

SMaRT: A Workbench for Reporting the Monitorability of Services from SLAs



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Sponsor



“Demonstrate technologies that can embed SLA-aware infrastructures into the service economy.”



- EU Funded – ICT FP7

Background

- Service Level Agreements (SLAs) for Software Services
 - An *agreement* from a *negotiation* for monitoring levels of service provided
 - Monitoring software services requires further services (monitors)
 - Hence, a dynamic provision of monitors
 - Re-negotiation of SLA terms
 - Availability of monitors
 - Appropriateness of monitors

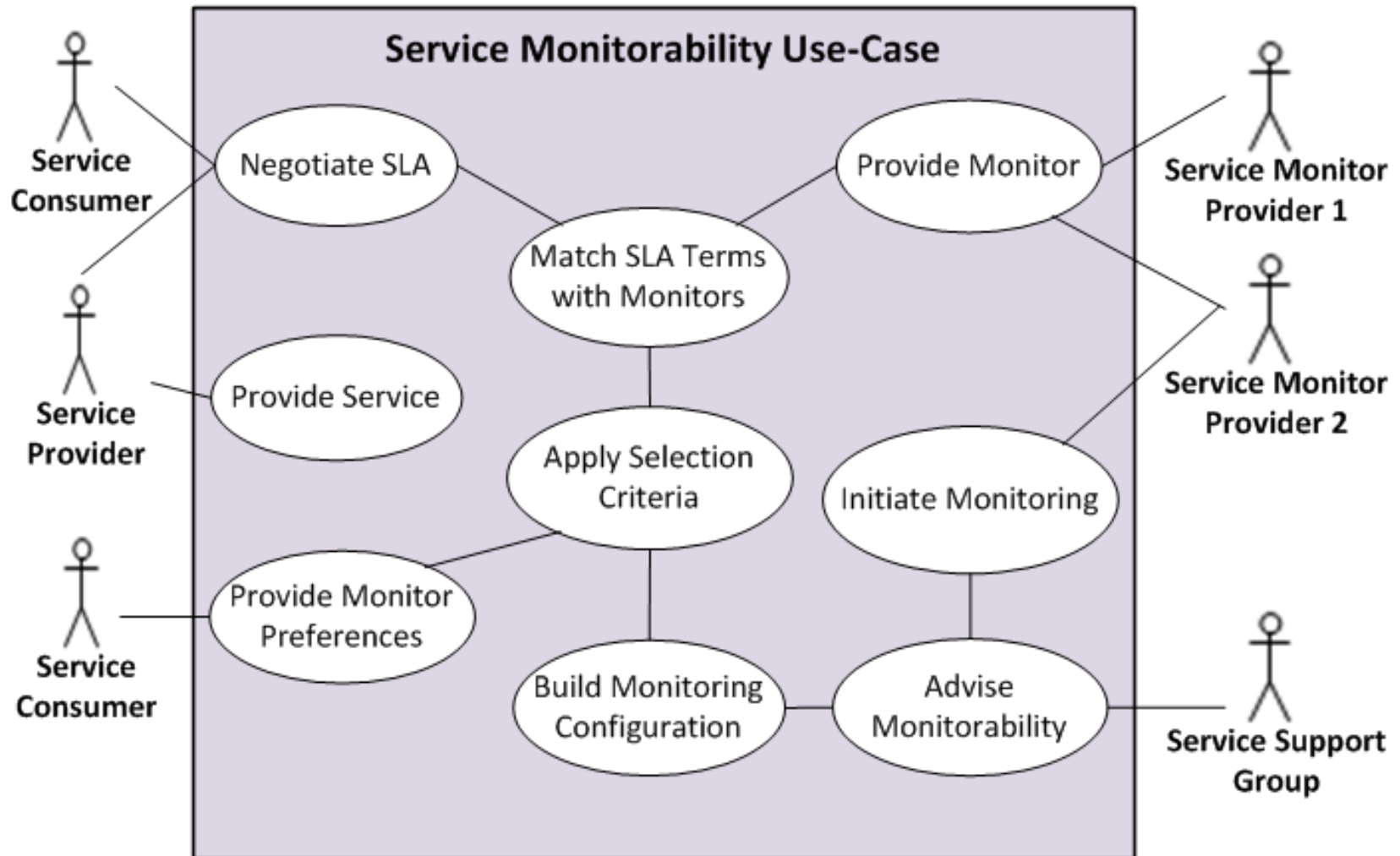
Aims

- Automation of Service Monitoring
 - Focus on **Monitorability Assessment**
 - 3 stages to assessment reporting:
 - **Decompose** SLA terms and expressions
 - **Match** Candidate Monitors
 - **Select** Appropriate* Monitors

