

**A Time for Choice:
Confronting the industry transition that plagues
today's service providers**

*By Steven Titch,
Editor-in-Chief, TitchOnline.com*

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This White Paper identifies the root cause of the telecommunications industry recession and the market stalemate it has created among the major service providers. It then discusses the two business models that will be necessary to provide the diverse services that the modern network is capable of delivering. Today's industry players can still choose their path, but it will take both internal and external effort. Either way, the new models mean consolidation and contraction. The difference is whether it will come as a slow death fighting over a diminishing voice market or through an opportunity to restructure and be part of a new value chain that delivers what the market truly needs today.

I. The Root Cause

The root cause of the current recession in telecommunications is that commercially, socially and politically, the world market needs a global public network that is universally accessible and suited to carry and process large amounts of data between and among a diversity of computers, servers and terminal devices. Instead, what the world has is little more than a cumbersome, jerry-rigged hybrid of aging and leading edge network technology whose unsuitability to meeting the new demands that are being placed on it grows more apparent each day.

It's Economics 101: When there's a gap between demand and supply, market instability is the result. In telecom, this instability is compounded by policy and business practices that hold back attempts by the market to right itself in this new environment.

It's no coincidence that the current industry woes began over the course of 2000. Most estimates say that sometime between late 1999 and mid-2000, packet data traffic surpassed circuit-switched voice on the public network. The moment that happened, the primary task of the public network became transmission of large amounts of data. Two-way, station-to-station voice calling, the one application for which the public network existed for more than 100 years, became secondary.

Despite predictions of this crossover for the past decade; despite the data-friendly alternatives to leased T-1 lines corporate users have embraced over the same timeframe; despite the fact that five years ago, dial-up Internet users, by virtue of the growing time they would spend on-line, changed the basic fundamental algorithms engineers used to allocate capacity on the voice network; despite all the talk about evolving the public network so it could accommodate the demand for high-bandwidth multimedia services that the Internet was creating; despite all that, the telecommunications industry, led by its richest segment, the Baby Bells, has been in denial about the implications of data as the primary traffic on their networks. Its members may have said all the right things, but in the end, it was not what they said that mattered, but what they did and did not do.

For the past two years, while Internet traffic has been doubling every six months and while cable modem installations increased 430 percent, the Baby Bells have slowed spending in general and, whenever they have loosened the purse strings, directed that funding into the legacy voice network. Yet voice is a secondary application. While data traffic is increasing, voice traffic is flat. Verizon Communications, SBC Communications and BellSouth all saw a drop in access lines last year. Yet the voice network is where the bulk of their spending has gone in the past 24 months.

The world market needs a global public network that is universally accessible and which is suited to carry and process large amounts of data among a diversity of computers, servers and terminal devices. The companies that were in the best overall position to build this network have not done so. The market has begun to look elsewhere.

II. The Last Mile

Incumbent local exchange carriers (ILECs) spent a great deal of time fretting about what would happen when data traffic overtook voice. Unfortunately, their thinking was focused on their own networks, not on the consequences of such a shift for their overall business. So they squandered most of the 1990s devising five- to seven-year transition plans so they could leverage the millions of dollars in assets locked up in their circuit-switched, time division multiplexed (TDM) networks for as long as possible, while overlaying and integrating next generation Internet Protocol (IP) networks that they believed would only gradually come into use.

What they didn't anticipate was that once that data crossover point was reached, the market would question whether there was a need for TDM networks at all.

The question isn't simply academic. If providing universally accessible high-bandwidth multimedia data communications is the primary job of the public network, henceforth economies of scale favor technology architectures and business plans that are best suited to this function. Today's telecommunications service provider has a new task: link various customer devices that could be anywhere in the world at any time, and make sure that any type of information can move efficiently, reliably and securely among them.

This is a far cry from how the industry continues to do business now, which is to uniformly manage individual circuits over a closed network of physical transmission facilities that terminate at fixed locations.

