



Pragmatism and Creativity in Holland

Lessons in Why National Fiber Infrastructure and Carrier Unbundling Must Become Top Priority

Can the US Under President Obama Grasp these Insights?

I have seen the future and it can work – if we can gather the vision and do the necessary integration. I was science editor at the John von Neumann Supercomputer Center from 1987 to 1990. Twenty years later, in mid November 2008 I attended Supercomputing 2008, in Austin Texas. Nothing can compare to first hand immersion. It was an Alice-like journey - popping down the rabbit hole and through the looking glass into a vision of a possible stunning future.

I met Harvey Newman of CalTech. Harvey is the architect and one of the principal builders of the global optical network that will collect the data for the Large Hadron Collider. We talked for close to two hours and Harvey agreed to join my Economics of IP Networks forum. On November 22 he wrote there:

“The focus on video as the

motivation for true broadband [must be] temporary.”

“Network applications involving access to, and sharing of large volumes of binary data as the basis of information, and ultimately as a basis of knowledge, are highly developed, but are not so visible in the world of entertainment and social networking, as they are in the realm of research. But soon corporations will learn to follow in the footsteps of the research community to handle and benefit from the knowledge implicit in such datasets, whether for healthcare or for other business processes, or for new forms of education, that complement web-page and video (more traditional) ‘content’.”

“Even in the days when walls of your home are live displays (the walls themselves, as extensions of current OLED developments, not just

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screens), it will be the knowledge behind the images, and the ways they are used to inform and educate, as well as entertain, that will matter most.”

The possibilities are profound. I was able to renew an acquaintance with Kees Neggens and meet Cees de Laat for the first time. I met ever so briefly Ed Seidel who is the Director of Cyber Infrastructure at NSF and who understands the significance of what Cees de Laat and his colleagues are doing. I have about three hours of recorded

On the Inside

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interviews with them and Harvey Newman. These will be the focus of the next two to three issues where we will talk about hybrid optical networks that will send light paths across heterogeneous network boundaries. There is a lot more work to be done – work that will take another four to five years. But when it is finished fiber connected end users will be able to use a GUI interface to build light path networks that will operate as a part of their application.

And there is no reason why, if the issues of authorization and authentication are solved, these optical hybrid networks could not be available almost universally. TCP/IP would be used much less, less electrical energy would be needed and --for the first time -- the infrastructure would exist on which Google could truly deliver the world's knowledge. This is happening in the Netherlands for sure. I am told it is happening in Japan. Will it happen in the US? Only if people like Kevin Werbach and Susan Crawford, Ed Seidel and many others are able to convince the new administration that it must put laying of open access dark fiber into the emerging public works program and to, like Japan did with NTT, achieve the unbundling of the incumbent's networks.

In the United States this will involve some serious integration and education. But given access to Susan Crawford and Kevin Werbach, and other key folk -- and the fact that for the first time since 1980 it should be possible to speak of the national interest without being laughed at – it should be possible here as well.

Understanding the Flowering of Technology and Network Infrastructure Building in the Netherlands

Let's pop back out of the supercomputing rabbit hole in the ongoing world. How did I find the Dutch? It was a matter of vision shifting. Alarmed at the on going monopolization and financialization of ICT in the United States in 2004, I began looking very hard at what was going on in other parts of the world. While many creative things were happening, events in the Netherlands were quite fascinating. In the fall and winter of 2006-2007 I published interviews with Herman Wagter on the Amsterdam build; Hendrik Rood on the general fiber situation and especially on Reggefiber; Marco Westerberg who explained how Reggefiber got started and in early 2007 KPN's Nico Baken who de-

scribed a network "mycelium" connecting everything. These people however do not exhaust Dutch innovation. as readers will see, the Netherlands also boasts Surfnet, and AMSIX, Netherlight and RIPE. Kees Neggers and Cees de Laat and the design of Hybrid Optical Networks.

This issue contains three more articles on the Netherlands. The main interview with Frans-Anton Vermast explains his role global fiber applications lobbyist for INEC. It also includes an expanded version of Jaap van Til's November 7 lecture in honor of Jens Arnbak. In this talk Jaap explains why the networked world is no longer flat and centralized but rather why it is not only layered, but also perpendicularly segmented into interconnected silos each of which replicate the larger internet and function in a very fractal mesh. The problem is that the regulatory systems that currently exist are like monolithic Soviet planning ministries that insist on forcing everything into a very uniform procrustean bed.

Finally it reproduces a talk given by Patrick van Eekeren at Trikala, Greece on October 22 on fiber networks in Holland that go beyond triple play in offering home automation and social networking

services in two different area of the Netherlands.

Wondering how this all came to pass in one small nation I asked my Economics of IP networks list: Are we seeing in Holland a resurgence of innovation at the photonic level that may be comparable in any respect to the 17th century innovations that made the Netherlands the west's strongest power between the decline of Spain and rise of England?

We have a Dutchman called in to reshape BT who has now gone on to attempt the same thing at Alcatel-Lucent. Dirk, Hans and Bas in Amsterdam. You guys have a nice share of visionaries. How did this come to be? Why? What was the confluence of events that enabled this creative flowering?

Rudolf van der Berg responded:

First of all, the Dutch are pragmatists. Whatever they do, it should work. It's less important what the dogma is, as long as it works. This has its effects everywhere:

We believe that administrative processes and regulation should just work (making The Netherlands quite efficient, with for instance the best looking tax forms and money). Technological choices are based on what

works. No winner takes all mentality. Everyone can leave a negotiating table feeling that both parties have benefited. Unions and employers get along quite well. The employers are not too stingy and the unions don't ask for too much money. Solutions to societal problems are generally thought through quite well as all sides get a say. The Netherlands (like Switzerland) can be a neutral solution between big nations. Dutch creativity in design is an example of designs that generally are simple, witty and work. Think Koolhaas, Wanders, airport signage by Mijksenaar, Tom-Tom.

Second, the Dutch always have this fear of not being taken seriously by the rest of the world because of our small size as a nation. (As individuals we fare better size wise) The result is that we put a lot of effort in being among the best.

The Dutch can't stand being in the bottom of an (OECD) list. Top 10 is the least that we will accept. The Dutch always wonder why they are not part of G7/G20 meetings. In international negotiations we want to be heard and so try to find the pragmatic middle between the various nations.

Third, the Dutch have been traders (transporters) since

the middle ages. Traders need flexibility. Tomorrow's success is something different than today's. Traders see solutions everywhere in the world and adapt them for their own situation. Traders need communication to execute trades and to track shipments.

So how does this work out for the position of the Netherlands in the telecommunications world?

Dutch academics in the nuclear particle physics community in the 70's and 80's always ambitious to be among the best, so needing communication with the rest of the world

KPN wasn't as pro European and anti-American as other Euro incumbents. Dutch Networks easily allowed to connect to both European countries with European communications standards and the Americans with their own communications Netherlands. (Amsterdam) became the hub between the Europeans and the Americans. Meetings were easily set up in Amsterdam, with good connections by plane.

We are always active in whatever standardization organization was important. Be it ETSI, ITU, IETF, IEEE and so on. Whatever needed standardizing, the Dutch were

there with a pragmatic, just-get-it-working approach.

When you help standardize it, you want to trial it (and not wanting to be the dumbest kid in class, the Netherlands did all this quite early generally). Many technologies developed in the Netherlands or influenced heavily by developments in the Netherlands. Bluetooth and Wifi come to mind, but also the DNS community, IP (addresses by RIPE). Entrepreneurial people helped to develop good ideas into practical realities that just worked, or adapted to changing situations. Think of the start of the commercial Internet in Europe (EUnet and NLNet). KPN dealt with the reality that they weren't the monopolist anymore and actually "allowing" competition. This was a different reaction than many of their competitors east and south of the Netherlands. Start of Internet with companies like XS4ALL, who supported the greater good and not only their own bottom line.

We have a regulatory environment that supported the growth of telecommunications Government tax credits for buying a PC via your employer, resulting in high PC penetration which in turn resulted in a high uptake of internet Regulations that gave telecommunications companies the freedom to lay fiber backbones throughout

the country without negotiations with every municipal government. Regulations were made to allowed competition in the telecommunications market.

Pragmatism

I thought about this issue and asked: do the Hollanders here agree with his assertion that a basic pragmatism is at the heart of things?

The assertion makes sense to me. I like it.

I think that every society must have some fairly agreed upon end goal in mind. If that is the case, then do what works and decide on policy NOT from the foundation of ideology but rather from an analysis of "will it work to support your goals?" Of course reality is much more shades of grey than this black and white oriented statement. And like the current argument over QoS the definitions can get very blurry as to what is ideology and what is the society's goal.

However if a leader can articulate a vision of what the United States should be or what the Netherlands should be and then propose policy designed to move toward that vision based on a view of will it work to the desired end or not, you can move forward

by beginning to abolish the idea that policy must adhere to an ideology something that has been especially poisonous in my country for the past fifty years if not much longer.

Herman Wagter who is heading the Amsterdam fiber build said: Well, this Hollander thinks there is indeed quite some pragmatism in our actions.

I would the first to criticize our society and point out its flaws (in the hope of being able to improve it), at the same time I am proud of a lot of achievements over here that, in my opinion, define the level of civilization of a society, and make it a country where it is pleasant to live. At lot of these achievements are based on pragmatism. Ideologies: there are plenty of them around, but somehow there is a tendency at the same time to seek compromises (or look the other way) to make life agreeable to everyone. The common ground is often pragmatism: if it works for us we will accept it. Pragmatism also dictates to look beyond a lot of blah blah and spin and see what reality is. Spin does not get so much traction over here, I believe, as in some other countries.

(The dark side is the tendency to solve things by compromises where nobody

is happy and nothing is solved, where excellence is put down. But that's another subject).

In NGN and broadband I think we have been helped by a couple of circumstances: - the municipalities have aggressively rolled out a cable-TV infrastructure to almost every home in the 70-80's, to be able to forbid antenna's on roofs - this infrastructure was consolidated and privatized (cable) in the de-regulation and privatization wave, leading to a second infrastructure to almost every home (So: no infrastructure -until now- has been built without the pull of the government.)

The Dutch regulator used to be very aggressive to the incumbent so other operators could enter the market. The Dutch ministry of economic affairs actively stimulated cable operators to add telephony and internet to their services. As a result aggressive pricing of broadband Internet was started, creating a large market.

But the early start led to a fast consolidation into a few players, and the realization that the issue changed from giving access-to-all to getting the next-generation investments going. All in all, I guess we got there early, and had to deal with it.

Paul Budde agreed: "I think that is true Gordon. Another element is that for as long as there have been people living in the Low Countries they had to fight the water. This required a level of cooperation (and compromise) that has become a key characteristic of the Dutch. This is also known as the 'Polder model'. Try and smooth things out between parties before you set them around the table so they don't take in position they might need to abandoned thus avoiding embarrassing backflips. I am using this model in Australia where I try and bring people together in this way which most of the time leads to far more constructive outcomes."

As did **Vincent Dekker**, telecom reporter for the Dutch daily Trouw. Yes, I think pragmatism is a key.

Not only when politics is involved, but also in management by companies. For example: I can go to my top boss and tell him: Hey Willem (his first name), your plan looks quite good but I'm afraid it will not work. Try that in Germany, or England, or France or ... First: you don't get to speak with the top boss, you speak to your manager and if he doesn't agree with you, too bad, your idea will die right there and then. If he does agree with you, he will have to talk to his superior and so on.

Somewhere in this chain of command someone will not dare to doubt the ideas of his or her superior manager.

I guess we are more direct (some call it blunt or impertinent) and also have less of the German and certain the English 'class' mentality. I remember a Dutch CEO of (then still Dutch) truck maker Daf being very surprised when he had just bought (we speak of 1992 or so) the British competitor Leyland Trucks. He went to the factories and wanted to talk to the blue-collar workers. They had never had direct contact with Leyland's Number One and were almost shocked by the fact that this new Dutch guy shook hands and talked with them on equal footing.

For the same reason a nephew of mine recently quit working as a manager in Germany after only one year. He was supposed to be Herr so and so who was not be questioned, instead of being the manager/colleague who received a lot of information directly from his employees as he had been in The Netherlands.

It doesn't matter much how high or low your rank is. It's indeed very much about: does it work.

A drawback of this 'equality' thinking is that many hesitate to excel, to be better than the

others. You get fairly good ideas that work fairly well. If you want German Quality, or American Entrepreneurship, don't count on the Dutch (well, most of the time...)

COOK Report: We are truly at a tipping point in so many ways. The selection of Susan Crawford and Kevin Werbach for the FCC transition team on November 14 bodes well. These folk understand the issues and choices to be made if the US is not to squander what capital we

have left. The approach it is to be hoped may embody a pragmatism of the Dutch kind. We must work with each other against incoming tides and to do this we must articulate and share some common interest that value remains in our constitution and the IDEA of America that can just make things work and is dedicated to an articulation of helping rather than shafting our neighbor.

It is to be hoped that the utter bankruptcy of the Repub-

lican embrace of Milton Freidman and Ayn Rand will enable us to rediscover the virtues of cooperation and collaboration.

Open Access Fiber's Global Roving Evangelist

An Interview with Frans-Anton Vermast

Editor's note: I met Frans-Anton Vermast at the San Francisco CUD meeting in February 2008. I did not get a chance to talk with him in any depth until October 20-23 when we attended the INEC meeting in Trikala, Greece. When I heard what he did, I requested the interview that follows.

COOK Report: How did you get into your present work with INEC and the City of Amsterdam?

Frans-Anton: At some point in 2004, Mark van der Horst, who was at that time Vice Mayor and Alderman of the City of Amsterdam, responsible for the fiber to the home project called Citynet, needed a political assistant because his prior assistant had been elected as a Member of the European Parliament. We met together socially and Mark said "I just lost my political assistant; you're out of a job. How about working as my political assistant?"

COOK Report: What had you been doing before this?

Frans-Anton: Very briefly, I went to business school in 1988. Then I studied eco-

nomics and management information systems in Tilburg. Next I worked as a financial controller and auditor in the teaching Hospital in Amsterdam; after that I moved to England where I set up a business with another Dutch guy and two English guys. The business made interior decorations for trains and buses. They needed a finance person who was willing to

move to England, and, as a result, I moved to Newcastle.

COOK Report: Did you have an MBA?

Frans-Anton: Not at that time. Just working experience in finance and training in management information systems and economics. I was also working closely with the University of Durham in England and decided to make



Frans Anton explaining how he puts his hands around a global problem in Trikala Greece October 23

career change and embarked on a formal MBA.

Beginning in September of 1999, I finished my MBA with a thesis: 'Can rational decision-making help to prevent discriminatory employment practices?' The inherent thought behind it was really whether it would be possible to avoid any situation where the best looking woman would always receive a job offer? Regardless of course of any other qualifications! This whole process is subjective. I was hoping to be able to find a more objective and less subjective and therefore rational approach to hiring people. I was asking what kind of tools we had, because, almost always, the hiring decision would be one of just gut feeling.

In September of 2000 I decided that I needed to escape for a while at least from the western consumerism society. I bought a backpack and went off to Central America where I traveled for a year and a half with just the backpack. Cuba, Mexico, Honduras, Guatemala, Costa Rica, Nicaragua, and Panama. I worked for several months in a Dutch travel agency in San Jose, Costa Rica.

COOK Report: Did this give you a different set of social perspectives?

Frans-Anton: It certainly changed my perspectives. In other words what were my drivers? I came to see the quality of life was much more important than money. Before this I was much more money driven. But when I came back into Western society and we are talking now January 2002, I did not have any money. I did not have a job. I did not have a house. But I had plenty of: time.

COOK Report: A blank slate?

Frans-Anton: Yes. Now parenthetically let me point out that from the eighties I had been a member of the Liberal Democrats (VVD) in the Netherlands. When I came back in January 2002, city council elections were being held in March. I visited with old political friends and they all said okay you have plenty of time, could you please help us with our campaign? Now in this year there were also national elections in May. The national headquarters for the Liberal Democrats asked me if I could handle the campaign for youth and students.

From a Communications Interlude to Contacts and information Broker

I did this and in the meantime I also found a job with a

communications and marketing agency -- something that was absolutely not my background. However, the job enabled me to do campaigning that I really love. I did this for two and a half years.

In mid-2004 Mark van der Horst (Vice Mayor and Alderman of the City of Amsterdam) approached me. One of his portfolios was fiber to the home. Hans Tijl, and Dirk van der Woude were driving this project for the city.

The national Liberal Democrats were probably the biggest opponents of fiber at the level of national politics. My membership of this political party and my involvement the past couple of years with a wide range of campaigns presented an opportunity. Because of this involvement I knew the people in the other political parties and their positions with regard to technology. I am really not a true lobbyist but much more a broker in networks and information. I am also not an engineer and I am not involved in the nitty-gritty of technology and I would like to keep it that way.

COOK Report: Because if you get too bogged down in technical nuances of fiber to the home architecture, then you lose the ability to try the higher-level social, political

and economic drivers on which everything else depends?

Frans-Anton: Exactly. But it is also a two-layer thing. I was wearing so many different hats that I could not possibly keep all of my customers happy. However I know that if necessary I could get the necessary information for the more technological details. Consequently, when I talk to politicians or decision-makers, I can say: "sorry I can't give you the answer now, but within 48 hours you will have the answer."

Doing it this way means I can always be honest with people and say sorry I don't know but I will find out. It enables the person to whom you are talking to understand that you will simply not second guess but do have the right contacts to follow up. It is also means building trust and respect.

Also, as I am a broker with people in networks and information, contact opportunities are very important. Sometimes I will even go so far as to say I don't know the answer to a question, because this gives me the opportunity to have a second contact opportunity with that person.

This is the way I work. I'm very transparent. The word lobbying can sometimes have

a negative connotation -- it is filled with images of back rooms and bribes but lobbying is a just part of public affairs. I am open and transparent and everyone knows who I am and what I get. When I go to talk to someone I am always very careful to say I want to talk about this particular subject and always make sure that I tell them which particular hat I am wearing.

COOK Report: So you are for hire?

Frans-Anton: I have an hourly rate; a daily rate and a monthly rate whichever customers choose. For example in the CityNet program there are sometimes weeks where I had 40-50 hours a week busy with them and sometimes there's a month where I may do just 10 hours a week.

Another customer is the City of Den Helder, which is where the Dutch navy is based in the north of the Netherlands. They want me to monitor the agenda in the House of Commons and in the European Parliament and introduce them to people, but not yet to really do the active public affairs. Consequently I charge them a flat fee every month. Other people may hire me and pay me in shares if they are startup companies that need introductions to politicians and decision-

makers. One of my strongest points is that I think very fast. When talking to my clients, it often goes through my mind whether he or she should better have a chat with him or maybe I can introduce you to her.

COOK Report: What you're describing is quite fascinating to me. We should go forward from 2004 with the narrative of what happened to you. I am quite intrigued because I never seem to have run across anyone quite like you and am thinking that you do play a role of which I have not been aware but perhaps should be.

Frans-Anton: I don't want to be in the spotlight. I leave that position to my client and that's perhaps my strongest point. Of course we all need to be paid, myself included, but I will also do lots of things pro bono because these things need to be done and sometimes no one else does them.

Now from 2004 on [in Amsterdam] we realized that there could be problems with the telecommunications legislation, so some heavy explaining in the parliament was necessary so that the Members understood what's at stake. It was essential to educate Members, as well as the public, both on the benefits of an open access network and the fact that the

very different proposals from the incumbent telco and cable companies for closed networks did not offer the best way forward. Decision makers and the public needed to understand that the vested interests advocating such programs were not necessarily acting in the national interest. **Telecoms infrastructure is essential for social and economic developments both for the municipality of Amsterdam and for the country as a whole.** This was my biggest message.

And it was in this context that I observed and tried to figure out how to deal with the lobby of John Malone and Liberty Global that was spending so much money and trying to convince the policy makers to maintain closed networks and stop fiber.

COOK Report: So these changes came about as a result of the litigation of the Development Corporation of the City of Amsterdam over the years that followed 2004?

Frans-Anton: Yes. The Development Corp. of the City of Amsterdam decided to hire me through a temporary agency. At that time, in 2005, I thought that the fight for fiber in Amsterdam at least would be over within a year. From this point because fiber activities could occupy me for 80 hours in

one week and 10 hours the next, I decided that I wanted some new business. As I really liked the public affairs profession and to attract new business the best way forward was to raise my own company.

As I became more experienced, I also realized that, if you're walking around Parliament and doing public-affairs, it is true that talking to someone for five minutes can save for example, a civil servant, six weeks of work. I speak to these guys regularly. I know most of them. I also meet them informally for a drink or a meal. We all exchange information.

