

Overview of SLA@SOI and its framework architecture

SLAs empowering a dependable service economy

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**The service marketplace
is
frustrating and cumbersome
for both
service providers and
consumers**

Motivation: Challenges, Goals, Vision

Service Consumer

- lack formal SLAs
- search standardized way to negotiate

Flexible usage of dependable services

Software Provider

- struggle to understand the behaviour of their SOA stack

Engineering of predictable services

Service Provider

- challenged to provide customized, dependable services at low cost

Automated SLA negotiation and management

Infrastructure Provider

- virtualization technologies allow for adaptive SOIs

SLA enforcement via adaptive infrastructures

Vision of SLA@SOI

An invigorated European economy thriving on a market of dependable services empowered by SLAs

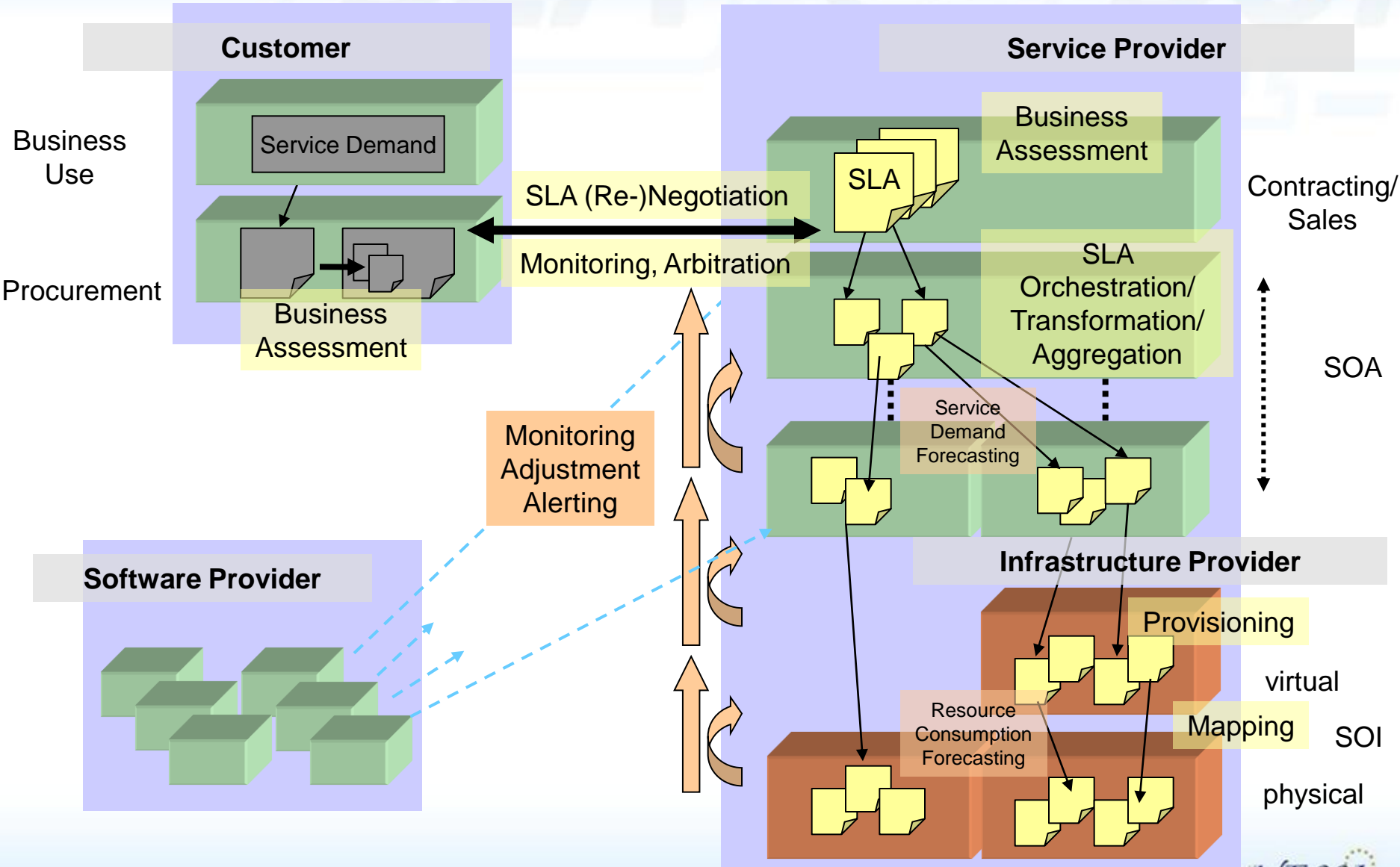
Mission

- to deliver and showcase an innovative open SLA Management Framework
 - ◇ that provides holistic support for service level objectives
 - ◇ enabling an open, dynamic, SLA-aware market for European service providers

