

Successful Congress in Poznan....next Leuven Belgium.

Leuven FITCE 2013: [CALL FOR PAPERS.](#)

Message from Our President

Dear FITCE friends,

Another year has raced by. I hope you all had a pleasant and peaceful Christmas time and I wish you a happy, fruitful and especially healthy 2013.

A quick look back into 2012.

We have started our efforts to increase the value of the FITCE membership. We made successful contact with the European Union directorate CONNECT. This will most likely result in cooperation on two important topics: Cloud Computing Standards and its regulatory aspects and secondly Radio Spectrum Management. Soon we will distribute a call for experts in these fields to form two teams to work with CONNECT.



Jos Gerrese FITCE
President

We had in September the 51st FITCE congress in Poznan. Although the attendance was not high it was a well organized and successful Congress with an excellent atmosphere.

The Comité de Direction had three meetings, two in Poznan and one in Leuven Belgium. We made good progress in our efforts to make a revival for FITCE. Especially the Marketing Workgroup under guidance of Vice-President Mauro Ugolini is very active and has prepared important proposals.

Unfortunately we had to say farewell to Mr. Filip Geerts, the FITCE Secretary General for more than ten years. We thank him for his time and dedication during the past years and wish him well in his current and future endeavors.

The CD appointed Mr. Walter van Hemeledonck as Assistant SG for the moment and he can be proposed as SG during the General Assembly in Leuven 2013. Walter is from Belgium and is active in FITCE for many years. By law the Financial Officer and/or the SG must be of Belgium nationality.

As in many organizations we see a decline in membership. I urge you to stimulate your colleagues to join FITCE. The costs are negligible and there are a range of benefits, like: the congress, access to all documentation, participation in European working teams, etc..

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Report from Poznan FITCE 2012.

FITCE 2012 in Poznan proved to be a very successful Congress, and the National Fitce Association, Association of Telecommunication Engineers (SIT), ensured that the Congress ran smoothly, and that delegates, presenters, and accompanying persons through the Accompanying Persons program, experienced the best of Poznan and the surrounding area, while ensuring that the Technical Program was at a high level consistent with previous FITCE Congresses.

There were over 80 Delegates and accompanying persons. While this number was not high, the opinion of Delegates after the Congress, was that low numbers



Technical University of Poznan

in no way detracted from a good Congress experience, and the quality was up to par with the best Fitce Con-

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In 2013 we will have the 52st FITCE congress in Leuven with the motto: Moving Towards Trustworthy Digital Ecosystems. The Belgium organizers are steaming ahead and the program looks most promising. Soon you will find more information on our website.

I am very happy to see that more and more there are activities and projects between the National FITCE organizations. It is an important value add for the membership. Again I wish you well in your professional and private lives and I hope to see many of you in Leuven 4-7 September 2013.

Ir. Jos Gerrese
FITCE President.

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gresses. The location of the Congress, the Technical University of Poznan was an excellent choice and there was plenty of Networking between delegates.

Poznan proved to be an excellent location, with good infrastructure, having hosted one of the groups in the Euro2012 Football Finals.

The Theme of the 51st FITCE Congress "Everything in the Net – IPv6 and Internet of the Future Prospects" was an excellent and challenging theme and allowed for many high quality presentations.



General Assembly

The General Assembly was held before the Congress was opened and FITCE Delegates were addressed by the FITCE President Jos Gerrese, the General Secretary and the Treasurer. There was no change in the FITCE Officers appointed.

The Congress was formally opened by our President Jos Gerrese, with an introduction by Prof. Krzysztof Wesołowski the Dean of the Faculty of Electronics and Telecommunications and Wojciech Hałka, President of Polish Association of Telecommunication Engineers.



Section of Congress Theatre

The Congress proper then got underway with 26 Presentations from 66 Authors. There were 36 submissions from 11 countries and each paper had two independent reviews.

During the Congress there was a Panel Discussion Session on Telecom Developments in Poland. A report on this

is later in the Forum.

The quality of papers presented was up to the standard expected in FITCE, and despite the small numbers in the audience there were very many lively discussions during question and answer sessions.

The Congress made three awards this year for Best Pre-



Bram Naudts receiving Best Young Presenter Award.

senter and Best Young Presenter, and Best Paper.

Best Presenter.

Huib Ekkelkamp - The Netherlands "A new orientation of Telcos on networks and services".

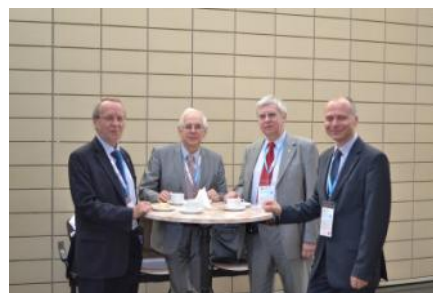
Best Young Presenter.

Bram Naudts - Belgium. "A value network approach for the evaluation of emerging internet services on-board of trains."

Best Paper

Peter Leonard - UK "Wireless at the Connected Games. How the London 2012 Games utilised the best WiFi technology". These papers can be downloaded from the FITCE Web Site.

The accompanying persons program was thoroughly enjoyed by all participants and the Congress ended with the Gala Dinner the Balcerowo Palace with presentations of Best Presenters and Papers awards.



