

FTTx Paradigm Change

to Achieve Fibre to the Exponential

The world wants MORE

Hyper connectivity is happening now. Humans are consuming data at the speed of light. We want more data, more convergence and unprecedented agility. But how will this happen? Words like 'buffering' or 'loading' still find their way to our screens.

Service providers need to do it all – reach the customers faster, deliver the best customer experience while optimising their capital and operational costs

How will service providers out-innovate themselves to meet these demands, is a question that is waiting to be answered.

It all starts with superlative customer experience

In the recent years, the world has realised the combined potential of ubiquitous data and disruptive technologies. Now we see, a new set of use cases, which are about to become a necessity for people across the world. Smart homes - replete with connected devices and using technologies like AR, VR, IoT, AI and block chain are just on the anvil. The next real estate boom might just be in this exciting milieu of smart, connected homes. We are already seeing connected cars in developed countries.

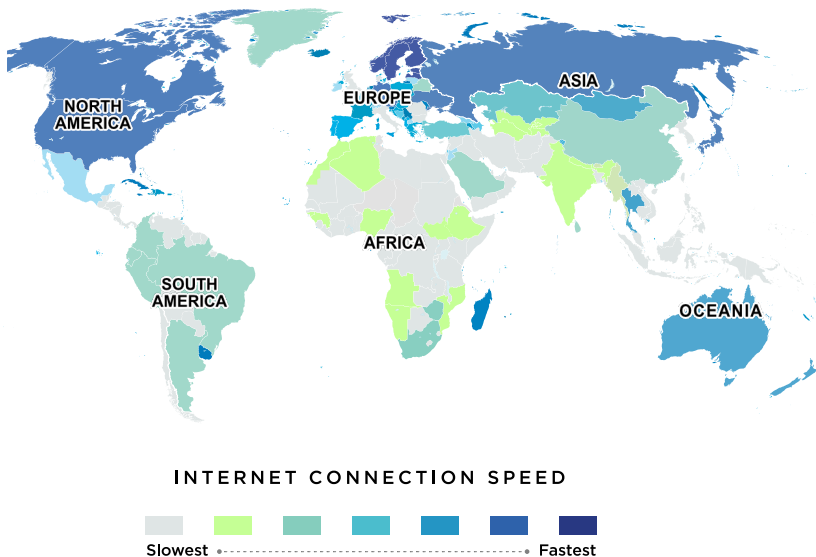
All this is customer experience. While the time for this idea has come, how ready are we to actually deliver it?

Technology and connectivity have to partner.... well

To achieve what we now deem as imminent reality, connectivity needs to catch-up and evolve at a faster speed than these emerging technologies. Data connectivity is both, the enabler and catalyst here. Current data on broadband speeds in some developing countries is not encouraging. A case in point is India, where, with an average speed of 29.06 mbps¹, customers are miles away from watching the next FIFA world cup in their living rooms with their VR headsets on.

Status quo is not encouraging

Data speeds in developing countries lag behind



Today's network is constrained

Proprietary Software

Customised & Dedicated Hardware

Wireless Dominant

1 - Source : Okhla speed test global index July 2019

How, then will telecom operators get ubiquitous connectivity to millions of homes and end points? How will the data networks take that quantum leap to deliver this experience?

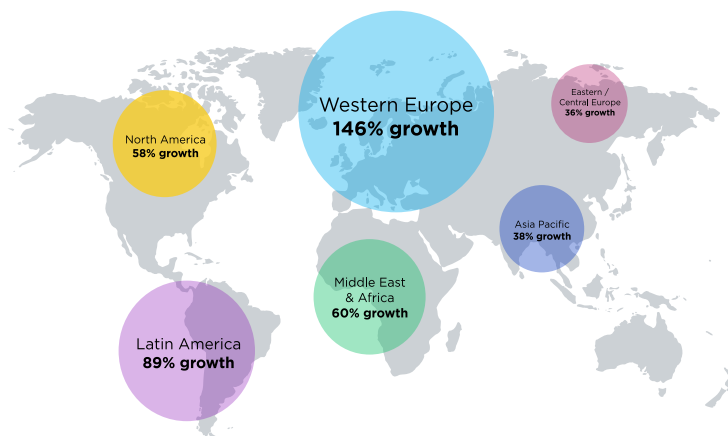
FTTx connectivity checks all the boxes but hyperscale FTTx requires much more

