IPv6 Summit

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Next Generation Networking Initiative

Funding Opportunities for Industry

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Presentation Outline

- Next Generation Networking:
  a Vision and its Challenges
- Working in Progress
- NGN-Initiative
- Opportunities & Priorities for 2001

Next Generation Networking
Defining Our Vision …
… and Its Challenges

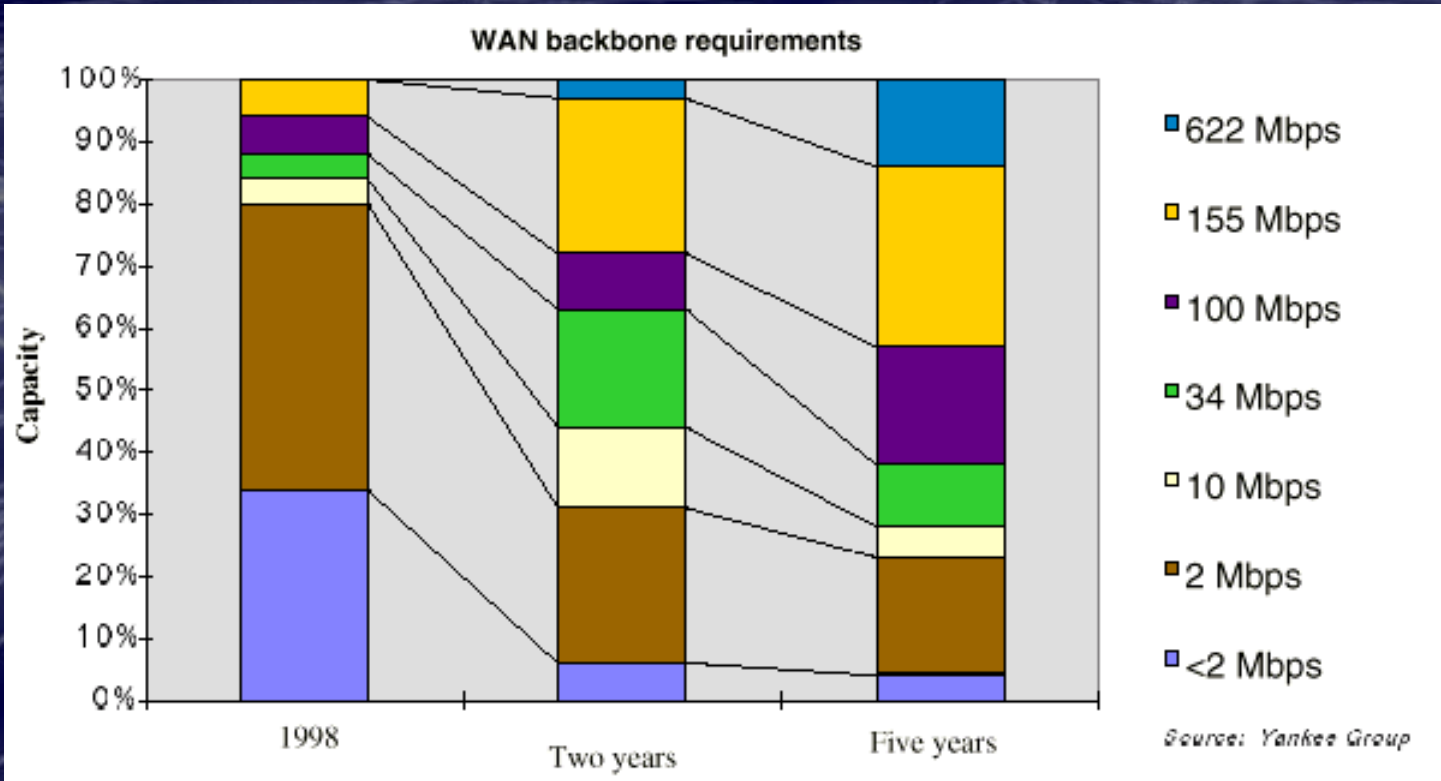
The New Economy and the Knowledge Society

New technologies are driving the economy

- all sectors
- all businesses
- increase productivity
- create new business
- open new markets

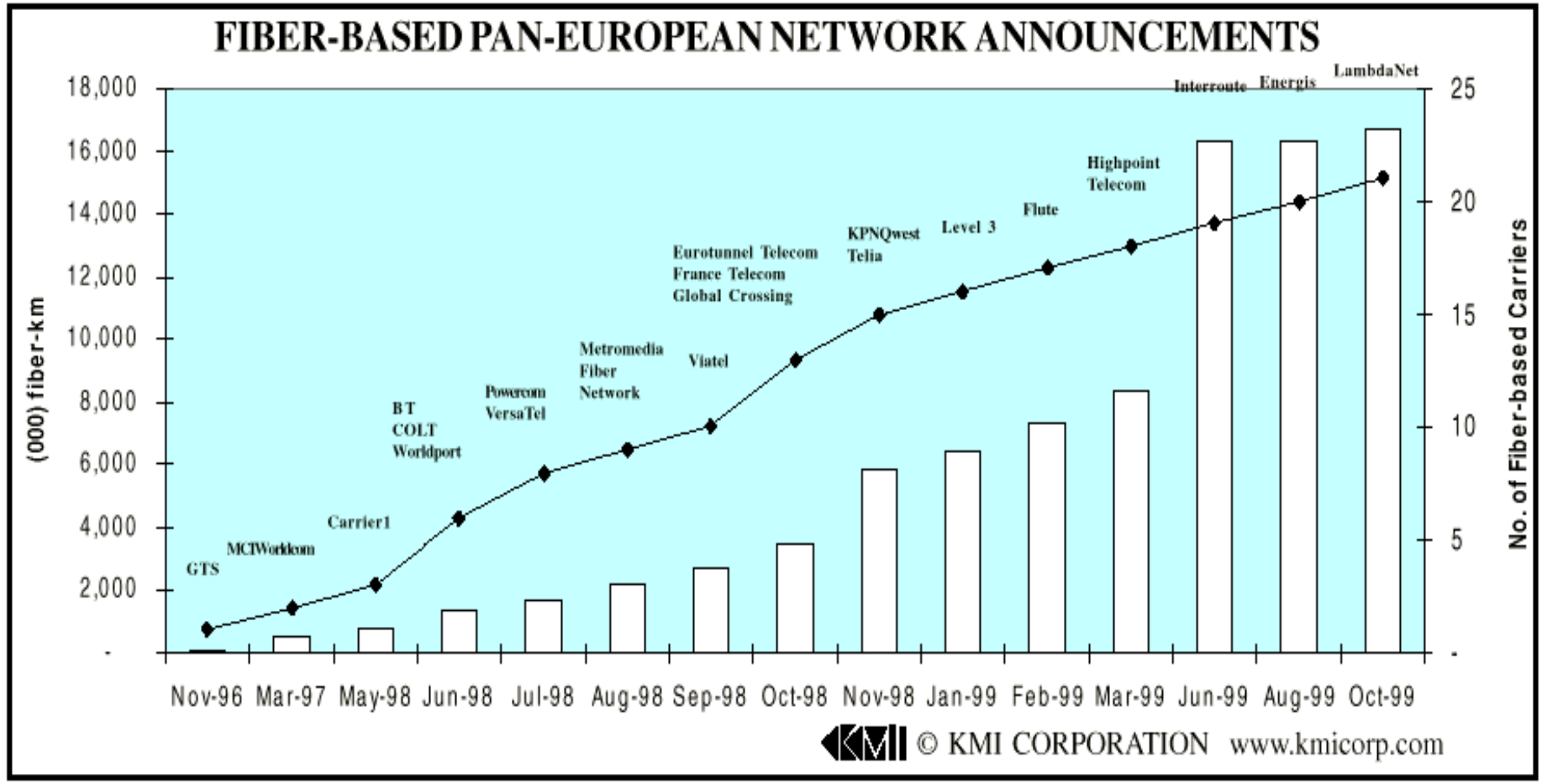
A networked economy is the key factor for growth, competitiveness and employment

