



NETWORKING

LFN Developer & Testing Forum

EUAG Newly Updates - Summary and Next Step Plan

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EUAG Newly Updates

- **ONAP H Rel Top Priorities & Recommendations**
- Network Intelligence Survey & Recommendations
- NFV Testing and Automation Survey & Recommendations
- 5G Adoption Experience White Paper
- Summary and Next Step

CSPs Normalized (Top) Priorities

Deployment maturity

- Simplify installation for usecases
- Automated code testing to verify CI/CD
- Reduce module dependency
- Reduce hard coding
- Security and Documentation



Function enhancement

- Intent framework and intent modeling
- Closed-loop automation reduces manual operations



CSPs Top Priorities- By EUAG

Industrial Ecology/Interoperability

- ETSI MANO
- ETSI ZSM
- TMF



Use Cases

- 5G E2E closed loop related scenarios (Core, Slicing, O-RAN, MEC, etc.)
- Vertical industry scenarios



CSPs Priorities Main Recommendations

- For ONAP TSC

- 1. Closed-loop automation is still the main work of the ONAP community. It needs to be implemented through deployment maturity, function enhancement and other methods to reduce manual operations.
- 2. Enhance functions for use cases or scenarios that operators are mainly concerned about , include:
 - Intent framework and intent modeling
 - 5G E2E closed loop related scenarios (Core, Slicing, O-RAN, MEC, etc.)
 - Vertical industry scenarios
- 3. Continue to strengthen collaboration with standards organizations, including align models, interfaces, etc. The organizations include ETSI MANO, ETSI ZSM, TMF, etc.

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- **Intelligent Network and AI Survey – Session Summary**
 - **Open discussion around how to integrate AI/ML mechanisms into various open source projects**
 - ✓ Acumos and ONAP integration : The integration method of some operators is to introduce the analytics module of Acumos into DEAC, obtain data from VNF through DCAE, and use Acumos for data analysis;
 - ✓ Is there any network automation/autonomy use-case specific model that could be enabled by Acumos Market;
 - ✓ The E2E integration and realization of AI capabilities are both challenge and industry goal.
 - **Regarding AI/ML testing and certification, CVC vice-chair Yan shared her views, open discussions also held at the meeting**
 - ✓ CVC and OVP should initiate testing, certification and evaluation of network intelligence;
 - ✓ It is recommended to carry out network intelligent testing and certification work through collaboration with existing open source and standard organizations.

Some Thoughts after Open Discussion

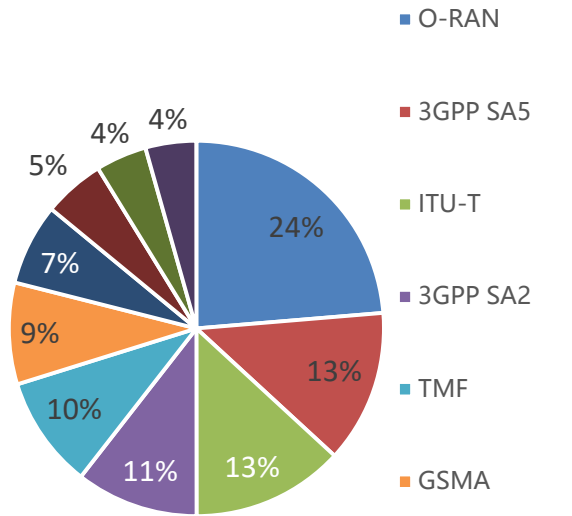
- At present, the industry's integration of AI capabilities is still in the preliminary stage of exploration. We have tried to conduct industry ecological analysis on related issues, hoping to provide some thoughts and suggestions from the perspectives of standards, open source, testing and certification requirements.

