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SPECIAL REPORT



MOBILE TV

Beyond the Limits • Mobile TV and the “Hybrid” Solution

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ALCATEL

EDITORIAL

Broadcast Mobile TV is no longer a dream. In 2006 it became a reality in Europe with the launch of DVB-H in UHF and T-DMB commercial services in Italy and Germany, and dozens of trial services currently in a pre-commercial stage.

Reflecting a trend for more personalized TV consumption, it is estimated that broadcast mobile TV users will account for more than 10% of the population covered by the service in Europe by 2010. It's a massive potential market... as soon as the coverage is there.

For the moment, feedback from both German and Italian users shows that when they do have reception, the service is very good. However as at time of writing, the fact is that coverage remains limited when users move, poor when they go indoors, with a limited number of TV channels in offer only available in major metropolitan areas.

At MIP-TV in Cannes, we discovered the "Unlimited Mobile TV" project of Alcatel and an eco-system of major players in the European market – an alternative service project using a "hybrid" scenario that aims to solve the issues of coverage, frequency allocation and roll-out that have been bugbears until now.

In this Special Report, through a series of high-level interviews, Cleverdis presents the current state of affairs with the Unlimited Mobile TV project, and gives the roadmap of the hybrid solution.

While valuing the achievements of other technologies and services currently in their project stages, this Cleverdis Special report highlights the specific value-add of this exciting new DVB-H project in the S-Band.



Richard Barnes

Editor in Chief
Cleverdis



Herbert Mittermayr

VP Marketing
Alcatel Mobile Broadcast
www.alcatel.com/mobiletv

ABOUT UNLIMITED MOBILE TV

Tell us the story of how Alcatel got into Mobile TV... and why the Hybrid Solution?

Alcatel had, for a long period of time, been evaluating the different possibilities of TV on mobile phones. We are, as you know, quite a significant player in the fixed DV and IPTV domain and are practically the leader in the field of IPTV.

As a simple straightforward consequence we engaged in Mobile TV as well. As TV is a mass market concept, it was important to establish a mass market service on the mobile domain.

This is quite easy to say but quite difficult to realise, because when we talk about a mass market it should be available everywhere and should be available for millions of customers in parallel. It should have with plenty of channels ... not just two or three or ten, but perhaps 30 or 40 or more.

The same terminal should also be able to be used across Europe. It was all about the availability of spectrum, because this was the denominating factor for the system.

We simply went about finding a frequency that would be available all across Europe ... now ... in a short time frame... and that would be useable from a regulation perspective.

When you do this, you come to one frequency, which is S-Band. It's not UHF, it's not L-band ... there are plenty of other minor bands which could be used in some occasions but not in a harmonious deployment across Europe.

It's an absolute precondition that if your Mobile phone works in roaming conditions, your Mobile TV does as well. Likewise, coverage indoors and in rural conditions, just like for mobile phones, must also work for Mobile TV.

That led to the discussion about a system... what kind of system could benefit from these frequencies. Our frequency has one precondition. That is that we needed to use a satellite, otherwise we could not get the frequency. As it turns out from a business perspective it is simply cheaper to distribute a large number of TV channels over a whole country with a satellite than with any other technology.

We've heard about DVB-H in UHF... How is this different and what improvements have been made?

We believe that DVB-H as such is a good standard for various reasons. It's European driven, there is a lot of push behind it, and also from the performance perspective for the end user it is quite a good technology. What we've

done, together with our partners, is to put our brains together and enrich the DVB-H standard with some additional technical features. We've also improved reception quality, and transferred the frequency where DVB-H is used to the S-Band. In the June board meeting of the DVB forum in Geneva, it was agreed that there would be an extended standard of DVB-H which is called DVB-SSP (Satellite Service for Portables).

There are many supporters for this project and we are currently working on standards that will be finalised by the end of this year. This will give us the security that for terminal manufacturers there is a stable situation for the technology on the market.

What kinds of feedback have you been getting to date?

There are two kinds of discussions. One is centred on the technology. This satellite/terrestrial technology is not an easy technology. But the operators we've spoken to feel this is an absolutely credible solution and we have recently announced, together with Orange that they are joining in the testing with us and the CNES in France.

The other kind of feedback is about the business case, which is based on deployment costs. This is driven by the terrestrial repeater network which you need in any case. The network deploy-

ment costs are driven firstly by the number of repeaters you need... several thousand to cover a single country. This is where S-band is interesting. It's S-UMTS, which is practically the same frequency as UMTS band. So when you deploy terrestrial repeaters for DVB-H, you can easily reuse the sites and antennas and feeders and power supplies of the existing 3G cellular sites. This gives us a big advantage in cost terms. This is the strongest argument we have today.

What is the time frame for rollout?

In the ecosystem with our partners we have defined a very clear schedule. We will have the standard by the end of 2006. We will have the chipsets from DiBcom and Philips by Q2 2007. This is early enough to have the terminal manufacture in quantity by Q4 2007.

In parallel we have the repeater development – and we will have the quantities of repeaters in the requested time frame... by Q4 2007... and last but not least there is the satellite construction which is ongoing, which is in time to have the satellite in orbital position – up and running by 2009.

