# Be 5G-ready with **next-gen programmable RAN**

# Virtualised RAN to accelerate 5G

The exponential increase in mobile traffic just compounds the complexity posed by legacy networks. Networks of the future must become software-driven, virtualised, flexible and intelligent to tap the potential of 5G and IoT. With the added complexity of digitalisation that most network service providers face today, it is evident to see a surge in interest of programmable and virtualised networks. This is a natural progression since programmability radically increases the ability to launch innovative services with a high level of agility while also allowing to monetise new services with a level of speed not possible with legacy network infrastructure.

To achieve 5G roll outs on a large scale, it seems necessary to adopt a flexible, open framework. To bolster this STL has developed Programmable, Open and Disaggregated Solutions (PODS) through combined efforts of the open community, the organisation and its partners.

PODS™

Programmable Open Disaggregated Solutions

**PODS makes networking more flexible, open, programmable and simplified.**

pRAN (programmable RAN) adopts the same philosophy and presents STL's unique solution for RAN virtualisation.

pRAN is a SDN- NFV- and cloud-based radio access network solution to help service providers create an Open, Disaggregated and Virtualized 5GC solution aligned with 3GPP. It helps in disaggregating RAN, virtualise its components, realize virtualised components in the edge cloud and SDNise it for programmability.

# STL's programmable RAN

In pRAN, STL has developed the nRT-RIC (Near-real time RAN Intelligent Controller), which is also one of the critical components of the O-RAN architecture and meet the below objectives:


**Figure 1: pRAN objectives**

# pRAN Architecture Overview

5G enabled vEPC: Decoupling the EPC can simplifies the operation and management of packet cores via smart automation and smart orchestration of the provisioning and operation procedures. Also components can be provisioned and can be scaled based on diverse and time varying control and data plane traffic requirements.

### Non-RT RIC (Non-Real time RAN Intelligent Controller)

Non-RT functions include applications that can serve upto <1s applications that include service and policy management, RAN analytics and model-training for the near-RT applications.

### Near-RT RIC (Near-Real time RAN Intelligent Controller)

RIC near-RT include applications that can serve upto <100ms latency and is completely compatible with legacy RRM and begins by enhancing well understood, but operational challenging functions such as per-UE controlled load-balancing, RB management, interference detection and mitigation.

### CU/DU Protocol stack

The primary goal of the CU/DU protocol stack are to implement the control commands issued by the RIC near-RT module through E2 interface and to provide FCAPS information to Orchestrator via A1 interface.

# pRAN enabling strategy with ONF and O-RAN Alliance

STL is closely aligned with Open Network Foundation (ONF) and Open Radio Access Network (O-RAN) for enabling pRAN with following approach:

**01**

Leading the industry towards open, interopreable interfaces, RAN virtualization, and big data-enabled RAN intelligence

**02**

Maximizing the use of common off-the-shelf hardware and merchant silicon and minimzing propreitary hardware

**03**

Specifying APIs and interfaces, driving standards to adopt them as appropriate and exploring source when appropriate

SDN and NFV offer the capability to configure, scale, and reconfigure logical nodes through software commands, enabling RAN to dynamically adjust to changing traffic conditions, hardware faults, as well as new service requirements. This will be achieved by separating logical nodes suitable for virtualization (on a GPP) and designing functions that require specialized hardware to be dynamically (re)configurable on an SPP.

# pRAN Value Proposition

pRAN provides the capability to configure, scale and reconfigure logical nodes through software commands that enables RAN to dynamically adjust to changing traffic conditions, hardware faults as well as new service requirements. It supports QoE-based load balancing and QoE-aware ICIC effectively via SDN-based RAN Intelligent Controller (RIC). The data from the network can be fed to machine learning models which can provide practical usage benefits like optimising handover for cars driving along a highway, or load-balancing, or power-saving to start. Additionally, 5GC will have the capability to provide specific slices to support ultra reliable low latency communication, massive machine type communication and mobile broadband.

