Ericsson
Software
Technology

OSC NONRTRIC rApp/R1 Prototyping Release E

Outline Implementation Proposal – OSC RSAC

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Focus/Themes for OSC NONRTRIC Release E

- ONAP Control Loop -> O-RAN rApp : “The *rApp-ification* of ONAP Control Loops”
  - Adopt ONAP CL work as a starting point, continue to identify gaps, then extend
  - Identify & motivate where an rApp is different from a CL
  - Types of rApps:
    - Microservice-based rApps
    - Non-Microservice-based rApps
- NONRTRIC Service Exposure/Gateway -> O-RAN R1 : “The *R1-ification* of Service Exposure”
  - Service-independent aspects
  - Types of exposure support in R1:
    - Microservice-based rApps & Service
    - Non-Microservice-based rApps & Service
- Use cases of rApps & Exposing specific Services via R1
  - Requirements drivers & demonstrators
  - O-RU FH recovery (multiple), Slice Assurance, Existing Function Tests, various other use cases in ONAP
- *Continued Evolution & Support for A1 functions*

CL -> rApp : “The *rApp-ification* of ONAP control loops!

Gaps:

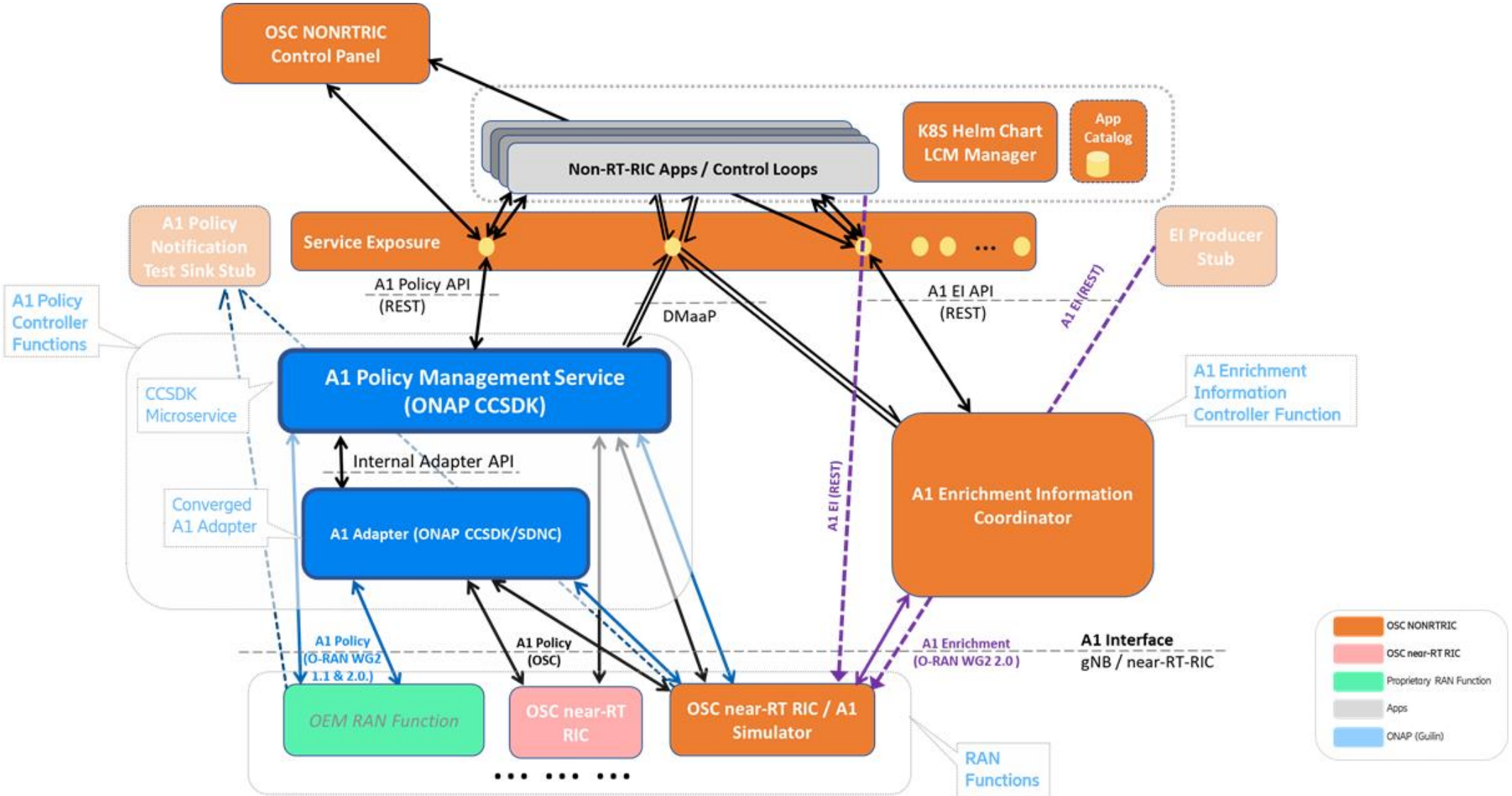
- Extend CLAMP CL manager
  - *(Note CLAMP has been re-imagined in ONAP I)*
  - Register rApp CLs
  - Ensure rApp CL LCM functions are via R1 Gateway
  - Coordinate setting up the different mechanisms needed to enable CL element interactions through R1 Gateway
  - Support rApp registration to Service registry & Gateway
- Service Gateway / Service Exposure
  - Implement using KONG gateway
- Microservice-based rApp CLs
  - K8s Namespace & Network Policies to enforce isolation (network/access level)
  - ISTIO to help support microservice authentication
  - ISTIO to help redirect traffic to R1 Gateway
- Non-Microservice-based rApp CLs
  - Studies continue
  - (Trusted) CL Participant is best placed to set up traffic redirection to R1 Gateway & enforce sandboxing of CL Elements
    - Likely need different strategies for different participants / CL Element Types

