Automated Optimization of Customer QoE
Customer care is still too reactive, labor intensive, and expensive

Our catalyst focuses on this problem

Customer experience degrades on July 21.
Operator is unaware.

Frustrated customer calls customer care on July 25.
Care agent unaware of root cause

Care agent and customer troubleshoot issue for 14 minutes.
Customer ends call

Issue is never correctly diagnosed.
Customer eventually switches operators.

Nothing is learned, so no improvements are made.

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A more proactive, automated workflow is required

**Our catalyst focuses on this solution**

- Automated detection, isolation, and notifications of customer experience degradations
- Automated orchestration of targeted resolutions
- Decision support for care agents and portals if customers seek assistance
- Feedback on effectiveness collected in all cases to facilitate machine learning and improvement
Sample Use Cases

See our kiosk for a demonstration!

1. Automated Customer Problem Diagnosis, Recommendations
2. Creation and Routing of NOC Trouble Ticket
3. Detection and resolution of subscriber provisioning errors
4. Detection and Resolution of Network Element Misconfigurations

Human Decision Support  Zero Touch Operations
Ecosystem for our solution and roles of each party

**Automated optimization of customer QoE**

- **Operator Data Science and Operations Teams**
  - Collaborative offline machine learning model development and refinement
  - Policy oversight or control

- **Customer Experience Assurance System**
  - Signature customer experience alerts & recommendations
  - Feedback collection
  - Online machine learning operationalization
  - Collaborative offline machine learning model development

- **Orchestration Engine**
  - Action implementation
  - Logging of actions taken
  - Inputs on configuration states

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Value of this solution to service providers

**Significant OPEX reduction without sacrificing service quality or customer satisfaction**

$1.95

**OPEX Savings per subscriber per year**

With a better customer experience

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**Customer Care Call Avoidance**
- Baseline 2 care calls/sub/yr
- Weighted average (tier I + 20% escalation to tier II) AHT of 13 minutes, cost of $0.67/min
- 3.3 reduction in tickets via automated resolutions
- Annual subscriber value ~$0.41/sub/yr

**Cust. Care Call Handling Time Reduction**
- 20% of calls benefit from handling time reduction
- 1.4 minute reduction in weighted average handling time for benefitted calls
- Annual subscriber value ~$1.03/sub/yr

**Churn Reduction**
- 20% of churn tied to service quality
- 10% benefit in quality-related churn
- $138 blended churn-related cost (50% prepay @ $75 replacement, 50% postpay at $200 replacement)
- Annual subscriber value ~$0.51/sub/yr
Use case #1

**Automated detection, resolution, verification of customer provisioning errors**

1. **Detect signature condition**
   - Overall QoE and SMS KQI impacted for subscriber
   - MO SMS failures tied to provisioning problems
   - Incorrect SMS provisioning setting in HLR

2. **Apply policy & take action**
   - Modify IMSI provisioning for service in HLR

3. **Score impact of action**
   - Provisioning errors disappear for this subscriber, returning QoE to green.
   - Score = 100%

4. **Optimize signatures and actions**
   - Promote/retain this path based on score
Use case #2

Automated creation and routing of NOC trouble ticket based

1. Detect signature condition
   - High #/% of subs with poor QoE
   - KPIs & cause codes point to core signaling failures
   - High #/% of poor QoE subs with VoLTE issues
   - Failures center around one MME

2. Apply policy & take action
   - Create NOC ticket and route to EPC engineering team

3. Score impact of action
   - NOC feedback score indicates that this was the proper routing
     - Score = 100%

4. Optimize signatures and actions
   - Promote/retain this path based on score
Use case #3

Automated customer problem diagnosis and care agent decision support

1. Detect signature condition
   - Subscriber QoE and Voice KQI impacted
   - KPIs & cause codes point to core signaling failures
   - MO Voice Failures tied to provisioning problems
   - Current provisioning status unknown

2. Apply policy & take action
   - Alert care agent to voice provisioning issue, recommend investigating voice provisioning status

3. Score impact of action
   - Customer care agent indicates that this problem diagnosis and (provisioning) resolution were correct
   - Score = 100%

4. Optimize signatures and actions
   - Promote/retain this path based on score
### Emerging TM Forum contributions

**Related and new/proposed use cases**

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<th>Existing or proposed use cases</th>
<th>Standard</th>
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<td>GB962d, C-CEM-16</td>
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<td>Proactive Care Based on Network Experience Analytics (C-CEM-26)</td>
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<td>Automated self-healing of issues degrading the customer experience</td>
<td>Proposed new contribution to GB962d</td>
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<td>Automated network operations workflows triggered by customer experience degradations</td>
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