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ORAN SMO Package

5G Super Blueprint

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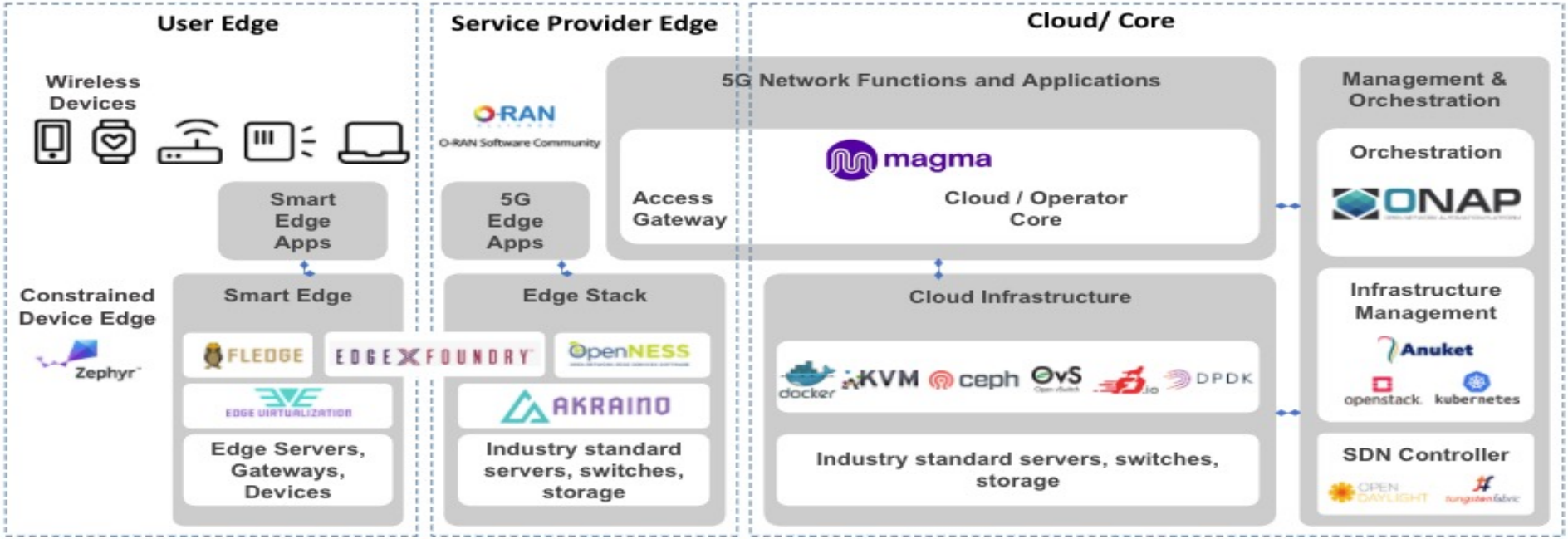
Agenda

- Introduction
- Challenges and Solution
- Technical approach
- Demo
- What's Next?
- Open Discussion

Introduction

LF Open Source Component Projects for 5G



Challenges

- Many Open-Source Streams involved in realizing a true open 5G Network Stack
  - All of them have different technologies
  - Constantly evolving (good!)
  - …at a different pace (managing dependencies..)
- Environments are not all the same (cloud; baremetal; hybrid..)

→ How do you create a reproducable testing/production environment with a consistent way to manage these ?

Solution

GOAL : Build a self-contained setup that can start and test a 'reference' implementation

- *Guiding Principles:*
  - Re Use is important to avoid 're inventing the wheel'
  - Combine best assets to obtain efficient setup
  - Customization should be minimal and should be on 'the top layer'

- *Key highlights :*
  - Try to set as few requirements as possible so the system is easily portable
  - Can serve as a reference implementation for a **5G SuperBluePrint** test setup
  - Can be easily extended
  - Can be used to 'prove' Open and Commercial equipment VS expected behavior
  - Run on multiple Lab to rule out environment problems with complex systems
  - Provide multiple Flavors to cover different use cases