This business transition - from provision of physical telephone lines to provision of virtual end-to-end personal information technology services - fundamentally alters the relationship between customer and service provider. Therefore it's no surprise that the last mile of the local exchange, the most obvious point where customer and service provider meet, is where the consequences of this shift are playing out.

Personal information technology requires broadband and portability. Today's telephone company local loops provide neither.

III. Glimpses of an emerging model

Market economics always tries to find a way to deliver what the customer demands. New service models, built around data networking, are struggling to sprout in the local loop like a flower through a crack in a sidewalk.

Three technology drivers are simultaneously gaining footholds as alternative access methods in the local loop. All three bypass telephone company local loops. All three are designed ground-up for data communications applications. These three are cable modems, "2.5G" wireless and 802.11b, or Wi-Fi.

All of these technologies put the tools, applications and cost benefits of the public network's data networking architecture in the hands of the individual consumer. At that point, however, none of them are complete. But they all have significant added value.

Cable modems, like phone lines, are tied to a fixed point. But they provide "always-on" broadband access. Cable modems, which now account for almost 67 percent of residential broadband access connections, are giving many people their first taste of personal information technology. To the consumer, all it may add up to is a satisfying Web experience. But today's industry professional knows that with each new cable modem user, at least one more personal computer is added to the network. And that PC will immediately begin to generate independent, IP-based, connectionless data transactions among a multiplicity of machines all over the world.

Savvy users already know they can use their cable modems for voice calling. The cable industry, when it sought to compete with the ILECs, mistakenly followed the legacy example and invested in TDM switching. Thus they have the same network amortization issues to deal with that ILECs do. If they hadn't, they would be much more aggressive in marketing voice over IP (VoIP). As it is, millions of dollars in phone company dial tone revenue are just a marketing campaign away from being lost.

To understand the success of cable modems, however, is to understand that the cable companies backed into broadband. A left-handed compliment, to be sure, but therein lies the paradox. For the cable companies, broadband access was part of a larger content package. The cable industry did not set out to build a broadband network to provide Internet access as an end in itself (This may be one reason they seem so oblivious to their relatively strong position in telecom). They layered broadband access on a healthy business that delivered content and entertainment. The cable exists first to deliver revenue-rich services, second to provide a broadband pipeline.

The second technology driver for personal information technology is 2.5G wireless. Throughout the world, GSM and TDMA carriers are introducing General Packet Radio Systems (GPRS) and CDMA carriers are rolling out 1XRTT. Their limitation is that, like a regular dial-up phone line, the 2.5G data rate tops out at about 50 kb/s.

The first added value of 2.5G, however, is that it combines voice and data on one small device and, like a cable modem, data is "always-on." The second added value is that 2.5G phones will work pretty much anywhere in the world.

Just as cable modems are giving individuals their first glimpse of broadband, 2.5G will give users their first taste of the power and convenience of data portability. 2.5G wireless will give users an understanding of how data networking applications can move across a number of communications devices, all of which are personally configured to them.

The service providers in the sector also backed into the personal information technology opportunity. Wireless carriers, to give them credit, understand the business significance of consumer access to data better than the cable companies. But as the cable companies had with entertainment services, the wireless companies, before they had an inkling of an idea about data networking, possessed the added value of mobility in their business. Their market power will grow from this platform.

Finally, there's Wi-Fi, the newest and potentially most disruptive local loop access alternative of all. It's both broadband and portable. Yet it can also be used in fixed applications, cutting the cost of cable installation. It's a cable modem that travels. It does for your PC what cellular does for your phone. The only thing it can't do well yet is voice. Just wait.