It is important to underline the fact that we have already signed an agreement with Eutelsat, and filed for an orbital position.

This was a precondition for being granted the frequency licences across

Europe. Put all that together and you compare it with a deployment in UHF or other frequencies and you will find that we are even earlier on the market with a country-wide deployment than you can ever have with UHF, for the simple reason that UHF will not be available country-wide before 2010 or 2012 – as it depends on the switch-off of analogue TV.

Another advantage in S-Band lies in the small antenna and terminal size. Do you think this will help sell the terminals?

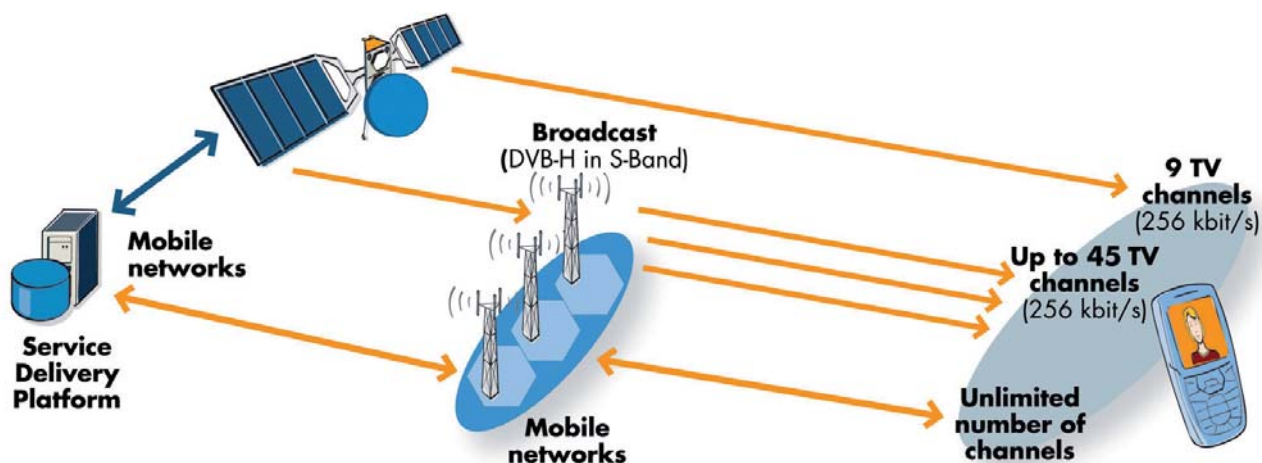
One of the difficulties in UHF is that you need a relatively big terminal and a very long antenna. With S-band, this is suitable to a handset in the same size as a mobile phone, and the antenna is only 6 cm long, so it can be built into the handset.

This means you can easily build in a second antenna, giving antenna diversity which for reception quality is a very important point.

Are you very excited about this project?

I have never had, in my entire career, so many positive responses on a brand new idea in such a short time. It's incredibly positive, because there are strong arguments for our customers simply from a business perspective. It really enables them to be at the core of the value chain and save a lot of money. ■

Alcatel Unlimited Mobile TV Solution



THE SYSTEM EXPLAINED

“... We believe S-Band has a huge potential...”



Christophe Allemand

Mobile TV Program Director
CNES

www.cnes.fr

Can you give us a brief overview of the work the CNES has been doing with Alcatel on developing a “hybrid” Mobile TV solution, and the research projects that have been commissioned in this sense?

It's complementary work, because as a space agency, our aim is to develop a real partnership with companies such as Alcatel today in developing new industrial activities. We also wanted to get an independent and complementary view of what the mission should be, to complement the broad view of the system and the mission that we would be working on together.

We've been working on three market surveys – two were conducted in 2005 and one began in Spring 2006 and is still under way. The first, completed in early 2005, was to check on the feedback that we already had – especially from South Korea and Japan – to be sure that we

could get the same expectations on the customers' side in Toulouse as in Seoul or in Tokyo.

Would the customer expectations be the same? One of the first main findings in qualitative terms was that for potential users, Mobile TV was not perceived as being another mobile gadget, but that there was a real need for TV on the move. Screen size was seen as very important. People want mobile TV on screens that are generally more than 3 or even 4 inches if they're going to be watching programmes for any length of time.

How important was image quality to those surveyed?

Very important. Like I said, the first part of the market survey in 2005 was really qualitative. There was a focus group and we were able to show people some prototypes... different screens, different programmes and so on. Immediately there was a very strong impact and a negative reaction whenever we suggested that maybe there could be some lack in coverage – in the quality of the picture and so on. There expectations were very clear. People want a comfortable screen size, and they want excellent reception too, everywhere they are. They want to be able to enjoy their programmes, not just to guess what's happening. They especially don't want any interruption to reception when they move from one place to another. There should be no discontinuity or lack of coverage – even for a few seconds.

What important facts came from the other surveys?

One of the most important things is that people said they did not want to lose signal when they left the main metropolitan areas. Even people who live in Paris said that if

they could not receive their Mobile TV in country areas they would be much less interested and would pay less for the subscription. There was a very strong impact of this potential theoretical lack of coverage.