Our Congress Team taking a break.



Congress Attendees taking a break.

**Looking to Leuven Belgium.
FITCE 2013.
52nd FITCE Congress.
"Moving towards trustworthy digital Ecosystems."
4th September to 7th September 2013.**

FITCE Belgium is delighted to invite you to Belgium for 52nd FITCE Congress in Leuven.

The congress on "Moving towards Trustworthy Digital Ecosystems", is being organised in cooperation with KU Leuven, ICRI, iMINDS, the B-CCENTRE and LSEC from 4 to 7 September to present the latest developments and thoughts in the security field, and provide the possibility for discussion and an occasion for networking with experts from all over the world.



Congress Co-Organisers.

Information systems are becoming ever more pervasive. They play a crucial role in the infrastructure of our society (communications, government services, financial sector, transport and other public facilities) and in our individual life (health, entertainment, home automation, etc.). The growing dependence on these IT systems implies that we impose higher requirements on the security and robustness of these systems. Security of information systems concerns everybody and can only be tackled by taking an interdisciplinary, holistic approach.

FITCE Belgium's co-hosting with industry security experts ensures that this Congress will provide cutting edge information and access to best practice in Europe regarding implementation of security strategies.

Leuven is very proud of both its past and its heritage, and rightly so. There is so much to see and to do in and around Leuven that one visit is simply not enough. Leuven has developed into a well-equipped, modern town with a thriving service industry economy and with a good balance of old and new buildings combining to offer a well-designed infrastructure to suit the demands of today's modern city with a rich tradition.

The university of Leuven was founded almost six hundred years ago. The University's academic fame has attracted scholars and scientists such as Justus Lipsius, Gerard Mercator and Andreas Vesalius who have all made valuable contributions to European intellectual life.



Groot Begijnhof
(Great Beguinage)

One of the unique parts of Leuven, where the Congress will be held, is the Groot begijnhof or the Great Beguinage.

The origin of the name 'begijn' is unclear. These women only took temporary vows of chastity and obedience to the 'mistresses' of their choice. As opposed to the conventuals they did not have to observe the rule of poverty and were therefore able to have private property and an income. For the remainder they provided for themselves via donations made to the 'begijnhof'. They also generated income from teaching, health care, manual labour like embroidery, sewing, washing, spinning etc..



Leuven Town Hall

Tradition has it that the first Town Hall of Leuven was situated at the 'Oude Markt' or Old Market Square. The second was located on Great Market Square of Leuven. It had its place in a row of houses in front of Saint Peter's Church, but outside the present building line.

The construction of the present Town Hall started in 1439. The spacious cellars of the houses were retained when the building of the façade began.

Leuven is 30 minutes train journey direct from Brussels Airport which is a hub for International Travel.

The conference theme, location and city promise to make FITCE 2013 an excellent Congress, with an exciting Congress Program and an adventurous Partner Program.

Congress Programme

Date	
Wednesday 4/9/2013	
15:00 - 17:00	Registration open in Aula Pieter De Somer
17:00 - 19:00	Reception at Leuven Town Hall
Thursday 5/9/2013	
09:30 - 13:00	Official opening of the Congress with personalities from Business and Politics
14:00 - 17:00	Congress - First day
Friday 6/9/2013	
09:30 - 17:00	Congress - Second day
19:30 - 20:00	Reception at Faculty Club
20:00 - 24:00	Gala Dinner
Saturday 7/9/2013	
10:00 - 11:00	General Assembly FITCE.eu
11:00 - 12:00	Congress Conclusions

Partner Programme

Date	
Wednesday 4/9/2013	
15:00 - 17:00	Registration open in Aula Pieter De Somer
17:00 - 19:00	Reception at Leuven Town Hall
Thursday 5/9/2013	
09:30 - 13:00	Official opening of the Congress
14:00 - 18:00	Visiting Brussels by bus and on foot, savouring the Food & Culture of the Region
Friday 6/9/2013	
08:30 - 17:30	Panoramic tour of Namur by coach; Cruise on the Sambre/Meuse; visit to the Citadel - Fortified Estate - with the little touristic train
19:30 - 20:00	Reception at Faculty Club
20:00 - 24:00	Gala Dinner



Congress Chair

Prof. Dr. Jur. Jos Dumortier

Director ICRI KU Leuven - iMinds

Director of B-CENTRE

Technical Committee

Prof. Dr. Jur. Jos Dumortier

Prof. Dr. ir. Bart Preneel

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Conference Website

www.FITCE2013.eu

Important Dates

Submission of Abstracts: February 15, 2013

Notification of acceptance: April 30, 2013

Submission of Full paper and Camera ready materials: June 15, 2013



Moving towards Trustworthy Digital Ecosystems

Call For Papers

The Congress will be held in Leuven, a town proud of its past

Leuven is very proud of both its past and its heritage, and rightly so. There is so much to see and to do in and around Leuven that one visit is simply not enough.

Leuven has developed into a well-equipped, modern town with a thriving service industry economy and with a good balance of old and new buildings combining to offer a well-designed infrastructure to suit the demands of today's modern city with a rich tradition.

