

Rethinking Wireless Broadband Platforms

William Lehr

wlehr@mit.edu

John Chapin

jchapin@mit.edu

Computer Science and Artificial Intelligence Laboratory
Research Laboratory of Electronics

Massachusetts Institute of Technology

Wireless Technologies: Enabling Innovation & Economic Growth

The Georgetown Center for Business and Public Policy

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Rethinking Wireless Broadband Platforms

Focus: mass-market access networks

Wired networks are evolving to
a broadband platform

Wireless networks will follow a
different path

Story of wired network evolution

From silos to platforms

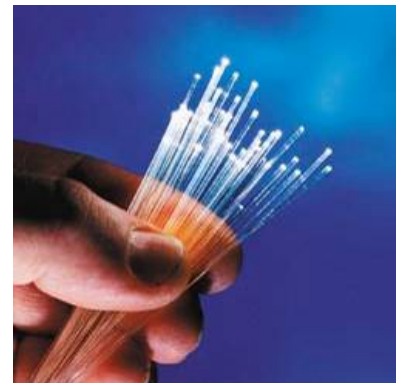
How wireless is different

Silo architecture embedded

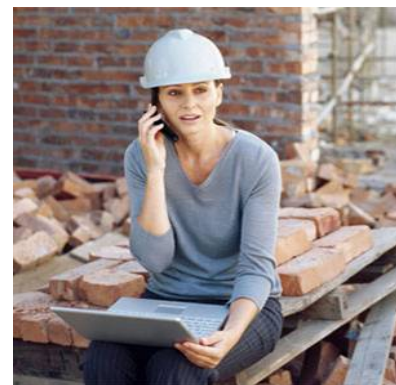
Reasons & why this matters

How will wireless evolve?

Hybrid wireless future

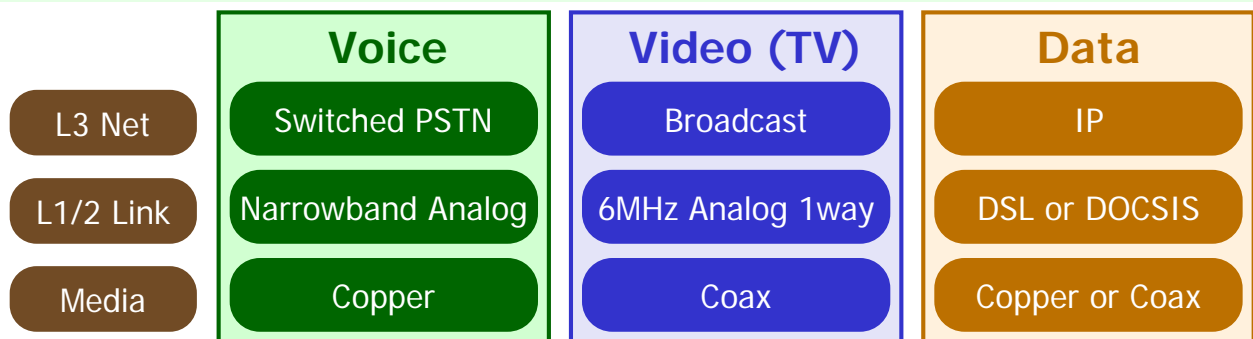


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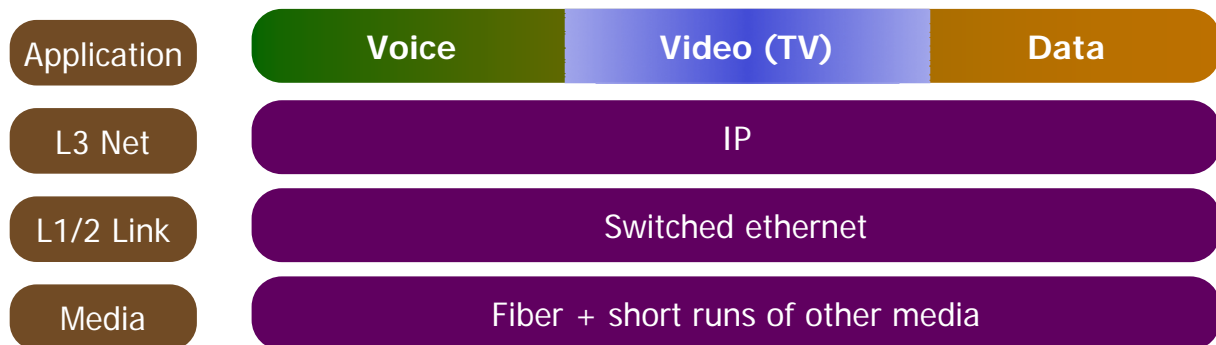