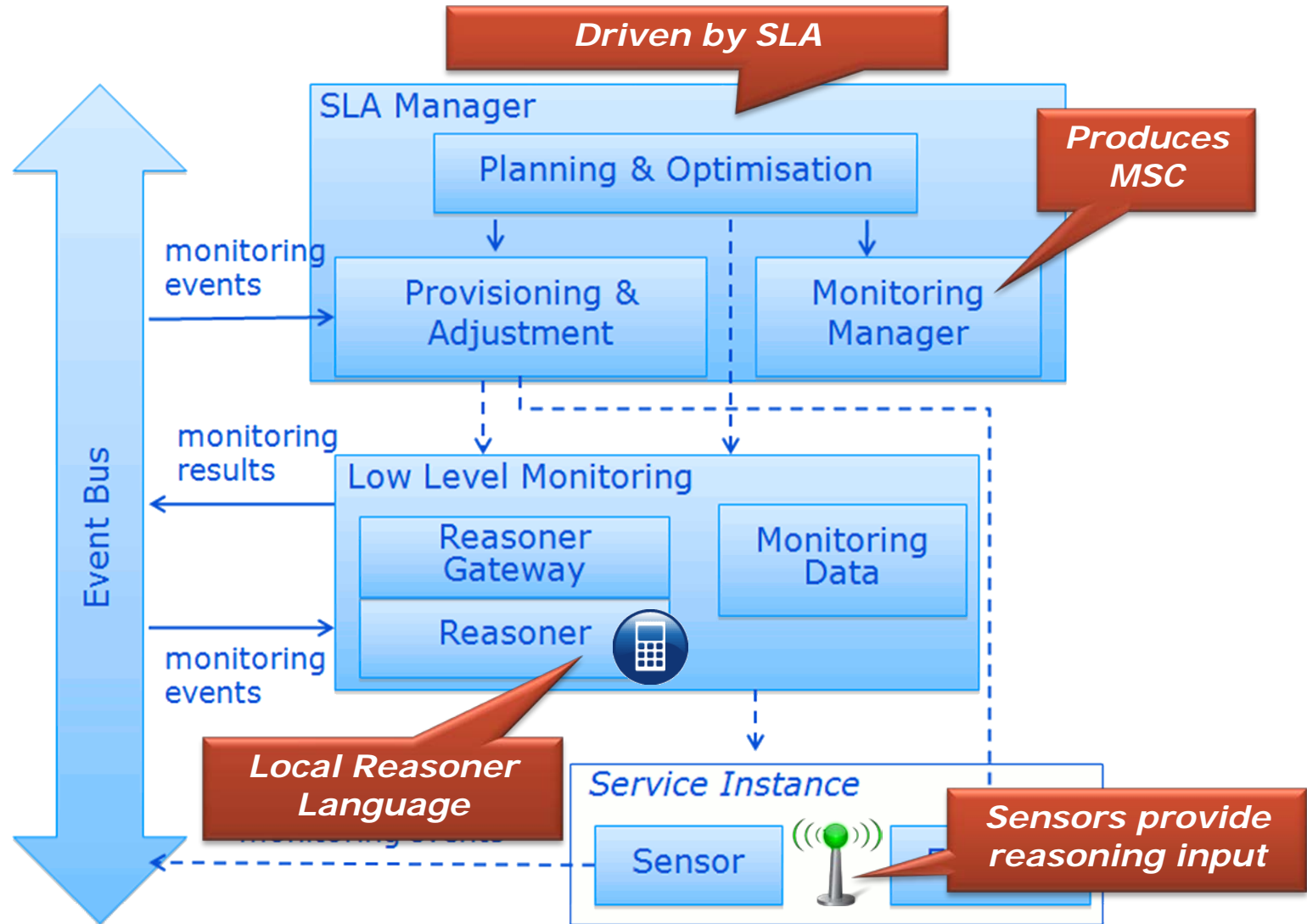
✓ **Configure** ✗ **Why?**

**with a potential to optimise*

Practical Scenario

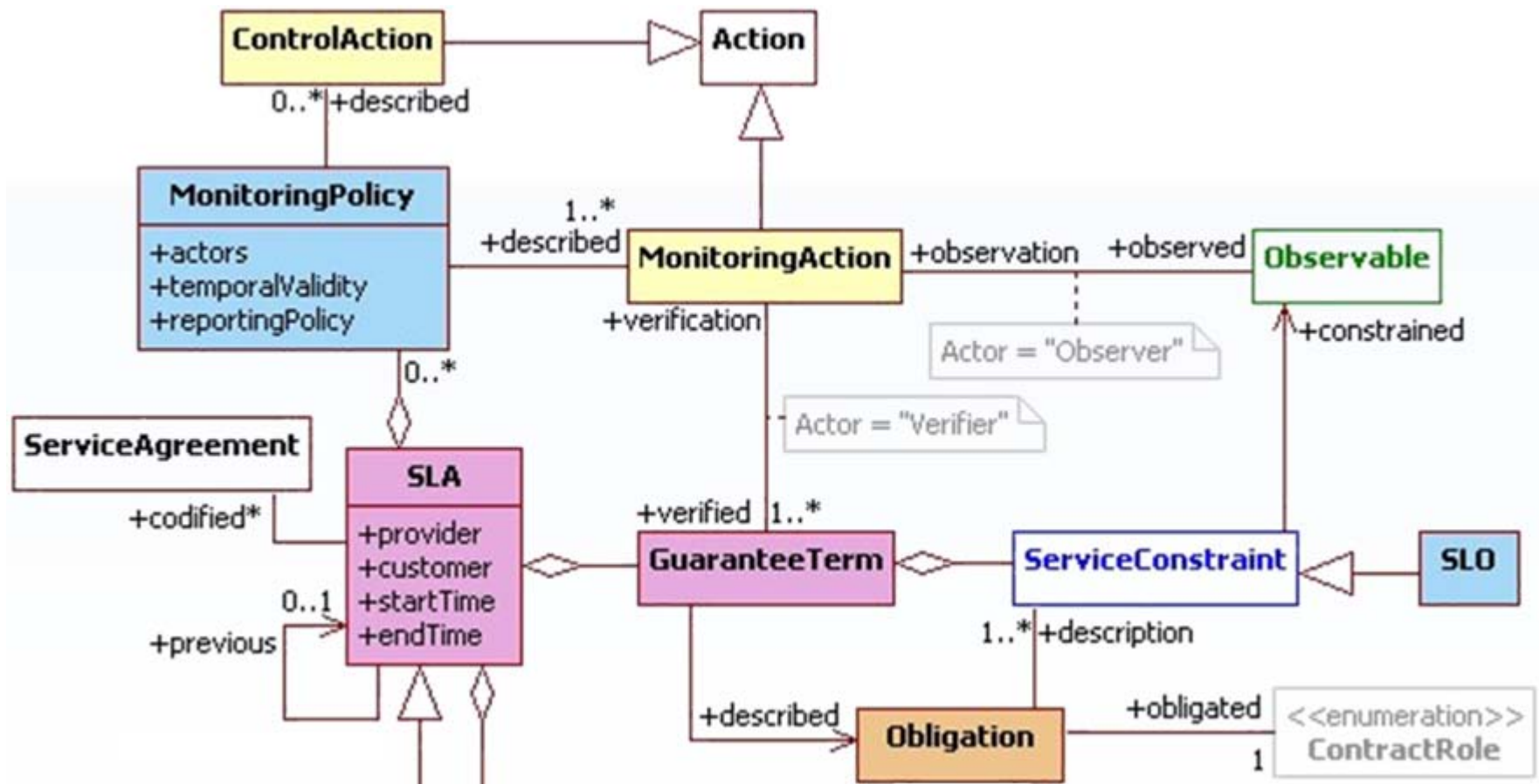


SLA@SOI Monitoring Architecture





(partial) SLA Model