Expected Benefits

- **more dynamic:**
 - ◇ reduced preparation / setup time
- **more dependable**
 - ◇ through holistic SLA support
- **more automated and thus cost efficient**
 - ◇ automation of service management procedures
- **more flexible**
 - ◇ simplifying the adjustment or reprovisioning
- **more transparent**
 - ◇ understanding cost drivers and non-functional properties

Envisioned Interaction



Main innovations

- **SLA management framework**

- ◇ harmonizing perspectives of relevant stakeholders (software/service/infrastructure provider and customer)
- ◇ standards for SLA specification and negotiation & systematic multi-layer SLA management (planning, optimization, and provisioning), monitoring and accounting
- guaranteed QoS in a dynamic and end-to-end fashion via consistent SLA handling across IT stack

- **adaptive SLA-aware infrastructures**

- ◇ standardized interfaces for adaptive infrastructures with harmonized access to different virtualization technologies.
- ◇ advanced technologies for SLA enforcement on infrastructure level
- efficient resource usage w/ reliable SLA enforcement at infrastructure level

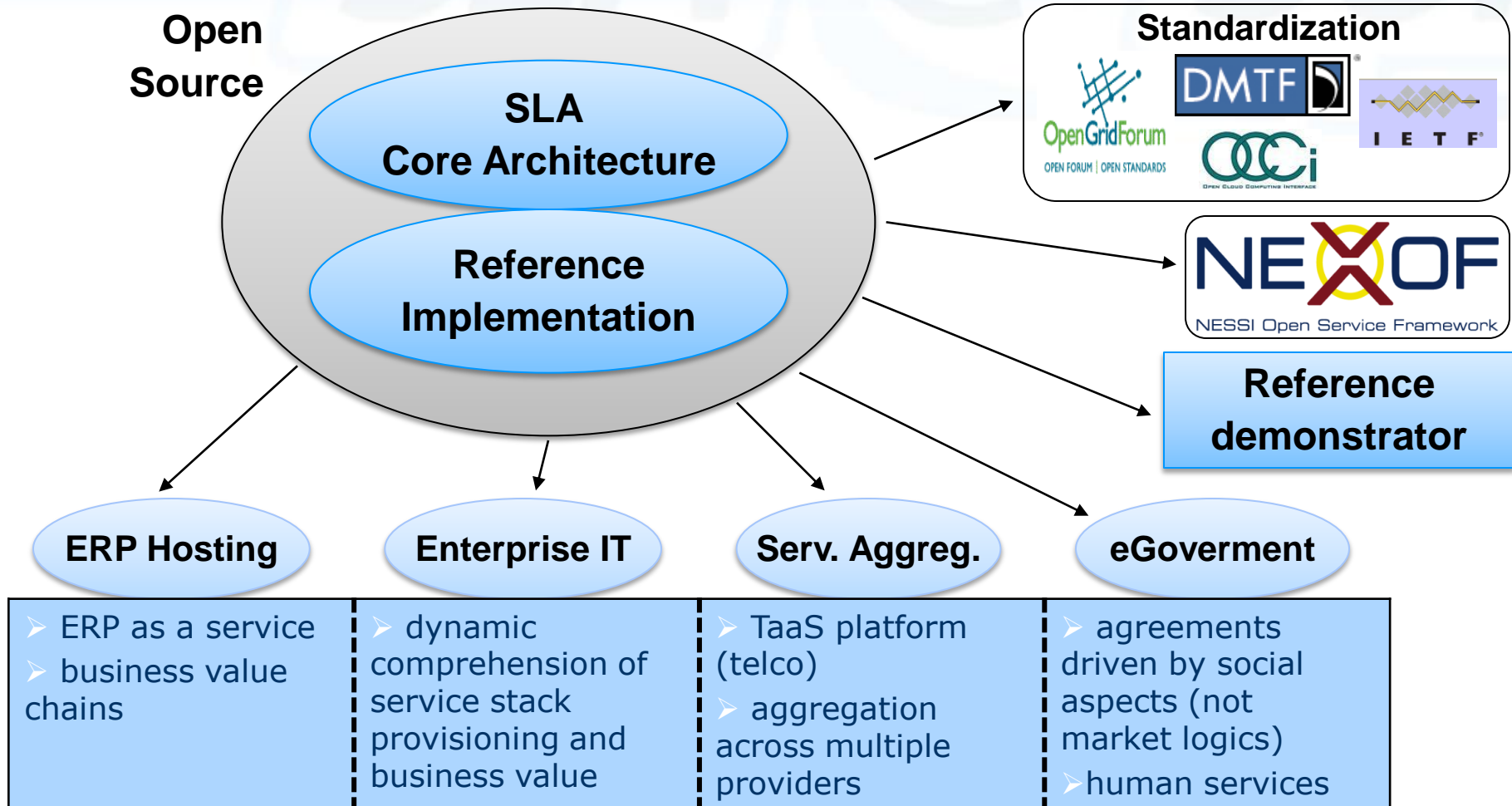
- **engineering methods for predictable service-oriented systems**

