



*Optical Connectivity*

# The backbone of future digital networks

**14<sup>th</sup> June '2021**



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# STL Introduction



**STL**  
**Introduction**

**1**

2021 - Start of a decade  
of network creation

**2**

STL - well poised to  
lead

**3**

STL - future growth  
levers

Summary

# We Integrate Digital Networks for Our Customers

Core Business

Customer Segments



Telcos



Cloud Companies



Citizen Networks



Large Enterprises

**opticonn**

Optical Connectivity



Fibre Deployment



FTTx Access Network

**netmode**

Network Modernisation

End-to-End Solutions

Portfolio Offerings



Optical Interconnect Products

- Glass Preform
- Optical Fibre
- Optical and Specialty Cables
- Optical Interconnect Kits



Virtualised Access Products

- Programmable FTTx
- Virtualised RAN
- RAN Intelligent Controller Network Orchestrator



Network Software Products

- Digital BSS Platforms
- Network Operations Platforms



System Integration Services

- Network Design Services
- Fibre Rollout Services
- Network O&M Services
- Data Centre Network
- Private Enterprise Network

Unique Capabilities

# This expertise has translated into robust performance



**\$ 661 Mn.**

FY21 REVENUE

**18%**

FY21 EBITDA %

**19%**

Q4 FY21 RoCE \*

**7**

GLOBAL PRODUCTION FACILITIES

**2**

SOFTWARE DEVELOPMENT CENTRES

**INDIA & UK**

SYSTEM INTEGRATION SERVICES



**4**

INNOVATION CENTRES

Aurangabad, Silvassa,  
Gurgaon, Ahmedabad

**569**

PATENTS

Across the network  
layers

**Zero**

WASTE TO LANDFILL

Shendra, Rakholi,  
Dadra

**30+**

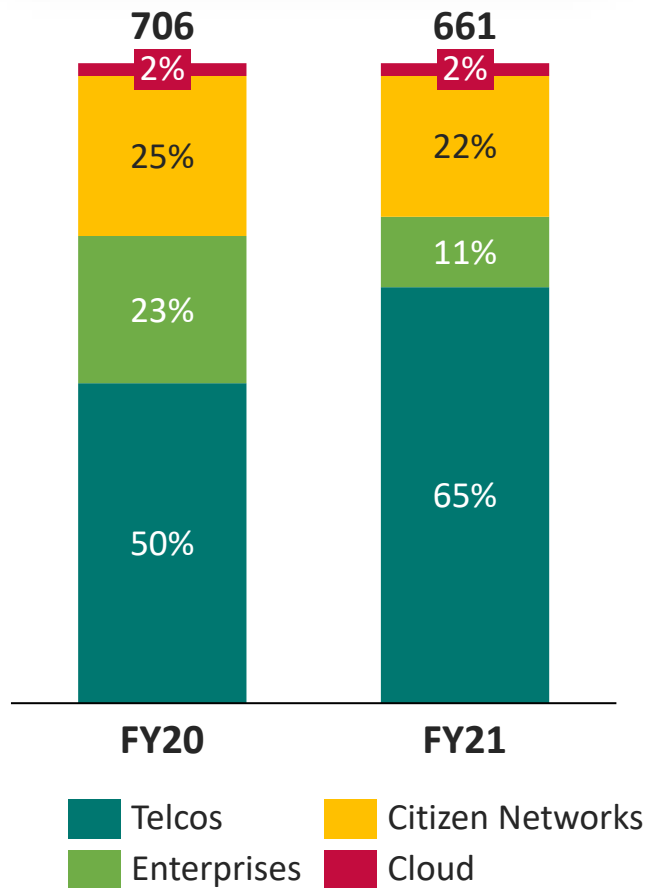
NATIONALITIES

~3,100 Employees

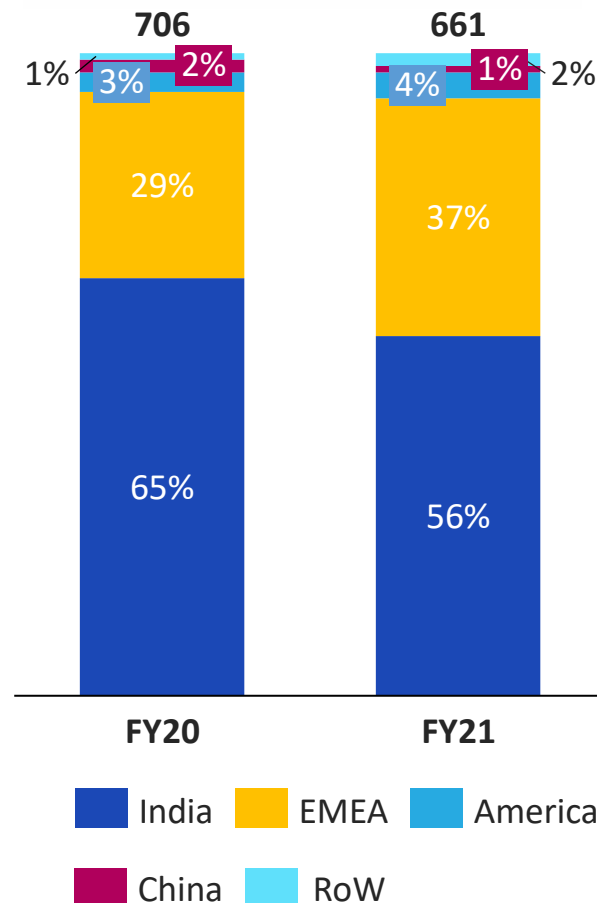
# And also enabled us to serve across all segments



**Customer Segments**  
Revenues (USD Mn.)



**Geographical Distribution**  
Revenues (USD Mn.)



We have a strong and **growing revenue share from European market** particularly UK, France and Italy.

