



# Beyond Amazon: Using and offering services in a cloud



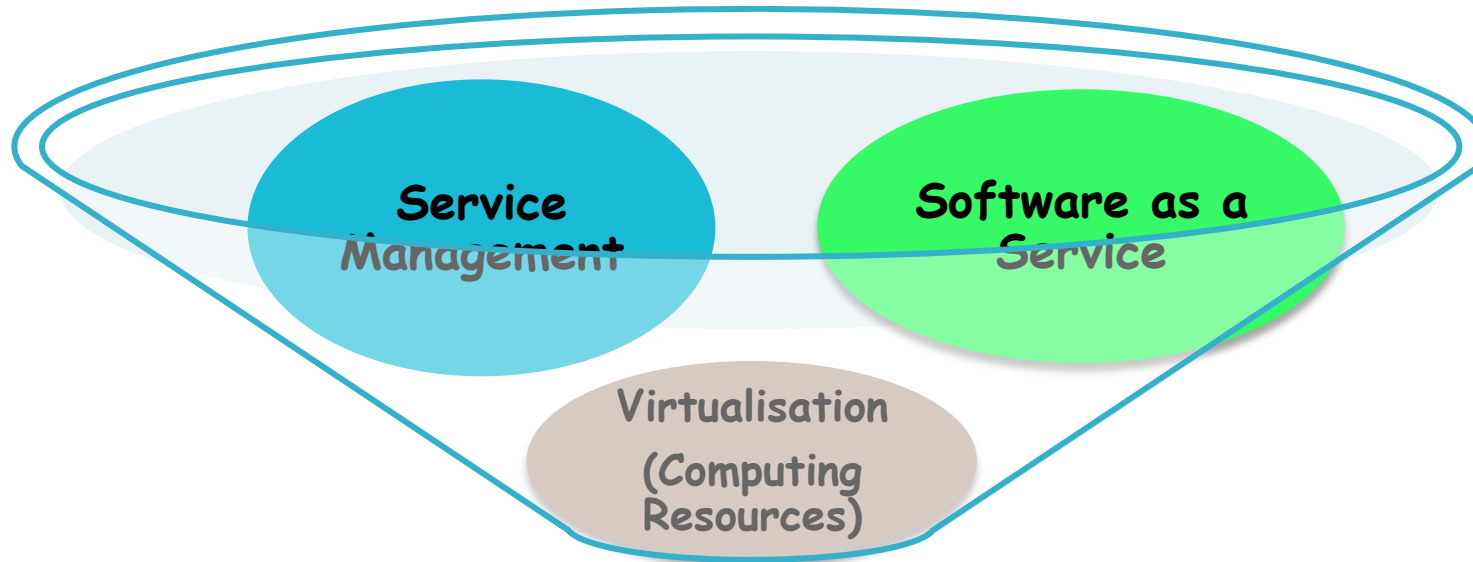
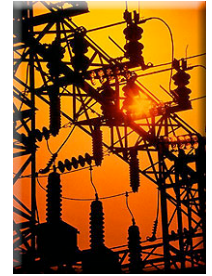
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# Service Clouds



## Service Clouds

Applications in the Cloud (SaaS) – Specific functional focus  
Platforms in the Cloud (PaaS) – Environments to plug in code  
Infrastructure Cloud (IaaS) – Computing in the Cloud

# Panel



Ignacio M. Llorente (UCM, Spain) - for Service Clouds research

Thierry Priol (INRIA, France) for Grids research

Alex Galis (UCL, UK) - for how to differentiate Service Clouds

## Questions:

1. What are the research challenges in Service Clouds
2. What can we learn from Grid Research
3. How do Service Clouds fit in the Future Internet of Services



