Welcome to the TM Forum Webinar Series Event:

Data Integrity Management: Foundation of Operations & Infrastructure Transformation
AGENDA

- Introduction - Joan Huffine, TM Forum
- Overview – Adam Boone, Subex
- Introduction to data integrity management – Mark Nicholson, Subex
- Exploring implementing auto-discovery – Ziaur Rahman, T-Mobile
- Data & Information integrity past, present, future – Mark Nicholson
- Wrap-up & parting thoughts – Adam Boone
- Q&A - All
Presenters:

- **Mark Nicholson**, CTO, *Subex*
- **Adam Boone**, Vice President, Strategic Marketing, *Subex*
Data Integrity Management: Foundation of Operations & Infrastructure Transformation
Welcome

Adam Boone  
Vice President, Strategic Marketing  
Subex Ltd.

Subex is a leading global provider of OSS/BSS solutions
- More than 150 installations in 60 countries worldwide
- Market leader in revenue management solutions
- A leading innovator in service fulfillment solutions … Syndesis
- Market leader in data integrity management solutions

Webinar goals:
- Explore OSS/BSS data integrity issues, especially as they relate to next-gen operations
- Examine the symbioses between Data Integrity and Enterprise Information Models
- Share knowledge – discuss data integrity management best practices
Data Integrity Management Defined

Mark Nicholson
CTO
Subex

www.subexworld.com
Data integrity management

Data integrity management (DIM):

Managing the quality, consistency, accuracy and relevancy of data that is critical to operational success.

Everyone manages data integrity today. But we might call it …

“provisioning rework”
“network audits”
“inventory reconciliation”
“fixing revenue leakage”
“reducing access costs”
“database cleanup”
“working the red-line processes”

And many other ad hoc, reactive methods for dealing with the impacts of inaccurate data.

Today is about getting proactive with data integrity management.
Original root of data integrity problems

Maintenance of data is often manual and/or siloed, permitting data sources to grow stale and out of sync.

- Between 20-30% of assets are not accurately tracked.
  - Excess capital spending; sub-par return on assets; S-Ox problem.
- Provisioning failure rates of 25%+.
  - 70% of provisioning “fall-out” is due to dirty data.
- Network data is inaccurate and obsolete.
  - Problem resolution takes longer … leads to customer churn.
- Revenue leakage and access cost overruns.
Implications for the future

- Operations management in retailing, logistics, manufacturing set the bar high
  - “Fly by data” backed by proactive approach to data integrity management.
  - Accurate, real-time customer activity, pipeline, billing, and inventory data.
  - Ability to track profitability and respond to market … operational dexterity.
  - With high data integrity, can run with razor thin inventory levels.

- DIM becoming central to transformation
  - Enterprise-wide common information modeling cannot be put into practice without DIM
  - Essential for governance of information handling and maintenance of process flows
Commonly deployed strategies

Data Integrity Management Projects

Low automation
- Manual audits
- Scripts, basic discovery tools and manual detection of discrepancies

High automation
- Discovery and automated discrepancy detection
- Discovery, discrepancy management and database synchronization
- Process improvements for ensuring data quality, discovery and reconciliation backstop
T-Mobile Data Integrity Management Strategy and Approach and Selection of Auto-Discovery Solution.

Ziaur Rahman
Sr. Manager, Strategy and Architecture, Service and Network Management Systems
T-Mobile, USA
Agenda

• T-Mobile Data Integrity Management Strategy and Approach
• T-Mobile Auto Discovery Opportunities & Business Benefits
• Auto-Discovery Solution
• Auto-Discovery Selection Criteria and Selection Process
Business Justifications of T-Mo CIM

- Too many databases/i-models with redundancy and overlaps exist in SP environment.
- Common Information Model (CIM) is the core of overall information/data architecture.
- CIM provides a common language, vocabulary, standard format for communications and information exchange across the enterprise BSS/OSS, organizations and people.
- CIM will reduce vertical and horizontal system integration and operation cost and enable and ease integration and automation.
- CIM can be a blue print for object/data model design of new OSS/BSS and system interfaces.
Strategy of T-Mobile Information Model Initiative

- Define the business justification and strategy of CIM project and evolution plan to adapt CIM in T-Mobile Env.
- Define the project plan (scope, goal, stakeholders, milestones and deliverables) for CIM project.
- Discover and document the current info/data architecture of OSS/BSS systems.
- Use TMF SID to define the T-Mobile CIM in fulfillment, assurance, and billing areas.
- Review and get approval from stakeholders and senior management.
- Select a vendor through RFI/RFP for POC, implementation and deployment.
- Use SOA for integration with Systems and Process initiatives.
Auto Discovery Opportunities and Benefits for Service Providers

- SPs’ Inventory System – 20-30% inaccurate, inconsistent and/or missing data. Consistent with NOC Techs testimony.
- Inefficient Use of Resources – many types of users and manual efforts.
- Fragmented and regional as opposed to centralized approach for ensuring both the integrity of network inventory and process automation.
- Inaccurate Asset Management and Capacity Engineering/Planning - un-recovered stranded assets (industry average) - $2.7M per $100M.
- Potential Revenue Loss - ROI Analysis: $5M potential yearly savings in Capex and Opex.
Auto Discovery Solution