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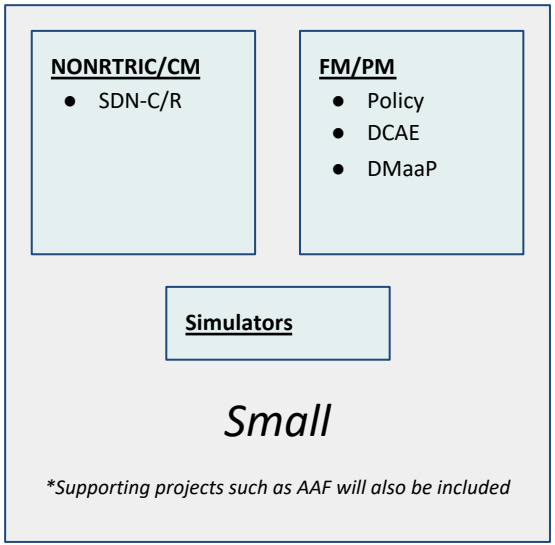
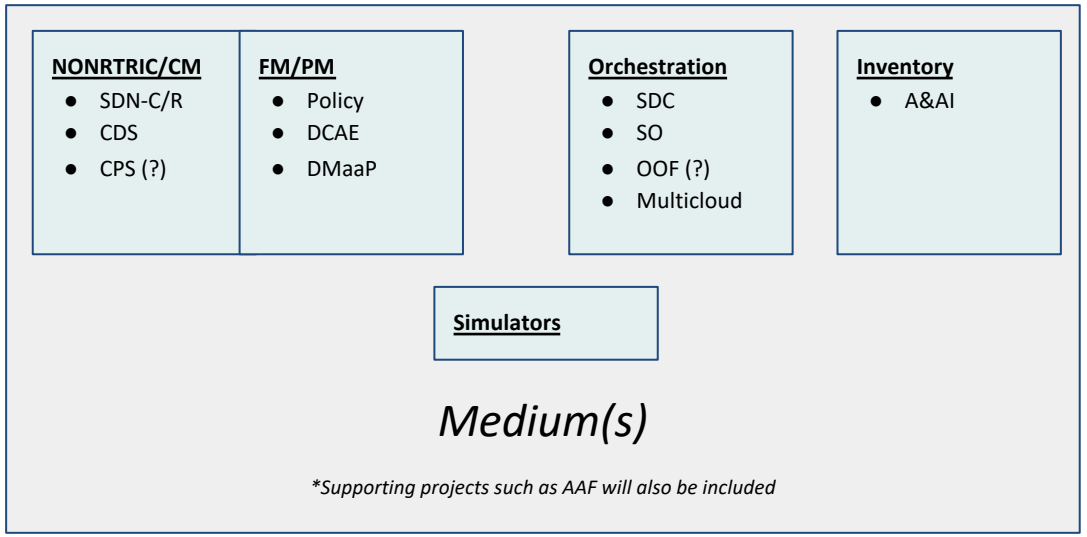
Technical Approach

Proposal for *Small* & *Medium* Flavors





1. Tie flavors to use cases e.g. O1, A1, orchestration, slicing etc. — this will drive documentation, simulators etc.
2. Focus on which policies, DCAE microservices, and other artifacts to include for SMO use case(s)
3. Opportunity to extend beyond ONAP and ORAN

Discussion with ORAN SC community

- Is CNF a good approach ?
  - ORAN SC components that belong to the platform, may/will require to be in the same namespace as ONAP
- How to best re-use and expand OOM charts?
  - Do we need an over-arching repo (importing OOM charts/git submodule) ?
  - Do we ‘integrate’ ORAN SC charts into the OOM templates ?
  - Any other idea ?
- Multiple flavor per Use Case/Feature ?
- (Future) More components from other open sources in LFN will be deployed
  - 5G super blueprint

