



Global IPv6 Summit 2002

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European Support to IPv6

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European Commission**



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Directorate-General*

“The views expressed in this presentation are those of the author and do not necessarily reflect the views of the European Commission”





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- ★ **IPv6 related European policy aspects**
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- ★ **IST Advisory Group: A Vision**
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IST: The “global race” to knowledge

- **The US invests 3 times more on RTD in IST**
52% of RTD effort in IST in OECD countries is in the US
only 17% in Europe (22% in Japan)
- **Public investment in the EU is 50% of the US effort**
...and the gap is widening
- **The EU effort is fragmented**
...critical mass is rarely reached in the member states
- **...and IST has shorter & shorter life-cycles...**





IST: Europe can react

- **A new generation of technologies is emerging**
 - Helps build an ALL inclusive knowledge society and economy
 - Europe is well positioned
- **Europe can build on strengths, e.g.**
 - In Mobile and Wireless,
 - Embedded software,
 - Consumer electronics,
 - Rich content & service provision
- **EU RTD in IST provides a unique opportunity**
 - To aggregate fragmented effort (ERA)
 - Build consensus and provide a “global approach”





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Commission policies: Motivation

- **Address space** - Growth of Internet
- A single IP address
- **Mobile Internet** - Internet services from everywhere
- Removing location dependency
- **Security** - End-to-end encryption
- Data Integrity, authentication

...or in broader terms, social equity, privacy, competition...





Policies for Information Society

At European level, coordinated efforts between:

- **European Commission**

- Telecom and Information Society Policies
- EU sponsored Research - The Programme IST
- Mobilising initiatives such as *eEurope* or European Research Area

- **European Council**

- Conclusion of European Summits

- **European Parliament**

- Malcom Harbour Report presented to ITRE May 2001





Some aspects of Commission policy

- **eEurope (08 December 1999):
An Information Society For All**

- 3 key objectives
- 10 priority areas for action

URL: http://europa.eu.int/information_society/eeurope/news_library/pdf_files/initiative_en.pdf

- **ERA (18 January 2000):
Towards a European Research Area
(COM (2000)6)**

“... to contribute to the
creation of better overall
framework conditions for
Research in Europe”

URL: <http://europa.eu.int/comm/research/area/com2000-6-en.pdf>





*e*Europe: A mobilising initiative

The *e*Europe is an initiative of President Prodi and Commissioner Liikanen, aiming to allow Europe to exploit its strengths and to overcome the barriers that are still holding back the uptake of digital technologies.





eEurope: the Action Plan

3 main objectives

Stimulate the use of the Internet

- Accelerating e-commerce
- Government online: electronic access to public services
- Health online
- European digital content for global networks
- Intelligent transport systems

A cheaper, faster, secure Internet

- Cheaper Internet access
- Faster Internet for researchers and students
- Secure networks and smart cards

Investing in people and skills

- European youth into the digital age
- Working in the knowledge-based economy
- Participation for all in the knowledge-based economy



URL: http://europa.eu.int/information_society/eeurope/index_en.htm





Some aspects of Commission policy

- **Communication from the Commission to the Council and European Parliament**
COM (2000)202; 11 April 2000

URL: http://europa.eu.int/eur-lex/en/com/cnc/2000/com2000_0202en01.pdf

“The Organisation and Management of the Internet International and European Policy Issues”

- **Communication from the Commission to the Council and European Parliament**
COM (2001)140; 13 March 2001

URL: http://europa.eu.int/comm/stockholm_council/pdf/comeeur_en.pdf

Explicit reference to e.g. IPv6 in the frame of High Speed Infrastructure, one of the priority area to be addressed





Some aspects of Commission policy

- Communication from the Commission to the Council and European Parliament
COM (2002)?; March 2002 (?)

