

# NGOSS Technology Overview

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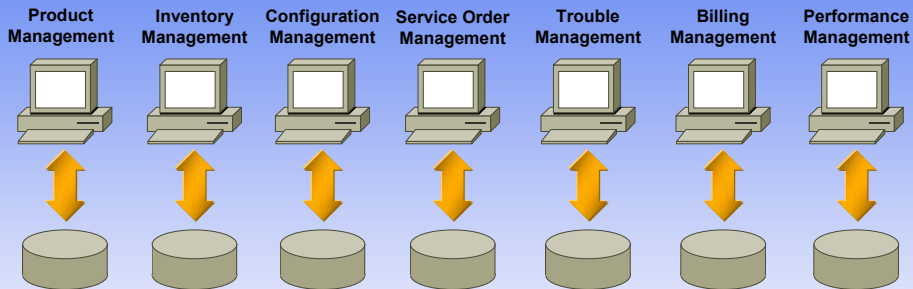
Co-Chair, TMF SID team  
Rapporteur, NGOSS Metamodel team  
Rapporteur, NGOSS Behavior and Control team

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## Agenda

- Motivation for NGOSS
- Information-Centric Architecture
- SID: The NGOSS “Glue”
- Policy-Based Management
- Compliance Team
- Catalyst Teams

## Shortcomings of Today's Network Operations



### ➤ Architectural issues

- ☞ Data redundancy
- ☞ Synchronization problems
- ☞ Application authorization issues
- ☞ Vendor and Application "lock in"

### ➤ Integration issues

- ☞ Isolated Data Silos
- ☞ Administrative nightmare
- ☞ Integration/customization nightmare
- ☞ Transition from legacy systems to a more flexible architecture