High level view SMO deployment strategy

ONAP public chart repo

Deployment instructions and/or script

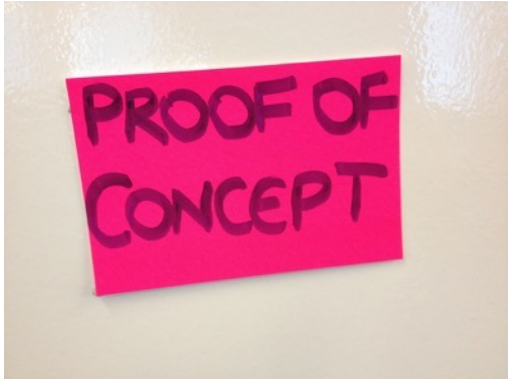
Target K8S Cluster

ORAN SC charts (repo?)

```
"Setup helm"
helm repo add https://nexus3.onap.org:10003
helm repo add "oran sc nexus" OR build chart
in local repo
helm deploy onap -f override SMO
helm deploy oran-sc -f override ORAN
```

First Approach:
Proof of Concept

- Using gitsubmodule to load up oom charts (will remove when helm public repo is available)
- Re used it/dep repo charts, created makefiles (the oom way)
- Able to build onap charts and oran sc charts, push to common local helm repo
- Can use this setup to test override files



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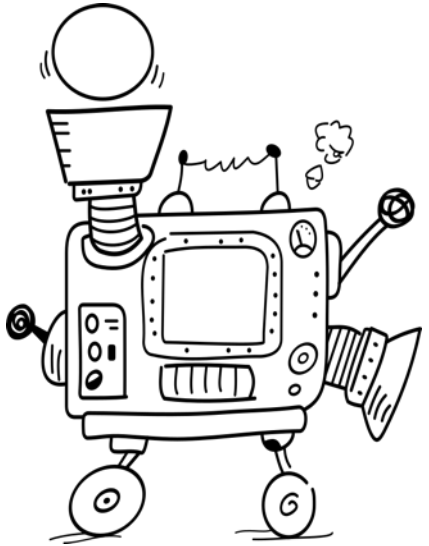
Second Approach:
CNF for TOPO/RU/DU Sims

- A second flavor of SMO (another override), more advanced
- Capable of spinning CNFs
- For the demo purpose, DU/RU/Topology server will be based on an ONAP compatible CNF
- ONAP (SMO) will be use to onboard, instantiate the CNF
- (Future) ONAP can be used to scale up/down DU/RU (with appropriate config changes through CDS)
- Package all this in a usable format
- *Disclaimer :* this may need to be revisited after latest updates