Our key customers in Europe include **BT, Openreach, Orange and Telecom Italia**

# Grown organically & inorganically in last 5 years



## Organic Capacity Expansion

From 12 to 50 mn. fkm

**OPTICAL FIBER**

From 6 to 33 mn. fkm

**OPTICAL FIBER CABLE**

**Elitecore**



## Inorganic Expansion

**SOFTWARE**

**MARKET ACCESS IN EUROPE**

**DATA CENTRE SERVICES**

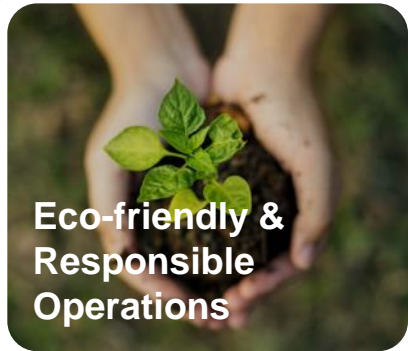
**WIRELESS**

**OPTICAL INTERCONNECT**

# While creating value across communities



## Environment | Social | Governance



### Eco-friendly & Responsible Operations

Caring for our people & the environment

#### Policies & Systems

on Human Rights, Labour Practises, Fair Wages



**1M+ m<sup>3</sup>**

Water recycled and reused at STL and replenished in surrounding communities

**7,000+ tCO<sub>2</sub>e**

Reduced through in-plant initiatives and plantations in surrounding communities



### CSR Initiatives

Enabling millions using tech & connectivity

**1.43M+**

lives impacted

#### Signatory

To the UNGC & UN WEP\*\*

**3,500+**

Rural women Empowered

**1,400+**

Individuals digitally empowered



### World's 1<sup>st</sup> ZWL Certified

Driving Sustainability

**134,000+ MT**

Waste diverted from landfills

**94%**

of our industrial waste does not go into landfill

**93%**

Of waste recycled and reused

**3R**

Approach to reduce, reuse, recycle



### Sustainability Goals

2030: Towards a Cleaner & Greener Future

**100%**

• Manufacturing locations to be ZWL certified

• Water Positivity globally

• Sustainable Sourcing

• Products families covered under LCAs

**50%**

Reduction in STL's carbon footprint



### ESG Goals

2025: Facilitating a More Inclusive Society

**5 Million**

• Impacting 5M lives

• Undertaking 5M plantations

• Replenishing 5M cubic meters of water in communities

\*All figures are cumulative (up to FY 21)

\*\*UNGC – United Nations Global Compact | UN WEP – United Nations Women Empowerment Principles



# 2021- A decade of network creation has started



STL  
Introduction

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**2021 - Start of a decade of network creation**

**2**

**STL - well poised to lead**

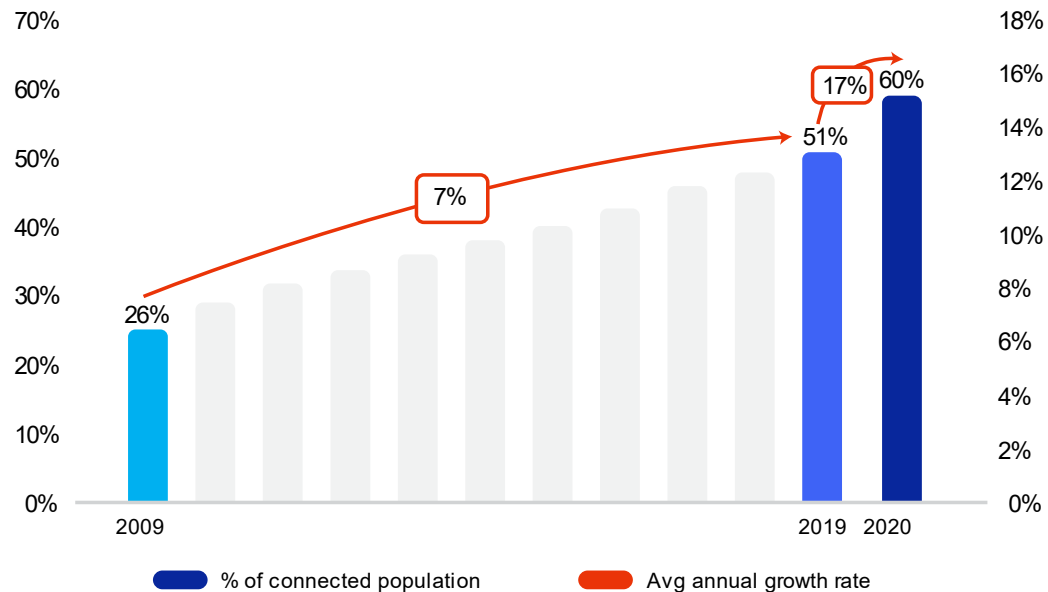
**3**

**STL - future growth levers**

**Summary**

# 2020 was a year of inflection for digital networks

## a User growth accelerated significantly ~2Mn users added daily in 2020



Figures from Statista

## b Network creators decided to invest disproportionately

Multi bn. \$ commitments, urgency

SILVERLAKE V VISTA EQUITY PARTNERS GENERAL ATLANTIC  
KKR TPG CATTERTON  
ADIA MUBADALA intel Capital Qualcomm ventures

Jio

Jio Platforms, India raised \$20.2 bn. capital

BOSCH Lufthansa  
Invented for life

Enterprise spectrum saw huge demand in US, UK, Germany,  
Many companies applied to set up local 5G networks.

