

Tejas Analyst Day Corporate Update

Sanjay Nayak, MD & CEO





Safe Harbor Statement

Certain statements in this release concerning our future growth prospects are forward-looking statements, which involve a number of risks, and uncertainties that could cause actual results to differ materially from those in such forward-looking statements due to risks or uncertainties associated with our expectations with respect to, but not limited to, our ability to successfully implement our strategy and our growth and expansion plans, technological changes, our exposure to market risks, general economic and political conditions in India which have an impact on our business activities or investments, changes in the laws and regulations that apply to the industry in which the Company operates. The Company does not undertake to update any forward-looking statements that may be made from time to time by or on behalf of the Company.



Tejas Networks: A Snapshot

- Founded in year 2000 in Bangalore; Customers in more than 65 countries; Offices in 10+ countries; 700+ employees
- Design and Manufacturer of optical & data networking equipment that is used by telecom service providers
 - High-capacity Optical transmission and Broadband Access
 - Expanding in adjacent areas of wireless broadband on LTE/5G
- Technology differentiation: “Software-defined Hardware”
 - Innovative use of programmable silicon; time-to-market and cost advantage
 - Strong IPR portfolio
 - World-class talent. More than 50% team in R&D
- Innovative business model- growth+profitability in a tough industry
 - Leveraging Indian R&D costs to get 4 times R&D efficiency
 - Leveraged and focused sales model for high-growth markets- India, SE Asia, Africa & America; OEM to global players
- Success in India (world’s most competitive telecom market) leading to global success
 - #1 in Optical aggregation in India; Top-10 globally (Source: Ovum)



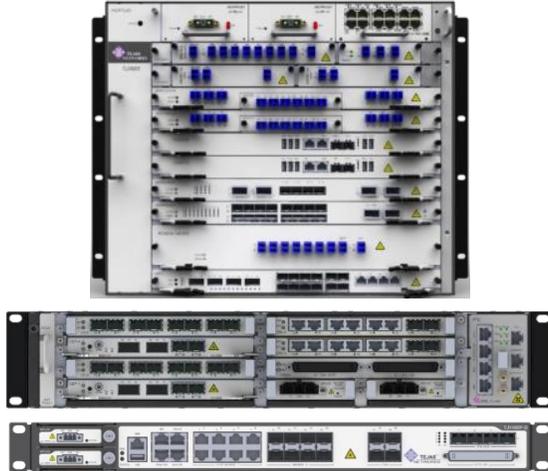
**1st Indian
Deep-technology
“Product” startup
to do an IPO**

Enabling Data & Broadband Networks: Focus on Metro, Aggregation, Access



Broadband Access
Wireline Broadband (GPON)
Wireless Broadband
(4G → 5G)

Metro and Aggregation
From Mbps → Tbps
Converged Packet Optical (SDH/OTN)
Packet Transport (PTN)
Nx100G DWDM



Programmable Silicon based Hardware

**340+ Patents
250+ IPs**

99.999% Uptime Quality

400,000+ field deployments

Tejas Focus- Application Areas



Next-gen Mobile Backhaul- 4G/5G

Transport of cellular traffic from base stations to switching centers

Technologies: PTN, CPRI

Bandwidth Services

Bandwidth wholesaling to telcos or enterprises; Data centers

Technologies: 100G/200G DWDM, DCI

Broadband Access & Infrastructure

Delivering high-speed Internet services over wireless or wired media

Technologies: NG-PON, 4G/5G FWA

Network Modernization

Migration to next-gen SONET or PTN

Technologies: Circuit Emulation, SDN/NFV

Unique Business Model- Profitable in a Challenging Global Industry



Strengths of Tejas Business Model

Use of mass-market FPGA devices,
Ownership of silicon IPR,
Outsourced “Asset-light” Manuf. to
EMS companies in India

Majority of our costs are on
manpower, which are India-based
Strong software skills from India

Sales Focus on fewer, but high growth
and large potential markets;
Effective use of India for back-end
support activities

Sustainable financial performance

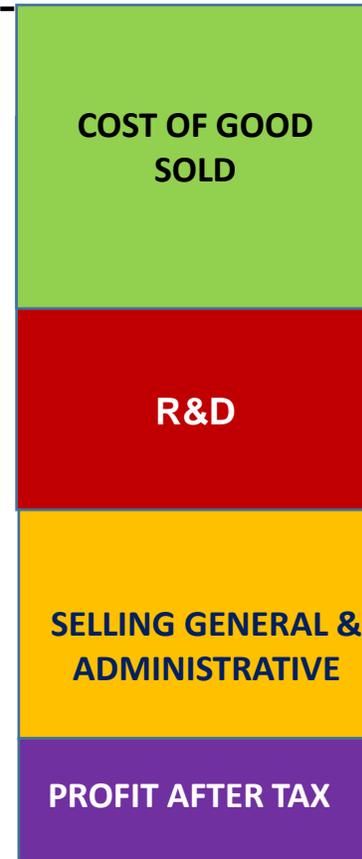
Advantage against Global Peers

Tejas Gross Margins are close to those
of global peers, despite lower
economies of scale and large
proportion of India revenues

Benefits of India-based R&D;
4-times R&D for same cost as
compared to western peers

SG&A costs are half that of global
peers, while creating a large growth
potential

Growth, with profitability



Global Data Demand will Continue to Drive Optical Capex for next 5 years

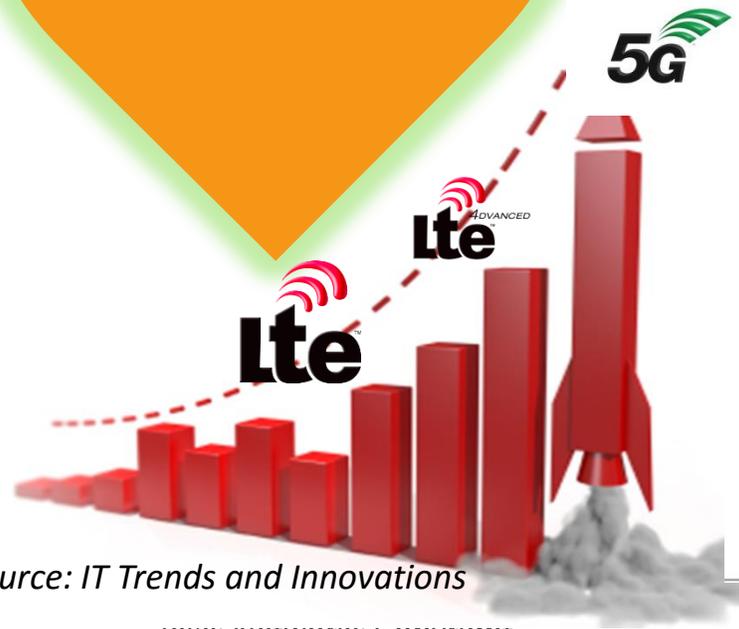


78% CAGR in mobile data consumption till 2020

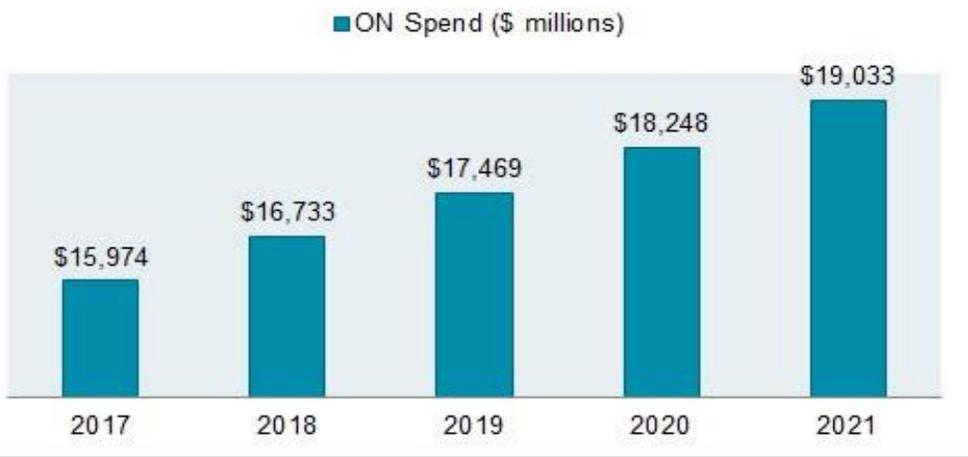


50X increase in data created by 2020

87% of human population uses mobile devices



Global ON Forecast



2012

9 billion

2020

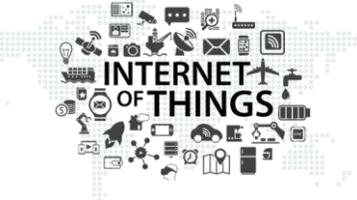
50 billion

IoT Devices

Source: IT Trends and Innovations

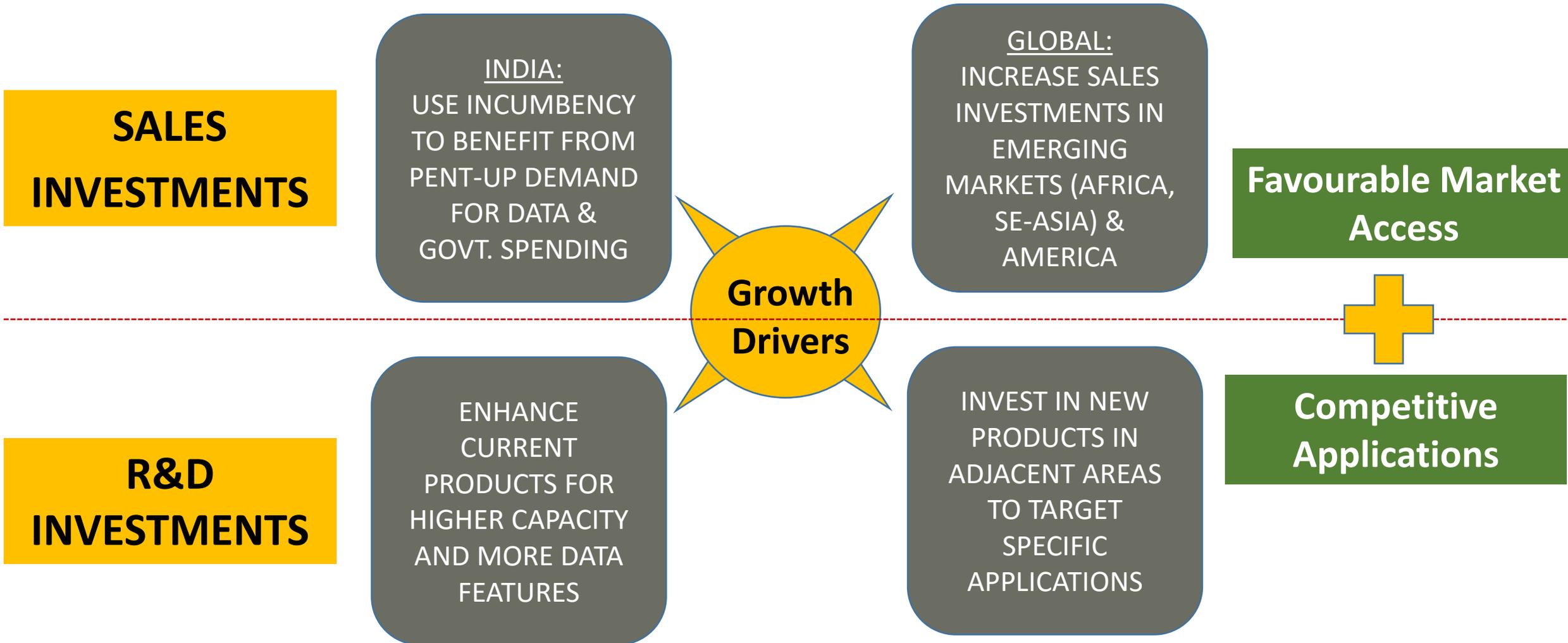
Telecom Industry Evolution- Each disruption opens opportunities for new players



1970 – 1990	 	Landline, Analog Wireless	PTT	US, Europe
1990 – 2005	 	Wireless, Mobile Phones, Internet	PTT + New Operators	US, Europe, China
2000 – 2015	 	Mobile Broadband, Video on Internet	Operator Consolidation	US, Europe, China
2010 – 2020	 	Video, Smartphone, Cloud, Broadband everywhere	Operators + OTT	US, Europe, China, Korea
2019 Onwards	 	IoT, M2M, Cloud, Software Defined Networking		US, Europe, China, Korea, India