Consider for a moment this little sidebar. Politicians, public affairs people, and journalists as a triangle. A politician can read a report of 100 pages or have a chat with a public affairs person for ten minutes. In doing so he knows that he gets the story that is in favor of his customer. But then a politician should also be wise enough to talk to his opponents as well for ten minutes and then make up his own mind. Politicians also need exposure; a journalist needs stories which he could get from politicians and public affairs persons. Public affairs people need some time to influence the decision makers (politicians) and the public opinion indi-

rectly for which they can use the journalists.

Why There is a Role for Government

COOK Report: How did you come to understand the social economic aspects and advantages of these open access networks for which you advocate?

Frans-Anton: The City of Amsterdam thinks that a business approach is the best way forward to build a passive layer of fiber infrastructure. In that perspective the City of Amsterdam is just an ordinary investor on equal terms as the other investors in this common good. A consequence of this business initiative is that a lot of policy results also will be realized; however the business approach is prime.

The original team taught me the essential basic conditions and the social and economic aspects and advantages of an open access model that will be available to all citizens.

I used this knowledge to convince the politicians that an **investment** from the local government was a good strategy to get the project off the ground. When people give me the basic rationale, I can add the sauce that is good for this politician or a slightly different flavor that is

good for another politician. I offer an argument custom made for every different politician so that they can score with it if they want. I know a lot about politicians and how to convince decision-makers. I put the technical information I get from them in layman's language.

COOK Report: In other words, if you do this –discuss information in relation to the fibre project– it will support that aspect of your party's platform?

Frans-Anton: Yes exactly. And while we are talking about open access networks there is the well-known 2003 Allen-report on Brisbane and the Queensland region in Australia on how open access at the network level can boost your economy where competition at the content level has no such benefit. [See http://www.citynet.nl/upload/ERN01_Final_Report_2_Broadbandproductivity_1.pdf] The key is competition based on what is provided over a basic open infrastructure and not competition between infrastructures. One must understand what this infrastructure can do to boost employment and boost the economy as well as information on the return on investment when a government invests its resources into communications infrastructure. And as mentioned at

the INEC presentations this morning there is a very natural role for governments and especially local governments to invest in infrastructure such as– roads, bridges, ports, airports and communication.

You have to remind politicians to think about the positive external (economic and social) effects of these kinds of investments that are difficult to calculate precisely but generally make their weight felt over fifteen or twenty years.

You will never be able to precisely calculate the effect of this on your economy. If you have new infrastructure, it will attract new people and new businesses and it will support the existing local society and economy. But if before they eat, they do their shopping how do you add that to the calculus of economic payback from the investment you've made? Because of questions like this commercial parties are always interested in return on investment.

Now if you construct a highway, instead of a new shopping mall, how can you tell in advance what the indirect return on investment will be? As well as what the cost-benefit effects are? It's very very difficult. So from this point of view in the past there has not been a stam-

pede of people wanting to invest in fiber. If you ask the incumbents in telco and cable industries they are not very interested because such investment would make their present networks obsolete. But secondly in this case the return on investment about which you're talking is more like thirty years. Most venture capitalists want fast money and have a time horizon that demands an annual accumulation of 15-20% within the next three years.

COOK Report: As Carlota points out when she talks about the way of financial capital.

Frans-Anton: Yes and this is why Carlotta is absolutely right when she points out that venture capitalists often kill the deployment of innovation. So as a Liberal Democrat, while it is unusual to advocate government involvement, I truly believe that there is a natural role for government. And unfortunately I have been right in looking at the present crisis when I say that the regulators didn't always do their work properly.

I believe in capitalism. What I believe in is *true* capitalism. One of the best things that capitalism has brought forward is a competition that allows companies to go bankrupt. And now, as we are

seeing, we have companies too big to go bankrupt.

COOK Report: In 2005 and in 2006 you were helping city networks get established?

Frans-Anton: Yes. I helped push their ideas through to the decision makers of the national government. The Amsterdam City Council had already voted 45 to nil in December 2004 in favor of the project.

But, at the time, there was also this MP from the Liberal Democrats who got most of his information from the cable companies and was, as a result, functioning as a mouthpiece for the cable companies. In turn he was able to exert a lot of influence on one of the larger coalition parties. That party then had to be convinced that an **investment** by local governments was not a bad thing.

COOK Report: Has Vincent Dekker been a major ally?

Frans-Anton: He is an independent Dutch journalist who did a lot of research, causing him to see, earlier than other journalists, that in the end we will need FttH, preferably the open version. He is also very critical and his criticism helps me to become even sharper. Vincent is one of the few journalists who is

really gotten into the whole fiber issue.

Inter Connected Travels and Alliance with CUD

In 2007 I got involved with Cisco and with its Connected Urban Development (CUD)-program. Nicola Villa and Hans had become good friends with each other on a trade mission with the Dutch prime minister to Australia in 2006. Paul Budde helped organize the visit from the Australian side. It was the 400th anniversary of the Dutch - Australian relationship.

Hans and Nicola were asked to speak about broadband and the Amsterdam open access fiber network model. At that point Nicola Villa was already busy with Connected Urban Development in the context of how the use of fiber can help reduce CO2 emissions in urban areas. It was mainly Dirk from the City of Amsterdam who did the field work to get Amsterdam signed on to Connected Urban Development. And at about this time I went to Metropolis, a meeting of large urban cities involved with ICT, which happened to be taking place in Seoul Korea.

As a follow through with Hans, Dirk and Mayor Cohen, Amsterdam joined Connected

Urban Development to focus on three issues. We worked on that to get a kickoff in June 2007 for the first Connected Urban Development Amsterdam meeting. That program has connections with broadband and ICT, while the climate aspect is dominant. In Amsterdam specific portfolios are, in general, not directed by the Mayor on a daily basis. Consequently, the CUD program became the responsibility of the alderman for environmental issues.

COOK Report: So the Mayor serves as a coordinator but not as a policy developer?

Frans-Anton: Exactly. He and the deputy Mayor Mr Asscher and their team just made it all work. They turned it over for the day-to-day management to alderman Ms Vos. But the responsibility for the Amsterdam Development Corporation belonged to another alderman. Consequently at this point it was put under the environmental label while we would have preferred for it to have been treated holistically within government because it is not only about the environment but also about buildings and about traffic. The director of another division became responsible for the CUD project.

Nowadays, as we shift in our presentation from infrastruc-

ture to more service oriented models (and INEC is focusing more on services), then suddenly the connection with Cisco began to take on extra relevance - one of the services that you can have is TelePresence. This is a very good example of services that are tangible; that can help you to boost your economy and, on the other hand, can reduce CO2 emissions. Consequently, at this point I put CUD and fiber services and TelePresence together all in one presentation.

COOK Report: And do I hear you saying then that from your knowledge of CUD you

took out certain features and applications that could be moved into a perspective useful in an INEC context?

Frans-Anton: Yes but on the other hand, in the services that are developed within CUD, personal travel assistant, smart work centers, Eco maps which are excellent tangible examples to use in the advocacy of broadband because you need broadband to run those services. Unfortunately it is still a chicken and egg proposition. Don't we have the infrastructure because the services are not there? Or don't we have the

services, because the infrastructure is not in place?

During the Public Service Summit in December 2007 Hans as INEC's chairman and Cisco discussed the possibilities to have a open and non-commercial partnership between the two organizations.

INEC -- International Network of Electronic Communities

In the May 2008 I was voted Director External Affairs of INEC and Henk Korevaar Director Internal Affairs.

Bas Boorsma Puts an Unusual Career in Context

Bas sent the following very useful note: in talking with you I noticed how you are making in-depth efforts to understand how Amsterdam, CUD and INEC people somehow relate, what the histories are etc. I rarely do this but I would like to give you somewhat of a background on myself so you have that part of the jigsaw together, have a better insight how you can tie me in me etc.

As you know I'm head of CUD Amsterdam and have been doing that for the last twenty months. The Smart Work Centers have just been opened around Amsterdam, a CUD project and my personal favorite flagship, fully fiber-powered, enriched with (20 MB/sec symmetric-bandwidth eating) Telepresence!

But my history is an unconventional one I suppose. I took the 'longest road to unemployment' by studying Asian History and International Relations ('87-'93). I lived and worked in Cambodia from 91 to 95 and spoke (still speak) Cambodian fluently. I got into a more regular career upon my return to Holland but it was always very international. I became the European representative for Malaysia's Multimedia Super Corridor in 2000 (till end of 2003). In 2002 the Dutch government asked me to help them set up a multi-lateral

platform which would facilitate an international exchange of Broadband Best Practices in order to further help the FttH 'Kenniswijk-Eindhoven' program. The organization we founded became the Smart Community International Network (SCIN), which was renamed INEC in 2005. After INEC's founding, I became its secretary. In 2005 (at the same time the organization was renamed 'INEC'), the board of INEC asked to take up a somewhat more 'profile-rich' role and I was installed as INEC's executive director which I remained until April 07 when I had already commenced in my CUD position at Cisco.

One of the more important results of my final 18 months at the helm of INEC is having authored, together with Crister Mattsson (then STOKAB, now Ericsson), the draft Declaration on Open Networks and organized the Communities' consent to it. It is this Declaration which was endorsed by the mayors of Greece last week. It was also used as an appendix in the agreement between Reggefiber and KPN. Before joining Cisco, I also ran the Dutch government broadband program called 'Connecting the Dots' (2005-06) and was secretary to a small FttH community platform in the Netherlands, called 'K-NL'. Last, in the past ten years I ran two companies (essentially being self-employed until starting with Cisco).

COOK Report: But it was Bas Boorsma who originally had the idea for INEC and managed to get it founded?

Frans-Anton: Yes. Bas is one of the founding fathers of INEC. Sometime later he got offered a job with Cisco as Head of the CUD-program Amsterdam.

COOK Report: So Bas was essentially a consultant on ICT matters?

Frans-Anton: Yes and he has also other roles. He was actually a business partner of Henk Korevaar for a time.

COOK Report: It sounds like the Amsterdam model bubbled up beginning in 1999 and 2000 and that it's influenced many different things over the next several years.

Frans-Anton: Yes Bas went to CUD. Nicola was already friends with Hans. Dirk and Bas cooperated in several other organizations (for example Stedenlink which is another alliance of various cities in the Netherlands involved in some respect or another with fiber ambitions.) So it all came together. I started in 2004 to tell the story about the Amsterdam fiber model.

I was saying: this is what we do in Amsterdam. But now this is also a part of the larger INEC including 10 other cities in the world with

broadband and some kind of municipality involvement. From here on I will broaden my story and talk about how we got involved with CUD both from the point of view of Amsterdam and of INEC. Consequently, most of the presentations that I am doing now offer an integrated story. Explaining that if you deploy fiber now this is what you can have in five years time. Talking about how we started in Amsterdam and what are some of the tangible examples. I will tell them how we did it and how they can do it too.

COOK Report: In other words what you have here is a learning module for other INEC cities. Something that will keep them on board and make them happy. Do you perhaps bring a certain economy of scale to INEC's efforts?

Frans-Anton: You would have to ask our members but I won't tell you straight away that you're wrong. We are certainly well set up to share expertise as well as a wide range of other best practices. For example Utopia in Utah is a very good example of how municipal fiber networks can be financed by bonds. Amsterdam is a good example of the three-layer, open access model. Gauteng South Africa is an example of social inclusion and. Kuala Lumpur has built the cities of their multi-

media corridor from scratch out of desert over the last 30 years. Almere in the Netherlands is another good example and is one of the founding members of INEC.

INEC, known as SCIN in its initial form, was an initiative from the Ministry of Economic Affairs in the Netherlands. The incumbents and the cable companies, as major economic players in the Netherlands, are subjects to policies and regulations from the Ministry of Economic Affairs. In some respects compared to the economic size of these first two incumbents our activities with fiber are somewhat minor. We might like the Ministry of Economic Affairs to be more of a fiber advocate, but we also recognize that its position is one of advising the government on policy and economic implications of investment in many other sectors in the national economy.

Now we might take a little sidestep here and look at our approach to Brussels. We felt that it was necessary for Amsterdam to have their approval which would require them to recognize that no state aid had been given in competition with private industry. We asked for this review at the end of 2005 and in December of 2007 we received affirmative approval.

My personal opinion is that if an entity in the European Union asks for Brussels approval on an economic investment issue, that the member state's Ministries should be an enthusiastic advocate for gaining and affirmative answer to such a question. Of course our ministry would tell me, and properly so, that I am not their only constituent.

COOK Report: Consider OPTA your regulator. Isn't consistency often lacking? They have given KPN your national incumbent the obligation to open up their network. But should they also not impose on the cable companies the obligation to open their networks as well?

Frans-Anton: From my point of view as a fiber 'evangelist' that is a question I often wonder about as well as a point of view that I would support. But there are plenty of other economic interests telling both the Ministry of Economic Affairs and OPTA what they think is good for the future of the country. My dream of course would be for them to have the kind of vision that would say: when new communications infrastructure investments are planned fiber would be the only acceptable solution.

Expanding from Amsterdam to Global Fiber Advocacy

COOK Report: How did you get your other clients?

Frans-Anton: This is a bit related to how I spent my holidays. In 2006 I spent four weeks in South Korea because one of my friends had a three month assignment there for a big Dutch Bank.

I decided that I would try two weeks of holiday and two weeks in business. So I sent an e-mail to the Dutch Embassy in Seoul and I said this is my field of expertise I will be in Seoul from such-and-such a date on until so-and-so. Can you introduce me to people who might be interested in the expertise that I could share with them and learn from them. They arranged seven or eight meetings for me.

COOK Report: I remember many postings from Dirk on how well your embassies perform this technology connection function for Dutch citizens when they visit foreign capitals. I only hope that an Obama administration can you learn from your experience.

Frans-Anton: Our embassies are indeed helpful. With the connections arranged for

me, I went around from meeting to meeting telling the Amsterdam fiber story because it is something that I am really passionate about. The Dutch technology officer at our Korean embassy is really excellent and arranged all kinds of meetings for me. The next year I was with Nicola at the Metropolis meeting that I mentioned earlier (a group of large cities --Berlin is the current vice-chair of one of their working groups -- which look at in the application of technology in economic development and a reduction in CO2 emissions.) I said to Nicola: why don't you meet up with the Dutch Ambassador here? And it will be nice if we can have lunch with him. I then went to the Dutch Ambassador and told him that Nick and I would be in town and asked whether we could have lunch together? Saying as well surely there are some other people who should attend such a lunch?

So it turned out that we had lunch at the residence with the ambassador and his staff and with the Vice Mayor of Seoul and the Director General of the Ministry of transport as well as some Cisco people; in all about 15 people. It was something that I did because I enjoyed doing it. It was a kind of investment. As a result of that meeting I still have contact with guys from Samsung,

Hyundai, and the University of Seoul. When they are in the Netherlands I'll entertain them there and when I'm back in Korea they will do the same for me.

The same thing happened with Australia. In 2007 I went to Australia and decided to do two weeks of holiday and then two weeks of business meetings. I knew Paul Budde by that time already so I asked him could you give me some names that I could contact in order to make appointments. So Paul put out to a kind of bulletin in his newsletter – Dutch FttH expert from Amsterdam available for meetings.

I said to Paul please don't give the impression that I am a really technical guy. What I am really is a high-level contextual guy. I know the story I love to tell the story. I had 21 meetings in two weeks time and didn't send anyone an invoice. I flew to Melbourne; flew to Brisbane; flew to Wellington; flew to Canberra; flew to Auckland; flew to Sydney and Port Macquarie. I spoke with the Ministry of Information. Now I tell my Dutch colleagues: if you are abroad drop in at the Dutch Embassy and ask if they are available for a cup of coffee and have a chat see what you can do for each other. I went to DCITA which is the Telecommunications Ministry; I went to ACCC in

Melbourne which is the Regulator. Basically they want to learn from the Amsterdam model and I wanted to learn from them.

COOK Report: And in the United States?

Frans-Anton: Chris Vein and Hans had met in the past and agreed on a deal where San Francisco would become an INEC member. I met Joanne Hovis in April of this year at Isenberg's conference in Washington and she took Dirk and me out for dinner. Unfortunately, when Joanne was over last September 2008 for the Global Connected Development conference in Amsterdam our time schedules did not allow having a meal together. But I owe her one! I love doing this. It's missionary work for me.

Keeping the People Straight

COOK Report: tell me a little bit about this chart of people and relationships that you mentioned the other day that you keep. I'm fascinated because you are describing an important role in this technology movement - a role of which I had been up to this point – for the most part - unaware.

Frans-Anton: Okay. You can look at it this way. Someone

who is an accountant keeps everything up-to-date on figures. The core of my activities is my human network. That's my most critical asset. When I meet people I have to put them into a larger framework in order to ascertain who knows whom and who needs to be introduced to whom in order to help them obtain their objectives.

When I meet a person I think about them in terms of what is in their interests but also what universities did they attend what are their hobbies? So I can search my database for people who are interested in soccer. And I get 10 hits and then I can say hey this guy and this guy have friends at the same football club and they should probably be introduced to this other fellow.

The other thing is how are people related to each other? There may be some other people like Gordon Cook and his extensive network and mailing list and whom I should contact when I would like to influence someone on a decision. I might want to reach out to them and say what are your views on this particular issue?

I have another "pack of cards" with decision makers; information on their worldview; to whom do they listen and who can influence them.

COOK Report: You know this by virtue of your knowledge about their contacts, business relations, trends and the circles within which they travel?

Frans-Anton: Yes. For example it is useful to know the views of older and more senior Political Party members who may have retired and gone on to other occupations, because younger and newer party members will respect and listen to these people.

While everyone has a Rolodex, most people do not put much more than contact information in theirs. I put every scrap of information in mine that I can find. When I met the person and what we discussed. For example when is their birthday? I have the birthdays of all of the members of parliament in my diary. I just send them an e-mail saying "happy birthday." And 50 out of 150 right back to me and say "how nice that you knew. Thank you." The business I'm doing is very simple Gordon. It is basically common sense what we do.

Alliance Building

COOK Report: So, to begin to summarize, for example INEC and the Intelligent Community Forum (ICF) from Robert Bell have formed another alliance. How do they all fit together?



Standing squinting next to Bas Boorsma at the spectacular monasteries of Meteora, Greece

Frans-Anton: One of the key principles of public affairs is if you do everything on your own no one listens to you. Therefore you need to make alliances and make them as broad as possible. So with one organization you can't do a lot. But if you have INEC you can lobby globally with ten different organizations and do so for one purpose. But even INEC is not big enough. So from there you look for other strategic alliances. ICF and INEC can use each other's platform to advocate their mission.

COOK Report: And while you travel around you find out who else is doing what?

Frans-Anton: And can we use each other? How can we

band together to make critical mass in order to convince someone who has to make a decision? From this perspective Cisco and INEC have common interests in the use of true next-generation broadband and Open Access. This is beneficial to Cisco and it is beneficial to INEC. For INEC you develop services and Cisco, in the end, can sell more equipment.

So from this point of view I am thinking how can we collaborate better? Cisco has a huge network all over the world. They can perform the role of a scouting agency for new prospective members of INEC. But on the other hand, by forming joint consulting teams, Cisco can use

INEC when someone has a problem.

Manche Numerique in Western France is another example. They want to deploy fiber. Cisco has done studies of several business cases -- we have examples with services-- therefore a joint effort could help Manche Numerique. Consequently, from our point of view Manche Numerique could be a prospective INEC member and from Cisco's point of view it could be a prospective customer. It is not a one-to-one relationship. It is not: "I-help-you-now-and-therefore-you-must-help-me-tomorrow-rather-than-next-month." It is a global ongoing effort with a similar objectives and free flow of information.

For example, Nicola Villa is now in Australia and Monday morning he meets the mayor of Brisbane. I've been talking to Brisbane twice in the past saying that I would like to have you as an INEC member. Nicola is explaining what Cisco does and what

CUD does and in the meantime in Brisbane he will also be explaining what INEC does. In the end, we will see what we can do for each other. It is all about collaboration.

COOK Report: And I bet Cisco's increasing TelePresence capability is a very useful glue.

Frans-Anton: Yes people like it. Every Cisco presentation in this area underlines collaboration. Mike Morris's story that we heard yesterday at the Trikala meeting focused in part on the role of retirees educating youth in the United Kingdom. We also have a collaboration with Robert Bell in the intelligent community forum and Henk Korevaar has done most of the collaboration with him on in their Smart 21 awards. Robert was looking for candidates for Smart 21 and he was saying can we use INEC as a platform to promote Smart 21? And I said: of course yes you can. We use each other's network and

each other's expertise.

And still another alliance is with the FTTH Council Europe. They are basically doing all the things in the ground -- in other words the physical fiber infrastructure while we are focusing on services. Sometimes the relationship between the physical infrastructure and the services that can run on them needs to be clarified. Consequently this is another natural alliance for us.

Soichi Hanatani, the president of the FttH Council Asia-Pacific, and I were invited by Paul Budde to advise the Australian Minister for Broadband, Communications and the Digital Economy Stephen Conroy whom I met a year ago on my voluntary two-week binge of get acquainted meetings when he was still the Shadow Minister for Communications in Australia.

