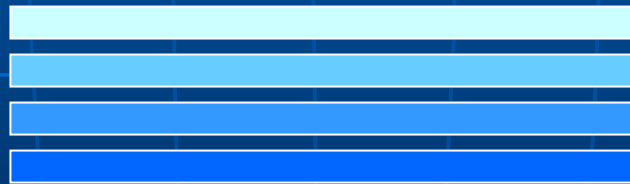


Taking A Horizontal Leap Forward

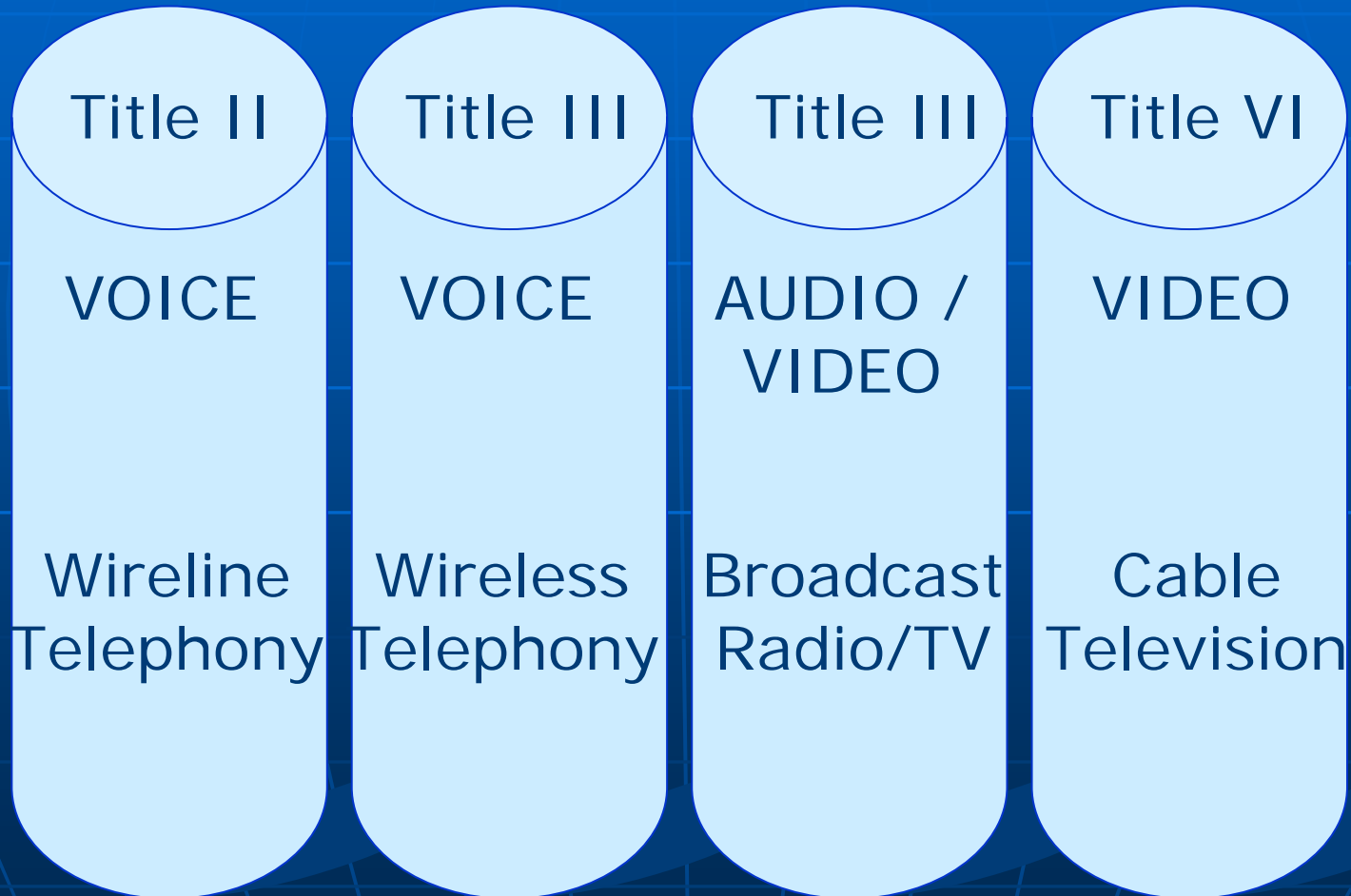
A Proposal To Reform U.S. Communications Law Based On The Network “Layers” Framework



