(Horizon 2020 ICT-17 project)

5GACIA General Assembly

Nov 13 2019

5G PPP

This project has received funding from the EU's Horizon 2020 research and innovation programme under grant agreement No 815279.

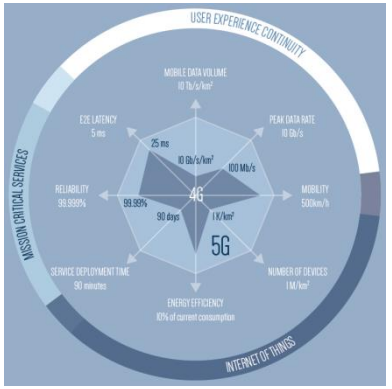
5G-VINNI

Take-away

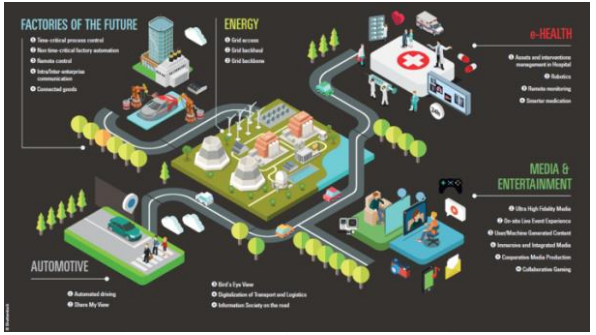
1. What is 5G-VINNI and how it can be useful for 5G-ACIA

2. 5G Service certification for (your) critical services

5G-VINNI (**5G V**erticals **INN**ovation **I**nfrastructure)



- Build an open large scale 5G End-to-End facility that can
  - demonstrate that key 5G network KPIs can be met
  - be validated, accessed and used by vertical industries (e.g. in ICT-19 projects) to test use cases and validate 5G KPIs.
- Duration: 1.July 2018 – 1.July 2021
- Project Budget: 19,998 million € (3 years)
- Consortium: 23 partners (operators, vendors, academics, SMEs)
- External Stakeholder Board: Vertical industry



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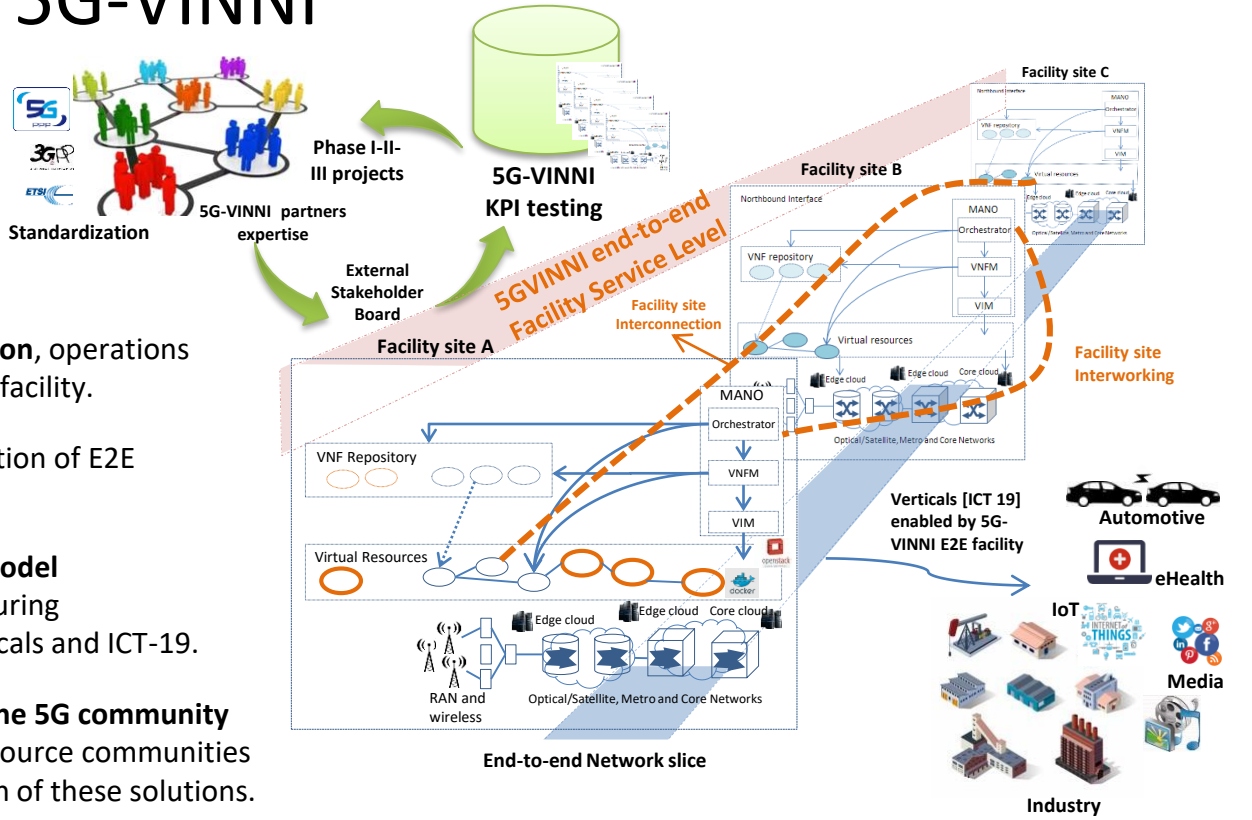
Telefónica SES NOKIA HUAWEI SRS SOFTWARE RADIO SYSTEMS Lime microsystems EANTC EUROPEAN ADVANCED NETWORKING TEST CENTER ENGINEERING Fraunhofer FOKUS

