

Fixed Mobile Convergence for the Internet Age

Max Riegel

Nokia Siemens Networks

Co-chair WiMAX NWG



WiMAX
FORUM®

BBF, Stockholm, Sep 8th, 2008

Outline

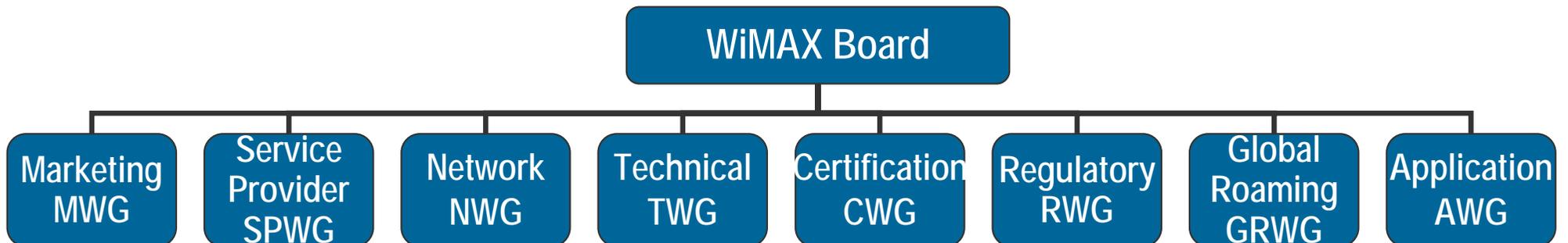
- WiMAX
 - Vision and mission
 - WiMAX Forum membership
 - WiMAX and IEEE802.16
 - Target market for WiMAX
- Fixed Mobile Convergence
 - New meaning due to the Internet
 - WiMAX Deployment Evolution
 - The WiMAX Architecture fits to the Internet
- FMC hands-on: Interworking between WiMAX and DSL
 - Issue#1: Orientation of Reference Architecture
 - Issue#2: The Network Planes of Mobile WiMAX
 - Issue#3: L2 or L3?
- Conclusion



WiMAX: Worldwide Interoperability for Microwave Access

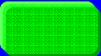
“Global adoption of WIMAX as the broadband wireless Internet technology of choice anytime, anywhere”

- Deliver a trusted certification process
- Develop a specification for a high performance end-to-end IP network architecture supporting stationary, portable, and mobile users
- Evangelize business model, including favorable IPR policy
- Foster a thriving ecosystem
- Promote and accelerate WiMAX deployments to achieve global wireless broadband market leadership



The WiMAX Forum Membership *Continues to Grow!*

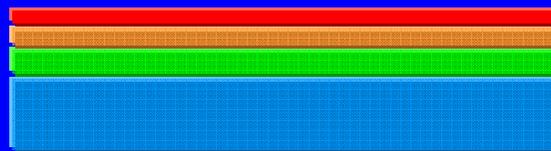
520 WiMAX Forum Member Companies

-  139 Ecosystem/Applications/Content
-  164 Service Providers
-  129 System Vendors
-  88 Silicon/Component Suppliers

