

*R&D in Information and Communication
Technologies: The European Dimension*

*Bordeaux
21/11/05*

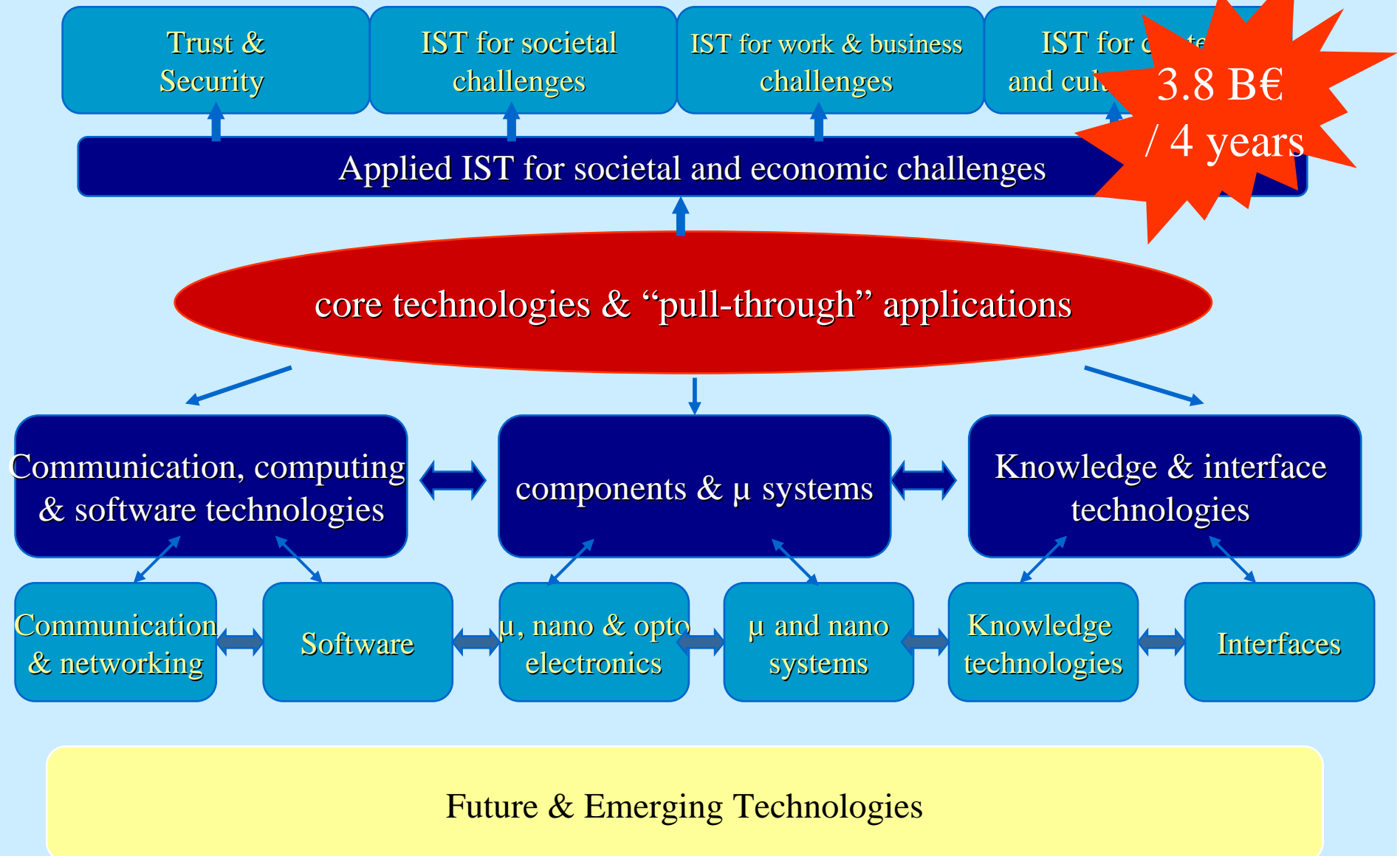
*Eric Badiqué
European Commission*

Outline of presentation



- European Programmes: Where are we today ?
- French participation in IST
- Support to GRID and security
- The future: Main trends and drivers
- The proposal for the next Framework Programme
- Conclusion

Information Society Technologies (2003-2006)



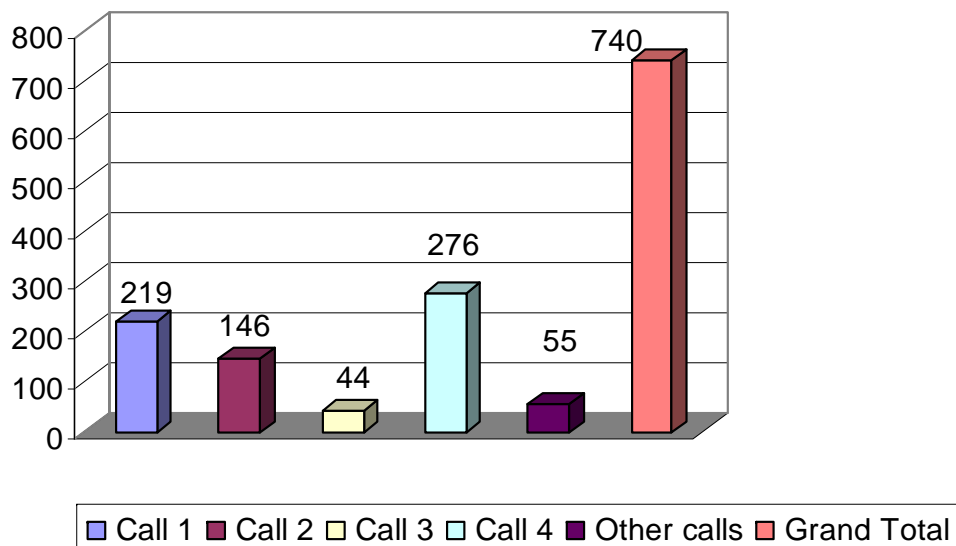
Types of projects: Forgive the jargon..



- **Integrated Projects (IPs)**
 - ✓ Integrate a critical mass of activities and resources
 - ✓ Ambitious objectives of a clear European dimension
- **Specific Targeted Research Projects (STREPs)**
 - ✓ Improves existing or develops new products, processes or services
 - ✓ Proves the viability of new technologies
- **Networks of Excellence (NoEs)**
 - ✓ Overcome the fragmentation of the European research landscape in a given area
 - ✓ Establish a durable restructuring/shaping and integration of efforts
- **Coordination Actions (CAs) and Specific Support Actions (SSAs)**
 - ✓ Support, networking, co-ordination of research and innovation activities



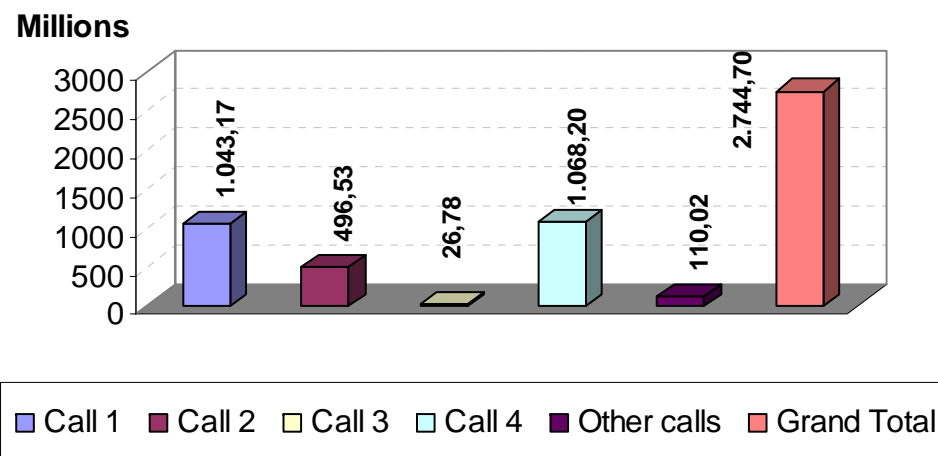
Total Number of retained projects per Call



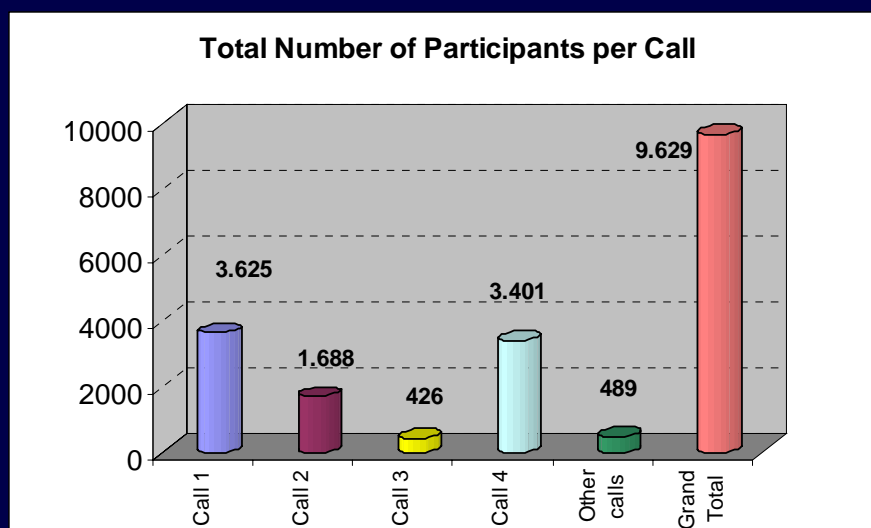
740* projects launched so far...