5G-VINNI

Key objectives of 5G-VINNI

1. Design an advanced and accessible 5G end to end facility for verticals and ICT-19.
2. Build several **interworking** sites of the 5G-VINNI end to end facility.
3. Provide user friendly **zero-touch orchestration**, operations and management systems for the 5G-VINNI facility.
4. **Validate the 5G KPIs** and support the execution of E2E trial of vertical use cases for ICT-19 projects.
5. Develop a viable **business and ecosystem model** to support the life of the 5G-VINNI facility during and beyond the span of the project for verticals and ICT-19.
6. **Demonstrate the value of 5G solutions to the 5G community** particularly to relevant standards and open source communities with a view to securing widespread adoption of these solutions.



5G-VINNI Facility Sites

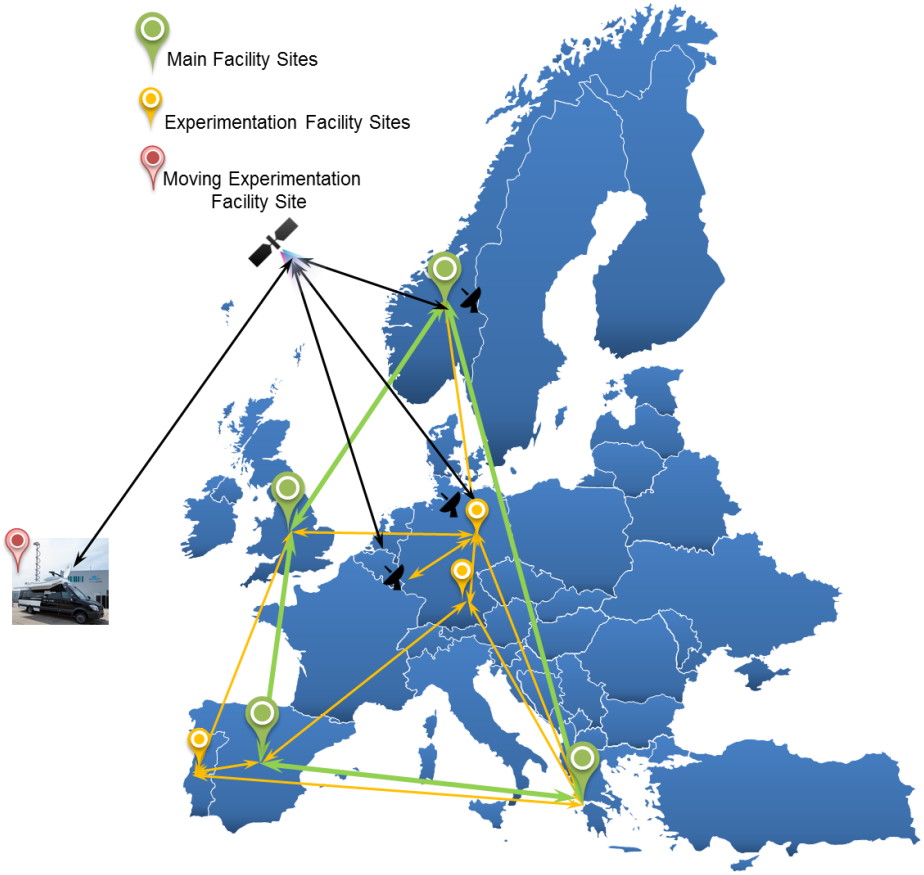
Main Facility sites: E2E 5G-VINNI facility that offers services to ICT-18-19-22 projects with well-defined Service Level Agreements.

