# Trans Sectoral Economic Issues in the Application of Computer Technology to Health Care

## Reflections on the 30th Anniversary of My *Futurist* Article on the Problem Oriented Medical Information System of Dr Larry Weed

**Editor's Introduction:** The June *COOK Report* combined interviews on key domestic policy questions: Broadband Mapping and Divestiture 2.0. This issue will bring readers up to date on two months worth of symposium discussion.

But allow me to lead off with an editorial rumination. In preparation for a total left hip replacement on July 2, I dusted off an article that I wrote which was published in the June 1979 *Futurist* magazine some 30 years ago. Titled "*Rx for the maladies of healthcare a medical revolution in the making*", it was the first article on Dr. Lawrence Weed's Problem Oriented Medical Record Information System (PROMIS) ever published outside of the medical or computer literature. Its premises would be familiar to many readers of

the *COOK Report* namely that real knowledge is found within the understanding of an entire system or ecology rather than just within specialized silos. Thirty years later it is a bit discouraging to see where we are. Namely still prisoners of the paper-based medical records system as we continue to fall victim to a fragmented care and to move forward with the assertion that doctors can stuff enough medical knowledge in their heads to develop adequate treatment plans rather than use computer technology that has grown orders of magnitude more powerful to act as guides and decision-makers in partnership with their patients rather than as God's dispensing of their own versions of "healing."

One can only wonder whether 30 years from now we will

still be under the control of the phone companies as they meter our every action.

Clearly our technology has progressed to the extent where, while health costs are burdening the social fabric of the United States more and more every year, if we had technology leadership that wasn't afraid to anger the vested interests, we could move toward the implementation of a PROMIS like system. Sadly a rather detailed literature search in Google

### On the Inside

**Trans-sectoral Economic Implications of Fiber**

Contents p.60

shows that, while electronic patient records are now a very big thing, Dr. Larry Weed's work is not known to many of the people struggling to reinvent the wheel that he brilliantly laid out in the 1970s with the support of nearly a decade of National Institutes of Health funding.

My 1979 article is available on my website as a down-loadable but unfortunately bitmapped PDF. http://cookreport.com/weed1979.pdf  I would urge readers to grab it if only to be exposed to a well reasoned way of thinking about huge amounts of information in the context complex decision-making that can be audited. Again this seems to me to be an example of the medical profession thinking that its expertise would be cheapened if a scientific system of record keeping and access to computerized knowledge were required to be an everyday part of their toolbox. We certainly now have the technology and the infrastructure by which a very effective universal system of medical communication knowledge transfer and record-keeping could be maintained. Regrettably it looks like we have not the wisdom.

In the next month or two I may turn my 30 year old article into machine-readable text and offer it alongside my own experience of 10 years ago to show a personal example of what happens when, like telco fiefdoms, medical fiefdoms continue unchallenged.

I have not made up my mind on this course of action yet but I am intrigued by the possibility because I can point out my own personal experience and publish two x-rays of my cervical spine that visually are quite extraordinary and that I believe should be part of a national computerized medical records system complete with the identifying information of the surgeon who installed a plate and screws -- the bottom two barely attached to C7 and the top two squarely anchored in the disk between C-5 and C6. Alongside this x-ray I can offer the picture of what euphemistically is called the re-vision. I will of course be careful not to name the negligent surgeon whom I am assured would sue me for defamation. However a Google check just showed me that he is still practicing.

## Larger Significance

One simply wonders how much longer we can function as a viable economic society without beginning to insist that professions demonstrate more responsibility.  I would also like to suggest that the "feds" begin to seriously study the ideas behind and history of electronic patient records. there is wisdom that may be found.

Here is an excerpt from **http://www.expertson.com/Branding_Symbolism/theorganizationaspatient.html**

The authors write: "the ideas of Dr. Weed about using knowledge couplers have caused a debate within the pages of the *British Medical Journal* (*BMJ*) but in the loud media noise of political scandals and tabloid news, little of this debate has come onto the "radar screen" of the general populace. The debate centers around a fascinating article in the July 26, 1997 *BMJ* called 'New Connections Between Medical Knowledge And Patient Care.' "

"The article(http://www.bmj.com/cgi/content/full/315/7102/231) is well-worth reading not only for the revolution in medicine it suggests but also for the application possibilities of application in other areas such as the internet and business."

"The problem is stated succinctly at the beginning of the article. "The meteoric shower of medicine's scientific achievements can overwhelm a doctor's mind. A patient has no assurance that his or her doctor is able to take into account all relevant scientific knowledge and integrate it with detailed data about the patient's own condition. Yet few doctors, patients, or policy

makers recognize that modern information tools can become the loom for weaving these two bodies of knowledge into a fabric. In fact, few recognize the dimensions of the problem."

"The cause of this state of affairs, notes Dr. Weed, is "misplaced faith in the unaided human mind." The requirement of modern medical practice requires tools to extend the mind's limited capacity to recall and process large numbers of relevant variables, just as medical science requires the microscope to extend our capacity to see at the microscopic level. We must abandon the arrogance of professional 'expertise' that shuns such tools. Instead, we must use the new tools routinely as they are developed for more and more diagnostic and management problems."

"Again, we suggest our readers link directly to the article and read it. For the purposes of brevity, though, here are the summary points of Dr. Weeds argument in the article:

•Medicine lacks an information infrastructure to efficiently connect those who produce and archive medical knowledge to those who must apply that knowledge.

• There are serious "voltage drops" along the transmission line for medical knowledge in the present healthcare system.

• Good medical practice requires tools to extend the human mind's limited capacity to recall and process large numbers of relevant variables.

• Knowledge should be held in tools that are kept up to date and used routinely–not in heads, which are expensive to load and faulty in the retention and processing of knowledge.

• Such information tools would allow fundamental changes in our approach to medical education.

• The tools would also allow a defined and consistent approach for controlling and keeping track of inputs to the healthcare system, which in turn would enable outputs to be properly interpreted and corrective feedback loops to be used routinely.

At the conclusion of the article, Dr. Weed notes that "Retrieving and processing information in medicine are operations that we have tried to perform by thinking about them at the time of action under extraordinary time constraints. Enormous damage results from this misguided effort."

**COOK Report**: The evidence abounds. Unfortunately, it seems that the courage to act is in short supply.

## Symposium Discussion April 16 - June 18, 2009

# Evolution of Australian Broadband Policies Continues with Request for Trans-Sectoral Thinking

**Paul Budde**: on April 20 -- Just back from a meeting with the Australian Minister for Broadband re the Australian National FttH Broadband Network. Just to recap it will be wholesale only, FttH to a minimum 90% of premises, rest wireless, etc.  All premises will be connected (not just passed). Planned investment is A$43 billion. Current estimates are: actual roll out will cost A$25 billion.  My argument is that if we can raise any more money we should use these funds to built e-applications (health, etc). Finance will be done through government bonds. The infrastructure utility will be minimum 51% owned by the govt.  Others (including Telstra) can participate and put fibre assets in the company. The government expects a minimum financial exposure of $12 billion and max around $25 (in the worst case of no private participation).

I have passed some of the messages on to him as we have discussed on this List (and he was very impressed). He is keen for me pursue the

trans-sector and digital economy issues and is very supportive of the international cooperation with other governments (USA, Netherlands).  He needs as much ammunition as possible. Why is this investment good for the economy? For his address of the Press Club on Tuesday next week.

He would also be interested in any high-level ideas and suggestions for his regulatory plan in particular in relation to FttH (the future outlook) rather than regulatory issues based on the immediate situation (separation, etc).

Your ideas and suggestions are very welcome indeed

**Cole**: **One of the obvious applications is metering -- water, natural gas, electricity**.  Another is to put a Wireless Access Point every 10th house or so, in order that government workers, etc. have a way to "tap in" to the network. They can use it for inspections, building permits, crime reporting, etc.

A third is remote sensing for

environmental purposes -- track air quality, water quality, fire alarms, etc.  All of these are "trans-sectoral" in that they are applications not normally associated with telecommunications.

**Cecil**: I'd like to echo and emphasize Rollie's points. This is not about telecommunications, cable, or wireless as a business. **It is about basic infrastructure used to connect increasingly ubiquitous and intelligent devices, whether they be institutions, public agencies, people, meters, appliances, buildings, or even bridges (e.g. Minneapolis' new "smart" bridge)**, but these applications are only the beginning.

Let me also quickly put some meat on the flesh of environmental monitoring.  Not only will it matter to green house gas emissions (the U.S. already has a database capable of tracking emissions with incredible granularity; it was built in anticipation of increasingly intelligent infrastructure), but to all sorts of

monitoring and control that will be associated with all sorts of new energy projects either planned or under construction out West, particularly in the intermountain region.   But these truths are not limited to U.S. borders either nor are they limited to energy production, environmental preservation, communications, or transportation either.  All of this is just the beginning.

Long story short, networks extend our senses and increase our adaptability.  Few, if any investments will have a longer and better return on investment provided there is agreement, intent and ongoing assurance that abundance is valued over scarcity; that open is understood to be more valuable than closed, and that the conceptualization and imagination brought to the effort are as unlimited as the minds that dare to imagine better worlds.

**And P.S**. fiber optics is **not the gold standard at all**; it is simply necessary infrastructure.  Pretending that it is somehow "gold" is to pretend that there is some premium on it; that it is somehow "more special" and likely more expensive than anything else.  It's an old marketing trick, but has nothing to do with the obviousness and plainness of very conventional technology.   It's no longer "magic"; it just is, so

let's also disabuse ourselves of the notion that somehow pulsing light down a fiber is still FM technology where M = magic.   This stuff is no more special than asphalt.  It's stuff we use.  Period.

The magic is what we - all of us - the people - do with it.

**Cole**:   A "trans-sector" concept, and one that does benefit mightily from, if not require, high bandwidth is what I call "remote diagnostics." It where the remote location shows something to the central expert and gets advice. Examples range from life-saving to silly, and include:

**1.** Here's this cut on my back -- do I need to come in for further treatment, or can you talk me through it?

**2.** Here's me playing a musical instrument -- are my fingers in the right places? how's my intonation, tone, expression?

**3.** Here's a look at my washing machine trying to run and the sound it makes -- can you help me repair it without coming out?

**4.** Here's my attempt at the latest dance move -- what can you tell me about doing it better?

**5.** Here's the architectural plans for my addition -- is

this enough for a permit? Can you send out someone junior, who can consult with someone senior back at the office in real-time?

6. Here's a plant that looks damaged -- can you tell me how to treat it without you coming out here or my bringing it in?

**You get the idea -- the remote location submits "things" -- whether real-time video, detailed photographs or high-quality sound recordings, elaborate diagrams (like architectural drawings), and can get feedback without travel to and from the remote location.**

**Savage**: With due respect, though, most of these require miniscule bandwidth.

Fiber to everyone's home enables, in my opinion, the following types of things:

**1.**   Health care from home (some)
**2.**   Work from home (for certain kinds of work)
**3.**   Education at home
**4.**   Shopping from home
**5.**   Interacting with the government from home.

Let's not forget that most people most of the time live in meatspace.  Having a fiber optic link to my house doesn't help me mow the lawn, or clean out the ga-

rage, or do the laundry. It doesn't help me help my kids with their homework when what is needed is editing a draft of a paper or reviewing (drilling) on Spanish pronunciation, when what they need (as one of my kids does) is help with the discipline of doing it, not the pronunciation per se.

**Cole: I am going to respectfully disagree with Chris on every point above <grin>. The crucial word is "help," not "do."**

**1.** *mow the lawn, clean out the garage, do the laundry*

FTTH can help with remote diagnosis and guided self-repair of the lawn mower, the washing machine and dryer, and the "stuff" in the garage. It can provide detailed photos, videos, and animations to guide those activities ("what do I do with this stain?" "can I wash these two items together?"). It can help sell the items in the garage, and/or identify places to give them away -- indeed, it can "market" them to charitable organizations that might come pick them up.

**2.** *homework*

Editing the paper is easy -- for a price, several services offer both asynchronous and synchronous homework help. In Indiana, Rose-Hulman undergraduates consult online

with Indiana K-12 students for free -- in a good connection that includes pronunciation, choice of phrases, etc. Now as to discipline, when my daughter was in high school, we discovered "parent-friendly" chapter review web sites. I just told her to bring me the chapter review quiz with all 10 answers correct. She could take the review quiz over and over again (it would scramble question and answer order each time), but I did not have to stand over her -- she could do it quickly or slowly.

Indian Math Online (www.indianmathonline.com) takes the process even further, with separate logins for parent and child - the child gets help; the parent finds out how the child is doing, relatively to grade-level math standards in India (similar to math standards in the US, but an international scale). Having an outsider was more fun, more effective, and easier on parent-child relationships -- so it really did help with the discipline issue.

So there -- FTTH can help with "meatspace" activities!

Earlier **Savage:** It does help with my work. But I have a bit-intensive job, as, I would submit, do most of us on the list.

I think it is important not to "oversell" the immediate,

pragmatic, measurable benefit of universal broadband deployment. It is certainly true that good things can happen. But an appropriate humility about our own (lack of) ability to predict the chaotic, unplanned evolution of the economy and cultural and social life counsels against making specific predictions about what can or will happen.

**Harrowell**: As they want to get high-speed wireless out beyond the end of the fibre, may I suggest video applications for the Royal Flying Doctor Service? A caller in the bush with their big green medicine chest could show the Doc what's going on, improving quality of care and potentially reducing the number of sorties.

Similarly, there are quite a lot of small medical facilities in Australia that although in reasonable-sized towns are still quite a long way from anywhere; could benefit from a fast uplink for medical imaging...

Regarding the fire brigade example, a couple of 3GSMs ago I interviewed Roger Quayle of the once and future IPWireless about the system they did for the New York Fire Department; basically it was a UMTS TDD radio system carrying IP, but the bit that stuck in my mind was some of the C3 applications run-

ning over it. The NYFD, by law, gets a copy of the plans of every building in its area of responsibility; they were digitising them and displaying them as a map overlay on a really big touchscreen.

The cool bit, however, was that the current state of the map on the big screen at headquarters (or in the forward-command post) could be synchronised with the view on the mobile terminals, so you could sketch out a plan and have the crew in the field both see it and respond to it.

**Robin Eckerman** (Canberra): Frankly connecting all homes does not seem to be an efficient use of capital given that *in the early life of the network*, typically well under half will actually want a service.

I sat on the oversight committee of a brownfields FTTH rollout that embraced this philosophy - buying sufficient ONUs to connect every home passed. Because only some homes passed actually wanted service and gave their consent for an installation (even though it was all free), about 60% of those ONUs are still sitting unopened in boxes, and are now un-saleable because the technology has moved on. At best, they may one day make a nice artificial reef somewhere.

Connecting homes is going to be *very* expensive. Start by considering the need to provide a powered ONU location. If outdoors, it will need an enclosure (bit like an electricity meter box) - these are normally sunk into the brickwork, but could be surface mounted. In-house wiring (probably telephony grade) may be unsuitable for high-speed services, and almost always won't radiate out in a star topology from the most convenient ONU location. If existing telecoms services come in via an underground duct, chances are it will not be designed with the more gentle bend ratios required for fibre (especially for pre-terminated lead-in cables) etc etc.

I'm just scratching the surface of a tiny sample of the issues that will be need to be solved to make the point that connections are going to be expensive - and connecting homes that aren't interested in a service doesn't immediately strike me as a smart strategy.

Some good practical skills are going to be needed to translate Australia's fantastic NBN decision into a reality at anything like the $43b that has been foreshadowed.

**Atkinson**: I'm all in favor of "ultrabroadband" and expect that there will be a natural but slow evolution to UBB

based on normal market and technology developments.

But I've got to agree with Chris' earlier post: none of the mentioned activities require FTTH--you can do them all today quite well with DSL or cable modem. So what's the rationale for forcing "unnatural" deployment of FTTH (as an overbuild) unless it makes a radical difference to average human beings? As it is, 20 percent of adults in the US don't have broadband at home and the principal reasons for non-adoption aren't cost or availability; it is that many people don't see the value or need for today's low speed broadband.

**If FTTH makes "sense" (as an overbuild), it has to enable the general population to do things they value that they CANNOT do today.** It is difficult to imagine and assess something that doesn't yet exist, but extrapolating from past experience can be helpful. It seems to me that the "bandwidth driver" is and has been "entertainment." The internet at home became popular because of entertainment--think AOL, instant messaging and porn. E-mail and tele-work was enabled because the computer and dial-up access was first installed primarily for entertainment purposes. And as the entertainment became more visual and required more bandwidth--

think web surfing, interactive games and even more porn-- broadband at home made sense and had value.

So, what are the valued activities at home that require FTTH? Surely it has to be entertainment-based and my guess is that it will be 3-D video: a real "wow" factor with vastly complex interactive 3-D games, 3-D "television," 3-D personal telepresence and, I'm sorry to say, 3-D porn. The spillover effects will be great: 3-D tele-medicine will be a big improvement on current telemedicine and the 3-D telepresence will make a physical office unnecessary (don't invest in commercial office buildings). But first, the majority of regular families will have to see the increased value in 3-D in order to justify wearing geeky glasses and justifying the very expensive displays (currently $4-5,000), computers and internal home distribution systems that are needed for a 3-D experience.

But 3-D is still trying to carve out a niche in theaters although Panasonic is pushing to standardize 3-D television in order to start selling sets to the early adopters.

And, by the way, I'm aware of a survey being done in a state that I cannot name to gather data on why people aren't subscribing to cur-

rently available broadband. One of the chief reasons, I'm told by the surveyor, is that "we don't want porn in our house." So, while porn may be a big reason for broadband adoption, it may also be a big (and understandable IMHO) reason for non-adoption, including FTTH.