The university of Leuven – the congress host - was founded almost six centuries ago. The University's academic fame has attracted students and scientists such as Justus Lipsius, Gerard Mercator and Andreas Vesalius who have all made valuable contributions to European intellectual life.

Congress Objectives and Topics

The objective of the conference is to present the challenges, visions and strategies, state-of-the-art and perspectives in the area of information and network security to a wider audience of non-(security) specialised ICT-professionals.

Topics addressed during the Congress include:

- Critical Infrastructure Protection
- Cloud Computing Security
- Security Management and Economics of Security
- Trustworthy Infrastructures
- Security Solutions for Mobile Applications
- Identity and Access Management
- Secure Embedded Systems
- Privacy and Data Protection in Cyberspace
- Security Awareness and Education
- Attackers and Threats
- Enterprise Security Services
- Forensics, Fraud Detection & Prevention

Abstract/Paper submissions

In a framework of keynotes and invited speaker presentations a number of selected papers will be presented. Authors have a choice of going for a "presentation-only" or "full paper" contribution. In case of the latter a publication is possible for a number of papers of academic interest.

Instructions on submission of abstracts can be found on www.FITCE2013.eu
Please mind the date !

Report from the 5th FITCE Greek-Italian Mini Event Patras Greece in October 2012.

"Trends in ICT: Bridging Technologies and Advanced Services"

This event was another successful one organized by the two National FITCE Associations of Greece and Italy. It took place at the Conference Centre of the University of Patras and the title of the event was "Trends in ICT: Bridging Technologies and Advanced Services". The diverse and high quality of the talks was noted by the delegates. The event started with a welcome salutation by the presidents of FITCE Greece Mr. Konstantinos Sidiropoulos and FITCE Italy Mr. Maurizio Mayer.

The purpose of the workshop was to present and discuss current issues and cutting edge advances and developments in the field of Information and Communication Technologies (ICT) with mainstream topics in the areas:



President of FITCE Greece.

- Wireless, mobile 4G, advances in WiFi.
- Optical architectures, update in research projects, measurements in access technologies.
- Round table focused on the financial crisis and the means to overcome it.

The main outcomes of the event can be summarized as:

Session I

The clustering and cooperation of technologies in high tech can produce innovative ideas and products, the multi-platform base station products (WiMAX, LTE, GSM) will lead the delivery of new services, the new advances of LTE and the high bit rate delivery of the 60 GHz technology.

Session II

Overview of optical technologies, Future user needs, IMS as a leading platform for the convergence of technologies, perspectives of m-government services.

Session III

Means and techniques for energy efficient technologies, how the information field has helped to improve the field technician and the regulation agencies in monitoring local networks.

Session IV

Means for measuring and evaluating the QoE in video services, how cloud computing has brought new advancement in the ICT field and the use of surge protection equipment in base stations.

About 100 delegates attended the workshop including Italian professionals in ICT, Senior Business Executives,

Students and University Professors who all viewed the event as successful. The buffet at the afternoon was done in a large corridor where different groups had talks and remarks on the interested subjects of the event

Keynote speakers were professors from the University of Patras, the General Director of a company clustering organization and the former FITCE Europe President Mr. Andrea Penza. Presents provided by the sponsors were given to all speakers



Congress Delegates



Buffet Area.

Sponsors of the conference were five companies including: OTE, Cisco, Mortek, Raycap and Hellas Online.



Organising Committee

A warm welcome was given to the speakers, sponsors and VIP persons in a quiet and astonishing restaurant the day before and after the workshop. The event closed with

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**Panel Discussion.
Poznan Congress.
Telecom Developments in Poland.**

The Panel Discussion was on the topic of "recent developments in Telecoms in Poland".

The panel consisted of,

1. Rafał Dziedzic. Orange, Poland; Director of Operations Strategy
2. Wojciech Hałka. Director of the National Institute of Telecommunication, Poland
3. Jerzy Kubasik. Assistant Professor at Poznan University of Technology, Poland
4. Michał Korzeniewski. INEA S.A., Poland; Development Director.

The session was moderated by Mariusz Glabowski Chair of Communication and Computer Networks Poznan University of Technology.

The following is a summary of the discussions and conclusions of this Panel Session.

Telecoms evolution in Poland, in terms of availability of services and new products, is at a par with European developments, in most urban areas. Mobile Services are up to date with LTE having initial rollout in April 2012. Poland, in terms of rollout of broadband in rural areas, is still trying to overcome similar problems in rural areas in the rest of Europe.

From a legal point of view, the EU-2009 Directives are not yet fully implemented. New projects can take longer because of legal difficulties in public procurement to enable civil works. Regional backbone and aggregation building will happen but the last mile, in common with many other EU Areas, is proving to be difficult.

A significant barrier is regulation in investing in the fixed broadband network to support infrastructure. There is already a common mobile network infrastructure between Orange and T-Mobile, who then compete in the service layer. There are 7 Mobile Operators with 3 players on the frequency market.

The cost of investment in fixed broadband access to "white areas" is still very high. Cable Operators use WiMax Broadband to cover "white spots" in rural areas and Docsis and FTTH in city areas. "Thinking outside the box" technology options, with innovative ideas for reducing costs by as much as 30%, are widely used, particularly in rolling out GPON Services. In terms of unbundling of the local loop Cable Operators are not yet regulated, in contrast with incumbent operators



Mariusz Glabowski chairing the Panel Discussion

who are heavily regulated in this area. One particular difficulty is that there are 9,000 small Companies in Poland offering local broadband services. These are gradually being bought up by larger operators.