Telecom revolutions, riding on microwave technology, have shaped the past 2 decades in India. Now deep fiberisation across the network value chain holds the answer for SLAUGE challenges. Fibre penetration in the network value chain has been restricted to backbone and backhaul networks. As we move to the hyper-connected “internet of everything” era, we need MORE and MORE fibre.

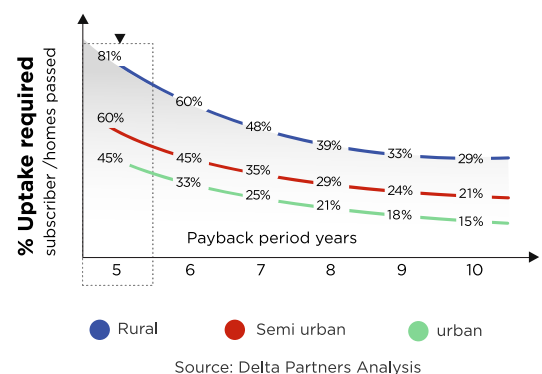
- ▶ Jio GigaFiber (India)
- ▶ Airtel fibre (India)
- ▶ Verizon – Fios (US)

The world is gravitating towards FTTx and FTTx provisioning is expensive

FTTx growth planned in next 3 years



62% FTTx Uptake required for pay back

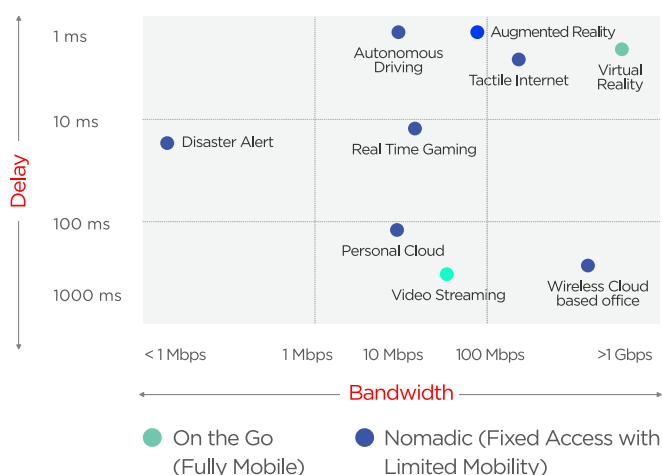


New network imperatives require interventions across the stack

New network imperatives for Networks of Tomorrow

Legacy networks, especially in developing countries were not built for data guzzling use cases. Networks of today and tomorrow need to be more competent. These data networks require proficiency on SLAUGE

Speed and Latency requirements for advanced use cases



Scale – to reach millions of end points, be it homes or enterprises

Latency – tending towards zero, ultra-fast network response times to enable futuristic technologies

Agility – to cater to variable data demands and respond to changing needs of the customers