Have you been able to estimate the importance of roll-out?

Yes, from our studies it has become obvious that the time frame of the deployment will be important for potential users. Is it acceptable for the people to know that in the first step only the biggest cities are covered, and then their suburbs and then a couple of years later the mid-sized cities?

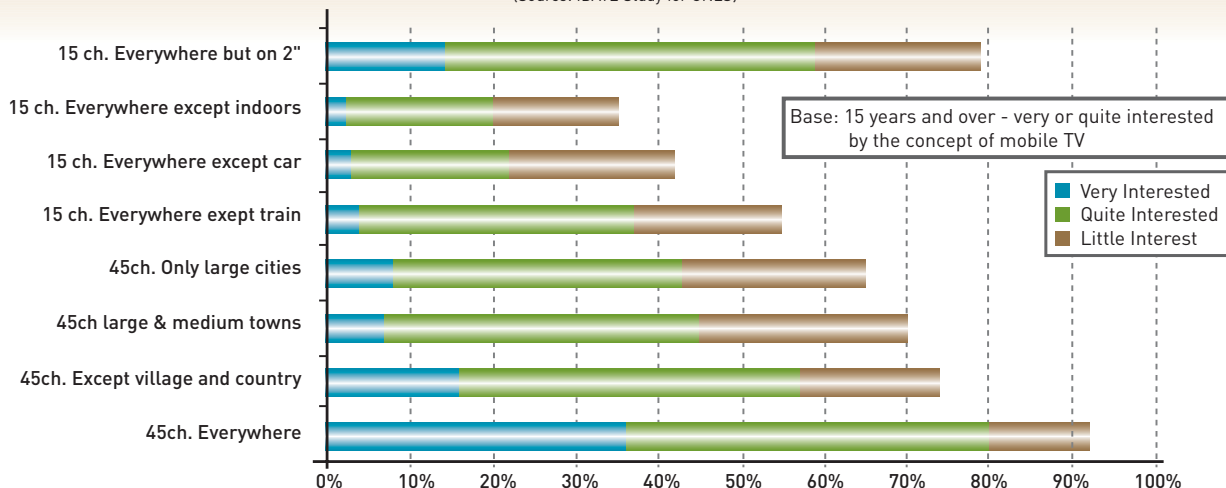
If, in your daily life, you move 20 km. in one direction and 20 in the other, you will only use the system if from the start it covers your whole living area. People who commute a lot are the most interested in Mobile TV. It means that to fully serve their needs you have to cover the full agglomeration of the area they live in. Take Paris, Berlin or Rome for example. The whole agglomeration covers a very large area... sometimes 100 km across. If you have a deployment strategy for the city only, then you're out! The other thing is that indoor coverage is also extremely important. It has been confirmed by many tests that most users want to watch their mobile TV inside, and that they need to have unflinching reception here as well. So if you can't deliver a system that effectively and efficiently reaches commuters in suburban trains and buses, as well as users inside their apartments or office buildings, you're out!

Most testing done to now has concerned UHF band DVB-H. Having seen the results of those tests, what are your thoughts about coverage?

Comparative interest of different offers

The continuity of the service is a very important factor

(Source: IDATE Study for CNES)



“We strongly believe there is a need to watch TV on cell phones anywhere.”

As regards coverage, when I look at the market surveys, I feel that we are very far away from consumer expectations.

Tell us about the tests currently under way of the Alcatel hybrid system...

We started testing at the end of last year. The deployment itself started in April. The key point is that Orange France is a partner. We needed a mobile operator to be a partner to get access to their sites to install the repeaters of the hybrid solution. So the deployment started in April and was fully operational in the first part of May. We've just finished the first two months of outdoor testing.

What's very interesting is that since the hybrid solution will have general total coverage, we conducted the tests from the very centre of Toulouse to the suburbs and even rural areas, and we've been getting the technical feedback about propagation in dense urban areas right out to country areas... In September we will continue testing in rural cities just north of Toulouse. In the hybrid solution there are two very important points to be checked. The first is how the satellite signal and repeater signals complement each other and show an improved performance in dense urban areas – in big cities. We are now checking that it works. The second point is to show that thanks to the satellite we will be able to decrease the size and therefore the cost of the repeater network.

Another big question is to show that in the thousands of other cities that don't have dense urban areas, satellite will be able to provide the service alone. In October, we will start tests on indoor coverage which is a very important part of the equation. By Christmas time, we expect to have live demonstrations of the system and will be able to get feedback from potential end users.

So how do you see the future of Mobile TV?

I think both technologies – DVB-H (UHF) and Alcatel's hybrid system – will emerge. We believe S-Band has a huge potential and we believe the current market survey in France will support that.

Are there any other advantages of the hybrid system for operators?

Yes. For one thing, the S-Band is available in France and at the European level. Thanks to the fact that it reuses existing mobile networks, much faster terrestrial roll-out is possible with the hybrid system. Furthermore, the satellite will be a big advantage for an operator that wants to say it has the whole territory covered at once... not just the city centres. ■



Yannick Lévy

CEO

DiBcom

www.dibcom.com

What is DiBcom's involvement in the S-Band Mobile TV project?

