

Internet radio

Some technology highlights

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Agenda

- **Differentiation**
- **Internet radio sets**
- **Mobile phone radios**
- **Web radio versus broadband radio**
- **Peer-to-peer delivery**
- **Geolocation systems**
- **Some quality aspects**

Internet Radio differentiation

- via a connected computer device or computer-like device
- new user interface (UI)
- linear radio and on-demand music
- thousands of internet radio stations
- worldwide
- new service providers
 - traditional broadcasters
 - internet-only stations
 - portals
 - individuals
- audio quality is getting better and better

Kerbango Internet Radio

2001

- ***Plays thousands of Internet Radio stations***
- Internet Radio
 - Looks and feels like a radio, not a computer
 - Easy to use: set-up, listening and tuning
 - Costs about as much as a high-end radio
 - No PC required
- Future Variations:
 - Connectivity options
 - Wireless versions
 - MP3 audio player
 - Car radios
 - Local storage



Audrey 2001

Unique consumer experience

Home organiser

family calendar
syncs with Palms

Unified messaging

email
voice mail
scribble mail

Audrey channels

preselected
preloaded

Touchscreen, IR keyboard



Solutions web radio

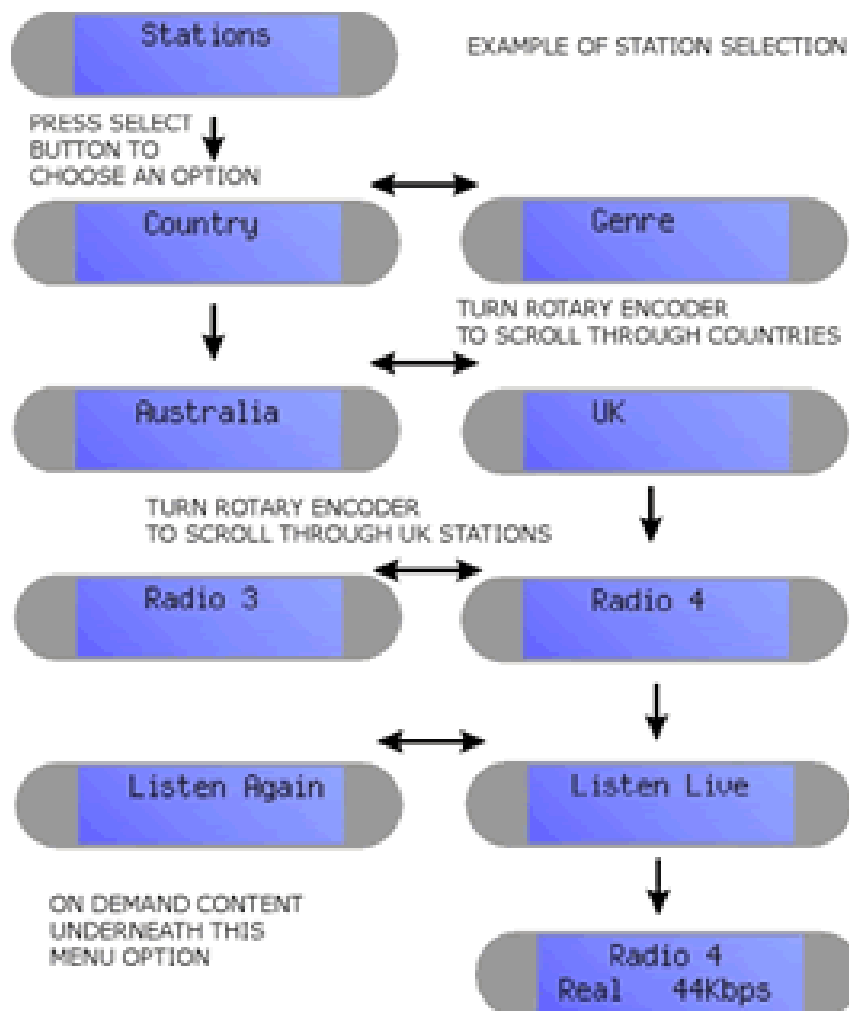




Acoustic Energy

- Wireless broadband connection
- ARM technology
- Supports Real Audio, Windows Media and MP3
- Reciva central station database
- Media Player to play audio files MP3, WMA, RM, OGG, AAC stored on a networked PC
- More than 10'000 stations worldwide
- Location: practically all countries
- Genres: more than 60
- You can add a station at:

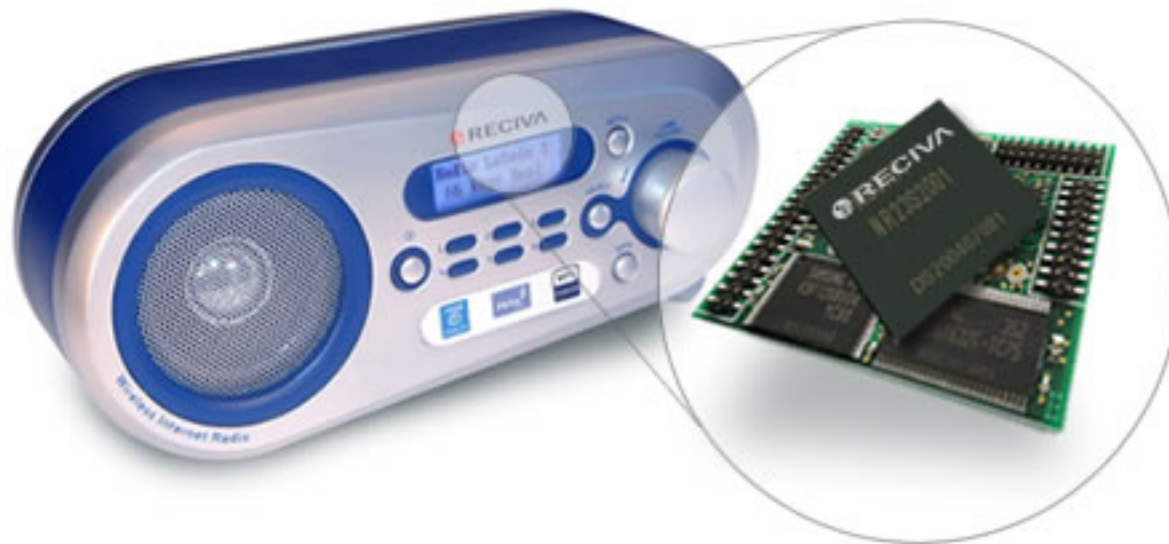
http://www.reciva.com/stations/add_station.asp



TEST

1. Slovenia, Radio Ognjisce MP3 24k
2. Australia, 2CHSydney Real 32k
3. Canada, CBC radio 3 MP3 128k
4. UK, BBC Radio 4, Real 44k
5. China, National Radio, Real 32k

Reciva



SoundBridge Radio



Slimdevices



Vodafone Radio DJ

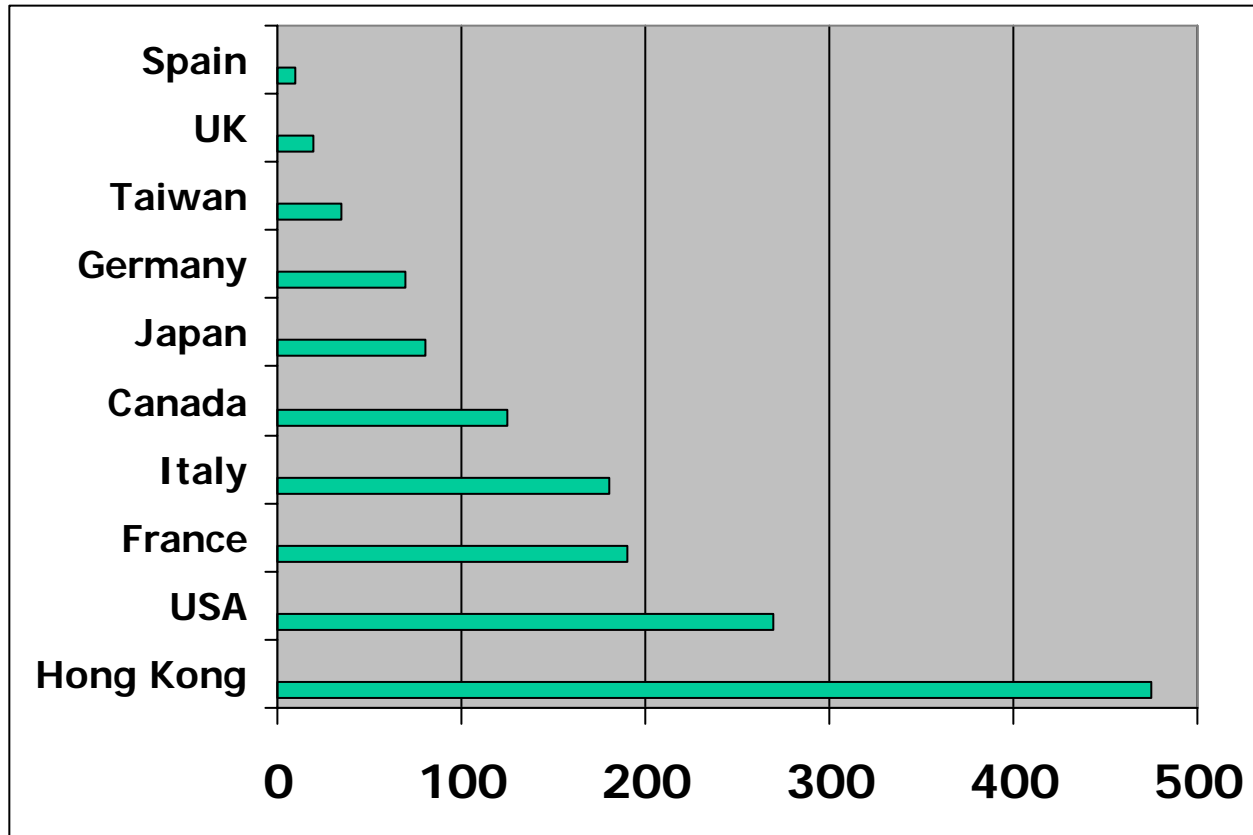
- “World’s first fully convergent music service”
- Interactive personalised radio channels streamed to 3G UMTS phones and PCs
- Joint venture of Vodafone and Sony NetService
- Enables to “train” pre-programmed radio channels by pressing “like” or “dislike” buttons
 - pre-defined channels – user can select songs for download based on mood and genre
 - create personal channels by rating songs
 - collections – prepared by local music experts around a theme
- Will be available in 6 EU countries in the coming months