Orthogonal Transformations on Telecommunications and Networks of People and Machines

by Jaap van Till

Editor's Note: Jaap van Till is consultant to CTO's and corporate telecom managers. He has experience in the telecommunication, computer network and Internet-infrastructure fields, and is working at the cutting edge of new disruptive technologies and emerging peer-to-peer community tools, FttX and technology policy. He is senior partner at Statix Consulting, professor at the HAN University in Arnhem (NL) and director of the Institute for Network Quality (IfnQ). He was professor at the Delft University (NL) and the University of Kaunas (Lithuania) and frequently teaches at post-graduate courses and business schools, like the Institut Theseus in Nice (France).

I am honored that he has granted me first publication of this ground breaking essay. In return I will provide him with a PDF file for release on the internet after January 1 2009.

Introduction

Jaap writes: (This is the [expanded] transcript of a brief and rather light footed lecture at Delft University, which was intended to be understandable for the general public present and for non-technical persons like regulatory affairs specialists. A few things were added later to introduce and explain certain technical or strategic concepts relating to the knowledge society that is under construction. Jens Arnbak is the former chairman of the NL telecom's regulatory authority OPTA. For some this text will appear a bit theoretical, but you know, nothing is as practical as a useful theory, so please consider this a framework for that. JvT Nov. 20, 2008)

Hogeschool van Arnhem en Nijmegen

Delft University of Technology, Faculty of El. Eng. Math and Comp. Science, NL
Friday, November 7th, 2008

Symposium on the occasion of the retirement of prof. Jens Arnbak from TU Delft
"Future Telecommunications: Regulated or Self-Organized?"

13.35 14.00

Orthogonal Transformations on Telecommunications and Networks of People and Machines:

Turning things inside-out and outside-in

Movements for the Net-Generation


Ir. Jaap van Till

HAN University of Applied Science, NL, Faculty of Engineering
Professor of Telecommunications & Networks
and the "Master of Telecommunication Management"
(MSTM) course, in cooperation with TU Delft

At the request of Jens Arnbak I will not talk about him or all the fantastic things that he is done, but will talk about the possible future of telecommunications and policies to guide and improve it. I will not tell you things that are very different from what you have already heard, but I will try to give you a different perspective on what they mean. My remarks will be especially aimed at the youngsters of the Net-Generation [1] who are now between the age of 13 and 30.

Since most of us here are somewhat more gray-haired than this boy on the first sheet, let's think about what may happen in the Net Gen future, - one that is based mainly on their "Freedom of Choice". This freedom is the most important issue for arriving at this future, and the core idea I want to present to you in this lecture.

I will skip the second slide with the Abstract [top of following page]. It is included for when this lecture is made available online, so that Google can find lots of interesting



Hogeschool van Arnhem en Nijmegen

"Orthogonal Transformations on Telecommunications and Networks of People & Machines: Turning things inside-out & outside-in" Jaap van Till, SUMMARY :

1. *Tasks and responsibilities in the Trias Telematica, way beyond the VOC Report.* Managing strategy, tactics/regulations and operations vis-à-vis bottom-up changes, uncertainty and innovations, Liebig's Law.
2. *The temporal and spatial impact of Telecommunications: What is happening.* Freedom to Choose Moore's Law at work in transmission and switching. Smart terminals & central aggregation. Dual shifts and transitions mapped on the Television Model. Stupid Networks and Stupid PCs. Impact on business processes, organizations, ICT. If you want to know what is going to happen in telecommunications, you should not only take a better look at what people do with telecom&networks, but also what it can do to them. It connects the users P2P and binds them together towards the Age of Synthesis.
3. *How to cope with transformations and changes to and from telecommunications.* ICT Policy and Regulations. We can no longer afford vertical integration. The 90 degree shift to several layers of agnostic (orthogonal) horizontal value chains. Spatial-, temporal- and spectral unbundling. Decreased interdependencies and removal of bottlenecks to implement price/performance improvements. The Amsterdam- and Singapore models for network modernization and investments. Perpendicular Policies.
4. *What can happen in the future STAMPEDES !! Inside-out & Outside- in to the DUAL on several scales.* New issues on the horizon, disruptive innovations, firework hypes, approaches, transitions. FttX access networks type 1,2,3: MSE and power users; Global 2.0 & local specialization for worldsourcing; ALDI devices & energy issues in virtual machine server farms: smartphones, in-house networks & smart grids / clouds; rural internet access/ rural cellphones & megacity creative class clusters; super-organisms.
5. *Key drivers: Emergent Creative Life Forces of Networked Swarms*
New cooperative networked laboratories and virtual schools/ ensembles/ teams/ tribes/ mash-ups where the multiplicative fourth networking effect (van Till's Law: Value - N !) creates value by contribution, trust and recommendation + appreciation. The new science of "Network Dynamics" beyond Small World effects and power laws: strong links within clusters and vital Weak Links (of distant friends) between clusters. Chaperones. Spiral Dynamics evolutionary jump from level 8 (increased resolution for all network participants by linking: connectivism) to 9 (parallel light path global brain synthesis for increased smart grid sensitivity). All boats will rise together on this innovative tele-tide.

HAN

words to index it on the Internet.

The Old Way of Looking at Telecom Regulation

Let me start by the question asked in the title of this Symposium: 'For "future telecommunications", do we go for Regulation or for Self-Organization?'

This is the old way of looking at Telecom Regulation. This slide shows my 1970s or 80s point of view of governance of the sector. The idea is that the Nation State is top-down in charge of policy, the future direction society wants to go, and of the general interest. Let us hope that the Government knows this too! The operators, on the lower right-

hand side, provide the telecom services to the public and businesses. Then they do the actual day-to-day work on their networks to run, provision and provide the things that the public wants.

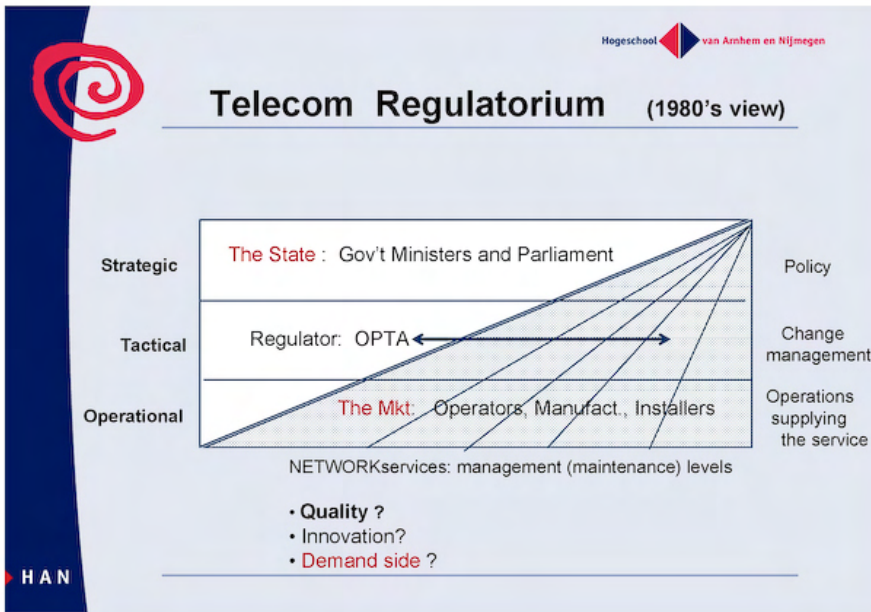
Now the key on which to focus, in my opinion, although one that is not shared even now by all officials, is at the tactical intermediary layer. In general this applies to anything you want to outsource, where you have to look very carefully what you ask others to do. Therefore the Regulator sits at the tactical layer and is in constant communication with the change management officials of operators. The regulator must see to it that what the operators actually do or change is in line with government policy and laws. In

turn the operators can do a lot of Self-Organization internally and together to stick to the Rules set by Government. Wonderful, but is this the complete picture and is it up-to date?

In thinking about the future, we have to establish what "we" actually want done with telecommunications. **Telecommunications are not there for the pleasure of the operators. Roads are not there for construction companies. Telecommunications are there for society and the economy.** We do the telephoning ourselves and the operators do the switching and the network.

This Regulatorium of [strategy, tactics and operations] was a wonderfully simple picture, in a stable, linear and unsurprising telephony world. Of course there have been years and years of turf discussion as to whether the Ministry should do something or whether OPTA should do something else. Maybe my 'tactical layer' schematic clarifies this. **I suggest that policy development should not be about the terrain or the jurisdiction, it should be about what we actually want these services to do for society.**

Policy changes management and operations but I'm always a little bit worried about Quality. Who is in charge of



Of course the other part of this Regulatorium was about TV channels – provisioning TV broadcasts over a few state controlled channels. In the 80's the state and the supply-side market companies seemed to know what was good for you. They did the choosing for us on the grounds of optimizing the use of scarce resources.



that? And who is in charge of Innovation? To liberalize the market is one thing and it is wonderful to get competition but that is not the aim in itself. The objective for competition is to remove obstacles to innovation. And innovation must help improve price-performance of the telecom infrastructure and - services for the users.

Of course, if you are at the helm of a large vested interest company in the supply side, it is not your first priority to think about innovation. Your thoughts will be about preserving, extending and exploiting what you have installed and optimizing shareholder value. About getting as much money as possible from investments. Nothing wrong with that. But how do we then get new and improved idea's, and better technology, driven by Moore's


Law, tried, tested and implemented within this ecology?

Now the demand side is not in this above picture either. This is one of my hobbies. This schematic that I showed you was based upon regulating the fixed telephone market. The famous black telephone that was brought to every home and office desk. It was a simple very uniform device and everyone got the same 'universal service'(rollout slogan) conditions. It was owned and maintained by the PTT. You were not even allowed to touch its wires or connection boxes -- it was their device and their System.



Now in 2008 my children don't even have a fixed telephone line any more. They have their mobile phones. My children don't look at a TV set anymore. They look at "Uitzending Gemist" (Delay-TV on Internet) or Youtube on their laptops. That is they look if some friend tells them that there was something interesting to watch on the telly yesterday. And they zap and choose themselves channels and non-scarce info from millions of sources, as predictable ad reliable as tap water. So now choice of content is ours.

Yet the Regulatorium that we have is still about Fixed Phones and TV Sets, and the choice set by this symposium is between more State Regulation or more Self Regulation



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3500 Million users of Cell Phones (2008)

- Place Shifting
- Identity
- Smartphones
- Cooperation
- Reach
- Smart Mobs
- Microfinance

HAN


There is also an enormous effect from the very intensive use of Internet. This represents about 2.5 billion Internet users. It has penetrated everywhere. Our children in NL spend much more time on Internet and using their cell-phone than they watch TV or read. Do you see this sign? It is in Dutch, in my hometown, where it says "we sell you floorboards here at Internet prices."

by Operators! And in this situation both are in my eyes a bit like Cuban cars -- it is wonderful that they are still running, but somewhere parliament and regulators need to go further in their thinking than continuing to on these two telecom devices and their supply chains.

allows people to organize themselves in multiple tribes at the same time. Football hooligans can use them for smart mobs to organize fights ;-0 -- a nasty side effect. And there is microfinance in third world countries, where they use phones to transfer money or send money home from their work. This has a huge impact.

Put it this way. Young people look first on the Internet for what they want and then confront local shopkeepers with that. Telecommunications now allows time shifting. You can do things now in other ways than only real time. Everything on this globe is in effect less than 200 ms away on networks. It is not only a flat earth; it is a very Near Earth. You have

We live in a world of 3500 million users of cell phones. And the increase in number of these cell phones is now running at the rate of several hundreds of millions a year -- spreading out over the entire globe. This is fantastic growth and it's a very important for people in the Third World. We do place shifting with cell-phones. No longer is there a fixed telephone in the home for serious calls only like talking to the doctor. You talk wherever you are. The mobile phone provides you with an identity. It is smart. It allows you to cooperate and to reach people. It



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2500 Million Internet Users (2008)

- Time Shifting
- Everything < 200 ms away
- Delayed TV
- Choice
- MSN chatting
- NET Gen.
- Virtual Labs
- Social Netw's

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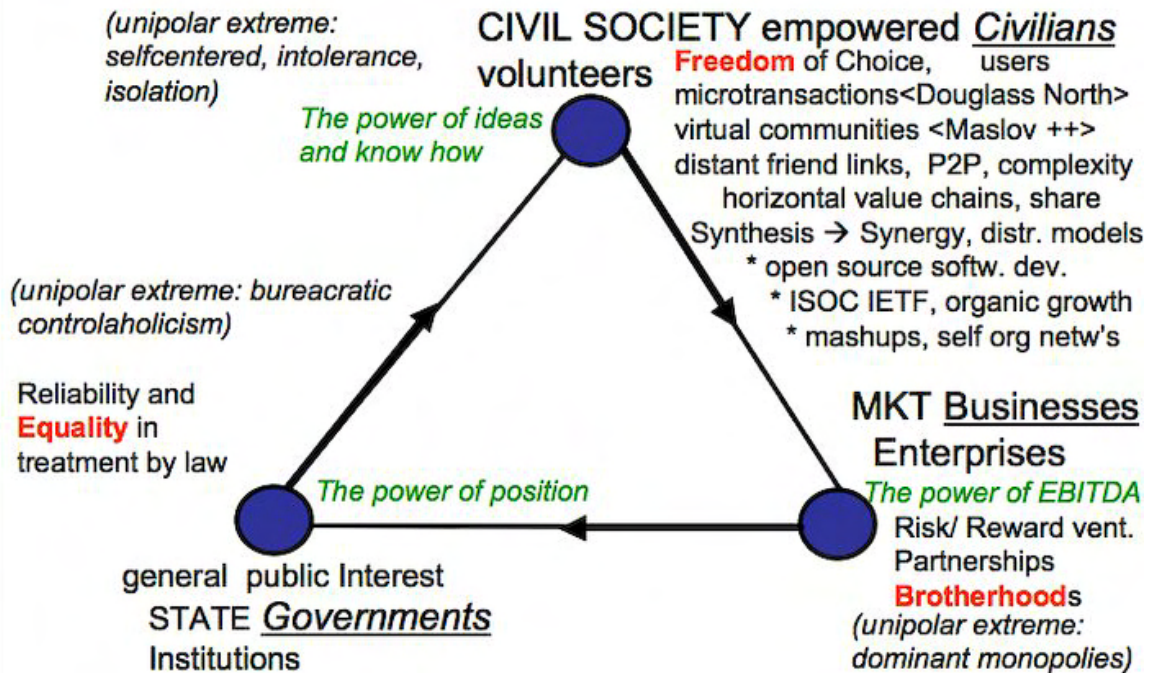
a lot of choice. You can chat virtually anywhere with anybody transparently across many types of former boundaries or borders. This is the Net -Generation do naturally [3] nearly all the time with virtual schools and laboratories, mashups and P2P social networks everywhere. Consider the huge social network effects from Barack Obama's

networked volunteer and experts organization. They are going to use this human network during the next couple of years too to provide practical answers to questions and problems and to gather interesting ideas for reconstructing and improving society.

No matter where you live or what your income is, or your shoe size, you can communicate, contribute in teams and cooperate with smart phones and Internet. These billions of telecom network users do have a definite effect! Consequently, this presentation is about the evolving interaction between society and ICT technology and economics. Therefore we must ask what

The Trias Telematica

The Trias Telematica: clustering of roles in the Internet Age [van Till 1988, version March 31 2008]



frameworks do we have with which to view that new situation?

The Trias Telematica

First of all I think this triangle of the division of power, similar to the "Trias Politica" (defined in 1784 by Montesquieu) of Government itself, is a better representation of the telecom regulatory situation than the 1980s three-tiered graph presented earlier. Not only do we have the government side (regulate) and the market side (self-organize); but also we have to recognize the civil society side -- the (groups of) civilians- the users and prosumers of telecommunications. They are no longer passive

uniform groups of consumers. It is very simple. Government and institutions should concentrate on things that apply equally in the eyes of the law to all citizens. Companies should dare to take risks and reap the benefits if successful in uncertain and innovative ventures and if they want to lower risks they should be allowed to form brotherhoods to cooperate to solve shared noncompetitive issues. And add value in self-organized supply chains.

Users should be free to choose - and this is the most important message that I have - and they should have the freedom of choice, their own, for what they want to

get and when. If I get a haircut I do not want to be forced to buy new shoes. The way telecoms work now you are forced to get a package deal with everything from one provider. Furthermore, the providers of these packages are very well-organized to keep you as a customer. Also in my freedom to choose, if I pick some things from one provider and some other things from another, I also do want these to be able to interconnect together.

This is a very ancient triangle. It is "Freedom, Equality and Brotherhood", the slogan of the French Revolution, with sources traceable to the Netherlands freedom fights against the Spanish rule. The triangle had its echo's later in the American Constitution. These three poles should be in balance with each other. Not everything will be suddenly rushed to freedom. You see that there is a power of communities and cooperation building up. The state also has definite requirements for what it must do. It needs to take certain positions and safeguard general interests. These need to be seen as good and in the goal of working to deliver benefits for the whole. Each of these three poles has its general task to perform.

If we distinguish these roles well and combine and

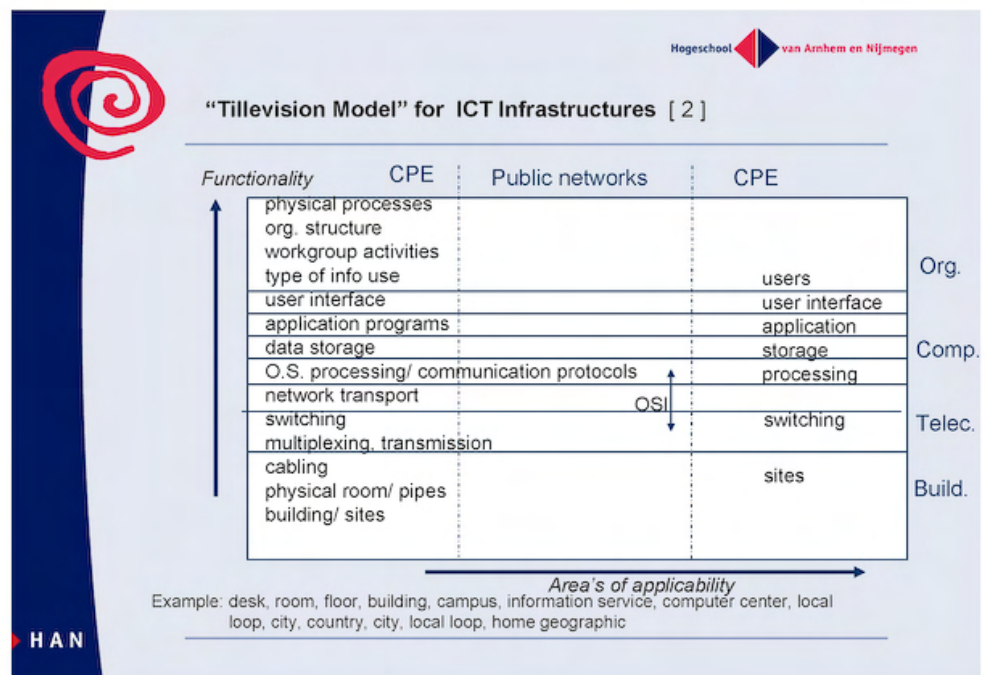
connect them well, we get a fantastic future. But with State regulation and overoptimistic interventions getting out of balance you get bureaucratic "controlaholism." If the Market side becomes too dominant and engages in exclusive company cooperations on competitive issues, you get cartels and monopolies that stifle innovation. And with excess forces in the "civil society" you can get self-centered and intolerant sects. Therefore the wrong sides of each corner are also known.

Why am I saying this and stress that the Demand Side should be recognized? Because that is where the driving forces for change and improvement in Telecommunications reside.

Tillevision Model

I have found that in a number of different companies in which I have worked during my career we have had within our internal network a lot of what the Operators call Customer Premises Equipment (CPE), formerly the terminal (end-point) equipment of the public telecom networks.

I have had to explain a number of times in my career to technical people and also to operators from different backgrounds that Customer Premises Equipment is much more than the black telephones, PABX's and the TV sets - that, in fact there is five times more invested in the customer premises, for instance in computers and



workstations & PC's than in the public network. And also that the amount of money spent on customer premises equipment each year is 5-6 times the amount spent in investments in the public networks. The tail, in fact, wags the dog.

