May 21st 2008

Faultline

The Journal of Quadruple Play Economics

Key Issues

DVB-T2 puts mobile TV on the back burner, says DVB-T has long life
Qualcomm and BSkyB, a scary unpredictable combination
Vodafone and BSkyB likely to fight over Tiscali spoils
US inches towards a Mobile TV strategy – no DVB-H comeback
Yahoo Microsoft talks back on, over ad cooperation, not merger
US Cablecos keep broadband and market share lead with 54.8%

Mobile and Mobile TV

Qualcomm takes largest slice of $30 billion wireless chip cake in 2007
MBMS not exactly limited to 7 TV channels says Ericsson
Dilithium tackles mobile video delivery

Finance

Time Warner Cable pays $10 bn dowry to separate from Time Warner

Triple and Quad Play

IPTV growing to $37 billion service business by 2012
DSL pricing up, but speeds up too says researcher
IPTV counts for European majors all headed upwards

Web Video

Netflix intros direct to TV device for its online video service

Legalities

Dish, NagraStar suit on NDS disappears in a puff of smoke

Worth Noting

Deals and Devices
Financial and Regulatory News
Mobile and Mobile TV News

Key Issues

DVB-T2 puts mobile TV on the back burner, says DVB-T has long life

- Mobile capability being de-emphasized in new standard
- DVB-T being pushed as having longer life
- DVB-T2 and DVB-H2 only for post analog switch off

The future DVB-T replacement, dubbed DVB-T2, and set for core technology selection some time next month, will not, at least not initially, address mobile TV after all. This move, if seen through, will ensure that the DVB Project doesn't confuse the world, offering a standard that could heavily impact on the DVB-H European preferred Mobile TV system. The replacement DVB-H standard DVB-H2 appears to have gone similarly quiet.

The DVB-T2 working group is understood to have pushed back that part of the specification which will make DVB appear more like the Japanese and US technologies ISDB-T and ASTC. With the addition of an ATSC M/H (mobile handheld) element sometime this Autumn, ATSC will allow for the delivery of HD, SD as well as Mobile TV (QVGA) from the same transmitters, and same signal. This will underpin the delivery of normal broadcast TV to handsets, from right across the broadcasting spectrum.

It has been a similar move that has rocketed Japan to the top of the Mobile TV stakes, where over 25 million devices have shipped, fed a signal from the existing TV broadcast transmitters using one of the 13 segments of the ISDB-T signal.

The request for technologies by DVB for its DVB-T2 second generation standard therefore had built into the spec the ability to add a mobile TV signal to DVB-T2 transmitters. We had thought that a DVB-H style timesliced multiplex could be made to sit within the DVB-T2 signal, and had raised the question of just what confusion this would give to the market place about whether or not to implement DVB-H in any given territory, or wait to have DVB-T2 emerge, in the 2010 timeframe, and deal with a shift to HD broadcasting and Mobile TV at the same time. Such a decision had the power to spread fear, uncertainty and doubt in the market, and devalue efforts to get on with Mobile TV now, especially in Europe, rather than wait until post analog switch off, when the new DVB-T2 would be available.

If DVB-T2 could also be used for mobile TV, it would create fear, uncertainty and doubt in the mobile TV market in Europe and damage the DVB-H message

The shift is, as we understand it from people that attended recent DVB working group meetings, was subtle, and came from commercial wisdom rather than technical problems. The requirement wasn't eliminated from the technical specification, but pushed backwards in

time. In June, when the first draft specification will be published, we would now not expect to see any element of the technology addressing mobile TV, but instead focus on the improved throughput efficiencies (of 30 to 50%) compared to DVB-T, which, along with a wholesale shift to MPEG 4 encoding, would mean that future DVB broadcast services would have plenty of room for expansion into HD services post analog switch off.

Already DVB-T is the most widely deployed Digital Terrestrial Television standard with services on air in over thirty countries and more than 60 million receivers deployed. Of course around 44 million of those are just in the UK and France, and many of the countries which plan to adopt it have either only just taken the decision or are ramping up numbers in Southeast Asia, Africa, the Middle East and Latin America.

The DVB-T2 web site now has moved to reposition the standard somewhat, saying that the new standard is not going to be designed so that these countries can leapfrog Europe, where DVB-T originated, but instead the "correct" order in which to proceed is to build DVB-T services under the full knowledge that there are cheap €30 ($47) set tops available now, and then as these multiplexes fill up, begin adding DVB-T2 for greater capacity, once Europe has knocked the kinks out of that technology in the 2010 – 2011 timeframe.

The decision was more taken out of "commercial wisdom" than out of the technical hurdles that the standard would have to surmount

This decision to delay the mobile element of DVB-T2 is perhaps driven primarily by commercial vested interests, and it will have a huge positive impact on DVB-H. Had DVB-T2 had a prominent route to mobile TV, then countries like ASEAN and much of South America, might have dumped DVB-H and moved wholesale to DVB-T2. The problem now is that DVB-H networks can be expensive to build, and especially difficult to cost justify when using a purely free to air mobile TV service.

This reinforces a notion we have put forward in our recent Mobile TV report, that the whole of South America is likely to opt for a technology that better fits with free to air mobile TV, and could either follow Brazil down the ISDB-T route, (perhaps Argentina next), or follow the US down the ASTC M/H route, as we expect Mexico to do.

Many South American countries have paid lip service to DVB technologies, but are not yet fully committed, and the failure to protect a roadmap that includes DVB-T2 supporting Mobile TV may be damaging, hence the idea that is it delayed, not eliminated from the spec.

The DVB projects specifically warns that DVB-T2 should not, in the short to medium term, be considered for the launch of free-to-air multichannel standard definition services targeted at migrating a general population from analog to digital, but pushes DVB-T as ideal for that purpose.

Key Issues

Qualcomm and BSkyB, a scary unpredictable combination

All the coverage surrounding Qualcomm's £8.3 million ($16.4 million) successful bid for a 40 MHz chunk of UK spectrum (1452 MHz to 1492 MHz) has the casual observer baffled. No-one seems to understand why the company would not only spend $16 million buying the spectrum, when no other major company was even prepared to bid, but exactly what it can do with it. Qualcomm watchers will not only be aware that the company has waged an obsessive war against DVB-H, pushing its own MediaFLO system, a similar but updated design, but will also be aware that Qualcomm has historically proven entirely new forms of communication by buying spectrum, creating the technology that will use it best, and then using that as a demonstration platform to go and conquer the world with the new technology.

That is the entire basis of how CDMA came to market, which established the company's gigantic intellectual property business in cellular.

