The COOK Report on Internet Protocol
Technology, Economics, and Policy
© Cook Network Consultants

The Open Computing Alliance Focuses on ICT Convergence Policy Development

Founder Tim Cowen Explains Need for Cross Silo Approach to Issues of Government Procurement, Cloud Computing, and Supply Chains

Volume XVIII, No. 10
January 2010
ISSN 1071 - 6327

Editor's Introduction: The Open Computing Alliance (OCA) was founded in June 2009 by Tim Cowen, former General Counsel and Commercial Director at BT Global Services. The Alliance's charter is to build a community of interested parties to address issues of mutual concern across the information and communications technologies (ICT) sector, especially addressing the issues raised by the shift to Cloud Computing. The OCA is currently focused on identifying issues and solutions related to procurement, competition and interoperability. For more information see http://www.opencomputingalliance.org/
Also for an integrated picture of the issues addressed in this interview see the Executive summary on page 37 below. I interviewed Tim on October 12, 2009.

COOK Report: How did you come to your current degree of understanding that led you to undertake your Open Systems Alliance agenda?

Cowen: A number of things happened in parallel. If you go back five or six years, I was a member of an in-house general counsel's group known as the IT lawyers forum. It had about twenty members then and probably 40 to 50 now. It included people like Carl Belding who at that time was the lead attorney at IBM Global Services, Chris Parker at Microsoft, Gawie Nienaber from CSC, Isabelle Roux-Chenus from Cap Gemini, Nick Holland originally from Lucent and now at Field Fisher Waterhouse and Richard Given from Cisco etc. **What you had is a serious group of people from computer and systems integration companies.** We got together to compare and discuss the legal issues affecting the industry. Eventually some of our group said "why don't we meet informally every six months or so?" What came out of this was the identification of a number of issues of common concern.

One early issue was the way in which governments in the EU purchase IT services something that I think would be called "public tendering" in the States. It is what we would called "public procurement" in the EU.

A Framework for Government Purchases

These public procurement rules amount to a separate

On the Inside

Trans Sector Policy Coordination

Contents p. 41

Please read Explanatory Note page 42

body of law designed to ensure that private companies can compete with each other on a level playing field when the government purchases goods and services. In the ICT sector playing by these rules is a significant problem because, for example, government is not good at defining its requirements or dealing with tenders in the short timeframe needed for technology life-cycles. Government also has the challenge of getting a good deal and often is in a position where it is such a powerful buyer that it can impose unreasonable terms.

The idea of the procurement system is to achieve as fair a balance as possible between risk and reward in the contract between government and its supplier. However, the tendency of government is to impose greater risk on the supplier than would occur in competitive markets. In a commercial setting the purchaser would seek to control the risks on the contract that would affect its business. For example, if you are dealing with a bank in a contract you ask the bank to agree that it would allow people representing the supplier into its premises, you will expect that the bank would say of course they would. But they would also say that the bank would identify and warrant that the premises that they want supplies to attend would indeed be the premises of the bank. Government, by contrast, could decide not to agree that government premises are in fact government premises. This happens because government wants the ability to blame the supplier; and ends up doing silly things to avoid responsibility. Such behavior in a commercial setting is ridiculous. But it becomes understandable when you see that the IT departments of many government agencies are treated badly. There are many examples of government making decisions which look sensible but have unforeseen consequences.

COOK Report: Why is this the case?

Cowen: I think it's due in part to a lack of appreciation within the government of the fundamental nature of IT. You're not just buying paper clips. With the nature of IT now you are buying something that affects your most important business processes. And I think there are many in government who have not yet appreciated the strategic importance of this.

There is another thing that occurs within government and that relates to what has been called "The fear of the Select Committee". Select Committee enquiries are a sort of Parliamentary oversight review, something like a US congressional oversight committee I suppose. When there is such an investigation, you can imagine that it relates to something that has gone wrong. In such situations people who were involved in the purchasing are civil servants who inevitably stand accused for something having gone wrong on their watch. The typical behavior that you can imagine is to explain that it's not their fault, and second that it is not the responsibility of the government to do XYZ. If it can be shown that the contract placed the responsibility for XYZ on the supplier you can appreciate that a reviewer tends to exonerate the civil servants from any blame. This is a mistake since contracts never work if each of the parties does not take some responsibility. Understanding this requires a deeper enquiry and deeper understanding of the sorts of risks that should be taken by either side.

Unbalanced contracts that don't tailor risk and responsibility to the party best able to deal with it happen all too frequently and, as a result, you can end up a "cycle of fear" that undermines the confidence that is needed for transactions to be delivered effectively. **Through the IT lawyers forum we looked at a number of government deals (with the help of the Rand organization) and developed a review of**

typical things that went wrong together with a set of recommendations for change.

As a separate but parallel track, on the commercial contracts side, one of the things that I also got involved in about five years ago was something called the IACCM. (The International Association of Commercial and Contract Management). I am its now its Chairman. It started about 10-12 years ago and it now has about ten thousand members representing about 1600 or 1700 different companies including slightly more than half the Fortune 500. It has lots of individual members because it focuses on being a training and knowledge management system. It is a not-for-profit organization designed to provide its members with best practices on commercial contracting. The idea is that the expertise of what you need to know goes beyond the law, finance or economics and the training courses covering a broad range of things needed to be a commercial professional. It provides training on a broad range of knowledge and capabilities. Tim Cummings (the CEO), who left IBM some 10 or 12 years ago set it up.

Talking about the parallel tracks that led me to set up OCA, IACCM was another such track dealing with training for individuals and does not go any further than that. Similarly the IT Lawyers Forum is a group of IT lawyers that emerged from common concerns over training and development, and then started looking at government procurement. The obvious focus was talking to government about the places where government practice needed to change. From my personal perspective this took place over quite a time period while I was General Counsel in BT's international business, dealing with big business contracts, often on a multinational basis. I was also responsible for public affairs and regulation and used to dealing with government to get issues resolved.

Liberalization of Telecoms Markets is in Interest of Both Service Providers and Device Makers

What wasn't in front of us in these contracts groups were the issues impacting the ICT sector in the antitrust and regulatory environment. This was something with which I was familiar due to my background as an anti trust and regulatory lawyer and my experience in telecoms liberalization. Liberalization of telecoms markets was pushed by IT and computer companies in the 1980s. This has perhaps not been as widely recognized as it might be. In private practice I started out dealing with IT issues for companies like Nortel, EDS and IBM. I worked for them in pressing for market liberalization and when I joined BT my job involved pressing for liberalization of telecom markets. (I have now been dealing with liberalization, anti trust and regulation for over 20 years).

We were talking about deregulation of telecoms markets in the mid-to-late 1980s in order to increase competition in the supply of the underlying telecommunications infrastructure. Doing so is usually in the public interest but also in the interest of the major IT and service provider companies because of course it would create a more competitive supplier base for them. It was also thought that it would reduce prices and increase innovation in both telecommunications and IT.

I worked in private practice for Baker McKenzie from 1985 and then a few years later with one of the leading UK firms: Lovell White Durrant. I joined BT in 1991. At that point I put into practice all the lobbying in the direction of deregulation that I had been working on for the preceding six years. I worked for IT companies with the International Chamber of

Commerce as well at that time. If you look at my history you will find that from the mid 80s through working for BT I've been pressing for the liberalization of markets. I was eventually responsible for BT's global regulatory and public affairs agenda and have been at the cutting edge of liberalizing telecoms markets, first of all, in Europe and latterly in the Asia-Pacific region, for most of my working life.

From a government perspective the original motivation behind liberalization started with the Thatcher government and some political dogma that has given way to an understanding that liberalization and regulation go hand in hand and that the creation of a competitive environment is good for customers. Liberalization brought about by deregulation in the 1984-1991 period enabled IT companies to deploy sophisticated computing technology in the telecoms markets. But in this environment minimal regulatory checks and balances were vital to make sure a few companies don't develop market power that destroys competition. ***Many of us were beginning to understand that the monopolistic telcos were getting in the way of the innovation that was available from the computer industry.***

This basic issue of careful balancing between regulation and deregulation was certainly related to the computer inquiries that were held by the FCC in the US. This really remains relevant today because, with the advance of technology, it is practically impossible to draw a line from where telecommunication leaves off and computing begins or vice versa. Even in the 1980s the lines that had been drawn between them were breaking down.

Now, you asked where my present ideas came from and what I have been trying to explain it is that they originated from all of these issues with which I have been working, beginning more than 20 years ago.

Then about a year ago I was looking at the emerging issues of what I believe will be coming out of the next wave of technological change – change that will drive the industry beyond the issues of telecommunications regulation that were going through the European Parliament. The issues that we have been dealing with in Europe for the past 10 years have largely been these issues of liberalization and the regulation. They have included issues like access to domestic infrastructure and failure to implement European wide laws at the national level. My hope is that the latest legislation will solve those issues.

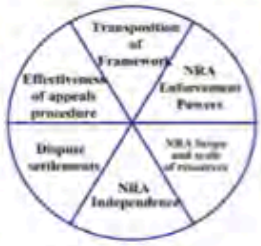
Strategic Importance of Regulatory Risk Analysis and How to Identify Risk

The strategist asks both who benefits from all this and what should come next? My former CEO, Andy Green, was BT's head of strategy before becoming CEO of BT's Global Services. We worked together on many aspects of corporate strategy including studies with people like ECTA (European Competitive Telecommunications Association). Some of our work with ECTA focused on the benefits that greater liberalization can be expected to yield for GDP. We also did comparative analysis of domestic national regulators and inquired into whether they are complying with European telecommunications legislation. That sort of regulatory risk analysis is derived from work that I was doing within BT seven to ten years ago to answer the question that my CEO asked about the comparative attractiveness of places to invest and comparative regulatory risk.

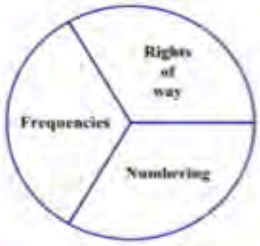
One of the products of this a traffic light slide that you can find on the ECTA website. [Editor: see also next page.] What this does is measure the regulatory activities

Report on the effectiveness of national regulatory frameworks 2008

	(1) Institutional Framework	(2) Entry Enablers	(3) Efficiency of NRA	(4) Application of regulation by NRA	(5) Economic Market Conditions
Austria					
Belgium					
Czech Republic					
Denmark					
Finland					
France					
Germany					
Greece					
Hungary					
Ireland					
Italy					
Netherlands					
Norway					
Poland					
Portugal					
Slovenia					
Spain					
Sweden					
Turkey					
UK					



(1) Institutional Framework



(2) Entry Enablers

(3) Efficiency of NRA

(4) Application of regulation by NRA

(5) Economic Market Conditions

Colours:

Weak

Neutral

Strong

against a set of criteria. For each of these activities you get a score. If your scores add up sufficiently well, you get a green light. If you get a bad score you get a red. http://www.ectaportal.com/en/REPORTS/Regulatory-Scorecards/Regulatory-Scorecard-Overview/ and http://www.ectaportal.com/en/REPORTS/Regulatory-Scorecards/Regulatory-Scorecard-2008/

Next is the question asked of me by my chief executive at BT. He said: if we are expanding internationally, can you explain to me where we bear the greatest regulatory risk for investment on our part? The **short answer was that the most unpredictable countries bear the greatest regulatory risk for investment.** But when you are trying to measure degrees of unpredictability, you have to get into degrees of subjectivity and the extent to which measured against some kind of yardstick you can actually anticipate a regulator's decision. From here you get into questions of due process and ultimately the rule of law.

I published an academic article on the Rule of Law last year. There was an extensive amount of work done over the last 10 years. We started off by formulating an opinion as to what we thought was the permissible level of discretion that could be taken at a national level over a number of different things. Market analysis is one. Speed of the process is another. For example, there are cases in which no decision taken in a given time frame will make the decision actually happen in practice. In effect you have the problem of "Justice delayed being Justice denied". Consequently there are a whole series of factors that need to be taken into account. What we also realized, partly from discussions with the European Commission was no one was going to benchmark or measure the different national regulators, one against the other.

What our chart has done is to provide a benchmark against which different regulators can be judged. What we concluded in the process of all this was that this was better done by a trade association and had greater impact than if done by a company. This became the ECTA scorecard. It is done independently and with the input of national regulators with their ability to complain cajole and argue about what their scores are**. I think that this has had a very powerful effect in encouraging national regulators to actually comply with their legal obligations. It is one thing to encourage them to comply with the law while it is another thing entirely for them to actually want to do so by process of peer pressure with the incentive of being seen by their fellow regulators as competing to live up to their obligations and commitments.**

You asked whether the scorecard approach could be used in the USA. I think it does have potential within the USA. In order to make it work you have to have a set of regulators that are reasonably comparable with their peers and have a common set of underlying rules against which you can judge them; I am not an expert on US law and it is for others to comment on the respective jurisdictions of state public utility commissions and the FCC and whether this sort of thing would work.