FC Federal Communications Commission

allocated \$9.2 bn. In reverse auction for rural digital opportunity fund

Google

Announced investment of \$10 Bn in US data centres & offices in 2020

# 2021 has kickstarted a decade long network creation cycle

# New technologies are driving this network creation cycle



## 5G

*the fastest technology  
to reach 400 million*

- **Over 163 5G commercial networks** deployed globally
- **Operators add Capex globally**  
AT&T and Verizon increased their capex plan by \$2+ bn.  
(initial guidance of ~\$17 bn.)
- **630 5G enabled handsets** announced globally as per GSMA

## FTTH

*Deployments pick up pace  
across India, Europe & US.*

- **EU Telcos plan 2+ mm FTTH**  
Deutsche Telekom plans 2 mn. new FTTH connections in 2021; Telefonica Germany plans 2.2 million rural FTTH connections over six years.
- **India budgets \$. 1.9 bn.**  
0.65 mn. FTTH connections in FY22, 6.7 kms of OFC, 0.12 mn. Wi-fi points
- **US: AT&T plans 3 mn. FTTP**  
Deploy fiber-to-the-premises to 3+ mn. residential and business locations across 90 metros in 2021.

## O-RAN

*Major operators start trials  
or deployments*

- **Verizon to start deploying**  
"We're 100% behind the idea, and that's why we're pushing it," Verizon's Kyle Malady
- **Telefonica, IBM start trial** open RAN in Argentina.
- **Operators partner for O-RAN**
  - Etisalat partner with Rakuten
  - Deutsche Telekom, Orange, Telefónica, and Vodafone join forces to support ORAN rollout
- **Germany earmarks \$300 mn.** for O-RAN research specifically.

# 5G

## Leading to dense and deep fiberisation



3

Operators per site in shared microsites

30% - 60%

YoY Growth rate of urban small cells

### Small cell requirements for full 5G commitment



10x

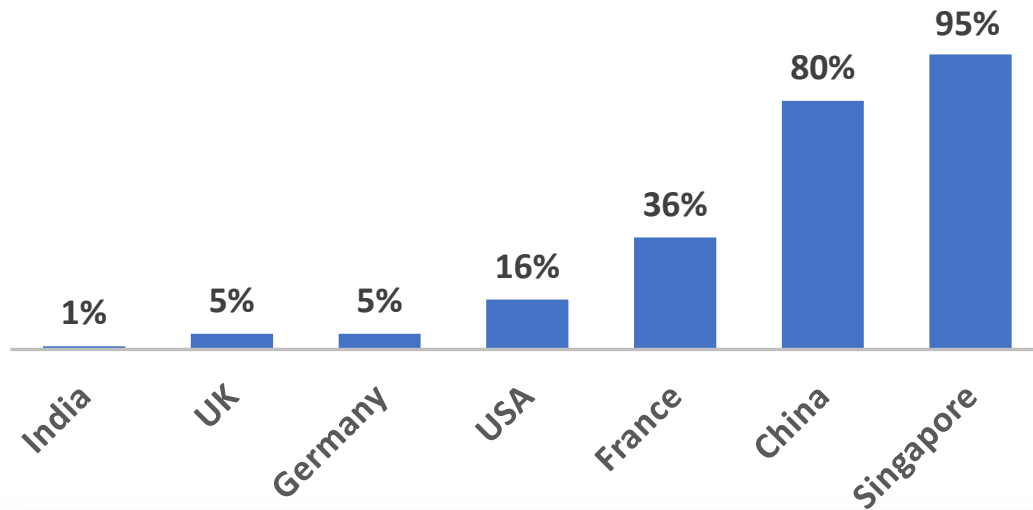
Amount of cell towers to accommodate full 5G services

Demand of Optical Fibre to roll out 5G

Dense & Deep  
Fiberisation

## Increasing penetration in the post COVID world

FTTH Penetration



- **Developed Economies** e.g. US, UK, Germany planning to increase FTTH Penetration.
- **Developing economies** e.g. India offer huge potential for growth, driving fiber demand.

Case in Point

### UK

- **UK Govt. is investing £ 5bn for FTTH gigabit network**
- **BT Openreach targets covering 25 mn. premises by 2026**
- **City Fibre increases roll out plan to pass 8 mn. premises**