## NGOSS Revolutionizes OSSs

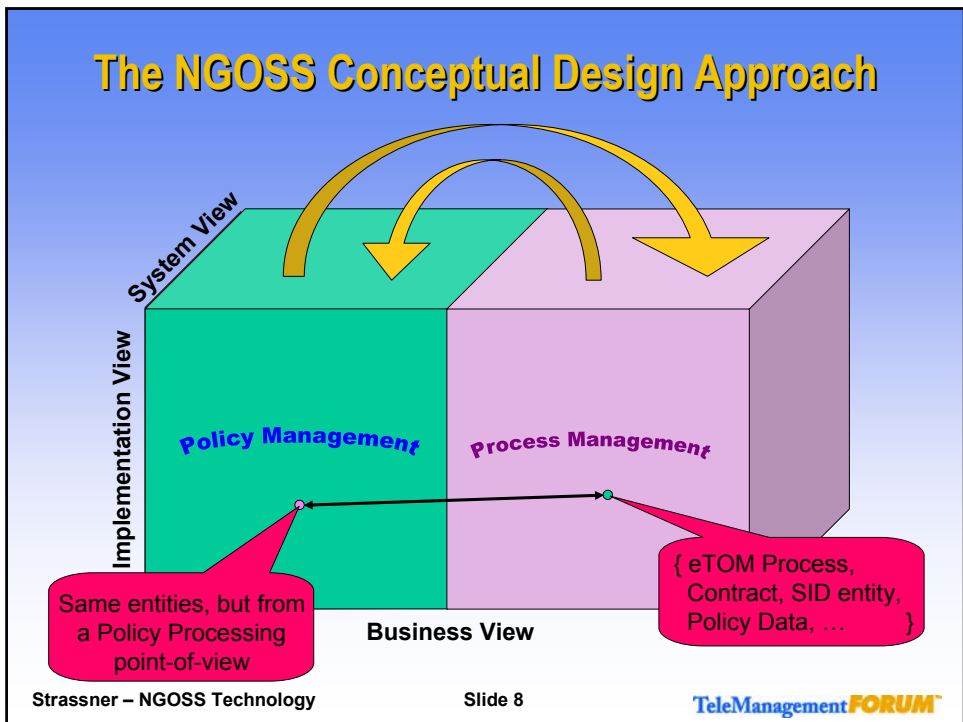
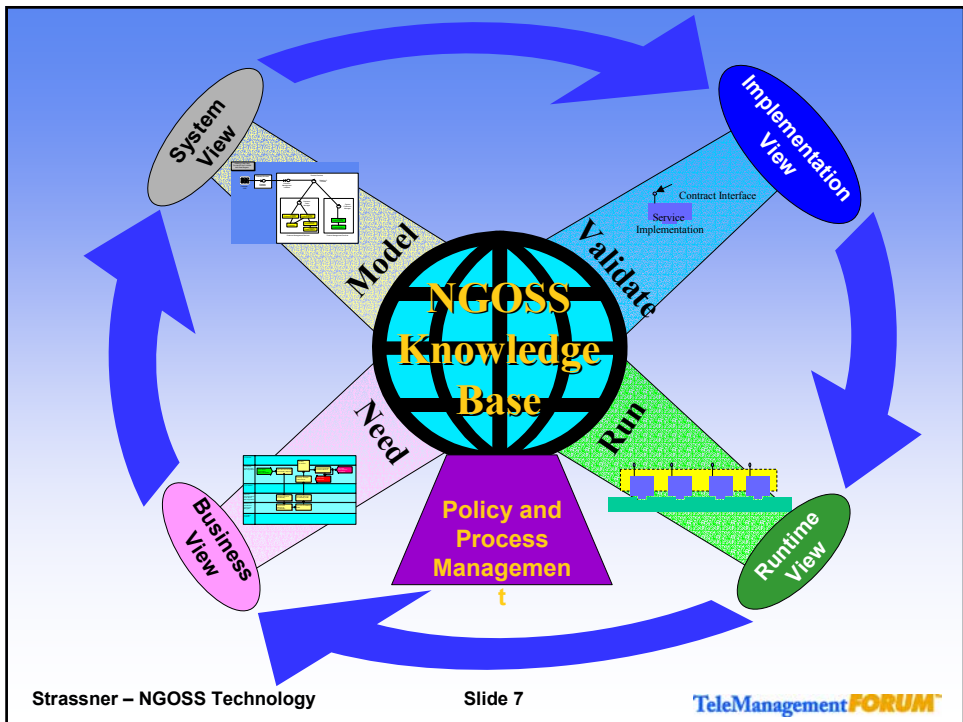
- OSSs span business, system and network needs
  - ☞ How come OSS components don't?
- NGOSS has two important goals
  - ☞ To enable business, system and implementation requirements to be specified and developed
  - ☞ To facilitate the rapid development of OSS components and solutions to meet the business needs of the Internet enabled economy
- NGOSS solves this by defining a methodology
  - ☞ MORE than "just" an architectural specification!

## What IS the TMF's NGOSS?

- NGOSS is a *paradigm shift*
- NGOSS is a business-oriented solution framework that specifies a methodology for building OSS components
  - ☞ Defines the salient characteristics of a next-generation OSS
- NGOSS is implemented as a set of programs
  - ☞ The TMF is producing a repository of business and system models, documentation, and code to support these efforts

## Hitchhiker's Guide to NGOSS

- Framework
  - ☞ Supports multiple viewpoints
- Architecture
  - ☞ Technology-neutral framework
  - ☞ Technology-specific implementations defined
- Methodology
  - ☞ Combination of policy and process management
  - ☞ Shared information and data models
- Interoperability
  - ☞ Contract- and component-based
- Communication
  - ☞ Distributed networking and computing services
- Compliance
  - ☞ Testable and provable



## Issues When Promoting NGOSS

- Expect a lack of understanding
  - ☞ Confusion over what it is - architecture, etc.
  - ☞ Confusion over WHY it is needed
- People will worry that
  - ☞ Standards are too slow to mature
  - ☞ Vendors won't adopt it
- What makes NGOSS different?
- What does it mean to them?

