Convergent Media and Networks

Opening Session – Keynote

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Ladies and gentlemen,

I consider it a great honor to welcome you here today at the 12th German-Japanese Symposium focusing on "Convergent Media & Networks – New Business Chances and Economic Opportunities".

This historic building was constructed between 1861 and 1863 and housed the "Telegraph Office's national headquarters" and after 1876 the "Central Imperial Telegraph Office". Actually, I should say welcome to the home of German packet switching – here in 1865 Germany's first pneumatic tube system (the "Rohrpost") was set operational, just second in Europe (and probably in the world) to the one in London. But that's not all – in 1877, the first voice call in Germany was established between here and the General Post Office in the nearby Leipziger Strasse.

Some contributions to the history of telecommunications were made in this very place, and today we have the chance to get some inspiration from our early antecessors.

The German-Japanese symposium emphasizes the strong relationship between Japan and Germany. Both countries highly depend on and greatly contribute to the area of telecommunications. The tradition of this symposium offers a great

opportunity to live the idea of open innovation, and I am personally looking forward to the contributions and fruitful exchanges during this event and beyond.

The shape of things to come.
The future is notoriously hard to predict ...

"People tend to overestimate what can be accomplished in the short run, but to underestimate what can be accomplished in the long run."
Arthur C. Clarke

"The past is a foreign country. They do things differently there."
L.P. Hartley

"Technology is not kind. It does not wait. It does not say please. It slams into existing systems. Often destroying them, while creating new ones."
Joseph Alois Schumpeter

„The future is already here – it is just not evenly distributed yet."
William Gibson

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Please allow me to begin today by making reference to a few people who were able to successfully make a living by talking and writing about the future. This is what three novelists had to say:

1. Arthur C. Clarke (British science fiction author, e.g. A Space Odyssey 2001)

    - "People tend to overestimate what can be accomplished in the short run, but to underestimate what can be accomplished in the long run."

2. William Gibson (US writer, creator of the term "cyberspace")

    - "The future is already here – it is just not evenly distributed yet. "

3. L.P. Hartley (British writer) known for his proverbial comment:

    - "The past is a foreign country. They do things differently there."

They all came to the conclusion that indicators of what *will* be are already present *now*. If there's one thing we can be sure of – it's change. Our lives differ hugely from our parents' lives and in turn in a few years, our lives will bear little resemblance to how they appear now.
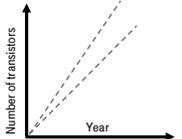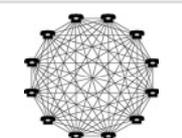
Let me also quote the economist we all know as one of the founding fathers of the analysis of the economic effects of innovation - Joseph Alois Schumpeter, who was by the way, Austrian by birth and a Harvard professor from 1932 to 1950…

- "Technology is not kind. It does not wait. It does not say please. It slams into existing systems. Often destroying them, while creating new ones."

His words spur us to try and draft our own view of what things will look like in our domain of telecommunications.

The shape of things to come.
… but the present can give us clues about the future.

Moore's Law	Number of transistors on an integrated circuit doubles every 24 months. **Gordon E. Moore**	Number of transistors / Year
Metcalfe's Law	"The value of a telecommunications network is proportional to the square of the number of users of the system (n^2)." **Robert Metcalfe**	
Edholm's Law	When wireless can hit today's wire line limits all telecommunications will be completely untethered and mobile. **Phil Edholm**	Bandwidth / Year / 100k
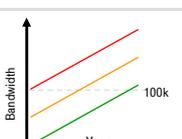
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We can also look to the technology sector for ideas about the future. The interpolation and projection laws of Moore (the co-founder of Intel), Metcalfe (the co-inventor of Ethernet and founder of 3Com), and Edholm (of CTO Nortel

Networks) already indicate that the future will be very different in our domain compared to how it is now:

- "The number of transistors on an integrated circuit doubles every 24 months." (Gordon E. Moore). And I am pleased to be able to tell you that telcos' de-layered next generation network infrastructures will allow operators to exploit the benefits of more powerful, and more effective, hardware at higher cycle times than is currently possible with legacy systems.