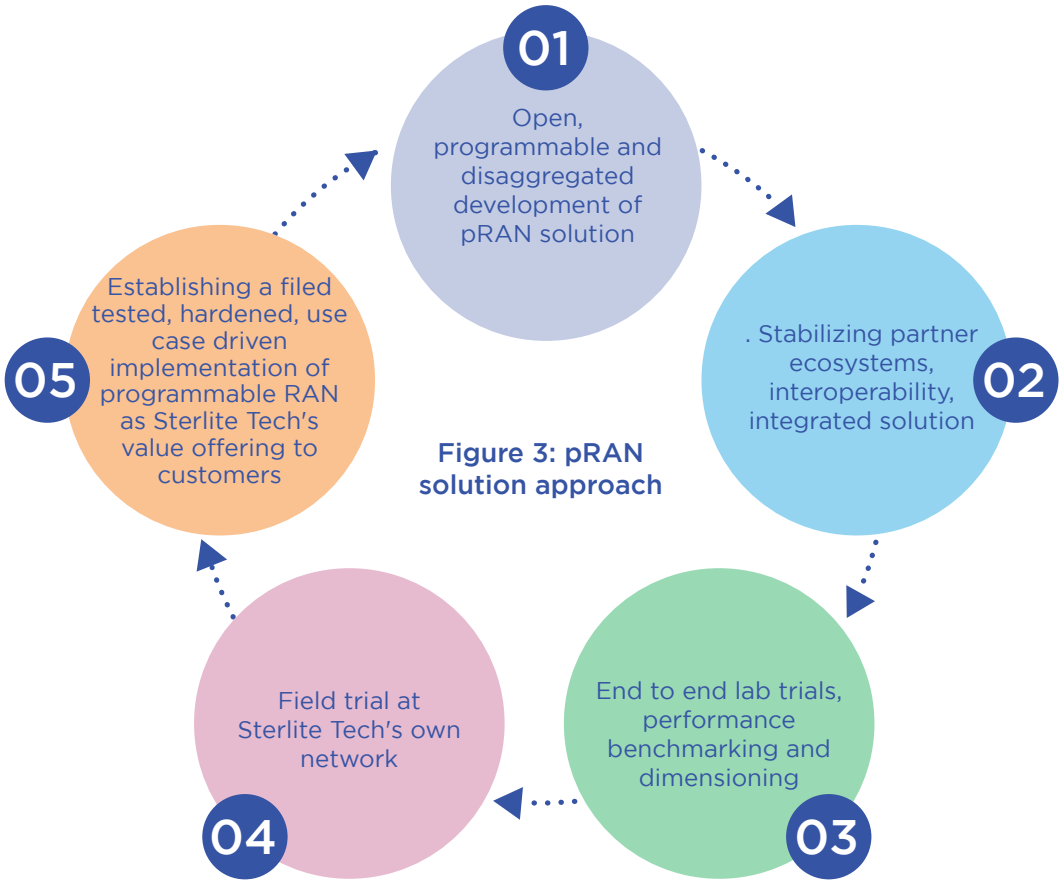


**Figure 3: pRAN solution approach**

## A 5G-driven future with programmable RAN

There is huge untapped potential for implementing SDN and NFV technologies in radio access networks. RAN accounts approximately 60-70 percent of the total cost of ownership in building and managing a network. However, the way a RAN is distributed, the centralization of workload presents significant challenges. Though RAN is comparatively more expensive than the core, RAN virtualization can bring cost savings and new opportunities for innovation. With 5G in the horizon, this is the right time for service providers to consider the benefits of virtualisation and gain the first mover advantage. With STL PODS solution we can support 5g use cases like enhanced Mobile Broadband (eMBB), massive Internet of Things (mIoT), and critical communications.

About Sterlite Technologies Ltd - STL

## STL is a global leader in end-to-end data network solutions.

We design and deploy high-capacity converged fibre and wireless networks. With expertise ranging from optical fibre and cables, hyper-scale network design, and deployment and network software, we are the industry's leading integrated solutions provider for global data networks. We partner with global telecom companies, cloud companies, citizen networks and large enterprises to design, build and manage such cloud-native software-defined networks.

STL has innovation at its core. With intense focus on end-to-end network solutions development, we conduct fundamental research in next-generation network applications at our Centres of Excellence. STL has strong global presence with next-gen optical preform, fibre and cable manufacturing facilities in India, Italy, China and Brazil and two software-development centres.

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