The “Broadband For All” Cluster


Martin Potts
Martel
Bern, Switzerland

martin.potts@martel-consulting.ch
Who was involved
Main topics
Overall Achievements
Project-specific Achievements
Next Steps
2 main trends:

• Broadband (faster .... and cheaper)
• Next Generation Networks (NGNs)
State of the art at the start of FP6 (Broadband)

- Demand for Broadband was outstripping supply (IPTV, gaming, VoD, VoIP, …)
- “Digital Divide” problem (especially in rural areas – line length for ADSL, no CATV)
- Impact on GDP
- A-BARD project: “40% of Europeans have no affordable access to Broadband”
State of the art at the start of FP6 (NGN)

- Telco services were “silo-ed”
- Research network operators (NRENs, GEANT) had got the message about converging on IP for everything
- Telcos recognised the promise of lower CAPEX and OPEX, but were being cautious. They needed to be convinced
Why did we need a BB4All Cluster?

• Many technologies (optics, WLAN, Cable, powerline, radio, satellite) were offering cheaper Broadband. Bringing them together would make it easier to compare.

• Different projects were considering components, systems, architectures (all layers).

• Avoid duplication.

• Joint effort towards standards.
Achievements:

- Workshops at each Concertation meeting on specific themes:
  - Quality of Service
  - Monitoring and measurement
  - Bridging the ICT divide
  - Socio-economic evaluation of solutions for broadband
  - Optical broadband systems
  - Fixed-mobile convergence
  - .... etc.

- BREAD “BBEurope” conferences/exhibitions
Achievements (Optical network technologies):

- eXtra Large PONs (long distance, high splitting ratios) – also space/energy savings
- CWDM optical ring for the access network
- Hybrid fibre radio access
Achievements (Low-cost Broadband access):

- Laying infrastructure in rural areas is expensive => WiMAX and WLAN mesh or sharing ADSL lines and WLANs
- Powerline (and its integration with WiFi, WiMAX, UWB, …)
- Improving the bandwidth of the ADSL that is available
- Diversity of solutions leads to competition and lower prices
Achievements (NGN):

- Separation of Services from Control and Transport

- Multi-service networks based on IP (“parallel Internets”, “virtualisation”)

- How to support QoS, end-to-end ... and how to simplify the reservation of QoS (eg. by using policies)
Specific project achievements:

- **MUSE**: The eXtra Large PON system was tested at a world record rate of 2.5 Gbit/s burst mode transmission over an optical attenuation equivalent to a 512-way split and 70 kms of fibre.

- **NOBEL**: Applicability of Ethernet in core and metro networks (standards) and concepts for advanced optical packet/burst switching.

- **ADHOC SYS**: WiMAX/WLAN Mesh wireless adhoc system trialled in a “digitally-divided” mountain village in Northern Italy – available under GPL license.
Specific project achievements:

- **GANDALF**: A cheap optical feeder component for the concurrent optical/radio system was tested at data rates of 1Gbit/s.

- **POF-ALL**: Symmetrical data transfer at 100Mbit/s over 200 meters over low-cost large core Plastic Optical Fibre.

- **OBAN**: Seamless mobility for users roaming between adjacent WLAN cells operated by different service providers.
Specific project achievements:

- **POWERNET**: Multi-carrier modulation techniques have been demonstrated as a means of solving EMC issues in powerline communications.

- **EuQoS**: Resource reservation mechanisms were developed for specific access network technologies such as Ethernet (fixed and wireless), DSL and UMTS.

- **MOME**: Practical support for collecting, storing, anonymising and retrieving measurement data.
BB4All Cluster

Specific project achievements:

• NoEs: Reduction of the fragmentation of European research (ePhoton/One, ISIS, EuroNGI/FGI)

• More than 100 patents

• Many of the results have been featured on the “IST Results” site of Cordis
Next Steps:

- Many BB4All projects are still continuing and fit with the FP7 topic of the “Network of the Future” (optics, network “slices”, low-cost Broadband access, faster rates, …)
  - Architectures
  - Protocols
  - Technologies
  - Systems
  - ….

- Convergence/Interoperability between technologies will always be an issue