TATA COMMUNICATIONS
TRANSFORMATION SERVICES

TATA

NEXT-GEN RADIO ACCESS PLANNING & DESIGN

MOVE TO LEAN CAPEX

With the industry moving at high speed towards 5G network technology, what assumes paramount importance is the service quality of wireless systems. It demands Smart CAPEX planning to achieve maximised RoI on the deployed assets. Traditionally, network planning is plagued by inefficiencies and inconsistent service, leading to high CAPEX and poor return on investment (ROI).

A paradigm shift to next generation network planning requires innovative traffic modelling, high resolution RF planning, backhaul/real estate assessment and comparative business case analysis in a scalable manner. The way forward is leveraging big data analytics to accurately identify high-return opportunities to address poor redundant since QoS and QoE issues.

TATA COMMUNICATIONS
TRANSFORMATION SERVICES

Tata Communications Transformation Services (TCTS), a leader in network transformation services, provides a comprehensive service offering related to mobile network analysis, optimisation and design, transforming the way wireless operators approach network optimisation and design. To deliver such services, TCTS experts utilise a ground breaking, next generation solution platform that combines industry-leading wireless data traffic analysis capability, high-resolution 3D RF modelling and big data business analytics delivered through unique and powerful set of software platforms and engineering processes.

The platform provides unparalleled business intelligence to enable better-informed decision making across a wide variety of wireless network development and enhancement tasks.

Evolution towards 5G

5G network technology brings in higher spectral capacity, improved spectral efficiency, reliability, flexibility and greater energy efficiency. The investment in 5G, coming after heavy investment in LTE and LTE-Advanced networks, imposes that new deployment of technologies and capabilities must be driven by Smart CAPEX planning to achieve maximised RoI on the deployed assets.

Changes in planning paradigm

The traditional network planning is typically plagued with inaccurate network baseline and design, error in identifying

the actual pain point and offers only a best-fit solution. Errors in design output usually result in deviation from network KPI and drive test output, high CAPEX and poor RoI maximisation. Additionally, traditional processes are highly manual, labour intensive and time consuming, and since they are not driven by real traffic demands and accurate QoE and QoS measurements, they usually result in high OPEX.

Next Generation Network Planning requires innovative traffic modelling, high-resolution RF planning, backhaul/ real estate assessment, and comparative business case analysis in a scalable manner. Using big data sources / analytics combined with next-generation modelling could be a way forward in accurately identifying high-return opportunities and addressing the challenges of poor QoE areas. Integrated technical and business impact analytics will ensure max RoI combined with ultra-high resolution maps for the planning of micro- and femto-cells, capability to design HetNet architectures with unprecedented detail and accuracy, multivendor multicarrier analysis and comparison, and advanced analytics in technical and business cases to quantify RoI and prioritise 5G solutions deployment.

