

Bridging the ICT Divide in Europe

DVB Technologies as alternative broadband access infrastructure

Dr. Evangelos Pallis
Centre for Technological Research of Crete

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Rural broadband is generally believed to be more expensive than urban broadband for three reasons: distance, remoteness and scale economies.

Distance: Rural dwellings and businesses are normally further away from the point of supply of a utility service than their urban counterparts. The point of supply for rural broadband, or “point of presence”, is typically a local exchange building or radio base station. Many solutions and especially the cheapest operate only up to modest distances. Limited reaches preclude application for many rural customers.

Remoteness: Delivery of broadband services (always on and triple-play) depends not only on the broadband access network, the so-called “last mile”, but also on a means of connection from the local “point of presence” (typically a local exchange building) to the mainline or high-capacity backbone networks. While backbone networks provide plentiful high bandwidths and provide it very cheaply, they are only cheap when their capacity is filled. Such networks, therefore, naturally serve continents, countries and cities, but rarely visit rural areas. Remote communities must, therefore, bear extra costs for distant connection between the local point of presence and a backbone network. This linkage to a main network node is known as backhaul or the “middle mile”. The cost of backhaul increases with remoteness, but is small or minimal in the urban environment.

Scale economies: Broadband technologies frequently depend on platforms having high basic costs but a capability to serve many, perhaps a few hundred or more, connections. There is thus often a scale economy that cannot be realised in a rural community, raising unit costs. Technology can play a major role here, since it may succeed over time in reducing the minimum operational size of a platform. This shifts the scale economy, making the technology available to a wider customer base.

Interactive Broadcasting: Paving the way towards broadcasting/telecommunications synergy that will alleviate the digital divide in rural areas

Although the requirements of the communications and broadcasting sectors are very different, the widespread advent of digital broadcasting presents a prospect of unified delivery platforms. These may offer valuable avenues to address broadband for all goals for two reasons:

Firstly, a lot of the consumer demand for broadband communication is for broadcast material, albeit personalised broadcast material.

Secondly, the relative ubiquity of entertainment broadcast channels makes them conceivable candidates for solving some of the problems of broadband access.

*“Typical broadcast channels send megabits or tens of megabits per second in a shared and unidirectional mode. Bi-directional operation is typically achieved through a subsystem of cell main nodes. These have two main purposes. The first is to receive the broadcast signal, for example from a satellite, and distribute it to user terminals requesting it via an access medium such as ADSL, B-WLL, W-LAN or cellular communications. **Such a broadcast solution is essentially a hybrid solution using a main access solution and the broadcast medium for secondary and primary backhaul, i.e. a linkage to a main network node is also known as the “middle mile”.***”

Proposed concept

**Proper
adoption of
Digital
Switchover
in UHF
(DSO)**



**Local &
Networking aspect
(IP)**

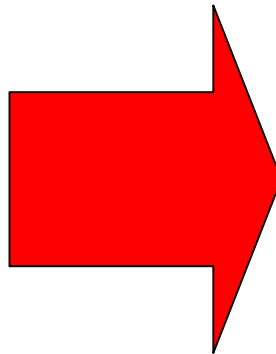
➤ **Synergy of Access
and backbone
networks (Backhaul)**

➤ **Synergy of
Internet and
Broadcast**

➤ **Convergence of
Users and Service
provider (realisation
of the Active
user/citizen)**