- Norway (Oslo, Kongsberg)
- UK (Martlesham)
- Spain (Madrid)
- Greece (Patras)

Experimentation Facility sites: provide environments for advanced focused experimentation and testing possibilities on elements and combinations of elements of the E2E model.

- Portugal (Aveiro)
- Germany (Berlin)
- Germany (Munich)

Moving Experimentation Facility site: satellite connected vehicle.



Capabilities in the Facility Sites

Capabilities	Main Facility sites	Experimentation Facility sites
5G NR	X	X
5G Core	X	X
NFV Infrastructure and Orchestration	X	X
Edge Computing	X	X
Network Slicing	X	X
E2E Service Orchestration	X	
Interworking and interconnection among facility sites	X	
Testing framework	X	

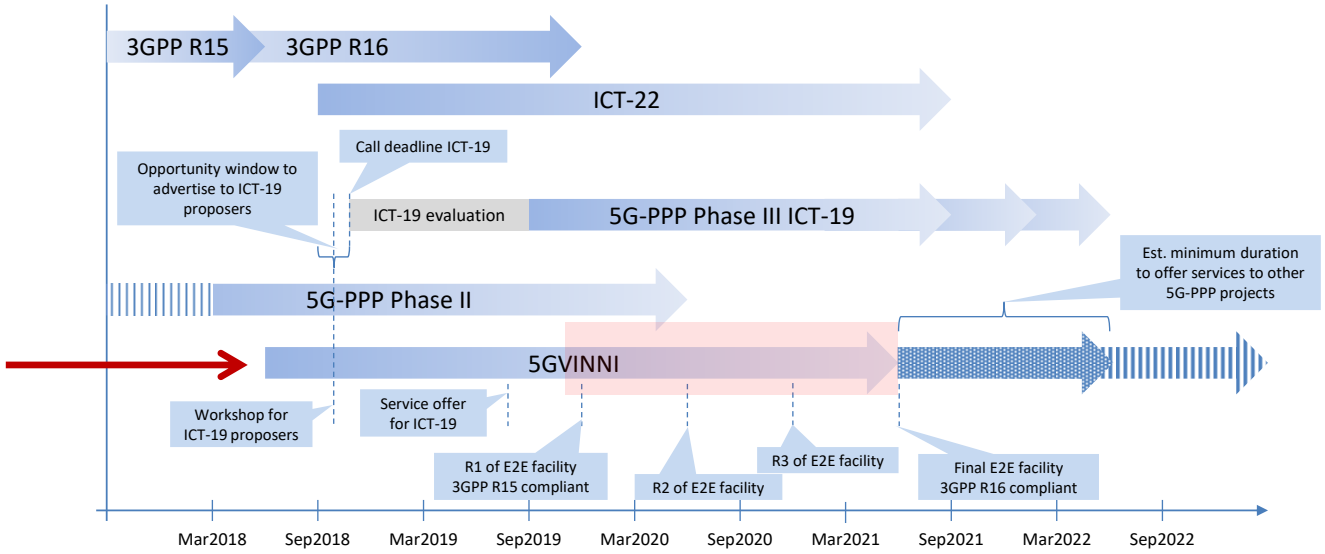
Note: the experimentation facility sites will have advanced capabilities not specified in the table, please refer to the facility site summary on https://www.5g-vinni.eu/facility-site/.

