JBoss WORLD
CHICAGO 2009

FOLLOW US:

TWITTER.COM/REDHATSUMMIT

TWEET ABOUT US:

ADD #SUMMIT AND/OR #JBOSSWORLD TO THE END OF YOUR EVENT-RELATED TWEET

presented by

JBoss WORLD CHICAGO 2009

Project Overlord: SOA Governance

Mark Little
JBoss CTO, Red Hat
September 3rd 2009

presented by

Overview

- What is Project Overlord?
- What is SOA Governance?
- Overlord sub-projects and dependencies
  - Contract definitions
  - Process Governance (CDL)
  - JON
  - SOA Repository
    - Guvnor
    - DNA
  - SAMM

What is Overlord?

- Open Source SOA Governance
  - Process Governance
    - Provably correct service interactions (static and dynamic)
  - Service Activity Monitoring and Management
    - Core capability for BAM/BI
  - SOA Repository
    - SLAs, service binaries, …
  - Contract definitions
  - …
- New and evolving project
  - Tied into JBoss SOA Platform

Governance

- Monitoring and managing distributed systems is complex
  - No concept of “now”
  - Failures, network partitions etc.
- SOA makes things more difficult
  - No control over infrastructure
  - No notion of trust
  - Indeterminate delays
- Governance is critically important
  - What services are running?
  - What are their contracts?
  - What are SLAs?
    - Are they being violated?

Governance role

- Affects all of the lifecycle phases
  - Not just runtime management
- Good governance solutions should be extensible
  - What needs to be monitored may need to change
- Should leverage existing SOI
  - No separate approach to fault tolerance, reliability etc.
- Standards compliance
  - Replace components with other compatible implementations

Contracts, policies and SLAs

- “Is this service really offering what I want?”)
- “Is this service really doing what it said it would?”
- Composition of services has an affect
- What is a contract?
  - **The service interface**
  - **The messages it can accept, their formats**
  - **A legal contract entered into when using the service**
- The difference between a policy and a contract is that the latter is an agreed policy between service and user

Policy language (SLA)

- Some collaborative work with Newcastle University
  - Drools as the basis of a policy enforcement language
- Needs to be WS-Policy compliant
  - Yes another WS-* standard that is not tied to SOAP/HTTP
- Needs to be enforced and alarmed
- Dynamically adapting
  - Repository support
  - Policy queries carried with messages