### USA

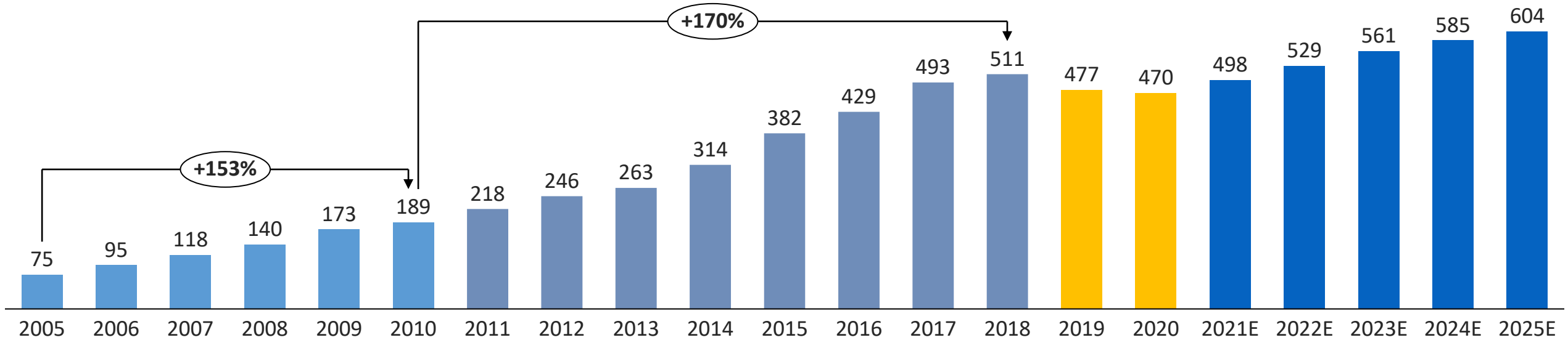
- **Strong federal push for increasing broadband penetration**  
*\$20 bn. rural digital opportunity fund*  
*\$100 bn. proposal for broadband in LIFT plan*  
*\$25 to 30 bn. grant under CARES ACT*
- **US private players plan multi million home passes.**  
*AT&T : 4 mn., Verizon : 3 mn. and Lumen : 6.5 mn.*

FTTH Penetration = No. of households that have taken up fiber broadband connection / Total no. of households

# 5G & FTTH



These mega trends are catapulting the optical demand



Source: CRU

Units: Mn. fkm

- After a pause in 2019 & 2020, the fibre demand has started growing again in 2021, which is visible across all regions
  - 5G deployment cycle is an 8 to 10 year cycle ; expected to peak in 2024-25
- Higher sales orders, increasing inventory drawdowns and widening lead times shall push the optical prices upwards

# Spurring innovation across optical portfolios

## Requirements

## Product Innovation

Optical fibre

**Bend insensitivity, Compatibility  
& optimise duct space**



- ◆ Bend insensitive with 10x reduced macro bend loss
- ◆ Fully Compatible with legacy fibre

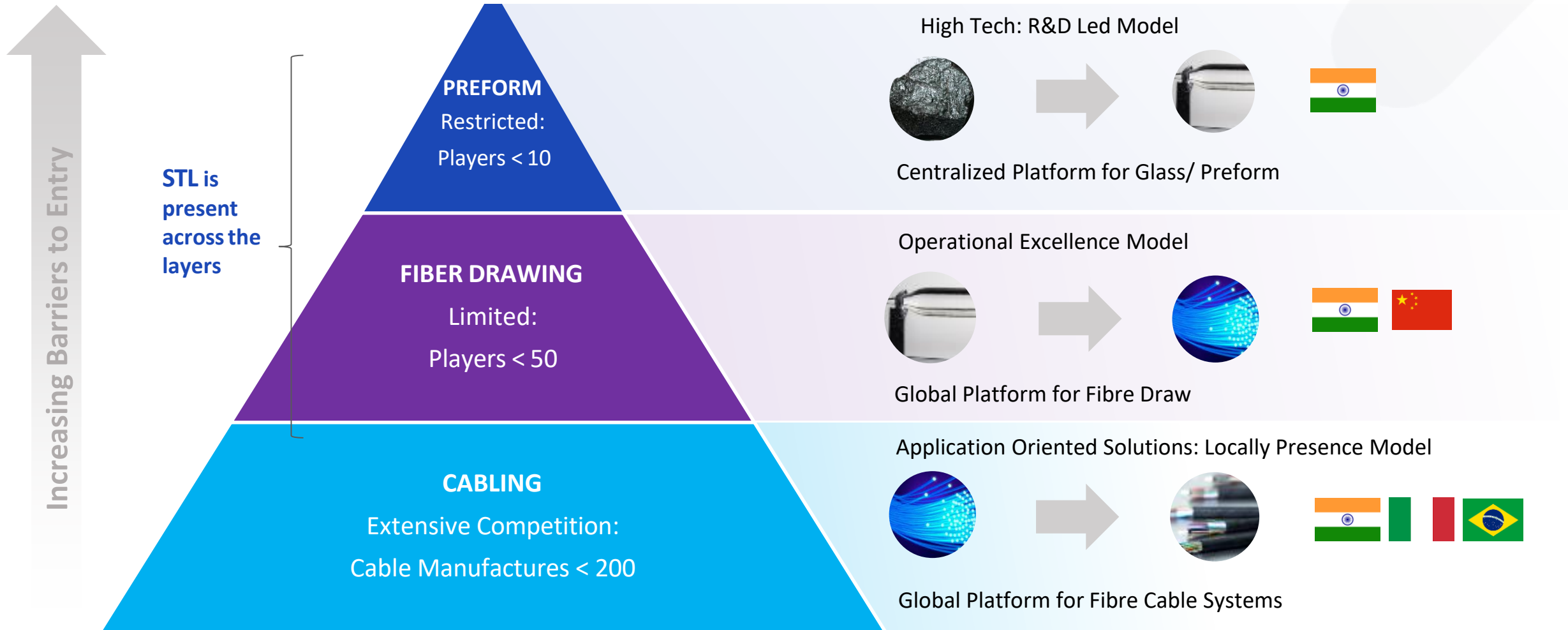
Optical fibre  
Cable

**Need high fibre count with  
minimum new duct installation**



- ◆ 100% existing duct capacity augmentation
- ◆ Better TCO with one time deployment

# Advanced photonics capability will prove to be the differentiator



- Glass Science
- Chemical Engineering

- Fluid Mechanics
- Large scale Automation

- Wave Optics
- High Temp processing ~ 2000 deg C



# STL is well poised to lead network efforts across the globe



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STL - future growth levers

Summary

# The future digital networks has 4 unique characteristics



Close to the Edge  
**EDGE**

Seamless Wired & Wireless  
**CONVERGED**

Enhanced Experience  
**COMPUTE**

Agile, Scalable, Agnostic  
**DISAGGREGATED**

At the Edge

Optical

&

Radio

Connectivity

&

Compute

Hardware

&

Software

?

