R8 5G Service Modeling

Use Case Overview & Description

(description of U/C)

Use Case Key Information

TOPIC	DESCRIPTION	WIKI PAGE
Requirements Proposal	This is a link to the requirements proposal made on the Requirements Sub-committee	
Architecture S/C info	Information on the Architecture sub-committee presentation	~~ONAPARC-643~~ - (Honolulu-R8) - Func - 5G Service Modeling in R8 - Modeling Work CLOSED
Prior Project "Base" Wiki	Link to the "base" wiki for the Use Case, or work from a prior release.	5G RAN SERVICE MODELING & DEFINITION in R6 Frankfurt
Requirements Jira (REQ) Ticket	Link to the REQ Jira ticket for this use case	~~REQ-428~~ - 5G Service Modeling in R8 - Modeling Work DONE
Key Use Case Leads & Contacts	**USE CASE LEAD**: Benjamin Cheung **USE KEY CONTACTS**:	
Meetings Register & Recordings	Link to Use Case Team meetings.	USE CASE Realization Meeting Register MoM
R8 Release update Page	Honolulu Release Key Updates	

BUSINESS DRIVER

This section describes Business Drivers needs. These business drivers are presented on the Requirements Sub-committee and should also be put into the release requirements sub-committee page.

Executive Summary - This requirement introduces platform information model enhancements to document new ISOMII experimental classes from 3GPP TS28.541, the 5G Network Resource Model (NRM). The purpose of this use case is to introduce the necessary changes into the ONAP platform architecture so that it can be prepared to accept and work with a real live 5G RAN DU (for a gNB). Presently, this may mean introducing a generic application model defined in CDS. This model would then integrate the 3GPP 5G NRM so that ONAP components and micro-services could access the information in a 3GPP format without needing to overhaul the Platform Information Model.

Business Impact - The requirement, is a critical because it will serve to lay the ground-work for actually "turning on" a real 5G DU (PNF) that might be installed by a Vendor.

Business Markets - This project applies to any domain (wireless, transport, optical, and wireline) that ONAP may manage..

Funding/Financial Impacts - Without the groundwork laid down for information model management of a 5G Service, operators will not be able to "turn on" a real live 5G network using "live" PNF resources. No Network. No Business. High OPEX impact.

Organization Mgmt, Sales Strategies - There is no additional organizational management or sales strategies for this use case outside of a service providers "normal" ONAP deployment and its attendant organizational resources from a service provider.

Development Status

PROJECT	PTL	User Story / Epic	Requirement
A&AI	William Reehil	NO IMPACT	
AAF	Jonathan Gathman	NO IMPACT	

APPC	Takamune Cho	NO IMPACT	
CLAMP	Gervais-Martial Ngueko	NO IMPACT	
CC-SDK	Dan Timoney	NO IMPACT	
DCAE	Vijay Venkatesh Kumar	NO IMPACT	
DMaaP	Mandar Sawant	NO IMPACT	
ExternalAPI	Adrian OSullivan	NO IMPACT	
HOLMES	Guangrong Fu	NO IMPACT	
MODELING	Hui Deng	Model Presentations and discussions. The 5G Service Modeling use case: (1) Developed a solution for vendors to deliver 3GPP TS28.540/541 5G NRM driven xNF models to ONAP. (2) The modeling solution has now been integrated into the CPS architecture and has driven the ONAP platform information model evolution. (3) In R8, the architecture was defined for a registry service to expose on-boarded NRM & vendor data to coordinate across use cases. (4) A new resource app Model was introduced to allow for flexible vendor model management in R8. (5) Discussions for onboarding NRM artifacts was explored in R8.	This use case is focused on making sure that ONAP will be able to work with a live 5G gNB base station. Currently, use cases are using simulators. The objective is to try to get everything in place for a live gNB launch. In R8, the Configuration Persistence Service (CPS) PoC has been approved to become a new platform component. Much of the ground work in this project has now been incorporated into CPS.
Multi-VIM/ Cloud	Bin Yang	NO IMPACT	
OOF	krishnamoorthy	NO IMPACT	
OOM	Sylvain Desbureaux	NO IMPACT	
POLICY	Jim Hahn	NO IMPACT	
PORTAL	Sunder Tattavarada	NO IMPACT	