..for a total of 2.74 BEuros

Total Funding per Call



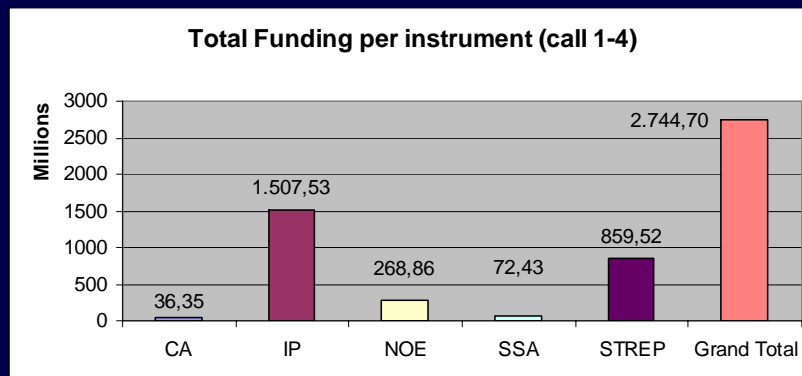
* Call 4 under negotiation



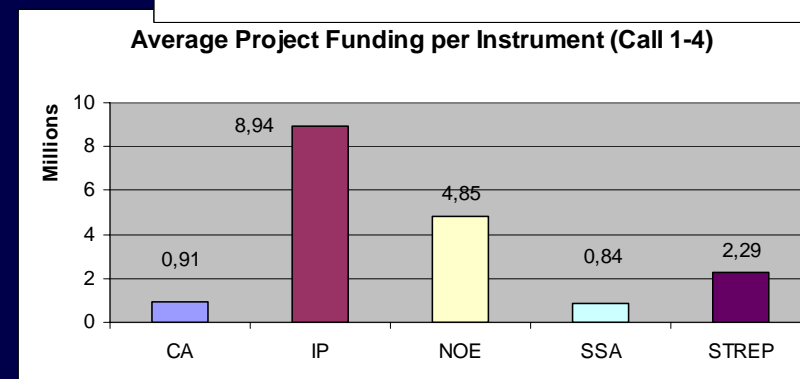
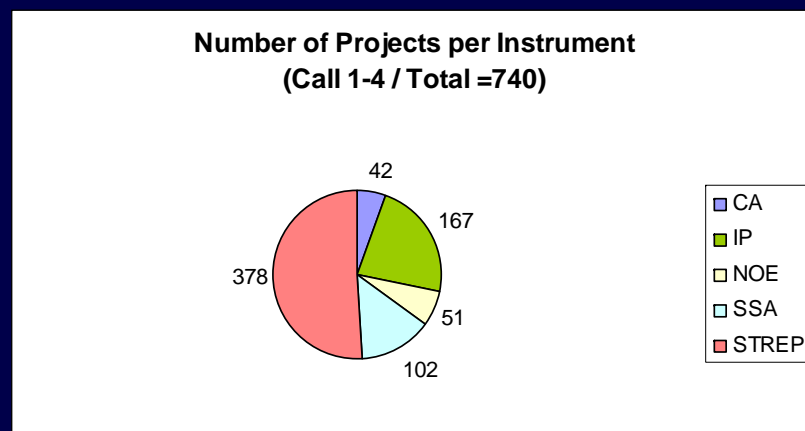
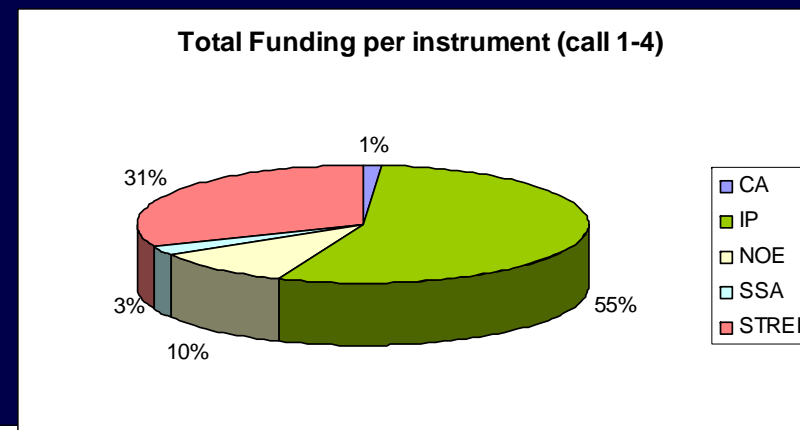
More than 9600
participating organisations



Concentration of efforts on more strategic projects...



1.5 B€, 55% of funding on 167 Integrated Projects



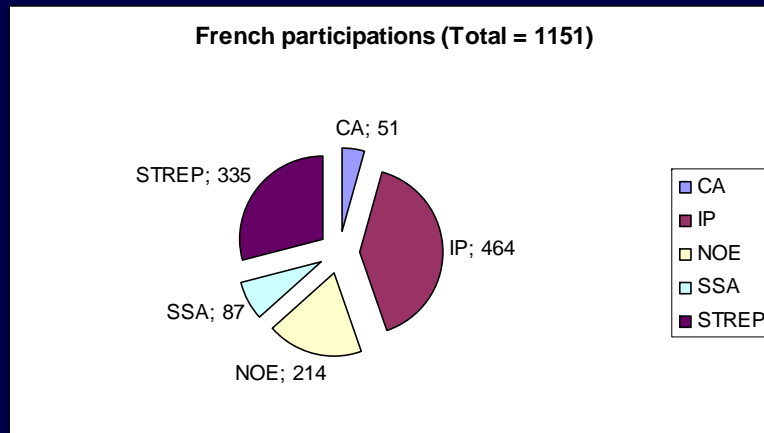
50 NoEs launched for 270 M€

Outline of presentation

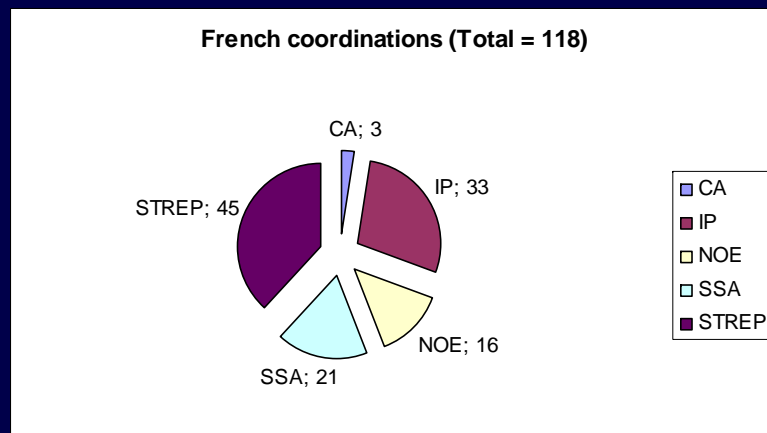


- European Programmes: Where are we today ?
- French participation in IST
- Support to GRID and security
- The future: Main trends and drivers
- The proposal for the next Framework Programme
- Conclusion

French Participation in IST – Call 1 to 4



- 1151 participations in IST projects
- Large participation in New Instruments

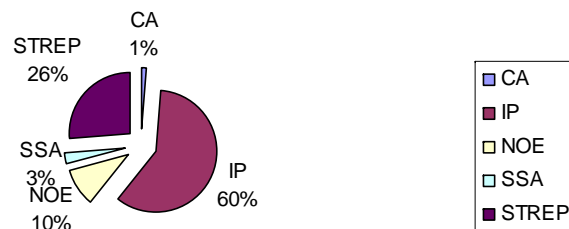


- 118 projects coordinated by French organisations
- Including 33 IPs and 16 NoEs (France leads NI coordination)

Funding to French organisations – Call 1 to 4

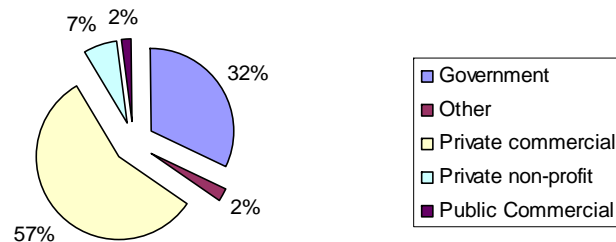


France- Funding per Instrument- Call 1 to 4



- Total funding: 365 M€
- 60% of funding allocated to IPs
- 10% allocated to NoEs
- 26% allocated to STREPs

