

A black and white photograph of a city skyline at night. Several tall skyscrapers are visible, with many windows illuminated from within. In the foreground, a road with light trails from traffic and a pedestrian bridge or overpass structure are visible. The overall scene is a dense urban environment.

TM Forum Report  
ONAP workshop  
Antwerp Sept 2019

## Open API and ExtInt

### Ext Int APIs

- Use TM Forum APIs (Apache2.0)
  - [TMF641 ServiceOrder](#)
  - [TMF633 ServiceCatalog](#)
  - [TMF638 ServiceInventory](#)
- Open APIs to Design Guideline 3.0 are extensible
- ExtInt uses TMF open APIs with MEF Payload

### Success factors

- Proactive coordination between TMF Open APIs and ExtInt team (and MEF Legato)
- Single member lead Orange Ludovic Robert and team



## Modelling

### SDC models & TM Forum Information Framework ( aka SID)

- Continuous exchange of experience between SDC & Modelling teams and Inf Framework
- Success factor**
- Proactive coordination between teams
  - Single member lead Kevin Scaggs



### Catalyst: Agile OSS for New Age Services & Hybrid Networks DTW 2018

- ONAP implementation A&AI, SO , Resource catalogue

### Success factor

- Proactive input of experiences to ONAP thru CR
- Lead Nishi Mathur Infosys



## (contributing to collaboration program)

- 5G Riders on the Storm - Phase II

focuses on the operational use cases required to support lifeline communications both during and after extreme weather events such as storms and flooding. Public safety relies on functional emergency services that in turn rely on CSPs providing an assured level of 5G services that enables first responders to do their job

- 5G Optimized Capacity & E2E Experience - Phase II

guaranteeing assured service quality across multiple slices requires elimination of prohibitively expensive, resource over-allocation and cross-CSP co-ordination.

This Catalyst demonstrates real-time, dynamic, automated planning, operation and spectrum optimization for multiple SLA guaranteed slices, with blockchain-based settlement, spanning multiple CSPs.

- Skynet

advanced eHealth and tele-medicine services across seamlessly coordinated, geographically distributed service providers to support medical crises where global collaboration is needed.

We will demonstrate the value of industry standard frameworks and APIs to support complex Network Services Orchestration, Service Assurance, monetization and capabilities offered by 5G network slices and physical networks.

- 4G & 5G NaaS for B2B & B2I Business Ecosystem

demonstrate the concept of network capability openness via APIs to enable service agility, and build a digital service ecosystem based on China Unicom's ONS Capability Center empowered by DevOps process and an open platform

