OSC RSAC

Date: 22/03/2023

Title: Discussion on Architectural Principles for integration and interoperability of SMO Services in OSC

Source: TIM

General Principles of SMO architecture
from ongoing work in "O-RAN Decoupled SMO Architecture" study (SMO_DEC)

Service Based Architecture, with SMO Services (SMOS) exposed
- *among SMO components, and*
- *outside SMO (external)*

SMO Service (SMOS): *Standardized cohesive set of management, orchestration and automation capabilities offered by an SMO Function.*

SMO Functions (SMOFs): *Internal SMO entities which provide one or more SMO Services.*
Note: An SMO Function exposes standardized interfaces which enable interoperability between SMO Functions.

SMO Services currently addressed in O-RAN specifications
- *RAN NF OAM (O1-related services)*
- *O-Cloud (O2-related service)*
- *Non-RT RIC services*
- *Service Management and Exposure (SME)*
- *Data Management and Exposure (DME)*
- *Topology and Inventory*

References
O-RAN.WG1.OAD-R003-v08.00
O-RAN.WG2.Non-RT-RIC-ARCH-TS-v02.01

SMO Services (1)

SME

- rApp registration,

- **Registration of services,**

- **Discovery of services,**

- **Authentication and authorization,**

- **Communication support,**

- Bootstrap (optional),

- Heartbeat (optional).

DME

- **Registration of data types,**

- **Discovery of data types,**

- **Request for data,**

- **Subscription to data,**

- **Collection of data from Data Producers and consumption of data by Data Consumers,**

- Access to optional data processing in the SMO/Non-RT RIC framework.

References
O-RAN.WG2.Non-RT-RIC-ARCH-TS-v02.01
O-RAN.WG2.R1AP-R003-v01.00

SMO Services (2)

RAN NF OAM services (O1 related services)

- Network Information service

- Fault management (FM) service

- Configuration management (CM) service

- **Performance management (PM) service**

  - The performance management service allows the Service Consumer to access performance information that was collected from the network elements by the Service Producer.

  - The RAN OAM-related functions in the SMO/Non-RT RIC framework produce this service. The PM service shall allow to query performance information using a set of filtering criteria
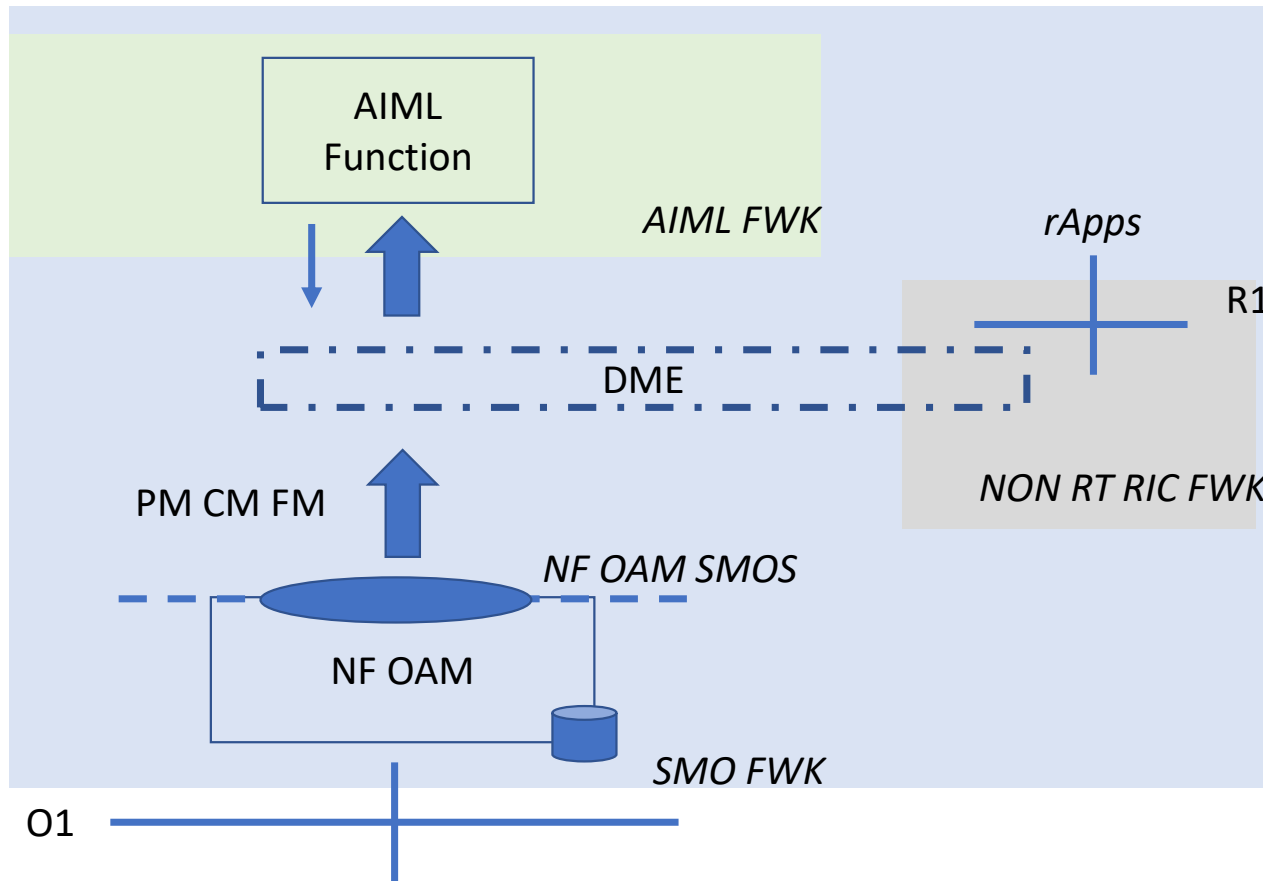
References
O-RAN.WG2.Non-RT-RIC-ARCH-TS-v02.01
O-RAN.WG2.R1AP-R003-v01.00

Summary and conclusions

- Work in O-RAN Alliance in ongoing wrt and open SMO architecture , addressing:
    - The definition of SMO Services in a Service Based Architecture
    - Exploiting the principles of Service and Data Management and Exposure for SMO interoperability
- O-RAN SC has developed components supporting some of the SME/DME principles to support rApps in the context of Non RT RIC project (e.g. Information Coordinator Service and Coordinated Service Exposure)
- **It is proposed to consider the applicability of those principles to support integration of SMO functions developed by other projects**

Example of service exposure between SMO PM and AIML

"SMO PM" as SMO Function (SMOF) producing "RAN NF OAM Performance Management Data" service

1. "SMO PM" exposes PM data by registering data types to DME

2. AIML Function discovers available PM data by requesting DME

3. AIML function gets data from SMO PM through DME