



ifip

40 YEARS TC.6

PRAGUE, 24 MAY 2012

40 YEARS TC.6



San Francisco 1982



Sofia 1988

A saying by Louis:

A famous saying by Andre:

Another one by Otto:

One made by Augusto:

Farouk:

"A cognac on breakfast is not the worst thing at all."

"Those living under socialism are also people."

"It is not easy to sleep next to person who snores from time to time."

"Drinks come at the end of a meeting."

"Slide on the sand on your bottom – the worse that may happen is some of it to get inside."



Malaysia 1994



China 2000

Ron: *"Before reading the book, read the content."*

Olli: *"We came to the bar to drink, not to talk."*

Kiril: *"Every intelligent people have opportunity to defend simultaneously thesis and antithesis."*



Finland 2002



Borovetz 2007

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40th anniversary of IFIP TC.6

	21. 5. 2012 Monday	22. 5. 2012 Tuesday	23. 5. 2012 Wednesday	24. 5. 2012 Thursday	25. 5. 2012 Friday
	Tutorials	Main conference			Workshops
8:30 - 9:00		Opening session		One Minute Madness	
9:00 - 10:30		Keynote	Keynote	Session A	Session B
10:00 - 10:30		One Minute Madness	One Minute Madness		
10:30 - 11:00		Coffee break	Coffee break	Coffee break	
11:00 - 12:30		Session A	Session B	Session A	Session B
12:30 - 14:00		Lunch	Lunch	Closing session	TC6 meeting
				Lunch	
14:00 - 15:30		Session A	Session B	Session A	
15:30 - 16:00		Coffee break	Coffee break	40th Anniversary of IFIP TC6	
16:00 - 17:30		Session A	Session B	Session A	Session B
		Welcome drink		Banquet	TC6 dinner

40 years of IFIP TC6

Commemoration ceremony

Prague

May 24, 2012: 14.00 – 17.40 h

Programme

Part 1	Chair: Guy Leduc	
Prologue	Dean/Rector; IFIP Member of CZ	14:00 - 14:10
Prehistory	<u>Vint Cerf</u> (Google, United States) VIDEO The early years of INWG and IFIP WG 6.1	14:10 - 14:20
Past	<u>Louis Pouzin</u> (Internet Pioneer, France) What difference between 因特网 and internet ?	14:20 - 14:50
Present	<u>Jon Crowcroft</u> (University of Cambridge, United Kingdom) The way to move forward in networking	14:50 - 15:20
Pause		15:20 - 15:45
Part 2	Chair: Gunnar Karlsson	
Progress	<u>Dina Katabi</u> (Massachusetts Institute of Technology, United States) Cutting through the Layers: High-Performance Wireless Networks	15:45 - 16:15
	<u>Adam Dunkels</u> (Swedish Institute of Computer Science, Sweden) Networking in the small, in the large	16:15 - 16:45
Perspectives	<u>Pablo Rodriguez Rodriguez</u> (Telefonica R&D, Spain) The Next Wave of Telco's Innovation	16:45 - 17:15
Poetry	<u>Otto Spaniol</u> (RWTH Aachen, Germany) Self-gratulation of IFIP TC6 for its 40th birthday	17:15 - 17:30

See the abstracts in the applications p. 27

Selbstgratulation von Erich Kästner zu seinem 40. Geburtstag

**Du weißt, mein Bester, dass ich nichts beschönige.
Deshalb vergiss nicht, was man leicht vergisst:
Doppelt so alt, wie du heute geworden bist,
werden nur wenige.**

Self-gratulation of Erich Kästner for his 40th anniversary

**You know it very well, my dear,
that my comments are very clear.
Therefore it should be wise to let
you know a fact – not to forget:
To reach your double age (I dare
to say) will be extremely rare.**

Self-gratulation of IFIP TC.6 for its 40th anniversary

**TC.6 meanwhile has forty
years. This is already sporty.
A serious question: Can we double
this age – without much trouble?**

**Can TC.6 remain alive?
Can mother IFIP, too, survive?**

**First we can simply calculate
the year until we'll have to wait;
how long we still will need to stand
until the "Eighty years event".
This happens – as I'll tell to you -
in May of twenty-fifty-two.
What will we see then (oh my dear)
in this still very distant year?**

**We might consider here three phases
to cover all the various cases.
First we might be realistic
(or is this all too optimistic?)**

that within four decades more
we live like all the years before.

We might instead, nevertheless,
try an optimistic guess
and claim that forty years ahead
our life will be by no means bad.
Research persists with consequences:
We need a lot of conferences
in places like as in Den Haag
or such as here in lovely Prague.

The third and rather sad solution
reads "pessimistic evolution".
It gives a bad evaluation
of the likely situation:
The life of IFIP will be ended.
Working groups will be disbanded.
The committee will have to quit,
Robots will beat Real Madrid.

What is the truth? We do not know.
But that's not crucial, clearly so:
Whether the first respective latter
is valid doesn't really matter
since most of us (of course, that's sad)
will by that time be fully dead.

This is the likely situation.
For TC.6: Congratulation!
Whether with laughter or with tears
I say just one word, namely: Cheers!

Prague, May 24, 2012

Otto Spaniol

40 Years of TC-6 – Looking Back and Looking Forward

Prague, Czech Republic, May 24, 2012

Thirty-seven years ago a distinguished Japanese academic, Dr. Hirose Inose, had been given responsibility to develop a computer network among the major universities of Japan. The view of the purpose of computer networks in those days of large mainframe computers was that networks were to allow access to these scarce computing resources by users sitting at computer terminals. Prof. Inose made a remark to me that I have remembered all my life. He commented that he was not sure that the prevailing view of the purpose of networking was correct, because “Information is naturally distributed in the heads of people.” Indeed, our brains are the ultimate repository of all information to be communicated whether by networks or face-to-face.

Last week, an article crossed my desk that read, “Using only her thoughts, a Massachusetts woman paralyzed for 15 years directed a robotic arm to pick up a bottle of coffee and bring it to her lips’, researchers report in the latest advance in harnessing brain waves to help disabled people.” TC-6 has been instrumental in vast improvements to the storage and movement of data and information over the past forty years. I believe that attention to improving the ability to capture data and information directly from the brain could be a major next area of interest for TC-6 probably in combination with other IFIP Technical Committees. More on this later ...

Technical Committee 6 – Communication Systems, has had a profound impact on the world not because it was developing new products or services, but because it brought together many people who have played a significant role in the development of today’s information economy.

The formation of TC-6 coincides with the beginnings of what we know today as the Internet. 40 years is a short time, in the history of mankind, but, these forty years span one of the most important developments in the history of mankind – the emergence of the information economy.

For hundreds of thousands of years people lived in isolated communities. Travel was limited to walking – typically at speeds of 5 kilometers per hour. The only place information could be stored was in the heads of people, and its movement was limited to approximately 5 kph. (One could argue that our minds remain the only meaningful place for storage of information even today, but that is another topic). As alphabets and writing developed in various cultures, information began to be stored on scrolls made from a variety of materials. That stored information had to be input to the storage medium by hand – a very slow process. Some very beautiful art forms, for example calligraphy, developed from this. However, information was necessarily limited to the wealthy because relatively few people could afford to own stored information.

The invention of the printing press approximately 500 years ago introduced the possibility of mass producing stored information; books and newspapers dramatically reduced the cost of stored information, and dramatically expanded ownership of stored information. But, books could still only be moved at the speed of a horse-drawn wagon or a ship – perhaps three to four times walking speed, or up to 20 kph. The invention of the telegraph dramatically increased the speed with which information could be moved, but it still had to be input by hand. Small amounts of information could be moved at much higher speeds than had ever been possible. All of this began to impact society in new ways.