Service Exposure/Gateway -> R1 : “The *R1-ification* of Service Exposure”

Gaps:

- rApp Management part of R1 (Onboarding, Install, registration, discovery, LCM, monitoring, update/upgrade, deleted, reconfigure)
  - Extend CLAMP CL manager to coordinate rApp-specific extensions & expose direct to Service Gateway
- NONRTRIC Service & SMO Service (& rApp Service) exposure to rApps
  - Service-independent/Generic gateway – no service-specific implementation
  - Service Registration, Discovery, Configuration interfaces
  - No LCM for SMO Services (Automation Platform) – exposure only
  - rApps CL Elements restricted to only access SMO services & other rApps through R1 gateway
  - Retain direct access to SMO services for non-rApp CLs & service-service interactions
- Data exposure to rApps
  - Via NONRTRIC Information Job Coordinator Service (*previously A1 EI Coordinator*)
    - ONAP DMaaP -> Information Job Producer
- Integration point for Access Control Enforcement

OSC NONRTRIC Func. Architecture (*Release D – Jul '21*)



OSC NONRTRIC: https://wiki.o-ran-sc.org/display/RICNR

O-RAN: Non-RealTime RIC Architecture

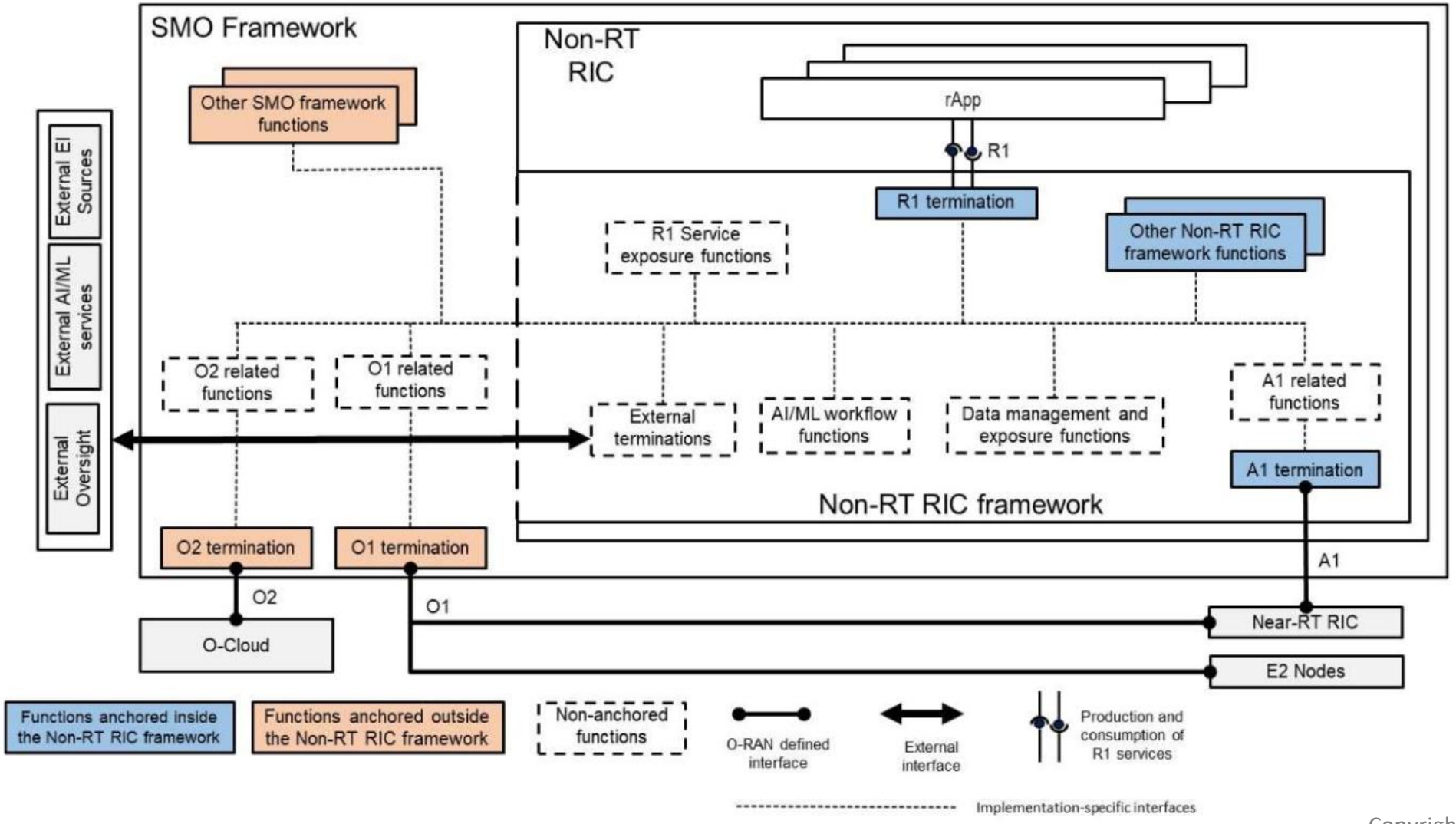
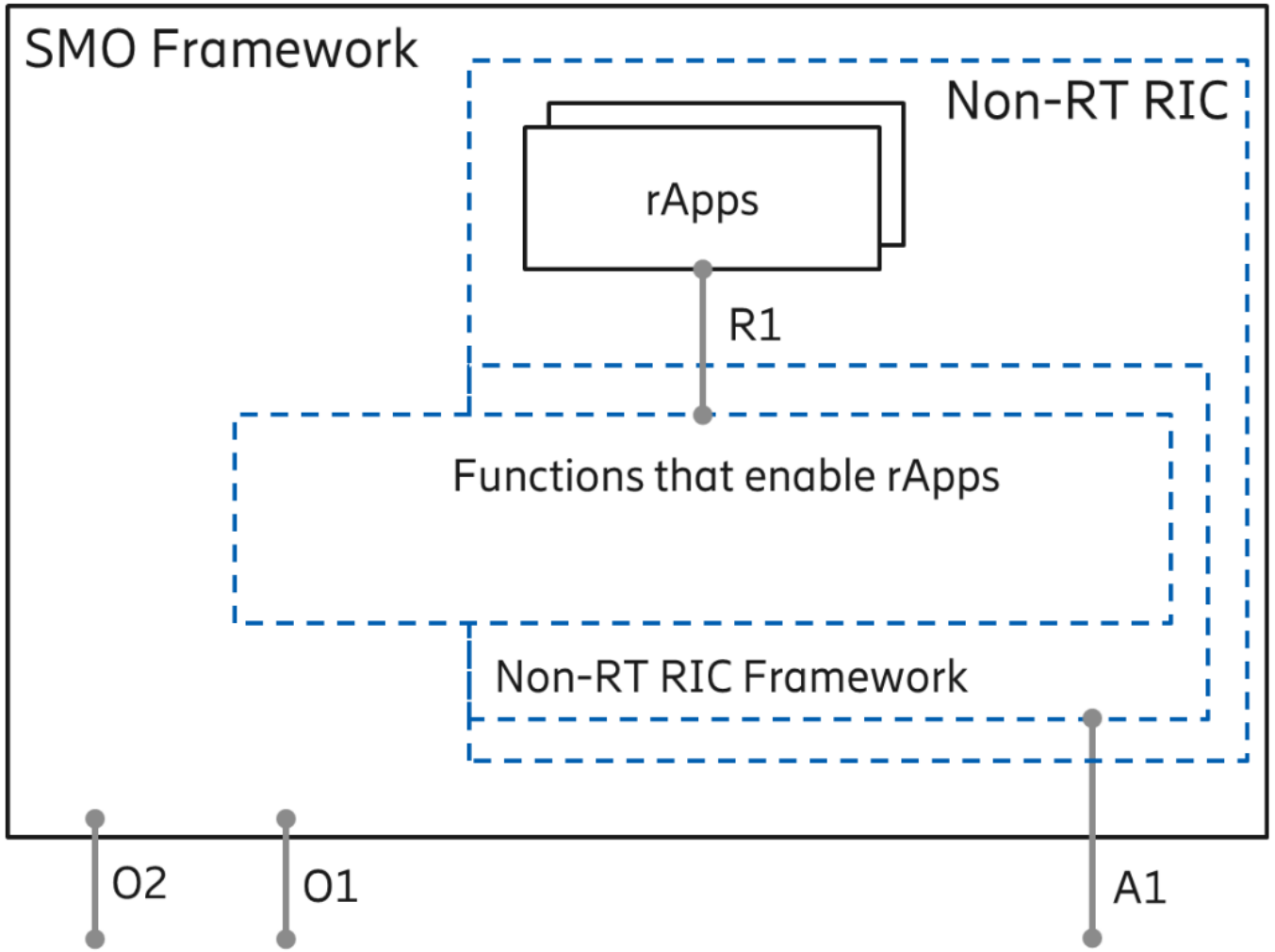