Services offered to ICT-19 projects by the Main Facility sites

Service offered by Main Facility sites
Network Slice as a Service for eMBB
Network Slice as a Service for URLLC
Network Slice as a Service for mMTC
Customized Network Slice*
Hosting of third party VNF as part of Slice
Distributed Data Fabric Service as part of Slice
Integration of new non-5G-VINNI gNB to 5G-VINNI facility
Integration of new non-5G-VINNI MEC node to 5G-VINNI facility
Interworking with non-5G-VINNI Facility sites**
Testing services (KPI testing, Use Case testing) ***

** Can be advanced features (e.g. SFC, security, enhanced Cloud access) and be a mix of eMBB, URLLC and mMTC.*
*** This is subject to terms and conditions to be defined with non-5G-VINNI facility sites (e.g. from ICT-17 or ICT-19 projects)*
**** Scope of testing services provided in each main facility site to be defined.*

Global Timing



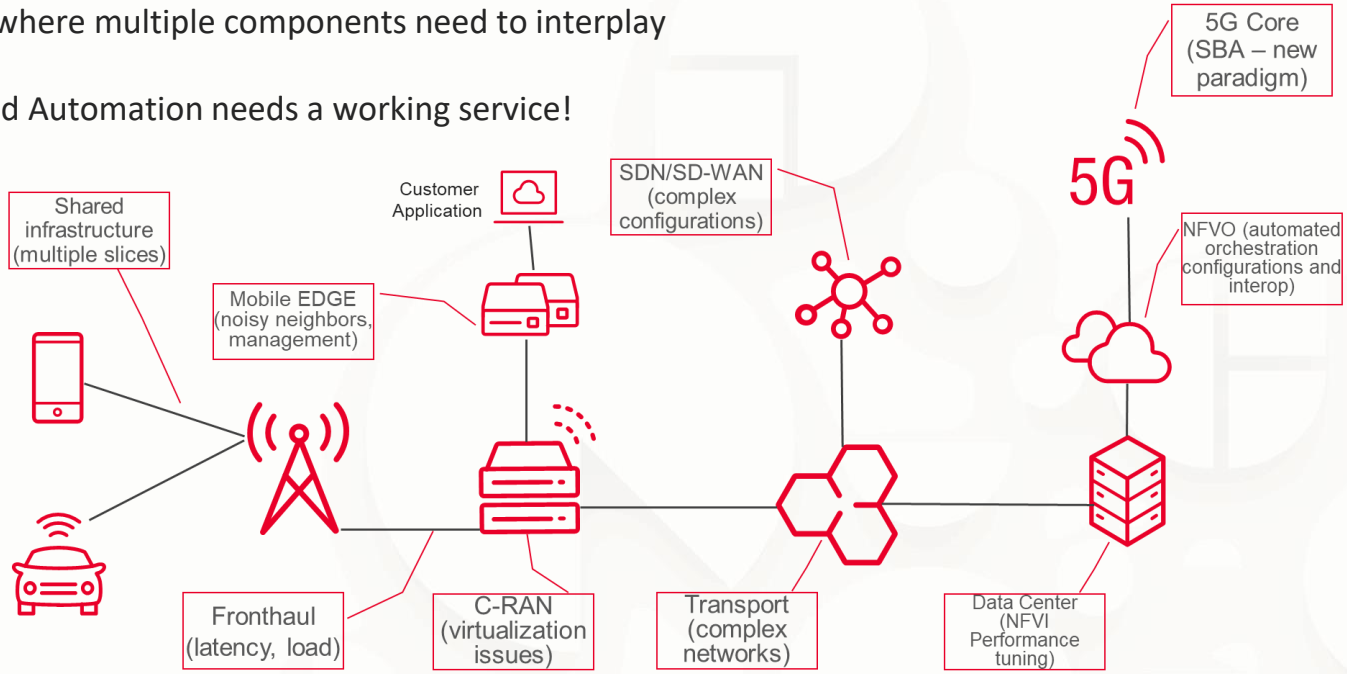
- Detailed service offer with SLA and onboarding-roadmap to be provided on 1st July 2019.
- Ready for project experimentation on 1st Jan 2020.
- 5G-VINNI Facility will be available 1 year after project ends*

*Terms and conditions will be announced for use after 5G-VINNI project ends

What can possibly go wrong?

5G is a complex system where multiple components need to interplay

Connected Industries and Automation needs a working service!



EVERYTHING!

*R.I.P.

5G-VINNI

Critical services over 5G

The more critical the service is, the more we expect customer demanding guarantee (SLA) he can rely on the 5G system.