“Next Generation Internet -
Priorities for action in
migrating to the new Internet
protocol IPv6”





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IPv6 in FP5: Overview

- **Consultation meetings: e.g. October 1999**
- **Informal information (awareness, readiness, ...)**
- **Ad-Hoc meeting: February 2001**
- **Several IPv6 running projects:**
 - IPv6 applied to Mobile Communication,
 - Quality of Service, Transition IPv4 to IPv6, ...
- **Stockholm Summit: March 2001**
- **IPv6 Task Force: April 2001; Results in January 2002**
- **2 projects for pan European platforms: January 2002**





IPv6 Task Force: some results

EU Member States

- Strengthen financial support towards National and Regional Networks
- ...

European Commission

- Strengthen R&D support towards native High Speed and High Capacity Network Infrastructures...
- ...

European Industry

- Support and fully participate in interoperability events
- ...

Industry Associations

- Harmonisation of standards related activities
- ...



URL: <http://www.ipv6tf.org>



IPv6 in FP5: IST projects

NGN-INITIATIVE ●

NGN-Lab ●

DRiVE ●

Moby Dick ●

WINE GLASS ●

6WINIT ●

LONG ●

SEQUIN ●

6NET
Euro6IX

● “GEANT”

● {P_i(Internet)}

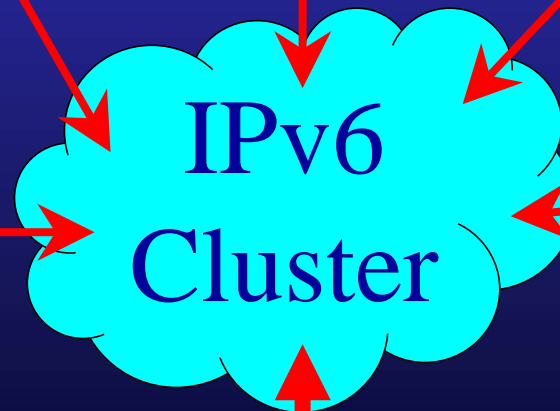
● GCAP

● WINE

● BRAIN

● SUITED

● MIND



6Link

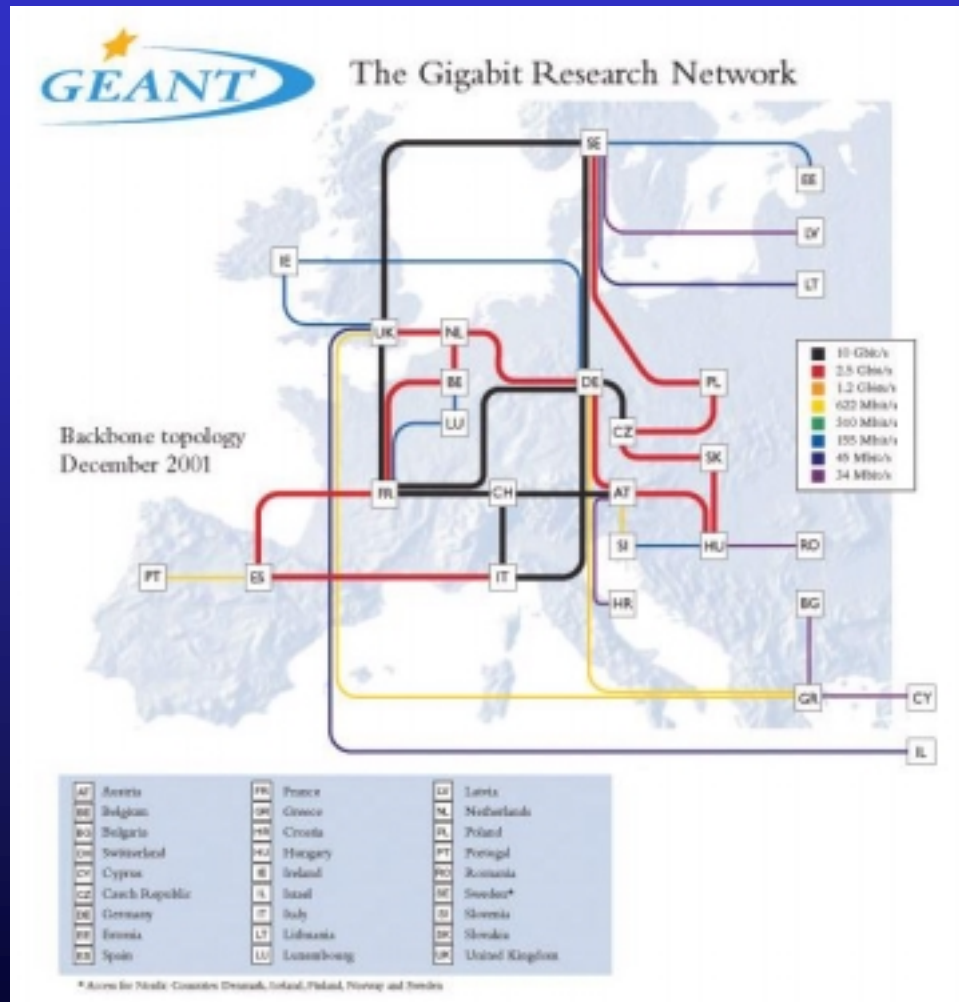


— Next Generation Networks
— Mobile area
— Testbeds





IPv6 in FP5: GÉANT



Communities of researchers are extremely important to the widespread of new technologies (early/educated adopters)

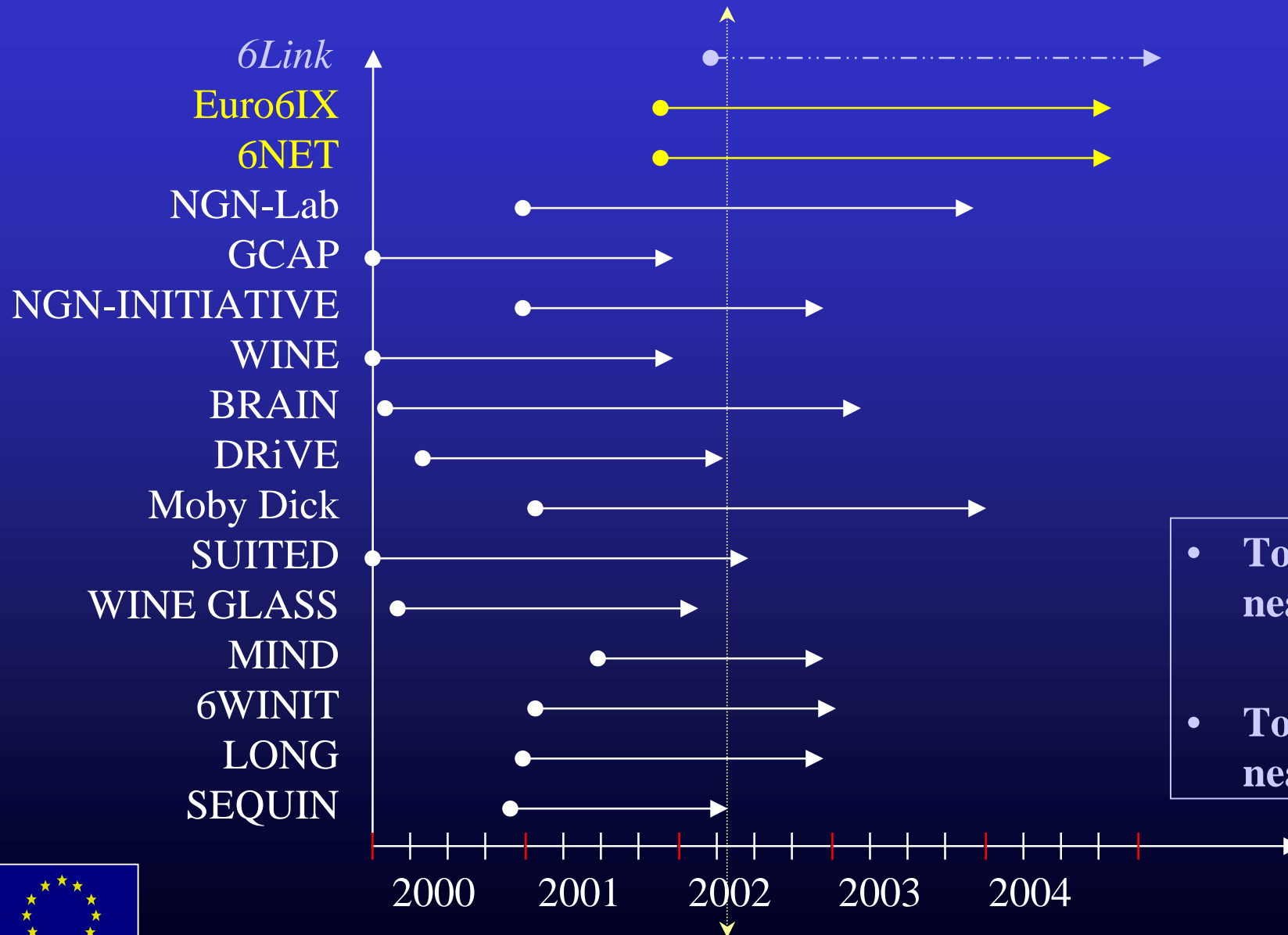
GÉANT Network in Europe:

- Preparing IPv6 introduction
- Providing an infrastructure able to interconnect IPv6 islands





IPv6 in FP5: Coverage in time



- Total cost:
nearly 105 MEuro
- Total EU funding:
nearly 55 MEuro





IPv6 in FP5: Geographical Coverage

	A	B	D	DK	E	F	GR	I	IRL	L	NL	P	S	SF	UK	CH	N	PL	J	IL
<i>6Link</i>			✓		✓	✓					✓				✓	✓				
Euro6IX		✓	✓	✓	✓	✓		✓				✓			✓	✓				
6NET	✓	✓	✓	✓		✓	✓	✓			✓			✓	✓	✓	✓		✓	
NGN-Lab		✓	✓						✓							✓				
GCAP	✓		✓	✓	✓	✓									✓					
NGN-INITIATIVE		✓	✓	✓		✓										✓				
WINE					✓	✓	✓	✓						✓	✓					
BRAIN			✓		✓	✓							✓	✓	✓				✓	
DRiVE			✓						✓				✓	✓	✓					✓
Moby Dick			✓		✓	✓						✓				✓		✓		
SUITED	✓	✓	✓		✓			✓							✓					
WINE GLASS			✓		✓	✓		✓			✓				✓					
MIND			✓		✓	✓							✓	✓	✓				✓	
6WINIT			✓	✓		✓							✓	✓	✓	✓		✓		
LONG					✓							✓								
SEQUIN			✓			✓	✓	✓							✓	✓		✓		





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ISTAG: Vision Statement

“Start creating the *ambient intelligence* landscape for seamless delivery of services and applications in Europe relying also upon test-beds and open source software, develop user- friendliness, and develop and converge the networking infrastructure in Europe to world-class”