- **Next Step-**

- We will have more in-depth investigation in AI/ML survey on high priority use-cases and use it to further investigate collaboration with open source communities or SDOs

Intelligent Network and AI Survey - Industry Ecological Analysis

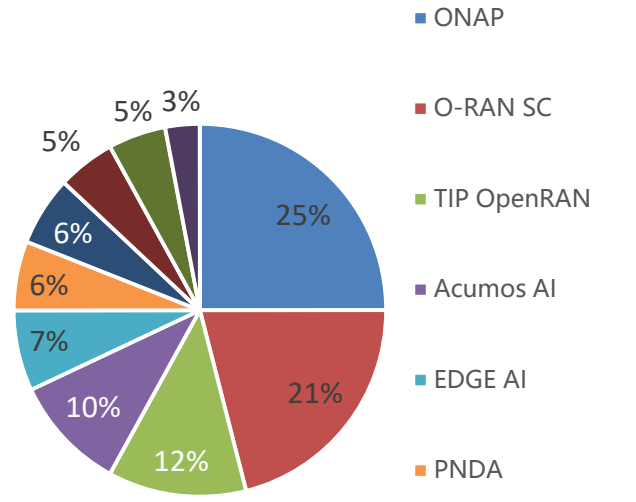
① SDOs Perspective



Standards organization with most participants (ranked):

1. O-RAN
2. 3GPP SA5
3. ITU-T

② Open Source Perspective



Open source community with most participants (ranked):

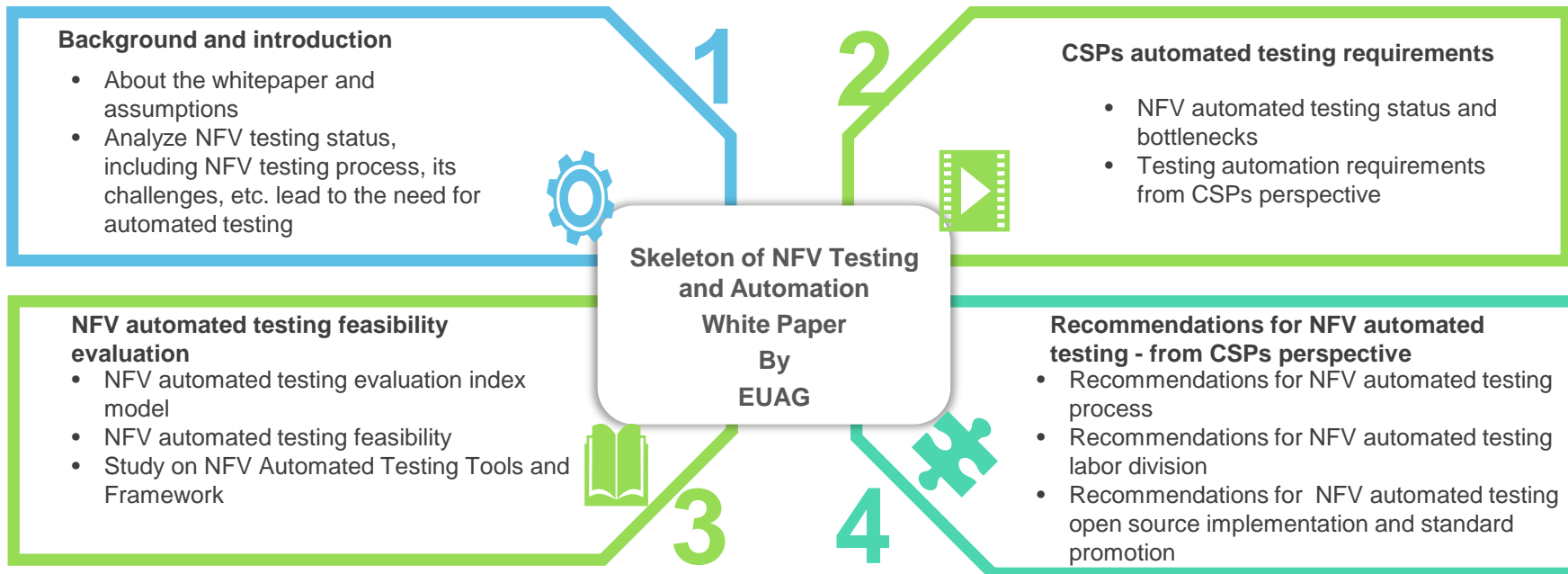
1. ONAP
2. O-RAN SC

- We suggest that the ONAP community continue to strengthen cooperation with O-RAN and pay attention to the intelligent standard work of 3GPP and ITU-T.

