The Driving Force Behind the New Generation Operations Systems and Software

Hisashi Tada
NEC
TM Forum - Advisory Director
With multiple downward pressures on price ....

- Over-capacity
- New technologies
- Competition (direct and indirect)
- Government & regulators

**Price**
Telecom must learn from other lean industries

Low-cost airlines -
• Heavy use of IT and customer self-service
• Demand based pricing
• High occupancy levels
• Heavy use of outsourcing

Banking -
• Highly automated capital flows
• Customer self-service
• Elimination of manual back-offices
• Fast-changing financial product life-cycles

Retailing -
• Highly automated flow-through
• Just-in time stock control
• Management of cost-base end-end
• Flexible product life-cycles
‘Lean’ operator goals

- **Ultra low cost operations**
  - High levels of automation & integration
  - Information integrity
  - Customer self management
  - Low cost of change
  - Commercially available, off-the-shelf, software

- **Highly flexible infrastructure**
  - Service development at Internet speed
  - Fast time-to-revenue
  - Rapid response to business changes and competition
  - Real-time flow-through service delivery
  - QoS guarantees
What is the TM Forum?

The TMF is the world’s trade association for telecom operations and systems. It has around 500 member companies in 60 countries encompassing the most important players in the whole telecom value chain. It has 3 primary roles:

**Guidance/Leadership -**
Providing the telecom industry with a common language and ways of seeing things to reduce fragmentation to a minimum
- Best practices
- Frameworks
- Information
- Training
- Education
- Benchmarks

**Standards -**
Providing the telecom industry with a minimum number of ‘cardinal’ standards to drive least cost of development and deployment
- Interfaces
- Contracts
- Data models
- Test specs and tools

**Ecosystem -**
Providing the telecom industry with a capability for networking, enabling business flow and ideas exchange through conferences, webinars and online information exchange
TMForum’s vision

To lead the emergence of continuously profitable, lean and agile providers delivering excellent services to their customers

TMForum’s vision is of a transformed communications services market where:

Operators achieve radically improved levels of service innovation, customer service and operational efficiency

By implementing high levels of flexible business process automation

Through easily integrated, open standard software provided by strong and profitable supply chain
Our key functions

be the focal point and “voice” of the telecom operations sector worldwide

stimulate a vibrant, open marketplace for operations systems

serve as an open and legal forum for industry collaboration

To lead the emergence of continuously profitable, lean and agile providers delivering excellent services to their customers

lead, educate and inform the marketplace

drive the timely development of open frameworks & standards

promote and enable experimentation
What are NGN management challenges?

- Personalization and Generalized Mobility with role-based access
- Markets
  - Fragmentation of service market
  - Niche products
  - Shortened Product/Service Lifecycles
- Multiple Trading Partners
- Complex Value Chains & Business Models
- Separation of
  - NGN Services and Applications
  - NGN Transport (mainly packet-based and partly control plane driven)
- Management Agility
  - Mass customisation in a componentized environment
  - Mgmt componentisation has to follow trading infrastructure changes
- New Business Models require new business functions
NGN management relationships

- NGN management solutions requires the integration of business and networking concerns
  - How the organization does business (the eTOM)
  - How the solution is architected (the NGOSS TNA)
    - functional, information and physical architectures
  - How the solution is developed, managed and used (the NGOSS Lifecycle and Methodology with view-centric and model-driven approach)
  - How the solution is modeled, and its behavior orchestrated (SID, MTNM, MTOSI, etc)

- Thus, possible collaborations include
  - Business – a new track in ITU-T, already in 3GPP
  - Architecture – OMG MDA, ITU-T, 3GPP, ETSI, ATIS
  - Lifecycle – OMG MDA, 3GPP, ITU-T
  - Modeling – ITU-T, 3GPP, ETSI, ATIS
TM Forum Collaboration Program

- Thought Leadership/Strategy
  - NGN-M
  - SPLC
  - Industry Liaison
  - TPC

- Business Tools
  - eTOM
  - Telecom Application Map
  - Benchmarking
  - SLA Management
  - Revenue Assurance
  - SID
  - SOX
  - Procurement Guidelines

- NGOSS
  - Business Requirements
    - Defining Requirements for NGOSS-based Development
    - SLA Handbook
    - Revenue Assurance
    - Business Process Management
  - NGOSS Developers Tools
    - eTOM Process Model
    - SID Information Model
    - Technology Neutral Architecture
    - Compliance
  - Lifecycle and Methodology
  - NGOSS Compliant Interfaces
    - Using NGOSS to build standard software interfaces
    - MTOSI
    - MTNM
    - IPNM
    - CO-OP