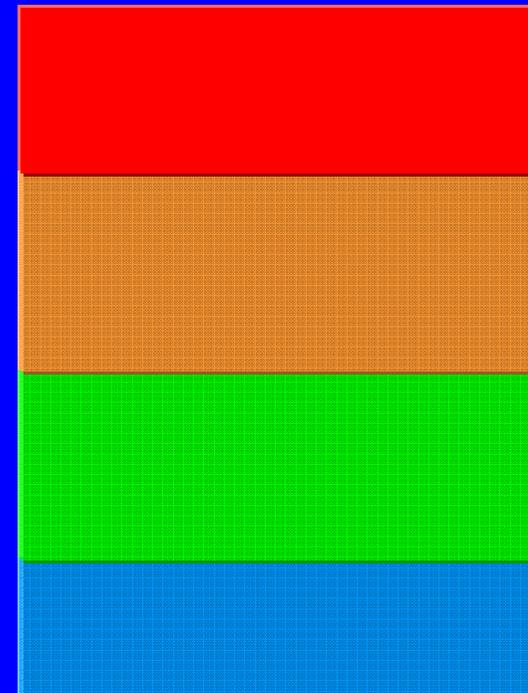
520



46



Spring 2004



End 2007

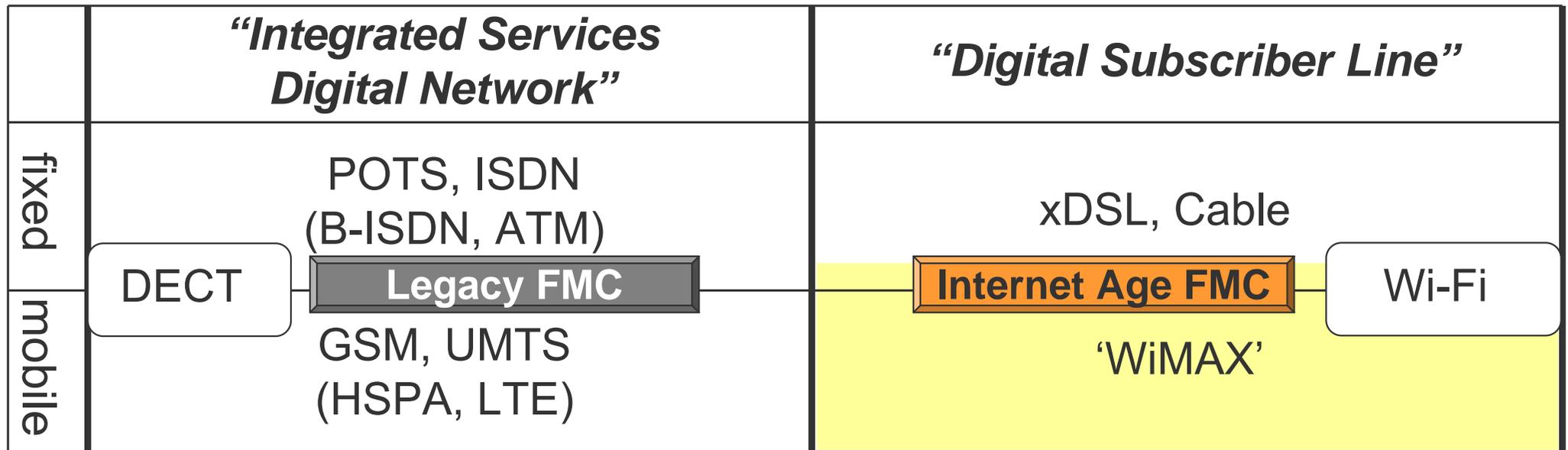
WiMAX and IEEE 802.16

- WiMAX is a subset of IEEE 802.16



- Mobile WiMAX attributes:
 - High tolerance to multipath and self-interference
 - Scalable channel bandwidth
 - Support for MIMO and smart antenna systems
 - Superior Quality of Service (QoS)
 - Mobility management
 - Multicast and Broadcast Service

'WiMAX' is addressing a new segment in the telecommunication market



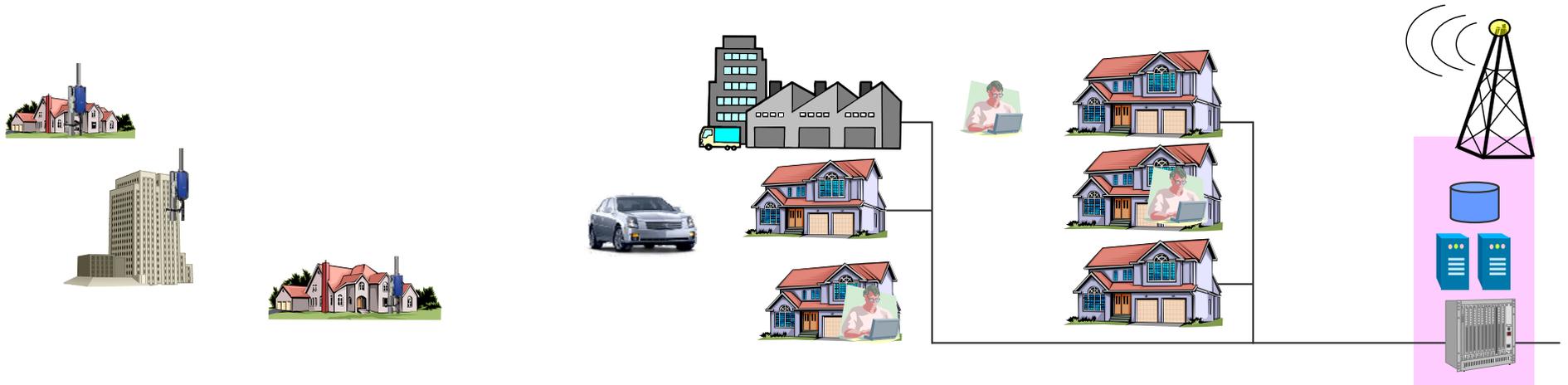
- End-to-end QoS
- Hard real-time (voice)
Defined traffic classes
- End-to-end service delivery
 - Voice, SMS, Gaming, Infotainment
- Precise accounting, charging and billing