Strategic Priorities for Growth



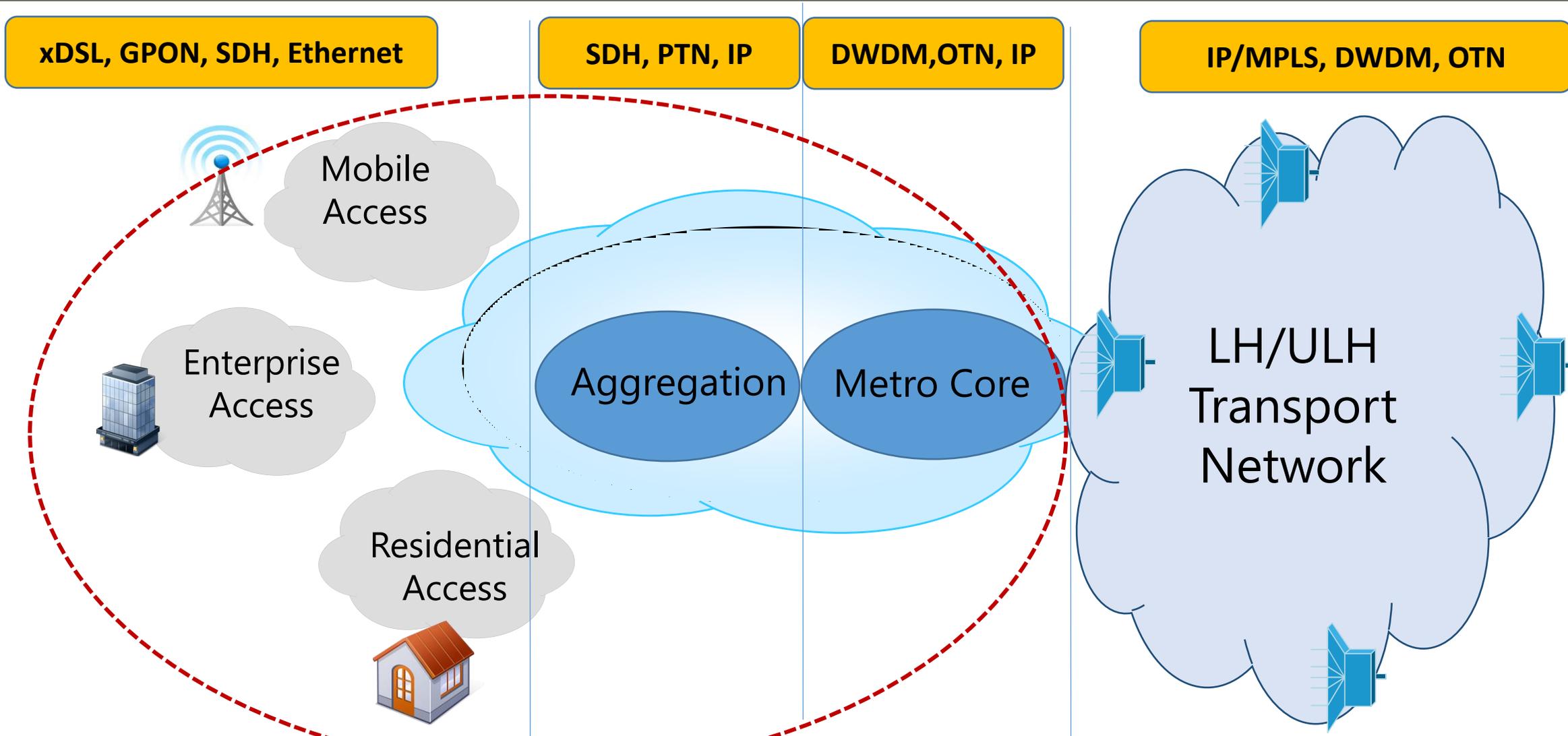
Technology Trends and Strategy

Kumar N. Sivarajan

Chief Technology Officer

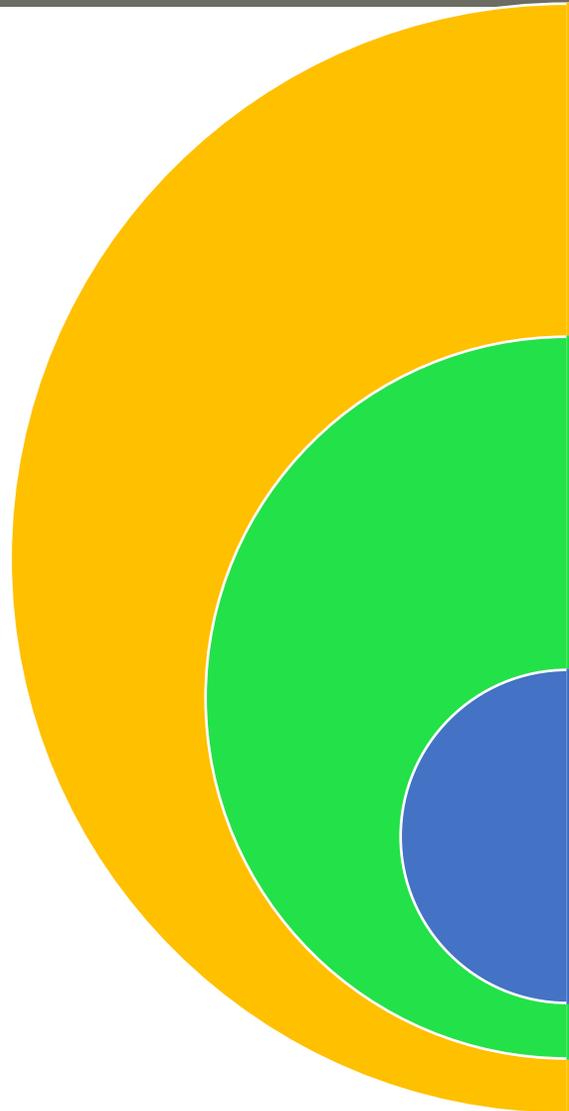


Telecom Networks Today: Access to Metro to Long-haul





Macro Trends Impacting our Business



Fiberization

- Deeper fiber penetration to homes, businesses, data centers and cell towers

5G

- More base stations (“densification”), higher-speed access and larger capacity optical pipes

Cloud

- Reinvention of access with greater virtualization of network functions

Key Drivers of Fiberization



Applications



Smartphones, Video, IoT/M2M

- Exploding mobile data usage and high-definition video ecosystem (4K video)
- Networked devices (IoT/M2M) hitting mainstream
- Affordable data devices and plans



Technologies

- Next-gen 10G PON and 100G PON connections to homes and buildings;
- Fast-tracked 5G driving multi-gigabits to cell sites
- Microwave technologies unable to cope with backhaul demands



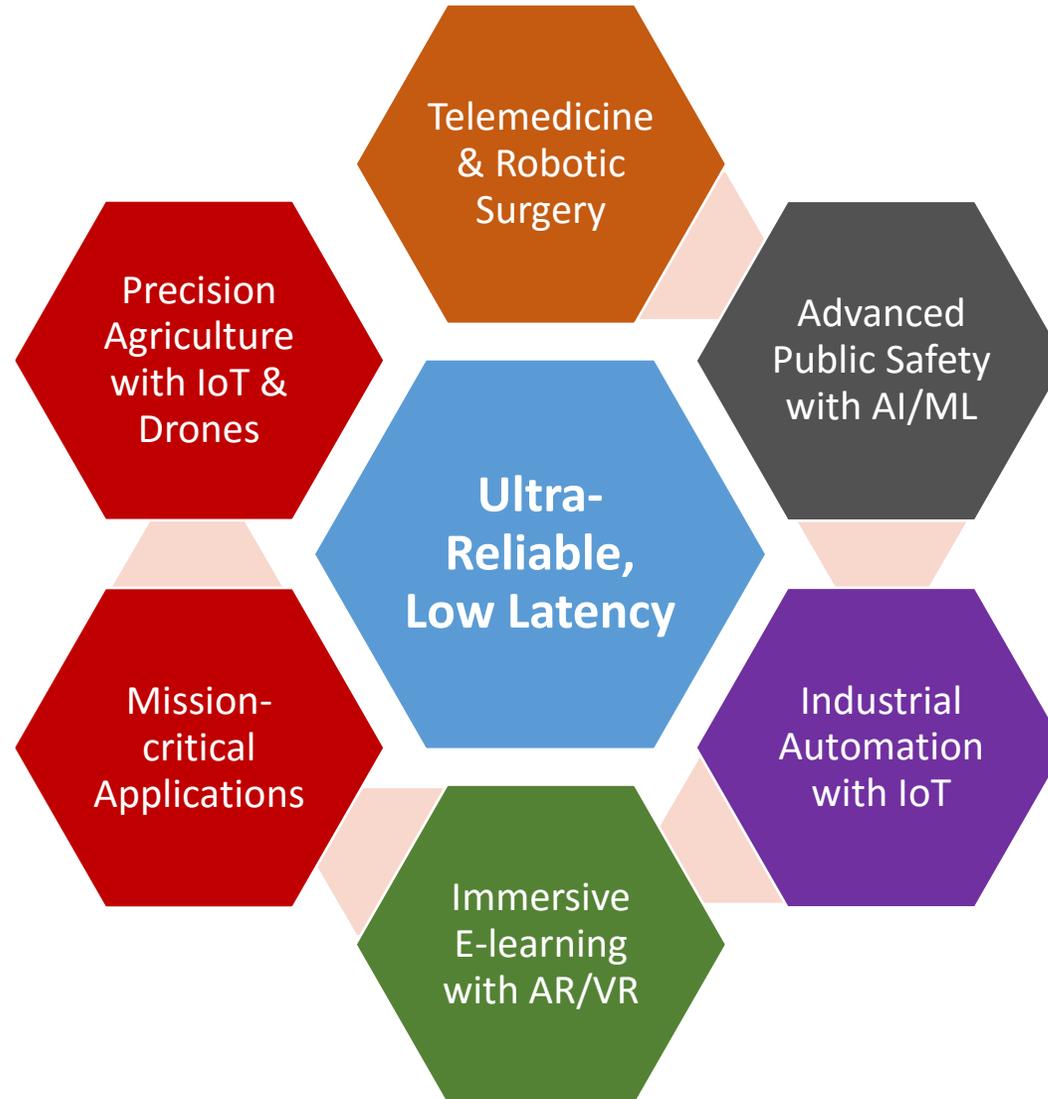
Data Center Interconnects



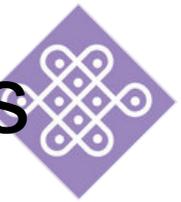
- Large investments in hyperscale data centers
- Upgrades both within and in inter-data center networks
- Multi-terabit traffic exchange in Metro networks
- Web-scale companies entering global subsea cabling space



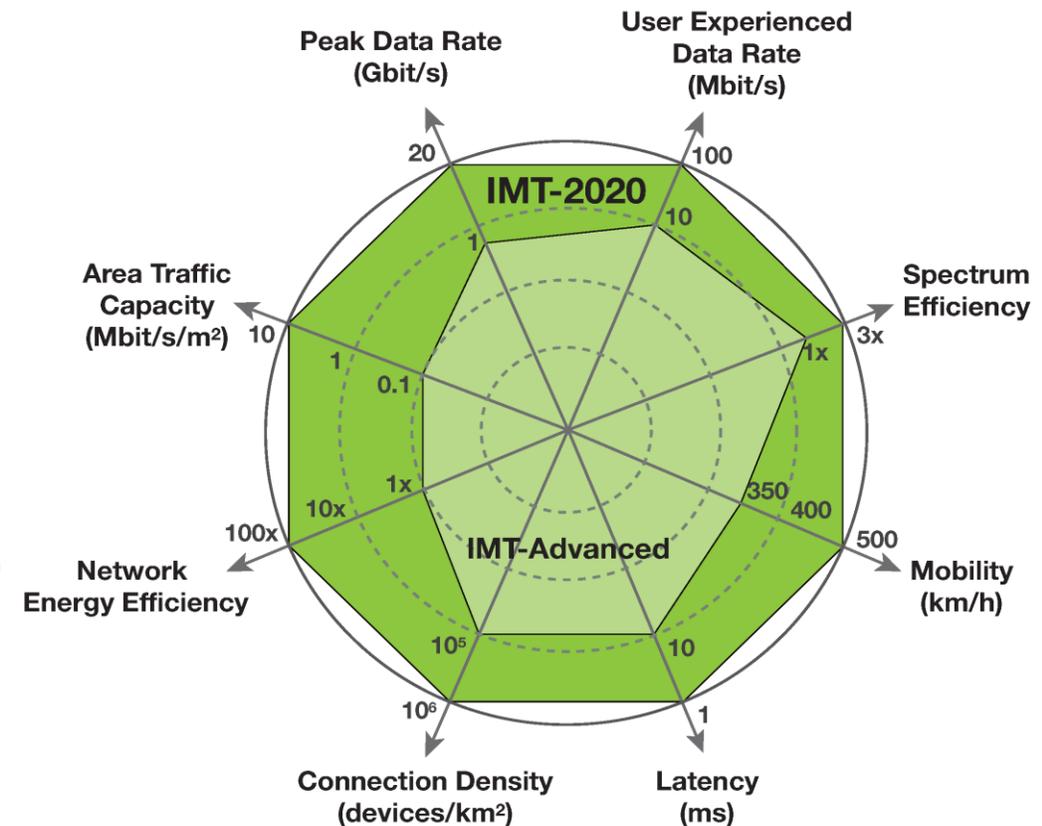
5G: New Applications to drive Network Changes



5G: Increased Demands on Transport Networks

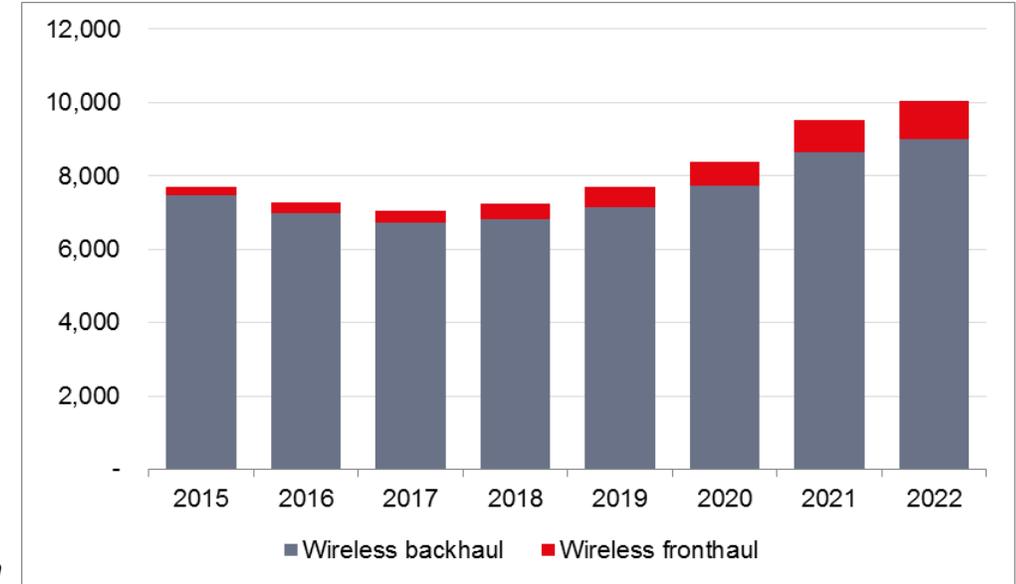
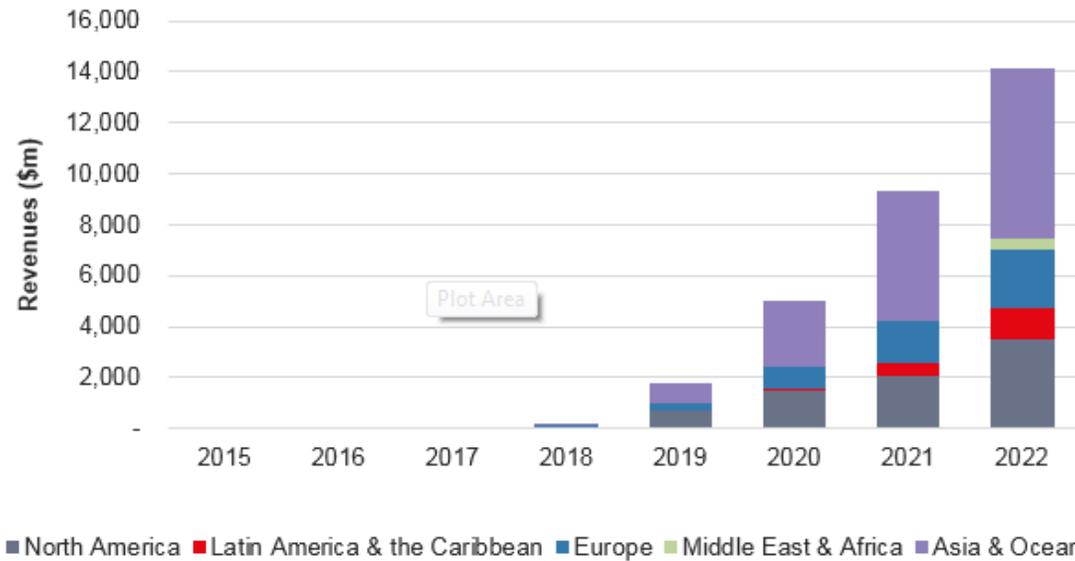