These public networks are wonderful but they are peanuts compared to what has to be done, installed and maintained inside our businesses, government buildings and also inside our houses. As I helped to design the networks for large companies, and ministries we found out that we had only one way to keep this complexity of company networks and infrastructures under control, as we had to invest in future proof structures, was to split the ICT infrastructures vertical into a number of functionally different layers, and chart them horizontally in terms of geography: from the workplaces to premises, local networks, metro and wide area to computer- and corporate centres, as depicted in the above chart about the Tillevision Model, an extension of the ISO Open System Interconnection (OSI) model. The lowest layer is **physical** construction, plants, campus grounds and buildings. And then on top of that we have the communication **networks**, and then we have the **computer** infrastructure and then the organization structure

and the **people** themselves. So people are actually included in this Tillevision Model [2] too.

Applying this Model or similar design charts was the only way to cope with changes in technology, in demands and in technological installations. It is difficult enough to do this coping with the turbulence within each layer. With the sorting into these layers we wanted to make sure that changes in one layer would not influence the choices in other layers too much. We don't want to buy new multiplexers and as a result find that we have to buy all new computers because this unforeseen application forces us to redo the entire infrastructure every time we change something to improve it.

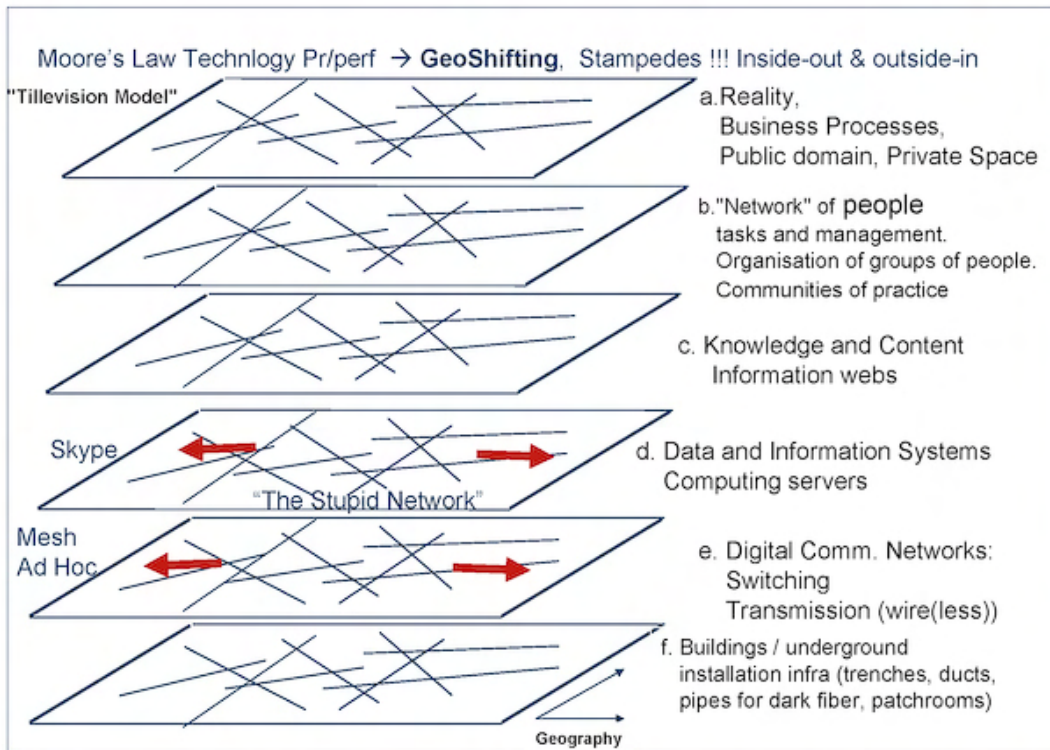
We where however faced in most organizations with IT islands of departmental computer and communication systems that where build salami fashion for a specific purpose, and started as "stand alone". For instance a computer system for the sales department with special dedicated cables and rooms, and connecting with the outside world only with paper input and output.

It is not so long ago that a lot of network manufacturers also tried to enforce such an

island. They called them "total vertical solutions by one supplier." They used proprietary networks like SNA and DECnet to wall off each island. We got rid of those kinds of vendor-dictated patchworks with the Open Systems Interconnection architecture way of looking at ICT infrastructure. And shortly and much more powerfully thereafter -- with Internet architecture, applied to LANs and Intra-nets.

Now nothing is 'stand alone' any more. Under this architecture, these layers are relatively independent (agnostic) from each other, since the resources are used for multiple purposes. Not completely but we try to make them as independent as possible. Why? Because our overriding objective is not to have to redo the remaining layers if we change and improve something in one single layer.

This allows a process of improvements and changes while leaving the structure as a whole future proof. Like the Internet net of networks, under the supervision of the ISOC and its architecture board proved to be as well. This was a very simple way of reasoning. This is a very simple chart for corporate IT and Telecom networks that I presented [2], I think, in 1993 for an IFIP lecture in Copenhagen. Later I extended it to a way to look at many net-



The Extended Tillevision Model

works, including for public networks, factories, ministries, cities and also for media distribution networks.

This was the extended "Tillevision model." I expanded it by adding two more layers. At the top is what I call "Reality" something that I would hope is not like the Tower of Babel. The top floor is reality: the activities of real business processes. Then you have people, another new layer: knowledge Infrastructures (WWW pages etc), and then computer systems, networks and again this physical infrastructure.

The computer industry networks architects and design-

ers started to think in terms of these horizontal layers first, then the telecom industry followed for internal procurement reasons at first too. Pure vertical integrated 'telephone networks' with only telephones, phone lines and cables and telephone switches are a thing of the past, although they still appear in legal texts. And now the media world is starting to make the 90 degree turn from vertical integration to horizontal value chains. As was forecast by Jens Arnbak in its 'VOC' report decades ago.

What we have tried to achieve since then is to make each of these layers as ag-

nostic as possible -- in other words they can perform their functions as independently as possible without having to know in any detail what is happening in the other layers. If you update your operating system you do not care if the data from Internet reaches you by optic fibers or by barbed wire.

But when you click on some icon on your screen at that

instant a momentary vertical value chain is made between software subroutines, PC hardware, lines, etc, all the way down the model, to equipment in the basement of the building. It is the same as with cars and roads. These are agnostic of each other (not so with trains and railways) but only make a momentary vertical link where and when the rubber meets the road.

So by introducing and enforcing the layers of the Tillevision model we have been able to migrate from *fixed vertical assignment* of resources (Wang computers on Wang cables) to *temporary assignment* of resources to

services (for instance a spectrum frequency band for a specific TV channel) to *momentary vertical negotiation* between ICT devices for use of resources (like in IP packet switching and when a cell-phone handset negotiates with a base station for a free frequency in the frequency band assigned for a number of years to a mobile operator). This way ICT helps to make scarce resources abundant. By the use of smart devices the spectrum policy is thus inevitably migrating from [state assignment and ownership forever] to [efficient use] and now to [smart device-temporary-shared use and non-interference].

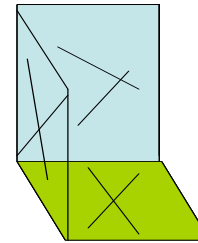
Example from another sector: Linguistics

This layered model for ICT has similarity with the way Linguists distinguish their different fields of knowledge and studies: wisdom/ imagination/ semiotics/ semantics/ syntax/ words/ signs/ signals. These too can be considered on different layers. That is also why collections of ontology, lexicons and idioms are in quite different books. Now if you express a wise thought this is enfolded in that instant in a number of envelopes of semantics, etc. vertically down to produce a voice signal on a telephone, which is opened like a multi-wrapped present by a listener

elsewhere and hopefully understood.

Example from yet another sector. Container shipping

The "floor separation" functions in the above graph works like the containers which were invented and installed 50 years ago and have very radically changed our geographical infrastructure, behavior, and performance. Witness, for example, the harbor city of Rotterdam, it was turned inside-out by the container terminals moving work to the outskirts of the city region. Containers shield the aspects of the specific content from the multiple ways you can choose to transport your physical goods. Train, ship, lorry or plane. No longer are they fixed for one type of goods. So the container boxes make the goods themselves agnostic from their transport. It is as though these functions are perpendicular. Orthogonal (at right angles) or perpendicular means that if you move in one plane/ dimension your position in another perpendicular plane is not changing. So imagine and treat the layers in the Tillevision model as if they are perpendicular in 6 different dimensions. Or a more simple version drawn for 3 :



Three orthogonal (perpendicular) layers of the Model

The more technical people in this lecture hall know that I am talking about the layers that are right angle vectors which together span the solution space of the ICT infrastructures we want to design and run. That is why the title of this lecture is "orthogonal transformations". You should look at all these infrastructures as though they are separate vectors and separate domains that you can change independently from one another at your will. This gives you the freedom to change, to increase quantities and renew things. It gives you the freedom to innovate while keeping the structure of the ICT infrastructure intact and future proof. Whether the stakeholders and companies like it or not, there is no other way to cope with change in such complicated ecosystems as the ICT infrastructure of the networked society.

After setting the components on layers free to move and thus introducing freedom to change and innovate – what happened, happens and where will things move to and land?

What Next?

Let's look at happens when you organize the old tele-structures and new technology with these very perpendicular orthogonal forces? Things start to move.

For instance as depicted on extended Tillevision Model above the function of telephone switching went to VOIP software at the edges and then to Skype computer applications on personal computers on private premises. I call such moves "geoshifting" (physical implementation to the left, to more decentral, as well as to the right towards more central), in contrast to time-and placeshifting. The huge telephony switches and services in the network center are evaporating and are replaced by routers. Also there is a more central Skype database where user addresses are stored.

Also with routing in mobile mesh networks movement goes both ways: more centralized and more decentralized and outside as well as within the old public networks. The effect of this is that introduction of intelligent chips everywhere, in line with the Internet architecture guidelines of end-to-end

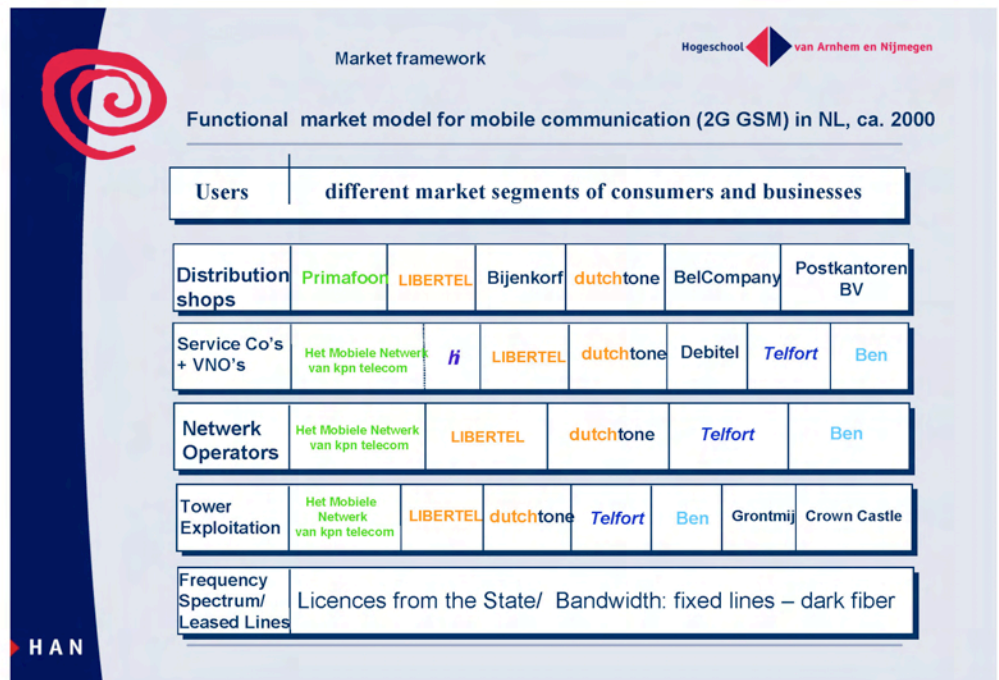
services complexity peripheral to the network, begins to move networks inside-out and outside-in, creating a vacuum inside the public networks of the operators, who where dreaming about new billable services to be introduced in the more and more "Intelligent Networks".

The "Rise of the Stupid Network" paper by David Isenberg showed very clearly that contrary to those IN dreams in reality the structural shifts in the Public Networks went the way I describe them now and in [4]. I know that the Operators where and are quite panicked. They have to think about something they can do to justify their existence and make money. I

have some possibly useful ideas about 'Telecom Companies 2.0', but that is part of another research project and will not be presented here.

The following schematic [One Market Framework] shows as an example what has happened in the mobile market (source: Stratix Consulting, NL): vertical layers of types of companies which are buying and selling services retail as well as wholesale without being restricted by vertical integration single-company stovepipes. Yes this mobile tele eco-system is largely self-regulating AND it needs strict rules and restrictions on its playing field as well. And huge changes have taken place since this schematic

One Market Framework



was made, changes resulting from innovative technology and new functions on open platform smart phones and palmtop computers.

These layers of different functions are somewhat agnostic of each other. For instance the retail store sells devices from several different companies.

Another example of the Perpendicular Policy approach (segmentation in vertical functional layers) is in the successful procurement, construction and service operation of new optical fibre, cable-based, FttX access networks in a number of countries. Like in Scandinavia, Korea, Japan, France and the Netherlands.

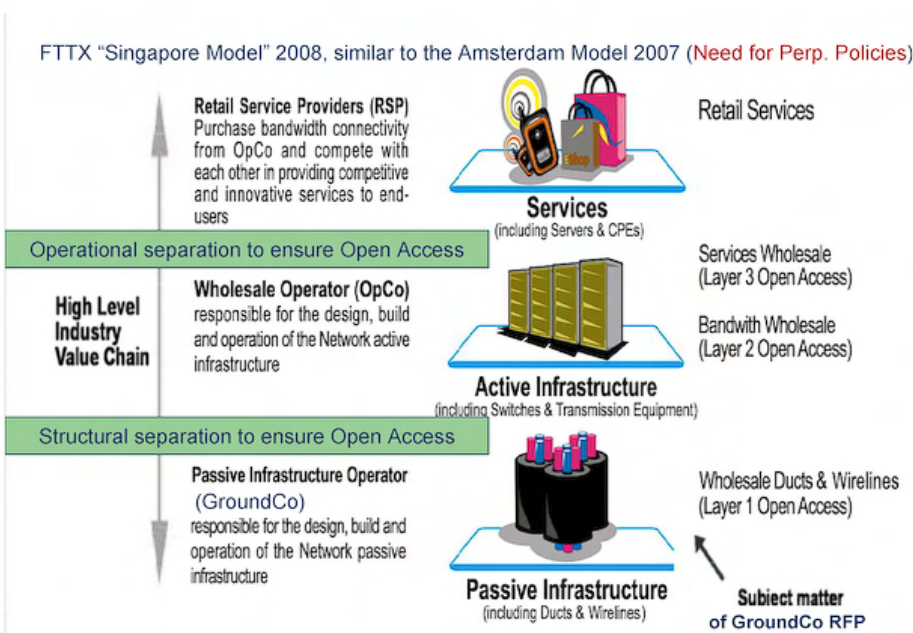
It is important to notice the fact that in Amsterdam and Singapore they have decided to make an infrastructure that is comprised of the passive layer operated by a company which they call the Ground Co. and the second layer or active layer with equipment provided by other companies (OpCo's), and then you have all these fantastic services on top.

And the absolutely critical thing is that you must have a structural separation between the physical contractors basically building real estate and the ICT active equipment operators, otherwise openness for change and entry will be resisted. We can no longer afford the fixed vertical integration of companies to provide both. The tendency to

ask regulatory holidays for companies trying to combine both, while still making money as long as possible on their copper access networks, just makes matters worse for themselves. Now if they want certainty they must choose which layer they want to be in. Let them go build and operate GroundCo's and ask the Ministry of Transport to give them some continuity of conditions under which they can do their business. That ministry has affinity with infrastructure (our ministry of Trade has not) and a track record on guiding the groundwork. Maybe we have to make different ministries look at policy for different layers in the Tillevision Model thus creating Perpendicular Government? This is to be preferred to multidisciplinary turf wars or a rule by simplification of a highly complex nonlinear wonderful vibrant organic growing diverse and unknowable world.

The World Becomes Fractal

Now the picture gets even more weird. First noticeable "Internet Effect" is that walls in organizations have become transparent by the bi-directional ICT information flow. Nothing is standalone any more and nothing remains hidden forever. If we look more closely, we can see that things now start to move (a) on each layer of the



A Perpendicular Policy Approach - Segmentation in vertical functional layers

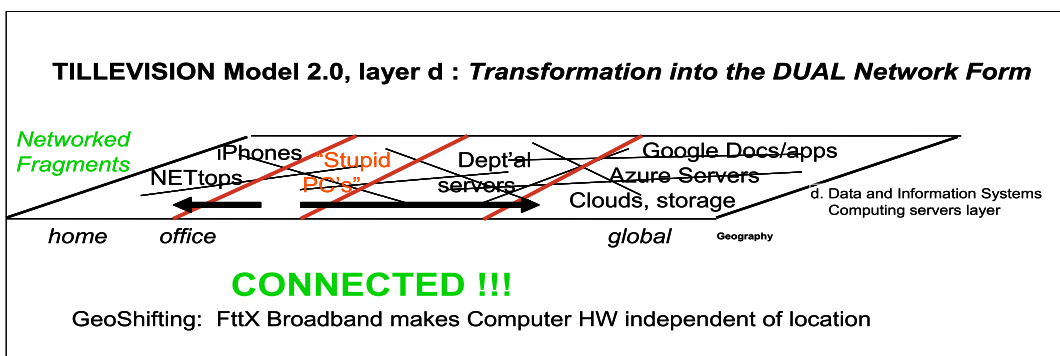
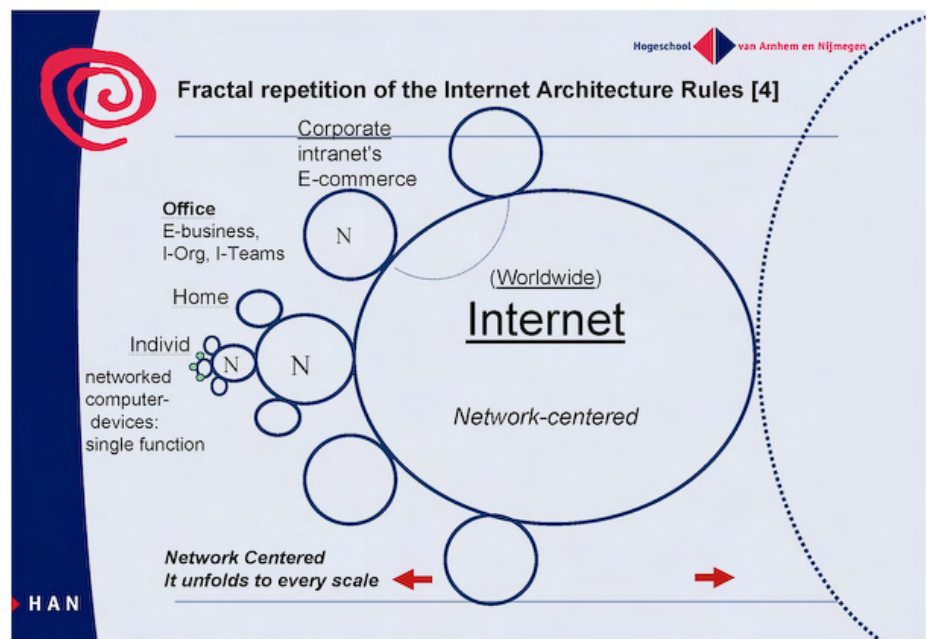
model and (b) on different geographical scales (!). And more specific: things start to be turned <inside-out, multi-polar and outside-in> everywhere by internet. How? For the technically educated: structures are changed into their Dual Form. (basic Electrical Network textbooks explain how). Parallel becomes Serial. Central becomes peripheral, etc. Loops become Links. Unipolar becomes Multi-polar. Example of Dual: the peak of the success ratings of celebrities and tycoons and the long tail of less popular personal websites of the general population are each others 'duality'.

An example of this strange multiple segmented stam-pede on the layer d."data and information Computing servers" of what we can call Tillelevision Model 2.0 is shown directly below. Again, there is more than one effect of this inside-out and outside-in driven by the network centered Internet paradigm. It is going to strike us within several different layers and on

several scales in the infra-structure -- not only the global infrastructure but the infrastructure inside offices and within our homes. Mini Internets in Homes and micro internets of connected small clever devices around our bodies. So what I have described will be repeated again and again on many different scales and more and more tiny connected devices on a structure similar to the Mandelbrot fractal.

