5G: Intelligent Service Planning and Optimization
Catalyst Problem Statement

Challenges

- Cost Efficiency
- 5G Network
- Flexibility & Agility
- Customer Experience

Scope

- Optimize
- Plan
- Monitor
- Design
- Activate

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Tour de France – the world’s most famous cycle race

- Providing connectivity and services is a unique challenge
- 21 stages, 3500km, 12m spectators, 190-country broadcasts
- Annually changing routes makes traditional techniques obsolete
- Live feeds, streaming, telemetry, drones and more
- **5G offers huge potential for supporting new services and revenue streams**
High Level Catalyst Architecture

Wipro Digital Services Enablement Platform

Order Manager

Ericsson Orchestrator
Service Orchestration, Network Slice Management

Ericsson Adaptive Inventory
Network Design & Planning Automation
PNF/VNF Resource / Service Lifecycle Management
Discovery & Reconciliation

AriaNetworks iVNT
Close Loop Planning
What-If Analysis

Domain Orchestrators
Cloud Orchestration
WAN Orchestration

MYCOM OSI
Experience Assurance, and Analytics (EAA)
Digital Service Awareness
Closed Loop Assurance & Tactical Optimization

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• France-wide network
• 4 DCs with distribution points at Paris, Limoges, Toulouse and Nice
• 3 Ingress points along the stage
• 5 mobile sites with dual microwave links back to the ingress points
• Focus on data plane function
• BPFs hosted at Mobile Site
• PPFs hosted at Ingress Points
• UPFs hosted at DC
• Slice optimal at all layers
Catalyst Use Cases

UC1: Network Slice Design
Improved and automated network planning to address complex network design
Benefits:
- Reduced Time to Service
- Ease of Planning

UC2: Network Slice Activation
Automated Service Creation across Multi Layer, Multi Domain & Multi Technology
Benefits:
- Reduced Time to Service
- Zero Touch fulfillment

UC3: Reactive Close Loop
Automatic rerouting of the service due to Quality of Service violation
Benefits:
- Reduced resolution time
- Automated healing

UC4: Proactive Close Loop
Proactive close loop due to predicted SLA violation
Benefits:
- Better customer experience
- Better Network utilization

UC5: Customized Customer Experience
Adapt fulfillment and billing to customer’s specific needs
Benefits:
- Transparency & efficiency
- Better customer experience
Use Case 1 – Network Slice Design

1) Radio Planner identifies location of trucks and plans details of cells and microwave connectivity, selects the network slice blue print from Ericsson Orchestrator and creates new network slice design

2) Ericsson Orchestrator passes information to Ericsson Adaptive Inventory to create more detailed design of equipment through templates

3) New network details are passed to Aria iVNT and Aria iVNT is requested to provide detailed design of the slice

4) Aria iVNT creates a detailed plan of the network slice including routing of all underlying connectivity and location of all required VNFs

5) Detailed plan is passed back to EAI to create VNF details through templates

6) Network Slice Design (TOSCA) is sent to Mycom OSI Experience Assurance & Analytics (EAA)

7) Network Slice is ready for instantiation at the appropriate time
Use Case 2 – Network Slice Activation

1) At appropriate time (when trucks are in position) Service Orchestrator triggers slice instantiation according to Network Slice Design
2) VNFs/PNFs are instantiated via Ericsson Orchestrator
3) Transport is configured via Ericsson WAN Orchestrator
4) Details of Network Slice are passed as TOSCA-O to MYCOM OSI Experience Assurance & Analytics (EAA)
5) EAA begins monitoring Network Slice activity measurements on Orchestrators and VIM
Use Case 3 – Digital Service and Network Slice SLA Violation

1) MYCOM OSI EAA receives Performance Data from the Orchestrators and the network infrastructure
2) MYCOM OSI EAA identifies QoS/SLA breach in Network Slice and informs Service Orchestrator
3) Ericsson Service Orchestrator passes details of QoS breach to Adaptive Inventory and then to Aria iVNT
4) Aria iVNT redesigns an optimal new Network Slice Design (avoiding congested path(s)) and if necessary relocates/resizes VNFs
5) New plan is passed back to EAI to created details VNF details through templates
6) VNFs are instantiated/ decommissioned/ resized via Ericsson Orchestrator
7) Transport is configured via Ericsson WAN Orchestrator
8) Details of Network Slice are passed to MYCOM OSI EAA
9) MYCOM OSI EAA begins monitoring reconfigured Network Slice
Use Case 4 – Service Information based Proactive Assurance

Pre-requisite: Network Slice Activation
1) Broadcasters/Subscribers request specific Video streams through Wipro DSEP (Digital Services Enablement Platform).
2) DSEP aggregates the information and informs Mycom OSI EAA the video streams to monitor.
3) EAA requests for current & predictive video stream specific & IoT information
4) DSEP sends the requested information periodically reflecting the current service situation
5) Based on the data analysis EAA analyzes will predict SLA breach and proactively triggers Ericsson Orchestrator (EO) for redesign of the network slice
6) EO reconfigures network slice based on Design from Adaptive Inventory
7) EAA is informed about the changes
Use Case 5 – Customized Customer Experience

1) Broadcasters/Subscribers order specific Video streams through Wipro DSEP. Subscribers may opt for non-telco supplementary services

2) DSEP evaluates cost of order and enables advance payment through banking service

3) DSEP aggregates the information & sends a consolidated Service Order to Order Manager which may trigger network changes via EO

4) If required EO configures network and informs EEA about the changes

5) EEA monitors the network, where possible initiates corrective action. At the end of the Service SLA report specific to each video stream

6) DSEP evaluates SLA report and calculates per customer final due based on agreed Service level and closes the transaction financially.
## TM Forum Components Used

- APIs leveraged for architecture and design

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<th>S.No</th>
<th>API used</th>
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<td>1</td>
<td>TMF 641 Service Order Management API</td>
<td>Wipro DSEP and Order Manager</td>
<td>Provide consolidated Service Order based on multiple Product order by Broadcasters</td>
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<td>2</td>
<td>TMF 622 Product Order Management API</td>
<td>Wipro DSEP to interface with Broadcasters</td>
<td>Collect Product orders from different Broadcasters</td>
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<td>TMF 628 Performance Management API</td>
<td>Ericsson Domain Orchestrators and MYCOM OSI Experience Assurance and Analytics</td>
<td>Transmit Performance counters related to RAN, CORE, Transport and NFVi</td>
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<td>TMF 642 Alarm Management API</td>
<td>MYCOM OSI Experience Assurance and Analytics, and Ericsson Service Orchestrator</td>
<td>Triggering Optimization action based on critical SLA violation</td>
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<td>TMF 628 Performance Management API</td>
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<td>Transmitting Video Stream Level SLA Violation</td>
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<td>TMF 664 Resource Function Activation</td>
<td>Ericsson Service Orchestrator to the domain Orchestrators</td>
<td>Create/Read/Update/Delete of network functions</td>
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Key Innovations & Benefits

- Dynamic Network Optimization
- Network Slices, Multi-domain
- Enhanced Customer Experience
- SLAs, QoS
- From Broadcast to Multicast
- Close Loop Assurance
- AI, NFV/SDN

Enabling Immersive Experience
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Thank you