- ◇ modelling techniques and prediction tools for SOA and SOI components

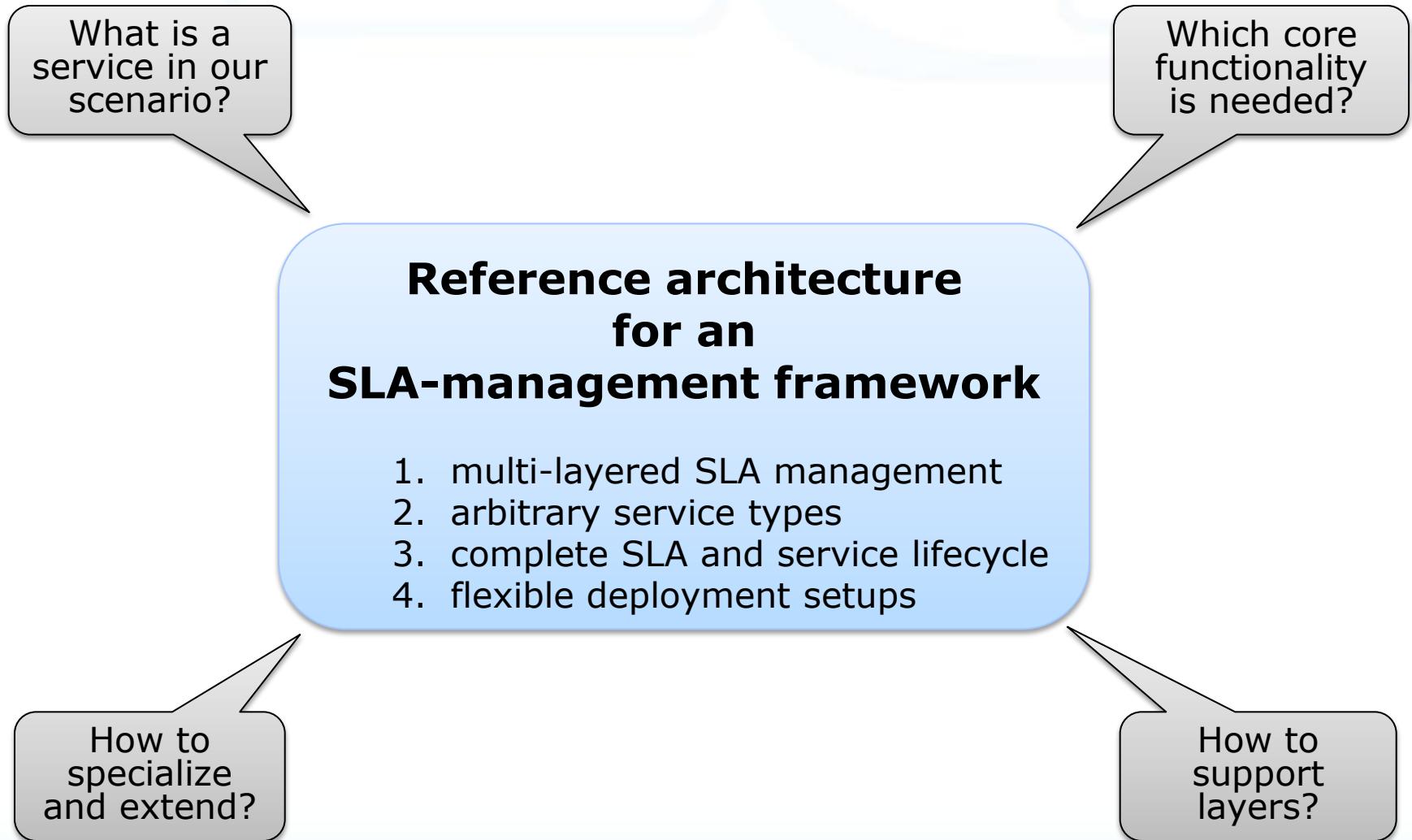
- **business management suite for e-contracting**