The next major development concerned data generation and capture. It took place in the late years of the 19th century and the early years of the 20th century with two new developments: 1) the ability to transmit voice at high speed over significant distances (initially analog voice) and the 2) ability to input and store voice information in real time (analog voice recording). While the ability to transmit voice, and later video, has been widely recognized as a major development, the

importance of the ability to capture and store voice and video has been another major information technology development.

During the 19th and first sixty years of the 20th century, the invention of rail and air travel multiplied the speed of physically moving information stored on paper by as much as a factor of 200 (1000 kph/5kph), with dramatic social impact. The stage was set for TC-6 to appear in 1972.

With computers came the ability to store significant quantities of information digitally. Technological developments in the storage and transmission of voice were separate from developments in data but began converging with data processing and communications around the time that TC-6 was formed. During the forty years of TC-6's existence, data transmission speeds have increased from 100s of bits per second to billions of bits per second – an increase in speed by a *factor* of ten million to 100 million. During the same period, the ability to store information digitally has improved significantly, whether text, image or voice. It was inevitable that these developments would have an even more dramatic impact on mankind than the invention of the printing press, as information can be input today to storage media and moved from anywhere to anywhere at speeds that were unthinkable sixty years ago.

Two of the three major constraints in data generation, storage and transmissions have been solved. But, one remains: the ability to generate information to be stored. This is still constrained to a rate of approximately 100 words per minute, or 4800 to 9600 bits of information per minute. With the dramatic improvements in the ability to store and to transmit data during the past forty years, perhaps the next frontier for TC-6 will be the ability to capture and transmit data and information directly from the brain, including the ability control a wide variety of devices, both locally and remotely.

Technical Committee 6 played a major role in bringing new data communications technologies to countries all over the world as they were developing. TC-6 brought together groups of like-minded people who were doing the research that was critical to all of these developments. Many – perhaps all of the individuals involved with TC-6 were aware of the enormous potential of data communications, and they were eager to meet with their counterparts around the world who were involved with data communications whether as a researcher, policy maker, or interested citizen. Members of the TC and its working groups had a desire to help people around the world become aware of what was happening in data communications, to encourage future research, and to help leaders understand the tremendous potential. The work of TC-6's first Working Group, WG 6.1, also called the INternet Working Group or INWG, originally by Vint Cerf as we heard earlier today, led to the development of the first layered model of communications under founding TC-6 Chairman Keith Uncapher, and then continued under TC-6 Chairs Louis Pouzin and Andre Danthine. I became involved with electronic messaging or email as it began to emerge in the early days of the ARPANET in the USA. In 1978 I traveled to a TC-6 meeting in Tokyo to propose that TC-6 form a working group on email. This resulted in the formation of WG 6.5. A flurry of conferences on email sponsored by WG 6.5 was held in North America and Europe in the early 1980s, bringing together both developers and early users of email from all over the world. Similar things happened with WG 6.4, dealing with Local Area Networks, and with each of TC-6's other working groups.

TC-6 adopted a policy of sponsoring at least one conference every year in Europe or North America, and one conference outside of Europe/North America. The conference in Europe/North America tended to be more technology focused, and well attended by the people doing research and development in data communications. However, it was recognized that it was equally important to bring the technology concepts and the technology experts to countries and regions all over the world. It was often very expensive or impossible for people from these regions to travel to Europe or North America. TC-6 addressed this problem by bringing the conferences and some of the experts in the field to them. The list of countries and regions where conferences were held is very large and includes every inhabited continent. In some parts of IFIP, it was said that "TC"

now had an additional meaning – “Traveling Circus!” It is safe to say that there was no inhabited region of the world where a TC-6 conference was not accessible to those who were interested in data communications. This concept was enhanced with recurring regional conferences such as AFRICOM held in Tunisia and Zimbabwe in the 1990s, and the COMNET series of conferences held in Hungary.

An interesting mix of people from government, academia and industry came together in TC-6. Each group had its own perspectives on what was important, and these perspectives were sometimes in conflict. The existence of TC-6 was important to intelligent, probing discussions of various issues surrounding data communications by this diverse group of people. TC-6-sponsored meetings and conferences provided an important venue for exploration of each other’s viewpoints. Sometimes differences were bridged; in other cases there was no more than an agreement to disagree. The opportunity to gain an understanding of the differences was invaluable.

Potential side-effects of these new technologies were not always anticipated. In a WG 6.5 conference held at the University of Nottingham in the United Kingdom in the early 1980s, all the major capabilities of email, as it is in use today, were identified and discussed. Various approaches to implementing these capabilities were explored in some depth. However, one critical side effect that was not anticipated was the development of spam – unwanted email. The wide spread of email to billions of users was not anticipated, and the need for an ability to filter out unwanted email was missed. Thirty years ago, even the most ardent enthusiasts for email did not anticipate such wide spread use. And recognition of the need to filter out email attachments containing potential viruses was not anticipated until later, because computer viruses had not yet appeared. WG 6.1 efforts had concentrated on ensuring that a message was not corrupted during transmission; not on protecting against a message deliberately designed to harm a computer.

The impact of TC-6 has been far reaching, in part because it was so timely. TC-6 was formed at the right time as computing and communications began to converge along with voice and data communications. It has served as a catalyst for the information revolution and the emergence of today’s information economy. And it provided me, personally, with the opportunity to know and interact with many marvelous people who have been instrumental in the development of data communications during the past 40 years.

Thank you for the privilege of joining you here at this celebration of the 40th Anniversary of TC-6 during Networking 2012 and talking with you today!

Dr. Ronald P. Uhlig
Past Chair, TC-6
Dean, School of Business and Management
National University
11255 North Torrey Pines Road
La Jolla, California
USA

Letter to TC.6 representatives

On May 24 we will be celebrating 40 years since the formation of IFIP TC.6. I remember that I was appointed as a Bulgarian representative in 1973. Two years earlier I was elected associate professor and was also responsible for the development and implementation of the channels of computer systems that had just began to be manufactured in Bulgaria. My job was additionally associated with developing a computer network between the academies of science of the socialist countries. Since then much time has passed, during which I've not only held lectures in the Technical University and the University of National and World Economy, but also worked as a senior research associate in BAS and the Institute of Computer Technology. My participation in the meetings of TC.6 and the friendships that I made vastly expanded my ideas and knowledge.

I expected that the 40 year anniversary will be an event not only retrospective but also emotional in nature. Within a day I expected to hear 10 minute presentations of my colleagues. I expected former committee members from different countries to be invited.

Creating the appropriate atmosphere could hardly have been a problem, especially since some of our colleagues have organized similar celebrations which many of us have witnessed.

I guess it is nostalgic to remember the traditional anniversary celebrations which were carried out in the old times. There would be a review of the achievements and a short analysis of the difficulties and results. The efforts put in by the participants would be noticed. These events were related with lots of music, fun and memories. Perhaps this is the reason why the programme for celebrating our 40-year history seemed too dry and formal. It does not give an overall review of the committee's objectives, nor does it show the achievements of the local and global representatives of data communication. So I allowed myself to send you my thoughts and visions with a short brief for those of you who would show any interest. I am thinking to put into paper all the materials that I have, and I would be grateful if all of you add a few pages and stories, so that we can create a booklet which appropriately represents the committee's work. This will come in hand for those who will celebrate the 50th anniversary of TC.6. Those who are young will walk through this same path and become like us – let them carry on not only knowledge, but also a piece of historical emotion.

