Challenges or Opportunity – 2G - 3G O&M

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Agenda

- Mobile Market - A paradigm shift
- Convergence and Diversity - Services v/s Platforms
- The Challenge Continues
- Maturity brings pain - O&M the relief
- Economical Solutions
- Network Operations & Maintenance offerings
## Mobile Market - A paradigm shift

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<th>Market Trends</th>
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<td>Increasing Competition</td>
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<td>Invest in UMTS</td>
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<td>Increasing Complexity</td>
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<td>Up-coming Data Services</td>
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<th>MNO Challenge</th>
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<td>New Service Propositions</td>
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<td>Quality of Service</td>
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<td>Customer satisfaction</td>
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<td>Time-to-service</td>
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<td>OPEX</td>
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<th>MNO Strategy for OSS</th>
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<td>Centralization</td>
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<td>Specialization</td>
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<td>Full automation of operational process</td>
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<td>Customer orientation</td>
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<th>Network Management Challenge</th>
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<td>Increasing complexity of multi-standard mobile networks</td>
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<td>Shorter innovation cycles of network elements &amp; services</td>
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<td>New NM Paradigms through IP &amp; NG OSS/eTOM</td>
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<td>From network to service centric operations</td>
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<td>Decrease of Systems Integration Tax</td>
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As networks mature, responsibility focus shifts from deployment to managing networks.

As network equipment proliferates & services converge, it creates operations & management challenges -- especially for carriers cohabitating 2G & 3G.

Convergence -- fixed-mobile, voice data, computer-telephony -- is the end.

Infrastructure diversity -- switches, routers, gateways, servers, thin clients -- the required means.

O&M requirements of hierarchical management structure coexisting with, flat network model, creates challenges for network planners.
The Challenge Continues!!

- 3G systems occupy a small space in the ocean of a 2G network
- Carriers don’t want to see a major change in O&M between the two

**O&M system**
- Management functionality
- Simultaneous display & handling of both networks' alarms
- Bi-technology network topologies

- 3G continues to diversify with new vendors’ equipment and specific formats defined by geography and region
- The greater the degree of diversity, the more pressing the need for O&M to be the binding factor in fixed and wireless networks
Quantity and Quality - Inseparable twins

Technological Diversification

Quantitatively

- Creates need for streamlined O&M for increasing network sizes
- Quantitative aspects of 3G O&M: system performance, flexibility & scalability

Qualitatively

- It lays a foundation for management of new technologies (ATM and IP)
- Qualitative perspective: addresses tech-oriented topics i.e. what end-to-end mgmt looks like in a 3G IP-based network
Maturity brings pain - O&M the relief

- Market maturity & Migration to 3G

Operators' margins → Competition

- Market saturation

- O&M is the first victim of Cost-cutting
  - While network elements and overall size grows, the goal is to maintain the required O&M manpower ..or even reduce it

- O&M is strategic to service provisioning
  - While considering to cut cost, it should be balanced against the strength and quality O&M adds to business

- O&M on its own will be a key success factor in the 3G networks market
O&M the Decisive differentiator

- Operators’ priorities have changed significantly
- Today’s focus of operators on CAPEX and availability will shift towards total cost of ownership

Price (CAPEX) + OPEX
Network Growth
Network Quality
Network Optimization & Performance

O&M the **decisive differentiator**
Economical Solutions

Understand the organization & cost structure of the mobile operator
- Analysis of business & operational processes
- Identification of OPEX saving measures

Efficient operational concepts
- Excellent mobile network usability with intuitive mgmt
- Automation of operational processes by Self-Optimizing-Networks, Auto-discovery

Optimal tailored network & service mgmt solutions meeting mobile operator needs
- Hiding network complexity
- Full Service Orientation
Evolution of O&M Sub systems

In the early 1980s, the first O&M and standard ISO-OSI Systems Management Framework was made (FCAPS)

With the introduction of wireless and mobile networks few additional areas, which could not be easily covered by FCAPS, had to be added
Some Trends in O&M

Shift from equipment-oriented mode to Service-oriented mode

From pure network-oriented and NE-oriented management to service-oriented and customer-oriented management

Shift from decentralized maintenance to centralized maintenance

Scattered technical resources centralized in the network management center (NMC)

- O&M efficiency increases
- Network operation quality improves
- Consistency of data remains unchanged
  (including office data, software version data, circuit data, network resources data, network operation quality data, and equipment performance data.)
Shift from Extensive management to Meticulous management