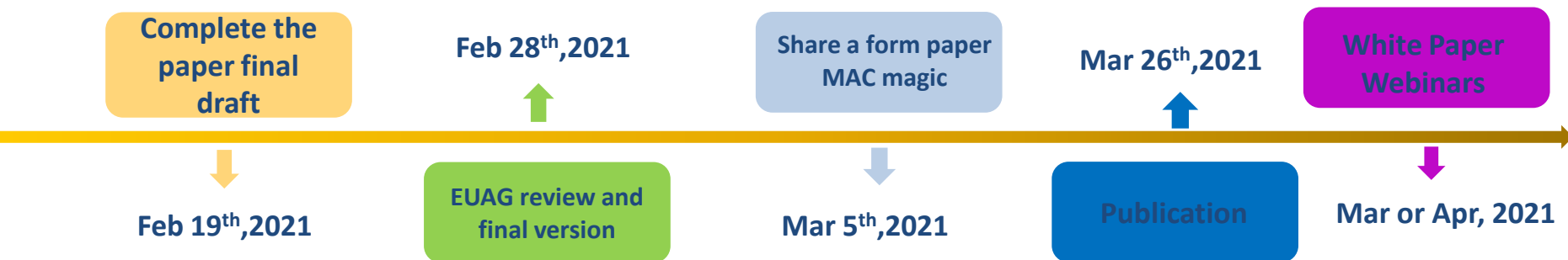
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NFV Testing and Automation White Paper

What will be in the testing white paper



Timeline



Highlight 1- NFV automated testing requirements

Test environment

- Automated deployment processes including network configuration and network element instantiation, etc.

Test configuration

- Including the test framework/tool and service configuration of the tested object

Test execution

- Automated execution of test tasks, providing a flexible automated test framework.

Test process observation

- Real-time monitoring of the test processes to facilitate understanding of the execution of test cases.

Test result analysis and report

- Test data collection and provide customized test reports; automated analysis and certification of test results and automated release of certified objects

Testing Tool- appeal to Restful API

- Specified test suite can be loaded; test suites/test cases can be executed regularly or in real time; observation points can be set to observe the test process in real time; obtain the original test log

DevOps integration

- There is a requirements about how to load the VNF software package into the operator's DevOps environment automatically.

Highlight 2- NFV automated testing recommendations

➤ General idea of NFV automated testing -

1. Introduce vendors/integrators tools for automated testing
2. Adjust current test specifications and adapt to automated processes
3. From easy to difficult, implement whole process of automated testing in stages