We will have an explosion of things that will go both ways. I introduced some time ago the idea of "the stupid PC": The desktop PC which will be replaced by large screen browser only NetTops & central storage and shared documents and applications in a huge server farm somewhere else geographically. Geoshifting I call it. The broadband FttX networks allow you to put hardware wherever you want!! It does

The Fractal Geometry of Internet Architecture



not matter anymore. That is the impact of telecom !! Although Mr. Bill Gates didn't like it much probably, a person from Germany mentioned to me a few days ago that this

At a mouse click operations in each networked fragment sends a perpendicular series of commands - marked by the slanted red lines - down the layers of the communications stack

The Fractal Structure of the invisible hand of the humans?



become multi-polar. Not overnight but in a steady and unstoppable powerful process with occasional sudden stampedes. I expect that these big transformations will happen in roughly the following phases. [Control Center phase 7; Link Relations Connections phase 8; and Parallel swarms, emergent collaboration phase 9 as illustrated at top of next page.]

These phases correspond with the prevalent Value Model in societies as found and defined by Prof. Claire Graves, as an extension of the Maslow pyramid of human needs and drivers of behavior. This value model was further described in the book Spiral Dynamics. Although individual citizens grow in a very personal way and time through this sequence, groups and communities can be characterized as having a prevalent set of values and concepts they find valuable. And for which they are willing to pay!

“Dummy Computer” concept was going to strike in the country of our neighbours too. News travels fast these days! And with Google and “Azure services from Microsoft itself, with clouds more central places where you have storage and processing. So not only will networks be stupid but also PCs are going to be turned inside-out and stupid. But this can only happen if the fragments and things are very well interconnected. It will be fractal: repeated on several scales. This

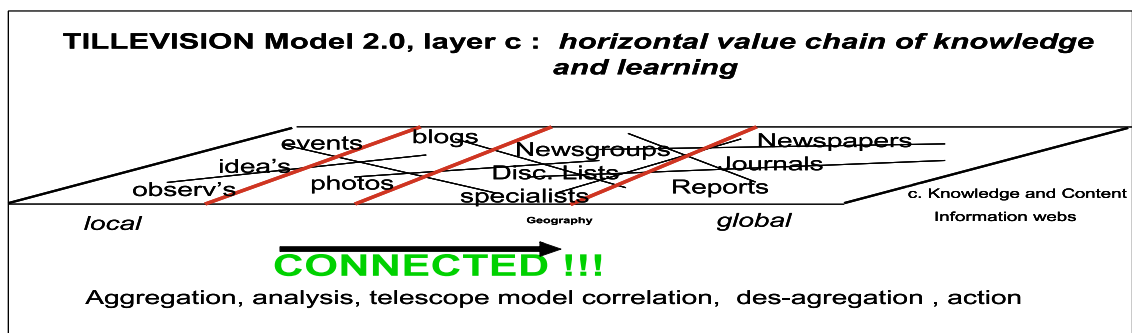
And as mentioned above the Duality movement: inside-out and outside-in in ICT layers, but this will also strike on the upper levels of the Tillevision Model 2.0.

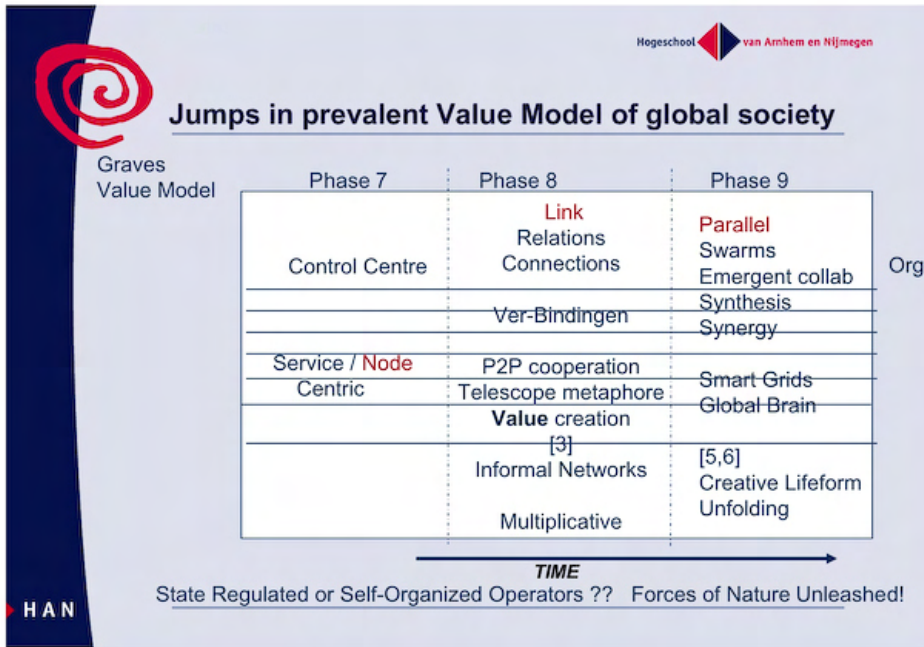
On layer c. of the structure of knowledge and learning we see the following horizontal value chain building up. [See illustration bottom of page.]

On the organizational layer b. families, villages, companies, cities and nation states will also be turned inside-out and

So roughly we are NOW in the transition from the era 7 of thinking in terms unipolar

drawing shows what such fractal structure looks like: maybe this is the “invisible hand” of the civilians?





ergy but also on the other layers of the model. The key concept then is Networked Synthesis and Synergy. These telecom/network effects can only be perceived, analyzed and studied in a combination of the new fields of "Network Dynamics" as defined by Barabasi et.al, and the new emergent behavior biology and life-sciences study groups. It is fascinating to see what will happen there and is really the kind of creative life force (élan vital [5, 6] at work when billions of multitalented creative class people (the new middle classes which creates value) and computers communicate and collaborate.

As network interconnectedness grows the value models of global society change

Centers (Nodes) to thinking in terms of a multi-polar world where the Links, binding connections between the nodes are in fact the key functions. Relations/bridges (era 8) (link = the dual of node) for making stronger mixes are the real key valuable thing. Phase 7 is characterized by media attention for celebrities and tycoons. Phase 8 by value and wealth creation by recommendation in the long tail and specialization-contribution in practical problem solving teams by the new networked middle class, coming up.

making very large things (super organisms like ant-hills, see the new book of E.O. Wilson) from very tiny "things" that are all connected, i.e. clouds and smart grids for computing and en-

These forces are at work whether we like it or not, we

Next transition coming up but foreseeable around 2012 will be to a society that is focused on tighter multi-mix cooperation and collaboration and on



have first to notice them at work behind our (baby boomers and Gen-X) backs, like in the picture above. Differences are giving synergy and strength when connected, in line with my central "telescope metaphor" for phase 8 and 9, described elsewhere, but that is another story.

The central question of this symposium was: Stay with state regulated telecoms or move to self organized operators? My answer is: the actual civil society movements (the third pole in the Trias and the forces unleashed by stampedes of wired users takes the dynamics of networks way out of control of either state(s) or manufacturers of telecom systems & operators.


Which does not make them insignificant, but their combined energy will force state and market to re-align, be part of and cooperate with Nature which is unfolding just in front of us into a new life form: a global brain. The legislators should not try to swim against these tides!! I hope that I will be a well connected tiny brain cell part of that brain and may see this happen, or at least my children and Net-Gen grandchildren, don't you ?? We wish you Good Connections !!

Editor's Afterword: As I was communicating with Jaap about our publication efforts and asking a few questions, he wrote: "the end of the paper is and should be unclear -- that is if you try to look beyond about 2012. No one knows what will happen



exactly -- unless you are a time traveler coming from that time but you also know they are not allowed to tell."

Certainly Jaap's essay breaks new ground in trying to place a structure and mental framework around an extraordinarily complex and important emerging phenomenon that is a critical and yet poorly understood part of our global infrastructure.

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HAN

Beyond triple play services State-of-the art broadband services in The Netherlands

Patrick van Eekeren, partner
Trikala, October 22, 2008

Editor's Introduction: I heard Patrick give this excellent talk on the first morning of the meeting in Trikala. It goes far beyond what, to my knowledge, we have operational in the United States.

Patrick van Eekeren: I have been involved in FTTX projects since 2000 - beginning with the Kenniswijk project in the Eindhoven region of the Netherlands. My involvement is in the fiber to the business, fiber to the institution and fiber to the home projects in both infrastructure and in services. My assignments as a consultant have been mainly for housing corporations, schools businesses and service providers.

My perspective in this presentation will be from an FTTH point of view looking at the state-of-the-art in the Netherlands. To summarize the situation, the Kenniswijk project, back in 2000, put FTTH on the agenda in 14 different cities. Almere, Amsterdam, and Eindhoven to name a

few. These initiatives spurred the market to react and we saw that - after a couple of years - Reggefiber became the most ambitious player in the new market place. Reggefiber's entry into the marketplace in turn forced our incumbent KPN to take notice.

Now we have infrastructure developments going on with a base of between 100,000 to 200,000 homes connected with fiber each year. Of course there is still a lot of work to be done with respect to FTTH infrastructure development. For this presentation I would like to focus on broadband services, starting with one major concern I have about FTTH development. I don't do this to be critical per se but to trigger a discussion by means of which to join forces to

do better.

Therefore I would like to share some information on two of the service projects that I'm involved in. Next to the necessity of open access broadband infrastructure, the broadband services argument is what I hear the most. We been talking about this the last couple of days with the I-NEC (International Network of E-communities) delegates and you see here all sorts of nice promises of the broadband market within the domains of health education social cohesion, business, sports and so on and so on.

The promise of

new and innovative broadband services

to achieve economic as well as socio economic effects

in the domain of education, health, entertainment, security, liveability, social cohesion, culture, sports, business, local government, et cetera

is one of the key arguments often used when starting a (FtH) broadband project

M&I/Partners/

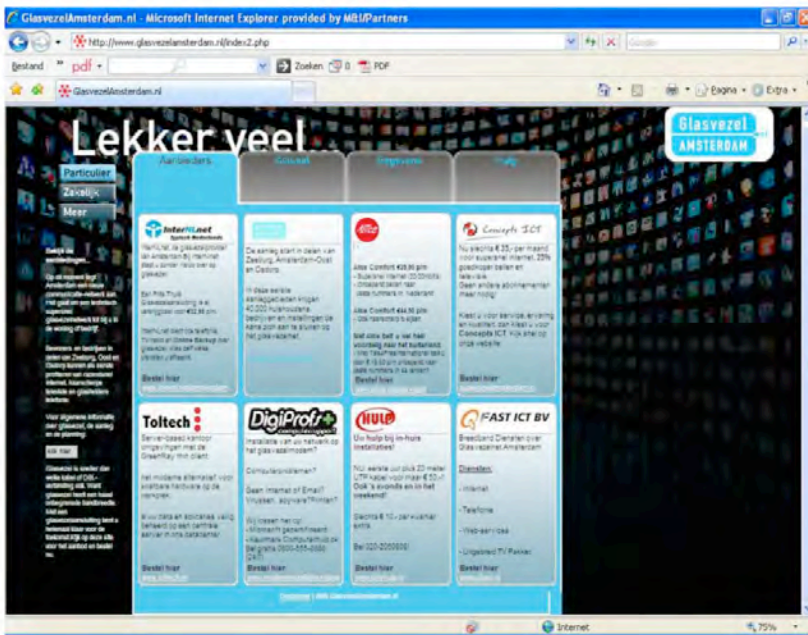
But look at the reality of this moment. **We initiate FTTH projects with broadband services behind them as a key supporting argument and what do we see looking at the service propositions given us by the service providers for these projects?**

Now as far as broadband services go, the screenshots below show first the Amsterdam situation. And second the Almeer situation. To give a translation of the screenshots in both those situations, what you saw was standard triple play. I could give quite a few similar examples of this with regard to

other parts of the Netherlands and elsewhere in Europe and abroad. Therefore by this time a few questions may arise. Is it that bad? Is FTTH only triple play? Well as I'm a consultant, there is always a yes, and a no, involved. [See slide next page.]

On the "yes" side, when we look at present offerings from the service providers, we generally see only triple play in a dominant role. On the other hand when we look beyond the dominant providers, we see some quite different offerings. When we look at the business and small office home office environment, we see developments that go beyond triple play -- developments that sooner or later will be introduced to the consumer market.

And there is a "no" answer when looking at hot spots, where there is continuous and focused efforts on service development (for instance in Almere Kennisstad). The answer was "no" when looking at the INEC (joint servbi-ces development) project where we had the signing ceremony yesterday focusing on Trikala. The answer is "no" when looking at growing services offerings for mid-band markets. A lot of these services press the need for broadband infrastructure and a lot of them will evolve eventually into offerings of



Is it that bad?

Is FttH only triple play?

Yes and No

- Yes, when looking at present service offerings for FttH by FttH operators/service providers
- No, when looking at:
 - Developing service offerings for business and SoHo market
 - Enduring and focused efforts at some places (e.g. Almere Kennisstad)
 - INEC Interreg-initiative
 - Continuous growing service offerings for small and midband market
 - Specific areas, for instance community services/liveability



high definition video. And the answer is no when we look at community services. **A recent study on livability in the Netherlands concluded that almost 1500 neighborhoods had initiated an ICT project to stimulate livability and social cohesion and almost all of these focused small and mid band rate DSL applications.**

So what's the problem? I think, to put it simply, it's that the development and

So what's the problem

- Lack of speed
- Lack of scale
- Wrong image from a citizens point of view



introduction of new and innovative broadband services is just not going fast enough. We seem to suffer the not invented here syndrome and prefer to reinvent the wheel resulting in the lack of scalability in what we do.

Imagine that you would have had a 100 Mb symmetrical connection for a year and that you would have had only "triple play" What would you say when you end up in the bar of the hotel here like I did last night and people ask you with high expectations in their voice "Now tell me what do you do with your FTTH connection?"

Some silence would follow.

To summarize

there is a race going on. A race for market share. The FTTH guy, while he doesn't look that way in this cartoon, is fully equipped.. However, he has to come up to speed.



Cartoons: courtesy of YourPlay



OnsBrabantNet

Let me go now to the first of the two projects that I'm involved in. The first is onsBrabantNet (one of the labels of Reggefiber, a FTTH provider active throughout The Netherlands). "Altijd Thuis" means "always home."

The CEO of OnsBrabantNet told me: I want new services on my network to attract new subscribers and to prevent my present ones from churning. At this moment OnsbrabantNet has several projects going on -- one of them being "Altijd Thuis" which is a



- NEM Brabant with OnsBrabantNet (label of Reggefiber)
- Currently active in 6/8 cities in the province of Noord-Brabant (8 when including Nuenen and Eindhoven)
- Homes activated for the 6 cities at this moment: over 40.000 (penetration of over 50 %)
- Service offering: Triple Play
- Question: new services helping to (further) differentiate the OnsBrabantNet-offering
- (One of the) answers: AltijdThuis ('AlwaysHome', a home automation services platform)

M&I/Partners/

Functionality at this moment



Looking after your mother



Babysitting



SMS when the neighbours' house is on fire



Burglar alarm

home automation services platform.

Altijd Thuis" or "always home" as a Home Automation Platform

Right now the functionality of "Altijd Thuis" or "always home" is primarily that of a security Alarm system. Looking after your mother, remote babysitting receiving an SMS when your neighbor's house is on fire or a burglary alarm

are are some of the present functionalities. "Altijd Thuis" allows you to organize your own follow-up procedures for any of the alarms that you use and in doing so to cut out any intermediaries getting the functionality that you want and in saving you money. [See illustration next page.]

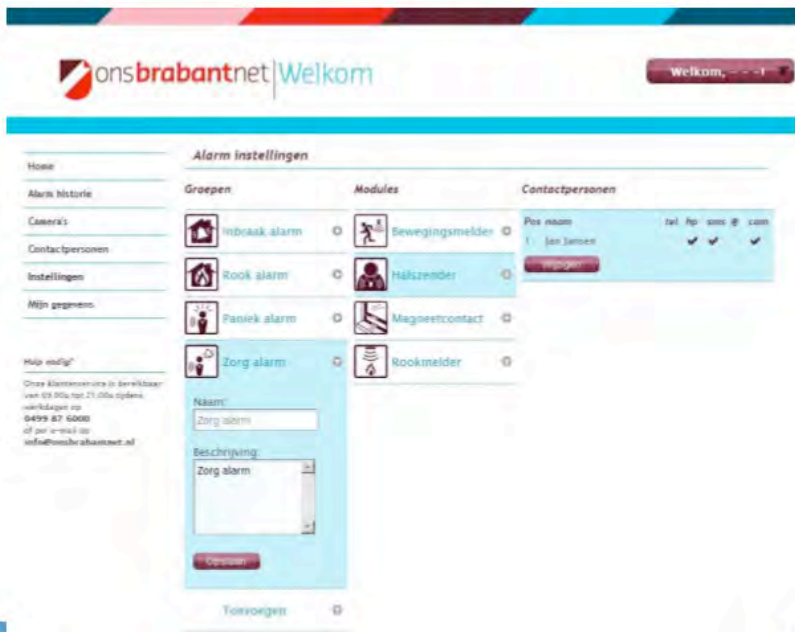
You can define new alarms. You can add new devices. You can define what kind of alerts they will get – a call, and SMS, a video. You may change the functionality of the alerts in the case of every specific alarm. Two other common components of "Always Home" are video screen communication and a touch screen home control panel. Video is added by standalone web cams and a web cam that is integrated directly into the home control panel.

The control panel uses an A4 format and a touch sensitive screen. One of its good features is that it is an "always on" device. While it doesn't immediately help with CO2 reduction, it has a sleep mode and, soon to come, it will have features in the field of energy management.

[Editor - Note that such homes will fit what Tom Friedman say in his new book *Hot, Flat and Crowded*, is going to be a globally necessary way to attack problems of energy and global warming.]

USP's of ons brabantnet | AltijdThuis (1)

- Organize your own follow-up of alarms in your own social environment (cut out any intermediaries)



We have been testing the system I've just described in 10 households from June of this year and will begin a commercial rollout to six cities in January. Yesterday I got notice that Altijd Thuis received a nomination for the innovation award of the Center for the Prevention of Criminal Acts in the Netherlands

USP's of ons brabantnet | AltijdThuis (2)

- Video-communication
 - Alarm integrated with video communication
 - Via webcam (stand alone, as well as integrated in home control panel)
- Touch screen home control panel
 - Always on communication platform in the home
 - Present functions:
 - Interface for security services
 - Basic daily information needs (e.g. local weather report, traffic info and stock exchange)

To emphasize some future developments, we focus on the fact that people can organize follow-up within their own community, we are also about to embark on an experiment with a video surveillance center that specifically requires use of video cameras connected with fiber.

Home control panel
Actual format A4



The center has pattern recognition intelligence capability and we are working with

senior citizens to get the necessary feedback to enable us to educate our customers in order to help them understand how they might want to use these capabilities within their own community. We are also thinking about organizing a contest amongst our users to suggest to them that they may come up with ideas for creative use of of "AltijdThuis".

Lessons Learned

Joint development with your customers is a must because it gives you extremely useful feedback. They are eager to give inputs and, when you make it possible for them to do so, they will become ambassadors for your service.

On a personal note -- as a project manager in this work I was very much involved in the definition of the functionality. I have a tendency to want to bring certain aspects of the services to perfection but what I found was that the users just wanted the basic functionality.

Making use of a home automation services platform makes the sky more or less the limit. We could have added more functionality that is already available. However, such functionality would have had to be tailored to the needs of this specific market. We chose not to add it at this

moment but to instead move forward with a "clear" market focus. Time-to-market is very important. The project started a year ago. And when you are personally involved you always want to go faster in order to stay ahead of new developments -- something that is quite difficult to accomplish because developments occur so rapidly.

Buurtleven.nl (Neighborhood Life)

The second project is from the Amsterdam region and it originates from the four different housing corporations that co-invested in the Amsterdam FTTH Project together with the City of Amsterdam and with other private parties involved. Amsterdam has about 1 million inhabitants and about 400,000 houses of which about 55% are owned by the

housing corporations which invest heavily in the livability of the neighborhoods in which they are involved. Apart from building new housing complexes and rehabilitating old ones, they spent €48 million last year in projects designed for better livability in the different neighborhoods.

Consequently the question two years ago was -- after an okay for the housing corporations and local government investing in FTTH-infrastructure from the Ministry of Housing and from the European Commission -- what are we the Housing Corporations going to do with the fiber network ourselves?

The answer was invest in technology and services to improve livability. The answer to that was Buurtleven.nl which translates as "neighborhood life." Essentially this is a website where citizens

What is ?

- **A website**
- **Where citizens can contact each other:**
 - E-mailing 'a home address' to contact a neighbour, a street, a neighbourhood
 - Organizing a digital group
- **Where info regarding the neighbourhood is presented via a map**
- **Where 'neighbourhood' directors, e.g. housing corporation, city, et cetera, can cooperate with citizens digitally**

can contact each other and one of the USPs is the fact that each house has an electronic home address so it is possible to easily contact to a neighbor or an entire street or the entire neighborhood just by indicating it on the map.