Uptime – to ensure seamless user experience

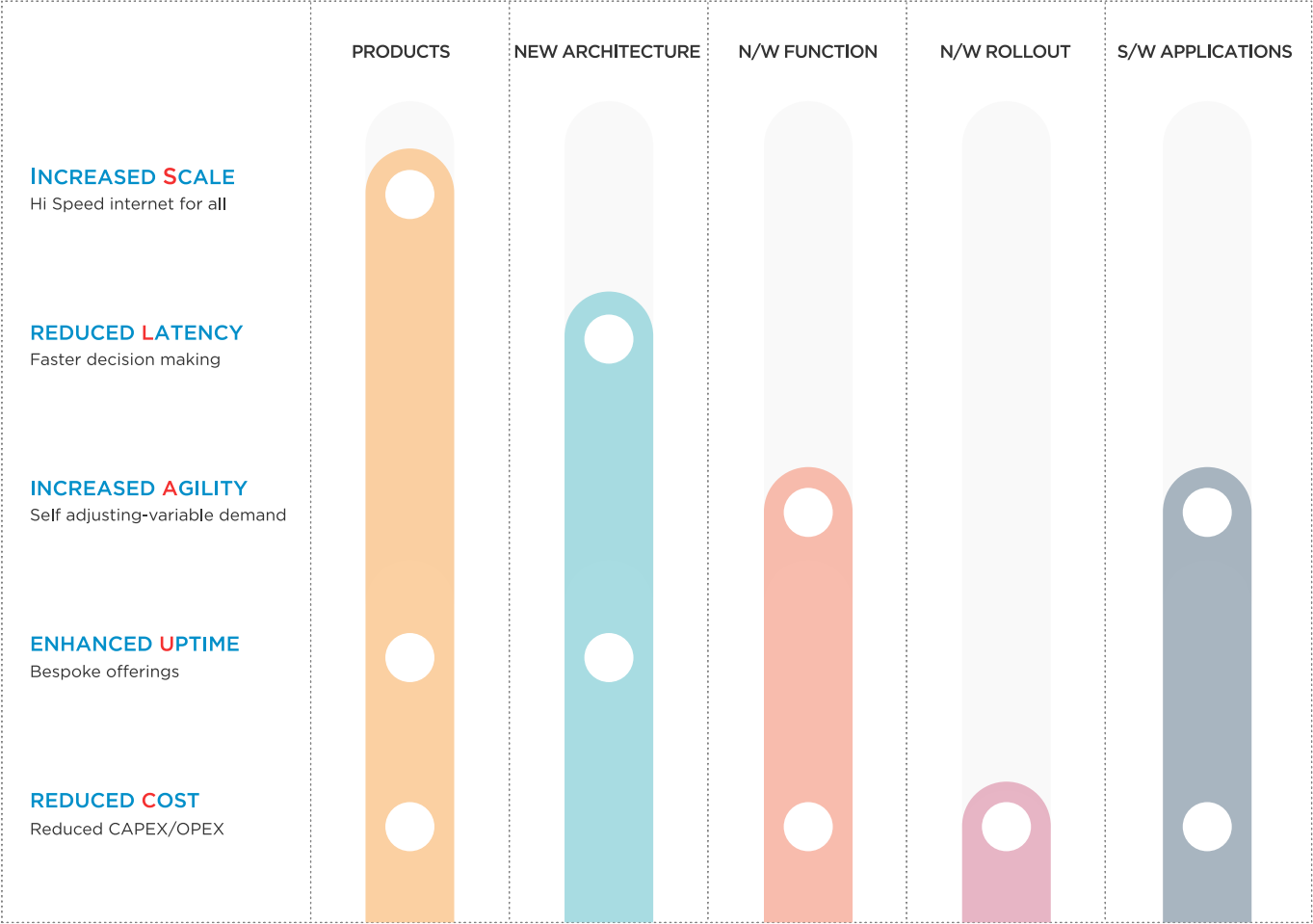
Cost – cost efficiency for CSPs to make hyperscale possible

Experience – for end user satisfaction & loyalty

All stack- all the way

FTTx is the connectivity piece of the entire network ecosystem but **innovations across all stacks will make this solution hyper scale, executionable and future ready.**

End to End Network Stack and SLAUCE imperatives



The ‘all-stack’ paradigm shift for taking fibre to the eXponential

Recommendations for hyper scale FTTx networks meeting all SLAUCE imperatives

To disrupt the status quo on how high speed data reaches millions of customers, here are some of the INNOVATIVE approaches to network design and orchestration which will help CSPs in their FTTx ambitions.