See you soon in Prague.

Best regards

Kiril

3 may 2012

Sofia

40 years of TC.6: A personal view

from the Bulgarian TC.6 delegate (Kiril Boyanov)

The period of 40 years that have elapsed since the creation of TC.6 can be viewed as significant, but also as a brief space of time. It is significant for major changes that took place in the scientific and political life of the member countries, to which we are all witnesses. In brief, 40 years are negligible from the point of view of history. Over those years, however, the Technical Committee achieved valuable results in its members' scientific endeavours. And, more importantly, major steps were made in finding ways of communication among individual experts in our polarized world. It may have been true that IFIP was created to provide insight into the socialist system and help it to a certain extent. This, too, may have been an attempt to set the beginning of a future cooperation among scientists and experts throughout the world. The issue is arguable but the positive results are obvious. Over the past period meaningful contacts were set up among experts and scientists in the Data Communication field owing to the TC.6 role. The conferences that took place in some of the socialist countries allowed experts in communication technologies a better access to some of the world's latest high level developments, as well as to new acquaintances and contacts. In addition, the conferences contributed greatly to the development of education, and to adoption of appropriate approaches to scientific research and training.

The value of contacts among experts can also be proved by the fact that all TC.6 Chairmen showed knowledge and understanding of the then existing issues. Louis Pouzin, André Danthine, Ron Uhlig, Otto Spaniol, Augusto Casaca, all did their utmost to organize conferences in Hungary, as well as in Bulgaria. There may be some people in Bulgaria that would question the added value of their efforts and ask how the country and its scientific community have benefited from them. The answer I can give it that due to the Network and Office Automation conferences the doors became open for many young experts to go and work all over the world. Suffice it to mention that the conferences and the TC.6 meetings in Bulgaria opened ample opportunities for contacts and mutual understanding. The mere fact that TC.6 Chairmen unanimously and successfully resisted the tendencies to hold TC.6 meetings in more attractive places speaks of the difficulties they had to overcome and, after so many years, I would like to thank them again for that. Two of the many positive examples can illustrate my point. The fruitful cooperation with the Chair of Prof. Otto Spaniol was developing so successfully that for a couple of years only, over 20 young researchers were given the opportunity of specializing there. Today, Rumen Stainov and Vesselin Yossifov are full-time professors in Fulda and Berlin, Vladimir Getov is Head of Programme in the University of Westminster in the UK and member of the Editorial Board of Computer, and Ilia Georgiev occupies a responsible position at the University of Denver in the US. Most of the young people who had just finishes their theses and participated in the organization of those conferences, continued their scientific careers in a most successful way and are now in leading positions in Bulgaria or in other countries all over the world. Let me also mention that Assoc. Prof. Boyan Bonchev and Assoc. Prof. Vassil Tsunizhev who, too, benefited by Prof. Spaniol's school, were actively working in Lisbon under Jose Granado. Ron Uhlig organized a seminar on Mobile Communication and application of CDMA in them in Bulgaria for the managers and chief executives of the Bulgarian Telecommunications Company. Olli Martikainen participated with invited paper at a discussion forum on electronic infrastructures, organized by the Bulgarian president. L. Pouzin, O. Spaniol, L. Pujolle, A

Casaca, A Danthine attended as keynote speakers in a number of IT conferences in our country.

All in all it is obvious that, owing to TC.6 activities experts and researchers were raised, who nowadays work for scientific research agencies the world over. In addition, the scientific community in Bulgaria and in other former socialist countries was given a chance for a wider view on scientific problems.

It would be wrong to assume that science and technology were dormant in our countries of those, now distant, years. A certain structure in the industrial development was present, except that it obeyed different rules. The assumption that everything in the East was a copy of Western technology is also totally wrong, since virtual copying was impossible, owing to the differences in the technological base, standards and materials. Rather, the aim was to find analogies for the Western products, and in some cases those analogies proved to be of a higher quality since mistakes by the Western constructors were noticed and rectified by their Eastern counterparts. Such mistaken opinion can only be maintained by those who have had no experience in preparing documentation or had not participated in the launching of mass production of certain products. The latter task is a difficult one and is related to specific research efforts since to reach functional compatibility on the basis of different standards and technologies requires new approaches to the research and analysis of products already existing and functioning. Those skills were seriously developed in the ex-socialist countries and the western counterparts who tend to deny this fact either misunderstand them or willfully neglect them.

A few words on the industrial development planning are appropriate here. That it failed to succeed can be easily explained. But lessons can also be learned from failure. It is not sufficient to totally negate our approach and maintain a priori that it only failed because the West did not participate in that particular method of development. The latter failed to guarantee high quality of the products yet relied on a huge market. By way of comparison, nowadays the world is buying goods made in China that do not offer high quality either. My point is that at the time under discussion, there were conditions to market socialist production. Moreover, part of them also satisfied the Western markets. Bulgaria, to take an example, used to export about 100,000 typewriters for the US annually. In 1989, the turnover of the digital technology products was orbiting between 4 and 5 billion dollars, depending on the then existing currency rates.

The ties that were created in the 40-year period were not only professional, they were also ties of friendship. Those friendly ties formed the foundations of bilateral and multilateral meetings to solve specific problems. Many of the leading researchers on the Technical Committee received recognition not only in Hungary and Bulgaria, but also in many other countries. It is not by chance that Louis Pouzin, Otto Spaniol, and Olli Martikainen received the highest awards of the Bulgarian Academy of Sciences. This trend would have persisted, had not the political changes in Eastern Europe changed the situation in our countries in a not always positive manner. Our cooperation however continued to grow from strength to strength, a fact proved, among other things, by the invariable presence of TC.6 members on the Editorial Boards of our journals.

I specifically want to stress here how important is the history of TC.6 for the young, as well as for the older representatives. It is indicative for the civilized, cultured manner of communication between the committee members, of our relations of spiritual closeness. There is a string of entertaining episodes that could be collected in a booklet, for they are related to many of us. I have related one or two, but there are many more. I also tried to make a photo collection, to prove that "once upon a time" we have been young and attractive.

People the world over have qualities that do not depend on whether they were born in “socialist” or “capitalist” circumstances. The latter will rarely influence individual abilities. In this context I can hardly refrain from mentioning that the categorical positions of some individuals regarding the capabilities, and the cultural and educational levels in the new EU states have been dictated either by a profound lack of understanding of the current-day processes, or by limited abilities of those individuals to see things in perspective.

In the retrospective, we see now that we have lived through a period of genuine movement and exchange of values, and have enjoyed cooperation that gave meaningful results. We should expect a continuation of, and a greater success in, the friendly cooperation among researchers and experts from member countries. And one last comment: We should remember those gone before us and never forget that we all share the goal of trying to create a better future for mankind. This is all that matters.

