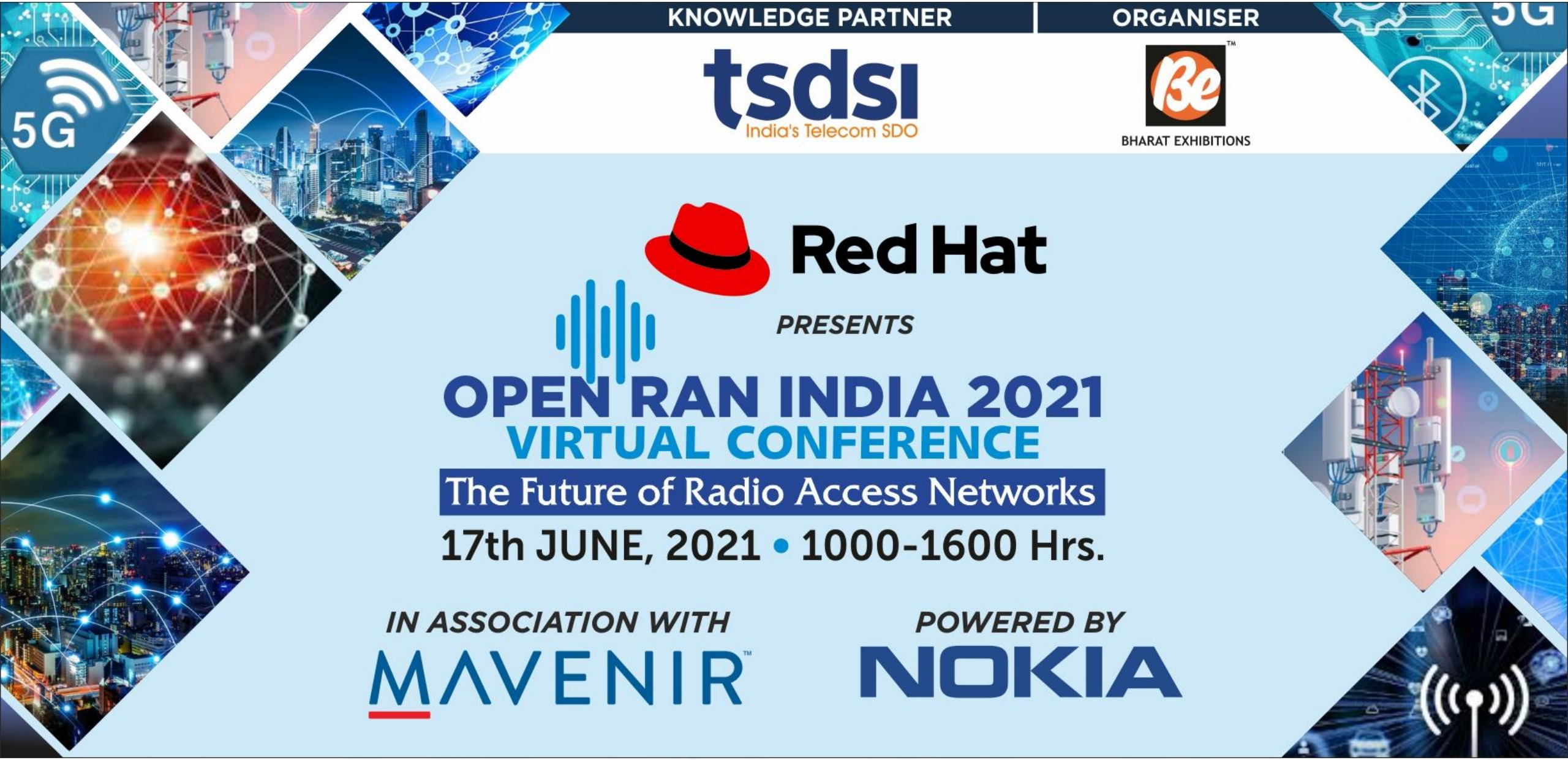
KNOWLEDGE PARTNER

tsdsi
India's Telecom SDO

ORGANISER

BHARAT EXHIBITIONS



Red Hat

PRESENTS

OPEN RAN INDIA 2021
VIRTUAL CONFERENCE

The Future of Radio Access Networks

17th JUNE, 2021 • 1000-1600 Hrs.

IN ASSOCIATION WITH

MAVENIR

POWERED BY

NOKIA

TSDSI Open Initiatives Task Force
17th June 2021

Objectives and Recommendations

By

Manish Gangey

Bharti Airtel

Key Drivers for Task Force

Given the proliferation of Open Source components across all segments of the 5G architecture, how can Indian 5G deployments benefit?