**Estrada**: I agree with Bob on this one. Recent focus groups that were conducted with non adopters in Los Angeles revealed there is a overarching fear of "bad stuff" that the Internet/broadband brings into the home - porn, identity thieves, etc. This is something we need to be aware of and need to find a way to ameliorate if we want universal broadband adoption.

**Atkinson**: As I said, porn was a major driver of dial-up internet access. And it, along with other entertainment, will drive ultra broadband. But should taxpayers be paying for "entertainment," whether porn, shoot 'em up games, IM, etc? I like to play pool: where's my taxpayer-subsidized pool table?

**Cooper**: At one level, I disagree with the sentiment entirely. Taxpayers don't subsidize the pool table in your basement, but they do subsidize the streets and roads you drive on to go to the pool hall when you want some real competition. Of course, the streets and road serve many

other functions. Thus, we arrive at the difference between widgets (i.e. pool tables) and infrastructure. "a rapid, efficient, nationwide and world-wide wire and radio communications service with adequate facilities at reasonable charges" is a public good of immense value. The fact that, once it exists, people will find entertainment, whimsical or even nefarious uses for that network is no reason not to deploy it.

At another level I agree. In choosing how to spend scarce and valuable taxpayer dollars to ensure the deployment of that critical infrastructure, we must ask what the critical functionalities are. We subsidize subways and rail as efficient mass transit, but people can still choose to drive or take a taxi (which we also subsidize, but to a lesser extent). I have demonstrated that a least cost, wireless approach to serving the unserved hits the sweet spot, delivering basic connectivity that meets the needs of the vast majority of consumers and applications. It falters only in the high end HD video realm, which would be left to the marketplace. .

**Cole**: I still say the real social driver will be "remote involvement," and will require images, sounds, and video to be UPLOADED as well as downloaded. Yes, that remote

involvement might be ama-teur porn; on the other hand, it might be lifesaving health or crime or fire containment advice or really convenient homeowner appliance repair, yard diseases, etc. Yes, some forms of DSL and/or cable and/or really high quality wireless could be part of this -- but only for a few years, until resolutions get higher or we want/need to do 2 or 3 remote sessions at once.

**Cooper**: Wireless = roads + Mobile Computing + tele-graph + telephone, + Inter-net + HDTV , all rolled into one at one one-third to one-quarter the cost of fiber.

**Craig Partridge**: This statement may or may not be true. I haven't rolled the numbers personally and my initial attempts to do so this morning suggested that to really have a good answer was at least a Master's thesis effort and perhaps plausibly a PhD effort [if you dig deeply into operating costs and tra-jectories of various cost curves].

But I think it has, hidden be-hind it, a core issue. If wire-less is a sufficient technology to meet broadband needs to-day, for how long will that be true?

Fiber's great advantage is that you can mint spectrum. Adding a new fiber in an area increases available transmis-

sion spectrum, while adding a new wireless device in an area decreases available transmission spectrum. Even-tually wireless cannot add capacity to meet demand (note we're some distance from that moment).

I'm a big believer that we can use wireless spectrum far better than we do today and with better technology can squeeze much more capacity out of wireless for all uses. Whether that will happen is rapidly becoming policy issue rather than technology issue.

I also suspect that, going forward, broadband demand will continue to go up and that fiber will play a central role, both directly and as a way to free up wireless spec-trum by moving some traffic off wireless and into the less limited fiber-optic spectrum. Note this leaves plenty of room for a FttH vs. FttC vs. FttN argument.

**Goldstein**: I don't think that Mark or anyone else here is arguing that fiber is never a good choice, or that wireless is always adequate. Rather, we're looking to achieve a balance. The cost curves for the two are very different. Radio systems essentially have a cost per square mile served and a cost per mega-bit of common capacity. Fi-ber costs are primarily per mile passed. So in the city, with a high density, fiber's

cost is low and radio hits the capacity wall pretty fast.

It's in the rural areas where radio can get coverage out there faster and cheaper than fiber, and while not exactly better, it can be good enough for the foreseeable future. (Such areas typically have a subscriber density of less than one per mile, though I'd probably put a break even at a somewhat higher density than that.) The existing tele-phone plant (some of it fiber, some copper) in those areas is usually paid for by the rest of us, not its users, so fiber-ing up the less-densely-populated half of the Lower 48's land area would cost too much. That's a small fraction of the population who could be most economically served by radio.

Of course current spectrum policy makes that very diffi-cult, but theoretically the new FCC could fix that.

**Partridge**: Complete agree-ment from my end. The challenge is figuring out that balance, especially in a world where one big employer (e.g. a company employing 500 people or more) can drive a community's needs from "easily satisfied with wire-less" to "needs fiber."

For example. take the new Honda plant in Greensburg, Indiana. Greensburg has 12,000 residents -- the entire

county has about 25,000 residents. If you subtract Greensburg from the county, my calculation is that the population density is about 30/sq mile, which is relatively low (about the same as Utah, which is 41st out of 50 states per Wikipedia). Lots of towns dream of being Greensburg.

**Goldstein**: Yes, and that's why the optimal model, as I see it, uses fiber within the town -- even a tiny rural one -- but goes wireless into the surrounding area.

I'm working with a real-life client, with some state rural-support money, building broadband to two very small rural towns. Right now he's a WISP. He even managed to beam an OC-3 radio into an isolated valley that ILEC couldn't get to with either fiber or radio. So he'll be able to use DSL for the short loops for now, but fiber might be practical for the towns themselves, which have a decent density within a half a square mile or less. (Many rural towns are denser, "in town", than typical suburbia.) But with over 20 miles between ILEC central offices, there's a lot of land area wherein nothing but radio is practical. So **all three technologies fit together, like a target with a fiber bullseye and a DSL first ring, surrounded by a field of radio.**

**Partridge**: That's fun -- I have almost exactly that picture in a slide I'll use at Google's Multidimensional Internet Symposium next week (which I understand will be webcast). The two differences are I say "copper" and "wireless" rather than DSL and radio, and copper and wireless are offset (e.g. so you can have various permutations, such as fiber+wireless without copper and fiber+copper without wireless, etc).

# More on Australian Open Networks

**Cole**: As I learned from Tim Nulty vis-a-vis the Swedish experience, "open" in the sense of wholesale not retail, can only work if the retail players agree to use the wholesale network. In "wholesale only" states in the US, the integrated cablecos and telecos simply "wait out" the wholesale player, since in "end-user" funded systems, the take-up rate is crucial (even more than the ARPU), and "end-user" choose to "take-up" for retail items (whether video, data, security, health, education, metering, or whatever), not just "raw" connectivity.

When the retail players agree to participate, it is a win/win for everyone, as the Dutch experience shows. When the

retail players refuse to participate, it is a lose/lose situation.

Are their Aussie retail providers (video, ISP, multi-player gaming, metering, et al.) ready to jump in -- and actually cut deals in advance, so they can help market the take-up?

**Budde**: Good points Rollie

The plan is indeed to get all retail players on the network. The only problem might be Telstra, but so far they have reacted positively to the plan - but you never know of course.

In order for the government to get Telstra onboard it has also foreshadowed structural separation, the proposed legislation is so cumbersome to Telstra that it would nearly be impossible for them to refuse the offer to become involved in the new NBN.

Network operators can become asset holders in the new wholesale company and they can include their fibre assets in this company and again most have reacted positively and the industry is now talking to find a solution that would facilitate all if not most.

**Cole**: In the US, I would be looking to organizations that are primarily, but not completely available through rela-

tively standard ISP connections now, including EPSN360, hulu.com, tnt.tv, NBC, ABC, CBS, various gaming networks (I saw a briefing for Onlive www.onlive.com that was most impressive), web hosting, email service, Skype, other VoIP providers, security services, education, health, etc. -- and all the Australian counterparts and/or specializations (tennis channel, golf channel, rugby channel, Google Australia, Amazon Australia, et al.). The idea is to have a whole host of retail providers ahead of install, so they can help market. The dream (to me) would be to have a package that is way beyond "triple" play -- more like a giant shopping center where the end-user can pick and choose among multiple "plays" at the time he or she "signs up."

It might be interesting to consider hardware bundles as well, a la wireless services. For instance, $X (in Austra-

lian dollars, or course <grin>), gets you (a) a computer, (b) installation; (c) first year's "raw" connectivity; and (d) the following X,Y,Z retail services.

**Cecil**: As wise as it is to ensure separation between wholesale and retail, let us also remember the wider uses and applications beyond normal conceptions of "telecommunications" or x-plays. While certainly in line with conventional offerings, we must be mindful not to foreclose adaptability.  Connectivity is intelligence.

**Budde**: Erik we have received from this List many good responses re wider uses A isand applications I have gathered this in the following overview.

http://www.budde.com.au/Research/Australia-National-Broadband-Network-Contributions-from-Experts.html

**Cole**: Paul -- one more thought.

The report says the key item in unserved areas is basic connectivity. I would just stress that it is TWO-WAY connectivity. The served are not just "sending out content" for charity's sake -- they are (a) expanding the market for content sent out, whether an economic market or a social or political market when trying to persuade or educate; (b) creating a chance for the unserved to make contributions -- i.e. to send things in -- questions, comments, their own content. It is the two-way nature of basic connectivity that is crucial, NOT just "more TV channels." [end of rant....]

# Fiber in the Balkans
## A Brief Report on Recent Developments

### Fiber week – Croatian Conference

**Wagter**: I have just returned from a conference in Croatia on FttH. The beautiful surroundings and the good food were completed by interesting conversations.

One eye-opener was the extensive use of fiber optics in ships and yachts, not only for networking but also for sensing. Continuous measuring of the stress on hulls, sensing of weight and weight distribution, sensing of fluid levels, optical gyroscopes, you name it.

**But the main topic was the extensive level of fiber-to-the-home initiatives outside of the EU including the Middle East.**

Such as in Iran, starting with the enormous city of Teheran with 17 million inhabitants. The plans are being made now, and they have the money. The government in Iran very well understands the importance of upgrading their (old) telecommunications infrastructure for their economy. Of course they want to invest in the newest technology but shifting eve-

rything to IP has another advantage for them: controlling and eavesdropping on communications is easier.

The Saudi's have the same ambition only Fiber-to-the-Mansion creates its own challenges: how many fibers do you lay to a gigantic mansion? Redundant or not? How about the internal wiring, should that also be fiber?

Everybody agreed that we will be surprised when these deployments start. **As Telco 2.0 already has noted: top down technocratic/ autocratic deployment of fiber is a proven successful model. Look at Japan, Singapore, and recently Australia.**

**Such as course short circuits the haggling and lobbying of incumbents as they work to maintain their monopolies, while they keep on delaying the investments as long as possible.** This can be seen in Croatia (and other countries in the region [editor – including Greece) where Deutsche Telecom (DT) has bought the incumbents. Tourism is a very important source of income for Croatia: close to 5 million tourists per year visit the

beautiful coastline. Many regions, municipalities and hotels have noticed that their visitors expect excellent connectivity, that it is a prime (dis-)satisfier. To get an affordable high speed Internet connection the hotels had to resort to alternative operators and deploying their own fiber. **A big legal row started: DT claimed that had bought the conduits as well as the cables, therefore nobody else could use these conduits, blocking alternative operators.** Municipalities and others protested as they had financed the civil works for the conduits.

According to Dr. Tacic (former member of parliament) DT could not show any legal proof of their position but every deployment by altnets had to face legal battles. Suddenly a proposal for a new law appeared: the biggest user of a conduit was to be made responsible for the maintenance of the conduit with the side effect of controlling access to the conduit. How convenient.

The transit at the Croatian IX was supplied by the incumbent (DT) at artificially high prices. As last one entrepre-

neur managed to create an alternative route via Bosnia, Slovenia and Austria. The transit prices dropped to a fifth or less. Hurray for competition!

As a result of the recent regional wars there was a lot of fiber (main trunk networks) deployed for the military (secure, no interference). All utilities also have create a fiber based network for themselves. The Croatian power utility is deploying gas pipes to every home, digging everywhere. So all that is

needed is political will. Namely the will to use part of the conduits and slack capacity to create a good country-wide backhaul network, the will to put conduits in the same trench as the gas pipes and allow all operators to use them.

This political will might appear quicker than expected: politicians complain that Croatians are now forced to send their money to Germany, instead of investing it in their own country in good infrastructure which will (to

start with) improve their facilities for tourism and services business. A powerful argument during insecure times.

(http://www.dadamotive.com /2009/04/fiber-week.html)

# Scarcity and Abundance or Two Different Kinds of Order

## A Discussion Stemming from a 1985 paper by John Marks

**Erik Cecil,** browsing, happened on a February, 7 2008 post to arch-econ by Kevin Marks.

**Marks (Feb 2008)**: The core point of massively parallel attempts out-competing design is both the Darwinian principle, and in a different context the Hayekian one. Here's a paper on Hayekian emergence from my dad circa 1985:

http://www.ertnet.demon.co.uk/2kinds.html

The ur-mistake of both big government and big corporate promoters is to ignore this; conversely the mistake of the Cato-style libertarians is to see markets as the only kind of parallel spontaneous order.

**Cecil**: Your father's writing is pure genius. (I was looking for something else and stumbled across this, followed the link and WOW!)

The WOW is a deep one because you posted this response more than a year ago, but within it I see (or think I see) insights that help me not only understand where

we are right now and how we got here with new depth and texture, but explain the dynamic of the operation of law with enlightening lucidity:

**Dr. Marks**: "There is a further respect in which languages resemble markets and science. Like these last two institutions, they incorporate self-correcting or error-eliminating mechanisms. Linguistic forms which do not lead to effective communication tend not to persist; more successful forms persist, and gradually evolve into more permanent features of the language. Natural languages have the interesting property that **partially incoherent or ungrammatical statements can transmit some information**, although they may also lead to misunderstandings. This is **not a property of such products of constructive rationalism as computer languages,** where one error is often enough to destroy completely the meaning of a statement. Again, unlike computer languages, the very complexity of natural languages may lead to differences in interpretation and a lack of communication - as

when two people use the same word in different ways.

"Yet another similarity exists between language and other institutions of spontaneous order. This is the essentially personal character of language: the fact that much of our linguistic experience and knowledge is personal, tacit and never fully conveyed to anyone else. Similarly, much of scientific knowledge and experience had a strong personal element of this kind (a point particularly emphasized by Michael Polanyi in his books *The Tacit Dimension* and *Personal Knowledge*).

**"I have already stressed the importance of evolutionary rationalism in understanding modern complex societies. I indicated that such societies, while they may use constructive rationalism in limited areas, in their totality have evolved rather than been designed.** Moreover, they are so complex that they need to develop and maintain decentralized mechanisms for information transmission; and these mechanisms provide such societies with

adaptive or self-correcting properties.

(emphasis added)

**Cecil**: Dr. Marks' statements about language, science, economics, and computers are also applicable to the study and practice of the law. Legal code arises out of the impulse of Constructive Rationalism, yet, unlike computer code "where one error is often enough to destroy completely the meaning of a statement", errors in law's components, even where "partially incoherent or ungrammatical" still "can transmit some information." I wonder if he would find, therefore, that Government must be as much an engine of spontaneous creation as any research laboratory or business market?

**Kevin Marks**: Well, in the case of law, the Common Law tradition is a way to allow a more spontaneous order to emerge, relying as it does on precedent rather than on existing legislation. Hayek defends this case very strongly, and contrasts the English common law with the French. Some discussion here:

http://mises.org/pdf/asc/2002/asc8-hamowy.pdf

**Cecil**: So long as the judiciary is truly independent, not only of others, but of itself,

common law is flexible enough to permit spontaneity but firm enough to permit order. Later iterations, of course, demanded change. In every case, change is accompanied by examination of ancient principles relative to what they may be at the time. *The key to any sustainable legal system, it seems, must be the express recognition that neither precedent nor statute nor constitutional (or cultural) "truth" expressed as words, is truth. Rather it points toward truth.*

More deeply, I return to your father's conclusion: law is never designed; it evolves.

**Earlier Cecil**: QUESTION: In thinking through what we've come to think of the Chicago School of Economics, would you agree, that one way of looking at the past 30 years during which it reigned supreme is that *the more or less political right wing did NOT pursue a market economy in the (holistic & balanced) sense your father describes via Hayek, but rather were as prescriptive and monolithic as the Marxists in their overemphasis on constructive rationalism?*

In other words, isn't the insistence that ONLY the market can make good decisions to the complete EXCLUSION of government (which, under Chicago / right wing rules is

always bad) purely constructive rationalism to the exclusion evolutionary rationalism? Wouldn't that dynamic be no different than communism (capitalist in form, but rigidly mandated and adhered to nonetheless)?

**Marks**: I think that's overstating it a bit; what I said was that the Cato/Chicago types seem to see markets as the only spontaneous orders, and miss other kinds from their analysis. There is also a lot of justification of outcomes as market-derived when there was a significant legislative oligopoly component.

**Cecil**: Fair enough. Still, would you agree that the significant legislative oligopoly component (which perhaps contained judicial & regulatory elements) result from (or justified by) a view that insist markets are the only spontaneous order?

**Earlier Cecil: Fast forwarding** to say, the debate over valuing content - from the battles we see over Pirate Bay to newspapers going out of business to handsets, set top boxes, RIAA lawsuits, or even Ed Whittacre's view of "his" network, perhaps the deeper question is not whether which side is right, but *how to create a better and more sustainable balance between Constructive Rationalism (legal systems of prop-*

*erty) and Evolutionary Rationalism (hacking / code battles on the Internet / DRM circumvention)?*

**Marks***:* I think the extension of the notion of property to non-rivalrous goods (so-called Intellectual Property) is a mistake of this sort, and one that ends up with supposed market proponents defending state-granted monopolies.

