



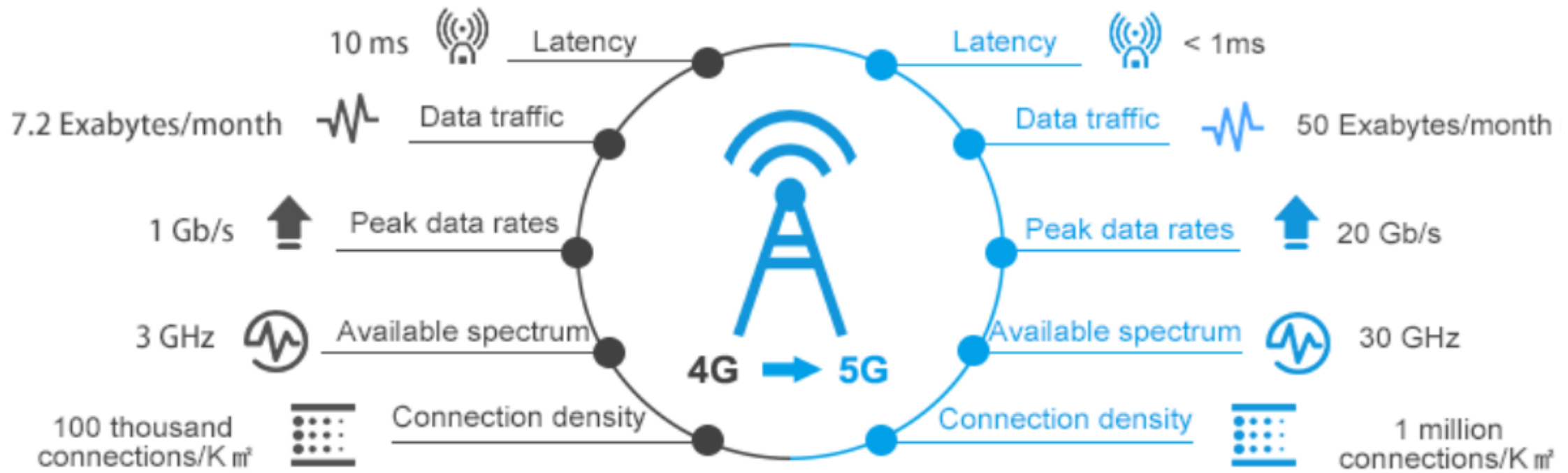
# Role of NaaS in 5G era

*Confidential*


Sep 2022

*CloudExtel is a brand operated by Excel Telesonic India Pvt Ltd*

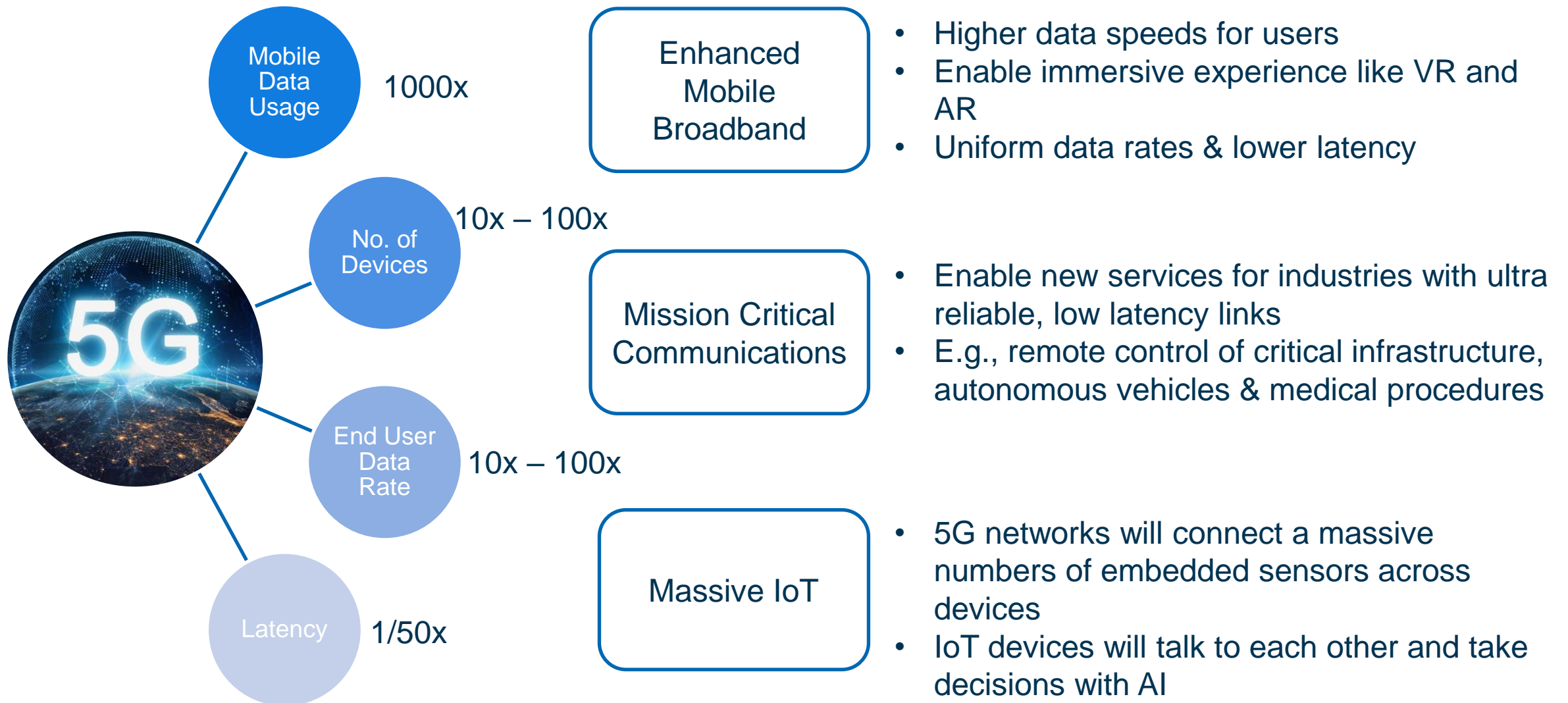
## 4G vs 5G – What is the difference?



The average consumer projection was to consume 11 GB of data per month on their smartphone in 2022

 However, India is consuming 19 GB of data per user per month (~70% higher)