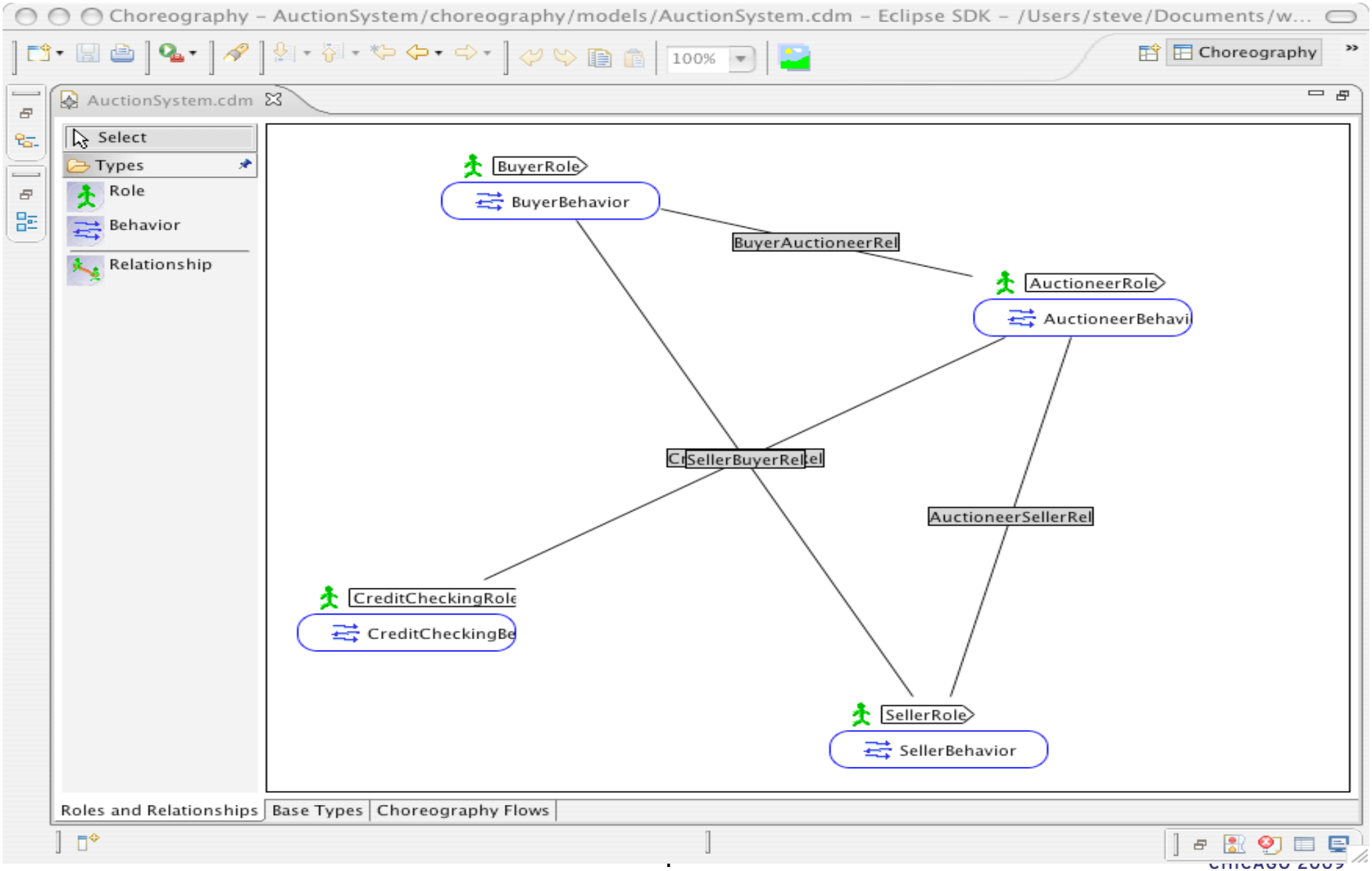
WS-CDL and Process Governance

- Choreography description language
  - NOT a competitor to BPEL
  - Compliments orchestrations
- Provable correct distributed systems
  - Design-time as well as run-time
  - Provides means of describing a process, that executes across a distributed set of services, from a global perspective
- Not Web Services specific
  - Ideal for SOA
- Not Red Hat specific
  - Though that's our focus initially

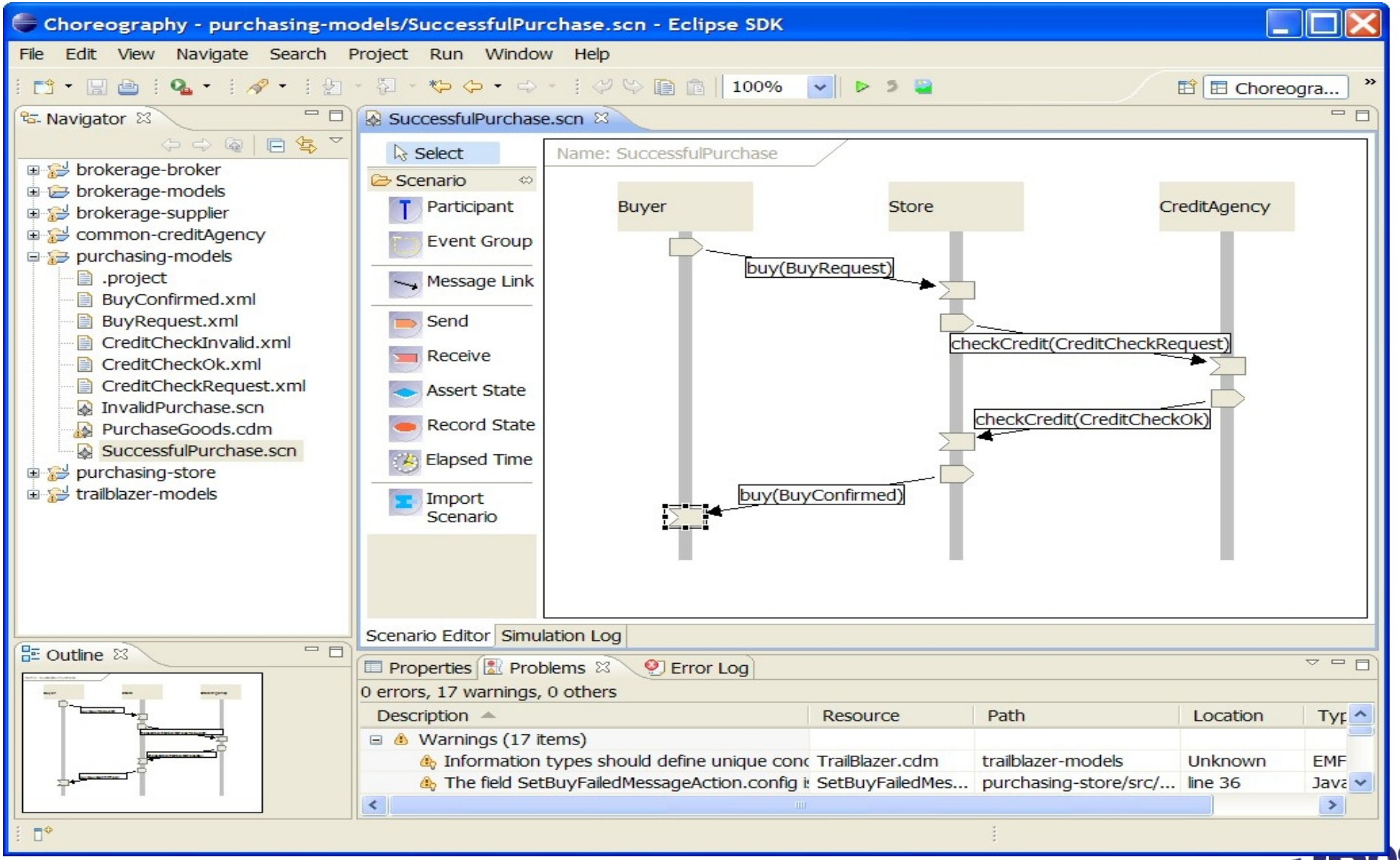
Design-time Governance

- Must capture requirements
  - Various approaches, but none that enable implementation validation
- Overlord tools provide a means of ...
  - Describing requirements
  - Representing specific use cases for interactions
  - Defining scenarios
    - Similar to UML sequence diagrams that have been enhanced to include example messages
- To become part of Savara sub-project

