

# Worlds In Collision

Net Forecasts – Peter J. Sevcik  
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There are two network worlds. We have given them simplistic names like 'Net-Bell, data-phone, or open-closed. John Waclawsky describes these two worlds very well in terms of how they approach standards (see BCR, March pp. 38-44). He calls them component-based and system-based. I think that these terms are an excellent way to describe the two foundations of our now-colliding worlds.

## Why So Different?

Component standards make devices interoperate with other devices within their use-case. Consider a screwdriver: It can be flat head, Phillips head, or a some specialized version. These differ from each other and are standardized only within their use-case.

Component standards don't need to be global in scope. There is no technical reason why users in, say, Japan need to use a flat head screwdriver if that region adopts a different tool standard. Markets and economics determine whether a component standard becomes a global standard.

Using a standard component for an off-standard application happens all the time and is relevant to the popularity of the tool. For example, using a flat-head screwdriver to open a paint can is a uniform global practice that was not within the use-case for the screwdriver.

By comparison, systems are a group of independent but interrelated elements, comprising a unified whole, that interact with each other to work as a coherent entity. Large complex systems that are networks must follow standards not for interoperability among their internal components but for uniformity across all users.

For example, it is important to standardize which side of the road cars drive on within a country. Here, there are two different models: fully a third of the world's population drives on the left.

The reason there can be two driving models is that the users in each of the two incompatible road systems rarely take their cars to the other region. In

contrast, a global telecommunications network that is providing service to all of the world's population must select and enforce "driving on one and only one side of the road," so to speak.

This is why the system-based standards described by Waclawsky got started and why they make sense even to this day. Of course, his arguments that these standards have evolved into a method for the incumbent cartel to protect the status quo is completely correct. It is just important to understand why they got started in the first place.

## Building Networks In The Two Worlds

Global telecommunications networks have clearly been built based on the system model. That world is based upon controlling a strict single user-network interface. Furthermore, again based upon history, it defines that interface according to usage: At the beginning, the human voice used the telephone while the written word was transmitted by telegraph: Two networks for two uses with two standard access methods.

Non-use-case was not permitted because components foreign to the system were not allowed to connect. It was hard enough to make the network work across languages, power systems and cultures. Furthermore, the networks really only did one thing, so it was very hard to perform non-use-case functions.

Global communications performed by component-based networks operate over a system-based infrastructure. They are sophisticated complex networks to be sure, but are useless without the old telephone infrastructure. The Internet is built out of routers that communicate across the globe over circuits defined by and operated by telephone companies. This is a symbiotic relationship.

Similarly, the fax machine was a symbiotic relationship. Faxes needed the phone network that could provide direct long-distance dial connections between machines (no operator intervention). In turn, the popularity of fax caused businesses to buy additional phone lines and increased traffic on the network.

Sometimes the symbiosis is more strained. VOIP is a component-based technology that both new and incumbent players are adopting to various degrees, even though it cannibalizes the traditional telephone infrastructure. But component-based technologies don't have to come from large, established entities: Skype can compete with VOIP even before VOIP technology is fully deployed in carrier networks.

And Skype is a good illustration of the new dilemma: The component-based world is more flexible, innovative and changes faster than the system-based world, but as it excels at fast evolution, it is turning the relationship from symbiotic to parasitic.

### **The Host Fights Back**

The ITU-based Next Generation Network (NGN--see Dave Passmore's recent column, BCR March 2005, pp. 20-21) initiative is a not-so-thinly veiled attempt by the carriers to regain control of services customers see. The ITU's primary argument is that the 'Net must provide higher performance than currently available on the ragtag Internet. However, the definition of good performance will likely be a mixed blessing.

The ITU-NGN is very circuit-oriented and breaks the traditional Internet mandate of separating services from transport. This approach has a significant layer of admission control for better security, and mechanisms to ensure that the network can support the service you requested. It is easy to envision a network reply, "Your connection attempt that was going to use Skype has been denied because we can't ensure the quality of the phone call you are trying to make...please use our phone service...click here to order our enhanced Internet service with phone capabilities."

The ITU-NGN is scary. What makes it even scarier is that it will have many allies. The control that ITU-NGN brings to the Internet is the perfect platform for regulation. In the U.S., telephone service is the third highest taxed commodity after tobacco and alcohol. You can't tax what you can't regulate.

Furthermore, there are 50 state public regulatory commissions and the FCC that employ thousands of regulators who need a job continuity program. Imagine that the Internet really makes the regulated

phone call go away: How will you employ all those regulators (and how will you track the details required collect all those fees and taxes)?

Next comes the fact that commerce will certainly be taxed on the Internet. Again, you need a strong foundation of regulation and control technology that keeps track of electronic commerce in order to provide accurate taxation data. Bricks-and-mortar commerce has a ton of paperwork that must be replicated on the Internet.

But you need technical enforcement to make sure the tax is being paid. Again a reply from your friendly carrier: "Sorry, we could not permit a connection to that website because we could not tell if that site would pay its taxes in case you buy something...please use our commerce portal to access that site...click here to order our enhanced buying things safely on the Internet service."

The gates of innovation paradise are closing. The big carriers are winning and they are preparing a nicely regulated world for you. Publicly, they complain bitterly about regulation. But they really love regulation as long as it preserves their market position. They are now preparing the technology needed to replicate regulation on their new Internet.

### **Alternate Scenarios**

But such an outcome is not guaranteed. The collision of two technology worlds can follow four scenarios.

**1. Benign co-existence** – This is where we were for about three decades. Both sides were amused by the other and learned to get along. But both sides benefited from a symbiosis they did not understand or fully appreciate. Unfortunately, their lack of realization that they depended on each other led them to the current collision course. There is no going back to this age of ignorant bliss.

**2. Mutual Assured Destruction** – This is the current path. Both sides co-opt technology, methods and revenue from the other. The Internet is the tip of the spear of the digital revolution that is challenging the old business models, while the old guard is learning how to fight back through the political, legal, regulatory arenas. Each side wants the other destroyed! But whoever survives will be very weak and wounded from the battle.

**3. Disengagement** – Both sides learn that a fight to the finish is not smart, but they can't cooperate, so they go separate ways. The carriers build their NGN with lots of controls that satisfy the regulators and ensure steady income to them. The Internet community builds a completely independent network infrastructure. ISPs lay fiber under the seas, build new services, and access customers via wireless Ethernet, thus avoiding the incumbents' copper or cable. Wholesale bandwidth providers make it easier by supplying that fiber to both sides. The new Internet adds some modest regulation in order to survive in the new political reality. Users can choose between these two approaches.

**4. New Synergy** – Both sides accept that they need each other. They carve out natural areas where they cede the business to the other. They build bridges between the two worlds. MPLS (Multi-Protocol Label Switching) and SIP (the Session Initiation Protocol) are examples of bridge technologies between the two worlds. Both sides flourish and users have the most choices.

### **Recommendation**

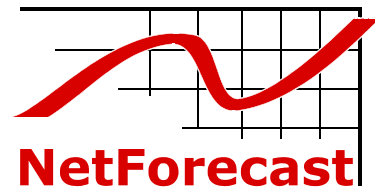
The symbiotic relationship should be renewed as described in the last scenario. It requires both worlds to understand that they benefit from each other. The component-based technologies need an infrastructure upon which to try their experiments and breed successful new services. The system-based world needs new users carrying more traffic in order to maintain their regulated utilities.

We must stop trying to tear the other world down by name-calling, technology fights, and business model attacks. We need more respect for both worlds.

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