Gaining Flexibility through Autonomy in Network Operation

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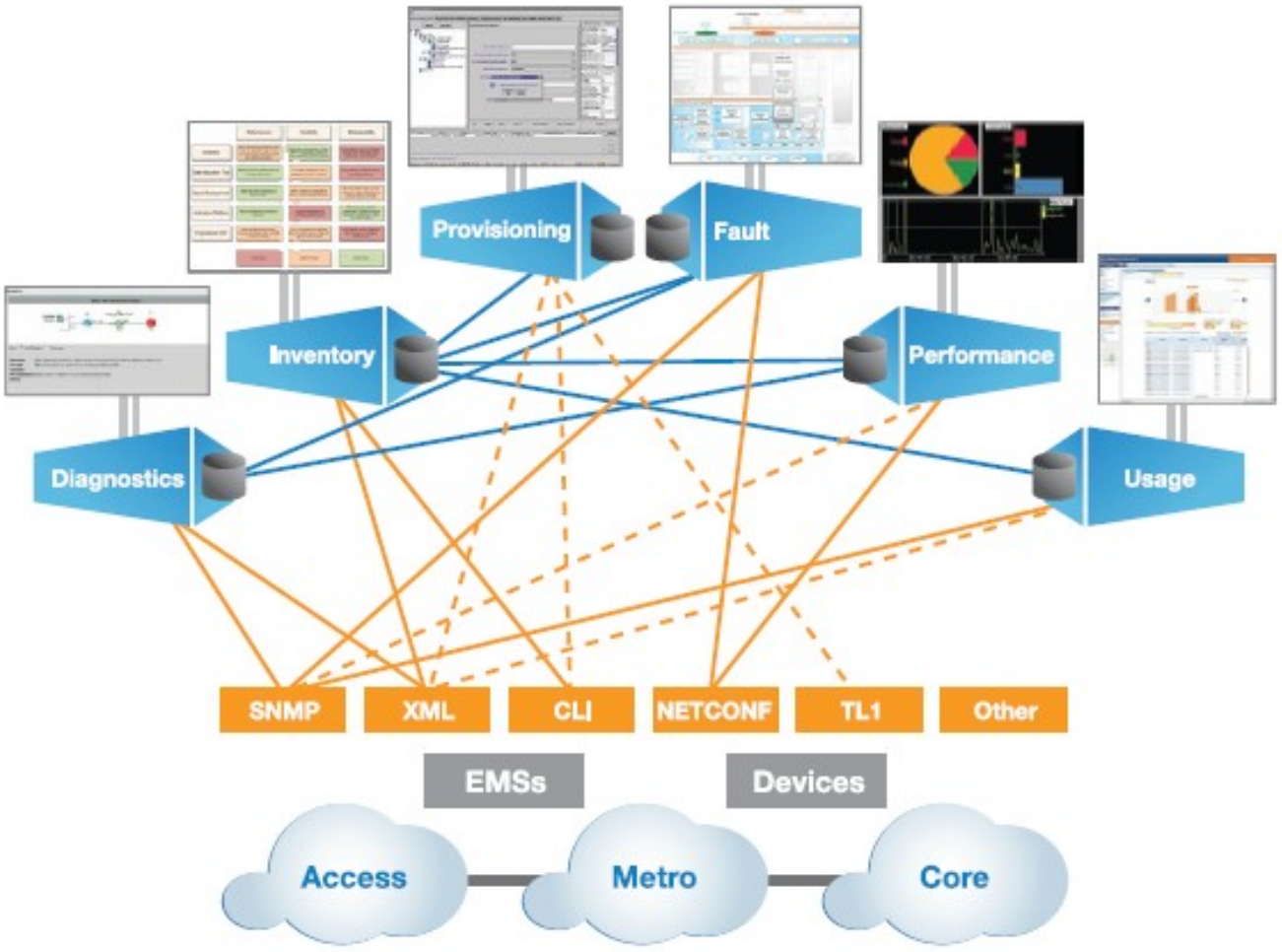
BE MORE