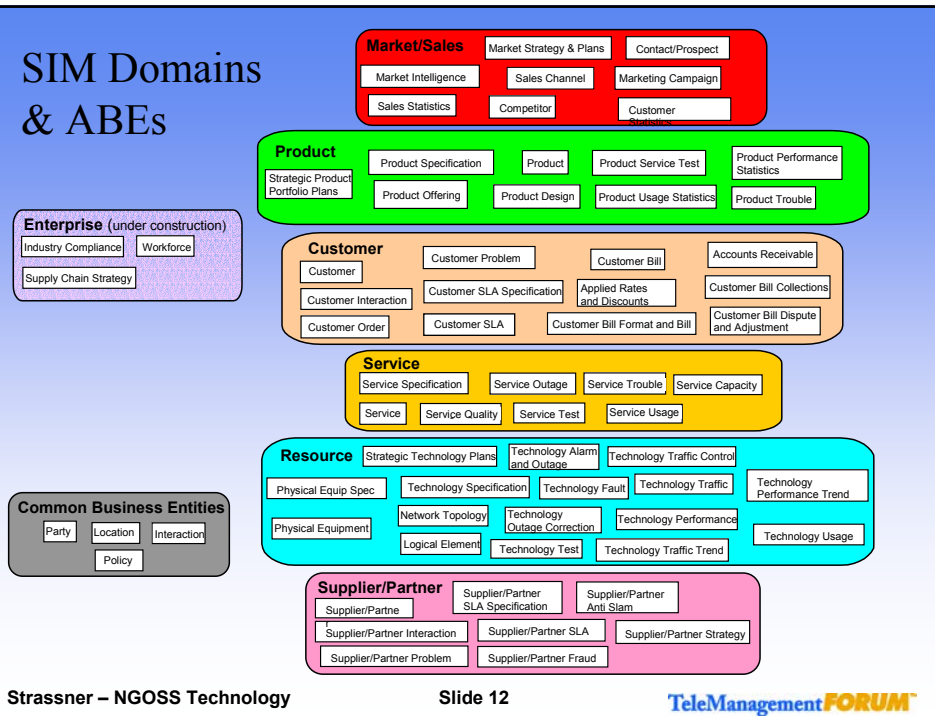
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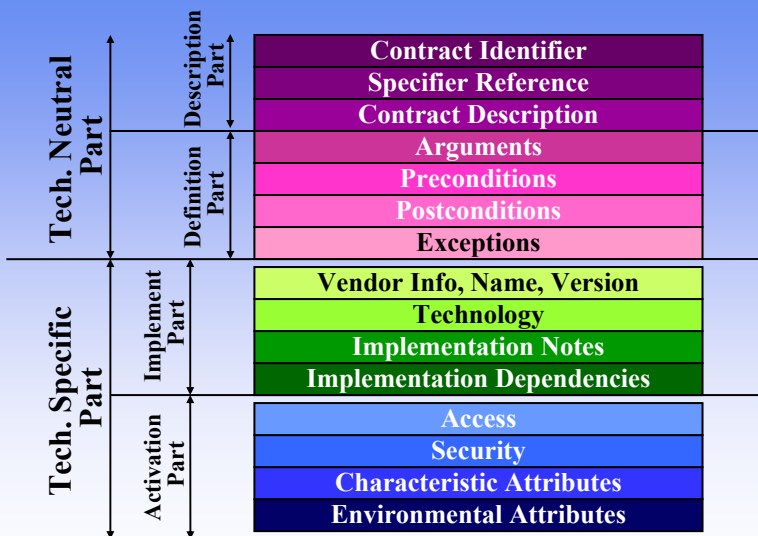
# eTOM - Business Map

- The eTOM defines the business viewpoint of the NGOSS System
  - ☞ External View of Functionality supported by Business Activities
- Mechanism for Identifying and Cataloging
  - ☞ Domain Boundaries
  - ☞ Business Processes and Flows
  - ☞ Use Cases
    - ◆ Actors, Entities, Models
    - ◆ Contracts