DiBcom made the first commercialized chipset enabling DVB-H handsets – notably used in the roll-out of broadcast Mobile TVs in Italy in 2006.

We were approached by Alcatel in 2005, and we thought their new concept of a hybrid system of satellite and terrestrial in a higher band would be very interesting to complement the UHF DVB-H system because of the availability of bandwidth and the capability of satellites to reach very wide areas.

So we have been working on the adaptation of a chipset to work in the frequency range of 2.2 GHz for multi-band handsets.

How important do you feel indoor penetration is for Mobile TV?

Most trials have shown that most people want to watch Mobile TV inside their home. This means there must be good signal coverage, which means putting a number of transmitters in the field... and one of the points that has been underlined with the S-Band project is that cellular base stations can be re-used, meaning that for quite low cost, additional signal coverage can be achieved for indoor penetration.

How do you see the roll-out of S-Band as part of the entire Mobile TV scenario?

Firstly, I think we will see the development of Mobile TV in urban areas between now and 2008 – in cities of more than, say 200,000 people.

This will happen in places where there is some band available in UHF, but this will be a fairly limited development, because there will be a number of areas where Mobile TV will not be able to penetrate for quite some time, because of a lack of bandwidth and coverage.

That's where the hybrid S-Band solution comes into the picture. Assuming you have a phone which is dual band – which can receive the usual DVB-H UHF standard in the city and go to the S-Band via cellular repeaters in urban and suburban areas not covered by UHF and with the satellite outside the city, then you can have a system that works when you're on the move anywhere. So in that sense it's really complementary.

What do you feel about the business opportunity with this global solution on a single chipset?

Of course we believe there is a business opportunity. We strongly believe there is a need to watch TV on cell phones anywhere.

Potentially Mobile TV will cover a billion phones in the future, so we need to make sure there is a technology which can potentially address these billion phones. In the past, satellite has shown to be the best solution for covering broad territory, and here it is the case as well.

The additional advantage of the hybrid system based on cellular network is that it provides indoor coverage, you can't do it with satellite only.

For us, the big idea of the S-Band solution is that, with a limited additional development effort, we can adapt our DVB-H silicon to the 2.2 GHz spectrum, and increase our competitive position on this booming market. ■

“... you're only as good as your network...”


Tell us about the background to your involvement in the Unlimited Mobile TV project...

This all started with a meeting between Alcatel and Philips Semiconductors in France about the Unlimited Mobile TV project. Earlier on in the year, Philips Semiconductors sat down with Alcatel to work out the framework of a joint agreement related to Mobile TV in S-Band including a number of phases.

We're planning to have solutions ready towards the back-end of 2007. So we have the technology, and now a very strong ecosystem is being built around the Hybrid Mobile TV project. And I want to emphasise just how exciting this hybrid project is for Philips. We feel very positive about its future.

Why is Philips backing the S-Band project?

When it comes to delivering mobile broadcast services, you're only as good as your network, so you can do as much as possible with the terminal. But if the coverage - and therefore the reception is poor, then the whole solution falls down. With TV on mobile phones, we have to look for ubiquitous reception, wherever people go - even indoors or out of town. From a Philips perspective, while we consider that DVB-H in UHF will probably be the most prevalent broadcast mode in the near to mid future, it's not the only technology, nor the only standard. It makes absolute sense that if we could efficiently put



Steve Turner
Manager Business Development, Mobile Broadcast - Philips Semiconductors
www.semiconductors.philips.com

together a hybrid service, we could certainly increase coverage and increase market penetration. What's very encouraging and interesting from the DVB-SSP perspective is the opportunity to elegantly combine the strengths of terrestrial and satellite services under one hybrid standard, and effectively not only extend the available spectrum for mobile broadcast services but actually combine a specification which can give us improved services in high density urban areas, and service rural areas at the same time. So the opportunity is in terms of increased market penetration. We really get excited about big, uniform markets. There will be big potential

areas of gaps where we don't have terrestrial DVB-H UHF coverage, and S-Band will cover larger markets more quickly. People want universal ubiquitous coverage, and our belief is that terrestrial and satellite technologies put together efficiently will give a very good global solution.

Which are Philips' strong points related to the delivery of the hybrid Mobile TV solution in the S-Band?

We are a large company, and something that's not mentioned that often is that we actually offer the full system solution - be it a mobile phone or personal media player terminal. Unlike many of our competitors, we certainly don't stop at the front end - at the tuner or the channel decoder. We supply the base band, the AV processors and the total underlying systems solution. There are a many areas where we can contribute on the Video enhancement side to make the hybrid end-to-end solution in the S-Band a success.

For example, we have significant video IP such as picture improvement algorithms, natural motion, picture upscaling, dynamic backlight and contrast boosting. I doubt that many other companies can do that. Much of our technology is programmable in nature, so from the tuner, channel decoding capabilities and the back-end processing standpoint, our technology has a high degree of flexibility.

