

The Importance of the Rule of Law

- Investment and Innovation will only be made in societies that can promise a fair playing field – the fair playing field is the application of the Rule of Law
- Innovators need to be able to interpret with certainty the underlying precepts of the Law so they can focus their efforts in such a way that they will not be captured by the incumbents

Natural Life and Death of Technology and Business Models

- Fair application of the Rule of Law allows for the natural life cycle of technology
- It is a good thing when an important and well engineered technology or business dies due to innovation of a better technology or model
- **If the Rule of Law promotes competition** it should allow old technology to die at the natural end of its life cycle. It should not artificially extend or support the life of old business models

Refusal to Adhere to the Rule of Law is very harmful

- Chills Investment
- Shelves Innovation
- Ripple effects to connecting Industries

What are our Rules of Law?

SEC. 7. [47 U.S.C. 157] NEW TECHNOLOGIES AND SERVICES.^[1]

(a) It shall be the policy of the United States to encourage the provision of new technologies and services to the public. Any person or party (other than the Commission) who opposes a new technology or service proposed to be permitted under this Act shall have the burden to demonstrate that such proposal is inconsistent with the public interest.

(b) The Commission shall determine whether any new technology or service proposed in a petition or application is in the public interest within one year after such petition or application is filed. If the Commission initiates its own proceeding for a new technology or service, such proceeding shall be completed within 12 months after it is initiated.

^[1] This provision was enacted in the Federal Communications Commission Authorization Act of 1983, Public Law 98-214. Senate Report No. 98-67 explained the objective:

[t]he development of new technologies and the efforts of competitors seeking to respond to consumer demands will bring more service to the public than will administrative regulations. ... [a] claim that the new or additional service will provide competition that will take revenue from another service, either existing or proposed, will not be a valid rebuttal. ... The regulatory process ... should not act as a barrier to those who wish to provide new and additional services.

See Memorandum Opinion and Order, *In the Matter of Petition for Reconsideration of Amendment of Parts 2 and 73 of the Commission's Rules Concerning Use of Subsidiary Communications Authorization*, BC Docket No. 82-536, FCC 84-187, ¶ 24 98 F.C.C.2d 792, 803, 1984 FCC LEXIS 2836 **23-**25 (rel. May 1984).

4 FCC Policy Statements

- In 2005, the Commission adopted a *Policy Statement* that sets forth four broad principles that “encourage broadband deployment and promote the open and interconnected nature of the Internet.” It specifically states that consumers are entitled to: (1) access to Internet content; (2) run applications and use services of their choice; (3) connect legal devices that do not harm the network; and (4) competition among network providers, application and service providers and content providers.

TWO NON-DISCRIMINATION PRINCIPLES OF NETWORK MANAGEMENT

- “Protocol Agnostic”
- “Application Agnostic”

Theodore Vail – AT&T’s greatest invention was Selling its Special Interest as a Public Policy – it was not the Technology Behind the Telephone

- “The Bell system was founded on broad lines of ‘One System,’ ‘One Policy,’ ‘Universal Service,’ on the idea that no aggregation of isolated independent systems not under common control, however well built or equipped, could give the country the service...”

AT&T advertisement, 1908

There are several brilliant pieces of Vail's Vision – both for policy and for the good of a nascent Bell System monopoly

- Recognized the basic policy truth of a Network Economy - The more users and functions attached to a network, the more valuable the network is for society;
- Vail's "Universal Service" injected a "Policy Layer" of "affording" communications to everyone that differs from the traditional basic economic concept of regulation – to act as a "substitute for competition." The more traditional vision is implemented in economic terms by driving prices toward the marginal cost (today defined as Long Run Incremental cost) of production. Vail thus put politics above basic economic analysis in establishing and creating communications policy in the US.
- Vail's Universal Service concept gave AT&T stewardship of common control and common purpose for "the" communications network. In essence AT&T was allowed to set the technical rules on how to build, model and run the US communications infrastructure.

INTER-MODAL Competition

- The FCC has applied a policy of promoting competition through “Inter-Modal” means of service. The root problem is that the FCC has never examined the policy implications on how Legacy network architectures differ from non-legacy network architecture. In essence, the current policy says it promotes competition between and among old-built and new-built networks, but it usually rationalizes the final decision based on old network topology concepts, exemplified by a Smart Network which can deliver a “service.” In essence, this network is always “controlled” by a service provider, who provides some type of service – i.e. It ASSUMES a Vail like monopoly service/business model being delivered by the network owner.