SDN-C	Dan Timoney	NO IMPACT	
SDC	Christophe Closset	NO IMPACT	
SO	Seshu Kumar Mudiganti	NO IMPACT	
VID	Ikram Ikramullah	NO IMPACT	
VF-C	Yuanhong Deng	NO IMPACT	
VNFRQTS	Steven Wright	NO IMPACT	
VNF-SDK	Weitao Gao	NO IMPACT	
CDS	Yuriy Malakov	NO IMPACT	

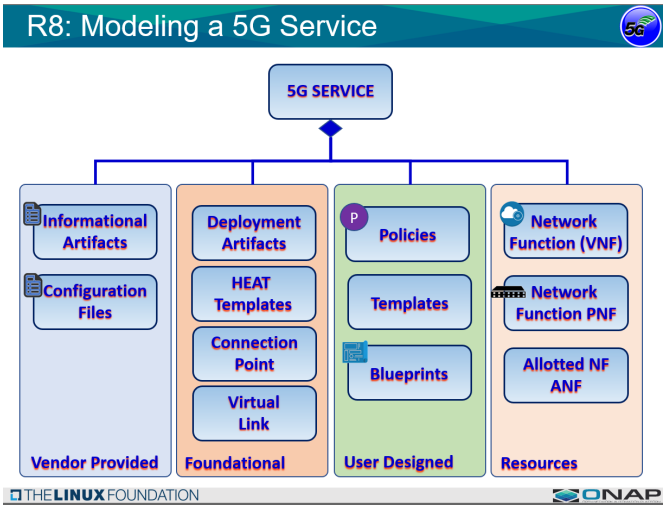
List of PTLs:**Approved Projects**

*Each Requirement should be tracked by its own User Story in JIRA

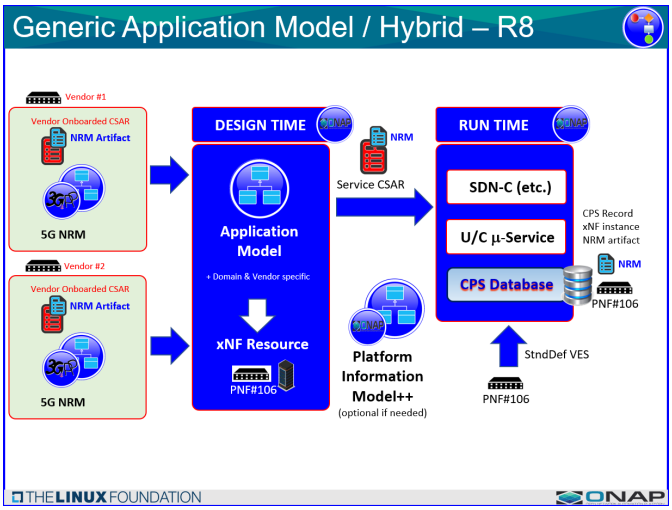
USE CASE DIAGRAM

Use cases define how different users interact with a system under design. Each use case represents an action that may be performed by a user (defined in UML as an Actor with a user persona).

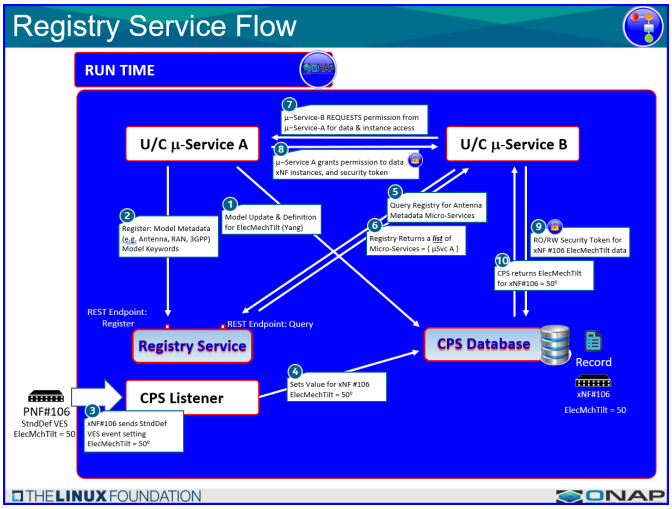
modeling a 5G Service:



Use of the 5G NRM in the PIM



The Registry Service



Use Case Functional Definitions

Use Case Title	5G Service Modeling and Creation
Actors (and System Components)	ONAP, gNB.
Description	This use case will lay the groundwork to introduce and open the discussion with the modeling sub-committee for the platform information modeling work to allow ONAP to integrate with a real "live" 5G DU Base station (PNF) The RAN (wireless) 5G base station network resource model is driven by the 3GPP standard: TS28.540 and TS28.541, the 5G NRM. This standard is used by all 5G vendors for their PNFs (DUs) which serves as a starting point to think about modeling work as it is common to all vendors. ONAP will not necessarily need to know or work with all of the ~300 parameters described in the standard, but rather should introduce a common "core" model into the ONAP platform release information model, so that other future use cases and applications can introduce model information in an orderly fashion. In R7, the OOF/SON/PCI and End-to-End Network Slicing use cases will leverage the work to introduce this common "core" model. Note that, these use cases ARE domain specific, to network wireless / radio access networks. So some thought should be given as to how to introduce domain-specific modeling into ONAP such that it can still serve many other domains with full functionality given to each of those domains.
Points of Contact	Benjamin Cheung , Chuyi Guo
Preconditions	N/A - this use case is modeling work only
Triggers / Begins when	N/A - this use case is modeling work only
Steps / Flows (success)	N/A - this use case is modeling work only

Post-conditions	N/A - this use case is modeling work only
Alternate / Exception Paths	N/A - this use case is modeling work only
Related Use Cases	End-to-End Network Slicing Use Case: E2E Network Slicing Use Case in R7 Guilin OOF/SON/PCI Use Case:
Assumptions	N/A - this use case is modeling work only
Tools / References / Artifacts	N/A - this use case is modeling work only

GENERIC INFORMATION MODEL FOR 5G SERVICE

This information is taken from this template: Generic Information Element Template

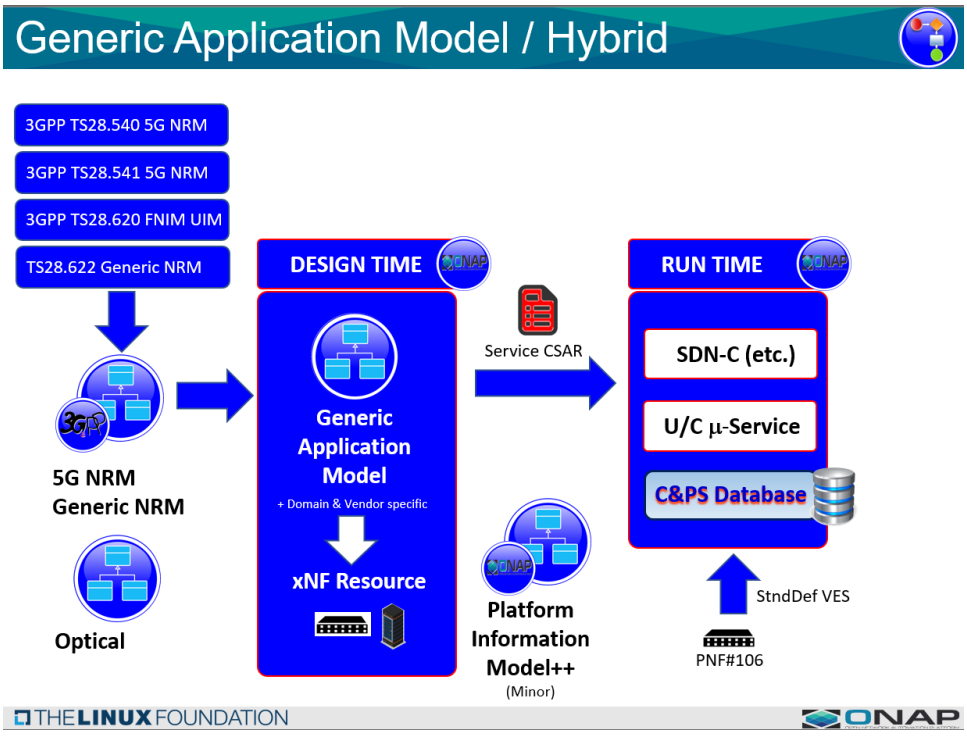
should be copied in the Parent Page (CNF Modeling Workspace) for each Information Element to be defined.

