ETSI ZSM work items on Closed loop automation

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Dec 8th 2020
Motivation

✔ Further specify how Closed Loop Automation can be realized within the ZSM framework

✔ Identify gaps and improve the ZSM framework
  ✔ New management services and capabilities
  ✔ Use case-agnostic enablers
  ✔ Solutions to documented scenarios

✔ Enable the creation and execution of closed loops, as well as the integration and interoperability between closed loops within ZSM framework

✔ Influence/collaborate other SDOs and open source projects
ZSM009 – Closed Loop (CL) Automation

ZSM009-1 – Enablers

- Enablers for closed loop automation for multiple use cases
- Mainly divided between:
  - CL Governance
  - CL Coordination
- Extension of ZSM framework with new management services and capabilities

ZSM009-2 – Solutions

- Solutions for end-to-end service and network automation
- Based primarily on the scenarios of ZSM001
- (Re)-uses the enablers specified in ZSM009-1

ZSM009-3 – Advanced topics

- Advanced topics, such as cognitive capabilities
- Problem statements and potential solutions
ZSM framework management services grouping (Example)

- **Analytics**
  - Provide insights based on collected data

- **Data collection**
  - Monitor the managed entities and provide live performance and fault data

- **Intelligence**
  - Provide specific decisions and recommendations
  - AI models / Policies & Intents

- **Orchestration**
  - Automate workflows to handle lifecycle management of the managed entities

- **Control**
  - Individually steer the state of managed entities (resources and services)

- **CL**
  - Analysis
  - Decision
  - Execution
  - Collection
This represents:
Managed resource, or
Managed service, or
Managed closed loop
Closed loop governance

✔ Set of capabilities for external entities to manage the CL models and the lifecycle of CLs (design-time AND run-time);
✔ Configuration of policies, rules, triggers and priorities for the CLs;
✔ Status and performance information of the CLs.

CL LCM – Phases and activities

Closed loops (meta)model
Closed loop coordination

✔ Set of capabilities that allows multiple CLs running within the ZSM framework to be coordinated (run-time)

✔ Main objective: improve the performance and the fulfilment of the CL goal(s)

✔ Focus on conflict detection and mitigation

✔ Pre-action and post-action coordination

✔ Delegation and escalation

✔ Information sharing between multiple CLs
Solutions for various scenarios specified in ZSM009-2

✔ Solutions for Management automation scenarios
  - Dynamically configurable monitoring
  - Plug n Play
  - Back up services
  - Automated service healing

✔ Related to CL coordination
  - Escalation/Delegation
  - Knowledge sharing
  - Limiting actions

✔ Related to AI/Analytics
  - Maintenance of the AI model in CLs
  - Use of analytics in CL

✔ Building trust in CL
  - Logging the actions of a CL
  - Pausing a CL

Cl Coordination across domains

Building operator trust in CL operation
ONAP transport slicing and ZSM closed loops

- Governance of multiple closed loops using Closed Loops models and CL LCM
- Coordination of multiple closed loops using CL Coordination Management Services
- Potential for collaboration
- Solutions specified in ZSM009-2