

# ARNES Experience - Introducing ICT Services to Schools in Slovenia

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## ☰ Connectivity

- Schools connect to ARNES network
- Uniform level of services
  - Management, monitoring, troubleshooting, access control, QoS

## ☰ Network services

- For smaller institutions (DNS, virtual domains)
- Individual access, email & web hosting

## ☰ Support

- Choosing technology, equipment, setting up services
- Using Arnes services or dedicated services for school

## ☰ We take active part in introducing ICT to schools in close cooperation with Ministry of Education

- Technical standards for school LANs
- Security & policy
- Project support
- Teacher training, workshops, knowledge transfer

- Schools are a vital part of building an e-society
  - kids are growing up into a world of ICT
  - the only ones truly embracing it
  - schools are there to teach “Net literacy” and “Netizenship”
- Directions of e-Europe:
  - *Fast internet access for all schools and students*
  - *Safer Internet Action Plan*
- National strategy, systematic approach & orchestration is a good idea, if not necessity
- Somebody should be doing it

- Schools are a natural part of Education network (resources, cooperation)
- Small country: economy of scale
- Schools on a frontline
  - Interested in using new applications
  - Demand for highly interactive communication
    - videoconferencing, distant teaching & learning
- Schools make good test-beds
  - maintenance, security risks
  - different levels of experience & organization

- Permanent connections (also for schools)
  - Leased line (copper TP)
  - Routers & modems (WYPIWYG) (up to 2Mbps)
  - Instructing administrators how to set up network
- Services (DNS, mail, WWW, FTP, News, IRC ...)
  - Central or hosted for smaller organizations
- Personal accounts
  - Dialup access / mailbox / disk(storage, www)

- ⇒ Since 1994 free personal accounts for teachers and students in primary and secondary schools
- ⇒ From “why not...” to “internet boom”
  - teachers were forced to learn about internet
  - creative teachers saw an opportunity to use new technology and make use of student’s interest
  - accumulating experience in new environment
    - pedagogical possibilities
    - social impact
- ⇒ Need for “Net education”
- ⇒ Active role of teachers-tutors
  - Each student user must have a “tutor” who can suspend his account and negotiate time and disk quotas

- We built “using net” in schools on “personal service”
  - Enables them to use services
  - Mail distribution lists
  - Hosting project pages on our server (“unlimited space”)
- Lots of individual work with tutors and online project coordinators
  - support for school projects, additional services
  - many times, we are asked to play the role of (net)educators, psychologists...
- ARNES helps setting net policy standards

- Arnes support: choosing the best option
  - Model contract: cable operator – Arnes
  - Governemental contract with Telecom
    - Flat rate “permanent” ISDN
    - ADSL (low overbooking – 1:1, 1:2, 1:3) (QoS!)
    - 10/100 Mbps Ethernet
  - Own last mile (fiber, wireless)
  - Encourage clustering
- Coordinated regional support
- Co-funding and supervision from the Ministry

## ≡ Videoconferencing

- MCU, gatekeeper, (ISDN) gateway
- Streaming server
- Workshops

## ≡ Dedicated server for important national projects

- Open source OS distribution
- CMS for schools
- Resource database
- International cooperation

- One people, one network, ... one policy maker 😊
- Uniform service level
  - Network management, QoS
  - Taking advantage of GÉANT network
  - Better support for specific projects
- Personal contacts, user feedback (!)
- Introducing ICT with strategy
  - Easier to implement standard solutions in schools
- Schools love us 😊
- Ministry is happy somebody is doing the work

- ... Well, a couple of enlightened guys, really..
- Knowing user's needs and problems we can help in strategic planning
- Accepted standards and recommendations for building networks at schools
  - LAN segments – administration, labs, classrooms, library...
- Holistic approach – planning for future
  - proper wiring, connectivity, clustering
  - servers, computers, applications..
  - network management and maintenance, security
- Teacher training
- Safer Internet Action Plan

## ☰ Scalability

- Lots of support – loosing personal contact
- Routine – need for automation
- Growing demands for resources – calls for separation from custom & high-end services
- ISP-like, still with added value

## ☰ Disturbing ISP market?

- Level of (network, ICT) services in organization depends heavily on Who is doing it and How
- We teach schools How to do it and help finding Who
- The rest will follow in 10 years

# Sežana case: building private MAN