**Cecil***:* Whether common law or otherwise, it is good to remember that going all the way back to Aeschulus' *Oresteia*, western culture relies on trials.  For awhile that mean combat, but then we went to juries, legislatures, and so on.  Still, it is a battle that even today jurists, legislators, academics, and bars strive to contain. *Our legal striving, however, is always locked in dialectic. Two sides. We have battles over our inability to quit battling.*

*We never seem to consider triads, though I was struck that your father's piece implicitly picked up on that. Rational v. Spontaneous is not a contest; it is a dynamic that, when in balance, results in evolution.  Evolution is the stuff of creation; it's the essence of our survival.*

The notion, for example, that property, say land, is a rivalrous good, follows from a dialectic world view which

sees land in a near mathematical state: "mine" and "not mine".  Obviously it fails to capture the fact that land is dynamically interrelated to all of nature.  The only lines drawn exist in our minds as words later captured in slightly more permanent, but not eternal, form. (None of this is to say that these systems did not or have not worked nor is it to say they always result in the wrong result; rather it is an attempt to observe a dynamic that is often lurking in the background of many economic, legal, and social discussions.)

Intellectual property, arguably, is no less and no more rivalrous than land.  The concept of property itself is the rivalrous thing.   "Property" assumes rivalry.   Again, this is not bad, but it is not good either; it's just how it works. And there's certainly and always a need to find reasonably stable, yet adaptive methods to assign and transfer value, and, even, sometimes, to extinguish it (e.g. derivatives). **Perhaps we need to recognize states more dynamic than "mine" and "not mine" and then find ways to handle those interests (in this regard, notions such as "environmental justice" or "sustainable practices" point toward this need to expand our buckets of rights and systems of creating and transferring**

**them).**

Ultimately, perhaps the Intellectual Property debacle is our systems informing us that zero sum rights adjudicated in zero sum ways but bodies of people (legislature, court, jury, regulator, magistrate, czar, state) limited to zero sum solutions no longer produces outcomes reasonably related to principles derived from our instinctual will to survive.

Perhaps evolution needs a little more wiggle room.

**Earlier Cecil**: It seems clear, as you note below, that neither big government promoters nor big corporate promoters do (*or ever will*) get this right as one without the other precludes Cultural Evolution.    **Without it, we would not have "Organisms, languages, market economies, societies["] as these "are orders which were not designed: they evolved."**

(Does this pellucid gem not capture the essence of [what has happened in the] past nine months?)

Anyway, thanks!   It was a great and welcome surprise to find such a gem amongst hundreds of thousands of interaction, data, and knowledge snapshots.

**Vest**: Interesting conversa-

tion guys!

However your remarks here, Erik, I think help to illuminate a real dilemma. If (1) you start from an "Austrian" perspective on prices -- in which basically "whatever the market will bear" is the only rule -- but also (2) assume that prices constitute some kind of transparent decentralized matrix for conveying information between individuals, then the only "signal" that that mechanism could possibly convey is the expression of the will of the signaler to demand something out of the prospective bargain  -- i.e., something like the "will to power". In the Austrian view, any relationship between what that signaler is demanding and whatever "cost" or added value s/he contributed to the subject of the transaction is purely coincidental. In my mind at least, this is what distinguishes Austrians like Hayek, but also most/all of the libertarian-to-anarcho-capitalist spectrum of economic thought, from the "Classicals" (Adam Smith et al.) who had maintained the notion that prices do, or should, have some more direct relationship with costs, e.g., the cost of inputs required to bring the price-bearing thing to market.

Here I'm not arguing that one view is superior to the other -- that might be fun, if time permitted (it doesn't at the

moment) -- but only pointing out that the quandary that you're stuck with here is probably unavoidable and inescapable given the two premises that you started with.

**Cole**: Constructive" versus "Evolutionary" sounds so much better than "top-down" versus "bottom-up" <grin>. Legislative versus Adjudicative is another dichotomy with somewhat similar meaning.

There was even a Yale professor, Charles Lindblom who espoused "partisan mutual adjustment" as the "market process" for legislation. As I read him, he thought it both descriptive and prescriptive -- what is, but also what should be.

Another "slant" on all of us is the spectrum between principles and rules -- say from Constitutional principles to legislative mandates to specific regulations. I read Chris Savage to urge "principles plus adjudication" for net neutrality rather than a set of rules. So the "principles" may in fact be Constructive or Legislative or Top-down, but the case decisions would be Evolutionary or Adjudicative or Bottom-up.

Yet another alternative (I think; I defer to Tom Vest and others on this) is the IPv4 system, which we might

call Fractal versus Wholistic -- some very specific and simple rules at the bottom, with the results emerging as fractal patterns do. The "free market" folks I think have this concept in mind -- a few very specific, lowest-level rules -- keep your promises, do not lie about product characteristics -- and whatever emerges is "right."

Yet another distinction, which could be Fractal versus Wholistic, is Right Coast Code (statutes and regulations) versus Left Coast Code (computer programs and interfaces). Left Coast Code is almost always Fractal; Right Coast Code can be either.

As any well-trained and/or experienced lawyer should be able to tell you -- the systems always adjust a bit no matter how completely specified, and they will be evaluated against values outside the system (e.g., "is it fair?") no matter how value/ principle-based they are.

*Back (whew!) to the architecture and economics of computer connectivity -- we have many of these same choices -- do we want established, top-down principles, exhaustive specification, simple, low-level rules, or some combination of all three? Should the unserved be served via (a) a specific technology; (b) a specific speed (up or down); (c) or a*

*specific cost per end user? Or should the rule be that they get whatever someone is willing to provide at a specified price per end-user?*

**Vest**: The problem that I alluded to before, which is inherent in the "subjective value" doctrine or principle that is at the core of Austrian economics (i.e., the spectrum of political and economic thought from Murray Rothbard to Milton Friedman and Alan Greenspan, with von Mises and Hayek somewhere in the middle), is that adherents to that view regard any a priori imposition of any kind on the free agency -- the will to power -- of the individual as a crime against humanity. To your specific reference, they tend to regard even the "lowest-level rules" as illegitimate -- a "taking" of liberty -- except in cases where those rules spring wholly from (and are binding exclusively by virtue of) the free will of the individual subject. The only (and absolute) exception they grant to this rule involves ownership of things. Do what thou wilt shall be the whole of the law, but don't mess with my private property -- that's an affront to God and Nature. [Note: granted, this is a pretty good rule if capital accumulation is the only way to motivate people to work, but I still don't really understand how and why that particular practical consideration gets a

pass, when all other practical considerations are dismissed as irrelevant and unimportant. But no matter... ].

Thus, to those espousing some variant of this view, the perceived "crime" perpetrated in the distribution of IPv4 addresses is the same crime that "authorities" commit through any act of regulation, e.g., (and most relevant to the IPv4 reference) the regulation of the financial and monetary systems. In both the case of IPv4 in the Internet and money in the conventional economy, the critical function that these mechanisms provide is "liquidity" -- i.e., the relatively easy, frictionless exchange of \*everything else\* encompassed within the relevant economic systems (e.g., goods services, labor, etc. in the conventional economy; information, content, services, etc. in the network economy).

The fact that these two mechanisms -- money and IP addresses -- came to support this function was not, at least initially, a function of intentional design, but rather an emergent property. We know this in part from the history of failed (i.e., un-adopted) protocols and failed currencies (i.e., those that were abandoned following inflationary or deflationary collapse, or were rejected upfront despite their ostensible

merits, e.g., the perennial $US 1.00 coin issues, et al.); in fact, far more have failed than succeeded.[1] But we don't really know how, or perhaps more aptly, we don't possess the power to make a "liquidity mechanism" work; we only know what it's supposed to do -- so we can tell if and when we've got one -- and we have a good idea from history of what causes them to fail.

*The "rules" that have been developed in both cases -- monetary and IP addressing -- are intended to mitigate the risk of such failures. As long as we lack the power to instantaneously conjure up a replacement liquidity mechanism at will, worrying about preserving the one(s) we've got is probably a good idea. But those "rules" are inevitably going to feel like a taking of liberty by some Austrians.*

Anyone who says that I can't start a lending bank myself -- i.e., that I have to use some "currency" that's dictated by a third party, and that I have to satisfy some capital and reserve requirements denominated in that currency, and also forego my right to privacy by demonstrating my "compliance" to that same external "authority" -- is stifling my personal will to be entrepreneurial... or substitute "IPv4" for "currency" and "ISP" or "bank" in the above and you get the Internet ver-

sion of the same argument.

Austrians may believe with all sincerity that if only their wishes were granted, that the resulting emergent order would be "even better" than the one embodied by the current emergent system -- but history doesn't vest that belief with much credence. Granted, everybody's got a right to their own beliefs... but I'm not especially keen on betting the world that I live on the unfounded assumption that the Austrians are right. It would be great if they could put this question to the test themselves, without adversely impacting the rest of us -- who knows, maybe John Day's PNA system might do just that -- but until that's possible I think (or at least I hope) that we're stuck with these dichotomies.

**Cowen**: I attach a section from the article I wrote on the Rule of law last year. It takes the issue of predictability of law and regulation and looks at the correlation between that and GDP growth. At the present time the boost to GDP is much needed and the way in which legislation operates and the mechanism through which the enforcement of law operates to change behavior requires special attention.

Incidentally, there is a good article on the future of capitalism in today's *Financial*

*Times*, written by Samuel Brittan. I disagree with him since he thinks that the system of law works well; I beg to differ and refer the list to the World Bank Table in the attached that shows the US perhaps further down the table than many would expect.

When looking at the implementation of regulation and legal systems the 'output' of the system is how behavior is changed. I emphasize that since the incumbents have not changed their behavior in the last 30 years and that should be the objective. There are many ways in which the existing telecommunications regime in the US as failed, and it is perhaps worth reminding ourselves that the creation of confidence for investment is as much about having predictable government, predictable regulation, and a predictable enforcement system.

**Cowen: to Vest** -- One point in the discussion so far is a matter that can be solved in the short term through the creation of a better system of data collection. As the exchange below points out, justice systems often have involved a trail. Trials are limited in time and there is often an antiquated method of assimilating and identifying relevant facts such that the decision maker, whether judge or regulator, makes a decision on the basis of the

facts at the time, and that is subject to the challenge that the facts are limited to those that can be adduced in the time available according to the rules of evidence.

I think that this can be changed and we could embrace a few alterations that would make a material difference to the outcomes:

1) educated judges (ie people with knowledge of the industry concerned as the regulators).

2) constant monitoring of the data in the market according to principles that allow market participants to contribute to a rolling database of key information would make the system work faster and solve many problems that the trial as a game does not address.

Obviously market participants have an interest in gaming the system and in presenting data in a particular way to support a particular argument. However, if a longer time horizon is drawn is there not also a mutual interest in market participants establishing consistent data? For the game theorists, since the knowable range of alternative outcomes is so varied it is in fact in each player's interest to tell the truth (where the data is collected over a considerable period of time). In short term trial systems many will testify to the fun of

playing the game but that comes at the expense of justice.

Of course the above can only work in a system where a Kevin Martin is not possible: the checks and balances that should prevent the abuse of power are also vital.

**Cole**: Tim/Tom et al.

First, as someone who has actually met Milton Friedman, and read a few of his books, in my opinion he is NOT an "extreme" Austrian, even if he is their poster boy. He actually proposed some Fractal rules for the money supply, for instance.

**Vest**: You'll note that I put him on the other extreme from Rothbard, intentionally, to suggest that he represents the more moderate end of the spectrum. But I hardly think that you could call him "less Austrian" than Greenspan, and Greenspan's faith in fractal rules for the money supply is, in no small measure, what brought us to the current state of affairs. Greenspan admitted as much himself in his Congressional testimony.

So basically I'm agreeing with you, but also pointing out that our agreement doesn't change the fact that, historically, this kind of approach has always been crippling to fatal for liquidity

mechanisms.

**Cole:** Second, Tim's point about predictability is fascinating, and resonates with those business people who say "just tell us what the deal is -- the tax rate, the time to permit, etc. -- and we can figure out something. It is the uncertainty or variability that kills us." OTOH, however, is the whole area of business climate, of which predictability is only a part -- low taxes, few environmental or workplace requirements, etc. also figure in, and are sometimes much easier to calculate.

So back to IPv4 and other "rules/principles" of computer connectivity. Predictability, other things equal, is good; low-impact, other things equal is good; "fairness," other things equal is good; etc.

But markets arise, whether sanctioned or regulated or not -- think gambling, prostitution, drugs, and even "black market" lending.

We have the "great experiment" in the US that suggests that a legal market is less disruptive than a widespread illegal one, even for something as dangerous as alcohol. So as we get closer to "running out" of IPv4, I hope we opt for the legal market, not an illegal one.

**Vest**: Is that what the legal

market for credit default swaps has taught us? I think I've drawn a different lesson from that more recent, more relevant experiment.

It would also be nice to assume that one precludes the other, i.e., that a legal market would crowd out an illegal market.

But if the illegal market provides benefits that the legal one cannot match (e.g., immunity from laws, or taxes, or any other obligations that are deemed to be "onerous" by aspiring market participants), then you'll get all of the downsides of both, and none of the upside of either.

Alternately, you can fatalistically define down/away any expectations that you might have had for the market (e.g., efficiency, procedural fairness, transparency. etc.), and then you'll get just what you expected: nothing.

I hope that we don't opt for nothing.

**Marks**: The short term versus long term trial is key too - this is where the classic game theory fell down, with the prisoners dilemma, and *homo economicus* with his short term horizon. The splendid result that an iterated prisoners dilemma (one played consecutively with players in common) rewards co-operation over betrayal is

of striking significance.

Now this result can go two ways; it can show how non-monetary spontaneous orders can arise through co-operation over a commons, but it can also show that in an area with barriers to entry, a group of players will divide the available goods and lock out others .Establishing rules is important, but so is watching for gaming of the rules.

**Cowen**: Rollie; you are right to point out that markets arise without any need for the rule of law. This is true of the black markets you refer to. However there is a multiple need for the rule of law; supporting democracy, justice freedom whether economic or personal etc etc. Zimbabwe has markets but is bottom of the list and is not a very successful model. Starting with a half decent system, some improvement may make a big difference.

**Cole**: As I said on the Cybertelecom list, the "best" rules work with the "market" and other "natural" forces rather than against them. Here in basketball-mad Indiana, I think of the 3-point shot and the shot time limit -- 2 "interferences" with the game that arose without them, but yet ones that IMHO make the game so much better than it would be otherwise, without the need for

extremely close supervision, severe penalties, detailed interpretation of border cases, and all the other indicia of "counter-natural" rules. It is not fully "self-enforcing;" there is still a line on the floor, and a referee to raise both his hands in the case of the 3-pointer, and a shot clock and a buzzer in the case of the shot time limit.

Indeed, it might be interesting (although perhaps difficult) to repeat your analysis not with rule stability, not with business climate, but with some measure of how well the system worked with or against countervailing, largely "free market" forces. To give an example, contrast heavily taxing a good to be discouraged versus outlawing it (alcohol, drugs, tobacco, adult porn). Neither policy stops it completely, and neither policy produces total compliance. (Cigarette smuggling to avoid taxes was still going on, last time I checked.) But heavy taxes give buyers and sellers a way to be legal, and produce substantial revenue to help with enforcement; outright prohibition does neither. Society might still prefer outright prohibition in some cases -- e.g., child porn, murder.

Back to arch-econ -- one instinct is to jump to direct requirements -- must be open and neutral, must not use DPI, et al. But a second

thought is to avoid outright requirements, but encourage and discourage through disclosure (ie, can shape traffic but must disclose), financial consequences (open gets subsidy, closed does not), etc.

Another Chris Savage like thought experiment -- what if the income tax scheme rewarded openness, in the following way? A network deployer would be allowed to offer triple play and/or other services, but revenues from such services would be taxed at level A if exclusive, either by rule or circumstance; if the deployer allowed/ persuaded others to offer services any revenues the network deployer received would be taxed at level B if exclusive, and level C if non-exclusive, where A > B > C, and the goal is that the network deployers revenue would be maximized if all services were offered by third-parties on a non-exclusive basis.

**Cecil**: An interesting thought. One might think the tax benefit would have to exceed opportunity cost of foregone monopoly rents (both direct and indirect) in the short term as well as across some reasonable long term horizon.

Though not a tax, in the U.S. Section 271 of the Act was supposed to operate in con-

junction with Section 251 as a carrot and stick approach. Carrot was open your markets under 251 and we lift the LD ban of 271. For 8 years it was leverage relative to the system at that time. W fixed that; Bells were in all major markets w/in 3 yrs. (An aside, I still find it fascinating that the LD prohibition coming out of 1983 was against in-region provision of LD and they still didn't compete out of region.).

**Cowen**: I guess I have done too much law, economics and got mixed up in psychology and management. One thing that I have found is that in a big company, when seeking to achieve cultural change, or a change in behavior, it is important to have  'buy in" and given that people are all different, it becomes critical to have multifaceted messages, programs and incentive schemes that target different functions, tribes and teams in different ways. For example, sales are typically more extrovert and less detail and fact based than accountants. (This can be proved with Myers Briggs scores). As a result, sales will respond better to being asked, in open forum and through a process of discussion and open debate, to do something, and that can be backed up with money; others want time to think things through and as more introverted types they think/feel

that they should be rewarded for results but to be paid to do something that they regard as part of their day job can be regarded as an insult. This gets too complicated very quickly.

Starting from knowing the above is a good thing. What to do about it, particularly in designing laws or regulation is the challenge since any scheme, regulation, instruction, encouragement or coaching system designed to alter behavior it is also important to remember that it will be gamed. The gaming is not just by the players in the market but by the regulators themselves. Political gaming is a feature of many regulatory systems and the public choice issues that this raises are many and real. Any system that is an improvement on the current one also needs to be simple enough to be monitored and enforced in a way that is objectively fair and reasonable.

One point is that faced with multiple prisoners' dilemma games leads to cooperation. So we should coin the rallying cry: "Prisoners of the world unite, the only thing we have to fear is each other!"