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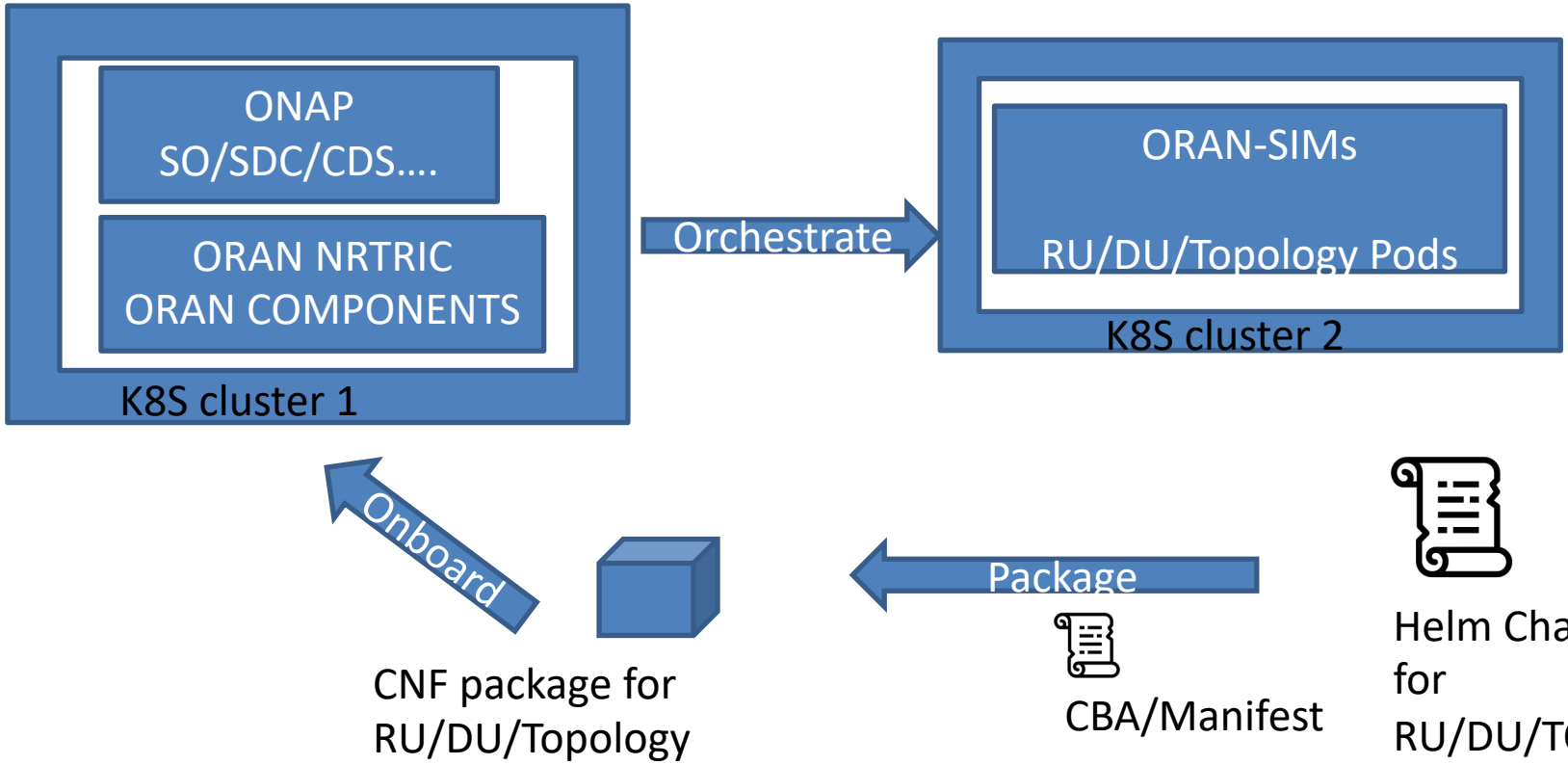
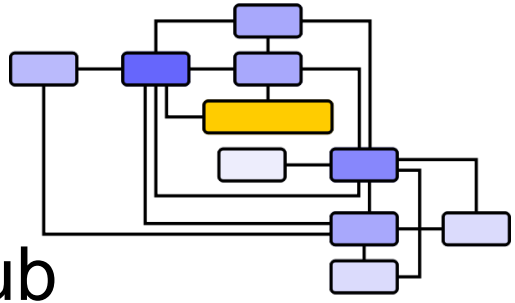
Second Approach Demo layout