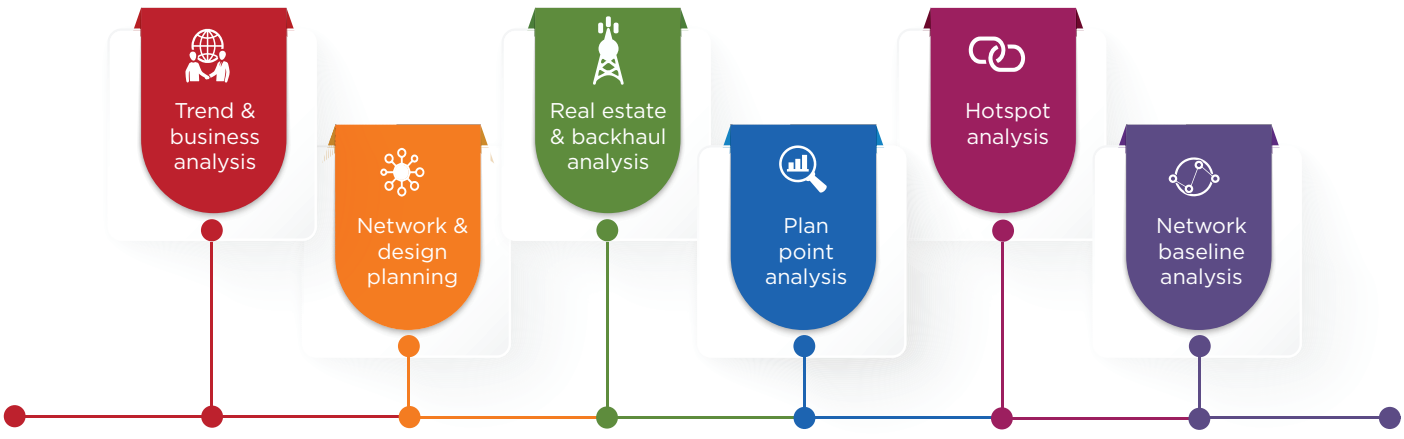
TCTS approach

The power of the TCTS analysis comes from the ability to accurately model an entire metropolitan area at various levels to provide a detailed analysis of how the network is currently performing. This layered modelling approach can then be used to determine problem areas of the network through 'Network Pain Point Analysis™.'

The TCTS solution provides in-depth analysis of the areas that subscribers are using in their smartphones. The traffic models generated by TCTS, referred to as 'Traffic heat maps' are a vital part of the analysis service. With these Traffic heat maps, the team will identify exactly where subscribers are loading the network, down to 4-metre accuracy. This level of detail, combined with the modelling of RF propagation, enables unprecedented network analysis and tuning that cannot be substituted or replicated by traditional design methodologies and processes.

As the network evolves over the coming years, the TCTS predictive model is updated and added to the radio network. This model will continue to predict new problem areas as and when old problems are fixed.

TCTS next-gen radio planning

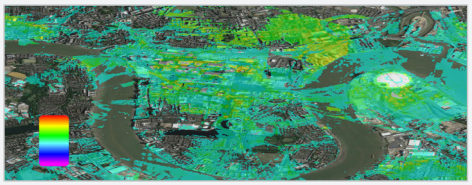


TATA COMMUNICATIONS
TRANSFORMATION SERVICES

Next generation planning capabilities

The TCTS methodology efficiently identifies network pain points and prioritises in the order of most critical down to least critical. The TCTS Network Pain Point Analysis™ provides a comprehensive list of all identified issues impacting network performance and related business outcomes, beginning with the most important to the most minor items. Once the pain points are identified, the accuracy of the modelling enables the analysis of various solutions. The modelling will show which solutions are the best to maximise network performance and RoI.

Traffic heat maps & Competitive analysis layers are high resolution (4-metre) indoor and outdoor data sets generated through big data sources that reveal the exact locations of smartphone users across all wireless networks.

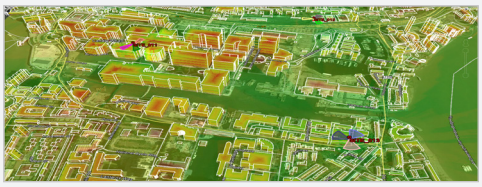


This capability steers deployments to geographies and to specific buildings with the greatest need. It prioritises the macro sites that are experiencing the most growth and areas where competitors hold an advantage.

Network Pain Point Analysis™ analyses all geographies and indoor spaces and ranks them by their need for improvement.

This powerful analytics engine combines traffic, network propagation and business analytics in a proprietary algorithm to pinpoint both indoor and outdoor areas that need optimisation or new radios added and enables informed decision making to maximise the use of available capital.

High Resolution Propagation Analysis provides simultaneous indoor and outdoor propagation analysis at 1-metre resolution in either 2D or, when required, 3D.



