

Accelerating deployment of Open RAN through system release certification

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The TIP community is on a mission

650+ Participants

FACILITATOR

TIP is a global non-profit industry organization enabling vendors, operators, system integrators, and regulators to develop, test and deploy open and disaggregated connectivity solutions across the access-, transport- and core-networks

100+ Operators and Service Providers

ACCELERATOR

TIP accelerates the commercial adoption of secure, high performance, and low cost solutions by aligning industry roadmaps with operator demands, and supports their deployment through test and validation based on use cases defined by the operators

WHO IS TIP?

150 + Trials and deployments in **45 +** countries

ENABLER

TIP enables supply chain diversity, drives economies of scale and secures short time-to-market, benefiting the ecosystem of participating operators, vendors and system integrators

TIP Test & Validation framework

Ensures technical readiness of open and disaggregated connectivity solutions









Product/Solution maturity

based on TIP Test Plan & TIP defined Criteria

The screenshot displays the TIP Exchange website interface. At the top, the logo "TIP Exchange" is visible, along with navigation links for "MARKETPLACE", "TIP BADGES", "SOLUTIONS", and "RFI TEMPLATES". The main content area is titled "OOPT (Open Optical Packet Transport) DCSG (Disaggregated Cell Site Gateway)". Below the title, there is a diagram illustrating the network architecture, showing the flow from "Access" to "Backhaul" to "Core" to "Internet".

The interface includes a table of awards and product details. The table has columns for "AWARD", "USE CASE DESCRIPTION", "RFI", "RFQ", and "RESOURCE LINKS".

AWARD	USE CASE DESCRIPTION	RFI	RFQ	RESOURCE LINKS
 November 2023	Cell site gateway in a production network serving and aggregating 2G, 3G, 4G and 5G mobile, fixed access and enterprise traffic.	 Product Name: Cell Site Gateway (3HW) Model: ACCV20R8ACCV20R8 Version: 0.1	 Product Name: NOS For Access Aggregation and Backhaul Model: N/A Version: 10.4.2.14	Use Case > Technical Requirements > Detailed Technical Requirements > Test Plan > Exit Report >
 June 2022	Cell site gateway in a production network serving and aggregating 2G, 3G, 4G and 5G mobile, fixed access and enterprise traffic.	 Product Name: Cell Site Gateway (3HW) Model: 3R50-3005 Version: 3005	 Product Name: CoNOS Model: S.0.141 Version: 3F7	Use Case > Technical Requirements > Detailed Technical Requirements > Test Plan > Exit Report >

At the bottom of the screenshot, there is a footer that reads: "LAB: TIP CL 1731 lab in Taiwan | Validated by: Test & Validation Committee(TT0)Test & Integration and OOPT Technical Leads".

Full-system view - Results presented on TIP Exchange

Enabling Open RAN to scale...

POC in Lab

POC in Field

Scaled Lab
Trials

Systems &
Blueprints

System Release
Certification

2018

Proving out
technology in a lab

2019-2020

Proving out
technology in an
Operators
commercial
network
environment

2021

Product Interop
and Integration
Testing Plugfests

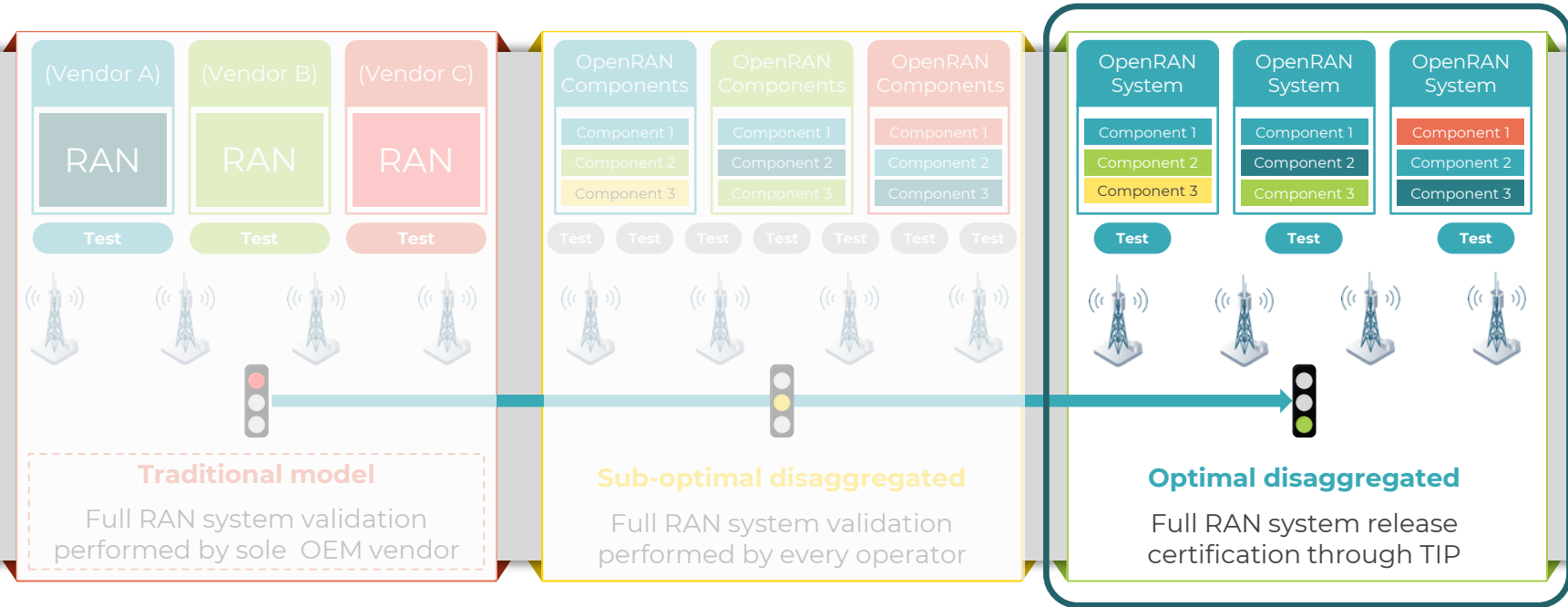
2022

Blueprint Definition
and System
Integration Testing

2023

Establish purchaser
confidence by
enabling a
community-driven
lifecycle process
that turns operator
requirements into
certified RAN
systems