Figure 4-1: Non-RT RIC Reference Architecture

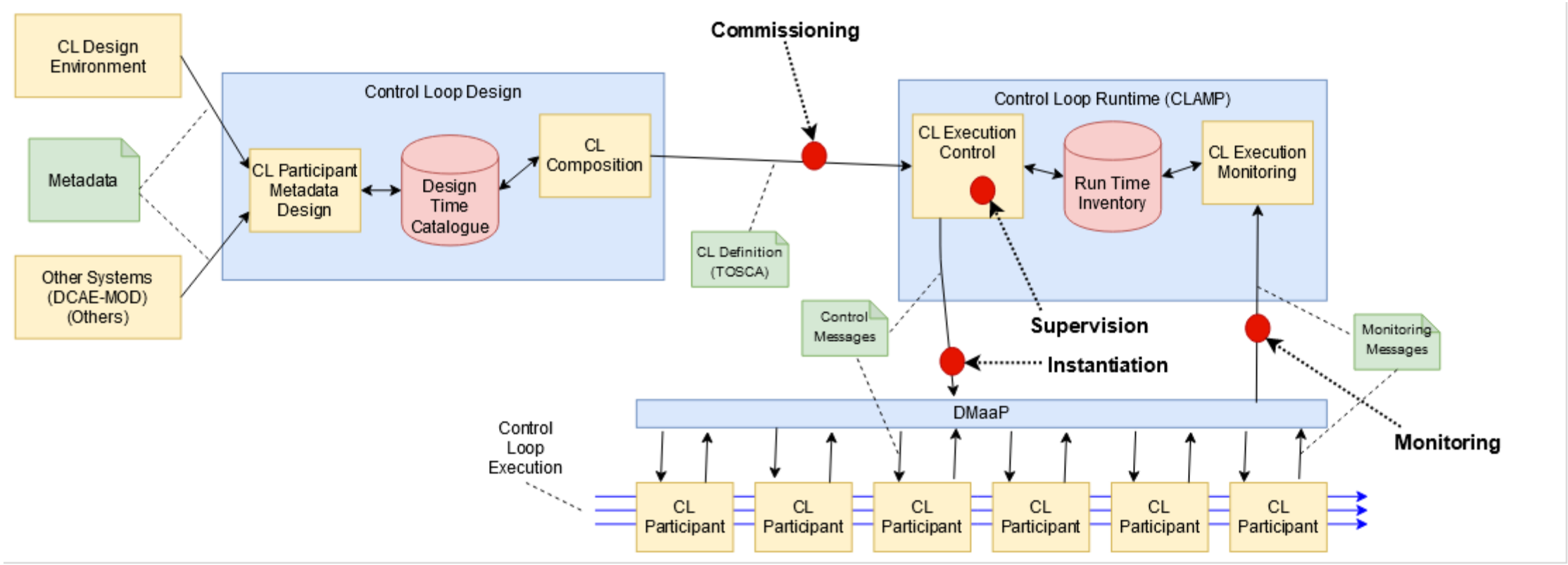
O-RAN.WG2.Non-RT-RIC-ARCH-TS-v01.00
https://www.o-ran.org/specifications