Evolution of Needs in EU



Optical Fiber Deployment in EU

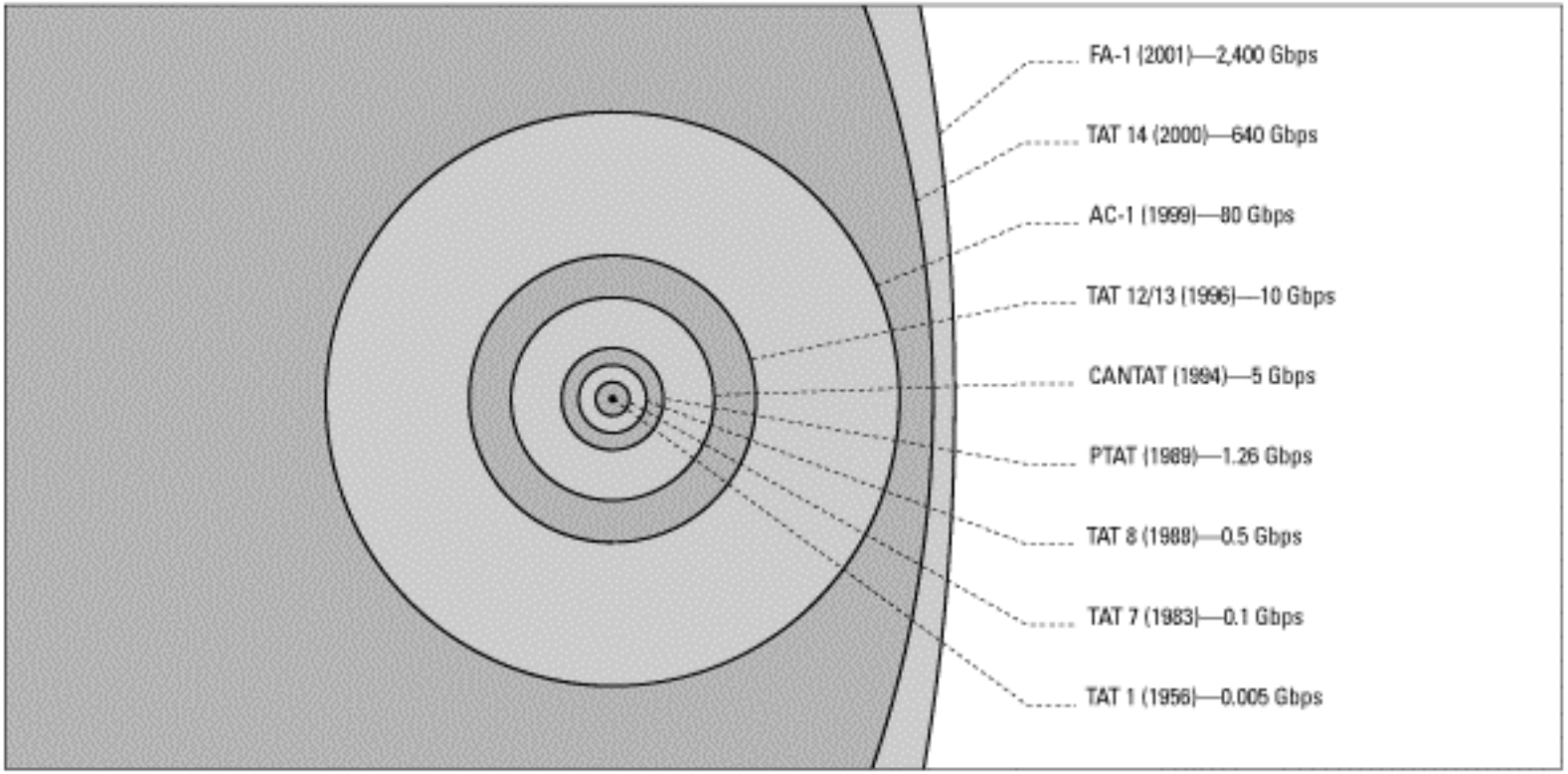
Image © Ericsson Media lab



Bandwidth Explosion

Image © Ericsson Media lab

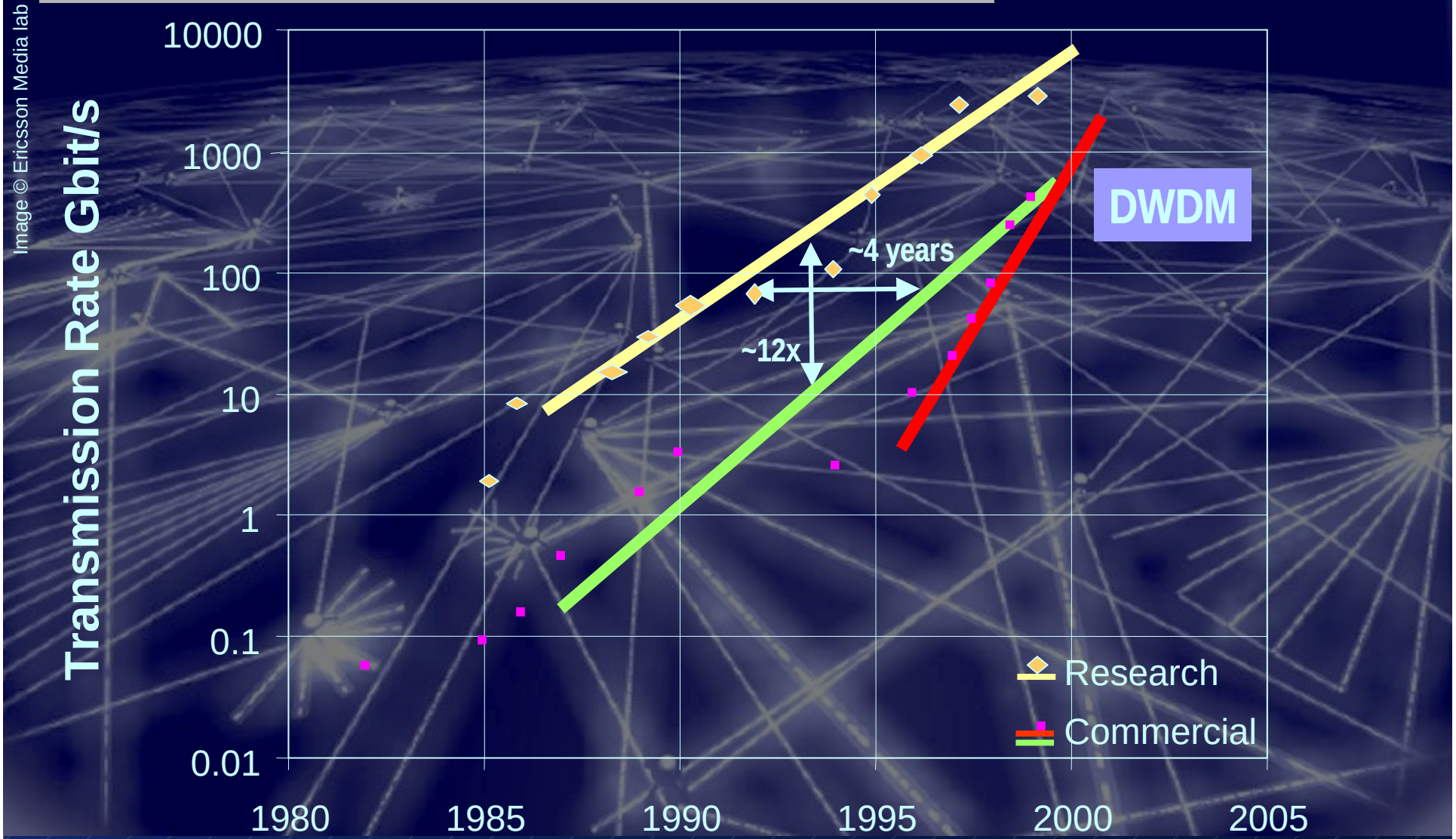
Figure 1. The Undersea Bandwidth Explosion



Note: Submarine cables are scaled to capacity when cable was put into service.

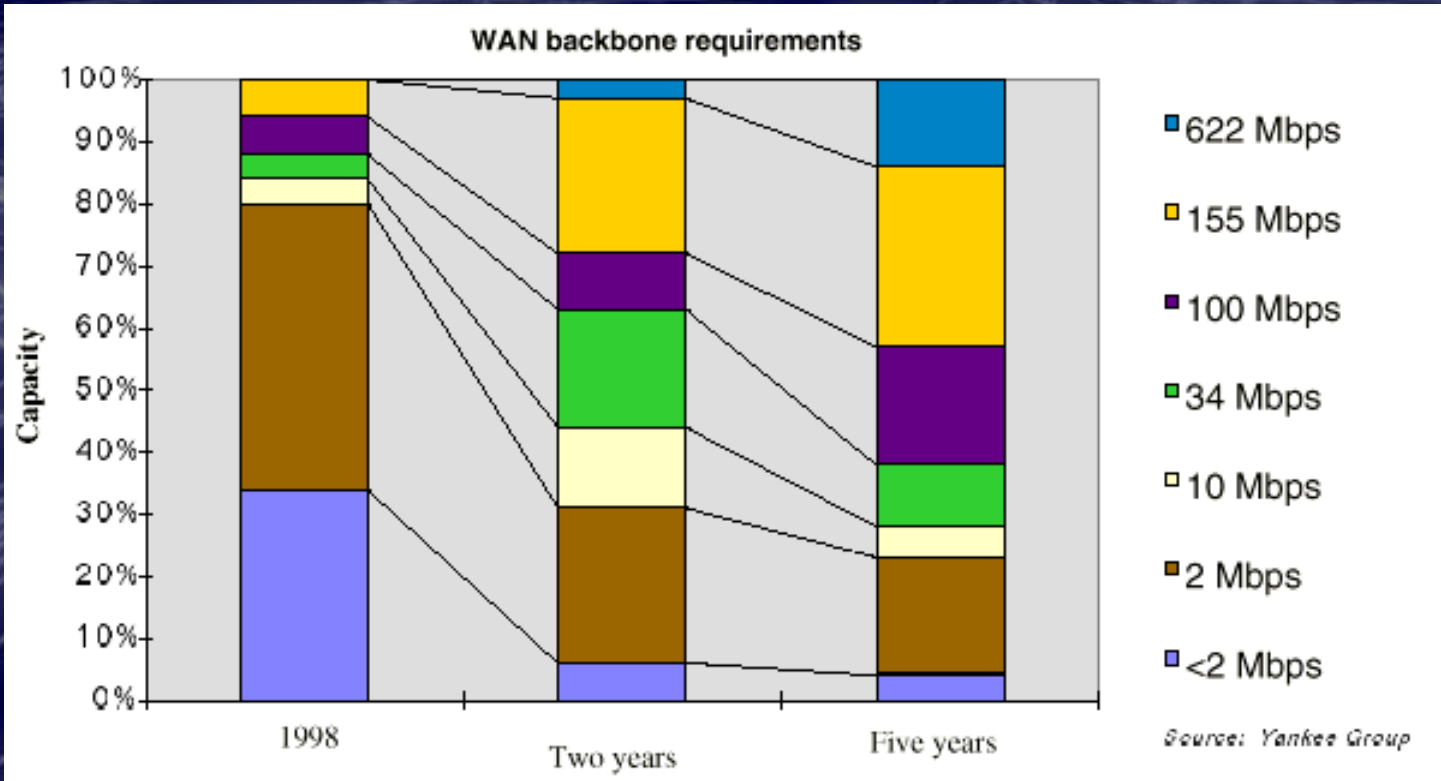
Source: TeleGeography, Inc.