France - Funding per organisation type - Call 1 to 4

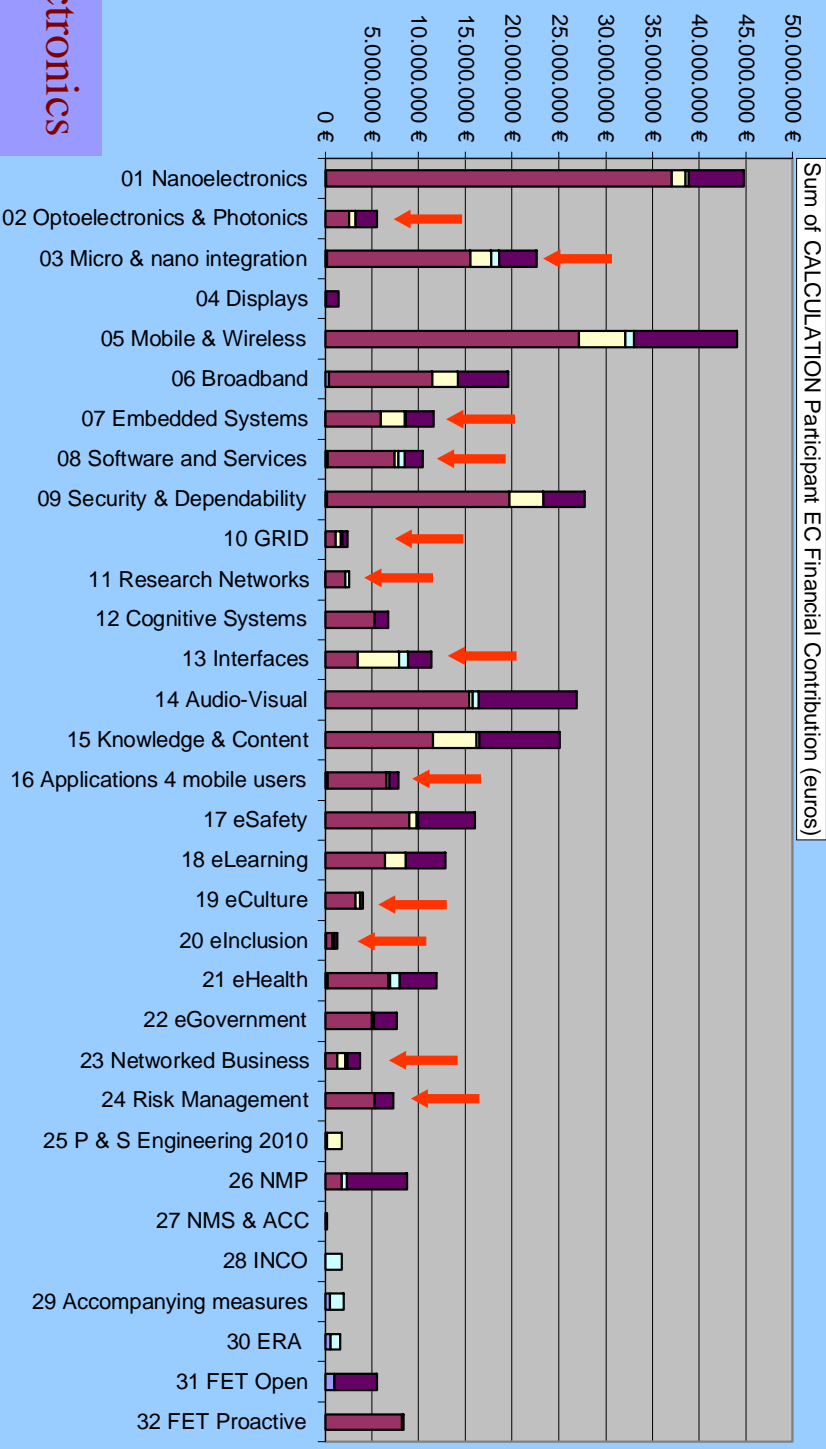


- 57% of funding allocated to industry and other commercial organisations
- 32% allocated to public sector and academia

Which areas of activity ?



Country | France



↓ Call 5

Strategic objective short name grouped

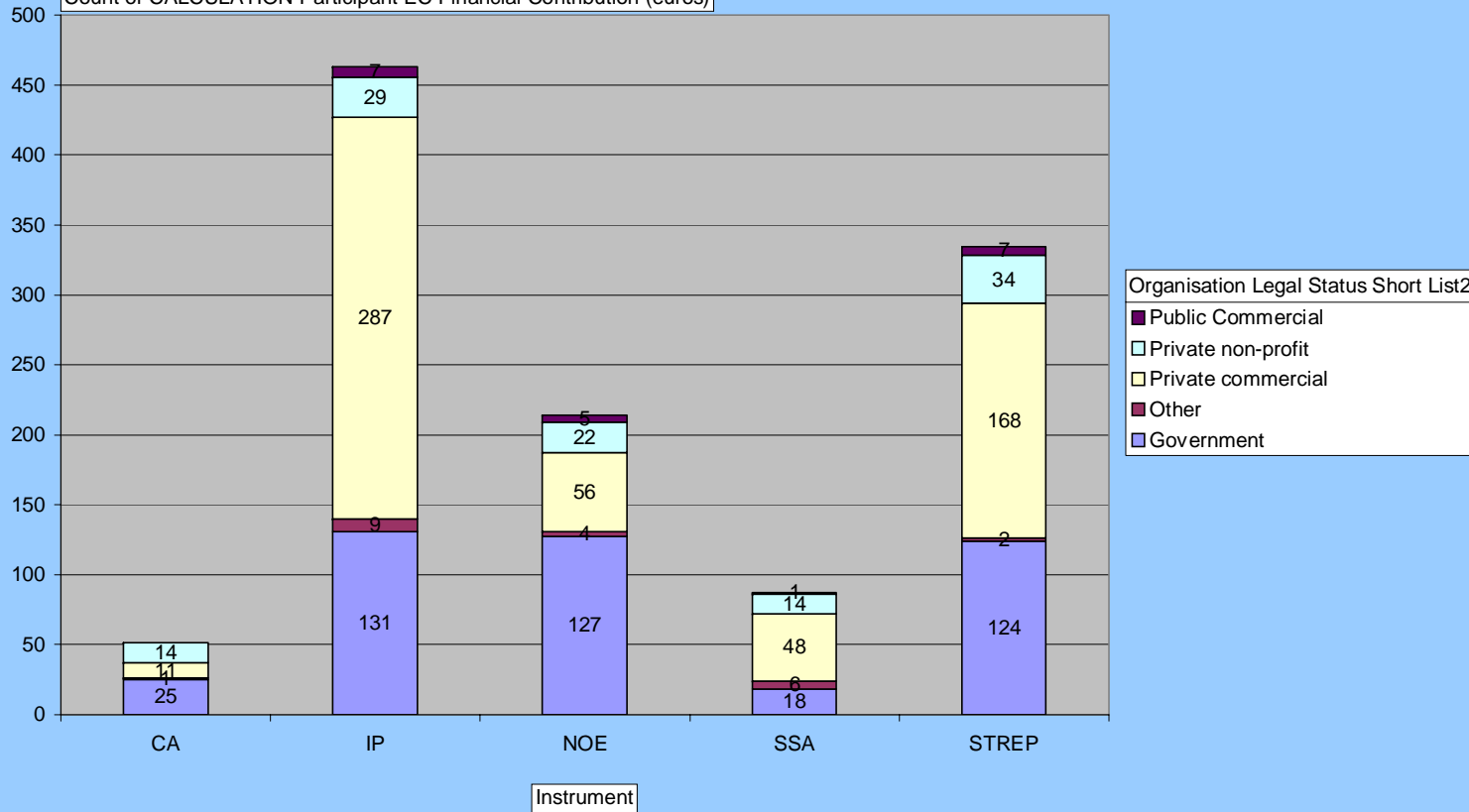
Nanoelectronics
Mobile
Security
Audio-visual..

What type of participants in which projects ?



Country France

Count of CALCULATION Participant EC Financial Contribution (euros)



Private sector strong in IPs
Academia dominant in NoEs
Streps are more balanced..