- Data Download Rates of up to 20 Gbps
- Ultra-low Latency Services
 - Less than 1 ms
 - Jitter/Timing precision in nanoseconds
- Mobile Edge Computing (e.g., Video Analytics)
 - Intelligent Processing at the Edges to optimize backhaul bandwidth by up to 35%
- More Devices – massive connection growth (IoT)
- Small Cell backhaul to account for 50% of total 5G Capex/Opex
- Network Slicing Requirements
 - Low-latency apps and Enhanced Mobile BB delivered on same infrastructure
- RAN Virtualization



Source: NGMN

5G: Market Overview

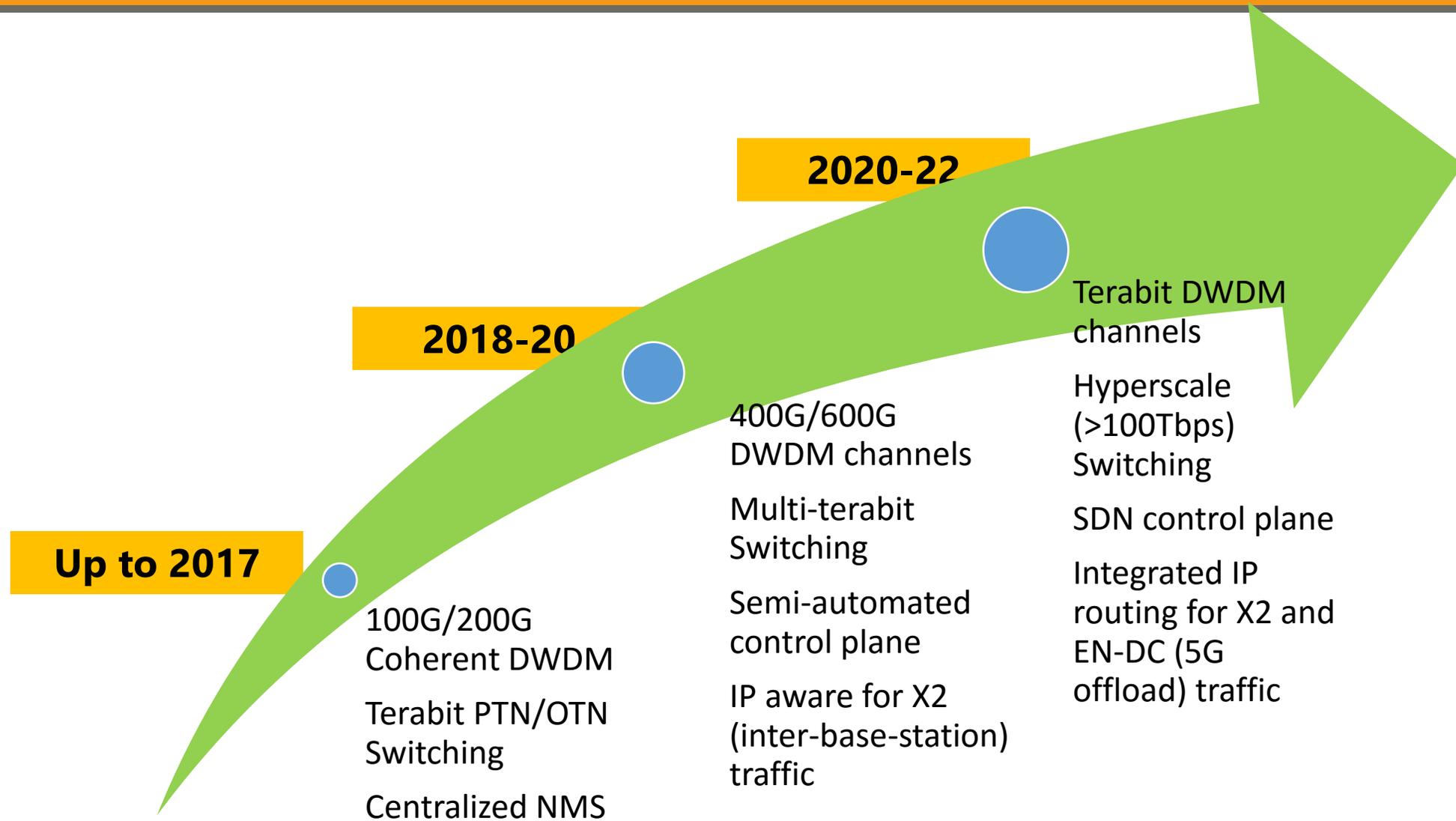


Source: Ovum

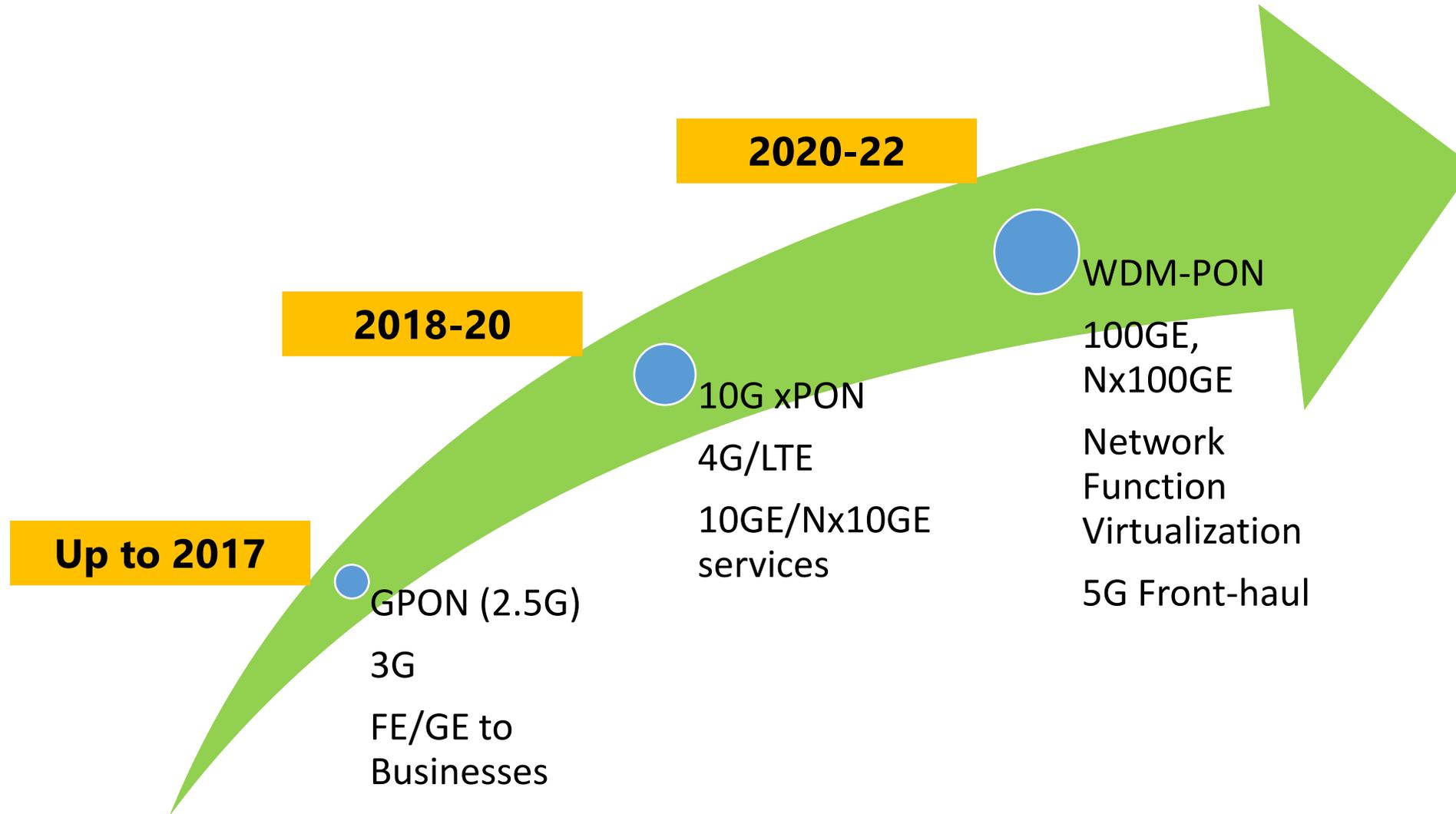
- Global market for 5G equipment to grow to \$14 billion by 2022
- 5G will drive accelerated investments in “crosshaul” (backhaul + front-haul), primarily over optical fiber
- Optical front-haul will contribute ~\$1 billion to the total optical equipment expenditure in the aggregation and metro region



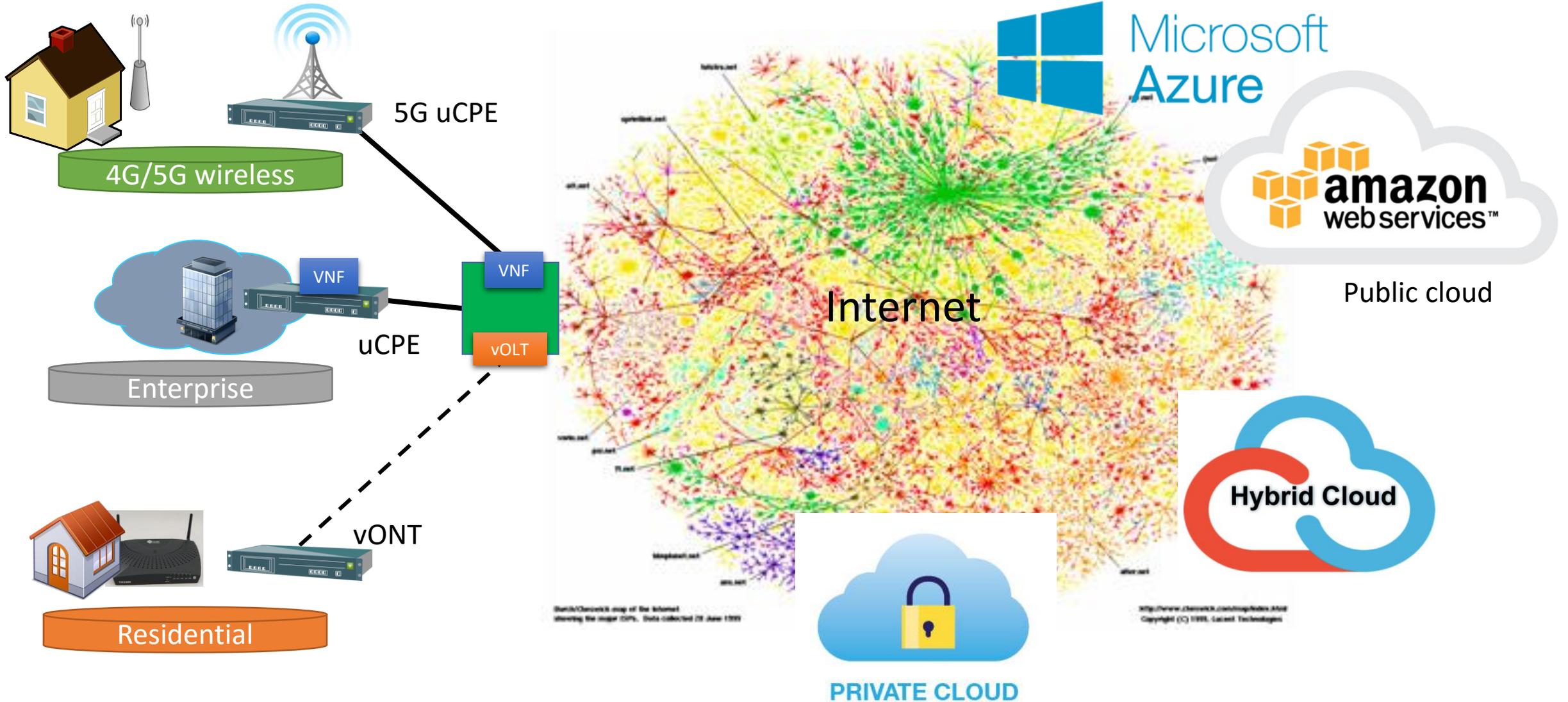
Evolution of Metro Optical Technologies



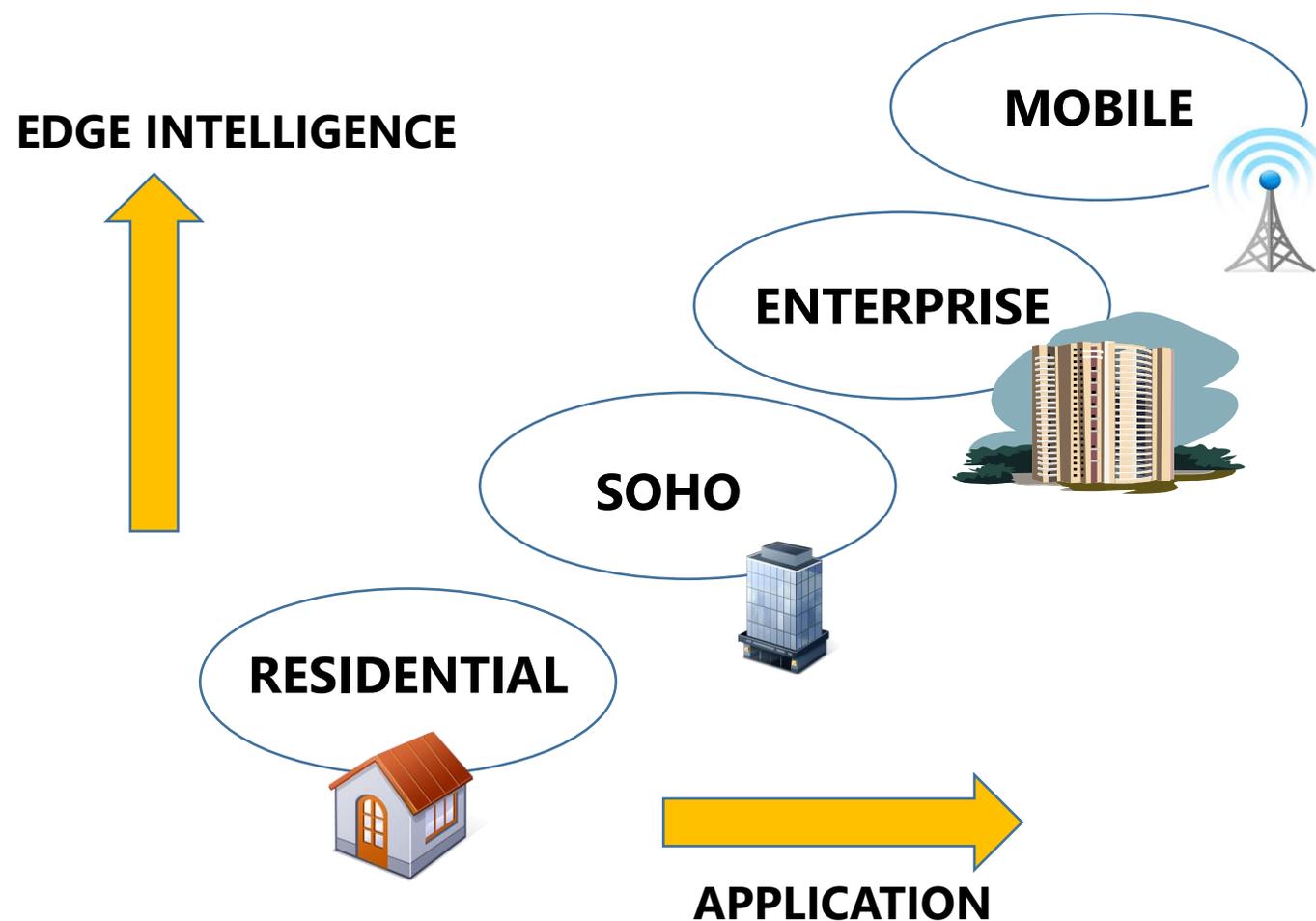
Evolution of Access Networks



What and How of Cloud?