- Robert Metcalfe's law becomes even more important when we think of telecommunications systems as personal social networks. "The value of a telecommunications network is proportional to the square of the number of users of the system (n^2)."

- Edholm predicts that advances in bandwidth in the fixed domain will be followed with some time delay by wireless technologies with the gap between them decreasing. He says: "When wireless can hit today's wire line limits, all telecommunications will be completely untethered and mobile."

Now, by trying to identify some current indicators of what will be, I'd like to take you through a projection of trends into the future. These scenarios describe the impact of technology on society and vice versa. Please bear in mind that these are just some potential permutations of what could be. Nevertheless, they *are* possible.

A projection of trends into the future - The change of society and its technological indicators

Combining the observations of the past, the clues about the future and the early indicators in the market, three overarching trends can be safely predicted:

- A trend towards digitalization,

- a return to the importance of society,

- and a trend to individualism.

Our society is on the verge of perceiving itself in a new and different way. The trend towards digitalization is obviously the hottest discussed topic here. On the other hand it also creates segmentation into interests, preferences, regions and so on. In other words, you could say, the world *is* about to change into a global village, but one made up of independent micro-communities. On the technical side, this tendency is supported by the era of rapid digitalization, which has begun to change the forms of human interaction. Technological indicators like digital media, easy-to-handle digital rights and cheap high-capacity data storage and delivery further promote this development. As unbelievable as it may seem, the last domains of analogue media, like radio and newspapers, are in their final death throes – well, let's see.

In other parts of our society, the perceived bulldozing effects of "capitalism" and "globalization" might well motivate a return to post-materialistic values and neighbourly solidarity. Technology, after all, is seen as a means of communication, as a tool for general support that doesn't *have* to be complicated to use, and as something that must not dominate users in any way. Folksonomies, Instant Messaging, Tagging or Web 2.0 are all technical indicators which emphasize this return trend to the importance of society. Technology is seen as a means to decouple a sense of community, replacing the need to be physically close.

Finally, it could also be that society will undergo a series of changes leading to greater individualism and the desire for self-expression. Knowledge *is* power. And there are many technologies that can be seen as representing this shift towards greater individualism, such as Avatars, Syndication but also Flickr, MySpace, Second Life, and so on.

Personalization is about to mark the end of the short era of traditional mass media.

A projection of trends into the future.
The change of society and its technological indicators.

Trend to Digitalization — The last domains of analogue media fall (radio, newspapers …).

Technology decouples community from proximity. — **Return trend to the importance of society**

Trend to Individualism — Personalization ends the short era of mass media.

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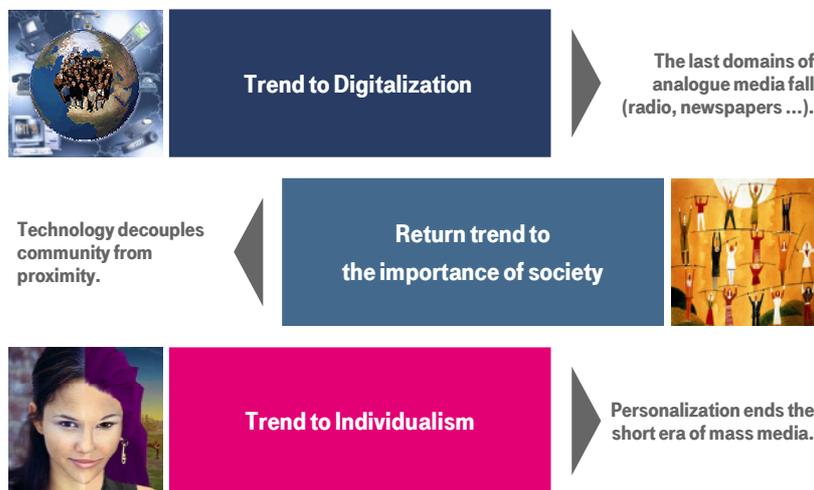
Besides these sociological tendencies, the speed of diffusion of innovation is also increasing. While colour TV was not able to attract more than 1 million users within the first decade after its launch in 1955, the adoption curve of handhelds boasted more than 4 million users within the first three years of its introduction in 1996.