The major interest for us therefore is to pursue strong partners, and to look then at developing major new markets whilst understanding how those markets will adopt Mobile TV solutions, supported by our key technologies. ■



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"... Mobile TV must become a mass-market service..."

Which is Sagem Communication's involvement in Mobile TV?

With the SAGEM brand, Sagem Communication is present in two kinds of business related to the Mobile TV Market. Firstly, SAGEM is present in the Digital TV market as one of the main actors in terms of set-top boxes, triple play solutions in Europe, thus having a strong know how in the broadcast market.

On the other hand SAGEM is a major player in Europe, South America, Africa and Asia in the Mobile Phone segment. Combining these two skills – TV and Mobile – SAGEM has now become strongly involved in Mobile TV. SAGEM has already developed a number of systems built around videoconferencing and multimedia applications. The integration of a DVB-H TV receiver into a telephone was thus the next step in the mobile integration adventure.

SAGEM has been doing some testing of DVB-H in Europe. Can you tell us about the results of these tests?

We started in France in 2005, then we did a trial in Italy during the Winter Olympic Games, and for the 2006 FIFA World Cup Germany, we did two major trials – one in Germany and the other in South Africa. These two trials were done at the same time with hundreds of users each time. The target of these tests was to put Mobile TV handsets in the hands of normal consumers. One of the aims of the various tests was to see whether on top of the interest for the service, there was a will to purchase the service, which is at the heart of the business model. What was very important in this case was the quality of the images on the mobile phone... the fact that there should be a good quality image at all times, along with good sound.

Do you consider that signal coverage is an important issue?

In a national deployment, of course this will be important, because Mobile TV must become a mass-market service... so it's essential to have a global coverage with a good quality of service. Indoor coverage is of course also a very important issue, and this was shown by our first survey. Mobile TV is not only used outdoors, waiting for a bus or taxi, or walking in the street, it's also used by people working in offices for example.

When a specific programme is on, they may want to watch their Mobile TV during their lunch or tea breaks. Youngsters want to use their Mobile TV as a personal TV set, watching their favourite programmes in their bedrooms, without sharing their TV with others. All these kinds of uses are indoor, and this is changing the way we consider the coverage of this technology compared with others kinds of TV, and this



Yves Portalier

Marketing Director
Sagem Communication
www.sagem.com

underlines the difference between cellular technologies and broadcast TV technologies. To match all usage scenarios, we see a solution combining both ways to receive the signal, UHF and S-Band, and we are currently developing a commercial product that will be capable of doing both. Test hybrid products will be finished by the end of 2006 and fully commercial products will be available by the end of 2007.

Are there specific advantages of the S-Band regarding the handsets' antenna?

Yes. Because the S-Band is in a high bandwidth at 2.2 GHz, the size of the handset's antenna is short enough to be easily integrated inside the handset. Furthermore, the small size of the S-Band antenna allows to combine two antennas inside the same handset, bringing the advantage of various reception channels.

SAGEM's DVB-H handsets have a reputation for high picture quality screen. Why is that so?

For us, that's a key point. Clearly if SAGEM has been selected in many major experiments as the only provider of Mobile TV solutions for example for the 2006 FIFA World Cup tests in Germany, this has a sense.

The quality is firstly linked to the quality of the screen, and the processors and ways of receiving and decoding the pictures is very important. We were also one of the first to work with the H-264 format, which is a high quality, highly compressed codec, enabling the high quality images on DVB-H phones.

How important is the S-Band project as part of SAGEM's roadmap for Mobile TV?

The S-Band is an integral part of our company's Mobile TV strategy. The development of S-Band is a way of optimising the development of our Mobile TV business. So for us, it's important to invest in this new technology and to work hand in hand with the other partners in the eco-system of this project. ■

... "currently most Mobile TV projects have big problems finding frequencies..."



Jean-Luc Pavy

CEO
TeamCast
www.teamcast.com

Tell us about TeamCast's involvement in the S-Band Mobile TV project...

Our involvement is at two levels. Firstly, the project will use our expertise in Single Frequency Networks (SFN) – enabling the operation of several transmitters on the same frequency. The enhanced DVB-H modulators will be designed and made by TeamCast for use in the mobile base stations. This technology is known as COFDM – a multi-carrier modulation used in the DVB-H standard.

What do you feel is the most interesting thing about the S-Band Mobile TV project?

The strength of the project lies in the fact it is based on a mixed structure – satellite and terrestrial – meaning the coverage could immediately be 100%, thanks to the satellite. That's the key point, because Mobile TV usual requires a great number of transmitters to be installed, so to reach an important coverage is quite difficult and needs a lot of money. The second point is about the frequency – the fact that it's S-Band, which is in the area of UMTS, meaning this project will be able to benefit from broad UMTS frequency allocation. This plethora of frequencies is really of great benefit, because currently most Mobile TV projects have big problems finding frequencies, especially in the UHF bandwidth, where there is currently very little availability.

Part of the work will include transforming cellular base stations into S-Band repeaters. Tell us about this...