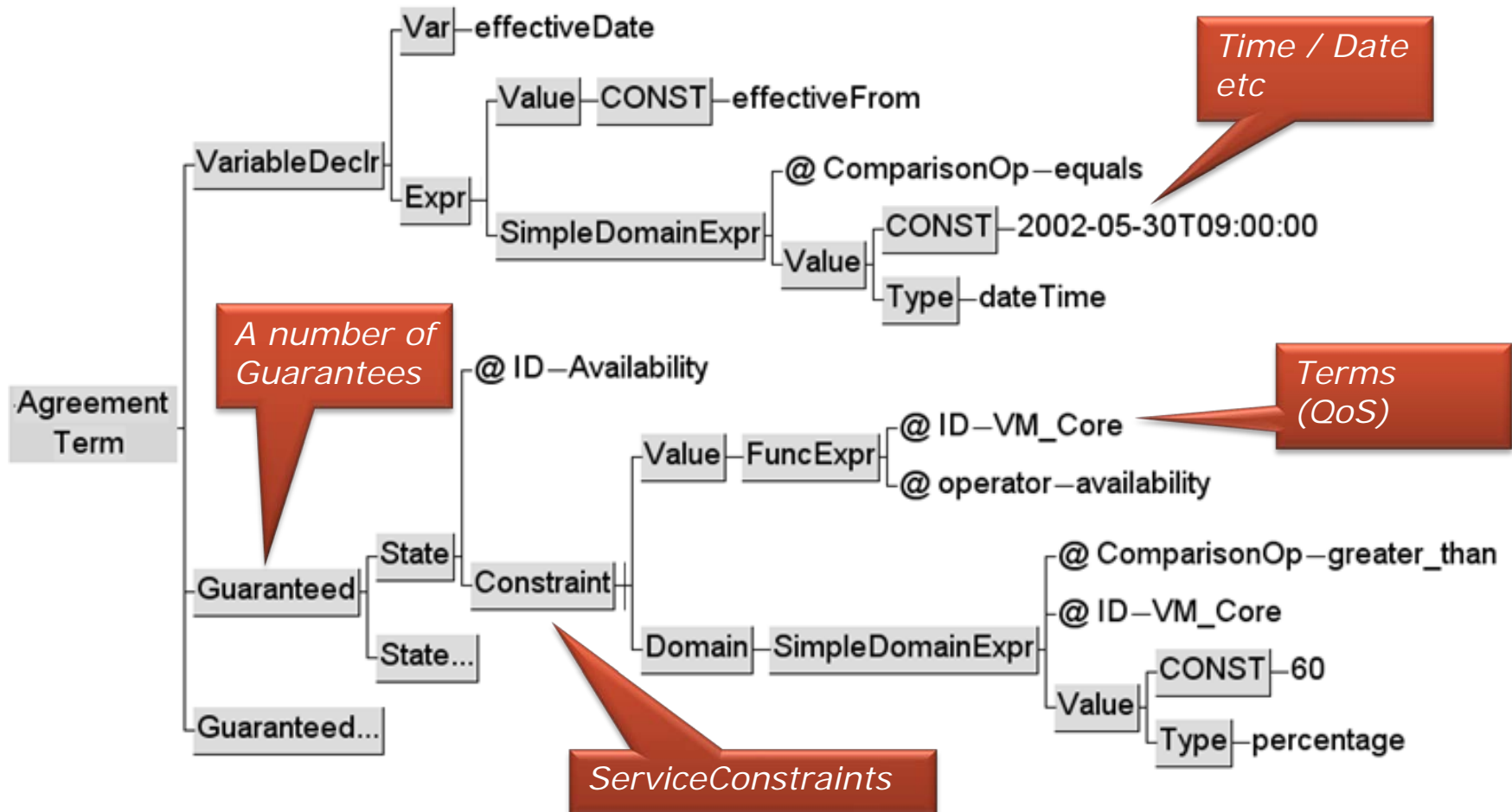


SLA@SOI SLAs

QoS Terms	
Numerical Measures: S-Service	
availability(S)	probability service S is running
accessibility(S)	probability that S is accessible
mttr(S)	mean-time-to-repair
mttf(S)	mean-time-to-failure
...	...