In the context of the $ billions that Qualcomm hopes to make $16 million is a tiny amount of money, especially if for that Qualcomm can defend MediaFLO and give it a basis in Europe – if that's all that it has to spend – but of course it now has to decide whether or not to build a MediaFLO network and decide on the size and scope of such a build out. Qualcomm is reported to be spending $800 million on MediaFLO in the US, and last quarter spent some $76 million in the US, building out more and more markets for a service that is supposed to be taken to market by both AT&T and Verizon, the top two cellular operators there.

The combination of a News Corp company and Qualcomm creates a maverick that will not be inclined to toe the line

The big problem with that service is none of Qualcomm's fault. It is not well marketed by Verizon (AT&T has only just launched) and the content offering that it has been allowed by the major US content owners, leaves a lot to be desired with Fox and Disney's ESPN and other properties all allowing only their pre-digested made for mobile content profiles on the system. MediaFLO in the US would take off tomorrow if it was a free to air service with better content, but it is a

paid service with short form content – as we say it's not the technology's fault. AT&T has been able to convince Sony to launch a film channel on MediaFLO, which may makes some difference for its own offering.

What Qualcomm did in the US was take the pain away from the cellular operators of getting involved in Mobile TV and building out a network, negotiating for content and sourcing the devices. It has conducted two trials in the UK of MediaFLO technology working with News Corp's BSkyB and there are obvious strategies that it might adopt to cement that partnership.

For instance it might build out a major city like London, or even several cities with MediaFLO transmitters and then use them to deliver a huge chunk of BSkyB programming in mobile TV. Cellular operators frustrated that there is no 700 MHz spectrum, thought to be ideal for DVB-H, available in the UK, might join in as a route to market – especially Vodafone and O2. The other large UK operators, Orange and T-Mobile, have merged their TDD spectrum and entered a commercial mobile TV trial using TDtv from Nextwave.

The important thing would be to offer full programming from Sky, not made for mobile snippets, which although fine for cellular streaming snacking, are known not to take off in high enough numbers for full mobile TV.

Sky might decide to pay for much of the cost of such a new network merely in terms of reduced churn in its DTH operation

Sky might pay for much of this in reduced TV churn, and choose only to charge non Sky subscribers. The prospect off picking up more device business from Vodafone and others, might lead Qualcomm to keep device costs down, in partnership with its usual Korean allies – Samsung and LG Electronics, who both have MediaFLO handsets.

BSkyB has worked with all the major consumer electronics manufacturers in providing set tops, and has its subsidiary NDS to solve any insurmountable technology issues such as DRM protection.

The bouquet could be enormous. The 40 MHz spectrum slice is supposed to be split into one high power 12 MHz segment and multiple 1.7 MHz slices in slightly lower power, with two of these segments uses as a guard band between them. But since this spectrum has not gone to multiple players, MediaFLO could now apply for a waiver to allow high power transmission across the board, perhaps shifting those guard bands to the outer edges of the spectrum. That would have the effect of there being over 36 MHz of usable spectrum, which it can carve up any way it likes to fit current transmitter design – say

into three 12 MHz chunks. Each of these might allow MediaFLO to deliver 40 TV channels, and many of the existing Sky TV bouquet could eventually be accommodated.

In the US a small city, relying on just a couple of 5 kW 700 MHz transmitters plus 10 to 20 smaller gap fillers, could reach around 1,600 square kilometers. The equipment might cost $1 million and the cost of civil permissions and truck roll might double this. In L-Band the price can immediately double, because the spectrum has less reach. However fitting this out in low power transmitters, although making the problem more complex, might actually reduce the cost. Instead of one big powerful transmitter and gap fillers which repeat the signal, a satellite system (that's what Sky does best) could be set up to feed lots of synchronized transmitters at the rooftop level. The roof rights for this particular type of transmitter cost far less, but there are some penalties in continued Opex.

One area where MediaFLO claims supremacy is that it can either carry signals further without data loss or carry more channels - that could make the network a little cheaper to build

One of the areas of supremacy that Qualcomm boasts of over DVB-H for MediaFLO is that it has a 4 dB advantage, which means that for a given power level, at an adequate signal to noise ratio, it can get by with transmitters being further apart. The DVB project disputes this, but the benefit is delivered due to the turbo codes used in the outer forward error correction, which are more modern than those used in DVB-H. If we accept it for a minute then there is every chance that a strong in-building MediaFLO signal might be achieved with only $3 or $4 million of cost for each town even in L-Band. So while it might cost $400 million to $500 million to completely cover the UK with an L-Band MediaFLO network, to reach perhaps 50% of the population might be achievable for a fraction of that, concentrated as they are in the a handful of cities.

If anyone knows how to do this in the UK, Arqiva and National Grid Wireless, who ran the two MediaFLO trials and who run most of the broadcast transmission networks in the UK, should. There are no actual power limits attached to the license, only a provision for putting no more than 150 transmitters in any 50 kilometer by 50 kilometer area, which we think MediaFLO could get by with.

A statement from Qualcomm said that the spectrum would allow it to experiment with a number of innovative wireless technologies and given that UK regulator Ofcom has made this spectrum tradable, and technology agnostic, Qualcom can try out lots of things with the parts of spectrum that it isn't using at any point in time. It could use MediaFLO as a basis for music services – or run a US technology like HD radio or a European technology like DAB (the spectrum being in

1.7 MHz slices is because this is the size of a DAB multiplex and this spectrum is coordinated across Europe as DAB spectrum).

One of the other bidders was known to want to offer satellite radio services and funnily enough this is roughly the same spectrum that Dish in the US is using from a satellite for a trial with Alcatel Lucent DVB-SH mobile TV technology.

The reason this may work well for Sky is that it has virtually saturated he UK with almost 9 million households out of 24 million, taking its paid satellite TV service. Its quarterly additions have shrunk and shrunk and it has now had to embark on bundling with broadband and VoIP services to continue to deliver growth. The next step might be to take on an MVNO and it has a close relationship with Vodafone and could offer a device of its own, on an MVNO sitting on the Vodafone network, complete with a Sky TV subscription on the handset.

Just what Telecoms Commissioner Viviane Reding will think of such a non-standard Mobile TV approach is anyone's guess but we cannot see how she will stop it

Such a move would give it a huge value add, and a full quadruple play, and like Qualcomm, we should never be surprised at the audacity of a News Corp owned company, especially in a territory where it is threatened by breakthroughs like Freesat (the new free satellite TV service in the UK which threatens to have 200 TV channels by Christmas).