Back to your question about where the OCA came from. Because I'd been doing a lot of regulatory work, this was another background issue for me. But again the General Counsel of IT companies to whom I was talking were not really paying a lot of attention to this. This was something being dealt with within the telecoms sector at the level *beneath* that of IT systems integration. *When BT Global became a systems integrator I knew how important the underlying telecoms regulation was for effective delivery of IT systems. What*

was needed was to motivate the IT companies to come to this understanding as well.

I think that what started to dawn on me in the last 18 months to two years is that we have had a very, very clear convergence taking place between telecommunications and IT at a technical level. What was less well known were the issues facing the different parts of the value chain and, although commercial people understood the commercial contracts side, the risks from lack of regulation of access, and shoddy government contracting were less well appreciated across the Information, Communications and Technology sector as a whole. Indeed the OCA is one of the first bodies to expressly seek to appeal to players in all parts of the market. I was talking last year to a number of IT companies about the importance of the underlying telecom links in their ability to provision their business, and most of them did not think it was important. However the net neutrality discussion in the USA has begun to focus some in interest in what can happen to the telecommunications infrastructure on which these IT companies critically depend.

To bring things up to date: you know **that cloud computing is on the horizon, and you know that it is following in the footsteps of systems integration and outsourcing of IT networks and telecommunications.** What this also clearly tells you is that the pinch points in the value chain - that are going to affect the entire industry very critically are first of all the very sort of things that Google was complaining about in terms of net neutrality which was the same principle as **access to telecommunications infrastructure on non discriminatory terms** which has been at the core of the liberalization of telecoms markets and the basis for EU and other legislation such as various World Trade Organization agreements. [**Editor**: readers are invited to think in terms of last month's discussion with Erik Cecil of the "devices" (or IT equipment) in terms of their access to the "wire" or the telecoms networks – which access they need to deliver their full value to their users.]

When you look at the computer supply chain and get into government contracting, what you find is that there are a whole range of issues where both the telecoms industries and IT industries have been passing like ships in the night. But they both have similar issues.

For example: consider interoperability defined as an issue that relates to legacy systems and seen as the ability to access a legacy application or legacy IT system. This can be seen as non-discriminatory access to a telecommunications system. When the IT system and the telecommunications system are one and the same thing the convergence of regulation and anti trust has taken place alongside the convergence of the industry. Access obligations are imposed in many systems of law when a supplier has market power. Also there are the questions of technical interoperability and standards setting. Regardless of what part of the supply chain you are in, these are issues that come up all the time.

OCA Focus

If you look at OCA's goals, they are to bring together IT companies and telecoms companies to look at these issues not from the context of the historic structure of the industry which was separate industries of telecoms and IT; but to look across the entire supply chain of IT services, systems, equipment, networks, software and hardware and so on. OCA is looking at the issues raised and helping to making the entire system work better, from a customer, supplier and pubic policy perspective. We will also look at things from the public interest perspective.

We have already looked at the GDP benefits of wise management in this area.

COOK Report: So what you have just articulated is the strategic business opportunity and rationale for your Open Computing Alliance? Right? How about summarizing?

Cowen: It started with the IT and computer companies wanting deregulation. I spent a long time on that. But when you come back to these companies, you find out that they don't really understand what happened.

COOK Report: the political, economic, social??

Cowen: Oh they understand that but the problem is that IT and telecoms companies typically have a lot of *commercial lawyers* or commercial people who deal with transactions. Now I was basically a regulatory and anti trust attorney who then became a transactions lawyer and have done a lot of transactions. For example, think of an outsourcing contract where you have to deal with multiple locations. When you have to figure out how to price this, you must understand that a huge proportion of your cost will be spent on buying circuits. However, as an IT company what you do not know when you finish the day is whether you have bought well or paid too much to the telcos.

Therefore one of he things that you should care about if you are an IT company or any company in the ICT supply chain, is the potential pinch point or bottleneck that is telecommuncations and potential for discrimination in the terms of telecommunications service provision. This can be a big proportion of what you are buying and the cost represents a significant risk factor in your ability to provision services over time. You should want high quality, lowest price, and non-discriminatory terms. How do you do that if you are a commercial person in an IT company? Your skill set is typically more driven by a career in commercial contracts. I realized that my background gave me a unique insight that could be of value to many ICT companies.

What I have done in creating OCA is to bring together a group of IT companies who weren't really focusing on the full value chain. One aspect of the OCA's work is to ensure the **members get business benefit from understanding -- in principle and as a matter of competitive strategy -- that competitive markets adjacent to the ones they are focusing on are very important to their existing and future business**. Let's look at one example. Who complained abut the reconsolidation of the US telecom industry when SBC bought up all those parts of the regional bell operating companies and then added ATT to the lot? Or who complained about Verizon? You would think big IT companies would have said something since it affected their supply chain.

COOK Report: Primarily the EFF and various public interest groups?

Cowen: Yes and maybe in the US you have a more mobilized industry. *In the EU the big IT corporations are not well-coordinated or represented on common issues of common concern. I think here is a gap in being able to get through to people that this is a really important area*.

COOK Report: So you have all these companies staring out of their respective silos, but if you attempt to bridge them as you are doing, you get a new way of looking at reality?

Cowen: Yes. And then as you bridge those techno strategy silos, you have to think through the legal implications and figure whether you have a means for monitoring legal compliance.

COOK Report: Meaning regulatory obligations?

Cowen: Indeed. About a year ago, I was saying to the big IT companies: look, if you are going to talk about net neutrality, discrimination, and the whole supply chain, who are you going to deal with? I talked to Vint Cerf and other guys at Google and to people in the big telecoms players. And you know I think it is really stunning how Google has come to understand so much in such a short period of time. They have been able to do this because they are looking across the whole supply chain: the business of search is about speed in the underlying systems. Any pinch point in the underlying systems may mean a loss of speed and is critical for a search company to understand and do something about.

But if you look at many other companies, you will find that they haven't really focused on this stuff much. So I have started talking to them about how we would do that together. The fundamental problem was who would do it. I had been 18 years in BT and frankly I was looking for other things to do. I thought that well this was an interesting opportunity and I called around to a bunch of people and asked what would happen if I did this? They replied - sure – we'd support that.

So that is what happened. In a way it is serendipity but from another point of view it fits as well as a next step to go from dealing with these issues for one company to dealing with them for a number of companies.

Government Procurement – Instigating non Siloed Thinking

COOK Report: So the opportunity you see now which is the coordination of procurement policies within the level of national governments?

Cowen: I am not sure I would go that far that quickly. There are initiatives in the e-government space to secure interoperability between government departments throughout the EU *but the real challenge is getting non-siloed thinking going at national level.* There is thinking and work being done on service oriented architectures but again that is a next year issue. Today the basic issues of getting government departments to purchase sensibly need to be sorted out. I see this as an opportunity of making sure government purchases efficiently and effectively and ***what I mean by this is making sure that they don't over prescribe risk in contracts in a way that makes it more difficult for suppliers to deliver.***

We start with government IT first and foremost because it is the single biggest sector for IT spending in all of Europe. The next largest is probably financial services which is both a competitive customer market and a competitive supplier market.

One of the problems with Government purchasing is that government departments are so large they can often dictate their own terms. Consequently there is a need for suppliers to point out something which is in the public interest because government tends to believe that whatever it wants it can get and doesn't understand that sometimes what it is doing is actually not in its own interest or the public interest.

I guess the other issue is that there are national bodies representing these companies but not doing so from this perspective. For example there are large numbers of bodies which deal with national issues but here we are dealing with a multinational IT and computing environment. The move to Cloud computing will make this even more of a coordination challenge.

COOK Report: Would you give me an example?

Cowen: Well, the British Standards Institute produces British standards, the ITU produces global telecom standards and the USA tends to favor market-led standards or de facto standards and there is a kind of international battle as to what you can say you are signing up for. National employers federations and trade associations also tend to reflect old industries rather than the newer ICT companies. I look at what those bodies do and see for example that they don't represent member's interests far enough. Sometimes I think you need to go the "extra mile" beyond national issues into policy and go and talk to the European Commission and other international policy makers. And that is what I have experience in doing.

COOK Report: Does the biggest opportunity you see in the coordination of government procurement lie in the area of how they should think about cloud computing?

How Do You Go from a World You Know into One You Don't?

Cowen: My experience of dealing with public contracts and the public procurement regime in the EU in practice left me appalled. When we commissioned Rand to work on this area we found loads of cases across the EU. They were derived primarily from basic misunderstanding of what government is often seeking to achieve. The misunderstandings often came from the lack of basic contract scope definition, and from either intentional or unintentional failure to define outcomes. Such failures may come from a mixture of lack of knowledge and unwillingness to take risk. Furthermore, I could not help but notice that no-one was doing anything about it. There was a lot of hand wringing to be sure, but "fear of biting the hand that feeds you" was a common concern of all industry players and organized response required an organization.

The failure of government to focus isn't in its own interests and, if they followed their own rules, they would save money. We could have taken a series of cases but that would probably only have meant more entrenched positions on both sides. If you would ask whether there is a huge economic opportunity there, I would have to say I am not yet totally certain but that it certainly looks to be the case.

However, with the advent of Cloud Computing, the economic opportunity is massive. I have tried to assemble the estimates and the potential opportunity looks compelling. These estimates are now in OCA reports that have been submitted to the EU. It is a very interesting area in which to be working. It is broken and therefore needs fixing. I think government would hugely benefit from listening more to their suppliers.

I'm not exactly saying anything startlingly new in this area but I do get the impression that 'government as customer' has ignored what suppliers have been trying to tell them largely on the misplaced assumption that suppliers will tell them only what is in the interest of the supplier. Doing ICT contracts properly is of course partly in the supplier's interest but it is also surely in the interests of the customer. For example, the private sector has appreciated that shared and partnership type models are vital to get both the purchasing teams and the delivery teams of people in both customer and supplier organizations to align and work together to achieve common goals. Where the contracts are one-sided, that creates suspicion. Mistrust and delivery of common goals and effective working together are undermined. But government contracts are typically one-sided and lead to the cycle of mistrust.

Now unscrambling all this is really quite difficult. Going back to the discussion that we had earlier about the issue of trust -- you have to realize that government does operate slightly differently than the commercial area and therefore people in government care about different things. If they can impose risk on suppliers and if they can impose excuses into the equation so that it is never the fault of government when things go wrong, that is good for the individual. This is usually not the case in the commercial environment where it is much more important that you fix the process or the problem; the imperative is to fix the hardware or the software and fix precisely whatever it is that has gone wrong. You are trying to provide a service for which people will pay and if the technology cannot be made to work, your business will suffer.

COOK Report: Your speed of operation and your timeline is probably very different when you compare the private sector to the public.

Cowen: Yes but it's more than this. Government should take an approach to contracts more like the private sector; it may not be doing so because it mistakes risk shifting with "value add". I have heard advisors say that they have added value when they have been able to impose more risks on a supplier. This is clearly missing the point of contracting where the party best able to manage the risk should bear it. In fact risk often gets shifted to the wrong place and value is decreased.

It could also be that government is doing so because, with the indifference of the monopoly purchaser, it can simply impose its terms. There is a strong case for saying that government contract terms should be benchmarked against the private sector. Now here is the issue: going beyond what would be done in private sector contracting does not "add value" and it probably undermines trust and contributes to failure in delivery of big government ICT contracts. Any contract terms that are more restrictive than the private sector should be tested as a prima facie abuse, and disproportionate. Add in to the mix that many government departments don't want to define precisely what they do because they don't want to be held accountable for it and it is little wonder that history is littered with ICT contracts that have not worked.

My concerns started with procurement. More recently they have gone into the following kind of area. **Imagine that I am a purchaser and ask yourself how do I specify that I want cloud computing? I'd don't know what it is. I don't know how to define it.** I know what my current systems are. I can define the world in terms that relate to today's technology. But what I really need to be doing if I am going to get the supply base to respond is to say this is my demand. What have you got that will meet that demand? Come up with technology that meets it. Purchasing departments find this difficult and resort to the "Intel or equivalent" requirement which really is not a definition of demand.

***COOK Report*: Therefore, if you want to encourage the development of cloud computing, this is the most expeditious way to go about it. Helping your single largest customer namely government to define what it will be asking for.**

Cowen: Yes and you can actually find yourself in a very awkward position if you over-define the thing that you want. As a customer, if you say I want a mainframe and mainframe maintenance, you are only going to get that from a single supplier. That is not competitive tendering is it? And so if you define the thing that you want in terms of the things that currently

exist rather than the demand for processing that you already have, and particularly in terms of the applications and process improvement for the service you are actually providing yourself, you will end up with different answers.

COOK Report: Then tell me a bit more about the kind of organization you propose to put together to bring the cloud computing definition process into focus. How would you describe it?

Cowen: I would say that I am not really inventing anything new here what I am doing is figuring out new ways of communicating to people things that already exist. **The idea of the OCA is to be member-led and operate on a "forum" or "collaborative discussion group" basis.** I was instrumental in setting up the Competition Law forum at the British Institute of International and Comparative Law after working with different groups in Washington; the idea comes from that experience.