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Part I:
**What Exactly Is This
Network “Layers”
Concept?**

Currently, U.S. laws and regulations are organized conceptually into vertical “silos”



In the (Current) Old Days....

- The U.S. legal superstructure has been organized in vertical “silos” around the presumed marriage of retail service, service provider, and underlying technology.
 - **The Communications Act of 1934:** establishes the “silos” paradigm, with differing legal obligations and rights based on service/provider classifications.
 - **Title II** – telephony common carriers (tariffs, service rates and terms, certification, nondiscrimination, interconnection and unbundling rules)
 - **Title III** – radio and television broadcasters, mobile service providers, and satellite service providers (licenses, facilities, spectrum rules)
 - **Title VI** – cable communications providers (local franchises, carriage requirements, public access channels, ownership restrictions)
 - **Title I** – “ancillary jurisdiction” (some deem to include information services)
 - **The FCC’s Computer Inquiry rules (1970s-present):** a notable exception to the vertical approach, with unregulated “enhanced services” layered on top of regulated “basic services.”
 - **The Telecommunications Act of 1996:** silos redux.

Legal Fiction Versus Physical Reality

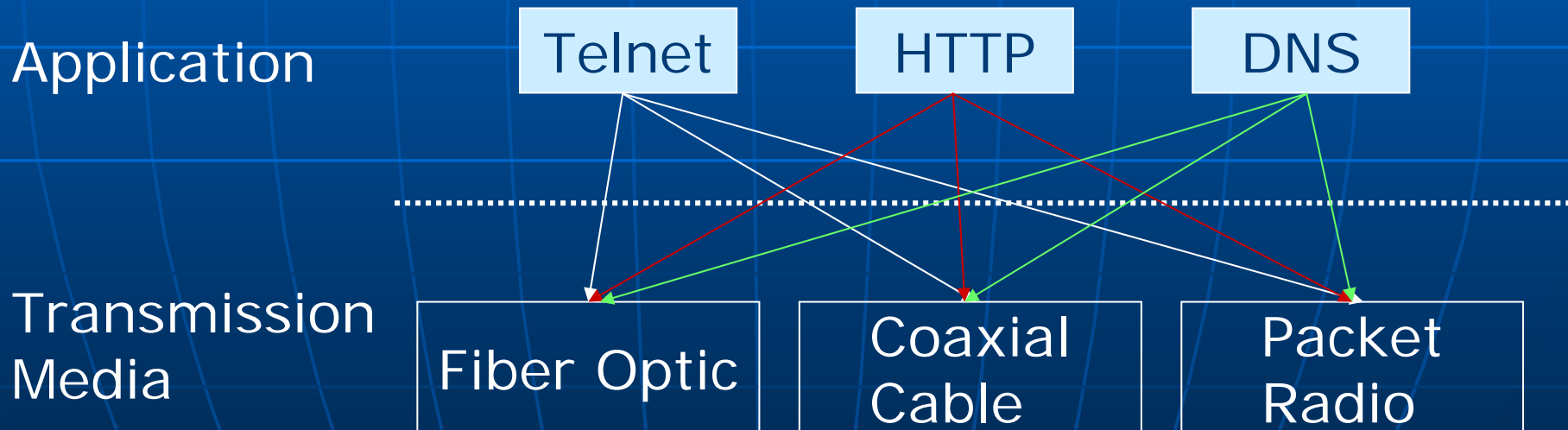
- Existing vertical “silos” fly in the face of several basic network design principles employed by engineers in the birth, growth, and success of the commercial Internet.
 - **The layering principle**: all data networks employ a common set of software-defined functional rules (or “protocols”), designed to create, transmit, and present packets of information to end users.
 - Physical transmission facilities operate at the “lower” layers of the data network.
 - Various interlinked software protocols operate at the “upper” layers of the data network.
 - **The “end-to-end” principle**: dumb networks (“the core”) tend to support smart applications (“the edge”).
 - In contrast, traditional telephone networks tend to employ smart switching infrastructure and dumb customer devices.