Who can  
Integrate all  
these  
Technologies?

# STL has an E2E capability to integrate future digital networks



**LARGE SCALE NETWORKS  
SYSTEM INTEGRATION**

**10 Years Network Design & Integration Solutions**

**OPTICAL  
INTERCONNECT**



**25 years**

Extraordinary track record  
Globally respected

**VIRTUALIZED  
WIRELESS  
(SOFTWARE, CLOUD)**



**5 years**

Strategic alliances and  
product development



**Digital Network  
Integrator**

Close to the Edge

**EDGE**

Seamless Wired & Wireless

**CONVERGED**

Enhanced Experience

**COMPUTE**

Agile, Scalable, Agnostic

**DISAGGREGATED**

**At the Edge**

**Optical**

&

**Radio**

**Connectivity**

&

**Compute**

**Hardware**

&

**Software**

**STL can integrate all  
the technologies  
required for the new  
age digital network**

# 1. 25 years of optical connectivity



**End 2 End  
Optical Connectivity  
Solution**

**Fully Vertically  
Integrated  
Manufacturing**

**Strong relationships  
with 21 key accounts**

openreach orange™



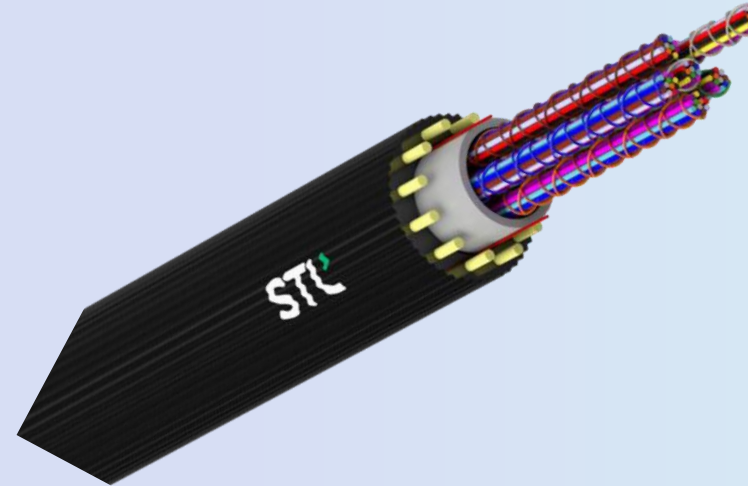
**Strong Inhouse  
R&D team with 569  
patents**

25 years of optical connectivity

# Opticonn : End to End Optical connectivity Solution



**Backward Compatible  
Bend Insensitive Fibre**



**High Density Ribbon Cable  
Intelligently Bonded Ribbon (72F - 6912F)**



**Underground and Aerial  
Optical Interconnect Kits**



**25% faster deployment  
of future proof bend  
resilient network**

**opticonn**

Our opticonn solution includes customising solution through consultative design and also includes optical subsystems, smart logistics and partner support.



**Higher density network -  
100% existing duct  
capacity augmentation**

25 years of optical connectivity

# Fully integrated manufacturing with global supply chain



## Optical Fibre

## Optical Fibre Cable

## Speciality Cable



Waluj  
Aurangabad  
India



Shendra  
Aurangabad  
India



Jiangu Sterlite  
Tongguang Fibre Co.  
Limited  
Haimen-City  
China



Rakholi  
Silvassa  
India



Metallurgica  
Bresciana  
Dello  
Italy



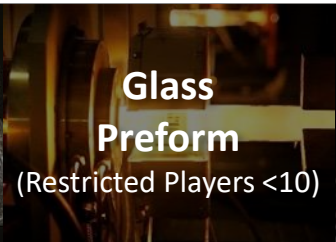
Sterlite Condu spar  
Parana  
Brazil



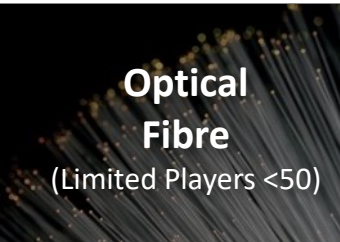
Dadra &  
Nagar Haveli  
India



Pure  
Silicon



Glass  
Preform  
(Restricted Players <10)



Optical  
Fibre  
(Limited Players <50)



Optical  
Fibre Cable  
(Cable Manufacturers <200)



Optical  
Interconnect

**STL's unique manufacturing capabilities with full vertical integration. Also top 3 integrated fibre producer globally**