# How to differentiate Service Clouds - Service Management Challenges



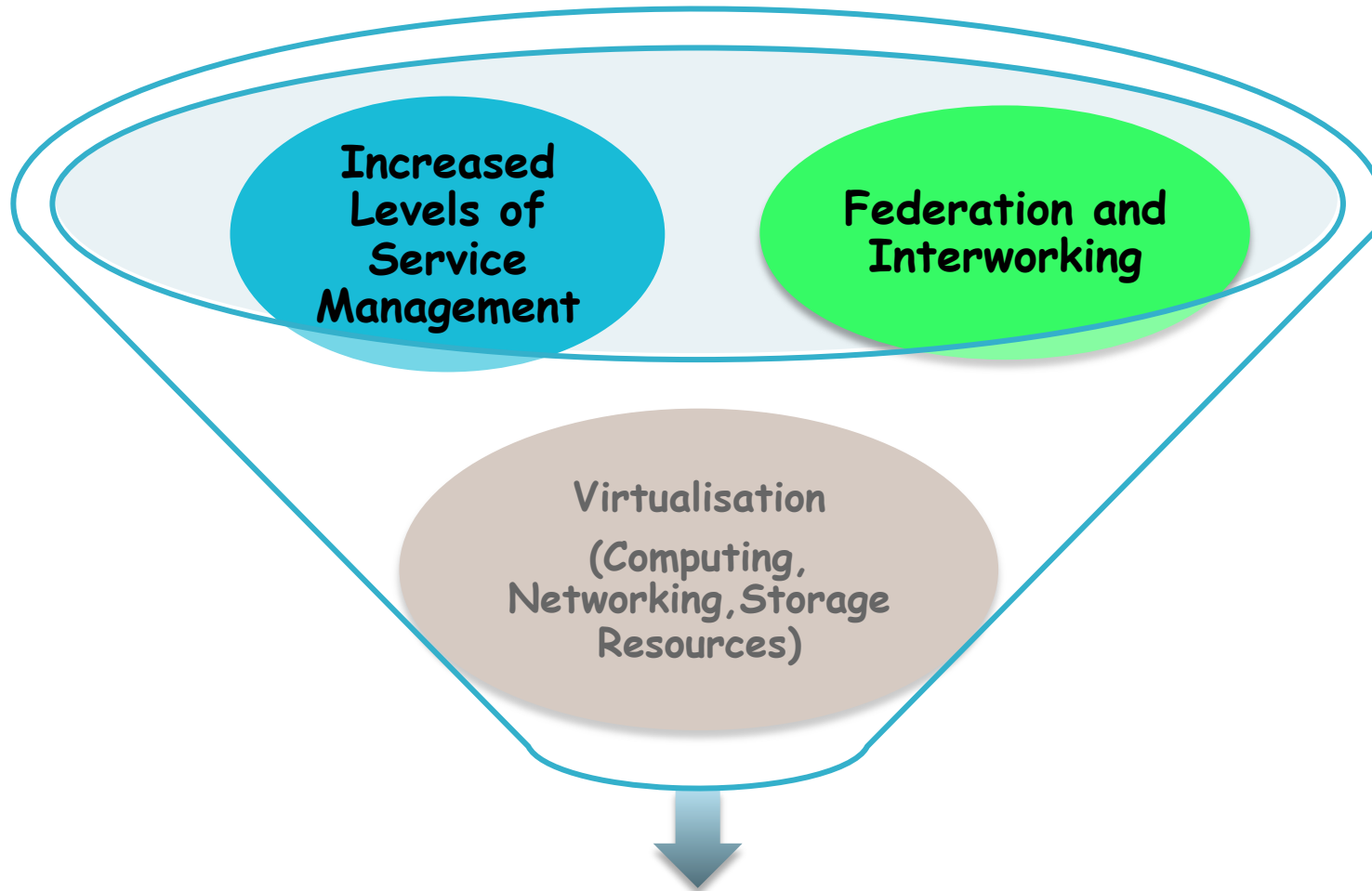
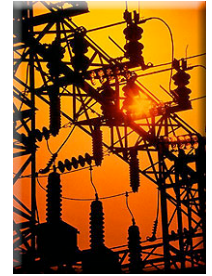
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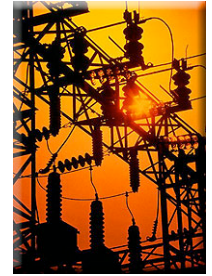
# Future Service Clouds