Photonics Technologies

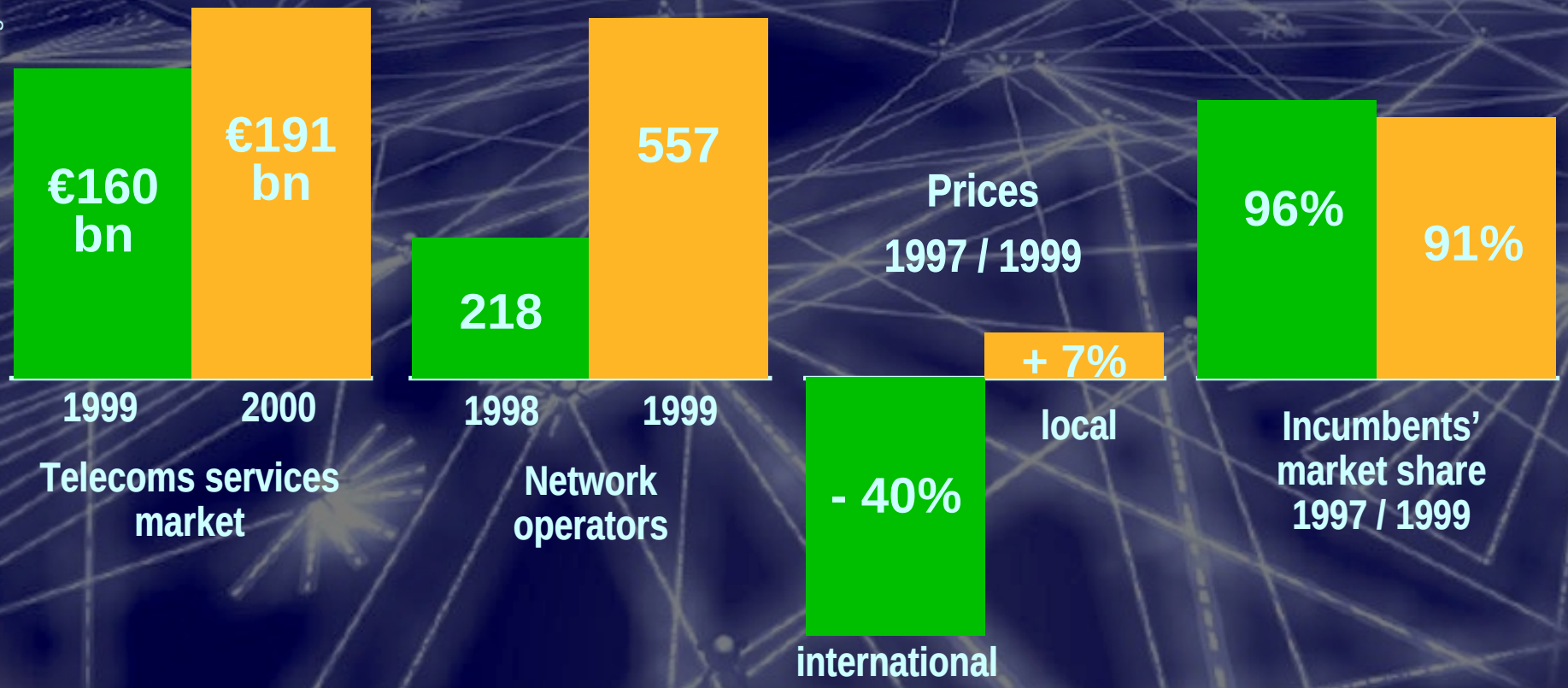


Can We Meet Those Needs?

Image © Ericsson Media lab

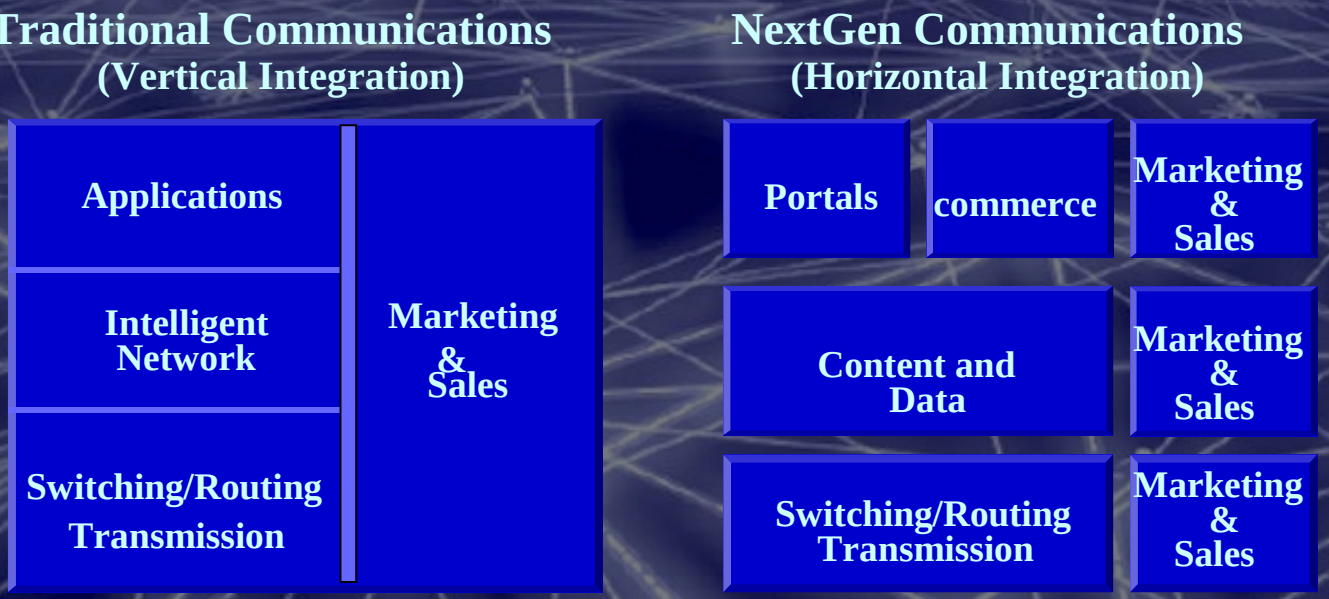


1998 Telecom liberalisation : Work in progress



The Communication Industry

- **New Actors and New Business Models**



Optical Networking Paradox

- Problem areas are non optical
- Optical hardware a decreasing problem
- Priority toward the higher layer

The rise of the stupid network

- Simple open network
- Third party innovation
- Distributed intelligence on the edges
- Smarter and more active than today's Internet
- Flexibility and scalability
- Optical core/varied access
- Premium for all

