ASN+ medium	ADSL 1024/256 unlimited Substitute LL 256 kbit/s unlimited*	
ASN+ large	ADSL 2048/512 unlimited Substitute LL 512 kbit/s unlimited*	
ASN+ xlarge	LL 2Mbit/s unlimited	
ASN+ xxlarge	LL 4Mbit/s unlimited	

ASN+ offers numerous services:

- Comprehensive managed firewall
- Central virus protection
- Spam prevention
- Content filtering for web and email traffic
- Web space 100 MB fair use

- Free email addresses (mailboxes) for teachers and students
- Separate VPN for education and administration
- Connection to ACOnet (Austria Academic Computer Network)
- E-LISA Academy offers education and advanced training for teachers, an e-learning knowledge base and support in preparing for class. For details please visit www.schule.at
- E-Learning platform, where user can upload content and create own user groups using the Open Source Software “moodle”. http://moodle.org/

ACOnet – ***Austrian Academic Computer Network***
Austrian Computer Network for Science, Research and Education

ACOnet is the network for science, research and education in Austria, funded by the Federal Ministry of Education, Science and Culture (bm:bwk). ACOnet provides a powerful network-infrastructure based on DWDM-technology and Gigabit Ethernet for data communication between points of presence in the whole country.

ACOnet provides full Internet connectivity and all Internet services to its customers. This picture shows a representation of the current range of ACOnet.

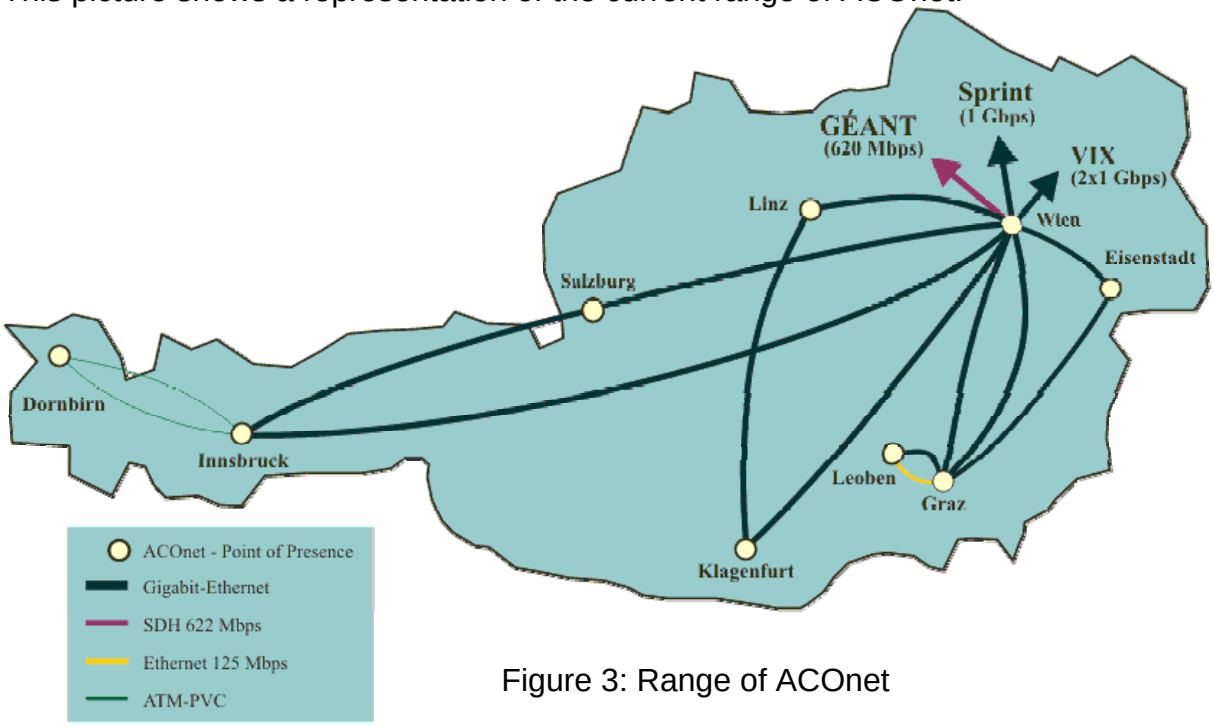

Figure 3: Range of ACOnet

Services of ACOnet:

- Connection to the global Internet with a fixed contractual bandwidth
- Administration of the domain ac.at
- Advisory and co-ordination tasks
- Operates gateways to other networks
- Advice, trainings, maintenance, etc.