## Future Service Clouds

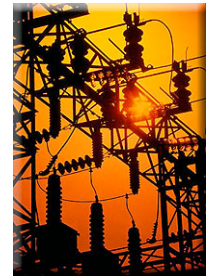


# Service management Functions for Future Service Clouds (1)

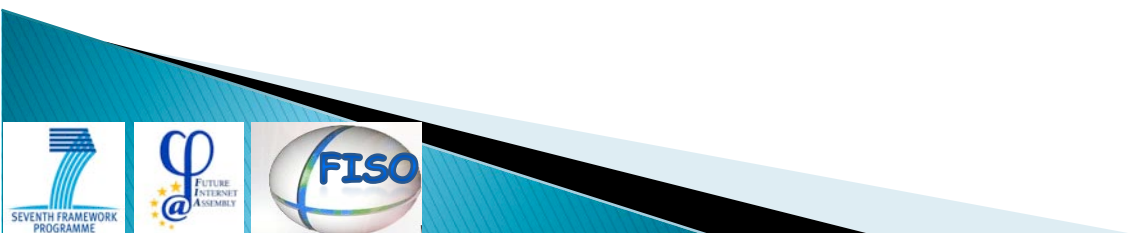


- ▶ Service life-cycle management
- ▶ Request & control of (virtual) execution environments for a service;
- ▶ SLA & QOS repositories; Monitor and police SLA commitments at all levels;
- ▶ Monitor Context changes at all levels;
- ▶ Maintenance of Service related metrics / QoS;
- ▶ Trigger and manage migration/ configuration/ contextualisation of service components as function of changes in context and/or SLA; same or multiple domains;
- ▶ Assurance management;
- ▶ Accounting and billing management;
- ▶ Performance management;
- ▶ Virtual Private service Clouds;
- ▶ Open interfaces to service portals;
- ▶ Open business policies framework for service and infrastructure providers relationship management (i.e. pay-per-use business model management).

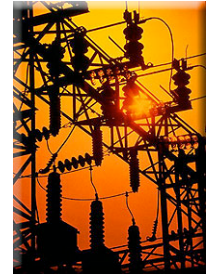
# Service management Functions for Service Clouds (2)



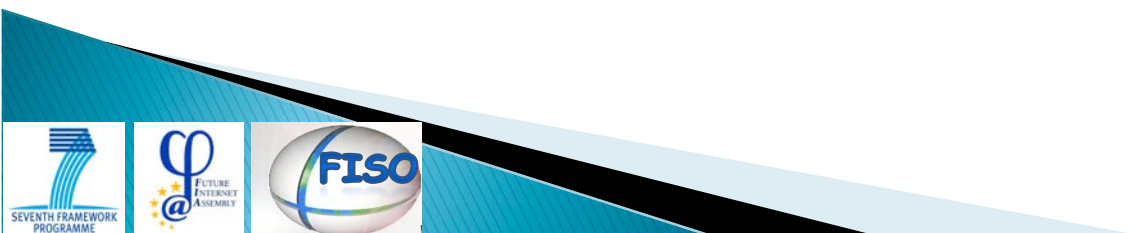
- ▶ **Cross-domain management functions, together with the design of cross-layer cooperative systems providing integrated management functionality of system lifecycle, self-functionality, SLA, and QoS**
- ▶ **Mechanisms for dynamic deployment of new management functionality without interruption of running Future Internet systems. The operations required will be Plug-and-Play, Unplug-and-Play, and (re)programmability**
- ▶ **Increased level of self-awareness, self-knowledge, and self-management capabilities (organisation, optimisation, configuration, adaptation, healing, protection, contextualisation) for Service Clouds**
- ▶ **Increased level of self-awareness of resource management, including discovery, configuration, deployment, utilization, control and maintenance.**
- ▶ **Self-awareness capabilities for minimizing system life-cycle costs and to minimise energy footprints.**
- ▶ **Orchestration and integration of management functionality.**



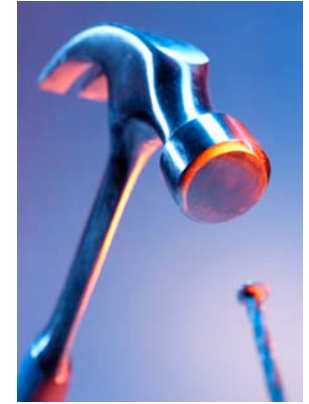
# Service management Functions for Service Clouds (3)



**Impact : Enable utility-like deployment and management of services, relieving the service consumer from awareness of the IT & Communications attributes while assuring QoS and security guarantees**



# Conclusion



“Grids are dead” !!!

