Rethinking Wireless Broadband Platforms

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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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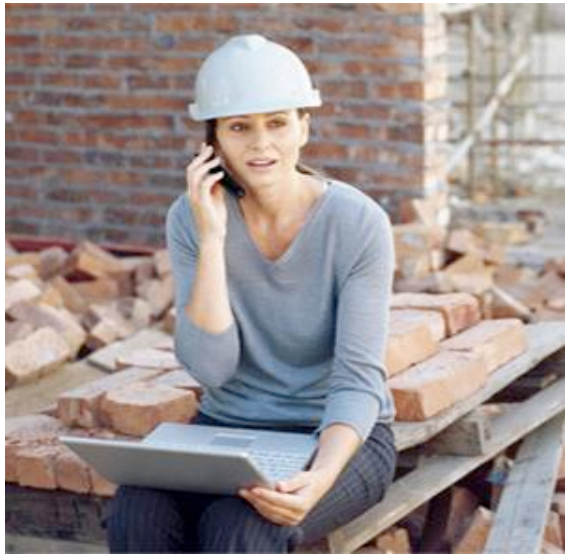

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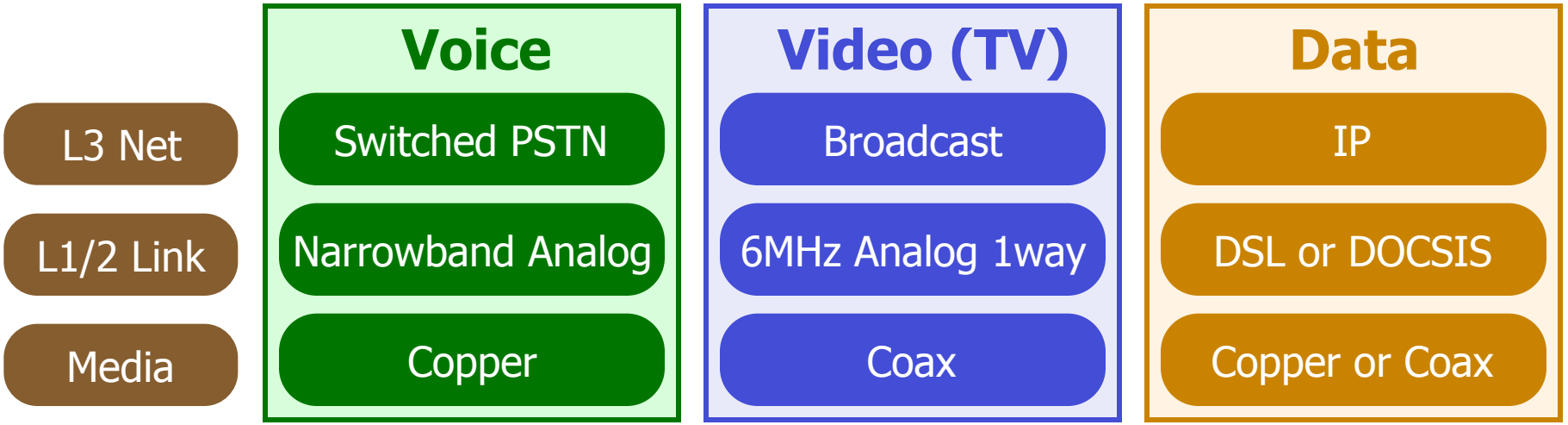
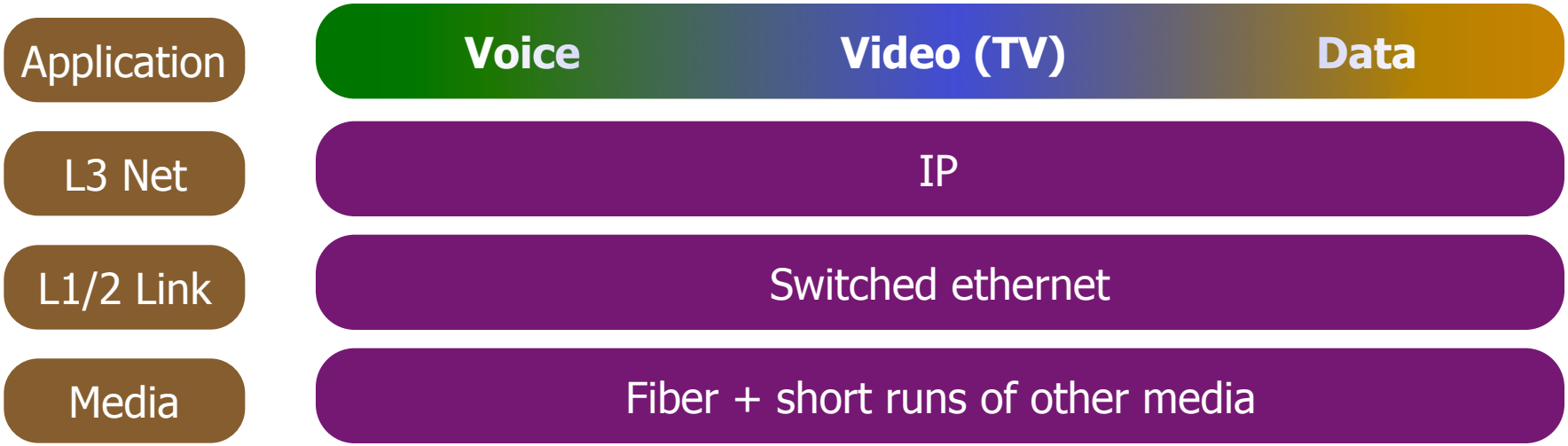
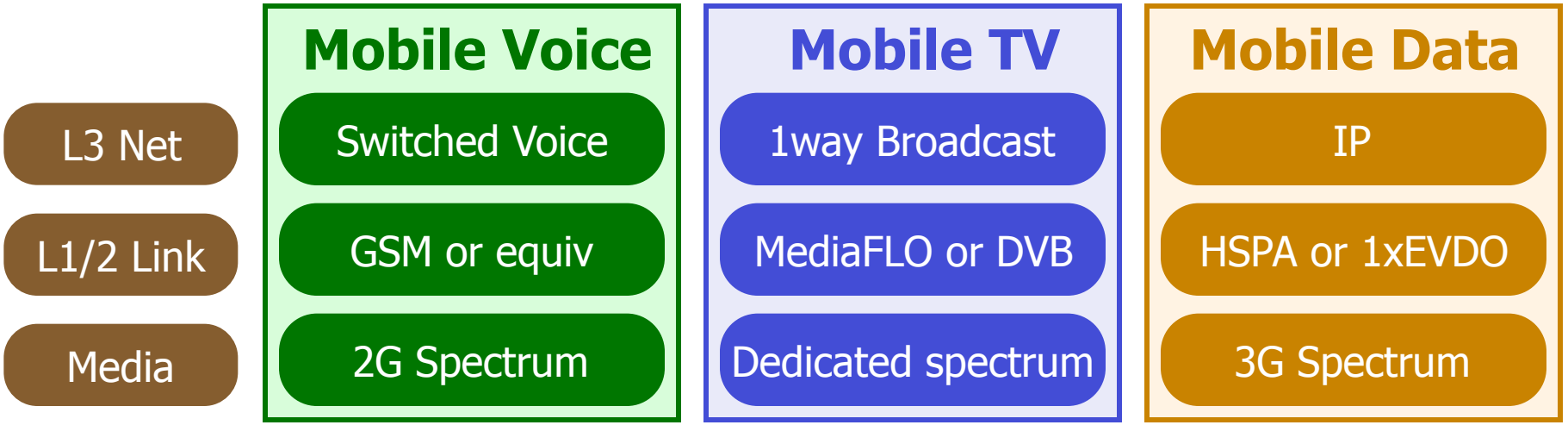
Wired networks: silos to broadband platforms