- ◇ covers complete business lifecycle of a service provisioning/delivery

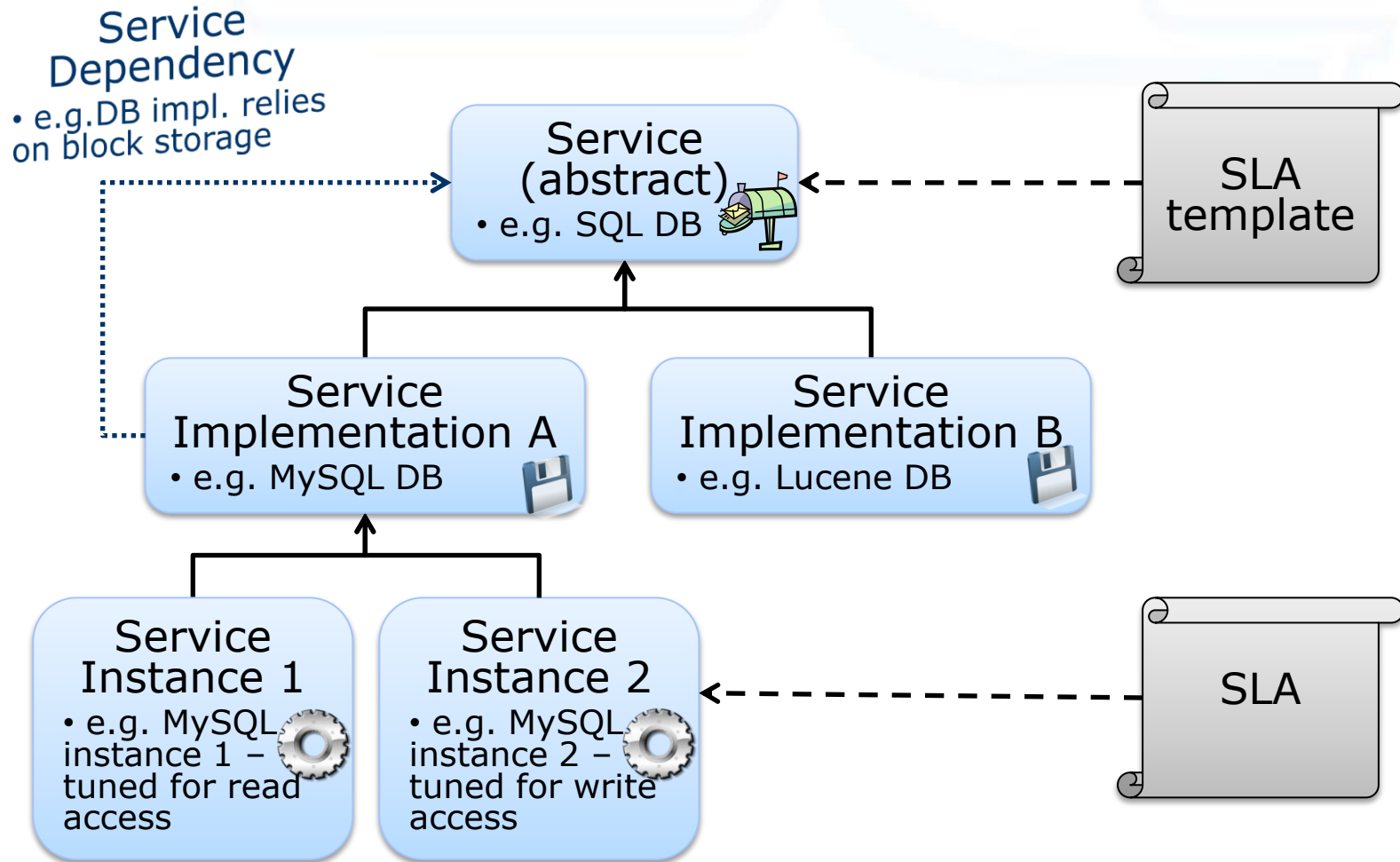
Main project results



➔ Industrial Evaluation Report: “How to run an SLA-driven business”



What is a Service?