Thus the focus on Inter-modal competition among and between various wireless, copper, coax and fiber networks all building “intelligent” networks to deliver multiple services is one permissible regulatory goal, but not the only permissible goal, or even the right goal if it is the primary goal. Yes investment in physical plant is important – but it is not everything – the Triple play (Voice, Video and Broadband “data”) is only one business model.

Old Model vs. New Model

The Internet's user-centric and application-agnostic design diametrically opposes Theodore Vail's concept of Communications, and the way the FCC has historically viewed communications:

Vail states that no aggregation of isolated independent systems not under common control, however well built or equipped, could best give the country "Universal" access.

"Give us the money/power and we will build and manage the network."

Value of network to society is measured by Economic Theory of Metcalf's Law ($n*n-1$)

Vs.

The Internet has proved and is based upon the exact opposite.

The Internet is purposefully designed to avoid central control; it's operative principle is simply to move packets from user to user. It has no physical area of interest, and it has no limitation on its use. It, by design, has no analog of PSTN "intelligence". It's design allows the edge to innovate and control the use of the network.

Value of network is measured by Economic Theory of Reed's Law (2^N)

What have we missed?

- Competition is not only Inter-Modal, but with respect to Internet it is INTER-MODEL:

1908 -- Bell and Vail

vs.

2008 -- Google, Zuckerberg and Zennström

Who is more important? Economic theory says the latter. So do your children.

What Should the Policy Be?

- Regulators simplistically and incorrectly look at the Internet as another piece of Content that intelligent networks deliver. They do not understand business models inconsistent with the Old Model
- If competition is a “Good Thing” then policy makers should embrace and encourage “Inter-Model” competition along with Inter-Modal competition. They must realize that promoting a different way to “Talk” and requiring that this alternative model be efficiently interconnected into the Legacy system is a part of the “Good Thing.”
- For competition to exist, networks must be “Protocol and Application Agnostic” –Bit Torrent vs. Comcast – Rule of Law must be applied the same to Telco Network Management as to Cable.

Empowering the USER – What Skype, Google and Facebook all do

Unlike the telephone system, Internet addressing is decoupled from the protocol, the application and the service

- **The only addressing scheme that intentionally couples itself to the underlying protocol is SS7, the system to which the incumbents wish to subjugate the Internet.**
 - While there are many registered URI schemes, there are an order of magnitude more permanent and provisional Internet protocols which operate at and below the application level.
 - It is a rare situation – because there are no intrinsic reasons why it would happen – that any given addressing scheme cannot work with any given protocol. This is because, on the Internet, protocols and signaling are purposefully decoupled from addressing. This decoupling is simply good, accepted engineering.
 - In the parochial model of telecommunications, the operative question of technological innovation is: “What protocols should be allowed to interact with SS7, and therefore the PSTN?”
- This question is ridiculous to the Internet way of technological innovation and to the policy of promoting competition.

The question should be “What protocols *can't* interact with SS7?”

- The answer to this question turns on the engineering principle of a basic call model, for which is a relatively simple formal state machine may suffice. This insight has led to an explosion of Internet telephony protocols, including the following:
 - Jingle/XMPP (the Google telephony protocol)
 - Skype
 - MGCP
 - TAPI
 - JTAPI
 - SIGTRAN
 - GlobalCall
 - ECTF S.100
 - ActiveX
 - SGCP
 - MEGACO/H.248
 - Dialogic R4
 - Skinny
 - Worldcall Call Protocol
 - SIP
 - H.323
 - TruPhone
 - Mig33
- Any of these protocols allow any user connected to the internet that has speakers and a microphone to communicate directly or indirectly with a PSTN user.