Pillars of Convergence

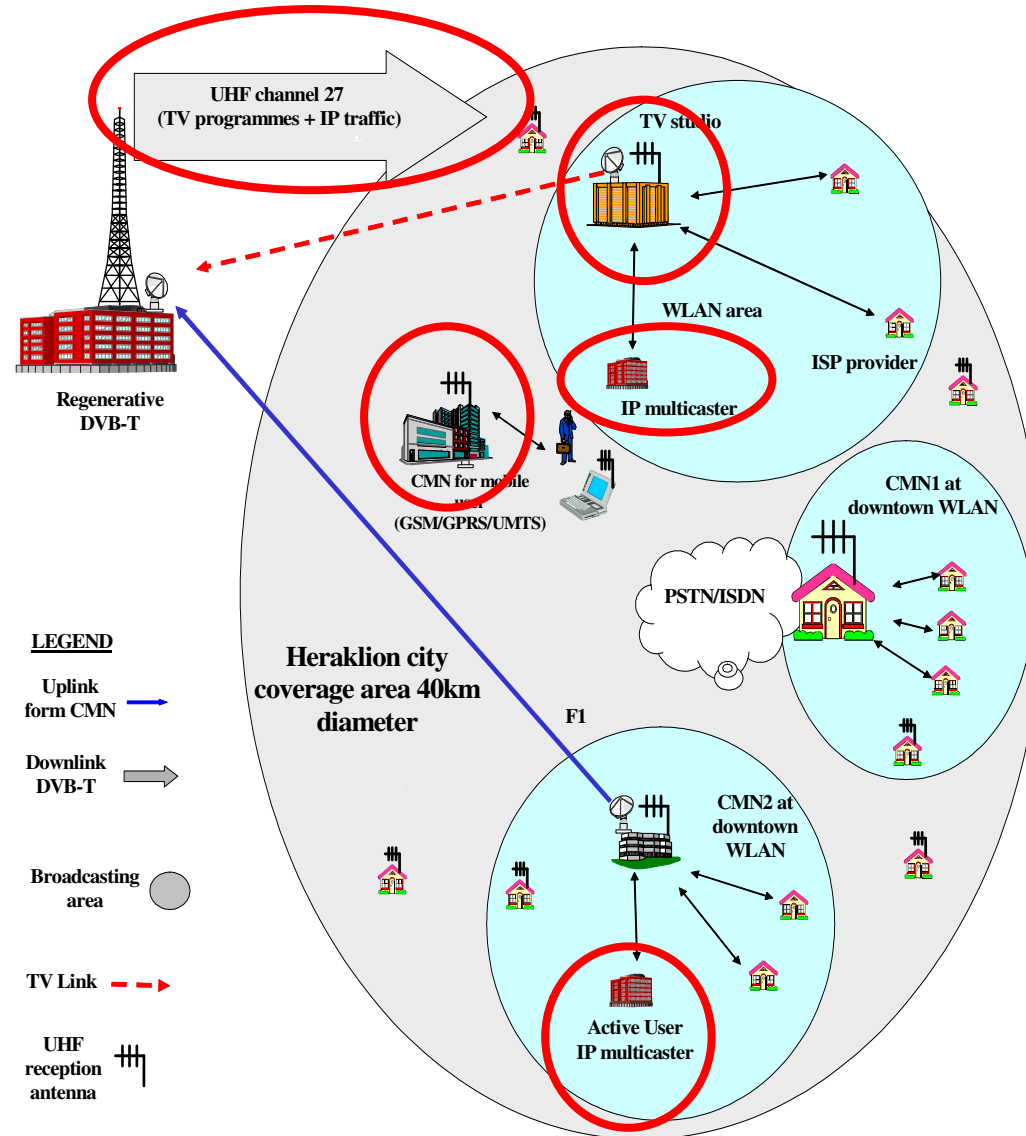
- Based on three “pillars”:
 - The exploitation of the available bit-rate by taking advantage of the Spectrum Dividend
 - The “Bit-rate allocation” instead of the “Channel/Frequency allocation”
 - The regenerative DVB-T concept.



Fusion environment

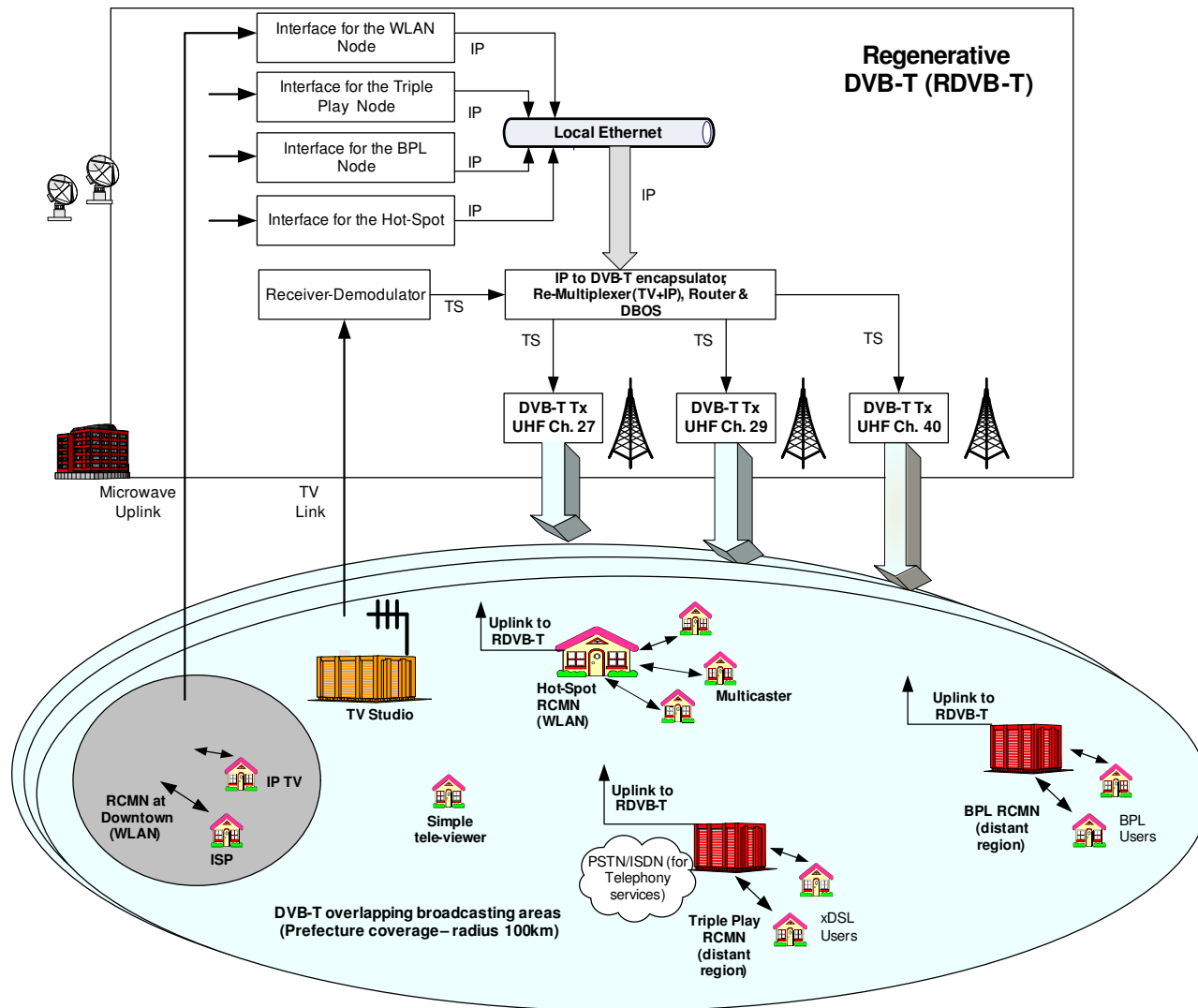
- **Digital TV bouquets,**
- **Interactive TV,**
- **Internet access (web, e-mail)**
- **IP-TV/Radio,**
- **Video/Audio-on-Demand,**