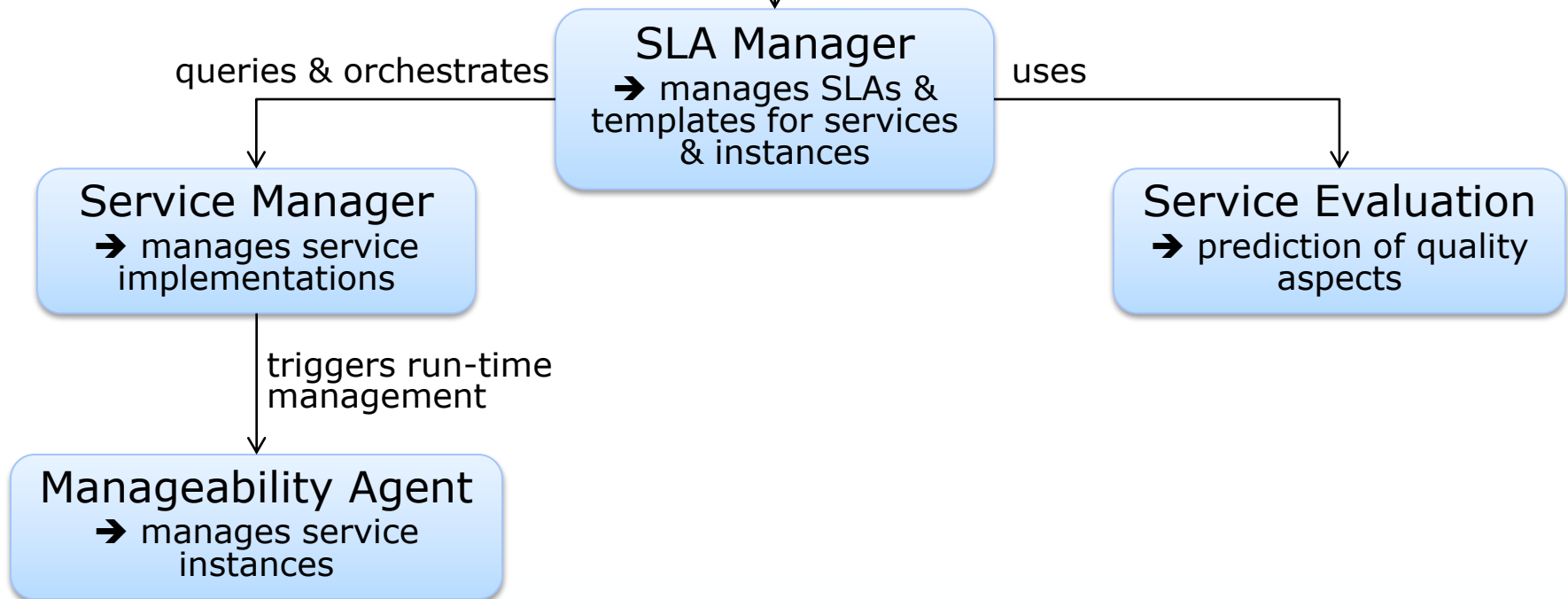
→ Sound understanding of service artefacts & relations

Which Functions are needed?