O-RAN: rApps & Exposing SMO & Non-RT RIC functions to rApps



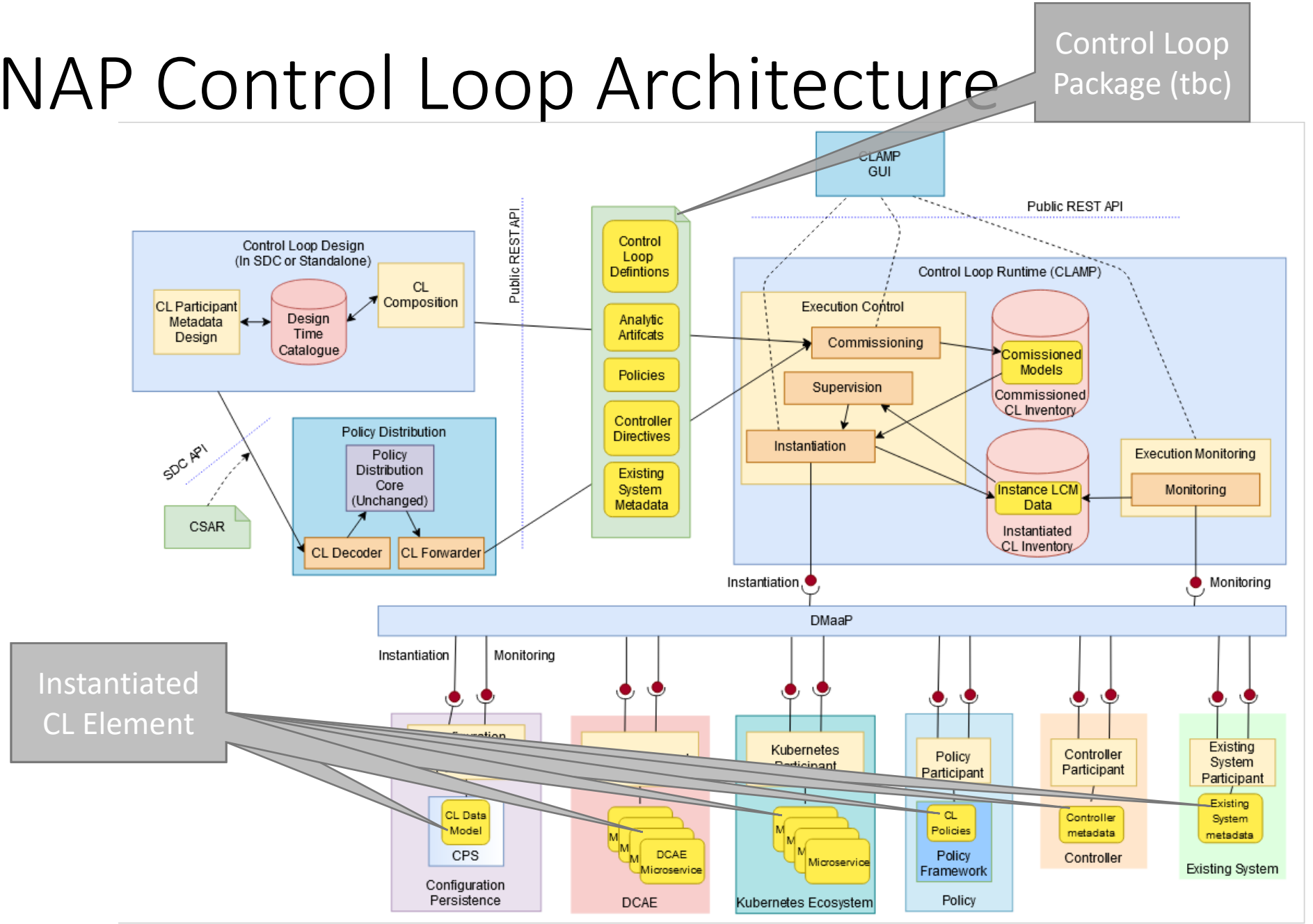
O-RAN.WG1.O-RAN-Architecture-Description-v05.0
https://www.o-ran.org/specifications