Remaining Challenges: Access Networks

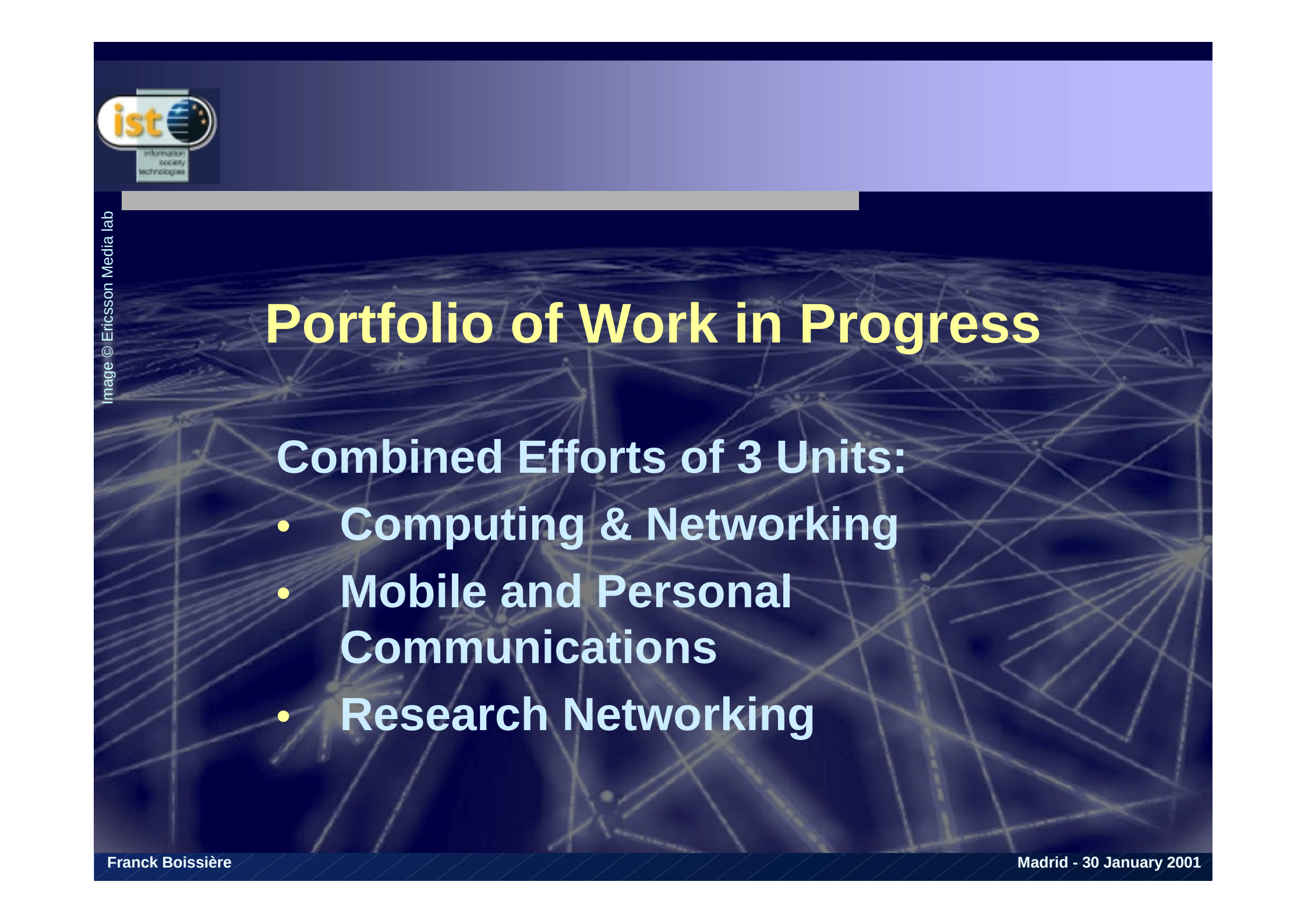
LOW COST - AFFORDABLE ACCESS!

Anyone, Anywhere, Anytime

- **Efficiency & Technology Independence (wireless, xDSL...)**
- **Flexible Bandwidth Allocation**
- **Cheap and easy-to-use Access Gateways**
- **Always on**

Challenges for MANs

- Support All Services (Internet, Mobile, Broadcast)
- Flexible Bandwidth Allocation
- Flexible Equipment
- Interfacing with Higher Layers (IP)
- Interworking with other Networks
- Management System
- Protection and Restoration

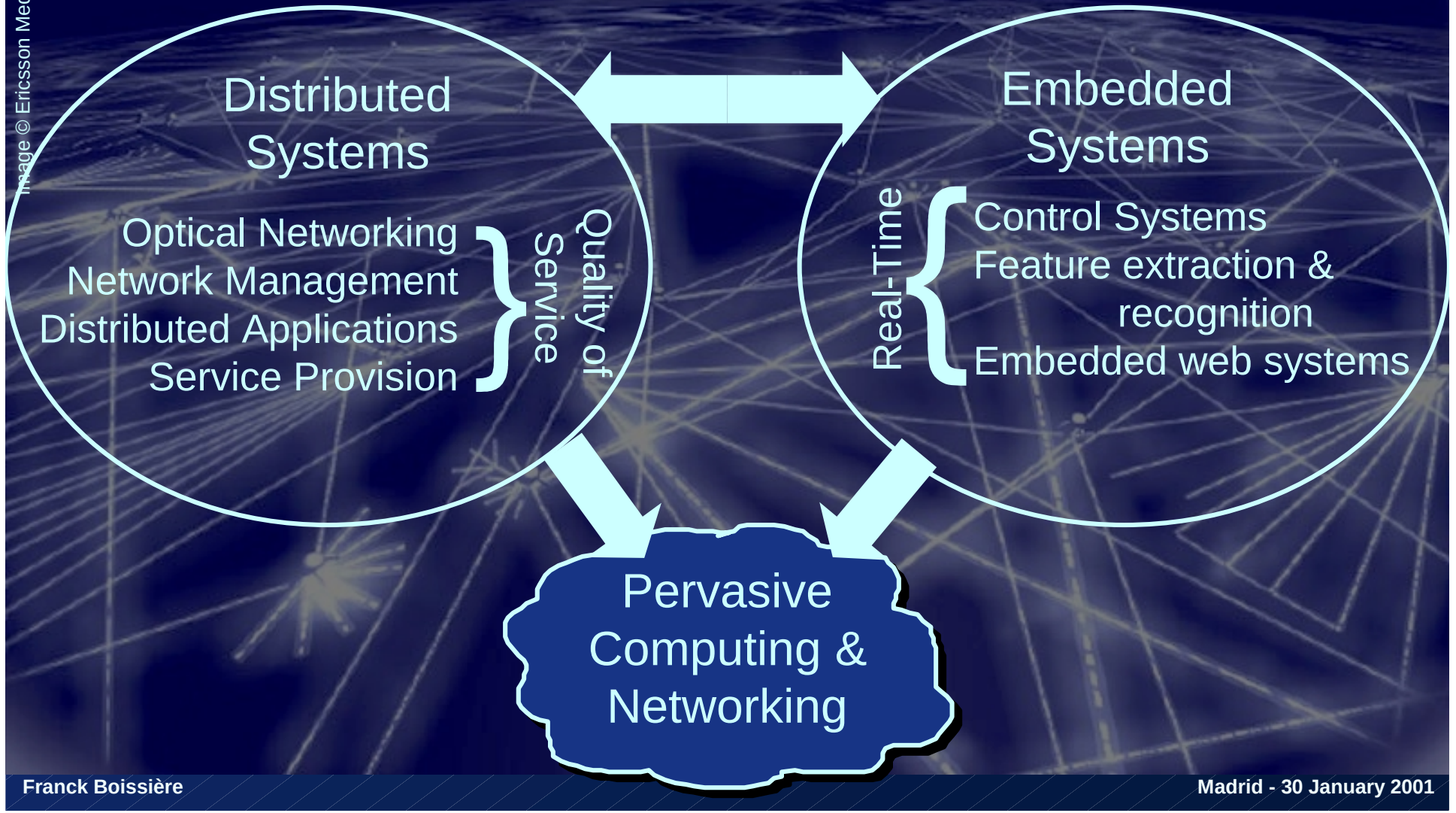


Portfolio of Work in Progress

Combined Efforts of 3 Units:

- Computing & Networking
- Mobile and Personal Communications
- Research Networking