Impact of "Cloudification" on the Access



- Cloud makes it possible to virtualize key network functions in software
- Popular edge appliances will be realized on servers at POPs/Data Centers
 - Firewall, NAT, Routing
- Greater flexibility in controlling edge intelligence as per end-user needs
 - Skeletal CPEs for Residential and Sophisticated CPEs for Carrier/Enterprise customers
- CPEs will be remotely configurable and manageable by the service provider

5G uCPE for Enhanced Mobile Broadband



uCPE (Radio+Transport)



5G gNB



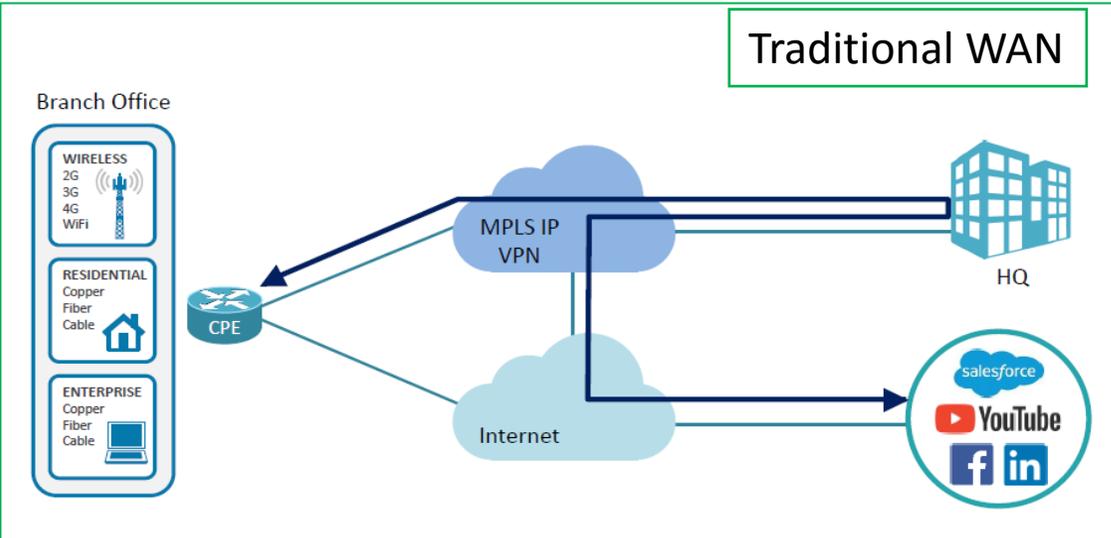
5G EPC

- 5G uCPE will integrate optical fiber transport and radio functions
- Rest of the base station functions will be implemented in the cloud
- uCPE will be deployed at street level close to customer premises to increase access bandwidth
- Optical Fiber based fronthaul from uCPE to gNB using Radio over Ethernet or CPRI/eCPRI standards

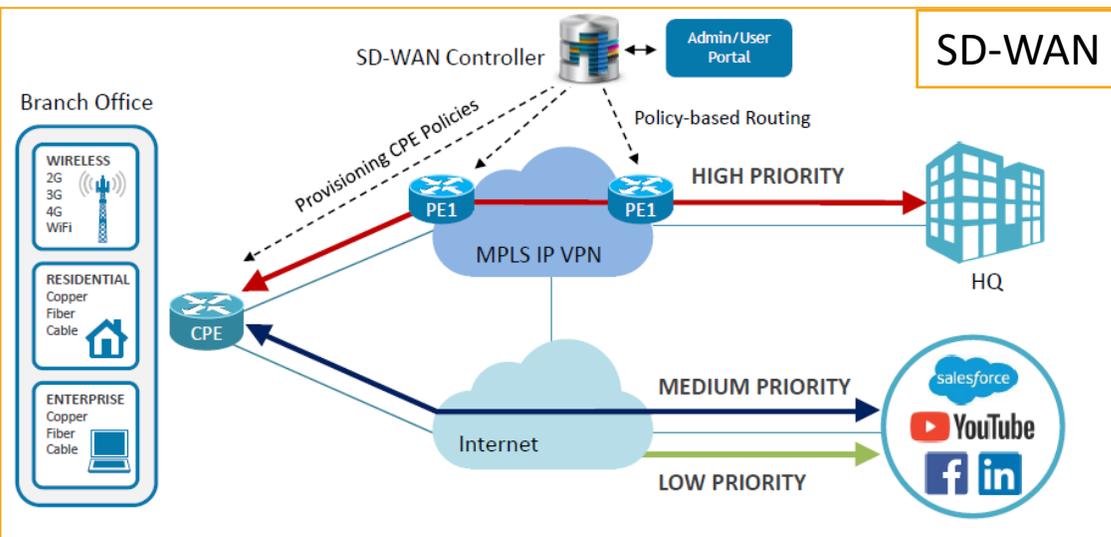
Enterprise uCPE for Business Services



Traditional WAN



SD-WAN



- Access product with enhanced VNF (Virtual Network Function) processing capability
- Standards-based open interfaces compliant with MEF LSO (Lifecycle Services Orchestration) or MEF 55 interfaces
- Integrated WAN router and transport function with ability to connect to public and private cloud in a fungible fashion
 - Multiple connectivity options (Internet + Leased line + MPLS VPN) for redundancy

Residential vCPE for Fiber Broadband



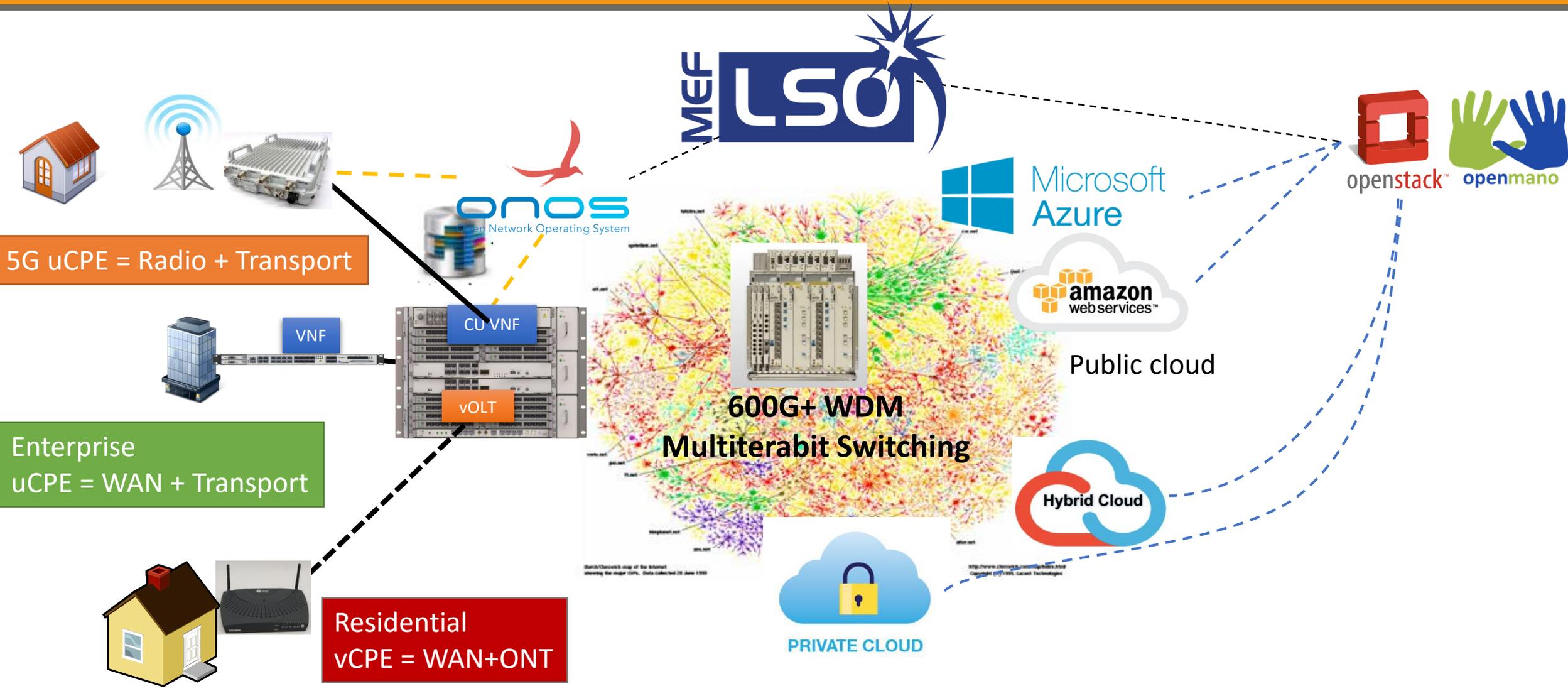
vCPE (ONT)



uCPE (OLT)

- Residential CPEs will become simple, low-cost and carrier-configurable
- Both ONT and OLT will be virtualized
- vCPE (ONT): 802.11ac WiFi, xPON ONT, 4G/5G UE optionally integrated with load balancing across xPON, Ethernet and 4G/5G
- OLT will also be realized as Virtual Network Functions (VNFs) in the Aggregation Layer

Telecom Networks: 2020 and Beyond



Products and Applications

Arnob Roy, President-Optical Products



R&D and Innovation-driven Organization



1

INNOVATIVE R&D PROCESSES

- Design flexibility through FPGA based approach gives cost and time-to-market advantage
- IP reuse, unique verification environment, common code base

2

IN-HOUSE OWNERSHIP OF ALL CRITICAL IPR

- Technology expertise and IP in network transport technologies like SDH, DWDM, OTN, Carrier Ethernet; Routing, Switching
- 340+ patents and 400,000+ systems in service, with >99.9995% uptime
- Among top patent filers in the Indian ICT industry

3

WORLD CLASS R&D TEAM

- R&D team constitutes ~52% of manpower; ~70% of R&D from IIT/NIT/IISc
- Expertise in Hardware, Embedded Software, Network Management and Chip design

4

CONTINUED R&D INVESTMENT FOR LONG-TERM GROWTH

- Continued expansion into newer technology areas and product lines
- Actively participating in telecom standards bodies; driving 5G and next-generation optical standards

Tejas Networks Copyright

Software Enabled Transformation

Advanced R&D skill-sets- high entry barrier

High-speed Board Design
Embedded Software
Network Protocols
Integration Engineering
Regulatory Testing
TL9000 Quality
CAD
FPGA Design
Management Software

...technology leadership..

