BROADWAN Workshop

True low-cost broadband wireless access everywhere

for fixed and nomadic users

Crowne Plaza, Rue de la loi 107
Wetstraat, Brussels 24 May 2005

DRAFT PROGRAM

Go to registration

Form for payment and hotel booking

08:00 - 09:00 Registration

09:00 - 09:10 Open
Representative from the European Commission

09:10 - 1030 Session 1: The broadband society, business models, and roadmaps
Chair: Terje Tjelta, Telenor, Norway

09:10 - 09:30 Broadband roadmap
Peter van Daele, BREAD-project, IMEC-Ghent University, Belgium

09:30 - 09:50 Business opportunities for wireless access networks
Roland Montagne, Idate, France, Nils Elnegaard, Telenor, Norway

09:50 - 10:10 Broadband landscape in North America
Gerald Chouinard, Communications Research Centre, Canada

10:10 - 10:30 Experience from Japan using the low-cost 26 GHz fixed wireless access WIPAS
Ryutaro Ohmoto, NTT, Japan

1030 - 1100 Coffee

1100 - 1230 Session 2: Broadband hybrid wireless architecture
Chair: Thierry Montalant, Cegetel, France

11:00 - 11:20 Hybrid wireless access for rural deployment
Julian Sesena, ViceChairman ITU-R SG 4, Spain

11:20 - 11:40 Requirements to and architecture of hybrid broadband access networks
Lisa Henden, Lars E Bråten, Telenor R&D, Norway, Zsombor Elek, T-Systems RIC, Hungary

11:40 - 12:00 Interoperability issues for hybrid access and backhaul networks
Marina Settembre, CoRiTel, Italy, Simon Paillard, Thierry Montalant, Cegetel, France

12:00 - 12:20 A Multi-link architecture for a global wireless Internet connectivity
Guillaume Bichot, Thomson, France

12:30 - 14:00 Lunch

14:00 - 15:30 Session 3: Next generation low-cost wireless solutions
Chair: Chris Howson, Thomson, France

14:00 - 14:20 Innovative system architecture for wireless access above 20 GHz
Knut Rimstad, Nera, Norway, Roberto Albanese, Simona Garritano, CoRiTeL, Italy

14:20 - 14:40 Enabling technologies for low-cost mm-wave systems
Jean-Yves Daden, Thales Communcations, France, Chris Howson, Thomson, France, Cyril Decrose, CNRS, France, Silvia Cavalieri D'Oro, CoRiTeL, Italy

14:40 - 15:00 Simulation results for advanced 5 GHz systems
Dr Ze'ev Roth, Alvarion, Israel, Nick Thomas, RAL, UK, Patrizia Testa, CoRiTeL, Italy

15:00 - 15:20 Propagation models for dynamic adaptive radio
Mike Willis, RAL, UK, Janos Bito, BUTE, Hungary, Ligia Chira, Technical University of Cluj-Napoca, Romania

15:30 - 16:00 Coffee

16:00 - 17:00 Session 4: Provision of services, promotion of wireless broadband
Chair: Otto Koudelka, Joanneum Research, Austria

16:00 - 16:20 Automated hybrid cost-optimised network design
Stuart Allen, University of Cardiff, UK

16:20 - 16:40 The way forward for the international forum Wibrace
Jean-Charles Point, Jurgen Emery, JCP Consult, France

16:40 - 17:00 International standards developments, such as WiMAX and beyond
Dr Vladimir Yanover, Alvarion, Israel

17:00 Close

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BREAD
BROADBAND FOR ALL

Coordination Action within FP6

BREAD

BRoadband in Europe for All: a multi-Disciplinary approach

Contact: peter.vandaele@intec.ugent.be

Agenda

1. BREAD Introduction
2. Why a Multi-disciplinary approach is needed
3. BREAD Roadmap planning & methodology
4. Preliminary Gap Analysis & Technical Roadmaps
5. Multi-Disciplinary analysis
6. Conclusions

