



SLA@SOI

Addressing Functional Requirements of the Future Internet

Date: 13/05/2009

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Organisation: Intel Labs Europe



Introducing SLA@SOI



Vision

- A business-ready service-oriented infrastructure empowering the service economy in a flexible and dependable way.

Business-readiness requires

- predictability & dependability → prerequisite for acceptance & uptake of (new) services
- holistic SLA management → transparent IT management
- automated negotiation → dynamic, scalable service consumption

Impact on the knowledge economy

- decreased time to market for new services
- increased productivity and competitiveness
- lower entry barriers, especially for SMEs

Technical Motivation



Service Consumer

- dynamic demand for complex business solutions at low costs

Software Provider

- SOAs provide unprecedented flexibility

Service Provider

- service economy requires dependable services

Infrastructure Provider

- virtualization technologies allow for adaptive SOIs

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Flexible usage
Business
Services

Software Provider

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Engineering of
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Automated SLA
negotiation and
management

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- virtualization technologies allow for adaptive SOIs

SLA enforcement
via adaptive
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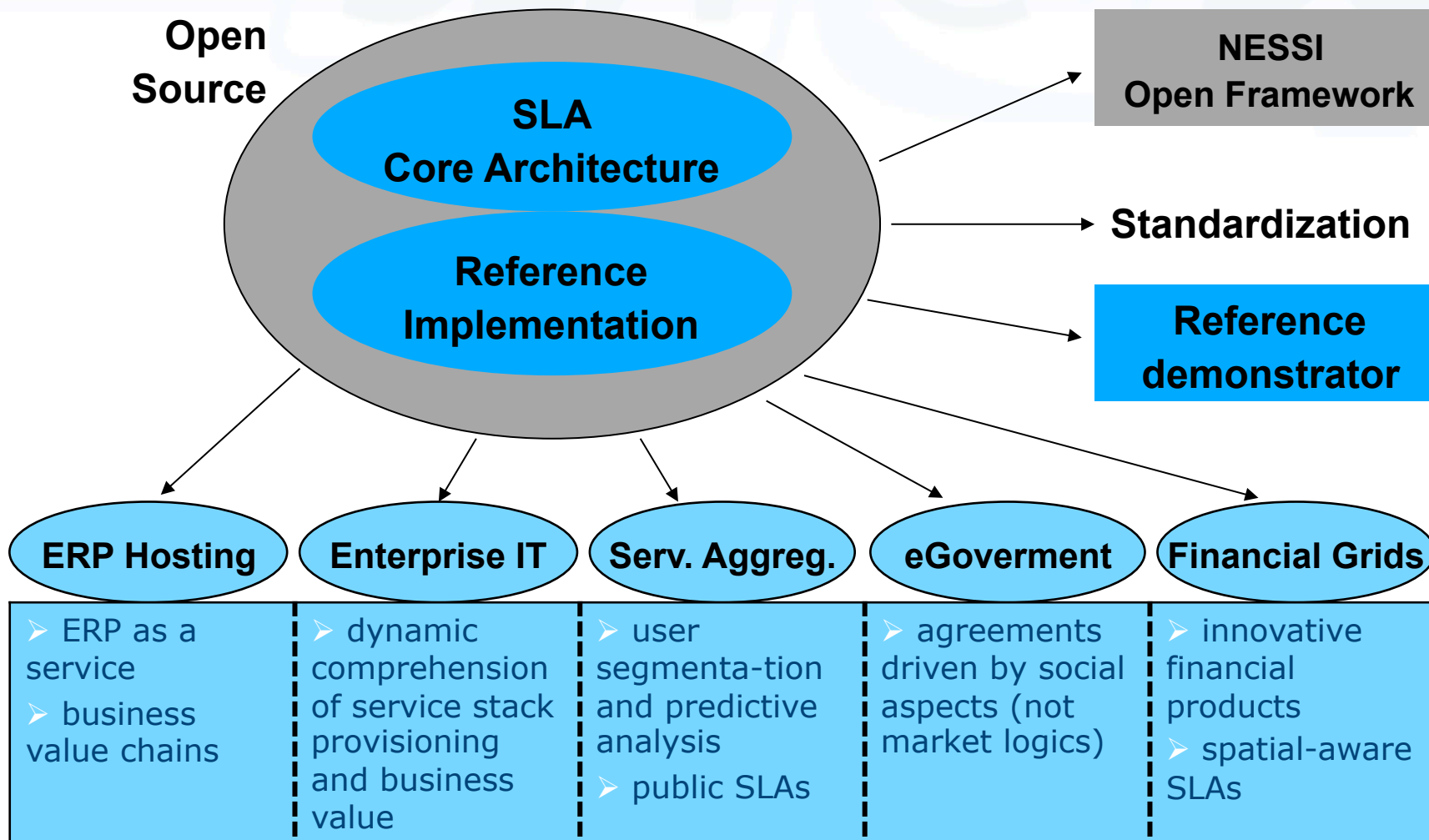
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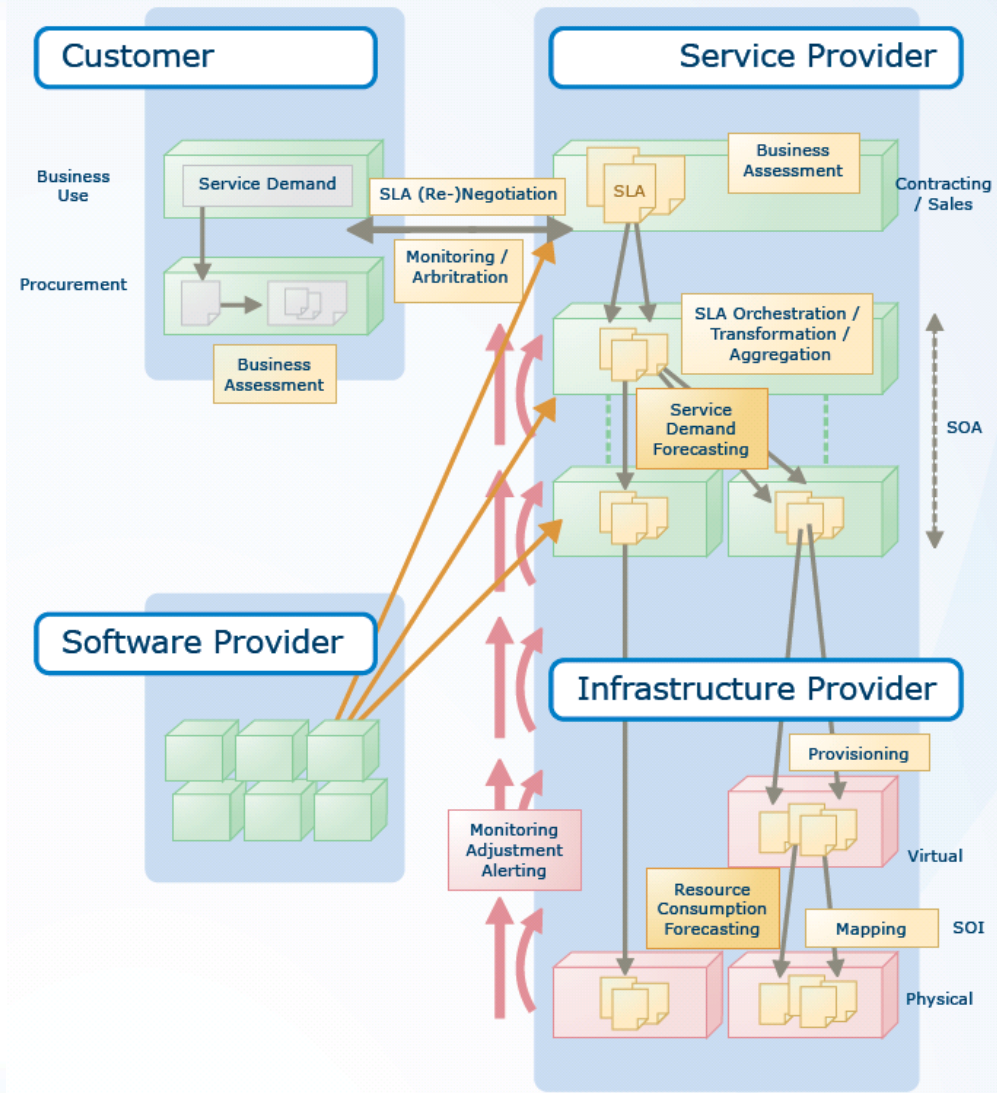


Use Cases & Output



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

Interactions



6. Large-scale Computing

- C. Trustworthy sharing of computing systems including data
 - ◇ Formalising and automating the definition, negotiation, monitoring and disposition of SLAs
 - ◇ Framework includes rich monitoring at all levels of SLA stack; prediction of SLA violations; dynamic reprovisioning; appropriate alerting through to customer

- G. Virtualization cross-business boundaries
 - ◇ Negotiation and management of machine-readable SLAs between service providers and consumers
 - ◇ Software services typically provisioned on dynamically allocated infrastructure: virtualisation a key enabler for IaaS / cloud-computing

7. Service Orchestration

B. Service-On-Demand (coordination & registration of physical services) available on a large scale

- ◇ Dynamic delivery of services based on the on-demand orchestration of lower level services (business, software & infrastructure)

F. Service Trading

- ◇ Computable SLAs (including models and negotiation protocols)
- ◇ Dedicated eContracting component addressing the automation of trading procedures