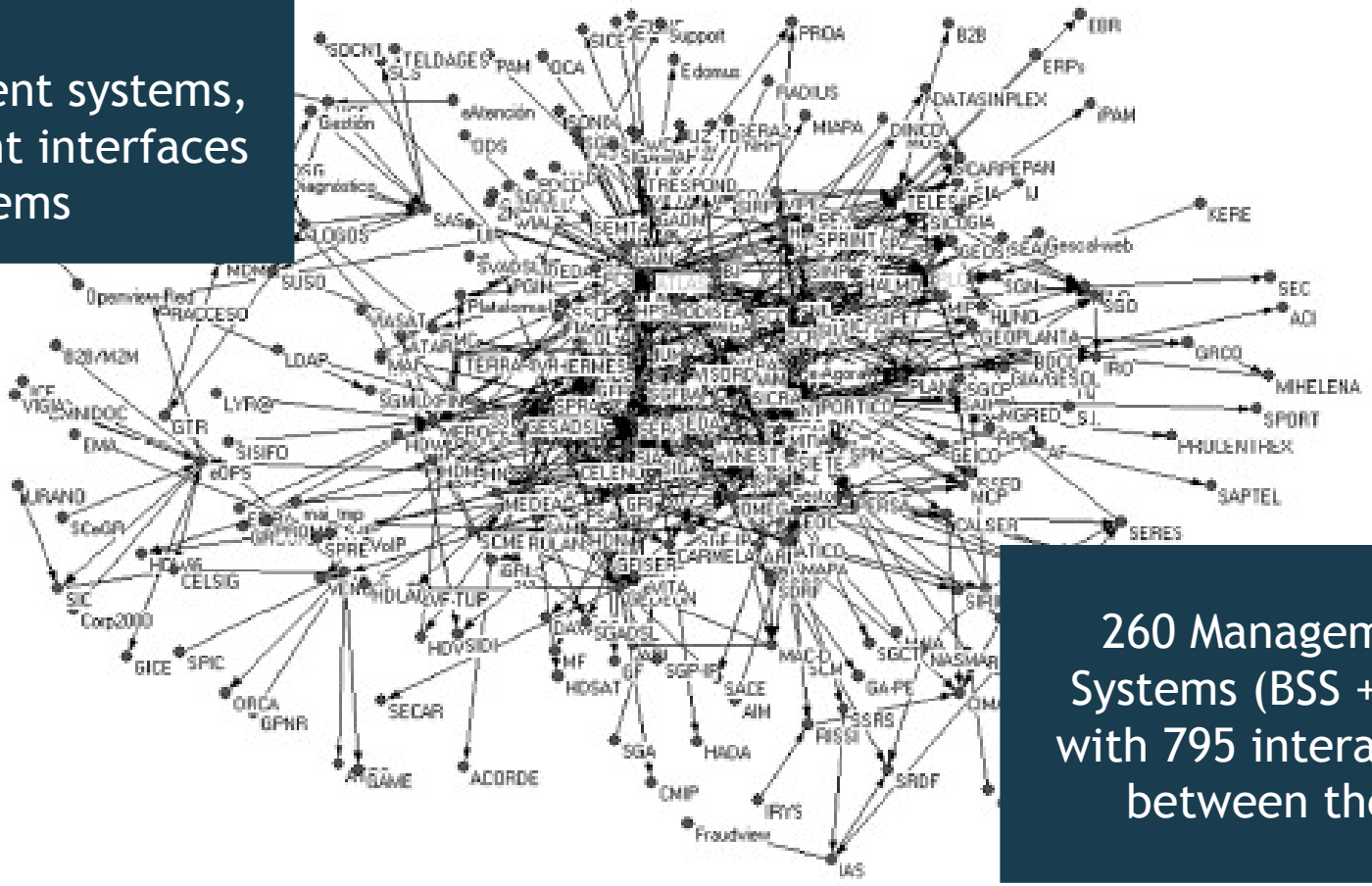
Operations Support System: The Simplified View



Source: Software Defined Service Orchestration: Dynamic, on-demand network services for the Cloud era. Amartus White Paper

Operations Support System: The Actual View

System map of Telefónica Spain.
Nodes represent systems, links represent interfaces between systems