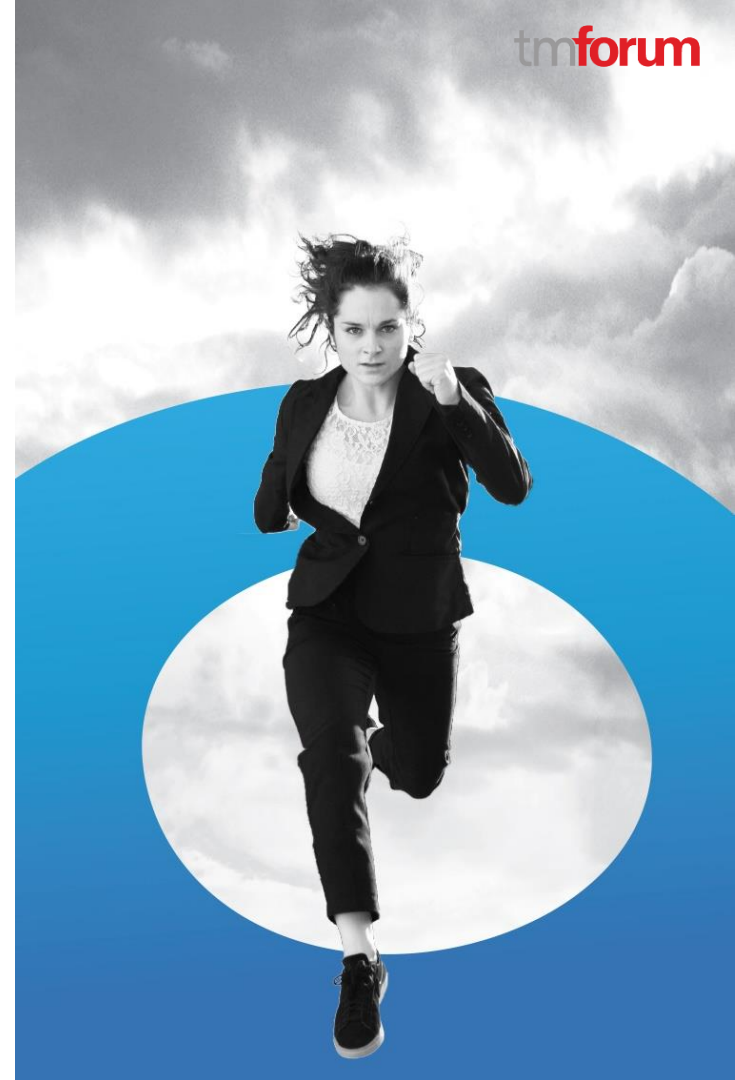
Catalyst	Contribution	Status
<a href="#">Skynet</a>	Contribution to ONAP: White paper 12.2 <a href="#">ODA-194</a> - Contribution to ONAP: White paper 12.2	Registered
<a href="#">5G: Optimized Capacity &amp; E2E Experience - Phase II</a>	The document provides information on merging architecture, components and concepts from TMF Open API, 3GPP, ONAP, GSMA and MEF to realize a solution for effective 5G slicing <a href="#">ODA-240</a> - The document provides information on merging architecture, components and concepts from TMF Open API, 3GPP, ONAP, GSMA and MEF to realize a solution for effective 5G slicing	Registered