The Ubiquitous and Indifferent Nature of IP

- The Internet Protocol (IP) has become the common “bearer” protocol operating at the heart of the Internet and other modern-day data networks.
- An important design attribute of IP is its completely ubiquitous, indifferent nature.
 - IP is agnostic regarding bearer underlying networks.
 - IP is agnostic regarding bearing applications and content.
- IP helps create the “virtuous hourglass.”
 - Convergence at the IP (middle) layer
 - Divergence at the networks (lower) and services (upper) layers
 - The end result: what MCI calls “NetVergence”
- Thus, IP overturns fundamental assumptions that have governed the communications world for decades.
 - Presumed distinctions between different “services” break down.
 - IP-enabled services themselves no longer are tied to discrete networks, facilities, technologies, or providers.
 - Proliferation of smart applications is key to Internet’s success.

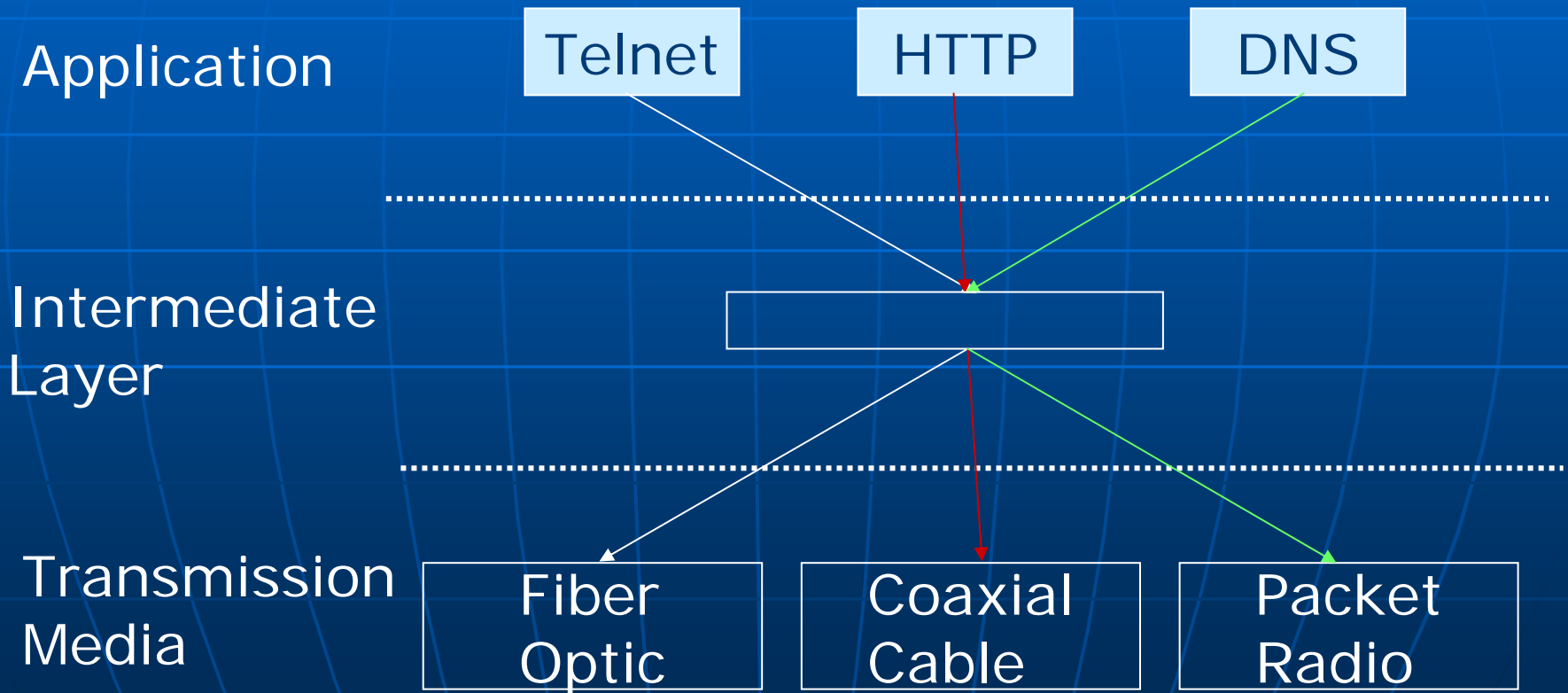
Why Use Layers?