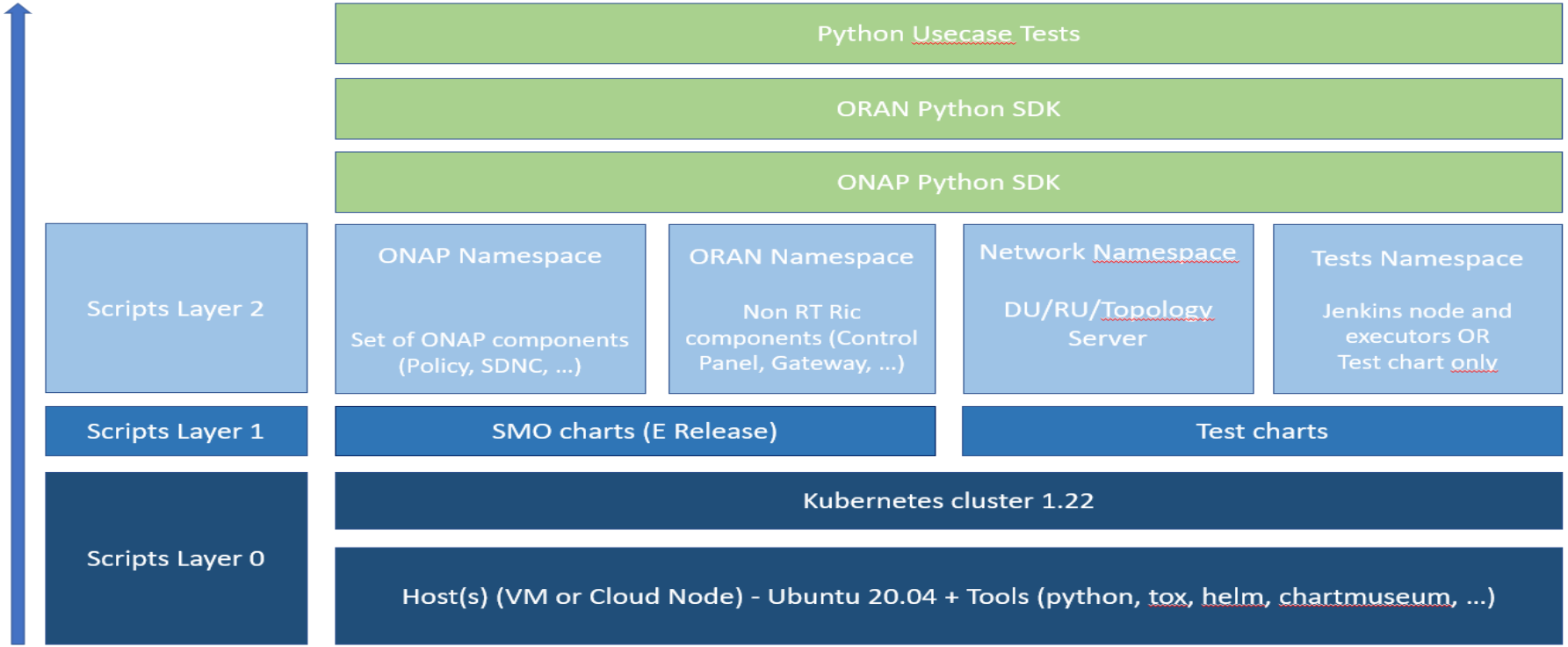
Third Approach: E2E Flows

- Improve and document usage and Flavors
- Store overrides and scripts at the right place
  - Override files belong to ONAP, test automation as well?
- Build a demo scenario to :
  - Test O1, A1, Closed Loop

  With various flavor
- Add Jenkins chart and hooks to github
- Aligned with ONAP Jakarta release

