



Self-Configuration for Ubiquitous Networking

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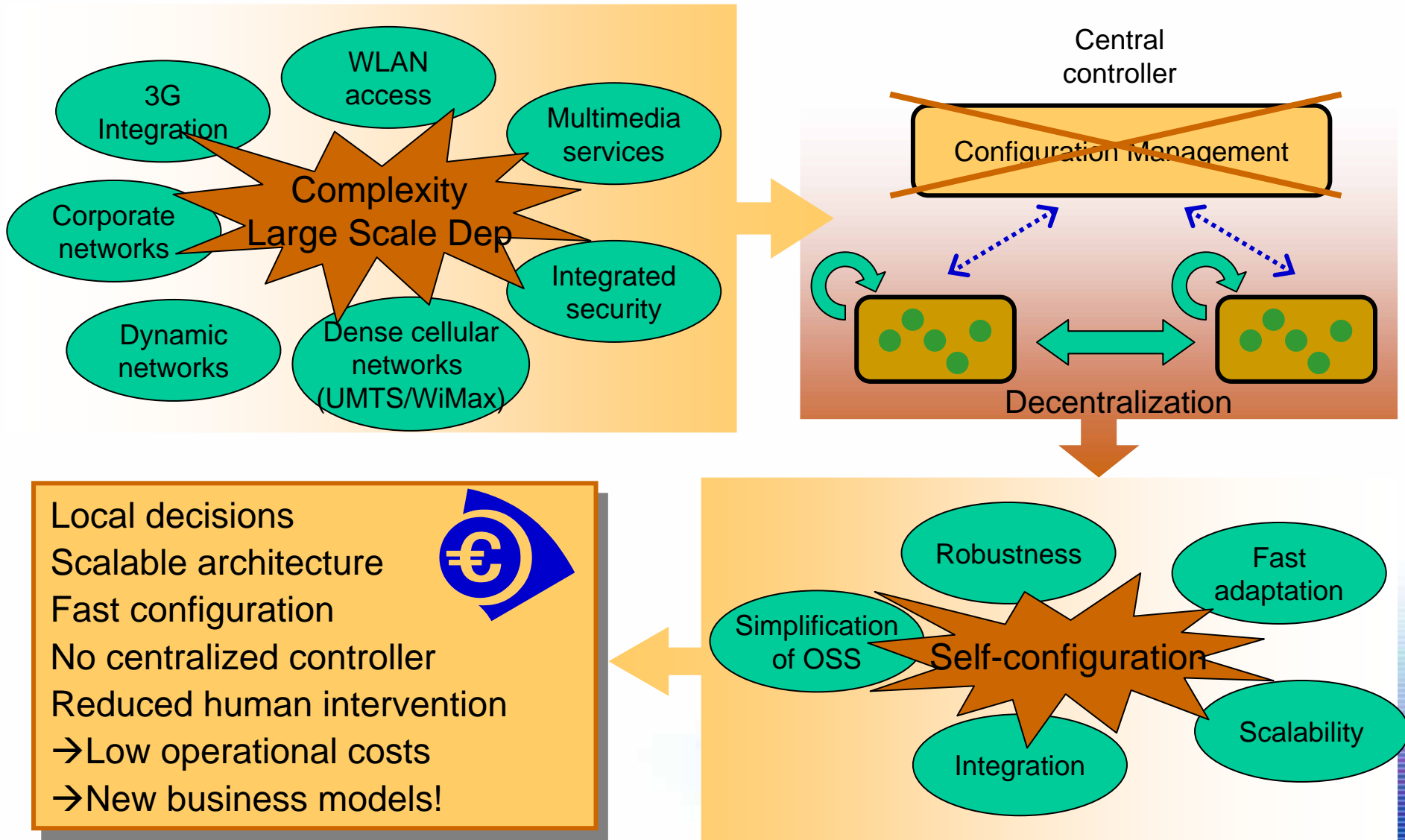
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Self-X

