



# Welcome to the World of Standards



## **NFV PLUGTESTS**

**Silvia Almagia**

**ETSI CTI**

**May 2016**

- ETSI Plugtests are not a commercial or marketing activity
- ETSI Plugtests focus on validating the interoperability among different implementations over standardized reference points
  - Run consistent testing across different combinations of implementations
  - Compile statistic results and provide consistent feedback
- Main goal is to provide **feedback** to the base specifications and the industry
- ETSI Plugtests are not tied to a specific project or implementation
- Participation is free and open to any product or open source project implementing a Function Under Test (FUT)
- ETSI has long experience in running Plugtests for different technologies

## 🌐 “early” Plugtest

### 🌐 Why “early”?

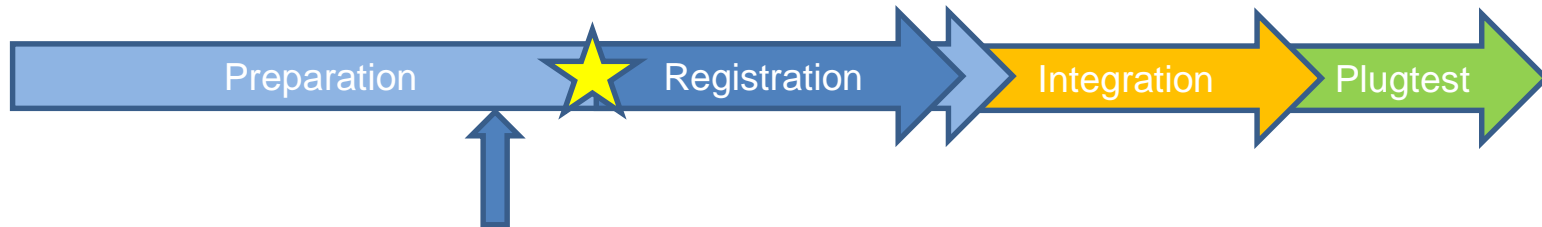
- Where no stage 3 (common APIs & data models) some arrangements will be needed
- Do not expect off-the-shelf Interoperability!

### 🌐 Main goals:

- **Feedback** to ISG NFV, industry, open source communities
- **NFV Rel 2 validation:** completeness, consistency, ...
- **Reality Check:** what is being implemented, what are we missing?

### 🌐 Assumptions:

- Focus on available NFV capabilities that can be actually tested
- Interop Test Plan developed in parallel with Plugtest preparation
  - Driven by ETSI CTI in close collaboration with Plugtest participants & ISG NFV (TST)
  - Can become / be contributed to an NFV Interoperability Test Specification (GS)



## 🌐 Plugtest Preparation (before announcement)

- Define a high level scope
- Define the Functions Under Test (FUT) in scope
- Define event-specific requirements
  - hosting,
  - integration,
  - event duration, ...
- Select a host and set a date

- Validate NFV Release 2 capabilities and Information Model in a number of NFV end to end configurations with components from different providers.
- NFV capabilities in scope include:
  - VNF Package, SW Image and NSD management,
  - VNF & NS Life Cycle Management,
  - VNF & NS Performance and Fault Management.
- NFV components (FUTs) in scope include:
  - VNFs
  - MANO (VNFM & NFVO)
  - NFVi & VIM

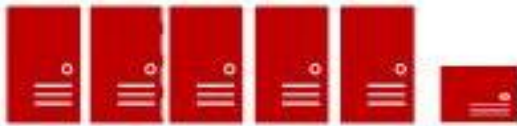
*=> Note: each of these can be provided by a group of companies / partners (i.e. comp1, comp2 and comp3 team up and bring a pre-integrated NFVi & VIM)*

- Call for hosts was sent on March the 30<sup>th</sup>
- Several options under consideration:
  - Spain
  - Finland
  - Slovenia
  - USA
- Still finalising details (duration, etc..) and dates
  - Target: Nov 2016 – Jan 2017
  - Possible conflicts?
- Plugtest announcement to be done in the coming weeks

- Open registration
  - Start compiling supported capabilities from participants
- Define System Under Test (SUT) Configurations
  - According to capabilities in scope
  - With input and feedback from participants
- Draft the Test Plan
  - Based on identified SUT Configurations & supported capabilities
  - Leveraging and validating TST002 IOP Test Methodology
  - Leveraging TST007 as possible