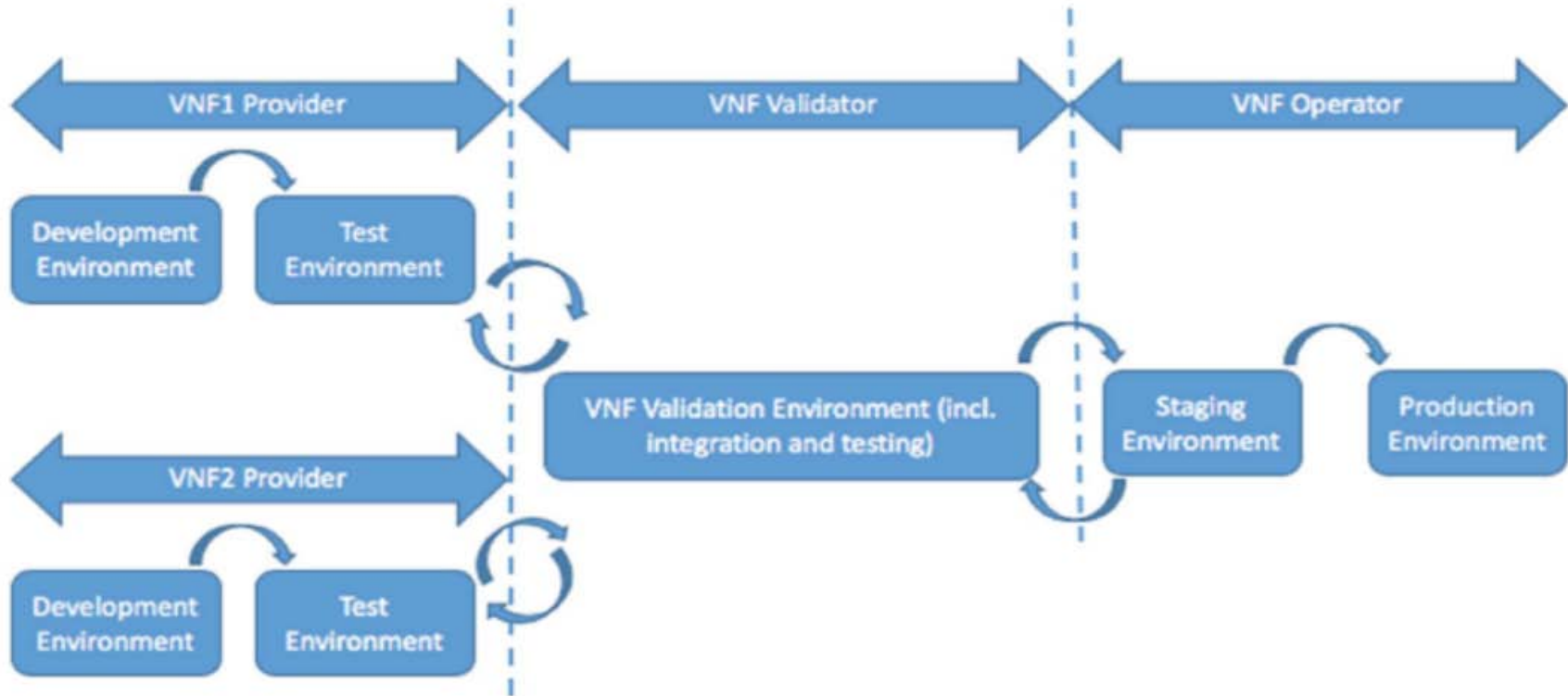
➤ Recommendations for NFV automated testing labor division -

1. Operators' perspective : provide DevOps joint pipelines that connect vendors, establish a common automated testing framework;
2. Vendors' perspective: provide interfaces, their own testing tools, test case implementation, and provide test feedback channels;
3. Instrument manufacturers' perspective: provide standard test case implementation based on operator test specifications, provide integration capabilities with operators' common framework, and provide customized test results.

➤ NFV automated testing open source and standard promotion recommendations -

1. SDOs: Align the DevOps joint delivery pipeline and relevant process that have introduced role named Validator defined by TST006, and align the TST013 standard test framework and test case template
2. Open Source: Input common requirements of the operator's automated testing into OVP as a third-party testing and certification platform to implement the Validator defined in the standard TST006

