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**Abstract:**

This document gives an overview on the current status of IPv6 deployment in Europe and the rest of the world up to some extent. The goal of this document is not to identify all projects and initiatives, but rather to give a survey of activities that have been initiated by the IPv6 Task Force and the IPv6 Task Force Steering Committee as well as by related initiatives all around the world.

As this is a living document, to remark the changes from the previous version, in order to facilitate the readers of previous versions, the new or amended text is highlighted in light blue background.

**Keywords:**

Current IPv6 Task Force Work, IPv6 Status in Europe and RoW, National Task Force initiatives, International Task Force and equivalent bodies initiatives.

# Revision History

The following table describes the main changes done in the document since its creation.

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v0.6	08/02/2004	Added contributions	Tim Chown (UoS)
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v1.0	24/02/2004	New text added	Jordi Palet (Consulintel)
v1.1	26/02/2004	New contributions from Bosco Fernandes and Olaf Bonness added	Jordi Palet (Consulintel)
v1.2	27/02/2004	Added references and news	Jordi Palet (Consulintel)
v1.3	29/02/2004	Final Review	Jordi Palet (Consulintel)

# Executive Summary

This document provides an overview on the current IPv6 activities that have been initiated by the IPv6 Task Force and the IPv6 Task Force (TF) Steering Committee (SC). It is intended to provide an overview of high-level initiatives to deploy IPv6 in Europe, and also in some extent in other parts of the world.

It is not a survey on technical IPv6 activities, nor is it an overview of IPv6 projects in Europe, but rather an attempt to list (and later on aggregate) current IPv6 activities in Europe and the rest of the world. The goal is to help identify blanks and show the progress that has been achieved.

Several significant achievements can be reported:

- Through activities of the IPv6 Task Force Steering Committee and members of the IPv6 Task Forces, the status of IPv6 initiatives and projects in Europe have been reported on over 40 conferences, workshops and other events. The founding events of the National IPv6 Task Forces have gained press attention in all countries where the national Task Forces are active.
- Through direct involvement, the IPv6 Task Force SC has been directly involved in several global path-breaking activities, like the announcement of the DoD to require IPv6-capable products in future procurements, the Global IPv6 Ready initiative, the Chinese IPv6 summit and the IPv6 Appli-Contest 2003.
- Through the national IPv6 Task Forces the membership grew from approximately 70 individuals at the Brussels meeting of the European IPv6 Task Force in 2003 to more than 400 companies (approximately 500 individuals), so the European national Task Force activity has gathered a significant momentum in recent months. The companies are reported in this document, although the latest version of the companies can be found on the web pages or through the contacts for each national IPv6 Task Force. The next phase of the project will focus on translating this industry support in high impact activities in Europe.
- The international related activities and equivalent bodies are taking-off and the cooperation levels keep increasing at several levels, including key agreements among Asia Pacific countries and Europe.
- Special actions and press releases regarding the cooperation with CEA (Consumer Electronics Association) and CENELEC (European Committee for Electrotechnical Standardization).
- Highly impacting activities are already taking place in Europe and the rest of the world, including the Global IPv6 Service Launch Event.
- A renewed call for actions has been published as a result of the October 2003 meeting in Milan.
- The dissemination level of this work is achieving very successful milestones. From about 600 downloads during 2003, to more than 425 in only 6 weeks, during 2004. Feedback and contributions being provided from every where in the world. The IPv6 Task Force web site received over 12.000 unique visitors.
- First IPv6 Ready products announced.

This document is a living document and is expected to be enhanced and continuously updated over the period of the IPv6 Task Force Steering Committee project work.

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## 1. INTRODUCTION

This deliverable (D3.4 IPv6 Overall Status), will be cumulative in order to follow the evolution of the project activities, IPv6 deployment and the IPv6 Task Force progress.

It means that this is not a final document, but a report of ongoing work and activities.

It will be made publicly available through the project web site.

## 2. TOWARDS A EUROPEAN IPv6 ROADMAP

### 2.1 Overview

The IPv6 Task Force is aiming to write down a roadmap for the major development steps for deployment of IPv6 in Europe.

Currently a rough outline for the roadmap exists. The roadmap needs to be refined and major developments and trends need to be outlined for the next three years. This activity is not only driven by the European IPv6 Task Force and the European IPv6 Task Force Steering Committee, but also by the national and regional IPv6 Task Forces.

The Task Force Steering Committee has taken the approach to raise support for IPv6 implementation on the regional/national level. Those regional/national activities are creating a stronger link between the development of a common view on the necessary steps for the introduction of IPv6 and concrete activities in each country and company. The task of the EU TF-SC is to aggregate all activities for more impact. The following figure depicts this idea.

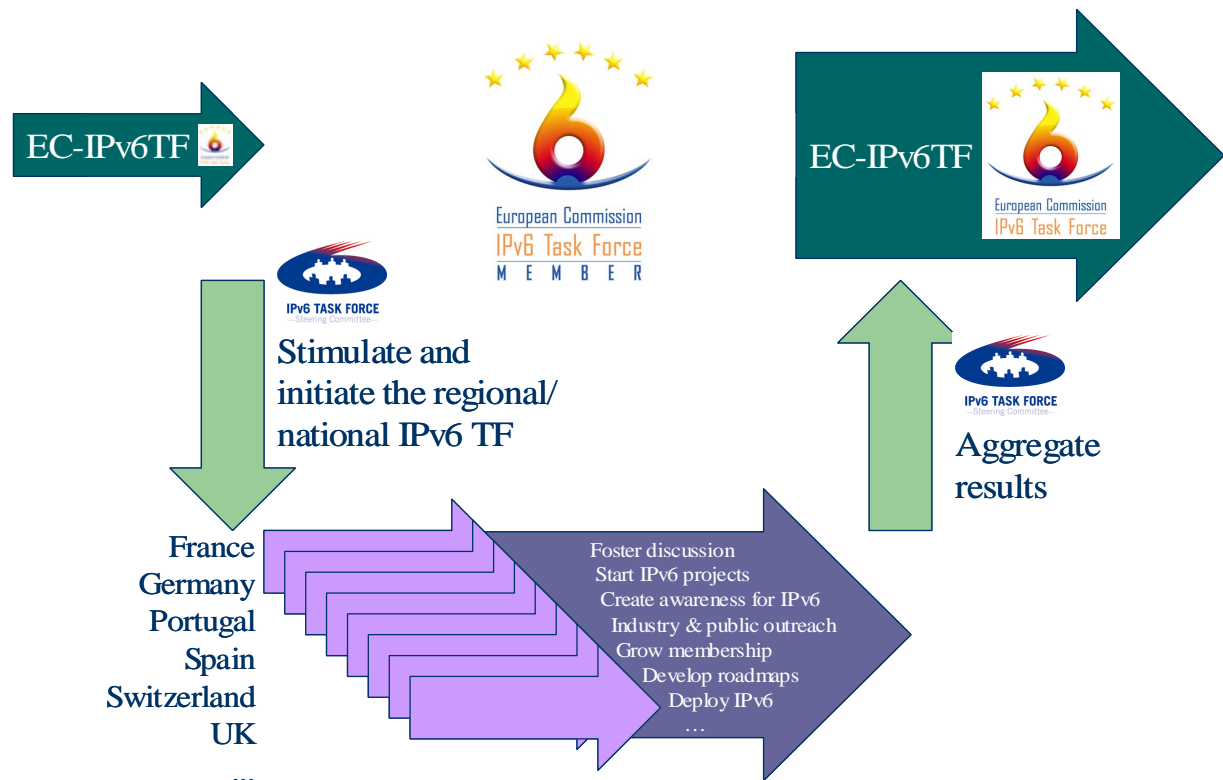


Figure 2-1: Gaining Momentum through National IPv6 Task Forces

This process and discussion is currently ongoing, so the roadmap depicted here reflects a work in progress only.

### 2.2 The Current Roadmap

From the TF-SC perspective, the next steps on the 2004 roadmap include:

- Initiate further European regional IPv6 Task Forces.

- Merge regional IPv6 TF action plans to enhance the European roadmap.
- Aggregate national initiatives at the European Level.
- Review action items of IPv6TF Phase 1.
- Create briefing white papers on particular topics including:
  - Open or missing IPv6 issues to include them into a roadmap.
  - IPv6 Privacy (this has been completed by consultation with the Article 29 Working Party and the Euro6IX project).
  - DNS (reverse, IPv6 transport Root server, secure DNS).
  - IPsec, PKI.
  - Measuring IPv6/Benchmarking IPv6 introduction progress.
- Foster collaboration in IPv6 activities between Europe, Asia Pacific and North America, including connectivity for initiatives between the regions (e.g. Moonv6 to Euro6IX and 6NET).
- Goal: Develop recommendations in standardization and towards the EC as an initiative in FP6.

## 2.2.1 Roadmap for Deployment of IPv6 in Selected Industry Sectors

### 2.2.1.1 Overview

The following picture gives an overview on the expected deployment of IPv6 in various industry sectors. It starts with an overview on the expected private and industry sectors that we expect to be affected first.

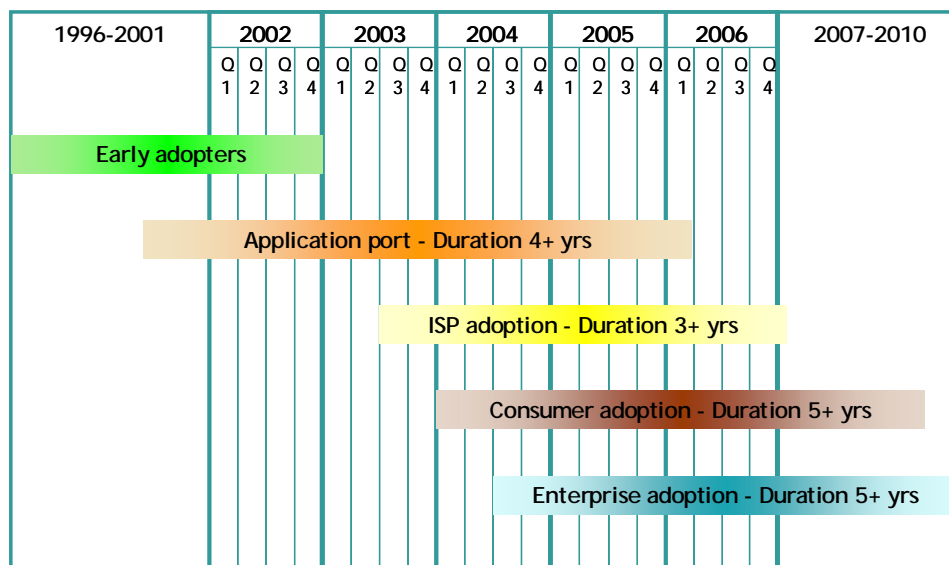


Figure 2-2: IPv6 Rollout

### 2.2.1.2 IT-Rollout for IPv6

The following picture provides an overview on expected steps in organizations and companies that are starting to integrate IPv6 in the IT planning.

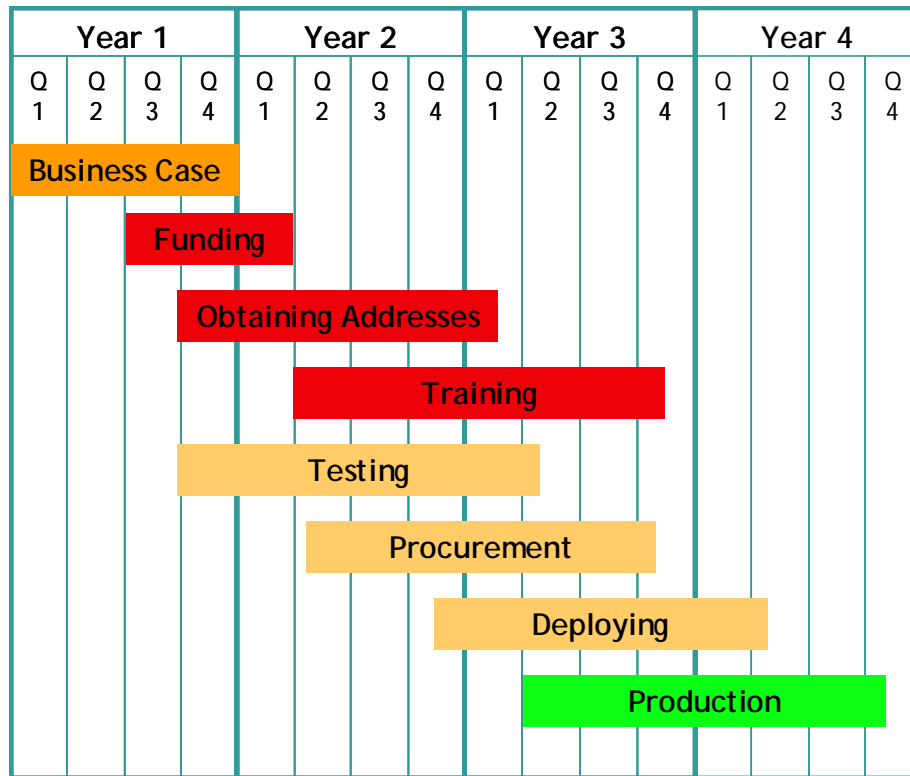


Figure 2-3: IPv6 Deployment

### 2.2.1.3 Internet Service Providers (ISP)

One of the main problems currently is that many of the ISPs currently are hesitating to invest in major new activities due to the current economic situation in general. New business is welcome, of course, but IPv6 currently does not automatically imply a new big business. Indeed, deploying a dual-stack IPv4-IPv6 infrastructure may imply a short-term increase in costs (managing both protocols) until operations become streamlined and new IPv6 functionality can be leveraged.

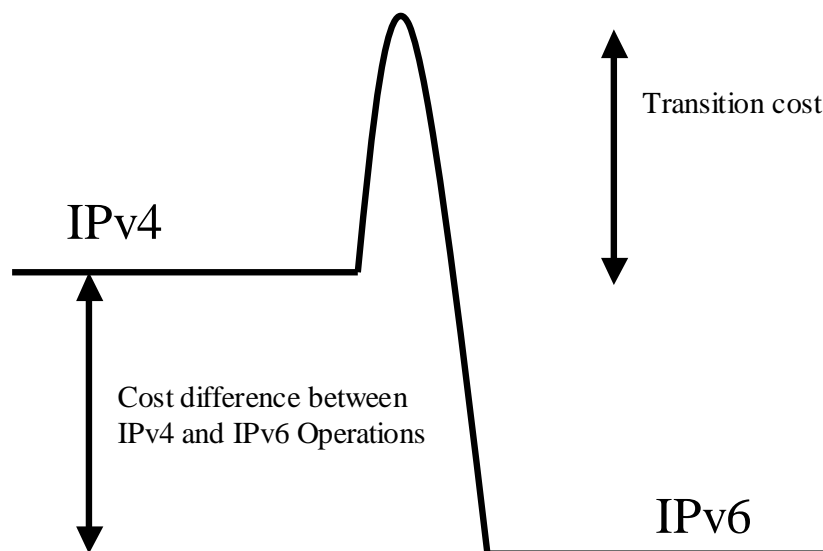


Figure 2-4: IPv6 Transition Cost (depiction following Chown, Doyle, Ladid, et. al.<sup>1</sup>)

<sup>1</sup> <http://www.ipv6forum.com/navbar/papers/IPv6-an-Internet-Evolution.pdf>

The best way to overcome this dilemma is through creating customer awareness so that they are motivated enough to request their ISP for IPv6 service. Particularly (large) business customers requesting IPv6, asking to move some parts or all of their networks or VPNs to IPv6 would be a big incentive for ISPs to start providing services and products beyond customer projects. This would lead to more investments in IPv6 on the provider side. This would also be of benefit for private customers. Not many private customers, though a growing number, are currently asking for IPv6. In comparison their impact seems to be less than a large network contract with a big customer.

Many major ISPs are prepared internally to do a rollout of IPv6, once a business decision is made. A business decision currently largely depends on customer requests. First customer requests are apparently handled as a project business. Massive customer requests would lead to an acceleration of internal decisions and a quicker IPv6 rollout. It is expected that over the coming 24 months IPv6 demand from customers will grow to a level, where few ISPs will be able not to offer IPv6 services in Europe. This situation seems to hold true for Backbone networks as well as for access and broadband access networks.

Another point that could bring the ISPs to the decision of implementing IPv6 services now is the raising number of supported IPv6 features within the actual router implementations that meet the special ISPs requirements. Especially the support of IPv6 for broadband access as well as the IPv6 transport possibilities over an IPv4 (MPLS) based provider backbones (without service degradation for IPv4) are a big step towards an IPv6 enabled carrier scale provider infrastructure.

The encouraging exception in IPv6 deployment can be observed within the academic networks, where no business case is required for deployment of IPv6. Here, IPv6 is seen as the right thing to do for the benefit of researchers and students alike. As a result, at the time of writing GÉANT (the pan-European IPv6 research network interconnecting all the NRENs) is dual-stack IPv6 and 18 of the NRENs have connected natively to this service, most of them having their own dual-stack service.

In a similar way, the US DoD did not require a business case for IPv6, rather it knew that IPv6 was the tool to do the job for their personnel including military forces. As a side effect, the scale of the US DoD market for procurement of IP-enabled products creates a business case for vendors and developers in itself.

Besides that the necessity of supporting IPv6 within the global military communication radiates to the other Defense Departments of the NATO, so that the requests from these big customers can trigger their ISPs to offer IPv6 services faster than expected.

A few ISPs in Spain and France have already started to provide some initial commercial services, most probably as a result of the Spanish and French IPv6 Task Forces activities and the major push done in these countries, including a strong government involvement. Other European ISPs are also involved in their national Task Forces and investigate in internal as well as EU triggered research programs their own IPv6 implementation strategies.

Regarding the lack of a business case in terms of short-term revenue, is necessary to consider that the "business cases" are here already here in terms of obligation to fulfill missions.

For the academic research, the mission is to educate, to train, to produce engineers, PHDs as well as operators, technical, marketing, commercial people. Their "business case" is to provide efficient tools for Research Education, for the benefit of the economy.

Today we have mostly succeeded in the deployment of backbones, but no any large university or research organization is running an IPv6 operational network. Consequently, one of the priorities should be not only to have connected labs working on the technology, but deploying IPv6 everywhere in the universities.

Same is true for military business. They need to deploy more efficient networks to fulfill their missions and cost effective technologies. DoD moved from ISO to IP because of the availability of products. The business model was clear: Low cost and product availability.

ISPs are moving to IPv6 because they have people who know the technology and because they see IPv6 as a necessity and an opportunity.

Encouraging to the ISPs is the reply from NTT/Verio, one of the earlier large scale deployments, regarding the cost of IPv6 in their network. Cody Christman, Verio's Director of Product Engineering indicates that the deployment costs even when to quantify, are extremely low. IPv6 has been on their roadmap for years, and therefore the transition to IPv6 has been a consideration in all normal hardware and software upgrade cycles since that time. Some resources have been enlisted to perform testing relating to IPv6, but testing is always performed on new hardware and OS releases. NTT/VERIO's transition to a dual stack backbone will normally require some software and hardware upgrades, but the costs for those are already factored in as part of an overall maintenance strategy to maintain the highest-possible network performance. As a result, it is difficult to quantify the specific costs for the deployment independently of an ongoing maintenance strategy.

Is interesting to note that the same reply is being facilitated by several other Telcos and ISPs, even in Europe, which are deploying IPv6. Basically, they indicate that the upgrade is almost zero cost, except for the education and training of the maintenance personnel. Also is observed that the maintenance of IPv6 networks is usually 30-35% cheaper than equivalent IPv4 networks.

#### 2.2.1.4 VoIP

One frequently asked question is about actual or future “killer IPv6 applications” and whether VoIP is a good example.

Many countries around the world are aggressively rolling out various always-on broadband access mechanisms aimed at the domestic and SME market. Many of these always-on access mechanisms are based on cable modem or xDSL type technologies. With the current IPv4 address allocation rules adopted by the Internet Registries around the world the number and type of IPv4 addresses allocated to these always on connections range from (best to worst):

- A few static IPv4 globally routable IPv4 addresses.
- One static globally routable IPv4 address.
- One dynamic globally routable IPv4 address.
- One private IPv4 address – access to the global Internet is only via NAT.

The vast majority being of the middle two types i.e. one static or dynamic globally routable address, with multiple addresses often being available only at a premium price. The result is that end users are installing NAT devices on their premises to enable multiple devices to be connected to the broadband always on access (which of course then hampers the ability to run services end-to-end between two such NATed networks). In fact there is a complete range of small cheap xDSL modems/routers that have NAT and a variety of interfaces (Wi-Fi, USB hub, etc.) built in.

Many of the xDSL providers are also the old incumbent Telco's that still have a large proportion of their revenue streams from the existing PSTN. The Telco's are however facing a problem that the existing PSTN exchanges are in need of replacement/upgrades but with lifetimes of 20+ years are reluctant to invest money in the PSTN when there is a generally accepted view that voice traffic will migrate from the PSTN to IP technology. Deutsche Telekom, for instance, announced in January 2004 that by 2020 all telephone traffic will run over IP.

Telco's around Europe that also have an increasing always-on xDSL network are therefore facing a problem. On the one hand they do not want to invest in the PSTN. But on the other hand they cannot easily migrate voice to the emerging xDSL networks. This is because of the way IP addresses have been allocated, resulting in many users deploying their own NAT devices, which would cause significant problems for a VoIP service. This is because while it is quite possible to connect OUT from a NAT network, it is considerably harder, if not impossible, to connect IN to a NAT network, especially with multiple services running within it.

The answer, of course, is IPv6. IPv6 over xDSL allows multiple globally routable addresses per access network and hence all the problems of NAT are overcome. It is also logical to use SIP as the controlling protocol and then considerable synergies with the 3GPP Release 5 specification are achieved. In practice this would allow true seamless services between the fixed and mobile environments. The use of IPv6 also allows Mobile IPv6 to be used and hence inter-domain roaming to be possible i.e. fixed to Wi-Fi, etc.

The type of voice service offered over IP would not be a direct replacement of the PSTN service but could be a much richer offering as presence, multimedia, multi party etc services could also be offered.

In summary it would seem that technically VoIPv6 has much to offer; gets around the NAT problem, synergies with the 3G (or the 802.11 Wireless LAN) environment, enables mobility and additionally allows adjunct services to be offered. It also has a business model of saving investment in the PSTN and providing additional revenue streams on the current predominately flat rate xDSL access offerings.

Whether SIP-based VoIP is an "IPv6 killer application" remains to be seen. It may certainly prove to be a strong candidate, especially where available in IPv6-enabled WiFi hotspots.

With Mobile IPv6 as key feature in 3G and Beyond Networks, IPv6 will find a dominating position in the future Telecom's environment.

Nevertheless, there exist still some open issues with VoIPv6 (e.g. interworking between IPv4 and IPv6 VoIP systems in a carrier scale environment), but those will be solved within the near future so that VoIP will develop to a communication scenario that motivates the ISP for implementing and offering IPv6.

#### 2.2.1.5 Broadband PLC

Power Line Communications (PLC) allows transmission of data over power lines. PLC is the network with the most enabling infrastructure already in place in the world: Power line is ubiquitous.

IPv6 provides a package of enhancements to the Internet compared to the capabilities of the existing IPv4 protocol sustained by the Network Address Translation (NAT). NAT has unfortunately created new barriers during the massive and unexpected growth of the Internet with the consequence of breaking the initial end-to-end communications concept.

But nevertheless, this massive IPv4 deployment happened mainly in rich countries, creating a digitally divided society. IPv6, together with other technologies, like PLC, are key in order to restore the situation and alleviate the digital divide pain, enabling more people, entire countries to access information, knowledge which in turn will allow them to take part in the global economy, benefit and possibly create new knowledge.

New access technologies, like PLC, that have already been evaluated for a number of years, have failed to support the initial Internet paradigm. These new technologies have now a new opportunity with IPv6, because IPv6 will facilitate their deployment.

That seems the case for Power Line Communications (PLC). PLC has been around since the 30's but was never seriously thought of as a medium for communication due to its low speed, low functionality and high deployment cost. However, new modulation techniques have enabled this medium to become a realistic and practical means of communication.

Over the last years, new technology designs have led to integrated chips and modems that have been introduced into the market, providing high speeds over the power lines infrastructure at reasonable if not low cost.

Although several broadband PLC technologies have been successfully developed, a standard in this area does not exist yet. Some vendors provide "low-speed" (up to 2 Mbps) data rates using single-carrier technologies (GMSK, CDMA). Some technologies are based on multicarrier modulations (OFDM) and offer higher data rate, starting with a 45 Mbps OFDM PLC chipset, which is the highest data rate available at this time.

On December 2002, at least one PLC technology vendor announced that during the second half of 2003, a new generation of broadband PLC technology providing 200 Mbps of physical layer data rate would be available as a commercial product.

A complete document describing this technology, and how possible with IPv6 can improve the deployment status for both technologies and simultaneously facilitate the addressing of the digital divide, has been published by ISOC, as part of the member's briefings series (<http://www.isoc.org/briefings/013>).

Several ongoing activities are being addressed to allow the take-off and further cooperation between these technologies, with the cooperation of the IPv6 Task Force.

As a result of one of the IST IPv6 projects, several utilities started to provide commercial service, including extending some of the IPv6 related trials. See:

- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=156>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=216>.
- <http://www.silicon.com/comment/0,39024711,10005886,00.htm>.
- <http://www.vnunet.es/Actualidad/Noticias/Comunicaciones/Internet/20031027015>.
- <http://www.denverpost.com/Stories/0,1413,36~33~1972967,00.html>.
- <http://www.computing-spain.com/Actualidad/Noticias/Comunicaciones/Internet/20031027016>.

#### 2.2.1.6 Digital Video Broadcasting (DVB)

The Digital Video Broadcasting Project (DVB) is an industry-led consortium of over 300 broadcasters, manufacturers, network operators, software developers, regulatory bodies and others in over 35 countries committed to designing global standards for the global delivery of



digital television and data services. DVB technology has become an integral part of global broadcasting, setting the global standard for satellite, cable and terrestrial transmissions and equipment. DVB standards are available from ETSI.

The move towards interactive services and the convergence at application and service level as well as convergence in networks lead to the fact that the Internet and Internet protocols are becoming important. This can however be divided in the following two aspects: Data broadcasting and consumer devices.

The steps taken include the awareness creation, presenting the benefits with respect to home networking, coexistence and interoperability with IPv4 and guidelines for dual stack. First steps had been already taken, and this is actually a key activity of some of the Task Force members.

An example of this has been the release on January 2004, by data planet international AG (dpi AG), of the world's first IPv6/DVB encapsulator including support for Ultra light encapsulation (ULE) - especially designed to fulfill needs of existing and upcoming IPv6 based DVB platforms (see <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=344>). This has been possible as a direct consequence of several European projects working on this topic, with the participation of IPv6 Task Force members. Current activities include further standardization work in IETF (IPDVB WG).

#### 2.2.1.7 Home Networking

Looking at the current situation one can conclude that most computers using generic operating systems (e.g. Linux or Windows XP) can have IPv6. For consumer devices based on embedded operating systems (even for broadband modems and home routers) IPv6 is not yet common in the commercially available devices. However, new embedded systems developers are releasing IPv6 capable code, e.g. WindRiver, Elmic Systems and the Microsoft CE .NET. Elmic Systems also have an implementation of the final version of Mobile IPv6.

We are still in the stage that only knowledgeable early adopters can set-up an IPv6 home network. An important step would be when broadband modems and routers (wired as well as wireless) could be configured to use IPv6 in the home and support tunneling on IPv4 to IPv6 services. While some ISPs offer IPv6 services the access networks are still on IPv4. For the consumer world these solutions should be easy to install and to manage, e.g. through adaptive appliances and auto-configuration. The ideal goal is to have native IPv6 services to end customers. In the meantime methods for (tunneled) access over existing IPv4 infrastructure are desirable.