All Companies indicate a very positive experience with Technical Universities and Polytechnics. One of these has been to allow Students to stress test new technologies and service that Companies wish to roll out.

The conclusion of these discussions indicates that Poland is experiencing many of the common problems faced by other European countries, in addressing the digital divide, the push for higher levels of broadband access, and the funding of the broadband infrastructure necessary to enable higher end User broadband access speeds.

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conclusions from the General Secretary of FITCE Greece.

Conclusions of the Event

These Greek-Italian FITCE events have already become a tradition and besides the current trends in the ICT field, they strengthen the relations between neighbour nations.



The General Secretary of FITCE Greece.

The main conclusions of the event are outlined:

- The LTE which is considered to be a 4G technology will bring new initiatives and perspectives in the future of advanced generation services,
- The WiFi technology will play a new role in the future besides a simple wireless connectivity terminal. It will be used to offload traffic from mobile base stations,
- New backhauling means will be needed to carry the vast traffic generated by new technologies,
- E-Government services will ease the everyday life of users,
- Optical systems of xPON type will play a significant role in the delivery of high bit rate data,
- Software platform advancement for online monitoring the functionality and performance of xDSL networks will improve the operational costs and decrease the systems maintenance time and,
- The surge protectors will be needed in the new installations of mobile base stations.

Report on IT & Telecom Symposium - euroCMG 2012.

Welcome to Vienna

The Future of ICT -

Trends, Innovations and Solutions,

October 24th and 25th 2012

The following is a brief report from the joint FITCE and CMG-AE Conference held recently in Vienna.

One highlight after the other awaited the participants of the 10th IT & Telecom Symposium held in Vienna from the 24th to the 25th of October 2012. This year the event was held in combination with the euroCMG 2012, making for an international crowd. Forty speakers from across Europe offered the participants a wide range of current topics from the ICT world. A great success for the two hosting organizations FITCE and CMG-AE!



Snapshot of Conference.

The two hosts, CMG-AE and FITCE, were happy to welcome over 150 participants, a new record, to the event that took place at the Hotel Courtyard by Marriott in Vienna. During the following two days the audience was offered presentations by speakers ranging across various fields of expertise, amounting to an interesting and diverse program. Apart from the four main topics FIBRE-Day, Future of ICT, IT Security and Mainframe & Cloud the participants also had the chance to mingle and get to know one another at the reception afterwards. The sociable atmosphere made for great networking opportunities.

Incorporating technology, the RIGHT way

Monika Herbstrith offered the opening key note to the symposium and showed the audience that life with technology is something that has to be learned.

FIBRE-Day The Austrian Plan.

In Session one a discussion took place on "Roll-out of fibre vs. virtual unbundling in cities and rural areas". Thoughts on the Austrian situation concerning the roll-out of fibre and virtual unbundling, were presented, after which the participants plunged into a lively discussion and interesting exchange of ideas.

What does the future hold?

In Session 2 various speakers presented their views of the future, ranging from DNA- Computers and quantum computing to "ambient assisted living" for Elderly people. Diverse future scenarios were presented to the audience.

In the afternoon the audience had the chance to hear about the successful projects of our European

neighbours. A good chance, to also learn from their experiences and see how these experiences might help in the Austrian development..

How safe can we really feel?

Meanwhile in session three, Speakers focussed on the topic of current security threats. The variety of topics was wide, ranging from smart grids to smart phones. The technical sides of the risks were portrayed and it was possible to clearly identify generic security threats.

Mainframe & Cloud – does that even go together?

According to the Presenter of fourth and last session, it surely does. The remarkable thing about this session was not only the speakers but also the fact that many of the topics mentioned the day before could be reincorporated. Not only did the discussion again focus on the roll-out of fibre, also the issue of security played a prominent role. Especially in the field of cloud computing, this is a crucial factor



Panel and presenter for Session 4.

All in all, the IT & Telecom Symposium – euroCMG 2012 offered its participants the opportunity to exchange thoughts and ideas, get to know new developments and approaches and make new contacts. The Organisers were very pleased with the successful course of the symposium, and the positive feedback they received and of course with excellent opportunities for another Conference next year.

Full details of the report are available from FITCE [website](#).

*The above is a summary of the Event report by -
Julia Raffetseder.*

New on FITCE Website!

Articles Page.

The FITCE Website has a new section for articles and news items. These are gathered from a number of sources, including FITCE. We are targeting articles and papers that have a particular European interest. Just click the link on the Home page, to get to the articles page. It is hoped to update the page once per month.

Articles from Industry
and FITCE Sources

.....[read more.](#)

Best Presenter Award Poznan 2012.

(Extract from Paper)

A NEW ORIENTATION OF TELCOS ON NETWORKS AND SERVICES

Huib Ekkelenkamp

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The Netherlands huib.ekkelenkamp@atos.net

1. INTRODUCTION

Telecom trends are mostly characterised by user demand due to changing communication patterns, devices in use, desired services and networks, all enabled by technical and economic developments. They may be different per country and user group and noticed only after a considerable time. Communication, defined in its broadest sense includes conventional voice and data telecommunication as well as text, video or TV via fixed and mobile networks. Ubiquitous service provisioning, supported by convergence of fixed and mobile, data and voice, pre-paid and post paid is the current trend. Telecom networks were developed for carrying specific services like voice and (small band) data.