COOK Report: You are trying to communicate in a coordinated way across many diverse groups.

Cowen: Well yes. *I am sitting here certainly coordinating and facilitating and I can do this because of the broad and diverse experience and perspective I bring to the subject*.

COOK Report: Vivian Reding and Neelie Kroes have been saying interesting things in this area, especially the remark about cloud computing. Would you comment on that?

Cowen: The European Commission is looking now to define the terms of the EU agenda for the next 5 to 10 years. And one of the things that Neelie Kroes has said is that interoperability is critically important for the future. It was Viviane Reding who said "cloud computing was the medicine of choice for our credit squeezed economy".

Let me give you a point of view on both comments. Neelie Kroes' comment is the point of departure for all inquiries into telecommunications and computing for the past 50 years. **The access issue in telecom is about access to underlying infrastructure and is similar to access to the operating system of the computing industry**. As well as in the Microsoft case it was also the issue in the earlier IBM cases. I gather the DOJ is now looking at this again.

These are all "Access" issues and in that sense there's nothing new in them. **The basic question is what is the access issue for a third party and the remedy in the general sense is usually interoperability.** Access remedies require mandatory access to certain processes and components that are required to be openly supplied in the public interest. These are very well-known as a set of issues in antitrust law. There have been a set of well-known cases on this -- port facilities and access to energy distribution networks and telecommunications and that sort of thing. And furthermore these cases go back over a long period of time.

As Competition Commissioner, when Kroes says interoperability is central, she should say something like this and she would be right. Vivian Reding is right too in her comments about cloud computing. Essentially what has happened because of the ongoing digital miniaturization and the development of huge processing capability and hosting centers and running huge databases, companies like Google, like Amazon and like Microsoft with its Azure service will provide services on a pay-as-you-go basis. These already exist -- it is quite clear that for many people software as a service is going to be provided at much cheaper prices and probably on different terms from today's sales of systems and equipment.

As Nicholas Carr points out in his *Big Switch* – if you look at IT and communications today it is a bit like the way electricity was generated at the beginning of the 20th century. What you can see happening is a shift away from home user provision or locating your business close to where you could generate electricity, or self-supply energy via a waterwheel, to the purchasing of electricity from an electricity grid. The development of an electricity grid is in another sense is what telecommunications networks are as the transport layer for cloud applications. Cloud computing can be seen as a joint cost center for everyone to run their applications somewhere else than on their own premises. They can share the processing power that is available online. The cost reduction could be quite considerable not just in terms of computer resources because you use capacity more efficiently and also because other costs can be saved.

There are typically a number of factors for cost saving:

Labor. This can be reduced when a company decides to buy-in in services because of centralized systems and processes. Labor is typically an expense item on the balance sheet and a customer will often need to incur more direct expenses than when those costs can be shared among many customers. In an outsourcing deal the supplier looks at the deal from the perspective of the customer's total cost of ownership. If an outsource takes place some people may be transferred to a supplier. This isn't necessarily a total net cost reduction as suppliers need to be managed and people are needed to do that as well. That may mean more jobs in supplier management than in maintenance. If you have to run your own data center rather than buy services from someone who is an expert at running a data center you should also get the benefit of that suppliers' specialization and expertise.

Power may be the next cost saving. If a third party is providing you with a service rather than your running your own servers or server farms, you don't have to run all the power systems. Power is a significant part of the costs of running a data center.

Land and buildings. Likewise, you don't have to own and maintain the physical assets on premises or land on which the servers and server farms and computer technology rests.

Over all it is a natural evolution of specialization that has been taking place in markets for the past 300 years. But why now? Why has Viviane Reding said this? Because we have a credit crunch and people are looking even more carefully at costs and cash and at what they can get in terms of bang-for-their-buck. Cloud computing is a more cost effective way of doing things. But it has additional secondary indirect benefits from process reengineering and doing things in new ways. the ways in which the new technology may free people to be more productive are likely to be even more significant although difficult to quantify. For example, I saw a report yesterday that a new deployment of services in a wireless cloud had allowed people to save days of their time and allowed them to be more productive.

COOK Report: In other words, since you have the technology direction already unfolding, the best way to draw the attention of other people who might be slow to understand is to show them how -- especially in the current economic environment -- it can save them money?

Cowen: Yes. And if they apply it sensibly, it will improve their business process add competitive advantage and all sorts of other good things. For me it seems to be the obvious next step but then I have just spent the last 18 years working for a company that has been providing services at a distance, particularly

in data processing and provisioning hosted services and the like and which identified the opportunity in outsourcing IT systems and running them over its telecoms platforms.

At BT we have been doing precisely this although we didn't call it "cloud computing." We used to call it hosting and more recently IT outsourcing and services supply. I can see the benefits in the consolidation of databases and third party supply efficiency. And again this is also a big opportunity for some of the large data warehousing companies if that is what you call them.

Choices Relating to Technical Issues for the Cloud – Security and Protection

COOK Report: What kind of learning investment must be attained before people are generally on the same page in their understanding of how to talk about cloud computing? There will be different kinds of clouds won't there?

Cowen: In terms of issues the first that has grabbed considerable public attention has been the issue of security of data. There are two sides to this. One side of the argument is that computers are dangerous beasts. They can gobble up my data and I feel very insecure if I put anything into them. You are relying on something that gives you a feeling of loss of control.

COOK Report: But with disk storage so cheap and captivity growing faster than Moore's law, is there not a reason to make an argument that a provider could offer a service that would allow the customer to keep a copy of his data locally as well as in the cloud?

Cowen: Well exactly. Looking at arguments against this there is a first side that is deeply suspicious of computing. While the other side of the argument is to actually point out that many of the data losses that have occurred, especially the high profile ones have been because of loss of physical security – namely loss of memory sticks and disks and briefcases and handbags containing them.

One of the things that the cloud computing lobby says is that if you had better technology and systems, you wouldn't have to physically transport and thereby risk loosing the physical data medium. We had a discussion about this at ITU last week and there was a question about whether the cloud would make the current position better or worse.

To make your choices you really need to be open about how bad your current position is. That means being open about how bad current physical computer security and system security really are. One question asked at the ITU panel in Geneva last week was, is this the end of firewalls? And someone responded that firewalls are like Swiss cheese. You need to look at the fact that firewalls don't currently work all that well anyway. So don't assume that the existence of a firewall currently solves all your problems. Nevertheless, data security is a big thing and will remain so.

We must also deal with data protection; data protection laws are a quagmire of differing national laws and differential interpretations. That can undermine the opportunity that could come from cloud computing and specific customers may require data to be stored where they can see it or at least within a country or countries that are thought of as being 'safe'. This is a matter dealt with in contracts and customers who want to have their data stored in certain physical locations or certain in particular jurisdictions are not currently uncommon. Moving to the cloud requires customers to think about this again.

COOK Report: Data Protection is mostly a matter of pri-

vacy? With security it's a question of actual loss of the data?

Cowen: Yes. Data security means making sure that the data is safe and cannot be destroyed. Data retention laws also require that data is retained and produced for example when law enforcement wants to see it. Data protection refers to the requirements of law – mostly in favor of individuals so that they can get access to data held about them and to require the controller of their data not to expose personal data to those who should not see it. This embraces a whole set of issues that are well known. We need to look into them at OCA but have not yet had time to do so.

Interoperability and Access – Fitting Clouds Together

What is emerging as a central issue is this question of interoperability. In this area are questions of antitrust: one of which involves the ability to have access to legacy systems from organizations possessing market power. There was an interesting UK competition case over the summer into Capita/IBS. In this instance a company that provided unemployment benefits software tried to buy another company that also supplied benefits software and the UK Competition Commission found that the combination would have created an organization with market power in the provision of benefits software. This was in a narrow market for the supply of a computer application. The Commission forced the disposal of the benefits software business of the other company. This action effectively defined the market as being an application -- in this case the benefits software application.
http://www.reuters.com/article/pressRelease/idUS59590+31-Jul-2009+PRN20090731

Where a dominant market position is held, one of the obligations on a dominant supplier is to provide access on non-discriminatory terms. In such circumstances third parties could say that they want access to legacy applications. This may enable them to interoperate more easily with new services and enable multiple services to run across legacy platforms, on fair and reasonable and non-discriminatory terms. This is the same reasoning by which Microsoft has had access to its underlying operating system imposed on it. These actions are about opening up computing to third parties. Whether or not this is an antitrust question is dependent on whether or not you happen to have "market power."

You have this question when it comes to standardization as well. It arises in regard to the question of interface specifications and interoperability. I think this is going to be a major issue for the future. Only in relation to clouds the issue that is on the horizon is how clouds interoperate and how legacy systems allow applications to run across technology platforms. This is further complicated as there will likely be private clouds and public clouds and resulting issues regarding how those clouds fit together with each other.

Essentially the cloud is something that provides resources from a distant point under a service contract typically on a component-by-component basis rather that a price for the entire system.

COOK Report: And by component what is meant is how many servers do you want as opposed to the whole server farm?

Cowen: I think it is at a more detailed level than that. Things like transaction time, speed of processing, lapsed minute rates can be specified at that level of detail. It then becomes up to the supplier to figure out how it will deliver. Whether the supplier uses 100 servers or 1000 is irrelevant to the customer since he is not, so to speak, paying a unit price for the bottle but

instead a price only for the drink. He no longer has to buy equipment. He is merely buying a service on a pay-as-you-go basis.

COOK Report: If you were to summarize where things stand now, is it **a matter of getting purchasers and suppliers and vendors to understand not only process issues but also one of how they define what the standards, processes and opportunities are? Not to mention how they can all be put together.**

Cowen: Yes. Hugely.

COOK Report: Then is it an issue of timeline? What needs to happen over the next year or two or three? In some cases perhaps they are already happening. But the point you just raised is worth picking up on for a moment.

Cowen; There was a conversation I had with a man from Deloitte at Geneva last week that emphasized this. People tend to define things in terms of what they're used to. They could go to a supplier and say: "give me a service contract." But this is really outsourcing an existing service and is defined against the way things are currently done. Doing that would probably give you cost savings on a total cost of ownership approach. You might well get 10 or 15% out of that if the supplier is big enough because the supplier gets an economy of scale in some aspect whether it is buying more cheaply because of great quantities or making more efficient use of telecommunications by having its physical premises in areas that are less expensive.

Improving Business Processes

Typically a customer will start with "this is what I have and I'll pay for you to give it to me by the minute." That is one thing --and it may be a decent start. But if you are going to going to get the full benefits of cloud computing, you need to be a bit more brave and do two different things as well. The supplier has to use the capacity he has dedicated at a particular computer workstation and get that from a third party and use it on a shared basis with others so that it can get an increased cost reduction. To get there you may have to do some clever tricks in the area of security but there's no reason why this shouldn't happen and, when it does, things will become more efficient. Another thing a customer has to do before it even starts down this road is to look at what it is doing and say why am I doing it? That is business process reengineering.

Where people like Deloitte and McKinsey and Booz Allen come in is to say "yes if you take an already existing computerized process and throw it at a third party to execute for you, you get some benefit." However it should not stop here. What you really need to do is to look at the overall capability that cloud computing can provide and start again and ask yourself what it is you are doing and why are you doing it and why I have I got this process in the first place? The reason for asking is that this new technology might give you a new way of doing more efficiently that which you are trying to deliver.

COOK Report: In other words improving your business process?

Cowen: Absolutely and this is why people like Deloitte are very interested in this.

I think that one thing we need to get answers to is how you quantify the value and benefits you get them doing this? I think this is critically important because we are in credit crunch time and there are a lot of ideas out there that are allegedly designed to save you money. There is no doubt that this way of doing things will save money. How much, is a really big question. From our consulting and looking at all the different reports that are

out there, we came up with a number that is around 44 billion pounds over 10 years in UK government purchasing. To a government looking for cost savings, this is a big number. It could be much bigger than that, but I think we have been conservative in our estimates. I studied a number of reports and found one that didn't even include cloud computing in its estimation. It was produced in April 2009 by Martin Read the former CEO of Logica working on behalf of the United Kingdom Treasury. He concluded that you could make savings of about 20% by controlling some very basic things: proper governance and financial control mainly. Adding that onto what I have been talking about, would give you additional benefits as well. http://www.computerweekly.com/Articles/2008/07/03/231340/martin-read-seeks-government-it-savings.htm

One of the things that Martin Read pointed out was that if we knew what current expenditure was, we could give you a more accurate number. Rather shocking isn't it -- **the fact that there is no accurate known number for UK government ICT spending**. His report is footnoted and referred to in my paper. See *www.hm-treasury.gov.uk/d/oep_final_report_210409_pu728.pdf*

What Do We Need to Find Out?

The whole classification question is massive. There is value in a dialogue about what the size of the cloud is. If we can get some additional figures on what the perceived economic opportunity is, in other words the "Size of Cloud", it would be very useful. I would like to get a dialogue going on the subject. There is very little thinking about it much less debate on an end-to-end basis. This is the first issue.