Current consumer applications are based on sessions where the connection is initiated from within the home. However, many applications (such as VoIP, remote monitoring, web cam access or video calls) would benefit from connections being initiated from the outside. This would be impossible or difficult in situations where NAT is used. IPv6 creates an opportunity for new classes of application, it is possible not only to reach external services but also applications and services can be reached from outside (e.g. from mobile handsets), or under proper control by others.

The usage of Wi-Fi, Bluetooth, together with new technologies like PLC, will facilitate home automation, possibly via OSGi gateways, already being developed by a few IST projects. Consequently this will increase the deployment of home networks and home appliances with embedded IPv6 features, even small GRIDs, Personal Area Networks, and at the end facilitate the enabling of the Ambient Intelligence concept, described in the next section.

Besides that the v6ops working group of the IETF is working to speed up the introduction and support of IPv6 in home networking, offering recommendations about how IPv6 could best be implemented in unmanaged and home network scenarios.

Some announcements about IPv6-based commercial services and products related to this had been already made by several entities, including European companies.

#### 2.2.1.8 Ambient Intelligence

Ambient Intelligence (AmI) has been described as a vision of the Information Society where the emphasis is on greater user-friendliness, more efficient services support, user-empowerment, and support for human interactions. Where people are surrounded by intelligent intuitive interfaces embedded in the environment. Since we are talking here about the Information Society as a whole we should realize that this has an impact on telecom, home appliances, business and industrial applications, healthcare and vehicles.

To make this possible Ambient Intelligence depends on seamless networking. There will be a need to be a large number and variety of devices, within spaces and as part of the electronic outfit, communicating with each other and with services. For this communication a variety of networks (wired as well as wireless) will be used, which will need to operate seamlessly as one logical network for the applications and the users. Different devices would roam across multiple networks.

The needs expressed above stress again the requirement for the address space, autoconfiguration (plug and play), ad-hoc networking, security, and mobility aspects offered by IPv6. Steps have to be taken in several domains such as infra-structures covering wide area, local area and personal networks, devices and services (e.g. location and situational awareness, identity management, ...).

#### 2.2.1.9 Smart Tags

RF-ID is one of the new application areas that are becoming visible to IPv6.

There are several ongoing activities on this field and Nokia Japan already exhibited a technical demonstration model of a name-card sized PDA that supports Wireless LAN and includes an RF-ID reader. It realizes an easy-to-use security system by configuring the network setting of the PDA using information obtained from the RF-ID tag the user is wearing.

A bracelet with a built-in RF-ID tag identifies the user. Each RF-ID tag contains unique IPv6 address and a pre-shared key for IPsec. The PDA reads the information and automatically reconfigures its own address to prepare for the new IPsec session. See:

- <http://www.ipv6style.jp/en/apps/20030318/index.shtml>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=117>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=368>.

#### 2.2.1.10 Security

The following chart gives an overview on the expected deployment of IPv6 in the security area.

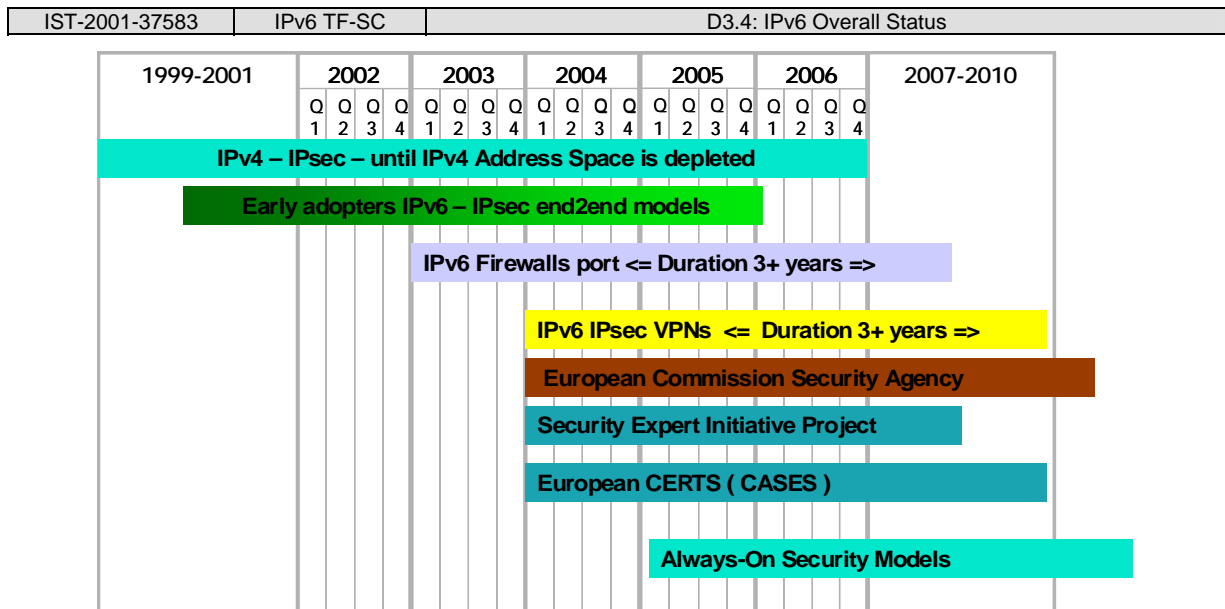


Figure 2-5: IPv6 Security Roadmap

It is worth noting that some early commercial IPv6 firewall products are now available, e.g. from 6WIND, Nokia, Checkpoint and NetScreen among others, but their functionality is currently limited. Cisco offers with their IOS software only some rudimentary firewall functionality that is besides that in EFT status. Microsoft already offers a personal firewall in XP SP1.

A new challenge lies in enabling IPv6 access peer-to-peer where firewalls would otherwise be blocking the traffic. Such end-to-end usage may currently be prevented by a site's security policy. Such policies tend to be site-to-site.

The new SEINIT IST FP6 project has a broad brief to study IPv6 and security and to publish new frameworks appropriate for an IPv6 environment.

Euro6IX has also started a new interesting activity regarding new distributed security models for IPv6, considering the end-to-end paradigm with the enterprises and individuals interest, with a requirements draft already submitted to IETF.

One open topic is the availability of commercial IPv6-enabled IDS (Intrusion Detection Systems) tools. Euro6IX is also working in this area.

## 2.2.2 Challenges to IPv6 Deployment

The aim of the EC IPv6 Task Force and the IPv6TF-SC is to ensure the smooth and timely introduction of IPv6 in Europe. To achieve this aim the IPv6 Task Force is putting in place a number of initiatives to overcome the barriers and hurdles in deploying IPv6 in Europe.

The following overview was requested at the January 2003 London IPv6 Task Force meeting and is a compilation, in no particular order, of the barriers to IPv6 deployment highlighted by the IPv6 community. Is being updated regularly.

### Standards

Stable standards are required to encourage companies to develop equipment and enable interoperability. In particular, Mobile IPv6, DHCPv6 (and maybe the Flow Label) need to be stable so interoperable implementations can be developed and deployed. As examples Mobile

IPv6 is seen as one of the advantages of IPv6 but cannot be deployed yet and multi-homing and renumbering are crucial for large/medium enterprise customers but after lots of effort we are still without an agreed solution.

As of October 2003, both DHCPv6 (RFC3315) and Mobile IPv6 (as of Draft 24) have been finalized, and the Flow Label issue has been hardened (with the stipulation that the usage of the Label is as yet undefined, with some simple usage rules defined).

Prefix Delegation is another key IETF development that will facilitate the IPv6 deployment.

The November 2003 IETF meeting continued the discussion on IPv6 Site Local unicast addressing. It has now been agreed that such addressing will be deprecated, to be replaced by an appropriate alternative that addresses the issues of address ambiguity and leakage. The meeting also agreed a roadmap to propose new solutions for IPv6 multihoming, which also remains an open issue, but with some clear progress perspectives envisaged.

Nevertheless there still exist some gaps within several standard documents that lead to interoperability issues between heterogeneous IPv6 equipment of different vendors (e.g. explicit 0-Label in 6PE). These gaps have to be identified and fixed and interoperability tests (like the ETSI IPv6 Plugtests and others related to the IPv6 Ready logo program).

#### IPv6 access

There has been much research and development in the IP core area but the most widely used IPv6 access to these emerging IPv6 cores is via tunnel-broker type services. More IPv6 research and development in the IPv6 edge needs to be undertaken so that there is a range of interoperable and stable commercially available equipment.

Members of the TF-SC are working on an IETF I-D on issues for the deployment of tunneled services to small end sites (including the tradeoffs of managed and unmanaged solutions), even thru NAT devices.

Several well known router vendors (6WIND, Cisco, Hitachi, Juniper ...) have already recognized that for instance the broadband IPv6 access via DSL could be one of the driving forces that motivate an ISP to offer IPv6 services. Hence corresponding implementations have become available.

New low cost IPv6-enabled access devices are quickly coming into the market.

#### User/Network interface

There are currently a plethora of standards that apply to the user/network interface area, but to achieve mass and interoperable deployment between user equipment and various network offerings an industry agreed user/network best practices guide needs to be established. This would allow equipment manufacturers, network providers and users to manufacture, install and purchase equipment with the knowledge that it will fully interoperate with their existing environment.

The end goal is to have secure, easy-to-use systems that an average home user can use.

#### DNS

There are many issues with DNS and IPv6 especially when interworking and DNSsec are also considered. These will be more fully elaborated in a separate IPv6 TF document but further

investigation is required to ensure that the current DNS system does not degrade with the introduction of IPv6. From the standardization side, this task is covered by the dnsop WG of the IETF, with the regular participation of IPv6 TF-SC members.

The basic IPv6 DNS service (using AAAA DNS records) works, however, but current usage relies on deployment being dual-stack, or via a dual-stack local resolver.

Besides that, an “entire” IPv6 support within DNS would need an IPv6 capable DNS root server implementation. First tests regarding IPv6 DNS root server have been performed already by different initiatives, including for instance one initiated by RIPE.

### Zero configuration

IP is still reserved for the technically aware! To meet the expectations that every home will have many IP aware devices we must have a complete and robust zero configuration or ‘plug-and-play’ architecture. More research and development is required in this area to allow a device purchased in the supermarket to be taken home and gain IP connectivity with the user having zero knowledge of IP.

New devices with zero-configuration features are already now in the market, for example IPv6 cameras.

### Security

Much has been discussed about the inclusion of IPsec as a mandatory part of a “full implementation” of IPv6, however, at the moment, not many IPv6 stacks include IPsec. Inclusion of IPsec needs to be encouraged and solutions found to the automatic distribution of keys in the circumstance that a widely available PKI solution is unlikely to happen. Security in its widest sense needs further investigations in all areas e.g. is it possible to use the authentication mechanism (AH) to replace parts of PPP, what are the real concerns on privacy – does security help or hinder.

The DoD adoption of IPv6 is likely to accelerate activity in this area.

### Network management

Products in this area are scarce, vendors need to be encouraged to develop IPv6-enabled solutions and new methodologies that IPv6 may facilitate need to be researched. Support for IPv6 in MIB’s is currently poor as is IPv6 transport for SNMP. Without a proper IPv6 Management only a few and small providers will implement IPv6 and be able to operate their IPv6 networks. This work is also being tackled by the Euro6IX project.

The management of transition tools and systems will also be important as the transition occurs.

Some of the most popular Network Management Systems and Operating System Support tools are becoming IPv6 ready.

### IP version-neutral applications

Nearly all-current applications use IPv4, but many are starting to be ported to IPv6. However, in some instances, porting IPv4 applications to be capable of working with IPv4 and IPv6 can be difficult.

There is now an IETF I-D on application porting, as well as a good guide from the LONG project, as well as a new draft for application porting within the GGF (written by an IPv6 TF-SC member). This guide is now being updated also by the Euro6IX project.

### Consumer devices

Currently there are very few IPv6 capable consumer electronic devices; those that are available are predominately Japanese and oriented to the Far Eastern market (e.g. Canon, Matsushita and Sony). Is it just a matter of time? Or can European industry be stimulated in producing conventional devices that are IPv6 capable and by “looking outside the box” can IPv6 with its inherent capabilities enable new markets. This is almost a chicken and egg problem, no devices because no IPv6 network, so no clear advantages.

There are already some applications available that suffer from NAT and would benefit from IPv6 e.g. VoIP and conferencing applications but operators and access providers do not seem to be interested in deploying a service in advance of the applications being ready and user demand being there. Mobility of wearable devices across different residential networks would be a clear advantage. The problem is: IPv6 on its own will not be required by end users, functionality of appliances and applications will be the discriminator.

Users want functionality, not IPv6. It means functionality at low cost, easy to use. IPv6 is the way to implement those requirements. IPv6 is an embedded technology, so not visible, but WiFi is not visible and users are requesting WiFi. A good example of IPv6 integration is given by Microsoft with 3 degrees: A new type of application (P2P); to run it uses IPv6 but the user doesn't know.

### Awareness

IPv6 is gaining momentum but considerable training of conventional IPv4 engineers needs to be undertaken and awareness increased in industries that currently do not use IP but to which IPv6 could bring benefits. One of the problems is that there are not that many industries that are as well organized as the mobile telephone industry. Contact needs to be established with the Car manufacturers, broadcasting world, ISP organizations etc.

### Host and router OS support

Many operating systems support IPv6 to some degree. Full support in the most popular end host operating system would stimulate demand. The situation with Linux, BSD, Windows XP/Server 2003, Solaris, HP/UX and other products is promising. As it is with most router vendors including 6WIND, Alcatel, Cisco, Juniper, Hitachi and others.

Support for RT kernels for embedded systems is another issue if one wants to develop consumer devices. Products from Symbian, QNX, WindRiver and Elmic Systems already include IPv6 for embedded systems; Windows CE .NET and Mobile 2003 is also available for such systems.

It is worth noting that functionality in the OS's will vary, e.g. only a small number of vendors currently support full IPv6 IPsec.

### Transition

Considerable effort has already been expended on transition and interworking technologies; there is however still a considerable amount of confusion. Clear guidelines need to be produced and discussed on what are the best options in a number of circumstances. There is also some interoperability of interworking mechanisms work that needs to be performed to recommend

which of the plethora of interworking technologies are compatible with each other within a particular network domain.

Members of the TF-SC are contributing to a number of the IETF activities in four scenario areas (ISP, home unmanaged network, 3GPP and enterprise) including analyses of those areas.

### Business case

What is the business case (main incentives) for companies to invest in IPv6 when the current economic climate is forcing people to save costs? A clear list of economic advantages of IPv6 needs to be articulated.

But is important to mention as well the potential risks of not implementing IPv6, including the opportunity cost.

### Technical case

In a similar fashion to the business case a clear technical guide to deployment is needed. These needs to cover what the most imminent steps are for IT people to consider over the next 2-3 years.

### Advantages

Some of the claimed advantages of IPv6: Mobile IPv6, Multicast, Plug and Play and even NAT avoidance, have not been quantified. Some of this may be covered by the business case activity but a clear business benefit from these technologies needs to be articulated.

## **2.2.3 Development of IPv6 in the World**

While IPv6 in Europe is only slowly gaining momentum, IPv6 is continuing to gain rapid interest in the Asian Pacific region. Due to restraints in the growth of IPv4 address space, the limitations of IPv4 put a growing limitation of the growth of the Internet in the important Asia Pacific economies, namely China, Taiwan, Korea and Japan.

In the Americas, the interest in IPv6 is growing slowly but steadily. Recent reports suggest that IPv6 will start to take up so rapidly, that there is the danger of a divide in the of Internet users: Those with IPv4 and those with IPv6. It is therefore essential to assure that the growth in IPv6 is happening all over the Internet with comparable speeds.

The following slide gives an overview on the development of major IPv6 initiatives worldwide.



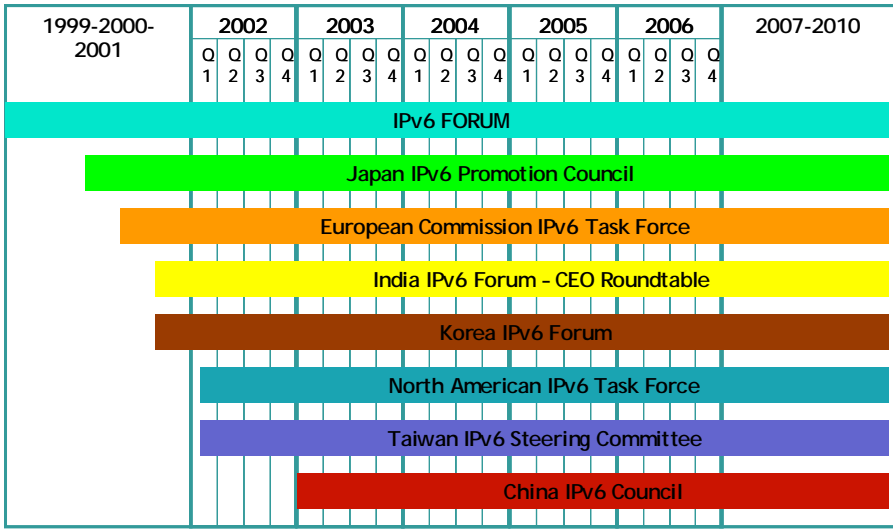


Figure 2-6: Major IPv6 Activities Worldwide

The following picture gives an overview on the current status of IPv6 deployment in major economies worldwide.

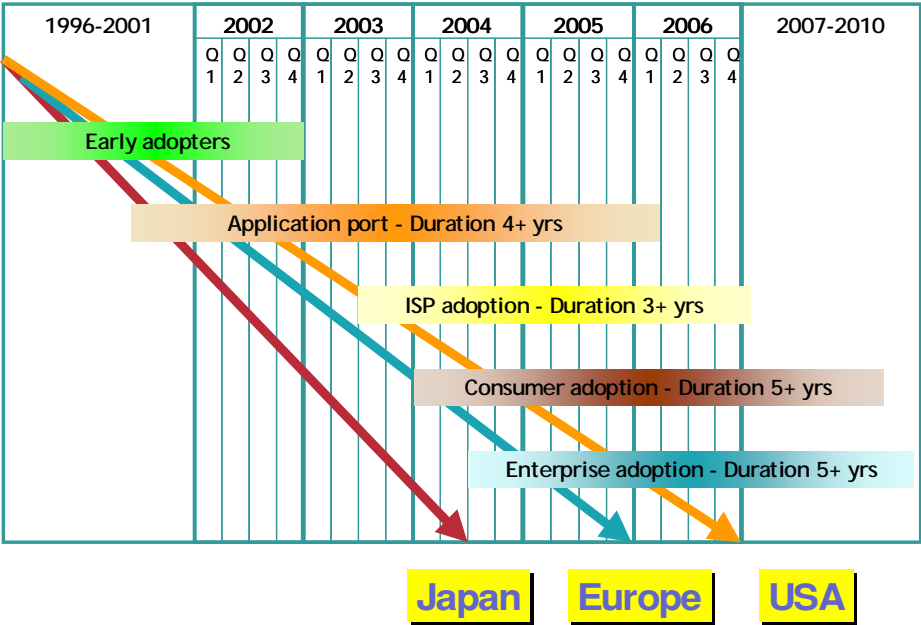


Figure 2-7: IPv6 in Japan, Europe and USA

Indeed, the Ministry of Public Management, Home Affairs, Posts and Telecommunications (MPHPT) of Japan, working Toward "New, Japan-Inspired IT Society" (FY2004 IT Policy Principles), indicates that their IPv6 expertise is one of their competitive advantages, key for Realization of a ubiquitous network society. Consequently MPHPT will address advancement of the Internet, including promotion of IPv6.

Furthermore, on September 8, 2003, the second China-Japan-Korea IT Ministerial Meeting was held at Shilla Hotel, Cheju, the Republic of Korea. Attendants from Japan included Mr. Katayam Toranosuke, Minister for Public Management, Home Affairs, Posts and Telecommunications; Vice-Minister Nabekura Shin'ichi; Mr. Oku, Director of International Cooperation Division, and others; from China, Mr. Wang Xudong, Minister of Information Industry; Mr. Qu, Deputy Director-General of Foreign Affairs Department, and others; and from Korea, Dr. Chin Dae-Je,



Minister of Information and Communication; Dr. Yang, Director-General of International Cooperation Bureau and others.

During the Ministerial Meeting part, acknowledging that ICT is an indispensable infrastructure in order to develop Asia and enhance mutual ties, and that the cooperation among the three countries accelerates the deployment of broadband platforms through Asia, the three ministers exchanged opinions on wide-ranging topics including development and cooperation through establishment of new cooperation models for the ICT field. Upon conclusion of the meeting, toward further development of the ICT field, the three ministers agreed that the three countries should promote cooperation in the seven information and communications areas, such as 3G and the next-generation (4G) mobile communications systems, the next-generation Internet (IPv6) and information security; the three ministers then signed the Arrangement.

This meeting continued with the Japan-China ICT Ministers Bilateral Meeting among Minister Katayama and Minister Wang of MII, China, which exchanged opinions on bilateral cooperation in the ICT field. It included the strengthening of cooperation under the scheme of Japan-China ICT partnership, cooperation on IPv6 and introduction of 3G into China. Regarding Next-generation Internet (IPv6), the goals include: Exchange of information and joint hosting of seminars for the promotion of IPv6, cooperation in R&D and standardization of IPv6, development and promotion of IPv6 application services, exchange of policies and experts on IPv6, establishment of a Working Group in order to promote the abovementioned cooperation.

As a consequence, several companies from those countries increased their cooperation on these fields.

#### Related links:

- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=75>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=190>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=198>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=200>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=213>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=221>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=274>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=275>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=277>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=278>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=279>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=313>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=328>.

One more immediate result of this cooperation is the cooperation among Japan and China in order to jointly test 4G networks. Related links:

- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=199>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=204>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=211>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=212>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=214>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=218>.

In addition, in November 2003, the South Korean Ministry of Information and Communication (MIC) unveiled the plan to foster Broadband convergence Network (BcN) infrastructure, indicating that for BcN to be successful, it must provide a high quality of service, security, and sufficient Internet protocol (IP) addresses using IPv6 (see <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=190>).

In the same direction, coincidentally with the Global IPv6 Service Launch Event, in one of the first cross-continent agreements, the EU agreed to work with South Korea to develop applications for IPv6:

- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=303>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=310>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=320>.

In Latin America, The IPv6 Task Force in Latin America and the Caribbean is under way.

## 2.2.4 National Task Forces: Constituency Roadmap

The following picture provides an overview on major steps in creating national IPv6 Task Forces in Europe.

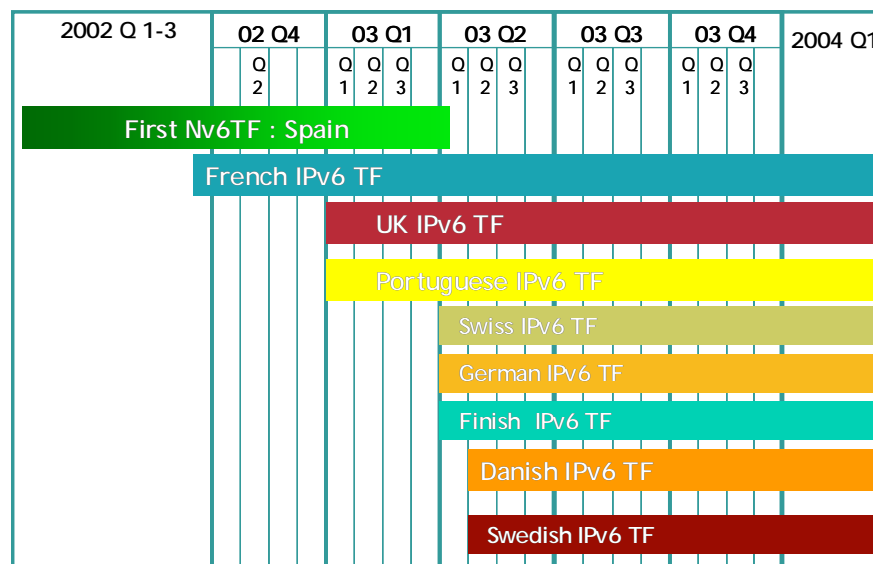
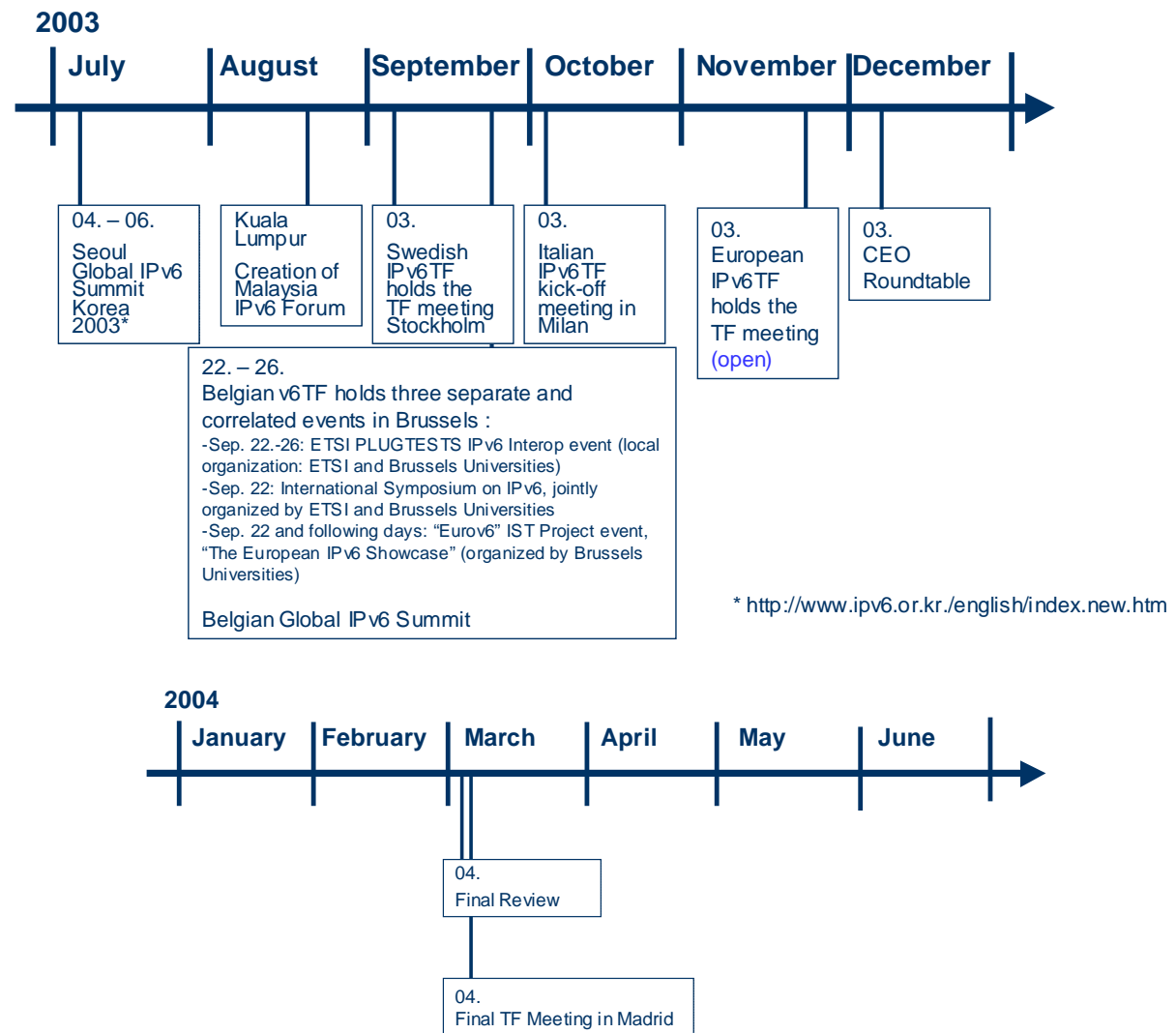


Figure 2-8: IPv6 Task Forces in Europe

The following pictures provide an overview on major steps over the last and coming months. This roadmap will be refined together with other IPv6 Task Force contributors on the European level.