This site is designed to make it very easy to organize a digital group. The information about the neighborhood is also presented in a geographical manner. The map contains a directory of organizations that are functioning in that neighborhood. For example: housing corporations, the city agencies and welfare agencies and other organizations relevant to the area are integrated in such a way as to make digital cooperation with the citizens whom they are designed to serve much easier.

I will no play a two minute twenty second video describing this in more detail and translate from it the Dutch as the video goes along.

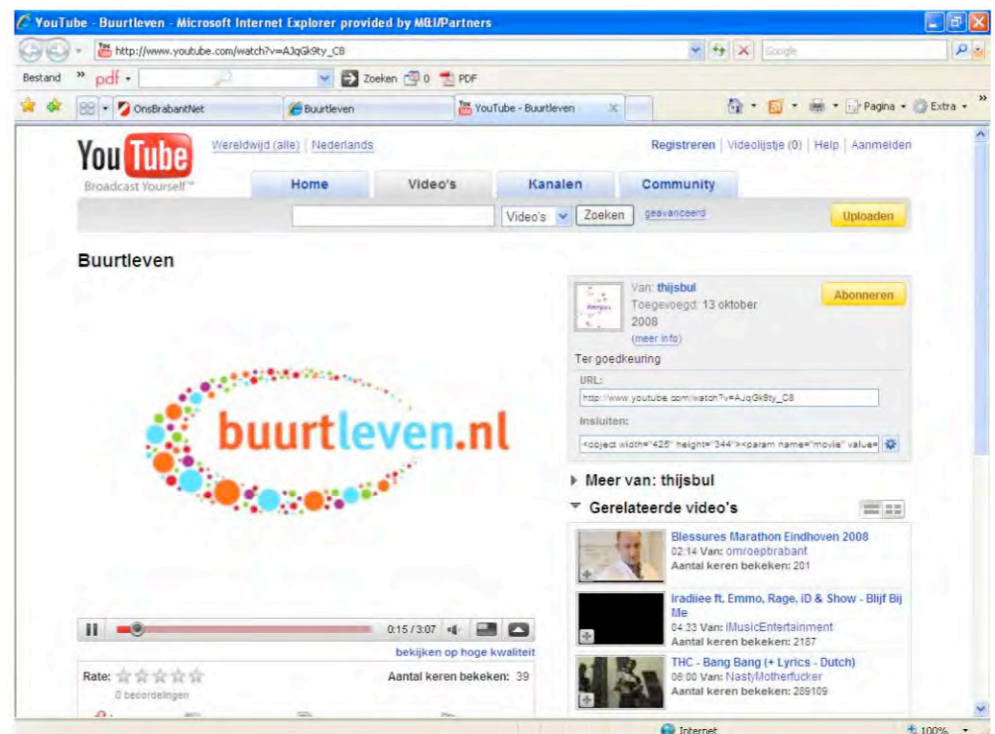
"Asking your neighbor for a cup of coffee? My cat is lost; I want to announce a neighborhood party; I want to find volunteers. All this will become much easier with buurtleven.nl." Don't know your neighbor's e-mail address? Each resident will get a Buurtleven address automatically. As a result you can reach all of your neighbors

easily. You have a square where you can get information. Using this square you can enter an exchange text; photos; videos – and of course this is where broadband comes in – Now if you don't want to receive Buurtleven mail you simply send a message to the central system. Where you say on your system mailbox "no mail please." Neighborhood groups can use the system to build their agenda to enable each other to attract groups of volunteers and to do all kinds of related social networking.

One of the major questions in the Netherlands is always what does it cost? At this moment it costs nothing for the consumer because the housing corporations pick up the bill.

Buurtleven.nl was just launched for people and organizations providing content in four areas of Amsterdam. Beginning next year it will be offered to 80,000 households. The broadband capabilities are the video chat and the uploading and downloading an HD quality video. Our future intention is to roll this out to the rest of Amsterdam and to make it available to other housing corporations elsewhere in the Netherlands and in other parts of the world.

We see here again that joint development not only with the citizens but with other stakeholders involved in these social networking technologies and capabilities is very important. You have only one chance for a first impression. So we did a lot of



Present status and future developments

■ Present status:

- Just launched for people and organizations providing content in Zeeburg, Oost-Watergraafsmeer, Osdorp en Slotervaart
- Beginning of 2009: launch for 80.000 households (40.000 connected to FttH)
- Broadband capabilities
 - Videochat
 - Uploading and downloading of HD quality video

■ Future developments

- Roll out to the rest of Amsterdam, ... The Netherlands, ... abroad
- Additional functionality will be added based on user experience

testing. Although this is not a commercial roll out -- because the housing corporations are not commercial organizations -- the time to market is essential. They have invested, at this point in time, over €1 million in this project. And the system will have a substantial operating expense budget so there is definitely something at stake.

I told you about the race for market share in that I see going on and the search for broadband services development beyond that of just triple play. My answer to the related challenges -- lack of

speed, lack of scale and wrong image from a citizens point of view -- would be threefold. First demand articulation and bundling. Therefore make sure that you know what you want and also try to make sure that you can get some economies of scale wherever possible by bundling demand. The market will go into overdrive as a reaction to this; prices will fall and broadband penetration will go up.

Secondly transparency regarding your present broadband services and initiatives can help. The services can be

used as a source of inspiration and you can copy them where possible. I am glad to learn that the FTTH Council of Europe is about to commission and publish a first edition of a broadband services catalog. The importance of this services catalog project will grow as a result of the alliance of the FTTH council of Europe with INEC.

And third and last in The Netherlands we have a saying better make a good copy yourself then invent something fresh and do it in a bad way. I would suggest to people go out and copy and paste where possible. I would like to conclude that if Greek cities and organizations join forces if Trikala joins forces with INEC in this matter of broadband services development, then -- in your Olympic tradition -- there can be only one possible outcome in this race for market share.

Recommendations



- **Problem**
 - Lack of speed
 - Lack of scale
 - Wrong image from a citizens point of view
- **Answer**
 - Demand articulation and bundling
 - Transparency of present service offerings/initiatives
 - Copy and paste where possible

Resulting in one clear winner



M&I/Partners/

Change is Coming to the FCC

An Editorial Introduction to Symposium Discussion

October 19 - November 15

We have a huge amount of rebuilding needed in the United States. To do this we must regain some sense of dignity, sanity, shared purpose. We need to be able to articulate pragmatic policies designed to help guide us toward this goal. The direction of the world is collaboration and cooperation not innuendo and smear. Barack Obama just won the presidency of my country based upon this program. John McCain chose innuendo and smear and lost.

On November 14 the incoming administration announced law professor Susan Crawford and business school professor Kevin Werbach as the team leaders for the FCC transition. From the standpoint of personal integrity and knowledge of appropriate policy directions I honestly can think of no two people better qualified in their understanding of how important it is to all our future to get this done right.

David Weinberger on JoHo said it well: "Obama appointments so good I thought I was being punk'd. Susan Crawford and Kevin Werbach are heading Obama's FCC

transition team. OMG. This makes me so happy. Not only are they amazingly knowledgeable about the issues, they also share Obama's political temperament: Strong beliefs, an ability to listen, a respect for others that is manifested as gentleness, and a practicality that carries them past mere ideology. Change is coming to the FCC."

Unfortunately the era of good feeling was trampled on before midnight struck. Dewayne Hendricks who I have known since Dave Hughes hired him on Dave's first wireless project, who has been written up in Wired, who was a member of the FCC technical advisory committee sent the following from Brett Glass to his "Technology List"

A Unfounded Attack

Glass wrote: "Dave, this is scary -- especially given the appointment of Susan Crawford as an advisor. I was physically present at a Congressional hearing at which Susan told a group of Senators -- straight to their faces -- that there were no alterna-

tives to the telephone/cable "duopoly." In short, she was denying the existence of myself and my approximately 4,000 colleagues -- who cover 98% of the country's population and many areas that telcos and cable companies do not cover -- even as I sat in the same room. What sort of policy can we expect from an administration at least one of whose key advisors is willing to make patently false and misleading statements in testimony before Congress so as to promote her personal agenda? Especially when that agenda would render WISPs such as myself extinct and thus actually hinder broadband deployment in rural areas?"

Glass is a Wyoming WISP with a strong temper. The Dave is Dave Burstein. Glass was referring to <http://www.fastnetnews.com/policy/56-us-and-canada-telecom-policy/560-obama-policy30-profiles>.

I responded and asked Glass to document his assertion. I received this which I am publishing only because Dewayne Hendrick and Dave Farber put it on their lists earlier today.

Glass: "Gordon: After a rather laborious hunt, I've managed to find a copy of Susan's testimony online. The hearing was before the Anti-trust Task Force of the House (not Senate; my mistake) Judiciary Committee, on March 11th, 2008. She says:

You might be thinking that the market will ensure that a non-discriminatory provider of Internet access will arrive on the scene if that is what users want. But we do not have a functioning competitive market for Internet access. Instead, we have regional duopolies (usually one cable provider and one telco) providing Internet access to 98% of the country. Prices are not going down and non-discriminatory Internet access services are not available. In fact, a JP Morgan analyst named Jonathan Chaplin recently made clear that cable and telephone companies are doing their best to avoid a price war:

"The broadband market is a duopoly," he said. "That should be a stable pricing environment. It's in their interests to compete rationally and preserve the economics of the market." [page 7]

In the remainder of her speech, she continues to harp on this (false) string, claiming again and again that there is only a duopoly in "98% of the country" when in

fact competitive ISPs -- including WISPs -- serve about that much of it! She seeks, by denying the existence of competitive broadband providers, to advance a regulatory agenda that would in fact greatly harm or even eliminate those providers.

For the full text of her testimony, see

http://www.openinternetcoalition.org/files/Crawford_Testimony.pdf -

[end of Glass's complaint.]

Editor's Note: what Glass asserts about competition from wireless providers is not correct. but that is a discussion for another day. In any case, between midnight and one AM on November 15 I told Dewayne that I thought Brett's attack was unfounded. He disagreed and published it. I also sent two private messages to Dave Farber asking him to think twice before republishing Brett's accusation. At about 8:30 on November 15 Mr. Farber republished Dewayne's note to his Interesting Persons list.

Now I have known Dave Farber since the fall of 1990 having met him in person for the first time at the Kennedy School NREN Conference of November 29-30, December 1, 1990 in Cambridge. Dave met Einar Stefferud at Rand in the 1960s, was a key per-

son in the development of token ring architecture and has been a behind the scenes player in the development of the internet ever since. I have been on his IP list since mid 1991. He has taught at Penn and Carnegie Mellon. In the past he has said that he publishes all opinions. I skim his list accordingly.

Thinking further as I see continued posts of Glass bashing Lauren Weinstein and vice versa is that what we have here is a reprise of 20th century flame wars, a decisive waste of time when the net is better used for problem solving. A forward looking approach must include such reality as distributed groups of experts in Europe and Asia as well as the US collaborating via the net to help the new Obama administration develop policy. That is the end I wish to embrace!

It seems that, if Susan sinned it was in not mentioning wireless internet service providers as sources of internet access. They exist, but in my opinion, they are not a practical source of connection for 98% of the population at least not at a monthly rate that consumers can afford.

Susan's and Kevin's appointments are the first source of HOPE in telecommunications policy I have seen in my country in the last decade. It would be far easier for me to

have kept quiet when I witnessed this attack. I don't enjoy this mode of communication and find it much healthier to avoid. But when mud is thrown and two people who in my opinion should know better pass it on to their readers with at least implicit editorial blessing, such action to me seems to be unconscionable.

Susan has been a valued list member here for I think at least two years. I wish I could write nearly as well as she. I read her testimony Brett so disliked. It is superb. But not even such a keen mind can satisfy everyone. To assert that on the basis of that testimony that Susan gave she is seeking, "by denying the existence of competitive broadband providers, to advance a regulatory agenda that would in fact greatly harm or even eliminate those providers." is utterly unsupportable. And when Dewayne Hendriks and Dave Farber - senior statesman who should know better pass this one to mail lists that seek to inform subscribers - it sticks in my craw.

Sanity Emerges as Dave Farber Offers Some Responses

November 15: Dave Farber is now publishing some feedback: this one from Carl Malamud is excellent: "Brett, I

think you were perhaps misreading Susan's testimony. She doesn't appear to be advocating the duopoly as a good thing, merely stating economic reality in a way that most economists would agree with.

A monopoly or oligopoly isn't an all-or-nothing thing. DOJ guidelines say a Herfindahl-Hirschman Index greater than 1,000 is a concentrated industry, and my back of the envelope calculations on market share (AT&T, 21%; Comcast, 22%, Verizon 13%) shows an HHI of about 1,400, enough to trigger a review by DOJ in a merger. And, I think it is fair to say the majority of people really do have a duopolistic choice: cable v. dialup/DSL. Again, this doesn't mean there aren't alternatives and isn't absolute, but it certainly is today's market.

The other thing you perhaps misread is that you seem to be thinking that her testimony was somehow justifying or advocating the duopoly ... my reading of her testimony is she was saying that the situation was not a good one from the point of view of consumers and she was arguing for a sharper eye on issues of common carriage, protection of speech, and discrimination.

It would be a real mistake to parse the transition agency

review staffers (which is what Susan is doing along with Kevin Werbach) into an indication of what policy is going to be. Their job is to look for problems, not solutions."

And to my surprise and delight this from Richard Bennett with whose positions I do NOT agree:

"I think the selection of Crawford and Kevin Werbach to oversee the FCC selections for the transition team is pretty inspired. One thing that should make IPers happy is the fact that they're both "Internet people" rather than "telecom people," which signals a recognition on the part of the President-elect that we're in a new world that calls for new ideas to meet new challenges.

Crawford is a former ICANN board member who understands the Internet as well as any of the lefty law professors in the net neutrality movement, and much of what she says about Internet regulation to protect political speech is quite reasonable. Her comments on duopoly do ignore the increasingly robust wireless options (we have 4 national 3G networks now, with more choices coming) but it's not unlike the market for Internet search: there are many choices in principle, but in practice it generally comes down to the Big 3.

Werbach has done some extremely interesting academic work applying network formation theory to the Internet. They're a balanced team, as they have reasoned their way to very different positions on net neutrality and Internet regulation in general. Just to show what a man if vision Werbach is, both Crawford and yours truly were panelists on broadband futures at his Supernova show this year.

I'm quite pleased with this team, looking forward to seeing their results."

So its good to see Susan rehabilitated. My only question: what was it necessary to do this to her in the first place.

Would that I Could Do This Kind of Due Diligence

Now let's look at the way Susan Crawford actually does work. Susan listens very very well. She gets her mind around the hairiest issues. She uses this list as it is intended - as an intellectual resource if a list member is willing to help her understand. And she knows to whom to go.

Frank Coluccio - (modest diplomat) - wrote here on October 19th - I was asked recently the following question by another list member

in a fascinating off-line discussion that lasted close to two hours:

"What would the perfect open-access network look like? Describe it if you could."

Needless to say, the question left me thoroughly flat-footed and mouth agape, at first, just as many other seemingly "dumb questions" have in the past. It's an instructor's delight, though, since questions such as this one make life a helluva lot more interesting than serving up the usual, well-scripted rote.

Would any of my esteemed colleagues and fellow network-ologists here care to step up to the challenge of answering this question by offering a functional description of what would constitute a perfect open access network?

One favor, if you please. Kindly keep your offering to ten thousand words or less. I'm sure that both the original inquirer and Gordon, alike, would be most appreciative :)

[**Editor's Note:** the person who stopped by to see Frank was Susan - we were not going to divulge that but in view of the above and in view of Susan's open acknowledgment a few days later on her blog a few days later [\[undance/1268/\]\(http://undance/1268/\) it seems reasonable to fill in Frank's very courteous omission.\]](http://scrawford.net/blog/ab</p>
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Rudolf van der Berg: The perfect network would instantaneously execute what I want to do in the way I want to do it.

Going one level deeper: Perfection would be: - Wireless - Unlimited bandwidth - always the shortest route (would require it to know any possible present and future state) - no configuring

Trouble is, this is the real world where we're dealing with trade offs. And trade offs have nothing to do with technology, but with economy. It's the trade offs that make the technology good enough given the situation. That is why I think technologies like IP, Ethernet, Wifi, GSM are so incredibly successful. They are 'perfection' within the limits of the socio-economic constraints that the world places on them.

Coluccio: Thanks, Rudof. I eventually gravitated to many of those same views, although not before first considering a number of abstractions.

One such abstraction that initially came to mind is the GiantZero

<<http://itc.conversationsnetwork.org/shows/detail1747.html>> described by Doc

Searls. Another is a self-fashioned form of singularity of connectivity elements, where all manner of media become spaghetti-ized into a glob similar to the GiantZero just mentioned, only a bit more physically rather than merely conceptual variant, which is actually more effect than substance. And lastly (for now), a modified form of Gilder's fibersphere <<http://www.seas.upenn.edu/%7Egaj1/fiber.html>> encompassing wireless that is both integral to the fiber (RF) over glass through the use of reflective-absorptive transducers, thus extended wireless to end points just about anywhere that fiber can reach without the need for ubiquitous radios) and external links used for input-output ports.

The last one mentioned above comes closest to a real manifestation of your first response, i.e., "wireless", albeit dependent on optical fiber underpinnings.

But as the need for all these thorny implementation's kept mounting and getting in the way of replicating the above mentioned abstractions in the real world, I suddenly realized that I was in the process of reinventing what we now have today, all the while trying to avoid introducing all the same restrictions, and, as you observed, "[T]he limits of the socio-economic con-

straints that the world places on them."

Paul Budde: OPEN ACCESS PRINCIPLES

The following principles will underpin negotiations and commercial arrangements between access providers and access seekers in respect of the supply of wholesale access and interconnection services provided by means of telecommunications networks (Services).

These principles will apply to Services whether or not they are regulated under the telecommunications access regime in the Trade Practices Act 1974.

* Access to Services will be provided on fair and reasonable terms in the spirit of industry co-operation with the aim of promoting the long-term interests of end-users of telecommunications services, namely the promotion of competition, achieving any-to-any connectivity and encouraging the economically efficient use of, and investment in, the infrastructure by which services are provided.

* Access providers will act in a non-discriminatory manner and provide Services to access seekers on equivalent terms to that which the access provides to its own retail operations:

* access providers will ensure that the price and non-price terms on which it supplies Services to access seekers is equivalent to that which the access provider provides to itself. There shall be accounting transparency for access pricing; and

* access providers will ensure that ancillary terms on which they supply Services to access seekers, including in respect of billing, technical and operational quality, fault detection, handling and rectification, ordering, provisioning and customer and service migration, are equivalent to that which the access provider provides to itself.

* Access providers will not unduly discriminate between access seekers in the provision of access to Services.

* The terms on which access is provided to Services shall be commercially negotiated by access providers and access seekers in good faith.

* Negotiations and contractual arrangements between access providers and access seekers shall be treated as commercial-in-confidence.

* Access providers will take a flexible approach in points of aggregation and interconnection given technical, commercial and practical considerations.

* Access providers and access seekers will include provisions in commercial arrangements that protect an access seeker's confidential information and relationship with its end-users while allowing access provider to engage in fair marketing in the same manner as its competitors.

* Access providers and access seekers will in good faith endeavour to resolve access disputes (including billing and non-billing disputes) between themselves in a timely manner. Simple, flexible, quick and inexpensive dispute resolution procedures will be included in commercial arrangements between parties that involve an escalating resolution process, including face-to-face discussion between the parties before recourse to mediation and arbitration.

COOK Report: But the very word "open" may have different meanings in different contexts?

Coluccio: To expand upon the number of areas in which 'openness' applies, or to demonstrate how similar concepts apply elsewhere ...

Whereas, in an earlier post of mine my allusions to 'singularity' related to a confluence of disparate types of connectivity media (wireline/wireless), but in the presen-

tation below Frog Design's Mark Rolston discussed at eComm2008 the quality of singularity as it relates to the changes occurring in handheld devices solely. Or so it would first seem.

He makes some interesting comments concerning the democratization taking place at the device level, but again he is focused primarily on the end users' appliance level experience (which handheld appliance experience, to many end users, just happens to be the only "it" that matters), along with a few other noteworthy points:

Keynote: "Defining the New Singularity" Mark Rolston - Frog Design

<http://ecomconf.com/blog/2008/05/defining-the-new-singularity-sdhd-video.html>

And later **Coluccio:** ps - here's the blog entry I cited in my previous message, which caused me to reflect on the many different domains in which "open" may apply:

Blog: What does "Open" mean for mobile? Barlow Keener | WhyDom | Oct 9 2008

There has been a great deal of talk about open mobile applications, devices and access since last year's FCC 700Mhz auction order for open mobile devices. The open mobile

proposal was teed up by Google as a requirement for the successful bidder of the 700Mhz C Block. The C Block covered the nation with a single spectrum license for a future 4G network. Google's open mobile proposal was analogized to the famous FCC 1968 Carterfone case which held that Ma Bell could not prohibit customers from using non-Bell devices, as long as the devices met FCC standards to prevent damage. As an aside, the cool part of the Carterfone analogy to the mobile industry is that the Carterfone device connected a mobile radio to a wireline telephone allowing Carterfone a 2-way conversation without the caller having to push "talk" like the radio user.