<https://docbox.etsi.org/ISG/NFV/Open/Drafts/>
- Define remote integration process

## NFVi&VIM



## MANO



## VNF

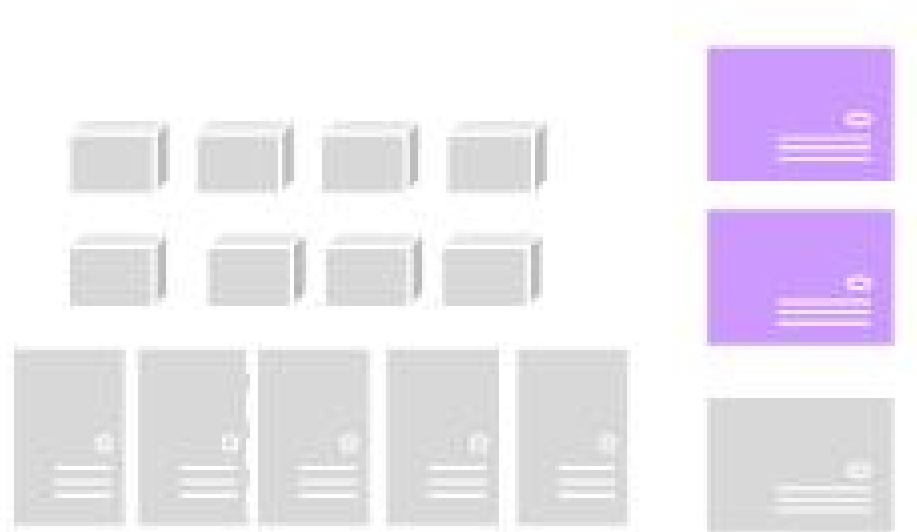




- Exposing VNF (& NS) Descriptors
  - And associated requirements: resources, VNFC interconnection, configuration methods, ...
- Supporting integration w/ MANO



- Pre-integrated VNFM & NFVO
- Exposing data model (templates) to support the test plan (in line w/ NFV IM)
- Exposing required interfaces to support the test plan
- Supporting integration w/ VIM NBIs & VNF