- How will operator be able to ‘guarantee’ services?

This issue is for 5G-ACIA but also other type of critical services/verticals.

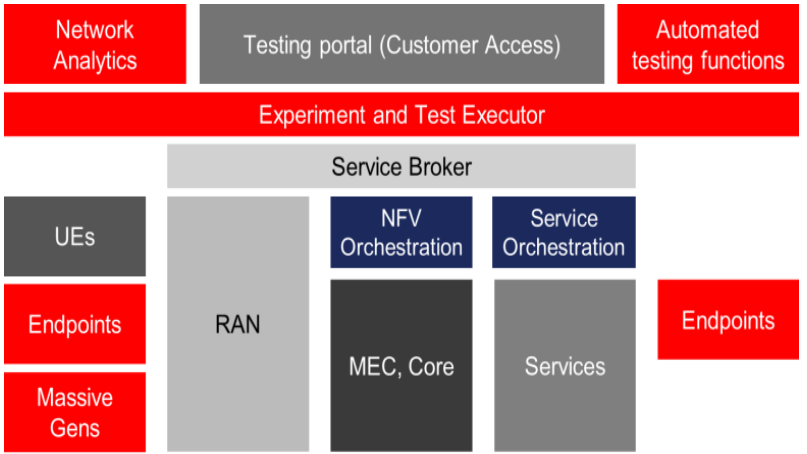
Expected telecom problems for guaranteed critical services:

- 5G Network is completely virtualized -> How will 5G service slices behave and be protected from noisy neighbors
- Service certification? Device as such is only part of the problem.
- M2M may lead to devices that are not functioning in all scenarios;

How does Operator intend to convince these new potential customers?

5G-VINNI Test Framework

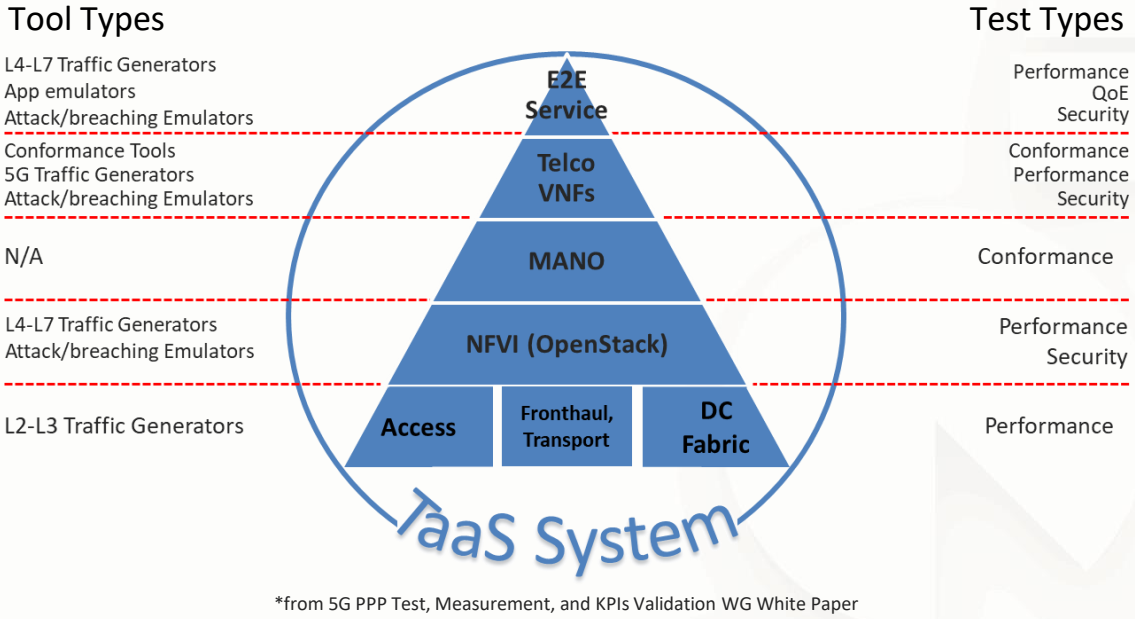
- Availability of a testing portal that allows:
  - Creation and customization of individual test cases
  - Management of testing campaigns (including overnight testing)
  - Results processing and analytics (analytics expected by 2020/2021)
- Easy integration of third parties components and systems under test via open SDK
- Consulting services for testing and experimentation