## 5G – User Centric Network & Applications



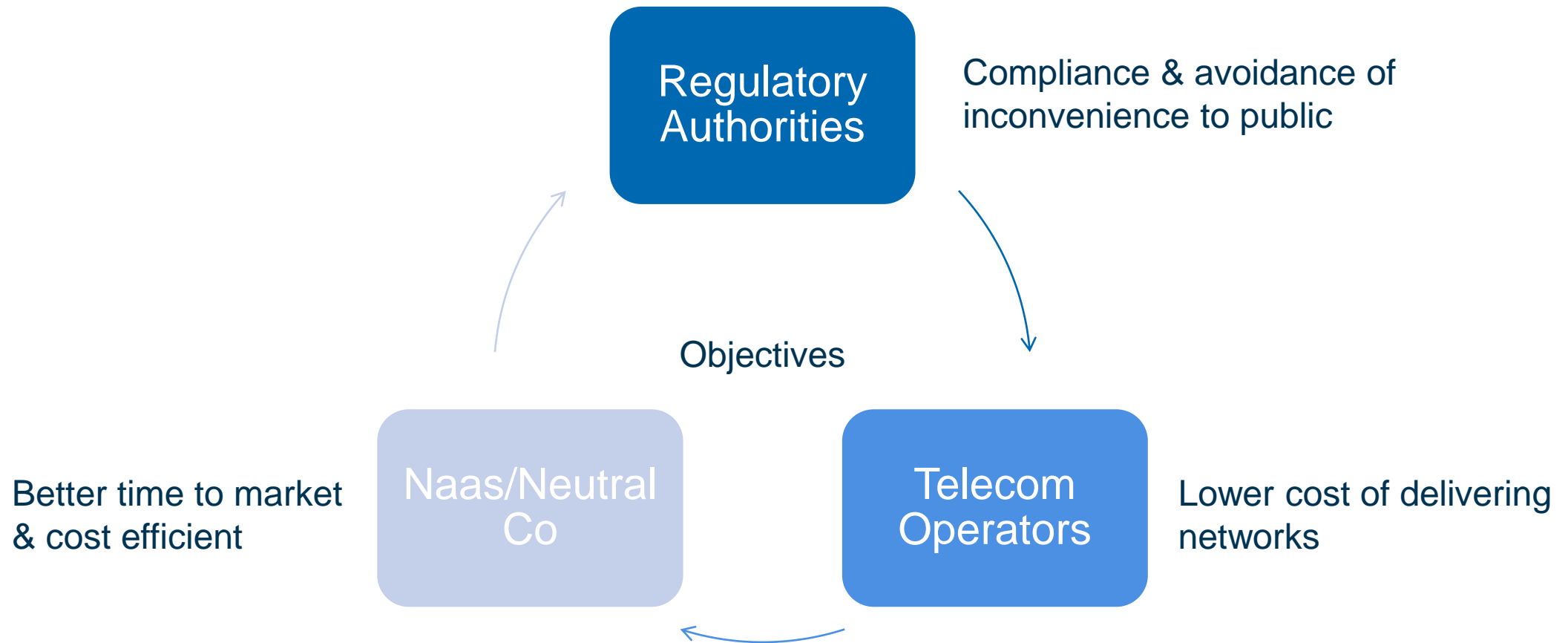
## Network Strategy to support 5G

Key Requirement: Increase the density of sites and the % of fiberization

	Current	Future
Site Count	X	6X Majority coming from Small Cell or Shared Deployment
Fiberized Sites	30-50%	70% of 6X

- Use Of E band radio
- PMP with 14.4 Gbps
- FSO to support faster deployment and delay fiberization

## Objectives & Expectation from Partners/Stakeholders



### Expectation

- Policy to support infra building rather than earning from infra buildout
- Promote sharing, for public convenience and aesthetic beauty of cities

### End objective

- Sharing amongst operators will bring down the TCO and hence better quality and more reliable networks can be delivered

## Current network deployment models have critical shortcomings which prevent them from scaling to meet the emerging demands for dense urban infrastructure

### Challenges

Site Acquisition Limitations

Stand alone macro sites undo benefits of sharing

Capex Heavy

Future Proofing for Upgrades

### HetNets & Shared RAN provide the optimal next generation capacity solution



### Requirements

Reduced Site Footprint

Re-engineering active stack for sharing benefits

Creating capacity modularity & right-sizing

Upgradable Roadmap (5G)

To accelerate network rollout in dense urban, a new kind of shared, light footprint, future proof & commercially attractive infrastructure solution is required for microsites/small cells

## Importance of Small Cells

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### What are Small Cells

- Small Cells are low power, Wireless Transmission systems which cover a small geographical area for indoor/outdoor uses
- They occupy less space & cost much lesser than the traditional Macro Site
- In a 4G network, small cells were used to address the ever-increasing capacity requirements, as densification of networks in urban areas or in enterprises in large buildings began to take place.
- In 5G Networks Small Cells will be used for
  - Increasing capacity and delivering gigabit performance
  - Smartphones/IoT devices & sensors
  - Automobiles
  - Lower latency application like VR/AR

### **CloudExtel is one of the largest small cell host in India**

- **All the 4135 Sites can be upgraded to 5G infrastructure**

## What is Shared RAN & comparison to Stand alone Operator Model

Infrastructure	Traditional Model – macro	Shared Model
Tower / pole, BTS shelter	Partially Shared*	Shared
Power supply	Shared	Shared
Battery bank, Invertors	Shared	Shared
Antenna	Not shared	Shared
Backhaul	Not shared	Shared
BTS	Not shared	Shared
Spectrum	Not shared	Not shared

\* Site Rental agreements in South Mumbai even through Tower Companies do not yield full sharing benefit on space

### Advantages of a Neutral Host

#### Reduction in site footprint

- Limited space and power along the corridor required for hosting of multiple operators, thus reducing duplication of infrastructure

#### Equal Quality of Service across operators

- With equipment owned and managed by a third party, all carriers are on a level playing field

#### Lower Cost

- Reduction in Total Cost of Ownership (TCO) and thus enabling a win-win business model amongst all entities

#### Limited O&M

- Site visit required on the corridor platform and tracks is minimal, and limited to only the neutral host team, not individual operators

Sharing benefits

Increased site  
addressability

Simplified O&M

Cloud based  
architecture



## CE had partnered with RailTel for Phase 1 deployment on corridor from Churchgate to Dadar, the highest traffic transit corridor in the country