**Figure 2-9: Major Steps of the IPv6TF-SC over the next 12 Months**

The latest decision at the moment is to focus more on the marketing responsables of the European industry instead of the CEOs. Simultaneously, new national IPv6 Task Forces are being prepared for their kick-off.

## 2.2.5 Currently Planned Events

The following events are being planned with the cooperation of the EC IPv6 Task Force:

- Latin American IPv6 Forum (FLIP-6), Montevideo, Uruguay, March 2004.
- "A fully networked user environment based on IPv6", Brussels, Belgium, April 2004.
- German IPv6 Summit, Berlin, June 2004.
- UK IPv6 Business Conference, London, June 2004.
- Swiss IPv6 Summit, June 2004.
- UK IPv6 Summit, London, September 2004.
- Global IPv6 Summit 2004 in Spain, Madrid, October 2004.

Future EU IPv6 TF events and support for National events will depend on the plans of the TF Phase III and a possible supporting project. The pattern of holding joint events with 6LINK (the IST IPv6 Cluster) has proven successful in Milan (October 1<sup>st</sup> 2003) and Brussels (January 14<sup>th</sup> 2004).

## 2.3 Key Results

The Task Force has helped prepare the IPv6 events in Switzerland (April 2003), Germany (April 2003), meeting in Milan (October 2003, coincidently with IST2003), meeting in Brussels (January 2004), and the Global IPv6 Service Launch Event (January 2004).

The IST2003 event saw a number of IPv6 demonstrations. IPv6 TF-SC members also assisted in generating and distributing the “Moving to IPv6 in Europe” booklet produced by the 6LINK project.

The IPv6 TF published a summary of the Global IPv6 Service Launch Event, which is available at the EC IPv6 TF web site since February 2004.

A Combined workshop on Consumer Electronics, Smart Home and mobility solutions is orchestrated by the European Commission and the IPv6 TF-SC for April 2, 2004 in Brussels. The different sessions will address:

- Mass Market Applications.
- The "Embedded Person" (Sensor networks and PANs).
- Home Environment.
- ISPs.
- On the Move (networked car and aeroplane).
- Terminals.

A panel debate will conclude with lessons learned, challenges, measures to address the barriers and the next steps ahead.

### 2.3.1 Global IPv6 Service Launch Event

One of the key events that have been organized in cooperation with the IPv6 Task Force, was the Global IPv6 Service Launch Event, in Brussels 15-16<sup>th</sup> of January 2004 (<http://www.global-ipv6.net>).

The event was funded and hosted by the European Commission together with the 6NET and Euro6IX projects, with some contributions from other projects, including GÉANT.

It was targeted to policy-makers, leading experts and managers from Research, Industry and Business active in the area of IPv6 and research networking from around the world.

The event included several end-user oriented demonstrations, a press conference, appearances in EuroNews (<http://stream1.euronews.net:8080/ramgen/mag/hitech-ipv6-en.rm?usehostname>) and a virtual inauguration ceremony to celebrate the availability of Global IPv6 connectivity.

A picture gallery is available, together with streaming of the complete event (was streamed live in IPv4 and IPv6). A DVD is under preparation.



## GLOBAL IPv6 SERVICE LAUNCH EVENT

**Figure 2-10: Global IPv6 Service Launch Event Logo**

The Global IPv6 Service Launch Event had the following objectives:

- Highlight the importance and impact of IPv6.
- Publicize the advanced capabilities of the large IPv6 test-beds, GÉANT and the national research and education networks with regard to their IPv6 deployment.
- Promote international coordination and collaboration.
- Emphasize the international dimension of research expanding from regional into global cooperation.
- Further develop a global perspective on research networking.
- Inform leading-edge and influential users about the achievements of the large European IPv6 tests-beds and GÉANT and how they can benefit from them.
- Promote the new possibilities available with IPv6.

Representatives of the Informatics Directorate (Telecommunications and Network) of the European Commission were present, in order to prepare for the internal adoption of IPv6, with the support of the IPv6 TF-SC.

Several members of the IPv6 TF-SC participated in the event committee and in several related activities, including the preparation of the final report, which included the following summary:

On January 15-16, 2004, the European Commission hosted the Global IPv6 Service Launch event in Brussels. The event formally heralded the availability of world-wide native IPv6 connectivity spanning IPv6-enabled research networks around the globe, including networks such as GÉANT in Europe, Abilene in the United States, CA\*net4 in Canada and WIDE in Japan.

The two-day event saw presentations from key players from the worldwide research networks, from industry and from the political arena. This document summarises the talks given by the speakers, and documents the launch ceremony and parallel IPv6 technology demonstrations.

The focal point of the event was the launch ceremony held on the evening of the 15th January. Eight representatives of the worldwide research networks were each invited to speak briefly on the importance of IPv6 from their perspective. European Commissioner Erkki Liikanen added his view:

“Today we are here to celebrate the arrival of IPv6 and its integration into Europe’s key research infrastructure. IPv6 is part of the next generation of Internet technology. It will improve the performance of the Internet and it will enable the Internet to be integrated into a wide range of devices and services in our homes, businesses and while on the move. Some of these are demonstrated at this event - from household appliances to the IPv6 enabled vehicles.

The introduction of IPv6, alongside unrestricted access to broadband, is of great importance. Together they will help to offer citizen’s wider access to an advanced Information Society. They will deliver improvements in economic growth, competitiveness, and productivity through the provision of a whole new generation of services and applications, including 3G.

Possible applications and services that this new technology promises to usher in are limited only by the imagination and many applications are currently under development now. If you consider that every device in the world is individually addressable, then this opens up limitless possibilities.”



**Figure 2-11: Commissioner Erkki Liikanen at the Global IPv6 Service Launch ceremony**

In parallel to the presentations, a demonstration area was set up which showcased the results of a number of IST and other research projects where IPv6 has been the base technology for deployment. The demonstrations included examples of collaborative work undertaken with international partners around the world, illustrating the potential for a global perspective on research networking.

In terms of its goals, the Launch Event was considered a success. It managed to demonstrate future potential for IPv6 services and applications, highlighting the results achieved in research to date and the capabilities of the international research networks to offer a production quality IPv6 service to universities and research institutions.

The complete “Report on the Global IPv6 Service Launch Event”, is available at <http://www.eu.ipv6tf.org/PublicDocuments/ipv6-global-service-launch-03.pdf>.

During the press conference, European Commissioner Erkki Liikanen, stated:

- Today we are here to celebrate the arrival of IPv6 and its integration into Europe’s key research infrastructure.

- IPv6 is part of the next generation of Internet technology. It will improve the performance of the Internet and it will enable the Internet to be integrated into a wide range of devices and services in our homes, businesses and while on the move. Some of these are demonstrated at this event - from household appliances to the IPv6 enabled vehicles.
- The introduction of IPv6, alongside unrestricted access to broadband, is of great importance. Together they will help to offer citizen's wider access to an advanced Information Society. They will deliver improvements in economic growth, competitiveness, and productivity through the provision of a whole new generation of services and applications, including 3G.
- Possible applications and services that this new technology promises to usher in are limited only by the imagination and many applications are currently under development now. If you consider that every device in the world is individually addressable, then this opens up limitless possibilities.

Take as one example road and traffic systems. Your in-built navigation system would do more than direct you to your destination based solely on global positioning and a set of passive digital maps, it would interact far more intelligently with the environment and could find routes dynamically based on information it receives back from other IPv6-enabled devices - for example enabling you to find the quickest or most efficient route taking into account heavily congested/blocked roads. Traffic signalling would become more intelligent and be able to respond instantaneously to the different patterns of traffic flow throughout the day. Road safety would benefit too. Drivers could be forewarned of accidents on the motorway or of slow-moving traffic and sensors of vehicles involved in collisions could automatically notify the emergency services.

Home appliances are another area which springs immediately to mind. Appliances enabled with IPv6 could be controlled remotely via a PC or even a hand-held 3G device giving home-owners total control of their homes from anywhere in the world. DVD players could be developed which would download or stream films from the Internet and alarm sensors could be manufactured cheaply which would automatically detect problems and forewarn the relevant services preventing unnecessary loss of life or damage to homes.

IPv6 also opens up enormous potential too for the end-user. With fast data connections and IPv6 at their fingertips, end-users will find they have the wherewithal to become tomorrow's data providers, opening up untold possibilities for end-user industries.

- The Union's commitment to IPv6 started with the creation of a European IPv6 Task Force in 2001. Since then the European Commission has provided policy orientations which have been taken up at the highest political level.
- These efforts have been well-rewarded. GÉANT, the European Research Networks backbone, is now IPv6-enabled and is today the world's largest IPv6 research network.
- GÉANT offers the greatest geographical coverage of any network of its kind in the world (from Iceland to the Caucasus). GÉANT has a dual role of providing an infrastructure to support the advanced communication needs of the scientific community (such as IPv6), as well as providing an infrastructure for research on state-of-the-art communication technologies itself.



- The GÉANT network is being continually upgraded, and currently has a total trunk capacity of 185 Gigabits per second (more than twice as powerful than any other research network in the world). In addition, the network provides 14.5 Gigabits per second of international connectivity to North America and Japan. Further links, to the Latin American and Mediterranean regions, are being implemented by the EU-projects ALICE and EUMEDconnect respectively and will become operational within the next few months. These regional backbone networks will be IPv6-enabled as well.
- During these two days we are celebrating the world's first global native IPv6 research network which is an important first step towards an IPv6-based commercial Internet. This event therefore underlines the fact that IPv6 is here and beginning to make its presence felt.

#### References:

- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=386>.
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### 3. IPV6 DEPLOYMENT STATUS REPORT

#### 3.1 Overview

The IPv6 Task Force Steering Committee monitors how the recommendations of the 1<sup>st</sup> phase are implemented.

The following chapters provide an overview. Each chapter outlines a quick status of the detailed action item. At the end of each chapter, a summary provides an overview on the major achievements and the major open issues to be addresses by the relevant addressees of the IPv6 Task Force Phase 1 recommendations.

#### 3.2 EC Recommendations: EU Member States

##### 3.2.1 Status of the Implementation of the Recommendations

1. Provide support towards the IPv6 enabling, of the networks and services associated with the public sector (e.g. e-government, e-learning and e-health services), including educational institutions. Moreover, IPv6 should be considered in application procurements.

##### **Status**

Not addressed so far on a large scale, although there are single initiatives. In France a Healthcare Initiative is being started, initiated through the French National IPv6 Task Force.

The UK e-GIF programme's draft document has recommended IPv6-enabled products for government and public sector procurements where cost-effective to do so (see [www.govtalk.gov.uk](http://www.govtalk.gov.uk)).

Several Spanish public entities and government bodies already implemented IPv6 requirements in their tenders, though not public awareness has been raised.

Besides that several activities have been undertaken by TF SC members in order to encourage the German Bundeswehr on their way to IPv6.

2. Establish and launch educational programmes on IPv6 tools, techniques and applications, so as to create the required base of IPv6 skills and knowledge.

##### **Status**

Not addressed so far.

A Spanish funded project, 6SOS (<http://www.6sos.org>), is addressing this goal, and organized the event "Deploying IPv6" (<http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=358>).

3. Promote the adoption of IPv6 through awareness raising campaigns and co-operative take-up activities, targeted at consumer organisations, small and medium size enterprises, Internet service providers (fixed or wireless) and operators.

##### **Status**

Addressed so far by some EU Member States governments. Namely worth mentioning is the French and the Spanish Ministry initiative. The IPv6 Task has contributed here with a bottom up approach by creating the National Task Forces.

4. Continue to stimulate the wide spread use of Internet across the European Union and encourage the transition towards IPv6 by avoiding fragmented approaches or mandatory deployment time-lines.

**Status**

Not addressed so far, except in the NRENs and GÉANT, where IPv6 has been deployed during 2003.

5. Strengthen the financial support towards national and regional research networks (NRENs), with a view to enhance their integration in European wide networks such as GEANT, and increase the operational experience on novel Internet services and applications based on the use of IPv6.

**Status**

GÉANT has been dual-stack native IPv6 at 10Gbit/s since early 2003, and now connects 18 NRENs natively, most of whom are also dual-stack. Only 5 NRENs have yet to start the introduction of IPv6 native services.

GÉANT has native dual-stack connectivity to Abilene (Internet 2).

Most deployments use Cisco or Juniper equipment. No reports of adverse effects on production IPv4 service have been reported.

The NREN status in IPv6 activity happens in many levels:

- National IPv6 NREN pilots, e.g. Bermuda project in the UK, G6 in France, JOIN in Germany.  
Participation by NRENs to European activities, e.g. to the TERENATF-NGN IPv6 WG, covering all GÉANT partners. This group has done much IPv6 piloting and testing, see: <http://www.terena.nl/tech/task-forces/tf-ngn/>.
- Also to RIPE IPv6 WG, which meets 3-4 times per year.
- Participation in IST projects, especially 6NET.

All NRENs now have production IPv6 address space under 2001::/16. Indeed GÉANT is no longer routing 6Bone prefixes under 3ffe::/16, recognizing the IETF's decision to deprecate the 6Bone, and for the increased routing stability that such a step creates.

The next challenge is stimulating IPv6 interest in the universities, and connecting them natively.

6. Provide the required incentives towards the development and testing of IPv6 products, tools, services and applications in the new economy sectors. In particular, IPv6 enabled broadband access to the home, to small and medium size enterprise and in public areas, is of key importance.

**Status**

Addressed so far by some EU Member States governments. Namely worth mentioning is the French and the Spanish Ministry initiative. The IPv6 Task Force has contributed here with a bottom up approach by creating the National Task Forces.

7. Take appropriate measures (such as the establishment of a National or Regional IPv6 Council) to carry out:
  - a. *The assessment, at national or regional level, of current developments and degree of take-up of IPv6, as well as the formulation of guidelines and dissemination of best practices relating to the efficient transition towards IPv6.*

**Status**

This is largely addressed. See section 6.1, European Initiatives, in this document. The European IPv6 Task Force has played a significant role in the helping and facilitating the establishment of national IPv6 Task Forces. Besides Italy, most of the economically larger European Countries have IPv6 Task Forces.

- b. *The development of measures aiming at the alignment of IPv6 transition schedules favoring a cohesive IPv6 take-up.*

**Status**

This is largely addressed. See section 6.1, European Initiatives, in this document. The European IPv6 Task Force has played a significant role in the helping and facilitating the establishment of national IPv6 Task Forces. The IPv6 Task Forces aim to coordinate their work and their roadmaps. This is work in progress.

Some IST projects, e.g. 6NET, have a focus on transition and have produced guides or cookbooks in this area.

- c. Encouraging the active participation of technology experts from industry in the work of European and International standards and specification bodies tasked with IPv6 matters.

#### **Status**

This is largely addressed. The European IPv6 Task Force and the national IPv6 Task Forces are actively aiming to widen their outreach, to include more people in the active development of IPv6.

### **3.2.2 Key Results**

An active commitment by most EU Member States towards implementing IPv6 introduction plans is not yet accomplished, although there are encouraging signals from some of the member states.

There are no single reasons for this that can be observed among all member states. The current economic situation can be recognized as part of the problem, as some contacts in the member states administrations consider the work of the national IPv6 Task Forces as relevant, but are unable to support them financially. Other reasons are that IPv6 is still not on the “radar screen” of officials or does not seem to have a high priority due to heavy investments in IPv4-only equipments.

There are encouraging examples, however. Namely worth mentioning are France, Germany, Spain and the UK.

The IPv6 Task Force has contributed in most of the major economies in Europe by actively helping to facilitate the creation of IPv6 Task Force. Most members of the European IPv6 Task Force are active contributors to national IPv6 initiatives.

### **3.2.3 Actions**

<b>Ref.</b>	<b>Action</b> (addressed problem, background, estimated cost, obstacles)	<b>Responsible</b>	<b>Due date</b>
A.1	Major engagement is missing in Italy, in the new member states and in some European countries (compare list of National Task Forces above). For this, the support of the Commission is needed. Some actions already taken and first results estimated by September-October time frame.  The Italian IPv6 Task Force organized a new meeting on 23 <sup>rd</sup> February 2004, with the support of the IPv6 TF-SC.	Jordi Palet	2003-09-01
A.2	New member states of the European community should be encouraged to take additional action. For this, the support of the Commission is needed.  NRENs from Hungary, the Czech Republic and Poland are all now 6NET project members, having joined the project under the Newly Associated States scheme.	All	2003-09-01

IST-2001-37583		IPv6 TF-SC	D3.4: IPv6 Overall Status
A.3	Actions in public fields that mobilize a lot of public spending in Europe should be addressed - health, environment, education, and public security?	All	2003-09-01
A.3	The European Network and Information Security Agency is starting to work. IPv6 should be considered by them ( <a href="http://europa.eu.int/eeurope">http://europa.eu.int/eeurope</a> ). For this, the support of the Commission is needed.	All	2003-09-01
A.4	Can we lean on Member States by requiring "ePublicServices" drive to use only IPv6-enabled providers? For this, the support of the Commission is needed.	All	2003-09-01

### 3.3 EC Recommendations: The Industry

#### 3.3.1 Status of the Implementation of the Recommendations

1. Fully participate in the R&D activities to be supported in the context of the 6<sup>th</sup> Framework programme.

##### **Status**

This is fully addressed. The IPv6 Task Force, the IPv6 Task Force Steering Committee and the National IPv6 Task Forces have actively contributed for a large participation in IPv6 proposals in the FP6.

2. Actively contribute towards the acceleration and alignment of ongoing IPv6 work within standards and specifications bodies.

##### **Status**

This is addressed. The European industry, in its own interest, in the FP5 and upcoming FP6 and in other R&D frameworks is quite actively participating in the international standardization and specification initiatives, e.g. the IETF, RIPE and ETSI.

3. Develop key guidelines permitting the efficient integration of IPv6 infrastructures and interoperability of IPv6 services and applications, notably in the context of 3G mobile communications.

##### **Status**

This is partially addressed. The Task Force has actively contacted a representative set of providers informally. It is observed that many of the major European telecommunication providers are actively working on plans to integrate IPv6 in their production networks. On the other hand, it can be observed that the current rollout of services is still rather slow. Major reasons seem to be the lack of active customer demand.

In the area of mobile operators, active work on IPv6 seems to be slow as well. Many operators seem to be occupied with the quick rollout of 3G services, where IPv6 is currently playing only a limited role (3GPP version 5 makes IPv6 mandatory, but this version is not widely implemented yet).

In the area of IPv6 services and applications, adoption is rather slow. While many of the larger software companies (Microsoft, Apple, Sun, IBM, etc.) are actively working on IPv6, the rollout of application and services is still marginal. While there are positive examples of early deployment of IPv6, e.g. in the NRENs, deployment of IPv6 applications and services in the industry is progressing slowly, still.

The Task Force is actively contributing in 3GPP through Latif Ladid and Bosco Fernandes.

4. Support and fully participate in interoperability events organized, including those by ETSI.

#### **Status**

This is fully addressed. See the “IPv6 Ready initiative” in this document, which is organized by ETSI and other organizations.

Two major events succeed already around this idea, one in Belgium and one in US (Moonv6).

IPv6 has been an important part of the 1<sup>st</sup> PLT Plugtests organized by ETSI, under the guidance of the 6POWER expertise (<http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=183>).

5. Address the multi-vendor interoperability issues impeding the wide-scale deployment of IP security and conduct extensive IP security trials.

#### **Status**

Not addressed so far. Security- and PKI-Infrastructures are a problem that goes to some extent beyond the problem of IPv6.

A new FP6 IPv6 security project called SEINIT is now accepted, with the participation of several of the TF members.

A new work on IPv6 Distributed Security has been started in IETF by Euro6IX.

6. Devote efforts towards the establishment of a European wide, vendor independent, training and education programme on IPv6 and ensure through timely and user friendly information, the collectively increase of IPv6 awareness.

#### **Status**

This has been addressed by the Task Force Steering Committee. Initiatives were taken, but without positive results. It was intended to setup an initiative in the FP5, but the initiative was not taken up. The Task Force will not actively pursue this issue, since approaches were made twice, unsuccessfully. Commercial Trainings by some companies are emerging (companies in the training field, manufacturers, e.g. Cisco, etc.), although vendor independent programs are still lacking behind.

7. Integrate IPv6 in their strategic plans and take early steps to obtain appropriate IPv6 address allocations.

#### **Status**

This is partially addressed. The Multihoming issue is still unresolved (it is a known open issue at the IETF), which is potentially a barrier for deployment at large enterprises.

The Multi6 WG has now reconvened at the last two meetings of the IETF, and is considering new proposals. Progress is now being made but is still likely to be slow due to the complex nature of the issue.

### **3.3.2 Key Results**

Progress in the industry is now gaining momentum. Many major companies are well aware of IPv6. Commercial rollout of services is lacking behind for various reasons. A common explanation pattern is the lack of customer demand for commercial IPv6 services and the current economic situation, which is in some areas preventing large or temporarily even any upfront investments in new technologies. It has been observed several cases of conflicting reports on the status of IPv6, within the same entity.

### **3.3.3 Actions**

Ref.	Action (addressed problem, background, estimated cost, obstacles)	Responsible	Due date
A.1	How is the deployment message being promoted/advertised? And what effect is this promotion having? Can it be done better? A plan of items should be specified that could be implemented. Particularly: Are all operators and providers aware of these 6NET/Euro6IX test-beds? It should be checked if the possibility of testing would be used more widely.  Several European Telcos are already cooperating in those projects, and some of them have already indicated their readiness and even commercial offerings.	All	Ongoing
A.2	Discussions with a few operators and manufacturers in Scandinavian region. Also to investigate interest for CEO level meeting. Results?  Presentation made to Finnish army, WLAN and IPv6 roaming technologies presentation to the major Scandinavian operators. Report the results.	TBD	Outstanding
A.3	Contacts with DVB-IPI working group. Report results.  Several standardization initiatives ongoing.	All	Ongoing
A.4	Have all major operators and providers been contacted (key to ensuring the infrastructure)? <ul style="list-style-type: none"> <li>▪ What is the time-plan?</li> <li>▪ How will it be done?</li> <li>▪ Who is responsible?</li> </ul>	All	Ongoing

## 3.4 Commission

### 3.4.1 Status of the Implementation of the Recommendations

1. Increase and refocus EU support to RTD in the context of the 6<sup>th</sup> Framework programme in the following areas:
  - a. IPv6 broadband fixed and wireless network infrastructures, and their interoperability aspects.  
**Status**  
This target is addressed in FP6.
  - b. Development of IPv6 tools, devices and network elements.  
**Status**  
Not addressed so far.
  - c. Large scale testing of IPv6 based services and applications, across heterogeneous, fixed and wireless, access platforms.  
**Status**  
This target is addressed in FP5 already with GÉANT, 6NET and Euro6IX.
  - d. IPv6 enabled advanced infrastructures for Research (GÉANT and GRIDs).  
**Status**  
This target is addressed in FP6.
  - e. IPv6 awareness, training and education.  
**Status**

Not addressed so far. This has been addressed by the Task Force Steering Committee. Initiatives were taken, but without positive results. It was intended to setup an initiative in the FP5, but the initiative was not taken up. The Task Force will not actively pursue this issue, since approaches were made twice, unsuccessfully. Material is available in the Task Force if needed.

- f. Production of a European Code Base for IPv6, including the development of IPv6 open source code.

#### **Status**

Not really addressed so far. There is a variety of open IPv6 source code available by European companies (e.g. IABG: IPsec implementation, HUT: mobile implementation, 6WIND etc.). Issues are the lack of IPv6 libraries, IPv6 applications etc., this could be addressed in a focused way.

Finally has been perceived as being too late for a new IPv6 open source stack, also no appropriate instrument for FP6, e.g. SSA not appropriate for development work.

- g. Launching a socio-economic and market study addressing the key potential impacts of the transition to IPv6, including on security, freedom of information privacy, user friendliness and easier management.

#### **Status**

This is work in progress: A market study is potentially too early. Study should be postponed, to be conducted late 2003/2004 by the Commission with support of the IPv6 Task Force. But some work on privacy is on going in Euro6IX. Benchmarking was proposed to be addressed by a new FP6 project (6MEMO), resubmitted in the second IST call of FP6 in October 2003. **However, this proposal was not funded in the second call of FP6, so the issue still remains open.**

- 2. Study the impact of the further evolution of the Internet including the new generation IPv6 protocol, on the fundamental right to privacy and data protection, so as to ensure that the required standards and specifications take these aspects into full consideration.

#### **Status**

The IPv6 TF-SC has addressed this. A communication between the EU Art. 29 WG has been established and a small common document has been prepared. Some work is done in cooperation with the Euro6IX project on this issue (<http://www.ec.ipv6tf.org/PublicDocuments/030225IPv6TF-StatementArt29-03.pdf>).

**Euro6IX is continuing this work and future documents and joint activities with Art. 29 WG is expected in the next few months.**

- 3. Renew the mandate of the "IPv6 Task Force" with an enlarged participation of all economic and industrial sectors likely to be impacted by IPv6, including, consumer organizations, research institutions, and independent data protection authorities as well as representatives of national or regional IPv6 Councils and appropriate representatives from candidate countries. In its renewed mandate the Task Force is requested to:

- a. Ensure a working liaison with standards and Internet governance bodies such as ISOC, IETF, ICANN, RIPE NCC, 3GPP, ETSI, IPv6 Forum, Eurescom, ETNO, UMTS Forum and GSM Europe.

#### **Status**

This item is addressed. There are direct links to ISOC, IETF, ICANN, RIPE NCC, 3GPP, ETSI, IPv6 Forum, Eurescom, UMTS Forum and GSM Europe via members of the IPv6 Task Force. The liaisons are established on collecting and exchanging information.

**In the UMTS Forum the Operators are only now showing keen interest for IPv6 and created a list of topic and issues to be studied within the Forum.**



3GPP Release still holes to a firm mandatory implementation of IPv6 in the IP Multimedia Subsystem. GSM Europe has established Operator individual Groups to study IP and in particular IPv6. Also the impact of VoIP cannibalizing their current Circuit Switched Voice Revenues.

IETF and ISOC are fully supporting IPv6 and working towards a rush fixes of issues and yet unsolved issues.

RIPE-NCC are now open to discussion on IPv6 but have still not fully jumped on the bandwagon.

*ETSI, UNH and TAHI have successfully launched it's interoperability project and been extremely useful in creating the "IPv6 Ready" program, with the support of the TF-SC.*

- b. Provide a regularly updated review and plan action ("the European IPv6 Roadmap") on the development and future perspectives of IPv6 in order to coordinate European efforts on IPv6,

#### **Status**

This is addressed and work in progress. This report is part of identifying gaps and determining actions needed.

- c. Establish collaboration arrangements and working relationships with similar initiatives being launched in other world regions.

#### **Status**

This is addressed and work in progress. A European delegation including IPv6TF-SC members had visited Japan. See the section of Non-European IPv6 Task Forces. The European IPv6 Task Force has played and is playing a helping role in supporting other Task Force, namely the NAv6TF.

A new Asia Pacific IPv6 Task Force has been started with the cooperation of the IPv6 TF-SC.

A new IPv6 Task Force is being formed in the Latin American and Caribbean region, with the cooperation of the IPv6 TF-SC.

### **3.4.2 Key Results**

The main activities have been put on the work of the Task Force itself and the liaison with other relevant parties. A paper has been prepared and some work has been put on data protection issues.

The national IPv6 Task Force have put some emphasis on the eEurope 2005 action plan, namely France has set up some initiatives in this direction. The Task Force member organizations are active participants in the major European IPv6 projects.

