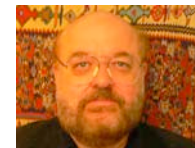


Management and Service-aware Architectures for Future Internet

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University College London



FIA Prague 12th May 2009



Content

- Why and How to change
- Initial Architectural Model
- Research challenges
- Next Steps and Conclusions



Why to change

Current Internet = Network of Interconnected uncoordinated networks

- $N \times 10^9$ connectivity points - **status: reaching maturity and maybe some limits**
- $N \times 10^5$ services /applications - **status: fast growing**
- $N \times 10^3$ exabytes content- **status: fast growing**
- Cost structure: 80% (\rightarrow 90%) of lifecycle costs are operational and management costs - **status: reaching crisis level**
- Change Capability - **status: ossification reaching crisis level; a lot of missing and interrelated features; missing enablers for integration of Nets, Services, Content, Storage, ...**



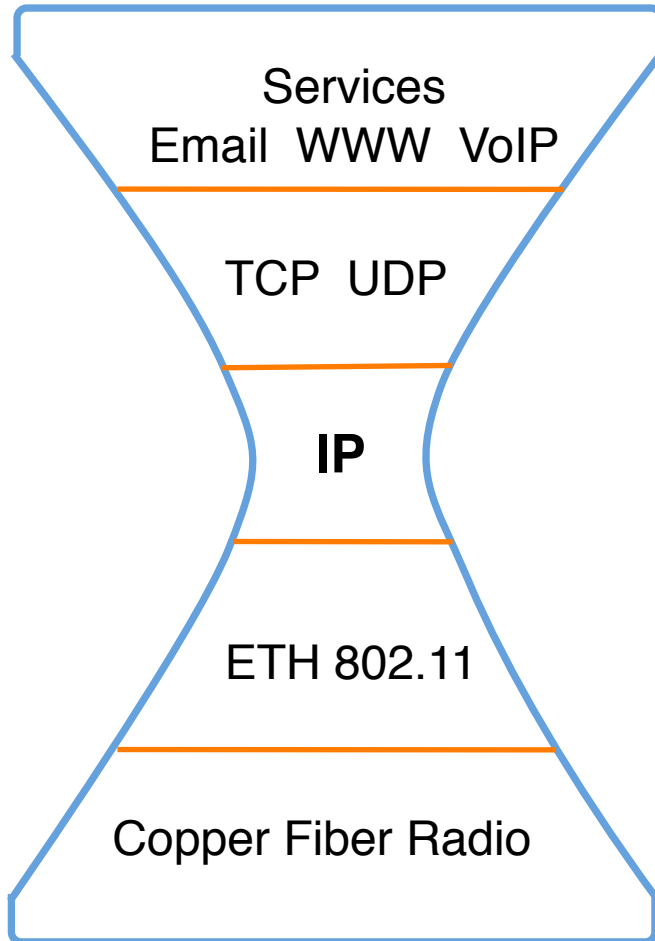
How to change

Approach:

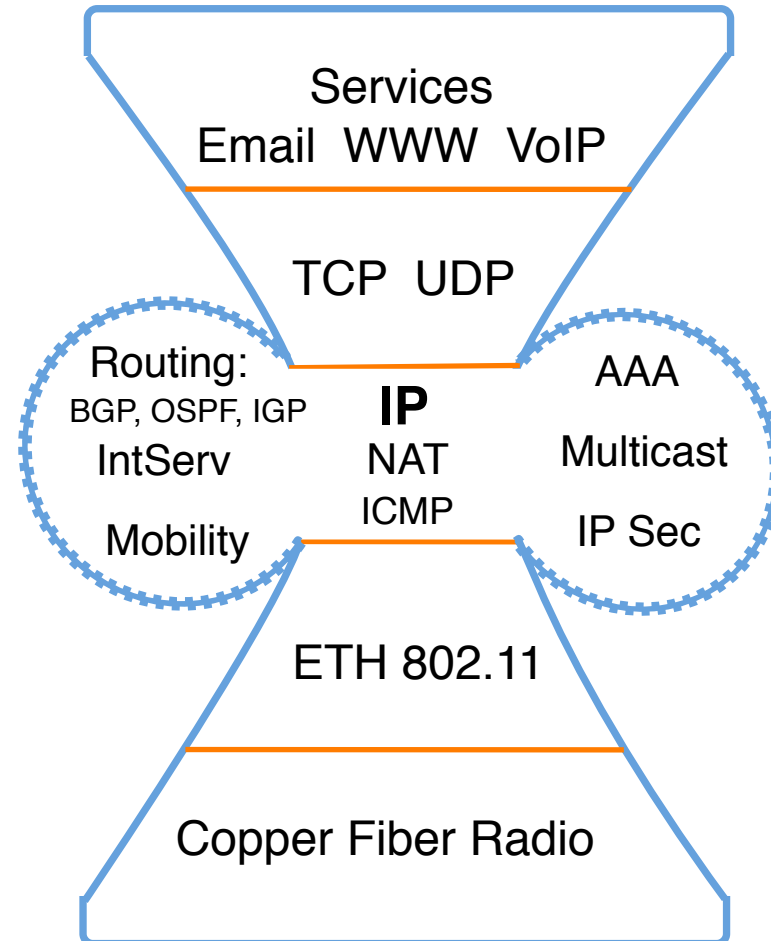
- Parallel Internets; Progressive changes; “Clean” slate and evolutionary
- Network of networks → system of coordinated service networks
- Virtualization of resources (Networks, Services, Content, Storage)
- Programmability
- Increased self-manageability as the means of controlling the complexity and the lifecycle costs