1 CHOOSE optical fibre solutions for data guzzling networks (SLAUCE)

Delivering scale and fast home-pass readiness is not easy. As and when more and more MDUs (Multiple Dwelling Units) come up and smart homes become commonplace, FTTx data demand will explode. As CSPs undertake staggered or full blown network modernisation, it is imperative to consider the future needs and plan for a robust physical layer which can handle high data demand and is easily deployable. As FTTx moves from GPON to NGPON and NGPON2, fibre products need to function well at higher wavelengths. This brings us to bend-insensitive fibre, high fibre count cables and compact FTTx kits.

STL's bend insensitive solution is perfect for high bend and turn scenarios as it reduces packet loss at bends and provides uninterrupted connection. It functions at high wavelengths and is apt for newer technologies and next-gen PONs. Fibre products is only half the battle won. To ace FTTx, speeding up and de-skilling of field termination is an essential. STL's compact kits make sophisticated deployments extremely simple.

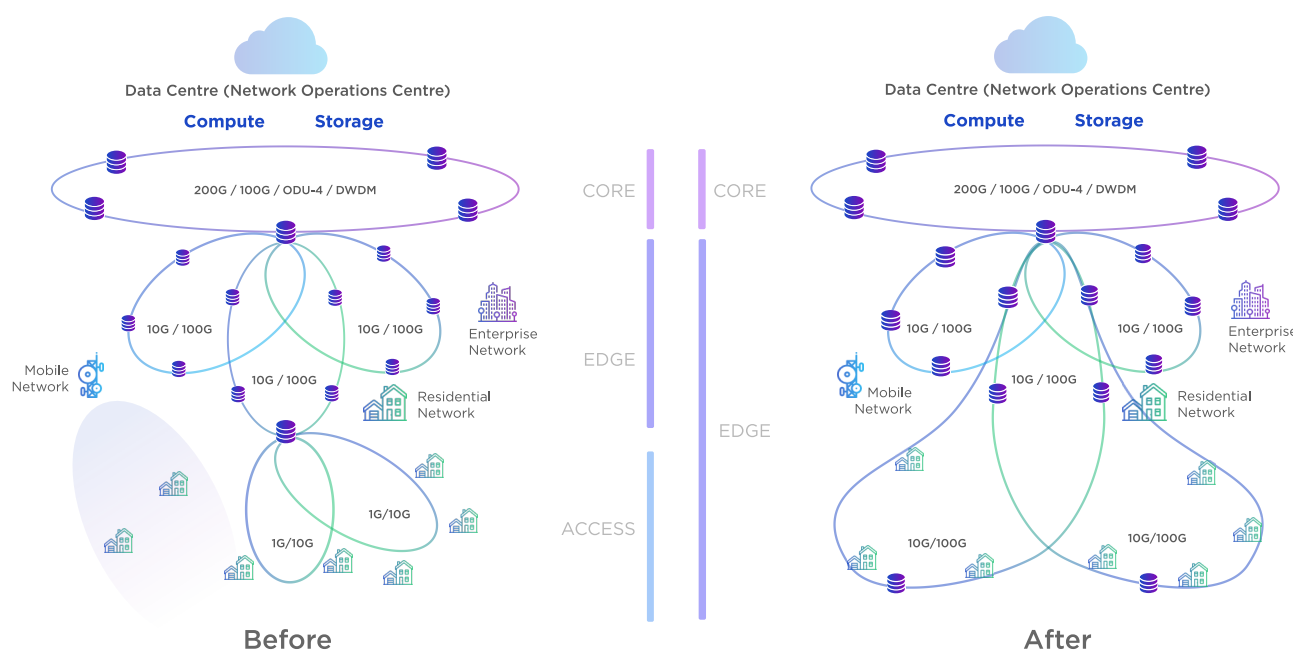
2 APPLY topology intelligence for unconstrained expansion (SLAUCE)

A key element of FTTx expansion is network design. It needs to solve many challenges amongst which being scalable and future ready is the most pressing one. While the voice demand is predictable, but FTTx demand is unpredictable and current network build needs to factor the changes in scale and type of demand.