Rate of change.
Technology diffusion is clearly accelerating.

Adoption curves of electronic devices

million units (y-axis: 0, 1, 2, 3, 4)
years from inception (x-axis: 0, 1, 2, 3, 4, 5, 6, 7)

Handheld (1996), Cell Phone (1984), PC (1978), Camcorder (1984), VCRs (1974), Color TV (1955)

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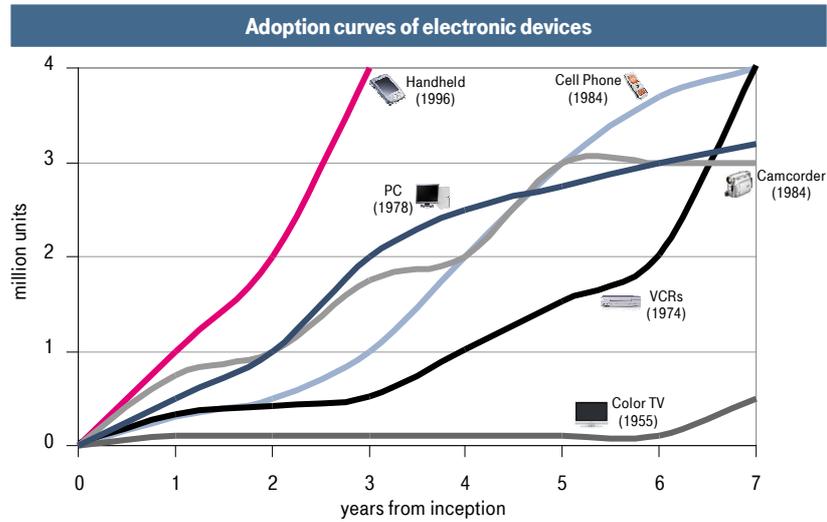
The roadmap of things to come

The three trends towards digitalization, towards social values, and towards individualism are both divergent and connected, and our industry is already now working on functionalities that would support all of them.

In the next years, new technologies, functionalities and services will arise. The roadmap of things to come provides a brief overview of the near future separated by the three trends broadly identified here. Within the next year the trend towards digitalization will force the replacement of analogue media with its digital counterparts. Paper-based TV guides will be substituted by semantically enabled Electronic Program Guides (EPG). The broadcasting domain of plain and linear television will be exchanged by interactive and alternately also mobile IPTV services with targeted advertising opportunities. In the remote future, digital life blogs will be able to replace personal memos and filing systems.

The return trend to the importance of society will at first be mainly driven by enabling community-building and the integration of group communication services across various communication channels. Within the coming years semantically enabled entertainment domains and community generated TV shows are going to satisfy the future demands of consumers. By 2012, technology will be seen as just another means of communication. And therefore the creation of telecommunication services will be as easy as using a webpage. Users will be able to access all telecommunication, media and IP services through a single, simple and personalized user interface.

Presence-aware service delivery is the greatest indicator of the trend towards individualism. But it's not just individualism, but *personalization* too that is going to be driven to a much higher level. A detailed analysis of user behavior by allowing profiling personal patterns of movement in the digital world will foster a high degree and quality of personalization. Leaving legal issues aside for a moment, total new forms of customized service delivery will be made possible in the next decade. All this will lead up to personalized intelligent user interfaces with emotion aware service delivery being widely available.

Roadmap of things to come.
The future will be digital and, paradoxically, in parallel more communal and more individual.

2007		Timeline		2012
Trend to Digitalization	Superdistribution	Interactive Mobile TV		Digital life blog replaces folder structure
	IPTV interactive services	IPTV targeted advertisement		
	Semantically enabled EPG	Protection against attacks on IPTV servers		
Trend to Society			One user interface for telco, media, and, IP services	
		Community generated TV shows		
	Community enabling services over IMS		Telco service creation as easy as webpage usage	
		Semantically enabled entertainment domains		
	User generated TV shows		Peer to peer distribution / user generated sales	
Trend to Individualism		Enabling niche-specific service creation through 3rd parties		
	Stereotyping of user preferences			
	Presence aware service delivery	Categorization of user preferences by mining digital traces		Digital world à la "SecondLife" as major sales channel
	Interaction with personalized information broker	Personalized intelligent user interfaces		Emotion aware service delivery

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Today, developments in four main areas exemplify these upcoming changes: the evolution of IPTV towards a new TV experience, digital superdistribution through peer-to-peer networks, personal social networks, and the mobile use of the internet. Let me briefly touch on each of them.