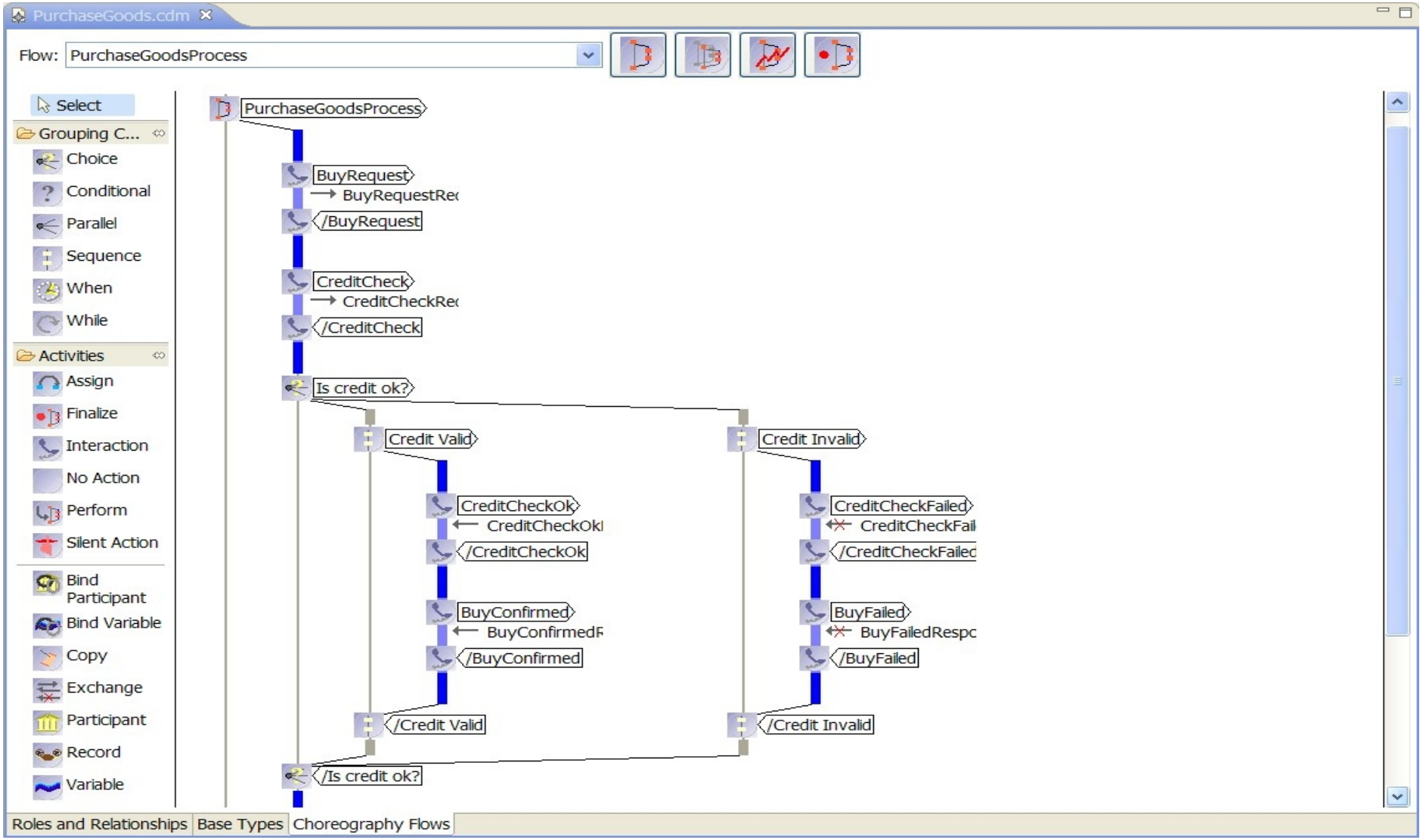
Roles and relationships



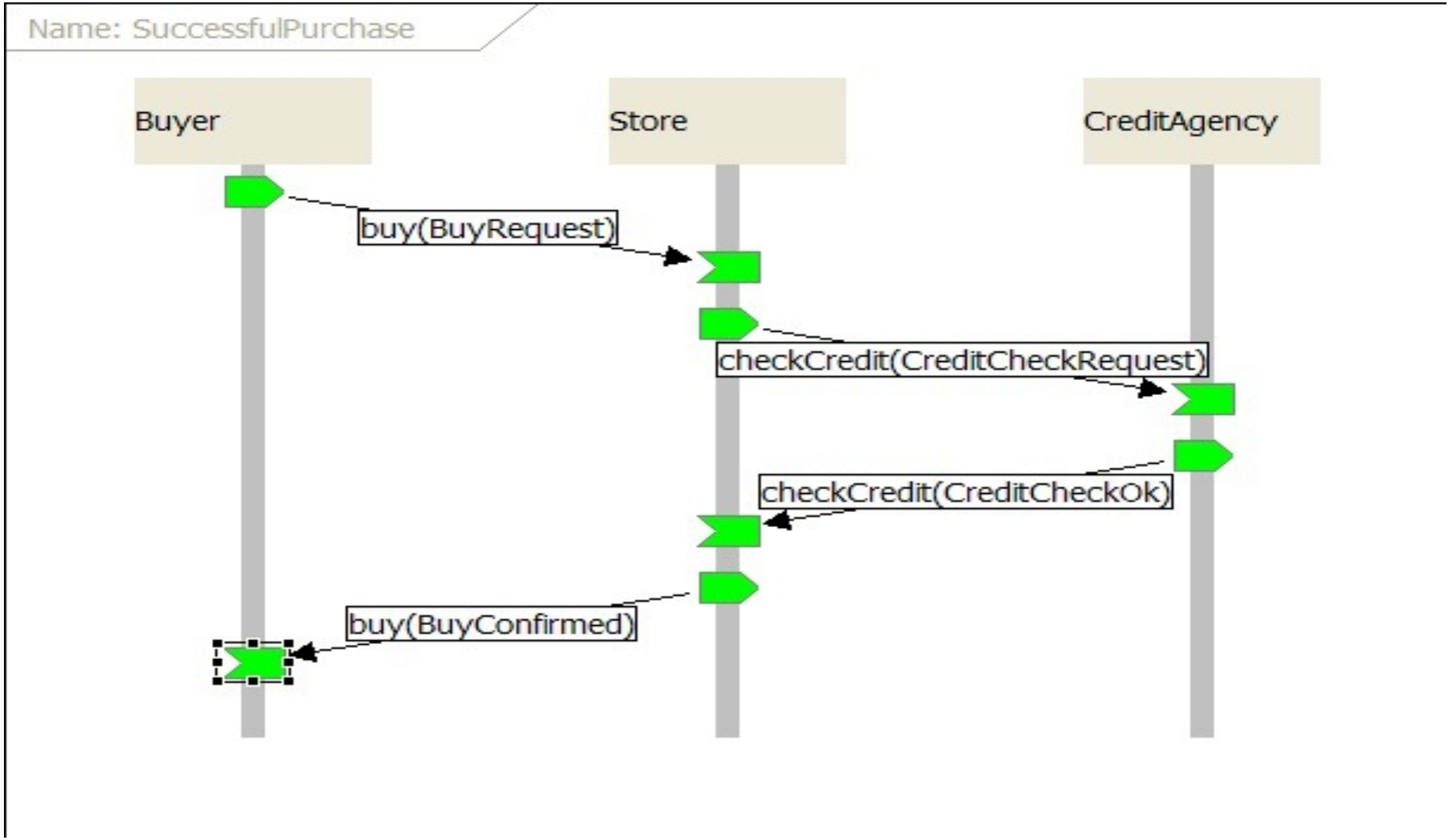
Purchase example scenario



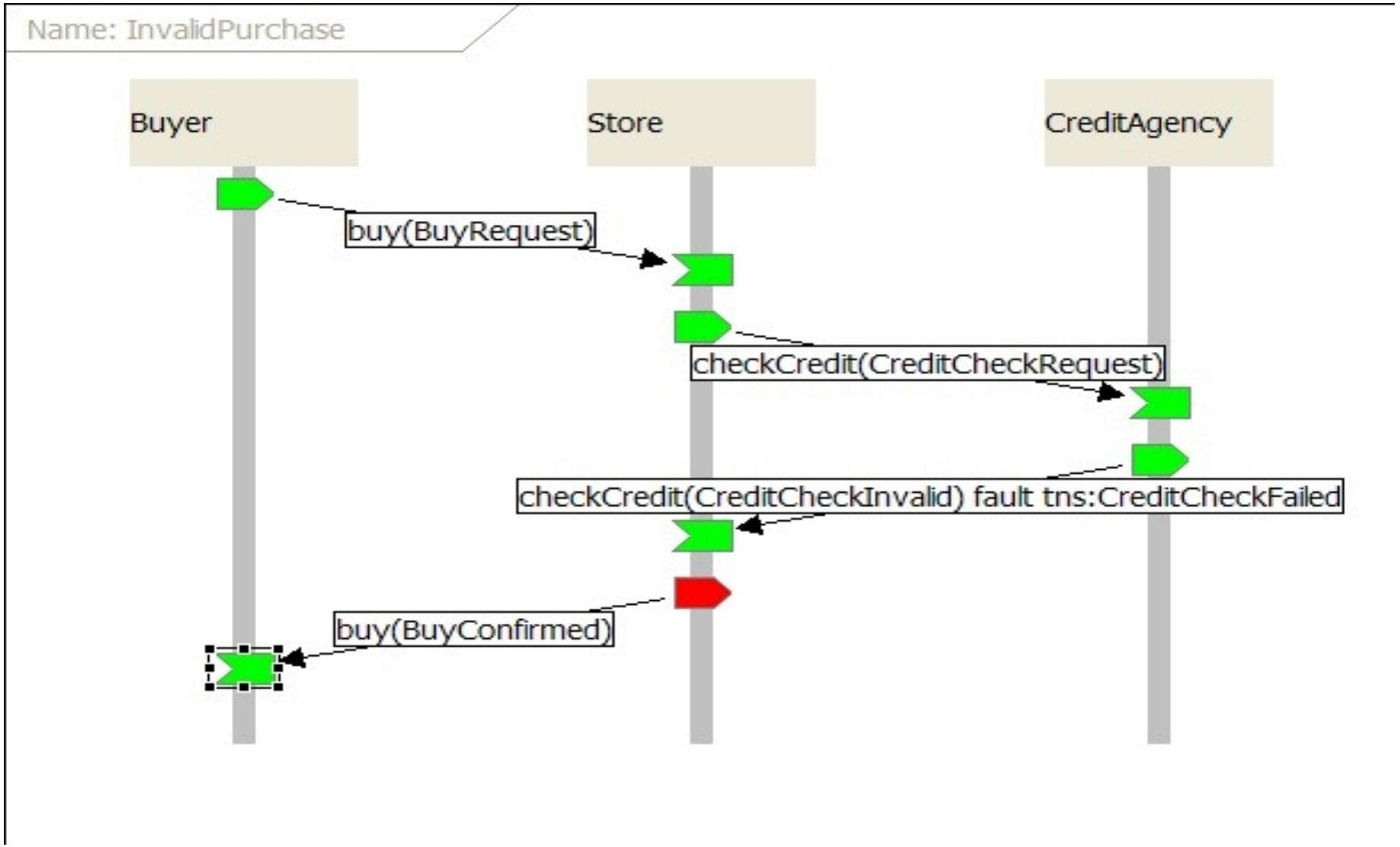
Purchase Goods Choreography Description



Scenario testing (success)



Scenario testing (failure)



Run-time Governance

- Service Validator
  - The behaviour of each service can be derived from the choreography
  - The derived behaviour can be used within a 'service validator' to monitor the inbound and outbound messages for the service.
    - If an invalid message is detected, it would be possible to block it, to prevent it from causing subsequent problems in downstream systems. The error can also be reported to a central management capability.