- Best effort, DIFFSERV enabled
- Interactive (http, mail)
Streaming, downloads
- Access to the plain Internet
 - Common web applications, email
- Usage classes, flat-rate

FMC: new meaning by the Internet

- 'legacy' FMC:
Access to the same telecommunication services over fixed and mobile networks
 - E.g. telephony, SMS, MMS
- Services in the Internet are by nature accessible over fixed as well as mobile networks
- Are we done with FMC?
- Probably not. But FMC is getting a new meaning. FMC is allowing telecommunication service providers to provide fixed and mobile Internet access by the same core network infrastructure.

WiMAX deployment evolution

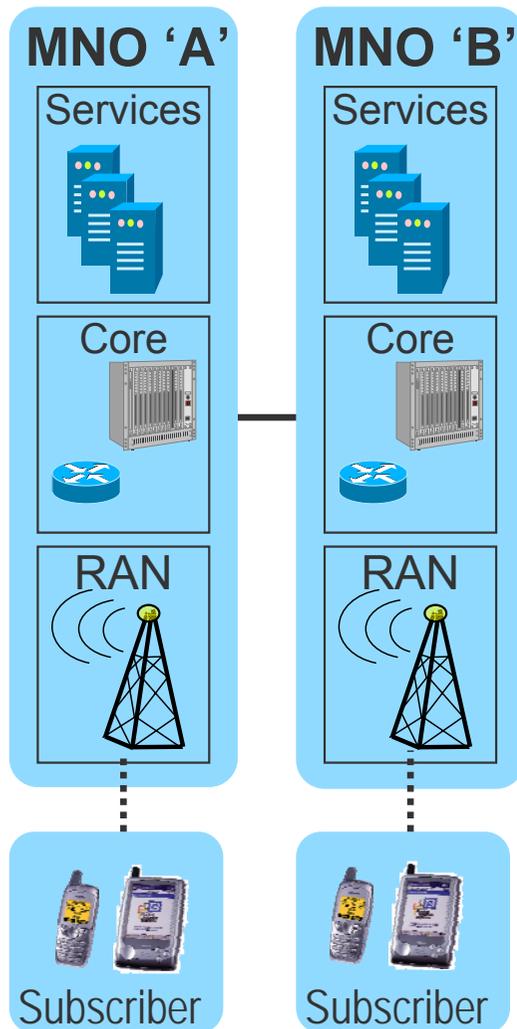


- Today's broadband providers are tied to their wires
 - serving consumers and enterprises inside their reach
- A WiMAX access network allows to extend the DSL business serving customers without appropriate wires, and additionally also...
 - addressing customers looking for a more easy-to-use solution,
 - providing portable and mobile access

