



The Success of Internet also its failure?

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on behalf of

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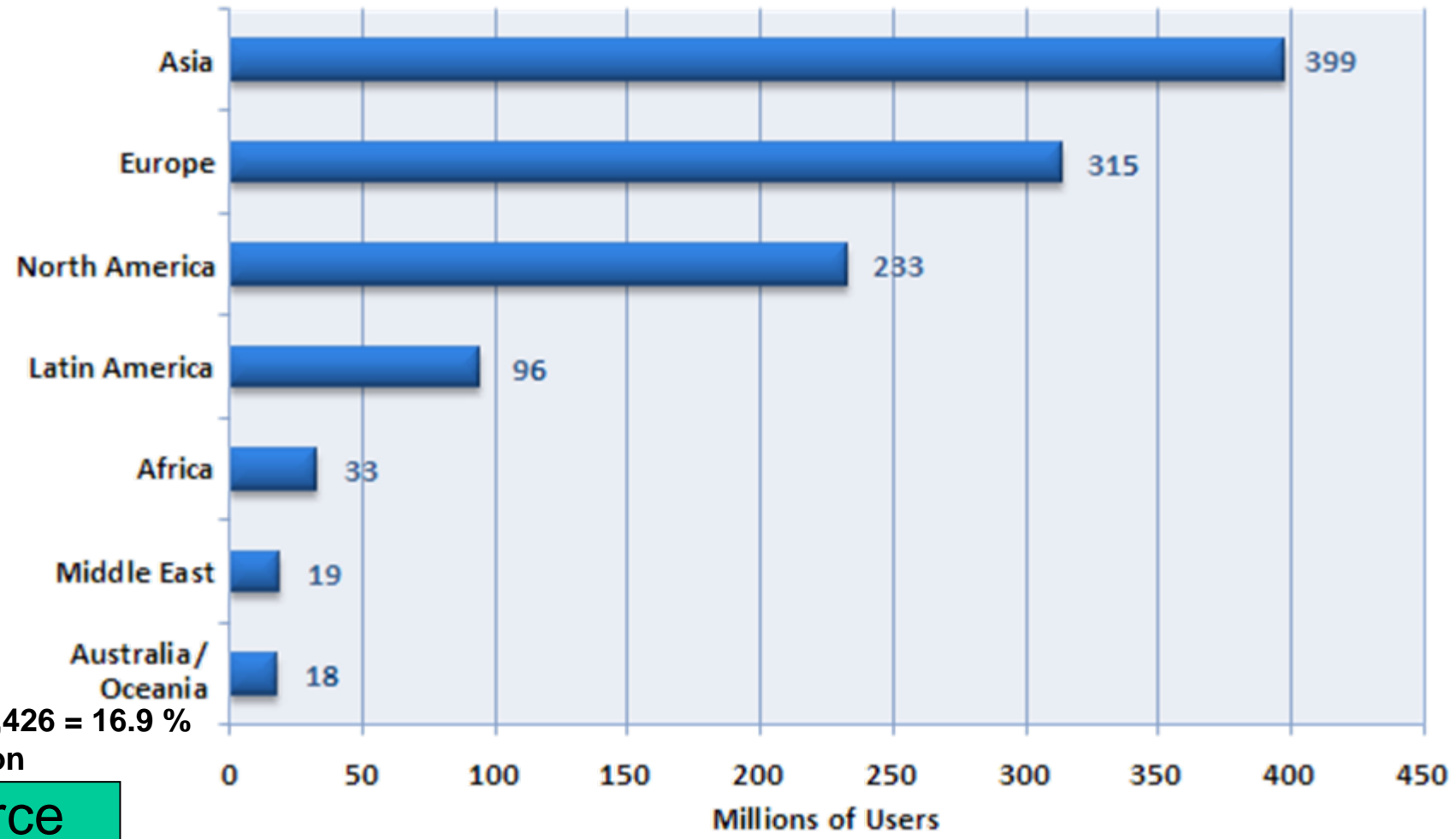
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INTERNET USAGE STATISTICS - The Big Picture