Without the use of layering, each individual application must be re-implemented for every type of network technology.



Why Use Layers?

Inserting an intermediate layer provides a level of abstraction that makes the architecture much easier to manage.



Communications System Layer Model

Content Layer

Text, Speech, Music, Pictures, Video, etc.

Logical / Code Layer

Application / Services

Web Browsers, Email Client Software, MP3 Software, Word Processors, etc.

Utility Protocol Layer

HTTP, SMTP, FTP, DNS, etc.

Transport Layer

TCP, UDP

Network Layer

IP, ICMP, IGMP

Link Layer

Interface to the Physical Layer

TCP / IP
Protocol Suite

Physical Layer

Ethernet, Modem, DSL, Cable, T1, Fiber Optics, Satellite, Bluetooth, Wi-Fi, etc.

Compelling Links Between Networks and Regulation

Many well-respected industry authorities draw compelling links between the way IP networks are engineered, and how such networks should be analyzed and regulated.

- Larry Lessig
- Yochai Benkler
- Kevin Werbach
- Lawrence Solum
- Robert Entman
- Douglas Sicker
- David Isenberg
- Vint Cerf
- Timothy Wu
- Michael Katz
- Philip Weiser
- Rob Frieden
- Craig McTaggart
- John Nakahata
- Scott Marcus
- Michael Powell (?)

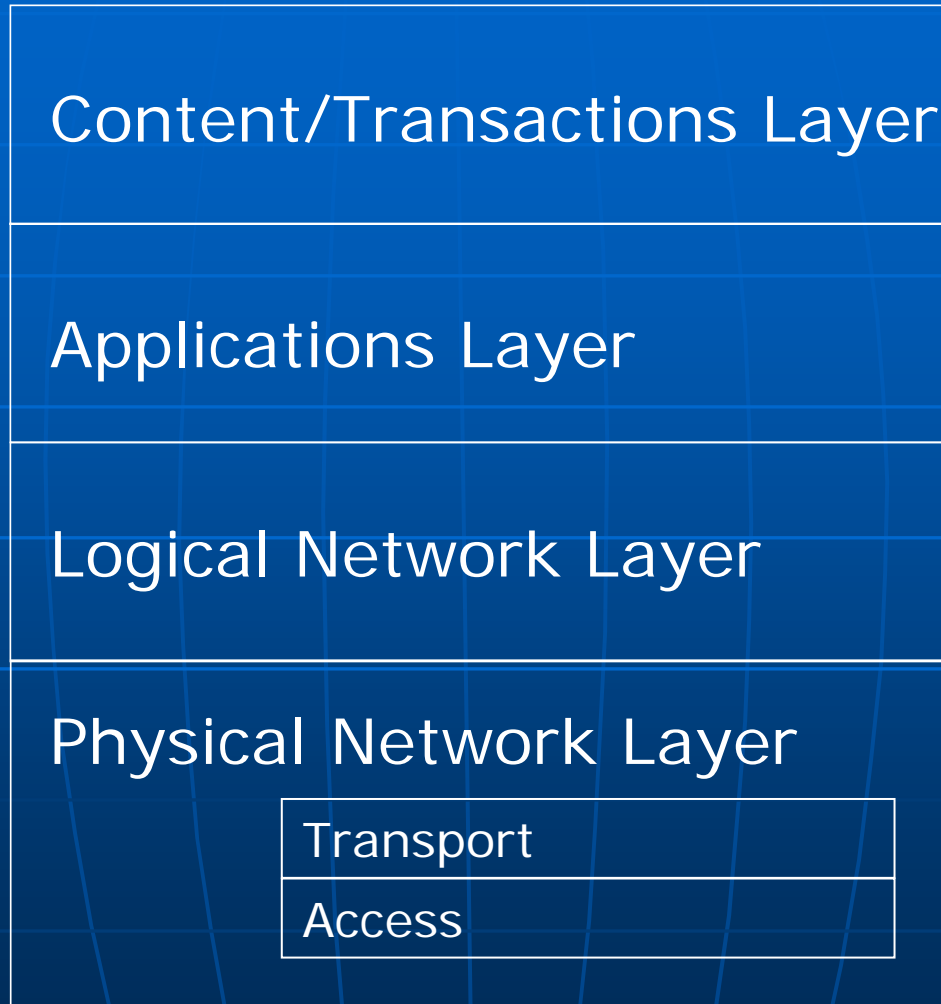
Advantages of a Layers-Based Public Policy Framework