7

GLOBAL  
PRODUCTION  
FACILITIES

50M

FKM OPTICAL  
FIBRE  
CAPACITY

33M\*

FKM OPTICAL  
FIBRE CABLE  
CAPACITY

**Industry 4.0 standards**

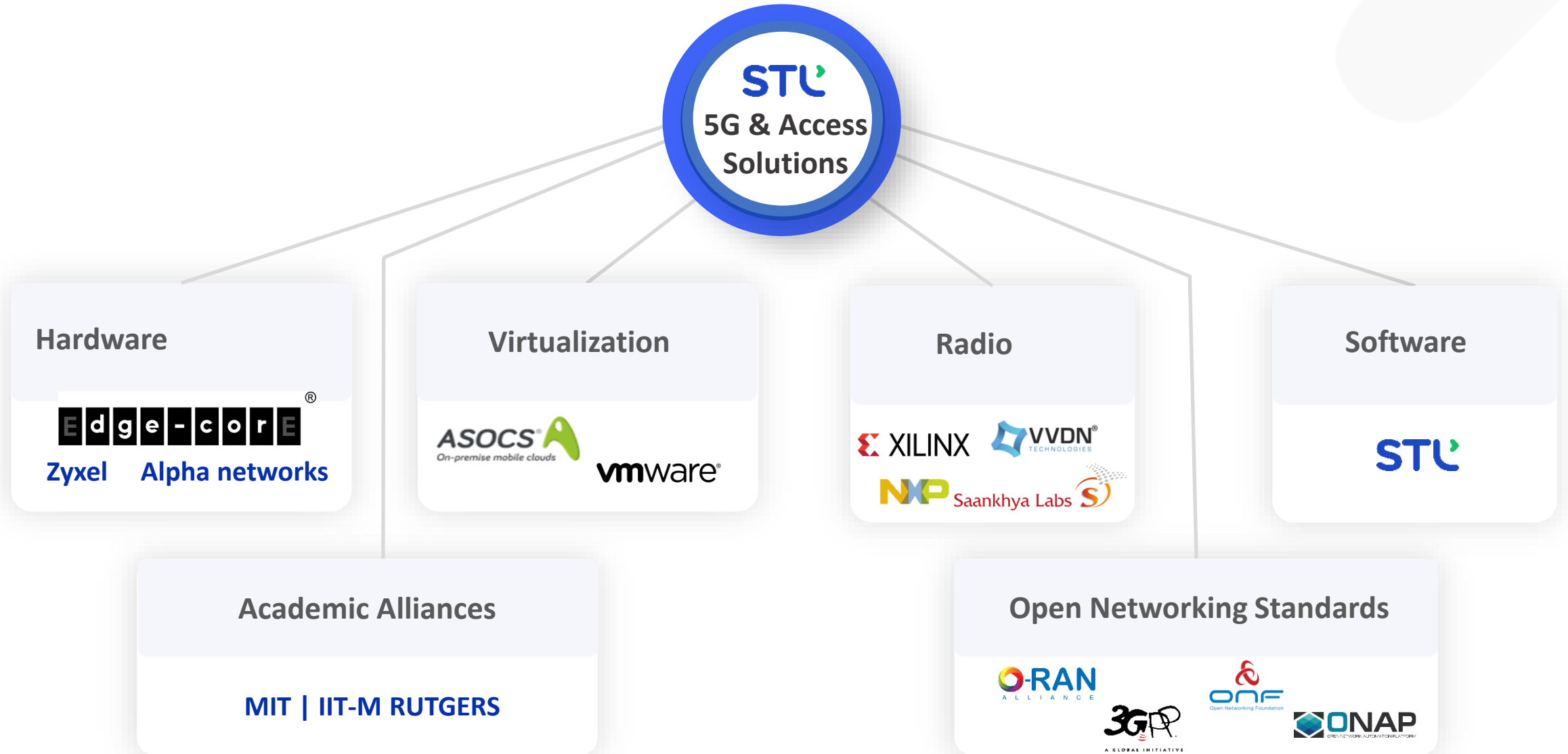
Fully automated machinery with robotic operations

**Efficient supply chain**

Reduced delivery times and SCM cost

**\* Plan to reach by Jun 2021**

## 2. Virtualised access ecosystem



# 3. Large-scale integration expertise



## End 2 End Solutions



**Network  
Modernization**



**Fibre  
Deployment**



**FTTx Access  
Network**

## Key Projects



**Network Modernization  
for  
Indian Army**

**\$350 mn project** for creating the **world's largest intrusion-proof network** in J&K for Indian Army.  
**Completed Project**



**Network Modernization  
For  
Indian Navy**

**\$500 mn multiyear project** across **1600 sites** to design, execute, O&M for the Indian Navy  
**Ongoing Project**



**Rural Broadband  
Under  
Bharat net**

Using **LEAD 360™** approach to connect **7.5 mn people** and **4,045 villages** in **Maharashtra**  
**Ongoing Project**