Broadband Radio

- Broadband Radio is NOT the same as Internet radio
- Broadband TV is a new emerging platform, growing very fast. It may embrace radio
- Vertically integrated, closely managed and secured distribution network
- The client base is known through individual IP addresses
- Intrinsically interactive – offers on-demand services
- Predominantly local coverage
- Offers bundles of telco and media services including radio
- Audience tracking and targeted advertising
- The jury is still out on economics

Top 10 IPTV markets 2004

(in '000 subscribers)



Interdisciplinary BR, IR and DAB approach

- It could be interesting to explore possible synergies between BTV, BR and Digital Audio Broadcasting (DAB) and DRM in terms of:
 - common receivers
 - common programme guide and service catalogue
 - common set of services
 - complementary coverage

**The user is network agnostic.
They do not mind about the service
delivery mechanism**

What is P2P

- **P2P is a distribution network of linear and on-demand services over the internet,**
 - real-time video/audio streaming
 - file downloading
- **P2P can make use of the users' infrastructure (users' storage and processing capacity)**
- **P2P can be used as a channel for networked PVR**
- **Three approaches (of varying degrees of centralisation of resource discovery, resource availability and resource communication):**
 - central server (web server)
 - central database
 - decentralised system (Gnutella)
- **EBU organised a P2P workshop on 14/15 February 2006**

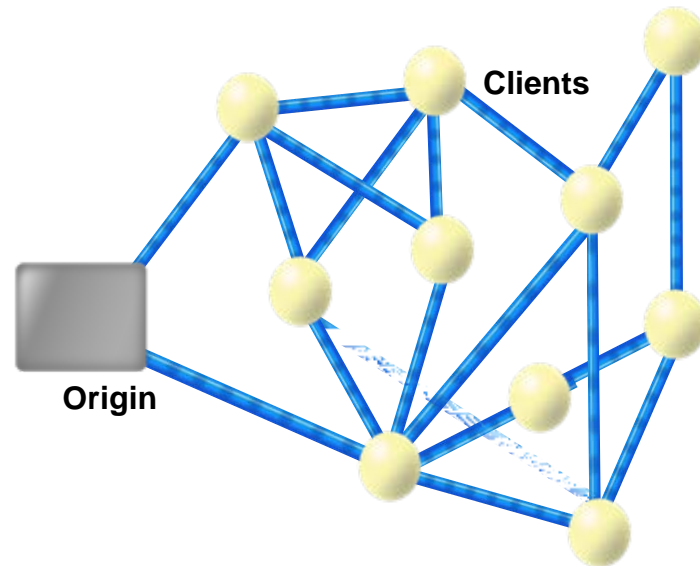
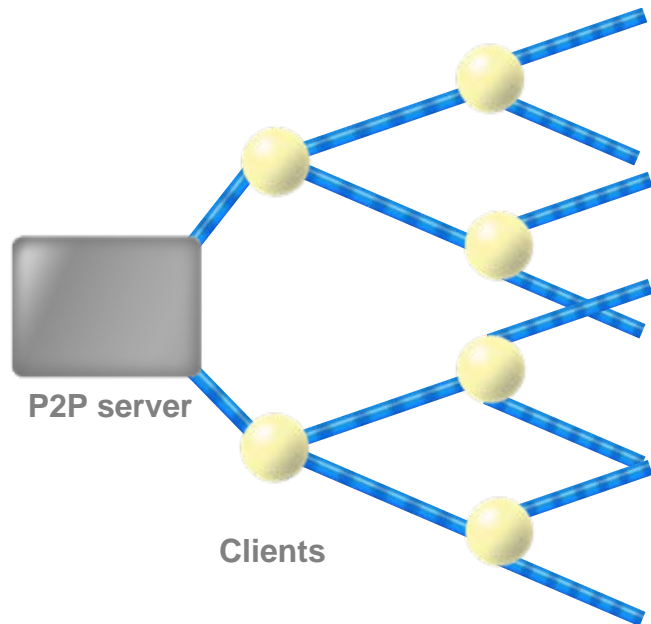
Motivation for P2P

- Internet is uneconomic today (large and expensive servers and networks)
- Compared to conventional approaches, P2P networks:
 - require less capital investment and maintenance
 - more cost efficient operation (saving bandwidth)
 - more reliable (no single point of failure)
 - more scalable and resistant to traffic peaks
 - software overlaid to the existing telco network infrastructure
- P2P may reverse traditional internet model:

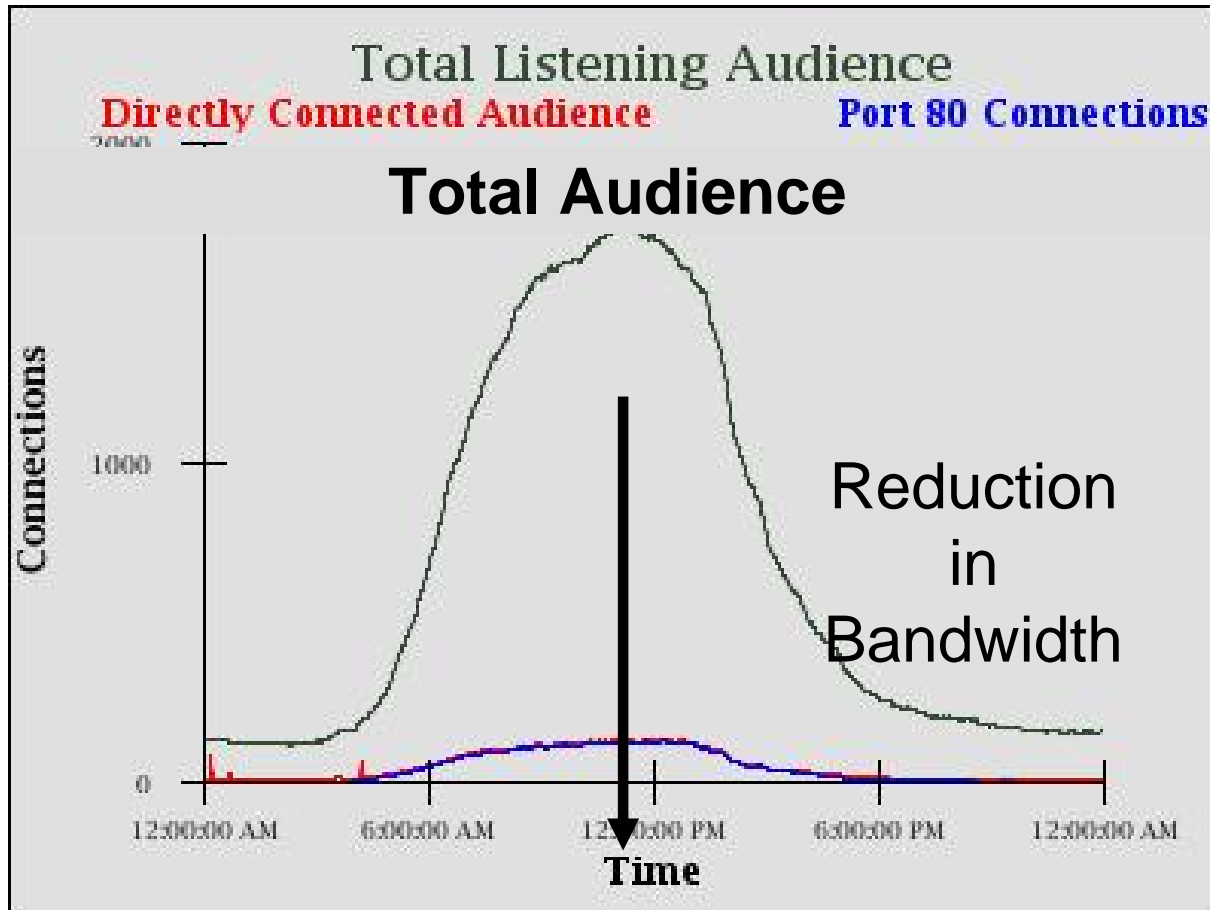
“More streams, higher costs”
becomes

“More streams, better the system and less cost (per stream)”

Tree vs grid



Example Streaming Network Efficiency



1882 Total Audience
X 64Kbps
= 117.6Mbps

102 Direct Connected
X 64Kbps
= 6.4Mbps

**Bandwidth
Saved
= 111.2Mbps**

Status

- P2P technologies are mature and ready for commercial exploitation
- Different topographies (tree, grid)
- Several commercial P2P propositions are available:
 - Abacast
 - Azureus & Aelitis
 - BitTorrent – open source
 - CacheLogic
 - Kontiki
 - Octoshape
 - PPLive (Chinese, tested by TF1)
 - Rawflow
 - Triber
- Infrastructures/CE equipments are available (Lamabox, Slingbox)

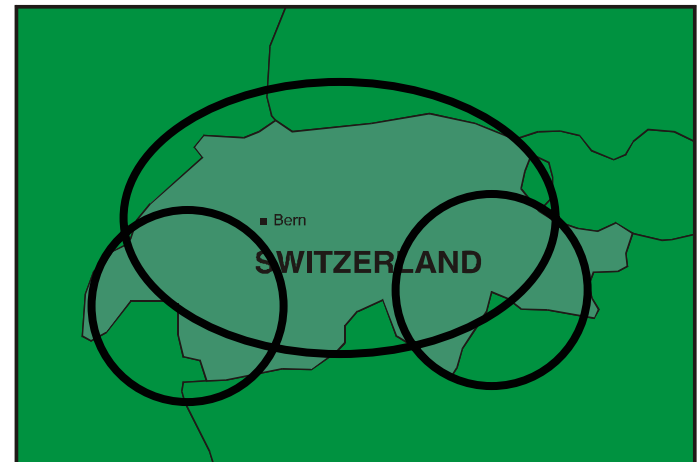
**There is a good timing for EBU discussion on P2P:
A new group B/P2P is being set up**

Geolocation

**Internet:
World-wide coverage**



**Conventional broadcasting:
Limited coverage**



What is GL

- **GeoLocation is the technology which allows to**
 - **determine on-line user's physical geographical location**
 - **delimit (restrict) the reach of media files and streams to certain territory.**
- **Users may be located in any part of the world:**
 - **Region (e.g. European Broadcasting Zone)**
 - **Country**
 - **City**
 - **ZIP code level**