Computing and Networking



Distributed Systems Functions and Enablers

CORPORATE NETWORKS VPNs

COMPUTING

BACKBONE NETWORKS

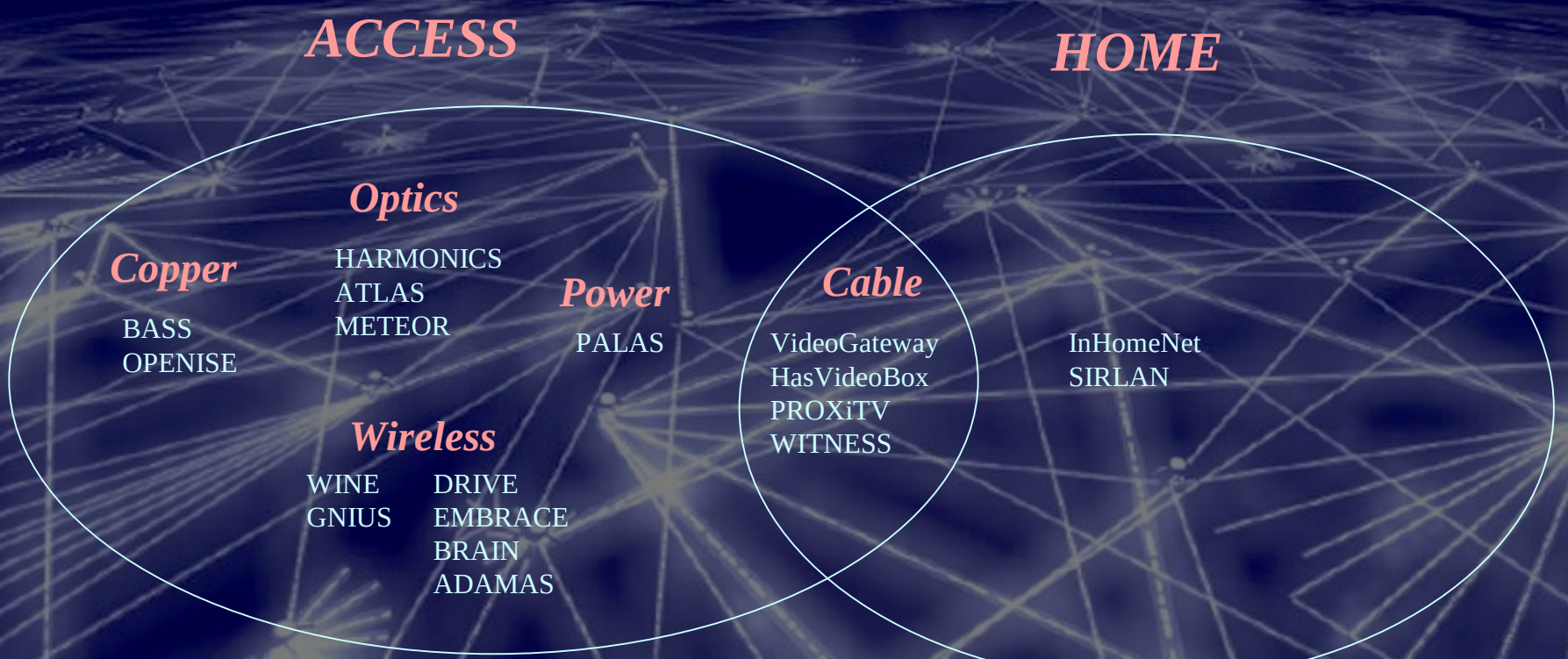
PHOTONICS

INDIVIDUAL ACCESS/ HOME NETWORKS MOBILE/FIXED

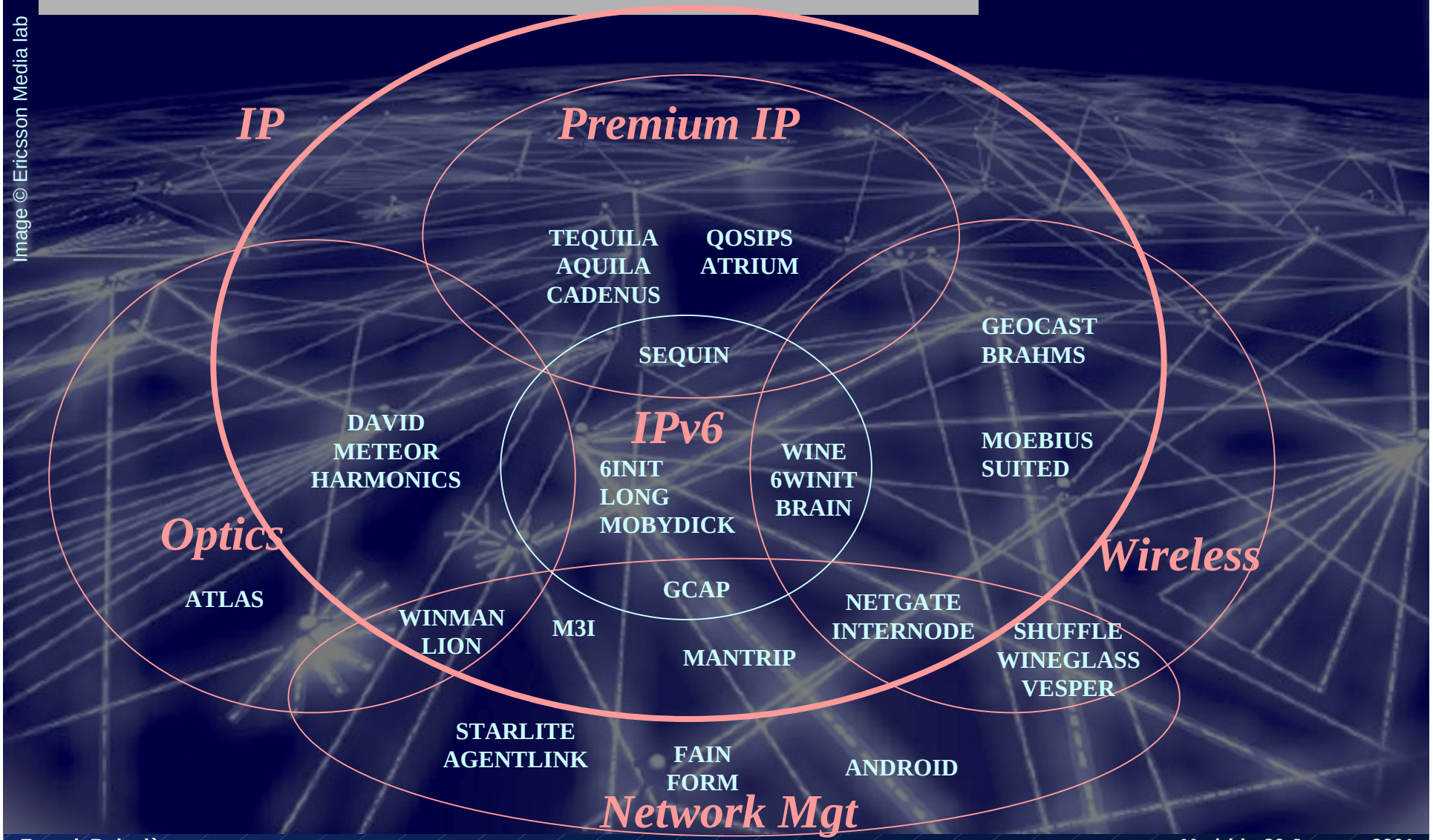
MICROELECTRONICS

Networking Integration (protocols)

Thematic Grouping of Projects



Thematic Grouping (2)



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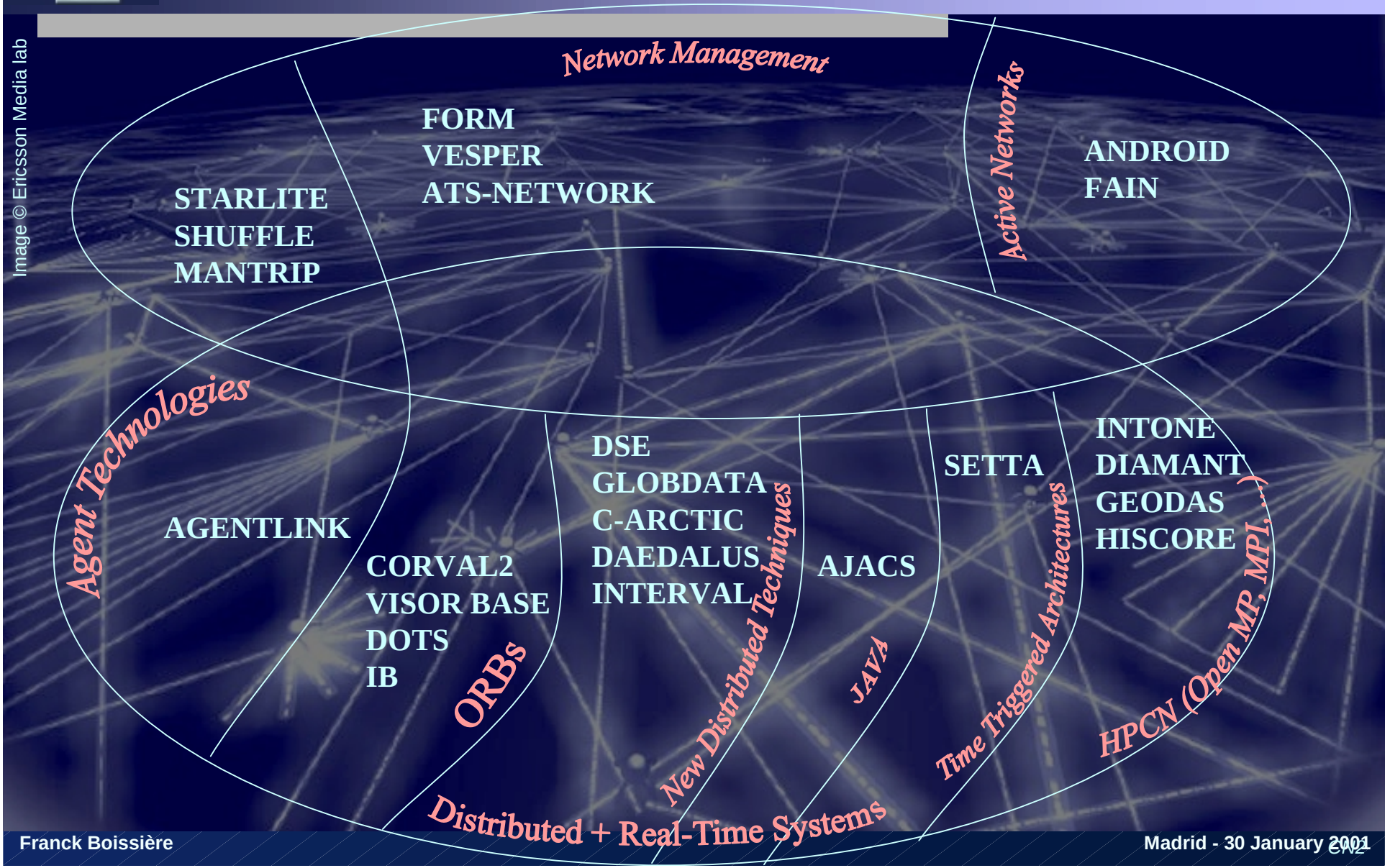
Thematic Grouping (3)



Our Response: A New Initiative & Further Targeted Opportunities

NGN initiative
Next Generation Networks

NGN-I: Mission

Pull Existing and Future Efforts Together to Build a Critical Mass Able To:

- To resolve issues that create barriers to deployment
- To achieve interoperability, compatibility and/or commonality