J. Service Composition Modelling

- ◇ Investigating models for reflecting service and SLA hierarchies which can be used for dynamic composition

3. Notification Services

D. Early Warnings

- ◇ Comprehensive monitoring and alerting functionality to support SLA-awareness
- ◇ Prediction services warning of potential SLA violation, automatically triggering appropriate dynamic reprovisioning

9. Trust

A. Protect Personal Information

- ◇ Can be explicitly declared via SLA Non Functional Parameters

B. Trust into service Providers

- ◇ A prerequisite for IaaS model

E. SLAs

- ◇ Underlying the entire project

10. Service Infrastructure

A. Virtualization

- ◇ Core enabler for IaaS / cloud computing
- ◇ More efficient utilisation of infrastructure & dynamic reprovisioning,
- ◇ Live-migration

B. Operating environments for virtual clouds

- ◇ Infrastructure management framework to manipulate arbitrary internal and external providers
- ◇ Clouds wholly internal, external or spanning the two

C. Energy management in service provisioning

- ◇ Supported via arbitrary internal policies

10. Service Infrastructure (cont'd)

D. Lifecycle management of services

- ◇ Entire lifecycle within scope: service creation, description and offering to negotiation, scheduling, provisioning and ultimately monitoring, adjustment and tear down

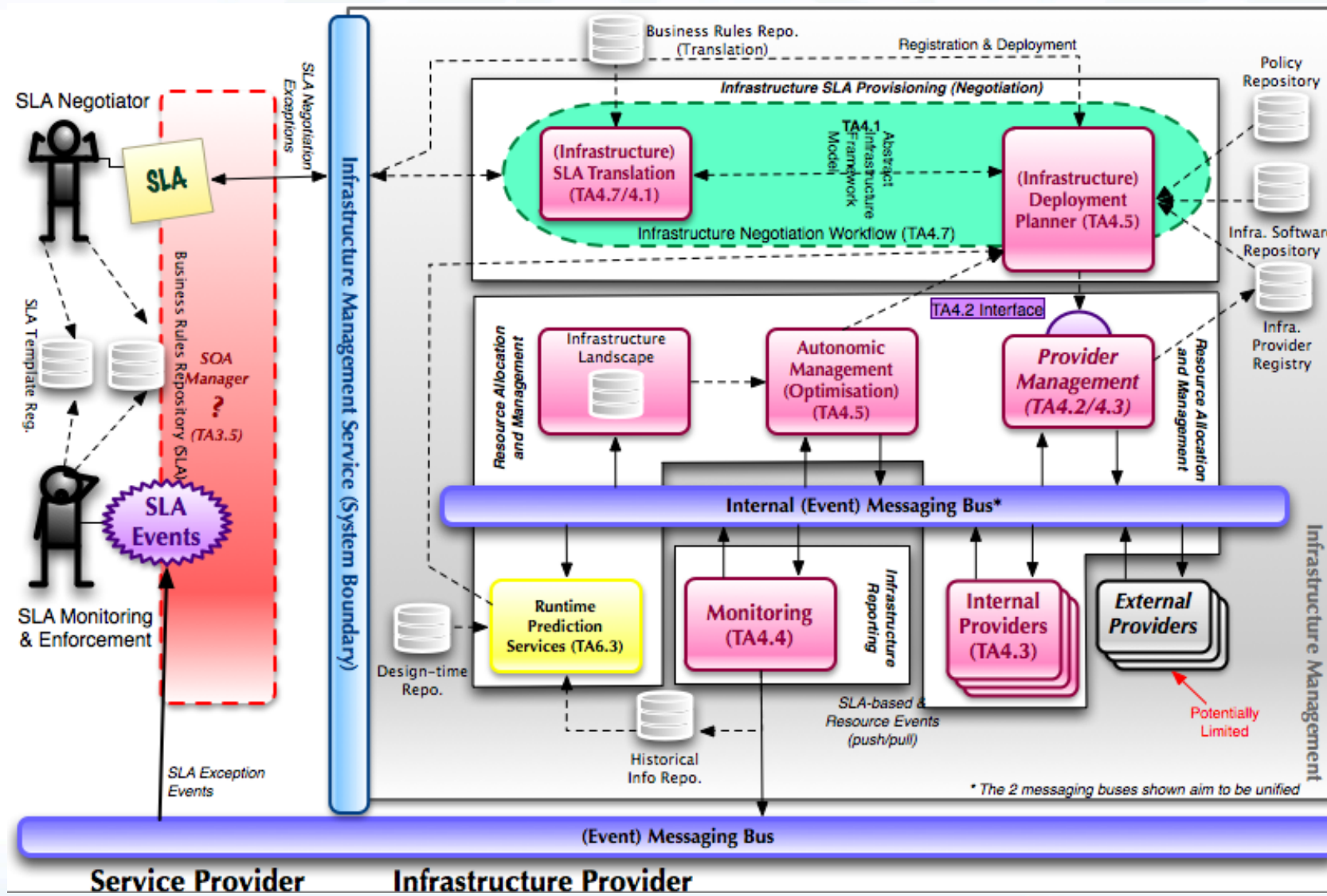
E. Formal definition of non-functional requirements