ACOnet is an uncommercial Internet service provider. To gain access to it, users need the permission of the steering committee, which consists of 2 representatives of universities, 2 representatives of the bm:bwk and the director of the ACOnet.

Schoolnets and policy

According to the report: “ICT and e-learning in Austrian Schools” from the year 2000:

The European Council decided on a European itinerary called “e-Europe” for further accelerating the use of ICT in all areas of life. All European citizens should be able to master and use new media in a meaningful way. The European strategy will be put into practise in Austria through the project “e-Austria”. A detailed work plan was agreed on by the government. The taking of inventory was carried out by the Federal Minister of Education, Science and Culture, Ms. Elisabeth Gehrer.

According to the catalogue of measures a steering committee has been established to make propositions how to make best use of the budget.

Objectives:

- All schools should have access to the Internet and to multimedia learning resources.
- All teachers should be individually equipped and qualified in the use of the Internet and multimedia resources.
- The European Computer Driving License (ECDL) as standard, intensified expansion of specific ICT-training and establishment of innovative training centres.

eFit
http://www.efit.at

To put eEurope into practice, several sub areas and projects have been started. In the scope of school networks the initiatives eFit and eEducation are most important. eFit consists of the following subcategories: eEducation, eAdministration, eCulture, eTraining and eScience.

Interim results:

- 63 % of schools had access to the Internet in the year 2000. Today 100 % of schools have a connection to the Internet.
- Between 2001 and 2003 35.2 Mio. € have been spent on the extension of the infrastructure of public and private secondary schools.
- Within the school year 2003/04 131 schools offered notebook-classrooms to 9.400 pupils.
- Until December 2004 470.000 ECDL-exams have been graduated. 100.000 within the eFit initiative.
- Projects in order to digitalise images, taken in museums.

Aims of eFit Austria:

- Access to educational content via the use of new media.
- Access to education for everybody, everywhere and every time.
- Austria wants to become one of the leading countries on the way to the knowledge society
- New media should complement traditional ways of learning how to write, read and calculate.

Aims of eFit 2 (until 2006)

- Broadband access to the Internet for every school (partially executed)
- High quality educational content is accessible on demand.
- All teachers have sufficient knowledge of ICT-based education. (at least ECDL)
- All school graduates should be qualified to use ICT effectively
- Broad information system of vocational training
- Better access to cultural heritage through digitalisation
- Development of eTeaching/eLearning strategies

Aims of eEducation (until 2006)

- Projects in order to check the use of subnotebooks, PDAs or other individual methods.
- Area-wide eLearning-cluster and agreements.
- To gather minimum standards and best practise examples.

According to the report ICT@Europe.edu Information and Communication Technology in European Education Systems from the year 2001:

Two general aims:

- Promote effective, long-lasting and systematic implementation of ICT in the areas of education, science and culture.
- Introduce the e-Learning concept into academies, universities and adult education and training, as well as in learning on the network, the training of future teachers, and within society as a whole.

A general strategy

The aim of the ICT strategy of the Ministry of Education, Science and Culture is that e-Learning and the Internet should become a natural learning resources. These aims are reflected in eight priority projects:

- Establishment of e-Learning academies
- Extending opportunities for training in ICT
- Developing on-line teaching content/educational gateways
- Setting up ICT scientific centres

- Enriching adult education and training
- Promoting the Austrian cultural heritage via the Internet
- Launching e-Government in education
- Adapting the infrastructure

Who are Schoolnets designed for?

Generally it can be said that schoolnets are designed for teachers, students, pupils, educational administration staff and parents of pupils. Furthermore for all citizens schoolnetworks could be useful, for example if they need adult training. Also people that research in this sector and other interested people are involved.