This resulted in so called vertical solutions: for each service e.g. voice, data or TV a dedicated network was provided. With the emergence of the Internet Protocol (IP) for packetized transport of information, a uniform core or backbone network for transmission and switching became available. This led to a separation of the general network infrastructure and the delivered services. The IP based network can carry any type of service, as long as it follows the communication protocol.

The result is a core IP network, able to transport large volumes of data over large distances at low cost. The access to this core transport network is provided via local copper pairs, fibre, or wireless connections using radio base stations, with allowed frequencies. In general fixed lines provide higher capacities than wireless connections, though recent developments in mobile communication systems decrease the gap. With the emerging broadband mobile networks, differences between fixed and mobile communication tend to disappear.

Telecom provisioning is a regulated market with rules for competition, prices, service obligation, coverage and security. Telecom is also a global business with strong growth (see also Figure 1 comparing growth of global Telecommunications and IT services). In particular in emerging markets large growth of users, services and traffic is noticed. In developed markets like Europe and the US some services show saturation in demand and revenue and traditional ways of communication are replaced by new patterns.

The Telcos or Communication Service Providers are aware of this. New players enter the market enabled by new technologies, standardisation and demand for ubiquitous communication at low cost. Large volumes and advanced production techniques of mobile devices have reduced their costs, enabling fast global growth and spread. The value chain extends to new applications and services.

If the "traditional" Telco wants to develop into an "infotainment" communication provider, delivering connectivity, entertainment, information / content and IT services this will require also different IT support from its suppliers.

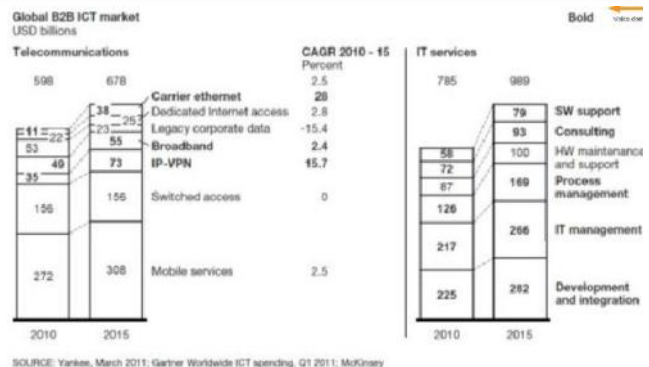


Figure 1 Growth of Telecommunications and IT services

2. INNOVATION 3.0, USERS DEMAND, TELCOS ENABLE;

New ways of working and new social patterns have a large impact on communication. Reduced travelling often leads to increased communication. New flexible organisation models based on a small permanent core staff and a large group of affiliated professionals require flexible communication. Communication in the networked organisation where professionals are contracted per project or specific job needs to be adapted to the situation which can change in a short period. Instantaneous exchange of text, graphics/pictures and video, can require fast data connections via fixed but also via mobile connections. This new way of working also called "Innovation 3.0" will require flexible networks with adapted capacities to the needs of the networked organisations. If Telcos want to be more than connectivity provider they should offer converged services to enable these organisations.

Changing social patterns also determine the shifts in communication. Family relations, leisure spending, and social events changed the last ten years considerably. But also the other way around; communication facilities have large impact on social patterns. In particular the fast growing social networks like Facebook and Twitter and the user generated content like on YouTube has resulted in a considerable shift from personal voice towards indirect data communication. Therefore, to predict something for the future of telecom, both the new ways of working and changing social patterns have to be taken into account. It is not enough to extrapolate the current trends.

Here we see, disruptive communication patterns

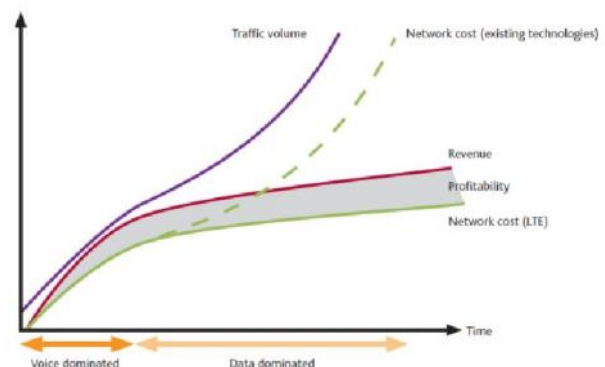


Figure 2 Growth of data services

where all modes of communication play a role. Consumers spend more money on telecom than ever. It has now become a vital element of the new lifestyle. Internet, e-mail and mobile communication are fundamental needs and people are prepared to spend an increasing percentage of their income on it.

The users require easy intuitive set-up of communication

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channels with no need to select specific parameters. Users don't like questions about server set-up, POPs or DNS parameters. There should be no hassle during installation.