Top 20 – Funding (%)



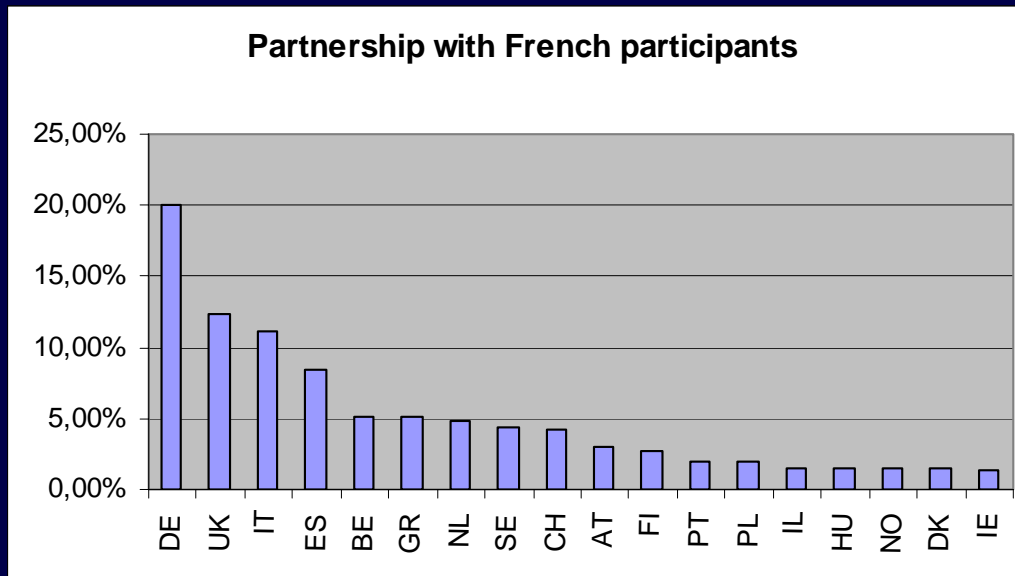
COMMISSARIAT À L' ENERGIE ATOMIQUE	8,99%
THALES GROUP	7,71%
CNRS	6,23%
FRANCE TELECOM	6,15%
INRIA	5,28%
ALCATEL GROUP	4,90%
STMICROELECTRONICS	4,68%
MOTOROLA GROUP	2,81%
EADS GROUP	2,31%
INSTITUT EURECOM	1,72%
GROUPE DES ECOLES DES TELECOMMUNICATIONS	1,67%
GEIE ERCIM	1,66%
THOMSON GROUP	1,15%
PHILIPS GROUP	0,95%
INSTITUT NATIONAL DE L'AUDIOVISUEL	0,82%
CS SYSTEMES D'INFORMATION	0,80%
SAGEM	0,77%
SONY GROUP	0,69%
XEROX	0,63%
AIRIAL CONSEIL	0,62%

French-led NoEs



SINANO	01 Nanoelectronics	Silicon-based Nanodevices	9.900.000 €
AMICOM	03 Micro & nano integration	MEMS For RF and Millimeter Wave Communications	5.499.124 €
PLASMO-NANO-DEVICES	03 Micro & nano integration	Surface Plasmon Nanodevices	3.920.000 €
Euro NGI	06 Broadband	Next Generation Internet	5.000.000 €
Euro-FGI	06 Broadband	Future Generation Internet	1.500.000 €
MAGIX	06 Broadband	Next Generation Networks	3.500.000 €
ISIS	06 Broadband	InfraStructures for broadband access	2.800.000 €
ARTIST2	07 Embedded Systems	Embedded Systems Design	6.500.000 €
HYCON	07 Embedded Systems	Hybrid Control: networked embedded systems	4.600.000 €
BIOSECURE	09 Security & Dependability	Biometrics	3.000.000 €
RESIST	09 Security & Dependability	Resilience for Survability in IST	4.500.000 €
CoreGrid	10 GRID	Large scale distributed, Grid and Peer-to-Peer Technologies	8.200.000 €
MUSCLE	15 Knowledge & Content	Multimedia Understanding through Semantics, Computation and Learning	6.900.000 €
HUMANIST	17 eSafety	HUMAN centred design	5.360.000 €
KALEIDOSCOPE	18 eLearning	Future of learning with digital technologies	9.350.000 €
INTEROP	23 Networked Business	Networked Enterprises Applications and Software	6.500.000 €

Who do French organisations collaborate with ?



- 20 % of all collaborations are with German organisations

- Followed by UK, Italy, Spain and Belgium

Outline of presentation



- European Programmes: Where are we today ?
- French participation in IST
- **Support to GRID and security**
- The future: Main trends and drivers
- The proposal for the next Framework Programme
- Conclusion

Grid Research in FP6 - IST



Application
Research &
Deployment

Industrial / Societal Applications

eBusiness, eGov, eWork,
eHealth, risks management, ...

Research Infrastructures

- Deployment of high-capacity/speed communications network – GÉANT
- Deployment in Research of Grids

Grid RTD

Grid Technologies

125 M€

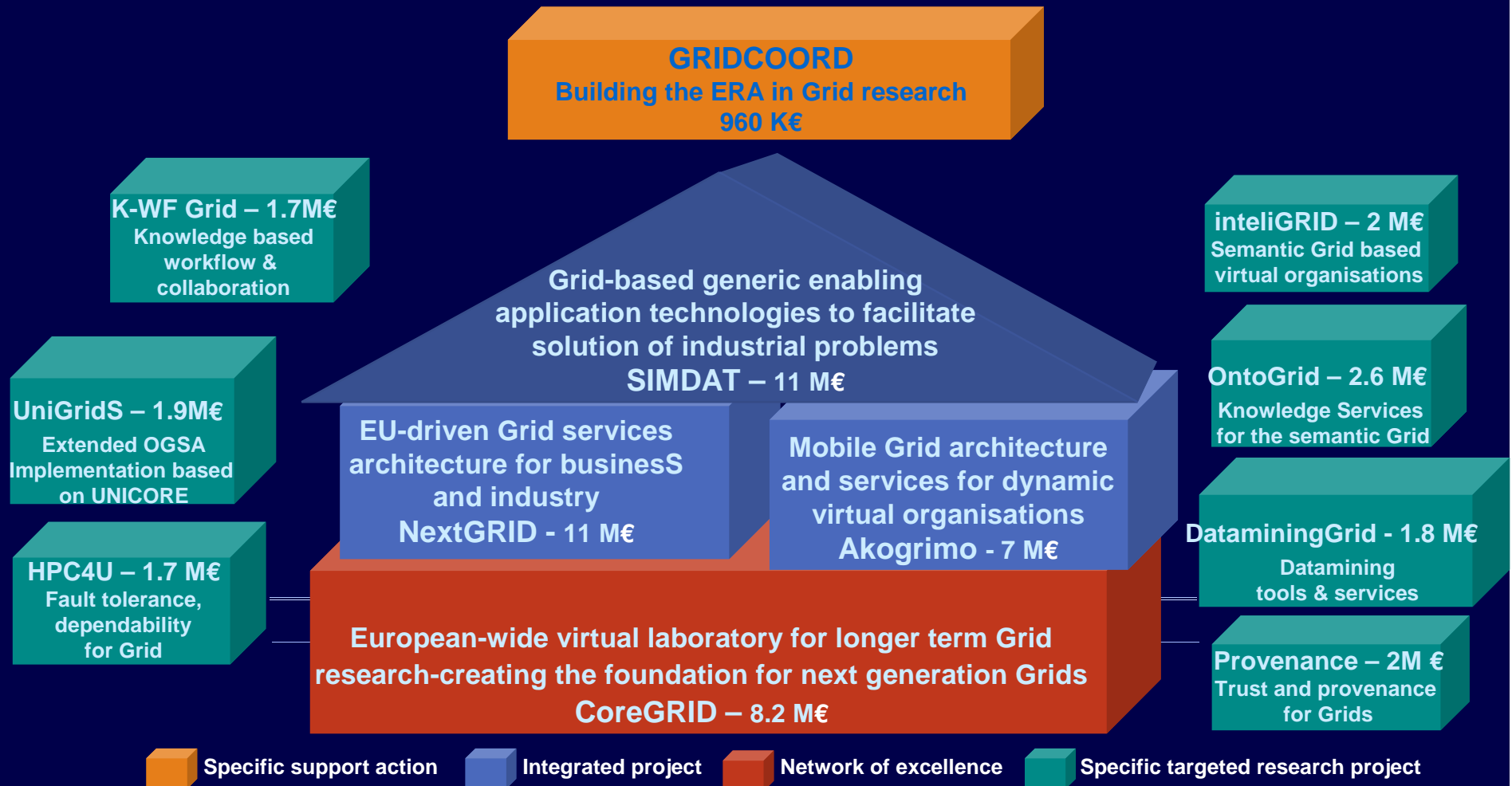
- Grid-enabled applications and services for business society
- Technologies and systems for building the invisible Grid
- Network-centric Grid operating systems

Related
Research

Software-, Web-, Knowledge Technologies,
Broadband-, Mobile Communication Technologies, Security

