MetaCentrum

Cloud Standards

Introduction

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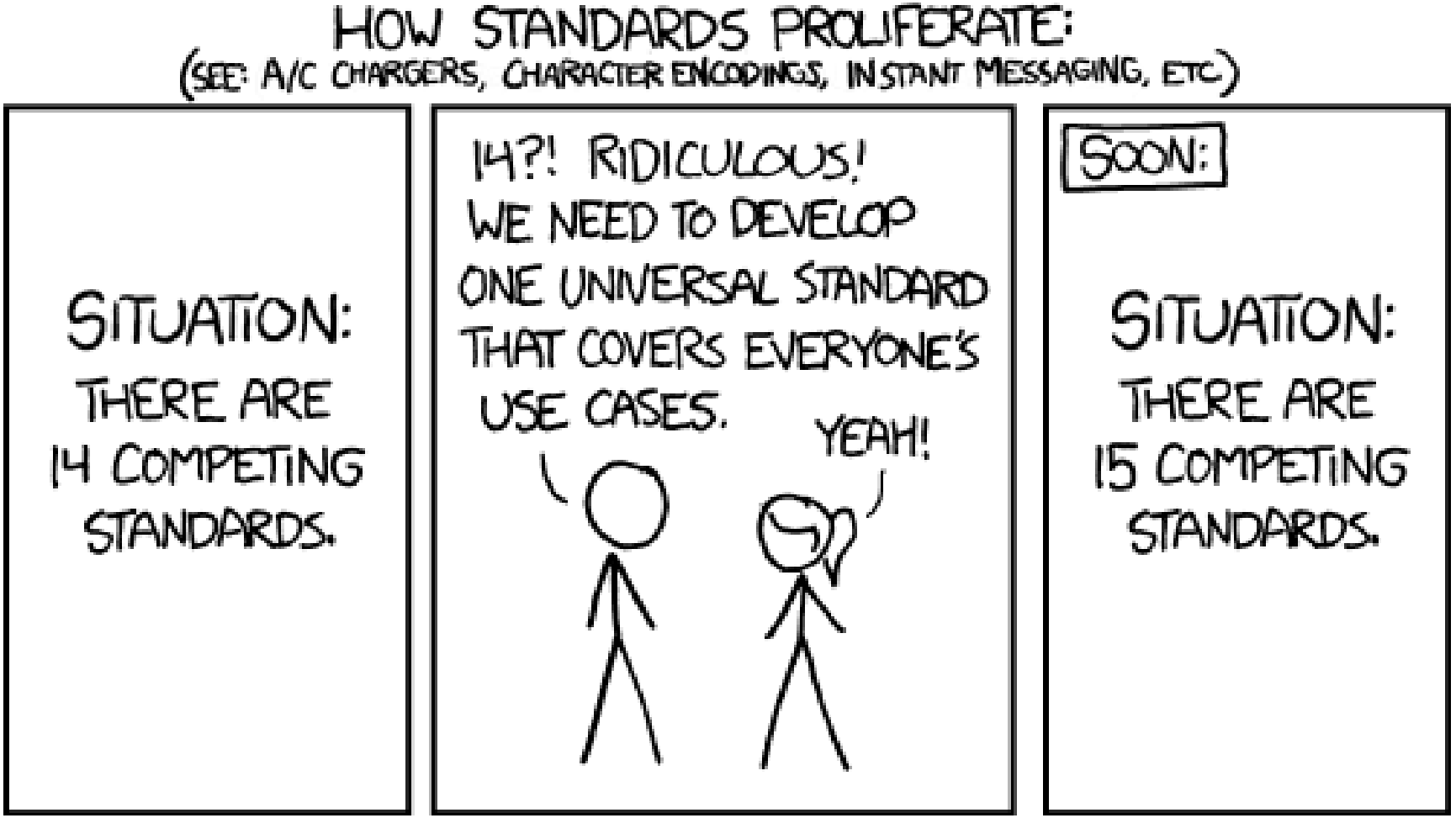
Standards?

- *De jure* and/or *de facto* standards
- Attempts to agree on a common framework and/or concepts
- Provide guidance in complex situations
- Improve over-all understandability of solutions
- Facilitate interoperability between components
- Possibility to avoid vendor lock-in for users
- Standardization bodies: ISO, IEEE, W3C, IETF, OGF, ...