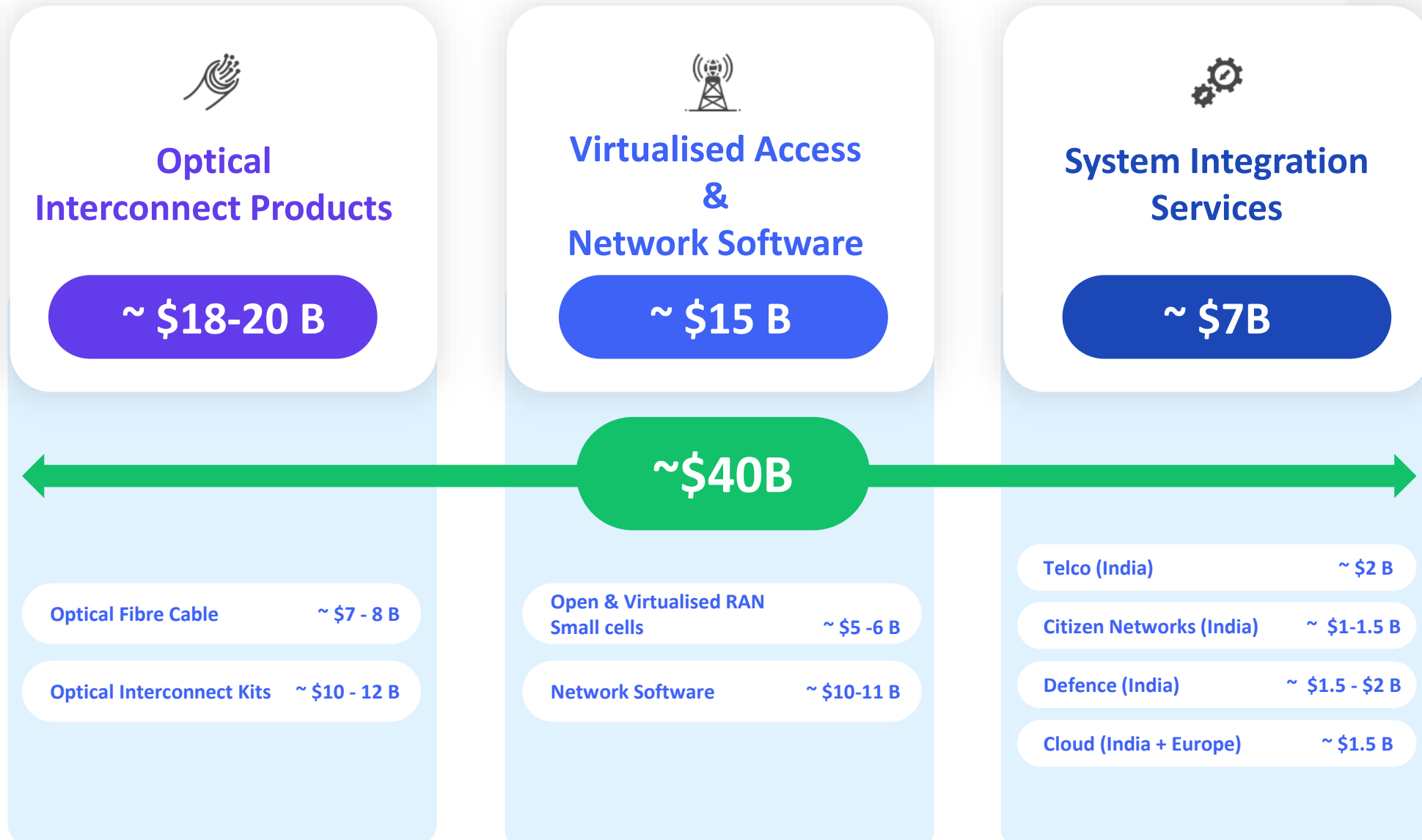


**Backhaul Network  
for  
A large Indian Telco**

Using **LEAD 360™** to build modern optical network in **10 circles in India** for a large Telco  
**Ongoing Project**



# Through E2E solutions, STL can address \$40 bn. market



# STL - Future Growth Levers



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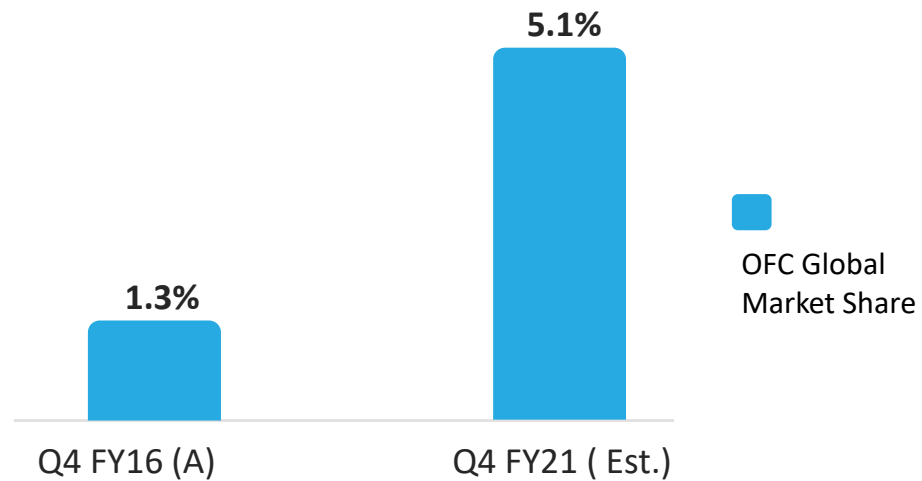
STL - well poised to  
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STL - future growth  
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Summary

# 1. Grow OFC Volume and Optical Interconnect business



- Grew market share 4 times in 5 years
- In FY21, OFC volume grew by 35%
- Continue to penetrate newer markets e.g. USA

OPTOTEC  
by STL



- Expand optical interconnect business by leveraging existing customer relationships
- Offer Optotec products integrated as Opticonn Solutions

## 2. Take System Integration business global & Scale in India



Long haul network  
roll out in India



FY17-18



Network modernisation  
at Nationwide scale



FY19-20



One Solution. Countless Opportunities

Design & deploy fibre network  
in metropolitan cities



Datacentre Solutions  
Inside datacentre connectivity



FY20-21

TAKE  
GLOBAL  
PROJECTS  
&  
SCALE in  
INDIA

FY22-Onwards

# 3. Build a strong Access Solutions business, based on disruptive open-source products



## Building a World class team

Leverage a team of exceptional professionals and ecosystem partnerships to develop network solutions.

Current team strength at 200 nos.

## Product of Choice for large Scale O-RAN Deployments

To become a product of choice in 5G networks based on Open RAN technology.

Product trials being conducted at customer premises.