GRID research

IST Call 1: A coherent set of projects

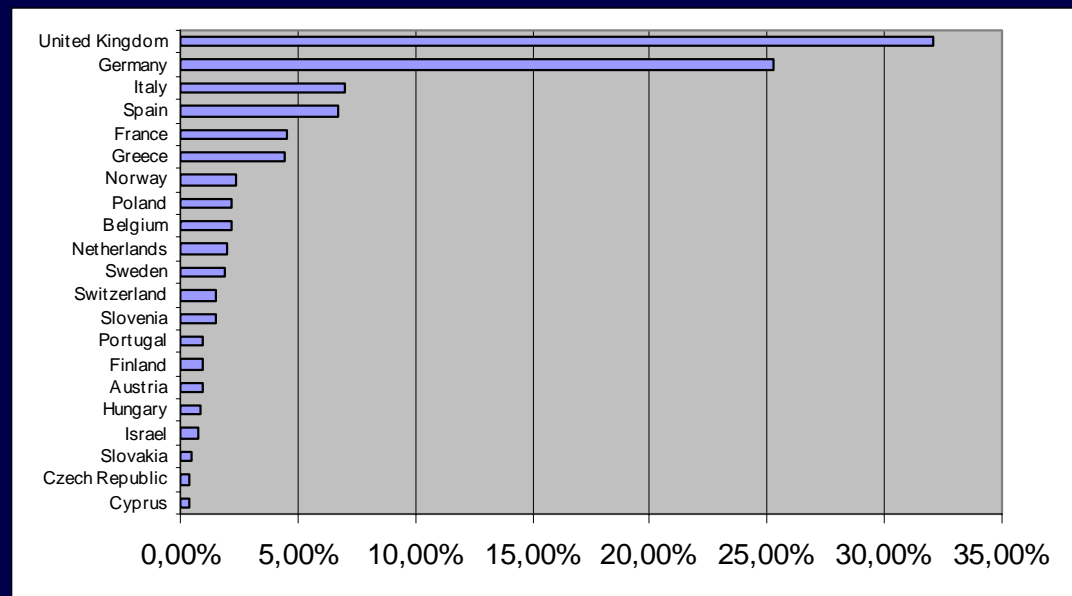
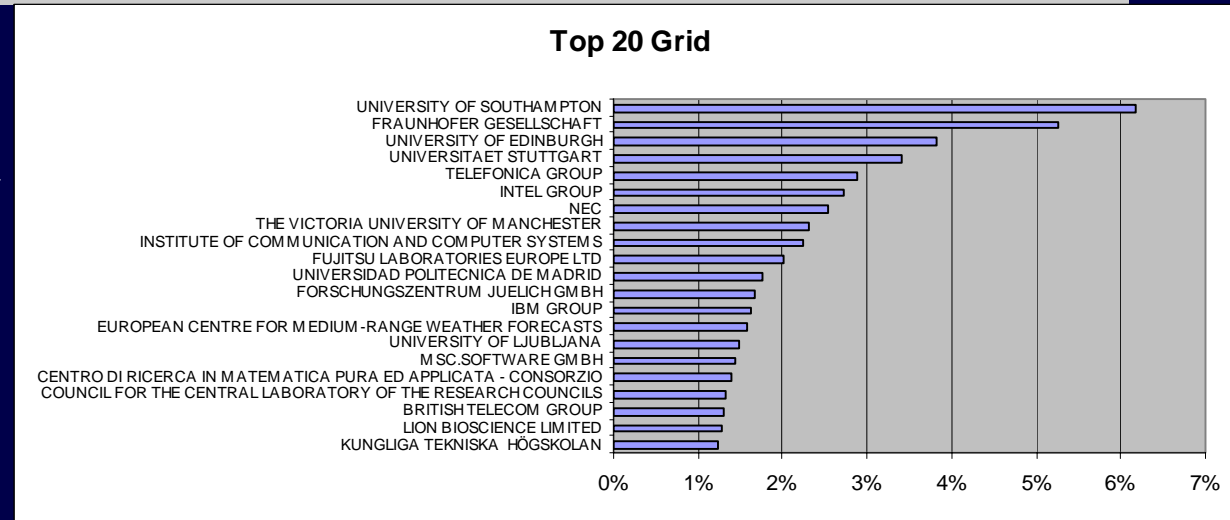


IST GRID constituency (call 1)

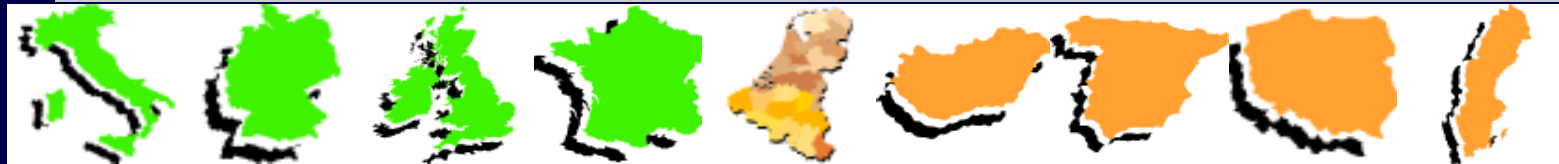


- UK and German organisations dominate GRID activities

- French organisations rank number 5



GridCoord: co-ordinated EU-wide initiative on Grid Research



- Situation in Europe
 - With more than 10 Grid Research programmes at MS & EU level, Europe is strong on Grid Research but fragmented
 - Weaknesses identified related to commercial exploitation of Grid research by European industry
- General Objectives
 - Overcome fragmentation and dispersion across EU to reinforce impact of national and Community research
 - Strengthen Europe's position in Grid Research and its exploitation

SSA/960 K€/18 months/13 partners

www.cordis.lu/ist/grids - Wolfgang Boch, INFISO F2

Trust and Security



From the 'walled fortress'

To the 'open metropolis'

Closed doors, physical isolation

Open, unbounded, interconnected

Security as protection

Trust as an enabler

Defending data and systems

Sharing content and resources

**Resilience, Interdependencies, Complexity, Vulnerabilities
Biometrics; Identity and Privacy, Authentication, Access;
Trust in the Net: Trusted Computing, Fight against Malware**

Current activities



Resilient Infrastructures

- **Dependable, resilient** ICT infrastructures
- **Manage and control** large scale dependable systems
- **Understand and manage** interdependencies

Biometrics

- **Usability** of biometrics in passports and visa
- Biometrics for **access to mobile or PC**
- **Smart cards vs Databases** for biometric data
- **Multimodality and interoperability**

Identity, Privacy, Rights, Assets

- **Identity** at home and on the move
- Location-based mobile services and **privacy**
- **Secure Handling Digital Assets** in the personal sphere
- Giving the **User control** over her/his **data** (DRM technology, RFID, Health card)

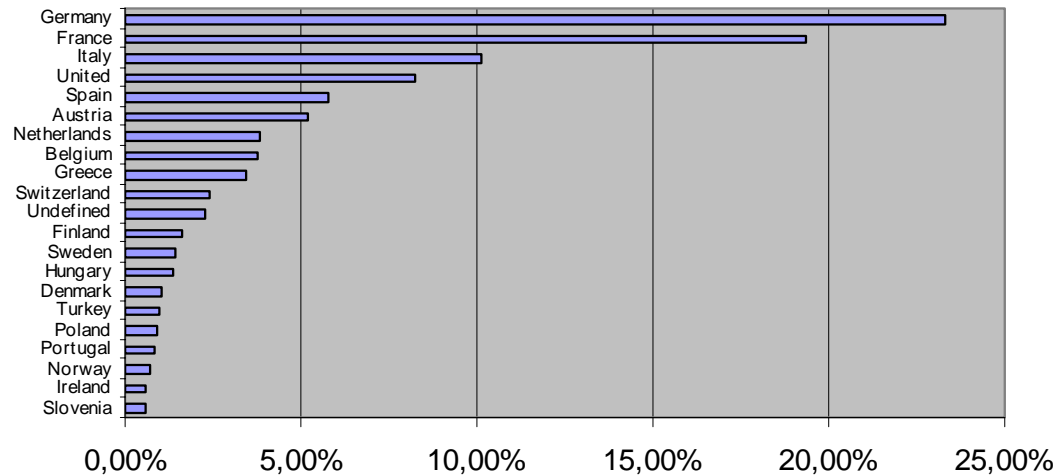
Trust in the Net

- **Secure Handling** Digital Assets (user and vendor); Open Trusted Computing
- **Security architectures** and models
- **Authentication** and Identification Reputation, dynamic trust marking
- **Auditing, reporting**, logging for forensics and law enforcement

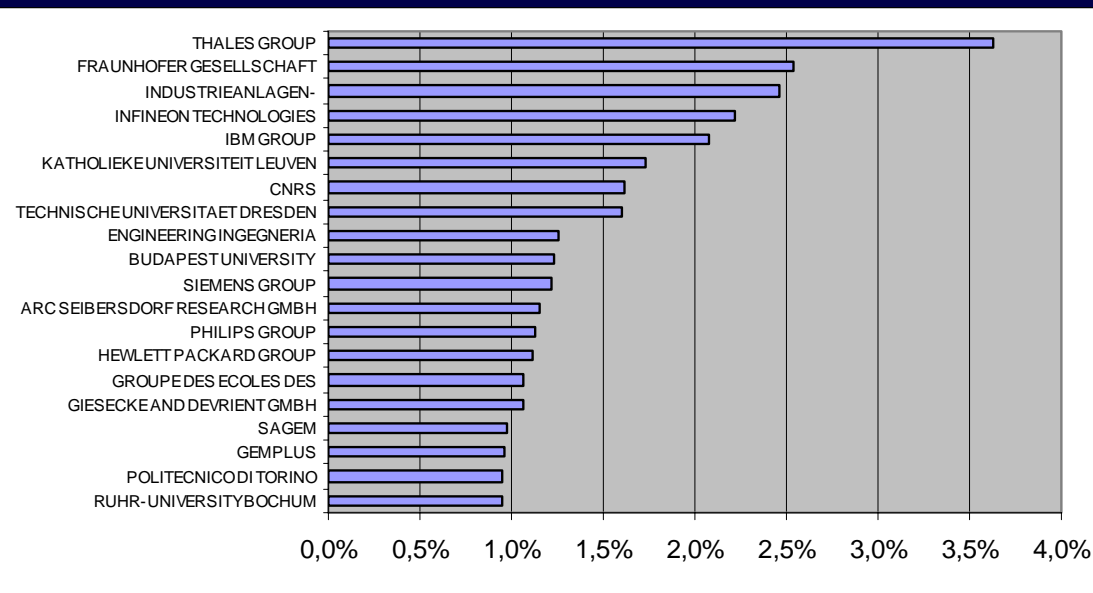
IST Trust and Security constituency



Top 20 Trust and Security



- France is the second largest beneficiary (total budget 143M€)