To deliver on latency and uptime, we need to re-think the traditional 3-layer architecture.

As more and more nodes join the network, routing needs to become simpler and access needs to move to the edge.

STL's innovative flattened architecture approach re-invents the traditional network design to meet key goals. This innovative, collapsed architecture, coupled with deep fiberisation and virtualisation will serve to function as the access network for fibre to the exponential.



3 INITIATE virtualisation where it matters the most (SLAUCE)

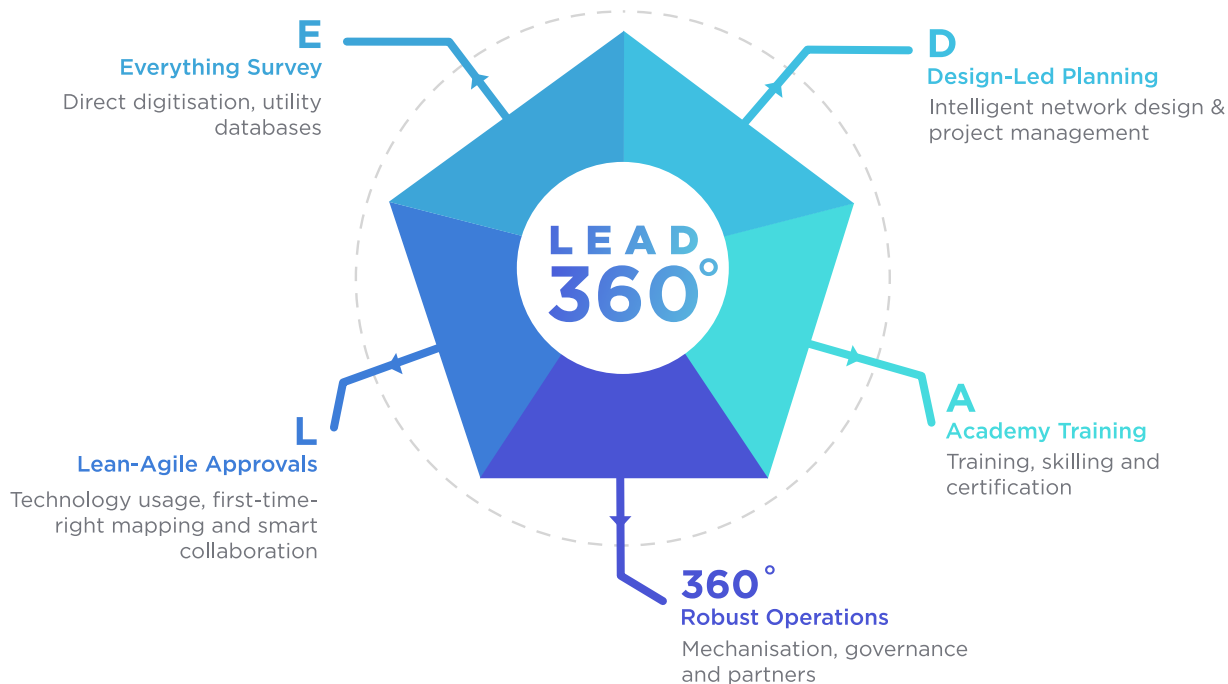
The world of networks is converging, It is now moving from management to orchestration. With multi-fold traffic increase and myriad data use cases, networks need to become more agile, flexible and cost effective. To achieve these outcomes, network function virtualisation needs to be smartly integrated with the existing networks to make them faster and more responsive.