Odd Man Out in the Local Loop

Cable Modems

Broadband? Y

Voice? Y (with VoIP software)

Data? Y

Portable? N

Monthly cost: \$40-\$60

2.5G Wireless

Broadband? N

Voice? Y

Data? Y

Portable? Y

Monthly cost: \$30-\$100

Wi-Fi

Broadband? Y

Voice? N*

Data? Y

Portable? Y

Monthly cost: \$0 - \$50

****While Wi-Fi's applications right now are data-focused, there's nothing that prevents it from handling VoIP***

Wireline Dial Tone

Broadband? N

Voice? Y

Data? N

Portable? N

Monthly cost: \$20-\$100

In summary, there's a group of new alternative access technologies that are cost-competitive with dial tone. Each features at least three of the four vital components needed for robust personal information technology services: namely broadband, voice, data and portability.

The services made possible by these access technologies compete today for revenues that once would have gone to telephone companies. The only answer the telephone company has to any of these technologies is digital subscriber line (DSL). While roughly equivalent in functionality to a cable modem, DSL lacks one critical element - it has no added value. Cable companies can hang broadband on their pay TV business. Wireless carriers can leverage portability and mobility.

All DSL stands to do for the phone companies is cannibalize existing line revenue, the one revenue stream that keeps them in the black. That's the DSL quandary. It gives telcos a broadband IP product to sell to the home. But that in turn lets the user adopt VoIP alternatives. For \$40 a month, DSL offers a great value for a high-speed connection, but there's nothing else in it for the telco. Unlike cable and wireless companies, they have no added value on which to hang data connectivity.

With dial tone, the network and the service were one and the same. Now that the public network is a data network, with software, intelligence and content scattered across it; now that it is much more of a vehicle for diverse and specialized transactions, commerce and information exchange, all of which use connectionless formats that subvert the traditional circuit-switched, minutes-of-use billing model, a service provider just can't run a physical line to the home and expect to make money. There needs to be something else to anchor the customer.

This transition - from provision of physical lines to support of virtual connectivity - has the industry spooked. Under the current structure, the biggest players, the incumbent local exchange companies, cannot go forward or back. While it can be said that their complacency and lack of vision put them where they are, they still connect the most users and control the largest procurement budgets. As long as they remain stalemated, so will the industry.

IV. The case for consolidation

Ever since AT&T was broken into separate local and long-distance companies 18 years ago, it has been accepted as policy gospel that any merger of a local and long distance carrier is wrong. Over time it's become de facto that the two groups must operate under different rules and that before for one company to move into another's turf, a series of intricate requirements would need to be met.

The Baby Bells and AT&T, which together yield the largest market and political clout in the industry, were more than happy with this arrangement. After all, it prevented them from having to compete with each other, a prospect neither side relished. Both groups still spend heavily in Washington and in state capitals, each trying to protect itself. Whenever there's a proposal to loosen some restrictions, or allow a partnership, one side or the other raises a hue and cry, claiming that its business would be gutted. So without a lot of political and legal maneuvering, local companies can't offer long distance service and long distance companies can't offer local. The regulatory division has since extended. Cable companies are regulated one way, wireless companies another. Regulators insist on treating them all differently, although as a group, they all compete for the same pile of customer dollars.

The most recent bill in Congress, the Broadband Regulatory Parity Act, introduced in April by Sen. John Breaux (D-La.) and Don Nickles (R-Okla.), is designed to keep this segregated structure in place for as long as possible.

But look around! In both the consumer and business markets, all this structure has created is a surfeit of service providers falling over themselves to collect a few pennies per minute or per megabit for undifferentiated bandwidth connections. And the margins are so low and the churn rate so high that many are going bankrupt.

The sheer breadth of the accounting scandal at WorldCom tends to overshadow the fact that in 2000 and 2001, the carrier already was steeped in losses. Yet as this was happening, regulators in the U.S. and Europe judged this company so powerful that they refused to let it acquire Sprint, fearing that such a merger would give WorldCom control of worldwide Internet communications. There are still questions as to whether the company will be able to avoid bankruptcy.