For 5G-ACIA users:

- Ability to test if a slice work for your application, what are the boundary conditions
- Towards service certification, enabling critical services on 5G, ‘SLA’ verification

One Ring to Rule Them All…



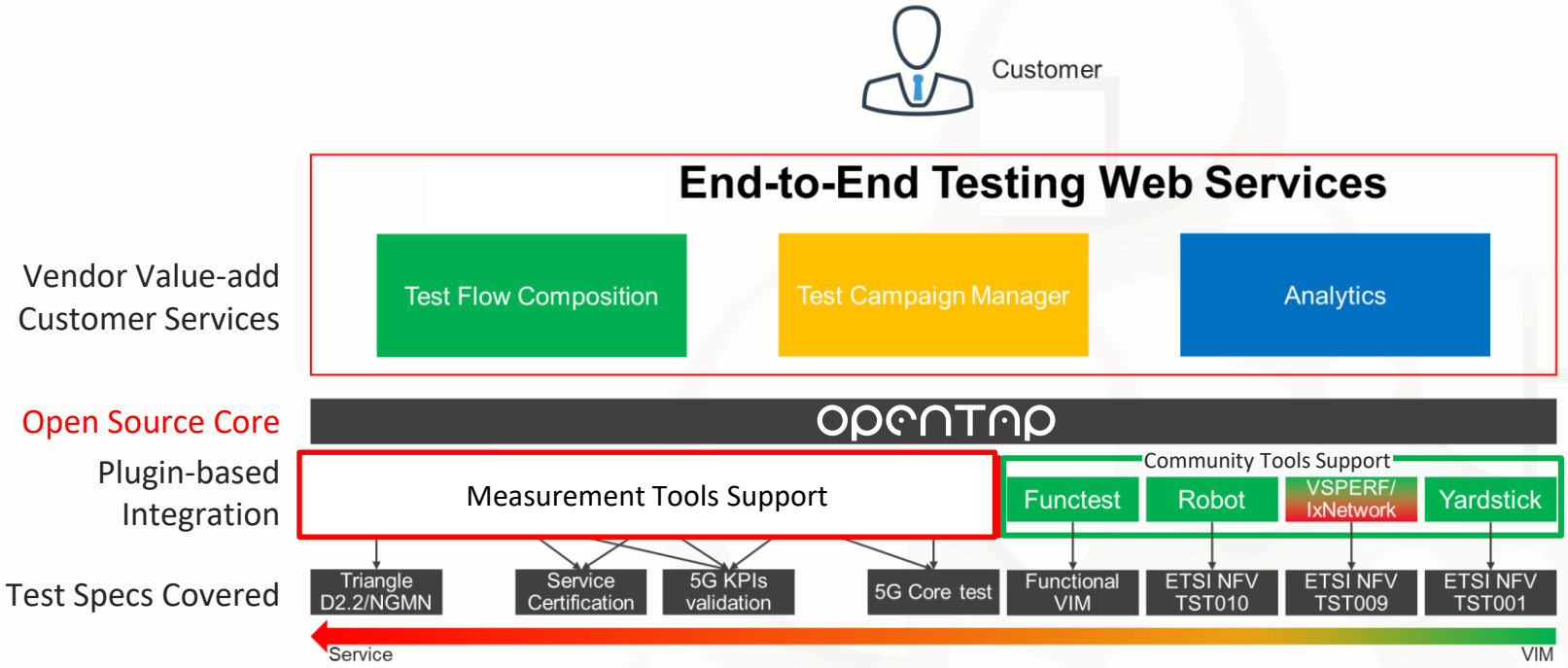
*from 5G PPP Test, Measurement, and KPIs Validation WG White Paper

- TaaS is de-facto an implementation of the 5G TestOps.
- Test-as-a Service (TaaS) is a way to unify the testing functionalities for 5G.
- It provides a one-stop-shop for testing service for both CI/CD applications and users.
- Test Automation is obviously the keystone of TaaS.

Implementing 5G TestOps

5G-VINNI

Building 5G test Solutions on Open Source leveraging commercial and non commercial solutions



Please contact 5G-VINNI for further information, discussion and interest

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