BREAD Introduction

- **IMEC (co-ordinator)** **B**
- University of Essex UK
- Research Center COM / CTI DK
- Groupe des Ecoles des Télécommunications F
- FhG/HHI D
- TELSCOM consulting CH
- JRC - Institute of Prospective Technological Studies E
- JCP - Consult F

BREAD Objectives

- Develop a multi-disciplinary view for the realisation of ***'broadband for all'***
- Combine forces in the area of
  - state-of-the-art results in R&D on the technological level
  - expertise towards the economic sustainability and the in-time adoption of adequate business models
  - expertise and study towards the regulatory aspects on EU level and the re-conciliation of customers' and industries' interests
- Develop a more holistic vision encompassing technical, as well as economical and regulatory aspects
- Identify roadblocks on European, national/regional level
- Share visions and best practices on national level to EU level (ERA)
- Benchmarking the EU situation with US & AP develop.

BREAD Introduction

www.ist-bread.org

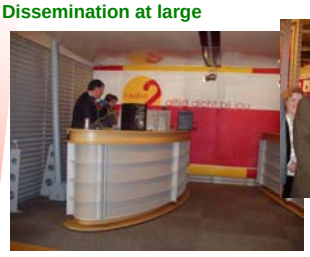
Project info
FP6 projects
News items
New reports
Links
Forum

> 150 visits / day

± 300 requests for BREAD deliverable

BREAD Introduction

Dissemination at large



Trade Fair "Accenta 2004"

- E-chat session on "BroadBand for All" (P. Lagasse)
- B2B event "First time BroadBand" (± 200 pax)
- Demo on QoS (on-line gaming)
- 120 000 visitors
- ± 400 school kids (10-12 years)

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A Multi-disciplinary approach

Information & Communication Technologies

Information and communications are at the heart of human life and social development

People have always worked together by sharing information and knowledge through speech, writing, the printed word and, more recently, telephony and broadcasting

Sharing information empowers individuals and communities, and enables whole societies to benefit from the experience of everyone within them

A Multi-disciplinary approach


Teleworking / e-learning


eCare


home security


video telephony


Unified messaging


conferencing


TV and video

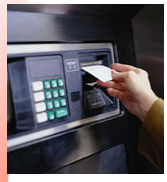

music


gaming

Information **Communication** **Entertainment**

A Multi-disciplinary approach

In the developed world, ICT has become a crucial enabling factor in the functioning of society and economy


banking


household


automotive

ICT becomes increasingly an important part of the product or of the service

A Multi-disciplinary approach

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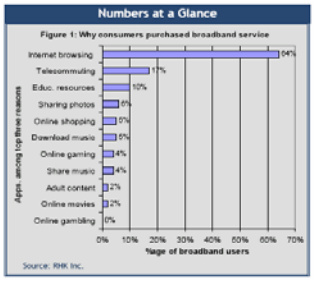

ICT has a fast growing influence on the societal behaviour of people

A Multi-disciplinary approach

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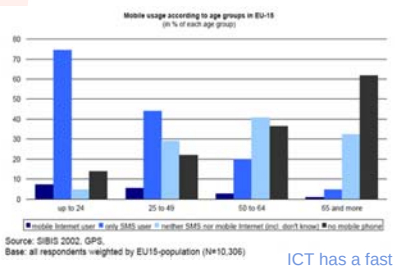
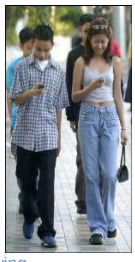




ICT has a fast growing influence on the societal behaviour of people

A Multi-disciplinary approach

Different ICT-technologies available

Cellular & Wireless

Requires masts:
Lower capacity, lower costs

Fixed

Requires digging cable ducts:
high performance, but expensive

A Multi-disciplinary approach

Wireless connections between devices

Bleutooth
(e.g. hands-free mobile phone)

IrDa
(e.g. between mobile phone & Palm)

Mainly used for
data-transfert between devices

A Multi-disciplinary approach

Wireless connections in-house

WiFi
(e.g. for LapTop in hotels, at home,…)