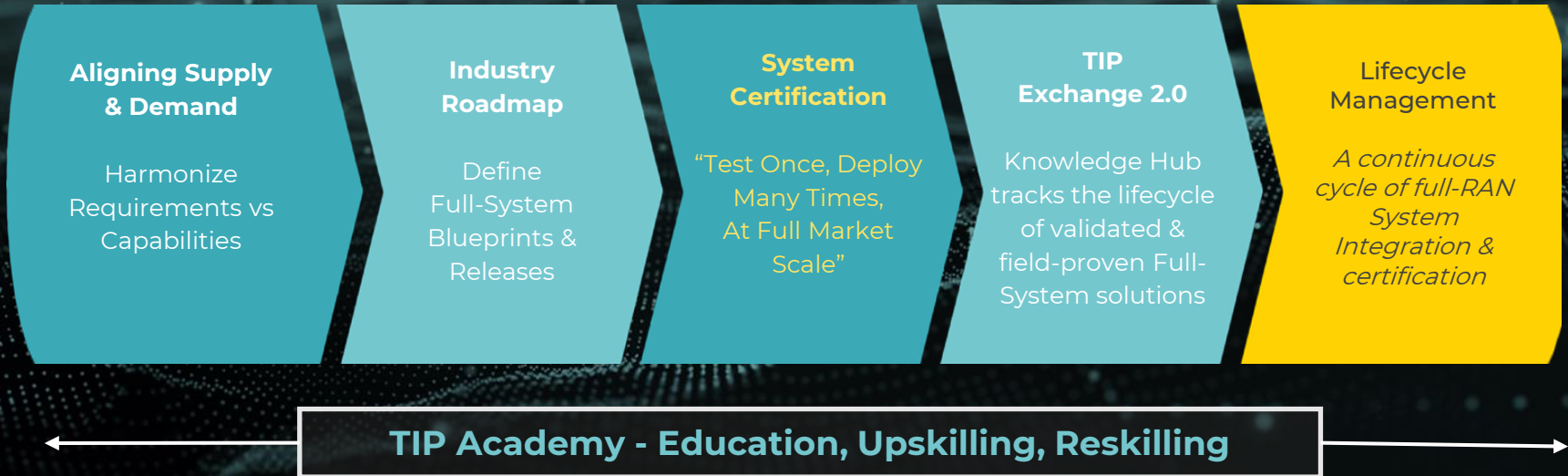
TIP's approach to increase Open RAN delivery efficiency



TIP System Release Certification — “Test once; Deploy many times”

A process that secures Open RAN Purchaser Confidence

Enabling a community-driven lifecycle management process that turns operator requirements into certified RAN systems



Open RAN Full System Certification Test Plan

Open RAN Full System Certification Test Case Categories:

Features & Functionality

Mobility

Performance

Stability

Operability

Security

Energy Efficiency

FN-25	Frequency selective scheduling UL, interference aware	AWGN generator	Ph2	
FN-26	Frequency selective scheduling DL, interference aware	AWGN generator	Ph2	
FN-27	Energy saving: DL MIMO adaption OFF/ON		NIP	
FN-28	Energy saving: PA dynamic voltage bias adaption		NIP	
FN-29	Energy saving: PA off during idle PDSCH		NIP	
FN-30	LTE-M (5/10/15/20MHz)	LTE-M device	NIP	
FN-31	NB-IOT (in band)	NB-IOT device	NIP	
FN-32	NB-IOT (guard band)	NB-IOT device	NIP	
FN-33	IPSEC for S1	IPSEC, server/client	NIP	
FN-34	IPSEC for X2	IPSEC, server/client	NIP	
FN-35	Admission control (allow 1 user and attempt to connect with 2)	multi-UE	Ph1	
FN-36	Synchronous Ethernet			
FN-37	Frequency Synchronization IEEE 1588 v2			
FN-38	IP Synchronisation IEEE1588V2 Time and Phase			
FN-36	Emergency Call home network		Ph2	Not a test of the RAN really but the functionality needs to work
FN-37	Emergency call (no service)		Ph2	Not a test of the RAN really but the functionality needs to work
Mobility - for all these tests, a programmable attenuator is best		Variable attenuators, preferably programmable ones		20x cell changes / HO
MOB-01	Intra frequency mobility while UE IDLE, same DU		Ph2	
MOB-02	Inter frequency mobility while UE IDLE, same DU		Ph2	
MOB-03	Intra frequency mobility during data transfer, same DU		Ph2	
MOB-04	Inter frequency mobility during data transfer, same DU		Ph2	
MOB-05	Intra frequency mobility during speech call, same DU		Ph2	

- 250+ Test Cases defined and being executed by TIP partner test houses
- Test Case list constantly being added to, based on pooled experience of TIP membership
- Coordinated by TIP as the certification body for the global market - Certification Board of MNO reps



Thank You