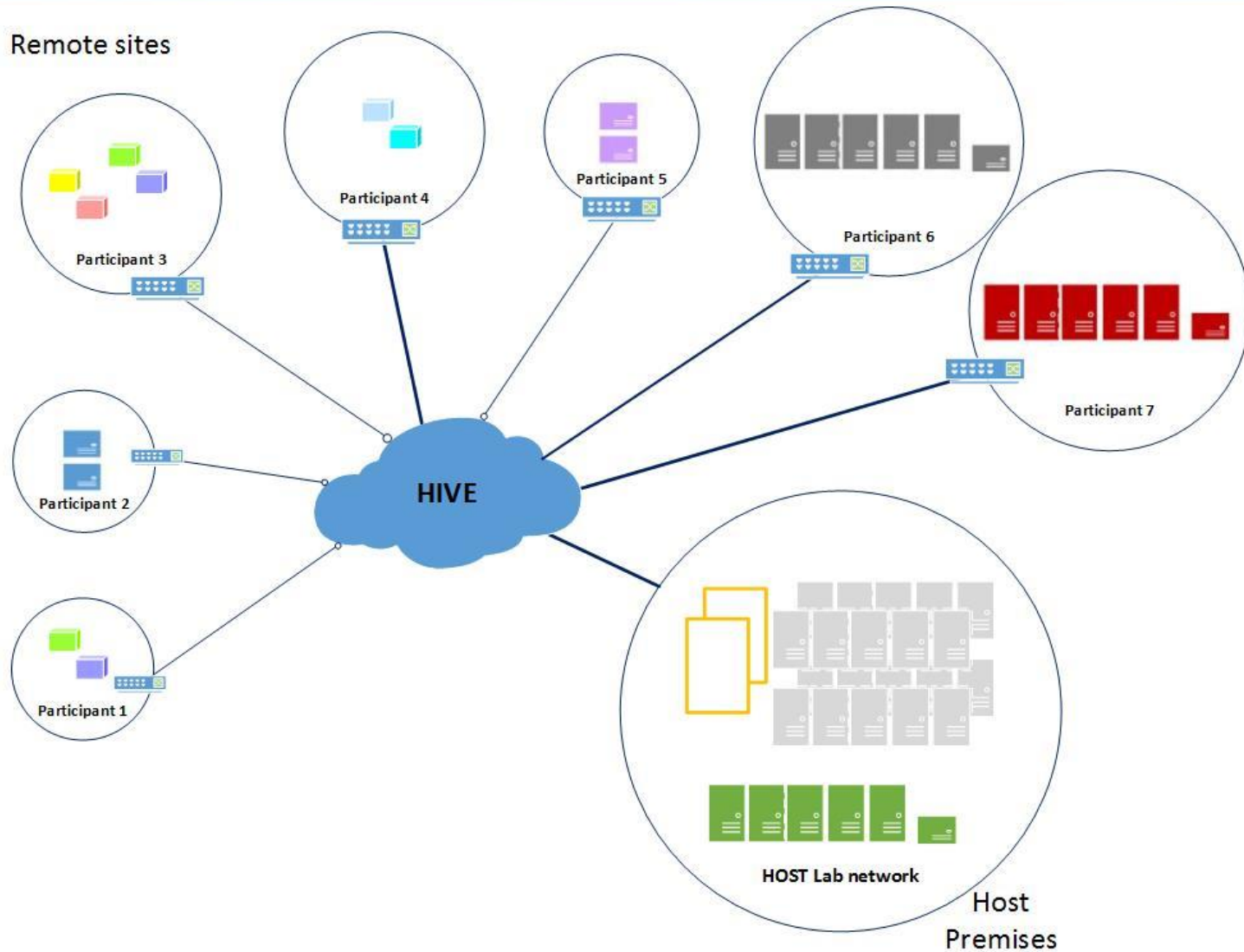


- Pre-integrated VIM & NFVi
- Minimum of 3 NFV nodes:
  - Pre-configured computing nodes (to be used with the pre-integrated VIM)
  - Data plane switches
- VIM running in a VM or small sever
  - Exposing required NBIs to support the test plan
  - Supporting integration w/ MANO



- ETSI interconnect securely participant sites
  - Acting as a HUB
  - Offering a “virtual lab” environment (HIVE)
- Allowing to:
  - identify and trouble shoot integration & configuration problems ahead of the Plugtest
  - Run some pre-testing and validate/fine-tune the test plan
  - Make sure that effective testing is possible from Plugtest day 1
- Supported by Plugtest toolkit (wiki, IRC,..) and weekly calls with participants