WiFi
(e.g. between PC's in offices)

Mainly used for wireless connection to
private fixed access point

A Multi-disciplinary approach

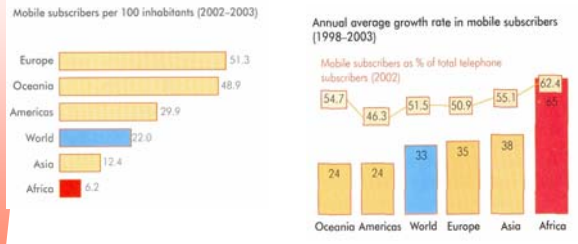
Wireless connections outdoor

WiFi
(e.g. Public Internet Access)

Mainly used for wireless connection to
public fixed access point

A Multi-disciplinary approach

Wireless technologies turns out to the most efficient way of "connecting" developing countries



Mobile usage is still low in Africa but fastest growing

A Multi-disciplinary approach

Examples of applications of mobile & wireless and of internet applications

Mtoni/Zanzibar
(APC's "Community Wireless Connectivity" project : using "cantennas" to connect to a community base station

A Multi-disciplinary approach




Etc...

?

Internet Access will become a "**utility**" in the developed world with large impact on economic and societal life

But in developing countries ICT is to be seen as an "**enabler**" towards economic and societal development

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BroadBand Roadmap: planning

- State of the art
  - March 2004 (1st version)
  - June 2005 (second issue, including detailed reports)
- Roadmap definition:
  - Technology roadmap -> BREAD + FP6-projects + other sources
  - High level « visionary » roadmap -> **BroadBand ThinkTank** Group
- BroadBand Think Tank:
  - Meeting June '05 with selected participants
  - Broad coverage of BB-areas
  - First outcome in BREAD Deliverable
  - Refined output: visionary document : fall '05
  - Update Spring '06

Contact: Jean - Charles Point" <pointjc@jcp-consult.com>

Roadmap breakdown

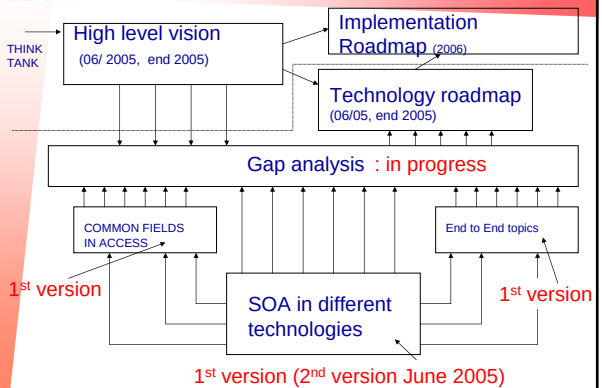
Based on BREAD review:

- Roadmap content divided in 4 phases:
  - Baseline analysis ("Where are we?"):
    - State of the Art (SOA): current technologies R&D, activities and standards
    - Current trends, users future goals and challenges
  - Visioning ("where do we want to go?")
    - Desired outcome assessed through scenarios building and cases studies
  - Gap analysis ("what are we missing?")
    - Comparison between the vision and the baseline, identification of missing technologies, barriers, etc.
    - Production of a set of research actions with timing and dependencies
  - Implementation
    - Framework to operationalise the R&D actions defined

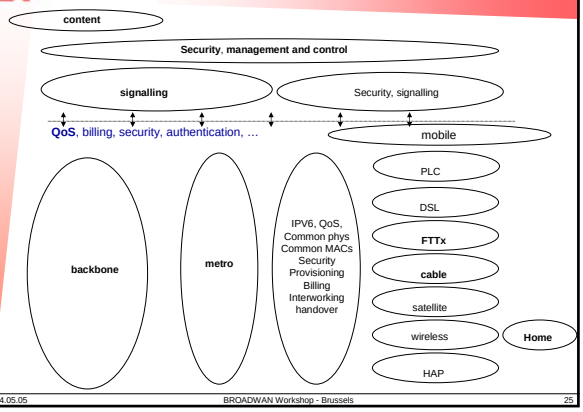
BREAD approach to roadmap

- Mixed bottom-up / top-down approach:
  - Technologies SOA analysis
  - Technical requirements and gap analysis
  - High level vision and derivation of gap analysis
- Multi-disciplinary approach required (technology, socio-economic, standardisation,…)
- Multi-player involvement (user, content provider, manufacturer, operator, marketing, management, ….)