World Internet Users and Population Stats

Internet Users by World Region



1,114,274,426 = 16.9 % penetration

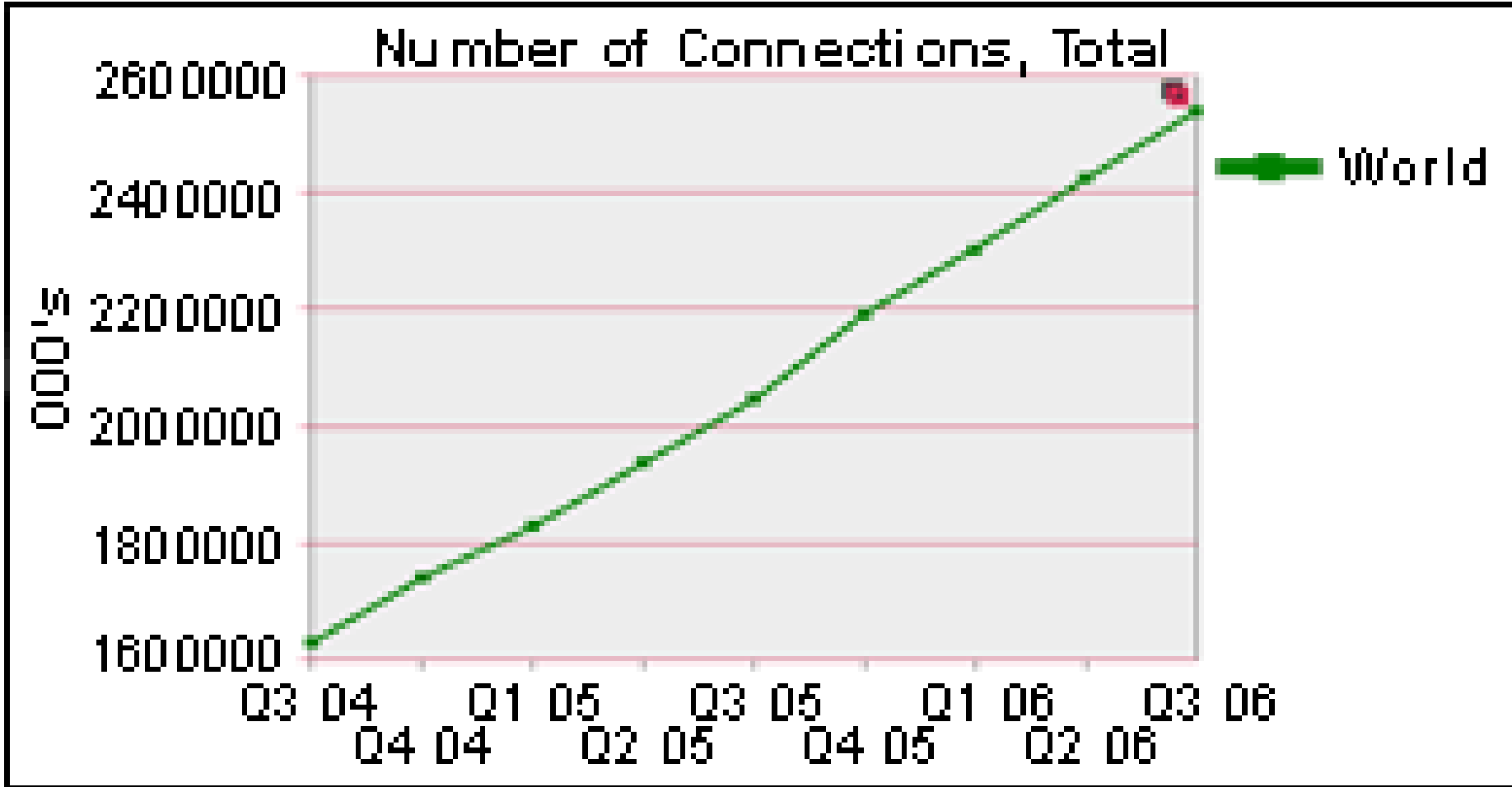
Source

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Mobile growth



Source GSMA

GSM/UMTS 2.4 bill 1Q 07

Mobile control communication areas – M2M

Fun and leisure

- Pervasive gaming
- Tourism guidance

Home and office

- Remote control of consumer electronics and appliances
- Monitoring
- Security, door access

Convenience

- Lost and found items
- Home control
- Shopping
- Location services

Logistics

- Cargo tracking
- Route planning
- Stock management



Sales and payment

- Vending machines
- POS terminals
- Advertisements



Industrial

- Service & maintenance
- Process automation
- Agricultural & forestry
- Environmental

Health, Safety&Security

- Health monitoring
- Property monitoring
- Environmental and weather monitoring

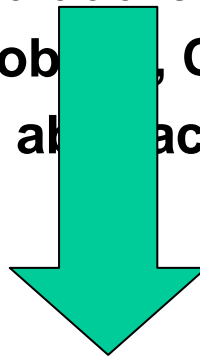
Telematics/in-vehicle

- Navigation
- Safety
- Vehicle diagnostics
- Traffic information



So what are the problems ?