  - Overlord provides the ability to configure service validators to monitor the behaviour of individual services.

Run-time Governance

- Process Correlation
  - Validating each service locally can enable errors to be detected quickly
    - The effects of the error prevented from contaminating other systems by blocking the erroneous messages.
  - However local service specific validation may not be adequate to identify errors that would affect the end-to-end business process.
    - Therefore the message activity at each service validator can be reported to a central 'process correlation engine' which can reconstitute a global view of the business transaction, and determine if it matches the expected behaviour as defined in the choreography description.

But where does it fit?

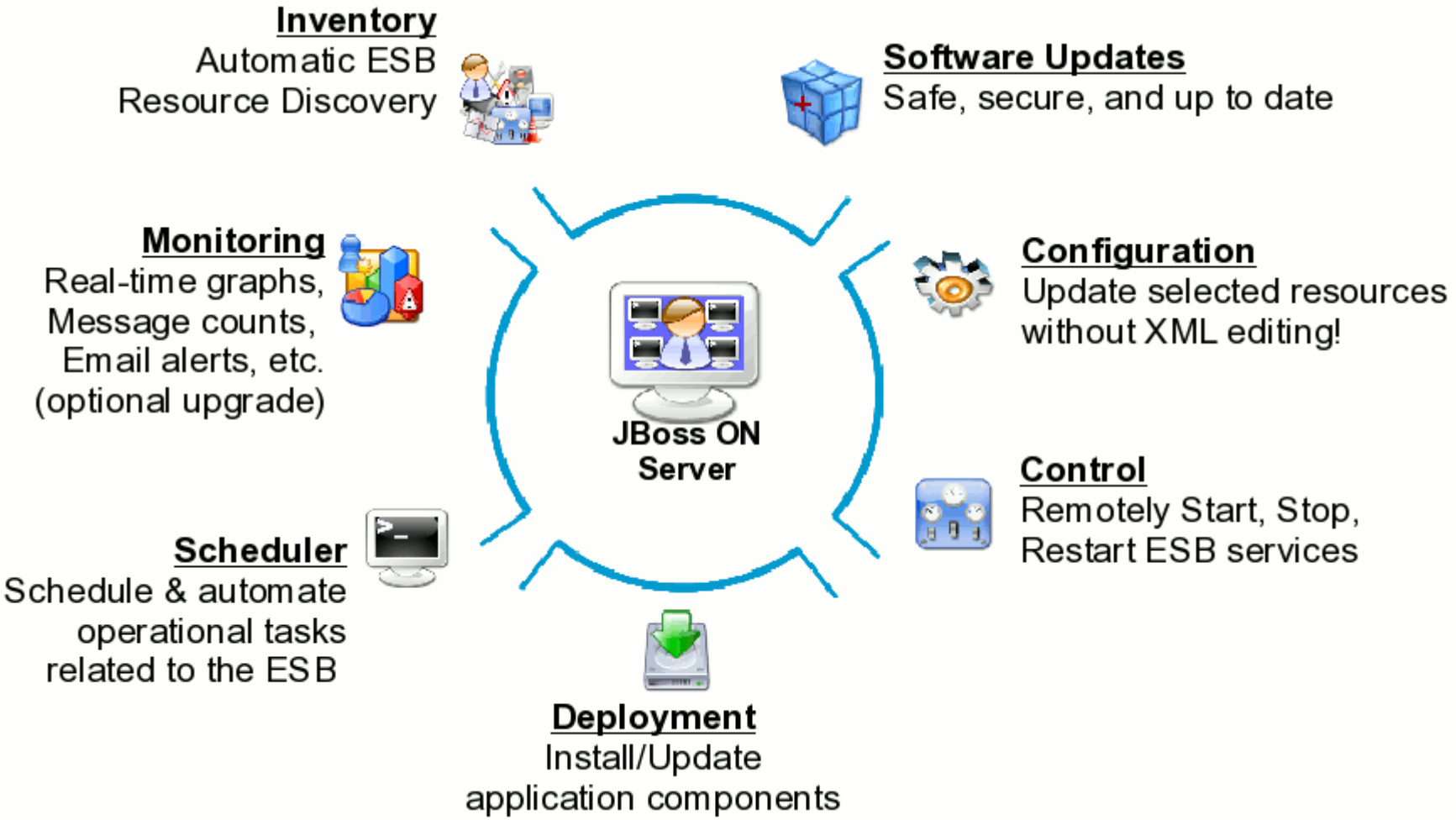
- WS-CDL is a key technology for successful SOA development
  - Most deployments have more than 2 participants!
- Turns the discipline into engineering
  - Being able to statically define interactions and simulate them is important
  - Being able to dynamically monitor them and enforce/terminate interactions is a major step
- Process Governance is core to Overlord
  - Tied into SOA Platform
  - Tied into SOA Development Methodology
- Being adopted by customers and partners