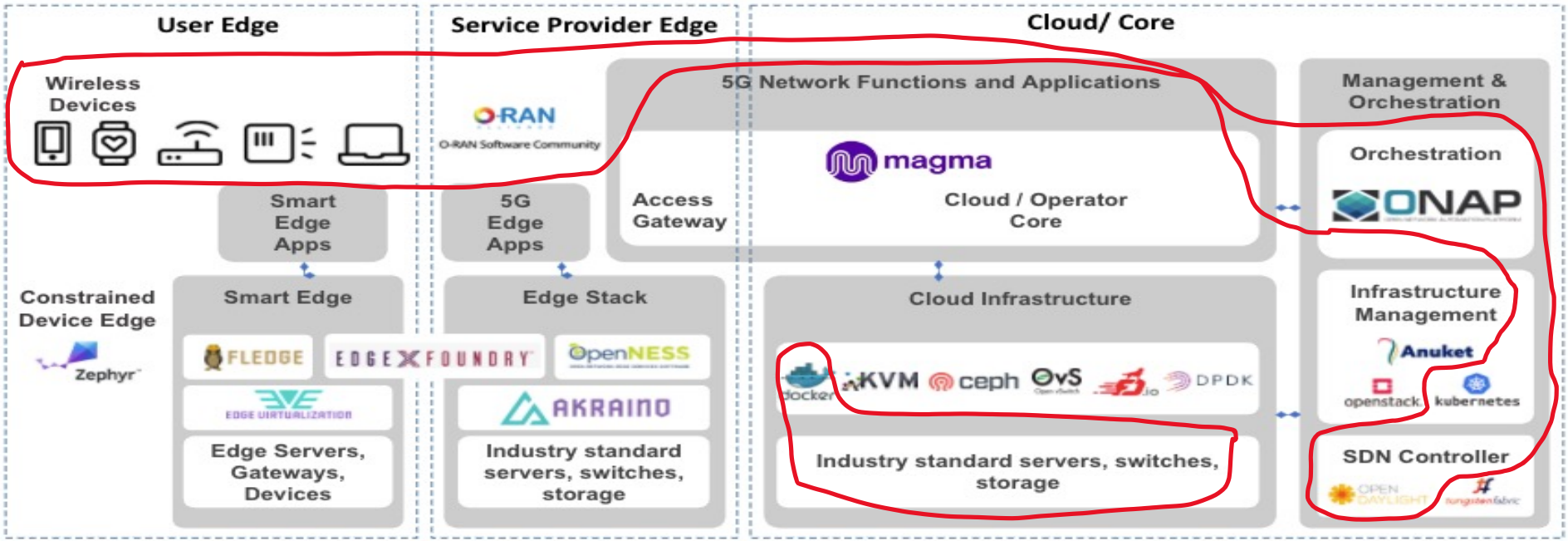


Technical Architecture



Where Are We Today?

LF Open Source Component Projects for 5G



Where Can You Find It?

- COSMOS Lab (New York City, Rutgers University)
- POWDER Lab (Salt Lake City University)
- AT&T Internal Lab
- South California University (as part of SABRES initiative)
- UNH Lab
- ….

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Demo

O1 Flow Sample 1/2

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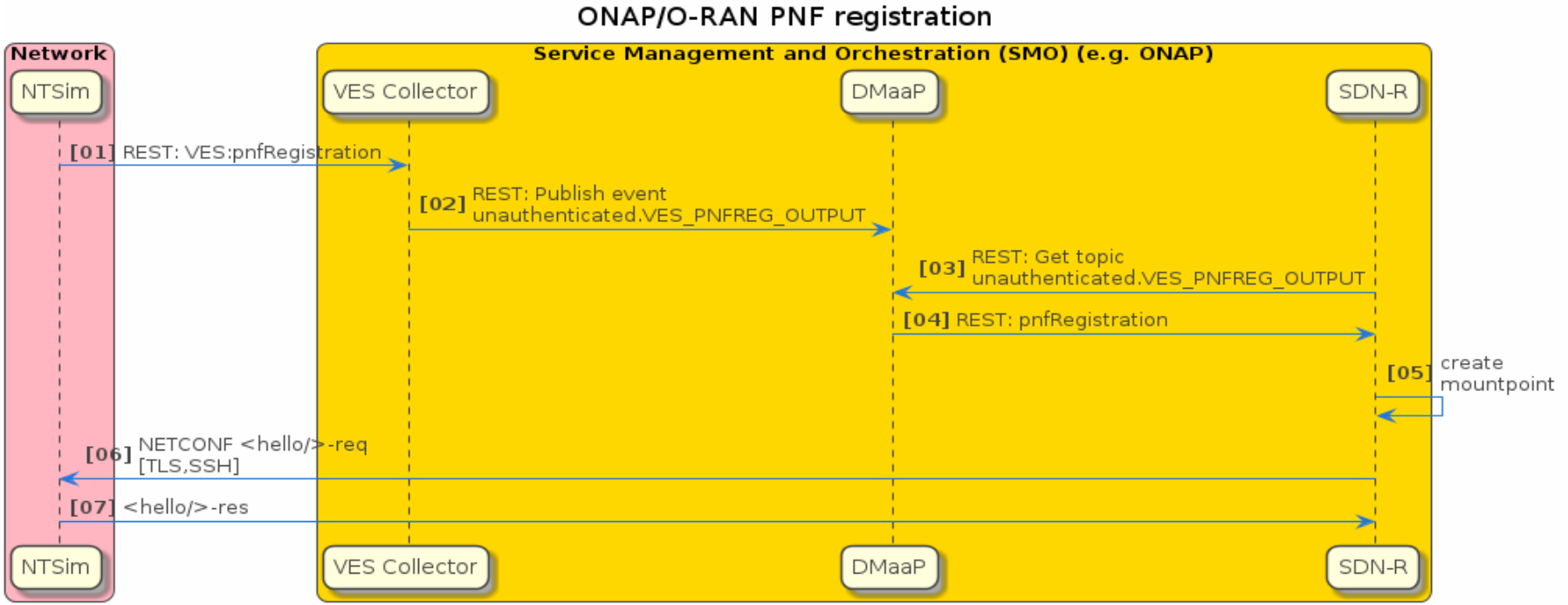
Apache 2.0