## 2021 - Start of a decade of network creation

New technologies such as 5G, FTTH and O-RAN are driving the network creation cycle. 5G deployment & increase in FTTH penetration are leading to deep and dense fiberisation. These deployments are catapulting the OFC demand across the globe and are also leading to innovative new products in optical fiber & optical fiber cable.

## STL is well poised to lead network efforts across globe

It has 25 years of experience in optical connectivity, an ecosystem in virtualized access technologies and an expertise in integrating large scale complex projects. Put together, STL has end to end capability to integrate future digital networks.

## STL has three validated growth levers

First, to grow OFC volume and the Optical interconnect business.

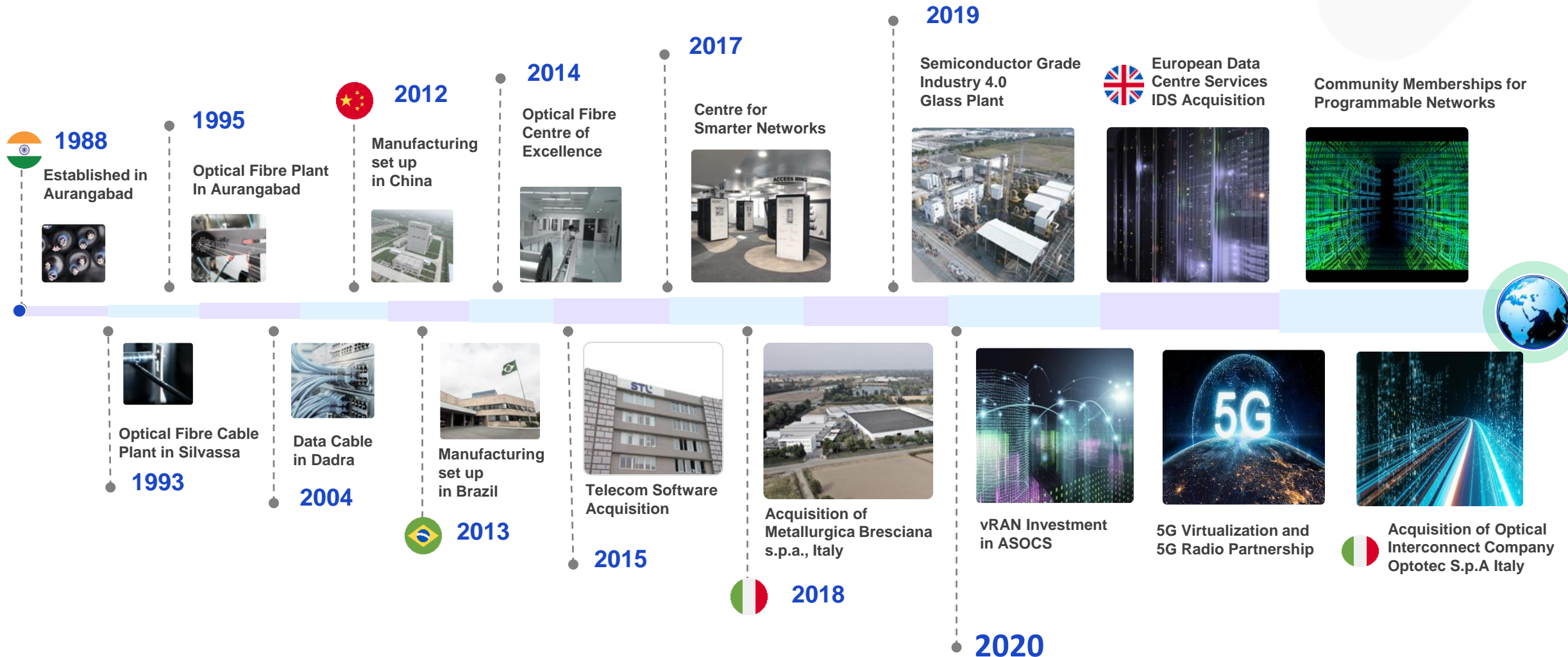
Second, to take System Integration business to global markets along with scaling it in India.

Third, to build a strong Access Solutions business, based on disruptive open-source products.



beyond tomorrow

# With Strong legacy and Capabilities





# About the Speaker



**Dr. Anand Agarwal**  
**Group CEO and Whole time director, STL**



A strong believer in the transformational power of technology, Dr. Anand Agarwal is the Group CEO and Whole-time Director at STL.

Recognising the shifts in the global technology landscape, Anand has navigated STL from an optical connectivity company to a global leader in end-to-end network solutions. With his disruptive efforts, Anand has scaled the organisation to over 100 geographies, while shaping the digital infrastructure landscape globally. Under his leadership, STL has developed core capabilities in optical connectivity, virtualised radio, network software, and system integration.

Anand was awarded as the 'Most Promising Business Leaders of Asia' by Economic Times at Asian Business Leaders Conclave 2020 and 'CEO of the Year' at the Economic Times Digital Telco Summit in 2020 for his significant contribution to the Indian Telecom ecosystem. He was also awarded with "Pathbreaker of the Year" award in 2019 for transforming India's digital infrastructure at the Telecom Leadership Forum and "Broadband Infrastructure Leader Award" in 2016.

As a flagbearer of culture and diversity, he has built a passionate and inclusive organisation that is strongly connected to its larger purpose of transforming billions of lives through digital networks.

A Ph.D. in Materials Engineering from Rensselaer Polytechnic Institute and B.Tech from IIT Kanpur, Anand is a hands-on technologist in advanced photonics and programmable networks. He is a firm believer in empowering and transforming lives through innovations in technology.