There are many other scenarios possible, and even a major breakthrough in the UK for MediaFLO would not necessarily see it flourish elsewhere in Europe. There would certainly be no TV roaming, since this spectrum just is not available in the type of size elsewhere, which would mean that to repeat the strategy at Sky Italia or at its other DTH properties in South America and Asia Pacific, the entire service might have to be thought out again from scratch

Just what EU telecoms commissioner Viviane Reding will make of a technology which is a direct rival to Europe's recommended standard DVB-H, being deployed in the UK, is anybody's business. But the key to this is will she or can she legislate against it? and we don't think so. There is a trend towards technology neutral spectrum allocation and Ofcom would have to repay the auction price if this spectrum were not genuinely technology neutral. But then again if making DVB-H a preferred standard fails at the first challenge, then it bodes badly for the rest of Europe in Mobile TV.

In the end, it will be commercial interests which Qualcomm manages to leverage, both among broadcasters like Sky, and among cellular operators, that will decide whether this spectrum is played around

with a little and then sold off, or becomes a springboard for broadcasting and an element in a whole new formula for quad play for DTH suppliers.

Key Issues

Vodafone and BSkyB likely to fight over Tiscali spoils

Sardinia based Tiscali is perhaps that last big sale of an independent ISP with a partial European reach, and newspapers in Italy and the UK, where its largest remaining operations are, suggest that Vodafone is serious with a bid so far up at the €1.4 billion level ($2 billion).

Tiscali is understood to have published a short list of bidders which will now be given access to the company's detailed internal finances, and the press have named Vodafone, British Telecom, BSkyB, the Swisscom-owned Fastweb triple play in Italy, and Wind Communications, another Italian company owned by Orascom. Carphone Warehouse, fresh from a $2.14 billion deal with Best Buy of the US, is also known to be chasing the broadband business in the UK.

Only some of these have genuine interests in both parts of the Italy-UK based business. Some 99% of revenues for Tiscali comes from those two countries, and while Vodafone already has broadband lines in Italy courtesy of its October purchases of Tele2 in Spain and Italy, for $1.1 billion, BT also has some Italian enterprise interests, and BSkyB has a strong DTH satellite TV business in both the UK and Italy, and has no Italian broadband lines.

Vodafone has the chance once again to add to its broadband tally in Italy, one of its strongest markets, but Sky may well counter bid

Interestingly Vodafone had an opportunity to buy Fastweb in Italy, complete with its legendary IPTV service there, to create a full quadruple play in Italy, but it felt that the $4.9 billion asking price was perhaps too much even for one of its premium territories and let that go to Swisscom. Already Vodafone has a cross marketing deal with Fastweb there but this could only make for a weak quadruple play.

The truth is that in the past it has been a single minded mobile giant, and Vodafone is only just starting to be ready to consider just how to manage a quadruple play set of services. It has only just worked out how to bill for dual mode services and because of its size finds such shifts in strategy glacially slow to engineer.

If it did acquire Tiscali, it would have to manage its way through a billing merger with Tele2 in Italy before considering how to benefit the fixed line service from bundling with mobile services.

But moves at the German based Vodafone owned Arcor show that it does have the heart for this type of transition. This week Vodafone cut an agreement to acquire the 26.4% interest in Arcor that it does not already own from Deutsche Bahn AG and Deutsche Bank AG, paying €474 million ($747 million) in cash. Vodafone has left these assets lying fallow, virtually running themselves, since it picked them up as part of the Mannesmann acquisition in 2000 and only began to work them into the mobile offering over the past two years or so.

Arcor has 2.6 million DSL lines in Germany, a 14% market share, and Vodafone still talks about fixed-mobile integration rather than fully quadruple play there despite the fact that in January it launched an IPTV service for the company, using Alcatel network equipment and middleware, NDS conditional access, Harmonic encoders and Pirelli set tops and home gateways.

That was seen as a first step in a long game of bringing a European wide quadruple play together, with this supplier combination to be rolled out across the wider Vodafone footprint, including Italy, Spain and potentially on the leased BT lines Vodafone works with in the UK. Now it could replace those BT lines, partially at least, with the substantial UK broadband lines that Tiscali has in the UK. At present Tiscali got €198 million of last quarter's revenue from UK broadband and the Homechoice IPTV service it acquired in London for $190 million in August 2006; and just €75 million from its Italian operations. The Tiscali UK has 1.87 million ADSL lines and Italy just 580 million.

The moves by Arcor, in Germany, to introduce IPTV, is seen as a long game to bring Vodafone quad play services to all of Europe

Tiscali has since launched a 50 channel IPTV service in three cities in Italy, also based largely on the Homechoice MyTV software, in Rome, Milan and its native Cagliari.

Add this to the Spanish Tele2 operations that Vodafone bought, and the partnership with Vivendi over SFR in France, which in turn can partner with Neuf Cegetel for Broadband lines, and Vodafone would be on track to build slowly towards a full quadruple play in all the major European markets.

When Vodafone acquired the 950,000 broadband lines in Tele2, it also received quite a few dial up customers, but we could put the cost per broadband customer at around €800 or $1,260. At the same price per broadband customer that would make Tiscali worth something just under €2 billion ($3.15 billion) and that means that the bidding has yet to start in earnest for the company. And BSkyB, which has made good on its purchase of one of the UK's largest DSL unbun-

dlers Easynet, could feel desperately keen to emulate that business by adding an Italian broadband operation, so may be competitive in the auction.

Tiscali has already sold off most of its ISP operations around Europe selling its German operations for $65 million, and Netherlands operations for $323 million. It still owns a small operation in the Czech Republic. Binding offers for Tiscali have to be in by the end of June.

Meanwhile Vodafone said this week that it has acquired ZYB, a privately-owned Danish company which operates a social networking and online management tool enabling handset owners to back-up and share their handsets' contact and calendar information online. The deal cost just €31.5 million.

Key Issues

US inches towards a Mobile TV strategy – no DVB-H comeback

While Europe is three years into the hype curve for Mobile TV, and still has not delivered very much in the way of a useful consumer experience, the US market is still unsettled and players worry about the shape the market will take there. The situation is therefore still extremely fluid and changes week to week.

This week, although there were no official moves, was no different, and AT&T has now told the Mobile TV community privately that it has dismantled the DVB-H trial that it had been running in Las Vegas, which it inherited when it bought the 12 MHz of Aloha Partners' spectrum last year.

At the time it looked like AT&T would use the US wide spectrum either as part of an LTE network in the distant future, or to mount a surprise attack on the Mobile TV market using DVB-H. That latter move now appears highly unlikely. That is not to say that AT&T has definitely decided not to pursue its own Mobile TV efforts. First it had to see through its commitment to launch Mobile TV services through MediaFLO, which it duly did two weeks ago, which will help it gain experience.