SOA Platform Integration

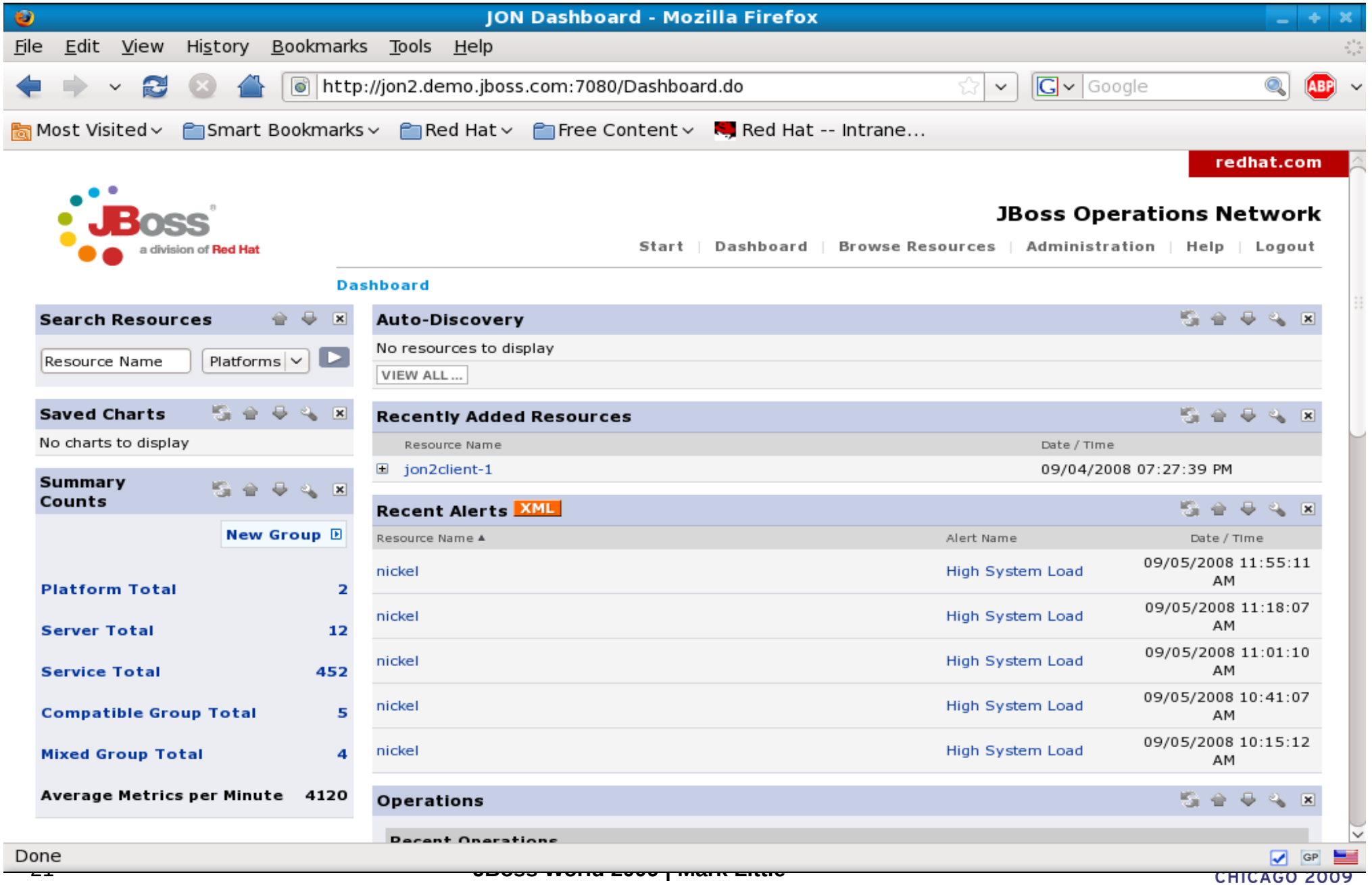
- Using Pi4SOA implementation for design and static analysis
  - Eclipse based
- Augmented JBossESB to support runtime monitoring and verification
- Support for WS-BPEL
- Next steps
  - jBPM 4
  - Beyond SOA
    - Distributed systems and local asynchronous applications
  - REST