340+
Patents

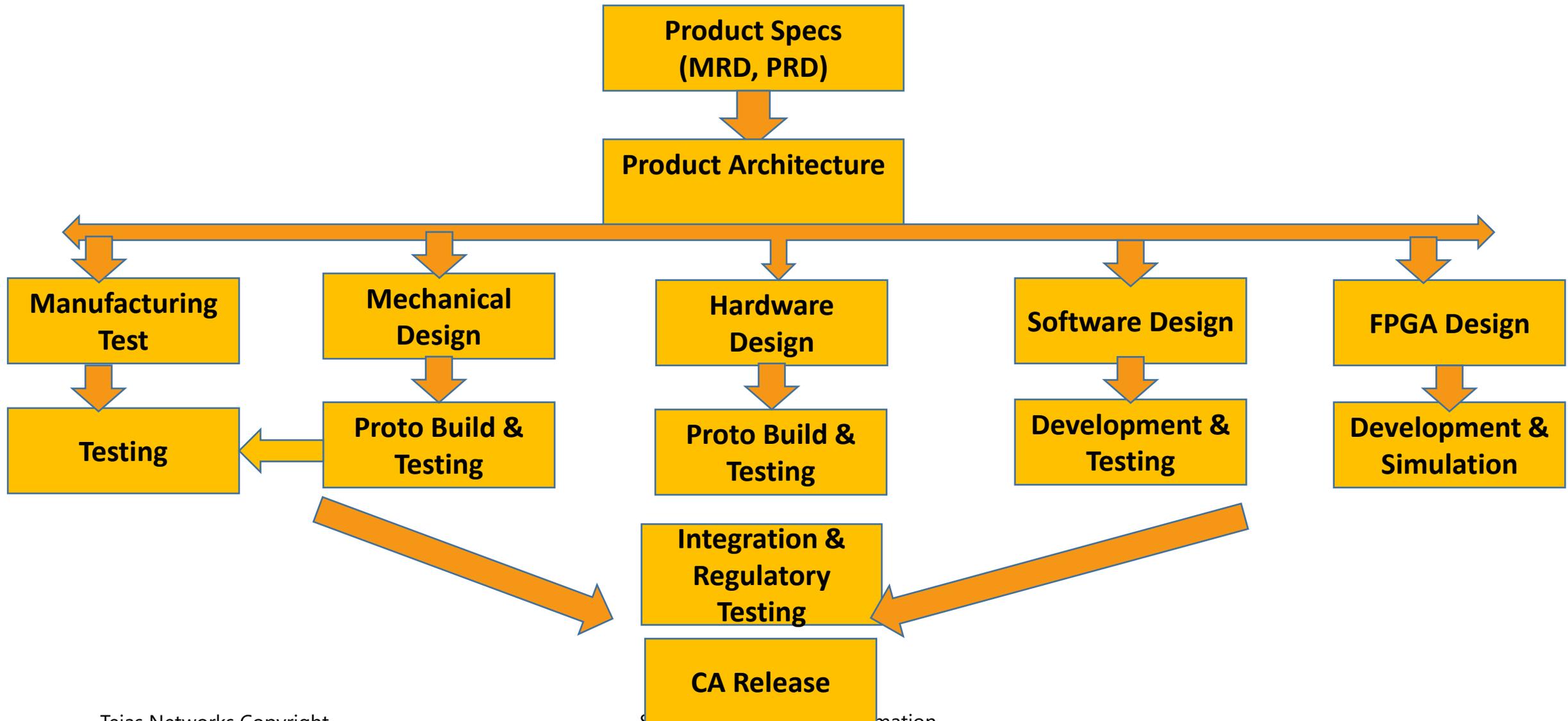
250+
Silicon
IPs

3Mn+
Lines of
Code

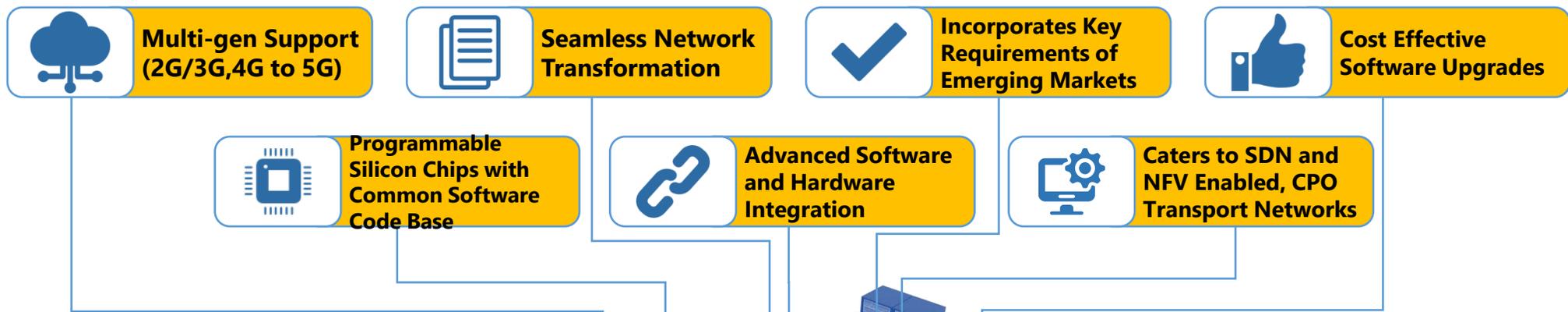
tsdsi
India's Telecom SDO



Product Development Process – Multi-disciplinary Engineering Skills



Our Differentiation: Software Defined Hardware™



Benefits to Customers

- Lower lifecycle cost
- Upgrade for new features and capacity
- Seamless evolution to next-generation communication architectures
- Customized to meet market-specific requirements

Benefits for Tejas

- Time-to-market advantage
- Ability to sell the same product globally
- Reduced R&D costs – design re-use
- Ability to sell upgrades on installed base

4G/5G Transport Architecture

Future-Ready Products

Transport Network Modernization

Product Portfolio



Optical Products

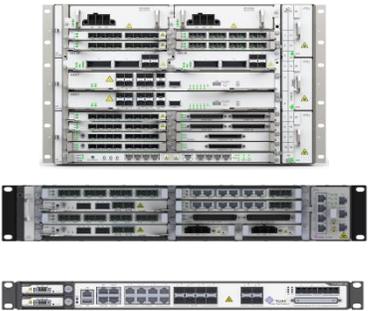
TJ1600



Optical Metro Core Products

- Multi-terabit Switching with DWDM, OTN, PTN and Ethernet
- Universal, Programmable, Dense Multi-protocol Cards
- High-capacity Circuit Emulation and Packet Switching

TJ1400



Optical Metro Access Products

- Terabit Switching Platform for TDM, Hybrid, PTN transport
- Flexible, Multi-protocol Cards for OTN, SDH and Ethernet, GPON
- High-capacity Circuit Emulation and Packet Switching

Products for Broadband Access

New Broadband Access Products (integrated with optical transport)

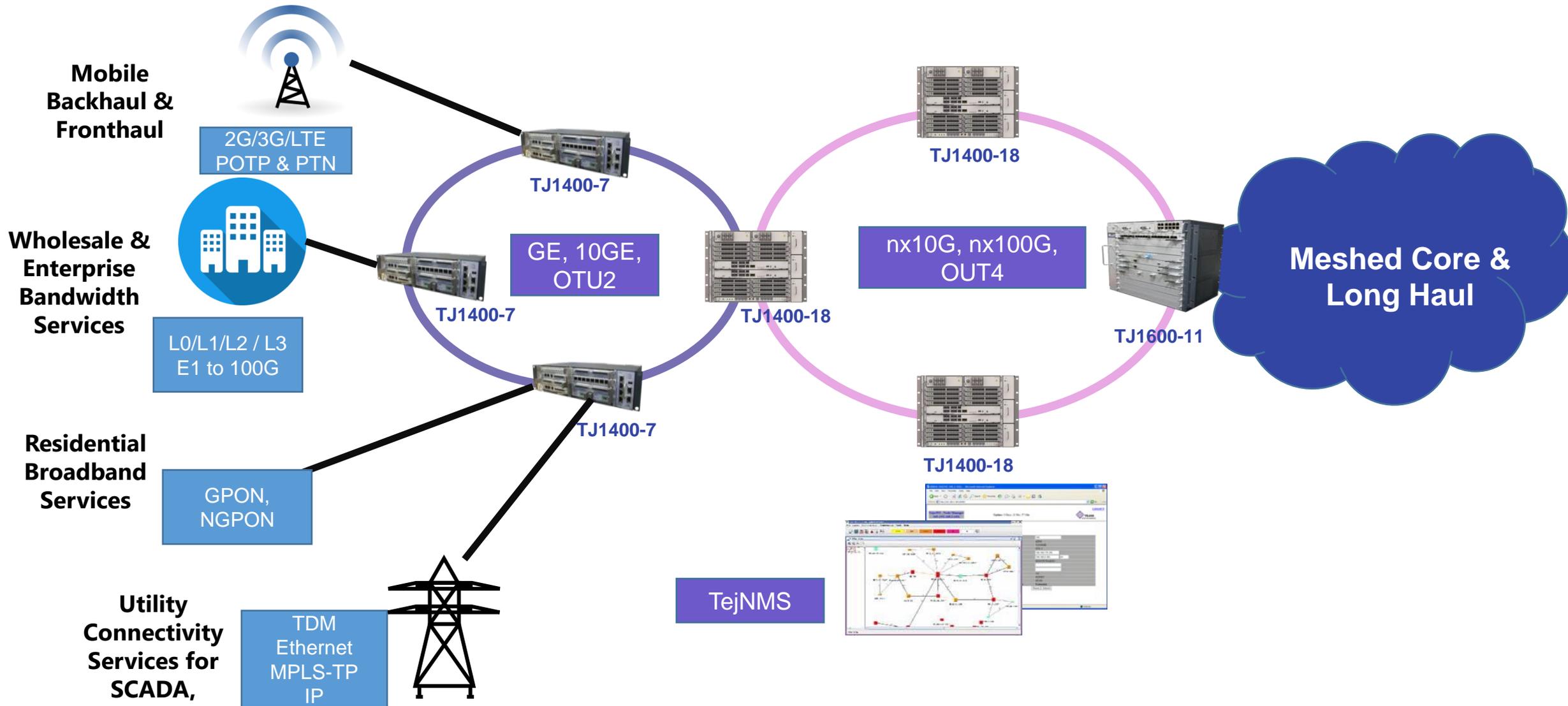


- GPON OLT and ONT products for Fiber-to-the-Home
- Fixed LTE Base Stations for Enterprise Services
- Ethernet and IP Switches for Enterprise Applications



All our products are managed by a common SDN-ready Network Management Software

Unified Service Delivery serving Multiple Applications





Application Overview: Mobile Backhaul

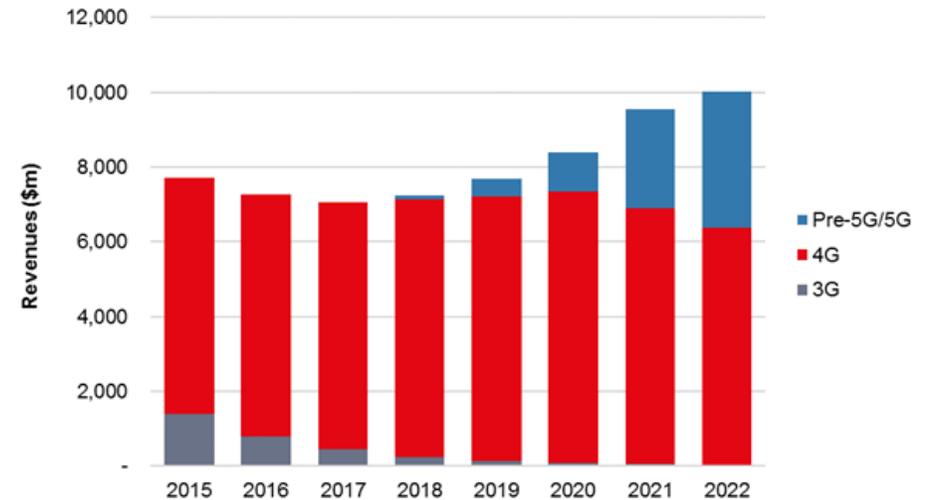
Business Requirements

- ❖ Future-proof solution with low total cost of ownership
- ❖ Compatible with existing 2G/3G backhaul infrastructure
- ❖ Flexible architecture for incorporating 5G technologies and standards
- ❖ Ease of evolution to a software-defined network architecture with centralized control plane

Technology Requirements

- ❖ Supports mix of TDM/packet transport for converged 2G/3G/4G networks of today
- ❖ Upgradeable to support eCPRI, FlexE and other evolving standards required for support 5G xHaul requirements supporting cloud-RAN architectures
- ❖ S/W architecture and interfaces supporting network slicing for supporting multiple application verticals

\$10 Bn Mobile xHaul Market by 2022



Tejas Products

- ❖ Universal platform for 2G/3G/4G and 5G backhaul
- ❖ Economical packet transport architecture (MPLS-TP, CE2.0)
- ❖ High capacity circuit emulation
- ❖ CPRI, OTN and xPON support for C-RAN/MFH applications
- ❖ SDN-ready Network Management

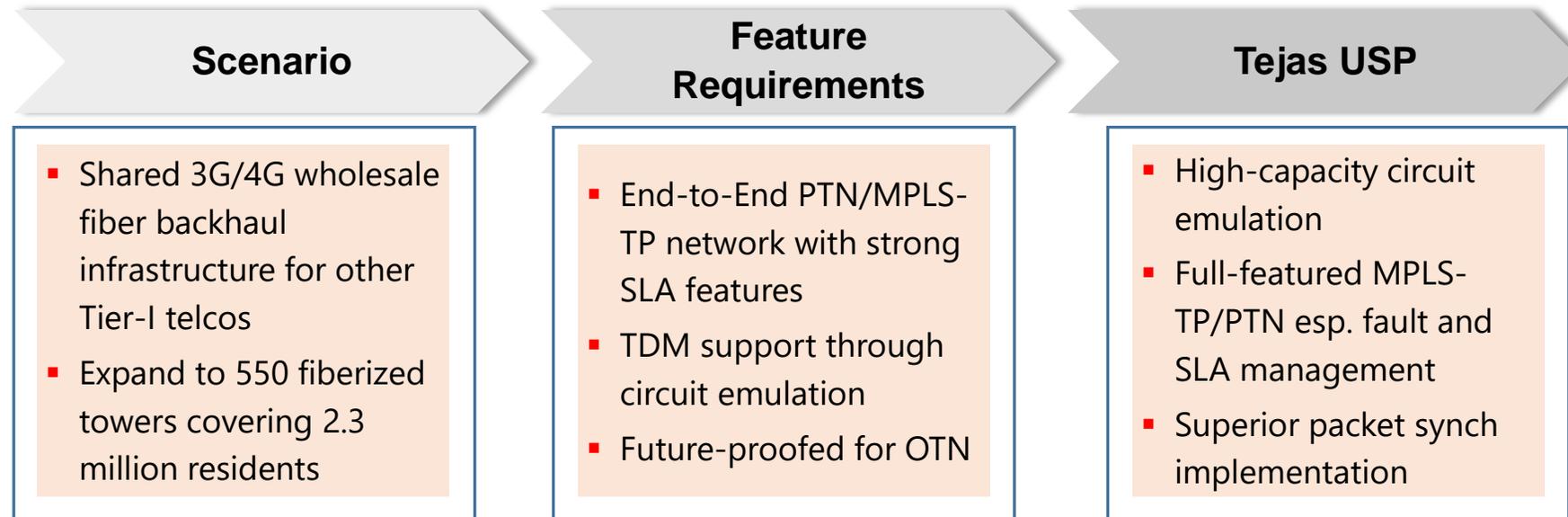




Case Study: Converged Mobile Backhaul

Client: One-stop telecommunication infrastructure provider with extensive terrestrial fiber

Tejas Offerings: TJ1400 and TJ1600 with MPLS-TP/PTN support



One of the first and largest PTN network implementations in South East Asia

Application Overview: Wholesale Bandwidth Services



Business Requirements

- ❖ Scalable from Megabits to Gigabits
- ❖ “Pay as you Grow” architecture
- ❖ Wide choice of client interfaces, transmission media, bandwidth
- ❖ Ability to offer premium SLA-backed value-added services with secure infrastructure sharing

Technology Requirements

- ❖ Strong portfolio of SDH, OTN and DWDM products to create an end-to-end wholesale infrastructure
- ❖ Support for 100G/200G wavelengths with terabit OTN cross-connect for efficient traffic packing
- ❖ 10G/100G alien wavelength capability