Cont.:

<http://www.whydom.com/2008/10/09/what-does-open-mean-for-mobile/>

Goldstein: First off, Paul **Budde's principles are very good, and can be broadly applied, as they are more about how business should operate than technically too detailed.**

That's useful because the original question is vague, because the word "network" means different things. What works for some "networks" doesn't work for others. It's not turtles all the way down.

We had a pretty good wire-line framework in the US about a decade ago. "Open" at the physical plant level meant access to poles and ducts, and access to unbundled loop plant. At the bit-pipe level, it meant access to unbundled lit transport services, and broader common-carriage rights to a range of services. That extended up to the traditional layer 2 boundary, including Frame Relay and ATM, and their faster form, raw DSL. And phone call payloads were sacrosanct too. Thus there was open entry into the ISP and related content/information businesses.

"Open" can also mean that the user of a network is not unnecessarily regulated. So ISPs were not regulated, and thus the regulated networks they rode on were open. This is almost counterintuitive, but if you have to submit to regulation in order to take advantage of open networks, then something's not open. That's part of the "neutrality" paradox, which focuses too high in the stack.

Joanne Hovis: Well, here's my first post to Arch-Econ after two years of reading.....

The attached document is my engineers' take on open in a mobile context. This is the engineering report we wrote for the Public Interest Spectrum Coalition (Media Access

Project, Free Press, New America Foundation, and so on) last year during the 700 MHz proceeding. It was intended for an FCC audience and submitted as part of the Coalition's filing.

It proposes a configuration in which a wholesaler handles physical layer and service providers buy dedicated capacity to resell at Layer 2 and/or 3, depending on the technology selected. The vision was a design with maximum flexibility-to allow the FCC to envision what openness would look like (and to understand that openness if feasible) without selecting among technologies.

The report also provides the technical discussion of how a larger, open pipe is far more efficient (with respect to spectrum use, engineering costs, network deployment costs, and peak speeds) than multiple closed bands.

The FCC staff did seem to engage this subject and we had extensive discussions on it. Needless to say, however, the FCC's final 700 MHz determination did not end up including an open platform, even as they adopted the language of "open access" to refer to their qualified open device and open application plan for the C Block.

Rollie Cole: Great question, especially if it provokes an interesting response from a 2-year lurker <grin>.

However, the answers so far emphasize the ARCH in Arch-Econ, rather than the Economics. How about this for an open network, emphasizing the ECON?

An open network is funded and regulated similarly to city streets (regardless of whether the physical analogy applies) (a) some general taxation, some INdirect taxation (say, tax on HD displays, HD cameras) (b) very tiny and generic restrictions, having to do with size (e.g. bits/hour), but not with application or content (perhaps some "emergency" priority, but NOT priority the sender or receiver can pay for -- e.g. fed ex trucks do NOT have "emergency override" on city streets.

Note this is NOT "free," any more than city streets are free -- but it is funded in a way that rewards use and abundance, rather than scarcity.

The ARCH would then be that form that would maximize (a) and (b) -- probably combination of high-speed wireless and FTTH.

OK, now start shooting <grin>

Kevin Barron: Excellent ideas Rollie. This is the first time the road/highway analogy has made sense to me. However, I would take it a step further: we need to take this opportunity to build out the net, just as FDR did with the highways. Our economic engine is broken and needs to be replaced. Rather than be worried about restrictions at this point, we need to focus on how the net can be viewed as the enabler of our stalled economy.

Brian Harris (new mexico AG's Office) From the perspective of a state regulatory advocate, I'd like to see the owners of the local distribution facilities going before state commissions and asking to invest in the network (in other words a simple rate-of-return approach). The economic incentive nowadays seems to be to skimp on investment. But I'd like to see those same owners of the local network prohibited from offering any services, their prime revenue stream would be offering seamless and equal access to any type of service provider, and the ratepayer-consumer would represent a secondary revenue stream.

Coluccio: Nice to "meet" you Brian, and thanks for the reply.

Some superb points you make, albeit some of them

arguable, or at least in need of a great deal more detail, naturally, otherwise why bother discussing.

First I'd like to state that I'm in total agreement with the need for separation of services/content and transport. At issue may be the number and type of physical layer network substrates. If you were to consider an hypothetical neutral transport medium, how many different types of physical media (Layer 1) would the custodian be responsible for maintaining and provisioning, in terms of wireless, fiber, copper, satellite, etc.? From there, capacity planning enters the picture, route admin, naming and address numbering (or not?) and so on. If the governance of the wireless sphere is different from that of wireline, how are those reconciled? Lots more to chew on as well, as you may have already known or now begun to infer.

But getting back to the ideal, I think that, given the availability of a suitable, neutral physical medium (made more feasible soon through the introduction of WDM-PON technologies <NOT asymmetrical, but symmetrical>, combined with millimeter rf capabilities, we would easily begin to see Layer 2 competitors sitting atop the medium begin to innovate and thrive on a level that would rival newly-

enabled energy technology startups. -- I became further invigorated on this topic of openness today in reading a blog post on open wireless access, which I thought was both apropos of this discussion and interesting. Yes, open.. but open what?

Open handheld device design seems to be all the rage today, with the G1 competing against the iPhone, etc. But also, how about open APIs within the network "operator's" domain? The airlink? L2/L3 protocols? Is the frequency band itself open? I don't mean to add too much junk on top of the main precepts already enumerated here, but I thought I'd toss this last paragraph in for good measure, just the same.

Later **Frank A. Coluccio** wrote: [in part]

By the way, Rollie brings up a very interesting point that I've wanted to touch upon ever since the inception of this list, but always thought it too pedantic-seeming or irrelevant. But I will now:

The very name given to this list, i.e., "arch-econ", is in an isolated kind of way redundant, since economics is usually one of the underlying considerations that an architect must assess in most fields of architectural endeavor. Economics is only

one, yet a very important one, of a broad array of disciplines and tools that the complete architect must use, in other words. I've made this point during seminars, only to witness the befuddlement of participants each time, and probably for good reason. The the word 'architecture' has been assimilated into the lexicon in a way that it is often confused with several of its dependent parts, namely design and engineering.

Rollie Cole To be just a bit pedantic back (OK, maybe a lot pedantic), architecture is still not everything. To run this analogy into the ground (pun intended), buildings of the same design and purchase price can still be financed in many different ways, owned in many different ways, and transferred (sold, leased, rented, given away) in many different ways. No matter how inclusive one's definition of architecture, there is still a number of separate roles for "economics" (and even more if "economics" is defined as "all non-technical issues"). For my own purposes, I just assume "arch-econ" refers to the combination/interplay of technical and non-technical issues.

Coluccio: Rollie, I think you're on to something here. Maybe I should get out more, but I've not recently come

across a suggestion to tax Internet-related things in support of infrastructure similar to how gasoline taxes, say, are used to support the maintenance of roadways. Hopefully you'll expand on this further, and hopefully others here may wish to, as well. --

Cole: I invite anyone who is familiar with the "TV tax" in Germany to comment. I have been told, that in addition to its regulatory aspect, part of the justification for the license fee for an individual TV set is to help pay for the broadcast facilities that send out the signal.

Something of this sort has been proposed for the US as a way to deal with copyright issues -- certain types of media are taxed for a fund that goes to compensate copyright holders (who are often NOT the original creators of the item being copied), and there are a number of proposals to tax the copying devices as well (which might well include personal computers).

Any micro-economist will point out that all taxes "distort" the market that might exist without the tax, usually to lower the amount of the taxed item that would otherwise be produced/earned/sold. But taxes on items are usually considered "more fair" than per head taxes,

and are sometimes easier to calculate and collect, along with all the "non-economic" purposes of wealth-sharing, encouraging some items and discouraging others, et al.

I am convinced that high-speed, broad coverage computer networks have important positive social externalities that will be short-changed if "society" relies on the amounts willing buyers and sellers of such networks are willing to accept. So my "dreamnet" does include "non-transactional" support designed specifically to bring forth networks that are higher-speed and broader coverage than those relying entirely on "transactional" support.

Tim Nulty (and others) have pointed out that a cleverly designed bundle of network and services can lead to much better networks (faster, more coverage) than traditional telephone and cable companies might provide, but even his examples, while a great step forward, still leave more externalities uncaptured (in my view) than would be the case if some "non-transactional" funding were added.

(Note it is possible to miss in both directions -- the "horror scenario" of the anti-muni crowd is that a badly designed and/or operated network will be worse than a

private transactional one and still require funding from such terrible sources as general tax revenues. I concede that is a real risk that probably has been realized in some places, but am willing to take the risk in return for the potential upside of a well designed and operated one.)

Joe Kelley (British telecom): Apologies is being a little late in contributing - and the topic is my virgin post to the forum too.

Utility payment for road usage doesn't discern who gets delayed in a congested street. If I've got box seats for the theatre, I want to get there on time. I will pay extra to guarantee to do so, rather than miss the start because it's important to me.

In your model, how do end users prioritise their 'bits' on a utility payment basis? How do they differentiate the applications that are of high value and low value?

And who guarantees QOS for the applications that need it? The device manufacturers can't and the apps developers will struggle.

I think that's the flaw.

Cole: Joe -- welcome to the world of posting!

My "dreamnet" does nothing DIRECTLY to solve the prob-

lem of congestion, as you correctly point out. I did allow for "emergency vehicle" override, but that would NOT get you to the theatre (or theater) on time, and the system does not generally allow you to pay extra to do so. BUT -- my system should lead to more investment in networks than otherwise, so "bigger" highways and thus congestion less often. However -- as with highways, traffic generally grows (perhaps at a slowing rate, as Andrew suggests, but grows nonetheless) so congestion is merely put off for a while.

So...a clear failing of the "Cole Dreamnet." On yet another hand (remember, we non-techies always have lots of hands/counterpoints), a private transaction based network has plenty of problems with congestion as well. I happen to think "society" is better off with a bigger network that gets congested occasionally, versus a smaller network that gets congested just as much if not more.

I do think (and suspect I am a minority on this list in so thinking) that a combination of "outside financing" for an initial large bucket of bits in both directions, plus an ability to "buy" bits above and beyond the large initial bucket (think of extra license fees for extra large trucks) would go a long way to getting you to the theatre/theater, but others on this list

have made the point time and time again that these sorts of pricing schemes have substantial disadvantages of their own.

Rudolf van der Berg to Joe Kelly: Do you know of any network providers that can offer QOS for applications that need it? The router builders can't build it and network providers don't use what's build as it distresses their networks too much.

Also could you tell me why a properly operated network would need to be congested in this day and age?

And just to take your analogy to its next level... The roads to Arnhem are generally quite accessible in The Netherlands... Except this week.. One of the most popular singers had a series of concerts there... How would you envisage QoS there, when everyone wants to go to the same place with their box tickets? You see the problems weren't on the national backbones but on the roads reaching the stadium. Your misconception lies with the fact that you think that your box tickets make you special traffic on the network. Others will feel similarly.

This in my opinion is the reason why the Paris Metro doesn't have Paris Metro pricing anymore.. When it matters the metro is so crowded

that paying extra doesn't give you an extra benefit. when traffic is low, it's value is zero. The margin where it did add benefit is so small that Parisians don't really experience it.

Brian Harris: Just a few observations: Traffic engineers have noted the phenomena that automobile traffic expands to fill available capacity. I don't know if this has an exact cognate for telecom networks.

Goldstein: Much, much more so. TCP/IP in particular is designed to fill the available pipe. It has no rate control and no real flow control. Its congestion control is the "slow start" algorithm: It gradually increments the number of unacknowledged bytes that the transmitter can have outstanding at a time (the window), and when the sending side detects that a packet has not been acknowledged in the anticipated time, it assumes that it was lost. It thus assumes congestion and shrinks the window back to one packet, and gradually raises it again. It's a saw tooth pattern. This is highly adaptive and allows a gigabit Ethernet link to feed a router that feeds a 256 kbps line through a finite buffer. Obviously packets will get dropped at the router, but the GigE sender will see the loss and slow down; it ends up sending little bursts, even if

the slower line is sending more smoothly.

So while it usually takes a new highway years to congest, a faster data circuit can still congest in milliseconds.

2. Private prioritization sounds a lot like a dedicated private network, and it was the multiplicity of such networks at the turn of the last century that prompted the Communications Act of 1934. So there would seem to be some tension between the ability to buy traffic prioritization and a mandated interconnection system.

Goldstein: Not really the same thing; the dynamics of voice traffic engineering and IP traffic are very different. There's a balance of economy of scale vs. economy of specialization. IP was not designed for streaming or higher-QoS-type applications, though it is possible to design a network that provides different classes of service with near-native efficiency. IMS is one such proposal that does not seem sensible, regardless of the vendor support behind it. (It seems optimized for creating demand for professional services.)

Editor: In answer to a question I asked about WDM PON from the conference at Trikala in Greece **Bill St Arnaud** said:

PON, with distributed splitters in the field, no matter whether it is WDM-PON, G-PON, E-PON, etc is an evil technology. It absolutely guarantees that a telco must stay in control of the network. And upstream bandwidth will always be a fraction of downstream bandwidth. There may be some argument for PON using home run fiber where the splitters are in the CO, as this saves on interface costs.

A much cheaper and more reliable technology than WDM PON is passive CWDM. It has been around for a decade. You can deployed 80 Gbps passive CWDM for less than \$500 - a fraction of the price of WDM-PON

Goldstein: There's more than one way to install a PON. Putting splitters near the subscribers does make things difficult. It minimizes the strand-feet of glass, but that's a cheap resource. FiOS is done that way, and indeed is aimed at being as closed as possible (evil).

On the other hand, home-run of glass to an old-fashioned wire center may be unwieldy too. The stuff is hard to splice and jumper, so building 20,000+ line main distribution frames is not an appetizing thought. And in many newer neighborhoods, there is no wire center nearby; it's

all fed from DLCs and outside plant cabinets.

What some CLECs have done is install PON terminal cabinets in the field and collapse the PON into the cabinet (pedestal). So it's a straight run of dedicated glass from the cabinet to the subscriber. This has two big advantages. One, you don't need to pre-wire the field with PON splitters and initially build out the electronics for maximum anticipated capacity. You add splitters and line cards to the cabinet as you need them. Two, it is more open; you can attach the distribution glass to whichever service you want, with different PONs for different services or providers. So the cabinet functions a bit more like a CO, but it's smaller and closer to the end users.

On October 22, Susan Crawford Summarizes on her blog:

Abundance

I'm grateful to Frank Coluccio for pointing me to George Gilder's Fibersphere piece from 1992. I'm spending time these days trying to figure out what an open access fiber optic network would look like.

It's astonishing what abundance could be unleashed by combining a few components: dark, unlit fiber; a coordinating entity that could ensure that different providers were using different wavelengths to communicate across that fiber; a small box with power and air-conditioning for that coordinating entity to operate in; and modulation schemes taking advantage of different frequencies. That's it - and then you'd have potentially hundreds of thousands of "channels," each possibly provided by a different vendor, each carrying the communications of thousands of knowledge-workers. It really would be the end of scarcity. Transmission would be the cheap element - device-manufacturers and coordinating entities would have to leap into innovation mode.

The way Verizon has built up its fiber network doesn't allow easily for this kind of unbundling, for many reasons. The top reason is that the potential interconnection points ("splitters") are out in the field, without power or air-conditioning, so no one else can interconnect there. Also the hardware, software, and protocol standards used

by this network are hard-wired to Verizon. You could interconnect right near Verizon's central office, but you'd need a lot of cooperation from Verizon.

I'm just beginning to understand that the architecture chosen by Verizon makes it difficult (if not impossible) to retrofit abundance and open access into their network. The company gets a lot of credit for bringing more fiber to more people. But what tradeoffs are implicitly being made?

<http://scrawford.net/blog/abundance/1268/>

Editor's note: I would give a lot for the ability to write a summary like that.

How an Astute Choice at the FCC Could Begin to Solve our Telecom Infrastructure Disaster

November 9 COOK Report:

Few things seem as intractable as the incumbent's stranglehold on our communications future. At the FCC one might be disposed to clean house and start over. Yet, from a pragmatic point of view, that might well take much more time and produce less desirable results.

The following outlines the possibility that President Obama, by one or two appointments at the FCC, could set in motion forces where the FCC could begin to make positive changes in our miserable telecom environment. And let these forces work while he tackles the other very grievous issues we face.

An Economics of IP Networks list member argued that it would be foolish to try to continue to work within the context of the 1934 communications act and within its 1996 revision. He closed by saying "We cannot solve this problem on the same level of consciousness that created it. An entirely new, expanded, and integrated view is necessary."

Chris Savage: Maybe. But to paraphrase someone who was once famous, we don't

create a new communications environment with the statute we want; we create new a new communications environment with the statute we have.

Suppose one were to look at the '34 Act from the following perspective: "What is the most I can accomplish under this piece of legislation to generate the end result that is most consistent with the public interest as it exists in 2009?"

Let me throw out some specific thoughts:

(1) Under Section 10 they can do more or less whatever they want in terms of regulating common carriage, or not;

(2) The whole end-to-end architecture of the 'net means that it is entirely plausible (and maybe even more so than alternatives) to treat Internet connectivity as common carriage, if that made sense (which would, among other things, take care of net neutrality entirely, more or less subsuming it under Sections 201(b) and 202);

(3) To the extent that there is a monopoly on dirt or the things closest to it, it or those things can be more tightly regulated than the rest;

(4) Spectrum could be used in any number of licensed or unlicensed ways;

(5) Devices could be authorized with any number of propagation/interference characteristics. I'm sure there's more, but you can see that we could be in a lot better place than we are, even with no new legislation.

So, with a tip o' the keyboard to Bob A's latest posts, I don't actually think we have a fundamental statutory problem here (although obviously one could make vast improvements on the '34 Act, as amended).

What we have is a failure of vision.

The economic forces acting on this industry are enormously powerful. Those forces will do what economic forces always do, which is to try to create a regulatory and market environment that causes money to flow from consumers to suppliers. Think of high-profit-and-revenue-

to-suppliers situations as "gravity wells" in communications industry possibility space. We will always tend towards one of them; the question is, which one? One that's really low (in terms of consumer benefits)? Or one that's only a local minimum, sitting on top of a high plateau (in terms of consumer benefits)?

That's where the idea of "smart regulation" comes in: we want to set up rules so that suppliers can make enough money to keep supplying while constraining them to do things they wouldn't "naturally" do (or not to do things they would). In other words, keeping us on a plateau of consumer benefit, while suppliers maximize their profits from what is available on the plateau.

Until a month or two ago, at least in this administration, and even to some extent in the last, it would be a sufficient answer to such an outlandish claim - the claim that regulation can actually accomplish something good - to state that it amounted to interference with the workings of the market. In fact, the pervasive Chicago-school, let-the-market-work-because-it-always-knows-best meme was - like John McCain's campaign - a casualty of the financial meltdown.

Unthinking deference to the market is, I assert, a dead ideology walking. It will stagger along for another quarter, or maybe - if the economic mess is a lot nicer than many now think - for another year. But there is now 20-30 years of very good, Nobel-Prize-winning economics (behavioral economics) that, when you think about it, pretty much guts the market-knows-best meme. See, e.g., Thaler & Sunstein, *Nudge* (2008) for a very readable explanation of why in the real world free-running markets won't produce optimal results, at least in a number of circumstances. (I will leave as an exercise to the reader the explanation of why markets for things like connectivity are not likely to fall into the "markets can sort it all out" category.)

What this means is that there are now Nobel prize winners to throw back at Friedman, Baumol et al., when those who want to push us into a very deep gravity well say that the market demands it.

But that doesn't necessarily mean that we will have the political will to resist the push.

The political will has to come from some economic force that stands to gain by disrupting the status quo - by, in effect, dragging us out of the

gravity well. In times past (that is, the Computer II era) that alternative economic force was IBM. Now I'm thinking it's probably Google, maybe Apple, maybe some others. Consumers per se just aren't organized enough to effectively and relentlessly push for their own interests. That force has to come from someone (or set of someones) who will make skads of money if there is (nearly) ubiquitous, (relatively) cheap, (reasonably) neutral, (pretty) high bandwidth connectivity.

And that's what troubles me most about the prospect of getting a new Commission that starts with an assumption, probably unstated, that we need to re-fight the same old wars. To the extent that we are on the cusp of something here, that something isn't tweaking the boundaries between ILECs and cable, or cleaning up universal service; and it certainly isn't about getting UNE pricing, or even interconnection pricing, right. That something is re-envisioning what the "public interest" in a "rapid, efficient, nationwide" communications system is, in 2009 and beyond. I would submit that it is commerce and person-to-person communication on an end-to-end basis. Focus on the ends. What's in the middle ought to be transparent. To the extent it isn't transparent, something isn't work-

ing right. It might not be obvious what that something is, but still.