- Key advantages of a layered approach include:
 - Relies on well-established and enduring network engineering principles;
 - Avoids unsupportable static distinctions between services, networks, and providers;
 - Appropriately separates upper layers (end user applications and content) from lower layers (physical and logical infrastructure);
 - Groups and segregates pertinent public policy issues;
 - Provides insights about interdependence of different layers, including interconnection between networks;
 - Focuses on fostering greater competition to curtail pockets of market power within the layers; and
 - Promotes and preserves maximum innovation at the “edge” of the network.

Some Key Principles

- The following principles are key for policymakers to employ a robust and nuanced layers-informed framework:
 - Respect the integrity of the layers.
 - Policymakers should not adopt layers-affecting regulations without at least (1) a compelling regulatory interest, and (2) consideration of layers-respecting alternatives.
 - Example: E-commerce issues (ISP liability)
 - Any regulation of layers activities should be narrowly-tailored.
 - Policymakers should focus on the pertinent layers-related activities, and avoid regulating one layer to address perceived issues or problems situated in another layer.
 - Example: IP-enabled applications and services (VoIP)
 - Regulation should be used primarily to address areas of market concentration by fostering robust competition.
 - Policymakers should combat the existence of market power in one layer by promoting competitive opportunities in that layer, and otherwise protecting end users in adjoining layers.
 - Example: Broadband platforms (DSL, cable modem)