NGN-I: Approach

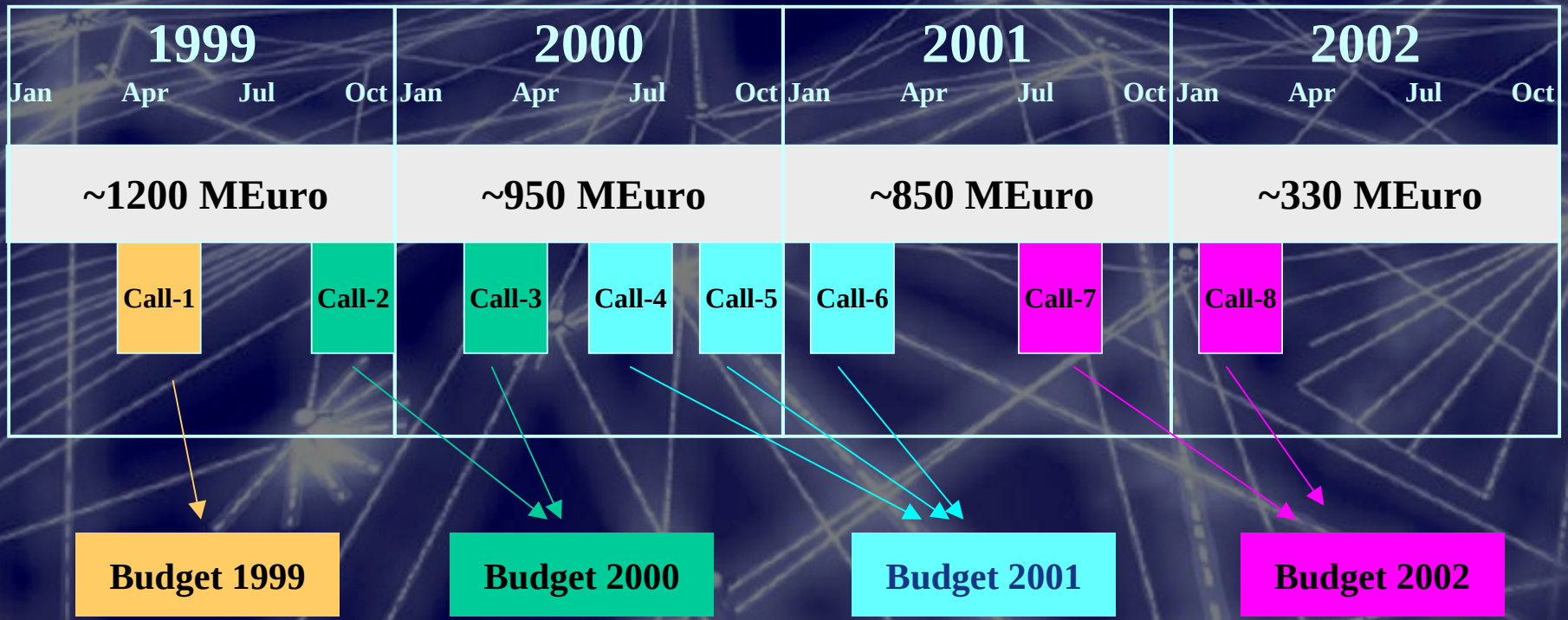
- “Clustering” of R&D efforts.
- Co-ordination of standards contributions
- Technology benchmarking
- Roadmaps

Image © Ericsson Media lab

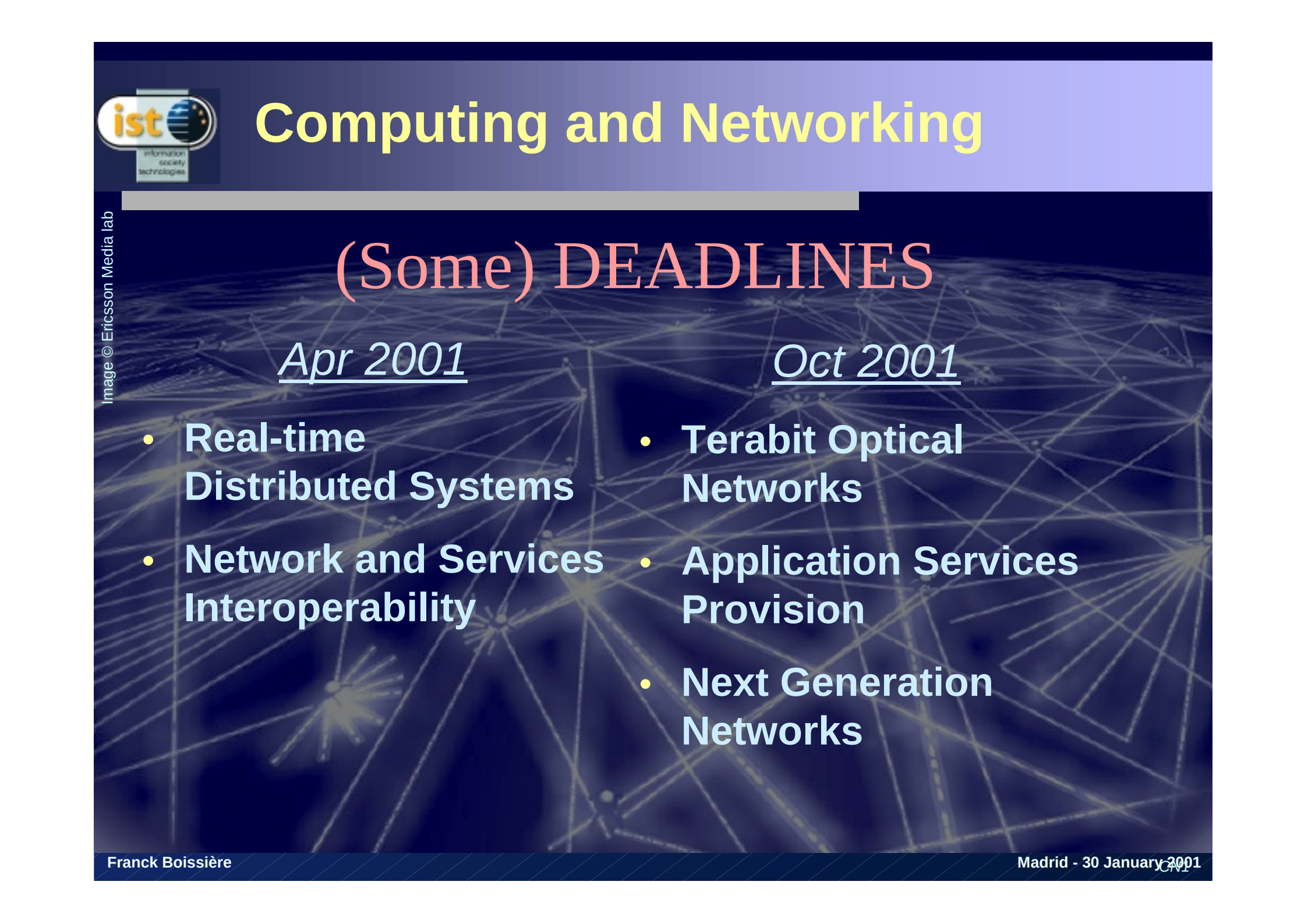
Workprogramme 2001
Opportunities & Priorities

IST timetable

Entering the Last Rounds



Computing and Networking



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(Some) DEADLINES

Apr 2001

- **Real-time Distributed Systems**
- **Network and Services Interoperability**

Oct 2001

- **Terabit Optical Networks**
- **Application Services Provision**
- **Next Generation Networks**


Image © Ericsson Media lab
NGN
initiative
Next Generation Networks

IV.2.2 - Network and services interoperability interworking and mgt

April 2001 Deadline

- **To increase bandwidth, QoS, and functionality**
  - FOCUS: network gateways and protocols
- **To support service interworking and network management**
  - FOCUS: active and dynamically reconfigurable networks

V.1.6. - CPA 6 : Next-Generation Networks

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October 2001 Deadline

- **Objective**
  - foster deployment of an “open” modern networking infrastructure supporting industry driven large-scale experimentation
- **Focus**
  - technology validation - Fixed - mobile interworking, Management across different network layers, Higher and lower layer protocols (e.g. IP over WDM, MPλS), Mobile IP, Access/core networks interoperability, IPv6, etc.
  - full service demonstration - Scalability, Security, Availability, Accounting/Settlements, QoS, etc.
  - usability testing - Application requirements in specific domains