Currently there are few working groups operational. There is a Naming and Addressing Working Group ("Nomad") actively contributing in the French IPv6TF. The French IPv6TF plans a Business Model and Security Models Working group. The Spanish IPv6TF has produced some first results already published, which are available currently only through the Spanish IPv6 TF. Preliminary results include the detection, that there is a need to increase R&D on IPv6 related issues, that Dissemination & Training are necessary and essential components, ongoing work on standardization issues is important, that there is a need for new and more IPv6 applications, as well as IPv6 Services and IPv6 E2E Security models.

### **3.4.3 Actions**



Ref	Action (addressed problem, background, estimated cost, obstacles)	Responsible	Due date
A.1	Co-ordination with eEurope2005 action plan. Drive towards the online public services (eEurope2005): e-government, e-learning services, e-health services?	All	Ongoing
A.2	Invitation to European Commission to “evaluate the social impact on society, citizens, and businesses of the implementation of IPv6”	TBD	Outstanding
A.3	Time Plan for business case and market study?	All	Ongoing

## 4. IPV6 TASK FORCE COORDINATION

Actions have been performed aiming at the enhanced coordination and continuation of the work performed within the IPv6 Task Force 2<sup>nd</sup> phase.

With the assistance of the Commission the TF-SC invited participation of representatives of not yet represented economic and industrial sectors likely to be impacted by IPv6, including representatives of national or regional IPv6 Councils and appropriate representatives from candidate countries.

The TF-SC has worked together with equivalent international and national initiatives, with important achievements towards the establishment of a Global IPv6 Task Force effort.

### 4.1 Background

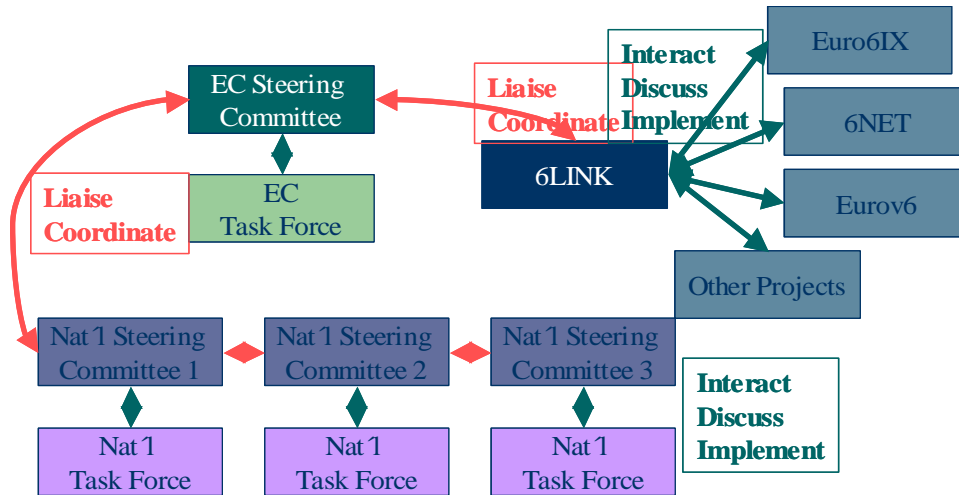
A clear differentiation between the European IPv6 players is essential. The following shall clarify the relationship of the European IPv6 Task Force (IPv6TF), the European IPv6 Task Force Steering Committee (IPv6TF-SC), the national IPv6 Task Forces and national IPv6 Task Force Steering Committees, the IPv6 Cluster and the European IPv6 projects.

The European IPv6 Task Force is a team of 70 members or so, that are addressable via mailing list and which have met a number of times in the past. It was originally intended that the IPv6 Task Force monitors and implements the actions during the 1<sup>st</sup> Phase, the Task Force (and not the Steering committee) was foreseen to do during the project, which is defined in the IPv6TF-SC project preliminaries. The action items refer to the IPv6 Task Force. A complication of the Task Force was that only few people were actively contributing during the first phase.

The funded part of the IPv6 Task Force, the project, with very limited resources, is the Steering Committee of European IPv6 Task Force (IPv6TF-SC). Several of the project members have voluntarily led working groups in the 1<sup>st</sup> Phase of the IPv6 Task Force. The original idea of the project was to provide some financial support for the SC members to continue their work.

While the original idea was to continue most work with the Task Force, the approach was slightly shifted in favor of activating more people on the national level. The IPv6TF-SC members have put a significant effort (many spent much more time and budget than could be charged to the project) to spread the word about the European IPv6 activities and Task Force and help initiate the national/regional Task Forces. The regional Task Forces have regional Task Force Steering Committee and these do currently help with the IPv6TF-SC work. The plan is to closely coordinate the next steps with the national IPv6 Task Forces. Since they are also not funded, the workload they can take is limited as well and a great lot depends on their enthusiasm and good will. This takes quite some effort, but the visible results are encouraging, there is some press coverage, a network of experts and ideas for common work. The idea is that this will result in some common action, direction and more deployment of IPv6.

The dialogue between the European IPv6 Task Force, the EU and national IPv6 Task Force Steering Committees and European IPv6 projects is beneficial to gain a higher momentum than single initiatives. The following figure depicts the level of interaction between the national Task Forces, the EU TF-SC and the European IPv6 projects.

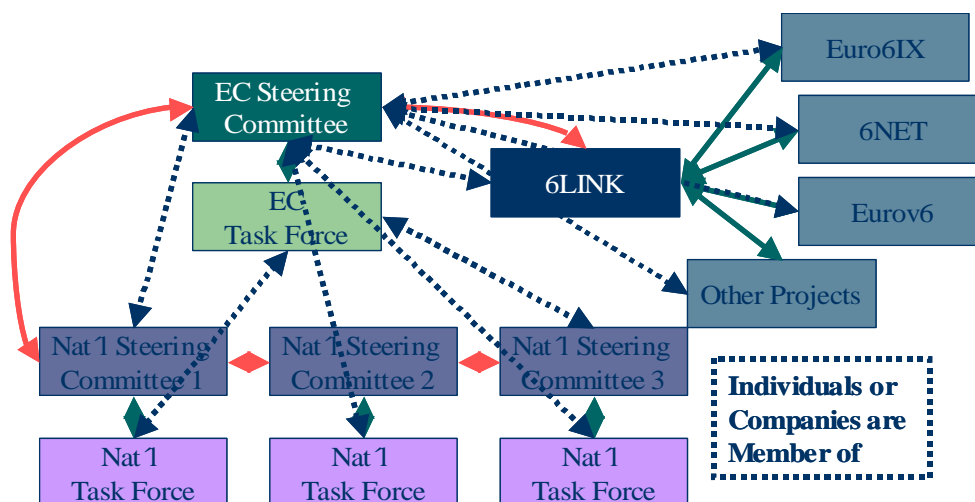


**Figure 4-1: Levels of Interaction between the Task Forces, SC and Projects**

The IPv6 Cluster (and the supporting project, 6LINK) is a different European activity, providing for active exchange of knowledge in the European IST IPv6 projects, looking for synergies, preventing overlaps and helping discover open issues. There is a direct interaction with the IST IPv6 Cluster, and additionally several of the partners in the IPv6TF-SC are active members of 6LINK and therefore there is also additional coordination through the member companies.

The same goes for the large IPv6 projects. The companies participating in the IPv6-TF-SC project actively are also active project members of many of the European IPv6 projects. BT, Consulintel, DT and UoS are members in Euro6IX; UoS is also member of 6NET; other current and past projects are Moby Dick, 6INIT, 6WINIT, where several of the IPv6TF-SC partners companies participated.

The following figure depicts the membership relationships between the various European IPv6 activities and the EU IPv6 TF-SC.



**Figure 4-2: Membership Relationship between the IPv6TF-SC and other Activities**

## 4.2 Key Results

The work with the Phase 1 and 2 of the IPv6 Task Force has now been actively pursued during the creation of the regional IPv6 Task Forces; some members of the IPv6 Task Force in fact are

active in their regional and national Task Forces. This is however, a constant ongoing process in terms of activating networks of experts from the IPv6 Task Force on every possible occasion for further discussion of the next steps.

Through the national IPv6 Task Forces the membership grew from approximately 70 individuals at the Brussels meeting of the European IPv6 Task Force in 2003 to more than 400 companies (approximately 500 individuals), so the European national Task Force activity has gathered a significant momentum in recent months. The companies are reported in this document, although the latest version of the companies can be found on the web pages or through the contacts for each national IPv6 Task Force.

In addition, more than 1.000 individuals representing over 500 companies/entities are being involved worldwide in regional Task Forces or similar initiatives.

## 5. LIAISON WITH STANDARDS

It is the task of the IPv6 Task Force to create the proper working and liaison environment to ensure that a working collaboration with standards and Internet governance/policy bodies takes place.

The members of the Task Force are active contributors in a large number of Internet standards and policy bodies, including the IETF and 3GPP. The members are promoting IPv6 deployment, and the collaboration amongst European IPv6 initiatives in these bodies.

The achievements will be documented in this living document over the runtime of the IPv6 Task Force Steering Committee project, since this is an ongoing task.

The work of the TF-SC started even before the project was officially started, and a few achievements are already evident.

First steps towards DVB IP Infrastructure (DVB-IPI) have been taken, through the Philips representation. Furthermore, an ongoing debate between the DVB-T IP Data cast working Group and UMTSF/Siemens has been going on. At a recent, workshop held in Munich at the “Institut für Rundfunktechnik” it has become very obvious that IPv6 will be used for datacast channel and transport protocol. Current, DVB-T Handheld (H) with UMTS/GPRS trials are being carried out in some countries e.g. Germany (Berlin) and will be a future alternative for delivery of multimedia services.

In the Workshops of the IPv6 Task Force in London, January 17<sup>th</sup> 2003, in Berlin on April 30<sup>th</sup> 2003, and in Milan on 1<sup>st</sup> October 2003 and Brussels on 14<sup>th</sup> January 2004, several topics have been identified that need further attention. It is intended to provide more inputs on these topics in short memorandums. These memorandums will help to identify potentially additional actions to be taken in the R&D or standardization areas, among others.

One of the main standardization bodies that is already being directly addressed, and heavily involved in work with the IPv6 Task Force and the Steering Committee, is ETSI, involving once more, international cooperation, as described in the following sections.

Several deployment and interoperability activities related to IPv6 and SIP are taking place:

- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=142>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=253>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=255>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=256>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=352>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=365>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=380>.

ETSI is also involved in a number of IPv6 MIPv6 interoperability activities:

- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=184>.

The ITU is also considering IPv6 as crucial, and started to provide a Newslog service specific to IPv6 (<http://www.itu.int/osg/spu/newslog/categories/ipv6>), managed by the Strategy and Policy Unit. Besides this, in the October 2003 ITU Telecom World, IPv6 was one of the major

technological issues highlighted by many Japanese exhibitors. In particular Panasonic, NTT and Toshiba are planning ahead their IPv6 development and deployment.

## 5.1 The “IPv6 Ready” Logo Certification Program

An important activity has been initiated with the participation of ETSI, UNH, TAHI, members of the IPv6 TF-SC (Consulintel, LME and UoS), and several research institutions involved in IPv6 testing activities.

The IPv6 Forum plays a major role to bring together industrial actors, to develop and deploy the new generation of IP protocols. Contrary to IPv4, which started with a small closed group of implementers, the universality of IPv6 leads to a huge number of implementations. Interoperability has always been considered as a critical feature in the Internet community. Due to the large number of IPv6 implementations, it is important to give to the market a strong signal proving the interoperability degree of various products.

To avoid confusion in the mind of customers, a unique logo programme has been defined. The IPv6 logo will give confidence to users that IPv6 is currently operational. It will also be a clear indication that the technology will still be used in the future. To summarize, this logo programme will contribute to the feeling that IPv6 is available and ready to be used.



Figure 5-1: “IPv6 Ready” Logo

In January 2004, the 1<sup>st</sup> slate of “IPv6 Ready” products was announced:

- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=301>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=302>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=322>.

The IPv6 Ready web site (<http://www.ipv6ready.org>) already contains a list of the first vendors and products to have been awarded the Phase I of the IPv6 Ready logo.

## 5.2 STF 236: IPv6 Testing

Consulintel is working with ETSI on the initiative Specialist Task Force 236, towards the delivery of a Technical Report on Pre-normative study for IPv6 testing (DTR/MTS-00083).

As IP-technology permeates more and more ETSI standards, there is a strong case for centralizing ETSI's IP testing activities. To this end the ETSI Board has approved the creation of

an IP Testing group in TC MTS. This activity is well supported by other TBs who will make use of the output of this group.

The area of "IP Testing" is extremely broad covering items such as SIP, Mobile IPv6, ROHC (Header Compression), Interworking (e.g., SIP/H.323), IPv6 over IPv4 and security aspects. There are also questions of methodology, types of testing and the practical implementation of the tests that need to be taken into account.

The Internet community of service providers and equipment manufacturers has indicated that the testing of IPv6 is one of their highest priorities in order to support the "IPv6 Ready" certification programme. It is here that TC MTS believes effort should be spent. In order to use ETSI resources (both voluntary and funded contributions) it is necessary to provide a scope for this work and to develop both short-term and long-term plans. The purpose of this STF is therefore:

- To produce an overall plan for enabling test specifications suitable for "IPv6 Ready" testing, taking into consideration the schedule of producing test documentation in a timely manner, the effort required and other costs.
- To identify specific IPv6 protocols to be tested and to allocate priorities (taking special account of other ETSI TB needs and schedules).
- To identify which types of testing are relevant: Conformance testing only; interoperability testing only or both.
- To identify the level and nature of voluntary support available and to estimate the extent of funded support necessary.
- To consolidate Test Purposes from existing TPs for the IPv6 core protocol.

The outputs of the STF will be a TR including:

- TC-MTS Work Item proposals for the individual testing specifications.
- Workplan and ToRs for proposed STFs to carry out the testing specification tasks.
- A funding proposal to eEurope 2003-2005.

This work is also being liaised with several research and trial activities within different IST funded projects.

The complete terms of reference and other information of this working group are available at <http://portal.etsi.org/STFs/MTS/STF236.asp>.

See also <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=71>.

A follow up initiative is being prepared.

### 5.3 Global IPv6 Showcase

A new initiative is being proposed to extend the actual achievements, for a Global IPv6 Showcase implementation, with the contribution of the Eurov6 project (<http://www.eurov6.org>).



Figure 5-2: Global IPv6 Showcase Logo

## 5.4 Key Results

The Internet Engineering Task Force, of course, does the standardization of IPv6. As far as operational matters are concerned, the Regional Internet Registries are involved, i.e. RIPE for Europe. The members of the IPv6TF-SC are active followers and contributors in the IETF and in RIPE and are following the developments. The necessary actions for technical progress are well known in the IETF community and the contribution of the IPv6TF-SC in the IETF so far was to a lower extend. Members of the IPv6TF-SC have actively endorsed the IPv6 Ready and the IPv6 Plugtests events organized by ETSI and others. At the Madrid 2003 Global IPv6 Summit, Consulintel has organized the first remote distributed Plugtests event (<http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=18>).

A new event has been organized in Brussels, in cooperation with the Eurov6 project (<http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=41> and <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=67>).

The project partners participated actively in the decision, in the IETF framework, to close down the 6Bone on 6/6/2006, considering that at that time, the status of the production networks will be optimal. This decision has been promoted widely, with the result, for example, that GÉANT is **generally** no longer routing **non-internal** 6Bone prefixes on its network. The UK research network, JANET, is implementing a similar policy soon.

### Proposed Action

A rather critical issue at the moment is the lack of clearly defined and scalable multi-homing solutions. This work is addressed in the IETF, though the progress is still low. There are few actions that could be taken here from the Task Force perspective. It should be considered by the European Commission to set up a special research action on routing and multi-homing research issues. It would be beneficial, if IPv6 experts from Japan and the US would be able to join such an activity. Discussions between the EU and US research networks are leading to routing policy implementations to enable IPv6 to be used reliably for day-to-day tasks. These negotiations were pump-primed by TF-SC members.



## 6. LIAISON WITH OTHER IPV6 TASK FORCES

Collaboration arrangements and working relationships with similar initiatives are continuously being launched.

The Steering Committee is working as a coordinating team for the worldwide organization of the different Regional and National Task Forces across the world.

Indeed, the national Task Forces in Europe have been directly influenced, supported and started by the IPv6 Steering Committee members.

The members of the IPv6TF-SC have been actively participating and established close relationships with several national and international IPv6 Task Forces, both described in the following sections.

*Disclaimer: The membership of the IPv6 Task Forces listed in the following sections is a voluntary activity, which not necessarily means endorsing any policy or view on IPv6.*

### 6.1 European Initiatives

#### 6.1.1 Spain

##### 6.1.1.1 Charter/Goals

The initiative is the response to the request of Jordi Palet (Consulintel), to the Spanish Ministry of Science and Technology, as a consequence of the recommendations from the European IPv6 Task Force and the e-Europe 2005 plan.

The group is constituted as an open working group, of limited duration, without juridical entity, supported by the Ministry of Science and Technology, and being the main goal to elaborate a public document regarding the actions to be taken by different organizations to implement IPv6 according to the Spanish market needs.

Initially, 5 working groups are established:

- Fixed and mobile infrastructures
- Mobility and new wireless technologies.
- Security and privacy.
- Next generation applications (including home/industrial networking and GRIDs, QoS, Multicast, ...).
- Research, Development and Innovation.

Each working group will identify their own target groups, and will consider not only technical aspects but also, and at least:

- Information Society Implications.
- Business Drivers.
- Proposal for Roadmaps and Benchmarking activities.
- Impact in Research, Development and Innovation programs.

A web site is established at <http://www.es.ipv6tf.org>.

### 6.1.1.2 Achievements

An initial press release was delivered for the kick-off meeting.

The working group is creating very interesting expectative among different government groups, Telcos, ISPs, application providers and manufacturers.

The main outcome will be ready May 2003, after one year of work, and will be presented in the Madrid 2003 Global IPv6 Summit.

The Spanish IPv6 Task Force has elected a steering committee, which will act as the coordinating team.

The Ministry of Science and Technology is hosting the meetings and participating actively.

The website and mail exploders had been setup since the early beginning.

In April 2003, the 1<sup>st</sup> phase of the work was concluded, providing the following recommendations:

- The Spanish industry and academic community shall increase the presence in National, European and International IPv6 research projects.
- The Spanish academic community and industry shall encourage IPv6 knowledge dissemination and training.
- Spanish presence shall be promoted in IPv6 standardization and related activities.
- The public administrations shall support and impel private sector initiatives for the development of new IPv6 networks, services and applications.
- Professional and corporate associations shall promote the deployment of IPv6.
- The public sector and the public administrations shall promote the use of new IPv6 networks, services and applications.
- The impact of IPv6 on end to end security provision and information auditing, as well as in personal data protection shall be explored.
- Projects should be promoted to explore the previous impact by including security platforms in IPv6 pilots and networks.

A short presentation was made during the last Madrid 2003 Global IPv6 Summit and is available at [http://www.ipv6-es.com/03/presentations/session2/juan\\_quemada\\_2.pdf](http://www.ipv6-es.com/03/presentations/session2/juan_quemada_2.pdf).

Consequently, several relevant web sites from the government are being updated to support IPv6. Several tenders (public and private entities), already required IPv6.

Remarkable achievement that for the 2<sup>nd</sup> time since the Spanish IPv6 Task Force was created, the new national R&D funding program has included IPv6 as one of the topics (<http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=186>).

In May 2003, RedIRIS, the Spanish NREN, was the first one in Europe to deploy dual stack and connect natively to GÉANT.

### 6.1.1.3 Meetings

Most of the work is being carried out via mailing list, but also with several meeting.

The kick-off meeting was on May 16<sup>th</sup> 2002, with attendance of over 180 people, mainly with very relevant positions.

The following meeting was organized on 30<sup>th</sup> of September, then 13<sup>th</sup> of November, 17<sup>th</sup> of February and then 11<sup>th</sup> April. Several other meetings organized since them.

The final results of the 1<sup>st</sup> year of work had been delivered during the Madrid 2003 Global IPv6 Summit, and a decision was taken to extend the work for at least 6 additional months, in order to provide more concrete actions to the industry, government and other affected target groups.

The national R&D program included several specific IPv6 and related issues, including security and mobility, and proposals had been received on those topics.

#### 6.1.1.4 Members

The following table is the relation of the members of the Spanish IPv6 Task Force.

Organization
ACE
Adhoc Security
Airtel Móvil S.A (Vodafone España)
Agora Systems
Alarmcom Inglesa S.A
Albura
Allianz
Altran SDB
Amadeus GTD
Aniel
Asociación de Ingenieros de Informática
Asociación Española de Proveedores de Servicios de Internet
Atento Telecomunicaciones España
AVÁNZIT tecnología
BBVA
BT Ignite ES
CDTI
Cirsa Interactive Corp.
Cisco Systems
Comunidad Autónoma de Madrid
Consulintel
Corporación IBV
Cubitel S.L
Director Asistente
DS2

Dynamic Interprise Junction
Ecija & Asociados Abogados
Endesa
Ericsson de España S.A
Escuela de Cine y Video
Flag Telecom
Fujitsu
Global Crossing
Grupo Eidos
Hewlett Packard
IBLNEWS
ICM Informática y Comunicaciones de la Comunidad de Madrid
IDG
Indra Sistemas
Internet Society
ISDEFE
ITA
Jazztel
Junta de Andalucía
Kristina Internet Business Solutions
La Caixa
Lambdanet España SAU
M. Educación,Cultura y Deporte
Madrid Wireless
MCYT
Ministerio de Administraciones Públicas
Ministerio de Ciencia y Tecnología
Neuroomante SL
Nokias Networks Spain
Nortel Networks
novaGnet Systems S.L
Observatori de la Societat de la Informació a l'Alt Urgell
ONO
Red.es
RedIRIS
Renacimiento Sistemas
Responsable Servicios Profesionales
Retecal
Robotiker

Satec
Schlumberger Sema
SG de Acceso a la Sociedad de la Información
Sky Point - NEO
Socintec
Soluciones Globales de Internet S.A
Sun Microsystems Ibérica S.A
Tech Foundries
Tecnocom
Telecom Italia de España S.A
Telefónica Data España
Telefónica de España
TerraLycos
Tiscali Telecomunicaciones
TISSAT
TVC Cataluña
UNI2
Universidad de Burgos
Universidad de Cantabria
Universidad de Murcia
Universidad Politécnica de Cataluña
UPM
Vodafone
Xfera Móviles

**Figure 6-1: Spanish IPv6 Task Force Members**

## 6.1.2 France

### 6.1.2.1 Charter/Goals

The following are the principle objectives of the French IPv6 Task Force:

- Identify the industry and service sectors where IPv6 is going to be vector of development  
Industry, transports, health, education, game, ...
- Work on a roadmap.
- Identify the existing breaks.
- Propose actions and recommendations.
- Organize events, provide publications, ...
- Facilitate deployments.

### 6.1.2.2 Achievements

I has been launched with the support of Senator Trégouët, and supported by France's Ministry of Research and New Technologies. Claudie Haigneré, ministre chargée de la Recherche, is supporting the work of the IPv6 Task Force. “[...] J'ai le plaisir de vous annoncer que notre Ministère, via le budget 2003 de Renater, soutiendra le fonctionnement de la task-force IPv6 française lancée par la société 6WIND et à laquelle un certain nombre d'entre vous contribuent” (<http://www.recherche.gouv.fr/discours/2003/dautrans.htm>).

Solid success among participants representing industry, Internet and telecom operators, government, public associations and universities:

- Over 250 members on mailing list.
- 8 working meetings + dedicated meetings.
  - Working group on naming & addressing.
- Steering committee with 8 members:
  - Jean-Yves Babonneau, AFNIC CEO.
  - Tayeb Ben Meriem, Director of the IPv6 competence centre at France Télécom.
  - Patrick Cocquet, 6WIND Chairman, IPv6 Forum VP.
  - Loïc Etesse, Technology Development Director at Alcatel.
  - Jonathan Robin, civilian society representative.
  - Gérard Ségarra, Telematics R&D Coordinator at Renault.
  - Laurent Toutain, ENST Bretagne and G6 representative.
  - Dany Vandromme, Renater CEO.
- Communication:
  - Press conference last April 2003
  - Several articles in the press
  - IPv6 pavilion and lab at N+I Paris
  - IPv6 conference in Normandy with G6, GN6 & Renater
  - Participation to Autran and Hourtin meetings
- Web site: <http://www.fr.ipv6tf.org>

Coincidentally with the Network+Interop Paris, November 2003, the French IPv6 Task Force presented to the Minister for the department of Research and New Technologies in the French Ministry for Finance, Economy and Industry, its official recommendations for establishing a strategic plan to develop and deploy IPv6 technologies for the country.

Aimed at both public administration and industrial leaders, the Task Force's recommendation paper underlines the importance of having concrete and coherent actions to ensure a smooth and gradual transition to the internet protocol version 6 (IPv6). In heightening the awareness on the social impact expected from the explosive use of the internet, it hopes to impress upon the different economic players, the need to empower innovation and development of new applications with IPv6.

The press release is available at <http://www.fr.ipv6tf.org/DATA/PRESS/PressR%20TF6.pdf>. The “Recomendations for a Strategic Plan in the Developent and Implementation of IPv6 Technologies in France” document with the complete set of recommendations is available at [http://www.fr.ipv6tf.org/DATA/PRESS/Recommandations%20IPv6%20TFF%20\(English\).pdf](http://www.fr.ipv6tf.org/DATA/PRESS/Recommandations%20IPv6%20TFF%20(English).pdf).

### 6.1.2.3 Meetings

The Task Force has one meeting every 6 weeks, and there are 2 main subjects per meeting.

There have been the following meetings 9 so far (listed in the web site).

#### 6.1.2.4 Members

The following provides a preliminary list of organizations that have been represented at the Task Force Meetings (complete list in the web site).

Organization
6WIND
A.R.T.
AFNIC
Alcatel
Cabinet 1er Ministre
Caisse des Dépôts
Cap Gemini
Cegetel/Bur. RNRT
CGTI
CIGREF
CNES
CNIL
DATAR
Député
DIGITIP
EDF
FING
Forum des Droits
France Telecom
G6
GITEP
IBM
ICBourse
ICHEC Belgique
IRCAM
ISOC France
ITEMS
La Poste
Laparra Conseil
L'Echangeur
M.E.N.
MEDEF

Min. de l'Industrie
Min. Recherche
Organisation
RATP
RENATER
Renault
Resp TIC
RNRT
Thales
TMM
UNAF
WSIS

**Figure 6-2: French IPv6 Task Force Members**

### 6.1.3 United Kingdom

#### 6.1.3.1 Charter/Goals

The UK IPv6 Task Force is leading the transition to the next generation Internet Protocol IPv6 for the UK. Participation is open to all: Government, industry, academic, international organizations, and users. The Task Force is an independent locally self-funded activity associated with leading IPv6 experts and organizations globally including the European Union IPv6 Task Force Phase II programme.

The Task Force works with the UK community to facilitate the deployment of IPv6 in the UK and to see IPv6 is understood and supported in Public Policy, Industrial and Commercial organizations and by users. To those ends the initial objectives of the UK IPv6 Task Force in 2003 are to:

- Produce a Road Map for IPv6 deployment in the UK.
- Develop outreach activities, events and information resources.
- Investigate and manage "Hot Topics" related to IPv6.
  - Infrastructure.
  - Security.
  - Privacy.
  - Business opportunities.
  - Wideband (Broadband and beyond).
  - New Applications.
  - Societal and Public Policy

The UK IPv6 Task Force acts as

- A centre of excellence for IPv6 issues.
- Coordinates UK oriented IPv6 initiatives including trials, research, EU project participations, events, etc.
- Influences and involves key players in:



- Government
- Universities and Academic institutions
- Public policy community
- Industry – ISP's, carriers, equipment manufacturers, software developers, content and media ...
- Related Trials, and Taskforces. e.g., **TERENA TF-Mobility for WiFi roaming**
- Press
- End users
- **Universities considering IPv6 deployment**
- **Working to help push IPv6 academic experience to commercial deployment**

UK Government involvement with the Task Force is important to:

- Ensure UK Government understands and has structured access to IPv6 expertise and deployment.
- Support the E-envoy objectives which may not be met without IPv6.
- Cover the EU Commission recommendation to deploy IPv6.
- Coordinate with the ITU-T draft resolution instructing the Director of TSB to liaise, co-operate with entities on transition to IPv6.
- Match our major trading partners in the EU and Asia who are deploying.
- Stimulate understanding of Public Policy implications of IPv6 which are potentially substantial.