The second issue is the question of what we think the impediments will be. Can we anticipate the future? And in doing this can we ask ourselves what are the roadblocks that will get in the way and what can we do get them out of the way? Part of those are the problems of security which we've talked about. Standardization and interoperability are also really big areas with which we are ill-equipped to deal. Standards bodies are fragmented often on national lines. They are not joined up with anti-trust authorities. Consequently, there has been a perennial need for anti-trust authorities to intervene in IT and telecommunications markets.

COOK Report: You need a really new approach to these standards issues?

Cowen: Well if you look at telecoms regulators you find that the very basic initial problem is that they are telecoms regulators. In many countries the telecoms regulatory authority doesn't spend much of its time looking at the IT industry or the end-to-end supply chain.

Courts and anti trust authorities also typically only look at issues on a snapshot basis. Because the process is "let me solve the problem when you have one to give me." The process in front of a regulator should be to anticipate the future. But my experience is that they tend to work on the process of consultations. *They tend to be looking at factual information based on past history -- in other words they try to drive forward while looking in the rearview mirror all the time.*

Therefore, getting a proper forward-looking view of potential scenarios for the future development of industry is going to be very important to understanding when intervention is needed. Industry has a common interest in having properly educated regulators and anti trust authorities. Authorities also need to anticipate the future before making a decision about when to intervene. I think that this is important because in these markets we

often have what is known as "competition for the market". So you can have someone who is just a speck on the horizon and before you know it today have come in and swamped the entire marketplace to the extent that they become the market. This requires extreme vigilance on the part of regulators and antitrust authorities are naturally and quite rightly skeptical about over intervention too early. It is also a problem because once it's happened is very difficult if not impossible to change things.

That is true of these markets. They are not slow to move. They are very fast moving but that means you can also get entrenched monopolies very quickly as well.

COOK Report: Also, if you try to change your position after something has already happened, the political fallout from that will kill you.

Cowen: It is very hard. I don't envy the regulators who have to do this. They are criticized for intervening too early. But you can never know whether you've intervened too early because you did not know whether a particular problem was going to arise. People will say that it was never going to arise and if you intervened and consequently the problem didn't appear, people will fight you on that score and say that it never would have come up and therefore your intervention was unnecessary. And if you intervene too late, you get into trouble for being too late. The regulators have to have the courage to know the difference.

One thing we look forward to doing at OCA is developing common cross industry views of potential market outlooks and educating the authorities about the issues in the market. OCA is an organization that seeks to engage with suppliers and understand customers' needs and put forward sensible views on how things can work better for all concerned.

At the most general level, the OCA exists to act as an advocate for these and other issues that its members want to put forward. The goals are sufficiently broad based to cover a wide range of issues that can be expected to arise from time to time. As a unifying principle the OCA can put forward arguments on behalf of its members without the fear of reprisal (from both government and other industry operators) that can suppress comment by those affected and can make the argument with a greater degree of freedom than its members.

Symposium Discussion October 18 - November 17 2009

Regulatory Status of Internet Access

Editor: This is a follow on discussion to treating internet access under title II as telecommunications service (See December 2009 ***COOK Report*** pages 1-29.)

October 25 **Chris Savage**: … The issue-du-jour is the regulatory status of Internet access. The conclusion I am tentatively coming to is that (a) the case for treating Internet access service as an unregulated information service is, in fact, pretty weak; but (b) if Internet access service were to be deemed regulated (for these purposes, let's say subject to Title II), it wouldn't actually matter very much.

As to (a), in an earlier post I outlined some hypothetical legal/policy logic that, if accepted, leads to the conclusion that Title II applies to Internet access. I have heard Erik and Fred argue that dreadful things would happen if that conclusion were to be reached, but I have not heard either them (or anyone else) explain why the logic is wrong. I would very much like to understand if it is, and invite/urge/beg those on this esteemed list to point out flaws. It goes basically like this:

1. Telecom service is offering to ship customer data where the customer wants it to go, unchanged, for money.
2. That's what happens when I send a request to get a copy of a web site sent to me, or place on order on Amazon, or send this email out to the email server for the list, etc.
3. Therefore, offering Internet access is a telecommunications service.

A few notes:

(x) Internet access is not providing "access to information" within the meaning of the definition of "information service." When I want information from the New York Times web site or the FCC, it is true that my Internet access provider in some sense gives me "access" to that information by sending my packets to the Times or the FCC, and theirs back to me; but in that sense Ma Bell offered "access to information" because Ma Bell let me make a phone call to a reference librarian. The information comes from third parties and is merely transferred by the provider in the middle.

(y) The notion that DNS look-up capability makes Internet access an "information service" (Powell used this in some order or other) is absurd. On that theory, calls made to any 800 number, or to any phone number that has been ported, are "information services." All DNS does is translate a destination address from one format (www.fcc.gov) to another (the relevant IP address). That's all that the 800 database or LNP database do. This is processing in aid of switching/routing.

(z) Under the law you are regulated as a carrier only to the extent that you are doing carrier things. So if a given company (say, Verizon) acts both as a provider of Internet access and as a provider of information via its own web site, only the former activity would be swept into the maw of the regulatorium.

As to (b), since nobody – not even clueless Washington DC bureaucratic regulators – wants to screw up the Internet, I think the notion that regulation would be applied

to prevent network operators from doing what they have to do to keep the packets running on time (spam blocking, traffic shaping, "network management," whatever) is also absurd. This is not to say that no regulatory mistakes would be made or that regulation would literally have no effect; just that the effect would not actually amount to much, at least not in the short run. The main effect that I can envision is that, to the extent someone had a plan to Do Something Evil™ – like block access to Vonage because it competes with your own phone service, or block access to Amazon unless Amazon splits its "take" from book sales with you – they won't do it. But the truth is that they would not be likely to do those things even if they were deemed unregulated, because that's just the kind of Evil Thing™ that would lead to serious regulation (via statutory change, if need be) were it to occur.

Can anyone tell me anything that is wrong with the above analysis? I am seriously interested in knowing if there are, indeed, any legal, logical, or policy gaps in my reasoning. I'm also interested in people's thoughts on whether ***in the long run*** things would likely play out differently under an "Internet access is regulated under Title II" scenario versus an "Internet access is an unregulated information service" scenario.

Paul Budde: Far too logical Chris, the rest of the world all agree with that, America is the odd one out, only your country has the issue of net neutrality (as different from network neutrality).

Atkinson: Chris, You are absolutely correct in your forecast. IMHO, the only way for the FCC to get out of the regulatory thicket created by classifying Internet access service as an "information service" is to reclassify it as a "telecommunications service." It is simply impossible to conceive that the government will NOT regulate the internet because, as proponents from all sides of the arguments stress, it is so important. If it can't be regulated as an "information service" the FCC won't have too much difficulty reclassifying internet access as a telecom service. What the FCC giveth (a classification), the FCC will taketh away (reclassification)." Ultimately, "if it looks like a duck, quacks like a duck and walks like a duck, it is a duck".

The only thing I'd add to your excellent and thoughtful exercise is that telecom service providers aren't necessarily "common carriers" (which as you point can be virtually unregulated as long a they are benign). They could also be "private carriers" which, by definition, price-discriminate because they do not "hold themselves out" to the public to carry traffic under a set price list but, instead, negotiate a separate deal for every transaction. This is probably "good news" and "bad news", depending on your point of view. My recollection is that the FCC has never regulated "private carriers" but it will find a way to do so if some company tried to use "private carriage" as a way to take a lot of capacity out of the "common carrier" bucket.

Goldstein: I'd rather we first created a clear vocabulary, so we could discuss -- among ourselves, and especially to the outside, like the FCC -- things without any confusion about what we're referring to.

Here's a stab at some terms.

Internet Service Provider (ISP): A category that includes all of the following three specific categories, and thus an entity that performs one or more of them.

1) Internet Access Service Provider (IaSP). A company that arranges IP transport from the end user to a point of aggregation. This can include "rent-a-modem" services, DSL opera-

tors, cable modem operators, and wireless providers.

2) Internet Vertical Service Provider (IvSP). A company that provides services such as IP routing/switching, web hosting, mail hosting, content filtering and caching, and other computer services that facilitate use of the Internet. An IvSP as such does not provide transport of any kind, and is fundamentally in the server-operation business.

3) Internet Backbone Service Provider (IbSP). A company that provides bulk interconnection to other network providers, or raw IP access to commercial users who need no vertical services. Typically called "Tier 1" and "Tier 2" providers, the latter typically being those who need to pay Tier 1s for transit to third-party IbSPs, and who typically call themselves "Tier 1" on their web sites.

Telecommunications: The carriage of unfiltered, unchanged, unmanaged payload (bits, frames, or, historically, kHz) between sites. This is what goes below Internet in the stack. [I'm trying to be consistent with the legal definition.]

Open Networks: Telecommunications service provided to any requesting information service provider, on a bit-neutral basis, to enable it to provide its service(s). [Examples include raw DSL, when it was tariffed, Special Access, and some Canadian cable networks.]

Network Neutrality: Regulation of ISPs (not telecommunications), any of the subcategories, on the basis of content, such that they cannot selectively provide access to services of their own choice.

Information Service: The broad category of network services, including ISPs, time-sharing computer operations, cloud computing, web hosting, etc., that make use of telecommunications in order to deliver a value-added service that is not put forth to the public as telecommunications.

And my personal contribution to definitions:

Internet: A voluntary agreement among network operators to exchange traffic for their mutual benefit. [This is protocol-agnostic and does not refer to only "The Internet" but any such network, and network operators can include any type of ISP.]

Broadband: An *adjective*.

Broadband transmission. (If a noun, El Broadband) The provision of telecommunications at high speed.

Broadband service. (If a noun, La Broadband) An information service provided via Broadband Transmission.

The distinction, then, is what the service is sold as, not protocol.

The IaSP role comes closest to telecommunications, and is where the controversy really is most critical. The lack of wholesale broadband transmission or IaSP services leads to the duopoly at the IvSP layer. One can argue that this really resembles common carriage and could be treated as such, and is treated as ISP rather than common carriage because it was originally done by the IvSP: When the early ISPs owned their own modems, they were acting as their own IaSPs, so IaSPs are seen as ISPs. That and there was no other good regulatory category for them. I am not unhappy with this, but the neutrality argument should be focused here, not on IvSPs.

An IvSP purchases services from an IaSP, or provisions them internally (and thus acts as an IaSP too). The IvSP role is what the Computer Decisions are most closely focused on, and regulating this is IMHO constitutionally and practically difficult. But this is where the proposed neutrality regulations are focused.

The IbSP function is still competitive and deals only at wholesale or B2B. I don't see too much argument about this.

Editor's note: See text box below where Chris Savage and Fred Goldstein get into a detailed back and forth on these definitions. Meanwhile:

[continued on page 25]

Fred Goldstein & Chris Savage Conversation on Internet Access

Savage: Some additional clarifying questions. This is helpful…

Goldstein: 1) Internet Access Service Provider (IaSP). A company that arranges IP transport from the end user to a point of aggregation. This can include "rent-a-modem" services, DSL operators, cable modem operators, and wireless providers.

Savage: Is any significant share of the retail market served by companies that perform only this function? I'm not saying they don't exist, but my impression is that no such firms are actually terribly relevant to retail, consumer-oriented Internet access. Am I wrong?

Goldstein: By definition they're wholesale. An IaSP sells to IvSPs, who are the retail providers. I should have been clearer about that. In 1996, when I was working on AOLnet, BBN was an IaSP, selling service to AOL, who was an IvSP.

Savage: OK, let me clarify my question. When I look at the retail ISP market today I see it dominated by the big ILEC and cable players: Verizon, AT&T, Time Warner, Comcast, etc. None of those guys use a wholesale entity to provide their connectivity to their end users. They use their own networks, either fiber/DSL (the phone guys) or HFC (the cable guys). I recognize that "back in the day" when dial-up mattered, these kinds of wholesale arrangements under which the physical connection to the end user was provided by someone other than the person providing "access to the Internet" in some meaningful sense may have existed and indeed may have been important. But unless I misunderstand things (which, of course, I may), this type of arrangement is dying a slow death and may already have dwindled to insignificance in the market.

Am I wrong about this?

Goldstein: 2) Internet Vertical Service Provider (IvSP). A company that provides services such as IP routing/switching, web hosting, mail hosting, content filtering and caching, and other computer services that facilitate use of the Internet. An IvSP as such does not provide transport of any kind, and is fundamentally in the server-operation business.

Savage: See comment above. Would you agree with me that the overwhelming majority of "Internet access" as commonly understood is performed by firms that combine functions 1 & 2? If not, help me out with an example or two.

Goldstein: This is the retail ISP category, so it has the mass-market customers. It also includes wholesale services like web hosting, CDNs, etc.

Savage: See my comment above. Today, it seems to me, this category is dominated by the ILECs and cable guys, who also have their own networks. Is that mistaken?