## SIM Domains & ABEs

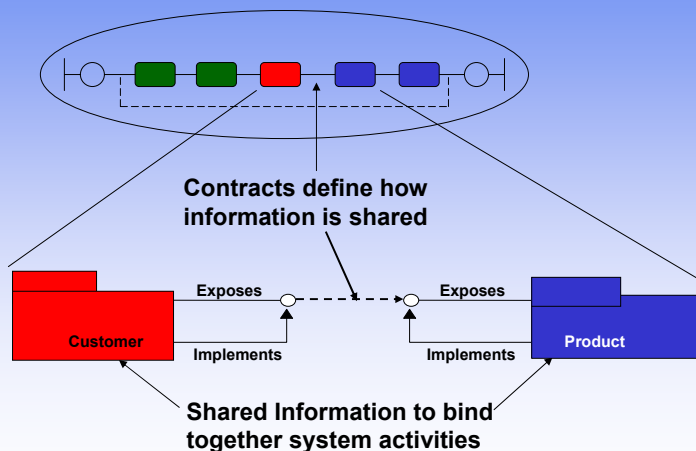


# NGOSS Contract

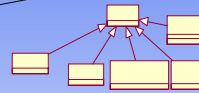
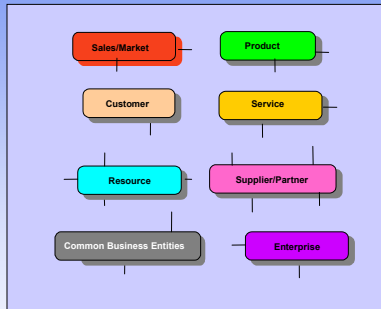


# The Contract/Information

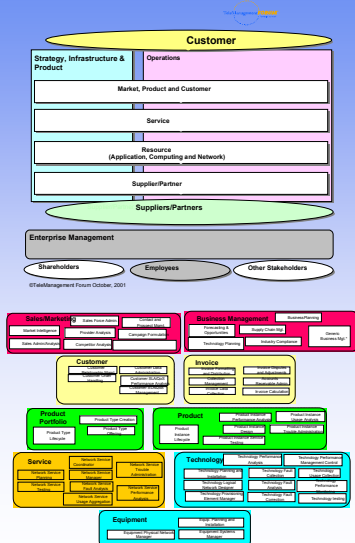
## Overall Process Plan



# What Is the SID?

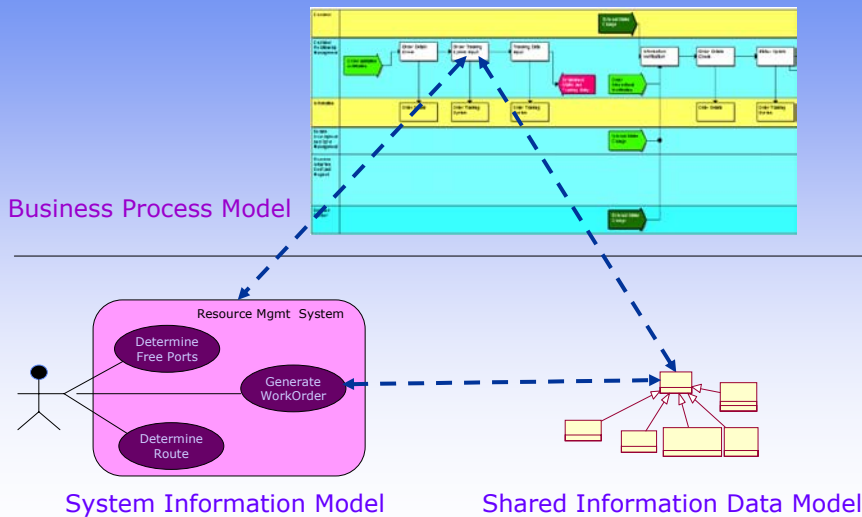


# SID and the NGOSS



- Provides business, system, and implementation views to drive design and implementation
- An organized collection of business and system entity definitions and UML models that
  - ☞ Provide a common information/data language
  - ☞ Depict the relationships among the entities

# Business to System Interactions



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## Motivation – New Management is Required