The change from voice based to data based communication has large impact on networks and services. The required network capacities provided by Telcos to meet the demand at sufficient quality of service levels have grown drastically and are posing a real challenge. In particular the increasing demand of fixed and mobile video determines the required bandwidth and service levels and pulls a strain on current infrastructures. Telcos have to invest in capacity increase to avoid bottlenecks and outages.

Figure 2 shows the growth of data traffic volume and revenue. Only new mobile technologies like LTE are able to generate an attractive margin. Ubiquitous access to broadband internet has become obvious, reliable connectivity is taken for granted. Internet access tends to become a commodity which should be provided at the lowest costs. Over-The-Top (OTT) players use the Telco networks to add value with services and applications to meet the demand of users. Mobile broadband access to internet, e-mail and video is growing fast. Stimulated by smartphones and flat rates, mobile data usage and resulting traffic has grown above expectations. The social media like Facebook, Twitter, LinkedIn and YouTube have caused new ways of communication where text, pictures and video are more important than voice. New players like Apple, Google and Facebook have drastically changed user behaviour in telecommunications.

With the continuous connection to the internet cloud services become more attractive. Infrastructure support like data centres and applications like office suites are provided as a service with a subscription fee depending on usage.

For enterprises the traditional e-mail is still a key stone for the operations. With the growth of the mobility in business communication, companies select devices optimised for secure e-mail like the BlackBerry. Enterprise e-mail is traditional based on a server-client relation like Microsoft Exchange Server with Microsoft Outlook on PCs and laptops or a mobile client like Touchdown on smartphones and tablets. Often it is assumed that the user has one client through which e-mails are received and stored and deleted. With several clients on multiple user devices accessing the mail server, cloud e-mail services become more attractive. This is stimulated by the consumer e-mail services like Gmail. With cloud e-mail larger flexibility is obtained as any device with a compatible browser can get access to e-mail. There is no need for synchronisation which often results in faster access. Enterprises have high security / protection and reliability requirements and have therefore concerns about e-mail in the public cloud. A private cloud with encrypted e-mail should provide enough security protection.

A fast growing area is Machine-to-Machine (M2M) communication via mobile networks. The "internet of things" enables moving or static objects, in general called "machines", to present instantaneously their status or exchange instructions with back-office systems. This can be cars, cashing machines, point-of-sale terminals, energy meters, surveillance cameras, health care monitoring equipment or consumer equipment. Considering the large number of these devices this leads to large volumes in transaction-based communication. Currently several business verticals already use M2M for remote monitoring, telemetry and process control.

It is expected that this will grow and new applications in the next years will lead to an explosion of the "internet of things".

Telcos have recently created special departments and sector-specific groups to ensure their role in this value chain. It requires branch-specific knowledge of processes and data streams so that alliances with main players in branches or business sectors are required. Examples are the car industry, health care, energy, manufacturing, payment systems and consumer electronics.

3. SMARTPHONES AND TABLETS CHANGE SERVICES AND USAGE

The supported mobile smartphones and tablets, intuitive user interfaces, advanced graphical and video services and use of mobile applications or Apps, have resulted in new usages and new business models. Downloading applications from App stores free or at low cost has transformed the mobile phone to a multi-media, multi-purpose device. Services tend to become applications, running locally on the smartphone. Combining services leads to new services e.g. pictures made with the camera in the smartphone can be enhanced or augmented by information from the internet so that instantaneous in a locally made picture additional information of the shown objects can be displayed.

Bring Your Own Device (BYOD) to the business environment, has stimulated consumers, who are accustomed to their smartphones with user interfaces and Apps to select one device for business and private use. They don't like to accept less sophisticated features in the business environment. However, they accept the more severe security requirements for business use. Differences between consumers and business users therefore tend to disappear and the consumers are in the lead.

The large numbers of consumers of mobile communication determine the developments and business usage should benefit from that. It means that considering the numbers of devices sold, more use can be made of standardised operating systems and user interfaces, while at the same time costs for hardware, software and communication decrease.

Figure 3 shows some smartphones and tablets, all using Apps for a wide range of services. Some popular examples of Apps are: e-banking, e-mail, drawing, office (word processing, spreadsheet and presentation), news, weather, antivirus, file manager, converter, calculator, route finder, navigation, maps compass, radio, TV, railway scheduling, astronomy, mobile workforce support and parking.



Figure 3 Smartphones and tablets use mobile Apps

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Giving individuals the ability to control the way they are represented in various communication modes is a shift in power. Individuals will decide how to communicate by choosing a particular service, platform and digital representation. This shift of power toward the individual user has a significant consequence, the application logic to find and establish a connection to a particular personal representation is not automatically related to one single phone number or e-mail address. There will be various ways to find people and communicate with them depending on the context of the communication. Contextual awareness is a core aspect in the design of future communication solutions. For the consumer market, the key criteria for selecting any communications infrastructure will most likely ease of use and the bundling of access offerings.

The popularity of tablets can partly be explained by the popularity of the smartphone. The similar or same user interface, combined with the larger screen and small size and weight has made the tablets attractive for users on the move. Software installation via Apps markets is easy and cheap.

Paid Apps for the smartphone can often be installed on the tablet without additional costs. Short start-up time and low power consumption (no hard disk, solid state memory) make the tablets even more attractive. Instead of using the browser, Apps can be tailored to the user requirements and settings which often result in faster performance.