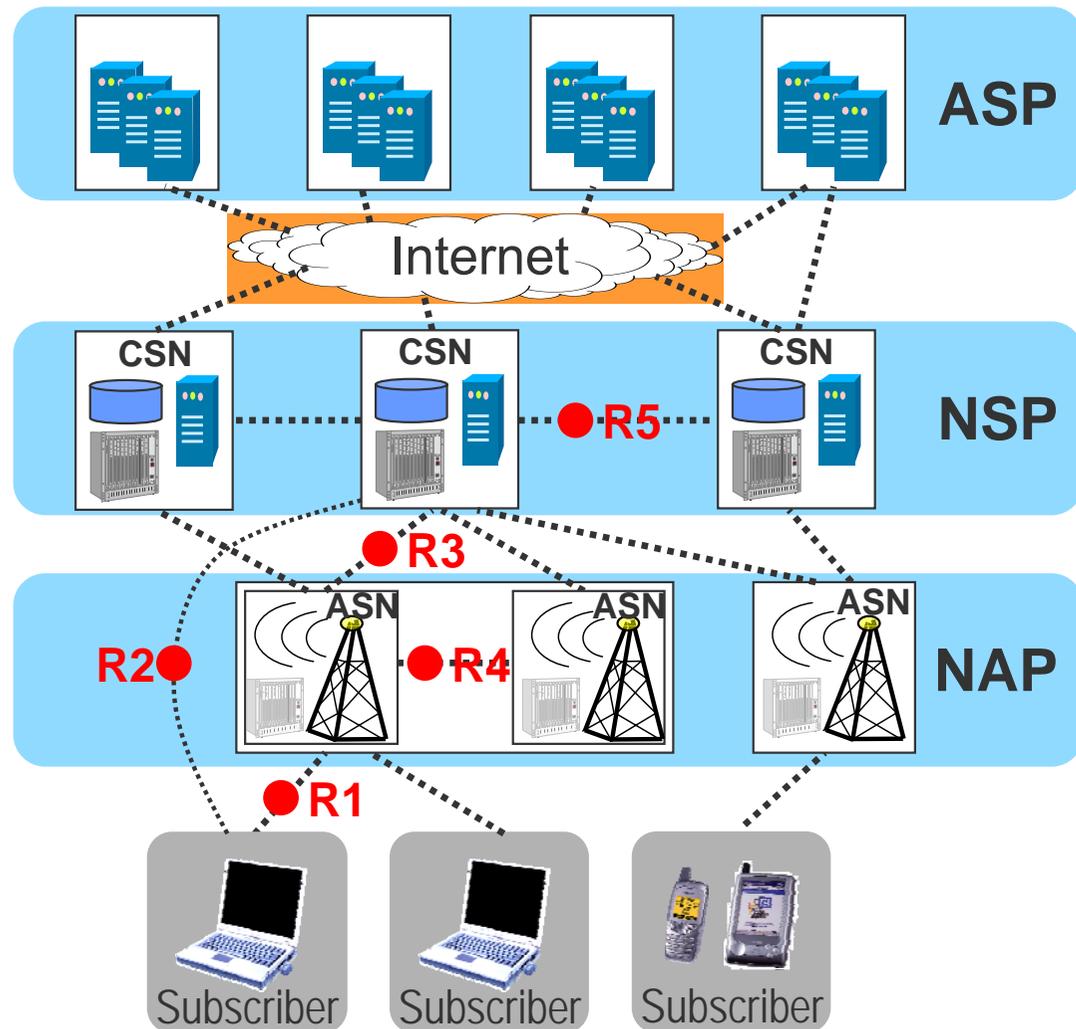
All together may generate a more attractive business case!

The WiMAX Architecture fits to the Internet, ... and to DSL networks too.