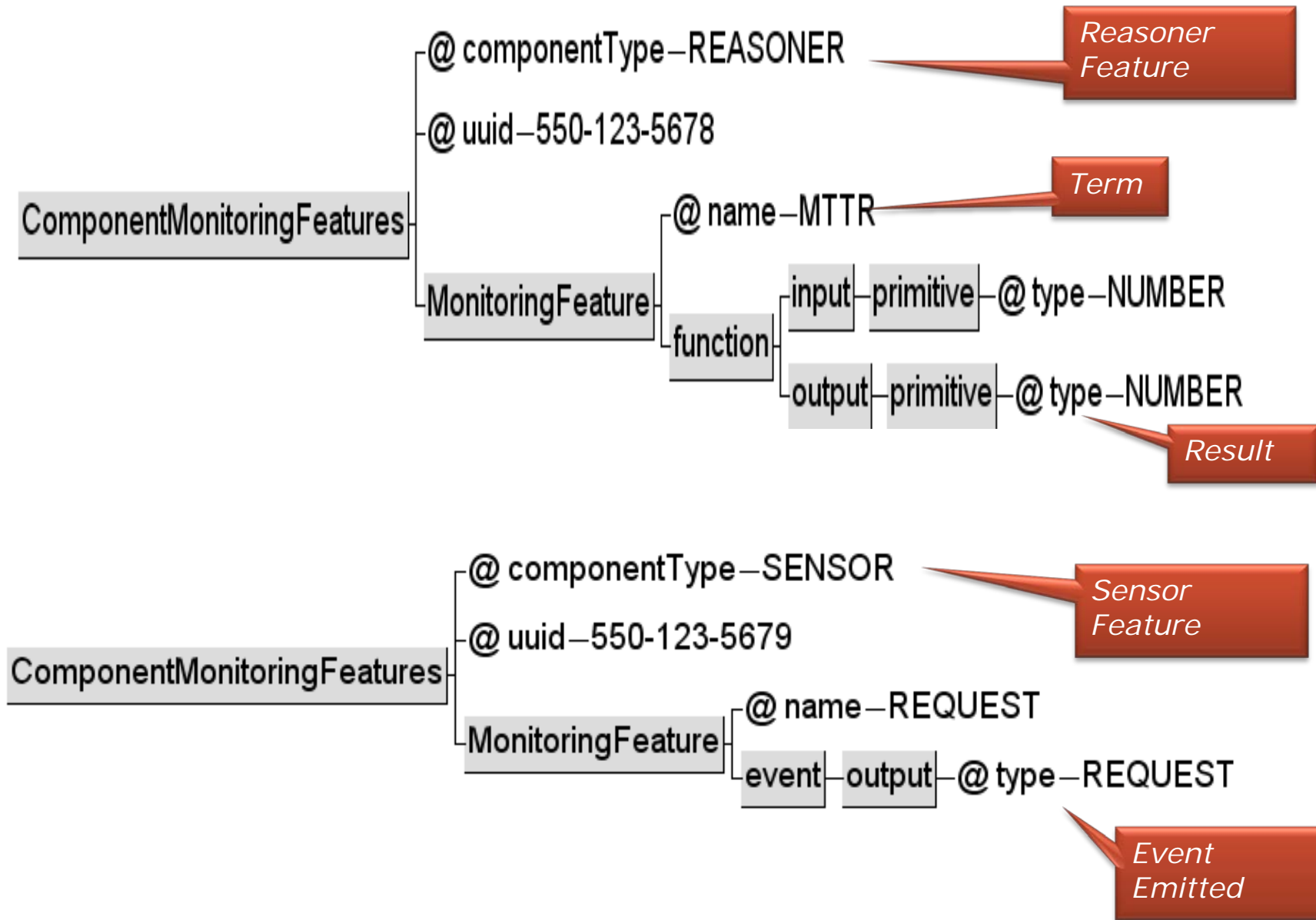


SLA Model Excerpt





Monitoring Feature Samples



Configuration

- Monitoring System Configuration (MSC)
 - Configurations for monitoring an SLA
 - Identifies the *components* selected



Reasoners (inputs and outputs)