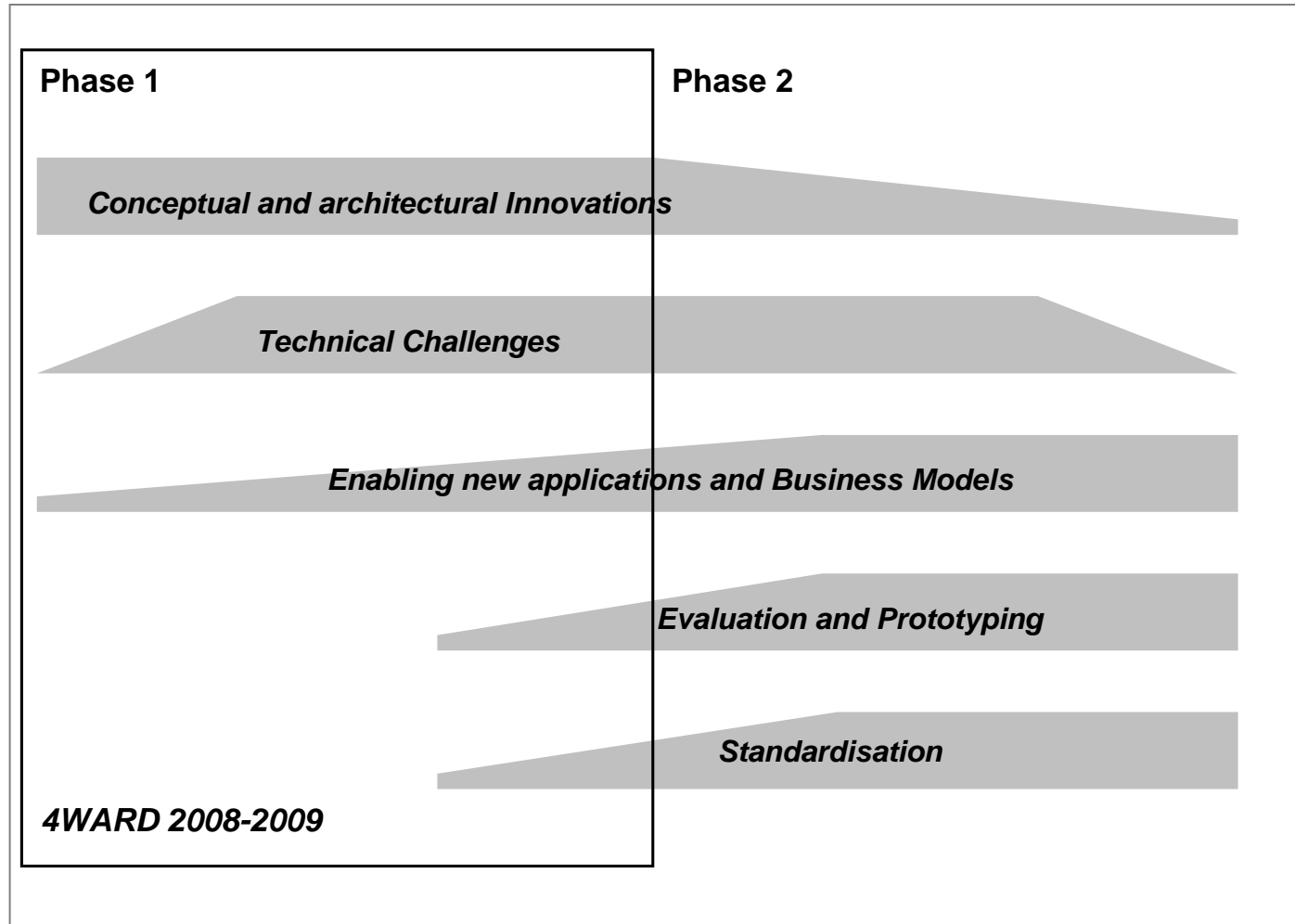
- ❖ **Both the architecture and the engineering processes of the Internet no longer suitable**
- ❖ **We want to bring innovation back into the network**
- ❖ **Some technical issues to deal with:**
 - **Can we cope with the massive number of communicating things?**
 - **Separation of naming and addressing**
 - **Integrated support for Mobility, QoS, Security**
 - **A generic multi-link path allocation**
 - **Self-* mgmt**
- ❖ **Policy and governance**
- ❖ **...**