#### 6.1.3.2 Achievements

The UK IPv6 Task Force has been established and a coordinating committee, a number of co-ordination meetings and conference calls have been held. The promotional and awareness initiatives of the UK TF and its members have helped to result in:

- The UK IPv6 Task Force www site has been established at [www.uk.ipv6tf.org](http://www.uk.ipv6tf.org).
- A very successful first public meeting was held on the 16<sup>th</sup> January 2003 with over 200 attendees
- Hosting the 2nd meeting of the EC IPv6 Task Force Phase II on the 17<sup>th</sup> January 2003 at UCL, London.
- The UK TF presented at the UKERNA IPv6 workshop, to 60 delegates, on 12<sup>th</sup> February 2003.
- The UK TF worked with ISOC England to present an "IPv6 Wake Up Call" event to over 50 attendees on 21<sup>st</sup> May 2003.
- The UK TF held a meeting with the DTI on April 29<sup>th</sup> 2003, presenting the IPv6 issues. However, no DTI funding has yet been made available for the UK TF.
- Native dual-stack deployment of IPv6 in the JANET academic network (see <http://www.ja.net/development/ipv6/statustable.html> for details). JANET is also phasing out usage or transit for 6bone prefixes under 3ffe::/16.
- Nominet presenting a plan to introduce IPv6 services in the near future for the .uk top-level domain.
- The UK e-GIF programme has recommended the procurement of IPv6-capable devices for government and public sector organizations (see [www.govtalk.gov.uk](http://www.govtalk.gov.uk)).
- Interest in government organizations (e.g. DSTL) for knowledge and expertise in IPv6 transition.

- The introduction of IPv6 into research programmes, e.g. the DTI's "Pervasive Computing in the Environment" initiative, and also the new UbiComp programme being proposed for HEFCE funding.
- The creation of new, innovative IPv6 training and consultancy companies (e.g. ip426.com).
- Promotion of IPv6 issues to new, young UK networking researchers.
- Consideration of IPv6 issues for Wireless LAN deployment and inter-university roaming, in conjunction with the TERENA TF-Mobility WG.
- UK IPv6 Task Force coordinating committee is currently finalizing a further programme of events. The next major event is expected to be in early 2004, with a focused seminar series.
- The UK TF plans to approach the UK Broadband Task Force or the Broadband Stakeholder's Group to introduce IPv6 thinking into the funded broadband support programmes (where an IPv6 Task Force activity would not be directly funded by the government).

The UK IPv6 TF plans two events in 2004:

- **Business Conference, aimed at commercial adopters, June 2004**
- **IPv6 Summit in London, September 2004, with the support of the IPv6 Forum**

### 6.1.3.3 Meetings

The UK IPv6 Task Force held its first public meeting, "IPv6 & the future of the Internet in the UK", on the 16<sup>th</sup> January 2003 with over 200 attendees. The evening event held at UCL, London included a series of presentations and an informal drinks reception, which was sponsored by Cisco Systems.

The presentations, invitation and agenda from the event are available on the UK IPv6TF site under the documents section.

The UK IPv6 Task Force also hosted the 2<sup>nd</sup> meeting of the EC IPv6 Task Force Phase II on the 17<sup>th</sup> January 2003 at UCL, London. Information from this event is on the EC IPv6 Task Force site.

Further presentations were made to broaden the audience with UKERNA and ISOC England.

### 6.1.3.4 Members

The actual members are listed in the following table.

Organization
6WIND
BTexact Technologies
Cable & Wireless
CESG
CISCO
IBM
ISOC UK

JANET
LINX
Microsoft
NTT
U. Lancaster
U. Southampton
UCL
UKERNA
Xchangeport

**Figure 6-3: UK IPv6 Task Force Members**

## 6.1.4 Switzerland

### 6.1.4.1 Charter/Goals

The Swiss IPv6 Task Force (<http://www.ch.ipv6tf.org>) has been established to group all the different companies and persons active in the IPv6 field in Switzerland and to leverage the work done in the EC IPv6 Task Force. The common goal is to identify the opportunities for the IPv6 technology and to encourage its deployment in Switzerland.

Currently, the Swiss IPv6 Task Force is still trying to increase the number of members (to reach more companies that will be affected by IPv6 in the future). Furthermore, first projects have been started initiated by the Swiss IPv6 Task Force and run by different members of the Task Force.

There are numerous other activities such as the organization of a 2<sup>nd</sup> IPv6 Summit Switzerland on the 3<sup>rd</sup> of June 2004 (a first summit took place on the 24<sup>th</sup> of April 2003 with about 200 attendees out of the Swiss ICT community).

### 6.1.4.2 Achievements

A Swiss IPv6TF terms and references draft has been produced (<http://www.swiss.ipv6tf.org/files/SwissIPv6TF-TermsAndRefsV2.pdf>). The website is online.

During the first year of existence, the Swiss IPv6 Task Force successfully rose awareness in the full Swiss ICT environment. There are today over 150 persons in the mailing list and over 50 companies and organizations member of the Task Force (for an actual list of all member companies please visit <http://www.ch.ipv6tf.org/members.php>). Numerous meetings have taken place. The core team holds regular meetings – about every 2 months. Different actors of the Task Force are regularly invited for public and private talks on IPv6. A discussion group of ISPs has been started to ease ISP interconnection with IPv6 and discuss ISP issues with IPv6.

As a direct or indirect result of the work of the Swiss IPv6 Task Force, first ISPs offer IPv6 services. The list of ISPs that offer such services (constantly growing) is:

- Dolphins Network Systems, commercial ISP services on IPv6 (ADSL, webhosting, etc).
- SWITCH (Swiss Education and Research Network), commercial ISP services on IPv6.
- Telehouse Zurich Internet Exchange (TiX), commercial Internet exchange on IPv6.
- Begasoft, pre-commercial webhosting service on IPv6.

- Cyberlink Internet Services, pre-commercial ISP services on IPv6.
- Dataway, pre-commercial ISP service on IPv6.
- Init Seven, pre-commercial ISP services on IPv6.
- Solnet, pre-commercial ISP services on IPv6.
- Swisscom Enterprise Solutions (IP-Plus), pre-commercial ISP services on IPv6.

#### 6.1.4.3 Meetings

Several informal meetings have been held. The following events are currently planned:

- 4<sup>th</sup> SICTA Kolloquium
  - Mobilkommunikation quo vadis (10<sup>th</sup> April 2003).
  - See <http://www.sicta.ch>
- IPv6 Event of the IPv6 Task Force.
  - 24<sup>th</sup> April 2003, Technopark Zürich.

#### 6.1.4.4 Members

The actual members are listed in the following table.

Organization
Agilent Technologies Switzerland
Alcatel Switzerland
Ascom
at rete
AWK
BAKOM
Bar Informatik
Bar[IX]
Bluewin
CERN
Cisco Switzerland
Cyberlink
Dolphins Network Systems
ETHZ (Eidgenössische Technische Hochschule Zürich)
Hochschule für Technik Rapperswil
IBM Global Services Switzerland
IBM Research
ICTnet
Informatikstrategieorgan Bund/ISB
ISOC Geneva
ITU
Martel Consulting

Orange
SITA
SolNet
Sunny Connection
Sunrise
Swisscom Innovations
Swisscom IP-Plus
Swisscom IT Services
Swisscom Mobile
SwissICT
Swiss Internet User Group
Switch
Telehouse Zurich Internet Exchange (TiX)
Telscom
University of Bern

**Figure 6-4: Swiss IPv6 Task Force Members**

## 6.1.5 Belgium

### 6.1.5.1 Charter/Goals

The Belgian IPv6 Task Force has been created in the scope of the European Commission IPv6 Task Force, re-launched on September 12, 2002 after an initial report was submitted in the spring.

The Brussels Universities (ULB and VUB) have been invited to host this activity, in view of their previous heavy commitment and activities on IPv6 and other “Next Generation Networks” projects. Prof. Paul Van Binst and Mrs. Rosette Vandenbroucke ensure the coordination.

This is strictly a not-for-profit activity, with a goal of information exchange and dissemination on the topics related to the future evolution of the Internet Protocol, and the associated technical and socio-economic aspects.

You are invited to become a Member of the Task Force by simply filling out the corresponding web page; you will receive from time to time some e-mail messages about news or events related to the field.

If you want to become an active Member, mark the corresponding field in the form and we will contact you to define what would be your special interests (organization of events, further dissemination of information, etc.).

The European Commission, BELNET, BELTUG, DNS.BE and ISPA Belgium morally support the Belgian IPv6 Task Force.

### 6.1.5.2 Members

The actual members are listed in the following table.

Organization
ABASconsult bvba
ADINS sprl
Alcatel
Alcatel Bell
Ambassade de France Mission Economique
Arpnet
Belgacom
Belnet
Beltug
BIAC/swlTch
Bruxelles Formation
Cabinet Gilles
Cable & Wireless Internet Services
Cisco CA
Cisco Systems
Colot & Co
Commission
Damovo
Damovo Belgium NV/SA
Dexia Bank Belgium
DNS.BE
EHSAL Europese Hogeschool Brussel
e-Strategy
Etisalat
European Commission
European Regional Information Society Association
Fernand Simon
Haute Ecole Francisco FERRER
HEC
HP Enterprise System Group
ICHEC
InduTec
Internet Society Wallonie (ISOC Belgium-Wallonie)
ISL - Promotion Sociale
ISPA Belgium
ITSP

Jean-Pierre Van Wayenberge
Juniper Networks
KBC
Limburgs Universitair Centrum
MediaNet Vlaanderen VZW
Mobistar
Muxum (Agoria - Febeltel) [ETSA]
National Bank of Belgium
NextiraOne
NextiraOne NV.
Nokia Network
OGM
OGMED sas
Omegasoft Medical
OPENFORCE
Planet Internet
ROYAL MILITARY ACADEMY
Siemens
Siemens Atea
Steven Tas
Telindus High-Tech Institute
UCL/INGI
Union Internationale de la Presse Electronique
Université Catholique de Louvain (UCL)
UNIVERSITE DE LIEGE
Université Libre de Bruxelles (ULB-STC)
University of Antwerp
Vrije Universiteit Brussel
Vrije Universiteit Brussel (VUB-HELIOS)
Vrije Universiteit Brussel INFO/TW
VSH
VUB-ETRO
Willem Naudts
WorldCom

**Figure 6-5: Belgium IPv6 Task Force Members**

## 6.1.6 Germany

### 6.1.6.1 Charter/Goals

A German version of a mission statement has been developed and propagated widely through the web pages of the German IPv6 Task Force (<http://www.de.ipv6tf.org>). It states the main goal of the Task Force: To provide leadership for the timely deployment and adoption of IPv6 in Germany.

The IPv6 German Task Force is formed to address the benefits and challenges for the German community (government, industry, academic, international organizations and individuals) that can be derived from adopting the Next Generation Internet Protocol version 6 (IPv6).

The IPv6 German Task Force will aim to define a three-year Plan of Action for the industry, the at-large community, and the German government given the millions of existing IPv4 networks and IPv6 will need to coexist in the next few years on the Internet.

The IPv6 German Task Force will closely work together with the EU IPv6 Task Force.

Main issues are, in brief:

- Raise awareness on the impacts of IPv6 on technical, economical and social environment.
- Encourage the industry to begin the initial phases of IPv6 readiness.
- Plan a well-defined 3-year Transition phase (or Action Plan) specific to the German environment to support a smooth and wide migration to IPv6.
- Initiate German IPv6 activities.
- Ensure national initiatives include IPv6 in their agendas.

A roadmap has been identified for the IPv6TF-DE. The following is the current version, which is work in progress and not finalized yet. Particularly timing needs be discussed and depends heavily on the workload of the TF members.

Excerpt of Items/Activities:

- Publication in the Web and the German Press
  - <http://www.de.ipv6tf.org> serves as IPv6 news channel for the German IPv6 Task Force
  - IPv6 related articles in Computer Magazines
- Organization of trainings and Workshops
  - Several TF Members are offering IPv6 training
  - IPv6 Workshops with all pillars of Deutsche Telekom (T-Com, T-Online, TSI, T-Mobile) regarding the possibilities, chances and threads of an IPv6 integration
  - IPv6 Workshop with Beschaffungsamt of Bundeswehr
  - Members of the German TF are involved in IPv6 related R&D activities of the Bundeswehr
- Conference.
  - German Summit Organized (International participation) for June/July 2004 in Berlin.
  - Representatives of the German IPv6 TF gave talks at several conferences inside and outside Germany (DFN Tagung, TCC Core Meeting, Russian IPv6 Summit, etc.)
- Participation at Tradeshows:
  - CeBIT 2004: Did not get a slot, but will try again in 2005.
  - Systems 2004: TBD.
- Presentations:
  - Systems 2004.
  - Security Forum.



- CIO/Computerwoche.
- ComputerLinks University.
- Ingram Micro (Distributor).
- Demonstration of IPv6 capability and interoperability.
  - Representatives of German IPv6 TF in lots of presentation in conjunction with EU projects.
  - Demonstrations in Deutsche Telekom internal projects
  - Systems 2004 (TBD).
- Encouragement for the industry to start with IPv6.
  - Successful talks with the Automobile Industry.
  - SAP initiated IPv6 related working group.
- Enhancement of coordination in the industry.
  - Ongoing
- Detailed argumentation for the IPv6 capabilities of IPv6.
  - Through Presentations constantly on going.
- Planning of a detailed 3 years-plan or action plan for the German Internet Landscape.
  - Roadmap in progress.
- Identification for transition scenarios for the German Environment.
  - This will follow the Roadmap for the deployment of IPv6 on different levels of Industry and Governmental offices.
- Coordination with other European Initiatives.
  - Alignment of what is happening in different EU Countries with what is needed for the national market.
- Initiation and Support of IPv6 activities and pilot projects.
  - Several trials to place IPv6 projects inside the research activities of BMBF (DFN related and own-standing BMBF projects) failed because of several administrative burdens.
  - Support: Constantly on going - on demand.
- Identification of funding possibilities.
  - National funding schemes are extremely vital for take-off of IPv6 in Educational and Research Institutes. Contacts to local Ministries have been established. So far no clear support found.
- Support of exchange of Research activities.
  - Starting now.
  - Contributions to integration strategies.
- Establishment and Networking of IPv6 Showcases and Showrooms.
  - Punctual IPv6 show rooms at the premises of the German TF Members (TSN, IABG, DFN, Siemens, SpaceNet etc.) are interconnected in different research activities.
- Influence on national organizations of the IT industry to have them integrate IPv6 in their work programmes.
  - By creating a White Paper in the German language, a new approach to influence IT industry in Germany has started.

#### 6.1.6.2 Achievements

Mailing lists have been established. A first version of the web page is established. A press release is prepared. The initial round has grown. Next steps are under preparation.

In September 2003, the German Ministry of Defense (MoD) distributed to all the relevant organizations guidelines and directives concerning the introduction of IPv6. The key points of those guidelines are:

- The use of IPv6 in the German armed forces shall be stepwise introduced. For this purpose IPv6 has to be regarded in all new ideas and projects dealing with IP protocols.
- The IT standards of the armed forces have to be adapted appropriately.
- For the procurement of components it has to be considered, that both, IPv4 and IPv6, has to be supported during an undefined transition time.
- No fixed date has been decided so far, on which all networks have to support IPv6. Appropriate transition scenarios will be investigated.
- The changeover to IPv6 will happen for the whole armed forces, including IT in weapon systems and sensors.
- The existing IPv6 address concepts shall be developed further.
- The armed forces shall apply for an IPv6 address range.

A subsequent meeting among the IPv6 Task Force members and the MoD, in February 2004, stressed the achievement. The meeting with Colonel Gernolf Karrer responsible for the IT strategy at the German Federal Ministry of Defense at the Bonn headquarters can be briefly documented as follows:

- The German MoD has been considering the implementation of IPv6 for more than 4 years but did not want to take the decision and be the first mover. The decision of the US DoD in June 9, 2003 to move to IPv6 was an ice-breaking decision and Colonel Karrer confirmed that the decision of the MoD was quite an obvious and natural one since they studies have confirmed issues with IPv4 to move to a net-centric approach to the use of the Internet technologies in the MoD.
- Colonel Karrer has expressed strong support to hold the next German IPv6 Summit in Bonn and confirmed Dr. Dr. van Giet ( General-level) to hold a keynote in the event.

Major break through has been achieved with the Federal News Agency (BND). Furthermore, good contacts to the Automobile Industry have been established. The first contacts to SAP have been established and SAP will have a speaker at the German Summit. The first Industry players (Applications) have shown interest and will be presenting their work in IPv6 at the Summit as well.

A major IPv6 conference is scheduled for June 2004 and will be organized by the German IPv6 TF with the support of the IPv6 TF SC. An agenda was settled that focuses mainly on the German Bundeswehr and the representatives of the industry.

Several German industrial partners (SAP, Mercedes, Nec, Telekom etc.) that want to fill a conference slot have been identified. More industrial partners will participate with a sponsoring function.

It is assumed that this conference is the IPv6 highlight in Germany and will gain very visible coverage in press and media.

### 6.1.6.3 Meetings

There have been a number of conference calls. Some people have met individually, but phone conferences are the preferred method of meetings and are held regularly once a month.

#### 6.1.6.4 Members

The following table is the list of the actual members.

Organization
AERAssec
BRAINTEC Netzwerk-Consulting GmbH
DFN
IABG
JOIN/Westfälische Wilhelms Universität Münster
Siemens
Spacenet
T-Systems
Westfälische Wilhelms Universität Münster

**Figure 6-6: German IPv6 Task Force Members**

### 6.1.7 Luxembourg

#### 6.1.7.1 Charter/Goals

Based on preliminary contacts, it seems that the users want services not a protocol per se. To gain user acceptance, it needs to be demonstrated that IPv6 is unavoidable and should be taken into account, much like the Y2K problem some years ago. To achieve this goal, there should be a realistic economic model for end-users and the transition costs should be minimal for them.

Additionally, there should be no service disruption during the transition phase. Given some continents like Asia will be forced to move to IPv6, for lack of IPv4 addresses, it should also be made clear to the user community that migrating to IPv6 is mandatory if we want our computers and other devices to be able to communicate with others around the world.

The Luxembourg IPv6 Task Force will aim to define a 3-year Plan of Action for the industry and the community, given the millions of existing IPv4 networks and IPv6 will need to coexist in the next few years on the Internet.

The main goals are:

- Awareness-raising on the impacts of IPv6 on technical, policy and social environment.
- Information dissemination (Web site, mailing lists, etc.).
- Education and training (seminars, workshops, ...).
- Demonstrations.

In relation with information, education and demonstrations, will seek co-operations and resource polling with other countries.

### 6.1.7.2 Achievements

Web site and mailing list established.

### 6.1.7.3 Meetings

Two meetings organized up to now. Next one already planned.

### 6.1.7.4 Members

As a general rule, all companies and organizations are welcome to join the task Force. ISOC Luxembourg will launch a campaign to recruit members from the government, the industry, the academic world as well as NGOs and professional organizations. The Task Force will be strictly not-for-profit and will perform a scientific activity. We do not think it will be necessary to incorporate the organization as such.

## 6.1.8 Finland

### 6.1.8.1 Charter/Goals

The national IPv6 working group acts as the Finnish IPv6 Task Force.

The group promotes the adoption of the IPv6 protocol in Finnish communications networks, and monitors and contributes to related international standardization. The work focuses particularly on an examination of the methods intended for migration of IPv4 and IPv6 protocols and the preparation of related guidelines for national implementation to ensure interoperability of communications networks, equipment and services.

### 6.1.8.2 Achievements

National IPv6 working group was established on June 13, 2002. The group is supported by the Finnish Communications Regulatory Authority (e.g. meeting facilities, mailing list, web site).

All the major players related to IPv6 matters are involved in the work.

The group maintains a document "Specific issues related to IPv4-IPv6 transition". At this moment the document includes 18 issues. Each issue contains a short definition, a list of related standards and other documents and a description of the current situation or other comments.

An open IPv6 seminar titled "Internet Protocol version 6 (IPv6) is ready for use" will be arranged in the afternoon of March 24, 2004 at Innopoli Technology Center, Espoo.

### 6.1.8.3 Meetings

The group has had 9 meetings so far. Normally 12-20 experts take part in the meetings.

The discussions have concentrated on issues like European IPv6 TF follow-up, presentations (e.g. 6NET research project, transition mechanisms, IPv6 in mobile networks, IPv6 in home networks), IPv6 standardization follow-up, IPv6 operational situation in Finland and updates to the national document.

The group has a mailing list and a website <http://www.ficora.fi/englanti/tele/IPv6.htm>.

#### 6.1.8.4 Members

At the moment the group's mailing list comprises experts from the following 28 organizations:

Organization
AXU TM
BaseN
Cisco
CSC
Cygate Networks
Digita
Elisa Communications
Ericsson
Eunet
eTampere
FICIX
FICORA
Finnet Association
ISOC Finland
Funet
KV9
Ministry of Finance
Ministry of Transport and Communications
Nokia
Siemens
Song Networks
Tampere University of Technology
TeliaSonera
Tellabs
TREX
Wicom Communications
VTT
Yomi Solutions

**Figure 6-7: Finish IPv6 Task Force Members**

#### 6.1.9 Denmark

A new IPv6 Task Force has been created in Denmark.

The information is currently available only in Danish at <http://www.dk.ipv6tf.org>.

### 6.1.10 Italy

During the last months, the Italian IPv6 Task Force has started gathering the interested participants, and a launch is being organized for October 1<sup>st</sup> in Milan. More information will be available after that meeting. This meeting has successfully organized, as expected, and the preliminary works started.

On 23<sup>rd</sup> February 2004, the 2<sup>nd</sup> meeting was also very successful, and included the cooperation of the IPv6 TF-SC, raising interest of about 30 new entities (see <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=373>).

The web site is already up and running (<http://www.it.ipv6tf.org>).

### 6.1.11 Austria

This chapter is being formed and some meetings are already planned, at different levels, most probably for the 1Q2004.

### 6.1.12 Sweden

Is expected that will start working at the last quarter of 2003.

### 6.1.13 Ireland

The work is ongoing to have this Task Force established coincidentally with the Irish presidency of the European Commission, 1<sup>st</sup> quarter of 2004.

As a preliminary step, an Irish delegation participated in the Global IPv6 Service Launch Event and a group from Telecommunications Software and Systems Group (TSSG) at Waterford Institute of Technology recently briefed Mr. John Browne TD, Minister of State at the Department of Communications, Marine and Natural Resources, on current developments in IPv6 and wireless technology. For more information on this, see <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=366>.

### 6.1.14 Netherlands

Similarly, the goal is to have the Netherlands IPv6 Task Force working during the 3<sup>rd</sup> quarter of 2004.

In October 2004, the Dutch Ministry of Economics affairs has granted a study to opportunities of IPv6 for SME's. The study will be performed by a consultancy company. A working group is also founded by the ministry.

### 6.1.15 Norway

The Norway IPv6 Task Force organization is also being considered.

## 6.2 Non-European Initiatives

### 6.2.1 Asia Pacific

A new Asia Pacific IPv6 Task Force (<http://www.ap.ipv6tf.org>) has been launched as a consequence of the IPv6 Summer Retreat meeting in Seoul (23<sup>rd</sup> August 2003), with the participation and cooperation of IPv6 TF-SC members.

A follow-up meeting will be organized in Kuala Lumpur, October 26<sup>th</sup>, including the 2<sup>nd</sup> IPv6 Summit in Asia Pacific, as part of the APRICOT 2004 event (<http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=374>).

The web site has been recently updated.

## 6.2.2 Japan

### 6.2.2.1 Charter/Goals

The somehow equivalent body in Japan is the IPv6 Promotion Council.

It is estimated that the number of Internet users will exceed 80 million by 2005 and it may not take long before televisions and other information appliances, equipment and devices in buildings, can be controlled by the Internet. The provision of future Internet-based services will affect many areas, ranging from Transportation (ITS), through to shopping and education. IPv6 was invented for the "Next Generation Internet".

"Next Generation Internet" using IPv6 will support the future development of communication and broadcasting networks. This will help to form advanced information and telecommunications network society and at the same time, enhance and support demands varied from shopping to corporate activities. To form this society promptly and successfully, it is essential to press on with promotion of IPv6 by gathering the wide-range intelligences from private enterprise, government bodies, organizations and personal users.

With the background described above, there are about fifty corporate members involving in IPv6 Promotion council's activities at the moment. In order to have a furthering widespread and upgrade of IPv6, accompanied with the new designed terms, we are planning to expand the number of membership and administration board.

The e-Japan Priority Policy Program that was established in March 2001 states that it will realize an Internet environment equipped with IPv6 by 2005 where everyone can receive, share and transmit diverse information securely, promptly and easily regardless of location. With current ongoing cooperation with non-governmental organizations, the Council is determined to contribute in the most effective manner.

The main goals of the IPv6 Promotion Council are:

- To show international leadership within the field of Internet development.
- To develop human resources to maintain and develop an advanced information and telecommunications network society.
- To create and support new business related to hardware, software and its service associated with networks and terminals.

### 6.2.2.2 Achievements

The IPv6 Promotion Council was the first entity in the world that achieved the corresponding government embracement of IPv6. In fact, the history of this group is a continuous history of achievements.

In the 2003 Networld+Interop, several new IPv6-enabled products had been announced (<http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=59>).

In October 2003 a new step forward towards the adoption of IPv6 in consumer electronics and home appliances, has been give by Hitachi Ltd and Matsushita Electric Industrial Co, Ltd., which have decided on a standard they will promote for Internet-linked consumer electronics adopting IPv6 technology with a view to improving their connectivity.

#### References:

- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=391>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=388>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=383>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=379>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=370>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=369>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=367>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=362>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=314>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=201>.

#### 6.2.2.3 Meetings

The IPv6 Promotion Council organizes frequent meetings. In the last meeting, several members of the IPv6 TF-SC (20<sup>th</sup> December 2002), participated actively.

During the Japan visit, contacts with the NTTCom and Impress have been established. It has been proposed that the work on a Japanese IPv6 magazine would be very valuable for European IPv6 initiatives as well. The magazine <http://www.ipv6style.jp> will now also render opportunities for English language articles and the Task Force has been invited to contribute articles about European IPv6 activities. Several members already submitted a few articles.

##### IPv6 Appli-Contest 2003

The IPv6 Task Force has been invited, during this meeting, to participate at the "IPv6 Appli-Contest 2003".

This event is trying to collect the ideas to emerge the next generation of Internet based on IPv6. 1<sup>st</sup> phase of "Idea" contest is starting in February; then the result will come out in mid-March. Then, 2<sup>nd</sup> phase of "Implementation" contest which intends to have a working software/system able to demonstrate is coming. The ceremony of the prizewinners will take place during IPv6 Showcase of Networld+Interop at Makuhari next July.

Even this event is conducted as Japan-centric, IPv6 PC would not like to be closed in Japan, but rather like to make this event open so that the various kinds of ideas come from all over the world. In order to achieve this, the cooperation of the IPv6 Task Forces to this event are very appreciated.

Several partners of the TF-SC had been appointed to help:

- Announcing this event to the European region.
- Promoting people to participate.



