10th Jini Community Meeting

Update on

Semantic Service Oriented Architecture

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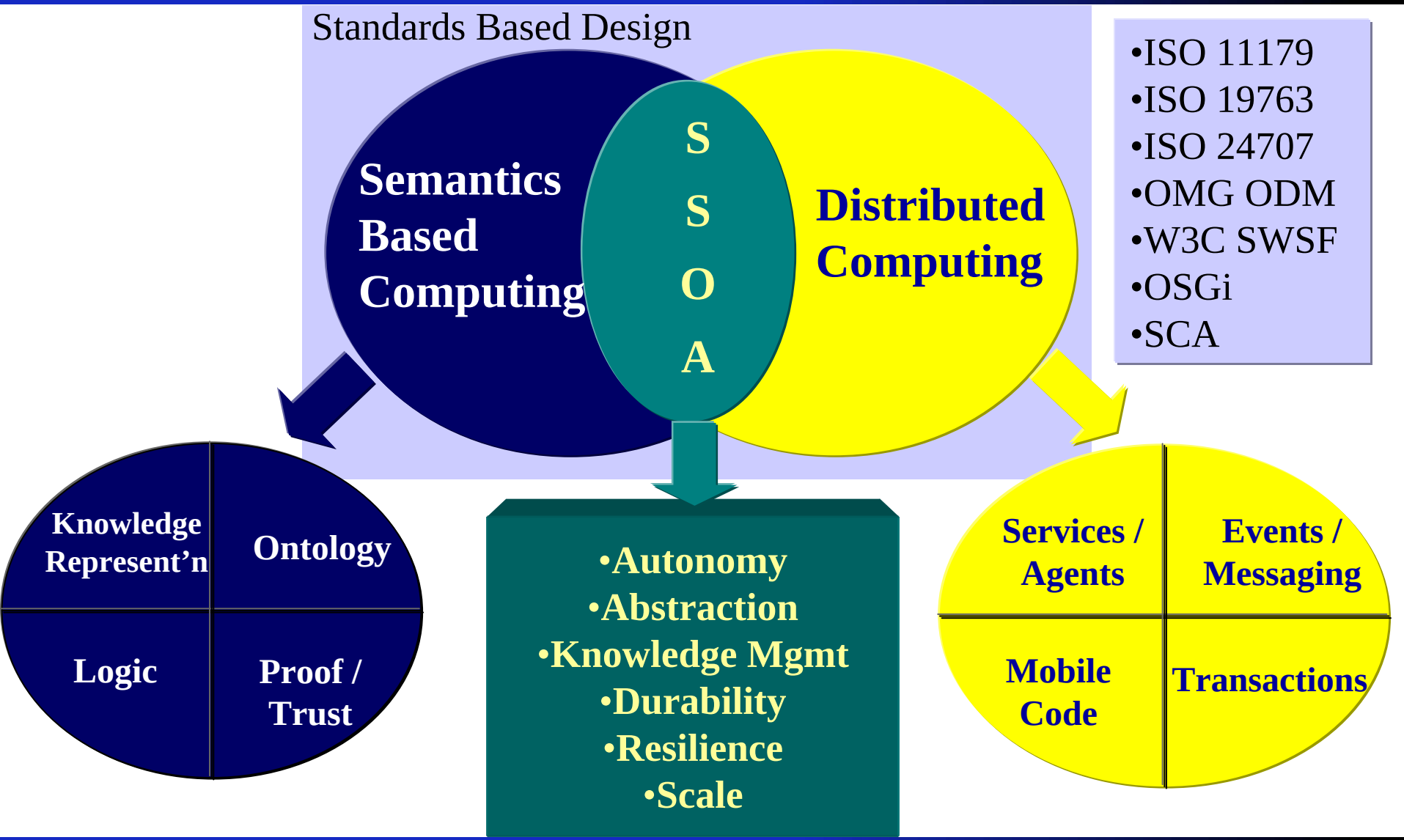
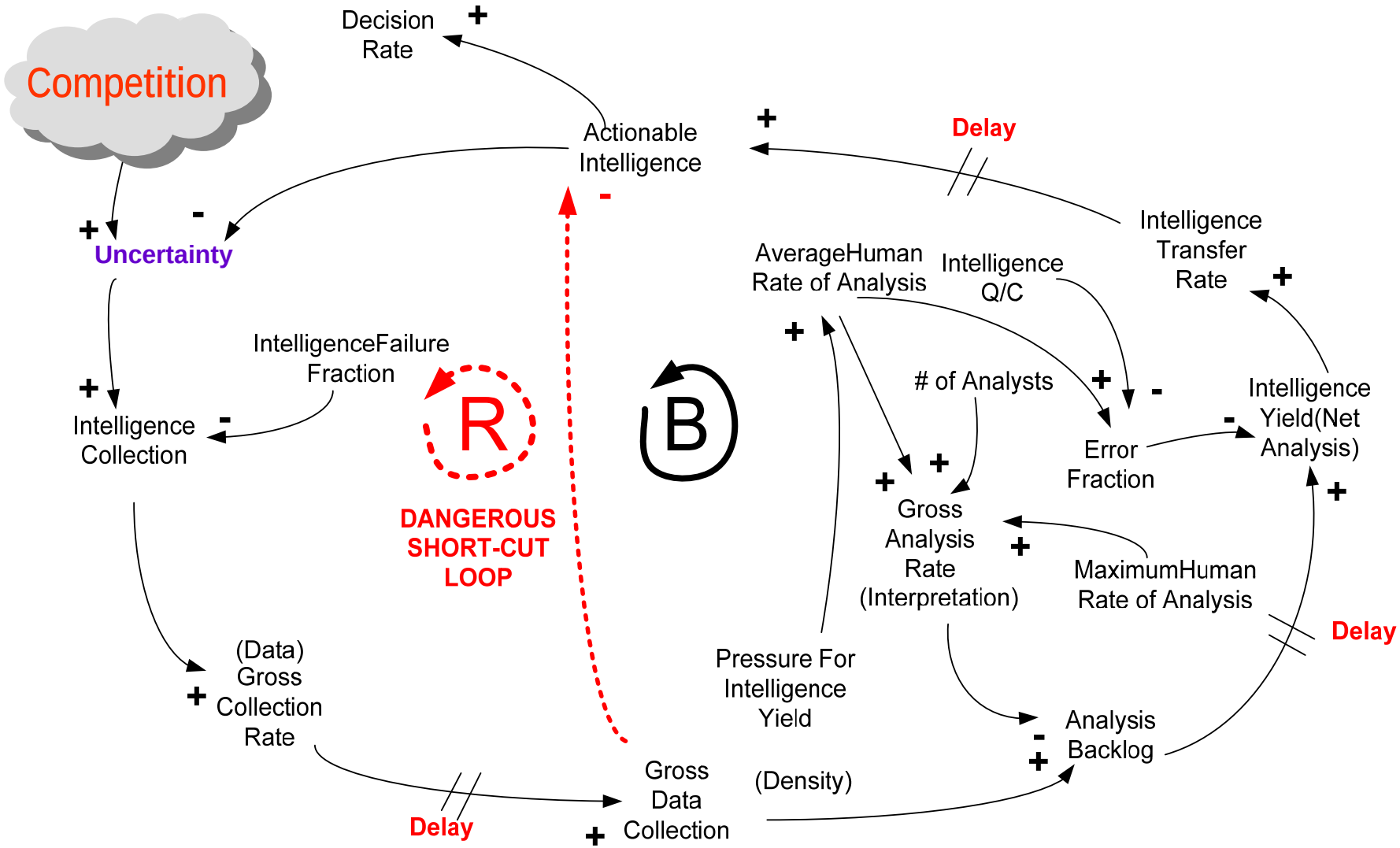
SSOA 'History'