By dismantling its DVB-H trial in Las Vegas, AT&T has closed the door on DVB-H

Now opinion is divided on just how AT&T will try to dominate Mobile TV going forwards. It appears to be in a "wait and see" mode. The only decision is HAS taken is that it won't use DVB-H. We have also made the case a few weeks ago that once Dish networks goes ahead and adopts a hybrid L-Band 700 MHz strategy for Mobile TV using the Alcatel-Lucent DVB-SH technology this would mean it

would no longer be an effective partner for AT&T. A partnership with Dish works if Dish uses S-Band spectrum and plants terrestrial transmitters on AT&T base station sites, which will now not happen.

The L-Band 700 MHz hybrid decision is very much endorsed by the fact that we are told that Dish has taken an option to use the Modeo New York network which was leased off to financial groups when Crown Castle's Modeo shuttered that service. We had suggested this was a good idea, since it is in close enough spectrum to the L-Band Dish donated to Mobile Satellite Service TerreStar, when it took a holding in that company, so that a single radio could access both a satellite delivered service and the New York Modeo network.

AT&T also has an abundance of 700 MHz spectrum, and while it could use some of that for Mobile TV the dumping of the HiWire trial makes it clear that it doesn't really believe there is a business model to support using such expensive spectrum in that way.

By far the most likely outcome is that AT&T will embrace ATSC M/H when it emerges in the US, and back the provision of the relevant handsets in all of its bundles, subsidized or not, taking all the pressure off it for a definitive dominance move in Mobile TV prior to that happening. The merging of the two ASTC M/H candidate technologies by Samsung and LG last week makes this even more likely, because this is now building momentum.

Some say that the ATSC M/H compromise is a climb down for Samsung, but we don't see how it can be, given that LG's partner Harris will have to make softare changes to its technology

We have heard the opinion voiced this week that this step should be seen as a Samsung capitulation. That opinion has it that LG was winning the OMVC technical trials, and was about to be selected as the US ATSC Mobile Handheld standard, so the mighty Samsung was persuaded to give up it's A-VSB offering and throw in its lot with LG. We think this is highly unlikely. Harris, the US transmitters side of the company, which is partnering with LG on a joint offering with its Mobile Pedestrian Handheld (MPH) ATSC offering, has said that it could adapt to the rival standard in just 90 days, and said that it will go ahead and launch its digital exciter in August, and deliver the new standard in November – a drag time of 90 days. It seems likely that the best elements of the two standards will be hashed into a single standard by October, and that neither side can claim a victory.

What the OMVC did discover (the group made up of US broadcasters testing the candidate technologies) was that the system worked in trials at driving speeds and as far as 40 miles from the transmitter, and that the mobile signal does not interfere with regular digital TV broadcasts.

And just as AT&T felt compelled to follow the Verizon lead into Mobile TV using MediaFLO, Verizon will be equally compelled to embrace ATSC M/H to maintain its own competitiveness.

Another possibility we have heard in discussion is the idea that AT&T might also look to buy ICO Communications, which has already launched its satellite, purely for S-Band Mobile TV services, initially to car seat backs, which uses the same type of technology as Dish (Alcatel-Lucent's DVB-SH) in S-Band spectrum. While it is fair to say that Craig McCaw, who indirectly controls ICO, has made a good living out of creating services and then selling them to AT&T, his real investment right now is Clearwire, lined up as it is as a direct rival to AT&T wired and wireless services. He is unlikely to undermine any edge that Clearwire has in the market, such as its own Mobile TV strategy ready made, by selling it to the opposition.

So it looks like the US will have ATSC for free to air broadcasts, Dish with a huge paid satellite/hybrid service footprint, and a residue of specialist options such as ICO and satellite radio video, with a residue of the first to market MediaFLO customers.

Key Issues

Yahoo Microsoft talks back on, over ad cooperation, not merger

We didn't think we would be thinking about the Yahoo Microsoft axis again for some months, but already this week, as the dust settles on Microsoft's abortive attempt to acquire Yahoo, talks have already begun between the two to look at collaborating on Internet advertising, a move seen as a Microsoft initiative to sustain some kind of balance of power with Google.

Was the talk of a Google advertising partnership real for Yahoo or just a way of pushing Microsoft away?

During the merger discussions Yahoo managed to get Google to offer help with its search advertising strategy, which would have boosted Yahoo advertising sales, which in turn drove up the price that Yahoo placed on its business. Because Google search is both more sophisticated and backed by more advertisers, Google always earns more for each search carried out. Effectively Yahoo would have been sharing its inventory with Google.

At the time this was perhaps seen as simple stratagem to drive up the share value beyond where Microsoft was happy going, and circumvent the deal. Now that job is done, there may be little benefit in following through on the Google deal, and instead a similar deal with Microsoft may create a more balanced internet advertising market.

Of course even though the merger talks are off, there are repercussions which are still reverberating around Yahoo shareholders. Activist share holder Carl Icahn has bought heavily into the stock and is now seeking to put new board members in, who will vote for in favor of putting the merger back on the agenda.

We said at the time the deal was first announced that it looked the right move for both companies and said that when there was time for reflection everyone would see that this was a good merger to come back to. At present Microsoft and Yahoo together have around 30% of the search market, with Google taking a giant share of 60%. If Yahoo and Google tried to work together the chances are that there would be anti-trust implications and if these were successfully overcome, Microsoft would be edged out of the search market permanently, and search is a dominant part of the growing internet advertising pie.

Jut because two companies merge their internet search inventory it doesn't mean that they will make more money, that only happens if you have more advertisers in the wings

But just because two search players might merge their inventory, it would not overnight guarantee an increase in revenue for either, the way a deal with Google might. The same goes for any AOL merger or advertising relationship with Yahoo.

While there remains any chance that Yahoo might be acquired, its share price is stronger than when Microsoft first made its surprise bid, though it has fallen away somewhat. Investor sentiment appears to be saying – "There's probably a deal for the company somewhere," but if that turns out not to be true, its share value could soon be in the doldrums once again.

Key Issues

US Cablecos keep broadband and market share lead with 54.8%

The 16 largest US digital service providers had at the end of March almost 62.5 million broadband subscribers, after adding 2.2 million in 2008's first quarter. Cablecos still have the most at 34.2 million to the Telcos 28.2 million, giving the cablecos a 54.8% market share.

The cablecos increased their lead slightly in the quarter, adding 1.182 million, 55% of the total net adds, compared to the telco net adds of 1 million.

Rider Research, our US partner and publisher of The Online Reporter, has put together detailed numbers which are for sale as its Broadband Scorecard. Most of the data is available in the operators financial results.