- Responding to the 1<sup>st</sup> level Questions or forwarding the Questions to the IPv6 Promotion Council.
- Informing results of the event to the European region.

In addition, some members of the IPv6 Task Force had been requested to become a judge of the applicants.

The award delivery for the idea part has been organized in a joint ceremony simultaneously in Madrid and Tokyo, during the Madrid 2003 Global IPv6 Summit.

#### **6.2.2.4 Members**

More than 280 organizations are members of the IPv6 Promotion Council.

### **6.2.3 Korea**

#### **6.2.3.1 Charter/Goals**

The Korean IPv6 Forum is the equivalent body in South Korea.

The main goals are:

- To allow access to knowledge and technology for the early adoption of IPv6 in domestic environment.
- To verify the adoption of IPv6 and its time.
- To improve IPv6-related market.
- To set environment for the transition from IPv4-based Internet to IPv6-based Next Generation Internet.
- Industrial bodies, research Institutes, Universities, etc., constitute IPv6 Forum Korea.

Major Roles of this organization cover:

- The counter-part of the international IPv6 Forum.
- Sharing of operation skills for adoption of IPv6.
- Sharing of IPv6 technology and know-how among members.
- Support and offering of development and implementation of IPv6-based technology and application.

### **6.2.4 India**

#### **6.2.4.1 Charter/Goals**

The IPv6 Interest Group (6IG) is the equivalent body in India.

IPv6 Interest group, is the platform for corporate and end users and organization to have technical discussions on Development, interactive Deployment, Implementation, configuration, usage and promotion strategies.

Several periodic activities are being carried out. Under the Education and Awareness umbrella, 6IG has planned to conduct monthly meetings on Saturdays, on various interesting activities.

This group has instant access to the development community in India, representing the world leaders in IPv6, development/deployment and products like HP, Cisco, Compaq and more.

One of the goals is to foster the IPv6 application development and deployment by providing continuous feedback.

In January 2004, in Bangalore, it was organized the 1<sup>st</sup> South Asian IPv6 Summit (<http://ipv6forum.org.in/events/jan2004>), jointly organized with SANOG (South Asian Network Operators Group, <http://www.sanog.org>). South Asia comprises India, Bangladesh, Pakistan, Nepal, Sri Lanka, Bhutan, Maldives and Afghanistan uniting 1.5 billion people (25% of world population).

The following are the key achievements:

- Official endorsement of the Indian Government of IPv6.
- ISPs supporting the move to IPv6.
- Establishment of a government-led India IPv6 Task Force. Dr. Govind from the Ministry of Communication led the initiative.
- Preparation of the EuroIndia 2004 event (<http://www.euroindia2004.org>) jointly organized by the European Commission and the Indian Government, with an IPv6 session led by the IPv6 TF-SC and demonstrations by the Eurov6 project (<http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=371>).

### 6.2.5 Afghanistan

One of the achievements of the 1<sup>st</sup> South Asian IPv6 Summit was the kick-off of the activities tending to create equivalent bodies in Afghanistan, with the support of the Office of National Security Council (Presidential Palace, Kabul) and AFGNIC.

### 6.2.6 New Zealand

Also as result of the 1<sup>st</sup> South Asian IPv6 Summit, some preliminary activities are being started in New Zealand, including test-beds.

Reference:

- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=329>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=349>.

### 6.2.7 Taiwan

#### 6.2.7.1 Charter/Goals

The national IPv6 Forum and the IPv6 Steering Committee are the equivalent bodies in Taiwan.

The "IPv6 Steering committee" and the "IPv6 Forum Taiwan" are formed to integrate the resources of industry, government, education, and research organizations and to collaboratively implement the "IPv6 deployment and Development Plan". Having government to lead local Internet-related industries to invest in IPv6, it is expected that the competitiveness of the Internet-related market in Taiwan will be greatly enhanced.

The "IPv6 Steering Committee" proposed "Taiwan IPv6 Deployment and Development Plan" and later the plan was incorporated into the nation's 6-year e-Taiwan project. There are many job

items and organizations involved in the deployment plan and complexity is high. The committee hence divided the whole project into three stages so that Taiwan can enter the new IPv6 information network era stably and timely.

The major tasks of each stage are listed below:

- NICI (National Information and Communication Initiative) establish the "IPv6 Steering Committee" and four divisions under the committee.
- Establish IPv6 Forum Taiwan and hold international IPv6 symposium.
- Second Stage (2002 to 2006).
  - Develop and promote the IPv6 related technology, particularly the IPv4-to-IPv6 transition mechanism, and gradually replace IPv4 with IPv6.
  - Drive ISPs and organizations applying for the IPv6 addresses, and enable the present IPv4 network to support the IPv6.
  - Hold international IPv6 symposium, and Global IPv6 Summit in Taiwan.
  - Establish domestic IPv6 test and verification center.
- Third Stage (2006 to 2007).
  - Complete IPv6 deployment in full scale, such that any network equipment and application can easily connect to the Internet with IPv6.
  - Replace IPv4 with IPv6, and make IPv6 the popular Internet Protocol.

## 6.2.8 China

The China IPv6 Council (CNv6, <http://chinaipv6council.com>) has been launched.

With the support of the IPv6 Task Force, the largest IPv6 network initiative in China, China Next Generation Internet (CNGI) project, was announced during “China NGN Migration and Development Strategy Seminar” hosted by BII Group.

CNGI project, led by China’s State Council and jointly with Ministry of Information Industry (MII), Ministry of Science and Technology (MOST), Chinese Academy of Engineering (CAE), State Development Planning Commission (SDPC), etc, was initiated and approved by China’s State Council in 2003. It means high official recognition of IPv6.

Under the guidance of government, five key carriers including China Telecom, China Unicom, China Netcom/CSTNET, China Mobile, China RailCom and CERNET (China Education and Research Network) will join CNGI project and build their own national IPv6 backbone independently and connect with each other by at least 2 IPv6 IX. By 2005, the scale of CNGI network will reach 39 GigaPOPs and more than 300 CPNs (Customer Premise Network) and realize nationwide coverage. Based on this infrastructure, related institutes and carriers will develop IPv6 key technologies, applications and commercial test. Before 2005, total fund from government will be 1.4 billion RMB.

Undoubtedly CNGI has become the one of the new engine of China telecommunication industry. It’s an excellent opportunity for China to catch up western developed countries with new internet protocol (IPv6). With the deployment of CNGI project, Chinese carriers and global IPv6 equipment vendors are facing new round of fast growth and aggressive deployment of IPv6 network. It is expected that China will have one of the biggest IPv6 network in the world by the end of 2005 and China will be the one of the leading IPv6 country. References:

- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=243>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=268>.

- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=269>.

## 6.2.9 North America

### 6.2.9.1 Charter/Goals

The NAv6TF is a sub-Task Force of the IPv6 Forum and adopt its By-Laws, Charter, and Membership agreements.

The NAv6TF is an open group, accepting members from all geographies (not just North America), but future membership will require some form of a commitment from the individual.

All members of the NAv6TF represent themselves as individuals, not their companies. Jim Bound is the Chair of the NAv6TF.

The short-term objectives are:

- NAv6TF Web Site and nav6tf@ipv6forum.com mailing list.
- Develop Long Term Objectives White Paper.
- Define NAv6TF Work Groups and Select Chairs.
- Identify key players needing to be involved.
- Identify White Papers to be written.
  - The need for IPv6 to support ubiquitous Internet remote sensing.
  - IPv6 Transition and Deployment within an Enterprise.
  - The cost to integrate and transition to IPv6.
  - The cost to remain with IPv4 and not integrate or transition to IPv6.
  - Wireless Deployment within North America.
  - Wireline Broadband Deployment within North America.
  - Integration of Wireless and Wireline Deployment with IPv6.
  - IPv6 Advantages Papers.
- Need to identify how to appropriately effect policy and policy makers.
- Determine how to add members and criteria to the NAv6TF.

The target Industries are:

- Federal, state, and local government, including DoD and law enforcement.
- Utilities.
- IT support contractors.
- Transportation.
- Independent Software Vendors.
- Application Service Providers.
- Academic/Research.
- Gaming and Entertainment.
- Internet Service Providers.
- Telecommunication Providers.
- Streaming Media Vendors.
- Mobile IPv6 Wireless Computing 802.11, GPRS, and 3G.
- Home Networks/Servers.

- Retail, Financial, and Manufacturing.
- High Performance Technical Computing.

The initial Working Groups are:

- Requirements Definition NAv6TF.
- NAv6TF IPv6 Deployment Status and Evolution (tracking function).
- NAv6TF Deliverable Status and Evolution (tracking function).
- NAv6TF IPv6 Standards Tracking (e.g.. IETF, 3GPP, ITU).
- Best and Current Practices for IPv6 Deployment in North America.
- IPv6 Training and Seminars.
- Next Generation Applications.
- Awareness and Promotion.
- Membership Promotion.
- Events Co-ordination.

### 6.2.9.2 Achievements

Mailing lists and webpage are established. Position Papers on various topics have been prepared. Next steps are under preparation.

The White House has recognized the group and is fully supporting it.

The EC IPv6 Task Force helped create the North American IPv6 Task Force to focus on the adoption of IPv6 to the US government and the Department of Defense.

Latif Ladid is vice-chair of the NAv6TF (see <http://www.nav6tf.org>) and Jordi Palet and Tim Chown are members and contributors to the work achieved in this initiative.

Following actions have been undertaken:

- Meeting with Richard Clarke, Chair of the US Cybersecurity initiative Oct 17, 2002 in Boston. Latif presented the impact of IPv6 on security and privacy (see <http://www.nav6tf.org/slides/repository.html> IPv6 Security & Privacy - Latif Ladid [pdf] (posted 10/30/02))
- Meeting with Howard Schmidt, co-chair of the US Cybersecurity initiative Nov 8th, 2002 in Washington. Latif presented the draft of the NAv6TF. Response to U.S. National Security. V2.0 of the final versions are listed here (<http://www.nav6tf.org/slides/repository.html>):
  - Jim Bound, Latif Ladid, and Michael P. Brig [pdf] (posted 12/02/02)  
NAv6TF PCIPB Input Part II Final Version 2.0
  - NAv6TF Members [pdf] (posted 12/03/02)
  - IPv6 an Internet Evolution  
Jeff Doyle [pdf] (posted 01/14/03)

This action has led to the inclusion of IPv6 in the final recommendations document: The National Strategy to Secure Cyberspace, which led to the decision of DoD to announce adoption of IPv6. “The National Strategy to Secure Cyberspace is part of our overall effort to protect the Nation. It is an implementing component of the National Strategy for Homeland Security and is complemented by a National Strategy for the Physical Protection of Critical Infrastructures and Key Assets. The purpose of this document is to engage and empower Americans to secure the

portions of cyberspace that they own, operate, control, or with which they interact. Securing cyberspace is a difficult strategic challenge that requires coordinated and focused effort from our entire society, the federal government, state and local governments, the private sector, and the American people” (see <http://www.whitehouse.gov/pcipb/>).

In June 13<sup>th</sup>, the DoD announced their strategy towards gradually implementing IPv6, requesting that all the acquisitions after September 30<sup>th</sup> 2003 should be IPv6-Ready. The complete deployment will be done by 2007. Several links are available with this information, including:

- <http://www.dod.mil/transcripts/2003/tr20030613-0274.html>
- <http://www.dod.mil/releases/2003/nr20030613-0097.html>.

The 1<sup>st</sup> North American IPv6 Global Summit organized by the North American IPv6 Task Force was organized in June 2003 (24<sup>th</sup>-27<sup>th</sup>), at the San Diego State University, California.

The site of the event is archived at <http://www.usipv6.com/sandiego2003/> (including most of the presentations).

There were a variety of speakers in terms of regions (including several from Europe), Asia Pacific and North America.

Same for the topics covered in terms of variety. The first day (24<sup>th</sup>) was devoted to the tutorial, followed by 2.5 days of sessions. The most relevant topics covered included:

- Peer to peer and related new applications.
- DoD using IPv6, gradually, from NOW.
- The world is moving to IPv6, isn't a local issue.
- IPv6 into planes, homes, work, life.
- Transition.
- Embedded applications.
- Mobile applications.
- Test-beds and real deployment.
- Interoperability.

The complete agenda is available at <http://www.usipv6.com/sandiego2003/agend.shtml>.

There were several keynote speakers, and the most relevant point of the event was the DoD announcement of their adoption of IPv6, starting on October, for a gradual transition that should be completed at the end of 2006.

The event gained a very relevant position in the press, with more than 30 articles and news published (some of them available at <http://www.usipv6.com/sandiego2003/media.shtml>).

The speaker's profiles are available at <http://www.usipv6.com/sandiego2003/speakers.shtml>.

Some of the presentations are also available at the North American IPv6 Task Force site ([http://www.nav6tf.org/summit\\_slides/summit\\_docs.html](http://www.nav6tf.org/summit_slides/summit_docs.html)).

Exhibitions were available during the entire event.

The same day as the tutorial, a special meeting of the North American IPv6 Task Force was organized with the cooperation and participation of 3 members of the European one.

After the opening speech, the DoD organized a press conference, led by John L. Osterholz, (Director of Architecture and Interoperability, Dept. of Defense). Some very concrete conclusions, in addition to the previous press release:

- We are aggressive in our goal, but is achievable.
- At the end, IPv6 will reach to each individual soldier.
- Today, everything has a router, even the helicopters. These will be with IPv6.
- Total IP budget is 30-35 billion (with b) USD, conservatively speaking. Cost of the convergence with IPv6 is being worked out right now.
- Feedback with contractors. A few with a negative reaction, but number of them are very happy to work in the idea of pilots.
- Is needed to provide IP connectivity to soldiers in the field. Will do also convergence with VoIP.
- Hundreds of IP addresses with every soldier. The big issue are still the batteries!
- The DoD isn't comfortable leading this technology, we don't want to have a commercial role, but we do it because we recognize that the products and technology is here. IPv6 community talked to us and we heard the message.
- Within 6 years satellites will provide IP capability at Gigabit speeds, and that will help the convergence with wireless. Is the transformation of communications. Software defined radios are here.

Also a meeting of the Moonv6 project was organized, and the cooperation with the European test-beds was once more reinforced.

Several other informal meetings had been organized during these days, with the participation of the European partners.

The 2<sup>nd</sup> US IPv6 Summit is being organized in Arlington, Virginia, next to the Pentagon, 8-11 of December 2003 (<http://www.usipv6.com>).

Three key offices have been added to the NAv6TF: Public Relations, Marketing, and Early Adoption/Test Beds and key Advisors like Vint Cerf, Larry Smarr, Larry Levine and Major Hess among others.

The North America IPv6 Task Force, in cooperation with the IPv6 Task Force Steering Committee, elaborated a couple of slides to describe the cost of NAT, available at [http://www.ec.ipv6tf.org/PublicDocuments/nww\\_ipv6\\_nat\\_cost.pdf](http://www.ec.ipv6tf.org/PublicDocuments/nww_ipv6_nat_cost.pdf).

A new North American IPv6 Backbone Network Pilot, Moonv6 (<http://www.moonv6.org>), has been deployed. The Moonv6 project is a collaborative effort between the North American IPv6 Task Force (NAv6TF), the University of New Hampshire - InterOperability Laboratory (UNH-IOL), the Joint Interoperability Testing Command (JITC) and various other DoD agencies, and Internet2. Taking place across the US at multiple locations, the Moonv6 project represents the most aggressive collaborative IPv6 interoperability and application demonstration event in the North American market to date.

While adoption of IPv6 in Asia and Europe has been a forgone conclusion for several years now, a great deal of doubt has persisted in the North American market. The government and academic communities in Asia and Europe have been investing resources and time to create IPv6 deployment and integration experience. Although North America is no stranger to IPv6, it lacks the level of mainstream expertise found in IT communities elsewhere.



However, advancements in the development of the protocol, continued support from IT industry, and a recent, important announcement from the DoD have pushed IPv6 back to the forefront of interest in North America, and highlighted our need for more mainstream IPv6 integration and development know-how. Moonv6 will help rectify this shortcoming by providing a platform for the North American IT community to garner extensive, real world, IPv6 deployment experience. Additionally, it will serve as an opportunity for equipment and application vendors to demonstrate the maturity and robustness of their respective IPv6 implementations to prospective users and adopters of IPv6.

#### References:

- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=106>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=111>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=124>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=127>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=128>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=130>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=131>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=132>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=133>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=147>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=148>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=160>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=181>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=192>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=224>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=228>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=231>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=242>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=244>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=245>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=246>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=248>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=250>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=267>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=341>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=364>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=381>.

In October 2003, the Commerce Department announced the launch of a federal government task force to study how deployment of a new industry-developed version of the Internet Protocol, known as IPv6, will affect competitiveness, security and the needs of Internet users ([http://www.ntia.doc.gov/ntiahome/press/2003/IPv6\\_10142003.html](http://www.ntia.doc.gov/ntiahome/press/2003/IPv6_10142003.html)).

The Task Force, called for by President Bush's National Strategy to Secure Cyberspace, will be co-chaired by the Commerce Department's National Telecommunications and Information Administration (NTIA) and the National Institute of Standards and Technology (NIST) and will



operate in consultation with the Department of Homeland Security and other federal offices and agencies.

The Task Force will examine the benefits and costs of the new Internet Protocol and the federal government's role in its deployment. It will seek input from the public, and from government and industry experts on a number of issues relating to IPv6 deployment and will meet with interested stakeholders.

Specifically, the Task Force will issue a request for public comments in the next 45 days and will subsequently convene a public meeting to gather information about IPv6. The task force will provide additional details about its planned activities concurrently with the release of the request for public comment. The Task Force's efforts will culminate with a report of its findings and recommendations, which will be transmitted to the President next spring.

In January 2004, the Task Force released a Request for Comments on the costs and benefits of a transition from IPv4 to IPv6.

#### References:

- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=294>.
- [http://www.ntia.doc.gov/ntiahome/press/2004/IPv6\\_01152004.htm](http://www.ntia.doc.gov/ntiahome/press/2004/IPv6_01152004.htm).
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=324>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=325>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=326>.

The NAv6TF and the rest of the worldwide Task Forces are working together to provide a coherent response to this call.

At the end of October, members of the North American IPv6 Task Force had been interviewed by BBCWorld, creating a big expectation and impact and additional press about IPv6 ([http://www.bbcworld.com/content/clickonline\\_archive\\_42\\_2003.asp?pageid=666&co\\_pageid=2](http://www.bbcworld.com/content/clickonline_archive_42_2003.asp?pageid=666&co_pageid=2)).

Arlington (Virginia), hosted The United States IPv6 Summit 2003, very well attended, including delegates from the DoD and US public administration. All the slides are available at <http://www.usipv6.com/2003arlington/main.html>. A presentation regarding the IPv6 Overall Status, based on this document, was provided by Yurie Rich (Native6 President and Business Director of the NAv6TF). An ongoing cooperation activity between the NAv6TF and the IPv6 TF-SC has been established towards the future updates of this document.

During the Summit, commercial services had been announced. References:

- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=229>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=233>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=234>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=237>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=238>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=239>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=240>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=241>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=247>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=249>.

- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=251>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=252>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=259>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=260>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=261>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=262>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=263>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=331>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=332>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=333>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=340>.

In cooperation with the NAv6TF and the IPv6 TF-SC, a workshop on Consumer Electronics has been organized in Las Vegas, at CES (Consumer Electronics show). References:

- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=219>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=257>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=283>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=288>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=290>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=342>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=343>.

Is remarkable that the visit to the exhibition space discovered several initiatives that include IPv6 as part of the underlying technology. For example, Windows Media Center Edition (<http://www.microsoft.com/windowsxp/mediacenter>) and HighMAT (<http://www.highmat.com>), both based on Windows XP which includes IPv6 support, are oriented to the usage of informatics and home networking applied to the consumer electronics, including, for example multimedia and TV management and home automation.

### 6.2.9.3 Meetings

Several meetings and teleconferences have been organized.

### 6.2.9.4 Members

Next table is the actual list of participants.

Organization
CECOM, FT Monmouth, U.S. Army
Consulintel
Hewlett Packard
Hexago
IPv6 Forum
Microsoft
NASA

SAIC
SPAWAR Systems Center, Charleston, U.S. Navy
Univ. of Southampton
US Air Force

**Figure 6-8: North American IPv6 Task Force Members**

### 6.2.10 Philippines

In Philippines, preliminary awareness is being procured. Foreign experts already urged the Philippines to adopt newer Internet technologies to keep up with developments worldwide. See <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=273>.

### 6.2.11 Iran

Preliminary activities had been started in Iran for the establishment of the Iranian IPv6 Task Force (<http://www.ir.ipv6tf.org>).

### 6.2.12 Tunisia

Several activities started, including local conferences, with the cooperation of the IPv6 Task Force.

Strong official cooperation with the “Agence Tunisienne D’Internet” (<http://www.ati.tn>). A web site with IPv6 information is available at <http://www.ipv6net.tn>.

Work towards the participation on WSIS 2005.

A conference organized by ICANN had also a strong IPv6 component (<http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=155>).

### 6.2.13 Saudi Arabia

Initial activities with SaudiNIC and Saudi Aramco, in order to prepare the introduction of IPv6 in Saudi Arabia, with some piloting already started (<http://www.ipv6.net.sa>).

The possibility of organizing a local conference is being investigated.

### 6.2.14 Russia

The IPv6 Task Force has participated since long time ago in the promotion activities of the Russian IPv6 Forum, participating in the awareness activities organized by most active institute, the Yaroslavl University.

The 1<sup>st</sup> official contacts are now established directly with the Russian Foundation for Basic Research, who acknowledged the IPv6 Task Force effort with the following letter signed by O.V. Syanturenko, Director of Russian Foundation for Basic Research:

“The Russian Foundation for Basic Research (RFBR) as Government Agency actively participating international scientific cooperation in the field of fundamental scientific researches

pays the big attention to introduction new infocommunication technologies, supporting corresponding research and infrastructural projects.

Acknowledging the importance of development of new technological development in the area of the Internet networking foundation, namely the new Internet protocol of new generation (IPv6) in the world and in Russia, RFBR renders all-round assistance to carrying out both research development in area IPv6, and the public scientific actions devoted to promotion of the new report and association of the international communications in the given direction.

Concluded with support of the RFBR in 2002-2003 the international conferences <<Internet of new generation – IPv6>> at the Yaroslavl State University, by the university and Russian IPv6 Forum have shown an urgency of a problem of introduction of the Internet Protocol version 6 in Russia and in the world-wide interest of scientific community and have defined necessity of an output of spent actions on more large-scale level, namely, carrying out of the Global IPv6 Summit <<Internet new Generation IPv6>> in Moscow.

It will allow to recruit the largest business players in the areas of telecommunications and software development in carrying out the conference and in active participation in the Russian IPv6 Forum.

The Russian Foundation for Basic Research suggests and offers support to strengthen the association of worldwide IPv6 community and the Russian IPv6 Forum, Russian scientific circles in order to carry out highly representative and conference on IPv6 in Moscow in the 2004.”

#### **6.2.15 Slovakia**

Initial activities started for the creation of a national IPv6 Task Force, with the cooperation of Slovak Telecom. Some IPv6 service trials already started as XS26 (<http://www.xs26.net>) and even the Ministry of Internal affairs WAN uses IPv6.

Several ongoing activities under preparation, including a high level conference.

#### **6.2.16 Malaysia**

In October 2003 was organized the 1<sup>st</sup> Asean IPv6 Summit in Kuala Lumpur, with the participation of the Communications and Multimedia Ministry and the Malaysian Communications and Multimedia Commission (MCMC). The main conclusion is that the deployment of broadband in the country needs to be parallel to the deployment of IPv6. The government is supporting this process. The IPv6 Task Force cooperated and participated in the event with a number of talks, debates and interviews with the press. References:

- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=145>
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=153>.

During the same week, Kuala Lumpur hosted the APEC (Asia Pacific Economic Cooperation), premier forum for facilitating economic growth, cooperation, trade and investment in the Asia-Pacific region. APEC has 21 members which account for more than a third of the world's population (2.6 billion people). Member Economies are Australia, Brunei Darussalam, Canada, Chile, People's Republic of China, Hong Kong, China, Indonesia, Japan, Republic of Korea, Malaysia, Mexico, New Zealand, Papua New Guinea, Peru, The Republic of the Philippines, The Russian Federation, Singapore, Chinese Taipei, Thailand, United States of America and Viet Nam.

The IPv6 Task Force participated in the Human Resources Development Seminar on the Adoption of IT, with a tutorial of IPv6 and the benefits for breaking the digital divide.

### 6.2.17 Australia

The Australian military look set to follow the initiative of the United States Department of Defense in deploying IPv6 throughout their communications infrastructure (<http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=76>).

With the support and cooperation of the IPv6 Task Force, the Australia's Academic and Research Network has decided to move to IPv6. The IPv6 Working Group has been established to promote and encourage the use of IPv6, including rolling the service out to AARNet members.

Several awareness and education activities are on the way.

#### References:

- <http://www.aarnet.edu.au/engineering/wgs/ipv6/charter.html>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=225>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=282>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=311>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=114>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=174>.

### 6.2.18 Mexico

IPv6 Forum Mexico works toward awareness and deployment of IPv6 in Mexico and Latin America. To meet this goal, it was established in 1998 the IPv6 Project of the National Autonomous University of Mexico (UNAM), that coordinates the IPv6 Working Group of CUDI (Mexican Internet2 Network) and the Mexican IPv6 Forum.

Each year since the end of 1999, have been organized seminars, workshops and other activities in order to give sufficient information and promote the advantages and benefits of using IPv6.

The most significant achievements are the support of IPv6 native traffic in all the Backbone routers of the Mexican Internet2 Network (since December 2001), and the first native IPv6 connection to USA by Internet2 (June 2002), with large scale IPv6 networks like Abilene.

Recent projects include working together with other research groups to support and use IPv6 in areas such as:

- GRID Computing.
- Remote Control of telescopes, microscopes, microprobes, etc.
- Volcanic Monitoring.
- Parallel Processing.

#### Promotion of the following:

- IPv6 Government support.
- Mexico IPv6 Exchange Point.
- Native IPv6 Network in Latin America (firsts by Internet2).
- Trial services.

- R&D projects.
- Creation of different working groups.
- Spanish documentation.
- Education programs.

### 6.2.19 Brazil

With the cooperation of the IPv6 TF-SC, the Brazil IPv6 Task Force has been kicked-off, and the web site is already available at <http://www.br.ipv6tf.org>.

### 6.2.20 Latin America and Caribbean

Coincidentally with the 6<sup>th</sup> LACNIC meeting, in Montevideo (Uruguay), 29<sup>th</sup> of March to 1<sup>st</sup> April the FLIP-6 (First Latin American IPv6 Forum) is being organized, with the support and participation of the IPv6 TF-SC.

Several relevant organizations support this meeting, precursor of the implementation of the IPv6 Task Force in Latin America and the Caribbean.

The aim of this Forum is to encourage and promote the adoption of the IPv6 protocol within the region covered by LACNIC through the exchange of experiences relating to this subject.

The Forum targets a wide group of participants, including professionals working within the academic and commercial areas, university networks, ISPs, NAP operators, ccTLDs, etc.

The event web site is available at <http://lacnic.net/en/flip6.html>.

## 6.3 Key Results of the National IPv6 Task Forces

### 6.3.1 Approach and Mission of the National Task Forces

The various national task forces have used similar approaches. So far, most of the national Task Forces have a good mix of industry and academic support. They have mission statements that aim to address the introduction of IPv6 in the country or region. Most of the Task Force members have contact to governmental agencies, although there are few examples where there is an active support (not financial) from a ministry (positive examples are Spain and France). Other governmental agencies have been supportive in words or are not fully aware of the IPv6 Task Force activities. A main problem is that the current economic situation reduces the possibilities to get funding support for awareness-initiatives like that of the IPv6 Task Force.