Proposal for a Fusion environment in backhaul configuration



Categories	Capabilities	Addressing to
1. One-way TV, digital broadcasting	Broadcasting of TV bouquets	<ul style="list-style-type: none"> • Broadcasters • IP multicasters • Passive users/consumers/viewers
	IP-TV (datacast, push, multicast, etc.)	
	Off-line Interactivity	
2. Interactive TV, Interactive Broadcasting (with appropriate reverse path)	Broadcasting of TV bouquets	<ul style="list-style-type: none"> • Broadcasters • IP multicasters • Passive users/consumers/viewers <ul style="list-style-type: none"> • Internet Service Providers • e-Businessmen • Spin-off businessmen • Active users/citizens • Citizens of the Information Society • Next Generation Network operators
	IP-TV (datacast, push, multicast, etc.)	
	Off-line Interactivity (EPG)	
	Provision of interactive multimedia services	
	Access to the Information Society (Internet, e-mail)	
	Broadband Access Infrastructures	

Adopting the proposed DVB-T backhaul concept in regional level



Barriers towards Digital Switchover in UHF

Contradicted business interests and Spectrum Dividend

- Broadcasters proclaim the ownership of the entire UHF band;
- Telecom and Mobile operators request part of this Spectrum for their own telecommunication services and
- Mobile operators place a series of plausible arguments against the provision by the Broadcasting sector of competitive IP services utilising the UHF TV beam (spectrum pricing policy)

The above barrier results in Licensing problem (Political/Legal barrier)

The way that DSO in UHF is currently adopted/permitted, results to the provision only of TV bouquets, degrading/minimising the technological DSO's breakthrough.

**Will Digital Switchover be adopted only for
delivering TV bouquets, by realising the
new digital television in UHF as the
substitute of the analogue broadcasting
???**

If the answer is YES:

The IP over DVB concept becomes a scientific/theoretical issue only for research purposes, and the digital television in UHF will:

- Enable no Information Society access
- Have no impact to broadband infrastructures
- Be one-way television with off-line interactivity.
- Widen the digital divide
- Be targeted to custom users/citizens, consumers of predefined content.

Cancels the relative challenge imposed by the eEurope2005:

“The information society has much untapped potential to improve productivity and the quality of life. This potential is growing due to the technological developments of broadband and multi-platform access, i.e. the possibility to connect to the Internet via other means than the PC, such as digital TV and 3G”.

If the answer is NO:

The IP over DVB becomes the lever for a DSO that :

- Enables for Information Society access
- Has strong influence and impact on broadband infrastructures
- Enables for Interactivity
- Alleviates the digital divide
- Enables for the spectrum dividend exploitation
- Allows for the realisation of neutral platforms, commonly exploited by broadcasters, telecom operators
- Enables custom users/citizens to become active participants of the Information Society.

Paves the way towards the realisation of the eEurope 2005 strategic objectives for an Information Society for All.

- DSO in UHF may enhance the issue of Interactive Broadcasting to a more dynamic stage, which enables for:
 - Active users/citizens. UHF is a public commodity and as such should be commonly and fairly exploited by all interesting players, **enabling for Information Society** service access, social, cultural and economic growth.
 - Service and content creation/delivery. Synergy between Broadcasting, Telecom and Internet sectors, enabling for **novel interactive services** that are provide via a neutral and commonly exploited infrastructure.
 - Broadband networking. The exploitation of the large coverage area and the IP capabilities of DVB-T as a **backhaul** for rural and less favoured regions.