Meanwhile, AT&T, a name synonymous with telephone service, is reached the last phase of a gradual deconstruction that goes back to 1984, a year when AT&T employed 1 million people.

In November, AT&T's cable business, AT&T Broadband, merged into Comcast. AT&T's wireless business already has been spun off. The price of the remaining outstanding AT&T shares will need to be boosted by a one-for-five reverse stock split.

Qwest Communications International, embroiled in an accounting scandal of its own, is struggling to avoid becoming the first Baby Bell to go under, a development unthinkable a year ago.

Despite these facts to the contrary, everyone from consumer groups, Congress, the FCC, the courts, the state commissions, right up to corporate management of these companies themselves, see the incumbent ILECs and the long distance companies as giant, formidable players that will dominate the market if not kept in their respective corners. That is not true anymore. WorldCom's days are numbered. AT&T and Sprint are struggling badly. As for the Baby Bells, just look at their numbers and guidance. In April, Verizon, the largest Baby Bell, reported a \$501 million loss for the first quarter. At the same time, it joined BellSouth in warning investors it wouldn't make earnings targets this year. Verizon, BellSouth and SBC said they saw decreases of 2.7, 1.8 and 3.6 percent, respectively, in access lines in 2001.

As large as they are, and as apparently formidable as they seem, Verizon, SBC, AT&T, WorldCom, Qwest, Global Crossing, just to name six, are trying to succeed by selling telecommunications services using models that don't provide the market what it truly needs from service providers. The corporate management of these companies is willfully blind. When the revenue numbers demonstrated their strategic errors, rather than question their business plans, some of this group apparently just fudged the numbers.

This market needs healthy consolidation. Service providers can continue to back the status quo and wither away within their own niches, or they can engage the outdated regulatory mindset and push for greater integration of local and long distance operations, which the economies of IP networking require for viability. Service providers have the choice of assuring that through contraction, some of them will survive and thrive. By maintaining their current course, they will be supplanted by wireless and cable companies completely. The long distance companies are collapsing today. It's only a matter of time before a Baby Bell reports it is on the brink of ruin. Qwest, for one, is awfully close.

If the largest companies are going to remain in denial, it falls to regulators and consumer groups to honestly examine the technology and business trends and recognize how users will benefit from an environment where there are fewer service providers, but in which each one is allowed to package virtual networks together for end-to-end delivery of personal information technology. For users, especially the millions today who are dependent on local exchange companies, this transition will be a lot less painful if the wireline, long distance, wireless and cable companies, in spite of the howls of protest for sector protection, are allowed to let competition rip.

V. The New Business Models

If consolidation is required for the benefits of personal information technology to reach all levels of the market, how might this consolidation play out? If the market is demanding a new type of telecommunications service structure, what kind of vendor-service provider-customer chain should evolve?

The answer starts with looking at the nature of IP. The principal impact that IP has on the traditional service provider business model is that it eliminates the need for a dedicated circuit to be set up when two parties need to reach each other.

Two direct business consequences result. The first is that it ends the notion of billing on a measured time basis. Since no circuit is created, it becomes difficult to assign - and bill for - facilities usage. The second consequence is that because there's no circuit involved, the packets use any number of different networks to reach their objective. This is what's meant by a virtual connection. Because they use virtual connections, unlike circuit-switched telephone service, IP separates service from specific physical network facilities.

IP further intensifies these business consequences because it's designed to connect machines. Now that data traffic exceeds voice, this will forever be the predominant role of the public network. Practically speaking, when we think about personal information technology services in a broadband future, many of these services really depend on machine-to-machine connectivity. A voice command to buy a movie ticket must be received by one machine and sent to another for translation. Then more messages must be exchanged among other machines that contain data about movie times, theater locations and the buyer's ability to pay for the ticket.