**I am very interested in looking at regulation and law through this lens with the help of the more reality based behavioral economics that we have dis-**

**cussed.** In terms of taking this approach into effective, or at least more effective, regulation, there is a trade off between a very sophisticated but too complex system and a system that is simple enough to be workable in practice.

Part of the answer is information, and getting to the facts on a regular and dynamic basis should be at the core of a good regulatory system. Each market participant should have an interest in the constant collection of data relevant to regulatory decisions, and open involvement should be better than snapshot gathering of information. In either case gaming of the system will take place but a more consistent gathering of data would at least be evolutionary and less prone to basic manipulation/shocks. (Although Kevin Martin proves that any system requires constant vigilance).

To make this real let's take an example. When the authorities engage in market anti trust analysis they will look at volumes and revenues for products and look at the products in terms of price characteristics and end use. Information technology products often have high fixed cost and low marginal costs in their production that make supply side analysis the better starting point. (The metal stamper point in US Merger

Guidelines). However authorities start with customers' buying habits and information is then taken from multiple sources, and tested against what has happened in the past. This gives rise to some degree of rigor but is a fallible predictor of future trends; a greater use of actual predictably irrational behavior would help, as would a greater use of access to all market participants' supply side economics, strategy materials and scenario planning; indeed I think that the authorities are so subject to so many political and public choice pressures that there is

a good case for the industry to identify the issues that it agrees on and to advance them in as open a forum as is possible.

I am looking at a project that would set up such a system, and look at industry on a collaborative basis from an end to end perspective so that a better and more representative view of the potential market scenarios can be advanced to regulators.

It would make more sense to to this together and join forces to do it  than to be constantly be "done to" by a

system that demonstrably does not get to the heart of the matter.

More anon.

**Cole**: Tim:

I am struck by how your "call for data" resonates with many of the proponents for broadband mapping. It also resonates with the portion of the broadband stimulus that calls for programs that "encourage" broadband use, at least those programs that try to do so by spreading word of best practices from one local area to another.

# Government Leaders Need to Put Trans-sector Policies in Place within Stimulus Packages

**Budde May 4** I am interested in your comments on this.

http://www.buddeblog.com.au/government-leaders-need-to-put-trans-sector-policies-in-place-for-stimulus-packages/

Since, IMHO, this stuff is really hard at "thorough" level, I advocate the first steps of the 1,000 mile journey. One of the first is "conduit everywhere." Since fiber, as opposed to water or natural gas or electricity, or sewage, does play well with others. one can imagine dropping in conduit (with or without the fiber in it) each time a ditch is dug for any purpose, a road is paved, a pole is put up, etc.

Another step is the "utility" easement. Although fire or other concerns may require, for instance, that there be some separation between power lines and gas lines, in many cases such things (e.g. cable and electricity) and be in the same easement (same strip of land, same pole, etc.) A gradual migration to the idea that the government will only create (or allow) easements that are "shared"

rather than "exclusive," and will gradually open up existing exclusive easements (perhaps by requiring opening as a condition of obtaining additional ROW, etc.)

The other initial step I would recommend is to think of carrots as well as sticks**. Maybe deployers who "play well together" should be rewarded in whatever coin makes sense, so highway departments have positive incentives to make medians available, etc.**

**In the US, the stimulus funds are NOT allocated that way. They are assigned to individual agencies, with NO explicit rewards (and I am guessing, few implicit ones) to encourage trans-sector proposals. One can certainly imagine stimulus packages that reversed this presumption.**

The same thing could apply at the local level -- right now, my water, electricity, and natural gas are read by three different people working for three different entities. One can certainly imagine a number of more efficient ways of

getting that information from my house to where it has to go, including me.

**Brian Harris**: Thanks for the link. As groups get together to discuss their application for stimulus funding strategies this is a timely reminder to think more expansively.

In previous iterations, grant programs in the US explicitly rewarded broad partnerships. Without these partnerships, and some matching funds to go with it, the application was not funded. I hope and expect that similar partnership requirements will be attached to the current round of funding.

I was struck by one thing. To many who live and breathe telecommunications policy, *it seems self evident that certain combinations of infrastructure sharing will result in increased economic efficiency. But this has been the call for ~15 years now, and it would seem that here ought to be some good case studies and more solid data.*

I can tell you that asking a government entity to install conduit on the expectation

that someone will pull fiber, is a very hard sell indeed. I guess this is just a somewhat convoluted way of saying that it is time to go beyond generalities and show some concrete examples. Thanks for the link. As groups get together to discuss their application for stimulus funding strategies this is a timely reminder to think more expansively.

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eralities and show some concrete examples.

**Budde**: I do think that it needs to be fine tuned with some sort of action plan or at least an idea for such a plan.

However, also here I would like to keep it on that visionary level. I think that the President, etc can play a leading role by showing trans sectoral leadership. He doesn't have to go in any detail. What he should do is through policy statements get the rest of the troops Ministers/Secretaries/ Departments/Industry to start taking up the baton from him and start with more detailed plans. Now this will surely yield hopscotch activities and I don't have the illusion that this will develop in a well orchestrated way. But at least we can start and learn and continue in a more planned way from here. What, above all, is missing at the moment is that very high-level leadership. Without direction everybody goes in its own direction. Before we do anything detailed we need to heard the cats and get them to walk roughly in the same direction.

**Cole**: Paul -- at that level, Brian has it right, IMHO. If the presumption can become that, other things equal, the trans-sector activity/ approach/proposal is favored over the single sector one, a

great deal will have been accomplished.

**Cowen**:  My reaction is that you make no mention of the key factors of production or at least those that will be key conditions for stimulating investment.

Whether we are talking about predictable regulation or predictable intellectual property right enforcement, I think that one issue that is important at a time of fragility in the economy is the generation of confidence. This means even more emphasis on certainty and predictability to encourage investors to come back out into the daylight.

What are the other key factors?

**Estrada**: **Here's how we are talking about trans-sector at FirstMile.US:**

1. Government entities at the federal, state and local levels should care about the government's 'grand challenges' -- healthcare, public safety, education, civic participation, energy independence/ efficiency, and economic growth.

2. From the Gartner study we commissioned as part of the One Gigabit or Bust Initiative in May 2003, the following sectors would greatly benefit in GDP by

big broadband installation in California. They are listed in order, highest to lowest benefits.  There is a lovely little chart with actual numbers in this document:

3.

http://www.cenic.org/publications/archives/glossies/Gartner_Short.pdf

·    Retail trade
·    Manufacturing
·    Health care and social assistance
·    Public education
·    Services

·    Business services
·    State and local govt
·    Wholesale trade
·    Construction
·    Finance and insurance
·    Forestry, fishing, hunting and agricultural support
·    Transportation and warehousing
·    Arts, entertainment and recreation
·    Computer programming services
·    Utilities (communications included)
·    Federal govt
·    Private educational services

·    Real estate, rental and leasing
·    Hotels and other lodging
·    Personal services
·    Mining

4. In our NTIA/RUS comments on jobs, we included the "Hot Broadband Communities Questionnaire" which gives a nice view of what the different sectors can do with broadband. Go here and get the                PDF: http://www.firstmile.us/pubs/NTIARUSComments/secondcomment.php

# Paul Budde's Education of the Australian Government

**Editor**: On May 12 *Communications Day* on pages 5 and 6 had a heated opinion piece. I include the entire piece so as to give complete context. The most pertinent text is in boldfaced red. Word about Paul Budde's actions leaked from this list.

## Telstra's IT Existential Challenge

by Graeme Lynch

*"Anyone who thinks that the new Telstra leadership team will spend the next few months concentrating on customer service and merging billing databases better think again. CEO David Thodey and chair Catherine Livingstone need to get their strategic hats on ASAP or potentially see the company quickly blindsided by government decision-making. The task is so urgent that I understand outgoing CEO Sol Trujillo may leave early and hand over the reins in the next few days.*

*The regulatory challenge to Telstra and its urgency is paramount-submissions are due for a myriad of government reviews covering regional backhaul, punitive regulation of the incumbent and future*

*spectrum policy within a matter of weeks. How Telstra responds, both formally and informally, will shape the degree of constraint it must work under in future and whether it can even continue as a meaningful investor in the Australian market if it is to continue earnings growth and fulfill its fiduciary responsibilities. (By way of example, if Telstra could raise $12b would it be better invested in a) a lightly regulated Asian cellular property or b) a project such as the NBN specifically designed to crimp its earnings upside?).*

*Given that decisions on these regulatory matters will largely precede ultimate decisions on the NBN, Telstra will not only need to formalise a position-but also conduct some high-level analysis of hypothetical probabilities of alternate outcomes, given the potential for it to be stiffed on NBN decisions even if it agrees to regulatory concessions ahead of time.*

*Most troubling for the company is the fact that the government appears to be taking its telecom cues from an eclectic and unconventional set of sources: the likes of Melbourne academic and technical specialist Professor Rod Tucker, the CSIRO and even the peripatetic Paul Budde. This makes Telstra's task of second guessing the government's intentions*

*even harder. As this column documented last week, Paul Budde and the "industry working groups" he has facilitated are gaining extraordinary influence in Canberra. That piece generated the greatest reaction to a CommsDay article in 15 years-and over 90% of the feedback was negative about what kind of advice the government might be taking.*

*That Budde has tremendous sway in Canberra has been confirmed: for example, on 21 April, he indicated that he was even providing talking points to the minister for his speeches. In a post to the US-based Economics of IP Networks mailing list, which circulates across some 200 inter- national telecom policy wonks, he wrote that he had just returned from a meeting with Stephen Conroy. Conroy was apparently keen for him to pursue his "trans-sectoral" digital economy discussions with the group as the minister "needs as much ammunition as possible on the questions" for an address Conroy was planning for the National Press Club in Canberra the following week. In another post to the blog of the group moderator, Gordon Cook, Budde wrote his industry groups were intended to "support the government in its fight against Telstra."*

*Then just last Friday, the day*

after Conroy attended a discussion and dinner with Budde and around 80 paid attendees- mainly manufacturers and consultants- Computerworld Australia ran two articles that affirmed the ambition of Budde and his comrades-one boasting how deputy prime minister Julia Gillard had apparently given strong hints in February to the Budde-facilitated Digital Economy Working Group that the government was contemplating FTTP, the other lambasting the Health minister Nicola Roxon for not apparently taking their representations seriously enough and, thus, putting the whole NBN project at great risk!

WHO VOTED FOR BUDDE? The sentiment of many of the emails I received? What is industry policy formulation coming to? It has been apparently been captured by an entrepreneurial analyst-cum-advocate and his band of "open access" acolytes.

As one said to me last night, "when did we vote for Budde to represent the industry? In the absence of this we are all being verballed." Another saw thin economic and technical expertise spread across three government agencies overseeing telecoms-ACMA, ACCC and DBCDE. Not one of them can apparently provide holistic advice on a par with a motivated & well-connected industry advocate. Another mocked the shared passion of Conroy and Budde for smart grids, opining that the basic telemetry capability- mere strings of numbers- such a concept requires could

be more readily and affordably carried by wireless SMS.

This is what Telstra's new leadership must deal with: a world where mainstream mechanisms to put across its views-such as industry organisations like Communications Alliance and direct representations to the Department- are apparently consigned to the "one view of many" ranks alongside Budde and co. In a sense Telstra has itself to blame for some aspects of this disconnect, especially in terms of a lack of planning for the change of government that it so eagerly encouraged in 2007.

For example, I understand that Budde has found a sympathetic ear with the Australian Council of Trade Unions, which turned heavily against Telstra when the carrier became an- enthusiastic supporter of the liberties provided by Workchoices. Whereas the union movement was previously pro-Telstra, Workchoices changed everything, leading to the bizarre occurrence last year where the ACTU signed a co-operation pact with Terria, whose carrier membership has hitherto been notable for an absence of unionised employees. Both the formal and informal links between the ACTU and Labor parliamentarians are strong, and with the ACTU's flip, so evaporated a previously important "inside" voice in Telstra's favour.

One of my correspondents last week also made a very interesting point about the NBN, specifically the conceptual and

analytical challenges it presents for a bunch of decision makers and industry advocates who are largely the other side of 40 and keen not to be seen as Luddites (which happens to be Budde's pejorative of choice for those who seek economic analysis of the NBN).

"A consequence of rapid changes in comms technology is global group think," she said. "Incumbents have been at it for ages, the same arguments popping up in every jurisdiction. It is now the turn of the others. So across the globe there is a very active community of people talking about FTTH and its benefits and it's no surprise that the government is tapping into their assumptions."

So that's what Telstra's new leadership is up against. A group think consensus at policy level, best expressed by Budde, that now assumes open access; 100Mbps for everyone; live connections without customer subscription; a network largely paid for by yet-to-materialise e-health, e-learning and smart grid applications; separation for the incumbent, and strict controls on access to potential alternative channels to market dominance such as spectrum acquisition and horizontal content control.

Thodey and Livingstone have a tremendous uphill battle protecting Telstra's interests in all this. And it's not evident, despite the media "groupthink", that playing nice will be the obvious response. Indeed, one view in Telstra that could pre-

*vail is doing nothing that of-fends anyone OR commits to anything. Especially when the immediate reaction from major access seekers to their ap-pointments is one of profound skepticism, and certainly, a complete absence of olive branches.*

*The mood, instead, is one of payback for fifteen years of Telstra sin, real or imagined. But while the access seekers really want to achieve the modest ambition of equivalence and a broader distribution of profits, the Budde-led open ac-cess brigade have a more thor-ough demolition of today's business models in mind. And they don't want to wait for the market or the users or the technologists or the service providers to catch up, they want to jump start radical changes in who pays what for telecommunications and who profits from it-by centrally planned diktat.*

*What started as an exercise in sharing more of Telstra's fixed line scale economies-and profits-with competitors could culminate in an outcome with extremely hard-to-predict con-sequences for all, and all the risk that entails. In all likeli-hood, the brinkmanship has only just started.*

May 11 **Scott McCollough**: Personally I won't lose much sleep about list leaks or being called part of a cabal. I have faced this sort of personal at-tack off and on for many years by the incumbents in America. It can get really

unpleasant. They got me fired twice already. Every time I tell them that if they want to kill me they bet-ter use a silver bullet AND a wooden stake. They did the coup but never delivered the grace.

When that happened to me I did appreciate it when my friends rose to my defense. I propose that we do this for Paul.

**Dirk van der Woude**: So we're 'wonks': *"An overly studious or hard-working person; A pernickety person who overly focuses on de-tails; A nerd or an expert"* *en.wiktionary.org/wiki/wonk*

Wonking along I find that Mr Lynch' organization, seem-ingly competing with Budde.com, actively pro-motes a conservative (and pro incumbent) policy agenda. Heartland and Mr Titch do come to mind where Mr Lynch last April asked a Telstra supplier to lambast the NBN

"(April 22nd, 2009) An eco-nomic analysis of the likely costs of the planned National Broadband Network suggests that end retail prices would have to exceed $200 per month for the project to re-turn its costs and pay stan-dard capital returns. Com-munications Day asked Con-cept Economics to run the numbers on what is known to

date about the planned net-work—estimated as costing up to $43 billion with fibre served to 90% of premises and wireless & satellite solu-tions covering the rest. (...)

"Even if the benefits of the NBN were greater than its costs, if the net benefit would be even greater with say an FTTN network instead, the NBN being an alternative to the FTTN, then evaluated properly, the NBN would fail a cost-benefit test, as the in-cremental benefits of the NBN compared to FTTN would be less than its incremental costs. In other words, costs and benefits need to be de-fined in opportunity cost terms, relative to the set of relevant alternatives."

Concept's calculations were performed by a team of its economists including Ergas, Dieter Schadt, Alex Robson, Garth Crawford and Geoff Pe-tersen. Although Concept performs consultancy work for clients such as Telstra, Ergas says the results should not be imputed to them.

*http://www.commsday.com/ node/325*

Well, and then there is this "Interview" with Sol Trujillo from 2007, published on a PR site of Telstra. The first ques-tion shows the deep feelings Mr Lynch has for this now fallen Angel:

"**LYNCH: I want to start off by looking back at your two years at Telstra. You came in as a change agent and have generated a quite extraordinary level of criticism. Some of it may have been unfair or maybe little more than journalists and other critics pursuing an agenda, but do you think you have got enough credit for the transformation underway at Telstra?"**

**van der Berg:** The best way to fight this is to confront Lynch c.s. with facts. If you get your facts right and then can show that the other party has an agenda too, generally the party with the facts wins. Of course you need to use the correct terms. However I don't think we're idiot marxists here. Jan Davids can build a billion euro network on 15 euro per customer per month. Mister Wessels has never struck me as an idiot, so he's making money on this. The cool thing is that the network can pay for itself and the services and benefits come as bonuses.

this is not a new or weird model. In The Netherlands the entire energy sector is moving to a connection oriented model. Because the networks have been split from the service delivered over it (the electricity) it became obvious that what was really driving costs were the

type of connections. To put it simply.. whether there is electricity running over the line or not, it doesn't matter for the network provider its costs are the same. The effect is that the Dutch Government Pension (ABP) fund now wants a piece of the networks as the provide stable returns for ages to come. --> I've long been hoping for them to get into fibre as well, but the market is still too volatile.

There are some OECD reports that point to a similar future. But since I was involved in those, they might have the fiber cabal seal on them :-)

**Felten**: On the face of it, the criticism of Paul's involvement with Conroy is silly.

No one knows who else the minister might be meeting.

Is it wrong for a minister to meet with industry experts to assess a situation he's going to legislate about?

I find this whole thing fairly ridiculous...