MCI's Proposed Layers Model



Part II:
**How Can You Implement
This Network “Layers”
Concept?**

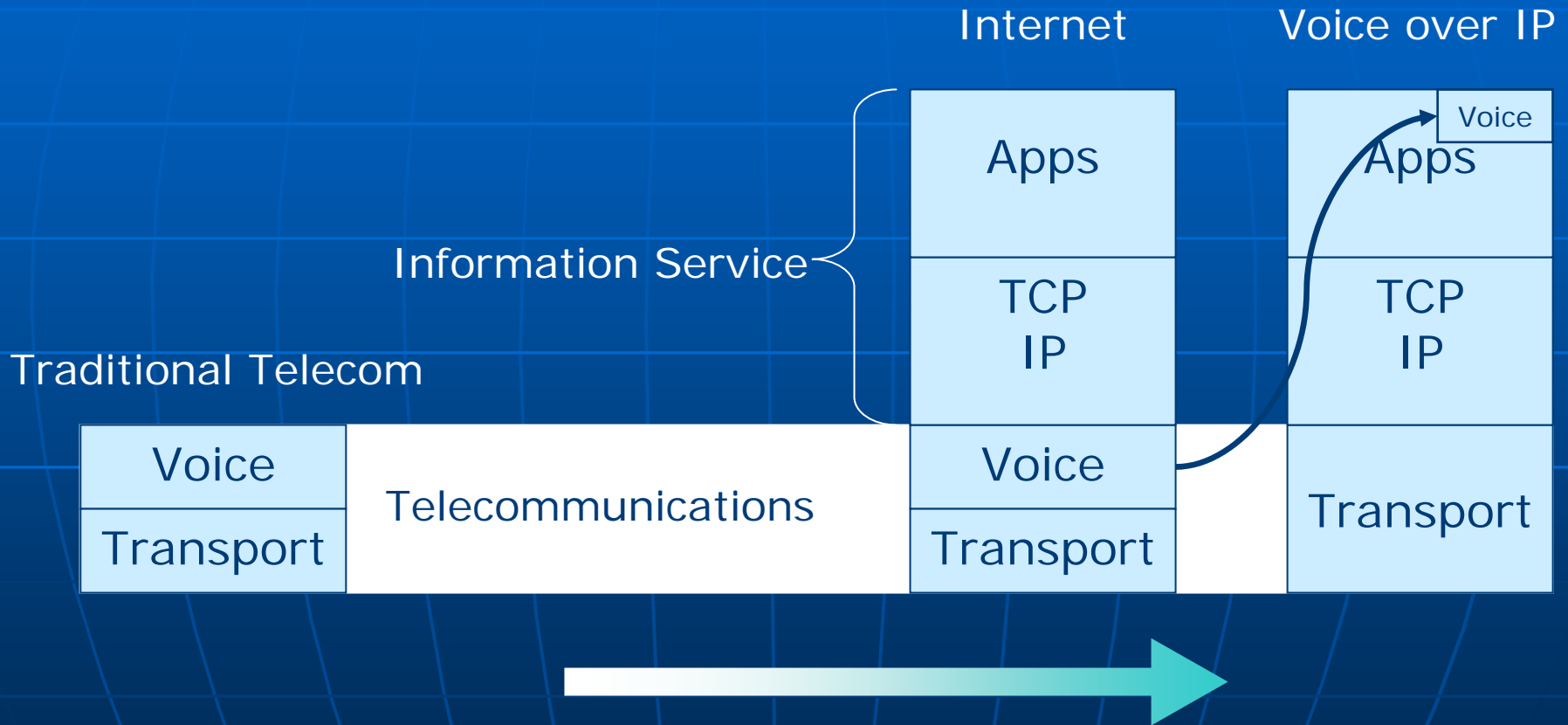
“Operationalizing” the Layers Concept: A Continuum

- There are at least three ways for policymakers to put the horizontal layers concept into concrete and effective form.
 - **Principles**
Agencies can adopt guiding principles.
 - **Rules**
Agencies can adopt binding regulations.
 - **Laws**
Legislators can adopt governing statutes.
- Each step can be pursued separately, or as part of a coordinated transition plan.

Adopting A Governing Federal Statute

- Working title: “The Internet Innovation and Broadband Competition Act of 2005”
 - Positioned as new “Title VIII” of Communications Act
 - Coexists with existing legal silos during period of market transition
- FCC directed to employ layers concepts:
 - As guiding principles (such as interpreting “public interest” test)
 - As binding rules (such as applying “forbearance” authority)
- Layers framework defined as a flexible conceptual guide
 - Physical, Logical, Applications, and Content layers
- Overarching principle: All entities generally are free to compete in and between the different network layers, without legal or regulatory constraints.
- Key legal dichotomy established:
 - IP Applications (generally unregulated)
 - Broadband Platforms (minimal carrier-like regulation)