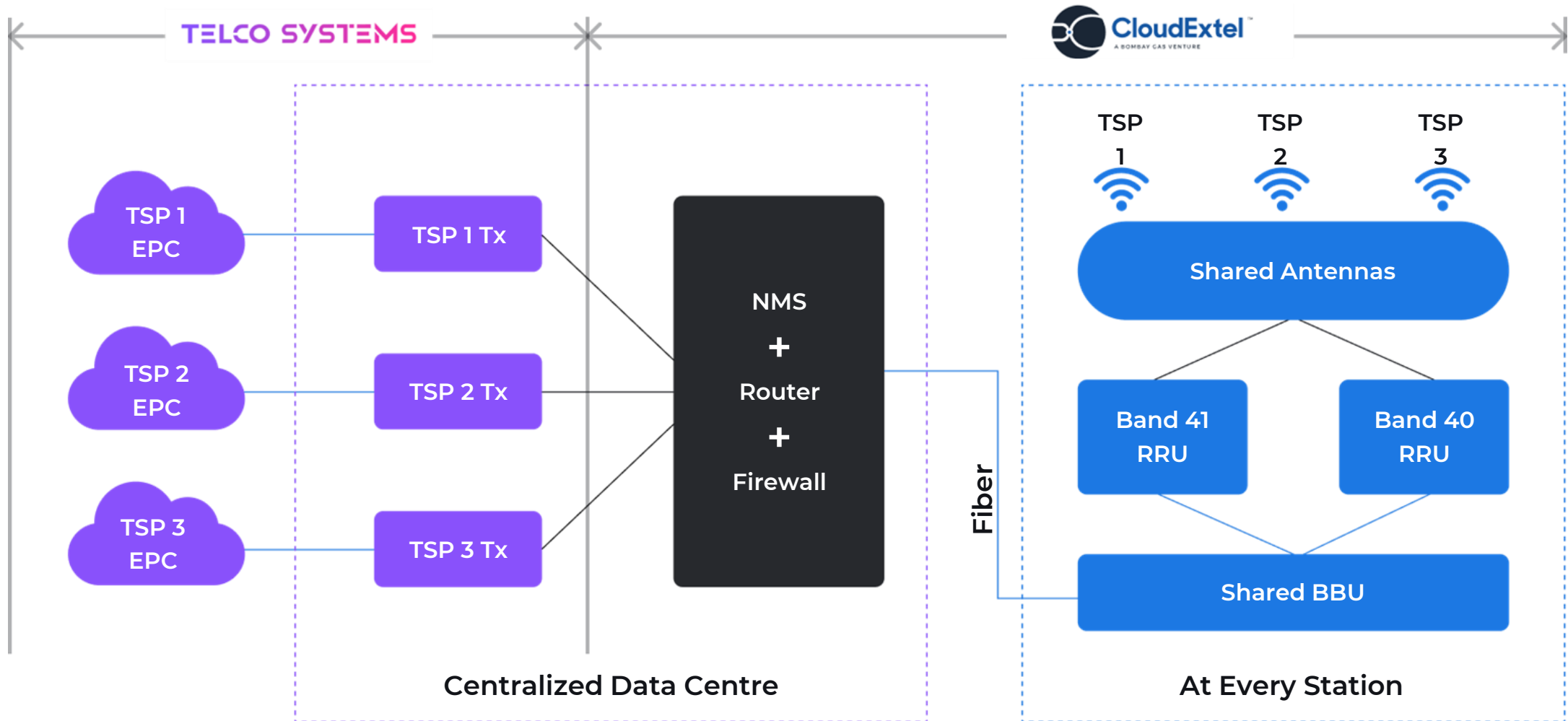
### Phase 1 Route: Churchgate To Dadar

- Churchgate to Dadar Train route distance is ~11.1KM, with 9 stations
- Major Railway stations with huge passenger movement of more 1,50,000 commuters during each peak hour
- High visibility area
- Very poor 4G Coverage & Quality of experience
  - In particular, downlink throughput minimal on platform
- First step in larger deployment plans
  - Expand to rest of the network of 150 stations (142 operational)