Goldstein: 3) Internet Backbone Service Provider (IbSP). A company that provides bulk interconnection to other network providers, or raw IP access to commercial users who need no vertical services. Typically called "Tier 1" and "Tier 2" providers, the latter typically being those who need to pay Tier 1s for transit to third-party IbSPs, and

who typically call themselves "Tier 1" on their web sites. <snip>

Goldstein: Open Networks: Telecommunications service provided to any requesting information service provider, on a bit-neutral basis, to enable it to provide its service(s). [Examples include raw DSL, when it was tariffed, Special Access, and some Canadian cable networks.]

Savage: I think that in common usage the term "Open Network" is much broader than telecommunications. And it is not binary; a network can be more or less open.

To say a network is "open" I think normally just means that the owner/operator of the network is not permitted to (or, at least, chooses not to) completely prevent third parties from using the network's capabilities. The less restrictions the owner/operator imposes, the more open the network. So, for example, cable networks are partially "open" in that they are obliged to: (a) carry over-the-air broadcast signals at the option of the over-the-air broadcaster (so-called "must carry"); (b) make network capacity available for public, educational, and government programming (so-called "PEG" channels); and (c) make channels available for use by third parties for a fee (so-called "leased access" channels). On the other hand, cable networks are not required to provide carriage or connectivity to third-party ISPs seeking nothing more than a high-bandwidth pipe to consumers (so-called "Open Access" arrangements).

Goldstein: I was only really addressing the Title I/II meanings, but I agree it is not always entirely binary. My point here is to focus on the non-ISP aspects of telecommunications. I see ISPs as the "value-added networks" and "open" refers to the networks upon which they add their value.

Savage: In taking this approach I think you may, in effect, be assuming what you are trying to demonstrate. The question on the table, as I see it, is whether what "ISPs" as commonly conceived do entails the provision of telecommunications. I recognize that in the old days somebody called an "ISP" had to obtain connectivity from somebody called a "carrier" to make things work. My question is whether that distinction remains relevant in a world in which the retail ISP functionality is dominated by entities that own and operate their own networks. I recognize that the old Computer II/III answer here was to say that a network-owning enhanced services provider had to "unbundle" and separately offer the transport component of the enhanced service. In a way I'm talking about that, but I'm also re-asking the question whether what "ISPs" do at their core – routing packets to/from Internet destinations – doesn't fall within the meaning of "telecommunications" as well. <snip>

Goldstein: Information Service: The broad category of network services, including ISPs, time-sharing computer operations, cloud computing, web hosting, etc., that make use of telecommunications in order to deliver a value-added service that is not put forth to the public as telecommunications.

Savage: I think this is a bit circular, or at least gummed up with your other definitions. Information service is defined in the law, and basically means offering a capability to store information, retrieve information, create information, or manipulate information, via telecommunications. See 47 U.S.C. § 153(20). What's slippery here is that you have to be very clear which entity is doing what. As I noted in another post, Ma Bell in one sense offered me the "capability" to "retrieve information" by letting me call up the library and ask the reference librarian a question. Saying, "I'll connect you to the library" is ***not*** giving me the "capability" to "retrieve information." Neither, I would submit, is saying "I'll connect you to the Internet."

Goldstein: Clearly the legal definition confused you, inasmuch as the library was information being retrieved from outside of their network. I see the retrieval et al as being from inside the IS provider.

Savage: No, I think we agree. But that means that if I send out a request to "Verizon.net" (my home ISP) to get me a copy of the WSJ home page, when "Verizon.net" does that for me, it is no more providing an information service than when Ma Bell connected me to the library. Right?

Goldstein: Broadband service. (If a noun, La Broadband) An information service provided via Broadband Transmission.

Savage: So, to avoid linguistic overload, this should be "Die Broadband…"

Goldstein:: The analogy here is to the Spanish nouns "el radio" and "la radio". The former refers to hardware (the box with a speaker), the latter to software (the program it's tuned to). This is a wonderful use of gender, a linguistic concept not well understood by Anglophones. (It has precisely zero to do with sex, for instance.)

Savage I get the point. But, actually, when you dig into the guts of the relevant languages, there are culturally interesting sex- and sex-role overtones to the assignment of genders to nouns. Normally these don't have anything to do with "sex" in the sense of a particular biological act. But I would submit to you, e.g., that the different perceptions in gender roles in Latin society has a non-trivial relationship with why the hardware, so to speak, gets the masculine pronoun, while the software, so to speak, gets the feminine. That's precisely why I was suggesting we move to a language with masculine, feminine, and neuter as our source of association-laden pronouns… <snip>

Goldstein: The IaSP role comes closest to telecommunications, and is where the controversy really is most critical. The lack of wholesale broadband transmission or IaSP services leads to the duopoly at the IvSP layer. One can argue that this really resembles common carriage and could be treated as such, and is treated as ISP rather than common carriage because it was originally done by the IvSP: When the early ISPs owned their own modems, they were acting as their own IaSPs, so IaSPs are seen as ISPs. That and there was no other good regulatory category for them. I am not unhappy with this, but the neutrality argument should be focused here, not on IvSPs.

An IvSP purchases services from an IaSP, or provisions them internally (and thus acts as an IaSP too). The IvSP role is what the Computer Decisions are most closely focused on, and regulating this is IMHO constitutionally and practically difficult. But this is where the proposed neutrality regulations are focused.

Savage: I am not sure that the IaSP/IvSP distinction is the right place to slice, if you are trying to more or less faithfully apply the legal distinction between telecom and information services. Switching is, without question, part of telecommunications. It's just what we use to get payload from A to B … N without having to have dedicated links between all the end points. So nothing about the "routing" function in the Internet disqualifies those who provide it from being in the business of providing "telecommunications."

Goldstein: I'm distinguishing between ISP switching and telecom switching. Yes, they're similar functions, but they're done on a different basis. Percolating telecom regulation up to resellers/VANs (ISPs) is dangerous. As you agreed, IP could be used either way.<<

Savage: I get that it is dangerous. But as Bilbo Baggins pointed out, it's a dangerous thing to step out of your door in the morning. Who knows where the road you step onto might take you? And, yes, I understand why you do not want to reach that result. I'm not sure that I want to reach that result. But my problem is that I have a very hard time seeing any sensible legal or technical basis to avoid reaching it.

Atkinson: Fred,

With respect to your definition: **Internet**: A voluntary agreement among network operators to exchange traffic for their mutual benefit. [This is protocol-agnostic and does not refer to only "The Internet" but any such network, and network operators can include any type of ISP.]

Does this definition include traditional telephone service?

Goldstein: Not in the US.

Atkinson: A lot of national and international telephone companies exchange traffic under voluntary agreements for their mutual benefit. This obviously changed with the advent of competitive long distance and local distance but even in that era, there were a lot of voluntary (not imposed by regulatory decision) agreements for traffic exchange and international traffic has always been exchanged under voluntary agreements.

Goldstein: I don't know the full regulatory context of those arrangements. Negotiating a a price is not the same as Internet, where the mere fact of connection is voluntary.

The heart of the PSTN, which is a business model, not a technology or a "thing", is a Duty to Connect. That is, originating and transit carriers must deliver calls to terminating carriers. They don't pick and choose, even if they don't like the price. They can complain to regulators about the price, but still have to pay it. This is what makes "traffic pumping" work, as well as what fueled the recip comp for ISPs of the last decade. Of course the FCC switched off the money in that latter case, favoring ILECs over CLECs, but traffic pumping is rurals vs. IXCs, where the IXCs are less favored. (And it seems as if the FCC for the past decade or so has tended to decide things based on who benefits, not on the objective details of the case.)

In the Internet model, there is no duty to carry anything. It's more of a mutual publication model, a free market. So you can't set up shop and demand peering -- such agreements are entirely voluntary, based on mutual benefit, and the bigger player has the right to demand benefit in the form of money. A lot of traffic is thrown on the floor, intentionally. You and I don't see it all -- a lot is malware -- but the threat of being thrown on the floor leads players to negotiate. (Cogent is a good example of one who cuts it rather close and sometimes loses.)

Neither model is right or wrong. The PSTN model works because it guarantees access and creates a reliable network. Also, everybody's actions are traceable (CDRs) and billable, so there's negligible malware. CLECs are peers of ILECs by fiat, even though they lack the market power, but this is needed to undo the effect of monopoly. You don't get from monopoly to full competition without regulating the monopolist. (Hence "deregulation" is not the right approach.)

The Internet model works because there never was a monopoly, nor even SMP, at the wholesale (peering) level; thank the EU from keeping Bernie Ebbers from getting it. So the structures and strictures of the PSTN are not needed.

Hence the confusion that leads to the Google Voice on iPhone argument. Clearly that is just an application, not PSTN. However, if somebody dialed the same high-rate phone numbers using the iPhone's regular ATTM telephone service, then ATTM, as a PSTN operator, would be compelled to deliver the call and pay the terminating price. Whoever Google Voice hands the call to is under that same obligation. PSTN rules require retail rate averaging, so iPhone users couldn't be surcharged for the calls, but they don't re-

quire wholesale rate averaging, so Google, as the wholesale PSTN customer, would have to pay. So, not being a PSTN carrier, they don't. At the surface it's not obvious and ATT can whine all it wants, but under the circumstances it's a rational outcome. And it has nothing to do with "network neutrality" since it's really just a dispute over *regulated* PSTN pricing, and a non-carrier's lack of a duty to eat it.

Budde: Guys you are harking back to the past, we can't fix the past we need to move forward and here – at least at an high policy level - there will only be infrastructure providers here and content providers; as simple as that. Even if – as most of you indicate - we can't get there in one big jump we need to start creating a direction forwards that future. We need to be the agents of change it won't come from the traditional players.

Savage: Paul, In fairness here, we need to find the best way out of our particular regulatory labyrinth. It may mean calling in the helicopters and getting airlifted out; it may mean burrowing under the walls; it may mean dynamiting the whole thing and starting over.
But in the nature of the American political and regulatory process, it may also mean actually working our way back out, step by step.

Our situation is terribly confused here for historical reasons I think you understand (and which we have reviewed here from time to time), and unraveling that confusion is a good thing, up to a point.

Cooper: Things would have been a lot easier if the FCC had responded affirmatively to our petition to declare cable modem service a telecom service in 1998. The Supreme Court would have upheld that decision 9-0 on procedural grounds. The Commission will bear an especially heavy burden to change its mind in a less than a decade. The Commission will have to try to settle for second best squared (network neutrality under Title I). The result will be a much weaker version of network neutrality than we need or should have had.

Savage: I'm curious about this point.

A wise, cat-owning friend of mine once classified certain tasks in life as "litter-box issues." A litter-box issue is one which:

1. Is sort of gross to do;
2. Is no fun to do;
3. Is subject to procrastination in that you don't ***really*** have to do it right now; but
4. The longer you wait to do it, the grosser and more disgusting it gets.

Making a change in a prior administrative determination is kind of like that, I think.

Cooper: The real problem is that after 16 years of ineptitude and the failure to recognize that the shit was piling up, we now have a variety of litter box issues to deal with. You have to prioritize, which one need to be dealt with. Launching a war over regulating network neutrality as a Title I service was far from the top of my list. You get a major ideological war for a piece of territory that you probably already commanded. Access charges, intercarrier compensation and universal service were actually more ripe and more important.

Savage: Considering how much of my own income is tied up in sorting out stupid intercarrier compensation and universal service messes, it pains me to say this, but: access charges, intercarrier compensation, and universal service are all deeply screwed up, but I think also deeply irrelevant to the future development of the industry as a whole, and almost to the public interest.

For most wireless customers and many VoIP customers (Vonage-like, anyway), long

distance is free. A call across the street costs no more and no less than a call across the country. And, beyond that, only a small portion of the retail charges by wireless carriers (or even landline carriers) reflect access charges or intercarrier compensation payments. Access/ intercarrier comp matters to the industry players but the market as a whole is passing the issue by.

Universal service is even less relevant, IMO. To most people it's just a random tax. It's a boondoggle for the little rural guys, but, in the grand scheme of things, so what? Our 2-Senators-per-state rule, combined with increasing urbanization of the population, essentially guarantees that rural areas will get disproportionate benefits from our political system.

So, while I agree with you that these topics were more "ripe" than Internet-related things (including Net Neutrality) – and, indeed, in multiple senses of the word "ripe" – I disagree with you that they are "more important."