GOOD POLICY – Application and Protocol Agnostic

- Explicitly accept and promote Inter-Model competition by promoting cost based interoperability between VOIP and Non-VOIP users. Don't get in the way by accepting Legacy concepts of intelligent network design, Legacy signaling standards, and Legacy content delivery, and Legacy subsidy based charges.
- Promote communications use in general. The communications industry is unique in that there are many positive externalities and very few negative externalities
- Do not allow the “PIPE” companies to place restrictions on Internet Use.
- Update and modernize Universal Service to incorporate ALL Internet use (including VOIP)

BAD POLICY

- ALLOW THE INCUMBENTS TO UNNATURALLY EXTEND THE LIFE OF A TECHNOLOGICALLY OBSOLETE PROTOCOL AND BUSINESS MODEL

Proposed Interconnection Policy

- Make the world's information universally accessible and useful, enable users to instantly communicate with friends, family, and colleagues via voice calls and instant messaging without measured charges. Assist in the development and creation of open communications standards among and between users and service providers.

**No One who is Legacy will talk to us
Not NECA, Not Embarq, Not AT&T
Not the Texas PUC – no one**

6 Detailed Principles of Interconnection

- 1) There should be symmetry in any interconnection scheme. The goal should be to encourage and promote two-way traffic, or at least, not to encourage business models that favor one-way traffic delivery based on the current complicated and inconsistent inter-provider compensation schemes.
- 2) Any interconnection scheme should be cost-based to discourage the ability to arbitrage new technology or to increase the cost of market entry by new technology providers or users. The scheme should encourage the least-cost method of interconnection, should remove incentives for any entity to promote non-cost based methods of interconnection, and all parties should be encouraged to search for the best, most efficient, most economically and most technologically advantageous interface. Any method of interconnection should promote the smallest transaction cost. In a world where traffic flows equally to and from networks and where traffic-sensitive costs are approaching zero, providers do not really need to count minutes any more.
- 3) Interconnection principles should not favor one technology over another. That is to say, there should be no favoritism based upon application (e.g., voice, chat, text, IM, email, video). In a digital world, all applications are or should be equal. To discriminate among applications would adversely skew the policy principles encouraging convergence.
- 4) Interconnection principles should not favor one affiliation or one type of provider over another in order to avoid predatory cross-subsidy.
- 5) Interconnection should support modern public policy goals including
 - promotion of network effects;
 - creation of group forming networks;
 - encouragement of user choice of technology, providers and applications;
 - user control over their own communications experience to the fullest extent possible; and
 - promotion of open network concepts that enable and welcome technological and social improvements regardless of source.
- 6) Interconnection should support historical public policy goals while subsidies move from application to network support.
 - Internet-based communications, if allowed to evolve and serve users without subjugation to legacy access charge rules, could dramatically ease the burden on the Universal Service Fund (VoIP could be a near free alternative for traditional voice telephony if we allow it);
 - current ILEC distribution of voice is economically 10 to 15 times more expensive to provide when compared to IP and Mobile voice;
 - IP and Mobile voice have more benefits to those USF is supposed to help;
 - allowing alternative providers of USF allows investment in new technology;
 - now that costs to provide service are dramatically lower, prohibit over earning by any recipient of USF; and
 - prohibit distribution of USF to any entity or affiliated entity that does not also explicitly support Modern Public Policy Goals (e.g., if a telco blocks VoIP or other Internet traffic, that telco cannot receive a subsidy).

Instead of Working with new technology, the Incumbents are asking the FCC to “OUTLAW” its use

- Not only is the cartel sponsoring new Call Signaling Rules at the FCC, but AT&T has actually patented the ability to claim a protocol use other than SS7 is irrefutable proof (based upon industry standards) of Fraud:

Real time detection of the fraudulent use of a telecommunications network is accomplished by analyzing data for each call that is occurring within the network. A signal protocol receiver is used to collect signaling protocol for each call that is occurring within the network. The Signaling protocol data is collected, decoded and formatted into call information records (CIRs). The CIRs contain various operator specified parameters for each call that is occurring within the network. The CIRs are compared to operator defined thresholds. If any of the CIRs exceeds the thresholds, an alert is generated. The alerts are stored in a database where the operator can analyze them and take the appropriate corresponding action to resolve the alert. The alerts and the CIRs are archived in a database so that trends of fraudulent use can be detected and prevented. This method of fraud detection provides for the effective analyzation of every call that is occurring within the network. Accordingly, no call goes unanalyzed and ideally no fraud goes undetected. Additionally, the method does not impose an additional load on the network switching equipment and therefore results in a better quality of transmissions.