Prague, May 24, 2012

Prof. Kiril Boyanov
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Member of Bulgarian
Academy of Sciences

Some Fun

I have remembered the TC.6 meeting in Sofia when it was hold for the first time in Bulgaria. The meeting took place at the 3 star hotels "Kedar" – a guesthouse of the Bulgarian Academy of Sciences. All representatives from about 12 countries were taken from the airport to the hotel where in one of the hotel conference halls the meeting took place. During the month of May, the weather in Sofia is usually warm and there is no central heating. Unfortunately, the bad luck was with us and the first night was a frosty one with no heating in the hotel. Double blankets were provided but this was insufficient and everybody was shivering during the breakfast. Then I asked a cognac to be served with the tea during breakfast. Louis Pouzin and Andre Danthine openly declared that they have never had cognac in the morning. Noticing that others did so, they tried as well and soon the number of opened bottles increased – just like the mood of the participants. After that the meeting went smoothly, decisions were taken effectively and fast. I can't avoid mentioning the Norwegian representative Mr. Willy Jensen, who used to have coffee in addition to the cognac all the time – one thermos all day. During the evening there was an argument in addition to the good wine, during which Andre was proving that the hardware solutions of IBM for mainframes are not good. He claimed that there are other companies, offering better and more effective ideas but the economical power of IBM leads to a market domination. The discussion crossed the boundaries of an ordinary argument and at the end of the evening, the participants argued with each other while the noise was as if attending a meeting of heavy drinkers. The next day the manager of the hotel asked me: "Prof. Boyanov, are these people really scientists and company representatives. We have not seen such drinking since last year when the telephone exchange was put into position. The suppliers got so drunk that several vases were broken at the end of the dinner. These, at least did not break anything".

I have remembered lot sayings from some colleagues and I would like to mention some of them:

A saying by Louis: "A cognac on breakfast is not the worst thing at all"

A famous saying by Andre: "Those living under socialism are also people"

Ron: "Before reading the book, read the content"

Another one by Otto: "It is not easy to sleep next to a person, who snores from time to time"

One made by Augusto: "Drinks come at the end of a meeting"

Olli: "We came to the bar to drink beer, not to talk"

Farouk: "Slide on the sand on your bottom – the worse that may happen is some of it to get inside".

Kiril: Every intelligent people have opportunity to defend simultaneously thesis and antithesis. Also-Drinking and sex should be done attentively but permanent.

During one of the visits of Sam Samberg, the Swedish representative in IFIP and famous scientists in the area of telecommunications, I was asked to show him some of the sightseeing of Sofia. Together with a friend of mine, we went to Vitosha – a picturesque mountain 15 km from Sofia. We took my "Moskvich" (Russian car very popular in our country at that time) and departed. His wife – about 50 years old lady started a conversation, related to our work. Dr. Samberg himself was not active in the talk, just mentioning something from time to time. On our behalf, we asked what is her job and learned that she is

neuro-sexologist. In the middle of the 70-ties, a lot of Swedish porn movies have been shown in Europe. In Bulgaria, this was a taboo, the penalties were severe – one might even go to jail, if a porn magazine is found in somebody at the border. So we asked Samberg's wife – why such distribution of this kind of movies – her answer was that it coincides with the state policy of encouraging child birth. We smiled and my friend asked how such movies help – the answer was, that watching a movie of this kind, the family might decide to have sex. Then we started provocative questions like the one - what does a husband, when he wants some intimacy with his wife? The answer was shocking – there is a dedicated day for this in the month. We continued – If after a party, or just coming back home, a wish for intimacy occurs – can the fixed date be changed? The answer was "Impossible!" We smiled on that answer. Then Ms Samberg asked "And how is in Bulgaria, for example – with the intelligencia?" Our answer was that most people have such relations once or twice a week – when they are in the mood, not fixed by pre arrangements. She looked very surprised, while my friend continued that in the villages, this is often done each day, or even twice a day! At this point she sincerely replied "Poor women!!!" We started laughing and she said "You are mocking me!" and her mood went down. We couldn't improve it later, despite the nice walk and beautiful places we visited in the mountain. Different people, different points of view.

Organizing of events was creating some difficulties, especially in regard to South Africa, due to the fact that in a certain period of time the socialist (and some other) countries did not recognize the government of South Africa because of its course of violence towards the colored population. This was the time of apartheid and the presence of South African representatives/citizens was not allowed – the above mentioned countries have signed agreements of not letting people from that state under no circumstances in their countries.

Andre always explained that it should be guarantee from the host country that every representative including SA should received entry visa. No visa-no meeting.

And here, I shall mention a scenario, which our representatives in IFIP executed skillfully. Some of the events including TC.6 meetings had to be held in Bulgaria under the condition that all participants must have access – no restrictions for anyone. They go to the Ministry of foreign affairs and propose the following – when South Africa representative comes to Bulgaria, his passport to be retained at the border and some special services accompany him in the country. After the end of the event, his passport is given back with no sign that he has entered Bulgaria. And so it happened. The South African representative came in, left his passport at the border and was smiling during his free trips in the country, often saying "I am without any passport and I can go elsewhere!" There were one or two "accompanying persons" but no problems whatsoever occurred. Leaving the country he took back his passport and ... it looked like that he spent three days at the airport!

This story became known to others and was applied for meetings of some other committees. Thanks God, this was not a practice to be carried out very often as the representatives of South Africa were not always able to attend the meetings. But for this case, the people in our committee used to say "You, Bulgarians, are quite ingenious - being able to take the apartheid system through your country– you clearly have creative thinking!"

50 years of IFIP

A very personal and highly subjective view by a past TC.6 chairman

**Prof. Dr. Dr. h.c. em. Otto Spaniol
Computer Science
RWTH Aachen University
(Germany)**

Preface:

Books entitled "History of ..." are typically very boring. They contain a lot of bureaucratic material, they have plenty of lists which are of absolutely no interest to anyone. Moreover, they are full of some old photos whose colour quality is typically very limited at best. And those who detect their face on one of these photos will only comment, with a hopeless and depressed sigh, "how much nicer I looked when I was young". As a consequence, nobody wants to read, let alone buy such books.

To make things even worse: it is extremely time-consuming to put together the necessary statistical material. And the authors will inevitably omit some details. This will give the reviewers a field day. On the other hand, if completeness were achievable there would hardly be any sign of applause for this Sisyphean struggle; but only some grumbling comments along the lines of "I could have made that much better in far less time".

That is why practically nobody wants to commit herself or himself to such a work. Things are even more complicated if the number of usual suspects who might be qualified to do the work (i. e. the number of committee members in the case of an IFIP Technical Committee) is comparatively high. In such a case each possible candidate will believe that there are so many others who could do the job. Consequently, the job will not be done at all. This is a natural consequence of Parkinson's law which says that "deliberative bodies become decreasingly effective after they pass five to eight members". But IFIP TC.6 has some 40 members ;-). You will understand what I mean.

A major reason behind the creation of IFIP and of TC.6 in particular

You might believe that IFIP was supposed to foster progress in R&D in Computer Science, deploying its strong scientific basis. This glorious interpretation, however, is partly true at best. A major reason for the establishment of IFIP 50 years ago was a strong desire of the second and the third world to have a "window to the west". Back then, the experts from the socialist world were hardly allowed to have contacts to Westerners, for political reasons. As a citizen of former Western Germany I remember very well the enormous difficulties we had to discuss with people from the former German Democratic Republic. As a typical sign of German perfectionism their delegations were composed of the strictest hardliners, even more so than those of the former Soviet Union. Contacts with the Western world were – and still are – very limited for experts from developing countries due to financial reasons.

Thus, the "invention" of IFIP looked like a very good move especially for the socialist world since establishing contacts with US based societies, such as ACM or IEEE, was next to

impossible. At the end of the day, however, it turned out that they had shot themselves in the foot. The improved contacts between East and West contributed considerably to the collapse of the socialist system in Eastern Europe.

IFIP TC.6 ("Data Communication"; later relabelled "Communication Systems") was established comparatively early (in 1972, i.e. 38 years ago) due to the increasing importance of all kind of communication networks. With respect to the socialist system shooting itself in the foot the field of data communication was a particularly effective one. The Soviet Union never had a national TC.6 delegate (because they were very suspicious of, and hostile against, every kind of improved and communication). However, other countries from Eastern Europe were more than happy to make use of the opportunities provided by IFIP. Therefore, IFIP TC.6 got delegates from Czechoslovakia (and, of course, later on from the Czech Republic and from Slovakia), Poland, Hungary, and from Bulgaria. The delegates from these countries established successful conferences to which Western experts were invited, and where many co-operations and even friendships emerged.