Highlight 2- NFV automated testing recommendations



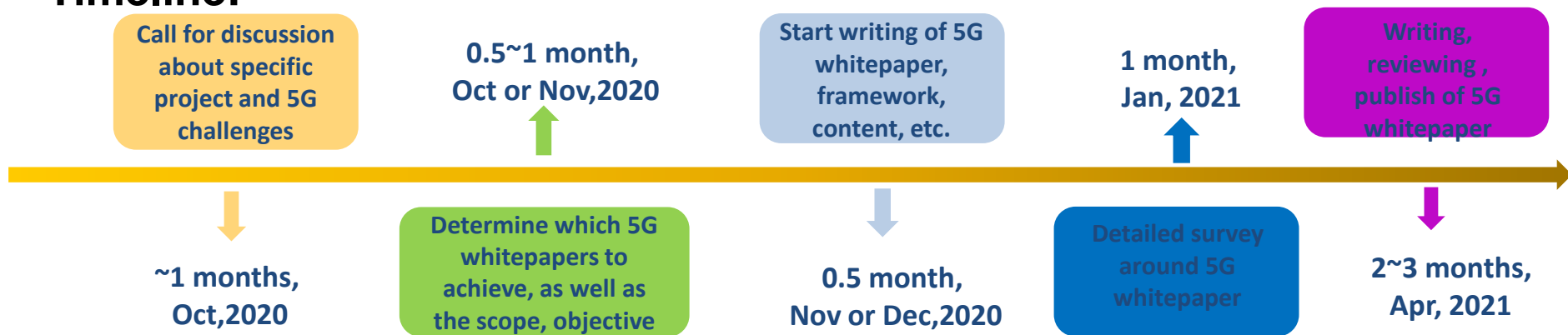
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5G Adoption Experience White Paper

- **White Paper Assumptions and Overall Objective:**
 - 15-20 Pages Divided in 5 Sections (As per experience many contents shrink during review so in first round, target 30-35pages.
 - Operator Requirements for 5G
 - Network Slicing and New use cases using ONAP
 - Assurance and use of ML/AI in 5G
 - Deployment Models for 5G
 - Operator Survey to Fulfil Gaps of 5G using Opensource
- **Workspace:** <https://wiki.lfnetworking.org/display/LN/5G+Adoption+Experience+Whitepaper+workspace>

- **Timeline:**



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EUAG Next Step Plan (Overall)

- Continue to focus on operators requirements, collaborate with open source communities/projects:
 - Continue to output operators requirements to various open source communities through the collection of work priority(e.g. CSPs priorities for ONAP releases, etc.)
 - Continue to pay attention to the latest open source trends, and extend collaborative work to more open source communities, including ONAP, LF AI, Anuket, etc. based on existing working method(surveys, priorities, etc.) through our liaisons.
 - Continue to explore industry common requirements and concerns, investigate industry requirements through surveys and other methods, and conduct in-depth analysis of survey from the perspective of operators, and give operators recommendations .

Call for participation

- **Next Meeting Time:** Tuesday, January 26th, 2021, 1500 UTC
- **Join Zoom Meeting**
- <https://zoom.us/j/100882564?pwd=TkcrWUNHYWswTG16dkpYSR1d3BCZz09>
- **Contact:** huangleiyjy@chinamobile.com

Thank You



OLF NETWORKING

LFN Developer & Testing Forum

NTT (Labs) Priorities


NTT (Labs) Priorities

Key priorities from NTT for ONAP Release "H"

@ Ken Kanishima




Closed-Loop Enhancement




- Closed-loop enhancement is central to Zero Touch Automation.
- Large number and wide variation of loop instances are expected to be possible.
- Efforts towards fewer designer manual tasks are highly appreciated.
- Continue aligning more with standard models

Platform Maturity




- Overall maturity improvement needed.
- Continue enforcing project review.
- More transparency and details on usecases' integration test needed so that they could be verified with reproducing tests.

Documentation from User Perspective



- What capabilities are and aren't released and to what extent exactly.
- What users need to do and in what order, including manual workaround, from e2e viewpoint. Improvement work from this perspective that started in Guilin is expected to continue.

Platform Modularity



is necessary to:

- Begin with simple evaluations
- Begin incremental deployment excluding unfamiliar components/modules.
- Integrate with operators' own/3rd party components/modules.