- Conceptualized in 2004 to Help Satisfy Operational Requirements for Collaboration and Sharing
- Idea Influenced by Masters Thesis Work (2002)
- Evangelized Over a Year Before Initial Funding
- First Two Projects Research / Proof-of-Concepts
- Implementation Ongoing in One Operational Project with Two Others Awaiting Approval
- Outlook is Very Bright!

SSOA Foundations



Motivation…Simplified



SSOA Mission

- Improve Awareness & Access to Available Capabilities
- Enable Sharing of Tools and Data
- Enhance, Enlighten “Mainstream” SOA (i.e. XML WS)
  - Enable Dynamic Discovery and Consumption of Services
  - Remove Location Dependence and “Stale” References
  - Add/Strengthen Semantics (i.e. Machine-interpretable descriptions)
  - Leverage Emerging Standards (re: WS-*)
- Provide “Deep” [Semantic] Interoperability
  - Semantic Descriptions for All Enterprise Resources
    - Data, People, Services, Processes, etc
  - Interpretability Among Specifications and Standards
  - Processes/Workflows More Flexible, Scalable and Repeatable
- Provide Critical Steps to Enable a Culture of Sharing
- Analysts Spend More Time on Analysis, Less Time on IT Tasks

SSOA Technical View

Extensible, Scalable Framework for Distributed Services

- Implements Jini™ Specification for Distributed Computing Model
  - Addresses Deutsch's Fallacies of Network Computing
- Decentralized, Distributed Service Oriented Infrastructure
- Flexible Location Independent Services
- Spontaneous Networking & Services Interchange
- Autonomic (i.e. Self Healing, Self-organizing, Self-synchronizing)
- Allows Near-Real Time Collaboration and Capabilities Sharing
- Proactive Health Monitoring and Management of All Services

Multi Agent System

- Agents Assemble "Business Functions" for Humans
- Provides Event Correlation over Myriad Sources
- Predictive and Proactive Behaviors (e.g. …"Might I recommend…")
- Facilitates Collaboration among Humans
- "Event-to-Process" Behaviors

* – "The Eight Fallacies of Distributed Computing", Peter Deutsch, 1991-1997, Sun Fellow, Sun Microsystems.

