Zero Touch

Next Gen OSS/BSS meets ML/AI
Drivers and Enablers

The Zero-Touch Vision

How to achieve it? Example ETSI ZSM

AI and ML Adaptations

What Next?
Current Status of Telco Network and Service Operation

Static Business Models

Waterfall-Modeled Processes and Projects

Multiple Manual Interactions

Multiple Silo Operation

Strong OSS/BSS Demarcation

Poor exploit of SDN/NFV
Drivers and Enablers

- 5G NR
- SDN NFV
- Slicing
- MEC
- Ultra-reliable
- Ultra-fast
- Agile Business Models
- Critical Infrastructures
- Industry 4.0
- Tactile Internet
- AR/VR
- IOT
Get Full Service Lifecycle Abstraction to business level
Eliminate all manual process steps
Automatically ensure policies
Network operation not prepared for emerging business models and network architectures

Pressure for operators to compete with OTT players

Fast adaptation on virtualized network architectures (SDN/NFV/5G) leaving OSS behind
Push for increased level of network operational automation

Maximise the use of abstraction (e.g. in intent based networking)

Plan for 100% automation of network operation (Zero-Touch paradigm)

Achieve 5G network slicing readiness
- Establish cross-industry initiatives
- Maximise existing standards and solutions
- Collaboration of standard bodies (ETSI/TMF/ONAP etc.)
ETSI ZSM ISG: Priorities

Enable hybrid network automation

Integrate legacy OSS landscapes

Develop evolution path to full automation

Develop E2E concepts and architectures
### Some Submitted Use Cases in ETSI ZSM ISG

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<tr>
<th>Category</th>
<th>Use Case</th>
<th>Vendor</th>
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<tr>
<td>Full Automation of 5G Operation</td>
<td>• DOCOMO • Full Lifecycle Automation</td>
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<tr>
<td>MANO for Network Slicing</td>
<td>• HUAWEI • 5G Slicing e.g. for critical infrastructures</td>
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<td>Automated Root Cause Analysis</td>
<td>• ZTE • Alarm handling, correlation and suppression, multi source, cross layer based</td>
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<td>Automation for Hybrid Technologies</td>
<td>• SPRINT • Hybrid aspect of 5G slicing</td>
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<td>Unified Closed Loop Analysis</td>
<td>• Huawei • Closed Loop mechanism and related models</td>
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<td>Service Resource Provisioning Automation</td>
<td>• Huawei • Service–related VNF lifecycle based impact analysis on related interfaces</td>
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<td>Best in Breed Control Capabilities</td>
<td>• Ciena • Optimized Quality of Experience for end customers</td>
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<tr>
<td>Automated Service Pre-Activation Testing and Validation</td>
<td>• Ericsson, VIAVI • Sub-Use Case for all Service Life Cycle starts</td>
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Involving AI/ML to Telco Systems (from ETSI ENI ISG)

Existing System
- Applications
- Service Plane
- Orchestration Plane
- Management Plane
- Control Plane
- Data Plane
- Infrastructure

AI System
- Context Aware Management
- Policy Based Management
- Situational Awareness Management
- Knowledge Representation and Management

Cognition Framework

Perception → Understanding → Projection of Future State → Decision → Action
Implement It!: Common Telco/AI Architecture for NFV (ETSI ENI ISG)
Closed Loop Example (ETSI ENI ISG)
Future business models require tighter integration of network support

Leverage of advanced networks require more flexible support systems

Likely major shift in network operational paradigms

Majority of approaches consider „brownfield scenario“

Meet the data scientist: Collaborating with AI/ML experts required

Leverage of existing frameworks and (open source) solutions