AT&T leads the US broadband hit parade with 14.65 million but by less than 600,000 over Comcast's 14.05 million. Both are comfortably ahead of third place Verizon, which has 8.5 million and fourth place Time Warner Cable with its 7.9 million.

Broadband service providers	March 31, 2008 total (in million)	% of market	Net adds in Q1 2008 (in million)	% of total adds
Incumbent Telcos	28.207	45.20%	1.045	45%
Incumbent Cable	34.224	54.80%	1.182	55%
Total 16 largest US DSPs	62.431		2.227	

Comcast barely nosed out AT&T for most net new adds - 492,000 to 491,000. Cox added 304,000 to edge out Verizon and its 266,000 adds.

AT&T (148,000) and Verizon (263,000) added over 410,000 net new U-verse and FiOS pay-TV subscribers, a number that does not include any DirecTV and Dish subscribers added. In the same quarter, the major cablecos had a net loss of 107,000 pay TV subscribers.

DirecTV (275,000) and Dish (35,000) added 310,000 including what the AT&T, Verizon, Qwest and Embarq sold for them.

Broadband Subscriptions	Q1 2008 (in 000s)	Qtr. Adds (in 000s)
Sorted by Q1 2008 Subscribers		
AT&T DSL and U-verse	14,647	491
Comcast	14,078	492
Verizon DSL and FiOS	8,505	266
Time Warner Cable	7,924	304
Cox	3,800	100
Charter	2,768	86
Qwest	2,701	90
Cablevision	2,343	61
Bright House incl. Suddenlink	1,976	76
Embarq	1,340	63
MediaCom	688	30
Century Tel	586	31
Cable One	356	27
RCN	291	6
Cincinnati Bell	228	6
Surewest	200	98

The major cablecos added 1.25 million new phone subscribers while the telcos lost 1.72 million. That takes a lot of money out of the telcos' bank accounts and transfers it to the cablecos'.

These numbers also show that the top telcos know how to sell pay TV. AT&T (U-verse) and Verizon (FiOS) have between them over 1.5 million subscribers. Counting the satellite TV subscribers they have, AT&T, Verizon, Qwest and Embarq have 5.7 million pay TV subscribers.

If you add in almost 31 million pay TV subscribers that

DirecTV and DISH have and multiply that by, say, $40 a month ($120 a quarter or almost $500 a year) and the total of the cablecos' missing pay-TV revenue is a serious number.

Whatever revenues and profits AT&T and Verizon have lost in their residential phone business has been more than made up in revenues and profits from their mobile phone operations. Between them, AT&T and Verizon have over 138 million mobile phone subscribers. The cablecos have zero.

The eight largest US cellcos have almost 238 million subscribers. They added 4.025 million more in the first quarter.

Broadband Subscriptions	Q1 2008 (in 000s)	Qtr. Adds (in 000s)
Sorted by Q1 2008 Net Adds		
Comcast	14,078	492
AT&T DSL and U-verse	14,647	491
Time Warner Cable	7,924	304
Verizon DSL and FiOS	8,505	266
Cox	3,800	100
Surewest	200	98
Qwest	2,701	90
Charter	2,768	86
Bright House incl. Suddenlink	1,976	76
Embarq	1,340	63
Cablevision	2,343	61
Century Tel	586	31
MediaCom	688	30
Cable One	356	27
Cincinnati Bell	228	6
RCN	291	6

If you would like further details of the Broadband Scorecard from Rider Research email peter@rethinkresearch.biz

Mobile and Mobile TV

Qualcomm takes largest slice of $30 billion wireless chip cake in 2007

US teardown specialist iSuppli reckons that the latest figures out of Qualcomm and Texas Instruments, means that Texas is no longer the largest supplier of wireless chips.

By its latest calculations that sub-market for semiconductors is one of the fastest growing, with overall semiconductors growing at around 3%, and wireless up around 7.6%. So for either company, getting more out of wireless means getting more growth.

iSuppi pegged the industry for wireless semiconductors at $29.5 billion for 2007and includes application-specific semiconductors, not counting memory, in mobile handsets, wireless infrastructure equipment and wireless LANs.

Handset shipments jumped 16% in 2007, so despite price erosion this

keeps this semiconductor market hot with six of the top 10 suppliers achieving double digit revenue increases – but not TI.

Revenue last quarter for Texas was $3.27 billion, up just 3%, from a year ago, with most of it semiconductor revenue. By comparison Qualcomm's quarter was $2.61 billion, up 17% with some $1.73 of that in equipment and services rather than royalty revenues, around half the size of TI.

iSuppli had already reported that Texas was slipping behind in earlier mid year figures, but now confirms that this is the first time that Qualcomm has stayed ahead for a year and says that within Qualcomm, wireless components grew even faster than the company as a whole, by 24.1% on the back of carving out dominant positions in HSPA chips to go with its captive EvDO market share. In total it supplied 19.1% of wireless chips during 2007 compared to 16.7% for Texas, down 7.7%

iSuppli: Worldwide wireless semiconductor suppliers by percentage of revenues, 2007

2006 Rank	2007 Rank	Company	Percent change	2006 Percent of total	2007 Percent of total	Cumulative percent
2	1	Qualcomm	24.1%	16.5%	19.1%	19.1%
1	2	TI	(7.7%)	19.4%	16.7%	35.7%
5	3	STMicroelectronics	14.4%	4.8%	5.1%	40.8%
8	4	Infineon Technologies	54.3%	3.3%	4.8%	45.6%
3	5	NXP	(7.6%)	5.6%	4.8%	50.4%
11	6	MediaTek	81.2%	2.5%	4.2%	54.6%
7	7	Broadcom	15.8%	3.5%	3.7%	58.3%
4	8	Freescale Semiconductor	(19.2%)	4.8%	3.6%	61.9%
6	9	RF Micro Devices	0.1%	3.6%	3.4%	65.3%
10	10	CSR	20.2%	2.6%	2.9%	68.1%
		Top 10 companies	10.1%	66.6%	68.1%	
		All others	2.7%	33.4%	31.9%	
		Total semiconductor	7.6%	100.0%	100.0%	

Source: iSuppli, compiled by Digitimes, May 2008

Texas has been hit by both Nokia aggressively shifting away from reliance on a single supplier, now spreading its strategic component purchasing across 4 chip markers, while Ericsson has done much the same by using STMicroelectronics components in infrastructure for some of its 3G baseband platforms.

On the back of this STMicroelectronics surged to the number 3 ranking with a 14.4% rise in wireless revenue, while Infineon posted an impressive 54.3% gain.