ONAP Control Loop Architecture



ONAP Control Loops: https://wiki.onap.org/display/DW/TOSCA+Defined+Control+Loops%3A+Architecture+and+Design

ONAP Control Loop Architecture



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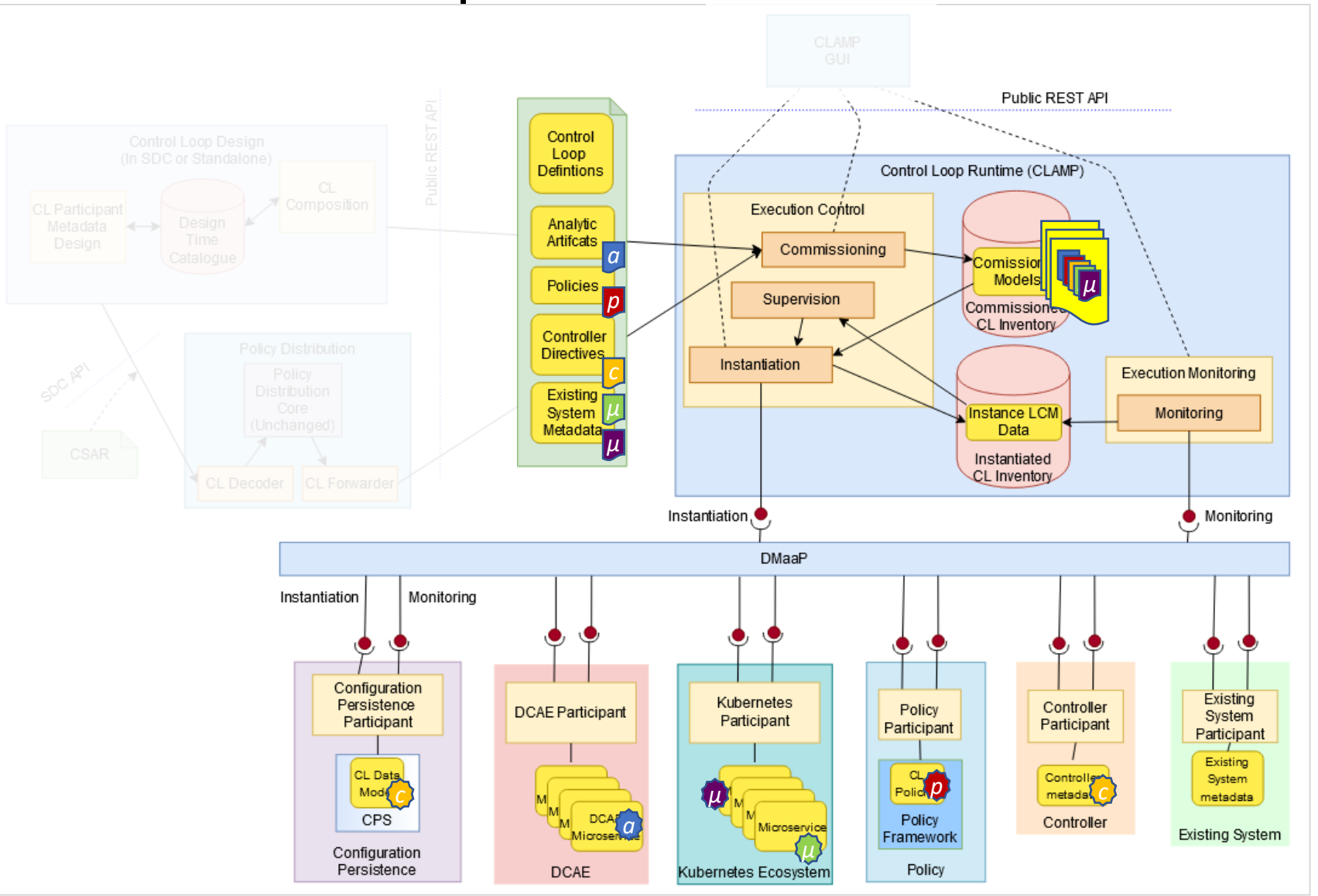