What do Schoolnets contain?

There are two different types of Schoolnets in Austria - national and regional schoolnets. The bm:bwk is responsible for the national school networks and projects.

With focus on the content, one of the biggest networks is www.bildung.at - it offers:

- Separate sections called “pupils”, “teacher” and “eScience”
- Platform www.classroom.at offering tasks from the PISA study.
- Guestbook.
- Kidsweb – a website especially for children.
- L@rnie-award for especially good educational content.
- SbX (Schoolbook Extra) – It is possible to download digital content that belongs to schoolbooks.

Equivalent of importance is www.schule.at . This network offers:

- Eduthek – Materials, links, software, articles, etc ordered by subjects.
- Special websites for primary education and polytechnic schools.
- Compilation of links ordered by different categories.
- Personal mailbox and virtual hard disk.
- Access to forums and communities.

Furthermore there are regional school networks.

These networks could contain:

- Access to educational content
- Forums, communities, chat, etc.
- Web mail with address book, virtual hard disk.
- Search function, collection of links.
- Newsletter and calendar of events
- Special websites for children, parents, pupils and teachers

- E-Learning platforms
- Advice, when searching proper education (e. g. after general qualification for university entrance)

Who is involved?

- Teachers, pupils and parents
- Federal Ministry for Education, Science and Culture (bm:bwk)
- Government of Federal States
- Public and private institutions and partners
- Administrative and pedagogical personnel
- School network administrator, network administrator, staff unit, etc.
- School authorities, headmasters, school manager and decision makers at all levels.
- Public libraries
- Schools, universities, technical colleges and other educational institutions.
- European Union

What research has been done about Schoolnets?

- ICT and e-learning in Austrian Schools
  Guntram Geser and Thomas Olesch
  In: International Journal of Educational Policy, Research and Practice, Vol. 1, Nr. 3, fall 2000, pp. 307 – 316
  http://www.salzburgresearch.at/research/gfx/ictelearning_2000.pdf

- ICT@Europe.edu
  Information and Communication Technology in European Education Systems / 2001
  www.eurydice.org

- National Summary sheets on education
  Systems in Europe and ongoing reforms
  Edition 2005
  www.eurydice.org

- http://www.efit.at/eeducation/
  is a website introducing Austrians eFit programme.

- http://www.klassezukunft.at/statisch/zukunft/de/zukunftskommission_kurzfassung_2005.pdf
  Final report of the reform concept “future school”

- http://www.hs-kuehnsdorf-shp.ksn.at/akademielehrgang/elearning/E-Learning.dot.pdf
  Script concerning eLearning, Dr. Franz Valentin Borotschnig, 2005

Schoolnets in Schools - What do Schoolnets do? How do schools use them?

Schools and educational institutions primarily use the connection to the Internet, offered by ASN+ and ACOnet, to create homepages, to use e-mail services and to have access to educational content. Generally there is the educational and the administrative sector. Furthermore the possibility to gain information and to publish something is important. Depending on the curriculum, teachers themselves decide on the teaching methods to be used and the content of work in the classroom.

Financial aspects of Schoolnets - who finances Schoolnets? Who sponsors or supports them? Is the industry involved? Is it funded by the government or by private companies? Who are the sponsors? For example Microsoft, INTEL etc.

Compulsory general schools, comprising primary schools, general secondary schools and pre-vocational schools (polytechnic schools) are financed by the municipalities, municipal associations and the Federal states. Lower and upper secondary academic schools and full-time technical and vocational schools and colleges receive their funding from the federal authorities. Beside the funding from the public sector there are private sponsors and partnerships as well:

- Vocational education, in particular, has enjoyed a long association with companies such as Siemens or Philips (for example, the industrial sector can be represented on the committees of these schools).
- In Vienna, there is cooperation between schools providing compulsory education and the city aimed at ensuring that schools are supplied rapidly with computers and secure Internet access.
- Within schools for vocational training (excluding vocational training centres), there are numerous partnerships with the private sector in the field of the humanities, depending on where particular schools are located.
- Training for teachers in cooperation with Intel: “Intel – Teach to the future”

Organisational aspects of Schoolnets - how are they organized? Who manages them? Who promotes and advertises them?