Two countries from the former socialist hemisphere were particularly visible in that respect:

- a) Hungary, where Tibor Szentivanyi was very successful with the NETCOM conference series that was regularly held in Budapest. Tibor was one of the most active delegates TC.6 ever had. Most unfortunately, he died prematurely from an illness contracted at a TC.6 meeting in a foreign country.
- b) Bulgaria. In this country, academician Kiril Boyanov has been extremely active. He organised lots of very successful conferences such as NIPS (Network Information Processing Systems) and quite a number of TC.6 meetings. His great hospitality always attracted numerous delegates, many of whom (including, of course, myself) became very good friends. This was not least supported by the freely flowing considerable quantities of Pliska (the Bulgarian version of Cognac) and of Vodka.

IFIP TC.6 and its impact on the evolution of communication systems

TC.6 has initiated, and contributed to, many developments that led to improved communication systems. This happened primarily in the early years of the committee when the number of participating delegates was comparatively small and when, therefore, the number of hours spent on more or less futile discussions was much lower. Among the pioneers of these days, and among the active contributors to TC.6's work were many world-famous experts including, for example, André Danthine, Don Davies, Bob Metcalfe, Louis Pouzin, Harry Rudin, Ron Uhlig, Einar Stefferud, and Carl Sunshine – to mention just a few in alphabetical order. It is safe to say that the establishment of packet oriented communication networks and the associated standardisation issues were heavily influenced by the work of these people. For example, ITU's X.400 series of Recommendations is rooted in the work of the Working Group (WG) 6.5 on „Message Handling Systems” (which is now disbanded).

Unfortunately, it has to be said that these days such pioneering progress of a Working Group is hardly possible anymore. This is mostly due to the fact that truly groundbreaking progress is only possible through the work of large teams. IFIP members are pure volunteers, and its TCs and WGs simply don't have the means for such co-ordinated efforts. Moreover, standardisation today has become extremely tedious, time-consuming, and costly (you have to attend the meetings to be taken serious, and you need to find supporters and to forge coalitions). As a consequence, TC.6 almost exclusively concentrates on the organisation of

high quality workshops, working conferences, conferences, and symposia. That is to say, IFIP TC.6 now focuses on information exchange (by presentation of recent results in research and development) and to information dissemination. The latter aspect is a particular aim of WG 6.9 (DC for DC; Data Communication for Developing Countries), where TC.6 uses part of its still considerable surplus from conferences for the organisation of state-of-the art tutorials in Latin America, Africa, and in other less developed parts of the world.

IFIP TC.6 and the competition with IEEE

Many prospective event organisers ask: "What do I get from IFIP for my requested transfer of conference surplus – if any – to IFIP? Why does IFIP take my surplus but will not cover a possible deficit?". IFIP doesn't really have good answers to such questions. Typical examples might include "the good name of IFIP" or "the refereeing procedure" and the like. But then the prospective organiser will reply that IEEE offers much better services and a better financial perspective. As a consequence, IFIP and in particular TC.6 are loosing more and more profitable events to IEEE. Sometimes this happens in several steps: first, a former IFIP conference is organised in conjunction with IEEE, with IFIP leadership; then IEEE moves to a 50:50 scheme; and finally IEEE takes over the full event. This is a very serious and dangerous development for IFIP, and one that has gained momentum during the past years.

Another reason for that trend is the fact the proceedings of all IEEE conferences are available online (in their Xplore data base), and thus accessible to everyone with a browser and a subscription (i.e., to most university people, as opposed to those who attended the conference). And that's why many prospective authors tend to ignore IFIP events since they believe that the corresponding publications will not contribute enough to their career and their visibility. As a consequence, IFIP conferences are no longer considered the prime outlet for (short lived) research results.

IFIP TC.6 as a "seismic" indicator of new and upcoming trends

The evolution of communication systems is almost perfectly reflected in the creation (and in the dissolution!) of IFIP TC.6 Working Groups.

It all started with **WG 6.1 on "Architectures and Protocols for Networked and Distributed Systems"**. This is still the most active working group, judging by the number of events organised per year. Of course, this topic is a never-ending story that will always be relevant. Eventually, **WG 6.1b on satellite communication** was added (and the original WG was renamed to WG 6.1a). It turned out that this new subgroup, focussing on satellite based communication (e.g. TV via geostationary satellites), was rather short-lived. And its rather quick suspension highlights the "indicator principle" of IFIP TC.6 WGs: they are established when they are needed, and they are dissolved when it is obvious that there won't be any more significant new trends and research questions in that particular area in the foreseeable future.

The original **WGs 6.2 and 6.3** had already been dissolved before I joined TC.6 in 1983. During my chairmanship the numbers were reused, respectively, for the topics **"Network and Internetwork Architecture"** and **"Performance of Communication Systems"**.

WG 6.4 was then on **"High-Speed Networking"**. It had a quite considerable overlap with WG 6.2, and primarily concentrated on the co-operation with the WWW conference series. Therefore, the WG was eventually re-named to **"Internet Applications Engineering"**, but there has not been any major activity of the group since at least 2007.

Together with WG 6.3 and WG 6.8 working group 6.2 organises what is probably TC.6's most important annual conference – "Networking 20xx". This conference series is the result of the merger of three formerly separate streams of events. And this combination has proved to be a very good move to counter the tendency towards way too many tiny events. Meanwhile, it has become quite obvious that the average number of participants of almost any given conference is shrinking (there are too many of them, the registration fees are becoming too high, and fewer and fewer people have an adequate travel budget). I dare to utter another reason for the shrinking participation: more and more conference presentations owe their very existence to the "publish or perish" syndrome. Most of them do not offer too much insight; in many cases they are little more than practically useless reports on unfinished master or PhD theses.

WG 6.5, entitled "Message Handling Systems" was hugely successful during its early days. Yet, despite this enormous success it was eventually felt that the width and depth of new developments in the field was too limited. Therefore, the group was disbanded and is now a task force group (**TG 6.5**). But plans are afoot to turn it into a working group again, to focus on **Secure Networking**.

For a long period of time **WG 6.6 on Network Management** has been one of the most powerful groups – at least financially. This comfortable situation came almost to an end when the formerly TC.6-based conference series **ISINM – International Symposium on Integrated Network Management**; now renamed to **IM (Integrated Network Management)** – was practically lost to **IEEE CNOM** for a number of reasons. **WG 6.6** is still comparatively big, though, with events such as **NOMS (Network Operations and Management Symposium)** or **DSOM (Distributed Systems Operation and Management)**, and maybe half a dozen other annual or bi-annual events.

WG 6.7 ("Smart Networks") deals with topics such as home networking, ad-hoc and sensor networking, broadband wireless networks, signal processing, and network control. Several new "hype topics" such as "active networking" or "autonomic communication" and the like have been proposed but no final decision has yet been reached. The events that are organised by this group are typically relatively small. The group has meanwhile be disbanded.

WG 6.8 ("Wireless and Mobile Networking") has been an obvious – but admittedly relatively late – reaction to the dramatic increase of radio based communication. However, the events organised by the group, such as "Mobile and Wireless Communication Networks", "Personal Wireless Communications" and "Wireless Sensor and Actor Networks" are quite small, even too small to be financially and scientifically promising. It has to be admitted that the group suffers from a totally insufficient base in North America and in East Asia, and is thus not yet really accepted outside Europe.