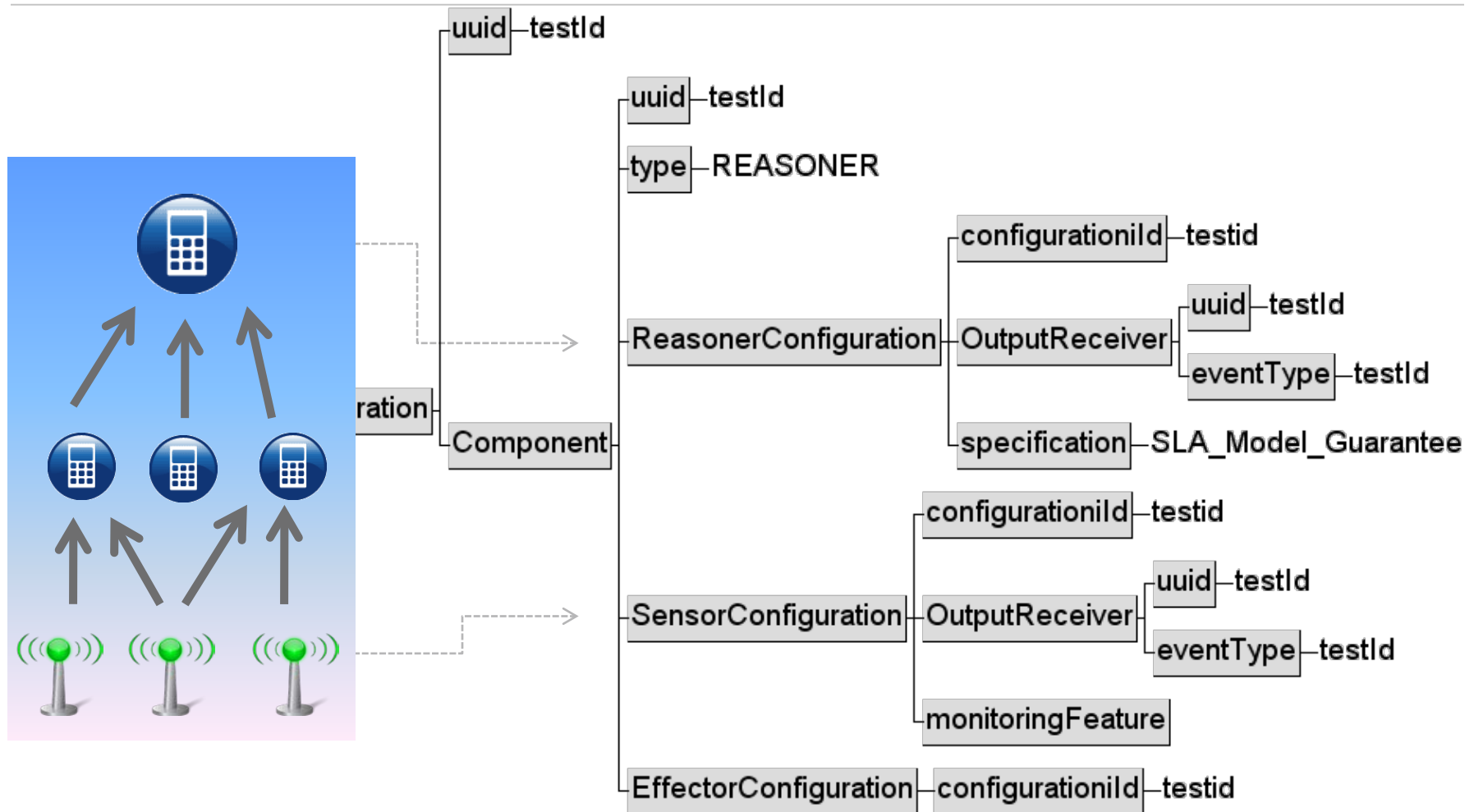
Specification of expression



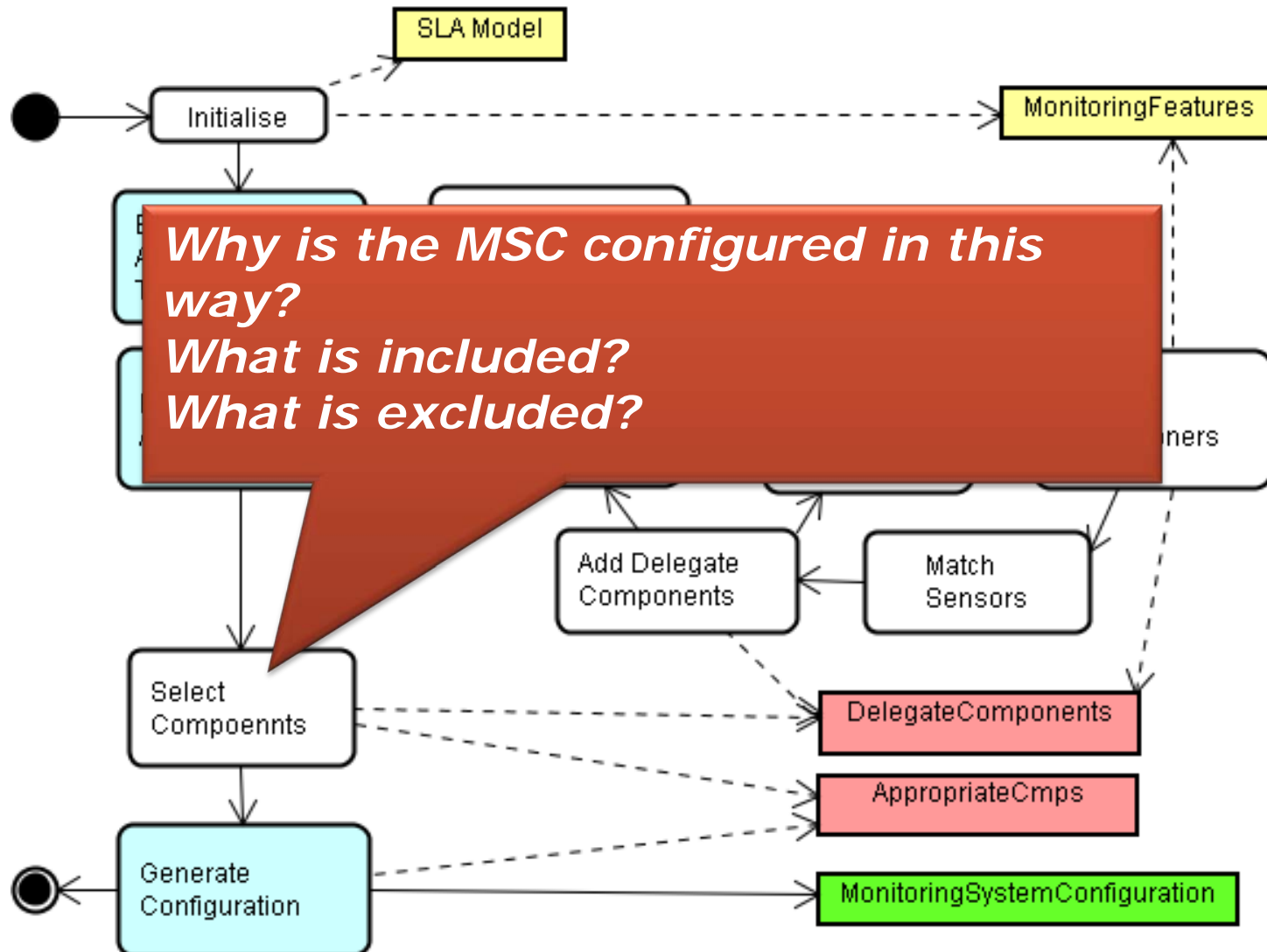
Sensors (service events emitted)

What if only part of the SLA is monitorable?