A holistic global approach

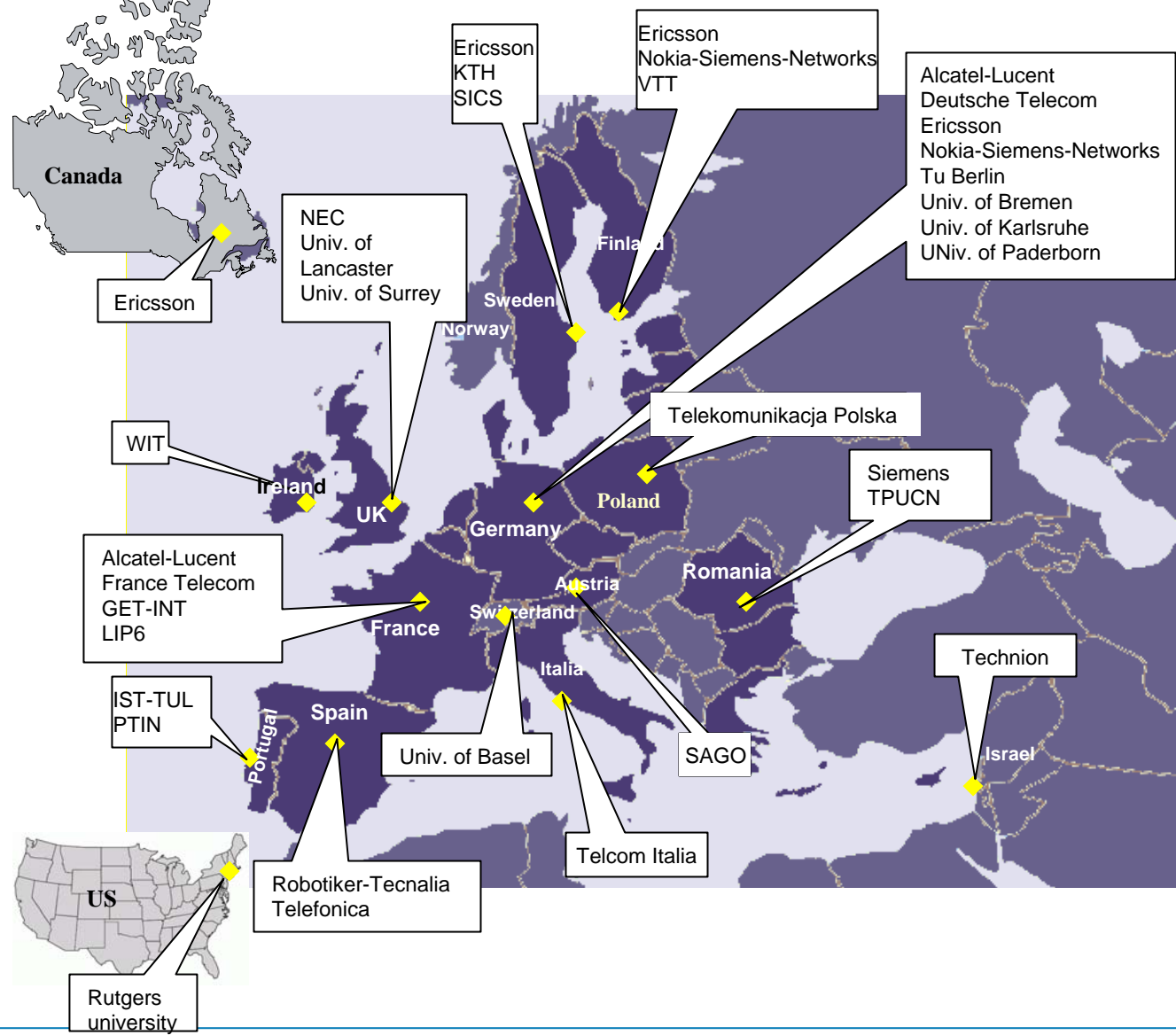


Work phases



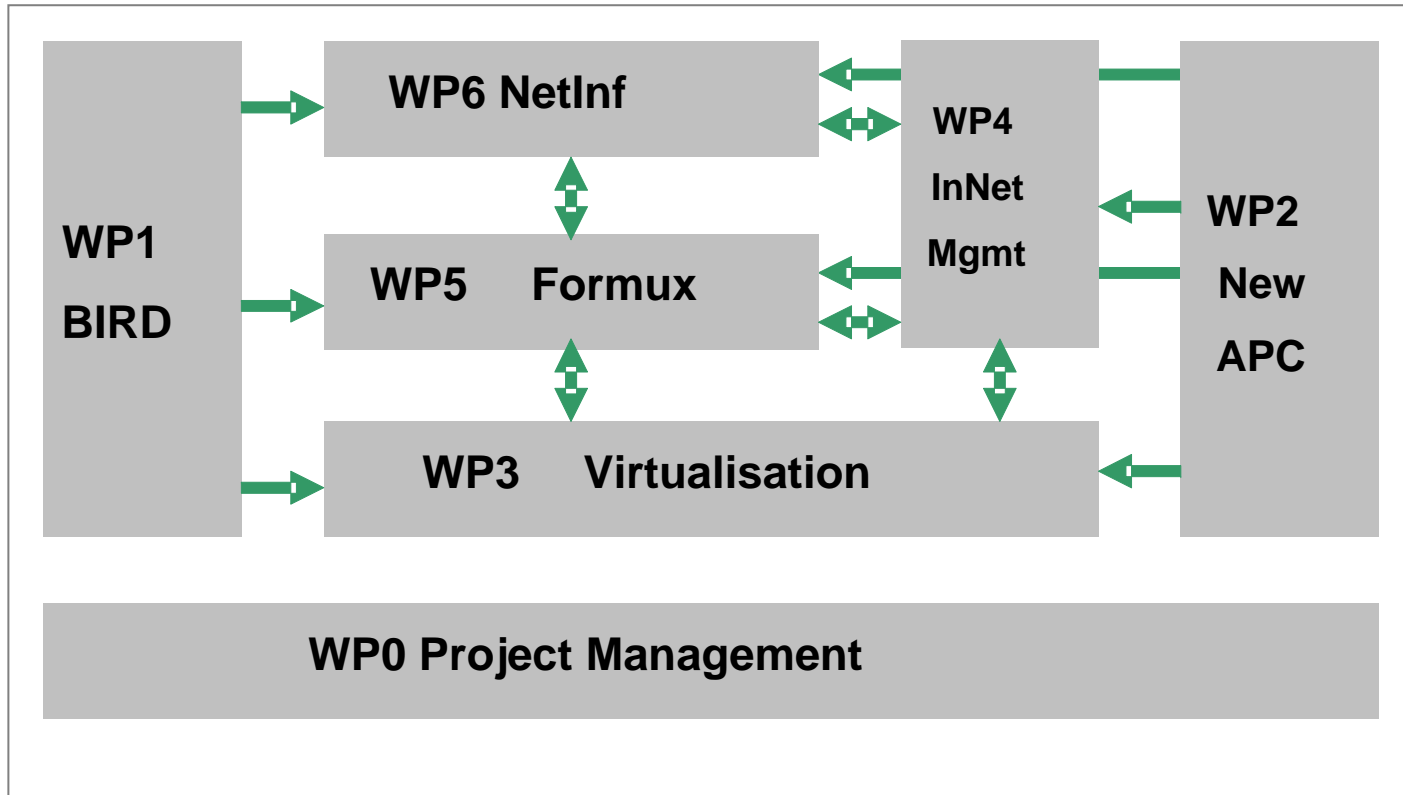


Some project data





Some project data



Size : Roughly 30 m€ ~ 40 m USD

Time 2 years



WPs

Work package No	Work package title	Type of activity	Lead partic no.	Lead partic. short name	Person-months	Start month ¹	End month
WP1	Business Innovation, Regulation and Dissemination - BIRD	RTD	9	ALUD/TUL	112.5	1	24
WP2	New Architectural Principles and Concepts NewAPC	RTD	1	EAB/UKA	335	1	24
WP3	Network Virtualisation - VNET	RTD	2	EDD/UNIBr	404	1	24
WP4	In Network Management - INM	RTD	11	NEC/KTH	407	1	24
WP5	Forwarding and Multiplexing for Generic Paths - ForMux	RTD	13	FT/TUB	488	1	24
WP6	Network of Information - NetInf	RTD	1	EAB/SICS	321	1	24
WP0	Project Management and Coordination	RTD, MGT	1	EAB	140	1	24
	TOTAL				2207,5		