While a complete transition to SDN (Software Defined Networks) will happen, staged virtualisation needs to happen now. STL's "Smartly Converged and Simply Controlled" SD-access design with a centralised control plane and virtualised functions, plugs in network intelligence and reduces hardware footprint to deliver superior control, agility and cost efficiency.

4 ACE ultra-dense fibre roll outs (SLAUCE)

Networks are moving towards deep fiberisation. And hyper scale fibre roll outs have many moving parts. Challenges like RoW approvals, sub optimal surveys, unskilled manpower, manual planning and legacy operations make the process more complex. Fibre roll out projects need to be re-imagined as they become super critical in building digital highways. Having a intelligent, design-led and technology heavy approach to doing fast and cost efficient fibre roll outs is crucial.

STL's has taken the lead and developed its LEAD360o approach which circumvents each and every challenge to engineer far superior fibre roll outs. This approach is designed for the future-ready data networks which are fibre dominant and need to be modernised at a fast pace.



5 FOCUS ON customer experience & network economics (SLAUCE)

In today's scenario, service providers need to focus more on customer experience, network monetisation and service provisioning and less on network management. Network management is fast becoming a business as usual (BAU) and the focus is now on converged digital platforms to catalyse their revenue and business operations. These digital platforms need to use the power of big data and analytics to provide actionable insights to the providers.

In this fast evolving space, STL is constantly developing software solutions which meet specific needs of the CSPs. Some cases in point are STL's Billing and Revenue Management (BRM) platform and Intelligent Data Lake (IDL) offering. While BRM simplifies billing, enables multi-faceted charging and enables intelligent revenue management, STL's IDL offering provides a real-time business intelligence solution for data driven decision making.

Synergy holds the key for this paradigm shift – hence **END to END approach is the only way**

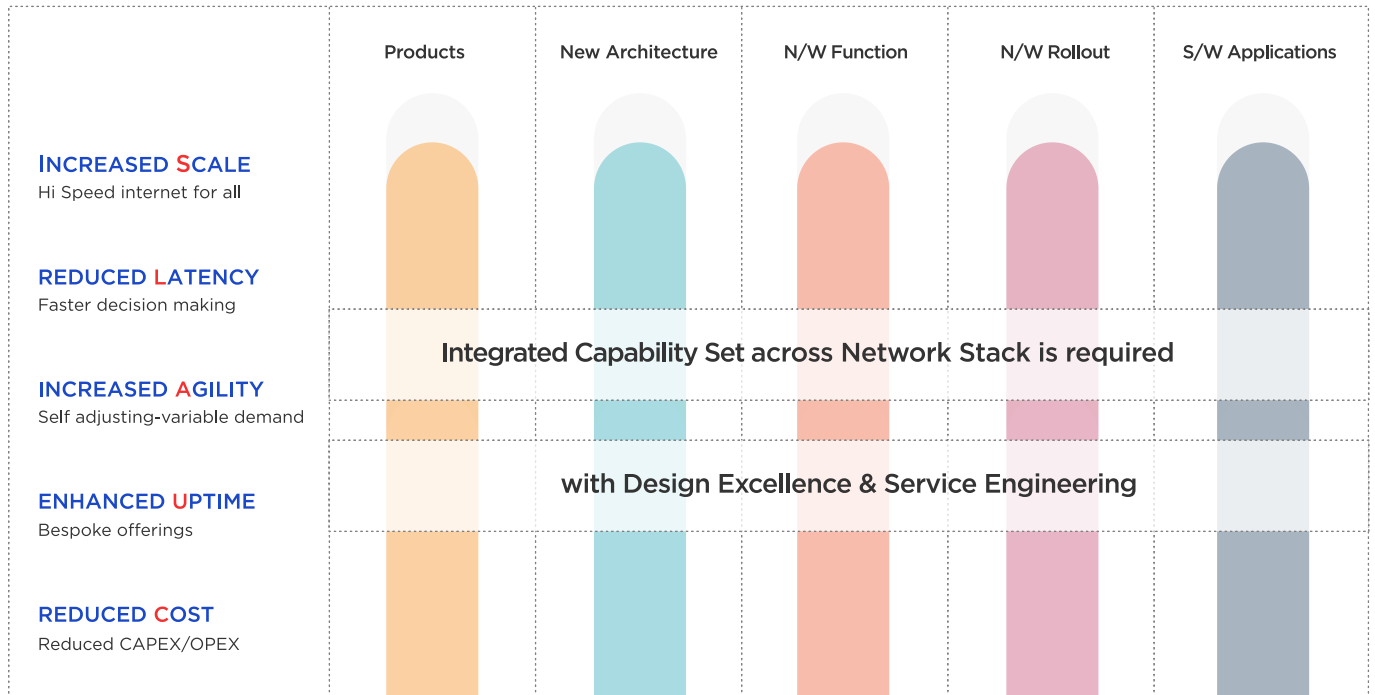
By itself each element of the network stack fulfils a particular network imperative. We need an approach which unifies the incremental potential of all the elements to deliver disruptive impact on FTTx deployments. **This can only happen when the view changes to 'end to end'**