Mobile and Mobile TV

MBMS not exactly limited to 7 TV channels says Ericsson

Ericsson pointed out to us that in our piece last week entitled, "MBMS is inevitably seeping into the 3G eco-system," that 7 TV channels is not the absolute maximum that an MBMS system can offer and asked us to pass on this clarification.

Initially as MBMS is deployed a 5 MHz carrier will only carry 7 TV channels of video at 128 kbps for each TV channel, around half of the resolution that we think is necessary to have the same apparent visual quality as DVB-H or other similar broadcast TV service. It might carry as few as 4 video streams at 256 kbps. However over time, as handsets have dual antennas to produce a level of radio diversity this will rise to 10 - 128 kbps TV channels or 7 - 256 Kbps TV channels. Clearly this is not about a logical limit to the number of video streams, more a data throughput limit.

Which is perhaps why opponents of MBMS have been successfully arguing that it cannot create a viable TV bouquet, on its own, or at least not a first, and is really a parallel development to broadcast Mobile TV, that perhaps will lend differentiation to Cellco efforts when working alongside a broadcast bouquet.

Mobile and Mobile TV

Dilithium tackles mobile video delivery

Online video is exploding as consumers download and stream video to their laptops, PCs and increasingly to mobile devices. That's no surprise given the popularity of devices like the Apple iPhone, Web sites like YouTube, Wi-Fi and 3G networks. Consider this - US Internet users alone viewed 11.5 billion videos in March, up 13% over the previous month.

But with so many formats, devices and network types like 2.5G, 3G, Wi-Fi and WiMAX comes a big problem for content owners and service providers - how do you adapt the video content to different formats, mobile devices and network types?

The conventional process of customized coding for each device and network type restricts real-time downloads besides being capital intensive and requiring extensive human interaction. At the same time there is pressure on content owners and broadband and mobile service providers to offer dynamic, high quality content over their networks to any device.

Tackling this seemingly insurmountable problem is multimedia delivery specialist Dilithium, which has just launched a content adapter to automate the real-time adaptation and delivery of video content over multiple networks to any mobile device.

Dubbed the Dilithium Content Adapter (DCA), the software product is described as well suited for services that are required to offer content in a range of formats to a variety of devices and networks. Dilithium executives say the company's patented technologies perform real-time on demand media conversion with minimal latency and eliminate the need for costly offline transcoding.

The Dilithium Content Adapter will swap network traffic between a number of different video formats

The DCA is said to support client access from different sources including HTTP and RTSP servers. File formats supported include 3GP, 3GP2, FLV, WAV, MP4, MPG and AVI.

Other features of the DCA include the ability to source content from live streams, downloaded files or on-demand streams and the ability to insert dynamic pre-roll and post-roll advertisements. Content from different sources can also be combined within a client session using the script based API.

DCA comes with interfaces to let operators optimize content for handset capabilities and screen resolution. An optional caching capability for frequently demanded content minimizes server resources and boosts capacity density. DCA is supposed to scale from small trial installations of tens of sessions through to distributed systems suitable for very large scale services through the use of service node clusters.

The system comes with a management application to monitor and configure all elements and to access a range of performance statistics. Dilithium said DCA supports different pricing models including existing capex model or based on the number of transcoded adapted streams.
This coverage first appeared in The Online Reporter from Rider Research, email peter@rethinkresearch.biz for contact details.

Finance

Time Warner Cable pays $11 bn dowry to separate from Time Warner

Time Warner has bitten the bullet to release Time Warner Cable from its clutches, but in the process it will extract a hefty $9.25 billion one time fee in the form of a dividend from the cash generative cable operator. It has set up loans and guarantees to make sure Time Warner

Cable has the wherewithal to make it as a separate company, and in total the cable operator will have to find $10.9 billion in dividends for Time Warner and its other 15% of shareholders.

The dividend will be paid out of an existing revolving credit facility and a new $9 billion, two-year bridging finance which TWC should be good to renegotiate into long term debt, and it can gradually pay down over the next two years. There was a lot of rhetoric in the announcement about both companies having greater, flexibility and being better able to compete. We think that TWC has all the problems that Comcast has, except it's half the size, and does not have the market dominance.

The deal is expected to close in the fourth quarter, subject to a favorable Internal Revenue Service ruling on its tax treatment as well as regulatory reviews and local franchise approvals. At some stage it will perhaps develop a name and brand of its own.

Triple and Quad Play

IPTV growing to $37 billion service business by 2012

IPTV subscribers will grow from 24.4 million globally in 2008 to 92.8 million by 2012 says the latest report from California based Multimedia Research Group (MRG) and this will bring in $37.1 billion of service revenue for operators in 2012, by which time these telcos will spend $5.5 billion in Capex annually. Europe will be the largest market, with Asia almost overtaking it by 2012, and North America next in size.

The forecast breaks revenue down into Access, Headends, VoD, Set tops, Middleware, DRM, and System Integration and lays them out across 4 major regions. It also breaks out the expenditures of the top 80% IPTV operators in each region. It is compiled from data on 600 IPTV Operators in over 70 countries.

The report also suggests that the sector will continue to consolidate, especially in DRM and Middleware,

Triple and Quad Play

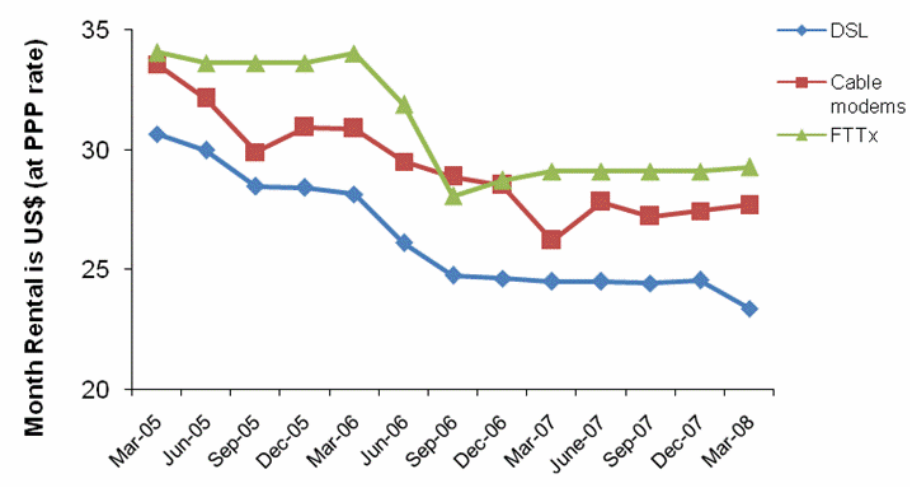
DSL pricing up, but speeds up too says researcher

Broadband researcher Point Topic in the UK reckons that both the speeds and the prices of residential DSL services are going up and rose by 4.7% and 9.3% respectively in the first quarter.