***Challenge is how to feed these results into ONAP***



# Skynet

Borderless Remote Health Care: A Reality with 5G

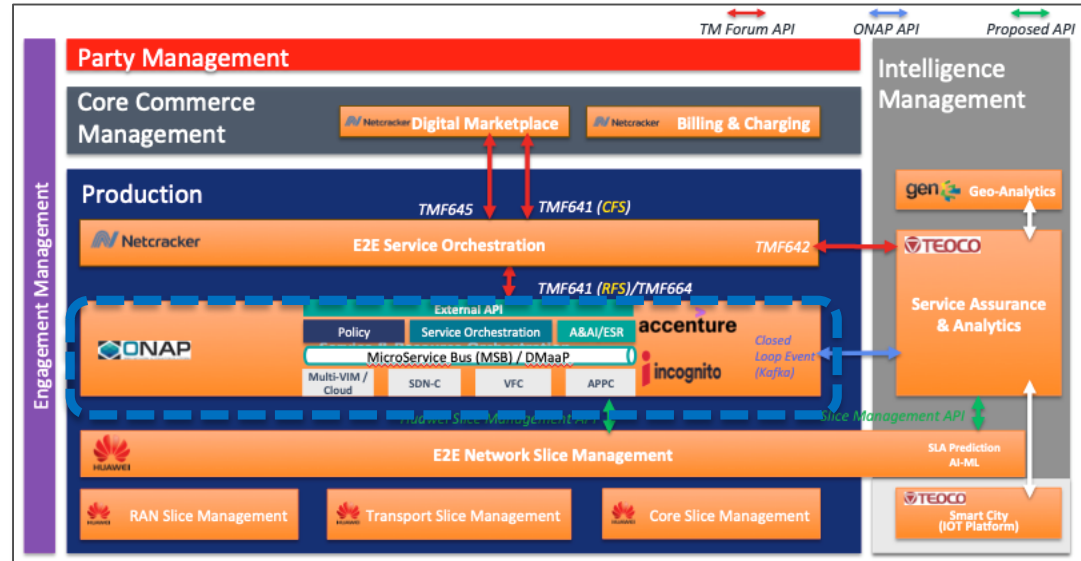




Supported the fulfillment of

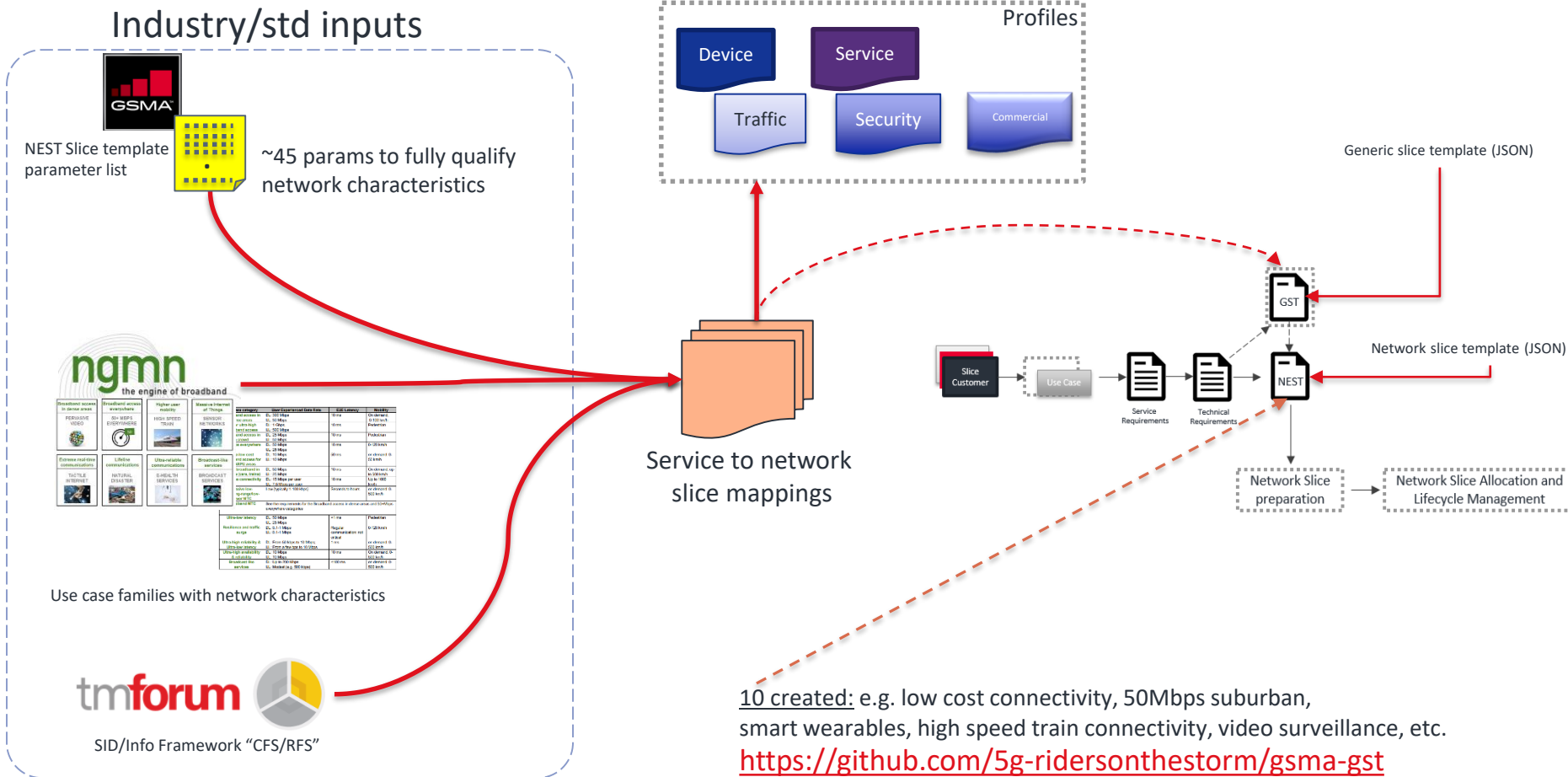
# "RIDERS in the STORM"

That thanks to the collaborative work of



# Slice template blueprint framework

Leverage GSMA NEST GST work and NGMN service categories, apply SID thinking → create programmatic slice blueprint framework