On-going Coordinated Actions



- **SecureIST:**
 - Brings together the FP6 projects on security and dependability
 - Provides inputs to a R&D agenda
 - Sets up an Advisory Board

- **CI2RCO:**
 - Builds the ERA dimension of R&D
 - Supports the International dialogue (with USA, CAN, AUS, etc.);
 - Brings together the representatives of the EU National R&D programmes

www.cordis.lu/ist/so/dependability-security/home.html
Contact: Jacques Bus, INFSO/D4

Outline of presentation



- European Programmes: Where are we today ?
- French participation in IST
- Support to GRID and security
- **The future: Main trends and drivers**
- The proposal for the next Framework Programme
- Conclusion

Europe's Challenges



- Global

- Increasing global competition
- De-localisation (including of R&D !)
- R&D investment gap

- Societal

- Ageing population
- Security
- Transportation
- Environment
- Energy
- Content and culture

ICT R&D	EU-15	US	Japan
Private sector investments	23 B€	83 B€	40 B€
Public sector investments	8 B€	20 B€	11 B€
Inhabitants	383 m	296 m	127 m
Investments / inhabitant	80 €	350€	400€.
ICT R&D as % Total R&D	18%	34%	35%

Source: IDATE (for EU-15); OECD

The case for ICT



- ICT – a key enabler for productivity growth & competitiveness
 - half of the productivity gains in our economies are due to ICT
 - ICT leading to completely new products and services
 - ICT underpins innovations in major products and services
 - ICT impacts business efficiency across the economy
- ICT – an important sector in its own right
 - from 4% of EU GDP in early 90s to more than 6% today
- ICT – underpins progress in all science & technology fields
 - computation and simulation, data handling, sensing, control, collaboration, etc. in biotech, genomics, medicine, energy etc.

ICT to address key societal challenges



- ICT – providing tools for addressing key societal challenges
 - ageing population, inclusion, health and social care
 - education, learning and preserving cultural diversity, entertainment
 - security, safety, transport, environment and risk management
- ICT – a facilitator for more efficient public services
 - helps modernise administrations and public services
 - allows more participation in democracy and public life

The way to increase Europe competitiveness ?



Triadic
patents
DG RTD
/OECD

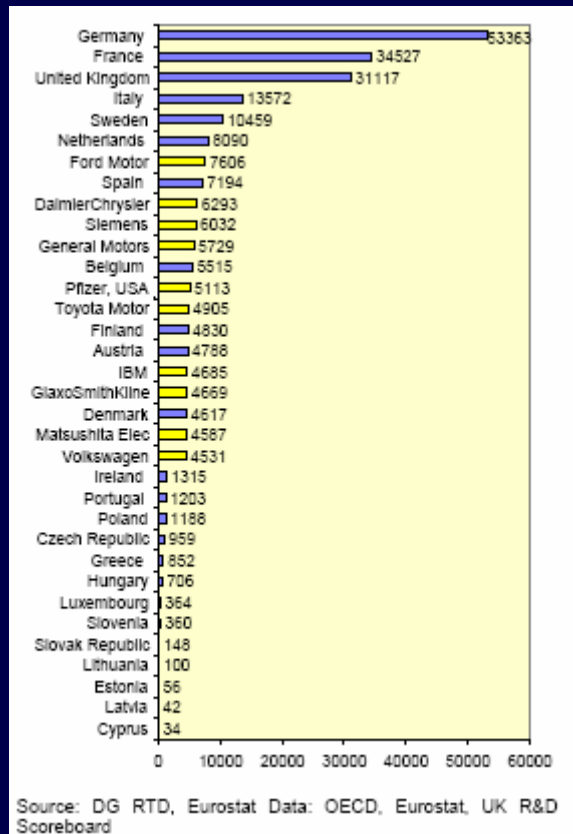
“Creating value from new knowledge resulting from research and innovation”

- More R&D investment
- More researchers and a more attractive environment
- More mobility
- More competition to stimulate excellence
- Better coordination of National research efforts
- Better innovation systems

R&D
Spending
Lemonde/OECD



Joining forces to Reach critical mass



R&D expenditure of
EU 25 compared
with top 10 multinationals

More than just technology and research..



- ✓ Understanding user requirements
- ✓ Understanding business and markets
- ✓ Regulatory framework
- ✓ Standards
- ✓ Take up and innovation

Changing the mindset..

- How can we better exploit research results ?
- How can we create more successful start-ups ?
- How can we further promote an entrepreneur culture ?
- How can you help ?

Outline of presentation



- European Programmes: Where are we today ?
- French participation in IST
- Support to GRID and security
- The future: Main trends and drivers
- The proposal for the next Framework Programme
- Conclusion

FP7 – Continuity & New Impetus



Commission proposal (April 6)

- Continuity

- European Research Area
- Thematic priorities
- Researcher's mobility
- SME measures

-> Seven years duration

- New Impetus

- Joint Technology Initiatives
- European Research Council
- New research infrastructures
- Flexible instruments

-> Doubling of budget ??

FP7: Four Inter-linked Objectives



- Gain leadership in key fields by supporting **cooperation**
- Stimulate **excellence** through competition
- Develop and strengthen **human capital** of research
- Improve research and innovation **capacity**



Collaborative research

ICT in FP7 – Objectives



- Strengthening the competitiveness of all industry in Europe
 - ICT for innovation and growth
- Re-inforcing the competitive position of European ICT sector
 - Build industrial and technology leadership in ICT
- ➔ Enable European industry and service sectors to *move up the value chain* and keep *innovation and creativity* in Europe
- Supporting EU policies
 - Mobilise ICT to meet public and societal demands
- Strengthening the European science & technology base
 - ICT for science and technology

“Mainstreaming” ICT



- Stimulate innovation from the **use** of ICT
 - Deeper embedding, end-to-end integration and interworking
 - To develop innovative goods and transform processes
- Bring technology closer to people and organisational needs
 - Involve users earlier in the process
 - Hide technology complexity and reveal functionality on demand
 - Make ICT more reliable and trusted