Standards?



https://xkcd.com/927/

Categorization

High-level frameworks, guidelines, and practices

- ITIL – Information Technology Infrastructure Library
- FitSM – Light-weight IT Service Management
- ISO 27k – Information Security Guidelines and Practices

Communication protocols and resource descriptions

- OCCI – Open Cloud Computing Interface
- CIMI – Cloud Infrastructure Management Interface
- CDMI – Cloud Data Management Interface
- TOSCA – Topology and Orchestration Specification for Cloud Applications

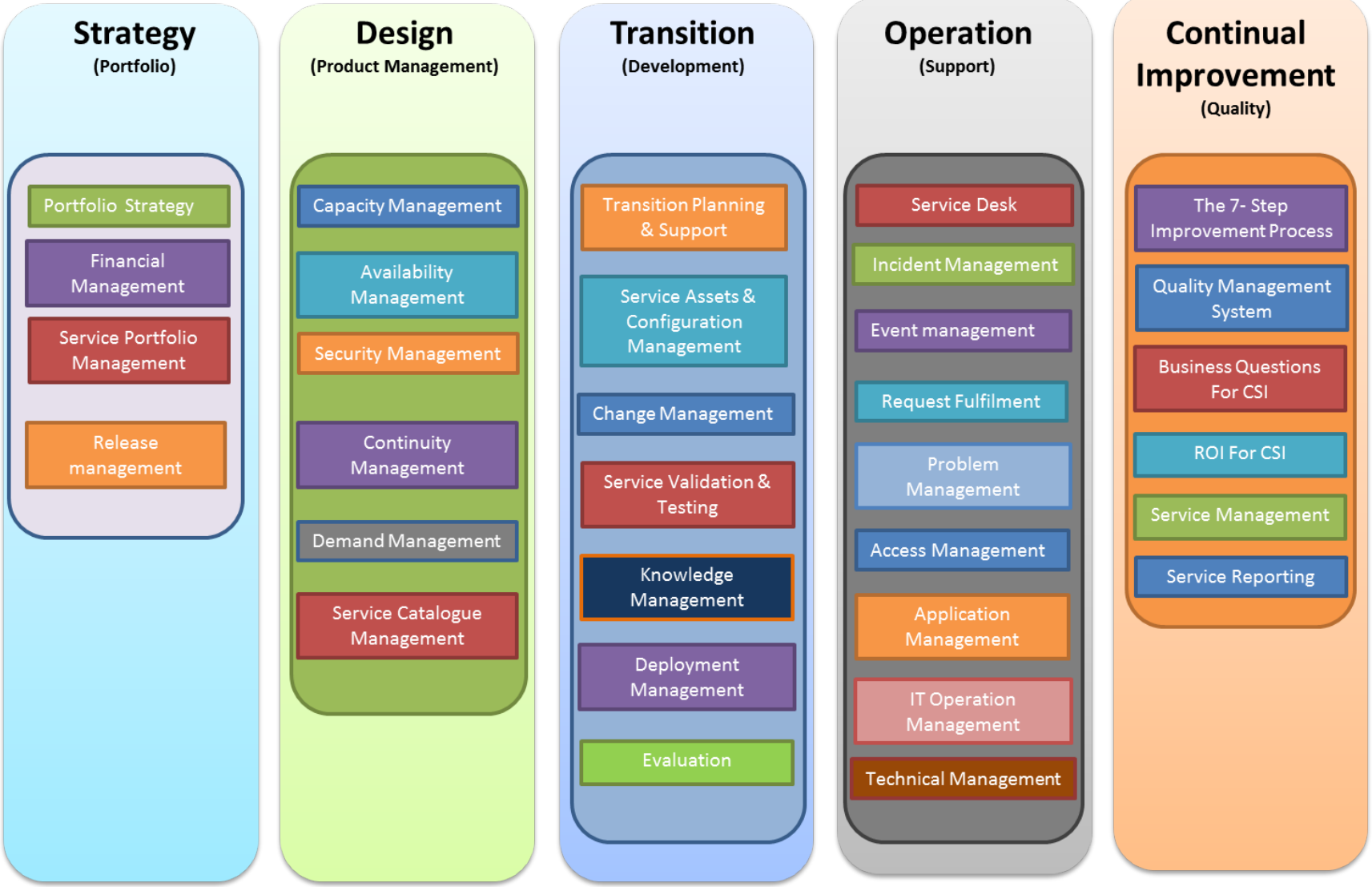
Low-level technical standards

- Wide variety of RFC, ITU-T, and IEEE standards

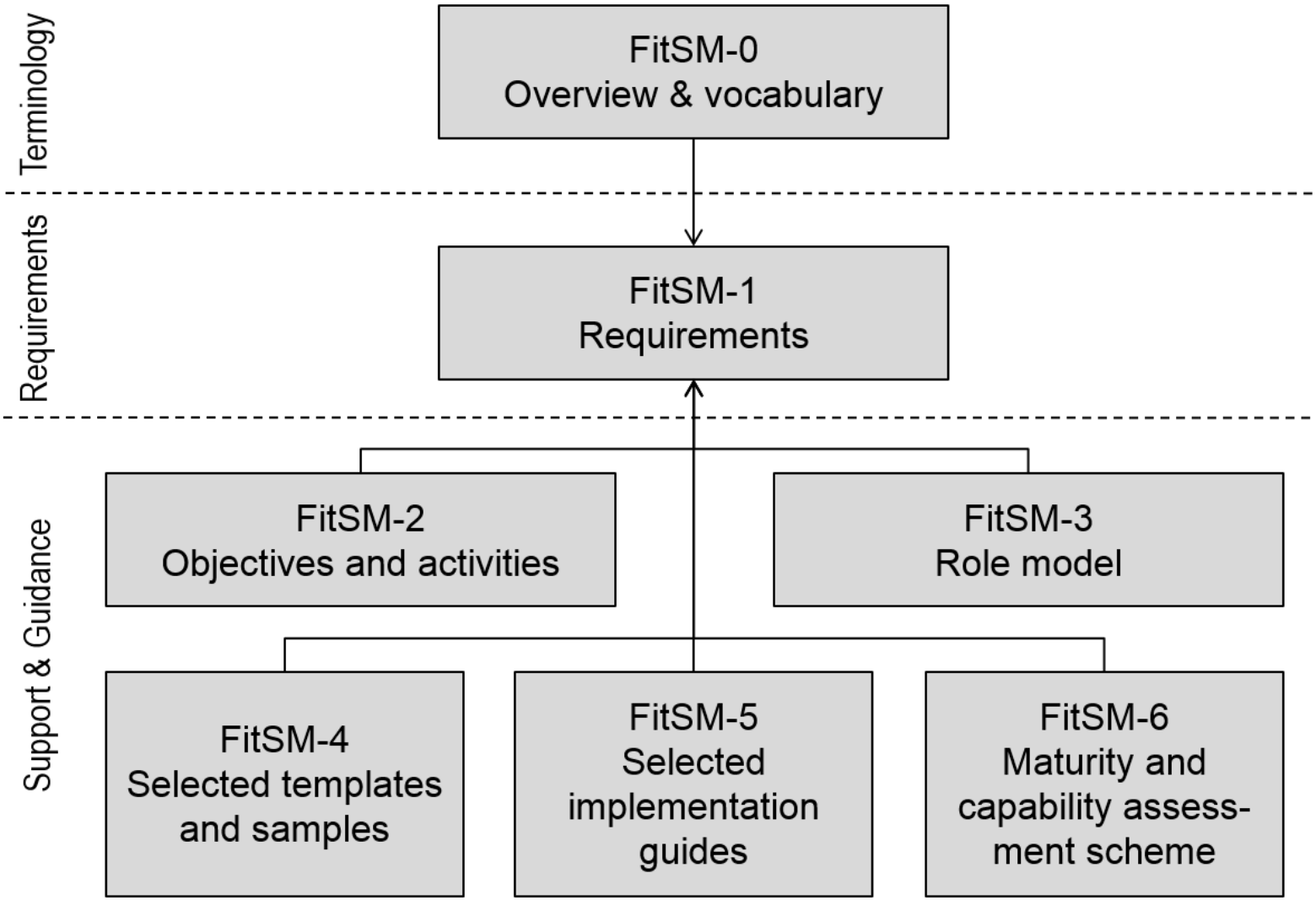
– Frameworks and Guidelines –

(details in previous lectures)