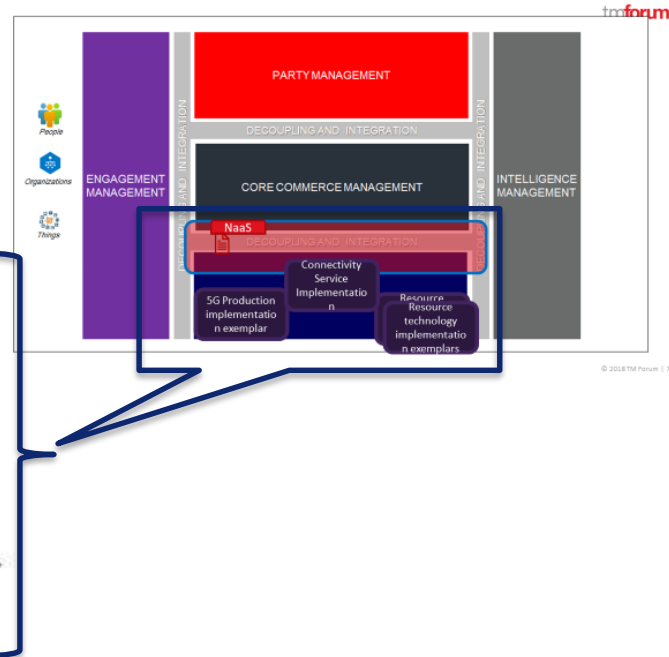
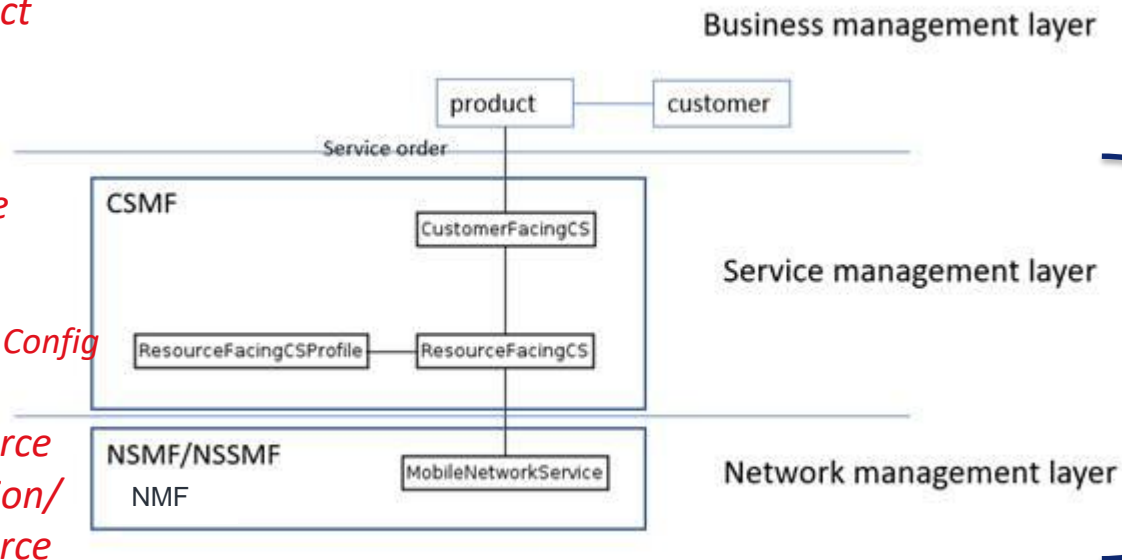


## Telecommunication management; Study on management aspects of communication services

*Product*

*Service  
CFS  
RFS  
Service Config*

*Resource  
Function/  
Resource*



28.805 Figure 4.3.1: Management model for management of communication services





Microsoft Word  
Document

Samples from mapping document subject to change ➡

ONAP TSC Requirement	ONAP Team	TM Forum Asset	TM Forum Team
5G / ORAN & 3GPP Standards Harmonization	?	<b>IG xxx Services not slices</b> <a href="https://github.com/5g-ridersonthestorm/gsma-gst">https://github.com/5g-ridersonthestorm/gsma-gst</a> <b>TMF664 RFAC API</b>	ODA Production Open API
All Control Loop Policy Models should be TOSCA Compliant	?	<a href="#">GB999</a> <a href="#">IG1176 TOSCA Guide for Model-Driven Automation R19.0.0</a>	ODA Production
Modeling: Network Slicing modeling	?	<b>IG xxx Services not slices</b> <a href="https://github.com/5g-ridersonthestorm/gsma-gst">https://github.com/5g-ridersonthestorm/gsma-gst</a>	ODA Production Frameworkx SID
LCM API Evolution	?	<a href="#">IG1176</a> <b>TMF664 RFAC</b>	ODA Production Open API
Third Party Operational Domain Manager	?	<b>TMF909 NaaS API Component Suite</b>	Open API
xNF License Management use case		<b>IG1141 Onboarding Automation</b>	ODA Production