Responsible for the clean running of regional school networks is an administrator, an administrating team or a staff unit. For example in case of the Carinthian school network it is the “Carinthian media lab for education and school”. There is also the possibility of outsourcing.

Responsible for the national networks is the bm:bwk. The organisation of the individual networks is similar to the regional networks. For the usually bigger, national networks more effort must be made.

The Telecom Austria Corporation has to ensure the smooth operation of ASN+.

Strategic decisions concerning ACOnet are made by the mentioned steering committee. Operational decisions are outsourced to the central informatics service (ZID) of Vienna. There is a strong cooperation with all institutions, where ACO-routers are placed.

Examples of Schoolnets - provided websites and information about them

Regional Schoolnets:

http://www.ksn.at (Carinthian schoolnet)
http://www.eduhi.at (Education highway)
http://www.tsn.at (Tyrolean schoolnet)
http://www.schulen.wien.at (Website concerning schools from Vienna)
http://bildung.salzburg.at (Education net from Salzburg)
http://www.eb-stmk.at (Education network from Styria)
http://www.bildungsserver.com (Education server Burgenland)
http://www.bildung4you.at (Education platform from Lower Austria)
http://www.vobs.at (Education server from Vorarlberg)

Since the description of all regional school networks would go beyond the scope of this report, the school network from Carinthia is introduced:

Carinthian schoolnet: www.ksn.at

The Carinthian schoolnet (Kärntner Schulnetz – KSN) started in 2000, since the year 2003 all Carinthian schools are connected to the KSN. For this purpose each school has access to the internet which is split into the pedagogical and administrative intranet.

The Carinthian schoolnet consists of 400 schools and 5.000 computer work places. 100 % of all schools in Carinthia are connected. The intranet is divided into two parts: the pedagogical part and the administrative part. Within the administrative part teachers and pupil's data are handled.

Content of the Carinthian Schoolnet:

- Pedagogical content:
  - Web space for all schools.
  - Thus schools can create their own web pages within an advice method called “5 steps”.
  - Didactic material for teachers and pupils
- Online-Media-Shop: Online-Ordering of Didactic Media
- Training initiatives: European Computer Driving License (ECDL)