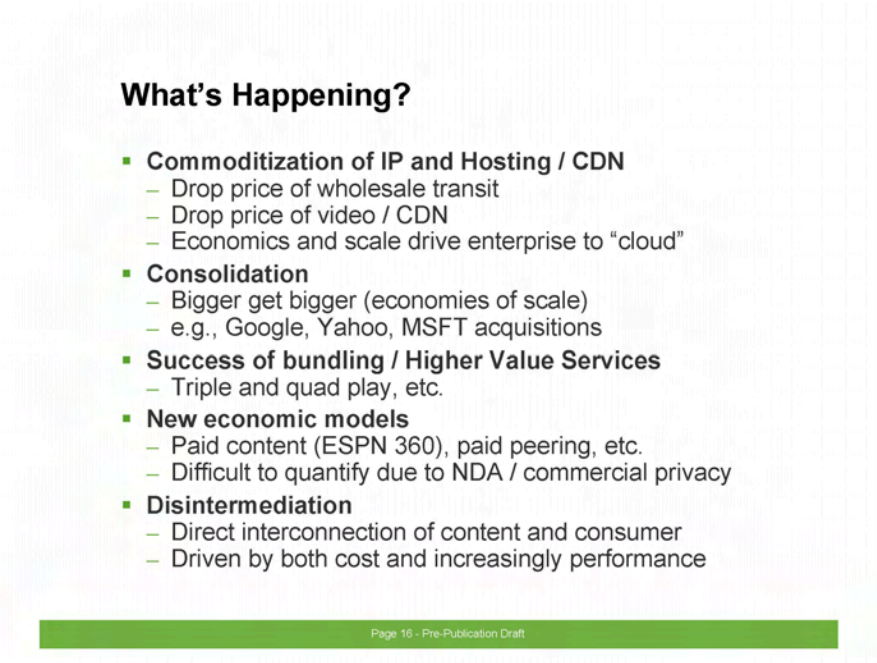
Cecil: I think Fred and Chris have it. At a high level, you can call it "telecommunications" but regulate on terms of what is sold and who is selling it. This allows far more transparent views of market power.

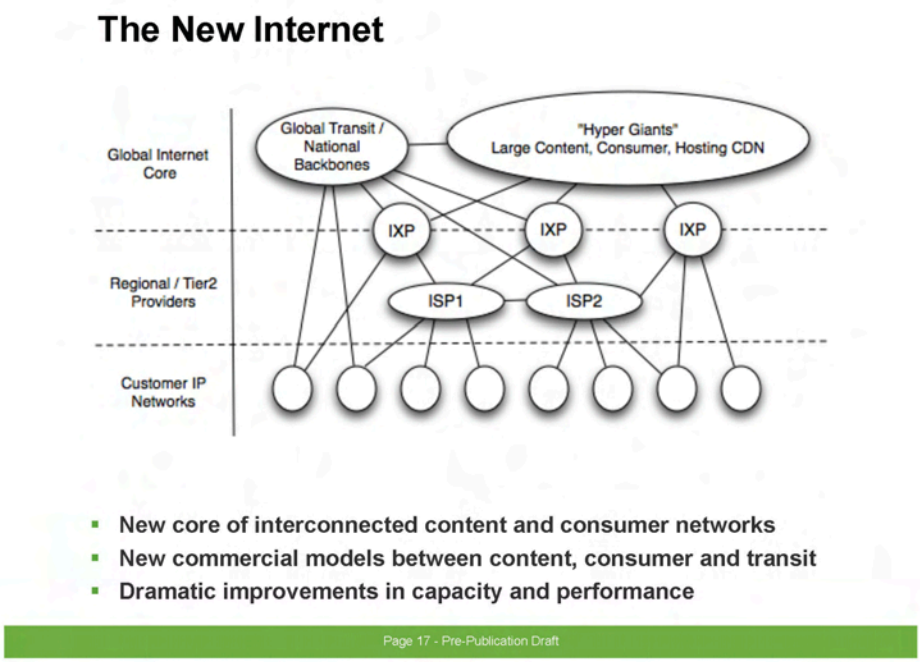
As you guys unpack this, you'll find it has potential to undo a lot of damage done over the past 16 years, but this is a very good start; thanks to you both for doing a great job of explaining and developing this.

Savage: OK, let me clarify my question. When I look at the retail ISP market today I see it dominated by the big ILEC and cable players: Verizon, AT&T, Time Warner, Comcast, etc. None of those guys use a wholesale entity to provide their connectivity to their end users. They use their own networks, either fiber/DSL (the phone guys) or HFC (the cable guys). I recognize that "back in the day" when dial-up mattered, these kinds of wholesale arrangements under which the physical connection to the end user was provided by someone other than the person providing "access to the Internet" in some meaningful sense may have existed and indeed may have been important. But unless I misunderstand things (which, of course, I may), this type of arrangement is dying a slow death and may already have dwindled to insignificance in the market.

Cecil: You are just beginning to see the dynamic I've been trying to explain. But yes, it is dying a slow death. The NANOG report I sent you describes this. Here is is for list benefit: **NANOG 47**

http://www.nanog.org/meetings/nanog47/presentations/Monday/Labovitz_ObserveReport_N47_Mon.pdf Check out slide 16 "What's happening" and slide 17 - the new Internet.





Google is #3 backbone. Maybe slide 16 has something to do with that.

Meanwhile, speaking of slow death and regulatory houses built on sand -- We've already seen bankruptcies in cable space and just this morning, the "7th largest" U.S. telco just filed for bankruptcy.

UPDATE 1-FairPoint Communications files for bankruptcy
Oct 26 (Reuters) - Rural telecom services provider FairPoint Communications Inc (FRP.N) filed for Chapter 11 protection in a Manhattan bankruptcy court on Monday, under a pre-arranged plan that would cut its debt by $1.7 billion.

http://www.reuters.com/article/COMSRV/idUSBNG48040020091026

Cecil again: [I would posit that} the distinctions between information services and telecom are not that useful anymore because (a) they are less relevant in any market / economic sense; (b) they are hypertechnical and easily misconstrued; and (c) the lines of technology, market control, and value are continually shifting.

Would it be fair to look at it this way? - and I'll credit Doc Searls with the insight - Google uses a horizontal strategy to gain market share - Android, Chrome, etc. flow from device to device, market to market. Apple, on the other hand, is vertical. They deploy cool devices and own the apps silo created thereby. If we go back to "information service" versus telecom, we'll never fix Google Voice v. Apple (or AT&T). Nevertheless, the consumer cares about functionality and will pay fortunes for good functionality.

So while, like any good discussion, we must go back into history in order to determine how to bring it forward, and while the IP as telecom meme was launched as a potentially workable solution to these problems short of throwing the 1934 Act out the window

Note that, in addition to the Fairpoint bankruptcy, Verizon wireless posted its biggest gains ever.
http://www.bloomberg.com/apps/news?pid=20601082&sid=aelTz7rDeXQE

Note VZW's profits were related to FIOS, mobile wireless and that VZW is teaming w/ Goog to launch Android (making goog the equivalent of a handset provider in mobile space and soon the same in cable / enterprise space - this is an economic read, not a technical one, so let's not confuse the two if possible; I'm just following the money here).

CF Clearwire - http://www.lightreading.com/document.asp?doc_id=183526&site=cdn& which sounds

very good but it's a drop in the bucket compared to the power that's in the market right now. And "coverage of 30 million" by end of 2009 is not uptake of 30 million; meanwhile, Verizon Wireless and ATTM according to Bloomberg and other publications are harvesting the wireless subs that Sprint continues to lose.

Qwest Makes a Profit While Level 3 Bleeds

COOK Report: What is wrong with this picture? (Oct 29) **Converge! Network Digest, v16n207** 28-Oct-09

QWEST POSTS Q3 REVENUE OF $3.1 BILLION, SEE IMPROVING TRENDS

Qwest Communications reported total operating revenue of $3.1 billion in the third quarter. Strategic services revenue of $1.1 billion increased by 5 percent year over year and 1 percent sequentially reflecting higher demand for IP services. Legacy services revenue of $1.7 billion decreased 14 percent annually and 3 percent sequentially. Fewer access lines, from a weak economy and competition, and efforts to improve Wholesale long-distance profitability pressured legacy voice revenue. Customer transitions to IP services impacted legacy data revenue.

Net income was $136 million. Earnings per share were 8 cents, which was equal to prior-year results.

"Our focus on perfecting the customer experience while maintaining strong financial discipline again enabled us to deliver solid results in the quarter." said Edward A. Mueller, Qwest chairman and CEO.

LEVEL 3'S Q3 REVENUE DROPS TO $916 MILLION

Level 3 Communications reported consolidated revenue of $916 million for Q3 2009, compared to consolidated revenue of $1.07 billion for Q3 2008 and $942 million for the Q2 2009. The net loss for the third quarter 2009 was $170 million, or ($0.10) per share, compared to a net loss of $129 million, or ($0.08) per share, for the third quarter 2008. The net loss for the second quarter 2009 was $134 million, or ($0.08) per share. Consolidated Adjusted EBITDA was $213 million in the third quarter 2009, compared to $255 million in the third quarter 2008. Consolidated Adjusted EBITDA was $229 million in the second quarter 2009.

"While we remain cautious, we saw positive signs in the business this quarter, as evidenced by the improvement this quarter in the rate of decline in Core Network Services revenue," said James Crowe, CEO of Level 3. "Our ongoing discipline in managing the business continues to provide benefit, and enabled us to generate positive Free Cash Flow during the quarter."
http://www.level3.com

COOK Report: The answer seems to be that the last mile monopoly trumps everything else.

As basic infrastructure Level3 should be worth orders of magnitude more than Qwest. Unfortunately its executives simply don't understand the internet and have no clue about the issues that Al-noor and JP at BT understand and that the folks from FREE get so well.

On Iliad's Free see http://internetthought.blogspot.com/2009/10/why-all-telecom-companies-should-follow.html

Van der Berg: Why would it be wrong?

Cecil: Well it depends upon your perspective. If you enjoy seeing innovative networks that do in 10 years what the entire PSTN failed to do in 100 years being killed by regulation, then sure, it's wrong. If you think that

competition should fund incumbency who uses regulated money to compete in non-regulated space, give Dick and W a call; they'd love to hear from ya! :-P

Van der Berg: Qwest has end-user customers. Level 3 is much more transit and therefore being squeezed

Cecil: Qwest DOES NOT have end user customers. Qwest is paid to have a crappy loop network that it never upgrades b/c the minute that equation flips, Qwest is irrelevant and Level 3's the only carrier you'd really want to watch.

But, in this bassackwards upside down environment, sure, Qwest has "end users"

Goldstein: I assume that you mean that Qwest does not have end user customers; it has end user RATEPAYERS. Right?

Today's chapter of Goldstein' Telecom Dictionary (let Harry retire):

- Ratepayer -- somebody who uses an incumbent's service because there's no real alternative.

- Subscriber -- somebody who uses a service but may be indifferent to its competitive alternatives.

- Customer -- somebody who uses a service because the vendor actually tries to please them.

It's easy for an incumbent to have ratepayers. Competitors need to make customers.

Cecil: Further bursting the illusion that wireless is "separate" from landline is separate from IP, here's a new Qwest vs LVLT battle: http://telephonyonline.com/3g4g/news/wholesale-fiber-backhaul-102809/ Like the monopoly landline guys are not going to leverage the hell out of this to kill competition - uh, guess which one is paid by all of us to run copper into the vast majority of towers out there, and guess who is going to deny interconnection, collocation, drive up prices from pole attachment to ROW access? Now it's bad enough for Q and LVLT - neither has a wireless affiliate, but watch how this plays out in Verizon and AT&T territory, not to mention how ugly this gets with your friendly guys at Frontier or Embarq.

Telecom regulation is a hedge fund for monopolies.

Cole: What "tweaks" might help with this bottleneck?

For example, one could imagine tower permitting authorities giving preference (if not absolute) requirement to towers that had arranged for "open" fiber backhaul at the time of siting, as this would help with "future-proofing" and allow more vendors on the same tower.

One could imagine expedited (and favorable) ROW processing for deploying "open fiber" to wireless towers. And so on....

Yes, this is tweaking at the margins, and may involve hundreds of local jurisdictions (unless states can impose such requirements on their local jurisdictions), and is no substitute for more "grand scheme" policies. But still....

Cecil: You raise an incredibly important point. Using the wireless towers as an attractor of fiber optic, but where local authorities make that process easier and less expensive for entities willing to open up access for others, has the potential for an incredible win-win proposition. In concept it is not unlike what's being done with some of the stimulus grants, so the precedent for this sort of thinking is already supported. If you need any help in refining your thinking or getting to folks inside those organizations, I'd be happy to point you in the right direction.

Cecil: November 5: I know this will send Fred to the ceiling, but, hey ... the market is messed up.

Welcome to Net Neutrality, Now Log Off – Comcast's Congestion Management Scheme

"Now the company is back with a new data throttling scheme intended to put the kibosh on excessive traffic during those times when the network is already being overwhelmed. The two-tiered system is put on alert if either more than 70 percent of your max bandwidth (downstream or upstream) is used for more than 15 minutes or if your particular Cable Modem Termination System gets congested and it decides that you're partially responsible. Should you run afoul of the traffic warden, expect to find yourself down-throttled for at least 15 minutes, or until your average bandwidth utilization rate drops below 50 per cent for 15 minutes. If there is no congestion, however, you shouldn't notice any difference whatsoever -- unless, of course, John McCain gets his way." Warning: PDF read link."

http://www.engadget.com/2009/11/05/comcast-announces-new-bandwidth-throttling-scheme/

Goldstein: Why does this send me to the ceiling? Sure, I think just slapping down file servers would be more effective, but the pirate-CDN business and their ILEC affiliates put the kibosh on that. So now they're limiting heavy users during congestion. Sounds more than fair.