**van der Berg**: Benoit,

You really don't get it do you. Of course this isn't silly. The Minister should only talk to representatives of officially recognized stakeholders. Such are the:

- incumbent

- association of communication workers (personnel of incumbent)
- association of mobile operators (incumbent plus its two competitors)
- association of competitive operators ( those that have carved a niche where incumbent isn't and therefore are bound by what incumbent does)
- the recognized telecommunications consultants (those that do work for incumbent)
- the government regulator (whose job is to work with the incumbent)

You cannot have uninformed outsiders deal with issues like these that are too difficult and complicated for them to understand. Before you know it these guys are making proposals that wreck the entire model that is financing people's mortgages. You might get such awful things as

- Grad students who think packetized networks are cool. You need circuits so you can charge for them  (they might even end up styling themselves as Evangelist)
- Construction and real estate moguls, laying down ducts and fiber like it is a "real estate" venture.
- Over the top providers of music and video (actresses should dig telco execs and not purveyors of books and computers)
- interconnection models that

do not contain complicated cascading payments or worse do not have any payments between market parties at all.

- Ex - cons who think 30 euro is enough a connnection, internet, telephony to x countries, HD-TV etc

You should really get this. There would be no money in such a market! Everybody would go bankrupt, everyone would loose money. Your local telco wouldn't survive. Damned marxist, socialist hippies, they can't do this.

**Felten**: Oops,

Sorry, I was probably overcome by my natural French disruptive tendencies ...[Editor: tongue in cheek] . . .]

**Budde**: What Graeme Lynch tries to do is to discredit the Minister who, as he argues, pays too much attention to my (wild) ideas and suggestions and perhaps tries to evoke the Opposition to take this up, but so far this hasn't happened and it further weakens the value of Grahame's arguments. Because of potential leaks I have to be careful in my wording – otherwise I would have been more direct ⊠ – but let me say that there is no indication what soever that the Minister is taking him serious.

Have a look at the outcomes of our meeting with the Min-

ister and how he support the activities that I lead: http://www.buddeblog.com.au/outcomes-buddecomm-roundtable/

As you saw in my previous email we also won over the support of the Prime Minister in relation to smart grids and we got $100 million for smart grids. As I have also been arguing for this within the context of trans-sector thinking I am very pleased that this initiative is linked to the NBN. All exactly as I have been lobbying for and this in my opinion opens the way to now also start talking about trans sector activities in e-health and tele-education – watch this space I now do have the interest of the Prime Minister and he stands above the silos and therefore is a key to the implementation of trans-sector thinking.

Many of the arguments I have used - and which have been accepted - also include significant input from the List and you should therefore also share in the success that we are making here and I am sure – as long as we execute this right – that the Australian example will be used by you and others far beyond our borders and that is the beauty of our boundary free industry.

Another interesting development while Lynch is still lamenting Telstra, the company

has moved on. A new CEO David Thodey an internal candidate and ex IBM has been appointed I have already made contact with him and we are looking at building bridges. So it looks not just the government but also his biggest ally (under Trujillo) are all moving on leaving Grahame a lonely voice in the dessert.

I am also very carefully listening to Hendrik's advice and I am in parallel working on a strong costing model to counteract Ergas and other naysayers. But I do need some trans sector wins; get other anchor tenants and then get economists to cost and value that. Your ongoing support and assistance is very welcome here. As you will see on my blog the Minister also wants us to support and guide the governance model they will start working on so there is ongoing room for participation not just from myself but also from you.

**Editor**: Paul's Blog summary deserves reading http://www.buddeblog.com.au/australias-open-national-broadband-network-sets-the-benchmark-for-the-usa/

Herewith the beginning Australia's open National Broadband Network sets the benchmark for the USA

As someone closely involved with the Australian National

Broadband Network (NBN) and many other fibre plans around the globe, I would like to provide an inside picture of the revolutionary developments that are taking place in the Australian broadband market. Australia's national broadband network will be an FttH-based open wholesale network - a network that will connect (not pass) 90% of all Australians to fibre, with the remaining 10% of the population being linked to that network through technologies that are capable of delivering equivalent services.

Some commentators, mainly those closely linked with the incumbent telco industry, have an interest in painting a dark picture about this radical development, which will most certainly mean the end of the cosy monopoly and duopoly telco models.

Scott Cleland's article titled 'Australian Fibre Mae Broadband Model' (http://tinyurl.com/r8bcly) is one example of this; it is more a reflection of the traditional telco interests than a discussion of the broadband vision and strategies that lie behind Australia's national FttH open wholesale network.

## The Old Order will Have to Change

What I see here is a clear indication that the vested telco and cable monopolies don't want the US to catch the Australian 'disease' of open telecoms networks and unrestrained competition.

Australia is not the only country taking this new direction - if anything the USA is the straggler here. But it will be impossible for that country to ignore these global developments towards open networks.

**We had a great win earlier this year when President Obama announced that the $7.2 billion broadband stimulus package would be based on the open network principles. The cracks are starting to appear in the telco monopoly fortresses of the USA.**

I am leading an industry group called 'Big Think Strategies' that has furnished the Obama Transition Team and the FCC with reports promoting open networks. Its sister group in Australia has also provided 'Big Think' reports to the Australian government.

Looking at some of the outcomes of these policies, both in the USA and Australia, we see that governments are beginning to understand the economic and social benefits and the multiplier effect that these infrastructure investments will give to other sectors (healthcare, education, energy, etc). These reports are all publicly available: http://www.budde.com.au/presentations/Digital_Economy_Industry_Group.asp

The economic crisis has revealed that some industries are committed to preserving the past - first banks, then autos, now telcos and media companies. **And so, as we will see in the Australian example below, any entity whose interests are closely aligned with the old 'closed' order might feel threatened when the government decides to build an open information superhighway directly into every home in the country. [snip]**

**[Editor: the remaining ¾ available at the url above.]**

# The FCC Mislead the Market

**May 8, 2009 –
http://www.arrl.org/news/stories/2009/05/08/10811/?nc=1 - Earlier this month, the FCC released the redacted portions of the studies on which they relied with regard to its Broadband over Powerline (BPL) rulemaking in 2004 after ARRL filed a Freedom of Information Act request on March 31 for the studies.**

**In October 2007, the US Court of Appeals for the District of Columbia Circuit heard ARRL's case against the Commission, stating, among other things, that the FCC not only withheld the internal studies until it was too late to comment, but had yet to release portions of studies that may not support its own conclusions regarding BPL.**

**Budde**:  In the mid-00s the Broadband over Power Line (BPL) technology received a huge boost when the FCC in the USA declared that BPL would be the third fixed connection (next to cable and telecoms) to deliver broadband to people's homes, and that this would stimulate facilities-based competition in this country.

Last month a court in the USA ruled that the FCC had misled the market and that "*there is little doubt that the Commission (FCC) deliberately attempted to 'exclude from the record evidence adverse to its position'.*"

When one looks at these 'adverse' points it becomes clear that they would render the technology unsuitable for mass market broadband competition.

This is very serious – not just for the deplorable lack of competition in the USA but also because a range of international BPL trials were based on the support the technology received from the FCC.

Over the last decade the FCC has increasingly distanced itself from introducing competition into the American market. It has been very seriously influenced by the two dominant telcos and the three dominant cablecos, who have nicely carved up the American broadband market between themselves, making sure that there is no serious competition beyond, at best, some regional duopolies.

One could argue that by not using their normal tactic of opposing competition – in this case BPL – the FCC had their blessing to hype it up as a great new form of infrastructure-based competition. **It was simply a hollow attempt to make it appear as though the US was developing a real competitive broadband market.**

**At that same time the FCC ruled against opening up the telco networks to more competition and BPL was promoted by the FCC as one of the reasons why that was not needed.**

My interpretation is that the FCC has been severely compromised by very active and successful lobbying from the vested interests. And to camouflage this BPL was used as a smokescreen to make it appear that the FCC was serious about competition.

There are many more examples of the FCC being not much more than a mouthpiece of the vested telcos and it is shocking to realise that an institution that ought to be independent has clearly been misleading the market in favour of the big interests.

Governance in the USA has been one of the most important reasons for the global economic downturn. Lack of governance has not yet surfaced as a serious political issue in the telco market, but with examples like this – and the fact that the USA is dropping further and further down the list as a competitive telecoms market that will stimulate the country to embrace and grow the digital economy **– it is only a matter of time before the role of the FCC will be more seriously investigated.**

**Vint Cerf**: The FCC had an inter-modal competition kool-aid belief for over a decade and absolutely rejected the idea of intra-modal competition through open, neutral and shared access to transmission infrastructure. They failed to enforce the telecom act revision of 1996 giving the telcos free rein to kill the competitive local exchange carriers by simply not providing to them what they were obligated by law to provide. It's a travesty.

**Tim Cowen**: My worry is that the way Intra-modal competition was used was to suggest that different platforms compete with each other and an excuse for deregulation. The mistake was both a fact based and regulatory one.

On the facts it looked like mobile competes with fixed telecomms or that cable competes with fixed; but in detail this is true only in some ways and in others the systems do not in fact compete with each other: it was used by Michael Powell as a reason for non-enforcement of anti trust or regulation and failed to recognise that the different systems actually delivered different things and hence the expected competition did not arise in all areas.

From a regulatory perspective: deregulation was allowed on the basis that the market would provide but that did not work without the reinforcement of access and interconnection pricing and oversight to ensure that a matrix of interconnected components was maintained. Hence the net neutrality issues and continuing access and interconnection issues.

I think a better way of thinking about intra modal competition is to think about competing systems: products are provided over platforms.  A CD and a CD player are part of a music system, a record and a record player are a system, and a download and an MP3/Ipod are a system. Thinking about systems helps regulators to stop overly looking at the demand side and helps get people to see the dynamic nature of competition over time being af-

fected by supply side factors as well.

**Tim Poulos:** Is there any chance for intra-modal competition being reinstated in the US?

**Cerf**: Not without a wholesale re-education of the FCC...

**Lee**: And a staff purge as well.  It's my understanding that a lot of the Martin staff will be staying - and perhaps they and others will be in a position to continue influencing public policy making.

**Goldstein**: It may depend on the new membership, as well as on whether or not they believe in "stare decisis" (don't freely overturn precedents).  There were two really big anticompetitive cases, the 2003-2004 Triennial Review and the 2005 detariffing of DSL.  Looking at interim Chm. Copps, for instance, in the TRO, he dissented:

"Critically, there are also parts of this Order with which I strongly disagree. Most importantly, I am troubled that we are undermining competition in the broadband market by limiting—on a nationwide basis in all markets for all customers—competitors' access to broadband loop facilities whenever an incumbent deploys a mixed fiber/copper loop. In essence, as incum-

bents deploy fiber anywhere in their loop plant, they are relieved of the unbundling obligations that Congress imposed to ensure adequate competition in the local market. The majority assures us that by somehow ignoring the intent of Congress and tearing away the infrastructure that undergirds competition, this will promote investment in advanced architectures. Rather than "new wires, new rules," I fear the majority adopts a system of "no rules, old monopolies." This is not a brave new world of broadband, but simply the old system of local monopoly dressed up in a digital cloak."

...

"As harmful as this decision is, it may not be the last battle this year in the headlong rush to deregulate broadband. Shortly, we may be considering whether to deregulate broadband entirely by removing core communications services from the statutory framework established by Congress. This strikes many, including me, as substituting our own judgment for that of the law."

In the DSL detariffing, he was persuaded that the Supreme Court's Brand X ruling said what it didn't, and thus he had to go along with Martin:

"But neither Justice Scalia's opinion nor my personal reading will guide the Commission's approach going forward. The handwriting is on the wall. DSL **will** be reclassified, either now or soon from now, whether I agree or not. This is not a situation of my making or my preference, and I believe that it does not inure to the benefit of this institution or to consumers across the land."

I expect that Genachowski will agree with Copps on a more pro-competitive (intramodal) policy, at least if sufficient legal cover is given (which should be easy, Chevron being rather loose and having been abused the other way). McDowell, if he remains, may also be amenable to a compromise there. I'm less comfortable with Clyburn, but she's on Genachowski's team now and may have to come around.

The trick will be to frame the questions properly and get them on the table. Of course we are trying... but the FCC is pretty much in a holding pattern until July, waiting for the confirmations and primarily dealing with the DTV transition.

**Cecil**: After the re-education and other purges, you've got to jettison the law that got us here. Otherwise you're putting new drivers in the same failed cars following the same filed maps driving over the same rutted paths. The Who sort of captured this long ago ... still true <span style="color:blue">...</span>

**Goldstein**: You know and I know that it ain't gonna happen. CA34 and TA96 are not getting major revisions any time soon. If they were, would they be designed to lock in the existing "intermodal/duopoly" model? That would make matters worse. But I don't see Congress understanding the issues. You have propertarians on the right (it's their network and their business what you do with it) and simple-minded neuts on the left (both ISPs must be strictly regulated, bits is bits, and must be given away for free in any quantity, unless they're licensed wireless in which case you defer to the right). And nobody there understands what Internet *is*, let alone "broadband". (Yes, I'm going to write an article beginning with a quote from Potter Stewart.)

The FCC can do a lot of damage or a lot of good within the Chevron deference. The states aren't able to bail us out, nor are they willing. And the Courts are still stuck in the Reagan void, afraid of antitrust. So the new FCC is the least unlikely place to turn to. At least they have a few guys with pikes and a longbow or two.

**Kushnick**: The FCC misleading the market is not new. In fact, it is the working platform of the FCC.

For example, in 1998, the FCC wrote a report, claiming that broadband was being deployed 'timely and reasonable' and omitted every state law where there was a requirement – which, as I've discussed, was never fulfilled. – that's 50 different state documents, annual reports, etc, totally ignored… This is the same report that claimed broadband was 200k, even though the telecom act stated it was 'high-quality video in both directions.

Next, in 2001 the FCC closed down the audits of the Bell companies done in 1998, which showed that $18.6 billion in equipment was missing, though added to rates… and this was only ¼ of the potential audits. This report would not have been released as there was an earlier 1994-1995 report that never saw the light day it was only because it was leaked to the *Washington Post* that it came out at all. It was closed down in 2001 without being investigated, the dockets and documents closed to the public, etc.

Then we have entire failure to do a full 'impact study on small businesses required in virtually every docket. – The FCC has been using data from 1992, 1993, 1994 about the current market in every docket for the last decade.

I have a new article coming

out highlighting this list and others…

And one other thing… on the books, the FCC's data is supposed to pass muster of something called the "Data Quality Act" --- where data is supposed to be transparent, objective, etc… besides us, no one has bothered to even take the FCC to court over their data inequality using the act, as far as I know…

**Adam Peake**: Commissioners Powell and Abernathy (see <http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-253125A2.pdf> ) used BPL to support non-competition. For 2-3 years BPL was pushed hard by NTIA and FCC (enormous support from NTIA). Peaked in October 2004 when they announced the outcome of technical inquiry which found interference levels acceptable. I have a quote (can't find the source…) from a news story about that announcement with Michael Powell calling it a "banner day for competition".

Clutching at straws perhaps, they knew intermodal competition wouldn't work. Any solution that could be painted as a third "wire" to the home got the treatment, Commissioner Martin later did it with some wireless.

But NTIA just as culpable as

FCC in this. That would be Michael Gallagher, that he "spearheaded" BPL is mentioned in his NetCaucus bio <http://www.netcaucus.org/biography/michael-gallagher.shtml>

Side question: was special access found to be competitive around this time and freed from price cap regulation? Or was that a process that kind of culminated on 2004?

**Tim Wu**: I am not sure how in the 1980s onward it became widely believed that competition was a state of affairs that was in some sense natural or had any tendency to last. That isn't reflected in the history of any industry I know of.

**Mark Cooper**: I will go one step farther. **All major infrastructure, network industries of the industrial and pot-industrial age, left to their own devices produce neither competition nor openness without public policy (e.g. regulation, antitrust, etc).to impose it.** Railroads, telephones, electricity, mainframe computers, computer operating systems. Each of these industries had exhibited a substantial trend toward abusive market power before they were addressed by legislation to prevent it.

Market fundamentalists like to hypothesize that the monopoly would have eventually been overthrown because it would have become so inefficient that some new entrant would have eventually overthrown the monopoly, but there was no evidence at the time to support that claim and the pain was severe.

Economic theory suggests that the number of competitors should be equal to the number of that will be viable at minimum efficient scale in the market, but economic reality shows that economies of scale and scope, network effects, vertical leverage, first mover advantages, and a host of anti-competitive tactics whittle the number down dramatically. In these sectors where the number would be small to start with, it ends up dangerously close to one or two.

The market fundamentalist literature has spent decade trying to prove that competition really isn't necessary for economic efficiency, by assuming that the monopolist will see the long term value of not exploiting market power. One strand of the literature has tried to argued that the number of necessary competitors is small. Thus we have moved from the traditional position that ten is the number necessary to have a competitive market

to "four is few and six is many" to "two is few but four is enough." IN telecom we now have the theory of the dynamic duopoly "two is enough, as long as their is a threat of a third).

We have a huge literature on the Incorporation of Complementary Externalities (ICE). The more sophisticated analysts admit that there is a set of assumptions under which the hypothesis fails. Firms will not be be motivated to keep their platforms open and forego the abuse of market power under certain assumptions. It turns out that those assumptions are where reality is. Being market fundamentalists, however, they cannot bring themselves to reach the obvious conclusion -- we need regulation as a prophylactic against market failure. They keep analyzing the space where ICE could apply and argue that since we would be better off if it did, we should wait for it to happen, sort of like waiting for Godot.

**Tim Cowen**: I agree that the classical drivers and economics of networks push organisations into a self-interested strategies designed to "benefit me" from discrimination and foreclosure, but there are other drivers, and other profitable strategies.

I agree with Sara Wedeman that this starts with the CEO's

behaviour as well as strategy. There are, for example, economic benefits from disaggregation of vertically integrated products. If a wholesale market can be stimulated, the on-ward downstream specialization expands the total market, and where an incumbent sells wholesale products to wholesale customers they are unbundling the offer in a manner that customers get what they want more easliy. Bundling and exclusionary strategies can be driven by the retail sales teams who see the competition as a threat to their income. Cases such as Linkline will happen if systems are not put in place to stop the downstream retail sales people from being able to influence the firm's decisions and reactions to being undercut by a rival.