# Remote integration II



# Remote Integration Sessions

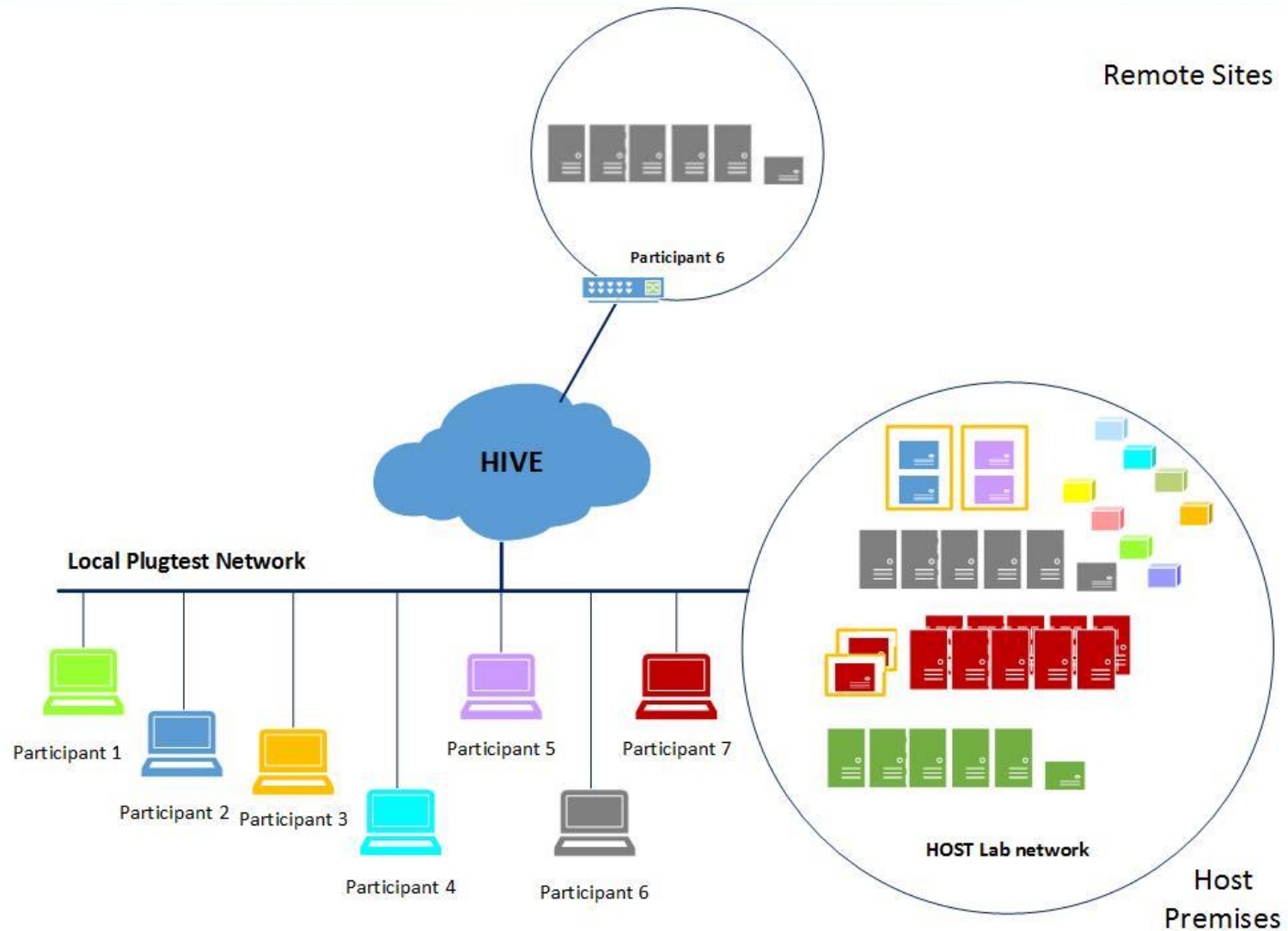


MANO to VIM



VNF to MANO

# Plugtest Setup



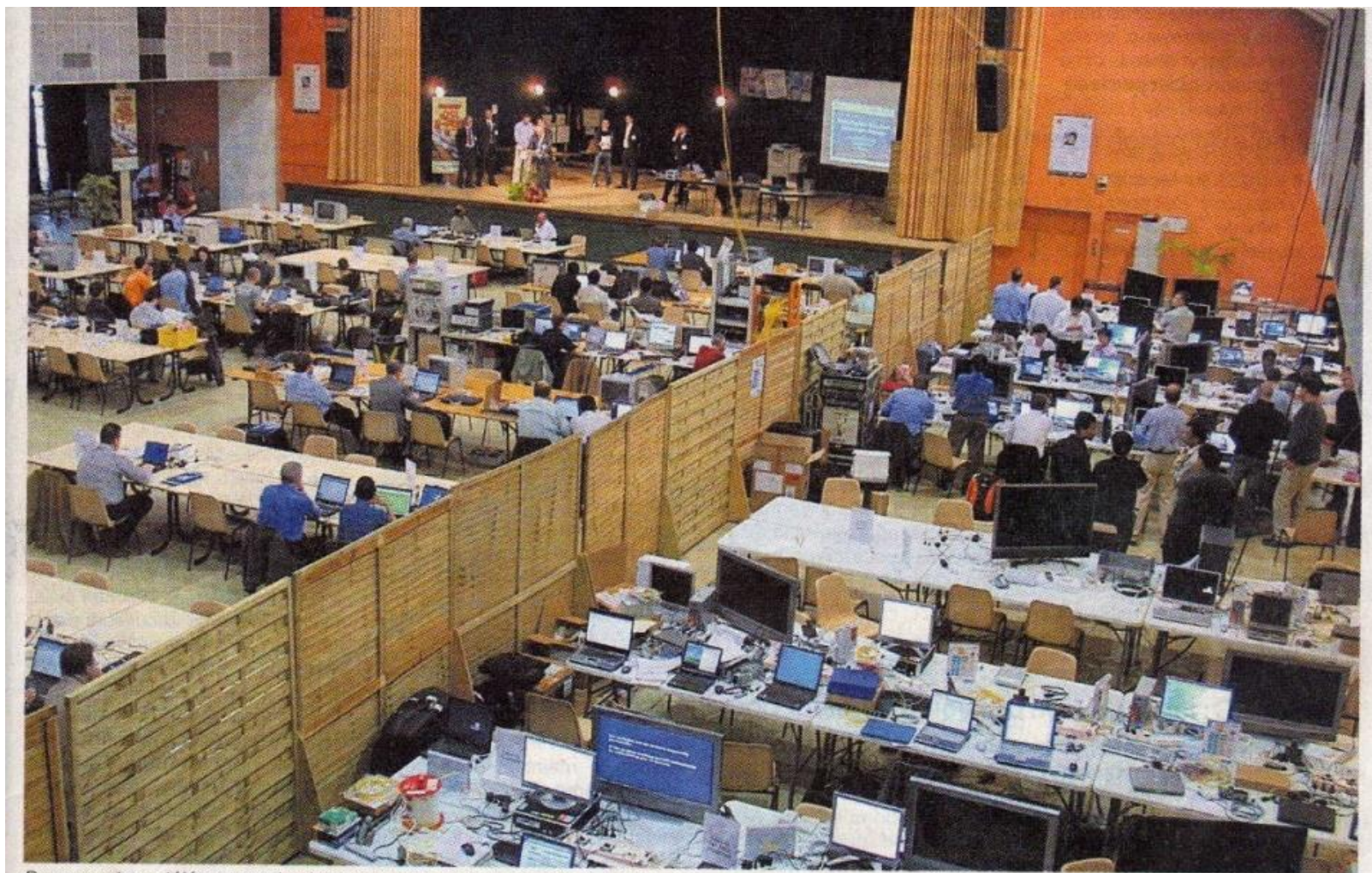
# Plugtest – Test Sessions





- Plugtests toolkit provide a platform to:
  - Generate test session scheduling
    - optimise f2f time
    - ensure a fair balance of test sessions among participants
    - maximise the number of FUT combinations tested
    - maximise the number of tests run
  - Record Test results and provide a real-time statistical view
    - Per test case, test group, configuration, ...
    - Detailed results remain private to individual participating organisations
- Daily wrap up meetings are run:
  - To discuss issues, workarounds, feedback, .. on NFV specs and test plan
    - Individual implementations' issues out of scope
    - Any outstanding topic is documented in the Plugtest Report

# What it looks like



*Des experts en télécommunications venus de toute la planète testent entre eux aux Ursulines les produits qui seront demain sur le marché.*



# Test Session channels



The screenshot displays a web browser window with the URL <https://services.plugtests.net/wiki/Small-Cell-LTE-Remote-Plugtest/index.php/Title:Chat?action=chat>. The page title is "Chat". On the left, there is a navigation menu for "PLUGTESTS INTEROP EVENTS" and a search box. The main chat area, titled "WikiChat", shows a list of messages with timestamps and user names. The messages include:

- 21:04:29:13 16:51:41 \*jamkhandikar (parallelwireless) Hi Alex, In report 780, Testcase has to be marked as NA. The report is locked. Can you do this on our behalf.
- 21:04:29:18 16:52:13 \*Alex (ETSI) jamkhandikar (parallelwireless, sure, the report has been unlocked
- 21:04:29:19 16:52:38 \*jamkhandikar (parallelwireless) ok
- 21:04:29:25 16:53:06 \*jamkhandikar (parallelwireless) ITI change it
- 21:04:29:25 16:54:39 \*Alex (ETSI) do not forget to approve again afterwards please
- 21:04:34 \*park (qucell) Hi
- 21:13:48 \*saraswat (parallelwireless) hey
- 21:13:06 \*park (qucell) please join Qucell\_Parallel\_Aricent
- 22:04:00 \*satoshi (fujitsu) hi
- 24:04:33 \*tom (cisco) Good Morning.
- 22:05:00 \*park (qucell) please join Qucell\_NodeH\_Aricent
- 22:05:05 \*tom (cisco) Satoshi, are you ready ?
- 22:05:32 \*satoshi (fujitsu) yes, @Cisco and @Athonet, please /join Fujitsu-Cisco-Athonet
- 22:05:38 \*park (qucell) @aricent, @node-h, please join Qucell\_NodeH\_Aricent
- 22:07:51 \*jamkhandikar (parallelwireless) Please join Accelleran\_Parallel\_Athonet\_One2Many
- 22:05:41 \*park (qucell) @athonet, @one2many, please join Qucell\_Athonet\_One2Many
- 22:02:07 \*kumar (aricent) hi Vijay@IPACCESS, please /join Ipaccess-Aricent
- 22:03:00 \*narashiman (ipaccess) joined
- 21:00:48 \*Neeraj (aricent) Hi niranen..vaneerten..tom..please /join nodeH\_aricent\_cisco\_one2many
- 21:12:22 \*maes (acceloran) @vaneerten, Hi Petar, Accelleran\_Parallel\_Athonet\_One2Many are ready for CMAS testing