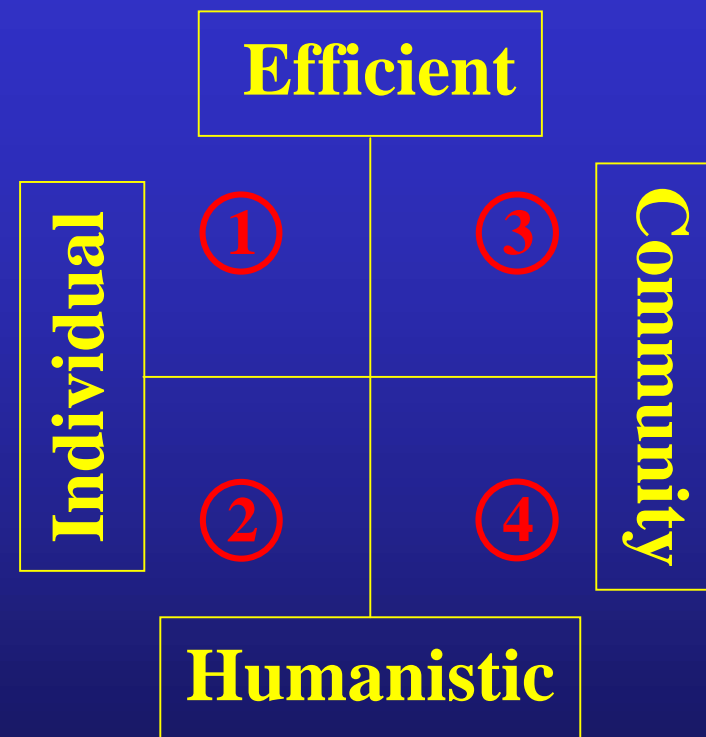


URL: <ftp://ftp.cordis.lu/pub/ist/docs/istag-99-final.pdf>



ISTAG: Scenarios for 2010

- 1: Maria: Road Warrior
 - 2: Dimitrios and the Digital Me
 - 3: Carmen: Traffic, sustainability & Commerce
 - 4: Annette and Salomon in the ambient for social learning
-
- George Orwell: 1984





ISTAG: Ambient Intelligence

Ambient Intelligence stems from the convergence of the 3 key technologies:

- Ubiquitous computing
- Ubiquitous communication
- Intelligent User Friendly interfaces

**“everywhere and yet in our consciousness;
nowhere unless we need it”**





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FP6: The timetable

21 February 2001.....	Commission proposal to Council and Parliament
3 March 2001	Presentation in Uppsala
April 2001	Starting the IST consultation process
30 May 2001.....	Commission proposal on Specific Programmes
June 2001	Research Council
Sept 2001	Commission proposal on participation rules
October 2001	Parliament's first reading of FP6
Oct/Dec 2001.....	Council position
→ March 2002.....	Parliament second reading
Spring 2002.....	Conciliation procedure
June 2002.....	Final adoption



URL: <http://www.cordis.lu/>

URL: <http://www.cordis.lu/ist/>
<http://www.cordis.lu/rtd2002/>





FP6: “Specific Programmes”

INTEGRATING EUROPEAN RESEARCH								
PRIORITY THEMATIC AREAS							ANTICIPATING S/T NEEDS	
Genomic and biotechnology for health	Information society technologies	Nanotechnologies, intelligent mat., new production processes	Aeronautics and space	Food safety and health risks	Sustainable development and global change	Citizens and governance in the knowledge society	Research for policy support	Frontier research, unexpected developments
							Specific S M E activities	
							Specific international cooperation activities	
							J R C activities	

STRUCTURING THE ERA			
Research and innovation	Human resources & mobility	Research infrastructures	Science and society

STRENGTHENING THE FOUNDATIONS OF ERA	
Coordination of research activities	Development of research/ innovation policies



Main IST related parts



FP6: IST key elements

Main objectives

- Strengthening Europe's competitiveness & technology base
- Building the information and knowledge society for ALL

Strategy

- Concentration and focus, building critical mass
- Capitalise on Europe's strengths
- Visionary, forward looking (longer term / high risk)
- Combine flexibility with greater speed in implementation
- Scope of activities: Core technologies & “pull-through” applications





FP6: The IST vision

- **Building the knowledge society for ALL**
- **Bringing the users, “people”, to the foreground the “centre of our attention” and build trustful technologies for the background (almost invisible)**
- **Moving to an era where:** *‘Our surrounding is the interface to IST applications and services’*
- **Exploring beyond “the PC, screens & keyboard interfaces”...**
- **Enabling multi-sensorial dialogues supported by computing & networking (everywhere, embedded in everyday objects; e.g: furniture, clothes, vehicles, smart materials, ...)**





FP6: The IST way forward

IST today

- PC based
- “Writing and reading”
- syntax based information search.....
- Low bandwidth, separate networks....
- Mobile telephony (voice).....
- Micro scale.....
- Silicon based.....
- eServices just emerging.....
- Only 5% of global population on-line..