Legacy Architecture



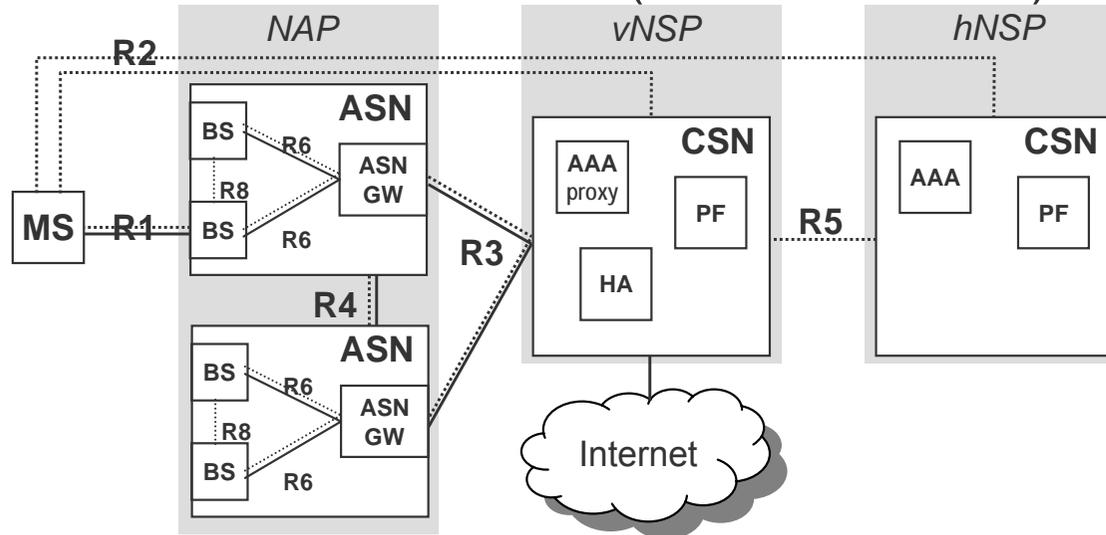
Mobile WiMAX Network Architecture



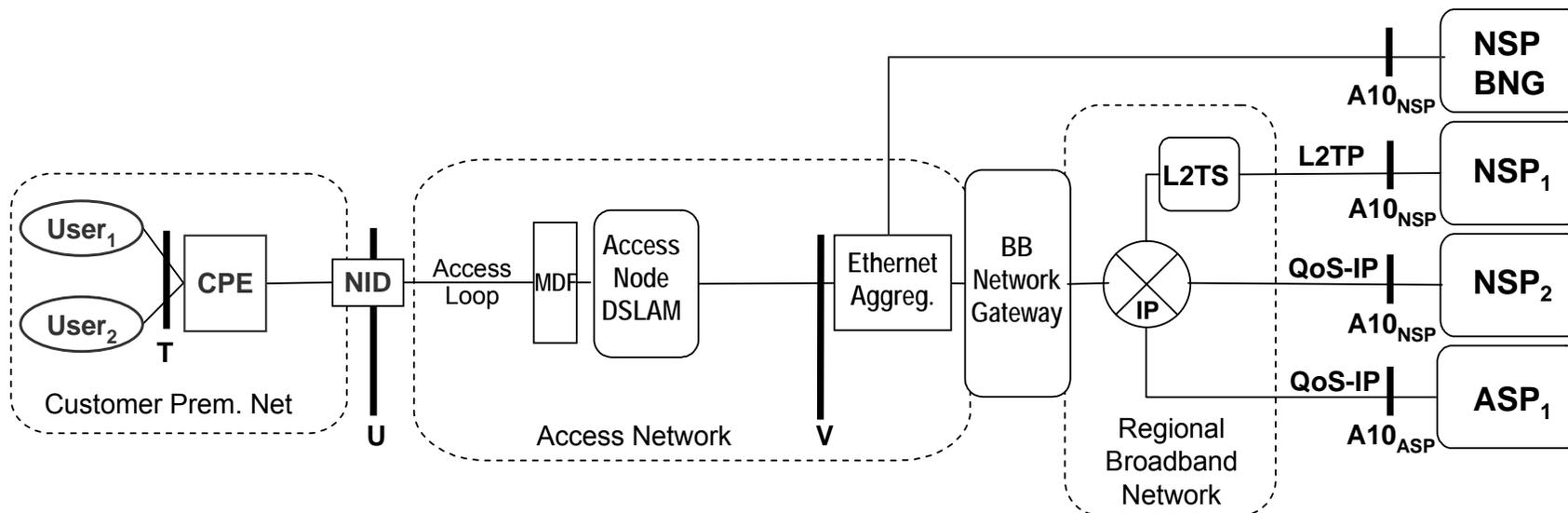
Interworking between WiMAX and DSL Network

Issue#1: Orientation of Reference Architecture

Mobile WiMAX Reference Architecture (User → Network)

