

## **What's Next in the Telecommunications Industry: The Implications of Clayton Christensen's book, Seeing What's Next**

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### **Response to Clayton M. Christensen's remarks by State of Missouri Public Utilities Commissioner Connie Murray**

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Dr. Christensen tells us how to use theories of innovation to predict industry change, in other words, how to see what's next. This can be an important tool for federal and state policy makers as we revisit legislation and regulation of the telecommunications industry.

Among the signals of change are companies using new ways to reach nonconsumers, undershot customers and overshot customers.

I would like to mention three such signals of change: Azulstar Networks, formerly Ottawa Wireless, Inc., is rolling out Wi-Fi and Wi-Max as the new local loop of the 21<sup>st</sup> Century in Grand Haven, Michigan and Rio Rancho, New Mexico. The CEO says the last mile wireless facilities are better than copper, a notch below fiber, but cheaper. As I understand it, they are offering high speed internet access as well as voice at rates between \$20 and \$40 per month. They are offering another pipe into the home and they are able to go after customers that are undershot and perhaps some that are overshot by the incumbents.

Another new-market growth opportunity that is likely to stay below the radar of incumbents is Wi-Max applications enabled through software provided by Proxim in the Tsunami relief efforts. These include systems capable of outdoor deployment in extreme weather conditions, advanced bandwidth provisioning, mobile roaming, adaptive wireless networking, and advanced security with privacy protection.

A third new-market growth opportunity is illustrated by the implementation of a wireless LAN to deliver services to ferry passengers aboard the Washington State Ferries, providing seamless connectivity and uninterrupted Wi-Fi service to passengers while they travel over Puget Sound.

These are examples where non-consumers can provide the test market for disruptive technology providers to perfect their services before offering them to consumers of the PSTN markets. These may have the asymmetries of motivation that Dr. Christensen talks about. These innovators will no doubt aggressively move up-market on what Dr. Christensen refers to as their own sustaining improvement trajectories, pursuing more attractive profit margins and meeting the needs of larger segments of the incumbent's customers. The result could be to force the incumbent further up-market or out of the market entirely.

Dr. Christensen points out that wireless technology was disruptive but was co-opted by the incumbents for several reasons, including that the entrants followed a path that was highly complementary and additive and built overlapping delivery networks.

I think that VOIP, a clearly disruptive technology, may have more potential for disruption without co-option. The VOIP providers may be targeting less demanding customers. And, perhaps more importantly, some of their networks are designed specifically not to interact with the existing telephone networks.

These providers are probably not going head to head with the incumbents for the most valuable customers but are stealthily taking advantage of asymmetries of motivation by targeting customers that incumbents are not that interested in.

In the book, we are cautioned against overestimating the chances that an innovation will overthrow incumbent leaders and are told to look at the co-optability of the innovation and the motivation of incumbents to fight the disruption rather than to flee it. This is because highly interdependent networked industries provide avenues for co-option. But, we are cautioned that developments in the fringe always bear watching.

We are also told to watch a firm's important strategic choices that increase or decrease its channels of successfully managing the process of disruption.

SBC is working on a strategy to drive fiber deeper into its networks to power high-speed, IP-based local connections, with a significant investment of capital. In announcing the initiative in June of 2004, Ed Whitacre stated that "Fiber technologies and IP-based services will enable a communications revolution, allowing consumers and businesses to experience integrated video, data and voice services beyond what can be provided over any network today." The announcement followed the FCC's decision not to unbundle broadband.

The book points out that the incumbent's ability to co-opt IP could be limited by delaying the fixed costs of building new networks until IP gets good enough. Dr. Christensen cautions that waiting could allow entrants to develop a set of asymmetric skills. It seems to me that the ILECs are responding rather late in the game. I understand that the delay is the result of regulatory constraints but I wonder whether they have suffered irreparable harm to any degree as a result.

Dr. Christensen also said another obstacle to incumbents would be the different mind-set and business model that data requires, one based on capacity rather than minutes of use. He says that incumbents could attempt to force old paradigms on new technologies. In terms of the old paradigms of minutes of use, I wonder whether the small ILECs will adapt their mindset to give up the minutes-of-use concept and start to think in terms of capacity. If so, this might lead to an answer to the extremely important question of how to repair the broken access charge regime.