260 Management Systems (BSS + OSS) with 795 interactions between them

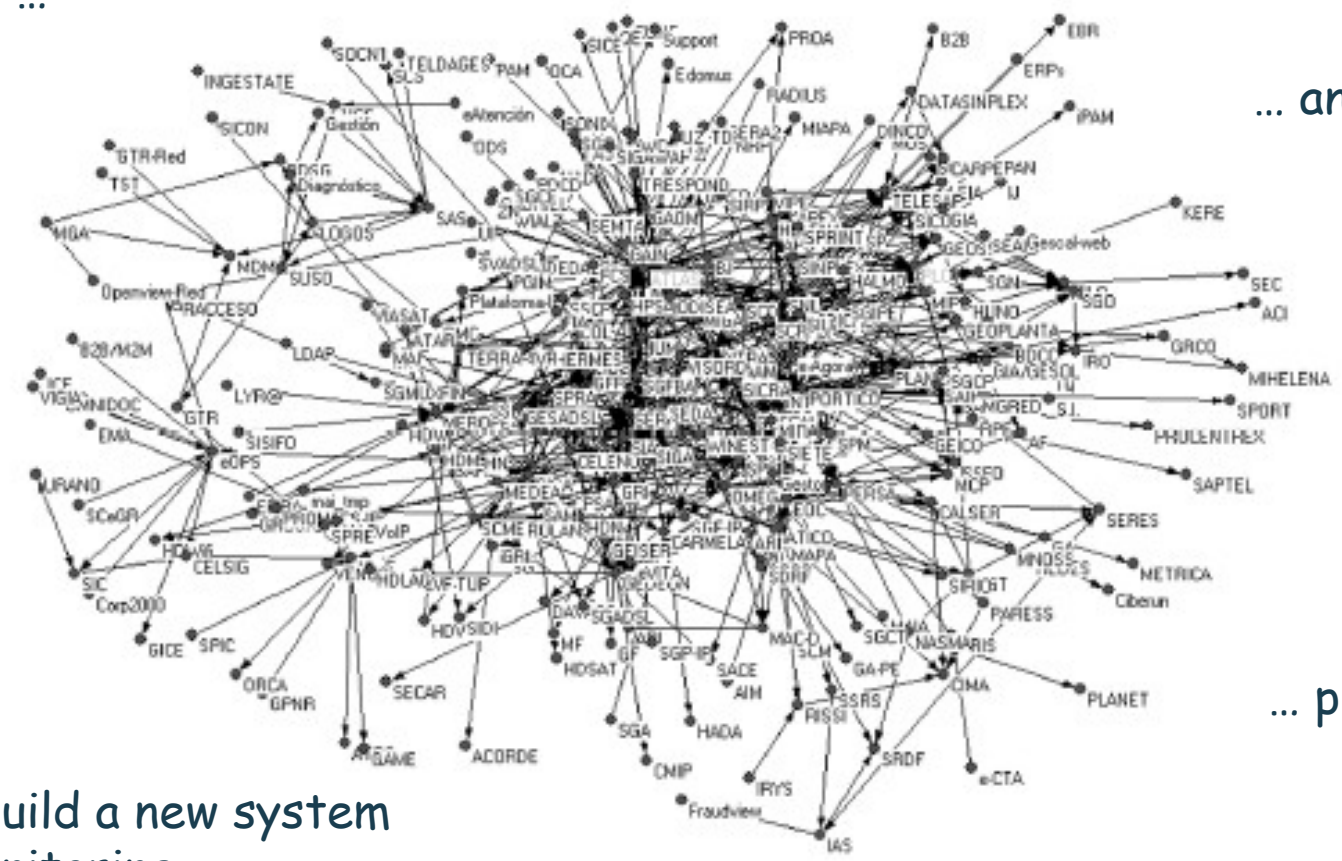
Source: Mouronte, M.L.; Armas, A.; "Complexity in the Systems Network of a Telecommunication Operator", 2010 Fifth International Multi-conference on Computing in the Global Information Technology (ICCGI), pp. 116-120, 20-25 Sept 2010