# TM Forum's thoughts on Top Four collaboration opportunities for R6 Frankfurt

1. Continue with APIs
  - e.g. Ext Int adoption of TMF 909 Networks as a Service API Component Suite
    1. Internal Closed Control Loop APIs GB999 ODA Production and Open APIs
    2. Catalyst API findings ( described earlier)
2. Use of the TOSCA templates for SDC and ONAP Runtime
  - [IG1176 TOSCA Guide for Model-Driven Automation R19.0.0](#)
3. Modeling/API 'Meet in the Middle' approach
  1. GSMA GST practical use through JSON in Open APIs
  2. Connectivity Service models - network technology neutral
  3. Alignment with Fx Information Framework and SDC models
4. License model –
  - Share work on Licensing Models IG1141 and ONAP activities

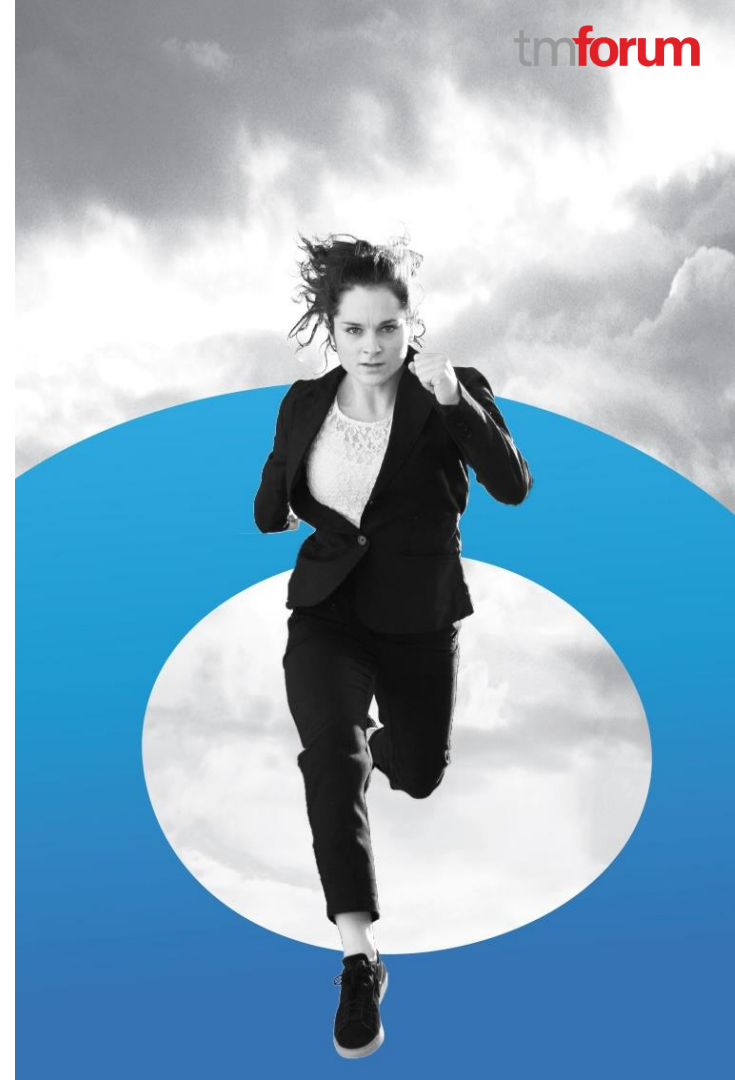
**We need champions for each opportunity that are working in or coordinating across both organizations.**

# Spares



# Skynet

Borderless Remote Health Care: A Reality with 5G



As recent history has proven, **epidemic outbreaks** are still happening frequently, even in well developed countries and **swift, coordinated handling is crucial**: pandemic influenza, bird flu, swine flu, Nipah and Ebola still have a global impact.