Customer

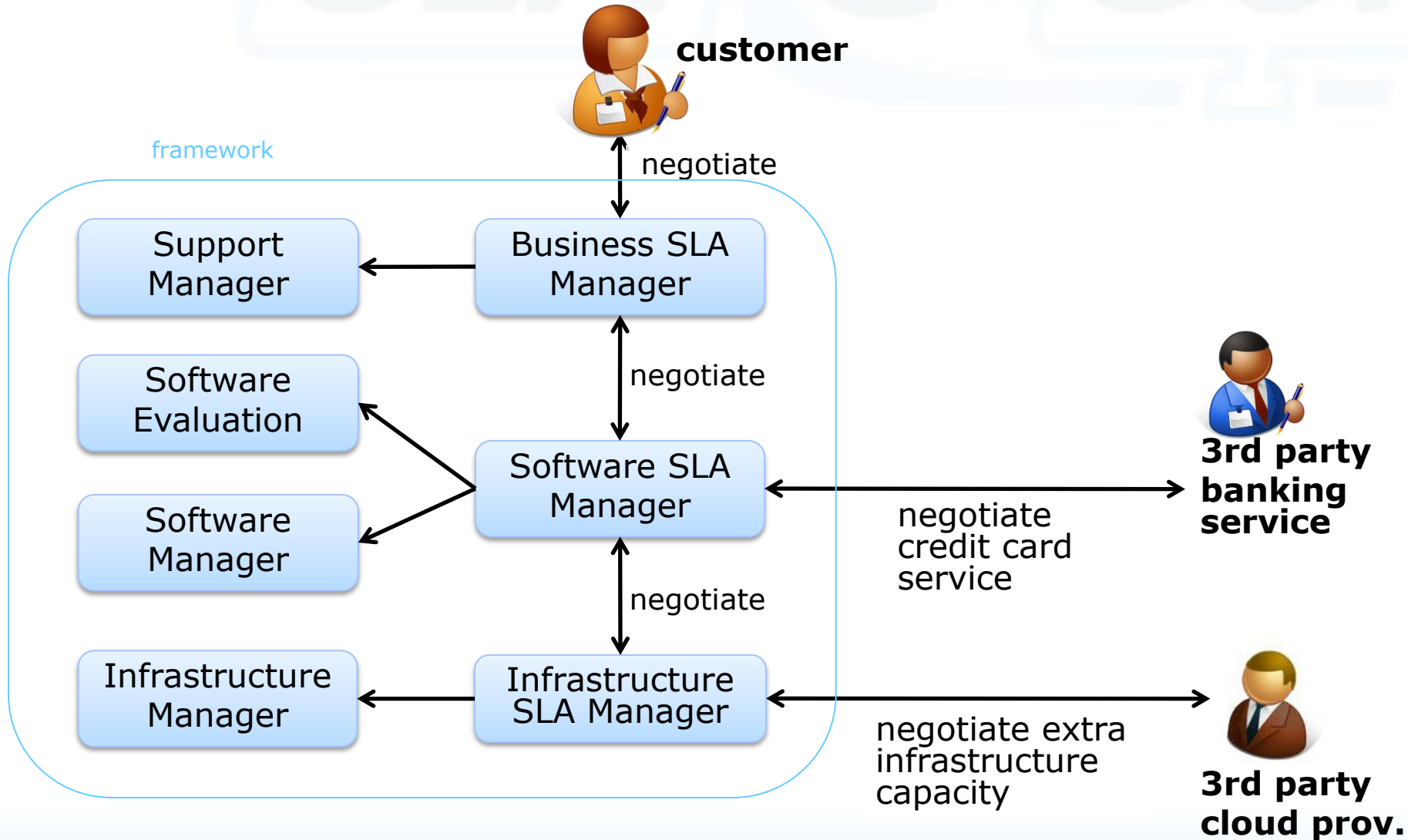


negotiate



→ Few Building Blocks with clear responsibility

Example Setup: Web Shop as a Service

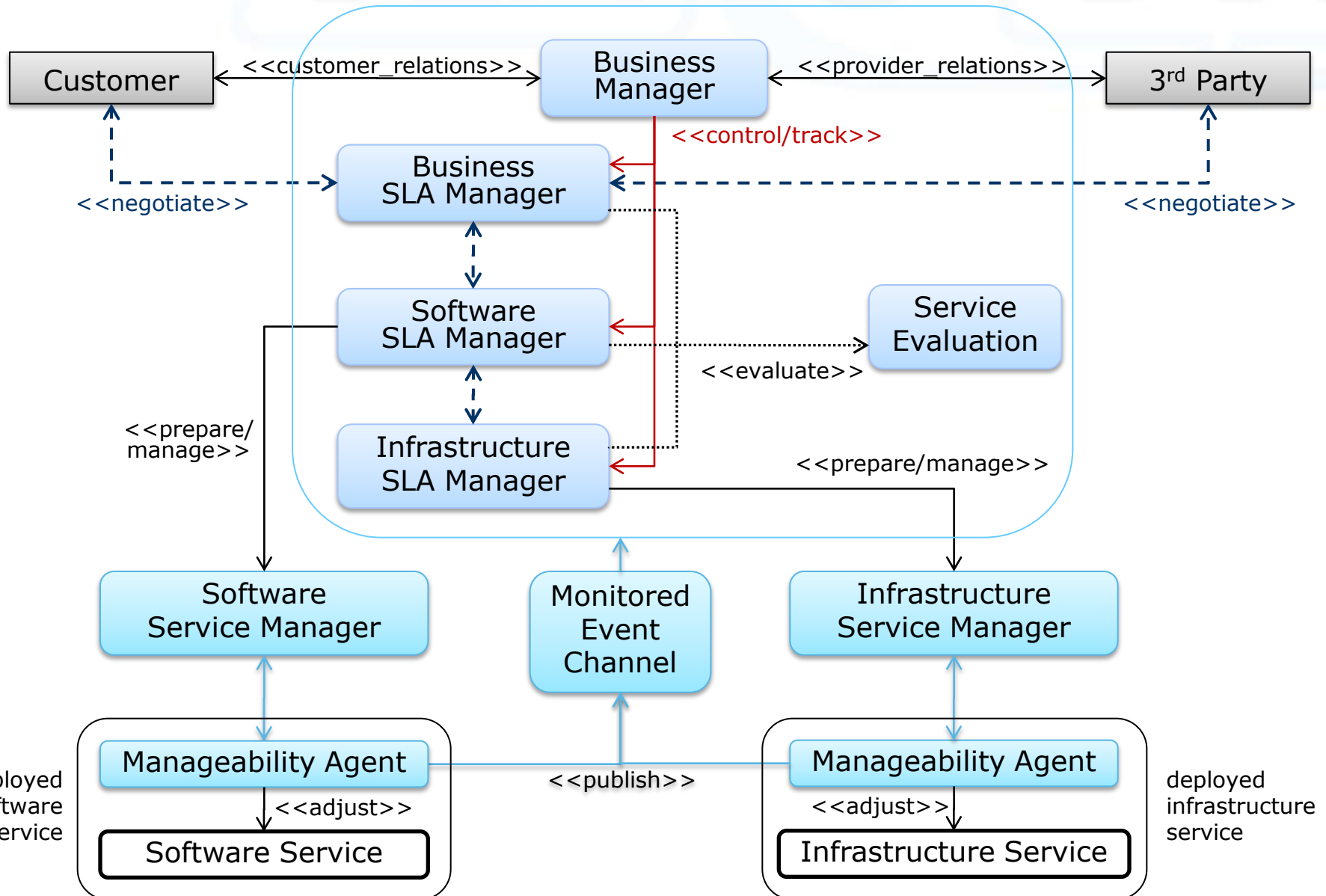


➔ Flexible Framework Setups for different Domains

Altogether: Reference Architecture



framework core



framework core

Generic core elements

- Generic SLA Manager
 - ◇ with abstract planning & provisioning module
- Generic Interfaces
 - ◇ Service Manager
 - ◇ Manageability Agent
 - ◇ Service Evaluation