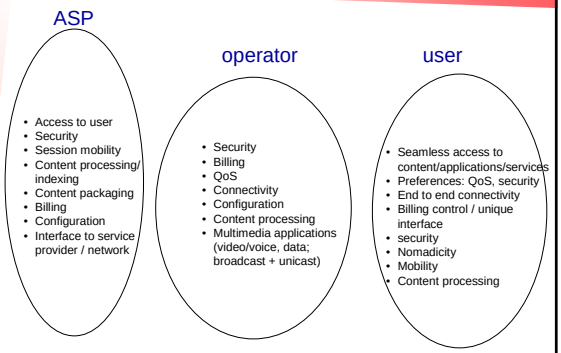
Methodology and status



Areas segmentation



Requirements in the bottom up approach



Results in translation in technical requirements

Examples of first technical gap analysis

- Wireless / 3G
  - Architecture for very high bit rate access (WIMAX), extension to mobile
  - Broadcast – broadband cooperation (DVB-H / WIMAX / 3G), handover (WLAN)
  - Higher capacity / extension of frequency range
  - IP / security architectures
- DSL / cable:
  - Different options of architecture change for multi service capability(eg. QoS control, AAA, multicast support)
  - New physical/MAC layers for higher capacity, spectrum management
  - Evolution of IP and security architectures:
    - For video (merge with broadcast model)
    - For application / network segmentation
- FTTx:
  - Point to point (PTP) and PTMP PON capacity increase:
    - Ethernet ((EFM) over PTP and EPON), ATM based BPON, Extension to WDM PON
  - Cost and large scale integration / manufacturing of ONU, maturity of optical components
  - Policy/regulatory support for deployment

Examples of first technical gap analysis (2)

- Fixed Satellite:
  - Satellite technology (larger Ka band antennas, higher power, OBP, capacity,..)
  - Channel capacity optimisation
  - Interworking in heterogeneous satellite (hybrid orbits) and satellite terrestrial environments (including CDN, cooperating networks) with satellite constraints
  - QoS architecture in satellite environment (CAC, scheduling, flow control, routing)
  - New transport protocols
  - Broadcast/multicast handling
- Wireless / Home network:
  - Capacity enlargement of the wireless channel
  - Improving spectral efficiency of the radio link by signal processing techniques and advanced antenna structures
  - Gigabit transmission at <11 GHz-frequencies in indoor and outdoor environments
  - Development of standards/protocols to be used in wired systems which are extended by wireless links; cooperation between wired (PLC, cable) and wireless resources
  - Interoperability interworking and management of heterogeneous short range wireless resources
  - Adaptation of IPv6, Mobile IPv6 for home environment
  - Interoperability between existing home networks and service platforms
  - Management of external service provisioning

Examples of first technical gap analysis (3)

- Backbone / transport:
  - New architectures for high capacity, low CAPEX/OPEX
    - Dynamic networking (ASTN)
    - Next generation SDH
    - High capacity routers and optical cross-connects
  - Efficient & robust modulation/transmission formats
  - Optical Burst Switching
    - UNI for OBS and Application Driven networking
  - Control planes, GMPLS, for multi-protocol operation
  - Penetration of Ethernet solution in the Metro domain
  - Low cost device integration and packaging for the Metro e
- Management:
  - Policy based network management
  - More flexible bandwidth management (LCAS, VCAT)
  - Application level signalling based on
  - Unified control scheme on top of
- Multimedia Content / QoS:
  - Introduction of storage in network architectures (CDN)
  - Scalable coding
  - Scalable OPEX
  - Application
  - Unified Q
    - Correlation (Dublin Core standard) metadata and signalling
    - Resource reservation
    - Policy architectures