V.1.6. - CPA 6 : Usability Testing

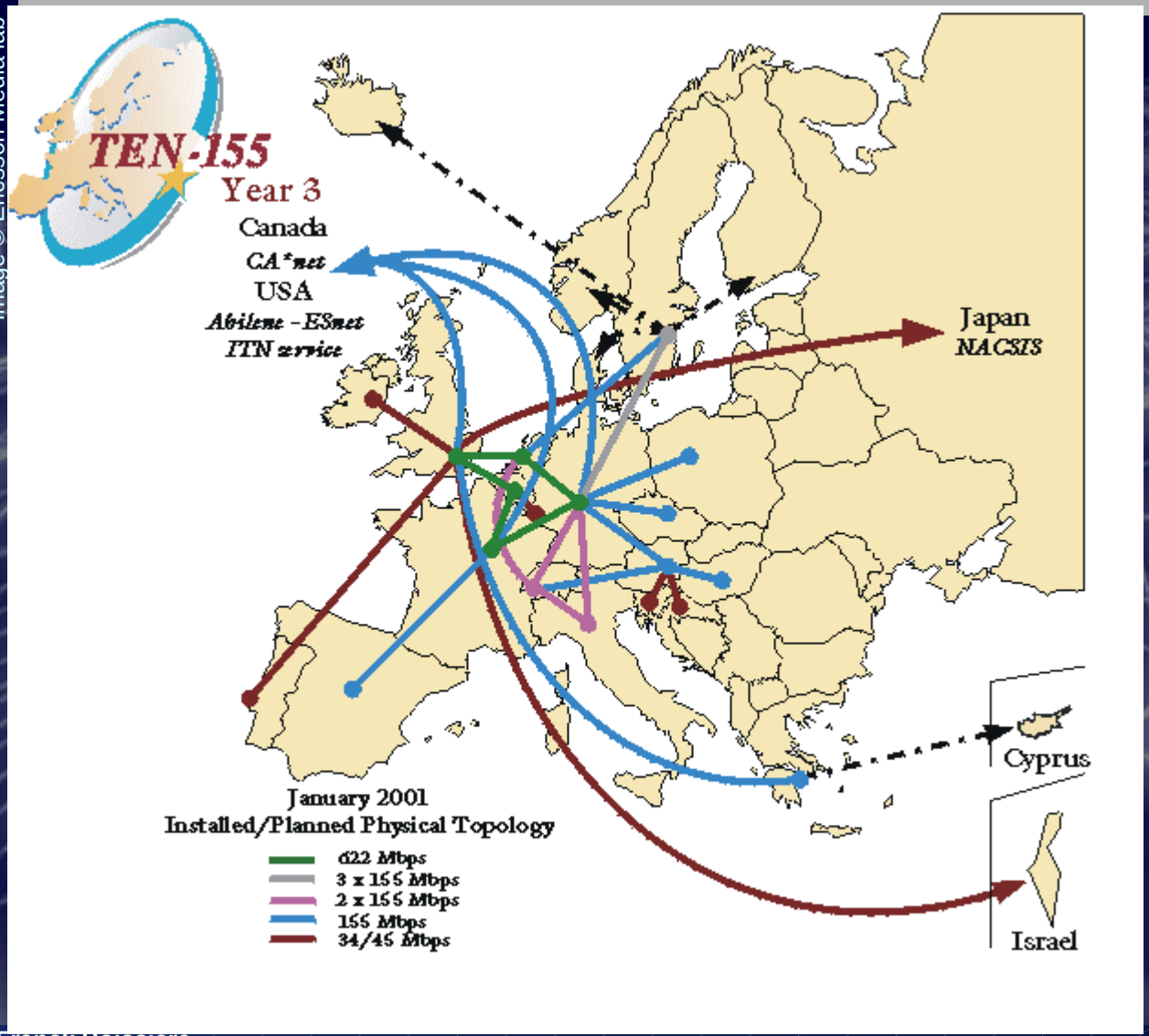
- **Application requirements in specific domains**
  - Virtual Museums (Semantic Web)
  - Distributed Engineering
  - Collaborative Working (VR)
  - Unified Messaging
  - Virtual Home Environments

V.1.6 - CPA 6 : Next Generation Networks

Remark

- “Next Generation” refers to NETWORKS not applications
- “Next Generation” refers to NETWORKS not components