Governance and JON

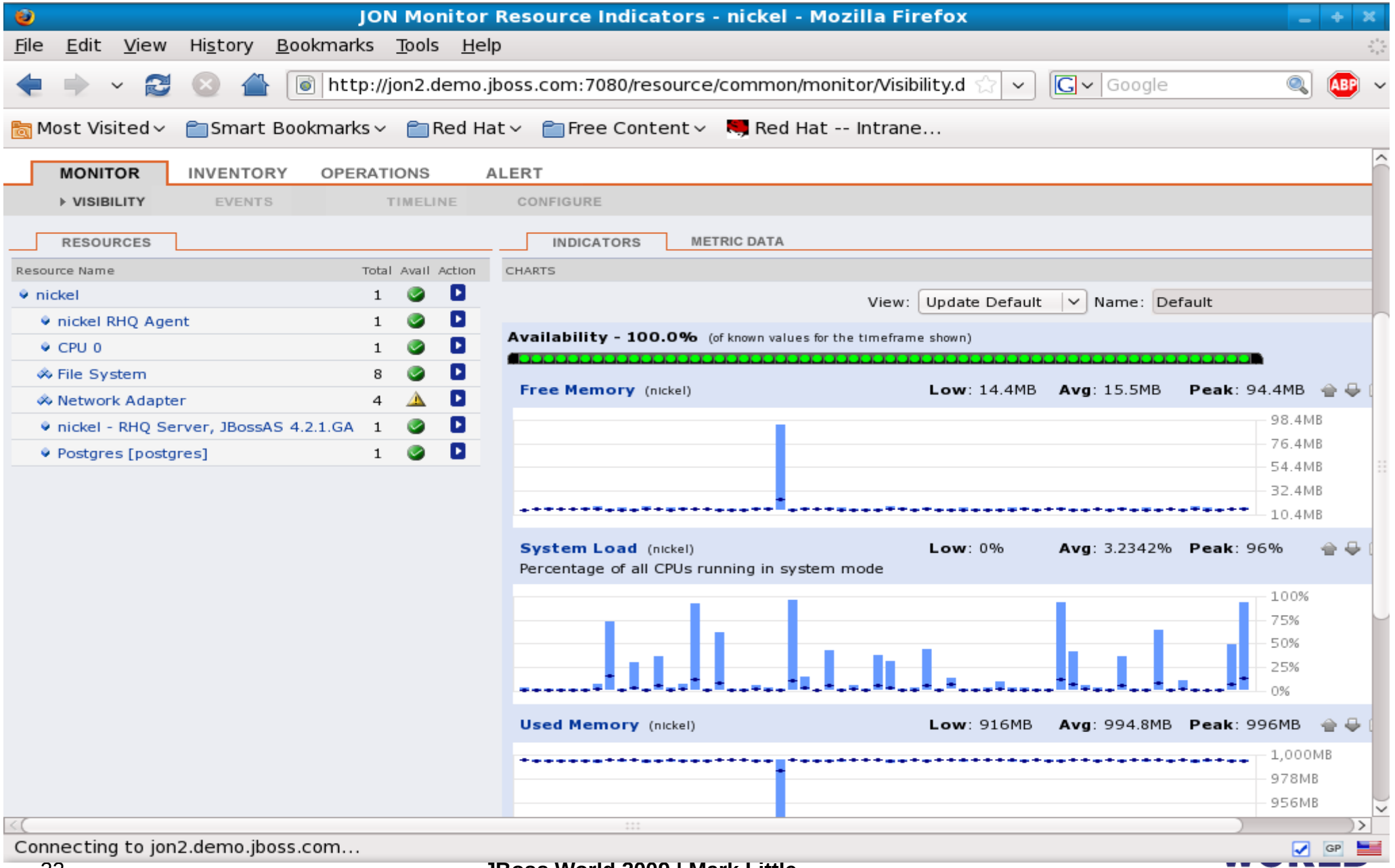
Simplifying Middleware Management for IT Administrators



JBoss Operations Network
Dashboard



Monitoring, Alerting...



Repository (Guvnor based)

- Service metadata, which is important for contract definitions
  - Functional and non-functional aspects
    - Transactional, secure, QoS, …
    - Policies
  - MEPs
    - One-way
    - Request-response
  - Message structure
    - Where data resides
  - Governance
- Service binaries
- Business rules
- Workflow tasks or process control information

Some repository facts

- It is not svn or cvs
  - Those are backend implementation choices
  - Need additional metadata
  - Ad hoc solutions do not scale
- It is not UDDI (a registry)
- Used at design time as well as run time
  - "Which service binary/VM image matches my requirements?"
    - Then deploy from repository
- Not a single instance
  - Logical instance, but federated
  - Hopefully delivered as part of DNA project
- Transactive memory