ITIL


Strategy
(Portfolio)
Portfolio Strategy
Financial Management
Service Portfolio Management
Release management
Design
(Product Management)
Capacity Management
Availability Management
Security Management
Continuity Management
Demand Management
Service Catalogue Management
Transition
(Development)
Transition Planning & Support
Service Assets & Configuration Management
Change Management
Service Validation & Testing
Knowledge Management
Deployment Management
Evaluation
Operation
(Support)
Service Desk
Incident Management
Event management
Request Fulfilment
Problem Management
Access Management
Application Management
IT Operation Management
Technical Management
Continual Improvement
(Quality)
The 7- Step Improvement Process
Quality Management System
Business Questions For CSI
ROI For CSI
Service Management
Service Reporting

FitSM

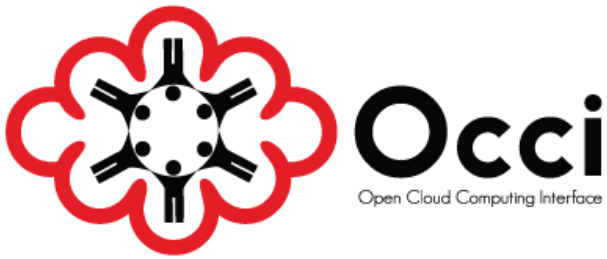

Terminology
Requirements
Support & Guidance
FitSM-0
Overview & vocabulary
FitSM-1
Requirements
FitSM-2
Objectives and activities
FitSM-3
Role model
FitSM-4
Selected templates and samples
FitSM-5
Selected implementation guides
FitSM-6
Maturity and capability assess-ment scheme

ISO/IEC 27k

ISO/IEC 27000	Overview and vocabulary
ISO/IEC 27001	Information security management systems
ISO/IEC 27002	Code of practice
ISO/IEC 27017	Code of practice for cloud services

– Management –

OCCI



- OGF's **O**pen **C**loud **C**omputing **I**terface
- Boundary-level interoperability and extensibility protocol
- Abstract nature, extensions for specific areas of functionality
- RESTful API over HTTP (plain or JSON rendering)

CIMI

- DMTF's **C**loud **I**nfrastructure **M**anagement **I**nterface
- Specifically targeting IaaS cloud APIs
- Other areas such as PaaS or SaaS out-of-scope
- RESTful API over HTTP (XML or JSON rendering)

AWS EC2

- Amazon's proprietary **E**lastic **C**loud **C**ompute interface
- Considered a *de facto* standard due to its popularity
- Other platforms offering reverse-engineered equivalents
  $\rightarrow$ sub-sets of features

– Storage –

CDMI

- SNIA's **C**loud **D**ata **M**anagement **I**nterface
- API to create, retrieve, update and delete data elements
- Oriented towards so-called object storage (not block or fs-based)
- Handling data and associated metadata

AWS S3

- Amazon's proprietary **S**imple **S**torage **S**ervice interface
- Considered a *de facto* standard due to its popularity
- Other platforms offering reverse-engineered equivalents
  $\rightarrow$ sub-sets of features

– Service Orchestration –

TOSCA

- OASIS' **T**opology and **O**rchestration **S**pecification for **C**loud **A**pplications
- Enhancing the portability of cloud applications and services
- Describes service components, component relationships, operational behavior

OpenStack HOT

- OpenStack's platform-specific **H**eat **O**rchestration **T**emplate
- Replacing the earlier CloudFormation-compatible format
- YAML-formatted resource templates, input parameters and outputs

AWS CloudFormation

- Amazon's proprietary way to create and manage collections resources
- Considered a *de facto* standard due to its popularity
- Other platforms offering reverse-engineered equivalents
  $\rightarrow$ sub-sets of features

– Virtual Appliances –

Appliance Formats

Open Virtualization Format (OVF):

- DMTF's standard for appliance packaging (published as ISO 17203)
- Enables the authoring of portable virtual systems and the transport of virtual systems
- Supports various disk formats (see below)

Disk Format:

- Often specific for the given virtualization platform
- Open formats: cow, qcow, qcow2, raw, ...
- Proprietary formats: vmdk, vdi, vhd, ...

The End

– That's All Folks! –

...

Contact Info

Do you have any questions?

- ask **NOW!**
- ask us directly at parak@cesnet.cz or sustr4@cesnet.cz
- send your questions to cloud@metacentrum.cz