“Ambient Intelligence” tomorrow

“Our surrounding” is the interface

Use all senses, intuitive

Context-based knowledge handling

Infinite bandwidth, convergence, ..

Mobile/Wireless full multimedia

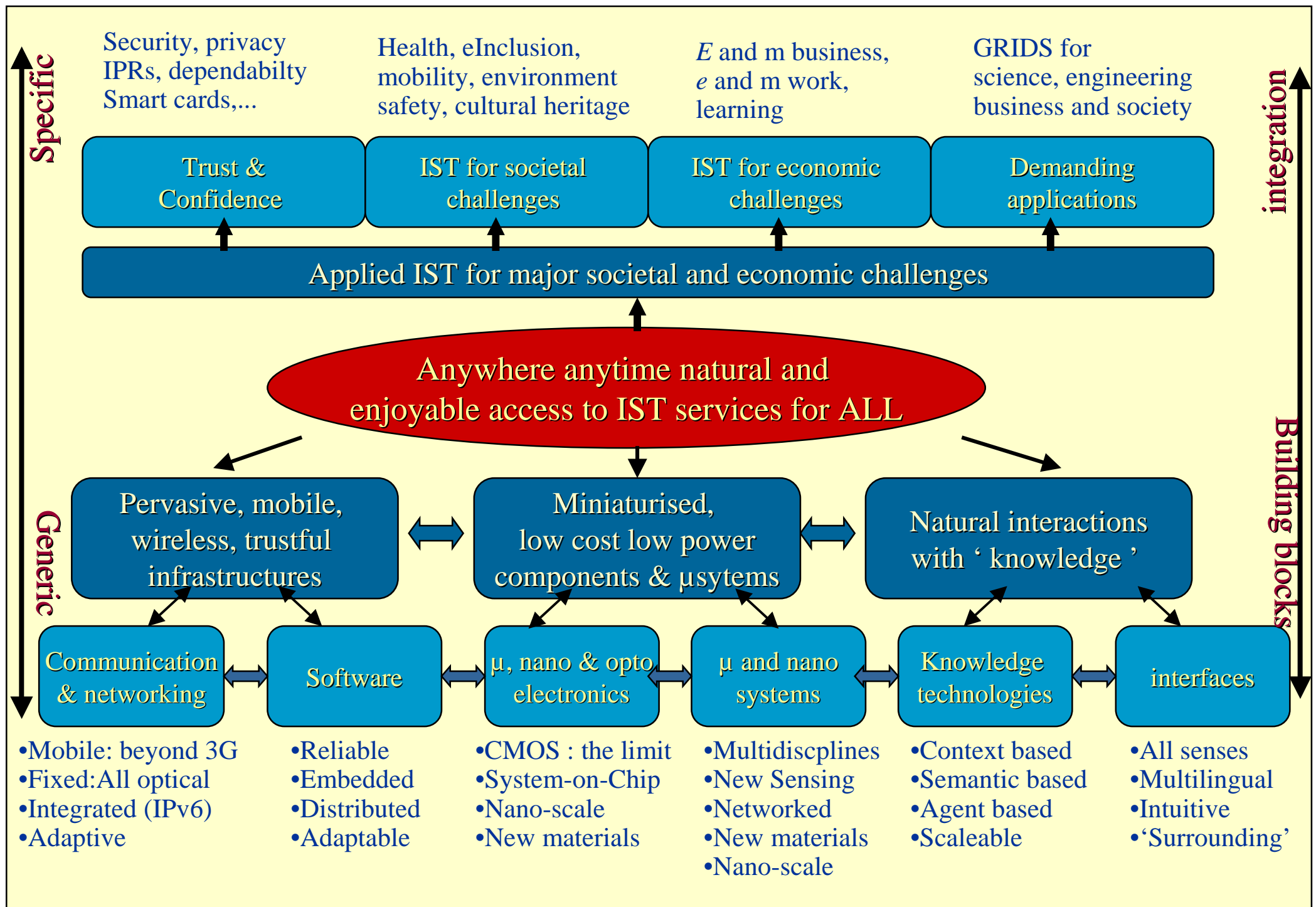
Nano-scale

+ new materials

Wide adoption (eHealth, eLearning, ...)