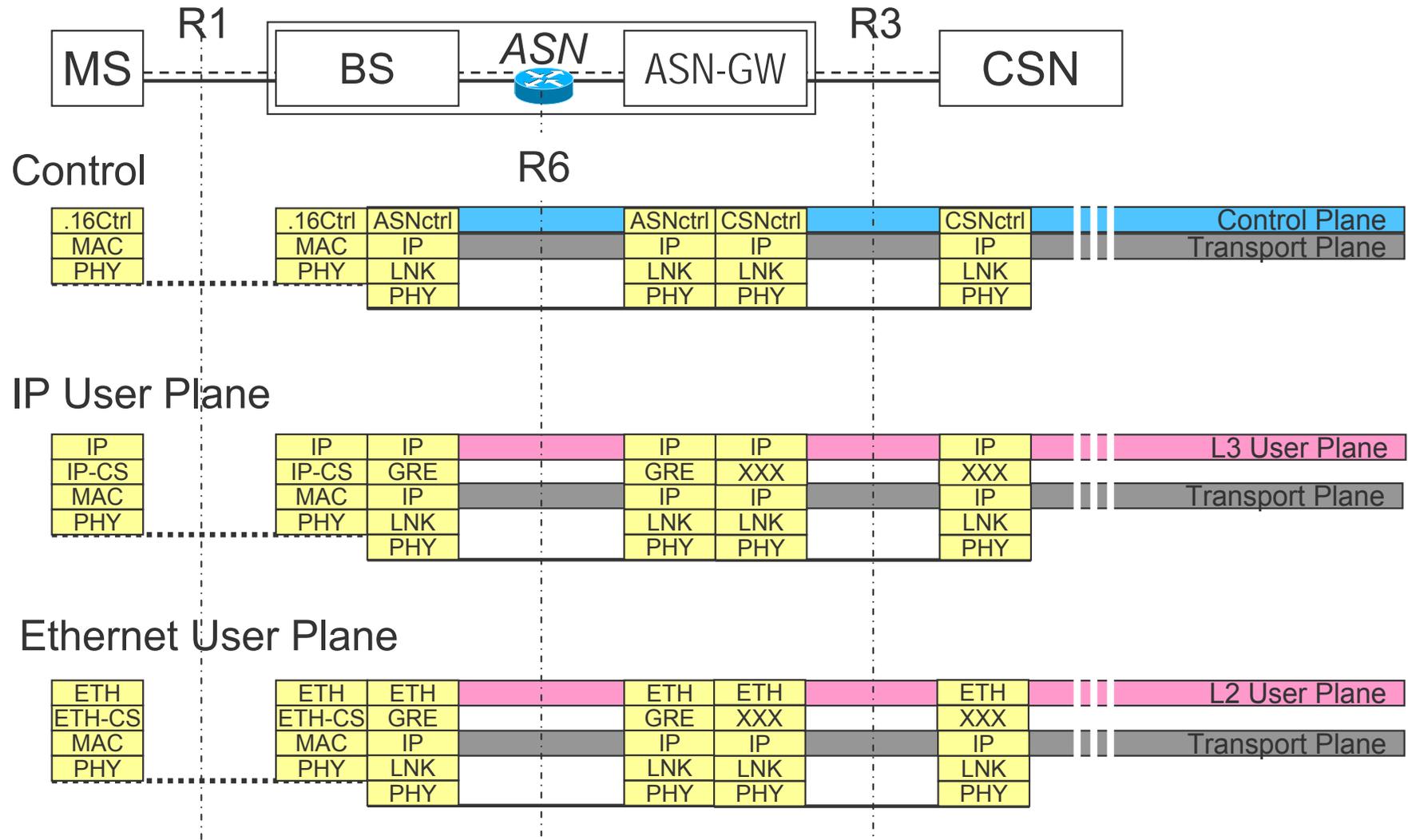


DSL Reference Architecture (User → Network)