The global average residential DSL service cost and downstream speed rose in the quarter to $61.36 per month (up 9.3% on Q407) and 6,517 Kbps (up 4.7%) respectively.

The most significant speed changes were reported in Latin America, as average downstream residential and business speeds increased by 36% to 2,737 Kbps and 40% to 2,995 Kbps respectively.

Telecom Argentina introduced two new high speed business tariffs with downstream speeds of 20 Mbps while Telefonica del Peru expanded its range to include two new tariffs with downstream speeds of 5 Mbps.



Telefonica in Spain implementing the largest price change cut its entry level 'ADSL Mini 1 Mbps' service by 36% to $24.80. Belgacom introduced a new entry level service called 'ADSL budget', which at $22.47 replaced its previous entry level service, 'ADSL light'," said Point Topic.

Triple and Quad Play

IPTV counts for European majors all headed upwards

All the major telcos in Europe took major steps forward in the provision of IPTV customers, with Deutsche Telekom perhaps the most impressive after complaints that initially its service was late and over priced. It has jumped to 200,000 IPTV customers this quarter for its T-Home Entertain service up from 116,000 at the end of last year, a gain of 84,000 in the quarter. It now says that it can reach 500,000 homes by year end. Deutsche Telekom has around 14 million broadband lines.

BT also did well, with a leap to 214,000 customers up from just 120,000 at the end of 2007 for its BT Vision hybrid DVB-T VoD service.

Spain's Telefoncia put another 43,000 IPTV subscribers on during its first quarter , accelerating slightly over the 35,591 it put on in the first quarter last year taking its customer base 554,045.

Telefonica now has 1.8 million TV customers around the world

In all pay TV at Telefonica rose to exceed 1.8 million, but that figure included operations up and running in Spain, the Czech Republic, Peru, Chile, Colombia and Brazil, some of them as DTH satellite delivery, not all IPTV.

Finally Orange said that its TV offerings will not cover more than 98% of French households from July onwards as it has extended its domestic triple play from just being broadband based and reaching just 50% of French homes, to including a satellite option through Eutelsat, in a system set up by France Telecom subsidiary Globecast.

Orange rose its Broadband TV customer base to 1.41 million subscribers by the end of March 2008 (which we reported last week) up from 770,000.

Web Video

Netflix intros direct to TV device for its online video service

The whole idea of having a device which takes content straight from the internet to a TV set is that you don't spend your time navigating the internet when you really want to watch TV. And so anyone that wants to sell such a device has to have access to 1,000s of films and TV shows from its own integrated site. Which makes the new Netflix direct to TV device, made by start up Roku have a nice feel about it. The existing online video service from Netflix, which did have to be watched on a PC, can be directed to the new device called simple the Netflix Player.

The invention is the work of serial entrepreneur Anthony Wood, who bills himself as the inventor of the DVR, because along with TiVo, one of his earlier companies Replay TV, did contribute enormously to the DVR concept.

This is just an Apple TV class device plugged into the Netflix online service and even then it comes with the peculiar business model it is set up to keep the old Netflix business in play. People pay to have the online DVD rental service, and consequently get the online service for nothing. The device itself will cost $100 and is a straight retail proposition. Netflix has also contracted with LG Electronics to supply a Blu-ray DVD player that can view the service

and says it has two other such devices in the wings from major CE manufacturers – you can bet at least one is a gaming console.

Wood joined Netflix a year ago saying he would design a direct to TV player, but after a few months in the job went back to his old company Roku, which focuses on streaming video, usually for in-store advertising, to complete a product, taking with him an investment from Netflix. With over 8 million subscribers to its online DVD rental service, and 10,000 online pieces of video to choose from, there is a good chance that this will be one of the surviving products that takes video from the internet to a TV set.

The Netflix Player by Roku is roughly the size of a paperback book and is installed by simply connecting the player to a TV and to the Internet and supports connection to the TV using HDMI, Component Video, S-Video, Composite Video, Digital Optical Audio and connects to the internet via an Ethernet plug or Wi-Fi.

Legalities

Dish, NagraStar suit on NDS disappears in a puff of smoke

We did say that the $1 billion legal action brought by NagraStar and Dish against NDS would end quietly, and so it has, with a minor damage claim being found by a jury trial, and the whole thing disappointing as a spectacle.

It had promised to show spies and evil geniuses hacking NDS rivals' technology, instead it ended with a sharp dose of reality and a fine under $1,000 and picking up of the opposition's legal fees. The counter claim, that Dish only brought the case because it lost the bidding to buy DirecTV all those years ago, rings truer than the initial claims that NDS employed a hacker ring to take down the Nagra conditional access security.

Details from leaked NDS emails, stolen from the PC of one of its heads of security, were supposed to feature as the main evidence, but nothing of that nature has leaked out of the proceedings.

The action alleged violation of the Digital Millennium Copyright Act and the Communications Act of 1934, and the Electronic Communications Privacy Act, The Computer Fraud and Abuse Act, California's Unfair Competition statute and the Federal RICO statute on racketeering. The actual award was a single incident involving a test card used by NDS.

Worth Noting
Deals and Devices

UK set top maker **Pace Micro Technology** announced a new family of MPEG-4 set-tops for cable operators in North and South America at the Cable Show in New Orleans this week. The new devices had support for IP content delivery using DOCSIS channel bonding and tru2way (OCAP) and include the Aspen with a dual-tuner, HD DVR and CableCARD; the Apache, a HD CableCARD set-top and the Denali for SD, again including CableCARD.

Arris announced this week that it has entered into an agreement with **Comcast**, for the purchase of the latest generation of C4 Cable Modem Termination System (CMTS) chassis from ARRIS. The DOCSIS 3.0 C4 CMTS enhances the existing hybrid-fiber coax infrastructure to deliver higher Internet connection speeds of up to 160 Mbps using channel bonding technology.

Tandberg Television, now part of **Ericsson** said that its OpenStream Digital Services platform has been chosen by Portugal's ZON **TVCabo f**or its VoD services and that Tandberg will also be the integrator for the VOD play-out.

Sweden's **Dreampark**, an IPTV middleware providers said this week that Sweden's government-owned media company, **Teracom**, has chosen Dreampark's Dreamgallery and plans to offer IPTV services through its recent acquisition of IPTV operator **Svenska Basboxbolaget**.