- Catalyst Program

- Collaboration Tools
  - OpenOSS, Collaboration Workspace, www, Web Communities

Drive Strategy
Create Business Guidelines
Develop Software
Demonstrate Solutions

Workshop on Telecommunication Management and Operation Support System - Beijing, 22-23 May 2006
The program behind the “Technology Leadership”
Creating de facto industry standards for OSS/BSS

- NGOSS
  - Driving the future of service provider business process automation
- Market Collaboration Projects
  - Solving specific problems in specific industries
- Catalyst Program
  - The living lab of NGOSS
- Industry Liaisons
  - Cross-pollination of ideas with other industry organizations
NGOSS is based on 4 key toolsets that form the NGOSS Toolkit

- Business Process Framework – the eTOM
- Enterprise wide information framework – the SID
- Systems integration framework – the Architecture
- Applications Framework – the Application Map
eTOM: the Big Picture

Customer

Strategy, Infrastructure & Product
- Strategy & Commit
  - Marketing & Offer Management
- Infrastructure Lifecycle Management
- Product Lifecycle Management
- Service Development & Management
- Resource Development & Management (Application, Computing and Network)
- Supply Chain Development & Management

Operations
- Operations Support & Readiness
- Fulfillment
- Assurance
- Billing
- Customer Relationship Management
- Service Management & Operations
- Resource Management & Operations (Application, Computing and Network)
- Supplier/Partner Relationship Management

Enterprise Management
- Strategic & Enterprise Planning
- Enterprise Risk Management
- Enterprise Effectiveness Management
- Knowledge & Research Management
- Financial & Asset Management
- Stakeholder & External Relations Management
- Human Resources Management

Workshop on Telecommunication Management and Operation Support system - Beijing, 22-25 May 2006
### The SID Business Framework (GB922)

#### Market / Sales
- **Market Strategy & Plan**
- **Marketing Campaign**
- **Contact/Lead/Prospect**
- **Market Segment**
- **Competitor**
- **Sales Statistic**
- **Sales Channel**

#### Product
- **Product**
- **Strategic Product Portfolio Plan**
- **Product Performance**
- **Product Specification**
- **Product Offering**
- **Product Usage Statistic**

#### Customer
- **Customer**
- **Customer Order**
- **Customer Problem**
- **Customer Interaction**
- **Customer Statistic**
- **Customer SLA**
- **Applied Customer Billing Rate**
- **Customer Bill Collection**
- **Customer Bill**
- **Customer Bill Inquiry**

#### Service
- **Service**
- **Service Applications**
- **Service Performance**
- **Service Specification**
- **Service Configuration**
- **Service Usage**
- **Service Trouble**
- **Service Test**

#### Resource
- **Resource**
- **Resource Topology**
- **Resource Performance**
- **Resource Specification**
- **Resource Configuration**
- **Resource Usage**
- **Resource Trouble**
- **Resource Test**

#### Supplier / Partner
- **Supplier/Partner**
- **S/P Interaction**
- **S/P Order**
- **S/P Plan**
- **S/P Product**
- **S/P SLA**
- **S/P Performance**
- **S/P Problem**
- **S/P Statistic**
- **S/P Bill**
- **S/P Bill Inquiry**
- **S/P Payment**

#### Enterprise
- **(Under Construction)**

#### Common Business
- **Party**
- **Location**
- **Policy**
- **Agreement**

---

Workshop on Telecommunication Management and Operation Support system - Beijing, 22-23 May 2006
## Technology Neutral Architecture

### Repository

<table>
<thead>
<tr>
<th>Shared Information</th>
<th>Component registrations</th>
<th>Service registrations</th>
<th>Contract registrations</th>
<th>Contract Instance registrations</th>
<th>Processes</th>
<th>Policies</th>
</tr>
</thead>
</table>

### Mandatory Framework Services

- Contract Instance Location Service
- Registration Service
- Repository Service
- Naming Service

### Legacy Application

- Service
- Legacy Application

### Other Mandatory Services

- Policy Service
- Process Service
- Security Service

### TM Forum Lean Operator Program

- New Generation OSS Toolkit
- Shared Information and Data Model – SID
- Telecom Applications Map - TAM
- Enhanced Telecom Operations Map - eTOM
- Technology Neutral Architecture (TN-A)
NGOSS Lifecycle