Monitoring System Configurations



SLA Monitoring Configuration (SAC 11)





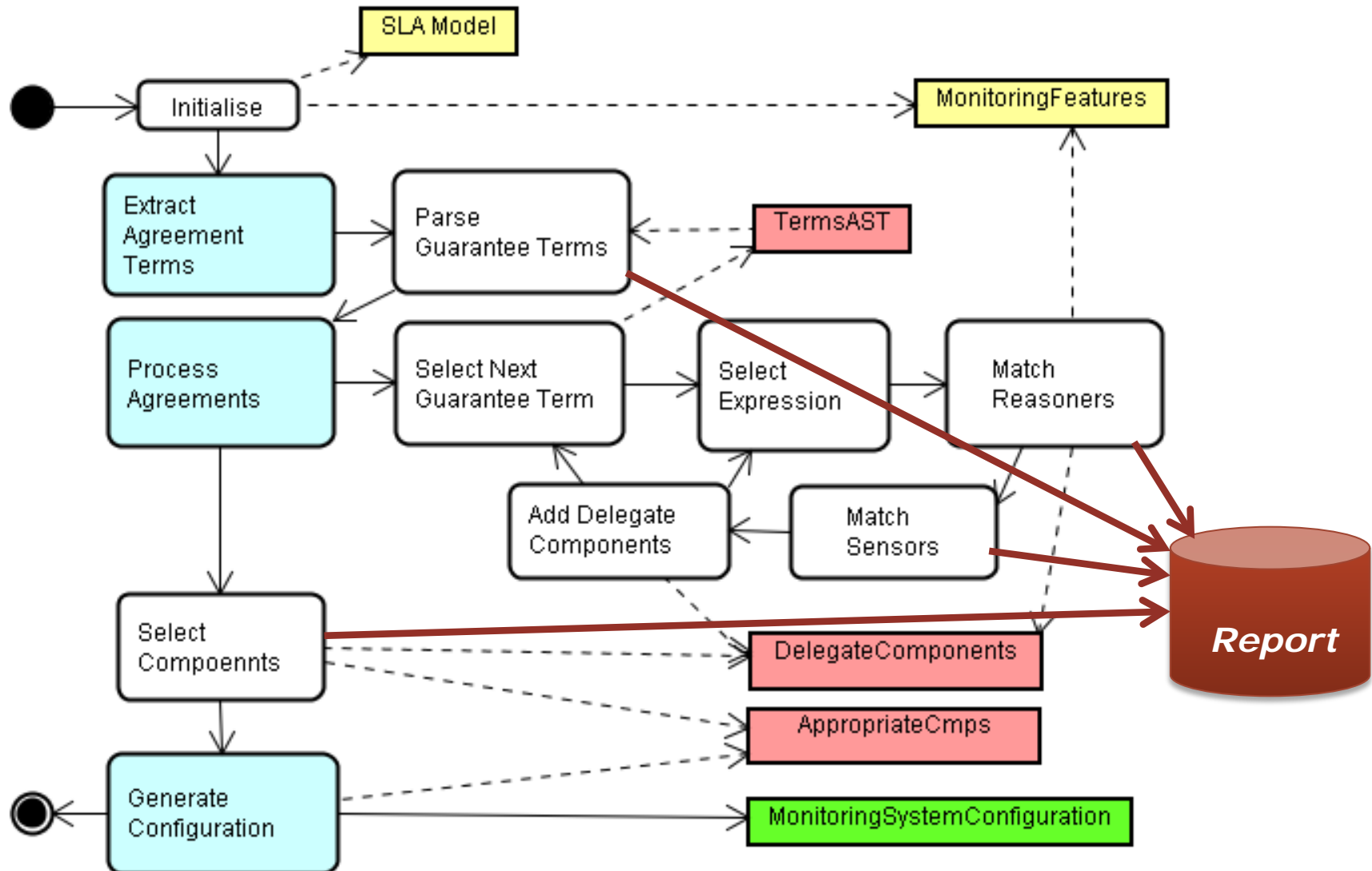
Manual Testing

Table 1 Testing for SLA Model, Configuration and Monitoring

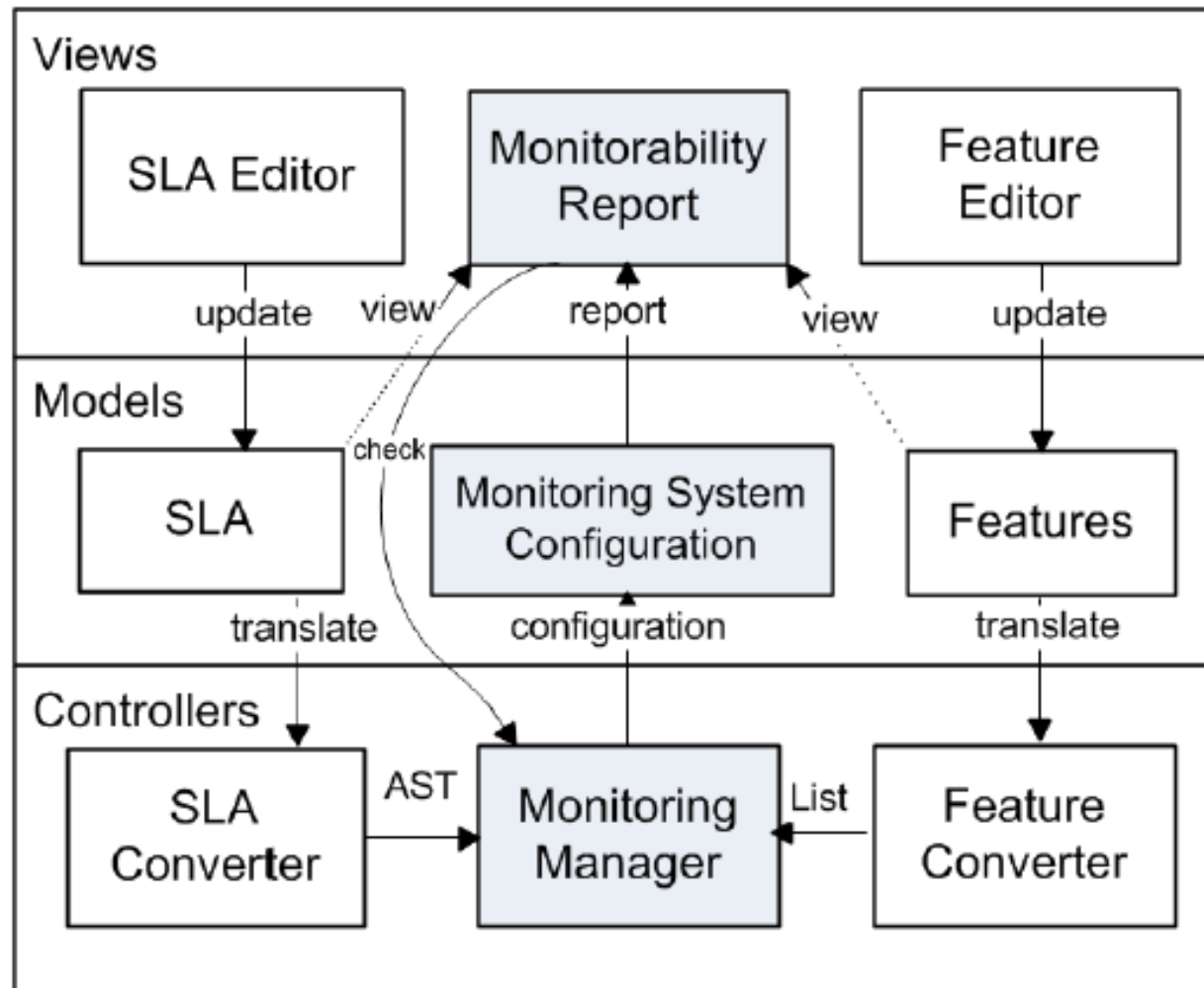
Element	ID	Event	Parse	MSC	Client	Monitored
Model						
InterfaceDecls	ID1	None	Yes	Yes	Yes	Yes
AgreementTerms	AT1	Violation	Yes	Yes	Yes	Yes
Guaranteed Actions	GA1	Violation	No*	No*	No*	No*
Guaranteed States	GS1	Violation	Yes	Yes	Yes	Yes
VariableDecls	VD1	Computation	Yes	Yes	Yes	Yes
Terms						
Core:and	GS1	Computation	Yes	Yes	Yes	Yes
Core:equals	GS1	Computation	Yes	Yes	Yes	Yes
Core:sum	GS1	Computation	Yes	Yes	Yes	Yes
Core:series	GS2	Computation	Yes	Yes	Yes	Yes
Core:availability	GS1	Request-Response	Yes	Yes	Yes	Yes

* The element is not currently supported

SLA Monitorability Assessment



Monitorability Assessment



Monitorability Reporting

Monitorability Manager

SLA@SOI Monitorability Reporting

Overview | Terms | Configuration

SLA

Select SLA

Selected SLA: B4_SLA.xml

Monitoring Features

Select Feature Set:

B4-Features

Add Features

Monitorability

Check Monitorability

Agreement Summary

Agreement Term	Status
autogen	Not Monitorable (see Indicators)
ServiceWideGuarantees	Monitorable

autogen Status Indicators

Result	Description	ID	Step	Type	Path	Value
ERROR	No CMF matched for...	http://www...	MATCHING...	MATCHING	autogen/V...	http...

autogen CMF Provider Summary

Component ID	Type	Features
777e8400-sss2-41d4-a716-406075043333	REASONER	
555e8400-sss2-41d4-a716-406075043333	SENSOR	

Log

Step	Type	Report	Result	Class	Line	Warnings
ASTTerms	DEBUG	Guaranteed Sta...	Passed	org.slasoi.gsla...	152	
ASTTerms	WARN	Guaranteed Sta...	Issue	org.slasoi.gsla...	152	
ASTTerms	ERROR	Guaranteed Sta...	Failed	org.slasoi.gsla...	152	

Summary

- SLAs for Software Services
- Architecture for Reporting Issues
- Tool Implementation

- Provides input to planning components
- Identify unsupported features
- Identify new provider requirements
- My Testing Tool 😊

Resources



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Questions?