Israeli conditional access supplier **NDS** said this week it has upped its presence in India with a new office in New Delhi. India's established Pay TV market leaders, **Tata Sky**, **Hathway Cable** and **Datacom**, as well as new market entrants **Bharti** and **Digital Entertainment Network** (DEN), all rely on NDS systems to protect their pay TV services.

Worth Noting
Financial and Regulatory News

US radio and advertising giant **Clear Channel** has accepted a deal to take slightly less in its sale to private equity firms, now valuing the company at $17.9 billion. **Bain Capital Partners** and **Thomas H Lee Partners** and a bank syndicate consisting of **Citigroup**, **Deutsche Bank**, **Morgan Stanley**, **Credit Suisse**, **Royal Bank of Scotland** and **Wachovia**, have now settled the legal actions over the acquisition which will see the share price go to $36.00 a share in cash,

CBS is branching out and has acquired technology web site **CNET Networks** in a deal valued at $1.8 billion including web sites News.com, ZDNet, GameSpot, TV.com and MP3.com. Broadcasters need to acquire more web properties to top up in internet advertising that which they are losing in TV ads.

The German monopoly commission is looking into how dominant cable operator **Kabel**

Deutschland is writing its channel contracts. There are claims that the company insists that smaller thematic channels have to be exclusive to Kabel.

If the **CBS** move above and also a **Comcast** deal for $175 million to buy social networking **Plaxo** are anything to go by, there is building a landgrab of online advertising targets. Comcast is the biggest US cable operator an Plaxo is really a business networking site rather than for social networking.

Conax, the conditional access provider owned by **Telenor** has acquired **Secustream Technologies** which launched itself at IBC in 2007 with its SecuShow product, which assigns a series of completely random media keys to each second of digital content being streamed via PCs, over IPTV or on any other pay-per-view or on-demand system, claiming it was a completely new approach. We expect this means Conax will follow the trend to enable the offering of IPTV content on PCs shortly.

Nokia has completed the sale of its Identity Systems to **Informatica** which was announced a month or so ago. Identity Systems operates in enterprise identity resolution.

Last week the **US Senate** voted to cancel the recent **FCC** ruling which allowed media companies to own both a newspaper and a TV station in the same part of the US. It did this through the unusual step of a "resolution of disapproval," to the ruling made last December. This will leave a number of media companies having to sell off some element or other of media ownership, likely to include **News Corp**.

The deal by which **Bell Canada** is being acquired by Private equity groups is stumbling over tightening credit lines in Canada, caused by the losses piling up from the sub-prime mortgage scandal. The banks backing the deal, led by **Citigroup**, **Deutsche Bank** and the **Royal Bank of Scotland** are trying to revise their terms under which they lend money to the buying group, which includes the **Ontario Teachers Pension Plan**; **Providence Equity Partners**, **Madison Dearborn Partners** and **Merrill Lynch Global Private Equity** and **Toronto-Dominion Bank**. Legal actions may well fly if they cannot reach a new agreement soon. Someone described it to the New York Times as "Clear Channel – The sequel." The likely outcome is that the deal will be re-priced downwards.

Video search engine company **blinkx**, which it is rumored is negotiating a sales of the company, posted a net loss of just $3.2 million for the six months to end-March, but on revenues of only $3.6 million. It said that it is ahead of plan in its move towards profitability. Video content hours indexed have tripled since last year and it is carrying 5 million searches for video each day.

Broadcom Chairman and Chief Technical Officer, Dr. Henry Samueli, and Senior Vice President and General Counsel, David Dull, have each taken leaves of absence as executive officers of Broadcom pending resolution of a civil complaint filed against them last week by the **US SEC**. The investigation relates to stock option granting practices. Samueli has also resigned from the Board and John Major, an independent director of the company will now

serve as non-executive Chairman for the time being. The company as making no comments about the SEC investigation except to say that it relates to options issues five years ago. Last month Broadcom settled a case with the SEC over its investigation into stock option grant practices paying a civil penalty of $12 million.

Eight former executives from the **AOL** side of **Time Warner** are being charged by the SEC with inflating the company's online ad revenues by over $1 billion between 2000-2002. Four of these executives have already agreed to settle civil charges by paying the SEC $8 million in fines while the other four are contesting the charges in court. The SEC says that revenue inflation was caused by giving money to advertisers to buy online adverts they otherwise could not afford.

Worth Noting

Mobile and Mobile TV News

NEC said this week that its German subsidiary has been selected by **Swisscom Broadcast** to build out a DVB-H broadcasting network. Presumably, since it needs to be working in a few months, this is simply confirmation of what they have been quietly building these last few months. Sinc it needs to be operational in time for the European football championship 2008. Initially Zurich, Bern, Geneva and Basle will go live but so far this involves only 26 transmitters, and NEC is only delivering 19 of them, so some other transmitter manufacturer must have provided some. In a separate release Swisscom's said that the remainder of the DVB-H infrastructure came from **Nokia** and **Nokia Siemens Networks**. The rest of Switzerland can watch the European soccer tournament on the Vodafone live! portal using streaming cellular.

Nokia said this week that its Music Store in Sweden has gone live with millions of tracks, independent labels, and local Swedish acts to Nokia devices only at present including the Nokia N95 8GB, Nokia N82 and Nokia N81. Tracks cost 10 Swedish Krona and albums 100 an a monthly subscription for PC streaming for 100 Krona.

Orange and **Nokia** this week announced a strategic partnership, extending an earlier agreement signed in February committing them to a three year partnership, including the addition of ten Nokia handsets to the Orange range and combined efforts on music, games, advertising, maps and location services. Looks like their falling out of Ovi is pretty much over.

Faultline is published by Rethink Research Associates, 4 Metro Central Heights, 119 Newington Causeway, London SE1 6BA
Tel: +44 (0)207 407 9848 Fax: +44 (0)207 900 2225

Faultline Principal Analyst: Peter White peter@rethinkresearch.biz
Research director: Caroline Gabriel caroline@rethinkresearch.biz

About Rethink
Rethink is a thought leader in quadruple play and emerging wireless technologies It offers consulting, advisory services, research papers, plus two weekly research services; **Wireless Watch** which has become a major influence among leading wireless operators and equipment makers, and which has pioneered research coverage of WiMAX; and **Faultline,** the Journal of Quadruple play Economics, which has become required reading for anyone operating in and around quad and triple play services and digital media.

Sales contact details
Peter White,
+44 (0)1590 624530
Mobile: +44 (0)7734 037414
Email: peter@rethinkresearch.biz

Recent Reports by Rethink include:
The Road to 4G- Operator Deployment Plans - June 2007
Quadruple Play - Method or Madness? - November 2007
Searching for a Mobile TV Business Model - April 2008
Base Station Technology Forecast 2008-2012 - April 2008