WiMAX

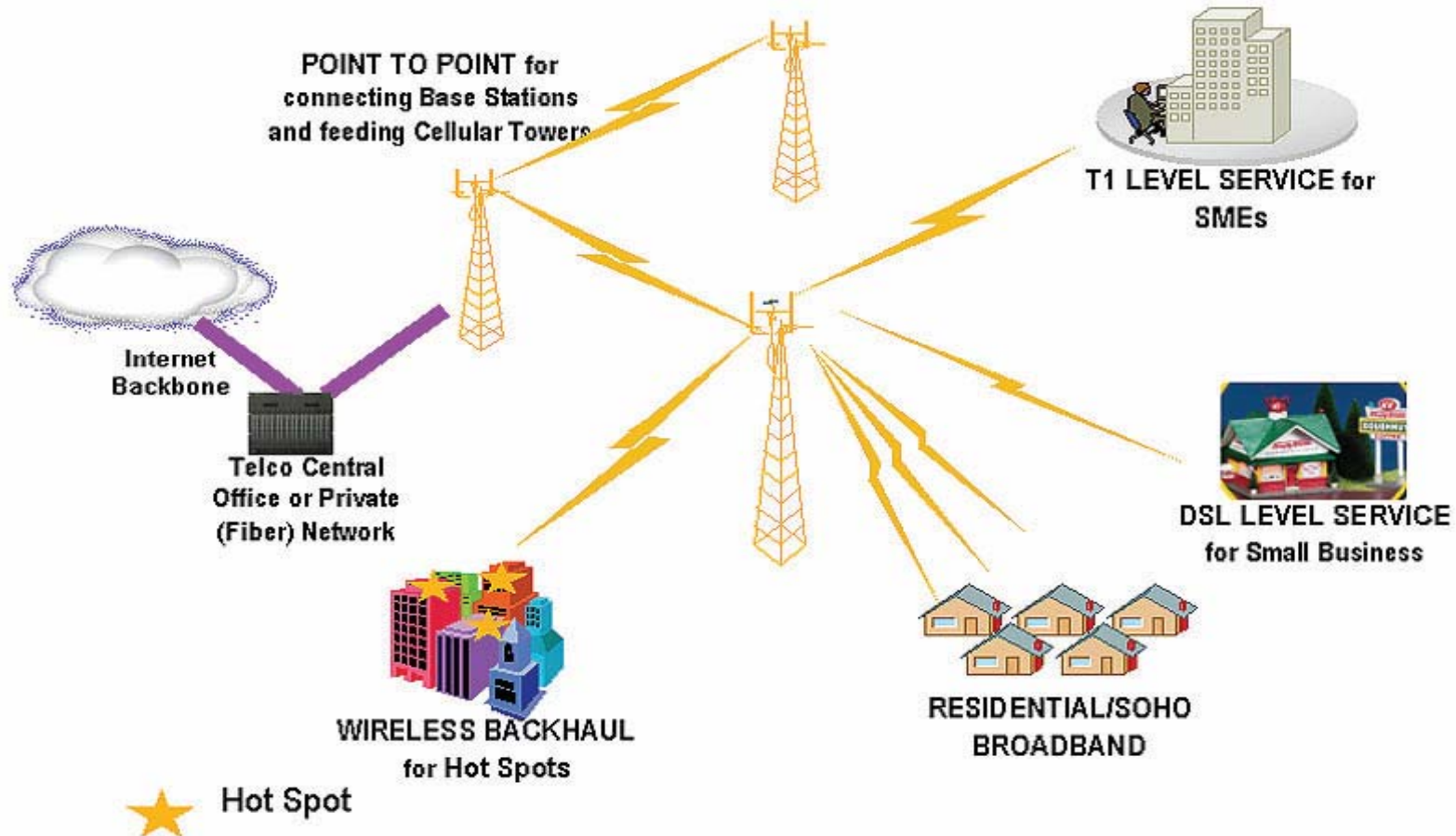


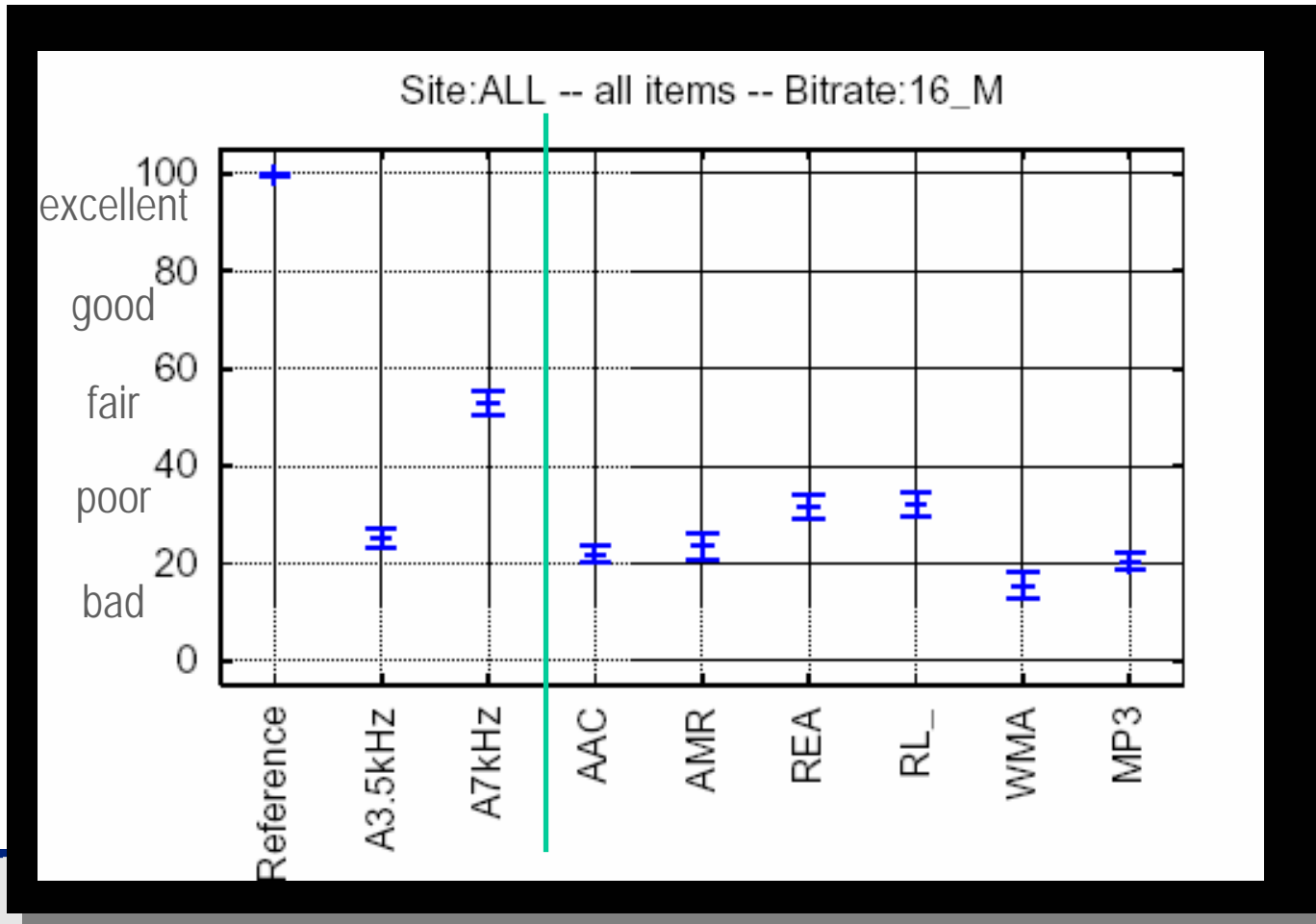
Figure 1. BWA (IEEE 802.16) Everywhere

B/AIM Internet Radio Tests

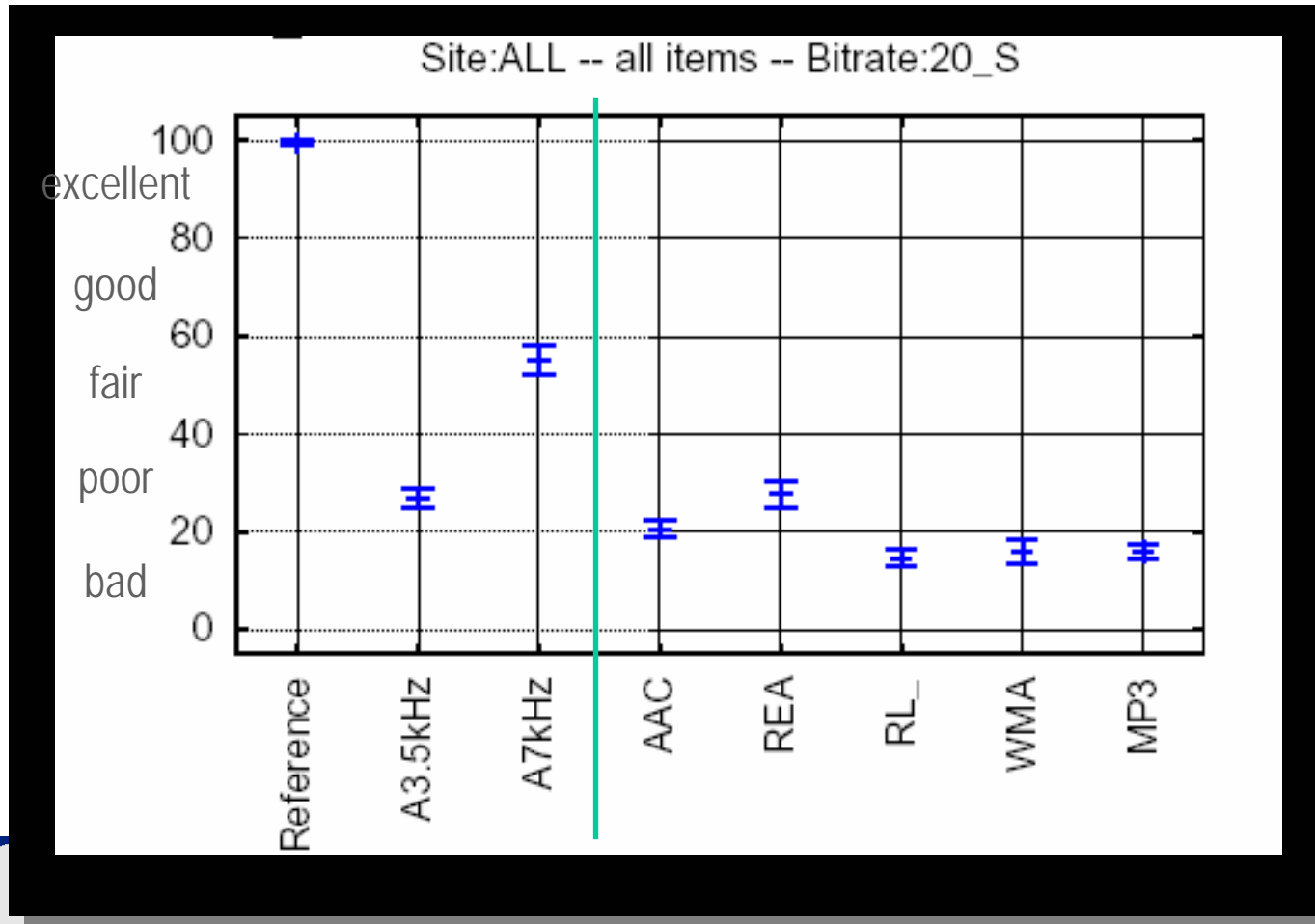
- **MPEG-4 AAC**
 - Implementation by FhG-IIS
- **AAC+**
 - Implementation by Coding Technologies
- **AMR Wide Band**
 - Implementation by FhG-IIS
- **MP3 Pro**
 - Implementation by Thomson Multimedia
- **RealAudio**
- **Microsoft Windows Media**