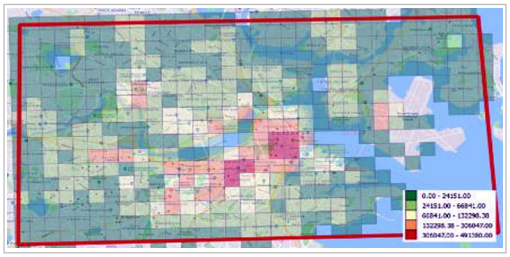
This capability provides unprecedented insight into the current performance of the network, both outdoors and indoors, and enables accurately projecting the performance of the network when new network elements are added.

High Resolution Network Design determines the best approach to carrier aggregation, frequency re-farming, and the addition of new radios to fix network pain points.

This capability enables informed decisions on spectrum re-farming and carrier aggregation as well as precise placements of radio sources to yield the greatest impact

5G for 4G offload

- Identify network pain points (high demand, low performance) of the 3G and 4G networks
- Focus on outdoor areas that can be served by millimetre waves
- Model all buildings and foliage in high-resolution 3D to determine all potential obstructions
- Assess all available mounting points in high-resolution 3D

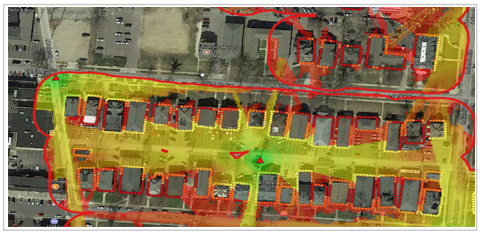


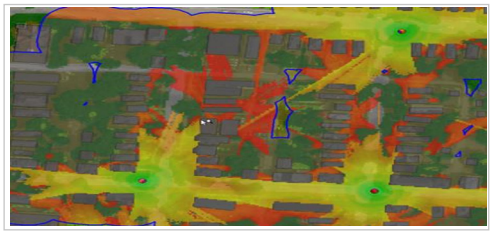
Accuracy, predictions and driving smart lean CAPEX

The collection of accurate, statistically relevant and geographically comprehensive QoE data is key to the pursuit of NGN planning. Leveraging big data allows us to integrate various data sources from both structured and unstructured sources, such as crowd-sourced data, converged (fixed and mobile), UE probe data and core probe data.

5G fixed wireless services

- Create coverage that specifically targets desired demographics
- Identify and prioritise building housing target customers
- Incorporate the specific performance and installation characteristics of the in-building devices
- Maximise the coverage of outer wall surfaces of target buildings





Identifying network pain points and priorities in the order of most critical to least critical is pivotal to the accuracy of modelling that eventually leads to best solutions. TCTS methodology does exactly that - once the pain points are identified, the modelling shows which solutions maximise network performance and bring in ROI. This extraordinary insight is achieved through a set of unmatched capabilities that are integrated and accessible through the TCTS methodology.

TATA COMMUNICATIONS
TRANSFORMATION SERVICES

TATA

About Tata Communications Transformation Services (TCTS)

Tata Communications Transformation Services (TCTS), a 100% subsidiary of Tata Communications Ltd, provides leading business transformation, managed network operations, network outsourcing and consultancy services to telecommunication companies around the world. TCTS delivers operational efficiency, cost transformation and revenue acceleration solutions for all the stages of the carrier process lifecycle including but not limited to network engineering and design, implementation and operations functions.

TCTS is a part of the USD $100+ billion Tata group. Tata group comprises of over 100 operating companies in seven business sectors. TCTS leverages the market expertise of Tata group's global telecom operation capabilities and globally established IT, process and consulting skills. It carries the rich traditions and business ethics of the Tata companies.

For more details on TCTS and how we can help your company build, operate and transform, please contact us at tcts.marketing@tatacommunications.com or visit www.tatacommunications-ts.com. To hear more from TCTS experts, join us on LinkedIn https://www.linkedin.com/company/tata-communications-transformation-services and follow us on Twitter https://twitter.com/Tata_TCTSL.