Pushing the Limits of Technology



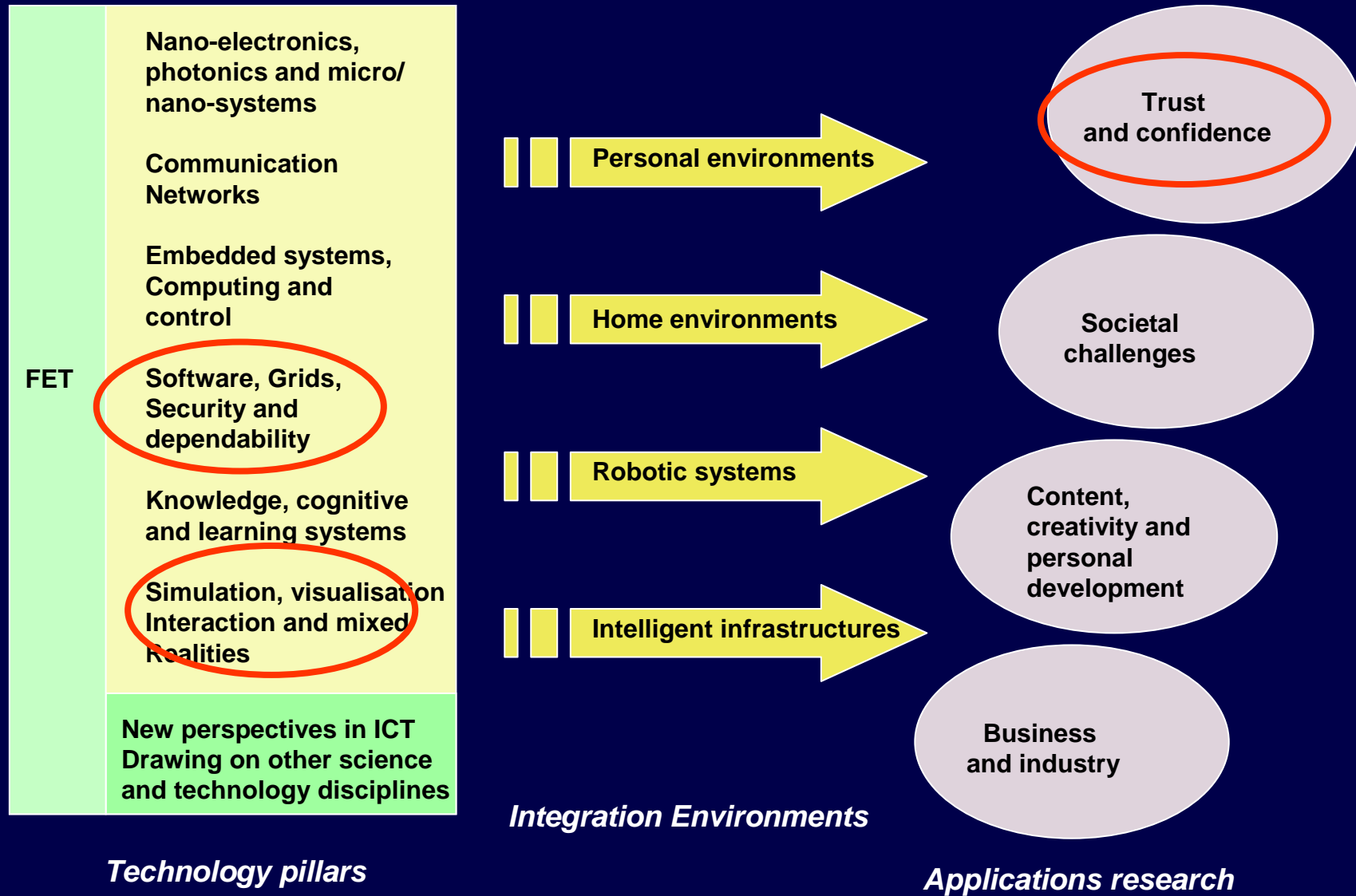
- Explore the **cross-roads**
 - Digital convergence
 - Info-nano-bio-cogno
 - ICT drawing on other sciences and technologies
 - ICT at the center of advance in other disciplines
- Pursue **new avenues**
 - Miniaturisation, integrated multi-functionality
 - Networked, embedded and wireless systems
 - Systems that contextualise, learn and act autonomously

IST in FP7: Main Themes and Activities



- ICT Technology Pillars
 - pushing the limits of performance, usability, dependability, cost-efficiency
- Integration of Technologies
 - integrating multi-technology sets that underlie new functionalities, services and applications
- Applications Research
 - providing the knowledge and the means to develop a wide range of ICT-based services and applications
- Future and Emerging Technologies
 - supporting research at the frontiers of knowledge

Proposed structure



Integration of Technologies



- Personal environments
 - personal communication and computing devices, wearables, implants..
- Home environments
 - communication, monitoring, control, assistance;
- Intelligent infrastructures
 - tools making infrastructures that are critical to everyday life more efficient, easier to adapt and maintain,
- Robotic systems
 - advanced autonomous systems; cognition, control, miniaturisation

Applications Research



- ICT meeting societal challenges
 - for health; to improve inclusion; for mobility; in support of the environment; for governments
- ICT for content, creativity and personal development
 - new media and content; technology-enhanced learning; digital cultural assets
- ICT supporting businesses and industry
 - business processes; collaborative work; manufacturing
- ICT for trust and confidence
 - identity, authentication, authorization, privacy, rights



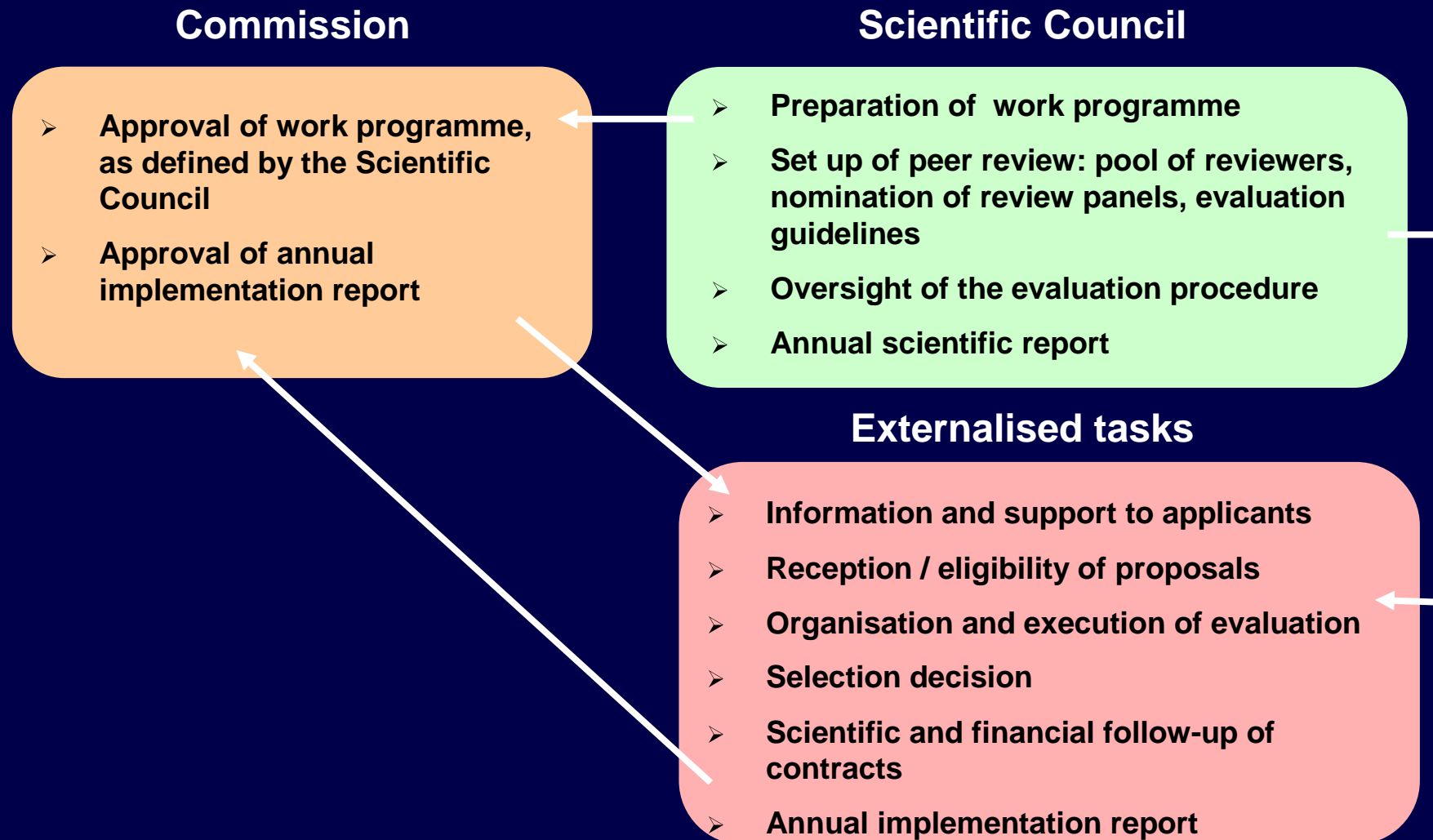
Basic research (European Research Council)

ERC: Main principles



- ✓ **Bottom-up** and selection solely based on **scientific excellence**
- ✓ Level of **funding adequate** to attract best scientists and teams
- ✓ **Minimal administrative requirements**
- ✓ Implementation and management by an **autonomous and independent structure**
- ✓ **Transparent mechanism** for management, peer reviews and award decisions
- ✓ Appropriate reporting regime to ensure **accountability in scientific and financial terms**

ERC – European Research Council





Budget proposal

Proposed budget: 2007 - 2013



Commission proposal (April 6)

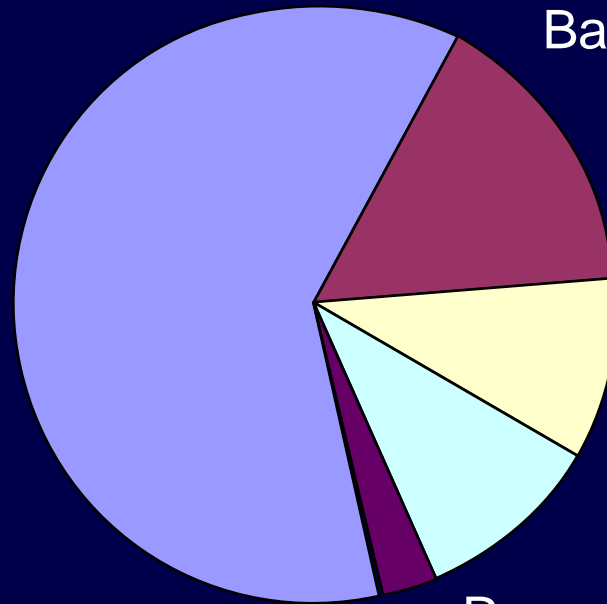
Collaborative R&D: 44 B€ (61%)