In the past two years, new protocols, such as the Session Initiation Protocol (SIP), Universal Description, Discovery and Integration (UDDI), Simple Object Access Protocol (SOAP), have been published and incorporated into the Internet infrastructure. All of them add functionality and intelligence to the personal information technology capabilities inherent in IP networks so examples like the one above can become real.

From this perspective, telecommunications service is no longer about who can provide broadband access, but about who can best deliver the benefits of all this network power and all these unseen network transactions in the easiest, least expensive and most user-friendly way.

Given this goal, two telecom business models are developing. One is the integrated services provider, who packages personal information technology for end-users. The other is the network facilities operator, who will own, lease and operate backbone networks that span oceans and continents down to metropolitan areas. These operators will compete to provide cheap, but quality bandwidth capacity to integrated service providers.

For the integrated services provider, network usage will be an overhead cost that must be kept as low as possible. The integrated services provider's added value is the quality and diversity of the services it offers, and the ease with which they can be accessed from anywhere at any time. This type of provider needs total freedom to pick and choose the network or networks that will support his customer base.

On the other hand, the network operator's business goal is to carry as much traffic as possible on the facilities it owns or leases. It needs to attract integrated service providers as customers with the promise of quality assurance, fast connections, seamless network-to-network compatibility and instant provision of extra bandwidth when needed.

But in an IP environment, it's impossible to do both. As a matter of operations, the integrated service provider business depends on negotiating the best quality bandwidth for the least cost, sometimes from minute-to-minute. The network operator's business depends on loading maximum traffic on its own facilities, and letting as little as possible spill over to competitors.

The ailing Global Crossing is the best example of a company that tried to have it both ways. As a backbone operator, Global Crossing wanted to sell network capacity to other carriers. Yet it also aspired to be an end-to-end service provider for large enterprises. To be successful, Global Crossing's end-user business had to compete with other carriers. But for Global Crossing's backbone business to be successful, it needed those same carriers as customers. Of course, no carrier wanted to rely on a competitor for mission-critical service. And likewise, by locking customers into its own network, Global Crossing couldn't offer them flexibility or redundancy that other service providers could. The company got caught in a business contradiction.

Global Crossing's problems show how the shift from the physical to virtual networking has disrupted the high end of the telecommunications and information technology market. As this disruption drifts down to smaller businesses and consumers, local service providers will face the same contradictions. It is time they decided on the model for which they are best suited.

Integrated service providers will build personal information technology services around broadband and portability. Their hardware infrastructure will consist of off-the-shelf hardware such as gigabit routers and large servers. Their most important, proprietary assets will be applications servers and the software that supports them, as well as their intellectual capital in terms of working with IP.

Integrated service providers will layer their services on top of broadband networks built by the network operators.

Because it's facilities-focused, the network operator model would be more recognizable to today's wireline carriers. These companies would manage local and long distance networks, selling capacity to integrated service providers. The temptation is to view this as a wholesale/retail analogy, but it's not. The integrated service provider isn't reselling bandwidth, it's using bandwidth to deliver information technology services that have a separate value in and of themselves. The relationship is more analogous to the way FedEx works with Amazon.com. Amazon doesn't run a delivery service that uses FedEx trucks. Amazon.com sells books, CDs and other products. FedEx delivers them. They are two different businesses.

Wireless business as a template

Wireless service providers, despite their debt problems, are best positioned among current service providers to become integrated service providers of personal information technology. True, they own and maintain network facilities, but those provide the radio connections with handsets and therefore are directly tied to the added values of mobility and portability.

With 2.5G systems, once past the base station controller, the wireless infrastructure begins to rely on IP routers and applications servers. Network capacity is purchased from other backbone carriers.

Under the proposed architectures for 3G, which yet may change due to the influence of Wi-Fi, wireless service providers would be the closest to the envisioned integrated service provider. Their value chain would depend as much on providers of software, data applications, content and portals as much as it does on radio and handsets.