Each Time a New Technology Is Introduced…

Ups, inventory again …

Inventory goes here…

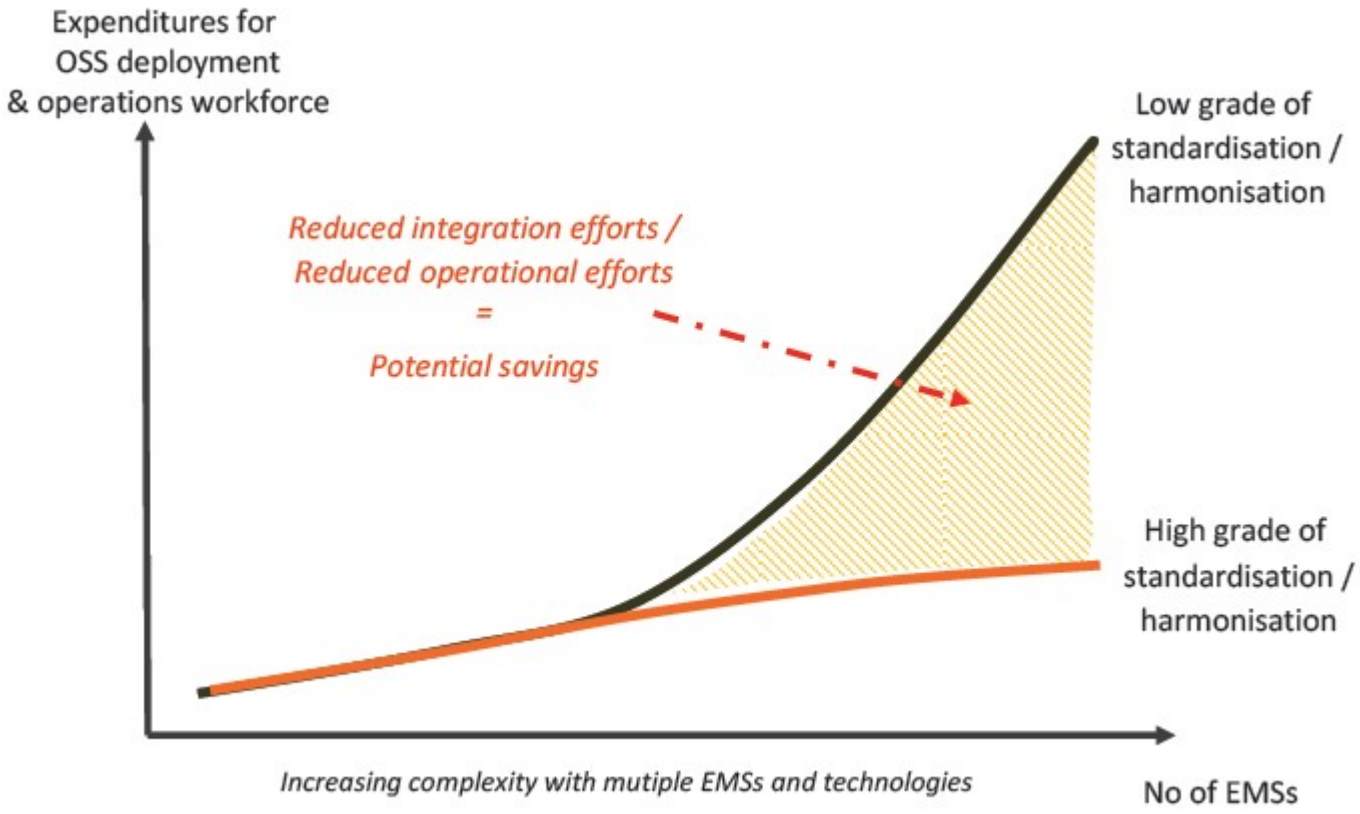
… and here…



… provisioning…

Let's build a new system for monitoring…

… With the Corresponding Impact in the Maintenance Costs



Source: TM Forum Handbook Case Study 2012

Counting Current OSS Pros and Cons

Pros

- OSS implement **intelligent mechanisms** for network management

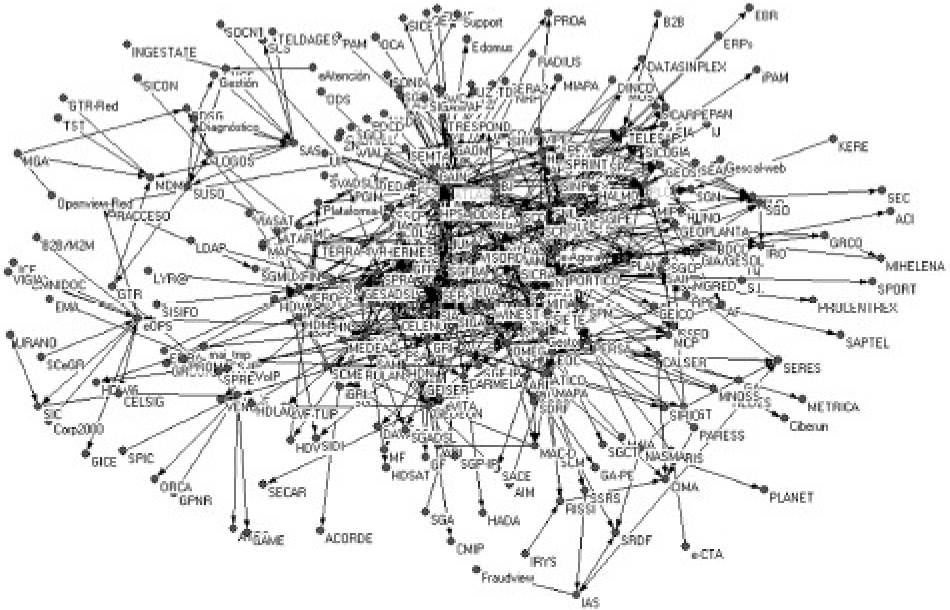
- Rely on **manually-maintained inventory systems**, which can not reflect dynamicity
- **Not scalable**
- Lack of prediction capabilities and **fault-preventive actions**
- …

Cons

- Multiple systems, APIs, GUIs & **manual processes**
- Network & element centric, **lack of service awareness**
- **'Hardwired'** for specific technologies & network segments
- **Cost & time-consuming** to evolve and maintain
- Closed systems designed for use by **especialized personnel** only
- **Long time-to-market** for new services

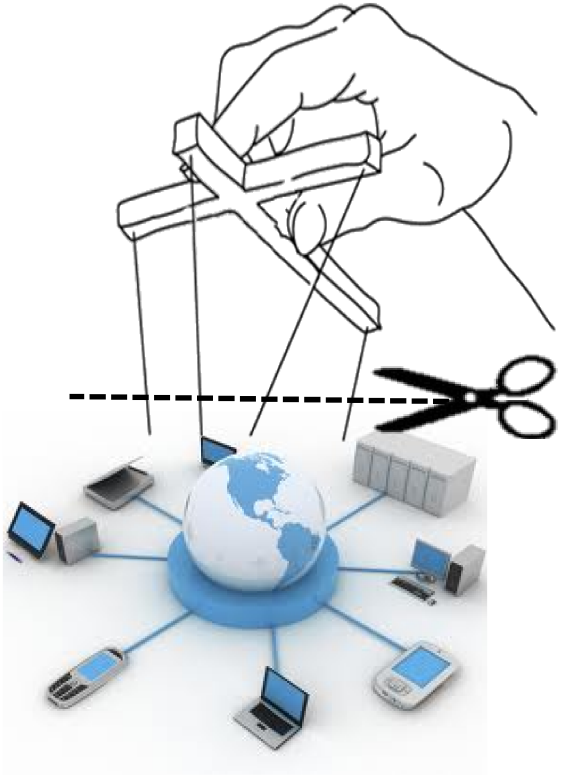
Build It First, Manage It Later

- Network and organization were built first, management approaches were designed later
- The result was the ossified OSS map
  (the pun is intentional)
- And new technologies on their way, like NFV…
- We need to run from spaghetti network management
- What if we attempt to provide self-management capabilities?



Gaining Flexibility through Autonomy

- Adaption
  - Self-discovery: a function that is capable to identify neighbour functions and locate the resources it needs
  - Self-configuring: a function that can dynamically configure itself dynamically, according to its changing environment
- Efficiency
  - Self-optimizing: a function that can tune its way of working in order to maximize efficiency while meeting QoS levels
- Security
  - Self-healing: a function that can evaluate its own state and perform corrective actions without disrupting the operation in order to make the environment more resilient by reducing the impact of failing components
  - Self-protecting: a function that can detect hostile or intrusive behaviour as it occurs and take autonomous actions to make itself less vulnerable to attacks or general failures

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