SDO Alignment and External Harmonization

- More TMF APIs to support; align resource modeling with TMF SID
- Bi-directional alignment with ETSI ZSM
- Harmonization with ETSI NFV-based VNFM implementations to suit users' environments
- Core Networking and Edge communities should work seamlessly to achieve e2e requirements on communication

Allow users to integrate closed loop automation more easily

China Mobile Priorities

China Mobile priorities

Key priorities from CMCC

@ Lingli Deng

@ Lei Huang



For Key Function-
Intent framework and intent modeling



For Key Services-

- 5G network slicing & intelligent application
- Support for vertical industry scenarios

Priority 1

For Key Function- Intent framework and intent modeling

Description

- This requirement propose to enhance ONAP with an general-purpose intent framework, including intent translation, intent execution and intent decision etc.
- In R8, the requirement will provide the internal reference architecture and interacting with other ONAP components, and also introduce intent modeling for specific use cases, including intelligent radio capacity optimization and intelligent slicing management.

What needs to be done

- Reference architecture for ONAP with Intent Framework
 - Functional blocks and interfaces between them
 - Initial Implementation as a separate component with multiple micro services.
- External interface to other existing ONAP Components
 - UI, SO, CDS, AAI/CPS, etc
- General Intent information modeling, and concrete intent data model for specific use cases

Priority 2

For Key Services - Support for vertical industry scenarios

Description

- Unlike traditional 2C scenarios, where the consumers of OSS are CSP internal operation staff or BSS system, in 5G era operators need to provide O&M capabilities for potentially multiple vertical industries consumers. This requirement propose to help operators to manage multiple vertical industry networks using ONAP.
- In R8, it will start with managing the relations between providers and consumers (vertical industry) of network resources, considering the following use-cases.
 - Scenario 1: Support 2B and 2C networks at the same time, in which 2B network and 2C industry network share part of network resources (slicing).
 - Scenario 2: Support multiple 2B networks, 2B networks refer to the enterprise private networks established by operators for vertical industries.

What needs to be done

- Enhance SO to support the relation management
- Enhance NBI via ExternalAPI for OAM capability exposure
- Enhance the inventory management model

For Key Services- 5G network slicing & intelligent application

Description

- Provide a full E2E Slicing solution involving Core, RAN and Transport subnets, including E2E Slice LCM, close loop and intelligent slicing for SLA guarantee.
- Focus on enhancement works in RAN, Core, Transport NSSMF implementations and e2e close loop scenario based on R7 deliverables.

What needs to be done

- **Enhancement in E2E Slice allocation including slice subnet stitching, subnet capability report, slice selection optimization**
- **KPI computation** final solution (continue to be in PM Mapper or an isolated Micro Service)
- **Modeling enhancement** : serviceProfile and sliceProfiles enhancement; RAN and Core subnet modeling(strech goal)
- **Subnet Slicing enhancement:**
 - RAN slicing: interaction with NSMF specifically for endpoint and sliceProfiles; Use A1 interface for close loop and ML;
 - TN slicing: Endpoints based TN NSSI selection, reuse of existing TN NSSI;
 - Core slicing: Configuration of Core slice subnet.
- **Close loop and intelligent slicing** at E2E slice level and slice subnet level for RAN and Core (stretch goal)

Orange Priorities

Orange Priorities

Key priorities from Orange for ONAP Release "H"

@ Olivier Augizeau, Eric Debeau



Platform Modularity

- Separate ONAP core components from use cases (example: don't want to have specific CCVPN, vFW, vDNS code when installing ONAP components.)
- Provide deployment dependencies graph to enable easy and partial cherry picking of ONAP components.



