



Akademska in raziskovalna mreža Slovenije

NREN Services for Schools in Slovenia

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ARNES services for schools

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- Connectivity
 - Access network and technologies
 - Service level
- Internet services
 - Provision, support, service standard
- Required human resources
- Funding model
- Why NREN?
- NREN added value?
- Stakeholders' attitude
- Future services for school



Connectivity

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- Nearly all schools (primary, secondary, high) are connected to ARNES (over 90%)
- Schools connect to ARNES PoP directly or in clusters (Arnes' managed MANs)
 - ARNES network used for national&international connectivity
- Access network: L2 by rule
 - ISDN (45%) special deal with Telco for 30 EUR/month for 24/7,
 - ADSL (37%), special deal with Telco for 90 EUR/month for 2/512 and limited overbooking
 - leased line (1%), wireless (1%), CATV (10%), Ethernet (6%)
 - Arnes helps in finding the best option

⇒ Uniform level of services

- Configuration and remote management of school's router
- Monitoring, maintenance, troubleshooting, access control
- Design for QoS and multicast

⇒ Support

- Choosing technology, equipment, setting up services, ACL setup

⇒ Local network

- Technical standards for school LANs (adopted* by Ministry of education)
- Security & policy



Internet services

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- IP registration
- Domain registration, DNS
- FTP archive, Usenet News server
- Chat and forum service (forum only for projects)
- Advanced services
 - Videoconferencing service (MCU, user support, QoS support)
 - Custom access control
- Introducing AAI, support for Eduroam wireless networks



Other services

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- Assistance to Ministry of Education and Schools
 - Technical expertise (network technologies, security)
 - National projects concerning ICT in schools,
 - Advising/tendering for connectivity
 - Safer internet projects
 - International cooperation (European Schoolnet)
 - Introducing new technologies
 - Teacher training
 - ICT conference for teachers
- Server for national projects (Content Management System)
- No web content filtering

- Arnes does not produce content for schools



Personal accounts

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- For teachers, projects, for students (50.000)
- Cheaper(?) dial-up access, cheaper access through CATV network
- Disk space: initial 50 MB per account (webhosting and/or mailbox)
 - unlimited on request for projects (within reasonable use)
- Email
 - Webmail
 - filtering viruses and spam
 - mailing lists (projects, special interest groups)
- Webhosting
 - School homepages, project pages, personal pages (teachers, students)
 - No scripts allowed (like PHP+MySQL)
- User support



Required human resources

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- There are 3 Universities and around 1000 schools in SI
- Majority of Arnes customers are schools:
 - 66% of all institutions connected to Arnes
 - 65% of all “individual” accounts
- Appr. 20 people work mainly for schools
 - Network & services management
 - Connecting new schools
 - Administration IT support
 - User support (basic & helpdesk done by students)
 - Collaboration with ME, projet co-ordination

- But: backbone and international connectivity are here



Funding model

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- School pays for LAN establishment (proper wiring)
 - cofinanced by the Ministry if according to recommendations
- School pays for communication equipment at its side
 - cofinanced by the Ministry if according to recommendations
- School pays to the operator costs of access network to Arnes PoP
 - leased line,
 - ISDN, ADSL, CATV,
 - wireless equipment
 - invests in laying own fiber or connecting to local MAN
- ERDF (project for laying dark fibre inside towns)
- Special rate agreements with operators
 - Arnes involved in market research, negotiations with the operators, technical & service level specifications
- All other services are provided by Arnes for free.



Why NREN?

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General excuses:

- History
- Schools are a natural part of Education network (resources, cooperation)
- Small country: economy of scale
 - price structure for connectivity
 - human resources
- Schools are special customers
 - They require a lot of attention
 - They have no money – bad customers for commercial ISPs
 - Interested to learn using new applications, ready to help
 - Demand for highly interactive communication
 - videoconferencing, distant teaching & learning
 - Success not critical
 - Inherent security risks 😊

➤ Arnes:

- Strategically important user segment
 - because the economy of scale
 - good for our image
 - easier to get public money (also for the academic part of the network)
- Got used to it, got experiences
- Lots of work, especially support
 - Positive aspect: obedient, respect us; uniform standards
 - Negative aspect: inexperienced yet demanding, poor scalability

➤ Schools: happy that somebody takes care of them

➤ Government (ME):

- Happy somebody takes care of schools
- Standardization
- Help with administration, central services, support, management, policy enforcement, tendering ...
- but: “free market” concerns



NREN added value?

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- More friendly user support
 - Knowledge transfer (beyond ordinary user support)
- Free central & hosted services
 - Practically unlimited disk space
 - Reliable email service
 - Efficient virus and spam filtering
- Videoconferencing & QoS support
- Managing client routers
 - Standard, efficiency, security... cheap
- Intermediate service level between schools and government
- TERENA added value
 - Human network – support coordinating international projects
- GEANT2 network

- Schools generally love Arnes, users demand more
- ISP's
 - Prevailing telco from time to time comes with the idea that no NREN is needed ...
 - Other providers ally against prevailing telco, but slightly eyeing the market share
 - Reduced importance of individual accounts – no individual DSL access
- Operators
 - Big clients / messing with their monopoly plans
- Ministry undecided
 - Those responsible for ICT for schools see Arnes as (useful) service
 - Others see a budget-consuming ISP, disturbing the free market (“Maybe telco could do better and for less money ?”)



Future services for school

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- Reducing the number of “individual” accounts,
 - focusing on projects
 - services based on AAI
- More videoconferencing support
- Secure wireless networks, Eduroam
- CMS hosting
- Safer Internet projects
- Introducing new technologies/services through teacher training
- Access control support
- Help choosing the best connectivity option and tendering