Domain-specific extensions

- Business-layer
 - ◇ Business Manager (customer & provider relations)
 - ◇ Business SLA Manager (interweaving business logic into SLA management)
- Software-layer
 - ◇ Software SLA Manager, Service Manager, Service Evaluation
- Infrastructure / Cloud-layer
 - ◇ Infrastructure SLA Manager, Service Manager (OCCI compliant)

deployed
software

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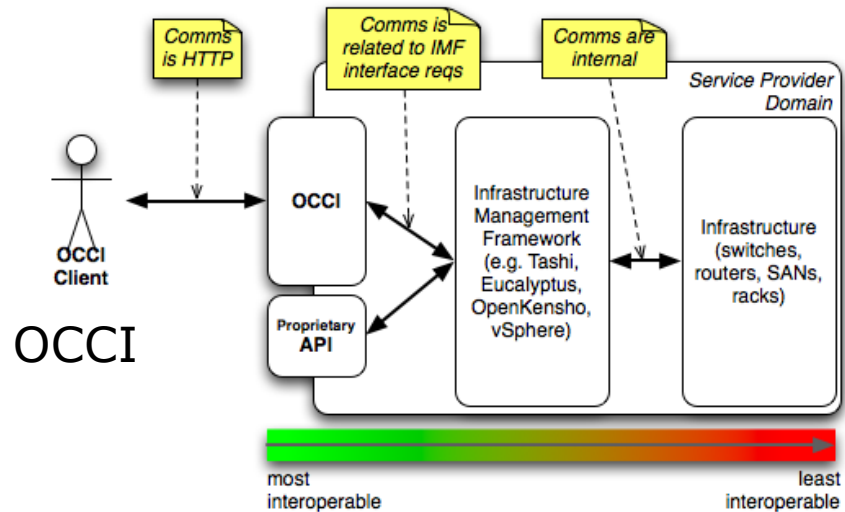
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deployed
infrastructure

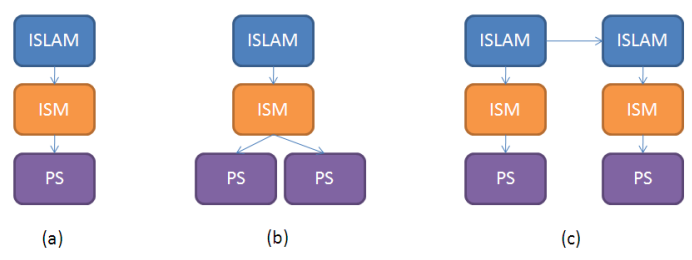
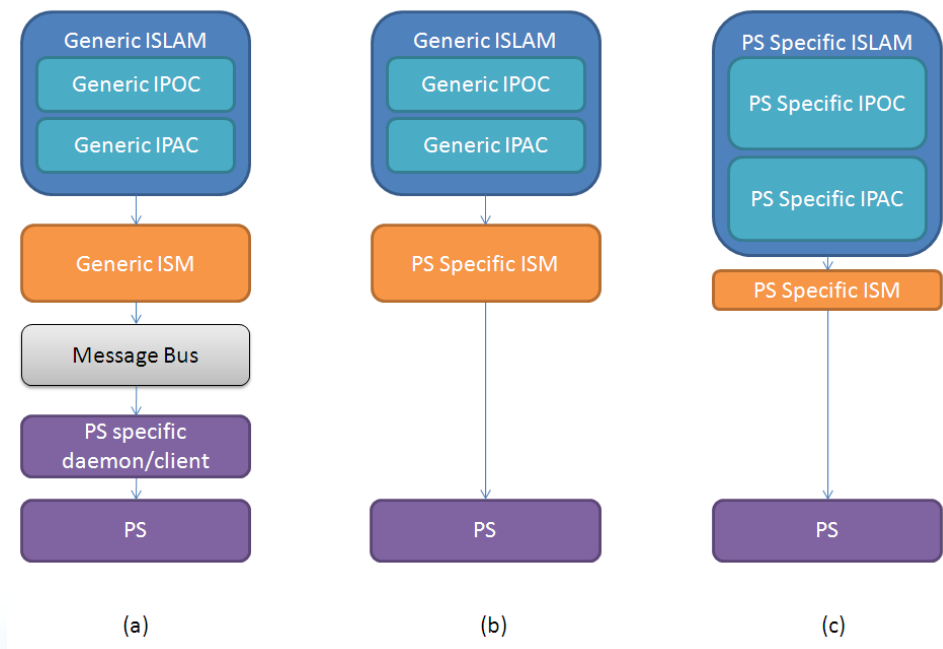
→ A stable framework core with flexible extensions