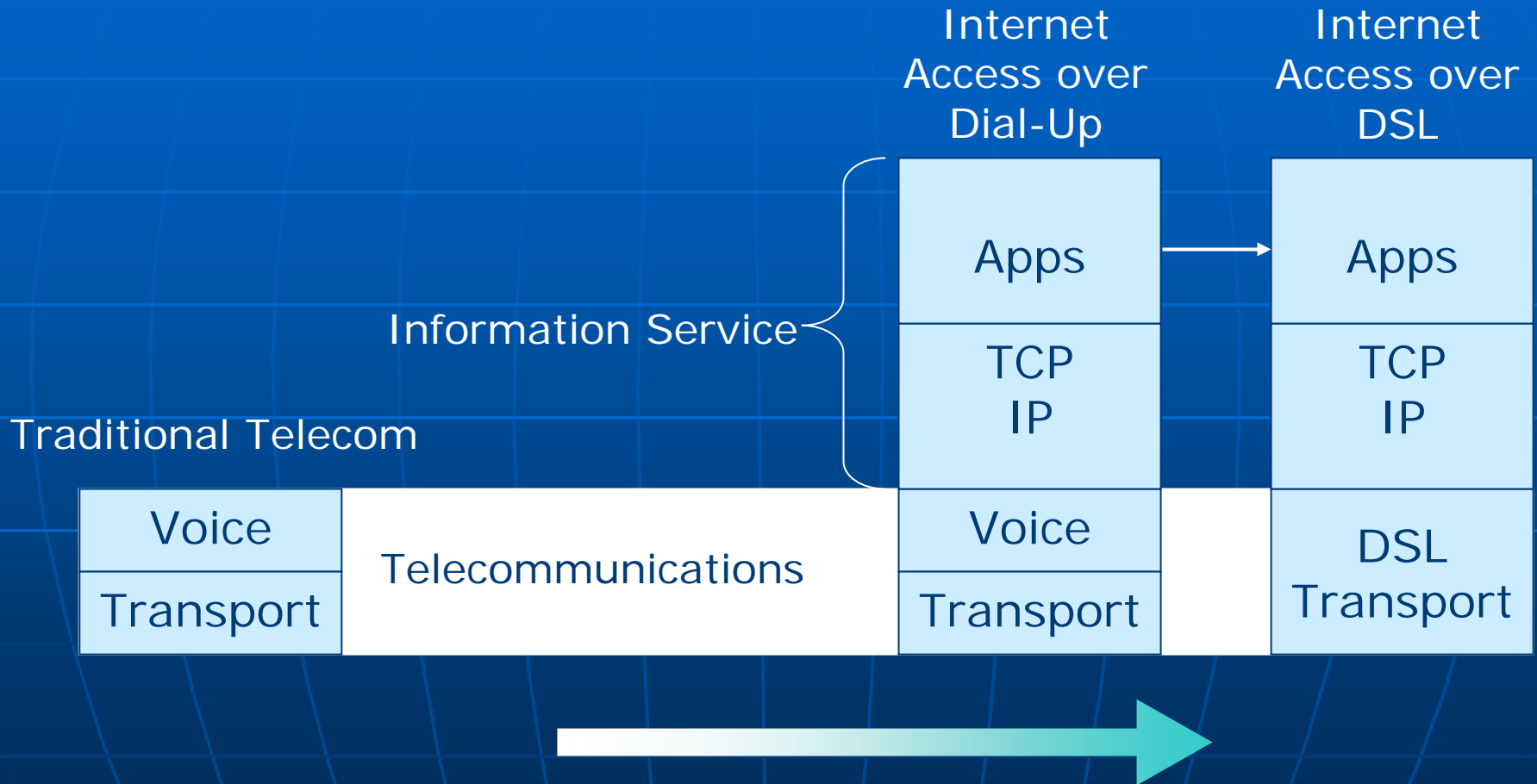
Layers Analysis Supports Non-Telecom Regulation of VoIP



The Proposed Federal Legislation: IP-Enabled Applications and Services

- “IP-enabled applications, services, and content” would correlate roughly to “information services” under the Act.
 - VoIP is one of many IP-based applications, divorced from any particular technology platform or network.
 - No retail or wholesale common carriage (Title II) regulation, or other legacy requirements, generally would be permitted, including by State legislatures and State public service commissions.
 - To limit unnecessary and harmful regulatory role, the FCC’s “ancillary” jurisdiction under Title I would be defined narrowly as:
 - Requiring preemption of inconsistent state regulation; and
 - Authorizing imposition of certain public interest requirements (such as 911 and CALEA compliance) only where the IP service in question:
 - connects with the circuit-switched network, and/or
 - reasonably can be viewed as a commercial and functional substitute for existing voice telephony service.