\$70Bn Ethernet Services Market by 2020



Tejas Products

- ❖ Converged, multilayer platform for L0/L1/L2 services
- ❖ Support for 100G/200G Metro and LH DWDM technologies
- ❖ Multi-terabit OTN/PTN switching
- ❖ Disaggregated Architecture for Unlimited Scalability
- ❖ Alien Wavelength capability

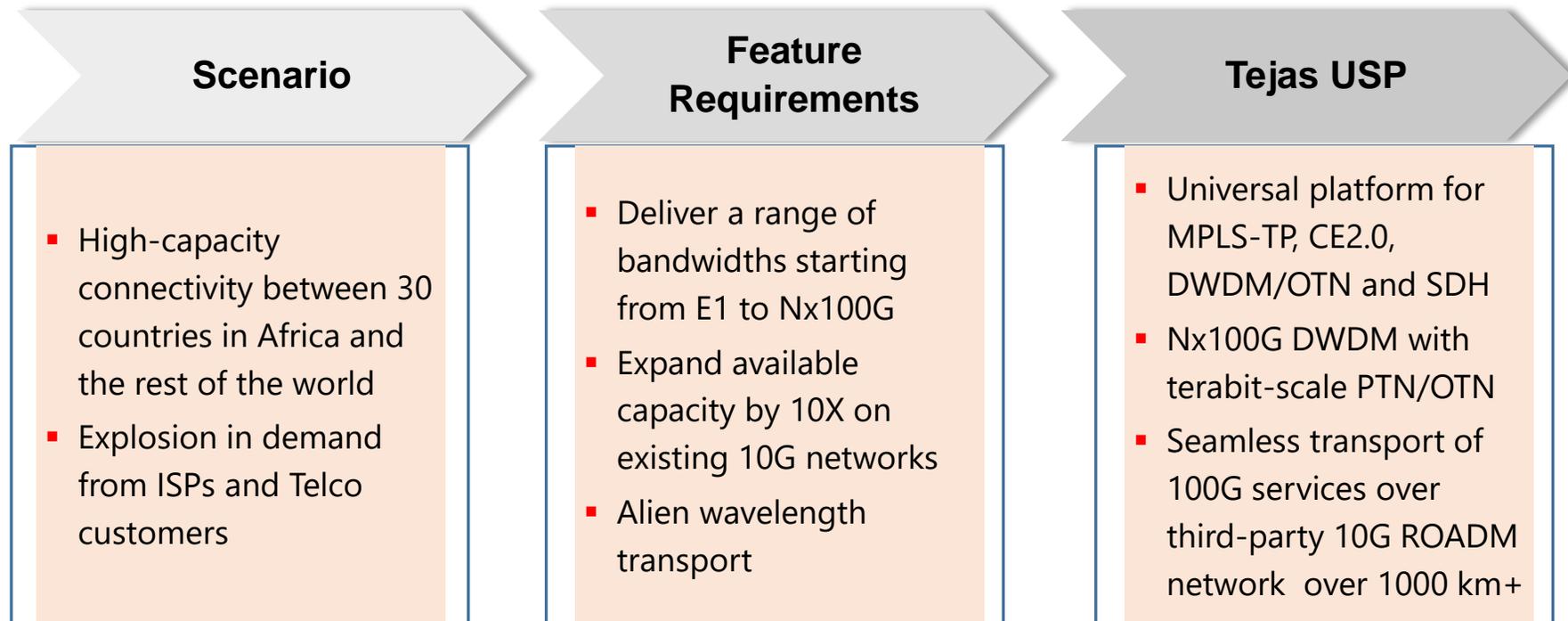


Case Study: Wholesale Bandwidth Services



Client : Africa's Largest Carrier of Carrier owned by Tier-1 Telcos from 14 Countries in the Continent

Tejas Offerings: TJ1600 with 80 channel 100G coherent DWDM support



Deployment of cutting-edge 100G coherent DWDM technology on third-party infrastructure

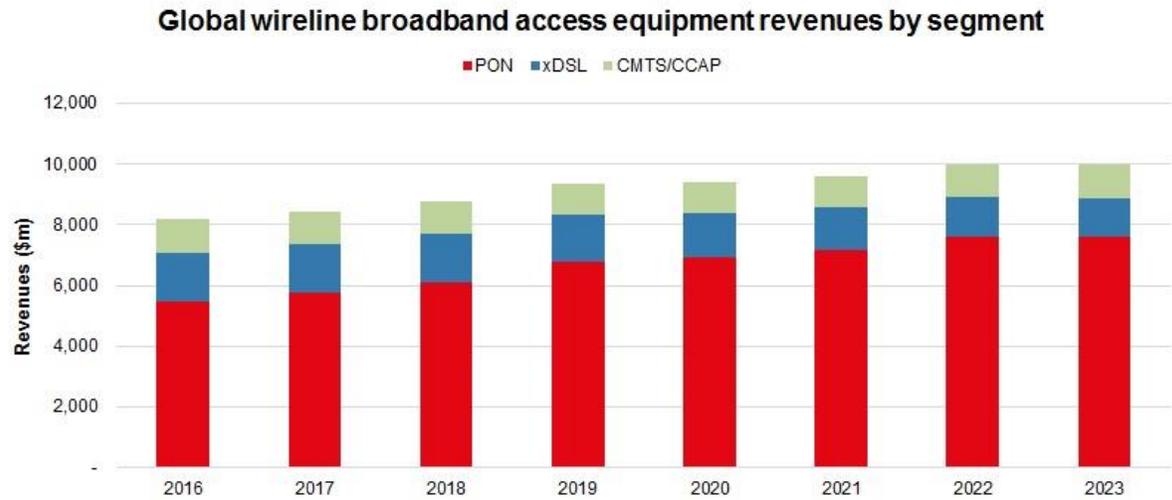


Application Overview: Broadband Services

Business Requirements

- ❖ Bandwidth explosion putting intense cost pressure on access networks
- ❖ Same access infrastructure for non-residential applications viz., backhaul and enterprise services
- ❖ Field hardened products for rural deployments as part of broadband infrastructure projects in emerging markets

\$7.5Bn xPON Market by 2020



Technology Requirements

- ❖ Evolving to higher-speed technology standards (e.g., 10G PON, 4G/5G FWA)
- ❖ Manageability of CPEs and enhanced service protection are critical for non-residential deployments
- ❖ Adoption of open-source software frameworks and virtualization of CPEs and OLTs

Tejas Products

- ❖ Converged Broadband Access and Transport platform
- ❖ Support for both xPON OLT and 4G/LTE eNodeB as blades
- ❖ Upgradable to support NG-PON and 5G gNB fixed wireless access

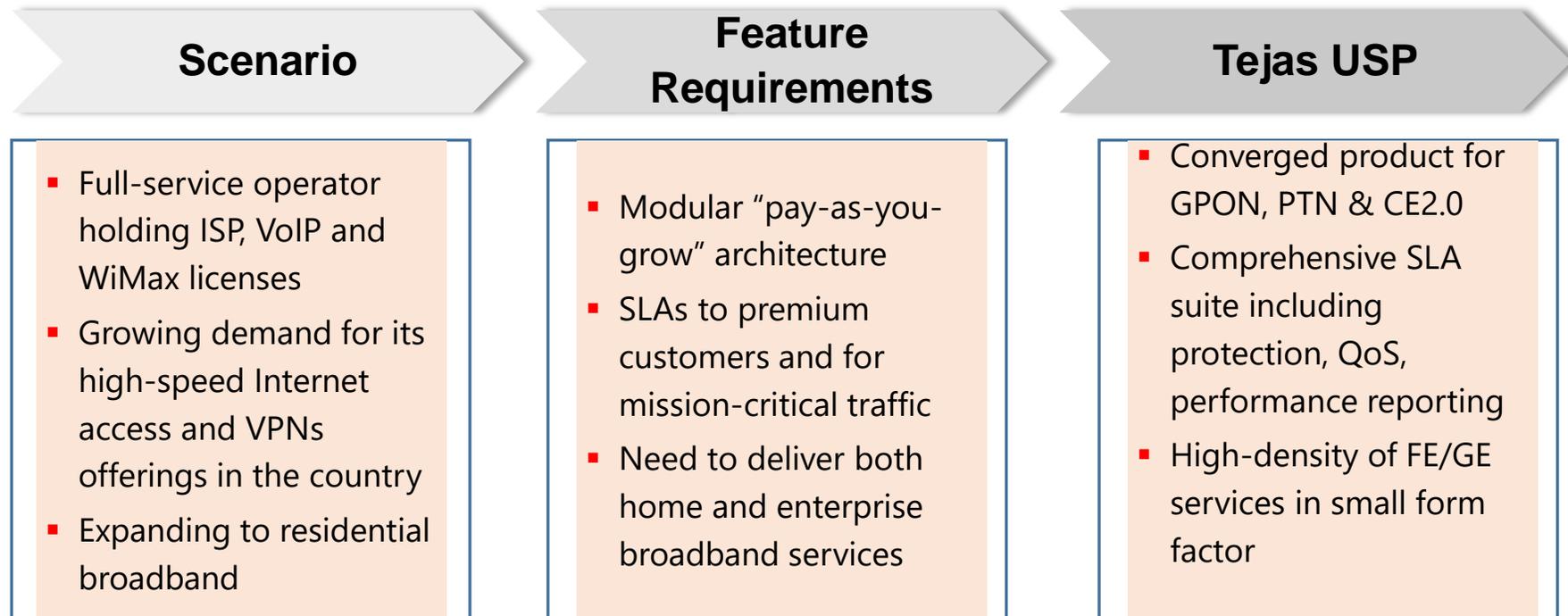




Case Study: Broadband Infrastructure

Client: Leading Internet Service Provider (ISP) in MENA offering broadband and enterprise services

Tejas Offerings: TJ1400 converged access and transport product



Tejas products deployed in national and international POPs of the ISP

Application Overview: Network Modernization



Business Requirements

- ❖ Modernize existing optical infrastructure without changing end-points, to avoid customer churn
- ❖ Compatibility with traditional transport-style operations to avoid retraining costs
- ❖ Ability to plan network transformation at a comfortable pace viz., next-gen SONET to hybrid SONET/PTN to pure PTN

Market Size

- ❖ Opportunities in multiple application segments
 - ❖ Fixed-line Voice and 2G Mobile Voice
 - ❖ Enterprise Leased Lines
 - ❖ Utility Control Networks, Emergency services
- ❖ Several Billion dollars worth of installed base of TDM equipment which is 7+ years old

Technology Requirements

- ❖ Replacing legacy SONET with next-gen SONET or PTN
- ❖ “Emulated” circuit has to meet tight timing, latency characteristics and stringent protection switching time requirements (<50ms) for TDM traffic.
- ❖ Scalability to support 1000s of such circuits as is done in legacy TDM networks

Tejas Products

- ❖ Dense Circuit Emulation up to 10 Gbps
- ❖ Field-proven Packet Synchronization implementation
- ❖ Support for SONET modes
- ❖ Reprogrammable hardware to ease transition

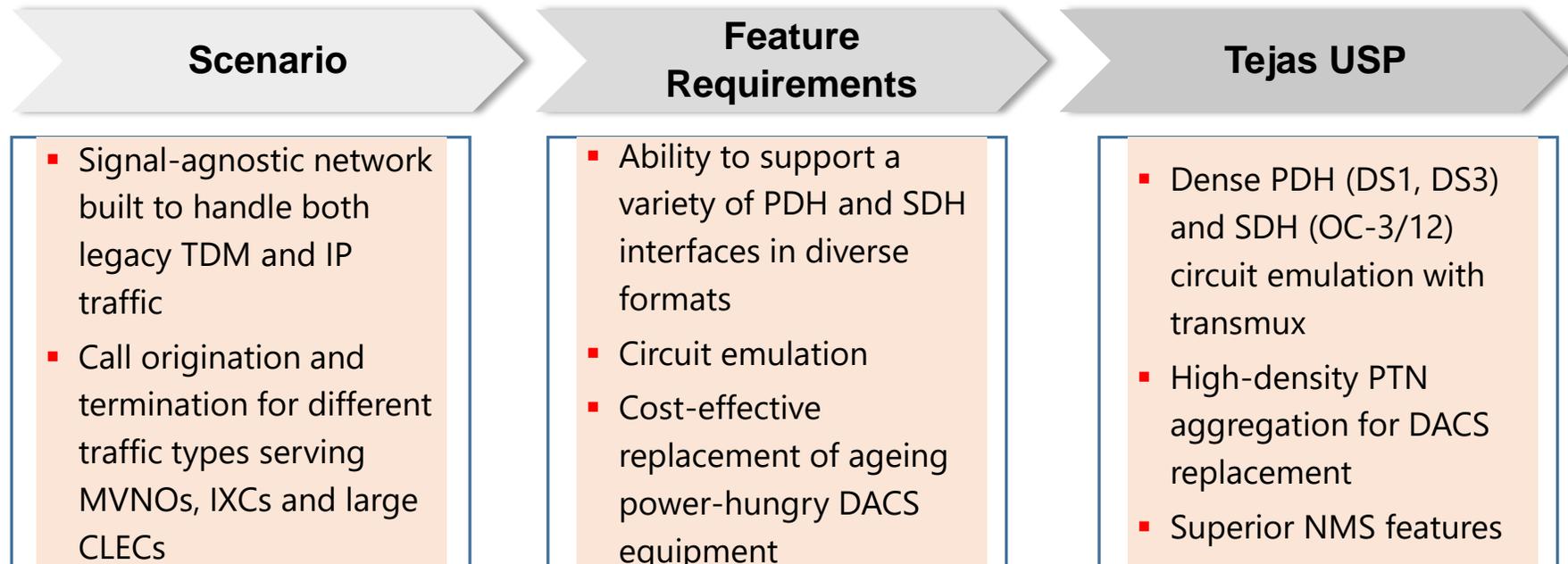




Case Study: Network Modernization

Client: One of the largest interconnected networks with carrier connections throughout USA

Tejas Offerings: TJ1400P, TJ1400-7 and TJ1400-18 SONET variants with circuit emulation support



Software-defined Hardware™ architecture enables flexible adaptation of SDH products for SONET markets