If a firm can be persuaded to stand back and think rationally at board level, there are benefits to the incumbents from segmenting the demand curve in a way that allows the firm to maximise profitability over time. However, if a strategy of competing across the supply chain is to be effective, getting the organisation to change its culture is a real challenge. One critical issue is the mental model in the minds of people: if a firm starts with the mentality of thinking that it owns the customers and the sales people think that they can and do

control the offering and the market, then getting them to change that mental model is very hard but very important. This is probably where regulators could best spend a lot of their time.

It is also a question of the time horizon and the signals that are sent out by the regulatory/legal regime to all players. Short term prisoners' dilemma games lead to both going to jail by blaming each other. If the game is expanded to include all actual or potential competitors in the value chain, and all players know that they are equally likely to be penalised for bad behaviour, then that does not by itself stop them crossing the line unless they percieve a greater advantage from compliance. This belief needs to be built and good behaviour needs to be reinforced. If it is seen to be, and then proves to be sucessfull then firms are probably more likely to collaborate in a beneficial way. Simplicity of the system and clarity of boundaries are critical to encouraging the "right" behaviours and any regime needs to make this explicit.

I see the US system that was in place up to the 1996 act as flawed since it set the RBOCs on a collision course against other players.  A litigation boundary developed because identity of firms became tribal and meant that non

tribe members were the enemy. As we know that was eventually bypassed by acquisition and the reestablishment of vertically integrated domestic telcos. The 1996 act provided the framework for a system that may work, and it did for a while under people like Bill Kennard, but we have moved on and learned from history and another way of regulating may operate as an improvement on the 1996 system. This would involve an approach that recognises the lessons from behavioral economics.

In the formulation in the UK of Openreach as the segregated access monopoly supplier, the management have been given a separate P&L and are separately incentivised on the basis of the incentives of an independent operator, with an independent board and members who are unafilliated with BT.

The system is designed to reinforce the positive. If, in addition, the system of law and regulation has clearly defined boundaries as well as penalties, and positively reinforces good behaviours with recognition and reinforcement, it has a real chance of working.

**Tim Wu**: I'm not sure what competition means, but I cannot think of a communications market at present that

is not dominated by an oligopoly, duopoly or monopoly.

**Erik Cecil**: AGREED! S/he who owns the dirt wins.  Telecom has been, is and always will be a war of attrition.  It's not much different than playing Risk(TM) but the stakes are higher.

I'm not sure where people get the idea that the United States now, or ever before, has really had a competition-based economy, unless you regard an oligopoly with matching prices and practices as a competitive market.

**Werbach**: Aren't those two different things?

I agree that most of the time (including now), when you take a snapshot you find telecom markets "dominated by an oligopoly, duopoly or monopoly".  But that doesn't mean there is not a "competition based economy."

Cable modem service made the telcos roll out DSL.  DirectTV made cable upgrade its plant (partly to ramp up cable modem).  Cellular substitution made AT&T and Verizon buy up cellular assets.  Those are all competitive effects.  They just don't necessarily produce markets with many strong competitors.

I think the fallacy (implied in Bruce's original post) is making policy based on some ab-

stract notion of whether "competition exists".   One can always massage the numbers -- and the market definitions -- to show that it does, or that it doesn't.

**Cecil**:   Open markets show up for brief periods lasting about a decade or so, but that's it.

Funny - Open mostly happens where there's no regulation (evenly - for all players; past 8 years were lopsided regulation, not deregulation).   Thus, the Internet arose from an exemption from common carriage regulation ...

**Tom Vest** Incidental at best. The Internet "arose" because it was not initially perceived as a potential commercial "telco service" offering at all by the facilities owners.

The Internet was able to grow substantially beyond the confines of a handful of university-based labs \*only\* because of positive regulatory (i.e., not deregulatory) changes like FCC 60 2d (1976), which   (IIRC) deprived AT&T of discretionary authority to refuse to sell private lines based on a determination that the line would be used as a component of some other "commercial" service. That was the change that both enabled competitive entrants to become commercially viable without the im-

possible burden of building out their own end-to-end duplicate facilities platforms, and also created the impetus/rationale for protocol overlays (e.g., TCP/IP) that are transparent to the underlying physical media, and vice versa. Another way of saying the same thing is that FCC 60 2d made the very concept of "network infrastructure" possible (or at least, relevant to anyone outside of AT&T's planning department).

**Cole**: Thank you, Tom; as you note, the public Internet exists precisely because of regulation, not deregulation.

The FCC had two really key proceedings that made it possible.   One, as you cite, was the "sharing and resale" doctrine.  **Before that, public packet networks (like Telenet) needed themselves to be licensed as common carriers, or else AT&T wouldn't sell them circuits to their customers.  Around the world the concept of "value added networks" sprang up too, to accomplish similar goals, though often more slowly.**   The second area was the Computer Inquiries, which clarified the distinction between carriage and content, and between network and terminal.

We sometimes forget these when trying to short-cut our way to desirable effects, like

a perceived-as-neutral Internet.   But when you get the predicates right, good things happen.  When you get them wrong (like deregulating raw carriage), bad things happen.

**Brian Harris**: Making policy is one thing; enforcing or effectuating a law is another. The current law in many states is along the lines of "promote competition while maintaining widespread availability of advanced services at affordable rates." This is actually a inherently contradictory directive. Some of the competitive effects resulting from this type of law seem to be forced bundling, firms concentrating on the enterprise market at the expense of individual customers, widespread discrimination on a geographic basis for basic broadband connectivity, deteriorating outside infrastructure in many locations and a toxic, scorched earth political atmosphere where meaningful discussion or negotiation has become well nigh impossible.

It may be that in the process of "litigating" an "alternative form of regulation" I've become a bit jaded. Litigation is a cumbersome, unwieldy tool to determine something as important as a regulatory regime for telecommunications but it's what we've got.

I agree on the description of the fallacy. The law forces

certain facts to be ignored or spun so far out of context that they are no longer "facts."

As a practical matter the phone company (ILEC) says something like: We're losing access lines ... see, competition works! We're losing access lines to our competitors, so we should have pricing flexibility (i.e., we should be allowed to raise rates) on all our Special Access circuits." To a lot of politicians and people with only a passing acquaintance to telecom this sounds like compelling argument. But to those who have to eat the cost of increased rates for special access circuits, it seems like just another monopoly situation.

**Tim Cowen**: This issue of 'Enforcement' is the key to an effective regulatory regime. Boundaries with penalties need to be set and clarity of rules is vital so that everyone will know what to do in a given situation. However this whole area needs to be thought about in terms of incentives to comply and a regulator needs to think in terms of positive reinforcement of good behavior and incentive setting rather than thinking of itself as an "enforcer".

For example, if a firm puts an extensive compliance programme in place, and the content is agreed with the regulator, the methodology for roll out is agreed, the system is implemented jointly and the people who are affected are reviewed for their incentives to comply (and any incentive not to comply is removed) then the system of regulation has a workable starting point.

The language of enforcement, control, comply, penalty etc is the language of the dictatorial parent. In transactional analysis and real life I always found that the dictatorial parent provokes the delinquent child. Over to the professional psychologists.

**Bill St Arnaud**: There are metrics to measure the competitiveness of a given market - the Lerner curve, Hesrchfield (sp??) index, etc Even with a duopoly you can have a monopoly market and paradoxically with a defacto monopoly the market can still be competitive.

Economists use a number of metrics to measure the competitiveness of a market such as price elasticity, innovation, etc. But bottom line - most studies indicate that wireline

broadband in North America is largely a monopoly market (even though there may be more than one player providing services).

# How Much Broadband is Enough?

**Cole**: I am becoming convinced that those of us who want to see at least 10 Mbps UP, and more is better, do need to find, if not a "killer app," a variety of "wounder apps" (sorry, could not resist <grin>) to help make the case. I am been doing some informal discussion with people who have the education and experience to "really get it" who do not (and are not employed by ILEC's or otherwise pressured in this space.

It helps in some quarters if these are "public" apps -- education, health, security, etc., but compelling entertainment apps also help (for example, Live Online for games, local video, real or delayed, of school kid activities -- sports, music, drama). Here in Indiana, where we have some 40 cities and towns where FTTH is being deployed, we have a chance to demo many of these apps -- it is no longer a chicken and egg problem, because we have some places to try them once they are developed.

I know a bit about Live Online, and do follow educational technology via Educause and other sources. What other sources of these "wounder apps" (ie, persuasive apps that require at least 10 Mbps both ways) does the list suggest I check?

**Cowen**: Digital photography is a key app and bandwidth hungry. This is not just for budding photo journalists but for anyone who is making images for such things as plans and buildings, graphics etc.

In healthcare high resolution is critical to being able to do remote diagnostics.

I am told that the ability to send high resolution XRays over the system is possible with fibre and high resolution equipment and it saves both money and time since it is possible to deploy x-ray more quickly, (rather than having to go to the x-ray department, wait a couple of days and see what comes back in a brown envelope)...

**Wagter**: I agree. Digital photography and video for home use is already far beyond the capabilities of normal 1 Mbps upload.    And check out tools like the Pogoplug.

My personal craving is for a big online webdisk, fully integrated in the desktop, fully encrypted and safe, unaccessible by anyone but me.  Plus a facility to "right-click" on any file and send a onetime link by email for someone who by clicking on the link can download the file onetime-only.   No hassle with rights and users, as unfortunately most online disk services offer (like Skydisk or many others).

Being able to keep my massive digital storage of foto's and home movies safe online, and send at will a particular file either professional to peers or private to grandma or the like is my killer app.

**Felten**: Regarding x-rays (and more generally the current generation of healthcare "apps") – they doesn't require a high bandwidth in the home.

Digital photography does, digital video even more so.

My personal feeling is that the killer app will be TV-set video-telephony.

I just wished that a service provider agreed with me...

**Cole:** I suspect HD video will not be for "regular telephone-type calls" but will be for special events, such as:

1. virtual attendance at a

family event -- allowing distant relatives to participate in a holiday, birthday, anniversary, etc.

2. virtual examination/ diagnostic -- while we will NOT have x-ray machines (or MRI or cat-scan) or other such medical imaging in our homes real soon, we already do (or can) have HD cameras for trained experts to exam -- wounds, rashes, balky appliances, droopy plants, our latest dancing technique or music solo, etc.

Someday, I even imagine a live "mix and match" so that, for instance, our bodies (with or without a modesty body cover) could be shown inside clothing of interest, vehicles of interest, sitting on furniture of interest, etc. Perhaps tailors can take virtual measurements, just the way one do with digital photographs now, assuming you have a reference length to start with.

So -- even though we might make most of our calls without video (although hopefully with vastly improved codecs, as Skype is working on and releasing to "free" use), I can see some extremely valuable uses of high-resolution video and high-resolution photography sent from the home.

Other ideas?

**Wagter**: Some years ago I tested a simple but high quality videoconferencing tool with elderly people. They loved it. But: the biggest demand was: please make something we can play bridge with as if it was a live meeting.

For me it is the summary of what we would desire as a "presence" tool. If it is capable of getting close to a bridge game with 4 people, we can use it for anything where we like to meet, including business meetings and you name it. Anything more than 2 persons is a meeting platform. Great.

**Cole**: Interesting -- note that with "online poker" etc. it is important to identify the goal being served. One can imagine multi-player bridge with quite low bandwidth, since only changes to the bridge table are sent (perhaps long with sound). If the idea is to replicate "telepresence," than of course hd video may be necessary.

**Don Marti**: Maybe it's time to look at architects and schools of architecture. How can you design spaces with many channels of audio, along with HD cameras and screens, to make two distant spaces work something like a common space? Not conference rooms for structured meetings, but the kind of run into somebody space that keeps people informed in the

background: http://www.randsinrepose.com/archives/2009/04/15/the_pond.html

**Wagter**: I would consider this a very interesting challenge for a multidisciplinary team: how to recreate more or less this feeling of "presence" which you experience when with friends? This would improve our quality of life and reduce our unnecessary travel time to a level where one could not live without it.

**Cole**: My 5 years of running two monthly statewide videoconferences has left me with a lot of operational advice about such things -- having to do with lighting, camera position, etc.

I would love to see "trained professional" (hopefully way beyond me) go to work on some specific instances other than meeting around a conference room table in a conference room.

We have already mentioned:

1. The bridge game (or other primarily social but planned activity). We have plenty of people working on making even American baseball engaging on TV; now to do multi-site bridge....

2. The unplanned gathering place -- break room, coffee shop, water cooler, the hall-

way in my graduate school where eventually everybody had to pass -- it was so successful in the building built in the 1930's that they went out of their way to replicate the same kind of common space in the building built in the late 1970's.

We know how to do these things live -- we need work on how to do them "virtual."

**Perez**: There is a compelling application using telepresence to facilitate communications for the hearing impaired. An enterprising citizen, expert at sign language can act as a virtual mediating communications between a deaf person and a government official.

**Cole**: Fort Wayne already uses this -- the deaf person calls the intermediary via video; the intermediary calls the help desk (of whatever sort; not just computers). The intermediary talks to the help desk and signs to the deaf person. It is a great service!

**Marks**: As I've said before, the upload more than you download model is already here for photo site and video users:

http://epeus.blogspot.com/2008/04/comcasts-bialystock-and-bloom-business.html

Conventional internet service

user models are based on users downloading more then they upload, from common big media sites that can be easily cached. However, as Odlyzko pointed out, citing Lesk's now decade-old work, the dominant form of data creation is photographs. Now all these photographs are actually digital, and we want to share them so others can see them. Because we aren't allowed to run our own servers by the likes of Comcast, we have to upload them to Flickr or Photobucket or Picasa to share them. This gives us an 'upload more than you download' network flow, as we send them up at full multi-megapixel resolution, but browse a few of each others' at thumbnail or reduced size. And that's before we even consider video uploading (which I've noticed Comcast throttles at 0.4 Mbit/sec for me).

**Felten**: I think what's explicit here is that it's a social pleasure that becomes impossible (or much harder) to fulfill with age because mobility comes in the way.

I was very moved today by the news snippets that a 95 year old Spanish Grandma who had been blogging for the last two years had died. She said that blogging had transformed her life, opened her to things she never knew and she's made many friends even though they had never

met.

This is what broadband already enables and it would become all the more powerful with live video-communication.

http://news.bbc.co.uk/2/hi/europe/8062760.stm

**Perez**: I think that trying to focus on one application to justify high bandwidth symmetrical exchanges misses the point. I am in the camp that believes that the bandwidth itself is the killer app since it will allow unparalleled levels of collaboration, which will give rise to all manner of new applications and enhancements of current applications. Additionally, many applications will also run at the same time. My son could be uploading his 10 mega pixel pictures while I engage in a HD video session and my daughter plays the latest video games. Also, as our immediate environment becomes networked, appliances, sensors and other devices in my home will be communicating with the network on a constant basis.

**Cole**: I agree, but have learned that examples help show this. Actually your comments include another reason -- multiple signals at once. In public computing centers, for instance, unless the upload is "commercial grade," the multiple comput-

ers will see "less than dial-up." Similarly, as we add multiple computer users, and eventually multiple computers per user, and signal devices without users (appliances, smart meters, etc.) we need expanded bandwidth just to keep any one moving sufficiently.

So in that sense, multiple standard apps running at once is the "wounder app."

In Oklahoma, farmers have wireless connectivity in their farm vehicles with fiber backhaul to the local state university. When they spot plants in the field with disease or insects, they take pictures, send them immediately to the ag experts at the university, and get feedback on what the problem is and what to do about it.

I really think this concept of "remote diagnostics" is going to be a key one....as I have written many times before<grin>.

**Cole**: in response to a query from Tim Cowen: My co-authors and I just completed a textbook chapter on what 4 mid western states (US) are doing to encourage citizens to "go online" instead of "stand in line" for items like vehicle licenses, filing tax forms, etc. We are hoping to extend that study to something like 3 or 4 European nations for a new chapter for a second textbook (approval of our 2nd idea is still pending).

But the experience, plus my own travels in most of western Europe, suggests a theme one might transform out of the "online shopping" item in the materials. What might or could or should be done to get citizens to "go online" instead of "stand in line"? Is it more information? More access to computers and connectivity? Actual discounts? Note that Indiana now shares its cost savings with its citizens through a $5 discount if you get vehicle tags -- ie, pay annual vehicle

taxes and registration -- on-line; many places still charge both a "credit card fee" and a "convenience fee" for doing something that saves the government money.

In fact, Indiana REQUIRES that filings for unemployment compensation be done online, and public libraries have set up special computers in special rooms open at special hours (Sunday night for a Monday deadline) for just that sort of filing.

Many social services -- including but not limited to education and health care -- could be delivered cheaper and more widely (if not otherwise "better") online rather than in-person. The problem is tapping into this future benefit to finance current costs, which is what long-term public bonds are designed to do.

# FTTH Deployment in the Netherlands

**Hendrik Rood**:  Below is a press release we issued today about the state of affairs of the FTTH roll out in the Netherlands

It links to our website were an English written report can be received for free via e-mail after filling in a form with your e-mail address. That report contains both more detailed data as well as our views on a lot of regulatory and policy developments and other relevant issues.

For those interested in FTTH mapping, we provide an example of how we have mapped the FTTH deployment geographically with a Google mashup at

http://www.stratix.com/ftth/geovoorbeeld.php

We got the GIS shape-files and generic neighbourhood data from our national Statistics Netherlands bureau and filled in FTTH-details for areas we knew some data.

One could think about launching similar web based efforts in other countries. A kind of broadband geowiki mash up.