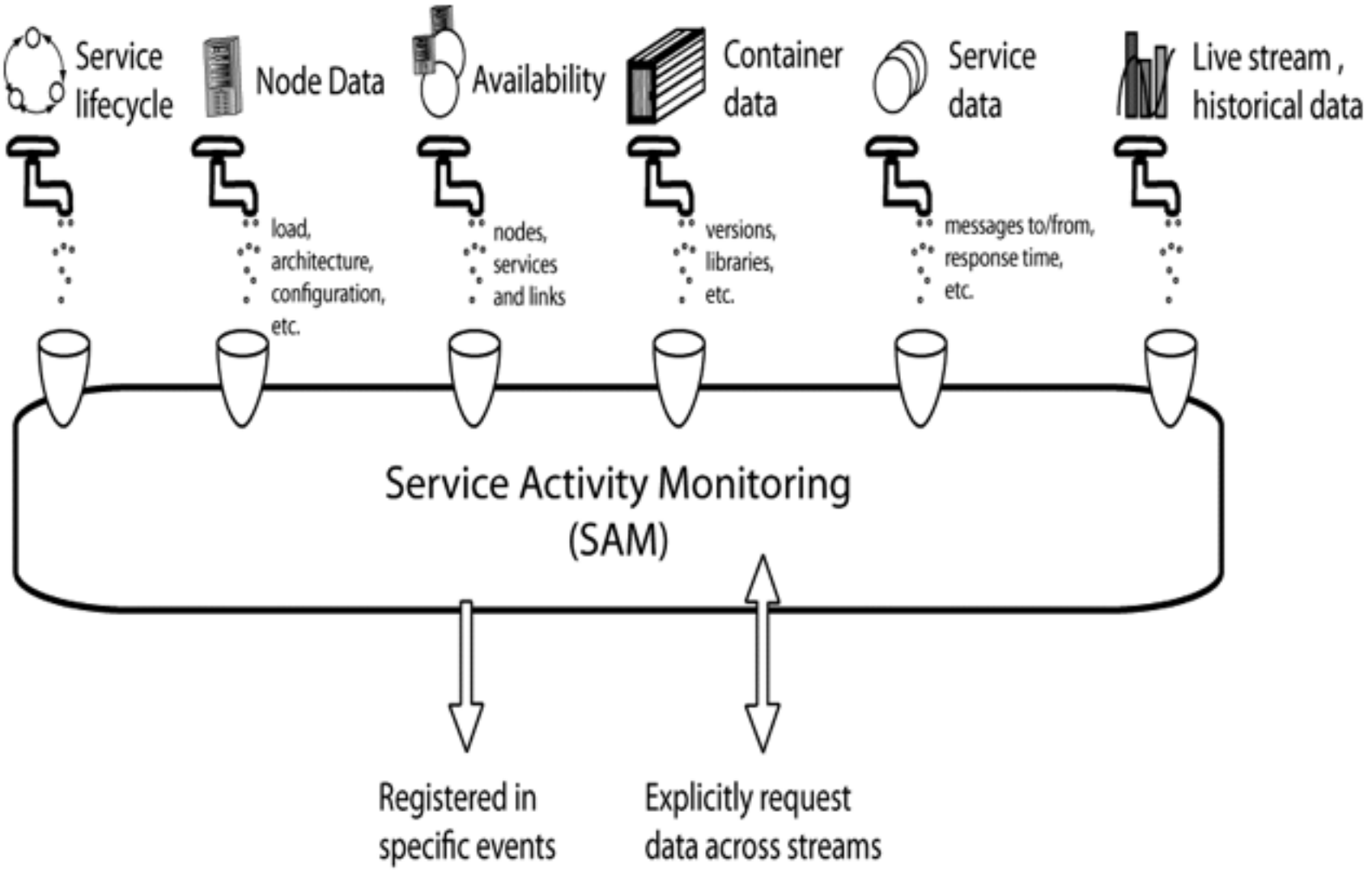
Service Activity Monitoring (SAM)

- Real-time access to critical infrastructure and application performance metrics
  - **Helps to improve the efficiency and effectiveness of the system**
- Real-time process/service monitoring is a common capability supported in many distributed infrastructures
- Overlap with BAM?
  - **BAM differs in that it draws information from multiple sources to enable a broader and richer view of business activities**
  - **BAM also encompasses business intelligence as well as network and systems management**
  - **BAM is often weighted toward the business side of the enterprise**

Monitoring meets events

- SAM builds on event driven architectures
  - Message throughput (the number of messages a service can process within a unit of time).
  - Service availability (whether or not the service is active).
  - Service Mean Time To Failure (MTTF) and Mean Time To Recovery (MTTR).
  - Information about where messages are sent.
- Relationship with JON
  - JON as a data stream
- Non-threshold based analysis
  - e.g., Baysian Inference Network

SAM and SI


Service lifecycle
Node Data
Availability
Container data
Service data
Live stream , historical data
load, architecture, configuration, etc.
nodes, services and links
versions, libraries, etc.
messages to/from, response time, etc.
Service Activity Monitoring (SAM)
Registered in specific events
Explicitly request data across streams

Conclusion

- Governance is critical to successful SOA development and deployment
- Governance is much more than a repository!
- Overlord will be a complete solution over time
  - Testable architecture is leading the way
- Get involved
  - As a contributor (code, ideas, ...)
  - As a user
- http://www.jboss.org/overlord

QUESTIONS?

TELL US WHAT YOU THINK:
REDHAT.COM/JBOSSWORLD-SURVEY