Summary

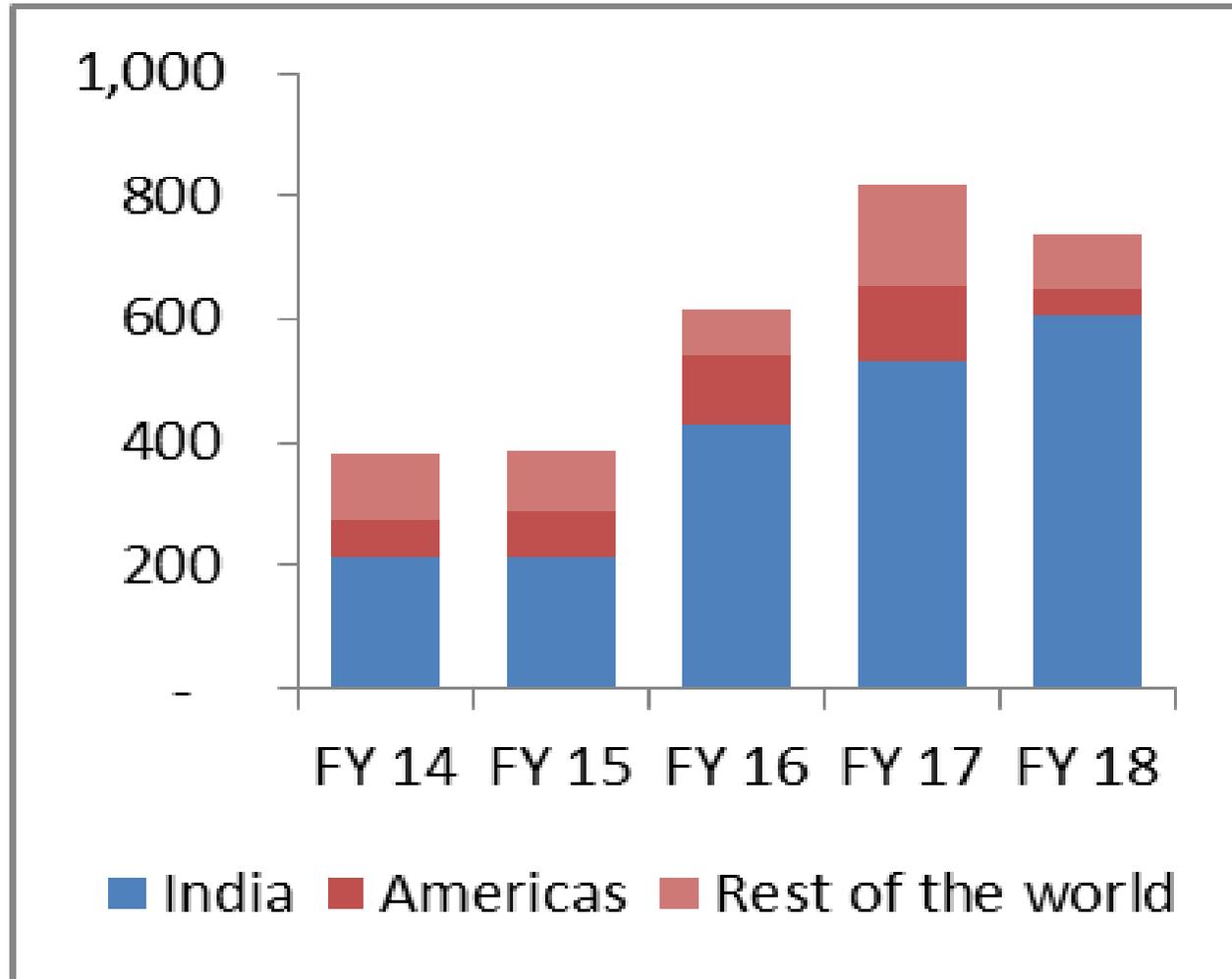
- High quality products and innovative R&D processes
- Advanced R&D skillsets with high entry barrier
- Flexible software-defined hardware TM architecture
- Unified Service Delivery Platforms for Optical Networks
- Large and Growing Network Application Areas
 - Next-gen Mobile Backhaul
 - Wholesale Bandwidth Services
 - Broadband Infrastructure
 - Network Modernization

Sales Strategy

Sanjay Nayak, MD & CEO



Revenue Trend

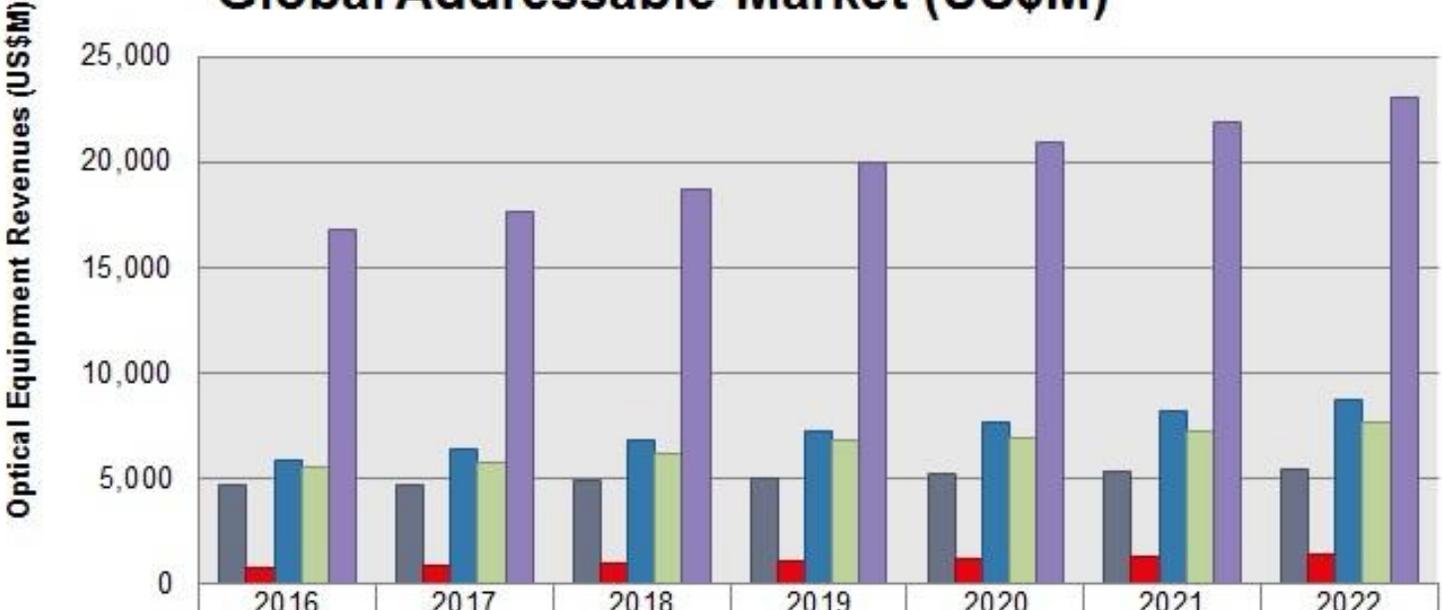


- FY18
 - Some large orders came late in Q4 and some slipped for FY19
 - De-growth in America business, primarily on account of OEM
- FY19
 - Strong opening backlog
 - Our investments in international during FY18 are expected to show positive results
 - Healthy business growth in India to continue

Global Market Opportunity



Global Addressable Market (US\$M)



■ Aggregation	4,667	4,707	4,849	5,005	5,182	5,280	5,416
■ Access WDM	767	824	927	1,034	1,142	1,235	1,360
■ Metro WDM	5,862	6,405	6,763	7,201	7,673	8,191	8,700
■ PON	5,476	5,741	6,121	6,778	6,910	7,172	7,592
■ Global Market Size	16,771	17,676	18,660	20,017	20,907	21,878	23,067

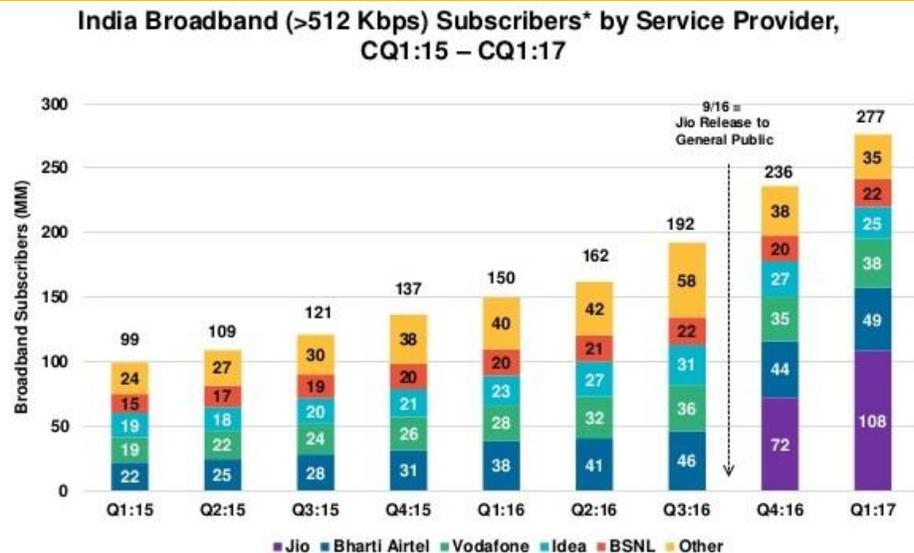
Source: Ovum

- Large addressable opportunity- we are currently focusing on countries/regions where we have a competitive advantage
 - India, SE Asia, Africa, America
- Focusing on product segments and applications where we have differentiators



India: Broadband and Data Growth Continues

Massive Growth in Data and Broadband



KLEINER PERKINS

Source: TRAI reports.
*Subscribers are defined as all unique SIMs within a carrier's database, less test/service cards, employees, stock in hand, SIMs where the subscriber retention period has expired, and service suspended pending disconnection.
Note: that as of 3/17, Jio's subscribers mentioned here were on free data plans. Subsequent to this free trial period, 72MM so far have converted to paying subscribers.

HP INTERNET TRENDS 2017 | PAGE 245

- ❖ India is #1 in Mobile Data usage ; 100+ crores GB of data consumed per month with 5x growth by 2023
- ❖ Optical market to grow from \$723M to \$947M by 2022
- ❖ India has overtaken USA as the #1 Facebook country
- ❖ 70% smartphone penetration expected by 2022
- ❖ Strong growth in fiber broadband next few years
- ❖ Operator consolidation- increasing focus on data

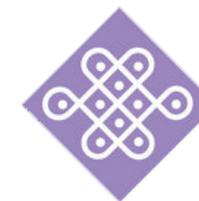
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Strong Push for Fiberization & Make in India

- ❖ Large Capex Investments planned by Telcos on capacity expansion on Optical Fiber & 4G this FY
 - Over 60,000 Cr of capex planned- spend on optical infrastructure is increasing significantly
- ❖ Draft NTP 2018 recommends 60% cell tower fiberization by 2022 (up from 20%)
 - 1 Gbps to every GP, upgradeable to 10Gbps
- ❖ BharatNet Phase 2 implementation started
 - Center-led as well as state-led model
- ❖ Preferential Market Access (PMA) to Domestic Manufacturers continues
 - As per draft NTP, it will be strengthened further
- ❖ Push by Government to nurture a domestic 5G ecosystem
 - Great opportunity for India
- ❖ Export promotion for digital connectivity projects in ASEAN and Africa; Government Lines-of-credit

Software Enabled Transformation

India- Market Opportunity



● Government

- Healthy backlog from last FY wins from Bharatnet as well as various utility accounts
- Strong funnel for Bharatnet Phase-2 from center as well as state projects, via partner wins
- Good visibility into tender funnel across customers for OTN, DWDM and GPON products
- Few large state-led Bharatnet projects, that are at RFP stage, can give good upside, since they require a wide range of our products
- Potential opportunities for our wireless product as well as ethernet switches

● Private

- Operators are increasing their focus on fiberization and network capacity upgrades- larger % of capex for optical
- Target new applications within existing customers to increase our wallet-share
- New opportunities for offering a converged access solution, combining GPON and optical transport for enterprise as well as home broadband connectivity
- Potential to increase marketshare due to operator consolidation

SE Asia/SAARC – Market Opportunity



- Focus countries
 - Malaysia, Vietnam, Bangladesh, Sri Lanka, Cambodia, Indonesia, Philippines, Thailand
 - Total population: 1.06 Billion
 - No. of smartphone users 200+ million
- Optical capex is estimated to be over US\$ 600 Mn
 - Fiberization of towers estimated at 30-40%
 - Broadband (both mobile as well as home) penetration is on the rise
 - Internet Economy hit USD 50 billion in 2017
- Customers
 - Mobile operators (3-4 per country)
 - Carrier of Carriers
 - Government, Utilities
 - ISP and Enterprise data service providers
- Competitive Landscape
 - Huawei, ZTE, Ciena, Nokia, Fiberhome
- Applications that are in our sweet-spot
 - Wholesale Bandwidth, Enterprise connectivity, Packet Transport, Broadband Infrastructure
- Strong reference customers in the region
 - 50+ customers across 10+ countries
- Expand on our success in the region
 - We have good reference base of customers which is a platform to win new customers
 - Increase wallet share in existing customers by introducing new products- GPON, Wireless
 - Increased sales investment in the regions- new leader hired. Using strong local partners/consultants
 - Leveraging Govt of India's line of credit for building broadband infrastructure in the region

Africa & MENA– Market Opportunity



- Four Regional drivers
 - South Africa- RSA, Botswana, Mauritius, Zambia
 - East Africa- Kenya, Uganda, Tanzania, Ethiopia, Rwanda
 - West Africa- Nigeria, Ghana, Sierra Leone
 - Mid-east and North Africa- Morocco, Algeria, Egypt, Oman, Turkey, Saudi Arabia
- Optical capex per annum is US\$ 770 Mn
 - Broadband is a key enabler of economic development and is a focus investment area
 - Smartphone penetration at 140 Mn (13%)- # of mobile broadband subs to grow to \$1 Bn by 2022
 - Low fiber penetration in networks- significant buildouts
- Customers
 - Mobile operators, Wholesale carrier of carriers, local fiber network operators, ISP
 - Government-led national broadband projects
- Competitive Landscape
 - Huawei, ZTE, Nokia, Ciena,, ECI, Cisco
- Applications that are in our sweet-spot
 - Wholesale Bandwidth, Alien Wave DWDM, Enterprise connectivity, Packet Transport, Broadband Infrastructure
- Existing reference customers in the region
 - 60+ customers across 20+ countries
- Expand on our success base in the region
 - Increased sales investment- offices in Jo'berg, Nairobi, Lagos and Dubai to cover all regions
 - We have large reference base of customers- using it to expand into more Tier-1 customers
 - Increase wallet share in existing accounts by introducing new products and applications
 - Leveraging Govt of India's line of credit for building broadband infrastructure