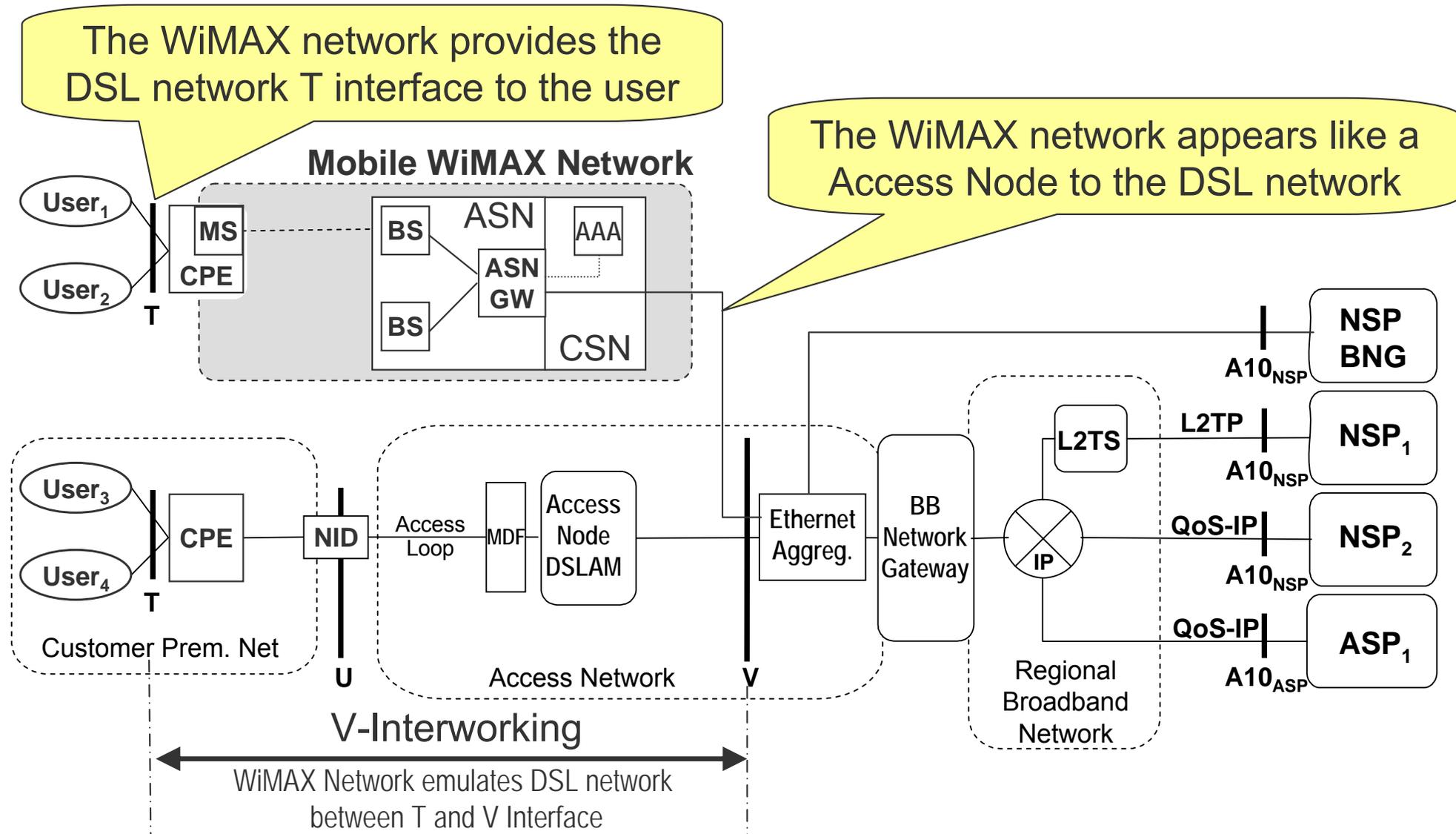
Interworking between WiMAX and DSL Network