New TV experience created by media convergence

First and foremost the evolution of multi-channel IPTV is emerging as a next generation TV scenario (NewTV). While today's IPTV packages concentrate on multi-channels and on demand services, these offerings are 10 to a large extent substitutes of the traditional, multi-channel television program broadcasted in the past. But this is just the beginning. Linear broadcasting, also known as one-to-many television is dying out. Features and functionalities we've already come to know from today's Web 2.0 will go on to enrich and diffuse the traditional static TV world. Broadly speaking, we can expect this to take place in three steps:

The first step is the entry into the traditional static TV market. It is a necessary step to gain experience within the television market and lay the ground for non-linear interactive television.

Nowadays, IPTV and TVoW (TV over Web) applications coexist in the same market. The fact that they still appear separate is mainly due to market dynamics and legal and contractual constraints. As a consequence the second step deals with the merging of IPTV and TV over Web applications. Together with the integration of interactive services such as active participation of TV consumers (for instance by sharing content) this will push the linear IPTV towards a TV scenario called TV 2.0.

The last step will finally turn around the "one-to-many" broadcasting paradigm into a user-centred scenario where local sports teams or other communities can broadcast their tournaments or events to a wide range of viewers. Therefore TV
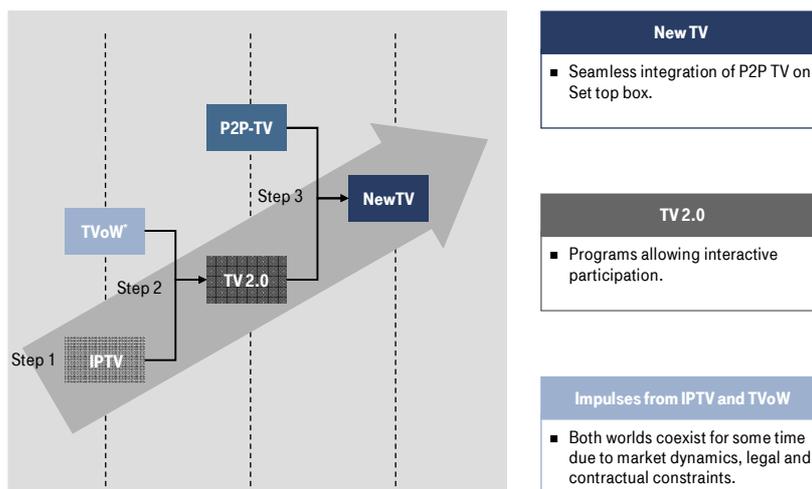
2.0 has to be combined with peer-to-peer television. Peer-to-peer television has the potential to have a great social impact. It enables the distribution of highly specified, niche content.

Next generation Television (NewTV) goes beyond simple interaction scenarios (like for instant, voting). Full scale interaction between the TV consumers themselves during and after a TV broadcast will be made possible.

This much is sure: we had better integrate the p2p functionality sooner rather than later on the set-top boxes which we deliver to our customers and thus reduce the technical complexity from them.

A converged TV vision.
Characteristics of the web enrich and diffuse into the traditionally static TV world.

New TV
- Seamless integration of P2P TV on Set top box.

TV 2.0
- Programs allowing interactive participation.

Impulses from IPTV and TVoW
- Both worlds coexist for some time due to market dynamics, legal and contractual constraints.

*TVoW = TV over Web

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The move towards a next generation New TV scenario is marked by the functionalities already included in the IPTV packages. The evolution of IPTV starts with a "Classic IPTV" service, providing linear multi channel IPTV enhanced by on demand services (e.g. Video on demand, Sport events on demand, etc.).

The next level (TV 2.0) of IPTV is set to be achieved through the introduction of interactive services such as online voting, online participating, and interactive

Electronic Program Guides; and through the use of targeting, for new advertising formats.