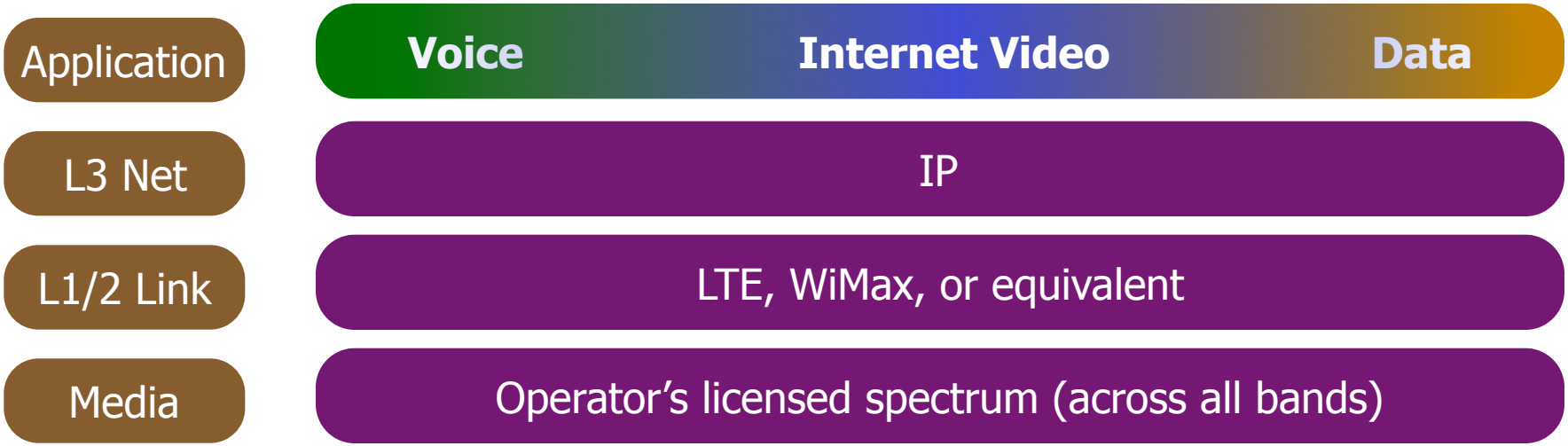
Single-purpose, separate networks → Multi-purpose, integrated network