>70% of world-wide population on line







FP6: Other IST activities

- **Exploring future visions and paradigms**
 - Anticipation of S&T needs, Priority 8
 - “Parts” of current FET: Interdisciplinary
- **Support to *e*Europe**
 - Anticipation of policy needs, Priority 8
- **Research Networks, GÉANT**
 - Research Infrastructures
- **Enhancing the impact**
 - Innovation and support to SMEs
- **Extending global co-operation**
 - International co-operation
- **Fighting the skills gap**
 - Mobility of researchers

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							JRC activities		

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FP6: Research Networks

National level

**Continuous upgrading
of National Research and
Education Networks linking all
Universities and Research
Centers**

National GRIDs Initiatives

European level, ERA

**Corresponding upgrade
of the European Backbone for
Research - GÉANT**

**Provision of multinational
GRIDS platforms**

**Research Communities: traffic and tools demand is
continuously growing**





Research Networks: From FP5 to FP6

	FP5 results	FP6 goals
GÉANT	10 Gbps, EU + N.A.S.	100 Gbps, Tbps, progressive inclusion schools
International	Mediterranean, Latin America	Global connectivity
GRIDs	Initial pilots	Large scale GRIDs platforms (virtual communities)
Testbeds	IPv6, QoS	Next Generation Internet solutions for Research Communities





FP6 instruments: Rationale

- **Higher integration and building critical mass**
 - Realising ERA
- **Simplifications of procedures**
- **Larger autonomy**
 - Higher responsibility for the consortium
- **Higher flexibility**



- **Integrated Projects: Objective driven**
- **Networks of Excellence: Exploratory research**
- **Article 169: Member states initiative**
- **+ Targeted research projects: Address specific issues**

INTEGRATING EUROPEAN RESEARCH									
Priority-Driven Science					ANTICIPATING S/T NEEDS				
Research for policy support					Frontier research, unexpected developments				
Specific SME activities					Specific international cooperation activities				
JRC activities									

STRUCTURING THE ERA				STRENGTHENING THE FOUNDATIONS OF ERA	
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Integrated Projects: characteristics

- **Integration**

- All elements of technology chain to attain high-impact goals
- Different type of activities:
 - RTD, technology transfer, training, dissemination, demonstration...
- Global funding involving public & private funds

- **Size**

- The necessary size to attain its goals

- **Participation**

- 3 legal entities at least (2 from Member States)
- Minimum can be changed in the WP
- Supports industry-academia collaboration including SMEs





Networks of Excellence: characteristics

- **“Virtual” centre of excellence**
 - Brings together the research effort on a particular topic
 - A clearly identified “joint programme of activity”
 - Established or emerging fields
- **Size**
 - Several MEuro funding per year for the “Integrated effort”
 - Support to different types of activities: RTD, training, transfer, mobility...
- **Participants**
 - Minimum 3: Universities, Research Labs, Industrial Labs
 - Special Measures planned for SME's





Article 169

- **At the initiative of the member states**
- **Support to “national” programmes jointly executed according to article 169**
- **Joint or coordinated calls for proposals**
- **EC funding used to support the jointly executed programmes**





Targeted RTD Projects

- **Principle: Similar to current RTD contracts**
- **Funding: Grant to budget up to 50 %**
- **Launching: Calls for proposals**
- **Participation: At least two Member States**
- **Under the same instrument:**
 - Coordinating activities (e.g. current thematic networks) will be added as well