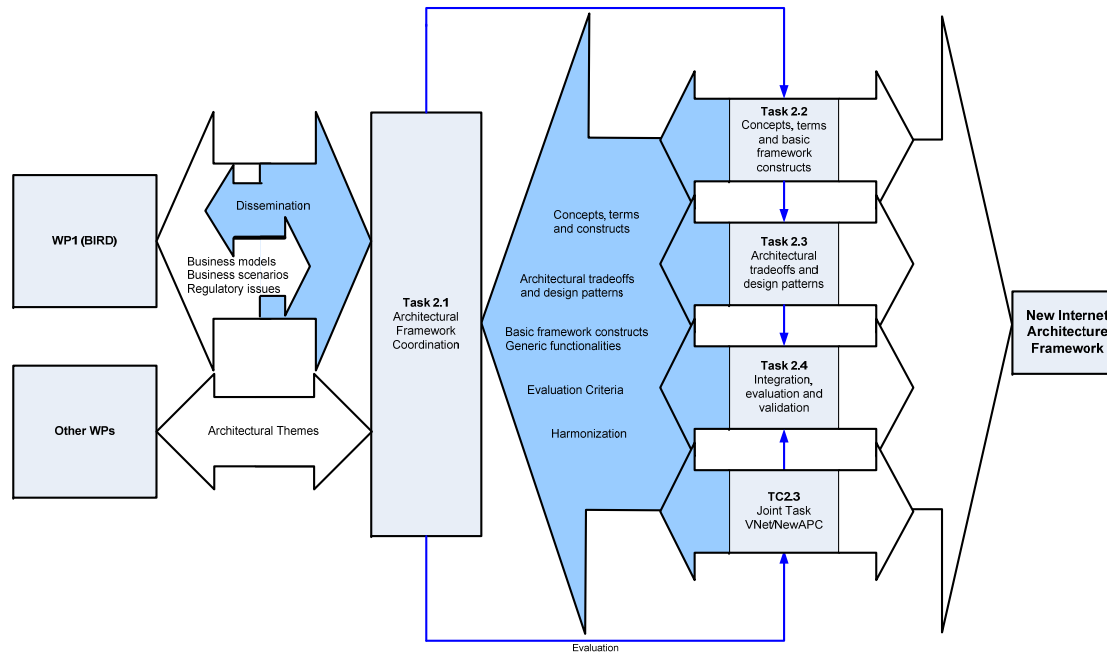


WP 1BIRD

- ❖ To understand and assess both how new technology may foster new usages and business models as well as how new usages and societal trends may require new or enhanced technologies.
- ❖ To investigate implications of policy and governance on networking technologies (including regulation) and vice versa.
 - Usage and services: DT
 - Socio-economics: TI
 - Policy and governance: NSNF
- ❖ **Dissemination and External Collaboration**



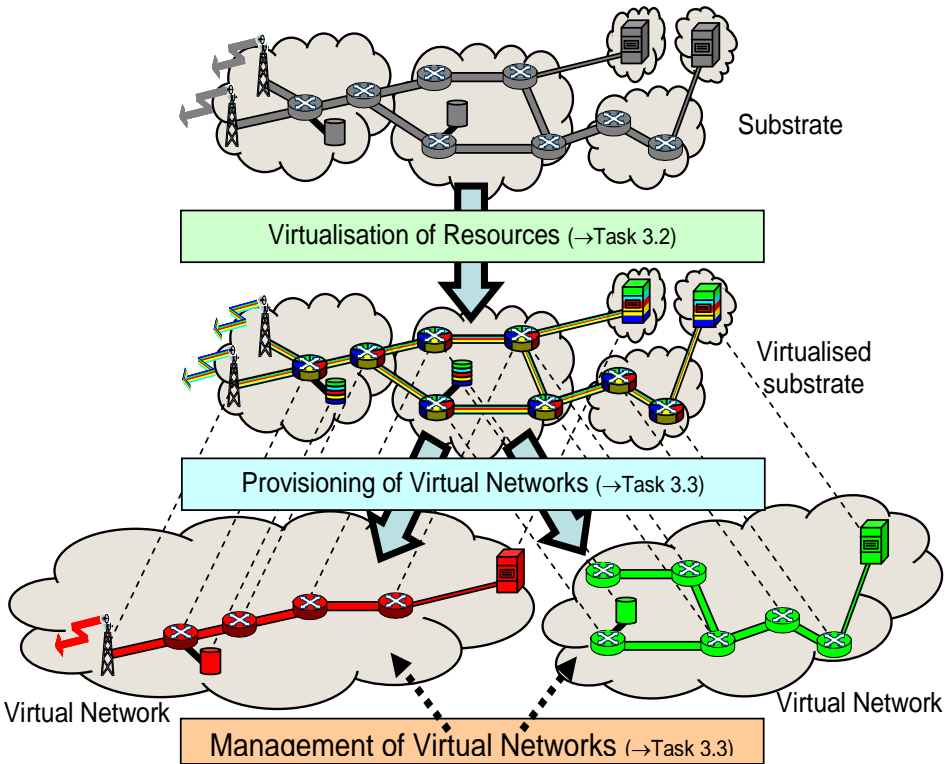
WP 2 New APC



- ❖ Task 2.1 *Architectural framework coordination* (headed by ALU)
- ❖ Task 2.2 *Concepts, terms, and basic framework constructs* (headed by Ericsson)
- ❖ Task 2.3 *Architectural tradeoffs and design patterns* (headed by UKA)
- ❖ Task 2.4 *Integration, evaluation and validation* (headed by TUCN)
- ❖ TC 23 *Joint Task NewAPC/Vnet* (headed by NSN),



WP 3 VNET



- ❖ Task 3.1: Virtualisation Architecture and Scenarios
- ❖ Task 3.2: Virtualisation of Network Resources
- ❖ Task 3.3: Provisioning of Virtual Networks and Virtualisation Management
- ❖ Task 3.4: Evaluation
- ❖ Joint Tasks with other work packages:
- ❖ Task TC23: Joint Task with NewAPC
- ❖ Task TC34: Joint Task with InNetMgmt
- ❖ Task TC356: Joint Task with ForMux and NetInf