Wireless platform vision: same as wired



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

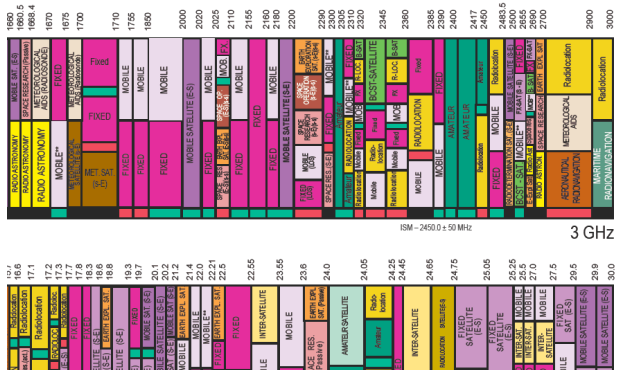


4G will not evolve as envisioned

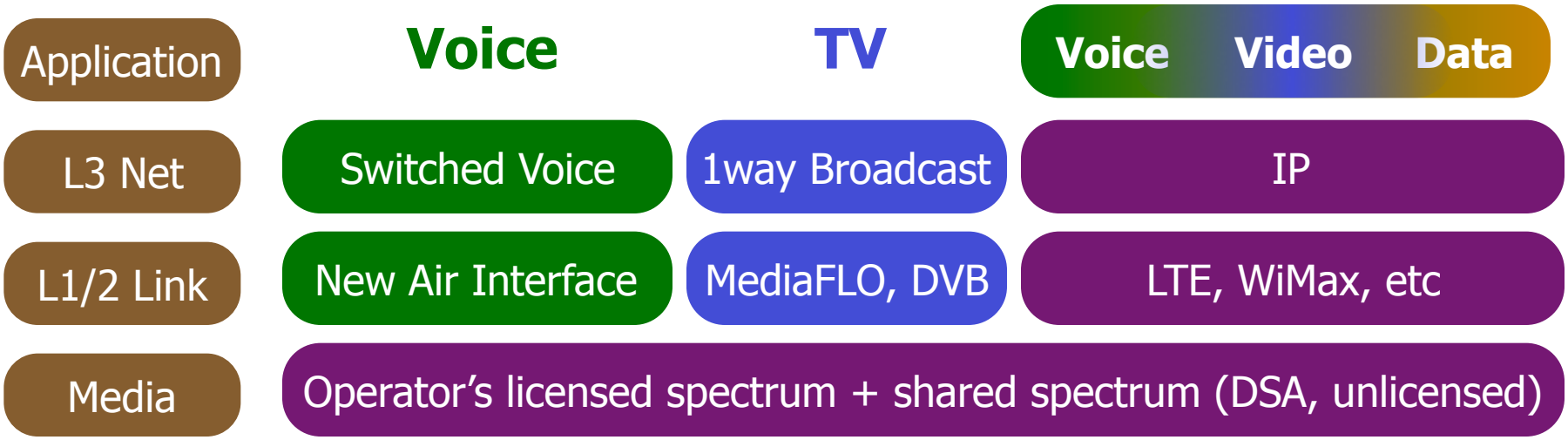
Essential differences between wired and wireless mean that wireless nets unlikely to become integrated platforms

	Wired	Wireless
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	Wireless Broadband
1-2 (or a few) vertically-integrated similar platforms	Many heterogeneous specialized platforms
Network-centric, operator driven	End users play larger role
Over-the-top competition is key (open access to broadband Internet)	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 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!

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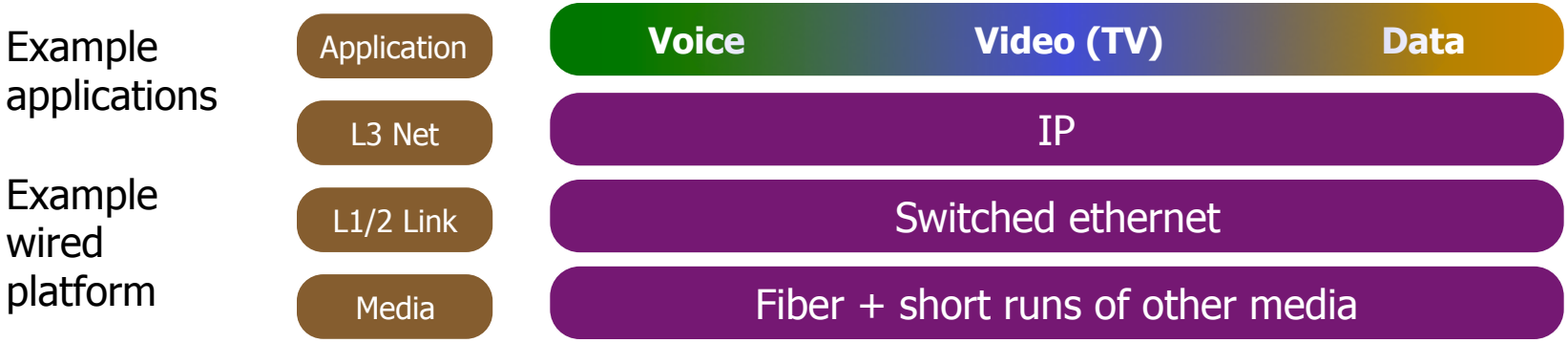
Definition of "Broadband Platform"

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)