WG 6.9 ("Communication Systems for Developing Countries") organises conferences such as **WCITD (Wireless Communications and Information Technology in Developing Countries)**. As already mentioned, it is very successful with state-of-the-art tutorials in countries like Paraguay or Mozambique. But if you use a "source and sink" analogy for financial aspects, **WG 6.9** is clearly the sink.

WG 6.10 ("Optical Networking") is so inactive that I don't want to comment on it here.

On the brighter side, **WG 6.11 ("Communication aspects of e-World")** reflects a real new trend in the area of communication systems. It organises conferences such as **I3E (IFIP Conference on e-Business, e-Services, and e-Society)**, "Virtual Goods", and even "Well-being in the Information Society". Its organisation is greatly alleviated by the fact that the "burden"

of the chairmanship is allocated to a triumvirate of three experts who co-operate very well.

IFIP TC.6 and the TC (the “Travelling Circus”)

Technical Committee 6 is (or was, rather) the only IFIP TC that could afford the luxury of two meetings per year; all other IFIP TCs restrict themselves to just one (or even less). Moreover, while other TCs concentrate on places which are relatively easy to reach, TC.6 quite frequently combines its events with conferences in nice and sometimes even exotic places. Meetings have been held from Saariselkä to Thiruvananthapuram, from Lake Tahoe to Sun City, from Sousse to Borovez, from Middelgrundsfortet to Madeira, from White Plains to Venice, and from Muscat to Nyanga (to name just a few places where some of the 75 TC.6 meetings took place until 2010). The reader of the present report is cordially invited to find out the countries of the named meeting places – and he will be congratulated if he knows them all without support from Google.

Such locations make it quite attractive for communication experts to become a TC.6 delegate or a WG chairperson. But the downside (which becomes more and more dominant) are the enormous amounts of money it takes to attend a meeting – even if it is “only” required to attend one out of three consecutive meetings. Therefore, from 2009 onwards TC.6 does not any longer require participation in each meeting. Rather, the first meeting each year (regularly combined with the conference Networking 20xx) is for all delegates, whereas the second one is mainly for WG chairs. Of course, “normal” delegates are also invited to attend the second meeting.

IFIP TC.6: A final conclusion and some kind of consolation

Everything has its pros and its cons. It is typical, however, that the good aspects are easily forgotten while the negative aspects stick for much longer. Thus, very easily an overall recollection tends to be negative even if it’s actually a good thing. My gut feeling is that my report may create the same all too bleak impression. This, however, is not exactly what I want. IFIP TC.6 is still an excellent and very successful committee – and IFIP would be much worse off without it.

TC.6 wishes IFIP (and also itself) 50 more successful years to come.

Otto Spaniol (RWTH Aachen University; Germany).
TC.6 chairman from 1992 until 1998 and then again from 2004 until 2006.

30 Years TC.6– Congratulation from Kiril Boyanov

I am happy to see all of you my friends

Today and if God say tomorrow

I will spend a good time shaking your hands

And always will remember it with sorrow.

Time is passing fast and our bodies are not the same.

But our hearts are still warm, without any ice.

I do not know when, where we shall meet again

But I am ready and will take my plane..

I wish you to have a very long and happy life

I wish you to enjoy your time on sun and candlelight

I wish you to spread around your remarkable skills

I wish you to keep up your heads not using any pills.

Vice chairman

B. Sendov

To the chairman of TC.6

Prof. Augusto Casaca

Dear Prof. Casaca,

Please accept my warmest greetings and congratulations on the occasion of the 30-th anniversary of TC.6 "Communication Systems". As one of the most active committees in IFIP, you have pursued remarkable activities in the area of telecommunications, computer networks, data exchange systems and a number of other directions in this fast growing area. The significant number of very high quality scientific and research conferences and workshops raised not only the authority of the respective scientific directions but also of IFIP.

I would like to wish all former and present TC.6 members good health and success for the benefit of science.

Sofia

Past President IFIP

Honorary member IFIP

/acad. Bl. Sendov/

IFIP TC-6 Communication Systems
c/o Professor Guy Leduc, chair
Université de Liège
Faculté des Sc. Appliquées
Département d'Electricité, Electronique et Informatique
Grande Traverse, 10 Bât. B 28
BE-4000 LIEGE
BELGIUM

Dear professor Leduc,

Technical Committee 6 on Communication Systems is celebrating its 40th anniversary this year. Unfortunately due to my agenda I am not able to attend your celebration meeting on 24 May in Prague. I regret this very much since it would have been a fine opportunity for me to meet the members of TC-6. I trust there will be a chance in the future to attend one of your meetings.

I congratulate TC-6, its working groups and all the volunteers involved with this birthday. TC-6 is a very active community in IFIP and this is highly appreciated. You are one of the most productive groups in IFIP with respect to events and publications and I trust that there is enough energy and enthusiasm in the group to maintain this, even if circumstances for organizing events are not so easy nowadays. IFIP's technical work is a strong basis for our image and position towards the many different stakeholders, not in the last place our member societies, and therefore it is important that we guard this position carefully and where possible expand and improve.

We do not know what the future will bring us. But we do know that we will continuously have to pay attention to the developments in our field. If we want to keep a leading role in our society, a role that will be valuable and attractive for the next decades, we will constantly have to evaluate what we are doing and how we are doing it. I look forward to the thoughts and ideas of our technical committees on this.

Let me finish by stating that IFIP is proud of TC-6 as one of its very active communities and that we look forward to a continued fruitful and active cooperation to address the challenges that we face. I wish you an enjoyable celebration meeting.

With warm regards

Leon Strous
IFIP President

IFIP TC.6 national delegates

COUNTRY	FROM YEAR	TO YEAR
AUSTRIA		
KÖNIGSHOFER Fritz	1978	1994
POSCH Reinhard, Prof. Dr.	1994	2003
HARING Guenter, Prof. Dr.	2003	-
ALBANIA		
FRASHERI Neki, Prof. Dr.	1997	2001
ANDORRA		
NICOLAU I VILA Miquel Prof. Dr.	2002	2010
ARGENTINA		
SANTOS Jorge	1989	1999
ROMAN Alejandro Dr.	2000	2001
DIAZ Javier Dr.	2001	2008
ARMENIA		
ANGIO J.	1982	1997
SAHAKYAN Vladimir Dr.	1997	2000
AUSTRALIA		
HOUSLEY Trevor	1985	2000
DUTTON Harry J. R.	2000	2003
HOANG Doan, Prof.	2004	2007
BELGIUM		
DANTHINE André, Prof. Dr.	1976	2005
LEDUC Guy, Prof. Dr	2005	-
BRAZIL		
TAROUCO Liane, Prof. Dr	1982	1993
SOUSA Jose Neuman de, Prof. Dr.	1999	-
BULGARIA		
BOYANOV Kiril, Prof. Dr.	1972	-
CANADA		
CURRAN Alex	1974	1979
TWYVER David, A.	1980	1990
CHAPMAN Ken Dr.	1997	1997
MASON Lorne G., Prof. Dr.	1997	2006
BOUTABA Raouf, Prof., Dr.	2007	-
CHILE		
PIQUER José Dr.	2004	2008