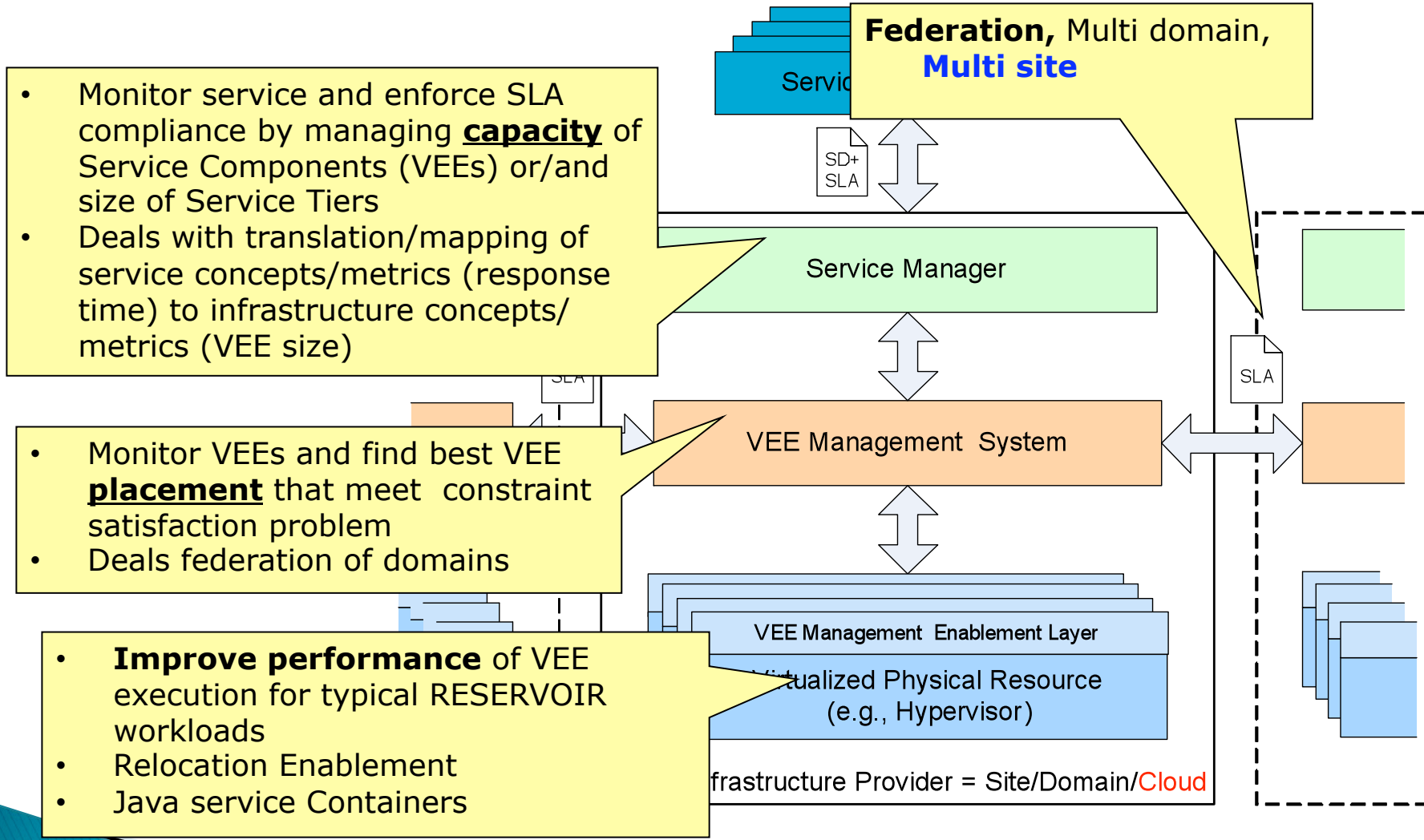
“Long Live the Grids in the form of  
Service Clouds”

# Resources and Services Virtualization without Boundaries (RESERVOIR)

[www.reservoir-fp7.eu](http://www.reservoir-fp7.eu)



# The Reservoir Architecture



Thank you for your attention



Q&A