Formulation of non-complex workflow and standardization of processes to

- Improve service traction index
- Boost service provision and fault response capability
- Increase the network operation quality
- Lower O&M cost
- Enhance the O&M efficiency

**eTOM**
- Service flow model universally accepted in the telecom industry
  - Designing the service flow to build necessary functions & systems for telecom service operations

**ITIL**
- Widely accepted guideline for IT service and management
  - To plan and formulate IT infrastructure and service management

Comprehensive enterprise service flow framework can be created if ITIL can be efficiently combined with ETOM
Shift from *Extensive* management to *Meticulous* management

**Optimisation of Network resource configuration flow**
- Involves procedure starting from **Service Initialization** to **Implementation**

- Key factors to be considered are:
  - Cost-effectiveness,
  - Service protocol,
  - Rational use of resources, and service activation specific requirements by subscribers

- Quicker establishment of flow can:
  - Shorten service activation time
  - Improve response capability for go to the market

**Optimisation of Service Assurance flow**

*Involves service daily assurance, fast recovery handling in case of fault, while engaging with customer:*
- Diagnostic; Dispatch for handling; Quick recovery
- Notification of subscribers and public relation with media should not be neglected
Shift from *Extensive* management to *Meticulous* management

**Management through traction of two indices**

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<th>1</th>
<th>Subscriber Quality of Experience (QoE)</th>
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<td></td>
<td>Subscriber satisfaction – the only network O&amp;M standard</td>
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<td>Subscriber perceivable O&amp;M indices can help guide transition of the O&amp;M – O&amp;M indices perceived by a subscriber closely reflect the network quality and maintenance level when the subscriber uses the network service.</td>
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<th>2</th>
<th>Network Resource Management index system</th>
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<tr>
<td></td>
<td>Too much or too little can hurt!!</td>
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<td></td>
<td>Can help to guide resource configuration optimization according to service development and customer requirements, for the maximum use of the network resource with optimal OPEX</td>
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*Network O&M should be based on *service goal*, with focus on core competencies existing and that can be built upon*

*Operator must establish *strategic direction* to drive reforms in *service management* and oversee *optimization* of resources, processes and personnel*
Towards Unified O&M System

- Configurations Manager
- Customer Manager
- Accounting Manager
- Security Manager
- Terminal Manager
- Mobility Manager
- Performance Manager
- Fault Manager

Terminal Management System (TMS)
- Network Discovery
- Network Selection
- Mobility
- QoS
- Personal Profile

Multi-mode terminal

Internet (or External IP Network)

Operator IP Backbone Network

3G BS

2G BS

WLAN AP

Appl. Platform
Network middleware
Multi-radio access ctrl.
WLAN
2G
3G
Network Operations & Maintenance offerings

- Network Monitoring & Operations
- Network Field Maintenance
- Logistic & Vendor Management
- Technical Support & Process Management
- Transition Management

Network Operations & Maintenance
# Network O&M - Services as a Product

## Managed Operations & Maintenance

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<tr>
<th>Core</th>
<th>Field</th>
<th>Preventive</th>
<th>Corrective</th>
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| • Upgrade mgmt  
• Database mgmt  
• Configuration mgmt  
• Capacity Mgmt  
• Help desk & Escalation Mgmt.  
• Inventory Mgmt  
• Swap Mgmt  
• Transmission n.w Audit  
• Performance Measurement  
• Fault Analysis and MIS  
• Alarm Management | • KPI Measurement  
• Fault Mgmt& Trouble shooting  
• Logistics Mgmt  
• 3rd Party Mgmt  
• Warehouse Mgmt  
• Logistics  
• Acceptance Test  
• Planned Expansion Audit  
• Optimization. | • Warranty Mgmt  
• AMC Mgmt  
• Routine Preventive Checks  
• Pre- Monsoon and Winter Preventive Maintenance | • Repair & Return Management  
• Resolution Mgmt  
• Fault Mgmt |
| Help desk & Escalation Mgmt  
• Inventory Mgmt  
• Fault Analysis and MIS. | KPI Measurement  
• Fault Mgmt& Trouble shooting  
• Logistics Mgmt  
• 3rd Party Mgmt  
• Warehouse Mgmt  
• Inventory Mgmt  
• Acceptance Test | Warranty Mgmt  
• AMC Mgmt  
• Power Utilisation Audit  
• Telecom Infr Audit  
• Site Repair, Painting and Upkeep  
• Replacement | Repair & Return Management  
• Resolution Mgmt  
• On-site repairs |
Thank You