On the right side, there is a list of users in the chat, including: kumar (aricent), Neeraj (aricent), satoshi (fujitsu), roberto (sistelbanda), munareffa (athonet), tom (cisco), jamkhandikar (parallelwireless), niranen (node-h), Silvia (ETSI), Alex (ETSI), vaneerten (one2many), garcia (acceleran), narashiman (ipaccess), maes (acceloran), and park (qucell). At the bottom of the chat area, there is a text input field with "Silvia (ETSI)" and a "Send" button. Below the input field are various icons for chat actions like bold, italic, underline, strikethrough, and color. At the very bottom of the page, there is a footer with the text: "This page was last modified on 14 April 2015, at 09:13. This page has been accessed 333 times. Privacy policy - About Small-Cell-LTE-Remote-Plugtest - Disclaimers".

# Test Reporting Tool



ETSI Test Reporting Tool

Settings Reports Statistics Session Plan

Silvia Almagia (Manager) Event timezone (Europe/P) Small-Cell-LTE-Remote-P logout

id	status	date	duration	area	Test groups:	Test ID	Summary	Result	Comment
737	👍	2015-04-13 09:00	180	Athonet #2	SON	DSON/PCI/05	PCI Conflict / Confusion Detection: Detect PCI Confusion with X2 Neighbor Cells	OK NO NA OT ● ○ ○ ○ ○	
738	👍	2015-04-13 09:00	180	Cisco		DSON/PCI/08	PCI Conflict / Confusion Resolution: PCI Confusion Resolution with X2 Neighbor Cells	OK NO NA OT ○ ● ○ ○ ○	Comments here
740	👍	2015-04-13 14:00	180	Cisco		DSON/ANR/01	ANR in existing network with one LTE Macro Cell	OK NO NA OT ○ ○ ● ○ ○	
741	👍	2015-04-13 14:00	180	Athonet #2		DSON/MRO/01	Basic Too Late Handover Test Case: Vendor A is a Small Cell eNB: Radio Link Failure occurs in Small Cell eNB (Cell 1)	OK NO NA OT ● ○ ○ ○ ○	
742	👍	2015-04-13 09:00	180	Cisco #2		DSON/MRO/02	Basic Too Late Handover Test Case: Radio Link Failure occurs in Macro Cell eNB (Cell 2)	OK NO NA OT ○ ○ ○ ○ ●	
743	👍	2015-04-14 09:00	180	Ariscnt	HeNB	one2many - CBC Fujitsu - HeNB Cisco - HeNB-GW Ariscnt - ePC			
744	👍	2015-04-14 06:00	180	Ariscnt	HeNB	Qucell - HeNB Fujitsu - HeNB-GW Ariscnt - ePC			

**Report Id** 728

**Configuration** HeNB

**Date** 2015-04-13 08:00

**Duration** 240 min

**HeNB** Qucell - HeNB

**HeNB-GW** Parallel Wireless - HeNB-GW

**ePC** Cisco - ePC

[Approve this report](#)

- Final Plugtest Test Plan submitted to ISG NFV (TST)
  - As potential input to NFV Interoperability Test Specification
- Plugtest Report is finalised, agreed with participants and submitted to ISG NFV:
  - List of participants and implementations (FUTs)
  - Test Infrastructure
  - Integration and pre-testing
  - Test Results (aggregated data)
    - Per SUT config
    - Per Test group
    - Per Test case
  - Feedback
    - On NFV specifications (IFA, TST, ...)
    - On general IOP issues
    - On practical arrangements
  - Conclusions and Recommendations

Silvia Almagia

[silvia.almagia@etsi.org](mailto:silvia.almagia@etsi.org)

Centre for Testing and Interoperability

ETSI

**Thank you!**