CHINA		
DAO-YUAN Hu, Prof. Dr.	1992	2005
LIN Chuang, Prof., Dr.	2005	2005
ZHU Hongbo, Prof.	2005	2007
WU Jianping Prof.Dr.	2008	-
CLEI (Centro Latinoamericano de Estudios en Informatica)		
BARAN Benjamin, D Sc.	2005	-
CZECH REPUBLIC		
GVOZDJAK L.	1972	1985
PUJMAN J. Dr.	1985	
SLAVIK Jan	1995	2008
BESTAK Robert	2008	-
DENMARK		
CILIUS-NIELSEN Dr.	1976	1981
ORSNAES J.	1981	1985
IVERSEN Villy Baek, Prof. Dr.	1985	
FINLAND		
RANKO Kauko, Prof. Dr.	1972	1980
EKBERG Jan	1985	1990
MARTIKAINEN Olli, Prof. Dr.	1991 and 2004	1998 and 2009
HARA Veikko	1998	2003
LATVA-AHO Matti	2009	2011
KANTOLA Raimo Prof. Dr.	2012	
FRANCE		
POUZIN Louis	1972	1991
TOHMÉ Samir, Prof. Dr.	1992	2000
PUJOLLE Guy, Prof. Dr.	2008	
GREAT BRITAIN		
DAVIES Donald W.	1976	1985
RADFORD Peter, Dr.	1985	
GREECE		
PAPACHRISTODOULOU Z.	1985	1990
APOSTOLOPOULOS Theodore, Prof.	1990	2007
STAVRAKAKIS Ioannis, Prof.	2007	
GERMANY		
FAERBER Georg.	1974	1980
RAUBOLD Eckard, Dr.	1980	1984

SPANIOL Otto Prof. Dr. Dr. h.c	1984	-
HUNGARY		
SZENTIVANYI Tibor	1972	1996
DIBUZ Sarolta, Dr.	1996	-
INDIA		
BASU D.	1987	
GUPTA M. N.	1981	1991
RAGHAVAN S V, Prof. Dr.	1991	2001
JHA Sunil Dutt	2001	2004
ICCC		
UHLIG Roland, Dr.	1983	1992
ISRAEL		
KATENELSON J.	1976	1982
BIRAN David	1982	1989
SHARON G.	1989	
ITALY		
LE MOLI Gesualdo, Prof. Dr.	1976	1990
BOSCO Piergiorgio, Dr.	1997	2000
PRATI Giancarlo, Prof.	2000	2006
RUGGIERI Marina, Prof.	2006	2007
JAPAN		
NAKAGOME Yukio, Dr.	1981	1987
ONO Kinji, Prof.	1987	1992
SAITO Tadao, Prof. Dr.	1992	-
MALAYZIA		
OMAR Charles	1994	1996
NAH Soo Hoe, Dr.	1996	2001
FAISAL Norsheila Bt, Prof. Dr.	2001	2008
REP. OF KOREA		
CHONG Il Young, Prof. Dr.	2005	2007
NETHERLANDS		
BOUTMY Bert	1974	1990
NIEMEGERES Ignatius, Prof. Dr.	2001	2012
PRAS,Aiko, Dr.	2012	
NORWAY		
JENSEN Villy Dr.	1980	1989
ELIASSEN F.	1989	1995
TORBERLSEN R.	1995	1997

AAGESEN Finn Arve, Prof. Dr.	1997	-
NEW ZEALAND		
MARTIN D. J.	1978	1987
HUNT L. Ray	1987	
OMAN		
AL-NAAMANY Ahmed, Dr.	2001	2009
POLAND		
SEIDLER Jerzy	1972	
SOBCZAK Wojciech, Dr.	1990	2000
GRZECH Adam, Prof.	2000	
PORTUGAL		
GRANADO Jose, Dr.	1982	1985
CERVIERA A.	1985	1990
CASACA Augusto, Prof. Dr.	1990	2009
MONTIERO Edmundo, Prof.	2009	-
SINGAPORE		
YEO Boon Sain, Dr.	2005	
LEE BU SUNG Francis, Prof.	2007	-
SLOVAKIA		
FABIAN Karol, Dr.	1992	2007
SLOVENIA		
BESTER Janez, Prof. Dr.	2002	2007
SOUTH AFRICA		
VEER Gert van der	1972	1980
KOEN Koos, Prof.	1982	2007
KRITZINGER Pieter, Prof. Dr.	2007	2010
HANCKE G.	2012	
SPAIN		
LABANDERA-SANCHEZ L.	1982	1989
RIERA Juan, Prof. Dr.	1989	1995
PUIGJANER Ramon, Prof. Dr.	1996	2011
PONT Ana, Prof.Dr.	2011	-
SWEDEN		
STAHL Monika	1972	
KHAKHAR Dipak, Prof. Dr.	1984	2009
KARLSSON Gunnar, Prof. Dr.	2010	-
SWITZERLAND		
HEGELBACH J.	1972	1978

RUDIN Harry, Dr.	1978	-
SYRIA		
KIWAN Fayer Dr..	1994	2001
SABOUNI, Iman, Dr.	2007	
THAILAND		
WUWONGSE Vilas, Prof. Dr.		
TUNISIA		
KAMOUN Farouk, Dr.	1983	
USA		
UNCAPHER Keith W.	1972	
METCALFE Robert, Dr.		
UHLIG Ronald, Dr.	1979	1995
CHAPIN A. Lyman (ACM)	1995	1999
IYENGAR Arun, Dr. (IEEE CS)	1999	-
ZIMBABWE		
WHILEY Jean	1996	

Applications

Part 1

Vint Cerf (Google, United States) VIDEO

The early years of INWG and IFIP WG 6.1



Vinton G. Cerf is vice president and Chief Internet Evangelist for Google. He is responsible for identifying new enabling technologies and applications on the Internet and other platforms for Google. Widely known as one of the "Fathers of the Internet," Cerf is the co-designer of the TCP/IP protocols and the architecture of the Internet. Vint Cerf served as chairman of the board of the Internet Corporation for Assigned Names and Numbers (ICANN) from 2000-2007 and has been a Visiting Scientist at the Jet Propulsion Laboratory since 1998. Cerf served as founding president of the Internet Society (ISOC) from 1992-1995. Cerf is a Fellow of the IEEE, ACM, and American Association for the Advancement of Science, the American Academy of Arts and Sciences, the International Engineering Consortium, the Computer History Museum, the British Computer Society, the Worshipful Company of Information Technologists and a member of the National Academy of Engineering. Cerf is a recipient of numerous awards and commendations in connection with his work on the Internet, including the US Presidential Medal of Freedom, US National Medal of Technology, the Prince of Asturias Award, the Tunisian National Medal of Science, the Japan Prize, the Charles Stark Draper award, the ACM Turing Award and eighteen honorary degrees. In December, 1994, People magazine identified Cerf as one of that year's "25 Most Intriguing People."

Abstract

The International Network Working Group (INWG) was created in October, 1972 after the first International Conference on Computer Communication (ICCC) at which the ARPANET was publicly demonstrated for the first time. A Terminal IMP (Interface Message Processor) was installed in the basement of the Washington Hilton Hotel and about three dozen terminals of varying kinds were attached. Sites around the ARPANET were demonstrated, largely by the graduate students who had built them. In a gathering of about two or three dozen packet networking researchers from around the world, it was concluded to form the INWG, using Steve Crocker's open Network Working Group as a model. The NWG had developed the ARPANET host and application protocols. Steve was too busy at ARPA to lead this new effort but proposed that I could do this as part of my research duties at Stanford University. So I became the first chairman. After a few years of operation, Louis Pouzin suggested to Alec Curran, then the head of IFIP Technical Committee 6 (Telecommunications) that INWG ought to be incorporated into the IFIP system. Alec and I prepared proposals for presentation to IFIP and TC-6 leaders and, if memory serves, INWG became IFIP WG6.1 in late 1994 or early 1995. Since that time, IFIP WG6.1 has pursued a range of technical objectives. Among the most powerful, in my view, were the focus on tools for analyzing and validating protocol operation. While the proof of correct operation proved very difficult for any sort of complex

protocol, the effort to model and analyze tended to expose mistakes in design in a systematic way.