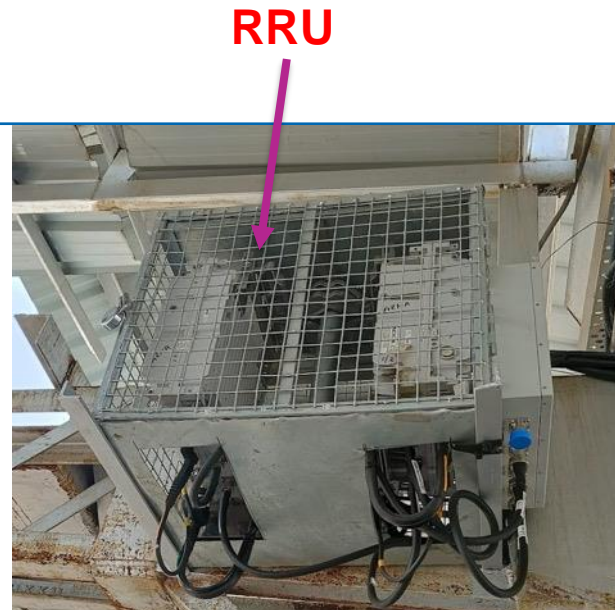
Mumbai Central Station – POC successfully deployed on 2<sup>nd</sup> April 2022