Specialization Example: Managing heterogeneous Infrastructures

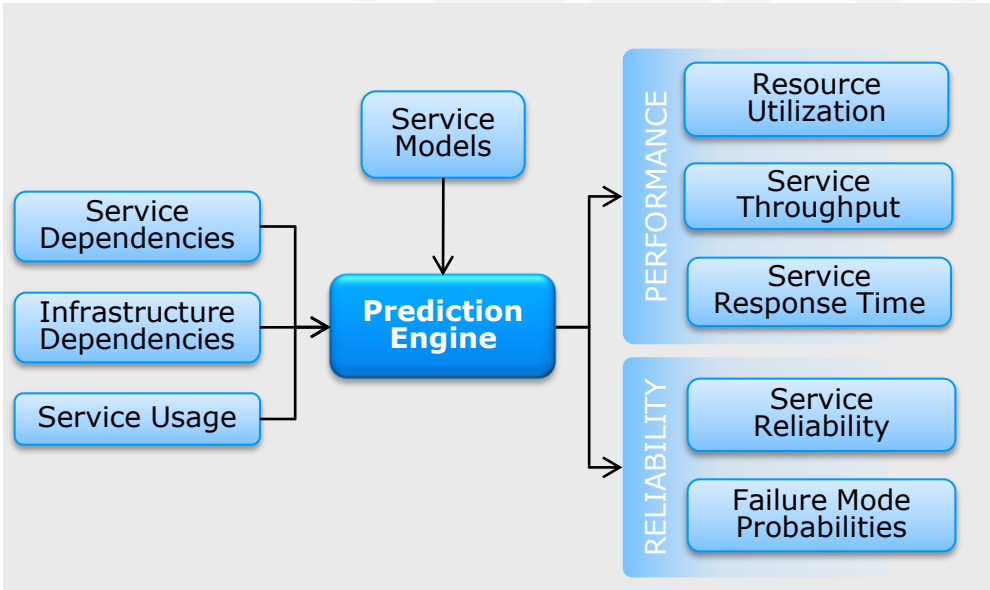
Provider perspective



Generic abstraction supporting multiple ways of managing heterogeneous infrastructures



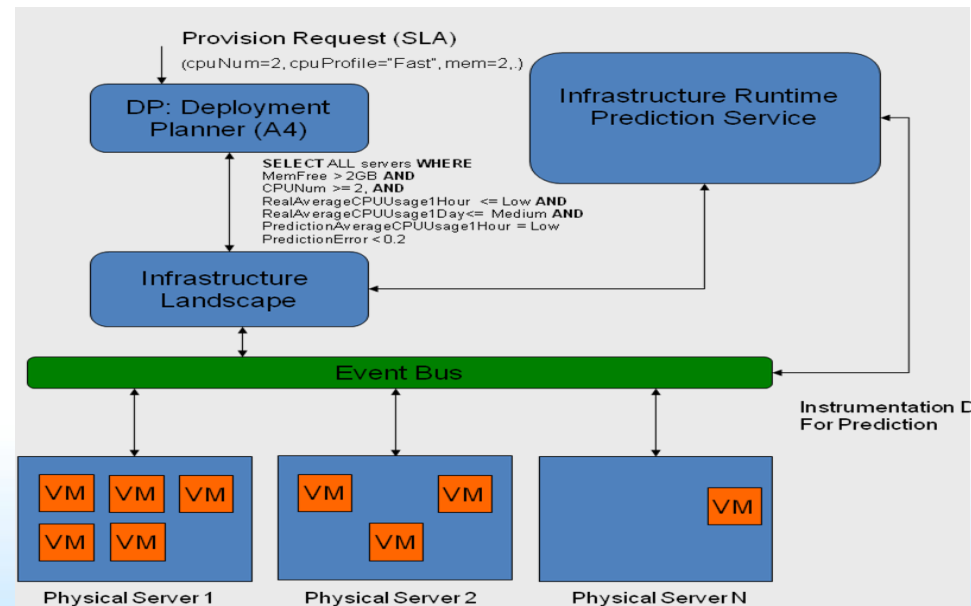
Integrated Solutions for Requirement Prediction



Evaluation of Software Services

On-Demand Provisioning Support

- Machine learning techniques for run-time usage
- Continuous evaluation of prediction quality: training and testing



Reference Architecture

- Provides glue for consistent harmonization of all project innovations
- Covers design-time and run-time
- Relies on common modelling basis
 - ◇ SLA model, service construction model, infrastructure model (OCCI), prediction models (PCM)

Selected technical details/innovation => session 2

Adoption in 4 industrial use cases => session 3

Public availability as open source

- Initial component release on SourceForge – TODAY
- Full release – planned December 2010

**Thank
you!**