Information Element Template (one table for each Information Element)

Information Element Name	*Name of the Information Element (to be determined) (Discuss with Modeling Team)*
Points of Contact	Information Element Main Contact: Benjamin Cheung Information Modeling Contact: Benjamin Cheung Chuyi Guo Swaminathan Seetharaman Schema Definition Contact: Benjamin Cheung
Related Use Cases	The E2E Network Slicing Use Case WIKI: E2E Network Slicing Use Case in R7 Guilin and OOF SON PCI Use Case are related use cases that all use the 3GPP TS28.541 5G NRM: WIKI: R7 OOF SON Use Case
Participating ONAP Components	OOF SON PCI Handler Micro-Service, End to End Network Slicing (Micro services) (With the Generic Application Model) in CDS
Related JIRA	The related Modeling JIRA is here: blocked URLMODELING-369 - 5G Service Modeling in R7 - Modeling Work CLOSED
Description	The purpose of this use case is to introduce the necessary changes into the ONAP platform architecture so that it can be prepared to accept and work with a real live 5G RAN DU (for a gNB). Presently, this may mean introducing a generic application model defined in CDS. This model would then integrate the 3GPP 5G NRM so that ONAP components and micro-services could access the information in a 3GPP format without needing to overhaul the Platform Information Model.
Related Standards & Industry Activities	Related Industry Standards are here:

3GPP TS28	Main 3GPP TS28 series link: https://www.3gpp.org/DynaReport/28-series.htm
3GPP TS28.532	Management & Orchestration https://portal.3gpp.org/desktopmodules/Specifications/SpecificationDetails.aspx?specificationId=3427 Document itself: 28532-g40.doc
3GPP TS28.540	This is the 3GPP Standard forum Management & Orchestration 5G Network Resource Model (NRM) Stage 1 The URL: https://itectec.com/archive/3gpp-specification-ts-28-540/
3GPP TS28.540	28540-g00.doc
3GPP TS28.541	This is the 3GPP Standard forum Management & Orchestration 5G Network Resource Model (NRM) Stage 2 and Stage 3 The URL: https://itectec.com/archive/3gpp-specification-ts-28-541/
3GPP TS28.541	5G NRM (document itself) 3GPPTS28541-f40.doc
3GPP TS28.620	Federated Network Information Model (FNIM) Umbrella Information Model (UIM) https://portal.3gpp.org/desktopmodules/Specifications/SpecificationDetails.aspx?specificationId=1539
3GPP TS28.622	Generic NRM https://portal.3gpp.org/desktopmodules/Specifications/SpecificationDetails.aspx?specificationId=1541 Document itself: 28622-g40.doc
3GPP APIs	https://forge.etsi.org/rep/3GPP/SA5/data-models

Attributes	There are hundreds of parameters in the 5G NRM from the above standards. A spreadsheet of all of the parameters are compiled in this spreadsheet:  Spreadsheet
Relationships	**RUN TIME** - (SO, CDS, PRH). PNFs that need to be instantiated in 5G Services (associated resources for a service). **RUN TIME** - (OOF SON PCI Use Case) - The PCI Micro-service will need the PCI values in the 5G NRM.