Issue#2: The Network Planes of Mobile WiMAX



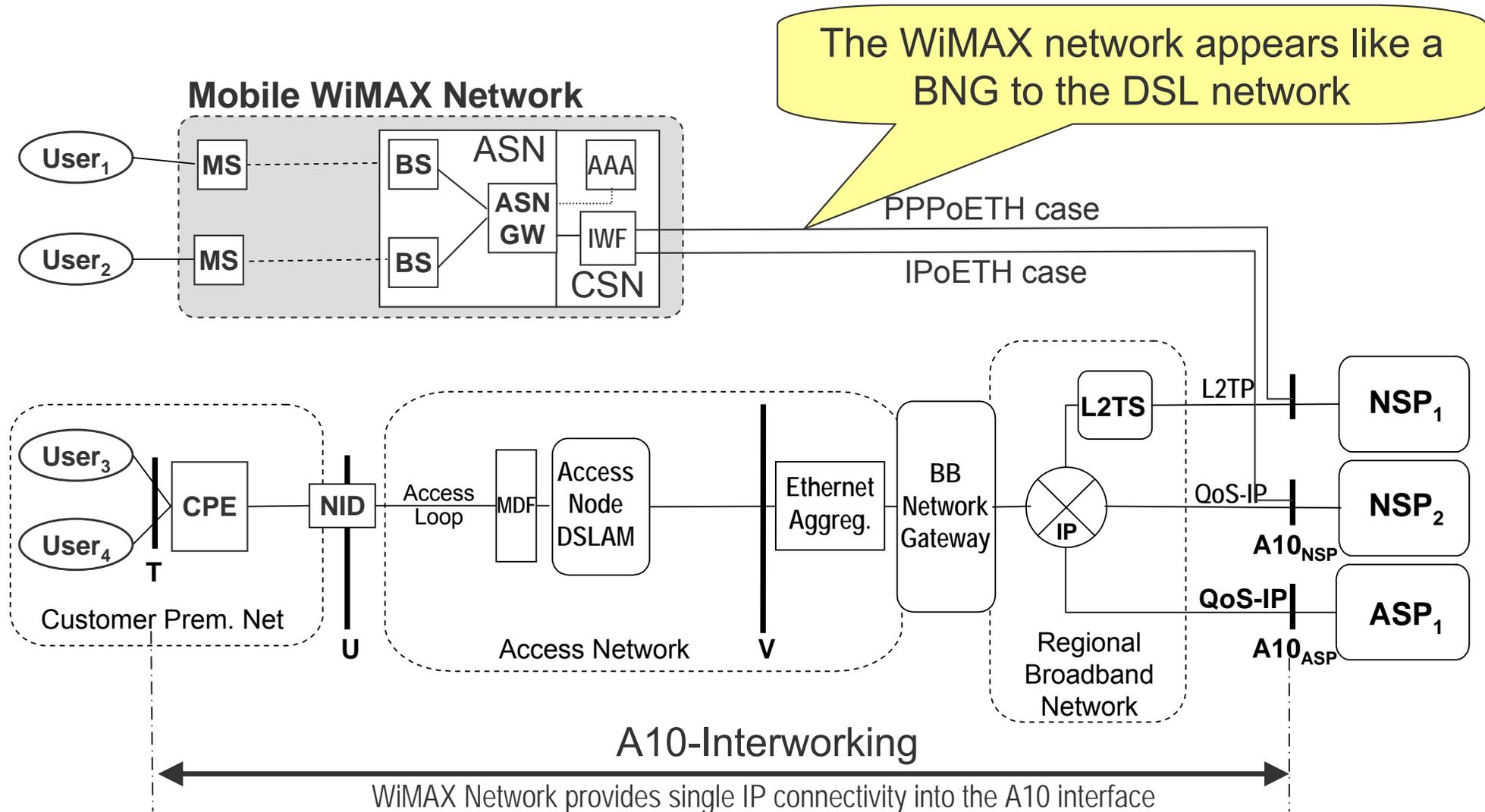
Interworking between WiMAX and DSL Network

Issue#3: L2 or L3? – The L2 case



Interworking between WiMAX and DSL Network

Issue#3: L2 or L3? – The L3 case



Conclusion

- FMC in the Internet age addresses the interworking of fixed and mobile access networks.
 - The same core network for fixed as well as for mobile access to the services in the Internet
- Mobile WiMAX is the wireless access technology for fixed, nomadic, portable and mobile access to Internet services.
- Mobile WiMAX is enabled to complement a wired broadband network infrastructure by a cellular wireless access technology.