4. NEW TELCO ORIENTATION AND FOCUS

Telcos need to cope with the new situation, first in order to survive but then after to grow in new markets and services. They have a unique position: a direct relation with the end user or customer and with a wide range of own and associated service providers. They know much about their customers and are able to provide specific offerings using service bundles and tailored solutions. Telcos in general own networks and supporting IT systems for provisioning, customer care and billing. However, increasingly new services are provided Over-The-Top where the Telco only has to provide (broadband) connectivity and so their unique position towards mobile consumers is strongly challenged. Other players provide the services in the value chain. An example is IPTV. This is still provided by Telcos via their network as a separate service but it can also be provided OTT by a TV provider via a broadband internet connection. This last solution is growing at a much faster pace.

Some argue that Telcos should only provide connectivity and leave the services on their networks to others. This underestimates the customer care and billing needs. Telcos have a unique relation with their customers; they have a long tradition and experience with this role.

The new market orientation of Telcos requires an agile approach to cope with changes. Only Telcos who adapt to the changing market are capable to survive. They can take a larger part of the value chain than the OTT players and be more in control of the service provisioning. This is possible through their broker role in service provisioning between wholesale and end-user. The technology development and customer demand needs to be matched in time in which Telcos have obtained much experience.

Traditional services like voice and SMS are generating less revenue; mobile voice and SMS show saturation or are in decline. New players like Google, Apple, but also Facebook and Twitter take a larger share of the communication market. Many of these services can be obtained

free or at insignificant charges. This means that Telcos need a strategy for growth and profitability. A new orientation requires the right surveying instruments.

In times of economic recession, cost cutting gets always highest attention. To reduce costs, simplification of processes and infrastructure will help. This is supported by further automation of processes and use of standard IT components. This can be complete outsourcing of legacy networks and IT systems. A new approach with a new business model is required. This takes customers upstream (wholesale) and downstream (end users) into account. To cope with the rapidly changing market, fast introduction of new services is a must. The price erosion of traditional services like voice needs to be compensated by revenue of new services. The growth of these services depends on the quality of experience of the users. Consistent use of customer data about their requirements, complaints and care will improve the relation with the Telco and minimise churn. To support this transformation, innovation is required with low cost IT support. Based on analysis of the published plans of Telcos, this results in the following list of priorities:

- Cost cutting
- Complexity reduction (leads to lower cost)
- Further automation of processes
- Assembling IT with standard components
- Change of business model to include upstream and downstream customers
- Price erosion compensation by new services
- Fast time to market with new services
- Improving quality of experience
- Consistent use of customer data
- Transformation through innovation
- Removing functional silos

This requires changing the rules of the game or even changing the whole game. Some Telcos decide to replace their legacy IT with new suites or outsource their complete IT and leave innovation to the managing supplier.



Figure 4 Orientation requires the right surveying instruments

Dealing with Over-The-Top service providers requires from Telcos a new positioning and a new approach. The business model for Telco's new orientation should create value with services, applications and content, including their provisioning (fulfilment), customer care (assurance) and payment (billing).

If one of these components fails the customer experience is badly effected and the customer might change provider or use only part of the value chain (e.g. only bit-pipe con-

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nectivity). Finding applications or content should for customers be easy and installation has to be intuitive. Problems should be solved directly, payment simple, device use and telecom services hassles free to keep the customer loyal to a brand.

Customers are not capable to make a distinction between the content provider and the connection provider. This means that one party should take the overall responsibility to solve problems. Mostly this is the party which charges the customer for the delivered services. This role could also be taken by the Telco who wants to take the control over the whole value chain.

The Telco acts as a matchmaker between different platforms (Apps stores, customer care, billing), content providers, operating systems, connectivity channels (3G, LTE, WiFi, WiMAX, DSL, FttH) and devices (mobile device, PC, notebook, tablet). Battery use, data migration and storage (contacts, favourites, messages, preferences etc) are also distinguishing factors. The business model should take the whole ecosystem into account, including all costs and revenues over the total value chain during several years. This covers acquisition of customers, the operation, the partners, the IT support, the failures, the recovery, the marketing, the reputation and the future demand.

Telcos strong points are:

- Telcos often have powerful brands, strong trust and financial relationships with subscribers
- Telcos are used to a critical mass for large scale roll-out of networks and services
- Telcos can increase customer loyalty by bundling of services
- Telcos have unique data of customer behaviour, interests, complaints and bills
- Telcos manage the core transport network and key services for all OTT players
- Telcos integrate back-office infrastructure and applications enabling cost reduction

Telcos new orientation should:

- choose for total service provider (including broker) or access provider (bit-pipe) only (with OTT players take the rest of the pie)
- create value for customers by differentiating offerings in the broker model, being excellent in operations in the bit-pipe model
- focus on value propositions, profit models, technology solutions, own or outsourced activities, organization and control to keep a sustainable competitive advantage
- acquire specific branch or sector knowledge; translate business demand into new services

Outsourcing of technology and processes becomes more attractive for Telcos because:

- Service provisioning and customer support are more complicated as more complex devices have to be supported
- Telecom networks heavily rely on IT elements and are therefore more related to the IT world than to the traditional Telecom world, requiring different knowledge and skills
- Networks are growing in complexity due to the

large number of devices to be supported, handover between different types and the interworking with legacy networks and systems

- The large number of standards of standardisation organisations often requires considerable effort to follow and translate them to operational environments

The Telco core functions are: Strategy, Marketing, Sales, Customer Care, Finance, Portfolio Management and Human Resource Management. Functions to be considered for outsourcing by Telcos are:

- Repeatable processes of support and enabling functions in: IT services, Network Operations, Customer Support, Billing and Provisioning
- Facilitating functions: buildings (facilities management), security, documentation and transport
- Some commodities of Telco core functions e.g. marketing.