The New TV scenario will in the end be enriched by two major functionalities: Personalization of the individual program such as customized news, regional weather forecasts, and the distribution of user generated content (e.g. user generated TV shows, etc.) and thus satisfaction of the human desire for self-portrayal will revolutionize today's idea of television.

Besides IPTV, the efficient and effective distribution of digital content will focus on discussions in the near future. Superdistribution is about to take the delivery of digital content (e.g. music, games, movies, software, etc.) to an even higher level.

Superdistribution

In the near future, most content will be digital. This will, of course, change the use of common media content. Both users and content providers will need technologies to do a variety of things. They might want to distribute content legally, share it, and re-sell it. Or maybe they just want to lend it to friends or earn money with their own content creations. To encourage this business even further, it is absolutely vital to protect and manage content distribution.

And this is what superdistribution is about. This approach first separates digital content from its corresponding rights, which then allows it to be distributed through personal social networks. Users can purchase or self-generate digital content, such as movies, software, games, music, e-papers, e-books, ring tones, and more. *And* they can distribute it to everyone.

But superdistribution does more than just enable user-generated content – it opens a whole new sales channel by introducing user-generated sales.

With superdistribution, users can legally upload, share and distribute purchased or self-generated content. And for the first time, they do not have to care about rights management. Content and rights are separated, and a network-based service is in place for license safekeeping.

Superdistribution also integrates an award system to motivate users to recommend digital contents to friends, to share or provide content within the platform, and to generate and distribute their own content. Users can therefore collect reward points and use them to buy further content.

Superdistribution demonstrates how the power of strong and efficient personal social networks can be harnessed to generate additional sales. Communities have always been interconnected in some way. Now, telecommunication operators can take on the task of providing the appropriate structures to support the relentless demand placed on them by context-aware group communication.

Group communications

To come back to the returning importance of society, more efficient and effective communication in social networks is essential. And this makes the simplification of personalized user interaction across all devices and communication channels a key differentiating factor. In this context, group communication is currently restricted to a web context, but the need goes far beyond that. By making group communication features currently known in the web 2.0 world available within a mobile context, real world communities could also be addressed.

- Personal social networks mapped on technological features.

- Offering and enabling of segment specific services.

Increase customer retention and enter additional market segments of highly specific user groups

The first step has already been taken with the myFaves concept, which allows easy access to the user's five most important contacts. This service idea can be enhanced by combining this application with location based services. Integrating a buddy finder helps to find friends and colleagues who are in the vicinity. The final step implicates context aware group communication over different communication channels.

Combining all these requirements shown for the three major trends digitalization, return trend to the society and trend to individualism will be the major task of future mobile Internet applications.

Mobile Internet

The mobile Internet is not just Internet mobile – it is so much more determined by the usage of context and intelligent interaction. To accelerate the adoption of mobile Internet services two main problems have to be solved. The legacy Internet can not be mapped 1:1 onto a mobile Internet network. Today's mobile services are not adapted well enough to different mobile usage situations.

Content and service access is often cumbersome for the user because the content is only available on certain devices or certain types of devices. Furthermore it is often difficult to find the desired content or service. With each required click, the user's interest decreases.

To present a more detailed outlook, I would like to give you an example of local interaction in a shopping scenario. There is one context, but many views:

After arriving at a shopping mall, you have a look at the local websites to get a brief overview of where you can find what you are looking for. While going through the mall, you receive bonus coupons which are sent via near field interaction to your mobile phone. Suddenly, you get a message that a friend of yours is also there. You meet and decide to watch the new blockbuster at the local cinema. It is easy to use the special offer at the cinema and spontaneously book two tickets. After this amazing evening, you just go back to the car park and leave. There's no waiting in line because you already paid using your mobile phone.

When we take all these different aspects into consideration, it becomes clear that the telecommunications of the future will be characterized by mobile, personalized social networks. Media content will no longer be reduced to one specific device or to one screen. On top, convergence will allow the expansion of channels for various content combinations. And this flexibility and opportunities for recombining services imply a growing potential for future markets. Tomorrow's customers will be served with media and communication services over the internet very different from today.

Thank you very much.