Originator	Where does this information come from? (What component initially creates it) The PNF or VNF will generate (and own) the information. This information is created outside of ONAP. The information is used by the micro-services. For example the OOF SON PCI Micro-service will use the repository of 5G Data from the C&PS Database. 
Consumers	Who uses this information inside & outside of ONAP? How do they use it? **RUN TIME** - (OOF SON PCI Use Case) - The PCI Micro-service will need the PCI values in the 5G NRM. **RUN TIME** - (E2E Network Slicing Use Case) - Slicing models, objects and parameters from 5G NRM (TS28.541) Includes description of information consumed (whole class, specific attributes, etc) The following table shows the E2E NS parameters & classes needed: 
Producers	Who updates this information inside of ONAP? **ANSWER**: A user would load the Generic Application Model. CDS would update this information inside of ONAP. A user would specify a domain specific model to use. Under what conditions do they update it? **ANSWER**: In design time, if the designer determined that a resource will be using the Generic Application Model, they can choose to update it with a domain specific model. The detailed description of information (classes, attributes) can be obtained in the 3GPP TS28.541 standards that can be retrieved from the links above.
Steward	Where will this information stored and maintained? **ANSWER**: This model information would become a part of the CDS repository. During design time, CDS would be used to load a domain specific model
Impacted APIs & Schemas	**ANSWER**: With the Generic Application Model Solution, CDS Platform component will need to be updated and its APIs may be impacted. CDS would load the Generic Application Model and populate it with a standard defined model, for example, the 3GPP 5G NRM. CDS would have an impacted ONAP schemas & API updated

Information Modeling Status	This is scheduled in the R7 Modeling planning page. The Wiki page: ONAP R7 Modeling High Level Requirements It is being tracked by the Modeling-369 Jira which can be found here: blocked URLMODELING-369 - 5G Service Modeling in R7 - Modeling Work CLOSED **Status:** It is active for the current release, this use case has been accepted. The model is being developed.
Schema Definition Status	*What is the status of ONAP Schema Definition activities associated with this Information Element.* *Please provide links to relevant wiki pages & JIRA.*
ONAP Release Priority	This use case is in the R7 Release planning. The Wiki Page is at: Guilin Release Requirements It has a TSC Priority of 0 (Go)

SUPPORTING DOCUMENTS

Document	File
Arch Presentation	

TESTING

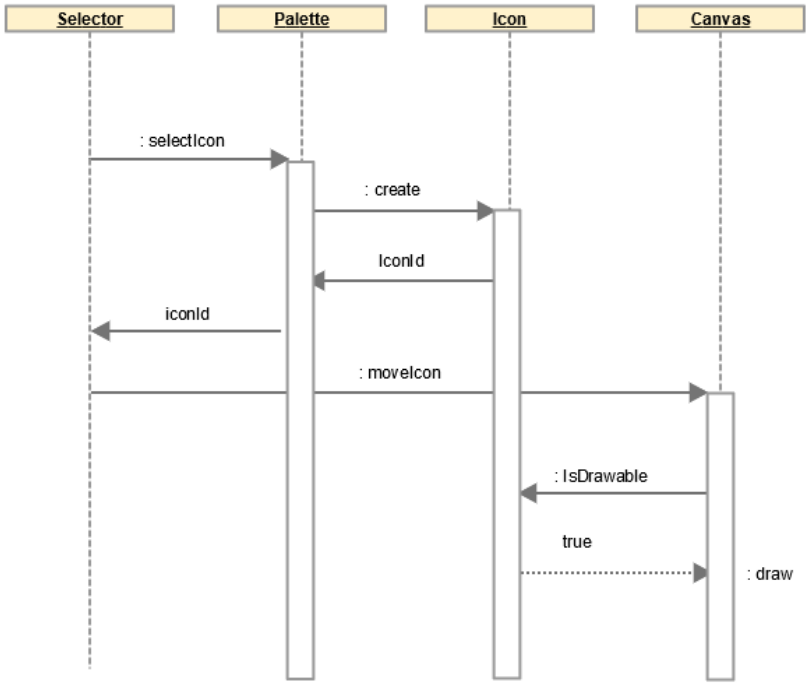
Current Status

1. Testing Blockers
2. High visibility bugs
3. Other issues for testing that should be seen at a summary level
4. Where possible, always include JIRA links

End to End flow to be Tested

This should be a summary level Sequence diagram done in Gliffy

Summary Sequence Diagram



Test Cases and Status

1	There should be a test case for each item in the sequence diagram	NOT YET TESTED
2	create additional requirements as needed for each discreet step	COMPLETE
3	Test cases should cover entire Use Case	PARTIALLY COMPLETE