On the issue of the Commission itself, I think Chairman Martin is a nice guy and a smart guy and politically very astute. But from all I can tell he lacks any sort of coherent vision of what the communications environment should be. I have a very hard time seeing any unifying or animating principle in what he tries to accomplish (other than, maybe, "let the markets work," as to which, see above). Hence he doesn't pursue, or enact, any sort of program. He just does deals, more or less distinct from each other. So when things fall apart for him - as the just did on the intercarrier comp/universal service thing, and as they did earlier this year on the retention marketing fight - he ends up on the losing end of 4-1 votes. He doesn't actually convince anybody; he either cuts a deal or he doesn't, which is very different indeed.

All that said, and as important as I think this stuff is, I also believe what I said earlier, which is that President Obama will hit the ground in mid-January with much bigger and much more urgent problems to deal with. So in the absence of some below-the-radar, ground-up effort to ensure that the new, improved, Obama FCC as an

appropriate vision for what this sector of the economy ought to look like, I fear we'll just get more drift.

Frank Coluccio: With all due deference to both you, Bob A. and others here, it appears that you're not giving due recognition to the rapidly changing landscape. Telecom (the service) is undergoing atrophy, and Internet has only begun to sprout. Yet most of the 'services' once viewed as telecom are rapidly being assimilated as IP applications onto Internet.

Savage: No, I get that completely. And at the same time retail access to IP applications, at least for residential customers, is going from the let-a-thousand-flowers-bloom world of (say) 1999 to a duo-and-a-half-opoly (two arguably fat-enough wires and some possibility of unaffiliated not-quite-skinny wireless). The key question for the FCC in 2009 and forward, stripped of all the folderol, is whether that's OK or not. If so, what's all the fuss about? But if not, then we have to conclude that the regulatory policies that have led us here need work.?

Frank Coluccio: Take this to the extreme and you wind up with in short order is a piddly few telecom services, for which most of the legislation being discussed here is devoted, and a potentially

wildly-raging environment that supports end point applications, including applications dressed up as telecoms. Now, I know that other factors come into play, which are usually found under the headings of program video and PSTN voice.

The latter two are "retail services", in my opinion, are not a part of the high-speed Internet access component of bundled offerings (unfortunately, I still have to refer to the triple-play, as though the three were organically dependent on one another) that we should be paying more attention to. PSTN and Video need to be regarded separately from basic connectivity, and indeed decoupled from it as well, and perhaps those two services can be treated finally as the tenants of underlying transport systems that they actually are.

Savage: I agree that POTS and broadcast/cablecast video are becoming less and less central, if not quite yet irrelevant. (Heck, I'm too old to stay up and watch Saturday Night Live like I did when I was a kid, but I didn't miss an episode this election season, thanks to my broadband connection. Plus an enormous amount of communication that would once have been POTS calls, either local or long distance, is now done via email.)

But you may, I think, have missed one of my legal points, which is that any communications lawyer worth his/her salt could, in very short order, write the FCC order that would withstand scrutiny in court and that would conclude with something like:

"XXX. For the foregoing reasons, as the Nation's communications networks have evolved, as IP-enabled and traditional PSTN technology has developed, and as consumer and business uses of the Internet have changed, we hereby conclude that the functions of providing Internet access to those who connect to it - both consumers and information and service providers - and transporting communications via the Internet, are subject not merely to our Title I jurisdiction (which, alone, gives us ample regulatory authority with respect to these activities), but also to our jurisdiction under Section 706 of the 1996 Act; to our Title III jurisdiction (to the extent it is provided via wireless technology); to our Title VI jurisdiction (to the extent it is provided via cable systems); and, ultimately, to our Title II jurisdiction as well. This does not mean that we should, or will, regulate the provision of Internet access like old-style plain old telephone service. As described above, however, it does mean that we have

the authority to ensure that the terms and conditions on which providers of Internet access deal with those who connect to the Internet, and with actual and potential competitors, are just, reasonable, nondiscriminatory, and in the public interest."

This was my point about political will or lack thereof. When the dominant political meme is one of deregulation, government-as-incompetent-bumbler-interfering-with-brilliant-markets, etc. - which it has been at least since 1980 - then you look at the law and look for ways that it either allows you, or compels you, not to regulate. (In that regard Computer II was a brilliant piece of regulatory jujitsu, accomplishing broad public interest goals by compelling the deregulation of certain activities and certain market participants, but not others.) But if the political meme is instead that intelligent regulatory policies can accomplish significant public interest goals (including those related to broadband), then the statute begins to look different and not so constraining.

I am not sitting here saying that the FCC should regulate "the Internet" under Title II. I am not, actually, even saying that it should do much different than it is doing now - if it/we/the country were to affirmatively conclude that

where we are, and where we seem to be going on the issue of broadband access is basically OK. Again, note that I'm an old-timer and remember when only big shots had car phones, when the fastest modem you could buy was 9600 baud, when consumer email was something you did with fellow devotees on a closed system like CompuServe. Considering where we've come from, maybe a duo-and-a-half-opoly is OK. But if it's not OK, I am saying that we do not need a massive re-write of communications law to take steps to fix it.??

Frank Coluccio: So, what matters very much here is the framing one chooses to assume at the outset. Are we attempting, on the one hand, to preserve the status quo by repurposing many of the earlier constructs whose original reasons for being were to provide oversight for something that is a now dying, or, on the other hand, are we viewing the end game as an environment that is well suited for providing ubiquitous connectivity?

Savage: I agree that framing matters, and I think that re-framing is in order. What I am saying is that taking steps in light of, and to implement, the new framing does not actually require a major re-write of the Communications Act.

QoS Versus Bandwidth - a Good Concise Summary

Editor's Note: **Chris Savage** asked about QOS and a predictable sparring match between Fred Goldstein and John Waclawsky resulted. But the sparring match was worth the summary.

Chris on November 10: Thanks. Very helpful. Let me see if I can make some 100,000 foot comments that both Fred and John will agree with:

1. Different applications have different requirements for latency and throughput in order to meet user expectations. Typical examples of applications with notable requirements in those dimensions are VoIP, streaming/live video, real-time multi-player games.

2. Broadly speaking, five things can slow down the delivery of a desired packet from End Point A to End Point B:

a. Delays at the server being asked to disgorge the packet.
 b. Congestion on links between nodes (e.g., server ready to send a packet, but not enough room on the link.)
 c. Delays processing a

packet at a node.
 d. Pure propagation delays (speed of light @ $\sim = 1$ foot/nanosecond)
 e. Processing or other delays at the computer at the other end point.

Any worry about implementing "QoS" in the network assumes that (a) and (e) are not the underlying cause of user-experienced bad service.

3. If there is no significant congestion on any of the links, then even if clever programming at the nodes puts packets associated with certain applications at the front of the line, it doesn't gain you much (or anything) in terms of user experience.

4. If there is significant congestion on a link, then IF there is a way to put higher-ranked packets at the front of the line at those links, that could improve the user experience of the affected applications.

5. There is controversy over whether this can be accomplished, for a variety of reasons. These include a potential mis-match between the nodes with the programming

to do the line-jumping and the nodes associated with congested links (i.e., the whole end-to-end system needs to cooperate in making this work), as well as the sheer computational burden of actually doing the line-jumping calculations correctly in real time.

6. There is also controversy over the relative costs of solving or avoiding service-level (as perceived by users) problems by (a) just adding capacity so ranking packets is irrelevant versus (b) instead investing in the computational capacity needed to give certain packets priority over others.

Is the above more or less a fair description of the dispute?

Scott McCollough: (7) Internet access providers want to move to value of service pricing, whereby they can assess a higher charge to deliver a "priority" packet because it is valued. But they don't want the *user* to be the one to determine what is valued - they want to do the valuing. Remember most of these guys grew up with ac-

cess charges and it is only natural that the access regime be applied to the Internet.

(8) Being a mere bit hauler is dull and boring, and if they just put in more capacity they are mere bit haulers. So they maintain scarcity (except for all the investment and expense in the systems to inspect, prioritize and differently bill) as a means to not be mere bit haulers. Now they are traffic cops too, and that can be really exciting and fun, particularly when you carry a badge issued by the government and are licensed to kill.

Nine: (9) to avoid mere bit hauling they also get into more exciting and (wrongly) perceived higher return endeavors like "video" or "content" or they package the whole shebang as "information service" rather than the basic transport that Internet access really is. (10)

Since they have their own wares to push because of (9) but face the problem of scarcity given (8) they now have to prioritize and are incited to figure out a way to favor their (9) rather than some "competitor's" "content", and since that "competitor" is "free riding" the network, see (7).

A Policy Note from Hendrik Rood for the Incoming Obama Administration

Rood: My main ideas when seeing this request.

One: Terminate the USF as it is financing already invested in construction of old school services that need no further financing.

Get rid of the term "Universal Service" ASAP as it has been utterly twisted in its meaning since 1907 (it's was coined by Theodore Vail, who wrote the slogan " One system, one policy, universal service" in the AT&T annual reports from 1907 till 1914 (then came the Kinsbury Agreement and Vail's goal was reached, so he stopped writing about the need for universal service in his reports).

Contrary to many scholars claims, Universal Service does not appear as a term in the 1934 Communications Act. It's current meaning as a social redistributive policy has been minted around 1975, by the AT&T regulatory affairs army to justify maintaining it's monopoly.

In it's modern meaning it has entered as a concept the Telecommunications Act of 1996 (or as some have called it to me the Telecommunications Lawyers and Consult-

ants Full-Employment Act of 1996).

Then create a new fund called the Rural Broadband Construction fund, and restrict that fund deliberately to (co-)financing the construction of passive network elements (e.g. Fiber optic cable, poles and radio towers).

Reconstruct it as a revolving capital investment fund which supplies an investment subsidy partially in senior notes, with low interest at start, preferential interest outpayment and a fixed annual upward sloping interest (say .5% annually), so that after a number of years it becomes attractive for the receiver to buy out the loan as interest will rise above capital market alternatives. Interest payments return into the fund. Secure the loans from the funds proportional to the (passive) assets created, not the company/organisation.

Two: Understand that deploying new technology in rural areas (Fiber, (fixed?) wireless broadband) is not something driven by incumbents, but by those who benefit first from it: A. Manu-

facturers of new broadband technology B. (Local) Construction firms C. The local communities that will be served by it So a smart fund must foster new rural entry: make local co-operatives or consortia of these interests eligible for construction (co-)financing by the fund. Let them also grasp that fiber allows far longer (local) loops (more than 10-40 miles) than current copper networks (up to 4 miles) enabling new network designs, that can bypass current local exchange buildings and rate centers and interconnect for voice termination at a higher level in the hierarchy. Long distance companies can pay a reduced voice termination fees at those higher level PoI, but then have to "pay" with leasing dark fiber or high bandwidth transport service (when opting for high band

width, than link the amount to an Internet traffic growth metric).

Three: Make a national register at the FCC that shows RoW charges per county, highway authority etc., as well as permit costs and other local taxes levied on construction efforts. Let the FCC also collect filings on and publish a database of the permit handling time performance of counties and other involved authorities, to create visibility of red tape delays in actual construction permits, slowest handling of requests, response times, most extreme RoW fees etc.

Four: Require the FCC to create the possibility for on-line querying and display a "top 25" of the worst performers in several areas of performance. This type of

benchmark visibility (a bit "name and shame" list) at federal level tends to work wonders with regard to the behaviour of obstructing authorities.

Somehow, I have the idea that many permit applicants in rural areas, that are confronted with the red tape (also rural independents) will happily provide input for that database.

Executive Summary

An Extraordinary Infrastructure Opportunity and Creativity in Holland pp. 1-6

On November 24, 2008 Bob Herbert wrote in the **NY Times**: "The idea that the nation had all but stopped investing in its infrastructure, and that officials in Washington have ignored the crucial role of job creation as the cornerstone of a thriving economy is beyond mind-boggling. It's impossible to understand. Impossible, that is, until you realize that bandits don't waste time repairing a building that they're looting."

Now that the looters have been removed from office we have an immense opportunity in telecom infrastructure if the right connections can be made.

CalTech physicist Harvey Newman summed up the situation to "arch-econ" with exquisite power when he said: "The focus on video as the motivation for true broadband [must be] temporary."

"Network applications involv-

ing access to, and sharing of large volumes of binary data as the basis of information, and ultimately as a basis of knowledge, are highly developed, but are not so visible in the world of entertainment and social networking, as they are in the realm of research. But soon corporations will learn to follow in the footsteps of the research community to handle and benefit from the knowledge implicit in such datasets, whether for healthcare or for other business processes, or for new forms of education, that complement web-page and video (more traditional) 'content'."

"Even in the days when walls of your home are live displays (the walls themselves, as extensions of current OLED developments, not just screens), it will be the knowledge behind the images, and the ways they are used to inform and educate, as well as entertain, that will matter most."

The message is clear that he new administration must enable the infrastructure top support this by building new fiber and by forcing the incumbents to unbundle.

Supercomputing 08 in Austin provided connections that will occupy the next two or three issues of the **COOK Report**. Perhaps not surprisingly they are from Holland as well. Meanwhile the rest of the introduction to the January issue explains some of the reasons for the Netherlands extraordinary flowering of activity in communications infrastructure.

The Role of the Global Fiber Evangelist pp. 7 -18

Frans-Anton Vermast explains how he became a lobbyist on behalf of fiber as infrastructure in the Netherlands. This is an excellent tutorial in the process of educating policy makers. It will help to inform the reader with regard to some of the processes that were important to the success of Amsterdam's fiber build and to the emergence of INEC (International Network of Electronic Communities) and its related alliances.

This text is a guidebook to an exceptionally important educational role of which few people are aware. It is also a guidebook to 21st century

education collaboration and sharing by a lobbyist that is so utterly different from the disreputable stench of K Street that it should bring welcome smiles of relief to reader's faces.

Why Regulators Can't Put Us Back in the Box, pp. 19- 33

Jaap van Till grants us first publication of his November 7th Jens Arnbak lecture in which he looks at how the digital and internet revolution have changed the face of telecommunications regulation.

Telecommunications are not there for the pleasure of the operators. Roads are not there for construction companies. Telecommunications are there for society and the economy.

. . . . I suggest that policy development should not be about the terrain or the jurisdiction, it should be about what we actually want these services to do for society.

His concept of Trias telematica where he calls for a balance of interests between state, society and operators is very significant. "Government and institutions should concentrate on things that apply equally in the eyes of the law to all citizens. Companies should dare to take risks and reap the bene-

fits if successful in uncertain and innovative ventures and if they want to lower risks they should be allowed to form brotherhoods to cooperate to solve shared noncompetitive issues. And add value in self-organized supply chains.

Users should be free to choose – and this is the most important message that I have – and they should have the freedom of choice, their own, for what they want to get and when. If I get a haircut I do not want to be forced to buy new shoes."

Where he gets most interesting and innovative is in pointing out that, when things become digital, they no longer fit into appropriate cubby holes. This is what he calls the "tilllevision" model. During the rest of the essay he breaks further new ground in showing how digital technologies continually break the boundaries of the stereo typical circuit-switched way of looking at the world. Horizontal planes or vertical silos don't fit well into this world where technologies slither from plane to plane depending on conditions of use and transect operational layers as they are used.

Finally Jaap speculates in a very informative and solid way on the collaborative behavior these technologies encourage. twentieth century

forms of regulation will fail because they ignore the collaboration that gives value and the civil society that is empowered by such collaboration.

Beyond Triple Play in the Netherlands pp. 34-41

Patrick van Eeckeren describes an exceptional home automation services platform that has been in trial in one of the Reggefiber towns in Holland and goes production on January first. He also describes a different system called "neighborhood life" that offers social networking capabilities. These systems go far beyond the capabilities of anything in the United States of which I am aware.

Symposium Discussion

Change is Coming to the FCC p. 42

Obama's FCC transition choices are superb. David Weinberger got it when he wrote: "This makes me so happy. Not only are they amazingly knowledgeable about the issues, they also share Obama's political temperament: Strong beliefs, an ability to listen, a respect for others that is manifested as gentleness, and a practicality that carries them past mere ideology. Change is coming to the FCC."

Regretfully two important mail lists published uninformed and misleading attacks on Susan Crawford before the stroke of midnight on the day the appointment was announced. It seemed that in testimony before the US Senate in March Susan had not paid enough attention to WISPs as a means of broadband access to satisfy a Wyoming WISP. In my opinion a ridiculous accusation. Susan's March testimony was on network neutrality a very sticky area that she navigated with brilliance.

In the meantime in October, displaying her indefatigable research drive, Susan made an in-person visit to list guru Frank Coluccio on the question of the design of an open access fiber network. This is one of the most critical issues facing us. And although simple in concept, when you get right down to the details you will find that it is made artfully obfuscatable by many possible architectural variants.

On October 19, Frank wrote: I was asked recently the following question by another list member in a fascinating off-line discussion that lasted close to two hours:

"What would the perfect open-access network look like? Describe it if you could."

Needless to say, the question

left me thoroughly flat-footed and mouth agape, at first, just as many other seemingly "dumb questions" have in the past. It's an instructor's delight, though, since questions such as this one make life a helluva lot more interesting than serving up the usual, well-scripted rote.

Would any of my esteemed colleagues and fellow network-ologists here care to step up to the challenge of answering this question by offering a functional description of what would constitute a perfect open access network?

One favor, if you please. Kindly keep your offering to ten thousand words or less. I'm sure that both the original inquirer and Gordon, alike, would be most appreciative :)

There followed a superb discussion for the next three days.

On the 22nd Susan summed up on her blog: "I'm grateful to Frank Coluccio for pointing me to George Gilder's Fibersphere piece from 1992. I'm spending time these days trying to figure out what an open access fiber optic network would look like.

It's astonishing what abundance could be unleashed by combining a few components: dark, unlit fiber; a co-

ordinating entity that could ensure that different providers were using different wavelengths to communicate across that fiber; a small box with power and air-conditioning for that coordinating entity to operate in; and modulation schemes taking advantage of different frequencies. That's it - and then you'd have potentially hundreds of thousands of "channels," each possibly provided by a different vendor, each carrying the communications of thousands of knowledge-workers. It really would be the end of scarcity. Transmission would be the cheap element - device-manufacturers and coordinating entities would have to leap into innovation mode.

The way Verizon has built up its fiber network doesn't allow easily for this kind of unbundling, for many reasons. The top reason is that the potential interconnection points ("splitters") are out in the field, without power or air-conditioning, so no one else can interconnect there. Also the hardware, software, and protocol standards used by this network are hardwired to Verizon. You could interconnect right near Verizon's central office, but you'd need a lot of cooperation from Verizon.

I'm just beginning to understand that the architecture chosen by Verizon makes it

difficult (if not impossible) to retrofit abundance and open access into their network. The company gets a lot of credit for bringing more fiber to more people. But what tradeoffs are implicitly being made?"

<http://scrawford.net/blog/abundance/1268/>

Some FCC Discussions p. 54

Chris Savage: I am not sitting here saying that the FCC should regulate "the Internet" under Title II. I am not, actually, even saying that it should do much different than it is doing now - if it/we/the country were to affirmatively conclude that where we

are, and where we seem to be going on the issue of broadband access is basically

OK. Again, note that I'm an old-timer and remember when only big shots had car phones, when the fastest modem you could buy was 9600 baud, when consumer email was something you did with fellow devotees on a closed system like CompuServe. Considering where we've come from, maybe a duo-and-a-half-opoly is OK. But if it's not OK, I am saying that we do not need a massive re-write of communications law to take steps to fix it.?

Frank Coluccio: So, what matters very much here is the framing one chooses to

assume at the outset. Are we attempting, on the one hand, to preserve the status quo by

repurposing many of the earlier constructs whose original reasons for being were to provide oversight for something that is a now dying, or, on the other hand, are we viewing the end game as an environment that is well suited for providing ubiquitous connectivity?

Savage: I agree that framing matters, and I think that re-framing is in order. What I am saying is that taking steps in light of, and to implement, the new framing does not actually require a major re-write of the Communications Act.

A Note from the Editor on the January 2009 Format and Presentation

This issue has an Introduction; an interview with Frans Anto Vermast; and article by Jaap van Till; a presentation by Patrick van Eckeren and three weeks of symposium discussion.

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 sarasworld.blogspot.com/behavioraleconomics/ for assistance with the masthead logo. Captain Cook now charts direction by looking at a compass rosette.

Coming in the February 2009 issue - out about December 31 an interview with Cees de Laat and Kees Neggens on origins of fiber in the Netherlands, Netherlight, e-science and tech transfer and light path networks - also with Frank Coluccio on fiber to the desk to and taking copper out of the networks. This material including a conversation with Harvey Newman will occupy at least the next two issues.

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

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