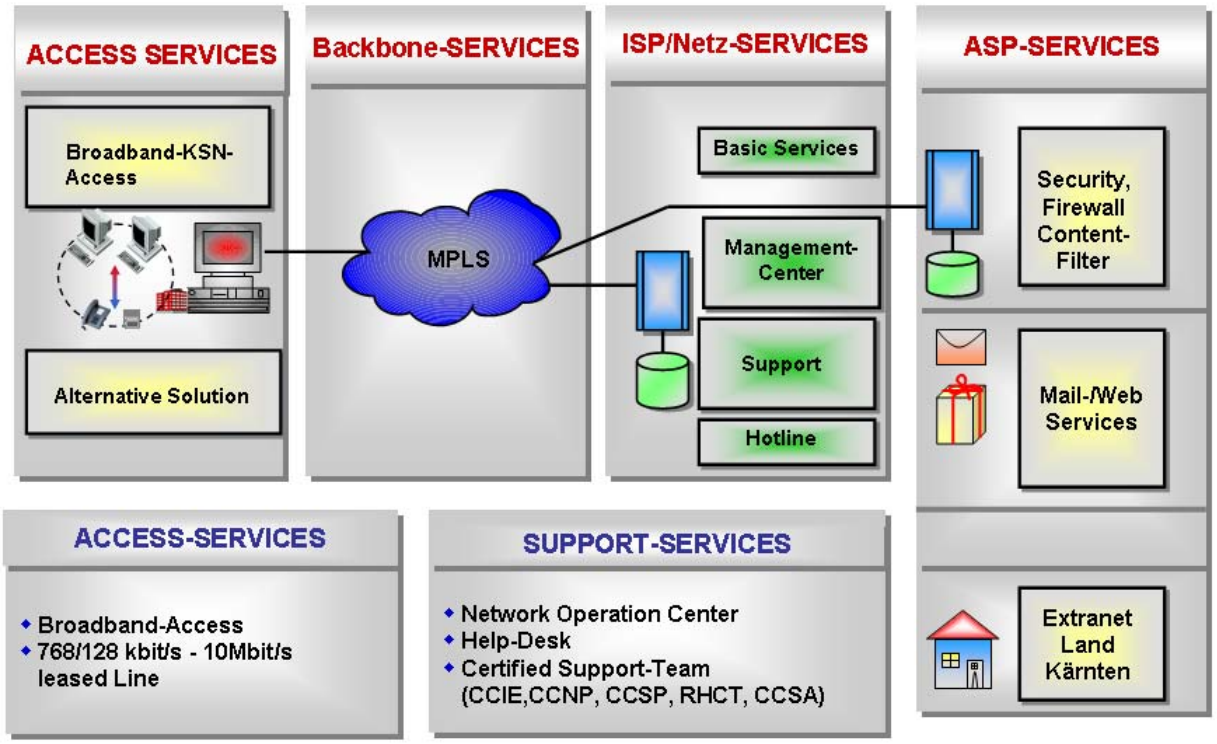

Figure 4: Carinthian school network

Technical details of the Carinthian Schoolnet:

- Web server (405 domains, 200 school websites)
- Mail server (6.000 accounts, web mail and SMS)
- Content-Filter (X-Stop-Filter for forbidden sites, 30 categories, 2.000.000 blocked sites)

- Firewall and Virus wall (10.095 spam mails per month and 8.411 virus mails per month)

- KSN-Lines (Bandwidth: 768 kbit/s – 10 Mbit/s)

- Virtual Computers (5.500 users, 1.400 administrative units, on every place – with every device.)

- Citrix-terminalserverfarm (8 server, 3 GHz, 2 GB RAM, 300 different printer types, 11.000 sessions, 45.000 school reports)

Examples of Austrian Schoolnets

http://www.schule.at (Austrian school portal)
http://www.bildung.at (Austrian education portal)
http://www.klassezukunft.at (Project concerning educational quality)
http://www.bmbwk.gv.at (Information portal of the bm:bwk)
http://www.e-lisa-academy.at (Austrian eLearning network)
http://www.aco.net (Austrian Academic Computer Network)

Usage of ICT in schools

- 63 % of schools had access to the Internet in the year 2000. Today 100 % have a connection to the Internet.
- Within the school year 2003/04, 131 schools offered notebook-classes to 9.400 pupils.
- Until December 2004, 470.000 ECDL-exams have been graduated. 100.000 using the eFit initiative.
- In primary education there is a computer / pupils ratio of 8/100, in vocational schools of 25/100. The average ratio in Austria is 12 / 100.
- 5 % of schools had a broadband access to the internet in the year 2000. 35 % of schools had such a connection in March 2005. In the same time the data transfer rate raised from 3.300 GByte to 13.500 GByte per month.

Why should we have Schoolnets? - What has been said about Schoolnets? Is there any publicity? Are there close releases or advertising projects about Schoolnets in your country? Have they run special and organized projects or campaigns? What are they?

Without doubt school nets have impact on education and society as a whole:

- Supports new levels of student creativity and research
- Collaborations that bring students, teachers and researchers together
- Change the role of teachers

- Create content

Therefore it is necessary to raise the usage of ICT, new media and school networks.

Schoolnets are primarily published via their web pages. Also brochures and flyers are produced. (e.g. http://www.bmbwk.gv.at/medienpool/12612/asn_flyer_small.pdf)
Also the participation or even better to win competitions or awards brings a lot of publicity.

Examples of European Schoolnets for schools

In 1999 the European Commission started the initiative eEurope. eLearning is the practical implementation that started in 2000 (European Commission IP/00/522 2000). The EUN project (European Schoolnet) promotes the collaboration of 23 European education ministries. The project aims at the connection of national and regional school networks. Below you see the portal of EUN and its national, communication networks.

Figure 5: Internet portal EUN with its participating countries