- The environment is more complex
  - ☞ Increasing number of users, devices and services means that provisioning must be smarter
  - ☞ Networks are more sophisticated
  - ☞ Differences in services can't be solved by bandwidth alone
- Application usage is more complex
  - ☞ Must accommodate needs of different applications, services and users
  - ☞ Requires agile architecture and management
  - ☞ Intelligence needs to be added
- Management needs to be pro-active

## SID and the Industry

- SID is a federation of models
  - ☞ Material mined from existing models (e.g., the ITU, the IETF, and DEN-ng)...
  - ☞ ...and company contributions (Intelliden, BT, Telstra, MetaSolv)
- SID is already being used!
  - ☞ TM Forum Catalyst Projects
  - ☞ OSS/J
  - ☞ T1M1 Global Telecom Data Dictionary (GTDD)
  - ☞ By vendors, such as MetaSolv and Intelliden
  - ☞ By Service Providers, such as BT and Telstra

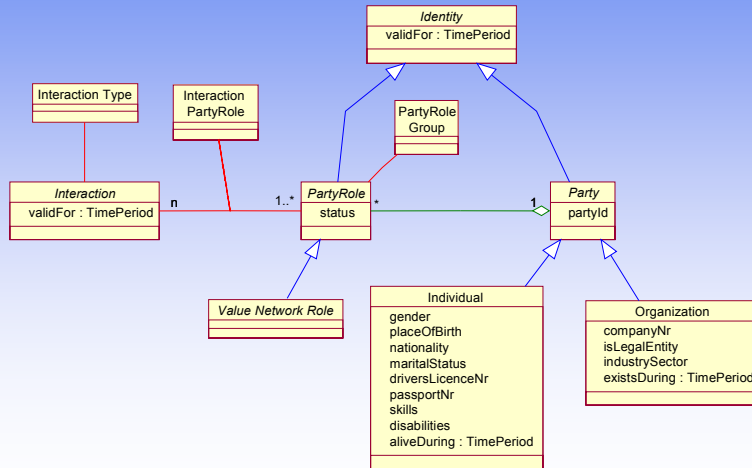
## Structure of the SID

- GB922 “front piece” containing concepts and principles
- GB922 addenda
  - ☞ Common and stand-alone Business Entities
    - ◆ Entities that span multiple domains, such as Party
    - ◆ Policy being added in Phase 2
  - ☞ Separate addenda on Product, Customer, and Inventory (Physical Resource)
    - ◆ Service and Policy added in Phase 2
  - ☞ Each addendum contains
    - ◆ Design rationale explanation
    - ◆ Business entity definitions
    - ◆ UML models of all business entities
    - ◆ Data dictionary defining all classes, attributes, etc.

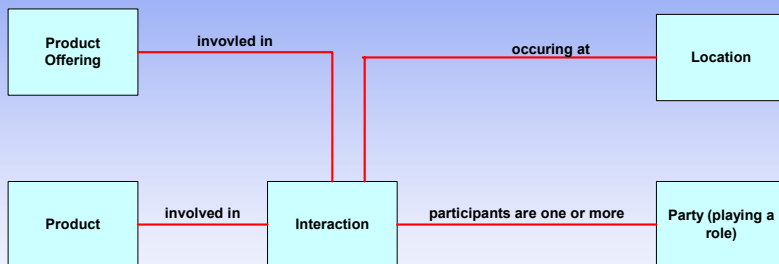
## Key Concepts of the SID

- Use of the Entity-EntitySpecification pattern
  - ☞ Modularize changeable and invariant behavior and characteristics of an entity
- Use of the Role Object Pattern
  - ☞ Physical Roles, to model the ability of a device to have multiple hardware uses
  - ☞ Logical Roles, to model different services provided by a device, or to model different uses of a device
- Use of the Composite Pattern
  - ☞ Powerful, extensible means to model stand-alone as well as aggregate entities