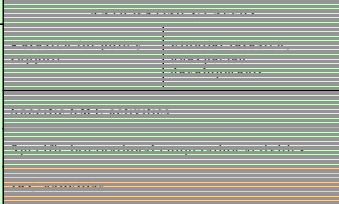
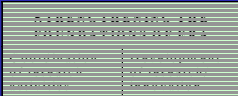


- **RTD supporting policies**
 - RTD supporting new S&T areas**
 - Targeted RTD Projects, similar to current shared cost contracts
 - Networking of Member State research activities
 - Focused Calls with annual workprogrammes

- **Collective.. (SMEs' Associations + Research Centers)**
- **Cooperative.. (>2 SMEs + research centers)**

- EU's foreign policy & development aid policy

- **Grants : to co-ordination of RTD**
- **Grants : for development of a coherent policy**

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				in the knowledge society		
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Other instruments (2)

- **Grants: support to interactions in research & innovation**
- **Fellowships: supporting human resources development**
- **Grants: to prepare & develop of Research Infrastructures**
- **Grants: for harmonisation of science & society**

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FP6: Budget overview

• Joint Research Centre 0,720 B€

• Integrating & strengthening

= Genomics	2,150 B€
→ = IST	3,600 B€
= Nanotechnologies, int.:	1,300 B€
= Aeronautics and space	1,000 B€
= Food safety	0,625 B€
= Sustainable development	1,850 B€
= Citizens in knowledge	0,225 B€
= Anticipation of S&T needs	
= SMEs	0,450 B€
= InCo	0,300 B€
= Policies and Frontier	0,800 B€
= Reinforcing ERA basis	0,420 B€

0,720 B€

12,720 B€

• Structuring ERA

= Research and Innovation	0,275 B€
= Research and Innovation	0,275 B€
= Human resources	1,680 B€
= Human resources	1,680 B€
= Research Infrastructures	0,800 B€
= Research Infrastructures	0,800 B€
= Science/Society	0,075 B€
= Science/Society	0,075 B€

2,830 B€

16,270 B€

INTEGRATING EUROPEAN RESEARCH									
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IPv6 in 2001: A Cyber Space Odyssey

- **October 1999: Workshop**
- **2000: Projects**
- **February 2001: “Ad-hoc” meeting**
- **March 2001: Stockholm Summit**
- **April 2001: IPv6 Task Force**
- **January 2002: Experimentation platforms
IPv6 TF results**



Internet and GRID*

- **Networking: TCP/IP**
- **Communication: e-mail**
- **Information: World Wide Web**
- **Computing: The Grid**

IPv6: Key enabler technology for GRID



*Brian Carpenter - Geneva, January 2002



Research on IPv6

**IPv6: Core sets of protocol standardised in 1998
but Research is still needed in (e.g.):**

- **Security aspects; Quality of Service**
- **Mobile IP**
- **Network management**
- **New routing algorithms**
- ...





IPv6 within FP6

- Need for IP on IPv6?





IPv6 within FP6

- **Need for Integrated Projects on IPv6?**
- **Need for a Network of Excellence around IPv6?**
- **Good, ambitious, innovative ideas are most welcome!**
- **Participation:**
 - Concertation meetings
 - Projects
 - ...





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Conclusion: From FP5 to FP6

- A new generation of technologies and applications is emerging
- Europe is well positioned to shape the future and compete
- The pace of development is increasingly fast
- The aim is “people first” in all-inclusive knowledge society
- Concentration, critical mass and flexibility are key
- Simplification of procedures and fast reactivity
- Need to address the (steep) learning-curve FP5→FP6





Conclusion: IPv6 in FP6

- **ISTAG's vision: Ambient Intelligence** \neq "1984"
- **GRID**
- **IPv6: Key enabler technology for GRID, Mobile and others**

**European Union has the opportunity to
take the lead on Internet based products
and services**

- **FP5: EC reacted quickly regarding IPv6**
- **Importance of Research Networks and testbeds has been recognised**
- **EC will continue its support**





Global IPv6 Summit 2002

Thanks for your attention!





Global IPv6 Summit 2002

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