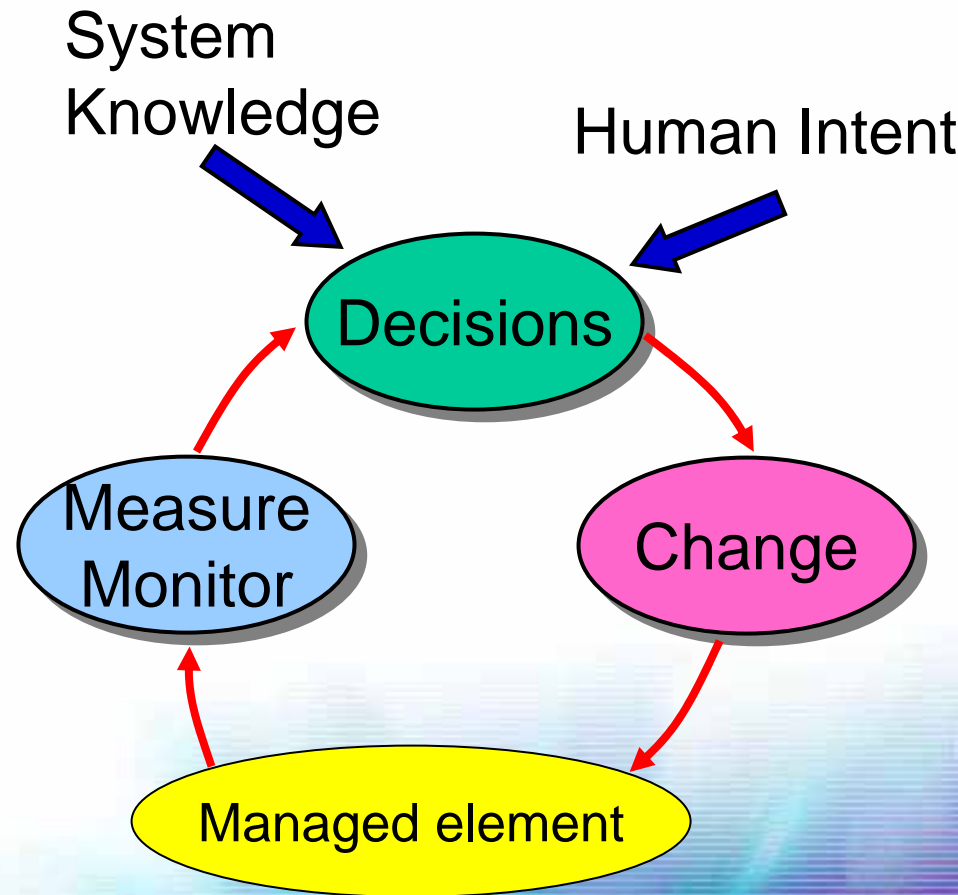
- **Autonomic Network Management == (???)**
 - Self-configuration
 - Self-optimization
 - Self-healing
 - Self-protection
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- **Is this really something new?**
 - Most of the literature describes automated management rather than self-management!
- **I think it is revisited since the network environments has changed**
 - More powerful NEs
 - Packet-based mobile networks
 - Heterogeneous networks WSN up to high speed optical backbones

Self-configuring Elements



Self-Configuration and Self-Organization

- **Routine management tasks**
 - Configure/re-configure elements such that they work properly
 - Monitor proper behavior to make sure that ...
 - They are subject to **self-management**
- **Management is also about intent**
 - Implement business strategies into the systems
 - Need to be kept in human hands, but naturally with system support and proper tools
 - For example, specifying intent through policies



Monitoring of Self-Conf

Burdens to deployment of self-configuring networks

Technical risks:

- Traffic overhead
- Loops in propagation
- Changes too frequent
- Oscillations
- Lost Flexibility to change

Operators' skepticism:

- Eventual need to know what is happening
- "Mental wall" to uncontrolled delegation to devices

Need to define a monitoring framework for self-configuring networked devices!

Summary

- **Self management is essential for future (mobile) networking and pervasive computing**
- **Main components are already available**
 - Monitoring/Measurement Technology
 - Distributed Protocols
 - Policy-based Mgt for Specification of Intent
- **Key are the decision processes**
 - Involves Computational Intelligence (difficult)
 - Typically computational intense
- **We should start with the easy things**
- **Self-learning management strategy is a long way off**
 - Can you really trust the computer to learn good behavior?
 - Humans should always take critical decisions