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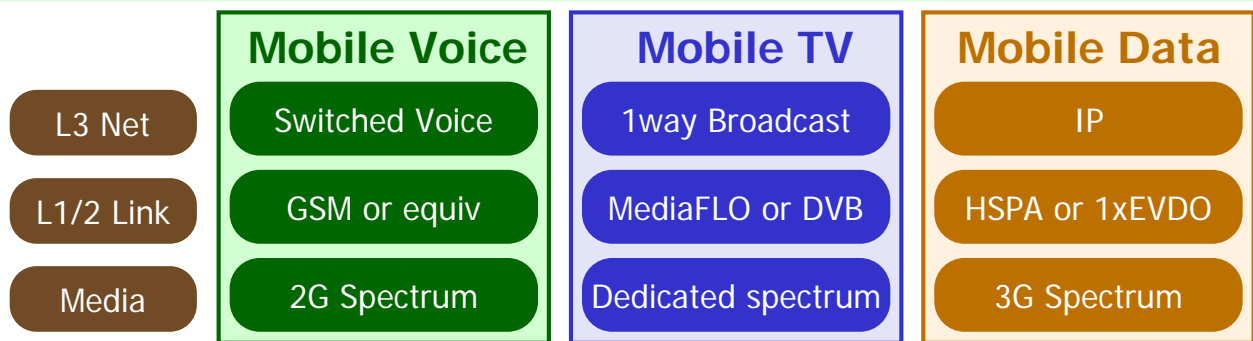
Wired networks: silos to broadband platforms



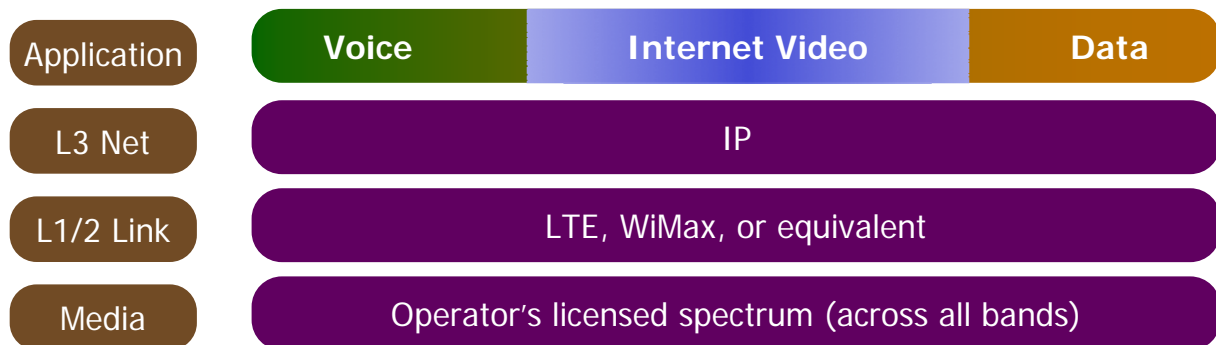
Single-purpose, separate networks → Multi-purpose, integrated network