# Network Architecture

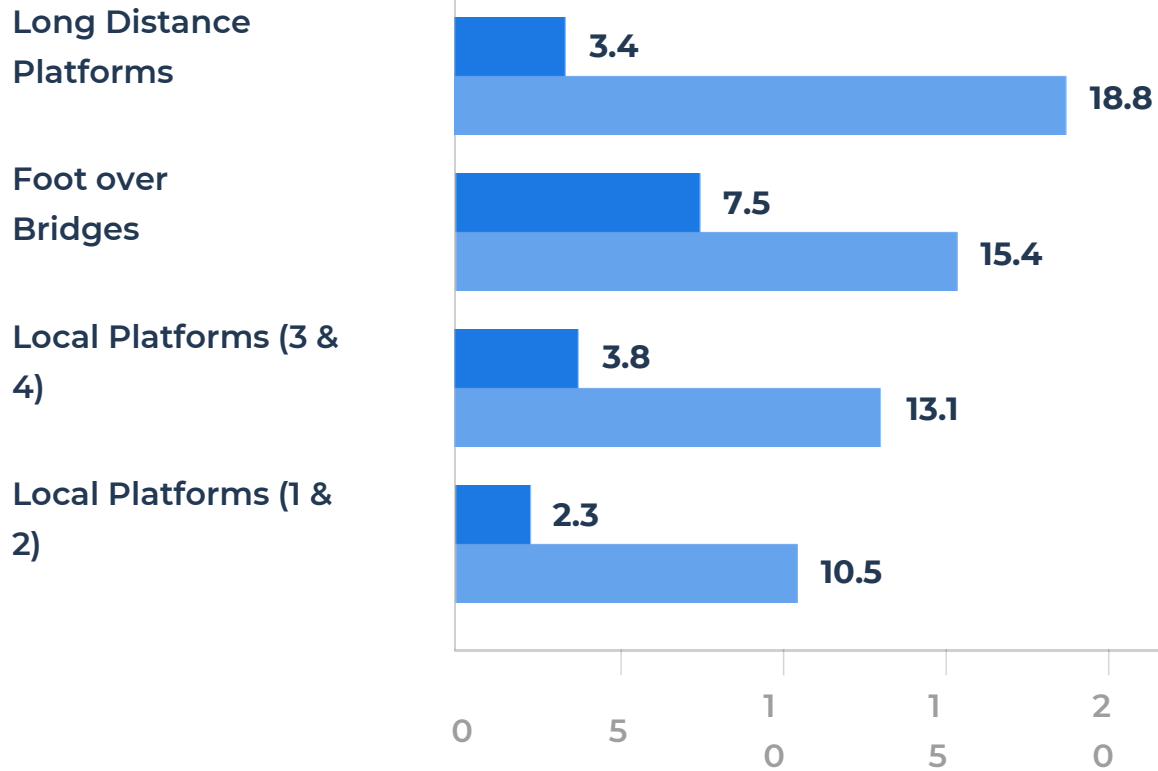


# CE MMCT Site Images



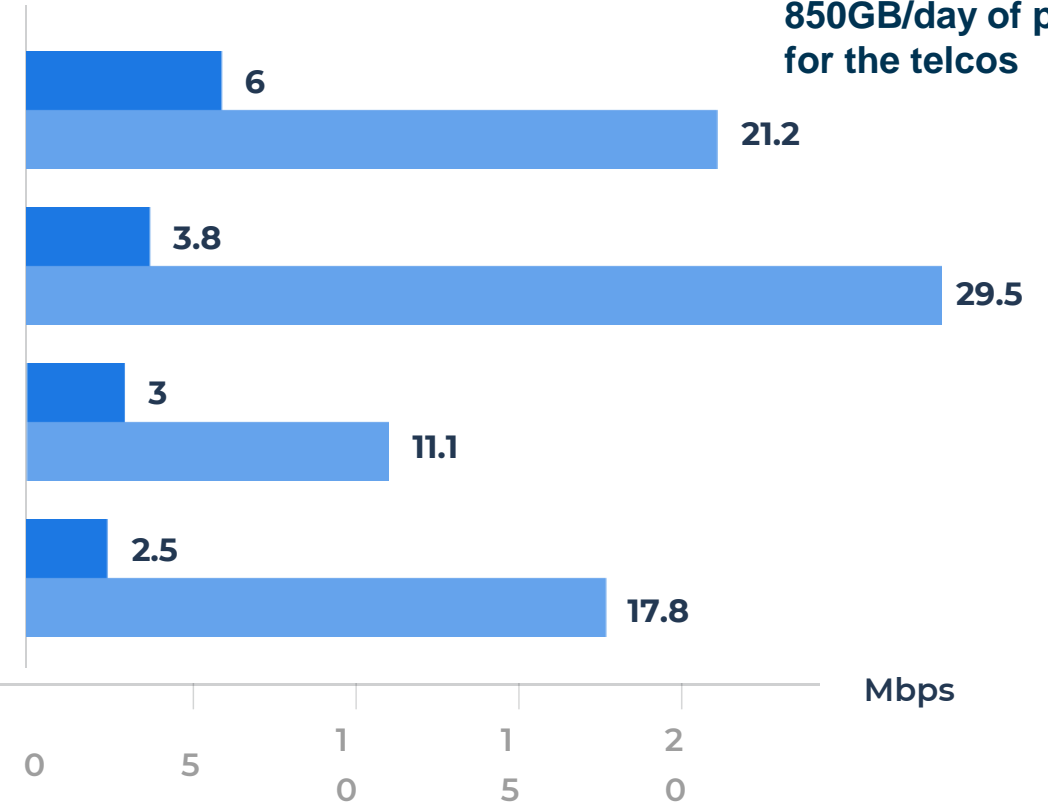
# User Experience

TSP 1 Pre & Post Throughput



4x Increase in Speed

TSP 2 Pre & Post Throughput



5.5x Increase in Speed

Currently CE site has generated additional 850GB/day of payload for the telcos

Mbps

## CloudExtel – India's first Full Stack Network as a Service (NaaS) Provider

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### Vision Statement

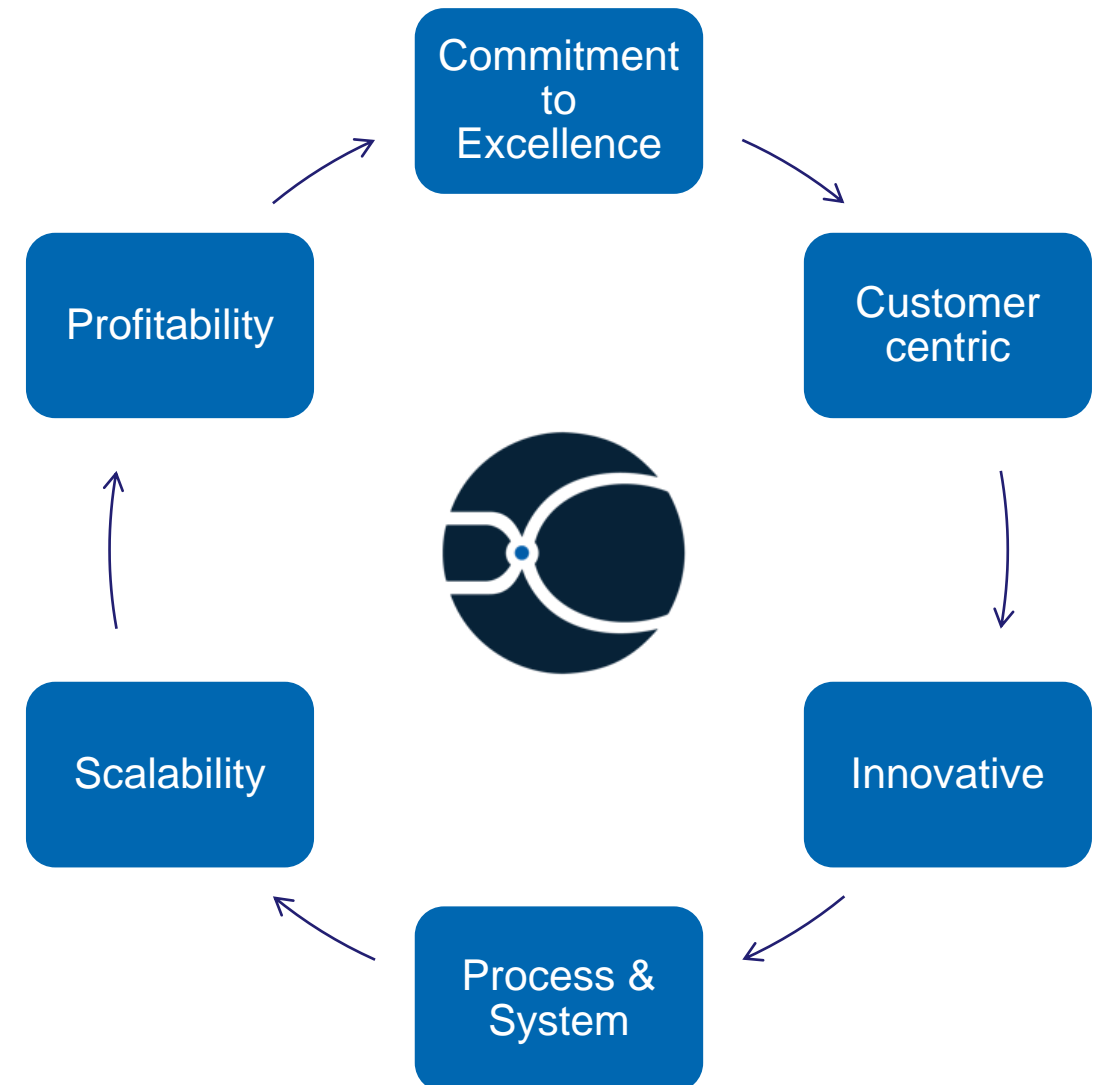
**CloudExtel will lead the next paradigm shift in network deployment towards emerging technologies and models that enable our customers to deliver the most efficient augmentation of data capacity & coverage**

Principles that guide our business:

- Enable our customers to deliver services to **their end users at the most critical points of network stress**