Thanks to plantUml!
2019-11-21 | onap.org | o-ran-sc.org

O1 Flow sample 2/2

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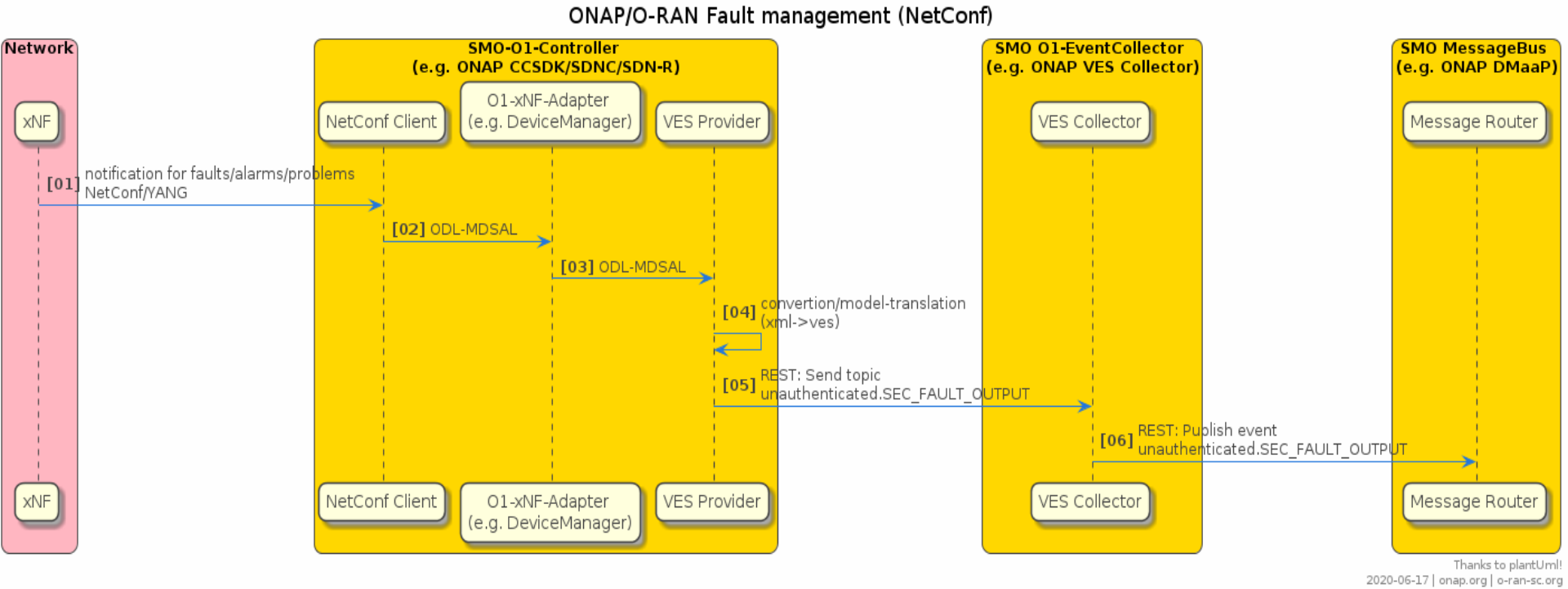

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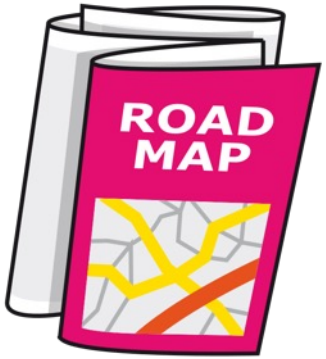
What's Next?

Roadmap

- Enrich Package with more Tooling (Wireshark, Keycloak (in progress), etc.)
- 5G/6G Network Slicing Use Case Automation
- SABRES Integration
- <…>



Open Discussion

References

- Wiki : https://wiki.o-ran-sc.org/display/IAT/Automated+deployment+and+testing+-+using+SMO+package+and+ONAP+Python+SDK

- Package & use cases : https://gerrit.o-ran-sc.org/r/gitweb?p=it/dep.git;a=tree;h=refs/heads/master;hb=refs/heads/master

  Folder : smo-install

- Meetings : https://wiki.onap.org/pages/viewpage.action?pageId=24641575

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