Platform Security

- Focus on ONAP user security (AAA – Authentication, Authorization, Accounting) and RBAC (coherent multi components approach)



Platform Industrialization

- Provide a « use case free » ONAP installer
- Provide G to H upgrade procedure keeping in H existing running data in G. (focus on core components)
- Back-up / restore (focus on core components)

Build a common automation
framework
for multi-purposes custom use
cases and ready for production

Telecom Italia Priorities

Telecom Italia priorities

Key priorities from TIM for ONAP Release "H"

@ Cecilia Corbi, Alessandro D'Alessandro, Marco Signorelli



Application level: 5G slicing full support



Ensure ONAP components to be flexible reconfigured, easily extensible, partially re-installable (e.g. re-install a single functional component)



Increase ONAP platform maturity (especially for Manageability and scalability) and overcoming current hard coded behaviour

Enhance E2E LCM of services: from VNF/CNF validation to deployment



Application level: 5G slicing full support

What needs to be done

- Provide a full E2E Slicing solution involving RAN, Transport and 5G core NSSMF.
- Align ONAP solution with RAN/Transport/Core state of art (developments and standards). That also implies enhancing transport modeling that may reflect a real network
- Managing in a fully automated way all aspect of service LCM (from day0 to day N)

Priority 2

Bring ONAP functional maturity and flexibility to seamlessly orchestrate any service without manual interventions

Description

Adopting frameworks that ensure ONAP core components to be flexible reconfigured and to support new services without being changed

- ONAP currently requires manual configurations to drive specific orchestration behaviors. Just as an example
 - definition of specific E2E workflows
- Some ONAP modules requires to be recompiled or stopped when new services are introduced. Just as an example
 - A&AI schema cannot be changed on the fly

What needs to be done

- Identify ONAP modules that need to be manually configured depending on the service
- Identify solutions that overcome above limitations
- Adopt identified solutions

Remarks

- A la carte, Macro and E2E orchestration approach provide great flexibility in service orchestration but the framework require specialized skills to implement unforeseen orchestration patterns. Tosca engine should be evaluated for ONAP SO
- New services may need modification of A&AI schema that is currently quite complex to be done. Schema shall be changed while A&AI related containers are running

Support 5G Core, O-RAN and slicing services

Description

- Most of 5G Applications should be released by 1 year and should run on CaaS/KaaS/PaaS.
- Time to market is fundamental for ONAP to have a chance to be the reference orchestration solution. Continue maintaining too much efforts on ONAP development for legacy infrastructure/applications would not be beneficial.

What needs to be done

- Implementing framework capabilities to fully support 5G cloud native applications by one year

Increase ONAP platform maturity (non functional objectives)

Description

- Installation and platform operation is not deterministic yet;
- The installation success rate depends on the number of installed modules
- Some dependency still exist among modules;
- Platform is not as much modular as should be;
- Documentation need further improvement especially to document APIs and functional and non-functional feature maturity

What needs to be done

- Increase ONAP platform maturity by fixing the above mentioned issues

AT&T Priorities

AT&T Honolulu Priority List Backlog

Key priorities from Orange for ONAP Release
“H”

@ Scott Blandford



5G Enhancements



O-RAN Integration



**Component Maturity
& S3P**

5G Enhancements

Description

- As 5G continues to mature and the new 5G RAN becomes more open and virtualized, it is more important than ever to integrate ONAP's automation management with both the 5G Core and RAN

What needs to be done

- Continue development that allows ONAP to manage 5G services
- Prioritize work efforts that automate 5G processes

O-RAN Integration

Description

- O-RAN is opening and virtualizing the RAN Infrastructure
- This new virtualized infrastructure needs a management platform such as ONAP

What needs to be done

- Develop ONAP such that it can operate as the management platform for O-RAN
- Develop ONAP such that it can operate as the Non-Realtime RIC for O-RAN
 - Projects include: VES Features, A1 Adaptor

ONAP Component Maturity

Address Defect Backlog (e.g., Medium-level and above)

Address all Critical security issues (NexusIQ & Penetration test)

Improve the Toolchain & Test Automation Infrastructure

Continue progress on CII Badging

Increase & Expand Unit Test Code Coverage

Address critical project-specific technical debt

Improve Documentation (e.g., all API's fully documented)