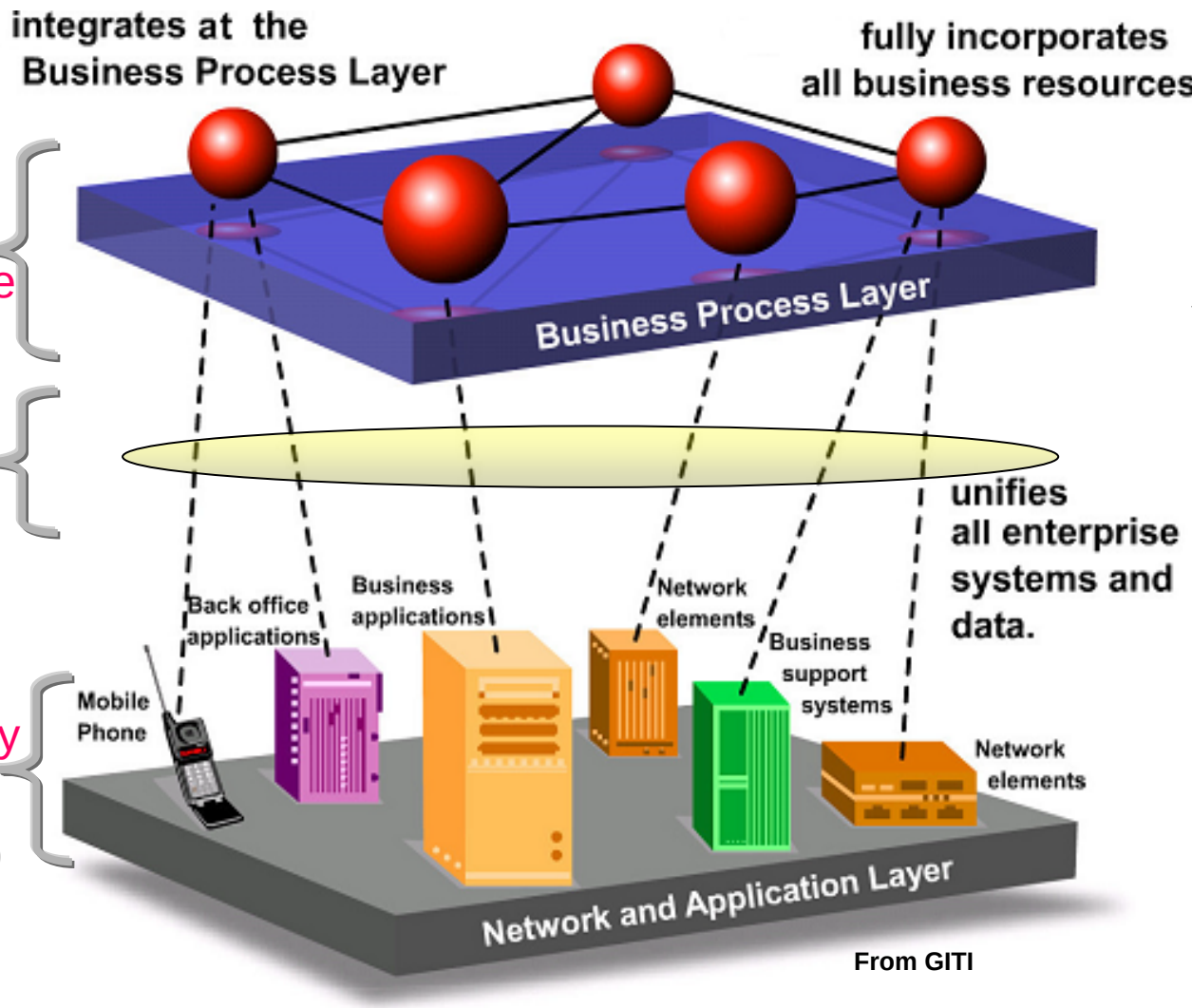
Powerful Jini™-Based Model

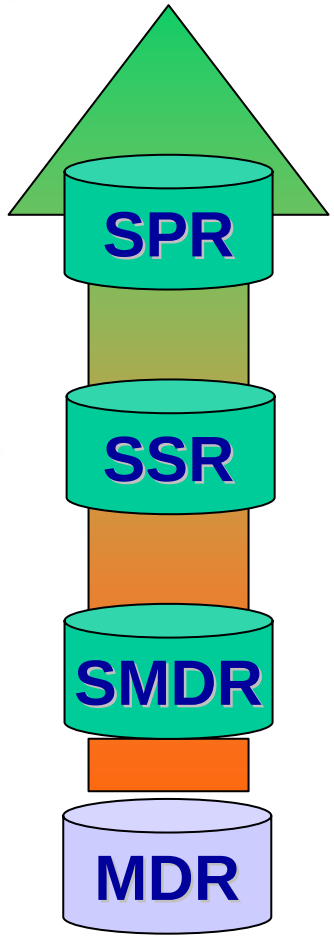
Abstraction, Location Independence

Protocol Agnostic

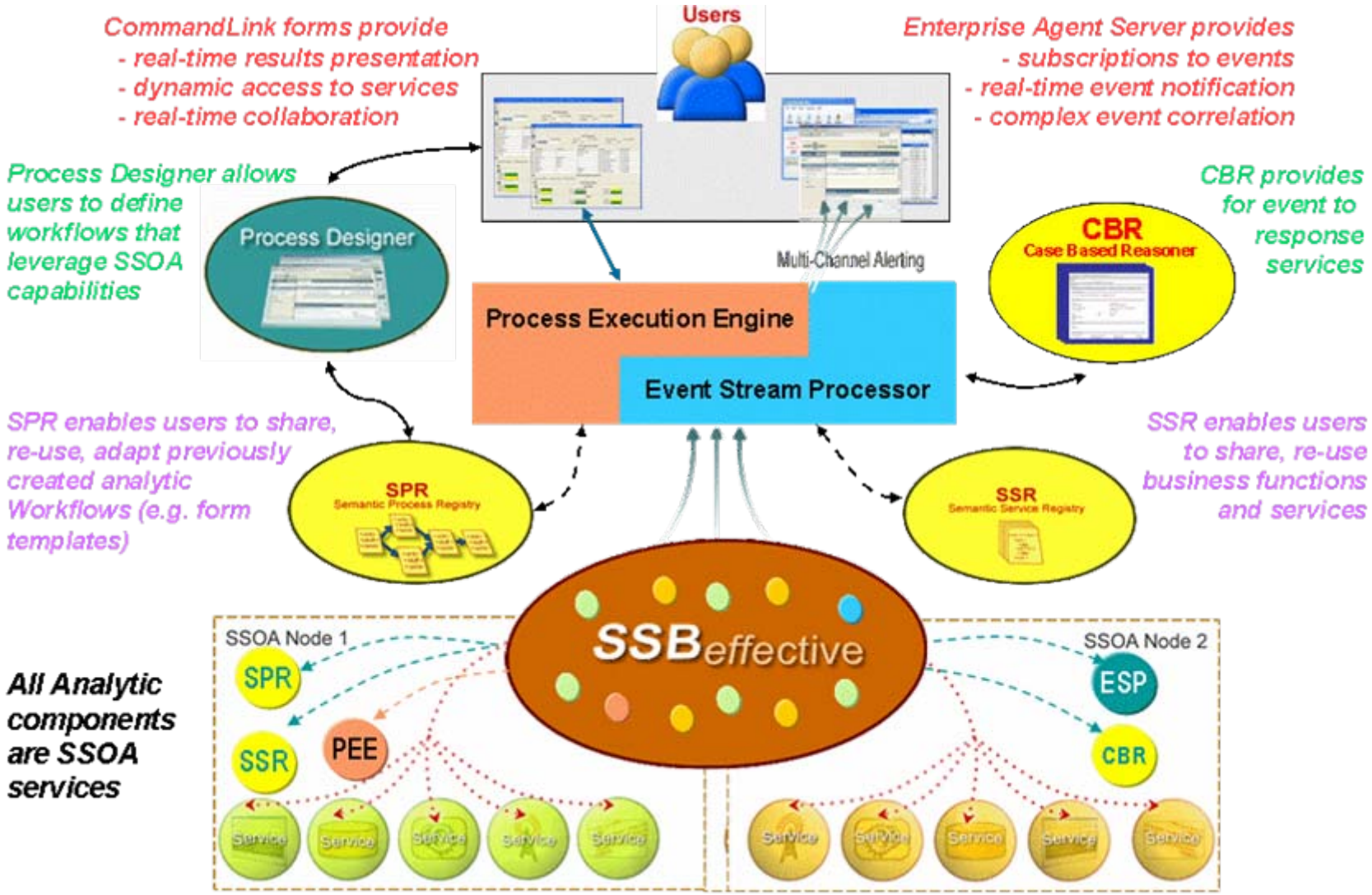
Heterogeneity

- Logical (s/w)
- Physical (h/w)
- S3





SSOA-Powered Analytic Environment



SSOA Case Study

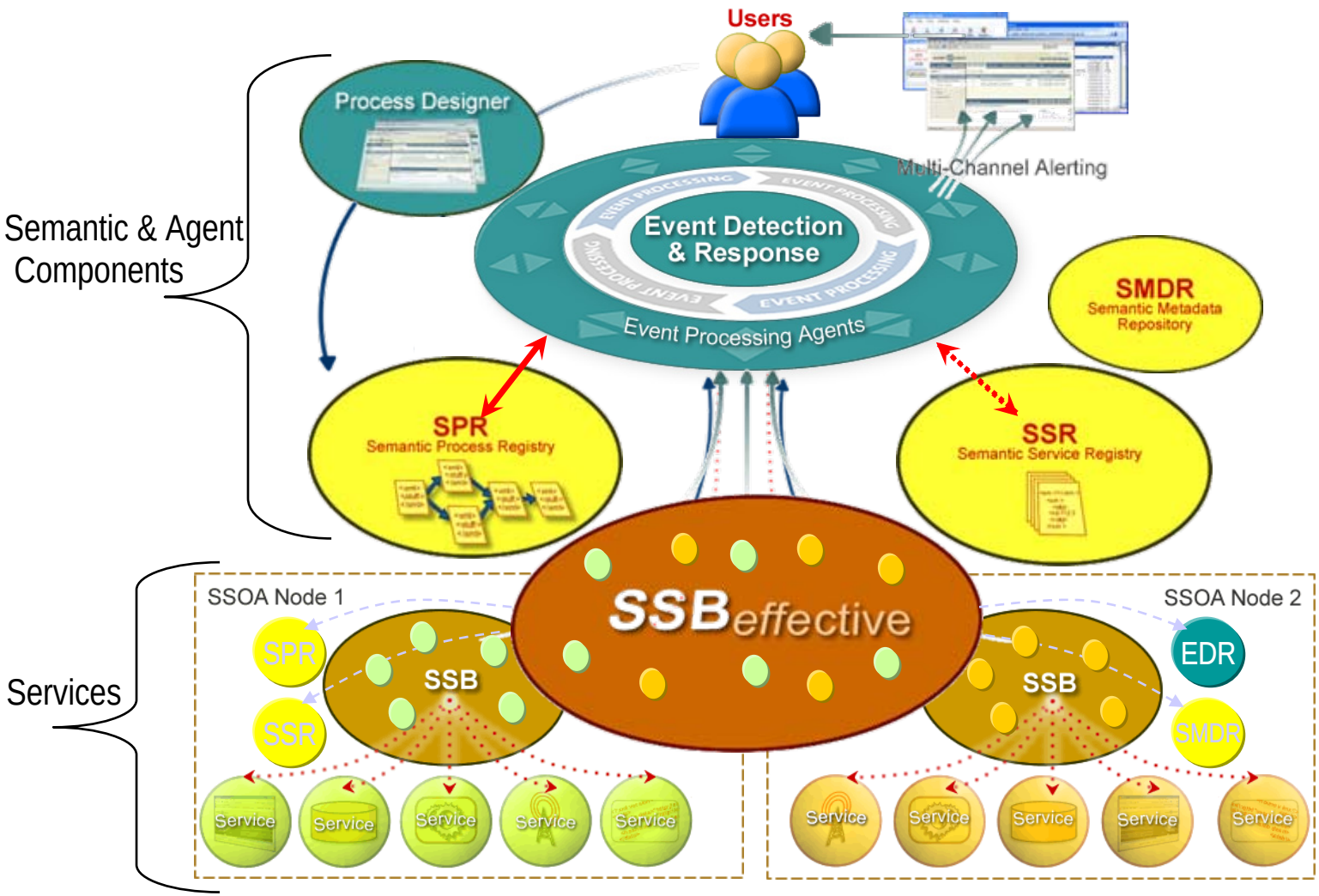
Demonstration available on request…

http://demo.agentlogic.com/ssoa

http://demo.agentlogic.com/ssoa/ActivateSignal.html

Back Ups

Prototype SSOA System View



SSOA Foundations

- Service Oriented Architecture (SOA)
  - Separation of Concerns
  - Functionality Discovered, Used, Re-used
  - Standard Interfaces Abstract Impl'n Details
- Semantics Based Computing
  - Machine Interpretable Content
  - Structure + Epistemology + Logic
- Standards Based Design (SBD)
  - Presupposes Pervasive Heterogeneity
  - Integrate Existing Apps w/ New/Future Technologies
- Standards Involved w/ Prototype
  - *ISO 11179 Metadata Registries*
  - ISO 19763 Meta-Model Framework
  - ISO 24707 Common Logic
  - OMG Ontology Definition Meta-Model
  - W3C Semantic Web Services Framework
  - *Open Services Group initiative (OSGi)*
  - *Service Component Architecture (SCA)*