## How telecoms can help the eHealth sector?

The Skynet model can ultimately enable an **unprecedented medical collaboration** around the globe.



# 5G Riders in the Storm

Catastrophic floods cause human tragedy, endanger lives and bring heavy economic losses.

A Severe Weather Event Inspired by the Genova Storm 2014 was our Use Case but ....



.... during the last five years Europe has suffered over 100 major damaging floods



# Different Users have different (Communication) Needs...

## First Responders



Push2talk  
BodyCam

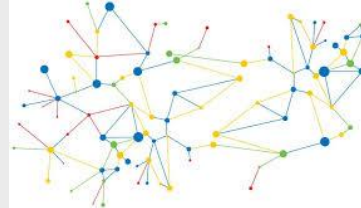
Health &  
Location  
Sensors

## Cities



Smart-City  
Sensors

## Enterprise Customers



Enterprise-  
Gold

Enterprise-  
Silver

## Media



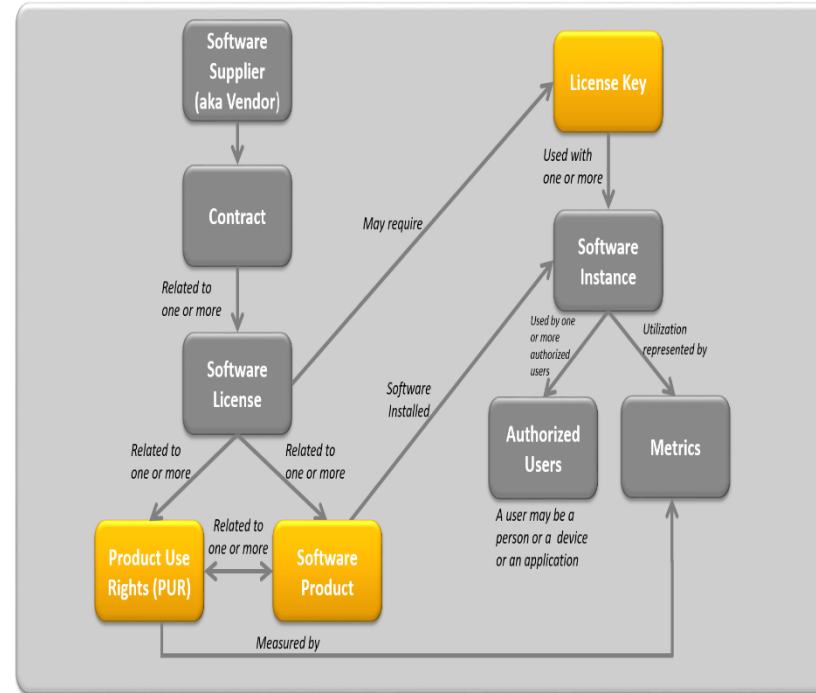
Weather Reporting  
Met Offices

...Different network characteristics

## Licensing was addressed as part of ODA /ZOOM Onboarding Automation initiative

- Key Results in
  - [IG1141 Procurement and Onboarding Suite R18.0.1](#)
  - [IG1141A Onboarding Automation: Package ID, Software Assets and License Management Support R18.0.1](#)
  - [IG1141M Onboarding Automation: Metrics Support R18.0.1](#)
  - [IG1141C Onboarding Automation: VF Categorization and Orchestrability R18.0.1](#)
  - [IG1141 Procurement & Onboarding of Virtualization Packages R18.0.1](#)
- **Context: Need to understand how to automatically onboard both network software applications, network appliances**
  - [IG1176 TOSCA Guide for Model-Driven Automation R19.0.0](#)
  - IG1141 identified licensing conditions for Software Application inc. VNF as a critical challenge)
  - CSP did not want licence management software in their critical infrastructure
  - Approach is based on extending ISO. (2012). *ISO/IEC 19770 Software asset management ( six parts*
  - <https://www.iso.org/standard/56000.html>

## Key entities in Software Asset Management ISO/IEC 19770 extended –from IG1141





# Key entities in Software asset Management