NGN Examples: Building on GEANT



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80M€ Funding

over 4 years

Start from TEN155

For all R&D

TF-NGN

NGN Examples: Building on GEANT

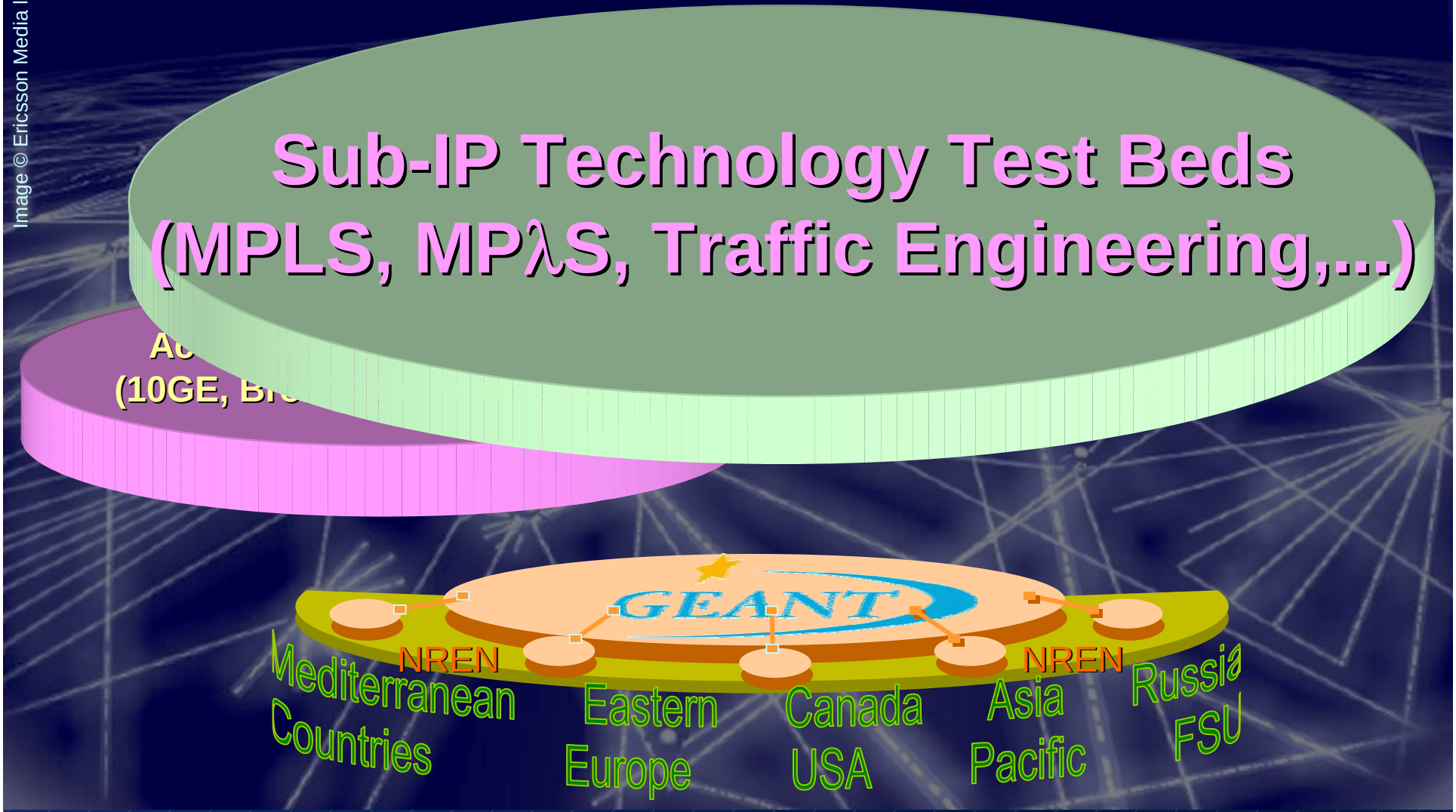
Image © Ericsson Media lab

NGN Examples: Building on GEANT

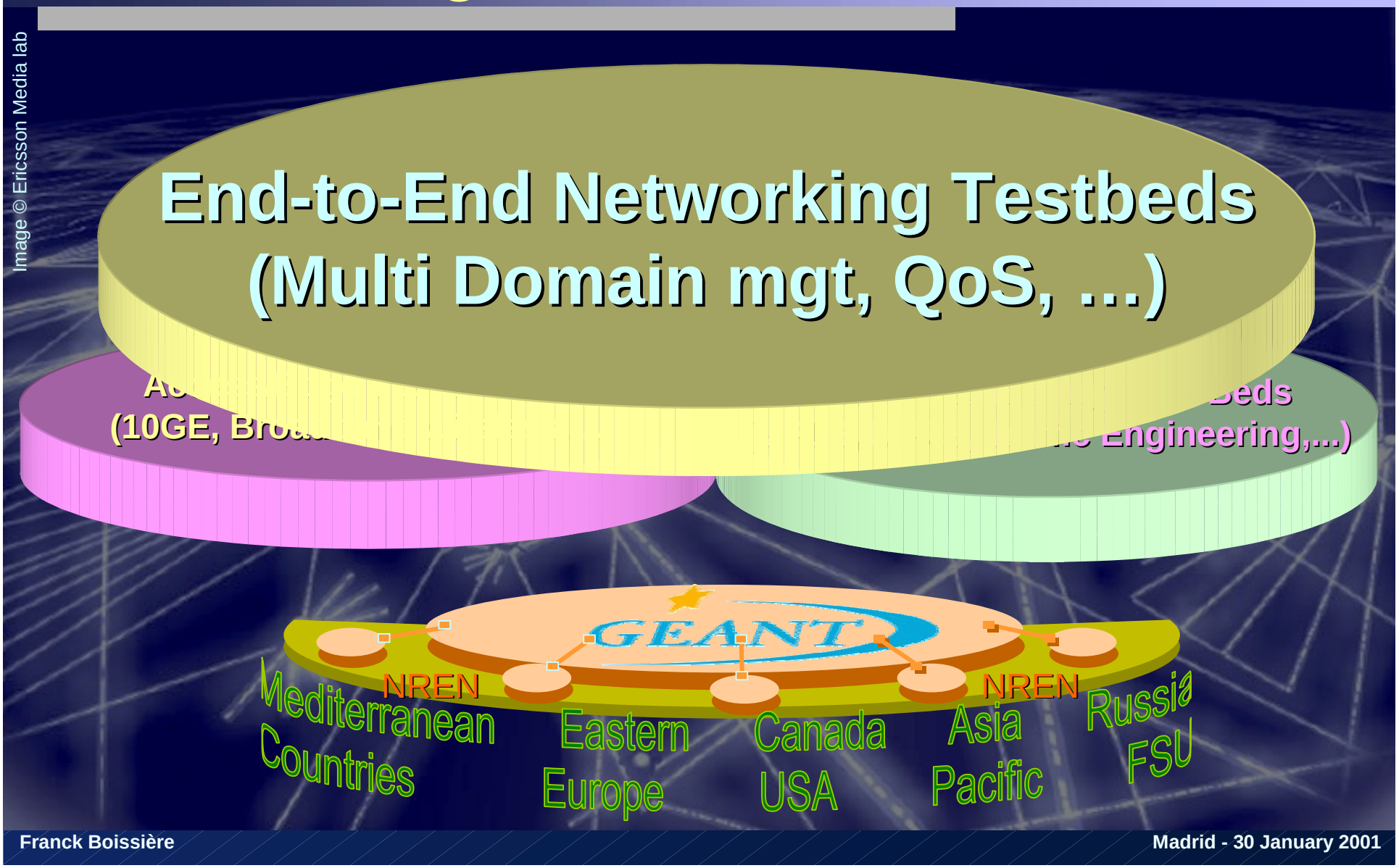
Image © Ericsson Media lab

Access/Edge Technologies (10GE, Broadband wireless, ...)

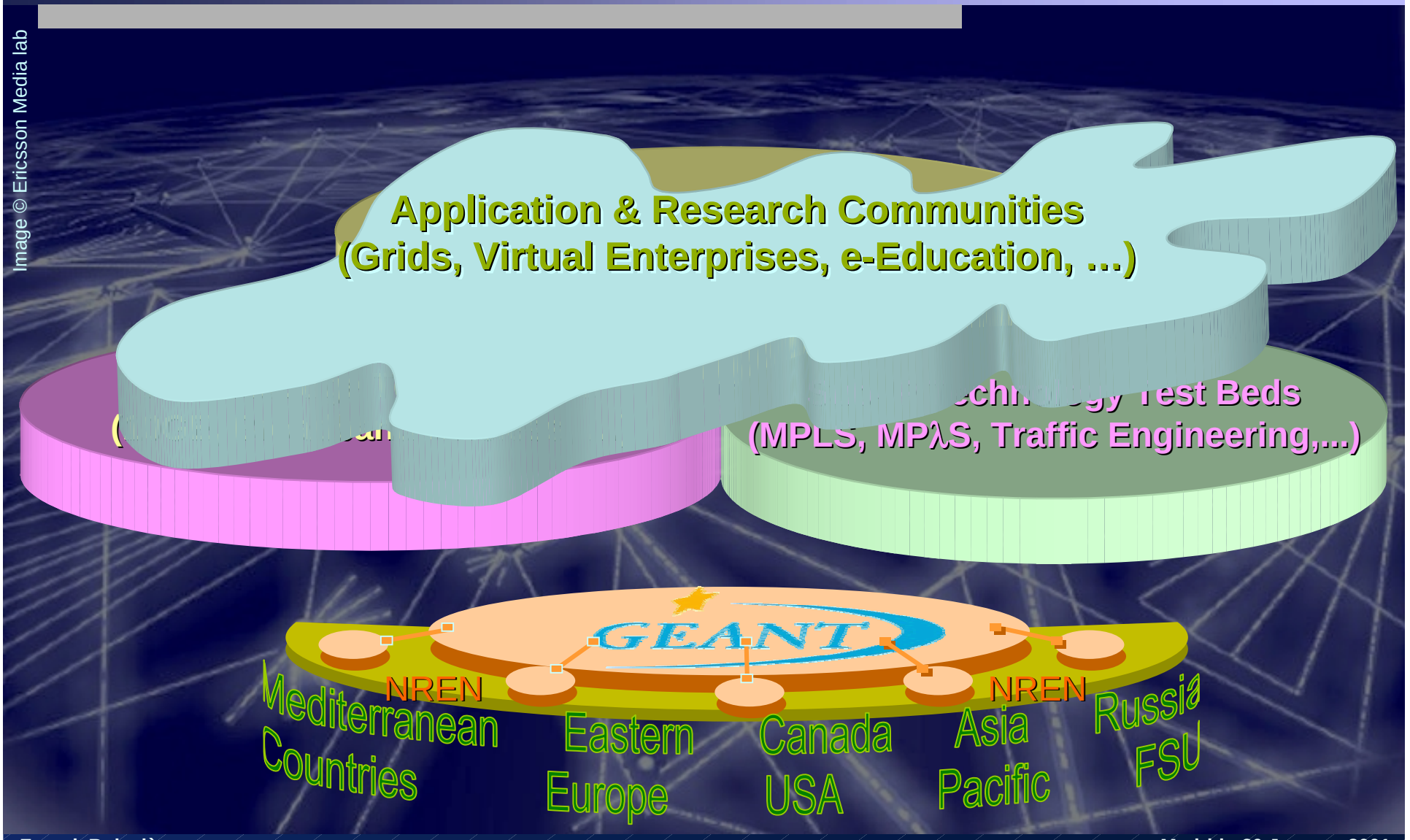
NGN Examples: Building on GEANT



NGN Examples: Building on GEANT



Beyond NGN Examples: Building on GEANT



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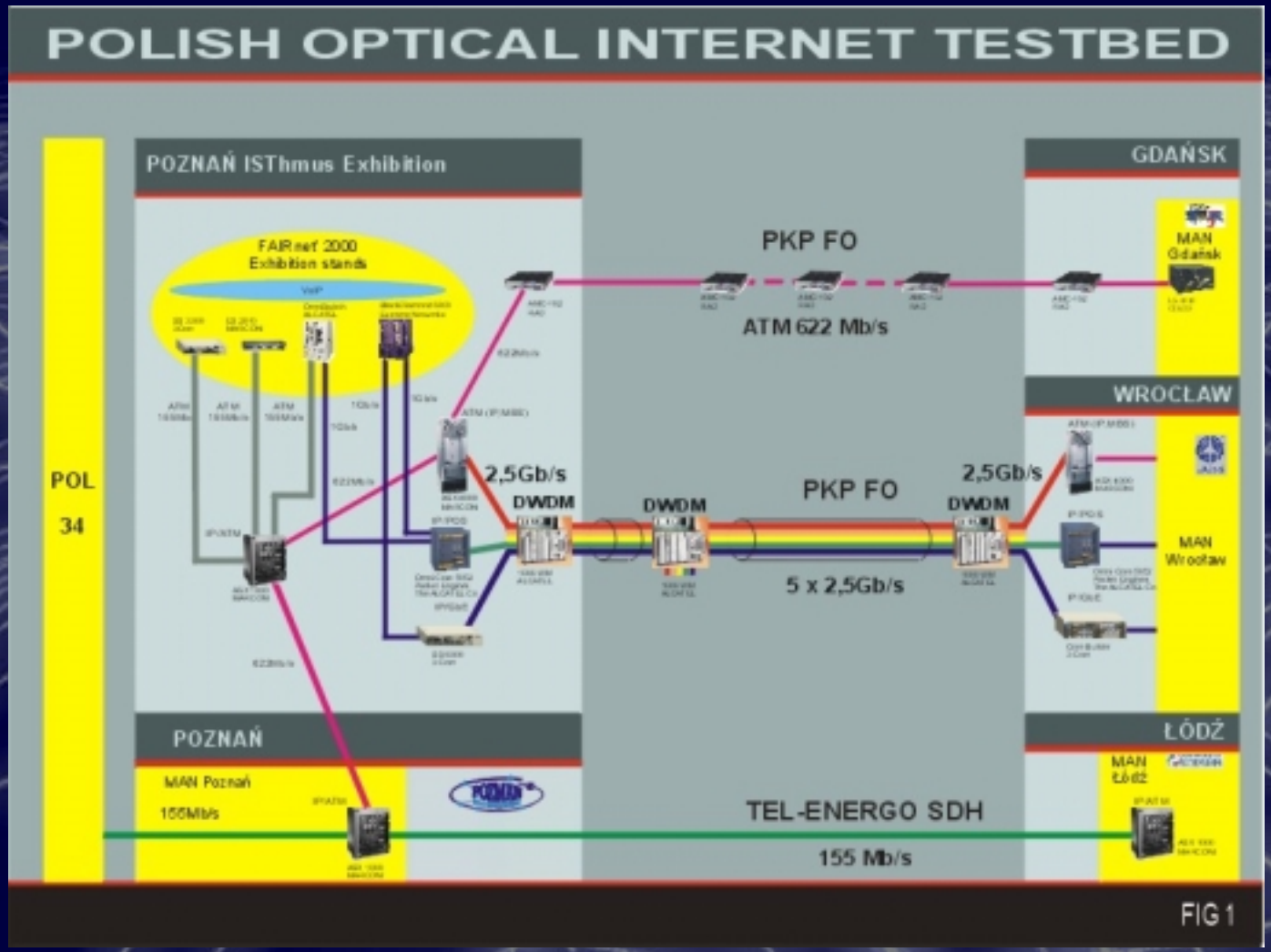
NGN Examples: Building on National Facilities



Important details - official texts

http://www.cordis.lu/ist

Do Not Hesitate To Contact Us

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