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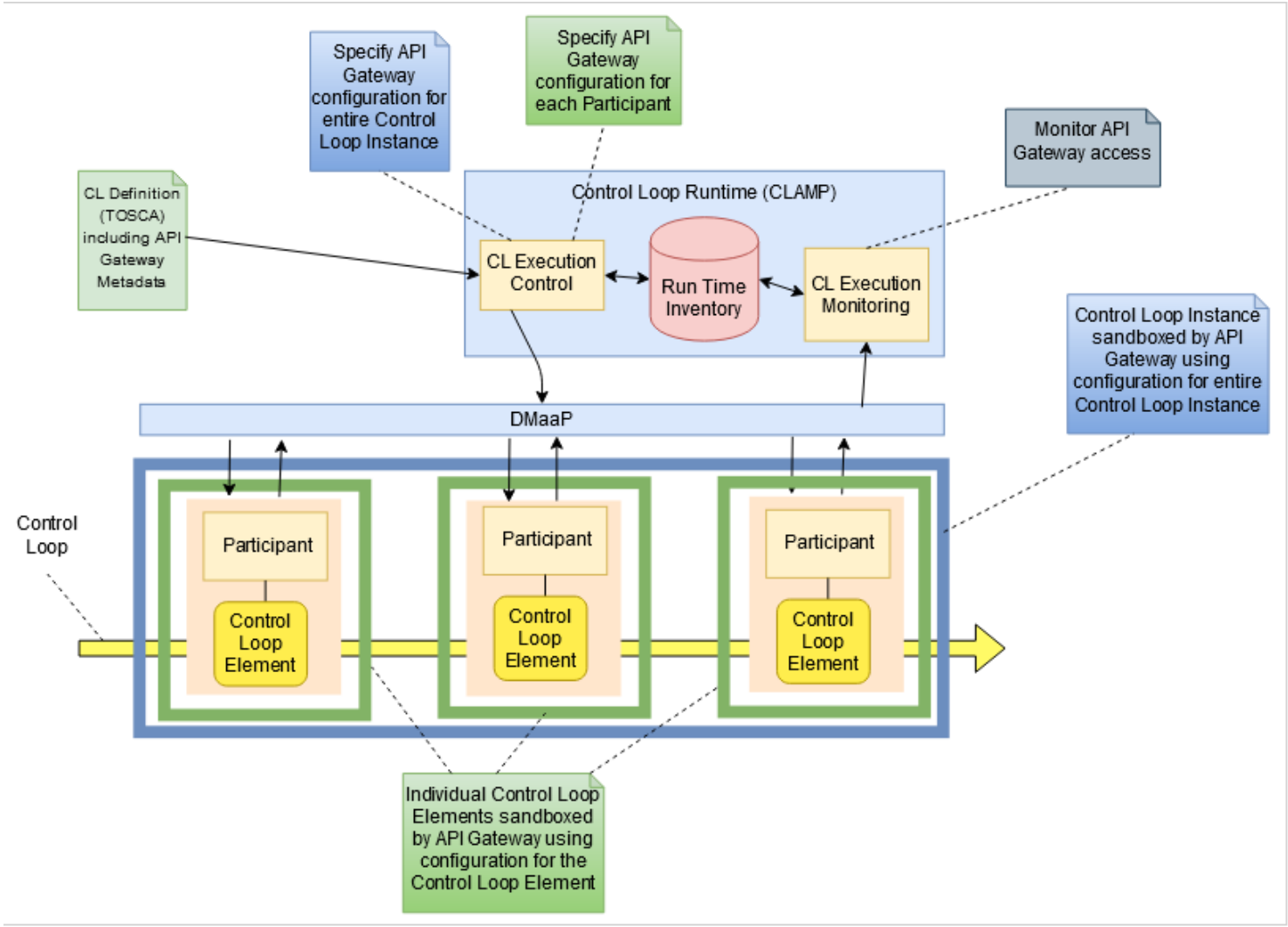

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