Configuration management and monitoring of heterogeneous, inter-organizational cloud infrastructures

**Use Case: Munich Hybrid Cloud in the Munich Higher Education Network**

- **Customer**: LMU, TUM
- **Provider**: Campus Management Software, Library Services, Virtual Machine (Kern), Virtual Machine (VMware)
- **User**: Service Manager, Enrollment service

**Challenges:**
- Composition of services necessitates multiple different input types for each service manager.
- Service Asset and Configuration Management for hybrid cloud services requires Status Mapping both across organizations and across the different service management levels.

**Our Approach: Standards form the basis on all levels**
- UN/CEFACT’s Modeling Methodology (UMM)
- UN/CEFACT = United Nations Center for Trade Facilitation and Electronic Business
- Information modeling of business requirements of inter-organizational business processes
- Platform independent
- Core Components Library (CCL): Definition of reusable building blocks
- DMTF’s Configuration Management Database Federation (CMDBf) standards
- Enables to federate and access information from complex, multi vendor infrastructures
- Simplifies the process of managing related configuration data stored in multiple CMDBs and MDRs
- DMTF’s Virtualization Management (VMAN) standard
- Set of specifications for the management lifecycle of a virtual environment
- Open Virtualization Format (OVF): Standard format for packaging and describing virtual machines and applications for deployment across heterogeneous virtualization platforms
- VMAN profile: standardize many aspects of the operational management of a heterogeneous virtualized environment

**Open issues**
- To enable Status Accounting for hybrid cloud deployments corresponding tools must enable modeling of organizations (OM), information and its relationships (IM), communication (CM) and functional (FM) aspects

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- IT Service Management Perspective
  - Specification of inter-organizational IT Service Management (ITSM) processes influences possible service states, e. g. iso-Problem Management -> State ‘problem’
  - ITSM on intra- and inter-organizational level needs to be aligned
  - Orientation on standards like ITIL or ISO 20000 could ease alignment because of widespread international degree of familiarity
  - CM could be modeled according ITIL for CDMB and iso-CMDB
- Proposed Standards are developed “Stand-alone”, thus holistic integration efforts necessary
- Emergence = complex patterns and systems might arise out of a multiplicity of relatively simple interactions:
  - Observable in inter-organizational service scenarios?
  - Small cause might have large effect: root cause analysis has to be done now inter-organizational
- MDR versus CMDB: replace or integrate decision for any MDR necessary