# Party (Simplified)

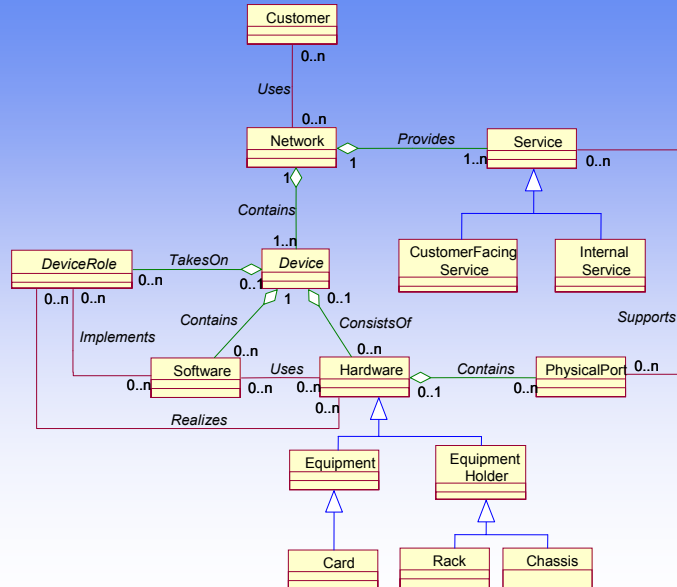


# Interaction Example





## Sneak Preview into the Service Addendum



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## SID Phase 2

- Update documents based on member review comments
- Enhance existing Phase 1 documents by continuing to examine how they interrelate and interoperate
- Continue Catalyst support
  - ☞ Entity modeling determined by Catalyst use of models
- Develop a model management strategy
- Update SIM for use with SID
- Align SIM and eTOM entity definitions with SID entity definitions
- Continue work on Resource domain, focusing on LogicalResource
- Initiate work on Service and ServiceSpecification
- Initiate work on Policy
- Support requirements of the Red Team as required
- Support use of SID by other industry fora

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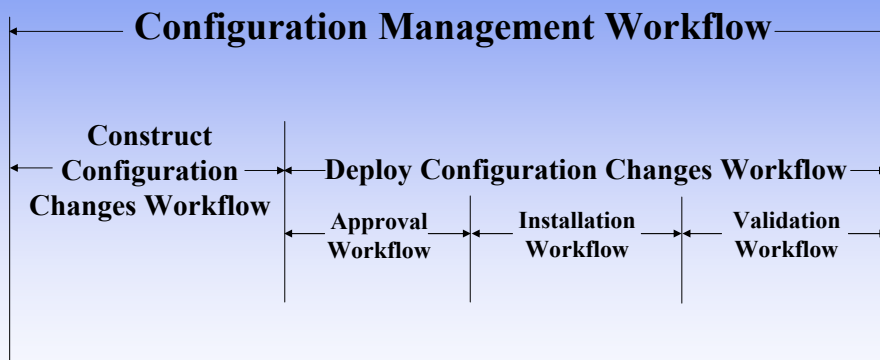
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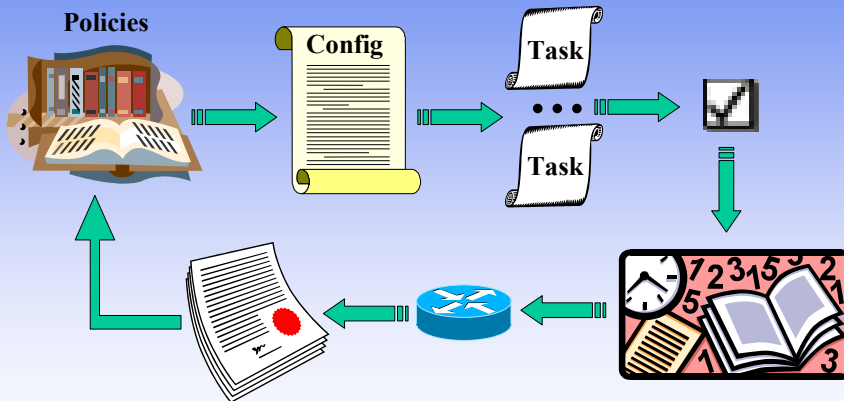
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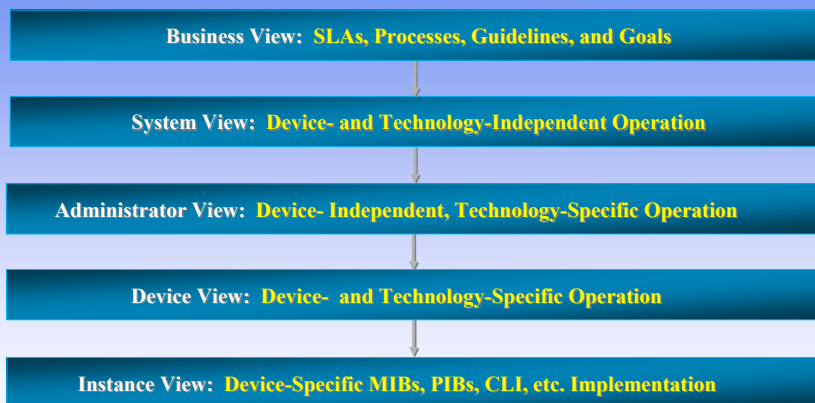
# Separating Configuration Mgmt