In today's world, CSPs approach FTTx and network modernisation in general, with a piecemeal approach. For example – for any large project -network planning is done by in-house teams, products are procured in isolation through the cost based approach of the procurement teams, virtualisation (if at all) is being looked at as a complete transition and software applications are focused on operations rather than economics.

This approach stifles the synergy and fails to deliver the disruptive impact that we are looking at



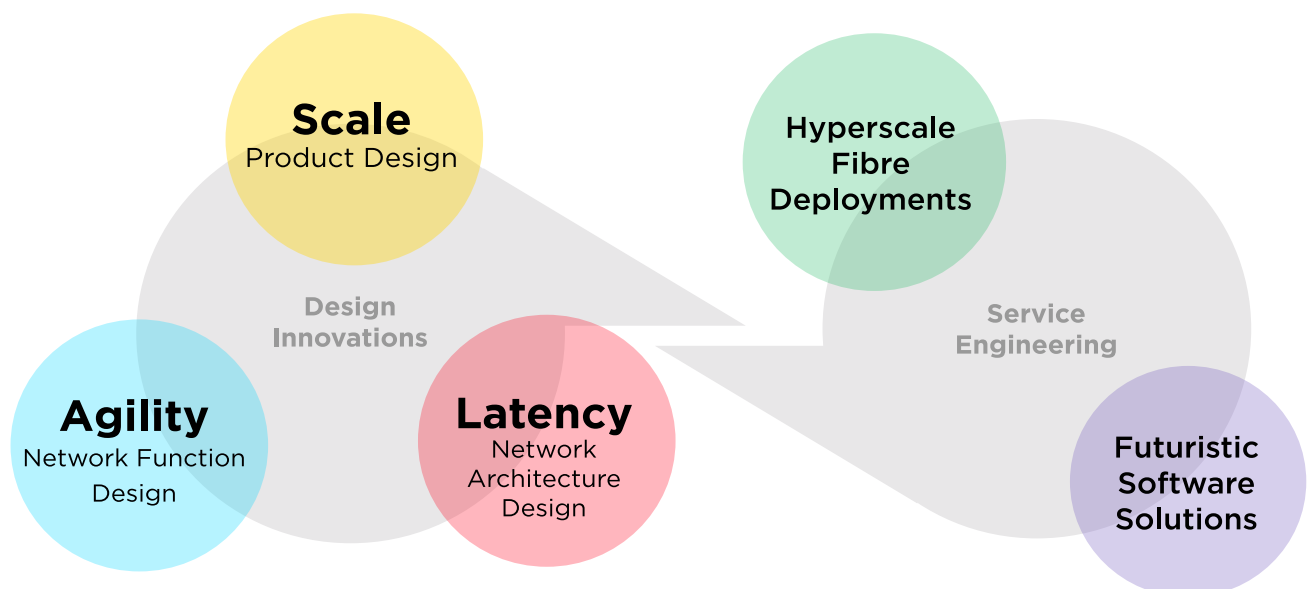
This is what we have to change with an End to End mind-set.