Firstly the signal is broadcast through the satellite in S-Band, so you can have a direct link between the satellite and the terminal, and at the same time, the signal is repeated by a network of transmitters located in the cellular base station. They in effect re-use the infrastructure of the UMTS base station. This is a big advantage because of environmental constraints. In many countries it is very difficult to install a new antenna, so reusing the current mobile infrastructure is a real plus. The system thus broadcasts via terrestrial means in urban environments, reinforcing the satellite signal.

Given your long background in this field, what are your personal thoughts about the importance of indoor coverage?

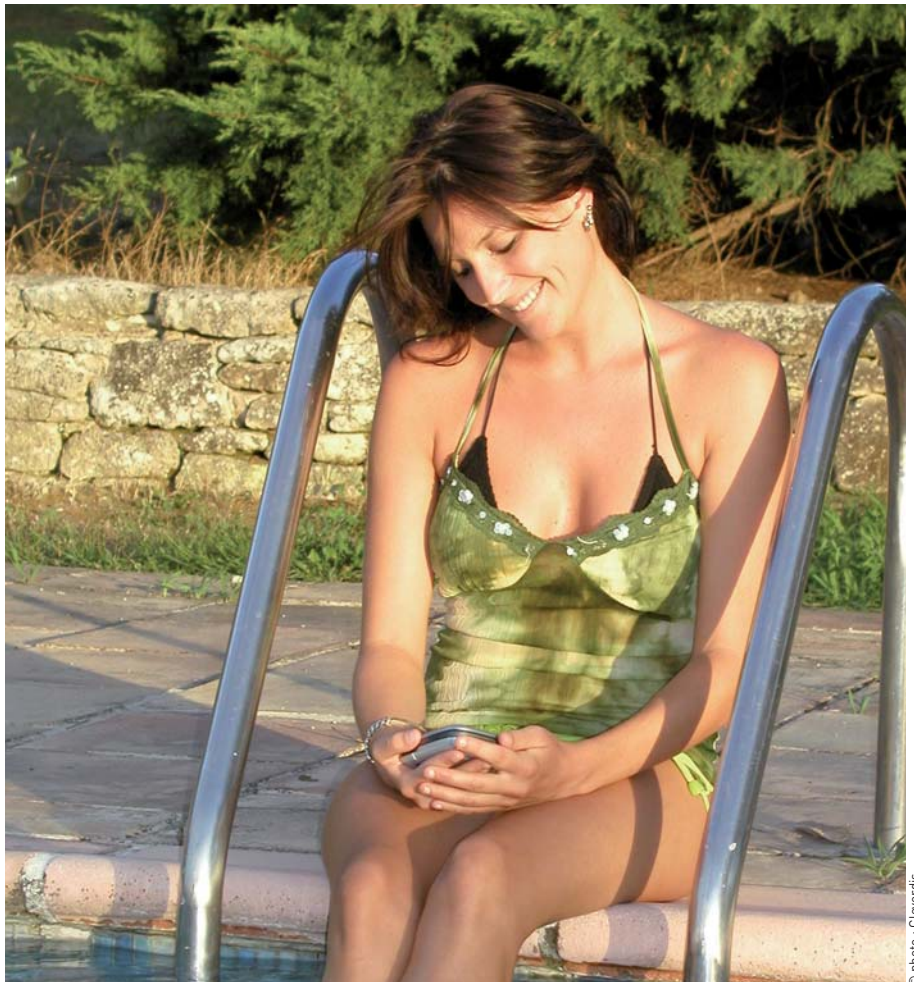
There have been a few tests around Europe, and it seems that most users watched their Mobile TV in the home. So it's clear that Mobile TV should reach everyone indoors. Broadcast networks are better adapted for the kind of use where you have a roof antenna to receive the signal – just like terrestrial digital

fixed TV. S-Band, however, which uses many more low-power transmitters than in a broadcast network using high-power transmitters only, is much better adapted for indoor coverage, just like UMTS coverage for mobile phones.

What is your perception of the benefits of working with Alcatel on this project? Are you expecting a significant business opportunity?

Yes, because for Mobile TV have been a lot of experimental projects, but in terms of commercially viable projects, there are very few happening. So working with Alcatel gives the kind of resource and assurance that the project will really happen, and this gives us a vision for the future and gives immediate application for our technology... so not only is this a business opportunity, it gives us a global vision, because Alcatel is a worldwide company - able to export this technology to other continents.

It's not a France-only nor a Europe-only venture. S-Band is widely available in many parts of the world, and even in the US, where S-Band is not available for Mobile TV right now, we could consider to use L-Band for a similar hybrid scheme. So Alcatel is a great partner for this project. ■



© photo : Cleverdis

“...Alcatel’s project has the big advantage that it’s very much based on the existing DVB-H standard...”



Filip Gluszak

VP Marketing
UDCast

www.udcast.com

UDCast were the first to manufacture “IP encapsulators” used in most Mobile TV systems designed to date... What is an IP encapsulator?

The IP encapsulator is a very central element of the Mobile TV network. It is the element that makes the link between video over IP solutions, which are very

much Internet type solutions, and broadcasting, which is closer to traditional radio and TV broadcasting. Before these were not linked, but the IP encapsulator is able to encapsulate IP packets into the transport stream that then can be broadcast by TV broadcast transmitters. It enables the convergence between the two industries.