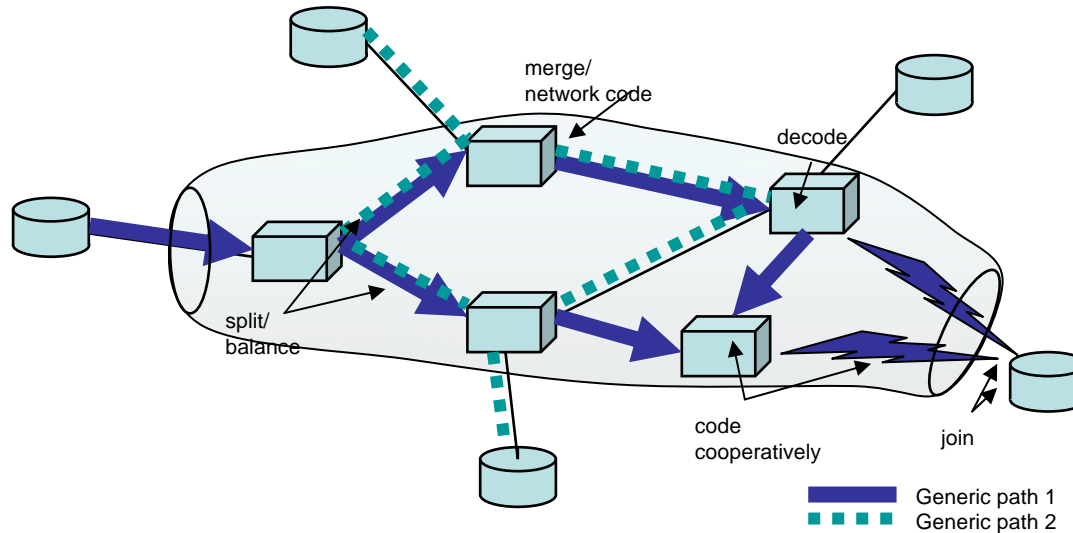


WP 4 In-Netw Mgmt

- ❖ Evaluate and demonstrate the InNetMgmt approach to embedded autonomic self-management for selected scenarios.
- ❖ Providing abstractions and a framework for a self-organising management plane.
- ❖ Design and implement a thin pervasive self-organising network management plane that provides access to and communication between local self-management functions embedded in the network and that organises itself within a given network and adapts to dynamic changes of network topology and structure. Develop registration and access mechanisms for embedded self-descriptive management functions provided by participating nodes within the management plane.
- ❖ Define a scheme, strategies, and protocols for collaborative monitoring, self-optimising, and self-healing.
- ❖ Investigate search engine technologies for retrieval of information from an information base that is unstructured, incomplete, timed out and/or faulty.
- ❖ Apply the in-network management approach to virtual networks and a network of information investigated in WP3 and WP6.