View from State Regulation's Perspective

I have been unable to come up with a better set of recommendations for reform of the telecommunications sector than the recommendations in the U.S. Chamber of Commerce Study that Dr. Rutledge played a critical role in, including phasing out network-sharing rules and ending wholesale rates set at theoretical costs; making more than 400 megahertz of radio spectrum available for commercial use; exempting high-speed cable modem service from certain regulations and internet services from state telephone regulations and using general tax revenue for universal service while distributing such funds directly via vouchers to targeted customers.

As we look to federal legislation, we should keep in mind Chairman Powell's admonition to be really careful and not open up the entire telecom act. He suggests that an IP statute should be no more than 25 pages long. I worry about the potential downfall of having legislators addressing IP at all. Chairman Powell said that for every word of law, there is a ten-fold increase in uncertainty. I agree with him that whatever we do, we should not try to spell it out in mind-numbing detail. Micromanagement of this sector is not possible. It is moving much too fast.

Regulators and legislators are largely responsible for the proliferation of overshot consumers in telecommunications. Regulations and laws that mandate minimum quality-of-service standards and so-called consumer protections force regulated providers to concentrate more on meeting a set of standards than on innovations that might give consumers freedom to choose to pay less for services that are less reliable or have less functionality, but better meet the needs of the individual consumer.

Perhaps the greatest threat to both sustaining technologies and disruptive technologies is the threat of too much government intervention. Of course, the question of which players should be regulated and by how much and by whom gets pretty complex and pretty political. The RBOCs have been very heavily regulated under the 1996 Act, having to share their networks at huge discounts with their competitors, and having to spend tremendous resources fighting challenges filed before state and federal regulators by their competitors.

The RBOCs now face competition from disruptive technologies, as well as sustaining technologies. The CLECs competing in the sustaining technology areas no longer seem like the most viable competitors. Regulators are slow, however, to recognize that the most threatening competition to the public switched network is from providers that use entirely different technologies and do not even need the incumbent's network.

We still argue over whether there is effective competition from traditional CLECs for purposes of allowing incumbents to respond in a timely manner to service, product and price offerings that are designed to woo their customers away. I struggled with what to call these entities making these offers to RBOC's customers. I could not think of anything to label them other than competitors. But we are still arguing about whether there is competition. There is a school of thought that a certain level of market share must be captured by a CLEC before competition can be declared effective. This mindset

ignores the contestability of markets by other PSTN providers and certainly ignores the threat from providers of disruptive technologies.

Economic regulation is becoming unnecessary for most segments of telecommunication. We must regulate down and give the PSTN providers the opportunity to respond in a timely and effective fashion to all sources of competition. We must NOT regulate up as some would have us do in order to bring parity to the incumbents. Certainly, we must not bring IP providers under the jurisdiction of state commissions.

The most troubling issues to solve are how to move out of the way and let the market determine the winners and losers, while the result could be that some customers may experience higher rates, at least transitionally. The political implications of intercarrier compensation reform and universal service reform make the ideal solutions impossible.

We must reform both, but we will no doubt do so in a way that allows continuation of subsidies for “high cost” areas. The issues become more complicated when we discover that disruptive technologies allow those “high cost” areas to be served at costs that are not so high after all. My prediction is that if rural carriers do not adapt to the changing world, their customers will eventually migrate to new entrants that can serve them more cheaply and with wider calling scopes and more choices of applications.

I am not a personal fan of subsidies and certainly not a believer that there is a great need to subsidize either basic telephone service OR enhanced services such as broadband for areas that are sparsely populated. As much as I like Dr. Rutledge, for example, I have no desire to help pay for his telephone or broadband service to his home in Maui. There are certain limited segments of the population that probably do need subsidies—very low income for example. Those people should be narrowly targeted and the subsidies should be limited to one line per household.

Beyond that, it is my sincere hope that policy makers at all levels of government will work diligently to keep hands off of disruptive technologies and to begin in earnest to deregulate the PSTN.