- Can components of the 5G stack be entirely built from Open Source? Which ones? What must be done to make this a reality?
- What aspects of the Indian 5G ecosystem will benefit and how? What are the inhibitors in realizing these benefits? Are any of them unique to India?
- Can Open Source level the playing field for Indian 5G product companies? What will be the impact of Open Source on overall Indian 5G Industry?
- What specific actions need to be taken? Standards? IPR protection? Open Source Industry Consortia? Policy advocacy?

Objectives of Task Force

- Study and evaluate key components for an end to end 5G ecosystem
- Define a few problem statements in each of the domains of 5G
- Evaluate globally available open source components to solve the identified problem statements
- Shortlist open source projects and evaluate them on a number of parameters
- Create a study report to document the gaps and recommendations for open source projects
- Suggest a few pilot implementations to demonstrate the effectiveness of the recommended open source projects
- Explore how can open source projects be used to drive standardization process in collaboration with wider industry

Operating process

- Divide workstreams (sub-teams) and assemble a group of domain experts from OEMs, carriers, academia, freelancers

- Goals for each sub-team
  - Evaluate open source options, maturity, experiences
  - Select best-of breed options and define missing pieces
  - Build model for aligning contributions and harmonizing global and India-specific roadmap
  - Explore and create guidelines for IPR treatment of contributions

- Key next steps
  - Define structure, governance, and operating model
  - Explore Funding (industry and government) sources for activities
  - Evangelize open source usage and adoption

Task force Sub-teams

Sub-Teams in TSDSI Outreach	Growing Industry Participation
► Access (Radio-centric) Creating open source for 5G Radio access Network. Focus areas include components in RAN like CU, DU, RU and Virtualization frameworks to host the RAN. ► Transport (IP Network centric) Accelerate transformation in IP Network Infrastructure by leveraging Open Source Software and White box Hardware. Focus on components like DCSG, FHG, Access Router, UPF/PGW, DPI, IOT, Router, BNG etc. ► App (App development centric) Focus areas include defining/building application ecosystem to enhance RAN optimization (RIC), edge applications, data analytics, closed loop automation etc.	Sookhtha, Lekha, Tejas Networks, Niral Networks, STL, Hughes Systique, Saankhya Labs, airtel, C-DOT, Edge-corE Networks, Huawei, Qualcomm, Tata, wipro, Tata Consultancy Services ***Looking for implementation partners …***

Access sub-team focus areas

Open SW

RAN software

- O-RAN ALLIANCE
- TELECOM INFRA PROJECT
- OPEN AIR INTERFACE
- SRSLTE

Cloud Infra

- redhat
- kubernetes
- ONAP
- openstack

Choice of Open Source Projects

Open HW

Open Box HW for Macro

- SUPERMICRO
- kontron
- intel
- Silicom Ltd. Connectivity Solutions
- XILINX
- STL
- NEC

Open Box HW for Femto

- intel
- STL
- NXP
- CIG
- Bai Cells
- WNC

Choice of Whitebox Hardware for integration

Collaboration

Community

- O-RAN ALLIANCE
- TELECOM INFRA PROJECT
- 3GPP A GLOBAL INITIATIVE
- tsdsi India's Telecom SDO

Collaboration with Open Community

Transport sub-team focus areas

Open SW

Network Operating System

- DANOS
- EDGE X FOUNDRY
- SONiC

Network Application

- FRROUTING
- ntop
- nginx
- pfsense

Northbound Interface

- ONAP (OPEN NETWORK AUTOMATION PLATFORM)
- OPEN DAYLIGHT

Integration with Open Source Projects

Open HW

Web scale Virtual Functions

- DELL
- SUPERMICRO

High throughput White box

- Edge-corE NETWORKS
- ufiSpace
- ALPHA
- DELTA

Low throughput White box

- Accton Making Partnership Work

Choice of White box Hardware

Collaboration

Community

- OPEN Compute Project
- O-RAN ALLIANCE
- 3GPP A GLOBAL INITIATIVE
- TELECOM INFRA PROJECT
- tsdsi India's Telecom SDO

Collaboration with Open Community

Application sub-team focus areas

Open SW

RAN App

Edge App

Automation and Orchestration

Integration with Open Source Projects

Open HW

White Box HW

Choice of White box Hardware

Collaboration

Community

Collaboration with Open Community

Expected outcomes

- A report defining key problem statements and their solutions based on open source projects
- Demonstrate open and Inter-operable solutions over standard interfaces through implementation projects
- Inspire industry and startups to pick up India-specific use cases and build products/solutions
- Open HW and SW - enhance opportunities for Make in India
- Potentially lower development costs, better control and hence lower TCO for infrastructure build outs

Thank You

manish.gangey@airtel.com