Tell us about your involvement in the S-Band project.

We’re really happy to be part of this project, because it will bring together the benefits of both satellite and terrestrial communications, and UDCast has expertise in both areas. We have been happy with the success of DVB-H UHF today, but we can see there are many areas where there will be a very big opportunity for the S-band system too.

The solution we are developing with Alcatel has a number of advantages. The availability of the S-Band frequency in most countries in the world will remove one of the major hurdles in the development of traditional DVB-H. The second big advantage is that it is very cost competitive, because it can be integrated very easily into the existing cellular base stations. In this way we can reduce the Capex and Opex of the mobile TV networks significantly.

Which markets can benefit the most from S-Band?

There are two types of markets... those where there are some regulatory issues regarding frequencies, which I think will immediately start looking into this technology. Other operators might join on the basis of the simple business case.

Today, in traditional UHF DVB-H, you will need to have a significant number of new high-power transmitter sites, which will drive costs up. To us the logical next step is to use the S-Band and the Hybrid satellite / terrestrial solution because it reuses existing cellular sites. There are many solutions today in the market for Mobile TV, but between DVB-H in UHF/L-band and DVB-H in S-Band, I think most of the operators should be able to find something which suits them with respect to the regulation situation or their business needs.

But can operators still wait for another standard?..

Alcatel’s project has the big advantage that it’s very much based on the existing DVB-H standard which means that in terms of development time scales we have a good level of confidence that all the components of the system including the head ends, the transmission and the terminals can be launched on time, and secondly those components will benefit from the economy of scale because the technology is very close to what has been standardized so far. So the S-Band represents an incremental and very significant evolution, while being based on the existing technology. ■

"We are in favour of systems that can be deployed nationwide and that can be received everywhere..."



Ernst Eberlein

Chief Scientist, Communications Department
Fraunhofer Institute for Integrated Circuits IIS
www.iis.fraunhofer.de

Tell us about your activities...

There are of course very famous projects like MP3 which came from our institute, but also there are other activities, like in the Communications Department, which is my responsibility, where we have been working for around ten years on systems for mobile reception of satellite signals. In this framework we developed technology that provides very high service availability, in receiving environments using limited power signals such as the S-Band network.

The key is for the broadcasting system to achieve a high quality of service and a seamless coverage, with a high number of programmes. The commercially successful systems we contributed to

achieve include the digital audio broadcasting systems one can find in the United States – XM Radio and Sirius... for one we did the system design and for the other we developed the repeater equipment in cooperation with IZT, Innovationszentrum für Telekom-munikationstechnik.

How is the institute involved in the "Unlimited Mobile TV" project?

We are adding our experience to the design of the satellite transmission system and to what we call hybrid systems, where you get a large coverage by the satellite and good service availability in urban environments by terrestrial repeaters. This background know-how has helped

us in the system concept. The know-how and ideas and experience of the systems developed in the US thus help us develop a good concept that allows unlimited European coverage and service availability through terrestrial repeaters. For us, it's a great opportunity to find applications for our technologies. We are able to bring our expertise to the fore and help Alcatel solve any problems they may encounter.

Where is the main interest for a trans-European Mobile TV project like this?

One of the main advantages of the SSP project is that it can be used in all countries in Europe – defining a European standard that can be used across borders.

In the car industry, for example, they don't like the idea of a system that only works in one country. So this is a great opportunity to make services available on a European level. We are very interested in this aspect ... in creating an attractive European service in a cost effective way.

What do you think users expect in terms of services?

For people who want real mobility, they want seamless coverage. They want more than a large number of programmes. They want a high quality service. We are in favour of systems that can be deployed nationwide and that can be received everywhere, which is what we are planning with the SSP project.

Are you involved in the T-DMB service that started in June?

We have some involvement in the project, but I don't have personal experience relative to the quality of service and coverage. Customers are reported to like the service. It is too early to comment on coverage as the system is still in a pilot phase and only few networks have been installed so far. The bigger question is, "What is the effort necessary to achieve nationwide coverage?" Here, it is a matter of costs, and there are also issues with regard to the availability of frequencies.

Therefore, I assume that the T-DMB system can offer only a limited number of channels. Technologies introduced in the SSP project will help to increase the capacity significantly because they offer high-power efficiency. This helps to reduce the repeater costs and, in addition, more frequency bands can be used. ■

ANALYSIS

David MacQueen

Mobile Analyst - Screen Digest

www.screendigest.com

Alcatel's satellite DVB system offers a very economically attractive model for deploying broadcast mobile TV. Mobile network operators can avoid the expensive spectrum auctions and network deployments, averting a repeat of the costly 3G rollout. The system also offers some significant advantages over the satellite DMB system deployed in South Korea, which has so far struggled to achieve mass market acceptance. Alcatel's satellite DVB system has many of the key factors in place for success; strong technical specifications, a wide range of influential partners and a compelling business case for network operators. Although the mobile broadcast TV market is chaotic with much still to be defined, Screen Digest anticipates the system will be widely deployed in Europe. We will be putting some comment in the Screen Digest magazine next month, and we will shortly be publishing (no definite date yet) a report called "Mobile TV: Winners and Losers" which compares the various technologies. ■

Claus Sattler

Executive Director - BMCO Forum

www.bmcoforum.org

How do you position DVB-SSP* and (the hybrid technology) in the market at the moment? (*Satellite Services to Portable Devices)

At the bmcoforum, we have working groups comparing the various technologies from different points of views, such as technological aspects, comparing characteristics, costs and so on.