Press release

FTTH roll out in the Netherlands accelerates despite credit crisis 349 thousand homes passed March 2009 and 1 million homes passed in December 2011

HILVERSUM, THE NETHERLANDS - June 4, 2009 - Stratix Consulting BV has issued a new report on the Dutch Fibre-to-the-Home market. The Netherlands is currently one of the very few countries in Europe where genuine Fibre-to-the-Home is installed. The number of homes (households) passed has grown from 188 thousand in the first quarter of 2008 to 349 thousand in the first quarter of 2009, an increase of 85%.

216 thousand homes outfitted with connections into the meter cupboard

From 349 thousand homes passed, about 62% or 216 thousand homes are actually connected (fibre brought into the meter cupboard, ready-for-service), a growth of near 52% compared to 142 thousand homes connected in March 2008.

Until recently, most FTTH providers, mainly non-listed companies, were quite secretive on the actual subscriber numbers. Detailed data was hard to come by, while publicly listed companies were keen to shield FTTH-figures by combining them with their other Key Performance Indicators.

Number of actual subscribers have grown 65% year-on-year

A team from Stratix Consulting has been able to uncover actual service subscriber numbers for nearly all projects of any scale, using local press and other public sources. From these data we can state with confidence that the number of active subscribers has grown from at least 84 thousand in the first quarter of 2008 to 139 thousand in the first quarter of 2009, an annual increase of 65%.

Stratix finds that the fibre industry is scaling up production in 2009 and regular launches in new towns and cities occur despite the credit crisis.

More detailed data per province and municipality on the Dutch FTTH market as well as Stratix' expectations and views can be found in the downloadable report at: http://www.stratix.com/ftth.p

hp

**Poulos**: Let's call it the virtues of competition; on the same day Hendrik's firm puts out its FTTH report on the Netherlands, so does mine. Hendrik stole some of our thunder, but our report is really quite different from Hendrik's. It's much more forward looking, it's based on extensive conversations we had with C-level execs (including Reggefiber's), and we are throwing in a conference in September.

http://www.telecompaper.com/reports/reportdetails.aspx?cid=R674470

BTW: mash-ups were made available by Reggefiber itself: http://www.reggefiber.nl/projecten.html

As well as its majority owned RSP:
http://www.xmsnet.nl/112_Stedeninformatie.html

**Press Release**  More than 1 million Dutch FTTH subscribers by 2013

Houten, The Netherlands, 4 June 2009 - The Dutch fibre-to-the-home market is set to steal significant market share from ADSL and cable operators over the next few years. The number of homes passed almost doubled in 2008 to an estimated 336,500 by year-end. During the first quarter of 2009 the number ex-

panded further to 361,700, held back somewhat by fierce weather conditions. We expect Reggefiber Group, the main investor of the new infrastructure, to increase its build-out capacity further. We expect the market to end 2009 with more than 500,000 homes passed. By 2013, we expect this number to cross the 2 million mark.

Leading market research firm Telecompaper is publishing its annual review of the Dutch FTTH market. The report discusses a wide range of related topics, including technology, regulation, the role of the government, financial aspects and the fibre-related strategies of the leading market participants. We have conducted almost 20 interviews across the Dutch fibre market, speaking with C-level executives.

We think that the Dutch market could lead the way internationally. At the end of 2008, the Netherlands ranked second in the group of 30 OECD countries, with a broadband penetration of 35.8 percent, second only to Denmark. When it comes to fibre however, the Netherlands ranks eleventh. Now that KPN has decided to join forces with Reggefiber and Opta has regulation in place, FTTH is ready to leap forward and be a serious competitor to ADSL and cable. However, inhibitors remain, including

cable's aggressive Docsis 3.0 roll-out, limited supply of construction workers for the physical roll-out of the new infrastructure and KPN's legacy ADSL networks, which may tempt the incumbent to migrate to fibre at a modest pace.

Based on a number of drivers, inhibitors, and several unresolved issues, we have made three scenarios for the Dutch FTTH market in the 2009-2013 period. Our estimates cover the number of homes passed, homes connected as well as the number of homes activated, i.e. the number of paying subscribers.

For the number of homes passed, we estimate a CAGR of 50.6 percent to end the 2009-2013 period at 2.04 million homes. We expect the number of homes activated to display a 46.4 percent CAGR to end the period with 1.07 million connections. The latter represents 13.4 percent of all Dutch homes (from less than 2% currently).

**Telecompaper**

Telecompaper is an independent research company. We publish the latest information about the global telecom industry and provide our international customers with need-to-know information and market insight via news feeds, newsletters, research

and advisory services. Tele-compaper has its main office in Houten (Netherlands). The company was established in June 2000. DFM2900/FTTH in the Netherlands 2009 is a research product from Tele-compaper. Price for 10 users is EUR 4,650. Single/double-user price for the report is EUR 1,550. The report can be ordered now and will be published on June 8th 2009.

Including in the purchase of this report is access to the FTTH NL 2009 congress (two tickets when purchasing the report for 10 users or more). On 17th September Telecom-paper will organize this event on the fibre market in the Netherlands. This event will provide excellent follow-up on our report on the Dutch fibre market (Report FTTH in the Netherlands 2009). This event will be held in Dutch. For more information see FTTH NL 2009 congress.

**Rood**: You are right that there are some nice maps and shape-files depicting areas, on their websites, where they are constructing / active.

The difference is that they provide in some cases the shape files for, but not available datapoints like the amount of homes in area, the known homes connected and we also have the projects they do not depict, like projects by housing corporations, developers and local cablecos that are active in some areas.

One of the purposes of broadband mapping efforts should be to assess paces of roll out vis-à-vis the homes in area.  There are some other acts one can do to combine todays wealth of data from public sources that can be linked to a much higher level of insights for a.o. policy purposes.

In 2005 I gave a presentation at a workshop at Statistics Netherlands, where amongst others I took in data from efforts like SETI@Home work packages (it's successor BO-INC's stats are here at http://www.allprojectstats.com/showproject.php?projekt=0) to show some country comparison benchmarks that you do not see in the typical

"e-Readiness" etc. rankings.

The point is that if it is possible for a team of a few persons to collect the kind of geographic data without inside sources (we took all from public releases and sources, without having to ask for disclosure) and in a time span of a few weeks, then why aren't Statistics Offices instructed to just doing it and do people argue that a broadband mapping effort requires many millions to fund ... ? There is already so much to build on.

For one of the most inspiring talks I ever saw about what you can do to gauge (human) development with just un-covering data that was already sitting idle and been publicly collected, but not quite opened up, so people did not see what could be done, see:
http://www.ted.com/talks/hans_rosling_shows_the_best_stats_you_ve_ever_seen.html

# 25 Things About to Become Extinct, All Due to the Internet?

**Cole**: Here's the list making the rounds:

1. The Family Farm 2. Analog TV 3. News Magazines and TV News 4. Honey Bees 5. Mumps & Measles 6. Drive-in Theaters 7. Personal Checks 8. Wild Horses 9. Hand-Written Letters 10. The Milk-man 11. Stand-Alone Bowling Alleys 12. Incandescent Bulbs 13. Cameras That Use Film 14. Answering Machines 15. The Swimming Hole 16. Ham Radio 17. Ash Trees 18. VCRs 19. Chesapeake Bay Blue Crabs 20. Phone Land Lines 21. Dial-up Internet Access 22. Movie Rental Stores 23. Classified Ads 24. Yellow Pages 25. U.S. Post Office

Here's what John Dodge and Dana Blankenhorn say about it:

"The list is neither compre-hensive not particularly accu-rate. Family farms have been endangered since their incep-tion and probably half of the people reading this don't re-member The Milkman. And the list omits gas-powered SUVs, full-size pickups and General Motors which are en-dangered list, too. You know what else is on it: Interviews like the one Brokaw con-ducted with Gates for the evening news."

http://www.smartplanet.com/technology/blog/thinking-tech/the-internet-circa-1994-institutional-extinction/448/

So ladies and gentlemen, can the list do better? What is about to become "extinct" (I myself would accept "way less important than before" rather than like the Dodo or the Passenger Pigeon), pri-marily, or in large part, due to the Internet? Maybe we should each try for a "top 10" and get the 25 by assembly, rather than each of us trying for all 25.

For instance, of the list above, I would only include "classified ads" and I would insert "regional daily news-papers" but would consider all the rest either not extinct (even in my "way less impor-tant" meaning) or not due to the Internet.

Your thoughts?

**Harris:** A lot depends on definitions. If you think a "classified ad" is a short an-nouncement of somebody seeking a buyer for a good or service", then classified ads are still very much alive. If the definition is simply "a three line announcement in the back of a newspaper" then yes classified ads are dead. This same concept would apply to "yellow pages" as well. It is not the concept that died, it is simply the mode of transmission that has changed.

Does the "internet" include cellular telephony (after all it's digital!)? If so, then you might want to include "the ability to plan ahead" as in most cases people now just say "call me."

Top 10:

Circuit switching
Editorial boards
Prime time television ("mass" media?)
Arbitron
The fairness doctrine
Attention spans
Centralized authority (to a certain extent)
Secrets
The concept (as opposed to the reality) of a paperless office
Privacy

**JM van der Vleuten:** Things cannot become 'extinct'. If they disappear it will be be-cause people have found other ways to do them, not 'because' but - in some cases

- by using the internet. Some items will not disappear: hand written letters, for example, their number declines but their prestige is rising. Others will not be missed by me: video rental stores (and not because I don't rent video's).

My "theorette": as long as molecules can be replaced by bits and bites, we're on a way to a smarter and more sustainable future. What Internet is this list about? Bowling alleys were on their way out long before net access became a big presence in homes. And a lot of these are actually getting un-extinct thanks to the Internet.

1. The Family Farm

...now has "community-supported agriculture" and "identity preserved" business models, among others. Cheap, direct, connections to customers, powered by the Internet. Plus better telework options for members of farm families.

9. Hand-Written Letters
13. Cameras That Use Film
16. Ham Radio

Artisanal and hobbyist scenes that would be too small to build critical mass locally can get along with Internet communications. Add vinyl records and turntables to that list.

5. Mumps & Measles

While mainstream medical journals Google-proof themselves with pay walls, and the medical industry patronizes its customers with dumbed-down patient sites, Internet quackery gets worried moms to skip even basic vaccines. Result? Infectious disease outbreaks.

15. The Swimming Hole

Only looks that way because you aren't cool enough to be on the secret list about it. Also, underground raves, LAN parties, clothing and movie swap nights, and other social events.

21. Dial-up Internet Access

That's like saying The Coca-Cola Company killed the 7-ounce Coke. People tried a little, then bought a lot.

**Cecil**: Internet: a multifunctional electronic communications network *capable* of enabling connections among and between other multifunctional networks and devices regardless of who owns or controls the network or device.  It is not going away.

What is going away:

1.  The idea that connecting 2 or more points via electronic communications is special or value add.

2.  The idea that public regulators or courts can, over the long term, reliably and inexpensively require private entities to serve the public good when the latter are in control of bottleneck facilities.

3.  The idea that competition results from number 2 above.

4.  The idea that private control of public facilities, without government oversight will ever result in maximum public value.

5.  The idea that 2 and 4 are mutually exclusive.  Thus community/municipal FTTx.

6.   The idea that "closed" networks are more valuable than open networks.

(This is a statement of perception, not an assertion of economic "reality", which is nothing more than the specialized perceptions of economists, a state attained by most mortals only after sufficient consumption of intoxicating beverages.  Thus Mark's comment that this discussion is moronic.  Of course it is; we're mortals.  Were we drunk, we'd see the idiocy of even thinking about this.  Worse, some of us are lawyers.  Beverage or not, we'll never make

sense, but somehow manage to make cents.  And we never shut up.  It's one of life's subtler ironies (at least for lawyers; probably obvious to everyone else), but there you go.)

That's my $0.0007.  ;-)

**Isenberg**: O Great Arch-econ and other lesser econs,

1. The Family Farm is, quite possibly, in line to be SAVED by the Internet, see my "Networks vs. Agribusiness" at http://bit.ly/xA1YD . . .

# The Stockholm Syndrome

On June 18  **Susan Estrada:** http://www.redding.com/news/2009/jun/18/editorials/

I saw this editorial today, from Northern California. It espouses some great ideology: " Say what you will about the federal government's spending binge this year. We should work to get our share, and the rural broadband money is a fat pitch across home plate for our region. And as long as we're laying the debt on our children and grandchildren, we can at least build something that will give them new opportunities. At least it will give them a fighting chance

to pay the bill."

But, check out the comments**. Most are completely against any government intervention into broadband deployment. The rallying cry seems to be - let's stay mediocre forever.**

I remain very concerned about the disconnect between what is right for US broadband and "Joe-the-Internet-User." How can we overcome this?

**Tim Cowen**:  Maybe some international comparison would be helpful. I am writing this in a hotel in Kuala Lumpur. The Malaysian government is rolling out its NGN, and while places like Malaysia, France, Singapore etc are getting on with it, others are making their own lives complicated.

I am astonished by Malaysia, last time I was here was 20 years ago. The pace of development has been extraordinary... maybe that's juts by comparison with the UK.

**Paul Budde**: Getting on with the job yes, but in combination with strong govt leadership to change the (Joe-the-Internet-user) perception that all of this is a rather expensive way to deliver fast Internet to one that promotes it as national infrastructure that can be used for a large

range of social and economic applications. If it not seen as building infrastructure for future benefits you will continue to get the negative comments as Susan mentioned. Only strong govt leadership can change that perception. While I am very critical about some of the elements of the Digital Britain report (lack of trans sector vision) it certainly is another report that shows the very important national benefits of such a network (universal services).

I think the White House gets it, but now it becomes a matter of how they can translate this into policies and strategies that are backing up that vision.

**Cole**: A high-speed connection is not a full substitute for a desk slot in a school or a bed in a hospital, but it can be at least a partial substitute and can be way cheaper......

**Budde**: Neil Neuberger (www.tcf.org) estimated in 2007 that in the USA remote monitoring of health conditions would reduce the need for hospitalisation of the elderly by at least 40%.

**Barron**: At WWDC a doctor showed an app that provides full real-time EKG monitoring on the iPhone. Once an alert has been received, the "attending" doctor can also

scroll back in the history and do measurements of the event! Not too shabby:

http://www.airstriptech.com/Portals/_default/Skins/AirstripSkin/tabid/136/Default.aspx

But it makes you wonder if your diagnosis will be rushed because it's your docs turn to putt on the last green! ;)

**Villa**: I think we have clearly moved away from the initial Stockholm model indeed. **The question is not anymore about whether government should substitute market (and address a failure) and build its own infrastructure, but rather what is the role of government in stimulating market when it is not reacting. The Amsterdam CityNet and Almere strategies are there to show this: government stimulations through the success of local demonstration pilots (Almere) and government action in stimulating the horinzontal unbundling of a vertical network (through all what Herman and Dirk successfully did), with several business entities reacting to the stimulation and agreeing to investments into a new paradigm, is really the new way go to for everybody.**

**This shifts the discussions from "how expensive is the network and should the government bear the cost" into "how can government unlock successfully a market potential which is not realized".**

**Atkinson**: Question: do you need "broadband" (and more specifically "high speed" broadband) to do monitoring of health conditions at home? Isn't wireless the best medium for monitoring because of mobility and aren't wireless data rates are more than sufficient for any monitoring function? How important is the "always on" characteristic of broadband to medical monitoring?

**Cooper**: This is the question and it should be more broadly framed. What are the minimum network functionalities necessary to support the broad range of applications across various paces (e.g. health, smartgrid, education, etc.)? To what level do you design your network, given resource constraints?

**Cerf**: If you stick with "at home" you probably have a wider range of options. Wired broadband (cable, fiber, DSL) can provide bandwidths in the 10-100+Mb/s ranges at reasonable costs. One can go wireless in the residential environment with WiFi at 10-50 Mb/s. For monitoring purposes one can also use 802.14.5 (6LowPan or Zig-Bee) at data rates from 20

Kb/s to 250 Kb/s. The 802.14.5 products tend to be very low power and can wake/sleep very quickly, so are good for months of operation on a couple of AA batteries, for example. I use such a system to monitor room temperature, humidity, light levels every 5 minutes.

If you want much more ubiquitous coverage, you probably have to move to 2G or 3G or LTE style devices that provide more modest data rates than cable, fiber or DSL, but which can often be reached in mobile operation in cars, trains, etc.

If one were looking to do continuous monitoring of heart or brain function (EKG, EEG), while the data rates don't have to be terribly high, you do need more continuous operation. If the devices that are monitoring are smart enough, they might buffer signals and only transmit if they detect anomalies. Home MRI of course would require a pretty significant capacity to send high resolution imagery quickly.

**St Arnaud**: The biggest challenge for using broadband to support at home medical applications is the liability issues. No network operator wants to assume the responsibility of an "always on" network that has been advertised to support these types of life and death applications

without suitable compensation and legal protection.

**Cole**: The liability issue is NOT insurmountable. In general, the telephone company is not liable if a call to the doctor gets a busy signal, etc. It is still better than not having a chance to call, rather than travel just to transmit information.

**Cecil**: I do not mean this as personal but rather as an overall observation, myself included:

Let us quit complaining of the faults of carriers as an excuse for inaction and lack of creative thinking or willingness to move forward. We must flow around obstacles rather than stop and yell at them.

Thus: let the institution assume that responsibility. It is called insurance. There is no such thing as a 100% up network. Train fires backhoe fades power outages weather software humans happen. Nothing is perfect. What can be perfect is a willingness to accept what is and create solutions.

**Budde**: It is not just the technology it is also the economics, monitoring for healthcare purposes can on a national basis only be done if it is available as a utility service. While there are monitoring services that will be required on the body and

therefore will have to be wireless, many monitoring services such as old age care, post hospital, etc don't require a wireless service and the economics of a fixed connection will favour these services to be delivered in that way.