In case you're not familiar with it, DOCSIS has a systemic shortage of upstream capacity. Cable is best at asymmetric applications. It's different in Europe where the upstream spectrum extends to 68 MHz, but in the US it's capped at 42 MHz, thanks to an old FCC rule requiring cable companies to carry TV stations "on channel", with Channel 2 starting at 54 MHz. 42-54 is the guard band between the two directions. So DOCSIS 3 can't do much here because there isn't space to bond more channels. Cable incrementally raises capacity by reducing the number of subscribers sharing a section of cable (node splitting). That costs money.

ADSL's asymmetry, in contrast, is entirely by choice.

Cecil: There you have it - a simple fix - wonder if cable would trade the "on channel" requirement for more bandwidth on the Internet side?

Goldstein: The on-channel requirement is nugatory -- Digital TV hides channels, and there are only a few Channel 2 stations left in the country. TV stations now display "virtual channels", which are technically arbitrary, though in practice they're normally their former analog channels.

BUT the entire plant is built with 42-54 as the split band (aka Low Split). Every CMTS, optical transition node (the box on the pole) and amplifier (where they still exist) would need to be replaced. So would the splitters and amps inside the home (I've got a bunch of 'em, to deal with the wacko wiring the former owner did). So it's not really practical. There was a proposal to move the split up, by putting a remote-controlled switch into all new nodes, but it didn't fly. The industry assumes that it's eventually moving to FTTH, so it's not investing big-time in HFC any more. Once it's FTTH, it can move upstream to its own lambda, as FiOS

does. But that's a LONG way off.

Broadband Pricing

Paul Budde: Referring to Pricing for the Australian Broadband National network

The pricing operations of the new national broadband infrastructure should not be telco-centric. Governments are making broadband investment to stimulate economic innovation, not necessarily telecoms services, and so we should look at an infrastructure-based pricing mechanism rather than a telco-based model.

The wholesale price of a NBN should be such that it reflects government's policies to stimulate the digital economy. In other words it should be affordable for organisations to build their own services on top. As a very rough guideline the price of the wholesale infrastructure service should be no more than 10% of the total price of the end-user application. Obviously this will depend on the nature of the application and there will no doubt be many exceptions to this rule. Another guideline is that the price of between €7and €13 in the Netherlands for a Layer 1 service is currently seen as too high.

Also, on an open network some providers might want to include the infrastructure charge within the overall price of their service; or certain e-health and education services could be modeled around health insurance and taxation facilities. Energy companies could include smart meter services within their energy pricing models. All sectors and providers should be able to decide how they structure their pricing mechanism. There will not be one gatekeeper.

The price should reflect the fact that the various sectors and providers can share the costs of the infrastructure. It would be unacceptable if all providers were to charge a basic access fee.

A possibility here would be to set an appropriate basic connection/access charge – one that is low enough for all users to have access to a basic service (USO), with a subsidy available to those who can't afford it. This could, in fact, be a tax or a 'real estate' fee for a lifetime connection. It could become part of the mortgage or part of a council charge.

If amortized over 20 years the annual fee is rather small, perhaps as low as $60 per annum. This fee should provide a regulated service level that would allow for the delivery of basic services. It should be reviewed regularly, and adjusted when appropriate, in accordance with changes in society and technology.

Once this pricing arrangement is in place the barrier is removed for others to use the utilities-based infrastructure to build their own independent business model for the delivery of their services to their end-users. Such a model would also stimulate the infrastructure company to deliver innovative new wholesale services above the basic offering, as that would positively affect their own revenue models – again, of course, working from a sound regulatory framework.

It is also important to remember that the current telco price is based on speed, which is subject to the limitations of the copper network and as such is rather irrelevant to the fibre network. Many applications that will be delivered over the infrastructure won't necessarily require a high speed.

Other key elements of a fibre network are security, reliability and the low maintenance and running costs.

As this price will be regulated it will be possible to adjust pricing over time to reflect changes in technology, society, the economy, etc.

On top of the basic connection fee access prices can reflect heavy or specialised use. In other words, there could be categories of wholesale services that would apply to consumers, small businesses, corporates, etc.

Cowen: Guess this note might light the blue touch paper on the firework, but in the spirit of Chris Savage's thought experiment, why not allow dominant incumbents to differentiate classes of service such that users pay for the bandwidth they actually receive; effectively paying to avoid congestion?

This is different from today since many bandwidth suppliers offer an indication of service speed with little or no compensation for failure to fulfill the megabit promise. Basic service is subject to congestion and carries little or no compensation. A more defined and guaranteed service could carry higher compensation for customers opting for that increased level of service, for which they could pay more.

Charging different amounts for different products which have different end user values would not be discriminatory.

I recognise that this would set up an incentive to build less, increase congestion and charge more, but is that in fact what has happened? <snip>

Editor: some back and forth snipped and on November 8

Cowen: Can I refine my question in terms of the offering by dominant incumbents of facilities where there is no economic alternative? Where there is a competitive market, prices should gravitate toward the competitive level and there should be no need for any form of government or regulatory intervention over the price of the offering of access to the facilities that carry broadband.

Goldstein: Agreed. However, there is a difference between having any competition at all and a market lacking significant market power. Typical EU regulation seems to kick in when one player has more than 25%; the FCC typically sees a market as competitive is one player has less than around 99.9%. Certainly in measuring Special Access, the guideline they enforce, based loosely on a not-hard-fought DC Circuit case IIRC, is that if there is competition anywhere in a metropolitan area, then the entire area is assumed competitive, regardless of whether or not a given customer can get a choice. Sort of treating wires in the ground like airplanes at the airport.

Cowen: I have tried to distinguish the retail offering to the end customer from the wholesale offering to an ISP or interconnecting carrier. My thought experiment/question relates to the wholesale level not the retail offering.

I am not sure whether Paul is talking about wholesale or retail. In any event, Paul may have a different view: he may be saying that retail broadband is a utility. I would disagree with that on the basis that I can get the service of broadband from a number of different retail service providers today, provided regulation of the wholesale access applies to the utility or monopoly in the underlying infrastructure. It is clearly right to regulate the monopoly access and that is what happens today.

Budde: Quick one Tim, wholesale only I believe in a very competitive unregulated retail market. As for example in the case with Australia the national fibre network will be at a wholesale level a regulated national utility.

Goldstein: I agree -- the wholesale side is what needs regulation. Not IP, but bit transport, wire, etc. That's where the "natural monopoly" exists and barriers to entry are greatest.

Cowen: What is meant by infrastructure from a con-

sumer broadband perspective is different from the business market. For the consumer market, there is typically no competitive supply available to an ISP for the part of the network from the connection point of the ISP through the telco backhaul and local switch through the local loop to the premises and including the in premises wiring and equipment to the network termination point (NTP). This could be defined as consumer access.

Where there is competition in the supply of consumer access, for example where in addition to the copper line there is a cable line into the house, or where there is an alternative access provider, wireless access (at 2 mb or more), metro or local utility access, etc, again there would be no need to regulate consumer access.

Goldstein: The US market demonstrates that this is not true. A duopoly simply means that SMP is split, but the public remains deeply suspicious of their collective motives, collusion is the norm, and real creativity in offerings doesn't happen. Wireless opened up, especially price-wise, once the FCC (in the mid-1990s) took it from two to ~eight licensees per market. Duopoly takes away the worst edge of monopoly, but isn't a real market.

I should note that wholesale markets do not generally develop when there is a duopoly. It takes around four players to make one or two of them become competitive wholesale suppliers. The top two focus on retail; the smaller ones accept wholesale as a substitute channel. Hence most MVNO activity in the US, except some high-priced prepay, is on Sprint and T-Mobile.

Cowen: Even if there is competition in the infrastructure for consumer access, there may not be adequate competition on business access. This is because access needs to cover multiple locations for business to be able to take the benefit of competition in the supply of infrastructure. Even a relatively small business with three locations may find itself dependent on a single supplier where there is only one supplier for all three locations. For business customers there is thus less need to map competitive access and more need to regulate. Again it depends on the facts. There should be no need to regulate where there is competition. To intervene where there is or could be competition would distort the market.

So my question relates to the provision of service at the monopoly wholesale access level where there is no alternative. At that level I think everyone would accept that regulation can and should apply.

Goldstein: Bear in mind that in the US, the wholesale supply of consumer access to ISPs is down to precisely zero. ILECs had a very loosely regulated monopoly; they're now allowed to reject wholesale entirely. Cable never had a wholesale obligation. This (what's the word? non-opoly?) is what created the "neutrality" debate, which if fundamentally about regulating the retail content of monopoly ISPs, based on an acceptance of a non-competitive retail market (aka Broadband Stockholm Syndrome).

Cowen: However my point was whether the incumbent monopoly supplier should be allowed to differentiate supply of service to fairly ensure that no discrimination in the quality of service that is supplied to its customers: the ISPs and interconnecting carriers. At this level there may be merit in allowing the wholesale offering to be differentiated and the SLAs could include liability for failure to meet service standards. Higher quality of service could carry higher liability. Congestion and capacity limitations may happen for a variety of reasons, why not allow a price mechanism to reinforce a non discriminatory offer?

Goldstein: Perfectly reasonable in concept. However, I

suggest that the IP and Internet market per se is technically not suitable to any kind of SLA; that should always be a free-market souk, and the layers *below* IP, needed to reach peering points, should be the regulated ones.

Hendrick Rood: On his blog:

http://larrydownes.com/the-case-against-the-fccs-neutrality-rules-cnet/ and the article at CNET http://news.cnet.com/8301-1035_3-10385865-94.html?tag=mncol

He doesn't quite trust an organisation that also engaged in acts like wardrobe malfunction on public airwaves and pushing the Broadcast Flag. He then proceeds to what he considers the Real Problem. I put that here

Avoiding the real problem

That, of course, is the real reason everyone, including me, worries about non-neutral behavior. In the absence of real competition, monopolies and duopolies have strong incentives to discriminate in ways that can severely burden some classes of users--whether consumers or service providers or both.

Despite a few isolated incidents of clumsy interference, however, no one really believes that the lack of competition has created true market failures. At least not the kind of failure severe enough to justify the intensive federal regulation visited, with mixed results, on U.S. railroads a century ago or of the telephone monopoly from 1913 until 1982. Pro-regulation advocates, including Chairman Genachowski and Google Vice President Vint Cerf, speak in the conditional tense. The word "could" appears 55 times in the FCC proposal.

Regulating ahead of a market failure makes little sense when, as everyone acknowledges, the underlying technology for access is evolving rapidly and models for making money in Internet provisioning are still in the early stages of development. The risk of non-neutral behavior is significant, but the cost of regulation and the potential for unintended consequences may be higher. "Have we correctly identified the costs and benefits of the alternative approaches?" the commission asks. The answer is that it hasn't even begun to identify either, correctly or otherwise.

And if the real problem today is broadband bottlenecks, why is so little being done to encourage competition? Municipal wireless Internet projects have largely shut down, in large part because state governments and their lobbyist friends maintain that the law allows them to prohibit cities from competing with private-sector communications companies, a view supported by the FCC in 2001.

Offering broadband over power lines, another promising option, has been stymied, with the FCC receiving still more abuse from the federal courts in 2008, for their failure to adequately support the development of the technology.

Net neutrality advocates may be celebrating the start of a process they have argued for since 2005, but here, as with all technology regulation, it's wise to be careful what you wish for. For now, the proposed rules look to be dead on arrival--and of multiple causes. That's one more reason to wonder why, if there is a problem to be solved sometime in the future, anyone thinks the FCC is the organization best-suited to solve it.

I think the risk for Dead on Arrival is rapidly growing indeed and Downes is mostly making the correct set of arguments. Except when someone is able to swing this to a debate on the desirability of a split in the access layer (probably below the IP-layer and maybe to the LoopCo layer) to tackle the vertical integration issues. This will go nowhere. But that would be more a debate on industry structure and advancing competition in bottleneck facilities, while promoting construction where they are not yet deployed.

Vint Cerf: I doubt there will ever be much competition at the physical layer and therein lies my big problem with status quo. If the split occurs, and physical facilities can be used to reach alternative providers, this would be a form of intra-modal competition - something the FCC rejected years ago. If we want to explore that alternative, we'll have to start asking ourselves what the pieces look like, who will experience what costs, who are the players that connect to the sharable infrastructure, what are the economics and business models that would work for all parties, etc.

Odlyzko: I agree with Vint. We have the ancient problem of a natural monopoly that was already faced by people worried about railroad economics almost two centuries ago. Apropos Hendrik's comments re Larry Downes, the net neutrality discussion may indeed not lead anywhere in terms of effective action, but it probably will be of great help in shaping the debate. The telcos staked out an extreme position with Ed Whitacre's "those are my pipes, I can do whatever I want with them" position, and the reaction to that has shown them, and everybody else, that this is not tenable. So now we'll have an ongoing tussle somewhat removed from such extremes.