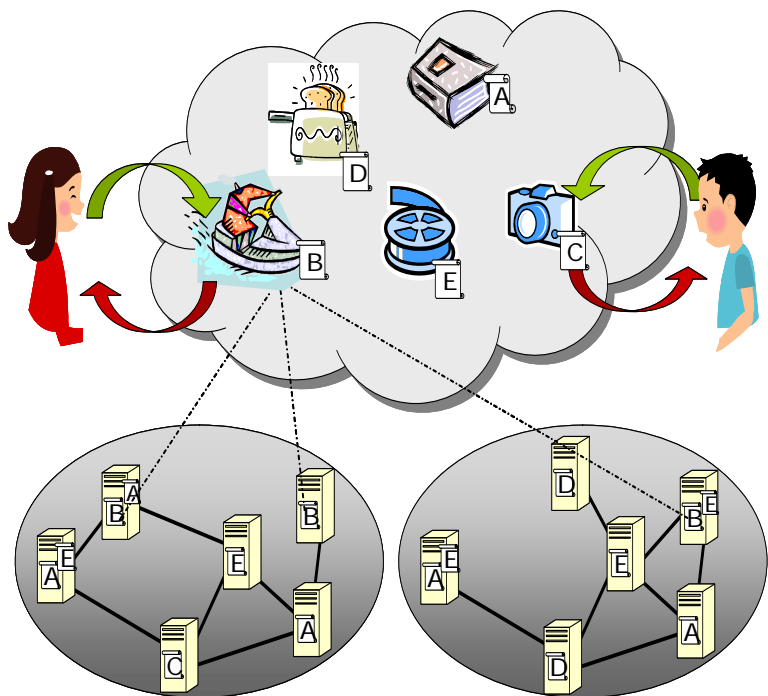


WP 5 Generic paths



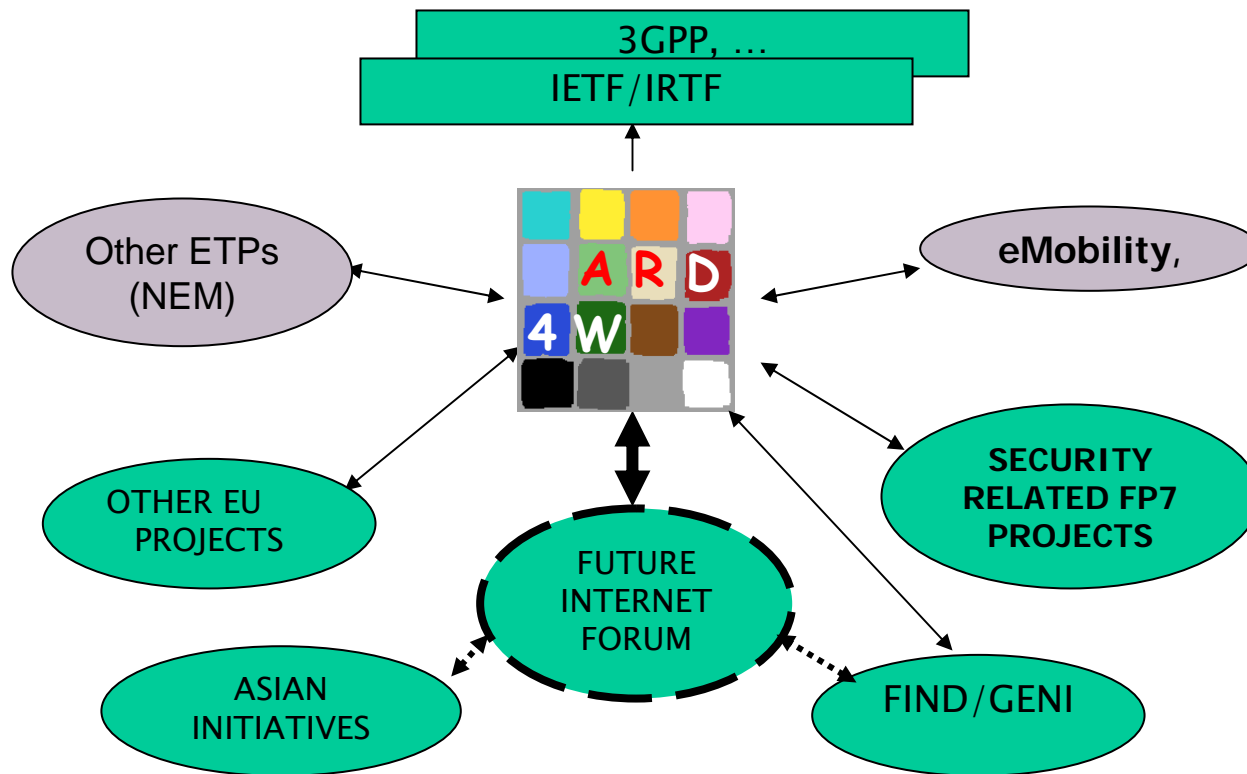
- ❖ Task 5.1: Path generalisations in a functional architecture
- ❖ Task 5.2: Generic paths by cooperation and coding mechanisms
- ❖ Task 5.3: Realising a generic path by routing
- ❖ Task 5.4: Interactions of multiple generic paths
- ❖ Task 5.5: Mobility by generic path
- ❖ Task 5.6: Evaluation in proof-of-concept testbeds
- ❖ Task TC356: Joint Task with WP3(Vnet) and WP6 (NetInf)

WP 6 Netinfo



- ❖ **Task 6-1: NetInf Architecture** (M1-24)
- ❖ **Task 6-2: Information modelling** (M3-12)
- ❖ **Task 6-3: Basic dissemination mechanisms and services** (M3-16)
- ❖ **Task 6-4: Non-dissemination and delay-sensitive services** (M3-16)
- ❖ **Task 6-5: NetInf evaluation** (M17-24)
- ❖ **Task C46: Joint task of WP4 (InNetMgmt) and WP6 (NetInf)** (M15-22) – see WP4 description
- ❖ **Task C356: Joint task of WP3 (Vnet), WP5 (ForMux) and WP6 (NetInf)** (M17-24) – see WP3 description

4WARD Interactions





Summary

- ❖ Inherent integration of self-management
- ❖ Increasing the amount of network features reliably available to end-user applications
 - Like mobility, QoS, security but also scalability, deployability
- ❖ Driving innovation and new business opportunities into the network layer
- ❖ Defining a systems approach to the Future Internet
- ❖ Drive the work from the mobile and wireless perspective