Layers Analysis Supports DSL As Telecommunications Service



The Proposed Legislation: Broadband Access Platforms

- “Broadband access platforms” would correlate roughly to “telecommunications services” under the Act.
 - DSL, cable modem service, and other broadband services fundamentally are communication transmission platforms.
 - The application layer retail service (high-speed Internet access) is separate from the underlying physical access layer (broadband platform).
 - Broadband access platforms would be exempt from many unnecessary Title II common carriage requirements, including all Federal and State retail regulation.
 - Remaining obligations would include network interconnection, simple resale, USF support, emergency services, CALEA, and access for disabled.
 - The FCC would be directed to facilitate multi-modal broadband competition.
 - Wireless (licensed and unlicensed), powerline, satellite options would be vigorously promoted.
 - Broadband access platforms with market power could be subject to discrete FCC remedy to protect dependent end users, such as:
 - Wholesale access requirement for ISPs (open access)
 - End user access rights (net neutrality)
 - Voluntary industry principles (Powell’s “Net freedoms”)

The Proposed Federal Legislation: Other Key Provisions

The FCC would be directed to:

- Reform Inter-carrier Compensation
 - Phase out existing federal and state inter-carrier compensation schemes, and adopt uniform, cost-based rates (presumably “bill and keep”) across all services and geographic boundaries.
 - Transfer any and all implicit subsidies to explicit universal service funds.
- Strengthen Universal Service
 - Extend Federal USF funding obligation to all broadband access platform providers.
 - Adopt contribution mechanism based on end user’s network connections.
 - Establish a new “universal broadband connectivity” program dedicated to supporting deployment of broadband access platforms in high-cost/rural regions of the country.
- Preserve “Social Goods”
 - Apply certain “public interest” requirements (such as emergency services (911), law enforcement (CALEA), and access for the disabled), to broadband access platforms, as well as to certain IP-based services.
- Deregulate IP-Based Legacy Services
 - Eventually remove existing regulatory burdens and benefits that apply to legacy services -- such as wireline and wireless voice telephony, cable television services, satellite services, and broadcast television and radio services – that begin running on IP.

Setting the Record Straight

- While certain groups have criticized discrete elements of the MCI model, a layers-informed legal framework would further important public policy objectives by:
 - offering a flexible, yet well-grounded, conceptual tool intended primarily to limit governmental intervention in the marketplace;
 - posing the right kinds of questions for policymakers to ask, without necessarily dictating particular legal or policy outcomes;
 - tending to lead to highly deregulatory policy conclusions;
 - not seeking to disturb salient consumer and competitive benefits of entities' vertical integration across different network layers;
 - envisioning government's primary role as preserving and enhancing competition and innovation, both at the network "edge" and between and among competing network platforms; and
 - viewing excessive market concentration, defined under traditional antitrust principles, as the key factor in considering the need for possible economic regulation.

In Conclusion

- The network layers approach offers a compelling and workable alternative to the Communications Act's outdated vertical "silos" structure.
- Congress should adopt a layered framework as it considers reform of the communications laws.
 - There should be a significant presumption against the imposition of unwarranted legal obligations and third party liability on content and application providers, and Internet service providers.
 - National policy should ensure that IP-enabled applications such as VoIP are not subject to common carrier regulation.
 - Comprehensive reform of existing carrier compensation and subsidy schemes is necessary to avoid imposing inequitable burdens on new IP-enabled technologies.
 - Full deregulation of all legacy retail services provided over IP networks -- voice, data, video -- may be warranted.
 - Broadband access platforms should be subject to minimal Title II carrier regulation, including possible consumer and/or ISP access rights where there is market concentration.