In the UK, the TF will seek funding by approaching already-funded broadband initiatives, to form subgroups or working parties there.

Due to the voluntary character of the National IPv6 Task Force, the power of the task forces is dependant on the available workload of the members. But all national IPv6TF aim at the awareness for and deployment of IPv6 and therefore the cohesion between the national Task Forces is quiet good. One of the aims of the IPv6TF-SC is to aggregate the plans of the national IPv6 Task Forces and to avoid duplication of work among the Task Forces.

### 6.3.2 Organizational Structure

Most of the Task Forces have a loose organizational structure and no official status. It has been reported from the US that the Nav6TF had some concerns about constituting an anticompetitive trust and therefore had to choose a different organizational status.

So far, most Task Forces have a prime contact. Each member of the IPv6TF-SC usually has one or more contacts to other IPv6 Task Force Steering Committees on the regional level.

### 6.3.3 Arising the Critical Mass

The question about what is being done to attract more organizations/industries and especially the key movers into these national IPv6 Task Forces is a tough one. The possibilities to attract players are strongly depending of the activities on the national Task Forces and its connections. Where there is a strong network and experts are available, the situation of the Task Force is usually better than where there are only technical people with few outreach possibilities. Some Task Forces have managed to get quite some press attention.

There are usually limitations in the outreach capabilities of the Task Forces, since they usually have no budget for dissemination activities and therefore the means to achieve and address a larger community are somewhat limited. None of the Task Force with their limited means could claim to target all industries and this do not seem to be an important goal. Some Task Forces have rather looked for qualitative members that are willing to contribute, than on a large number of silent members.

### 6.3.4 Targeting the EU Enlargement Countries

So far now, main focus was to reach out for larger economic countries and countries where there were good opportunities. The means to address countries where there is no recognizable IPv6 activity are very limited for the IPv6TF-SC at this stage.

Initial activities started, though is a slow process.

### 6.3.5 IPv6 Deployment Status in Europe and Required Actions

As a result of the October 2003 meeting in Milan and the work and initiatives undertaken by the European and National IPv6 Task Forces in Europe during the first half of the 2<sup>nd</sup> phase, a deployment status and updated call for action have been released, including a press release ([http://www.eu.ipv6tf.org/PublicDocuments/ipv6tf\\_phase2\\_v5.pdf](http://www.eu.ipv6tf.org/PublicDocuments/ipv6tf_phase2_v5.pdf)).

This report makes comprehensive recommendations for EU Member State governments, for the European Commission and for industry.

A fully-fledged document outlining the global IPv6 deployment roadmap will be produced in six months, as the final recommendation report at the end of the 2<sup>nd</sup> phase of the EU IPv6 Task Force.

The collective initial findings of the 2<sup>nd</sup> phase of the European Union IPv6 Task Force are detailed in this report and in the minutes of the Milan meeting including the following key messages:

- The critical mass needed for IPv6 adoption in Europe and the member states has been garnered, though in a slow process, which needs further strengthening through increased active participation of key industry players and involvement of the new European countries to design a comprehensive European IPv6 roadmap.



- Global cooperation, including Research & Development, policy-making and real life deployment, should be strengthened to pave the way to a global scale deployment of IPv6 and equitable access to knowledge, avoiding the creation of isolated Internets and allowing a rhythmic adoption at a global scale.
- The National IPv6 Task Forces are still in the formation phase (with many with less than one year of activity) with a relative degree of success engaging their governments in the dialogue and recruiting volunteer experts to formulate objectives and action plans. The “volunteer model” delivers on a best effort basis. A dedicated or funded model would be more suitable for such an important, large-scale undertaking.
- The actual level of IPv6 deployment is still imperceptible, especially when compared with Asia Pacific and the expected growth in other areas (including North America).
- A number of barriers and hurdles towards IPv6 deployment have been detected, namely deployment business models, return on investment models, CEO/CTO unawareness and some political showstoppers. The creation of a new panel of experts, led by the IPv6 Task Forces, winning stakeholders from the public and private sector, including SMEs, will allow in depth investigation of these barriers and the generation of new recommendations and case studies.
- Similarly, a number of technical barriers had been identified, and it is necessary to address these, while driving forward technology in a networked world that will increasingly rely on IPv6 as an enabler. The creation of a research-led center of IPv6 expertise or excellence would address this requirement. Such a center should combine a technology-driven focus with the needs determined by the IPv6 panel of experts, and both should liaise in this mission.
- The adoption of IPv6 by governments, universities, schools and the European Commission, where it make sense (e.g. deployment on web sites), will generate confidence in the minds of end-users (as is happening with the DoD announcement in the US), and a possible trigger for business cases.
- Public and private sector procurements should require IPv6 capabilities for future-proof investment.
- Top-level national NICs should accelerate their support of IPv6.
- IPv6 deployment progress should be benchmarked in order to monitor its success.
- The achievements and progress of the Task Forces must be widely disseminated by means of an extended IPv6 Task Force portal.
- It is of paramount importance to take all required actions aiming at the continuation of the work performed by the “European IPv6 Task Force” and renew its mandate for the third phase with an enlarged team including the national IPv6 Task Forces and selected key industry players (ISPs, ASPs, vendors) with a “funded model”. The third phase should focus on tangible success in the short-term deployment in wired and wireless broadband access and strategic innovative revenue-generating applications (consumer electronics, end-to-end security, e-vehicle, etc.) and in the longer term strategic objectives (e-Infrastructure, GRID, 4G, Ambient technology,...).

While IPv6 deployment should be market-led, this Task Force encourages the consideration of the recommendations contained in this report because of their critical importance towards the achievements of the eEurope 2005 goals (including “broadband for all”, security and Ambient Intelligence) and the future development of Internet in Europe.

The European Commission is called upon to submit the results of the work of the 2nd phase of the IPv6 Task Force, contained in this document, to the European Council.



The complete “IPv6 Deployment Status in Europe and Required Actions” document is available at [http://www.eu.ipv6tf.org/PublicDocuments/status\\_and\\_required\\_v1.8.pdf](http://www.eu.ipv6tf.org/PublicDocuments/status_and_required_v1.8.pdf).

The press has widely spread this message, including articles and interviews to some of the key actors (<http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=187>).

## 7. LIAISON WITH INDUSTRY AND RESEARCH

### 7.1 Achievements and Non-Achievements

So far IPv6 deployment in Europe industry has started slowly but consistently. Quite a number of industry sectors have started to become IPv6 aware. However, major success stories are still missing, although there are some good examples for IPv6 services, e.g. in France, Netherlands and Spain.

The following chart gives an overview on the availability of IPv6 in the IT Sector.

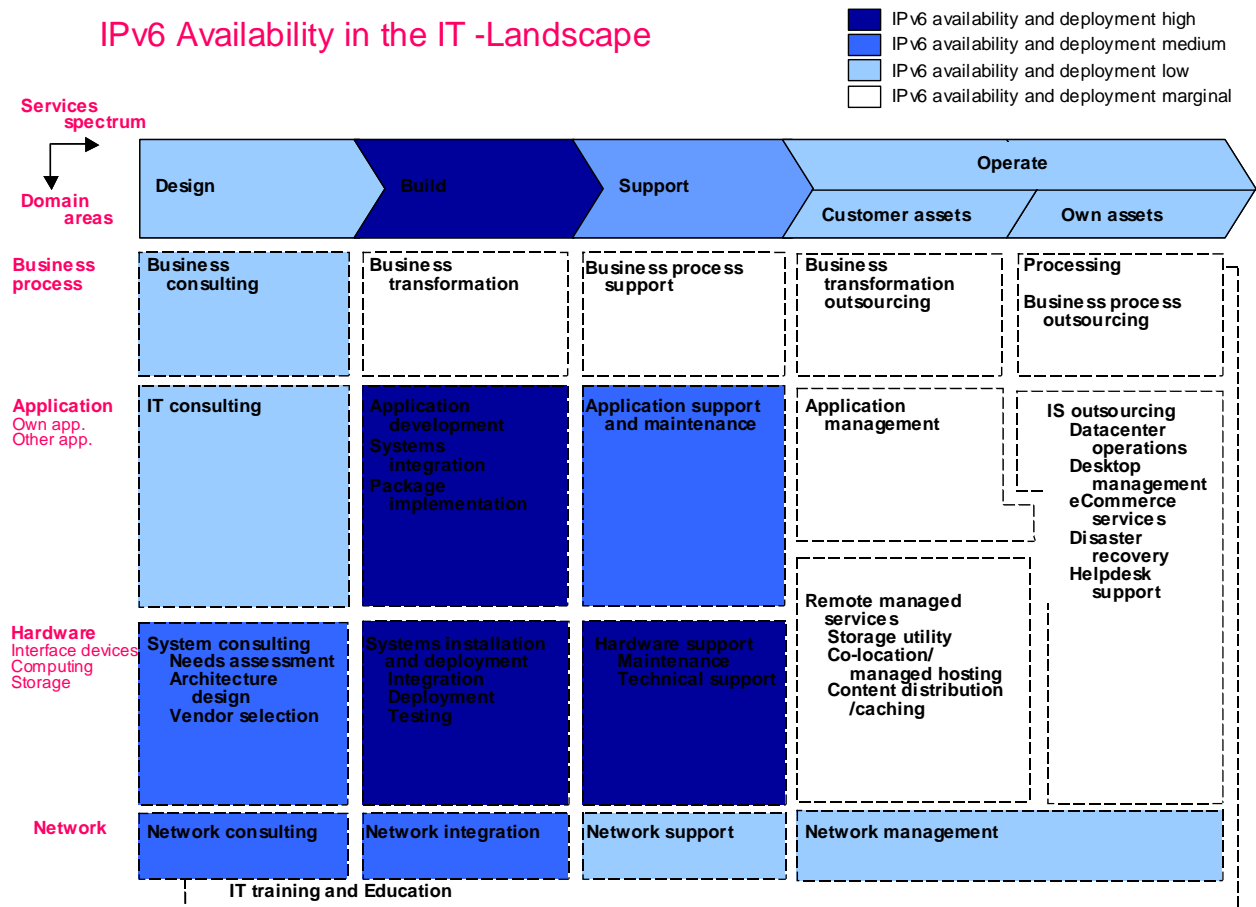


Figure 7-1: IPv6 availability in the IT landscape

The following chart provides a list (for reference only, not exclusive) of manufacturers (Hardware Software) and Service Providers, with an active involvement in IPv6 (an extended list is available at <http://playground.sun.com/pub/ipng/html/ipng-implementations.html>). The plans and roadmaps of these providers are known via personal contacts, conferences, and product presentations. The list of members of the national IPv6 Task Forces provides a good overview on the national IPv6 Task Force activities and its players.

IST-2001-37583	IPv6 TF-SC	D3.4: IPv6 Overall Status
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<b>Hardware</b>
6WIND, Agilent, Alcatel, Allied Telesyn, ARtem, Bay Micro, Cisco, dpi, Enterasys Networks, Ericsson, Extreme Networks, EZchip, Fortinet, Foundry Networks, Fujitsu, Hexago, Ixia, Juniper, Matsushita, Nec, NetLogic Microsystems, NetScreen, Motorola, Nokia, Nortel Networks, Paion, Polypix, Procket Networks, Renault, Samsung, Sony, Spirent, Sumitomo, Telco Systems, Teldat, Teradant, Xcelerated, Xiran, Yamaha
<b>Applications, Software, OSs</b>
Apple, Ariel Networks, BSD, Check Point, Consulintel, Elmic Systems, Enea, FreeBit, Firebird, Hexago, Hlfn, HP/UX/Tru64, IBM/AIX, Interpeak, InterWorking Labs, IP Infusion, Java, Linux, Matsushita, Mentat, Microsoft, MontaVista, Mozilla, NextHop Technologies, NFR Security, Novell, Opera, Panasonic, QNX, Radvision, SCO, SGI, Sun/Solaris, Symbian, TeamF1, Teja, Trolltech, Ubo System, WindRiver/VxWorks
<b>Native IPv6 Service Providers</b>
arsys, AsiaNetcom, Biglobe, Bersafe, British Telecom, Cegetel, Chita Medias Network, Colt, Deutsche Telekom, Dream Train Internet, France Telecom OpenTransit, Flag Telecom, FreeBit, Gitoyen, Global Crossing, HKNET, HiNet, HTnet, Hurricane Electric, IJ, Japan Telecom, Japan Sustainable Community Center, Jens, KDDI/KDDI Lab, Level3, Matsushita Graphic Communication Systems, MCI, Media Exchange, Nerim, Nifty, NTT Australia, NTT Communications, NTT East, NTT Europe, NTT MCL, NTT MSC, NTTPC, Poweredcom, SpaceNet, Stealth Communications, STnet, Telecom Italia, Telefonica, Teleglobe, Telia, Tiscali, TIWS, Verio, vBNS+, XS4ALL
<b>Internet Exchangers</b>
6TAP, 6IIX, 6NGIX, AMS-IX, ASNet, Equinix, FICIX, Florida-MIX, FNIX6, INXS, JPIX, mad-iX, MCI MAE, NaMeX, NL-SIX, NSPIX-6, NTT MCL IPv6 IX, NY6IX, PAIX, S-IX, Sphinx, TIX, TOP-IX, TREX, TWIX, UK6X, Wellington Internet Exchange, XchangePoint Europe

Figure 7-2: Known Commercial IPv6 Products/Services (partial selection only)

## 7.2 Key Results

So far, the main goal of the task force was to promote and support the creation of regional IPv6 Task Forces in Europe to establish liaisons with Industry and Research on a regional or national level. It is intended to advocate the establishment of these liaisons and links on a national level and to aggregate the players and link the national initiatives on a European level as soon as these links have been established.

The IPv6 Task Force Steering Committee intends to gather various industries European-wide in workshops and gatherings to gain momentum for the deployment and usage of industries on a European level. It is foreseen that this is an ongoing process that will continue even after the completion of the TF-SC project. Nevertheless, the progress is continuously being reported, since these links and liaisons on a regional and national level are currently established through the national/regional IPv6 Task Forces.

IBM, one of the IPv6 Task Force members, released a position paper regarding IPv6. The document provides the "IBM vision for IPv6 in the era of e-business on demand" (see <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=70>).

### 7.2.1 ISOC

The Task Forces are already working in cooperation with several ISOC chapters.

Several “member briefings” include contribution from the IPv6 Task Force members:

- IPv6 and the Future of the Internet (<http://www.isoc.org/briefings/001>).
- IPv6 Implementation (<http://www.isoc.org/briefings/004>).
- The Transition to IPv6 (<http://www.isoc.org/briefings/006>).
- IPv6 in the Home Makes Sense (<http://www.isoc.org/briefings/007/index.html>).
- Grid Computing (<http://www.isoc.org/briefings/011>).
- Establishment of global IPv6 address policies (<http://www.isoc.org/briefings/012>).
- Addressing the Digital Divide with IPv6-enabled Broadband Power Line Communications (<http://www.isoc.org/briefings/013>).
- IPv6: Necessary for Mobile and Wireless Internet (<http://www.isoc.org/briefings/014>).

The IPv6 Task Force has also organized a dedicated IPv6 session “The New Internet (IPv6)” at the next INET2004, May 10<sup>th</sup>, in Barcelona, organized in this occasion jointly with the Internet Global Conference 2004 (<http://www.isoc.org/isoc/conferences/inet/04/tutorials.shtml>).

### 7.2.2 GGF (Global Grid Forum)

With the cooperation of the IPv6 Task Force, the Global Grid Forum (GGF) has recently established an IPv6 WG. The WG met at GGF9, and its charter has been formalized. It is initially tasked with producing two documents. The first is a review of IPv4 dependencies in existing GGF specifications, the second is a set of guidelines for IP version-independence in future specifications.

Several ongoing activities with IST R&D projects. More information available at <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=208>.

### 7.2.3 NPF (Network Processing Forum)

With the cooperation of IPv6 Task Force members, the Network Processing Forum is providing IPv6 support into their latest specifications.

In the latest APIs and specifications, the NPF incorporates support for IPv6. More information available at:

- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=108>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=230>.

### 7.2.4 CEA (Consumer Electronics Association)

The Consumer Electronics Association and the IPv6 Forum joined forces to promote the essential technologies necessary in deploying the IPv6 Internet protocol around the world.

As a first result of this agreement, in the January 2004 International Consumer Electronics Show, the IPv6 Task Forces organized a dedicated workshop “IPv6 Products and Services: Enabling Consumer Electronics with Next Gen Internet”.

This event resulted in a high press impact, and was very well attended by key relevant organizations and individuals. A liaison was established with the Welcome to the Digital Home Working Group (DHWG, <http://www.dhwg.org>).

Related links:

- <http://www.eu.ipv6tf.org/in/cea.htm>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=219>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=257>.

### **7.2.5 CENELEC (European Committee for Electrotechnical Standardization)**

The IPv6 Forum, with the collaboration of the IPv6 Task Force, agreed to forge a Liaison with CENELEC to drive Deployment of Smart House.

“CENELEC within the ICT Standards Board (ICTSB) and in collaboration with the European Commission has been working for quite a long time on the Smart House initiative. Now that the concept is maturing and interest from the Consumer and Industry is rising, the challenge is more to help the convergence of the different initiatives in a structured and coherent way for the benefit of the European citizen. The role of Standardization is very important here, and IPv6 will facilitate the broad development of Home Networking”, states Mrs. Elena de Santiago, Director General of CENELEC.

#### **References:**

- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=287>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=304>.

## 8. MEETINGS

Several IPv6 Task Force meetings have been held.

All the relevant information, presentations, and minutes are available at the IPv6 Task Force website.

### 8.1 July 1<sup>st</sup> 2002 (Brussels)

In collaboration with the Japanese IPv6 Promotion Council and the Ministry of Home Affairs, Post and Telecommunications (MHPT), a joint meeting with the European commission has been conducted, where members of the IPv6 Task Force Steering Committee, as well as representatives of other European IPv6 projects have been present. The Task Force had an internal meeting discussion the roadmap for the IPv6TF-SC project and discussed collaboration with the Japanese IPv6 activities, particularly the IPv6 Promotion Council.

### 8.2 September 16<sup>th</sup> 2002 (Brussels)

A meeting of the IPv6 Task Force has been prepared by the members of the IPv6TF-SC members in collaboration with the European Commission. During the meeting the Task Force has discussed about the course of the IPv6TF-SC project and the next steps. The start of the work of the IPv6TF-SC has been officially announced.

An important step in the preparation of the meeting and during this meeting was the announcement of several national IPv6 Task Forces, including Spain, Swiss, France, UK, Belgium, Sweden, Luxembourg and Germany.

The meeting was mainly dominated by presentations and a few discussions. Main issues of the presentations were: Usage scenarios and applications for IPv6 need to be developed; open IPv6 issues need to be addressed; the status of regional and national IPv6 activities is quite diverse and more attention needs to be put to the deployment and dissemination in the European countries.

A representative of the Danish presidency (at the time of the meeting) assured the support for IPv6 related initiatives. The conduct of the meeting and the feedback afterwards led to the conclusion that the next meetings had to be more interactive and leave room for discussions. It was decided that the following meeting should focus on the national IPv6 Task Force activities.

### 8.3 January 17<sup>th</sup> 2003 (London)

Approximately 20 people attended the meeting.

The main goal was to continue the work fostering the cooperation between the different national Task Forces.

Is important to mention the following points as outcomes from the meeting:

- <http://europe.eu.int/>, <http://www.cordis.lu>, and other websites must be now, available with IPv6. The TF-SC and other projects can help the EC to make this possible, even with existing infrastructures, via tunnels, or using the, for example, Euro6IX web servers and network. This is the 1<sup>st</sup> step to show the EC interest in IPv6, and then other governments will follow.
- The EC should encourage working in multihoming solutions. We are working on this in Euro6IX, but may be is not enough.

## 8.4 April 30<sup>th</sup> 2003 (Berlin)

Approximately 20 people attended the meeting. In the evening before the event, the German IPv6 Task Force had its founding meeting, accompanied by six short lectures and a reception funded by Cisco Systems.

The main goal was to continue the work fostering the cooperation between the different national Task Forces. This has been partially reached only, since there was little time for discussion about major initiatives at the end.

Main topics were a discussion on the European IPv6 Roadmap Implementation, Progress on Briefing Papers from London, Benchmarking IPv6, CEO meeting initiative and the progress at the National/Regional IPv6 Task Forces.

## 8.5 October 1<sup>st</sup> 2003 (Milan)

Approximately 50 people attended this event, which was held for a first time, as a joint meeting of the EU IPv6 Task Force (organized by the IPv6TF-SC project) and the IST IPv6 Cluster (organized by the 6LINK project), organized the day before IST2003.

The meeting was also the kick-off for the Italian IPv6 Task Force, which hosted the meeting, with the presence of the Italian Ministry of Communications (ISCTI) representatives, that indicated their support to the initiative.

The meeting was well-received in part because more time was reserved for discussion. Projects and national IPv6 Task Forces were requested to make presentations to strict 3-4 slide fixed formats (achievements, barriers and next steps) and this format worked well.

The slides were also requested in advance, so the TF-SC prepared also a set of 3 joint slides in order to describe the overall European status (achievements, barriers, and future). A lot of discussion was also fostered by this exercise.

The complete meeting minutes are available as a PDF document ([http://www.eu.ipv6tf.org/PublicDocuments/eutf-meeting4-minutes\\_v0\\_4.pdf](http://www.eu.ipv6tf.org/PublicDocuments/eutf-meeting4-minutes_v0_4.pdf)) and all the slides also at <http://www.eu.ipv6tf.org/in/i-documentos.php>.

## 8.6 January 14<sup>th</sup> 2004 (Brussels)

This was another joint and successful meeting, attracting 40 attendees, as a precursor to the two-day Global IPv6 Service Launch event in Brussels on January 15-16 2004.

In this occasion, we also took the opportunity to expressly invite relevant representatives from the Asia Pacific and North America Task Forces. At this way, we repeated the exercise done in Milan with the 3 slides from each national Task Force. They were compiled in advance by the TF-SC. The Asia Pacific speaker (Hiroshi Esaki), and the North American one (Jim Bound), did an equivalent presentation.

A very interesting talk about IPv6 and privacy raised some discussion.

The complete minutes are available at [http://www.eu.ipv6tf.org/PublicDocuments/eutf-meeting5-minutes\\_v0\\_3.pdf](http://www.eu.ipv6tf.org/PublicDocuments/eutf-meeting5-minutes_v0_3.pdf), together with all the presentations (<http://www.eu.ipv6tf.org/in/i-documentos.php>).

The following Action List is included in the minutes of this meeting:

Ref	Action	Responsible	Due date
A.1	Investigate issues for deployment of IPv6-based EC web services (accessibility to EC information over IPv6, including by dual-stack). If technical problems exist, report them back to the IETF v6ops WG	Jordi	Ongoing
A.2	Consider and then publish joint research plans with Japanese IPv6 Promotion Council established after EU delegation visited Japan in December 2002	Latif	Ongoing
A.3	Contribute recommendations to the Global IPv6 Showcase project	Latif Jordi	Ongoing
A.4	Track and promote the IPv6 Forum "IPv6 Ready" programme to European vendors and industry	Latif	Complete. See also A.18
A.5	The TF should draw up its recommendations to the IETF on an appropriate timescale to wind down the 6Bone experimental network	Jordi	Complete. (6Bone phase-out plan finalised)
A.6	Methods should be considered to encourage ISPs to offer IPv6 services over existing IPv4 links, so that customers can gain native IPv6 access over the same link as their existing IPv4 access	Mat	Ongoing
A.7	Encourage vendors to offer IPv6 security products, including IPv6-capable firewalls	Tim	Ongoing
A.8	TF position paper on best practice for deployment of secure IPv6 routers and firewalls in the absence of site NATs	All	Outstanding
A.9	TF position paper on the outstanding IPv6-specific privacy and security issues, and how the privacy issues impact on EU legislation, current or future. (Max 3 pages)	Alberto Jordi Patrick Wolfgang	Complete
A.10	TF position paper on outstanding IPv6 DNS issues (one page)	Tim Peter H	Ongoing
A.11	TF position paper on IPv6 PKI deployment issues (short paper)	Jordi	Ongoing
A.12	TF position paper on IPv6 ISP deployment status and hurdles (one page, six key issues)	Peter H	Complete
A.13	TF Position paper on international IPv6 routing stability issues (one page)	Tim	Ongoing
A.14	Finnish TF to circulate its "IPv6 deployment	Timo	Complete



	issues” document to TF members		
A.15	The TF should liaise with telco operators and RIPE NCC to ensure the telcos gain the appropriate IPv6 address space for their needs, and end users get appropriate delegations (/48 or /64)	Peter H Tim	Ongoing
A.16	The TF should revise its roadmap documents on a regular basis (e.g. after each TF meeting)	All	Ongoing
A.17	Investigate a Specific Support Action proposal under the open FP6 call, to undertake an “IPv6 Measurement” project	Jordi	Complete
A.18	Produce one page summary of IPv6 Ready programme goals and methodology	Latif	Outstanding
A.19	Produce IPv6 Multihoming short briefing paper.	Tim	Outstanding
A.20	Consult with appropriate European experts on the potential to develop an open source European IPv6 stack	Latif	Complete (not proceeding)
A.21	Analyse National TF achievements, perceived barriers and planned next steps for commonalities and report them to all TFs	Jordi	Complete
A.22	Identify candidate IPv6 deployment case studies that can be passed to the EC for possible tender for reporting	Latif	Ongoing
A.23	Produce a communiqué recommending the holding of a meeting of national NICs to coordinate IPv6 service support in top level services as per AFNIC	Jordi	Ongoing
A.24	Produce a communiqué recommending the formation of a “technology platform” on IPv6 to investigate barriers, bringing together stakeholders and the public and private organisations and companies	Jordi	Complete (renewed call)
A.25	Produce a communiqué recommending the creation of an IPv6 adoption measurement and benchmarking framework for Europe	Jordi	Complete (renewed call)
A.26	Produce a communiqué reinforcing the need for IPv6 knowledge and awareness to be targeted at European SMEs	Jordi	2003-12-14
A.27	Discuss and then decide how to best recommend the adoption of an “IPv6 Ready” procurement policy for government procurements (in all aspects of state networks including government, health, education)	Latif	Ongoing
A.28	In support of 6LINK, request that the EC reminds IST projects in the IPv6 Cluster to contribute news of significant IPv6 work done in their projects to the Cluster (to the Cluster news site at <a href="http://www.ist-ipv6.org">www.ist-ipv6.org</a> )	Mat	Ongoing
A.29	Select 3-4 key action areas for the IPv6 TF-SC to push during the closing months of the TF-SC project	All	Complete
A.30	Investigate means to share experiences between the European, North American and Asia Pacific IPv6	All	Ongoing

	deployment and research groups		
A.31	Investigate opportunities and methods for Moonv6 to be connected to European networks such as 6NET and Euro6IX	Jordi Tim	Ongoing
A.32	Publish one-page summary of pointers to best practice for IP-independent application development	All	Ongoing
A.33	Publish 1-2 page summary on the status of IPv6 network management and monitoring tools, e.g. citing those used by NRENs in 6NET	All	Ongoing

## 9. DISSEMINATION ACTIVITIES

### 9.1 Websites

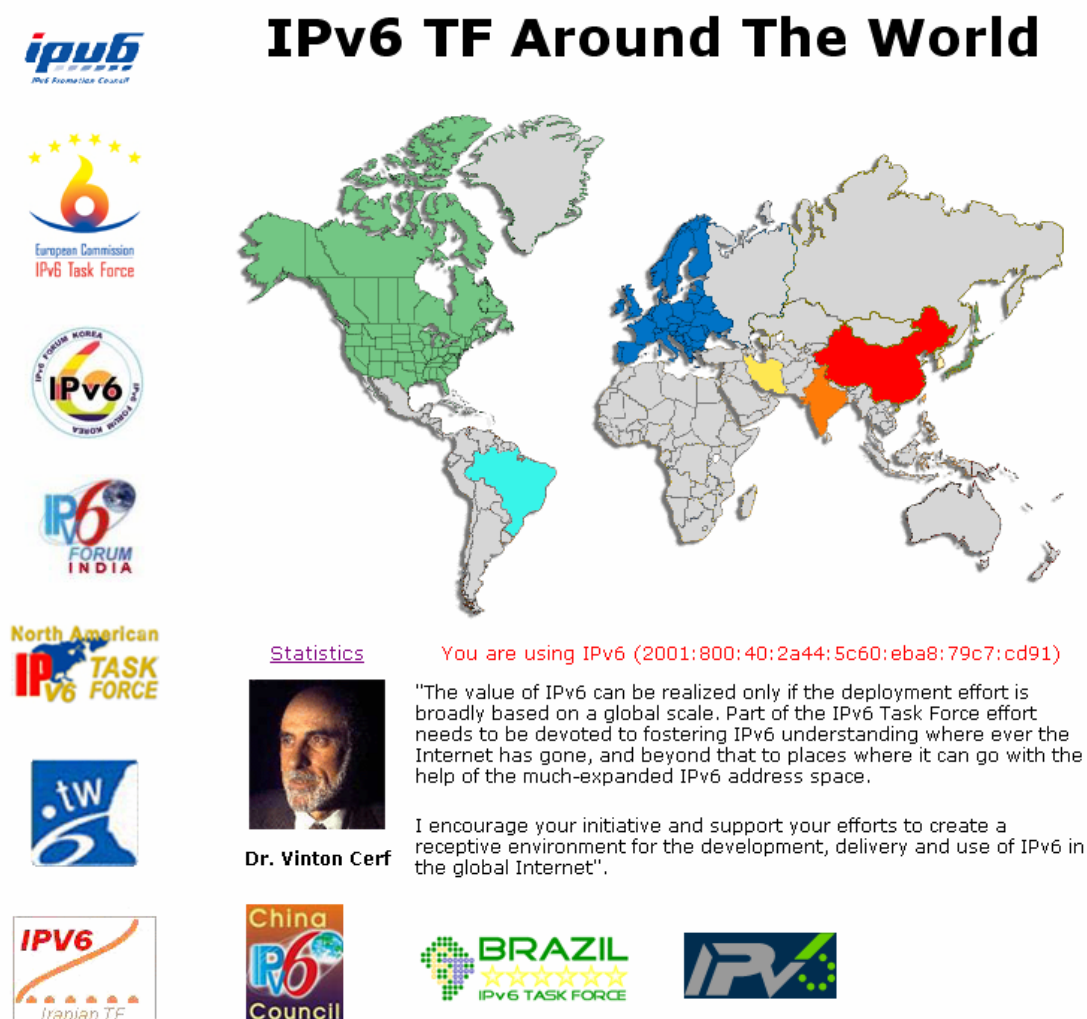
The IPv6 Task Force website has been significantly changed, enhanced and is permanently updated (<http://www.ipv6tf.org>).