# The Interaction Between Policy and Workflow



# The Policy Continuum



## Model Mapping

View	Sample Objective	Sample Objects
Business	<i>John gets Gold Service</i>	Customer; GoldService; GoldApplications
System	<i>Define three Class of Services</i>	Set of customer-facing services {Gold, Silver, Bronze}
Administrative	<i>Use DiffServ to define traffic conditioning for Gold, Silver and Bronze; use RSVP to reserve bandwidth when required</i>	Define mappings between devices that are DiffServ-aware and not DiffServ-aware
Device	<i>Pick specific devices and software releases of their operating systems that support the above requirements</i>	Define specific type of queuing objects used per device, and map between their functional differences
Instance	<i>Write the appropriate CLI, and monitor using the appropriate MIBs</i>	Define objects to represent CLI and MIBs, and define mapping between them

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## Compliance and Vendors

- Compliance is critically important
  - ☞ Without it, interoperability is prevented
- Compliance is
  - ☞ Adherence to a minimum set of criteria
  - ☞ A holistic merging of engineering excellence and meeting marketing demands
    - ◆ This is why the Catalyst programs are so important
- Compliance is NOT a “rubber stamp”!

## Initial Scope of Compliance Map

- Automated Testing!
- Business case (TMF051)
  - ☞ Integration of legacy OSS systems to NGOSS framework
  - ☞ Addition of NGOSS components to support new services
- Architectural principles and associated requirements (TMF052 and TMF053)
  - ☞ A Common Communications Vehicle (CCV)
  - ☞ Contract-Defined Interfaces

# Compliance Tests to Implement

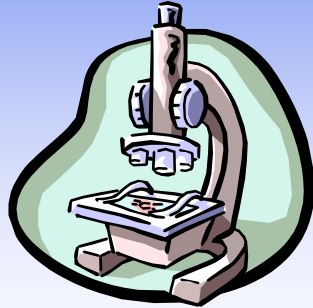
Test Category	Test ID	Test Name	Type
Environment	NGCTENV01	Registration Lookup Test	Mandatory
	NGCTENV02	Component Discovery Test	Optional
Common Communication Vehicle	NGCTCCV01	Message Test	Mandatory
Contract Defined Interfaces	NGCTCDI01	Contract Specification Test	Mandatory
	NGCTCDI02	Contract Implementation Specification Test	Optional
	NGCTCDI03	Contract Invocation Test	Mandatory
	NGCTCDI04	Contract Trading Test	Mandatory
Externalized Process Control	NGCTEPC01	Process Plan Initiation/Completion Test	Mandatory
	NGCTEPC02	Process Step Contract Invocation Test	Mandatory
	NGCTEPC03	Process Step Contract Response Test	Mandatory

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## Catalyst Program – *the living lab for NGOSS*

- The Catalyst program has been active for over two years developing solutions to real-life OSS problems
- Catalyst program is evolving into the *living lab for NGOSS*
- Five of six Nice TMW 2002 Catalysts will apply NGOSS principles



**Thank You for Listening**