In the mentioned Telco core functions most important is customer care dealing with satisfaction, price and flexibility. Satisfied customers will stay and are prepared to take more services.

With changing technology and changing demand, flexibility in provisioning, assurance and billing keeps the customer loyal.

Several scenarios are possible. A Telco can acquire companies to increase its part in the value chain. Most Telcos have followed this path with mixed success. Cultures often differ and integration takes time. Brands are also an issue; building a reputation takes a long time. Different brands are not always a success.

Another scenario is a merge between a Telco and an IT company. In particular for the business customers, a combined ICT service offering is attractive. Differences between the telecom and IT world are so small that combined offerings are required. A third scenario is that a new player like Google, Apple or Facebook provides the telecom services and network as well. Considering their global coverage, value and investment capabilities it is not surprising that all show large interest in telecom provisioning.

Customer excellence is based on products and services delivered under a brand. This can be the core of the Telco. The Telco can also concentrate on the enabling functions like a MVNE (Mobile Virtual Network Enabler) providing wholesale services only. Another role can be bit-pipe provider, focusing on connectivity only.

To succeed with both large and small businesses, Telcos will need to focus on innovation, sell services before systems, and be able to manage change and customization effortlessly. Business communication is no longer a cost factor, but rather an enabler for increased efficiency. The line between work and private communication, via smartphones is becoming blurred.

5. CHANGING IT SUPPORT

For fulfilment (ordering and provisioning), assurance (customer care and quality control) and billing (rating and invoicing), Telcos installed over the years a wide range of supporting IT systems and platforms. These so-called Business Support and Operations Support Systems have often resulted in complicated legacy systems which are difficult and costly to maintain and to adapt to new requirements.

New services or products often lead to new IT systems which have to be interfaced with existing applications. As new Telco services have to be introduced as fast as possi-

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ble this resulted not always to the best designed and integrated solutions. With the emergence of complete suites covering all major IT support applications a complete replacement of legacy becomes more attractive. However, continuity of Telco service provisioning, customer care and billing requires exchange of information with existing systems. This often asks for adaptation of the new IT systems. By using a service-oriented architecture and an enterprise bus structure with middle layers, the interfacing complexity can be reduced. Figure 5 shows the main IT functions to be supported. Customer self ordering and self care (zero-touch service activation) is required. Ease of use and self control require other front-end systems and response times. Besides products and prices, intuitive user-friendly interfaces and instantaneous reactions determine increasingly the competitive advantage of the Telco. Ordering via clumsy websites doesn't contribute to trust. This puts strong

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The full content of the paper including abstract and references is available for download on the FITCE Website and will also be published soon in the JT&T Journal which is owned by National Institute of Telecommunications, Warsaw, Poland, who organised the Poznan Congress.

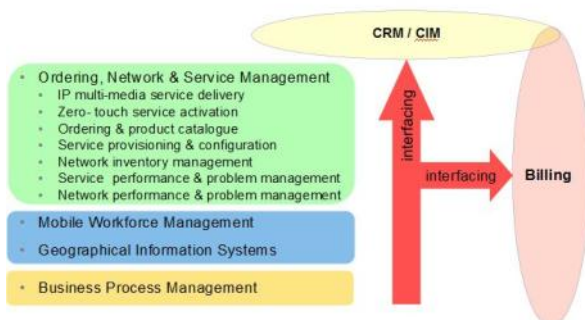


Figure 5 Main IT functions of Telcos to be supported

requirements on the performance of ordering and service delivery platforms.

Telcos are interested to become a cloud service provider for their business customers. This often requires specific branch or sector knowledge for which partnerships are most effective. They invest in data centres to provide Infrastructure as a Service (IaaS) and consider converged telephony services as Software as a Service (SaaS).

Some Telcos see opportunities in providing Platforms as a Service (PaaS) like for the provisioning of Apps or secure Payments. This strengthens their role as broker in the value chain.

6. CONCLUSIONS

The role of Telcos is changing fast. Under pressure of the new OTT players like Google, Apple and Facebook and the replacement of traditional services by data a new orientation is required. Their role as connectivity provider might not be enough to survive. They need to increase their position in the value chain. Cost cutting is not enough, new distinguishing services, new business models including upstream and downstream customers, brokerage and cloud services is the way forward. This should be combined with excellent provisioning, customer care and billing with the customer in control. With this ambition and orientation Telcos should be able to survive.

About the Author.



Huib Ekkelenkamp graduated at Delft University of Technology in 1978 in the field of telecommunications. He joined KPN with research on digital optical fibre transmission systems. He worked in several countries for the international consulting organisation of KPN. He spent many years in the Far East

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