The Regional, European, and National IPv6 Task Forces have been integrated into the IPv6 Task Force website.

The home page of the EC IPv6 Task Force site (<http://www.ec.ipv6tf.org>) has been improved with two new sections:

- European Commission IPv6 Hot Links. Contains the IST IPv6 related links that are main actors in the R&D activities.
- Latest Information. Will be continuously updated to highlight the links to relevant documents, presentations, or events.

Several pages have been updated. The following screenshots depict some of the current Web Site pages.



**Figure 9 1:** Global IPv6 Task Force Site (<http://www.ipv6tf.org>)

# IPv6 TF in Europe



Erkki Liikanen

"Our objective is to ensure that Europe's competitiveness in wireless technology is not jeopardised by the lack of a clear road map towards IPv6," European Enterprise Commissioner Erkki Liikanen said in his opening speech to the IPv6 Task Force.



IPv6 TF Around the World

You are using IPv6 (2001:800:40:2a44:5c60:eba8:79c7:cd91)



Belgium



Denmark



France



Germany



Italy



Luxembourg



Portugal



Spain



Switzerland



U.K.


**Figure 9-1: European-National IPv6 Task Forces (<http://www.ipv6tf.org/europe.php>)**

<p>European Commission</p>	<p><b>Latest IPv6 news continuously published at the IPv6 Cluster site</b></p>	<p>Information Society Technologies</p>
<p>INFO DOCS   MEETINGS   PRESS ROOM   EVENTS   LINKS   T.F. MEMBERS   PRIVATE   FTP</p>		
<p>Erkki Liikanen at Global IPv6 Service Launch Event</p> <p>"IPv6 is part of the next generation of Internet technology. It will improve the performance of the Internet and it will enable the Internet to be integrated into a wide range of devices and services in our homes, businesses and while on the move. The introduction of IPv6, alongside unrestricted access to broadband, is of great importance. Together they will help to offer citizen's wider access to an advanced Information Society"</p> <p><b>European Commission IPv6 Hot Links:</b></p> <ul style="list-style-type: none"> <li><a href="#">6NET</a></li> <li><a href="#">Euro6IX</a></li> <li><a href="#">GEANT</a></li> </ul>	<p style="text-align: center;"><b>Latest Information</b></p> <ul style="list-style-type: none"> <li><a href="#">Report on the Global IPv6 Service Launch Event available</a></li> <li><a href="#">Minutes and slides of last meeting available</a></li> <li><a href="#">Press coverage of the Global IPv6 Service Launch Event</a></li> <li><a href="#">IPv6 Featured in EuroNews</a></li> <li><a href="#">IPv6 Task Force Releases Call for Action at EU Level</a></li> </ul>	<p>Dr. Vinton Cerf</p> <p>"The value of IPv6 can be realised only if the deployment effort is broadly based on a global scale. Part of the IPv6 Task Force effort needs to be devoted to fostering IPv6 understanding where ever the Internet has gone, and beyond that to places where it can go with the help of the much-expanded IPv6 address space.</p> <p>I encourage your initiative and support your efforts to create a receptive environment for the development, delivery and use of IPv6 in the global Internet".</p>


You are using IPv6 from 2001:800:40:2a44:5c60:eba8:79c7:cd91

**Figure 9-2: European Commission IPv6 Task Force Site (<http://www.ec.ipv6tf.org>)**

The project website has been updated (<http://www.ipv6tf-sc.org>), including the names of the relevant people involved.



**IPv6 TF-SC:**  
IPv6 Task Force Steering Committee



Information Society  
Technologies

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**Documents**

*General*

*Presentations*

*Deliverables*

**Private**

*FTP*

*Exploders*

*Statistics*

**Partners**

The European Commission initiated an IPv6 Task Force driven by major and key European and worldwide players, to develop a comprehensive action plan by the end of 2001 aiming to ensure the timely availability of IPv6.


The conclusions and recommendations of the Task Force were successfully submitted to the European Council Barcelona Spring meeting of 2002, under the Spanish Presidency, and in the context of this document, a series of recommendations pertaining to the implementation of IPv6 by all relevant ICT sectors were proposed by the Commission.

As a result, the Heads of State resolution was to prioritize the widespread availability and use of broadband networks throughout the Union by 2005 and the deployment of the New Internet Protocol IPv6.


One of the main achievements was a Communication from the Commission to the Council and the European Parliament called "Next Generation Internet-priorities for action in migrating to the new Internet protocol IPv6"

As a complementary action, the European Commission calls for the renewal of the mandate of the "IPv6 Task Force" as a platform for debate on critical issues concerning the deployment of IPv6.

See the [objectives](#).




IPv6 Cluster  
MEMBER




You are using IPv6 from 2001:800:40:2a44:220:e0ff:fe6b:441d

Disclaimer:  
"IPv6 TF-SC is a part-funded EC (IST-2001-37583) project. The information/views generated by the project may not completely align with those of the individual participating companies or The European Community. Although the project's information/views are considered accurate no responsibility will be accepted for their subsequent use."

**Figure 9-3: IPv6 Task Force Steering Committee Site (<http://www.ipv6tf-sc.org>)**



**IPv6 TF-SC:**  
IPv6 Task Force Steering Committee



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**Documents**

*General*

*Presentations*

*Deliverables*


**Private**

*FTP*

*Exploders*


*Statistics*


**Partners**



T-Systems  
André Zehl  
[More information...](#)


T-Systems is the new group division into which Deutsche Telekom AG is bundling its IP/data and system solution business. A workforce of 37,000 and a turnover of EUR 10 billion make it the second largest systems house in Europe. Within T-Systems, T-Systems Nova is the fullservice provider of telematic innovations and for integrating telecoms systems and information technology.






British Telecom  
Peter Howell  
[More information...](#)

BTextact Technologies helps businesses and organisations gain maximum advantage from communications technology. BTextact creates value and competitive advantage by combining deep knowledge of networks and networked applications with proven skills in business consulting, change management and innovation.




Consulintel  
Jordi Palet  
[More information...](#)

Consultores Integrales en Telecomunicaciones is a leading company in networking and telecommunications technologies, including integration of systems, consultancy, and maintenance/support services.




Ericsson  
Latif Ladid  
[More information...](#)

The successes of Ericsson are largely owing to long-term investments in technology development. Today's new technologies build ON a tradition OF foresight AND business innovation.




Philips  
Bosco Fernandez  
[More information...](#)

Philips Research has activities in the areas of access networks, home networking, and distributed systems and services. As such they participated in several projects within IST and within ITEA.



Siemens  
Ger Van Den Broek  
[More information...](#)

Siemens a multinational company has placed itself as a potential player within the wireless community. It relates its business to supporting 2G up to 3G and beyond that offer Internet connectivity. It also provides a range of communications capabilities along with a variety of cognitive wireless IP applications and services.



University of Southampton  
Tim Chown  
[More information...](#)

The Pervasive Computing and Networks group is a participant in both the major European IPv6 research and development projects, Euro6IX and 6NET. Within 6NET, we lead the activity studying IPv6 integration and transition techniques, with additional work in IPv6 GRID and network monitoring.

Figure 9-4: IPv6 TF-SC Partner's Page (<http://www.ipv6tf-sc.org/html/partners.php>)

## 9.2 Other Dissemination Activities

The IPv6 Task Force, European IPv6 activities and the IPv6TF-SC has been presented at various occasions.

Date	Location	Topic	Participants
30/09/2002	Madrid	Spanish IPv6 Task Force meeting	Jordi Palet (Consulintel)
01/10/2002	Brussels	All-IPv6-world meeting	Tim Chown (UoS) Peter Hovell (BT) Jordi Palet (Consulintel)
09/10/2002	Bucharest	IST Broadband Event	Jordi Palet (Consulintel)

17/10/2002	Budapest	TERENA TF-NGN meeting	Tim Chown (UoS)
26/10/2002	Los Angeles	Internet 2 Fall Meeting	Tim Chown (UoS)
28/10/2002	Paris	IPv6 Deployment Conference	Jordi Palet (Consulintel)
04/11/2002	Copenhagen	IST2002 Event and All-IPv6-World	Latif Ladid (LME) Tim Chown (UoS) Jordi Palet (Consulintel) Bosco Fernandes (Siemens)
06/11/2002	Copenhagen	IPv6 Cluster meeting	Tim Chown (UoS) Jordi Palet (Consulintel)
07/11/2002	Madrid	SIMO	Miguel A. Díaz (Consulintel)
08/11/2002	Salamanca	RedIRIS event	Jordi Palet (Consulintel)
13/11/2002	Madrid	Spanish IPv6 Task Force meeting	Jordi Palet (Consulintel)
17/11/2002	Atlanta	55 <sup>th</sup> IETF Meeting, ISOC meeting	Tim Chown (UoS) Jordi Palet (Consulintel) Latif Ladid (LME)
20/11/2002	Beijing, China	EU-China: International Forum on Future Mobile Communications Presentation about the IPv6TF/IPv6TF-SC work	Latif Ladid (LME)
28/11/2002	Nice	Eurecom-Hitachi-Motorola Symposium	Jordi Palet (Consulintel)
03/12/2002	Paris	Upper Side, Deploying IPv6 Networks Conference	Jordi Palet (Consulintel) Latif Ladid (LME)
03/12/2002	Paris	IPsec Global Summit 2002	Latif Ladid (LME)
07/12/2002	Cracow	ATAMS 2002 Conference	Jordi Palet (Consulintel)
10/12/2002	Brussels	SB3G and Concertation	Jordi Palet (Consulintel)
10/12/2002	Paris	Compte-rendu de la réunion IPv6 Task Force France	Latif Ladid
16/12/2002	Japan	EC Delegation to Japan and IPv6 Summit	Latif Ladid (LME) Jordi Palet (Consulintel) Andre Zehl (TSN)
16/01/2003	London	UK IPv6 TF IPv6 Evening Lectures	Tim Chown (UoS) Peter Hovell (BT) Latif Ladid (LME) Jordi Palet (Consulintel) Ger van den Broek (Philips) Bosco Fernandes (Siemens) Olaf Bonneß (TSN)
22/01/2003	Bangalore	IPv6 Summit & CEO Roundtable	Latif Ladid (LME) Jordi Palet (Consulintel)
27/01/2003	Orlando	IEEE SAINT 2003	Tim Chown (UoS) Jordi Palet (Consulintel)
04/02/2003	Brussels	IPv6 Cluster meeting	Tim Chown (UoS) Peter Hovell (BT) Jordi Palet (Consulintel)
12/02/2003	Madrid	Distributed NGN-I workshop	Jordi Palet (Consulintel)
13/02/2003	Lisbon	Portugal IPv6 Task Force kick-off	Peter Hovell (BT) Jordi Palet (Consulintel) Bosco Fernandes (Siemens)

17/02/2003	Madrid	Spanish IPv6 Task Force	Jordi Palet (Consulintel)
24/02/2003	Taipei	1 <sup>st</sup> Global IPv6 Asia Pacific Summit	Jordi Palet (Consulintel) Latif Ladid (LME)
10/03/2003	Brussels	Concertation meeting	Jordi Palet (Consulintel)
16/03/2003	San Francisco	56 <sup>th</sup> IETF Meeting	Jordi Palet (Consulintel) Tim Chown (UoS)
26/03/2003	Brussels	Concertation Meeting	Jordi Palet (Consulintel)
02/04/2003	Beijing	China IPv6 Summit	Jordi Palet (Consulintel) Latif Ladid (LME)
11/04/2003	Madrid	Spanish IPv6 Task Force	Jordi Palet (Consulintel)
24/04/2003	Zurich	Swiss IPv6 Task Force event	Latif Ladid (LME)
29/04/2003	Berlin	German IPv6 TF lectures	Tim Chown (UoS) Peter Hovell (BT) Latif Ladid (LME) Jordi Palet (Consulintel) Bosco Fernandes (Siemens) Andre Zehl (TSN)
12/05/2003	Madrid	Madrid 2003 Global IPv6 Summit	Tim Chown (UoS) Peter Hovell (BT) Latif Ladid (LME) Jordi Palet (Consulintel) Bosco Fernandes (Siemens) Olaf Bonneß (TSN)
21/05/2003	Zagreb	Terena event (via videoconference)	Jordi Palet (Consulintel)
04/06/2003	London	UK Light meeting	Tim Chown (UoS)
24/06/2003	San Diego	North American IPv6 TF Meeting	Tim Chown (UoS) Jordi Palet (Consulintel) Latif Ladid
25/06/2003	San Diego	US IPv6 Summit (3 days)	Tim Chown (UoS) Jordi Palet (Consulintel) Latif Ladid
25/06/2003	San Diego	DoD Press Conference	Tim Chown (UoS) Jordi Palet (Consulintel) Latif Ladid
26/06/2003	San Diego	Consultation meeting with US DoD	Tim Chown (UoS) Jordi Palet (Consulintel) Latif Ladid
26/06/2003	San Diego	Moonv6 meeting	Tim Chown (UoS) Jordi Palet (Consulintel) Latif Ladid
03/07/2003	Oxford	Multiservice Networks 2003	Tim Chown (UoS)
09/07/2003	Southampton	Open workshop with DSTL	Tim Chown (UoS)
13/07/2003	Vienna	IETF 57 <sup>th</sup> Meeting (6 days)	Tim Chown (UoS) Jordi Palet (Consulintel)
24/07/2003	Madrid	UC3M Summer School	Jordi Palet (Consulintel)
18/08/2003	Seoul	APNIC/KRNIC meeting	Jordi Palet (Consulintel)
23/08/2003	Seoul	IPv6 Summer Retreat	Jordi Palet (Consulintel)
24/08/2003	Rejkyavik	NORDUnet 2003 (3 days)	Tim Chown (UoS)



26/08/2003	Southampton	Meeting with Nominet CTO	Tim Chown (UoS)
02/09/2003	Amsterdam	TF-SC drafting meeting	André Zehl (TSN) Jordi Palet (Consulintel) Bosco Fernandes (Siemens) Ger van den Broek (Philips)
05/09/2003	London	UKERNA WAG Meeting	Tim Chown (UoS)
15/09/2003	Cambridge	TERENA TF-NGN Meeting (2 days)	Tim Chown (UoS)
16/09/2003	Brussels	Concertation meeting	Jordi Palet (Consulintel)
22/09/2003	Berlin	TERENA TF-Mobility Meeting	Tim Chown (UoS)
22/09/2003	Brussels	Belgium IPv6 Event	Jordi Palet (Consulintel) Latif Ladid Bosco Fernandes (Siemens)
24/09/2003	Brussels	Global IPv6 Service Launch meeting	Jordi Palet (Consulintel) Latif Ladid Bosco Fernandes (Siemens)
23/09/2003	(voice)	UK IPv6 TF meeting	Tim Chown (UoS) Peter Hovell (BT)
29/09/2003	Heidelberg	Eurescom 2003 Summit	Jordi Palet (Consulintel)
30/09/2003	Milan	TF-SC meeting	André Zehl (TSN) Tim Chown (UoS) Jordi Palet (Consulintel) Latif Ladid
30/09/2003	Boston	3GPP-PCG Meeting	Bosco Fernandes (Siemens)
01/10/2003	Milan	IPv6 TF + IPv6 Cluster meeting	André Zehl (TSN) Tim Chown (UoS) Jordi Palet (Consulintel) Latif Ladid Mat Ford (BT) Peter Hovell (BT) Ger van den Broek (Philips)
06/10/2003	Yaroslavl	Russia IPv6 Summit	Latif Ladid
20/10/2003	Kuala Lumpur	Malaysia IPv6 Summit	Jordi Palet (Consulintel) Latif Ladid
10/11/2003	Minneapolis	58 <sup>th</sup> IETF meeting	Jordi Palet (Consulintel) Tim Chown (UoS) Mat Ford (BT)
21/11/2003	Madrid	Spanish IPv6 Task Force meeting	Jordi Palet (Consulintel)
02/12/2003	Paris	Deploying IPv6 event	Jordi Palet (Consulintel) Latif Ladid
09/12/2003	Geneva	WSIS	Jordi Palet (Consulintel) Tim Chown (UoS) Mat Ford (BT) Bosco Fernandes (Siemens)
07/01/2004	Las Vegas	Consumer Electronics Show	Jordi Palet (Consulintel) Latif Ladid

14/01/2004	Brussels	IPv6 TF + IPv6 Cluster meeting	Jordi Palet (Consulintel) Latif Ladid Tim Chown (UoS) Mat Ford (BT) Bosco Fernandes (Siemens) Olaf Bonness (TSN)
15/01/2004	Brussels	Global IPv6 Service Launch Event	Jordi Palet (Consulintel) Latif Ladid Tim Chown (UoS) Mat Ford (BT) Bosco Fernandes (Siemens) André Zehl (TSN)
22/01/2004	Madrid	TF-NGN meeting	Jordi Palet (Consulintel) Tim Chown (UoS)
26/01/2004	Tokyo	SAINT 2004	Jordi Palet (Consulintel)
18/02/2004	Madrid	6SOS - Deploying IPv6 event	Jordi Palet (Consulintel)
19/02/2004	Málaga	Open Source Conference	Jordi Palet (Consulintel)
23/02/2004	Turin	2 <sup>nd</sup> Italian IPv6 Task Force meeting	Jordi Palet (Consulintel)

**Figure 9-5: Dissemination Activities**

The EC IPv6 Task Force will continue to be represented in several upcoming events, including:

- EuroIndia 2005, New Deli, India, 24<sup>th</sup> March 2004.
- LACNIC IV/FLIP-6, Montevideo, Uruguay, 29<sup>th</sup> March 2004.
- INET2004, Barcelona, Spain, 10<sup>th</sup> May 2004.
- Eurov6 showcase, Brussels, Belgium, 18<sup>th</sup> May 2004.
- Terena 2004, Rhodes, Greece, 7<sup>th</sup> June 2004.
- US IPv6 Summit, Santa Mónica, US, 14<sup>th</sup> June 2004.
- IPv6 Summit, Taipei, Taiwan, 26<sup>th</sup> August 2004.
- IST2004, Le Hague, Netherlands, 4<sup>th</sup> October 2004.

One of the best dissemination activities has been done during the last IST2002, where several IPv6 Task Force members have participated. In addition, Erkki Liikanen's speech regarding the eEurope 2005 Action Plan, indicated:

“eEurope 2005 will concentrate on five actions: eGovernment, eHealth and eLearning, eBusiness, broadband/IPv6 and security of networks and information. The fourth action aims at the widespread availability of broadband access to the Internet throughout the EU. Broadband is needed to increase the functionality and performance of services and to further extend the usage of Internet. The rationale for a broadband initiative is convergence. We want to create a level playing field for all technologies. The objective is to reduce uncertainty, remove obstacles, and help improving demand in order to stimulate investment in broadband access networks.”  
([http://europa.eu.int/rapid/start/cgi/guesten.ksh?p\\_action.gettxt=gt&doc=SPEECH/02/536\[0\]RAPID&lg=EN&display=](http://europa.eu.int/rapid/start/cgi/guesten.ksh?p_action.gettxt=gt&doc=SPEECH/02/536[0]RAPID&lg=EN&display=)).

#### The World Summit on the Information Society

An informal contact with the “The World Summit on the Information Society” (<http://www.itu.int/ws>) has been established through IPv6TF-SC members. Latif Ladid represented the IPv6 TF at PrepCom-2 (18-19<sup>th</sup> February 2003).

As a result, the “New Internet (IPv6) Workshop” has been organized by the IPv6 Task Force on the 9<sup>th</sup> of December, in Geneva, as one of the sessions of the WSIS (<http://www.ec.ipv6tf.org/in/wsis.htm>).

#### References:

- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=51>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=154>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=195>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=254>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=265>.

Follow up of this work are being prepared for future WSIS events (Tunisia 2005) and related United Nations activities.

#### SAINT2004

In January 2004, Tokyo hosted SAINT2004 (The 2004 International Symposium on Applications and the Internet). This event is co-sponsored by the IEEE Computer Society (IEEE-CS) and the Information Processing Society of Japan (IPSJ, <http://www.ipsj.or.jp>).

A dedicated IPv6 workshop included a talk regarding the European activities regarding IPv6, provided by the IPv6 TF-SC.

Complete information available at <http://www.saint2004.org>.

The next edition is being organized for the 1<sup>st</sup> time in Europe, Trento, Italy (<http://www.saint2005.org>), with the cooperation of the IPv6 Task Force.

## 10. SUMMARY AND CONCLUSIONS

### 10.1 Status of Project Goals

#### 1 Goal

To perform all required actions aiming at the enhanced coordination and continuation of the work performed within the IPv6 Task Force 2<sup>nd</sup> phase.

The IPv6 TF-SC will set the Agenda and with the assistance of the Commission invite participation of representatives of not yet represented economic and industrial sectors likely to be impacted by IPv6, including representatives of national or regional IPv6 Councils and appropriate representatives from candidate countries.

#### Status

The IPv6 Task Force has primarily focused on the creation of national Task Forces so far. During this time, the work of the European IPv6 Task Force has rested. Many colleagues from the European Task Force do support the national IPv6 Task Force activities. It is intended to continue some of the work with the national IPv6 Task Forces, while the European Task Force will be invited for special occasions only.

#### 2 Goal

The IPv6 Task Force provide a regularly updated review and plan action on the development and future perspectives of IPv6 in order to coordinate European efforts on IPv6.

The IPv6 Task Force Steering Committee will monitor how the recommendations are transformed implemented and remind those that need to take action where appropriate.

#### Status

A first version of the action plan and the status of the implementation of the recommendations is part of this document.

#### 3 Goal

Create the proper working and liaison environment to ensure that a working collaboration with standards and Internet governance/policy bodies takes place.

#### Status

Through the members of the project, the liaisons have been and are being established.

#### 4 Goal

Establish collaboration arrangements and working relationships with similar initiatives being launched in other world regions, industry and research.

#### Status

The relations with other IPv6 activities are listed in this document.

#### 5 Goal

Organize regular IPv6 Task Force meetings (Plenary and/or Working Groups) with the assistance of the Commission.

#### Status

National Task Force meetings have been arranged with the help of the Commission. Further meetings are work in progress.

#### 6 Goal

Foster dissemination and awareness activities, regarding the IPv6 Task Force work, and other related efforts and initiatives, including the operation of the IPv6 Task Force and the project web sites.

#### Status

The website has been created and is being operated by the project. The project members are actively participating in many events and are actively promoting the European IPv6 Activities as well as the work of the Task Force.

## 10.2 Conclusions

The IPv6 Task Force Steering Committee took up its work. Several gatherings have been organized and links and liaisons have been and are currently established with several bodies. The project is gaining momentum through the initiated national IPv6 Task Forces.

The Task Force intends to continue and intensify the work on the goals that are addressed so far.

Is remarkable the wide press coverage about IPv6 and the high number of new products and services supporting it worldwide.

Is also a remarkable achievement that worldwide there is a massive take-up of IPv6 in industry and governments, including its consideration in private and public tenders. First business “because is IPv6-Ready”, can be already accounted.

The dissemination activities are a great success, including the Global IPv6 Service Launch event and the EuroNews appearance.

Very positive articles being published by specialized press:

- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=361>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=347>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=339>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=338>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=312>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=258>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=271>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=276>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=284>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=289>.

Also some negative press, usually with incomplete knowledge about IPv6:

- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=377>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=300>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=291>.
- <http://www.ist-ipv6.org/modules.php?op=modload&name=News&file=article&sid=295>.
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## 10.3 Objectives for the Next Reporting Period

The following is a list of clear and concise set of objectives until the end of the project, and how they are planned for its completion.

Basically the work will continue on the successful initiatives that have been launched and started so far. The national Task Forces and the support Commission will continue to play a major role in achieving the overall goal of the Task Force in facilitating the shift of IPv6 in Europe.

The following stakeholders will be addressed by planned actions:

#### **10.3.1 EU Member States**

- It is intended to address the Member states and the presidency to help facilitate the awareness for IPv6 with help of the Commission.
- Since Ireland took over the European Presidency in January 2004 a special action shall be taken to enhance the awareness in that country.
- Since Netherlands takes over the European Presidency in July 2004 a special action shall be taken to enhance the awareness in that country.

#### **10.3.2 The Industry**

- Through the national Task Forces it is intended to include more industries and raise their awareness for IPv6.

#### **10.3.3 Complementary Actions by the European Commission**

- Specific business sectors should be addressed with dedicated workshops, including applications for cellular phones and consumer electronics. Awareness should be raised regarding the relevance of new IPv6-enabled applications. Gaming is a major area that should be addressed (European game software producers).

#### **10.3.4 IPv6 Task Force**

- Continue with the organization of the next events.
- Continue the liaison with other National Task Forces and aggregate the national IPv6TF plans.
- Continue the work on further details of IPv6 roadmap.

## 11. REFERENCES

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Belgium IPv6 TF	<a href="http://www.be.ipv6tf.org">http://www.be.ipv6tf.org</a>
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