Cowen: Vint, Looking at the facts what has happened over the past few years is important. CLECs operated the "We will build it and they will come" business model for a little while. They struggled and are either struggling or have failed. Municipal networks should be able to provide alternative access but are, in Europe at least, artificial in the sense that they are only allowed to be built with public money in areas where there is no alternative infrastructure; they are a form of allowable state aid in order to bring the benefits of competition and the efficiency of the competitive process to the more remote regions.

Note my point about business customers: multi-site customers will have a challenge in being able to show that the local access market is competitive where there is no alternative for all sites; the bigger the customer the more that a multi-site local access player has the opportunity to monopolise that customer at least from the access side.

The WIK report last year demonstrated that in all but the most densely populated areas there is unlikely to be anything other than a local access monopoly. That is why access regulation is needed. You make the point that "I doubt there will ever be much competition at the physical layer and therein lies my big problem with status quo.'

So far I think we agree. To be clear I thin that what is being said is that that your status quo in the USA is a problem because physical layer infrastructure is unlikely to be competitive. History suggests that to be right. Is there any compelling evidence not that competition will emerge from new technology to make that an unreasonable perspective for the future? Not as far as I can see but I would allow the case to be made for it if someone can put forward the facts.

On the basis that no other competitive infrastructure can meet the needs of customers then regulation needs to apply to regulate access to that infrastructure at the wholesale level, and to do so in a way that mirrors the effects of competition such that the supplier has to be come more efficient in the provision of services in the public interest..

What that then means is that the USA should properly regulate physical layer infrastructure. That's what we call access regulation in the EU. I thought that was at least in theory what special access was supposed to do in the USA.

Executive Summary

The Open Computing Alliance. pp. 1-18

Industry coverage tends to focus on technology's increased ability to put amazing performance into small packages. Apple's iPhone is perhaps the most outstanding example of convergence in ICT. As the well known technology changes of the last 30 years have made telecommunications networks and the digital devices that ride their wires or their spectrum more powerful, the telecoms and IT industries are converging such that a 35 gram device from Apple, the 5th gen iPod Nano nad oner fourth the weight of the iPhone, is an FM radio, a digital music player, a voice recorder, a still picture viewer, file storage and retrieval device, a stop watch, a pedometer, calendar, address book and can record full motion audio and video that can be watched on the device's small but high res screen or on a full TV screen.

This technology convergence has kept armies of designers and engineers busy. It has created many new vast and valuable corporations. But while it has rushed forward, it has outstripped the ability of the corporations responsible for creating marketing and maintaining it to work productively in a globally conflicted and often chaotic capitalist market place. Consequently the economies of all nation states are impacted in conflicting ways while achieving the synergistic development and ***deployment*** of these technologies is a desirable goal that grows more distant

It grows distant because, at nation state level, regulation of the relationship between hardware and telecomm is filled with contention, where regional regulation needs to coordinate with that restricted by national boundaries and where antitrust and market dominance issues cut across device versus wire regulatory issues that further inhibit the possibility of smooth market functioning.

To make matters worse, government procurement in technology areas is not rational, and definitely not coordinated across divisional boundaries. Reality varies between outright chaos and random Brownian motion. Governments don't know how much they spend on IT. Corporations don't understand national regulatory environments. Even regulators have difficulty figuring out where they fit in regional economic bloc picture. From a long term strategic point of view corporations have no really adequate means of judging which nation states are optimal for new investment in IT and telecom.

While all this is happening, the framework of enterprise centric IT and telecom is shifting al la Nicholas Carr's *Big Switch* in the direction of cloud computing. The value of standards for creation of clouds is understood as people in government see the possibility of vast cost savings of moving to the cloud. But to do this effectively means standards and shaping them is not a forgone conclusion. The traditional standards bodies seem too large, too cumbersome or too slow. For standards should the mix be regional, or nation state? Should the focus be on privacy, security, interoperability, price differentiation, architectural differentiation all in a green energy saving computing context?

National interest, regional interest, corporate interest versus the environmental concerns and physical available of energy and supplies

are all issues making smooth policy legal and economic coordination and development difficult.

Further IT and telecoms are partners in making the cloud work, they need to understand their supply chain interdependence on each other far better than they have managed to at present. This lack of understanding often leads to working at cross purposes. If we are to have an economically effective transition to cloud computing, what the cloud is must be better defined, brought into focus, an effective approach of moving to standards created. Government procurement must be standardized and coordinated within the context of the cloud. the corporation must learn how to better contact with government and vice versa.

Tim Cowen has used the benefit of a 30 year career that crosses most all these issues to come to the point where he has established the Open Computing Alliance.

The alliance invites membership from it companies where it can help members design better business contractual and legal processes that will help IT companies and telecom companies works more productively with each other while recognizing all the inter company processes that can benefit both sides. The same thing goes in showing governments how to coordinate plans and policy across operational and sectoral divisions. As Tim explains it in the ***COOK Report*** interview, the goal of OCA is to encourage systemic thinking across these legal planning budgeting and operational issues.

OCA Members will be assisted in developing trans sectoral approaches that are synergistic rather than conflicting in using national economic resources to move forward in ways that legal, procedural and operational goals can be formulated and carried out in ways that can demonstrate how a systemic approach can produce results that are unobtainable by the current system that lacks the necessary integrated cross silo thinking.

Regulatory Status of Internet Access p. 19

This is a follow on discussion to treating internet access under title II as telecommunications service (See December 2009 ***COOK Report*** pages 1-29.)

October 25 **Chris Savage**: … The issue-du-jour is the regulatory status of Internet access. The conclusion I am tentatively coming to is that (a) the case for treating Internet access service as an unregulated information service is, in fact, pretty weak; but (b) if Internet access service were to be deemed regulated (for these purposes, let's say subject to Title II), it wouldn't actually matter very much.

snip

Atkinson: Chris, You are absolutely correct in your forecast. IMHO, the only way for the FCC to get out of the regulatory thicket created by classifying Internet access service as an "information service" is to reclassify it as a "telecommunications service."

snip

Cecil: You are just beginning to see the dynamic I've been trying to explain. But yes, it is dying a slow death. The NANOG report I sent you describes this. Here is is for list benefit: **NANOG 47** http://www.nanog.org/meetings/nanog47/presentations/Monday/Labovitz_ObserveReport_N47_Mon.pdf Check out slide 16 "What's happening" and slide 17 - the new Internet.

Qwest Makes a Profit While Level 3 Bleeds p. 29

COOK Report: What is wrong with this picture? (Oct

29) **Converge! Network Digest, v16n207** 28-Oct-09
snip

Cecil: Further bursting the illusion that wireless is "separate" from landline is separate from IP, here's a new Qwest vs LVLT battle: http://telephonyonline.com/3g4g/news/wholesale-fiber-backhaul-102809/ Like the monopoly landline guys are not going to leverage the hell out of this to kill competition - uh, guess which one is paid by all of us to run copper into the vast majority of towers out there, and guess who is going to deny interconnection, collocation, drive up prices from pole attachment to ROW access? Now it's bad enough for Q and LVLT - neither has a wireless affiliate, but watch how this plays out in Verizon and AT&T territory, not to mention how ugly this gets with your friendly guys at Frontier or Embarq.

Telecom regulation is a hedge fund for monopolies.

Cecil to Rollie Cole: You raise an incredibly important point. Using the wireless towers as an attractor of fiber optic, but where local authorities make that process easier and less expensive for entities willing to open up access for others, has the potential for an incredible win-win proposition. In concept it is not unlike what's being done with some of the stimulus grants, so the precedent for this sort of thinking is already supported. If you need any help in refining your thinking or getting to folks inside those organizations, I'd be happy to point you in the right direction.

Welcome to Net Neutrality, Now Log Off p. 31

Goldstein: Why does this send me to the ceiling? Sure, I think just slapping down file servers would be more effective, but the pirate-CDN business and their ILEC affiliates put the kibosh on that. So now they're limiting heavy users during congestion. Sounds more than fair.

In case you're not familiar with it, DOCSIS has a systemic shortage of upstream capacity. Cable is best at asymmetric applications. It's different in Europe where the upstream spectrum extends to 68 MHz, but in the US it's capped at 42 MHz, thanks to an old FCC rule requiring cable companies to carry TV stations "on channel", with Channel 2 starting at 54 MHz. 42-54 is the guard band between the two directions. So DOCSIS 3 can't do much here because there isn't space to bond more channels. Cable incrementally raises capacity by reducing the number of subscribers sharing a section of cable (node splitting). That costs money.

ADSL's asymmetry, in contrast, is entirely by choice.

snip

Broadband Pricing

Cowen: Can I refine my question in terms of the offering by dominant incumbents of facilities where there is no economic alternative? Where there is a competitive market, prices should gravitate toward the competitive level and there should be no need for any form of government or regulatory intervention over the price of the offering of access to the facilities that carry broadband.

Goldstein: Agreed. However, there is a difference between having any competition at all and a market lacking significant market power. Typical EU regulation seems to kick in when one player has more than 25%; the FCC typically sees a market as competitive is one player has less than around 99.9%. Certainly in measuring Special Access, the guideline they enforce, based loosely on a not-hard-fought DC Circuit case IIRC, is that if there is competition anywhere in a metropolitan area, then the entire area is assumed competitive, regardless of whether or not a given customer can get a choice.

Sort of treating wires in the ground like airplanes at the airport.

snip

Vint Cerf: I doubt there will ever be much competition at the physical layer and therein lies my big problem with status quo. If the split occurs, and physical facilities can be used to reach alternative providers, this would be a form of intra-modal competition - something the FCC rejected years ago. If we want to explore that alternative, we'll have to start asking ourselves what the pieces look like, who will experience what costs, who are the players that connect to the sharable infrastructure, what are the economics and business models that would work for all parties, etc.

Odlyzko: I agree with Vint. We have the ancient problem of a natural monopoly that was already faced by people worried about railroad economics almost two centuries ago. Apropos Hendrik's comments re Larry Downes, the net neutrality discussion may indeed not lead anywhere in terms of effective action, but it probably will be of great help in shaping the debate. The telcos staked out an extreme position with Ed Whitacre's "those are my pipes, I can do whatever I want with them" position, and the reaction to that has shown them, and everybody else, that this is not tenable. So now we'll have an ongoing tussle somewhat removed from such extremes.

The Open Computing Alliance Focuses on ICT Convergence Policy Development

Founder Tim Cowen Explains Need for Cross Silo Approach to Issues of Government Procurement, Cloud Computing and Supply Chains

Symposium Discussion October 18 - November 17 2009

A Note from the Editor on the January 2010 Format and Presentation and Coming Events for February, March, and April.

This issue begins with an interview with Tim Cowen on his construction of a more unified approach to government IT expenditures in the context of open standards and cloud computing. Tim Cowen's economic goals are highly significant in the on going context of attempting to build a more rational economic approach toward telecom investment.

While at Supercomputing 09 in Portland November 14-19 I interviewed Cees de Laat and Kees Neggers again. In addition: Wim Leibrand, Director of Surf, Hans Dijkman, and L. O. "Robert" Hertzberger - the later two involved in Gigaport 3 and the Netherlands path breaking e-science program. I will publish a report on their activity in the February 2010 issue. This the answer to how to use government policy to support a bridge between basic and applied research. My hope is that NLR will assimilate what the Dutch have pioneered. Pub date between Jan 1 and 15

Also on deck *2. Netness AKA* **Renan's Law**. *I have Sheldon in 2.5 hours of recordings on this subject. This is wooly but HUGE and profound. A framework and compass for thinking. Everything wants to be connected..... and the more things are connected the better things work. For example augmented reality anyone? Netness is quite hopeful and quite REAL It gives us - a new way of looking at things. Many more details to come. - target date february some time. VERY VERY important- breath taking. Pub date between Feb 15-28. Feb March and April issues for 2010 likely to be Feb March - and March April.*

And stilll more Server-sky.com - in five to ten years the cloud moves into space just below the lower van allen belt. Keith Lofstrom. Portland is filled with fascinating folk and Keith. yet another interview and likely 3 if not 4 months away, is one such. keith is enlisting he open source community to help design very cheap very flat, very thin solar powered servers that can be launched in stacks of say a thousand five years from now.....or maybe ten.

Text, URLs and Executive Summary: I have attempted to identify especially noteworthy text by means of boldface for REALLY good "stuff" . Also the proper Executive Summary in this issue continues. I hope you find it useful. Feedback welcomed. You will also find live URL links and page links in this issue.. (I am also no longer changing British spellings of things like fibre to the American fiber.) Thanks to Sara Wedeman - see www.becgllc.com for assistance with the masthead logo. Captain Cook now charts direction by looking at a compass rosette.

I am omitting the contributors' page since a cumulative list may now be found at
http://www.cookreport.com/index.php?option=com_content&view=article&id=121&Itemid=74