Wireless platform vision: same as wired



Triple play bundle, separate networks → LTE or other 4G integrated network

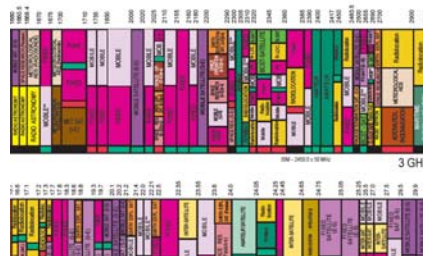


4G will not evolve as envisioned

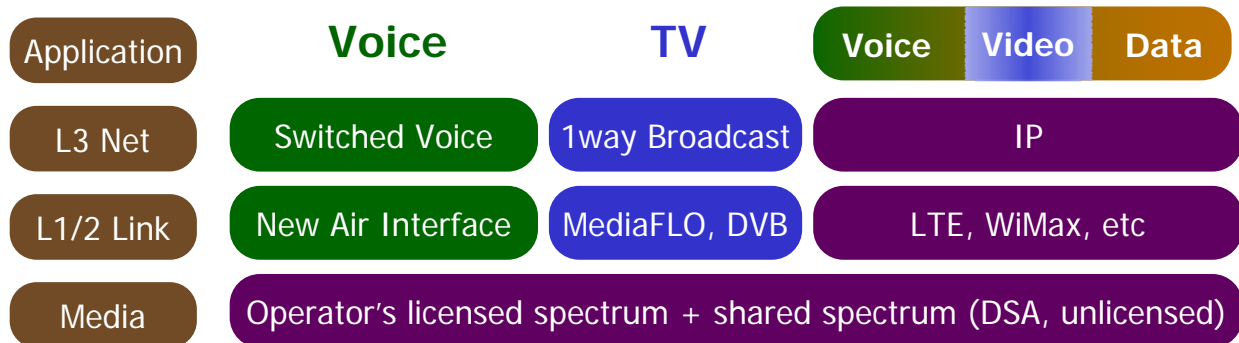
Essential differences between wired and wireless mean that wireless nets unlikely to become integrated platforms

	<u>Wired</u>	<u>Wireless</u>
Capacity	Abundant	Scarce
Topology	Point-to-point	Broadcast
Reliability	Reliable	Unreliable
Mobility	Fixed	Mobile
Layering	Effective	Inefficient

Scarcity of RF spectrum is the key difference.



Future of wireless broadband: Hybrid Networks



Novel aspects of this model

Specialized air interfaces + dynamic reallocation of spectrum

Software radio supports all air interfaces with one radio

Overload on specialized net carried transparently by IP net

Operators exploit mix of dedicated and shared spectrum

End-user device plays active role in network selection

Market implications of the essential differences

Wired Broadband

- 1-2 (or a few) vertically-integrated similar platforms
- Network-centric, operator driven
- Over-the-top competition is key
(open access to broadband Internet)

Wireless Broadband

- Many heterogeneous specialized platforms
- End users play larger role
- Low entry barriers are key
(especially spectrum access)

Wired and wireless compete and complement

Multiple equilibria are possible

- (1) Wireless bundle competition slows wired innovation
- (2) Wireless/wired bundles emphasize differentiation



Microsoft, LG, YesDigital

Regulatory implications of the essential differences

Interconnection & universal service

Separate regimes for wired and wireless

Technical & service neutrality across wired & wireless

Not realistic

Open Access

Wired: unbundle over-the-top

Wireless: spectrum

Spectrum Policy

Enable Dynamic Spectrum
Access



Key takeaway points

Wired and wireless broadband are fundamentally different

Wireless will not evolve towards broadband platforms

Future is a hybrid network with extensive spectrum sharing

Market structure will remain very different

Even though the two broadband services compete with each other

Appropriate regulatory treatment will remain different

Detailed analysis of the hybrid network model and its implications will appear in a companion paper

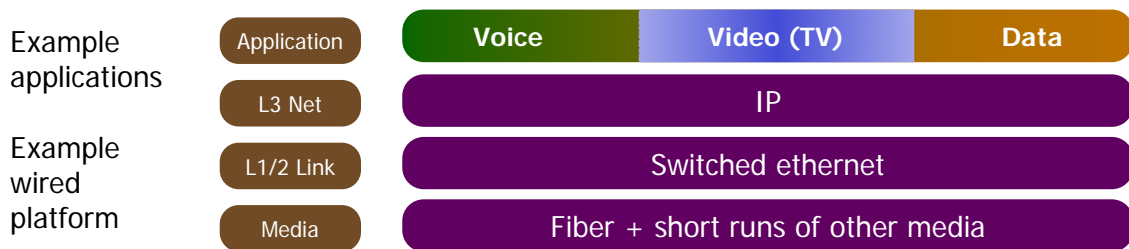
Thank you for your attention!

William Lehr
wlehr@mit.edu

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Definition of "Broadband Platform"

An integrated, high-capacity, general-purpose network



Integrated services share common lower layer functionality & resources

High-capacity capable of supporting triple play

General-purpose multiple and extensible set of services (traffic types)

Network access network including L1/2 (facilities based provider)