Input required from you

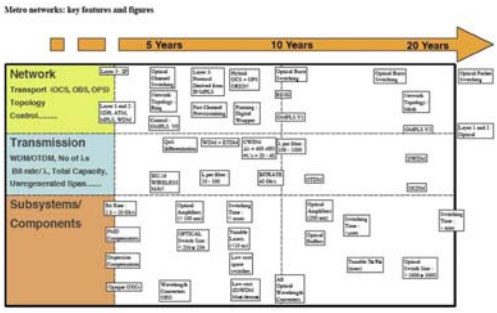
Contact: Jean - Charles Point" <pointjc@jcp-consult.com>

Roadmap : Current contacts with projects

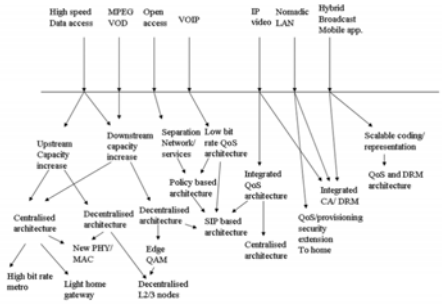
- Broadband acces (DSL/ FTTx): MUSE
- Cable: ECCA, Eurocable Labs
- Satellite: SATNEX
- QoS / video: MEDIANET, DANAE, EuQoS
- Home Network: MEDIANET
- Backbone : ePhoton/ONe, NOBEL
- PLC: OPERA
- Fixed wireless: BROADWAN, WIBRACE(*)
- DVB-T/H: ATHENA, INSTINCT

(*) : WIBRACE is an international forum on wireless initiated by BROADWAN.

Metro roadmap example



Cable roadmap example



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Multi-Disciplinary analysis

- Development of the techno-economic model
- Development of a database on key national contacts on broadband
- Drafting the « European Broadband Vision »
- Completion of country studies (EU25 + interesting outside)
- Drafting of «lessons of country studies »
- Drafting of «Applications and User Needs » with discussion on broadband user segments and « service packages »

Multi-Disciplinary analysis

Some observations from country studies

- Broadband is a rapidly moving target; “snapshot” cases are not particularly useful for policy conclusions.
  - e.g. the Finland case: BB connections doubled in 2003 and grew from 500,000 to 760,000 in 2004 (from 21 % households to 30%). Prices dropped 22-40 % during the year.
  - e.g. some digital divide policies may become outdated before they are implemented
- A detailed analysis of developments in a country require in-depth work.
  - Concepts such as “unbundling” mean different things in different countries (“unbundling” was a critical success factor in Korea).
- Broadband market is organised around grabbing customers in an environment where telecoms are going through a major structural change.
  - Profitability of broadband service provision is still an open issue. VoIP might kill infrastructure investments.
- Peer-to-peer and games are key apps for BB

Conclusions

BREAD is running

- Website works
  - Improvement / input welcomed
- Newsletter
  - Improvement / input requierd
- Higher than expected interest in deliverable
- 2nd deliverable:
  - much work to be done
  - All input / comments is welcomed

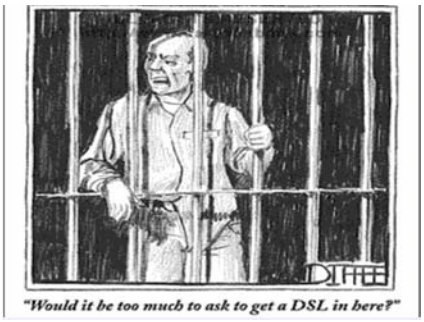
BBEurope 2005: preparation is ongoing:

- Your forum for BB results
- Targeted workshops highlight specific issues:

Shaping the Broadband Society “Fixed-wireless/mobile-satellite convergence : Networks and Services”, June 23rd, Dresden (Germany)

BREAD
BROADBAND FOR ALL

Impact of BB



"Would it be too much to ask to get a DSL in here?"