Louis Pouzin (Internet Pioneer, France)

What difference between 因特网 and internet ?



Louis Pouzin has acquired an international reputation as an expert in computer communications and networks. Most of his career has been devoted to the design and implementation of computer systems, such as CTSS, the first large time sharing system at the Massachusetts Institute of Technology, or the CYCLADES computer network and its datagram packet switching network, from which TCP/IP was derived. Besides his experience in leading teams of top professionals, he is known internationally for his participation in early network standardization within IFIP, ISO and CCITT, and his numerous publications, many of which have become educational material in network courses. As a lecturer, he is especially appreciated for presenting complex subjects in clear and understandable terms. He graduated from École Polytechnique in Paris. He is past chairman of IFIP-TC-6 (data communications). He has published more than 80 articles and a book on computer networks. Among awards he has received: IFIP Silver Core, Bulgarian Academy of Sciences Marin Drinov, ACM SIGCOMM, IEEE Internet, French Légion d'Honneur, and ISOC Hall of Fame Pioneers. Presently he is Project Director with EUROLINC, a non-profit organization promoting the use of native languages in the Internet.

Abstract

IFIP-TC.6 was lucky to be born at the very beginning of the data networks age. This timing in history attracted top experts in network design, management, instrumentation, modeling and protocol validation, security, standardization, analysis, etc. A sticky point remains unexplored though: politics. As commerce, power grab, traditions, fraud, crime, or war rely increasingly on networking, design and operation cannot be exercised simply from technical standpoints. Present trends from far East to far West lead to an extensive control of all human activities far beyond proportionate justifications. This appalling deviation from a civilized equilibrium must be kept in check. But how ?

Jon Crowcroft (University of Cambridge, United Kingdom)

The way to move forward in networking



Jon Crowcroft has been the Marconi Professor of Communications Systems in the Computer Laboratory since October 2001. He has worked in the area of Internet support for multimedia communications for over 30 years. Three main topics of interest have been scalable multicast

routing, practical approaches to traffic management, and the design of deployable end-to-end protocols. Current active research areas are Opportunistic Communications, Social Networks, and techniques and algorithms to scale infrastructure-free mobile systems. He leans towards a "build and learn" paradigm for research. He graduated in Physics from Trinity College, University of Cambridge in 1979, gained an MSc in Computing in 1981 and PhD in 1993, both from UCL. He is a Fellow of the ACM, a Fellow of the British Computer Society, a Fellow of the IET and the Royal Academy of Engineering and a Fellow of the IEEE.

Abstract

The way to move forward in networking is not to guess the future but to do what people tell you not to do. In this talk, I will report on 30 years of being contrary, and explain what this is motivating me to do now about the present (and future) Internet. I expect disagreements.

Part 2

Dina Katabi (Massachusetts Institute of Technology, United States)

Cutting through the Layers: High-Performance Wireless Networks



Dina Katabi is a professor in the EECS Department, and a member of the Computer Science and Artificial Intelligence Laboratory. She has joined the MIT faculty in March 2003, after completing her PhD at MIT. Katabi's work focuses on wireless networks, mobile applications, network security, and distributed resource management. She has award winning papers in ACM SIGCOMM and Usenix NSDI. She has been awarded a Faculty Research Innovation Fellowship in 2011, the IEEE William R. Bennett prize in 2009, a Sloan Fellowship in 2006, the NBX Career Development chair in 2006, and an NSF CAREER award in 2005. Her doctoral dissertation won an ACM Honorable Mention award and a Sprowls award for academic excellence.

Abstract

The traditional layered structure of networked systems has created barriers between researchers working on physical transmission (signal processing, coding, and communication theory) and network protocols (medium access, routing, and applications). As networking techniques become more sophisticated, these barriers increasingly inhibit the productive flow of information necessary to solve important networking problems. This problem is particularly relevant in the wireless domain where the shared nature of the broadcast medium conflicts with the isolation assumed in a layered abstraction.

In this talk I show how a more integrated view of the network stack can deliver fundamental design shifts that produce significant performance and functionality benefits. In particular, with standard techniques, interference causes packets to be dropped at the physical layer. I show how to use an integrated technique that leverages the structure of the interference to jointly decode multiple corrupted packets, eliminate the throughput reduction otherwise

caused by interference. I also present a novel technique that makes the network stack act like a linear transform, and hence enables mobile video that does not glitch or stall.

Adam Dunkels (Swedish Institute of Computer Science, Sweden)

Networking in the small, in the large



Adam Dunkels is an experimental computer scientist in the Computer Systems Laboratory of the Swedish Institute of Computer Science, Kista, Sweden, and the founder and senior scientist of the Networked Embedded Systems group. His research interests are system software and low-power IP networking for small embedded systems and wireless sensor networks. Adam has written some well-known software for networked embedded systems that is used in satellites, air planes, racing car engines, oil bore holes, cargo ships, TV-transmission equipment, and in products from hundreds of companies, including ABB, Altera, BMW, Cisco, Ericsson, GE, HP or Xilinx.

Abstract

Networking has undeniably been tremendously successful in driving real-world progress over the past decades. The Internet, while initially driven by a technology push, has in a short time transformed the world as we know it. We have recently been seeing networked smartphones and the cloud drive a similar transformation, only faster. Many believe the next step to be called the Internet of Things - massive amounts of tiny, networked, sensors get connected to the Internet, fueled by a decade of academic research and technology progress. What happens when millions - nay, billions - of networked sensors connect the physical world to the Internet? What will drive progress - technology, users, business, or academia? Can the lone researcher still hope to make a difference?

Pablo Rodriguez Rodriguez (Telefonica R&D, Spain)

The Next Wave of Telco's Innovation



Pablo Rodriguez is Director of Research and Director of Telefonica Digital Barcelona R&D Lab. He is also an adjunct faculty professor at the department of computer science at Columbia University, New York. He has developed his career in the United States as a software architect and entrepreneur in three Silicon Valley start-ups (Inktomi, which provided the search engine of MSN, Yahoo and AOL; Netli and Tahoe Networks). He also worked at Microsoft Research in Cambridge and Bell-Labs in the USA. As a result of his work, Pablo

has more than fifty scientific publications and patents. He has winning paper awards, including ACM/IMC and WWW, and was awarded the "Prix de la Recherche" for academic excellence. Twitter: @pabloryr

Abstract

Exponential data growth and slowly growing revenues are carrier's dilemmas today. To meet such a challenge, it is the time for Telcos to focus on innovation. While the early stage of Telco innovations focused around their core technologies and business around voice and data, the next decade looks very different. In this talk I will discuss how the Internet paradigm, knowledge of complex systems, and core networking expertise can be used as the basis for innovation in many other areas. A few example of those are privacy, trust and reputation, world-wide TV delivery, peer to peer connectivity, connecting the next 50 Billion things, or network economics. However, the real breakthrough innovations may come from more adjacent and far fetched multidisciplinary areas including psychology, vanguard cooking, or the science of soccer playing.

Otto Spaniol (RWTH Aachen, Germany)

Self-gratulation of IFIP TC6 for its 40th birthday



Otto Spaniol is professor emeritus at RWTH Aachen University (Germany) for "Communication and Distributed Systems". He has been chairman of IFIP TC6 from 1992 til 1997 and then again from 2004 til 2006. Since 1983 he serves as German national delegate for this Technical Committee.