Earlier **Cole**: I agree with everything Vint says (no surprise there), but also point out that 2-way video is useful for post-surgery and/or preventative exercise classes (already in operation; we saw video at F2C2009); personal instruction in music, dance, sport, even some forms of art (give advice on brush strokes, etc.). Upload still images are useful not just for MRI, but for showing a rash, a scar, a wound, a discoloration in the eyes, a painting, a musical composition, a document with charts and graphs, a CAD drawing, et al.

And even though much could be done with intermittent, slow
connections, I would note that great novels and nonfiction have been written with hand-made pens on hand-made paper; but computers with word processing software are still preferred by most writers.

**Atkinson**: I agree that the liability issue isn't insurmountable but it needs to be addressed. Telephone companies acting as common

carriers are not liable unless their negligence is "gross" but the FCC has determined that internet access services are NOT common carrier services but "information services" so that normal tort law negligence standards would apply. And you can be 100% certain that the internet access service providers—large telephone and cable TV companies that jries are likely to dislike and capable of paying huge judgements--will be targeted by the tort lawyers. So, unless the FCC reclassifies internet access as a common carrier service, some sort of tort immunity legislation would be required.

**Cerf:** i think we need some really juicy tort cases to send the telcos back looking for common carriage cover :-)
]

**Cecil**: Recall it was the IXCs who fought LD detariffing like crazy - 2 trips to the DC Circuit. Thereafter AT&T took some serious hits in subsequent class action law suits. Apparently customers weren't too crazy about the TOS, which they just ripped out of tariffs and pasted in. So, somehow courts and customers came to conclusions (captured?) regulators couldn't. (sorry, it just rolled out that way.) It wasn't tort liability, but it was enough.

Still, we may closer than you

might think. Their stupid games are getting old and the ruse wearing thin.  I'd take a tortious interference case given the right facts ... and there's some pretty decent fact patters bubbling around these days; get that in front of a jury (b/c you'll be shot dead if you'd breath such blasphemy to most regulators) and it will happen.  Hell, if the RIAA can sue a mother of 2 and win $1.92 million for her downloading 24 songs, certainly some enterprising attorneys can open up a hole or two. All it really takes is the right facts in the right places.

Setting that aside, the fraud in intercarrier compensation is ridiculous.  That's a time bomb just waiting to go off.  Enormous violations of federal law - prima facie - all over the place.  There's no hiding it either. It will happen.  The cracks and strain are all over the place if you know where to look.  And many are looking.

**Goldstein**: **We had to destroy the village in order to save it.  The correct answer is:  USE TELECOM SERVICES, NOT INTERNET.**

**Yes, I'm shouting.  We're so busy talking about Internet that we forget what telecom \*should\* and \*could\* be.  We think about the awful business people and the obnoxious regulatory positions taken by the incumbents, but forget that their bag of tricks is fairly large.  Sure, the Bells have gone out of their way to LIMIT the range of services that they offer, but that's the fruit of deregulation gone mad.**

When I worked on standards 20 years ago, we envisioned a very rich set of telco offerings.  They can be delivered; they just don't have a business model for them. There is NO reason why a telephone company can't deliver a packet-based always-

on service with the QoS you want:  They introduced this about 17 years ago under the name "Frame Relay"!  Of course they obsoleted it, but that was a business decision. Same with ATM, which could do the same at 155 Mbps. There was even always-on X.25 low-bandwidth service on the D channel of ISDN BRI!  Obviously X.25 was not ideal, but Frame Relay was very specifically invented for ISDN BRI retail use, where it was never deployed.

So let's not kill the Internet. Let's have common carriers. And if they choose to use eye pee as their protocol, fine, but let's distinguish it from ISPs who are offering information service.

# Executive Summary

## Heath care and electronic records

We lead off with a sketch of an article we wrote 30 years ago for the futurist magazine on Dr. Lawrence leads ideas for computer-based medical records.  This is the first occasion that I can remember where I went out of the way to tell the world the story of a new and very fascinating technology but 30 years later one unfortunately that has not gotten very far because of the enormous human engineering problems it poses. Nevertheless there is no doubt that its intellectual foundation is correct and I definitely hope that it will begin to make progress. Certainly readers will find plenty of evidence that even in 1979 the most exciting knowledge breakthroughs were to be found not within specialized silos but rather in achieving a synthesis of operation that crosses different fields of expertise.

## Trans-sectoral Thinking and Australian Broadband

[p. 4] The Australian Minister for broadband requests through Paul Buda input from the list that identifies innovative uses.  He gets plenty of

examples including an interesting one that suggests making information about a remote object available to an expert so that the object does not have to be brought into the presence of the expert.  While broadband cannot directly do much of our local work, it can help us understand how to do the local work better.

**Craig Partridge**: Fiber's great advantage is that you can mint spectrum. Adding a new fiber in an area increases available transmission spectrum, while adding a new wireless device in an area decreases available transmission spectrum. Eventually wireless cannot add capacity to meet demand (note we're some distance from that moment).

I'm a big believer that we can use wireless spectrum far better than we do today and with better technology can squeeze much more capacity out of wireless for all uses. Whether that will happen is rapidly becoming policy issue rather than technology issue.

## More on Open Nets in Australia  p. 10

Budde: The plan is indeed to get all retail players on the

network. The only problem might be Telstra, but so far they have reacted positively to the plan - but you never know of course.

In order for the government to get Telstra onboard it has also foreshadowed structural separation, the proposed legislation is so cumbersome to Telstra that it would nearly be impossible for them to refuse the offer to become involved in the new NBN.

## Fiber in the Balkans p. 12

**But the main topic was the extensive level of fiber-to-the-home initiatives outside of the EU including the Middle East.**

Such as in Iran, starting with the enormous city of Teheran with 17 million inhabitants. The plans are being made now, and they have the money.

**As Telco 2.0 already has noted: top down technocratic or autocratic deployment of fiber is a proven successful model. Look at Japan, Singapore, and recently Australia.**

**It short circuits the haggling and lobbying of in-**

cumbents as they work to maintain their monopolies, while they keep on delaying the investments as long as possible. This can be seen in Croatia (and other countries in the region [editor – including Greece)

## Both Society and the Law Evolve -- they are not top down design p.14

**CecilL**: *The key to any sustainable legal system, it seems, must be the express recognition that neither precedent nor statute nor constitutional (or cultural) "truth" expressed as words, is truth.  Rather it points toward truth.*

*Our legal striving, however, is always locked in dialectic. Two sides. We have battles over our inability to quit battling.*

*We never seem to consider triads, though I was struck that your father's piece implicitly picked up on that. Rational v. Spontaneous is not a contest; it is a dynamic that, when in balance, results in evolution.  Evolution is the stuff of creation; it's the essence of our survival.*

**Cole**: *Back (whew!) to the architecture and economics of computer connectivity -- we have many of these same choices -- do we want estab-*

*lished, top-down principles, exhaustive specification, simple, low-level rules, or some combination of all three? Should the unserved be served via (a) a specific technology; (b) a specific speed (up or down); (c) or a specific cost per end user? Or should the rule be that they get whatever someone is willing to provide at a specified price per end-user?*

**Vest** *The "rules" that have been developed in both cases -- monetary and IP addressing -- are intended to mitigate the risk of such failures. As long as we lack the power to instantaneously conjure up a replacement liquidity mechanism at will, worrying about preserving the one(s) we've got is probably a good idea. But those "rules" are inevitably going to feel like a taking of liberty by some Austrians.*

Anyone who says that I can't start a lending bank myself -- i.e., that I have to use some "currency" that's dictated by a third party, and that I have to satisfy some capital and reserve requirements denominated in that currency, and also forego my right to privacy by demonstrating my "compliance" to that same external "authority" -- is stifling my personal will to be entrepreneurial... or substitute "IPv4" for "currency" and "ISP" or "bank" in the above and you get the Internet ver-

sion of the same argument.

**Cowen**: Obviously market participants have an interest in gaming the system and in presenting data in a particular way to support a particular argument. However, if a longer time horizon is drawn is there not also a mutual interest in market participants establishing consistent data? For the game theorists, since the knowable range of alternative outcomes is so varied it is in fact in each player's interest to tell the truth (where the data is collected over a considerable period of time).

**I am very interested in looking at regulation and law through this lens with the help of the more reality based behavioral economics that we have discussed.**

## Governments Must Push Trans-sectoral Packages p. 24

**Budde: Maybe deployers who "play well together" should be rewarded in whatever coin makes sense, so highway departments have positive incentives to make medians available, etc.**

**In the US, the stimulus funds are NOT allocated that way. They are assigned to individual agen-**

cies, with NO explicit re-
wards (and I am guessing,
few implicit ones) to en-
courage trans-sector pro-
posals. One can certainly
imagine stimulus pack-
ages that reversed this
presumption.

**Estrada**: **Here's how we
are talking about trans-
sector at FirstMile.US:**

1. Government entities at the
federal, state and local levels
should care about the gov-
ernment's 'grand challenges'
-- healthcare, public safety,
education, civic participation,
energy independence/
efficiency, and economic
growth.

## Pro Telstra Tirade Complains That Arch-econ Mail List Gives Paul Budde Unfair Help  p. 27

That Budde has tremendous
sway in Canberra has been
confirmed**: for example, on
21 April, he indicated that
he was even providing
talking points to the min-
ister for his speeches. In a
post to the US-based Eco-
nomics of IP Networks
mailing list, which circu-
lates across some 200 in-
ter- national telecom pol-
icy wonks, he wrote that
he had just returned from
a meeting with Stephen
Conroy. Conroy was ap-
parently keen for him to**

pursue his "trans-
sectoral" digital economy
discussions with the group
as the minister "needs as
much ammunition as pos-
sible on the questions" for
an address Conroy was
planning for the National
Press Club in Canberra the
following week. In an-
other post to the blog of
the group moderator, Gor-
don Cook, Budde wrote his
industry groups were in-
tended to "support the
government in its fight
against Telstra."

## Old Order Will Have to Change p. 32

**Budde**: referring to Scott
Cleland astreoturf on behalf
of the LECs: What I see here
is a clear indication that the
vested telco and cable mo-
nopolies don't want the US to
catch the Australian 'disease'
of open telecoms networks
and unrestrained competi-
tion.

Australia is not the only
country taking this new direc-
tion - if anything the USA is
the straggler here. But it will
be impossible for that coun-
try to ignore these global de-
velopments towards open
networks.

**We had a great win earlier
this year when President
Obama announced that
the $7.2 billion broadband
stimulus package would**

be based on the open
network principles. The
cracks are starting to ap-
pear in the telco monopoly
fortresses of the USA.

I am leading an industry
group called 'Big Think
Strategies' that has furnished
the Obama Transition Team
and the FCC with reports
promoting open networks. Its
sister group in Australia has
also provided 'Big Think' re-
ports to the Australian gov-
ernment.

## A Tainted FCC p. 33

Budde: The FCC **Broadband
over Powerline (BPL)
rulemaking in 2004 was
simply a hollow attempt to
make it appear as though
the US was developing a
real competitive broad-
band market.**

**At that same time the FCC
ruled against opening up
the telco networks to
more competition and BPL
was promoted by the FCC
as one of the reasons why
that was not needed.**

**My interpretation is that
the FCC has been severely
compromised by very ac-
tive and successful lobby-
ing from the vested inter-
ests. And to camouflage
this BPL was used as a
smokescreen to make it
appear that the FCC was
serious about competition.**

[snip]

**Tim Poulos:** Is there any chance for intra-modal competition being reinstated in the US?

**Vint Cerf**: Not without a wholesale re-education of the FCC...

**Eric Lee**: And a staff purge as well.  It's my understanding that a lot of the Martin staff will be staying - and perhaps they and others will be in a position to continue influencing public policy making. [snip]

**Mark Cooper**: I will go one step farther. **All major infrastructure, network industries of the industrial and pot-industrial age, left to their own devices produce neither competition nor openness without public policy (e.g. regulation, antitrust, etc).to impose it.** [snip]

**Cecil:**  Open markets show up for brief periods lasting about a decade or so, but that's it.  Funny - Open mostly happens where there's no regulation (evenly - for all players; past 8 years were lopsided regulation, not deregulation).   Thus, the Internet arose from an exemption from common carriage regulation ...

**Tom Vest** Incidental at best. The Internet "arose" because it was not initially perceived as a potential commercial "telco service" offering at all by the facilities owners.

The Internet was able to grow substantially beyond the confines of a handful of university-based labs *only* because of positive regulatory (i.e., not deregulatory) changes like FCC 60 2d (1976), which   (IIRC) deprived AT&T of discretionary authority to refuse to sell private lines based on a determination that the line would be used as a component of some other "commercial" service. That was the change that both enabled competitive entrants to become commercially viable without the impossible burden of building out their own end-to-end duplicate facilities platforms, and also created the impetus/ rationale for protocol overlays (e.g., TCP/IP) that are transparent to the underlying physical media, and vice versa. Another way of saying the same thing is that FCC 60 2d made the very concept of "network infrastructure" possible (or at least, relevant to anyone outside of AT&T's planning department).

## How Much Broadband is Enough?  p. 41

**Cole**: I am becoming convinced that those of us who want to see at least 10 Mbps UP, and more is better, do need to find, if not a "killer app," a variety of "wounder apps" (sorry, could not resist <grin>) to help make the case. I am been doing some informal discussion with people who have the education and experience to "really get it" who do not (and are not employed by ILEC's or otherwise pressured in this space. [snip]

**Don Marti**: Maybe it's time to look at architects and schools of architecture. How can you design spaces with many channels of audio, along with HD cameras and screens, to make two distant spaces work something like a common space? Not conference rooms for structured meetings, but the kind of run into somebody space that keeps people informed in the b a c k g r o u n d : http://www.randsinrepose.com/archives/2009/04/15/the_pond.html

**Wagter**: I would consider this a very interesting challenge for a multidisciplinary team: how to recreate more or less this feeling of "presence" which you experience when with friends? This would improve our quality of life and reduce our unnecessary travel time to a level where one could not live without it.

## Fiber Buildout in Netrherlands p. 45

Stratix finds that the fibre industry is scaling up production in 2009 and regular launches in new towns and cities occur despite the credit crisis.

More detailed data per province and municipality on the Dutch FTTH market as well as Stratix' expectations and views can be found in the downloadable report at: http://www.stratix.com/ftth.php

Poulos reffering to reggfiber: It's much more forward looking, it's based on extensive conversations we had with C-level execs (including Reggefiber's), and we are throwing in a conference in September.

http://www.telecompaper.com/reports/reportdetails.aspx?cid=R674470

BTW: mash-ups were made available by Reggefiber itself: http://www.reggefiber.nl/projecten.html

As well as its majority owned RSP: http://www.xmsnet.nl/112_Stedeninformatie.html

**Rood**: You are right that there are some nice maps and shape-files depicting areas, on their websites, where they are constructing / ac-

tive.

The difference is that they provide in some cases the shape files for, but not available datapoints like the amount of homes in area, the known homes connected and we also have the projects they do not depict, like projects by housing corporations, developers and local cablecos that are active in some areas.

One of the purposes of broadband mapping efforts should be to assess paces of roll out vis-à-vis the homes in area. There are some other acts one can do to combine todays wealth of data from public sources that can be linked to a much higher level of insights for a.o. policy purposes.

## Social and Economic Changes from increased Bandwidth. p. 48

**JM van der Vleuten:** Things cannot become 'extinct'. If they disappear it will be because people have found other ways to do them, not 'because' but - in some cases - by using the internet. Some items will not disappear: hand written letters, for example, their number declines but their prestige is rising. Others will not be missed by me: video rental stores (and not because I don't rent

video's).

My theorette: as long as molecules can be replaced by bits and bites, we're on a way to a smarter and more sustainable future. What Internet is this list about? Bowling alleys were on their way out long before net access became a big presence in homes. And a lot of these are actually getting un-extinct thanks to the Internet.

## The Stockholm Syndrome p.50

On June 18 **Susan Estrada:** http://www.redding.com/news/2009/jun/18/editorials/

I saw this editorial today, from Northern California. It espouses some great ideology: " Say what you will about the federal government's spending binge this year. We should work to get our share, and the rural broadband money is a fat pitch across home plate for our region. And as long as we're laying the debt on our children and grandchildren, we can at least build something that will give them new opportunities. At least it will give them a fighting chance to pay the bill."

But, check out the comments**. Most are completely against any government intervention into broadband deployment.**

**The rallying cry seems to be - let's stay mediocre forever. [snip]**

**Villa**: I think we have clearly moved away from the initial Stockholm model indeed. **The question is not anymore about whether government should substitute market (and address a failure) and build its own infrastructure, but rather what is the role of government in stimulating market when it is not reacting. The Amsterdam City Net and Almere strategies are there to show this: government stimulations through the success of local demonstration pilots (Almere) and government action in stimulating the horinzontal unbundling of a vertical network (through all what Herman and Dirk successfully did), with several business entities reacting to the stimulation and agreeing to investments into a new paradigm, is really the new way go to for everybody.**

**This shifts the discussions from "how expensive is the network and should the government bear the cost" into "how can government unlock successfully a market potential which is not realized".**

# A Note from the Editor on the August 2009 Format and Presentation

**This issue leads off with an essay on trans-sectoral aspect of electronic medical records.  It contains the eight weeks symposium discussion from mid April to mid June.**

**Coming in the September 2009 issue - out by July 31 an interview with Arcady Khotin on the 15 year history of Arcadia his 160 person strong software company based in St Petersburg Russia. Readers will gain insights into innovative off shore business models.**

**Text, URLs and Executive Summary**:  I have attempted to identify especially noteworthy text by means of bold-face 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**

# Contents

# Paul Budde's Education of the Australian Government

# The FCC Mislead the Market

# How Much Broadband is Enough?

# FTTH Deployment in the Netherlands

# 25 Things About to Become Extinct, All Due to the Internet?

# Executive Summary