The wireless business is also a consolidated business. Out of a market that ten years ago had at least two providers in every country (and in the U.S., two providers in every city) a handful of dominant players has emerged. Economies of scale demanded that. It's cheaper and more efficient for one company to manage 50 operations that it is for 50 companies to manage one operation each. Vodafone, Orange and Deutsche Telekom's T-Mobile are the major world players. Yet competition is still intense and customers and minutes of use continue to increase. No one worries that one company will "control" wireless.

The wireless sector has always understood the added value of mobility. Although they face the same challenges as to their future role as any other service provider right now, they are approaching data as another value-add. This psychology alone puts them in the lead.

Network operators will compete by being able to speedily configure bandwidth and provide guaranteed quality of service levels. They will take advantage of all the new core network technology that continues to become available. In cities and rural areas alike, dense wave division multiplexing (DWDM), gigabit Ethernet and DSL will be needed to support delivery of personal information technology services. The local exchange companies, and whoever will remain among the long distance companies and competitive local exchange companies, have great potential if they can see past the increasingly meaningless battle for control of consumers in the local loop.

But there is a caveat. In order for these two models to develop, the network operator market must be allowed to consolidate across local and long distance sectors.

The very nature of the integrated network services provider's business is to offer service that is accessible any time and anywhere. For a viable class of integrated service providers to emerge, they must be able to procure backend bandwidth from a provider that is not geographically limited. To run cost-efficient operations, and pass those efficiencies down the value chain, network operators must be able to integrate local, long distance and international networks into large-scale, low-overhead operations.

Post-modern telecom: A profile of two value chains.

Integrated service providers (the virtual)

Will compete on: Providing high-quality personal information technology services and management

Customers: Tiered, from large enterprises to individuals; some providers will target all layers, some will target specific segments.

Will live or die by: Customer service; ability to seamlessly integrate services across platforms; ability to keep current with IP technology; ability to anticipate and react to customer usage trends.

Characteristics:

Few large network assets

Large software and network intelligence assets

Human capital

International scope/regional character

Vendors:

Sun, Microsoft, HP, IBM, Convergys, Logica, plus diverse providers of applications servers, development platforms, database management and OSS integration.

Best Bets for success if they play their cards right: Vodafone, Orange, NTT DoCoMo, Sprint, AT&T, EDS, IDT

Network operators (physical)

Will compete on: Switching and routing aggregate data traffic around the world.

Customers: Integrated service providers, other network operators

Will live or die by: Strength of network operations; technology dexterity; ability to balance economies of scale without compromising quality of service.

Characteristics:

High capital investment

Highly automated

Margin intensive

Globally integrated

Vendors: Cisco, Lucent Technologies, Nortel Networks, Alcatel, Ciena, Juniper Networks (or the survivors from this group).

Best Bets for success if they play their cards right: Cable & Wireless, UUNet (Post-WorldCom), SBC Communications, Verizon Communications, Sonera, Singapore Telecom

From a technological standpoint, the elements needed to create this binary industry model are coming into place. Only policies driven by a group of companies that have let fear get in the way of business vision are holding it back.

The world market needs a global public network that is universally accessible and which is suited to carry and process large amounts of data among a diversity of computers, servers and terminal devices. The network today can't do the job. You don't need a technology degree to understand this: all you have to do is read the business news.

If the technology is given the space to evolve, there is certain to be more contraction and consolidation. Time-honored companies will disappear and the role of others will be diminished. At the same time, for users, all the benefits promised by the information revolution will become available that much faster and with far less visible upheaval.

The measure of any new policy or business decision should be how it increases the reach of integrated data services and personal information technology to users everywhere. Companies that are bold enough to craft a new role for themselves must be allowed to act. But first, companies must be bold enough to craft that role.