- Deploy in the most scalable, differentiated and economically efficient way, yielding substantial cost reduction and investment optimization
- Scale as a neutral specialist offering full stack sharing to **address points where self-deployment economics are not feasible**
- Drive adoption of **heterogenous and multi-use networks** based on principals & technologies from software and cloud platforms for combatting data consumption explosion and emerging 5G architecture

## CloudExtel's focus on excellence, customer centricity & innovation have led us to build processes that are highly scalable and deliver the best services to our customers

- Identify customers' challenge areas in network expansion & QoS
- Develop and launch new services
- Leverage strong foundation in South Mumbai to establish product market fit and operating economics
- Refine best practices & systems to replicate and scale in other geographies
- In each geography, leverage operational setup for additional new services
- Build profitably on service standalone basis; synergies across businesses lead to scale and cost optimization rapidly
- Yields win-win on go-to-market with telco customers
- Reinforces trust with customers, leading to new opportunities



## Contact Details

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## CE – Benefits of Shared RAN solution

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### ▪ Advantages of Neutral host Shared RAN

- Reduction in site footprint
  - Limited space and power needed for hosting multiple operators, reducing duplication of infra
  - Environmental benefits
    - Reduces energy consumption
    - Reduces excess cabling and trays / ducts
    - Mitigate citizen's concern over radiation
- Upgradeable to the next generation of technology 5G
- Lower Cost
  - Reduction in Total Cost of Ownership (TCO) and thus enabling a win-win business model amongst all entities
- Scalability and architecture upgradability