Report available as Tech 3296

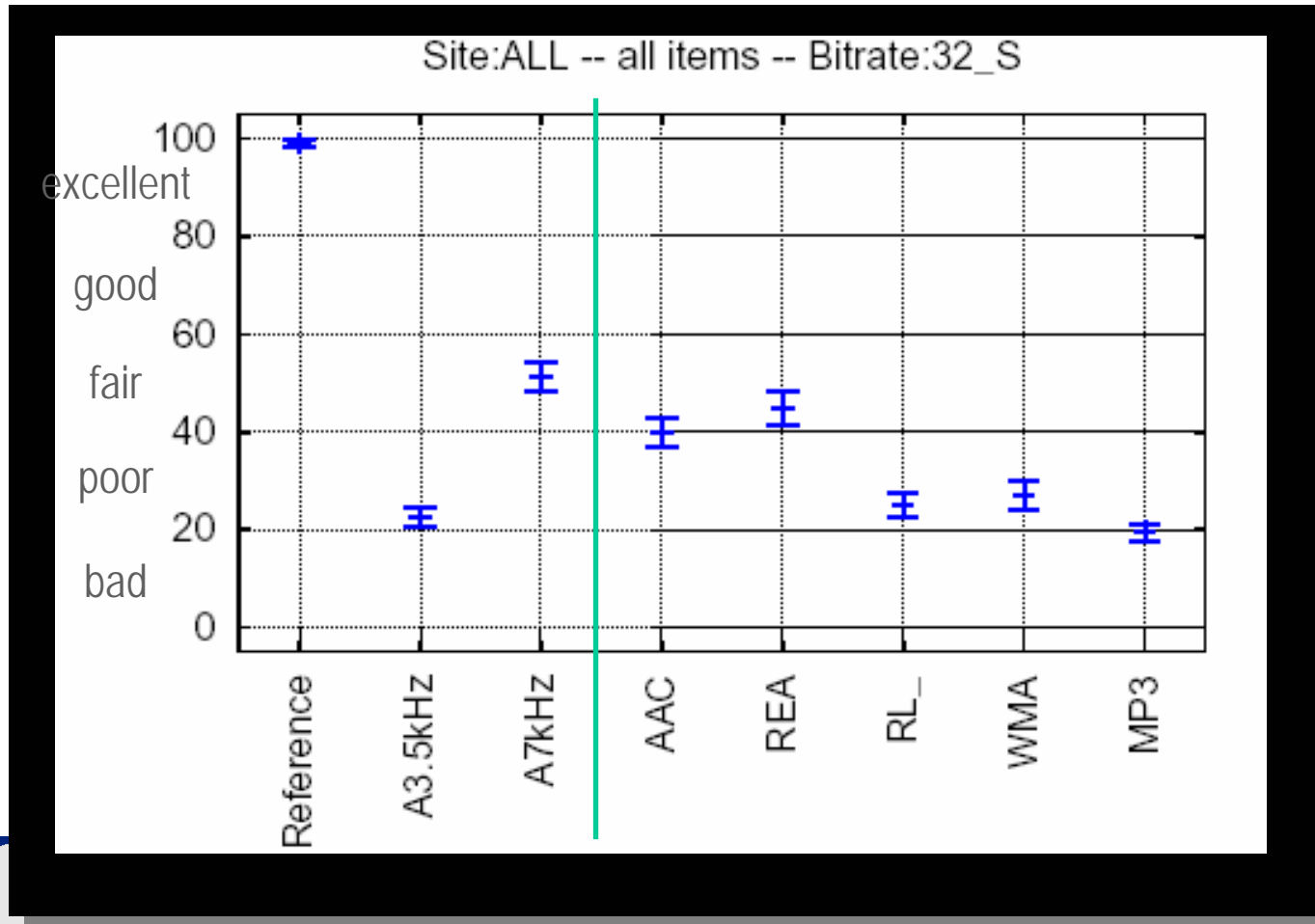
Data rate: 16 kbps mono



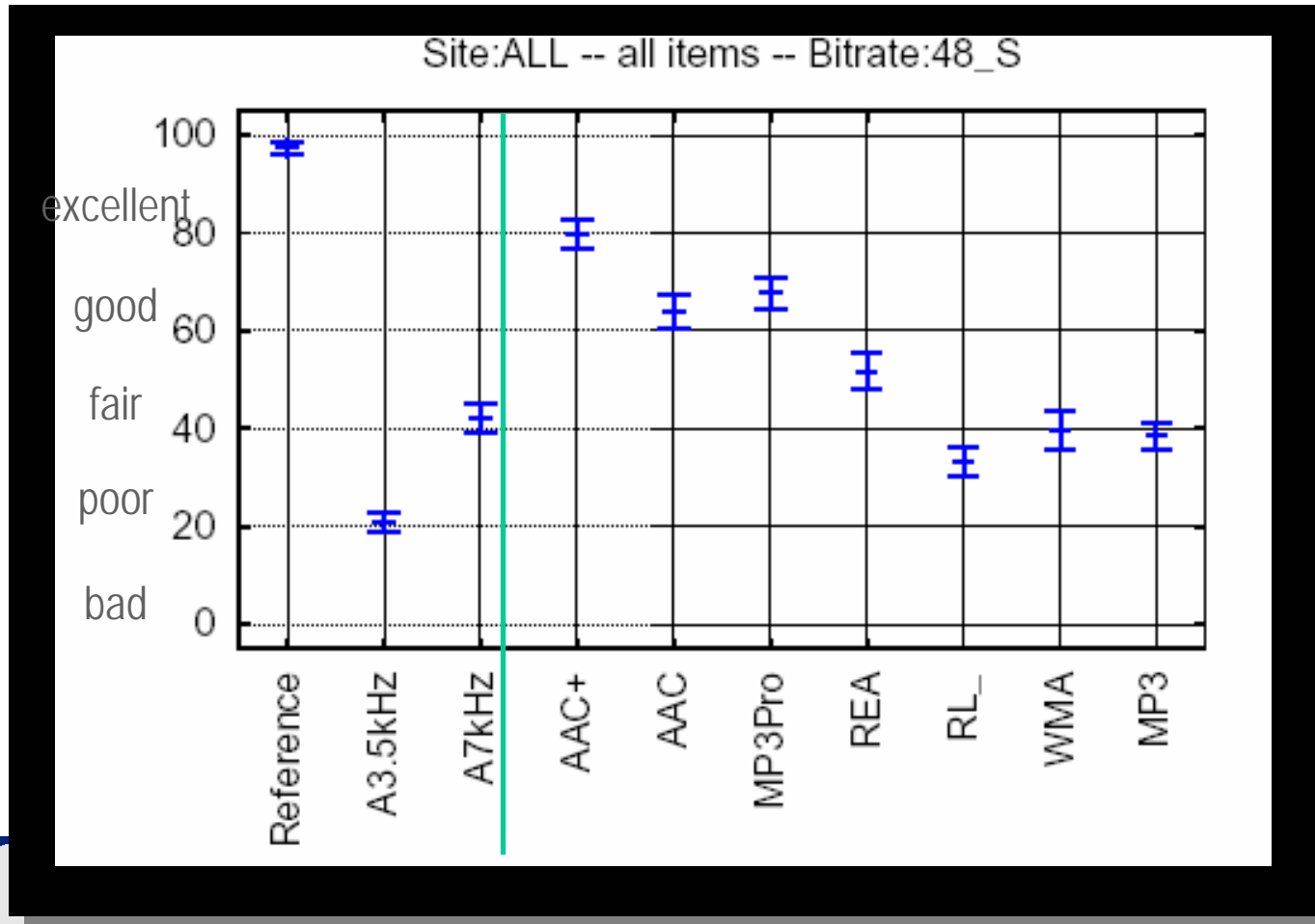
20 kbps stereo



32 kbps stereo



48 kbps stereo



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BBC's Integrated Media Player (iMP)

- The BBC iMP is a PC application that allows internet users in the UK to download BBC TV and radio programmes via a programme guide for up to 7 days after broadcast.
- The programme guide is available a week in advance and a week behind.
- Users are able to download programmes as soon as they have been broadcast on TV and Radio and can watch them as many times as they like during seven days.
- iMP allows users to subscribe to a series which automatically downloads each programme immediately after being broadcast.

TagWorld Music Discovery Engine - Listen Now!

BETA

Type in an artist you like:

 [PLAY NOW](#)

About the Music Discovery Engine:

Enter an artist name and discover similar music you will enjoy. Each song serves as a departure point from which you can hear and discover an endless stream of music.

Recent Discoveries...

Staind, Alkaline Trio, U2, Evanescence, [Black Eyed Peas](#), No Doubt, The Click Five, Death Cab For Cutie, Kanye West, Metallica, The Roots ...



Search

Find friends, family, and more. Powerful search features provide dynamic and real-time results!

Search for People

Gender:

☒ female ☒ male

Age: 41 to 80

Country:

Miles: 10 from

Building the Social Web!

TagWorld combines the power of *people*, *photos*, *blogs*, *tagging* and *storage* in a single, free, and easy-to-use online service, complete with powerful *Web 2.0* tools!

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Today's Popular People

[View more...](#)


KielEWyote (4)
Indianapolis,IN



StrangeLand (50)
Pekin,IL



Michelle24 (545)
Greenvale,NY



Ashleylike... (163)
Burbank,CA



HeyJules (143)
Winter Park,FL

Username

Password

GO

[Forgot your Password?](#)

Not a member yet?

[JOIN NOW! IT'S FREE!](#)
[Artist & Bands](#) Click Here

This Week's Featured Band



Artist

The Bangkok Five

Location

Los Angeles, California

Genre

Rock


TAGWORLD.COM/THEBANGKOKFIVE

Other Featured Bands...



The Fray



Division Day

[Listen to More Bands...](#)