Is there an **End to End** data network solution for the pressing **FTTx** need?

Digital re-invention and core capability is at the centre of developing all stack solutions for the needs of the connected world. It is as much about intent as it is about having the two pillars of design excellence and service engineering. Without these two, end to end is not possible.

STL, with its credible experience across customer segments like Telcos, Defence, Citizen networks and Cloud companies, coupled with Design excellence and Service engineering capability is well poised to cater to this need.



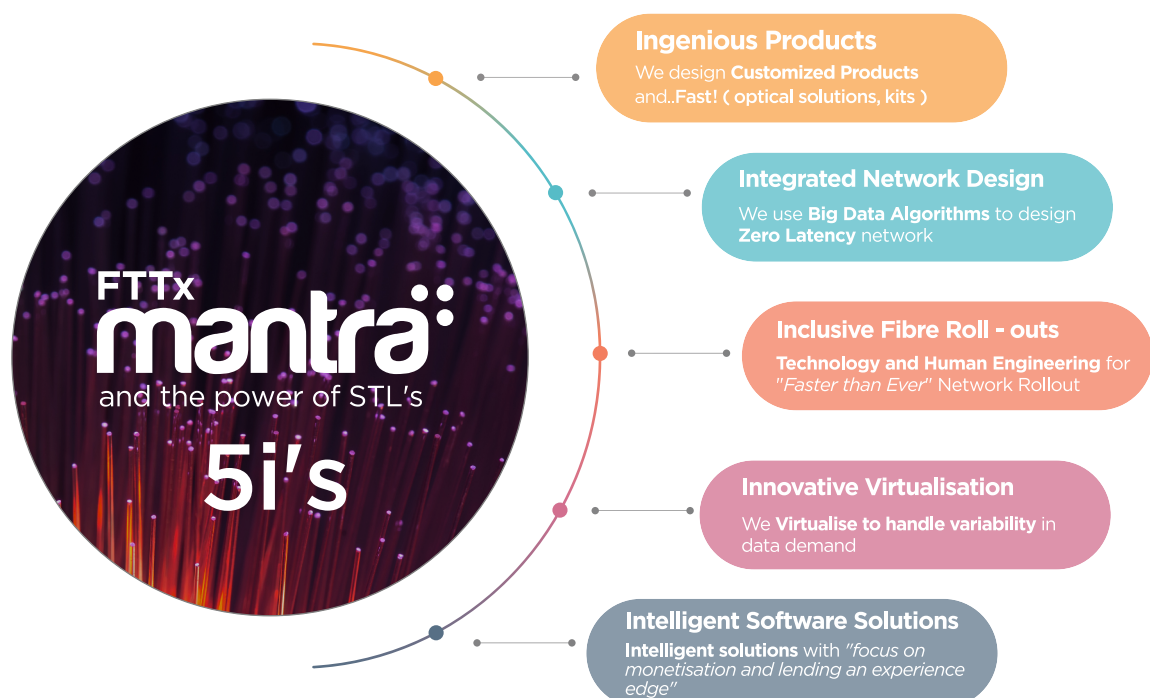
STL's FTTx MANTRA is the solution the world needs



FTTx MANTRA for the age of **Fiberisation and Virtualisation**

STL's industry first FTTx solution combines all that is needed to craft the fibre-to-the-home revolution. It is designed keeping in mind the needs of our customers who are deploying or modernising their network infrastructure to support new technologies and use cases.

This solution eliminates the need for approaching different vendors for standalone elements with FTTx Mantra, we are helping our customers move from transactional vendor based approach to a consultative co-creation approach.



One Solution, Countless Opportunities

STL FTTx MANTRA

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, 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.

For more on STL, visit : www.stl.tech

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