Logical View

Business

System

Deployment

Implementation

Physical View

Business Capabilities, Constraints & Context

System Capabilities, Constraints & Context

Deployment Capabilities, Constraints & Context

Implementation Capabilities, Constraints & Context

Service Providers View

Service Developers View
## NGOSS Release 6.0 – Now Available

<table>
<thead>
<tr>
<th>Business Process Map eTOM</th>
<th>Shared Information and Data Model SID</th>
<th>Integration Framework - TNA, Contract Interface</th>
<th>Service Framework</th>
<th>Conformance/Compliance Tests</th>
<th>Lifecycle</th>
<th>Application Map</th>
<th>CIM/SID</th>
</tr>
</thead>
<tbody>
<tr>
<td>GB921V 6.0</td>
<td>GB926 v1.0</td>
<td>GB922 v6.0</td>
<td>GB924 v2.0</td>
<td>TMF 050 v4.1</td>
<td>GB927 v1.2</td>
<td>GB929 v1.0</td>
<td>GB932 V0.2.7</td>
</tr>
<tr>
<td>GB921B v4.0</td>
<td>GB927 0 v1.0</td>
<td>TMF 053 v6</td>
<td>TMF 050A v4.1</td>
<td>GB927 A v1.2</td>
<td>GB930 v1.0</td>
<td></td>
<td>GB933 V0.1.13</td>
</tr>
<tr>
<td>GB921C v4.0</td>
<td>GB922 1A v6.0</td>
<td>TMF 053A v3.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GB921D v6.0</td>
<td>GB922 1BI v6.0</td>
<td>TMF 053B v4.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GB921F v4.5</td>
<td>GB922 1BT v3.0</td>
<td>TMF 053C v1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GB921N v5.0</td>
<td>GB922 C v1.0</td>
<td>TMF 053D v1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GB921P v4.5</td>
<td>GB922 1J v1.0</td>
<td>TMF 053F v1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GB921T v4.5</td>
<td>GB922 1L v3.0</td>
<td>TMF 053S v1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GB922 1P v3.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GB922 1POL v1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GB922 1R v2.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GB922 1T v1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GB922 1U v6.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GB922 2 v6.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GB922 3 v6.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GB922 4S-O v2.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GB922 4S-QoS v1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GB922 5LR v1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GB922 5PR v3.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GB922 6 v6.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Industry Group Liaison – Why?

- Principal focus of TM Forum work = OSSs for Comms. Industry.
  - But this has very wide scope:
    - Business Processes, Systems Framework, Info. Modelling,
    - Network Technology Integration, etc, etc.
- Increased Convergence with the work of other Industry Groups
- TM Forum wants:
  - Cost-effective solutions that receive wide industry support
  - Reduced industry duplication and confusion
- Hence TM Forum must:
  - **Build upon** work of other Industry Groups – where applicable
  - **Influence** the work of other Industry groups – where necessary
- Objectives achieved through **Liaison Program**
TM Forum - Liaison Program

- **Organisation:**
  - Business Relationship – **Liaison Agreement**
  - Technical Detail – **Work Register**

- **Example Liaison Areas:**
  - Management (DMTF, ATIS / TMOC)
  - Network Technology (MSF, MEF, OIF)
  - Internet (IPDR.org, IETF)
  - System (OSS/J, The Open Group)
  - eBusiness (RosettaNet, UN/CFACT)
  - Mobility (3GPP, OMA)
  - “Standards Bodies” (ITU-T, ATIS, ETSI, TTC)
Other Industry Group Liaisons

- **OSS/J** (OSS through Java)
- **DMTF** (Distributed Management Task Force)
- **3GPP** (3rd Generation Partnership Program)
- **ETSI** (European Telecommunications Standards Institute)
- **ITU-T** International Telecommunications Union
- **ATIS** (Alliance of Telecommunications Industry Solutions)
- **TTC** (The Telecommunication Technology Committee)
- **OIF** (Optical Internetworking Forum)
- **MEF** (Metro Ethernet Forum)
- **MSF** (Multi-service Forum)
- **OMG** (Object Management Group)
- **RosettaNet** (eBusiness)
- **QuEST** (Quality Excellence for Suppliers of Telecommunications)
- **TOG** (The Open Group)
- **IPDR** (IP Detailed Record organization)
- **OMA** (Open Mobile Alliance)