VI. Action Items to ponder on sleepless nights

You know this industry is in crisis, and you know whatever your company's role, it's likely being affected in some way. The shift in service models is inevitable. The market will force it one way or another. The question is whether your company will help shape and direct those forces or be swept away by them. Whether you are a wireline or wireless service provider, a cable company or ISP or vendor, here are some ways to confront the changes that are confounding the business.

Change begins at home. Evaluate the two new business models. Where does your company fit best? Can your company survive as a single entity, or should it split? If you had the means to buy any company you wanted, which would it be and why? How would you sell the acquisition to your board and to regulators? Propose radical solutions. Put others on the defensive for a change. Make them tell you why your move wouldn't be in the company interest or the public interest. Don't accept speculation. Demand specifics and evidence to back up their arguments

If you're a vendor, in which group do your customers fit? Craft the right message to the right group. Identify emerging companies who can become future customers. Review your product suite to make sure it fits the changing market. Quickly retire products that won't.

Recognize there's nothing to gain by maintaining the stalemate in the local loop. Telephone companies don't have the networks in place to deliver personal information technology. Neither do CLECs or long distance companies. Stop fighting over a diminishing voice market and begin to think where your company can take an active role in the evolution to IP. Cable companies, wireless companies and nascent Wi-Fi hot spot providers have basic answers to IP access and are bypassing your network. That's the threat that needs to be addressed.

Find your added value. By itself, broadband connectivity cannot support a service provider business. It must be packaged around something unique enough to attract and keep customers. Cable companies have TV and wireless companies have mobility. For landline telephone companies, this is the missing element that must be filled if they are to have a future in the consumer business.

Take more risks. Remember that actions speak loudest. Experiment with new approaches. I live for the day a Bell company decides just to open its network to all comers and lets them sweat the churn and customer retention issues, while it collects consolidated usage fees from all of them. Wireless companies should seek partnerships with Wi-Fi companies for hot spots.

Educate customers, shareowners and regulators on the need for a new approach. For Bell companies, this is the toughest task. Because of past bad behavior, users and regulators don't trust the ILECs. Your best bet is to start quietly and humbly. Admit mistakes. Apologize for legal violations. Then start presenting your case. Remember, your aim is to show how your plan would lead to wider availability of personal information technology, not merely protect your turf.

Then target your most vociferous opponents, the blowhards on every state commission or in every state legislature who make political hay at your expense. You know, the ones who proclaim they are protecting the "little guy" from the big bad telco. Take them to lunch. Ask them how the "little guy" would be served if your company went bankrupt. Show them the same earnings and profit forecasts you're sharing with Wall Street. Bring in third parties who can help you state your case. Then offer a graceful, magnanimous way for your legislative opponents to lend support.

Finally, make time each day to come up with at least one new way your company can profit from the network and service transition to IP and personal information technology.

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TitchOnline.com provides telecommunications and IT professionals with the information they need to make the best strategic decisions to capitalize on the concept of personal information technology. Subscribers rely on TitchOnline.com to deliver critical analysis, research and perspective on the trends, technologies, companies and policies that affect service access and management, user frustration, and ultimately the ability to profit from large-scale integrated broadband networks.

TitchOnline.com's flagship product, *The Personal Information Technology Report*, offers unique reporting and analysis that correlates the technology and business developments in corporate information technology, Web software and infrastructure, and public network access and transport platforms to recognize and identify new value chains in the telecommunications industry.

About Steven Titch

With more than twenty years of experience, Steven Titch, founder of Expert Editorial Inc. and Editor-in-Chief of TitchOnline.com, is recognized internationally as one of today's top telecommunications journalists and analysts.

Career highlights include: Editorial Director, Telephony; founding editor, Global Telephony; founding editor, Cellular Business; executive editor-special projects, Tele.com/Data Communications.

Titch is also a member of Forum Program Committee for the International Telecommunication Union's Asia Telecom 2002 conference and exposition.

In addition to producing his own Web site covering personal information technology, Titch is available for evangelistic consulting, technology analysis and content development for technology marketing programs.

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