Basic research: 12 B€ (16%)

People: 7 B€ (10%)

Research infrastructure: 7 B€ (10%)

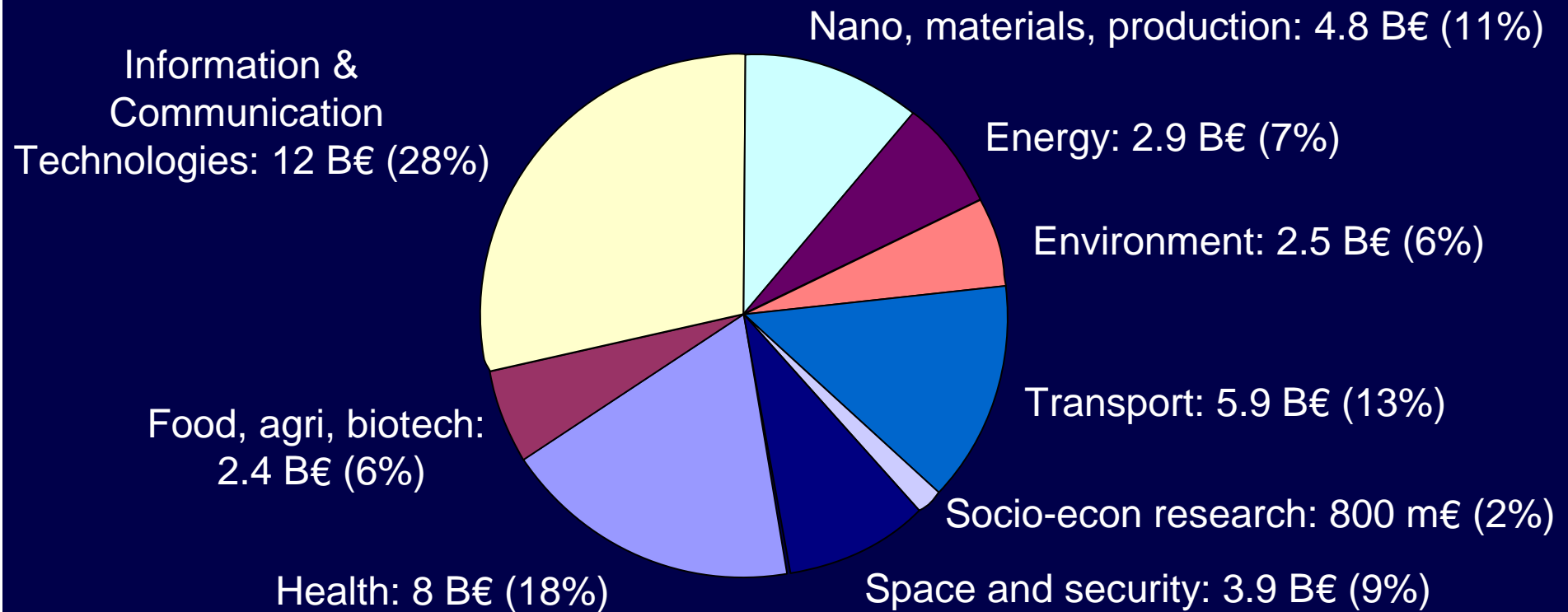
JRC: 1.8 B€ (3%)



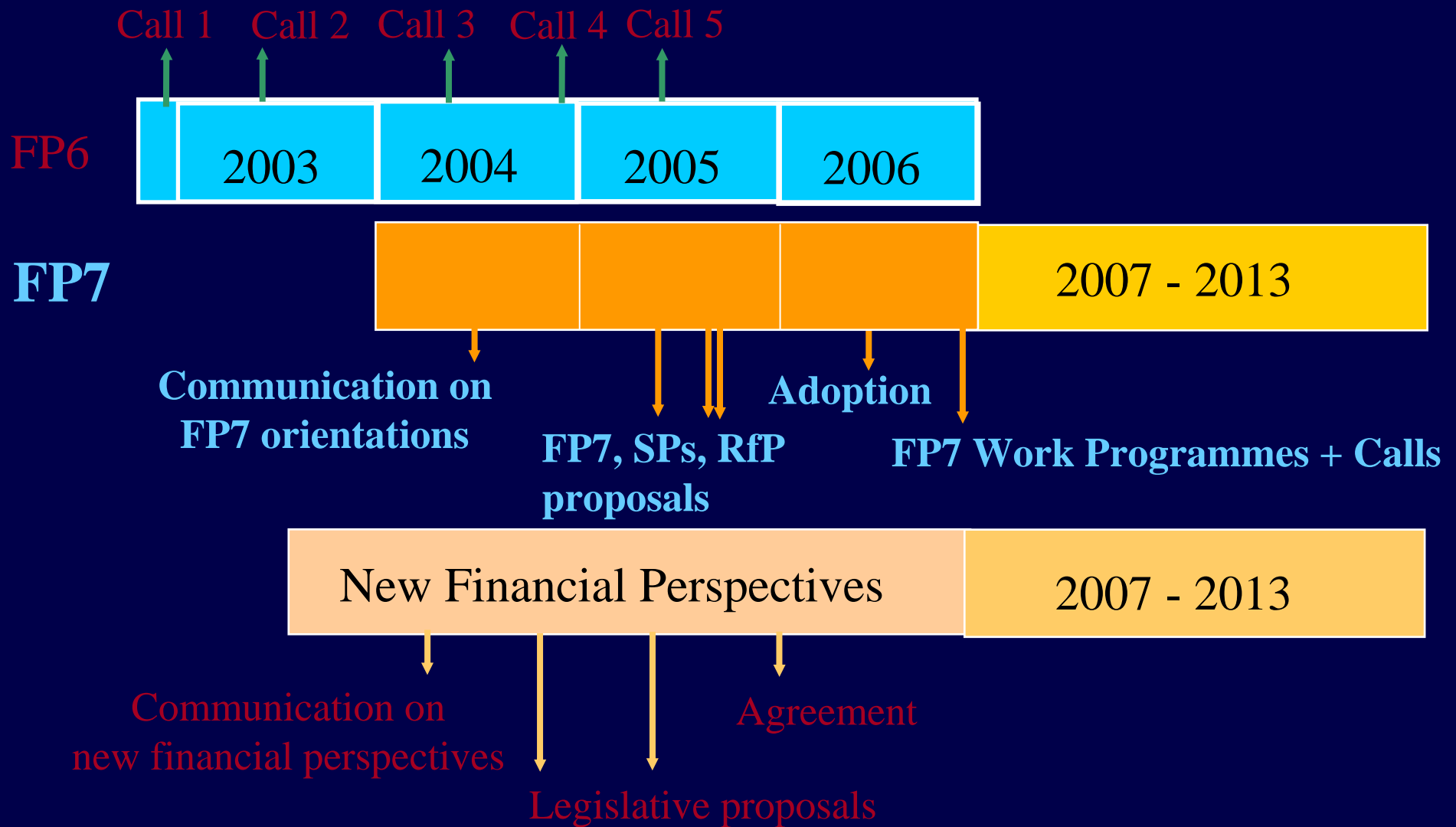
Collaborative Research Themes



Commission proposal (April 6)



Timetable



Options for Grid, Trust and Security in FP7



Technology pillar: Software, Grids, security and dependability

“dynamic, adaptive, dependable and trusted software and services, and new processing architectures, including their provision as a utility”

– For Grid..

- **Technology Pillar: “Simulation, Visualisation, Interaction and Mixed Reality”**

“tools for modelling, simulation, visualisation, interaction, virtual, augmented and mixed reality; tools for innovative design and for creativity in products, services and digital audio-visual media”

– For Trust and security...

- **Applications Research: “ICT for trust and confidence”**

“identity management; authentication and authorization; privacy enhancing technologies; rights and asset management; protection against cyber threats”

Consultation process – contributions welcome



For ICT in general and your areas in particular:

- What are the main trends and challenges?
- What are the enablers?
- What are the main research issues?
- Who should be involved?
- What is the rationale for EU-level intervention?

 Time frame: First quarter of 2006

Conclusions



- EU programmes play an important role in structuring research activities in Europe
- French organisations are very well positioned in IST research and have successfully adopted the New Instruments introduced in FP6
- Information and Communication Technologies can help Europe respond to serious global and societal challenges
- Grid/Software/Security can help provide some of the answers: You need to show how
- We need your support to refine future research priorities
- Beyond R&D, it is important to further develop a culture of entrepreneurship and innovation and you can help.

For Further Information



IST:

<http://www.cordis.lu/ist/contacts>

General FP6/FP7:

[http://europa.eu.int/comm/research/fp6/
.../research/future/index_en.cfm](http://europa.eu.int/comm/research/fp6/.../research/future/index_en.cfm)

IST infodesk

E-Mail : ist@cec.eu.int

Fax : +32 2 296 83 88

On to you...



- How important is European Research to you ?
- Do you think the new orientations taken at the beginning of FP6 will lead to success ?
- What should be the main priorities for FP7 ?
- What needs to be changed ?
- ...