- ◇ Prerequisite for most SLAs
- ◇ Inherent support in models and framework

F. Optimization of geographical deployment of services on physical architecture

- ◇ Can be explicitly defined via NFPs
- ◇ Internal policy-based relocation

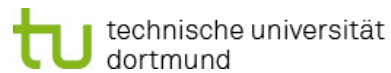
Infrastructure Management



**Thank
you!**

Backup

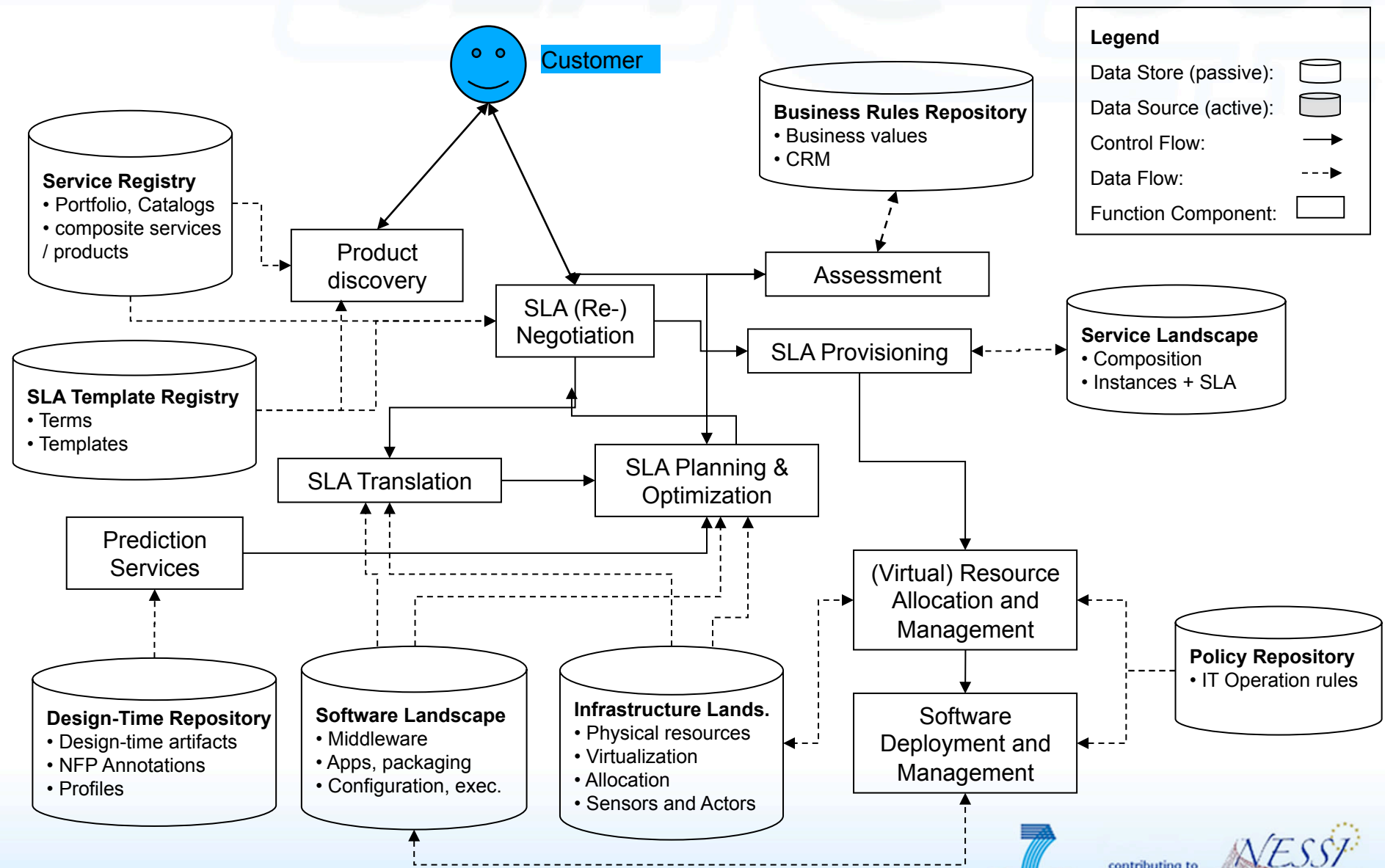
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Negotiation & provisioning-time functional view



Run-time functional view