At the moment we have only started to considering the SSP proposal, so there are still some questions to be addressed. We of course have to be neutral in this case, as every technology has its pros and cons and we don't think one technology can be the only one.

If, for example, you look at T-DMB which has a very narrow multiplex, one could ask the question whether four or five or six programmes might be enough for a good service offer. It all depends what you want to offer to users.

Citigroup Research Report

www.citigroup.com

In July, 2006, Citigroup released a comprehensive report on the impact of Mobile TV on telecommunications equipment vendors. According to Citigroup analyst, Robin Nazarzadeh, "Mobile TV needs broadcast, unicast and interactive functionality in the long-term for it to become a differentiated, revenue generating service."

In the report, Mr Nazarzadeh explains the advantages of S-Band: "Alcatel has developed a method of providing mobile TV that straddles both the 3G and the DVB-H camps: the company proposes using DVB-H but instead of broadcasting in the UHF or L-bands where spectrum is scarce, it proposes using the S-band."

Practically, this would mean broadcasting via a satellite for rural and less densely populated areas, and then using the 3G network to provide the repeater network for in-building penetration in built-in areas."

With SSP, as outlined by Alcatel, the cost-reduction aspect could be important as it might be cheaper to realise a full nationwide DVB-H network using the S-Band.

How do you see the near to mid-term future for Mobile TV in Europe? Are you bullish about the fact that Mobile TV will become a reality in all countries in Europe?

We are convinced about that. If you look at the more than 100,000 users 3 had in Italy just one month after the launch of the DVB-H service there, it's really surprising. This gives us a good feeling about what could be all over Europe.

When these people buy a Mobile TV capable handset with a subscription, you could say they are buying a dream. How important is it that they get the quality they expect from this dream?

I have some experience using mobile TV devices and my understanding is that look and feel is very important and it could affect a mass introduction. People are convinced, and when you show them

Importantly, in financial terms, Nazarzadeh underlines "the frequency band (2.17-2.22GHz) is sufficiently close to 3G (1.92-2.17GHz) that data can be transmitted using the same infrastructure as 3G."

This means that an operator using this method could re-use its own 3G transmission infrastructure. Some hardware would need to be added to the base station, but the overall capital outlay would be lower than the other methods and has the added benefit of not requiring planning permission for new masts." ■

Windsor Holden

Senior Analyst - Analysys

www.analysys.com

My concern with conventional DVB-H is that, given the high costs associated with the spectrum acquisition and network deployment, operators will struggle to create a service that is financially viable.

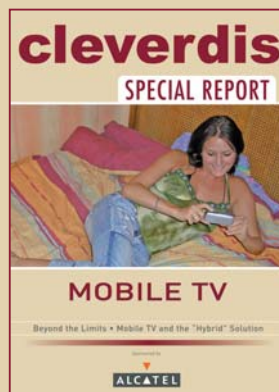
If we assume total spectrum and rollout costs of EUR300 million for a single DVB-H network in a major European country, then it's unlikely that cumulative service revenues for mobile broadcasting will exceed that total for at least four years after service launch.

Factor in additional expenses such as rights acquisitions and running costs, and it's clear that any profits will only be realised in the very long haul.

The advantage that S-Band would offer is that firstly, terrestrial rollout costs are significantly lower; secondly, the requisite spectrum is currently available; and finally, the pan-European satellite footprint would be highly beneficial to operators such as Vodafone and Orange wishing to transmit the same material to different territories. ■

the quality of the picture, they generally say they couldn't believe the quality could be so good on a mobile phone.

On the other hand, we should be careful that we provide good reception quality everywhere the users want to use it not to have very fragmented territory. From all trials so far we know that users also watch mobile TV in-house, so the reception should be guaranteed even there. ■



CONTACTS

CLEVERDIS

Richard Barnes

Tel: +33 (0)4 42 77 46 08

richar.barnes@cleverdis.com

ALCATEL

Eric Giaretto

Tel: +33 (0)1 30 77 88 47

eric.giaretto@alcatel.com

A CLEVERDIS Publication • 116 avenue Eugène Mirabel, 13480 Cabriès • France • Tel : + 33 4 42 77 46 00 - Fax : + 33 4 42 77 46 01
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• With the participation of: Dominique Delours (dominique.delours@cleverdis.com), Tatiana Gerassimato (tatiana.gerassimato@cleverdis.com),
Arnaud Monge (arnaud.monge@cleverdis.com), Raphaël Pinot (raphael.pinot@cleverdis.com), Marie-Armel Raut (mariearmel.raut@cleverdis.com),
Bettina Spegele (bettina.spegele@cleverdis.com).