- Data Integrity: Maintain an accurate and real-time inventory of the existing network configuration.
- Discovery: Discover, normalize and store physical and logical inventory data in the Auto-discovery database.
- Reconciliation: Reconcile inventory data using discovered data.
Auto Discovery Architecture
T-Mobile Selection Criteria for Auto-Discovery

- Customer base in the Auto-Discovery Solutions area
- Available adaptors or plug-ins to the network elements
- Modular architecture – scalability, ease of integration with current CM solution and ease of customization
- Development Toolkits and northbound interfaces
- RDBMS – Oracle is preferred
- Systems functionality (Reporting, Logging etc)
- Accuracy and performance of the data discovered
- Capability to support T-Mobile operations, development and users
- Trial results
Highlights of Subex Solution

- Better Trial results
  - Completed the discovery process in two hours
  - Has better ease of use from development and operations point of view
- Many off-the-shelf Adaptors
- Better Architecture
  - Matured, established, scalable and industry proven product
  - Strong support for failover and load-balancing.
  - Flexible cartridges - can contain rules and schema for discrepancy processing or without rules and schema for unknown data source.
- Easier for future in-house development and operations
  - Easy reuse of Adaptors and customization via chaining method.
  - SDK is available for T-Mobile to build NEMs and Collectors.
- Uses industry standards DBMS – Oracle
- Subex can work with any inventory system or DB of record
- Subex has extensive industry experience in Auto-discovery domain as well as service activation area and has larger customer base
Selection of Auto-Discovery Tool

Result: Vendor selected based on technical excellence – Subex

- RFP Issued to seven vendors – June 22, 2006
- Five vendors short listed based on RFP responses - Sept 27, 2006
- Short listed vendors provided technical demo – Oct 9-12, 2006
- Two vendors selected for trials – Oct 12, 2006
- Two vendors including Subex performed lab trials in WA to discover Nokia, Alcatel, and Tellabs NEs and user trial in NJ including the read out of the results: Trial Dates: Nov 27 – Dec 21, 2006
- Subex was selected by the evaluation team. The team included Architecture, Systems Engineering, Development, and Operations Teams - Dec 21, 2006
- Statement of Work (SoW) was prepared with vendor and the final results presented to the executive team March 1, 2007
Thank You
Data Integrity Management:
Summary of where we’ve been, where we are, and where we’re going

Mark Nicholson
CTO
Subex
A brief history of DIM (2000-2006)

- **2000 – Internet bubble burst**
  - But not for us “telecom folks” … we were selling real things, not hype

- **2001 – Full market melt-down and telecom bubble burst**
  - 9/11 and beginning of full market melt-down
  - Telecom bubble bursts October 2001

- **2002-2004 – Telecom ice age**
  - Things look DIM
  - “D&R” – discovery & reconciliation – market is born in 2002

- **2004-2006 – Bottoming out and rebirth**
  - Voracious M&A cycle begins
  - IP services become “the next big thing”
    - Hybrid and greenfield approaches
  - DIM and D&R matures from a “cleansing” bolt-on to a key architectural component for all next-gen OSS
    - BT 21CN, Telstra OSS-T, etc.
    - More than 25 operational transformational initiatives now including DIM as core component
Where DIM is heading next

- Critical maintenance function in enterprise information modeling
  - As we move to “fly by data” relying on common model across all operations

- Automated integrity management
  - Elimination of process holes that cause data integrity issues, buttressed by continuous automated validation of data
  - Perpetual accuracy for all processes via continuous validation
  - Ensures conformity across all entities – data stores, processes, systems, resources

- Central consideration in transformational initiatives
  - Information hub – core requirement is DIM data quality backstop
  - Intersection with business intelligence layers
  - Operational transformation and process engineering
  - Revenue operations centers, monitoring operational impact on profit
Service provider transformational initiatives involving DIM

- OSS/BSS architecture transformation
- OSS/BSS integration / silo consolidation
- Inventory system consolidation / rationalization
- New inventory system deployment
- NGOSS architecture implementation
- Converged network infrastructure deployment / operationalization
- Network integration (M&A) and data migration
- Process engineering initiatives
  - Provisioning automation / flow-through
  - Fault impact analysis
  - Revenue management frameworks: Revenue Operations Center
  - Next-generation service offering initiatives
Wrap Up & Q&A

Adam Boone
VP, Strategic Marketing
Subex
Key take-aways

- **DIM evolving**
  - From a stop-gap, reactive task into a pro-active process
  - Increasingly essential to operational transformation and adoption of lean operating principles

- **Certain best practices are emerging**
  - Organization
  - Process
  - Technology
Example: DIM Process Start-up

Methodology recently introduced by Subex based on experience with 20+ DIM projects

Data Integrity Process Analysis

Data Integrity Diagnosis

Technical deployment

Data Integrity Deployment Plan

Analysis of processes, organization, and system architecture

Diagnosis of current data integrity levels, reasonable target levels and timeframes, with analysis of FAB process impacts of data integrity issues

Plan for DIM technology processes

Results, course corrections

6 mos

Data Integrity Results Assessment

Phase 2 Additions / Expansions

6 mos

Data Integrity Results Assessment

Phase 3 Additions / Expansions
Questions & Answers

Data Integrity Management: Foundation of Operations & Infrastructure Transformation
THANK YOU FOR COMING!