MANA Architectural Model

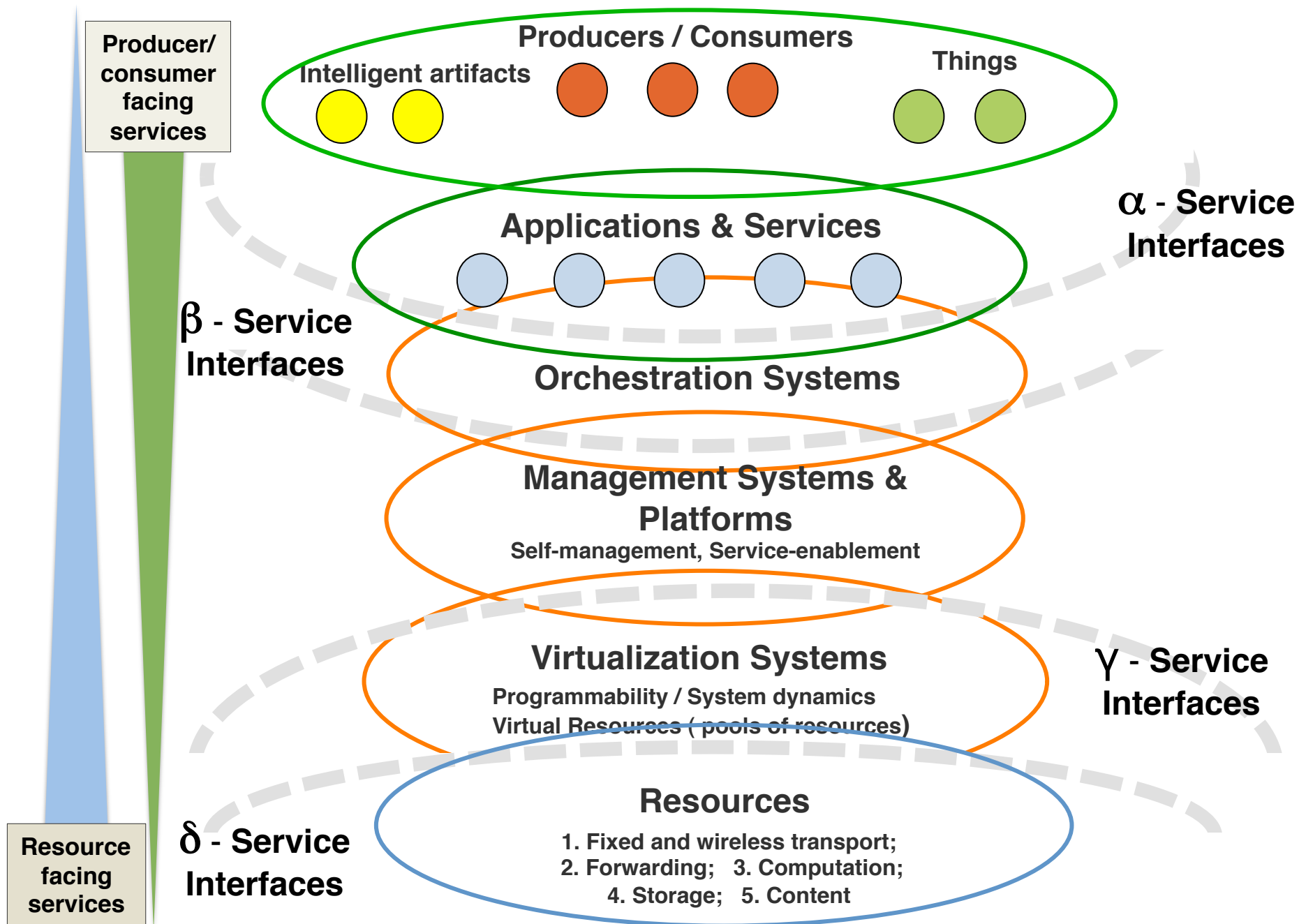


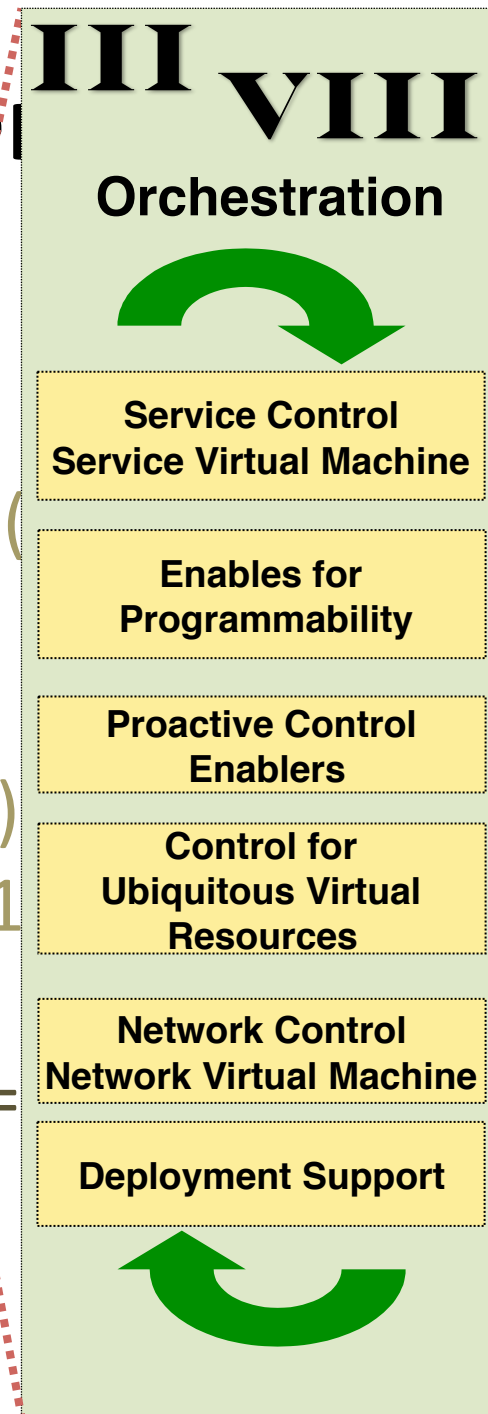
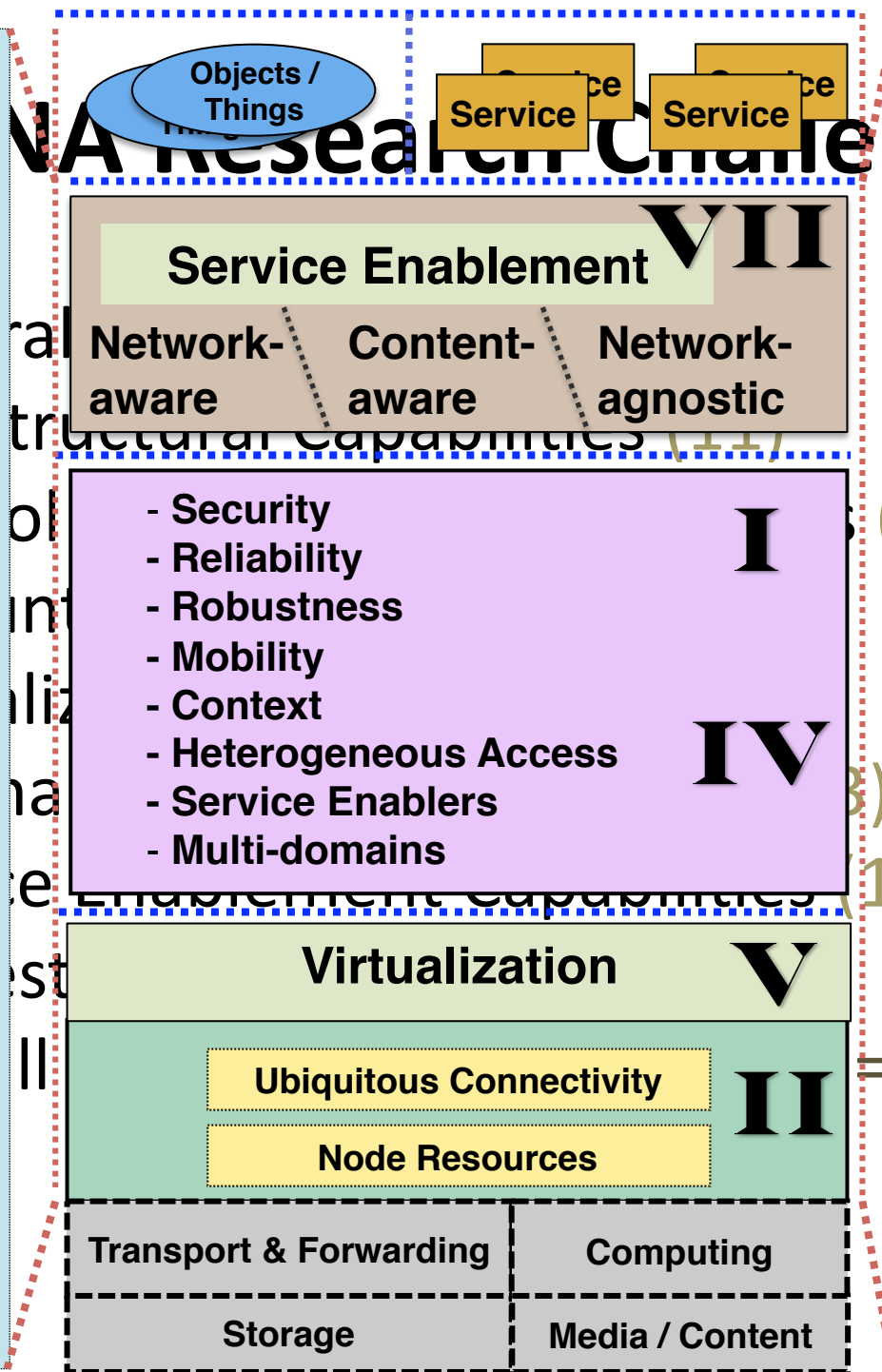
Data Plane



Control Plane







MANA Work Scope

Sept 08

- MANA networking infrastructures for
 - Connectivity-to-network, network-to-network services, network service-to-service computing clouds, and other service-oriented infrastructures.
 - Cross-domain interoperability and deployment.
 - Optimal orchestration of available resources and systems; Interrelation and unification of the communication, storage, content and computation substrata.
 - Management systems covering FCAPS functionality, including increased levels of self-awareness and self-management (i.e. all self-* functions).
- Analysis of 4 groups of Scenarios for Future Internet
- Identification of the research orientation & capabilities for MANA system of systems
- Initial Architectural Model

May 09

- Milestones and Roadmap to help plan and coordinate technology developments.
- Proposals for Integrating a set of essential and high impact Research Projects progressing the FI capabilities set / interdisciplinary priorities



Next Steps