North America Market Opportunity



- Focus on USA and Mexico
- US consumes 35% of global bandwidth
 - Over 300 telecom service providers
- Optical capex per annum is \$3.3 Bn
 - By customer segments:
 - Tier 1 – \$750M, Tier 2 - \$525M, Tier 3 - \$150M
 - Webscale - \$500M, Cable MSO - \$440M
 - Competitive carriers (CLEC) \$270M
 - Utilities - \$100M, Wholesale - \$70M
 - Applications:
 - Network Modernization, Packet transport, DWDM , Others
- Growth drivers
 - Capacity enhancement to the cell tower as well as aggregation at the network edge and rural areas
 - Network modernization
 - Rollout of 5G- densification of fiber networks
 - FTTX- GPON for OTT applications
- Applications that are in our sweet-spot
 - Network modernization- Circuit emulation, DACS replacement, SONET replacement
 - Packet aggregation and transport
 - FTTH – GPON for OTT applications
 - Bandwidth - Alien Wavelength, cost effective 100G
 - Addressable market: \$700 Mn - \$1 Bn
- Competitive Landscape
 - Ciena, Cisco, Nokia, Adtran, Fujitsu, Coriant, Infinera, Adva
 - No Chinese vendors in USA
- Good initial response
 - Strong track record in Mexico- over 10 customers
 - Won 8 customers in USA. Many active engagements
- Increasing sales & support investments
 - More local sales, pre-sales and support resources
 - Offices in Boston, Dallas, Mexico City
 - Participation in trade shows for brand awareness



Risks & Challenges

- Customer concentration – dependence on few large customers
- Large dependence on India business – still contributes to majority revenues
- Longer than expected sales cycles in international business
- Aggressive pricing by competitors to win deals
- Talent- hiring and retention
- Supply chain – increase in lead times, dependence on single-sources
- Technology risk



Summary

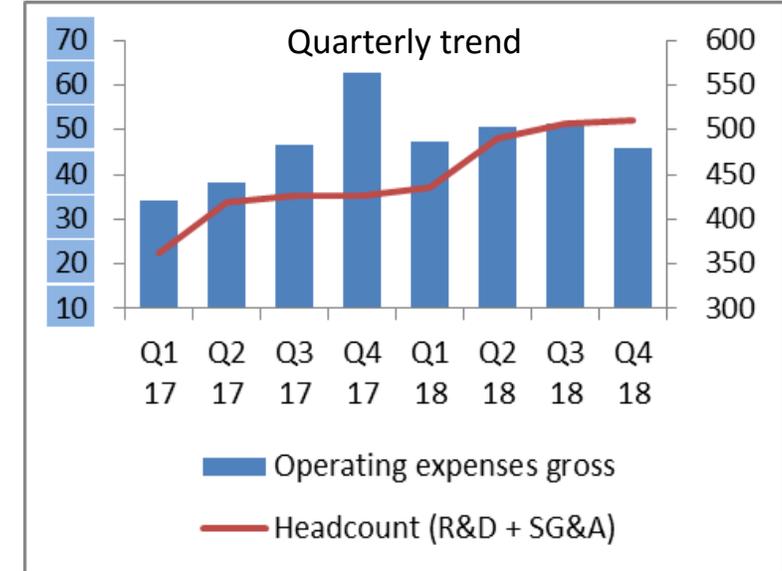
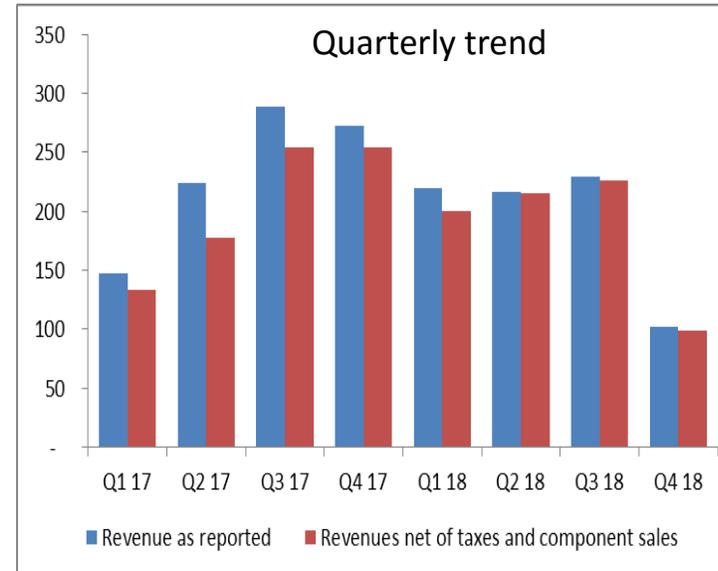
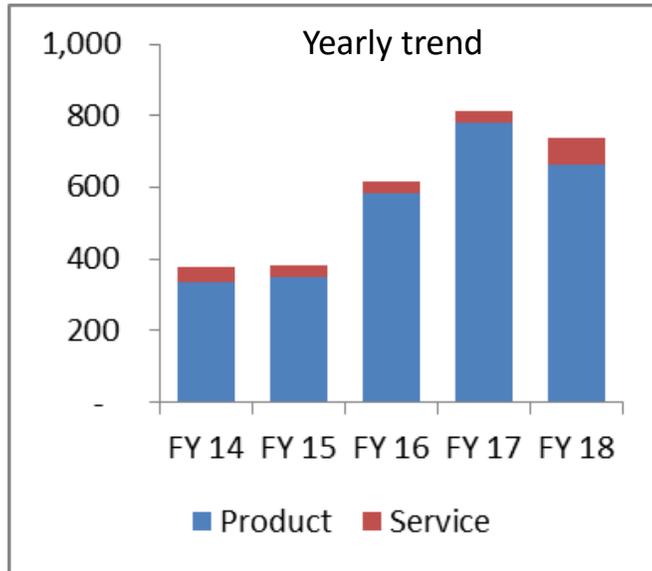
- Tejas is established as a pioneering technology “product” company from India
- Data/4G is driving demand for optical equipment; 5G will accelerate it
- Sustained growth momentum seen in our target markets for next 5 years
 - India is world’s fastest growing optical networking market, where we are well entrenched
 - Focus on expanding in Africa, SE Asia etc. that have India-like needs
 - Well poised to leverage the opportunity of network-modernization in markets like USA
- Tejas has demonstrated strong technology and market leadership
 - Unique, programmable, Software-defined hardware product architecture
 - Leadership for optical aggregation in India- world’s most competitive market
- Unique business model- delivering profitability in a tough industry
 - Asset-light business model, India’s R&D cost advantage, focused sales strategy
- Potential to be strong global player in the new 5G eco-system

Finance Update

Venkatesh Gadiyar, Chief Financial Officer



Revenue and operating expenses

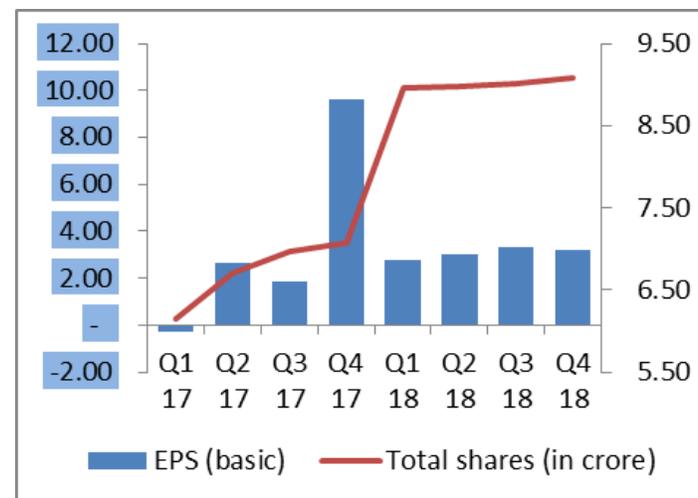
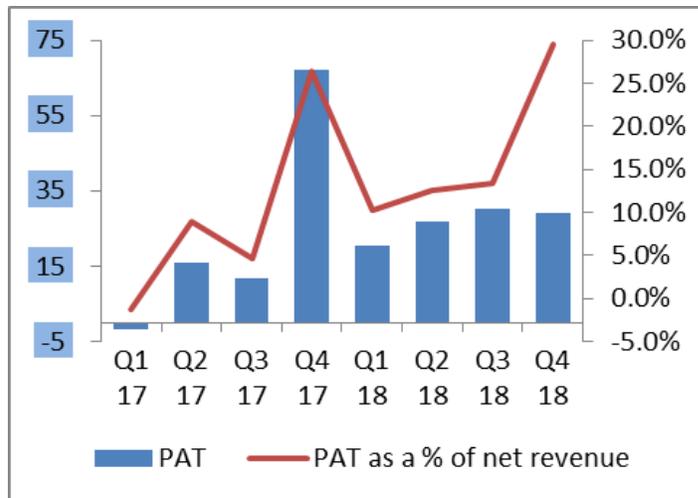
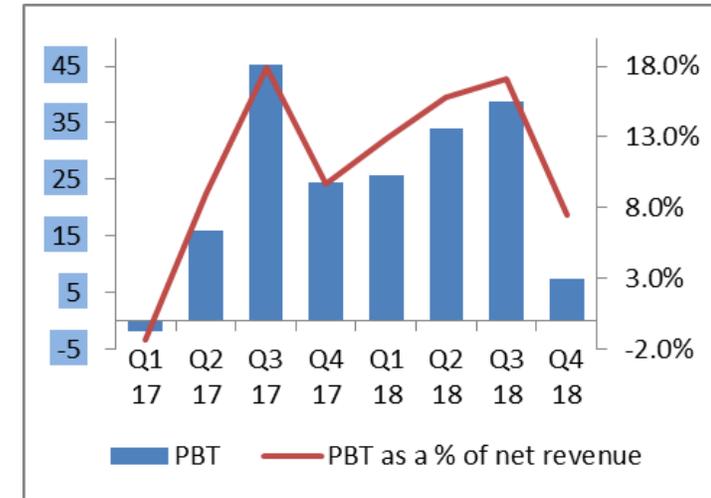
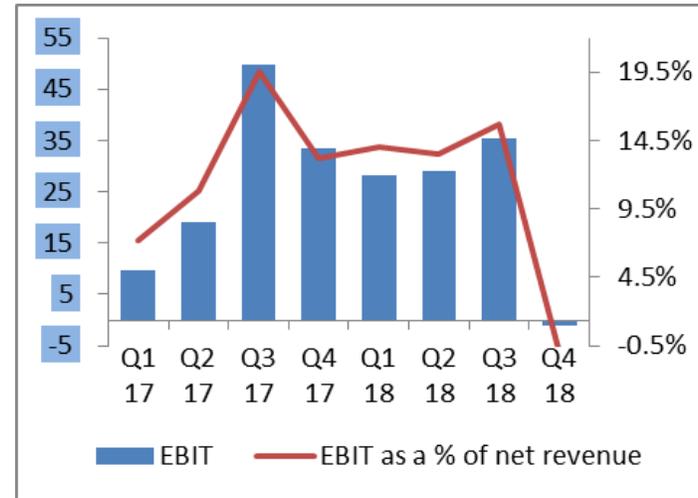
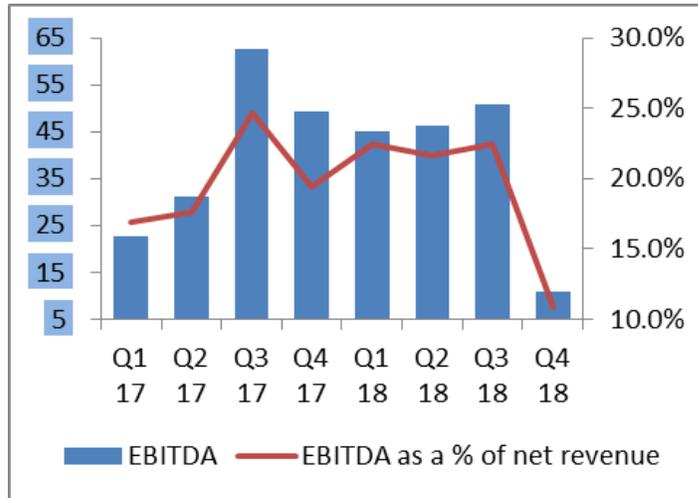


- Out of total net revenue, 82% (previous year 65%) came from India, 6% (previous year 13%) came from Americas and 12% (previous year 22%) came from Rest of the World
- Product and service revenues – 90% & 10% of net revenues compared to 96% and 4% for previous year
- *The reported revenue from Q2 18 onwards are net of GST, however revenues of the periods up to Q1 18 are inclusive of excise duty and are not comparable.*

- employee benefit costs constitutes 60% of operating expenses
- Q4 2017 includes one time write-offs

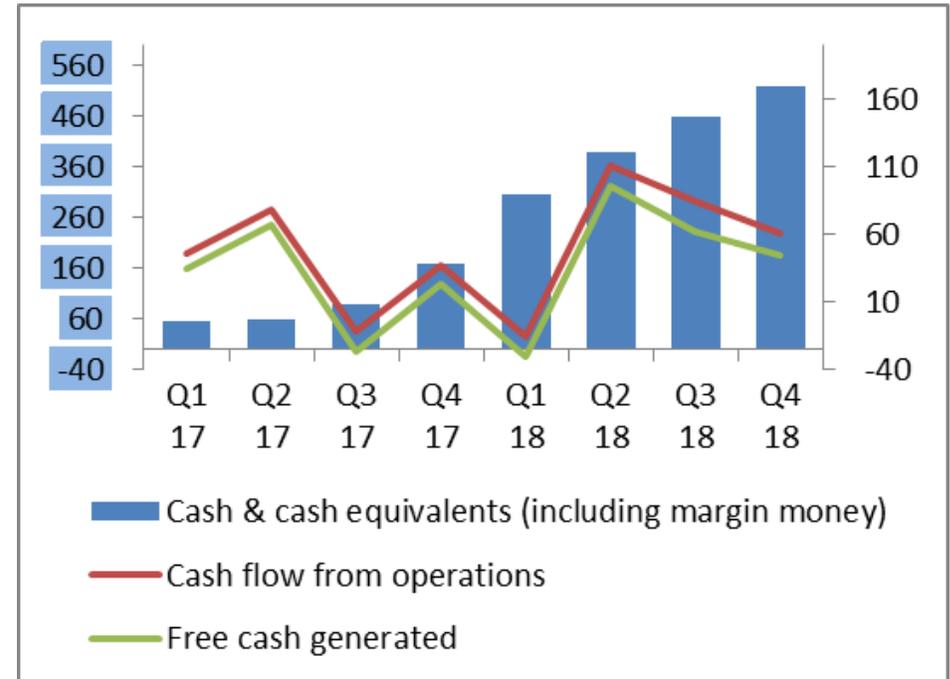
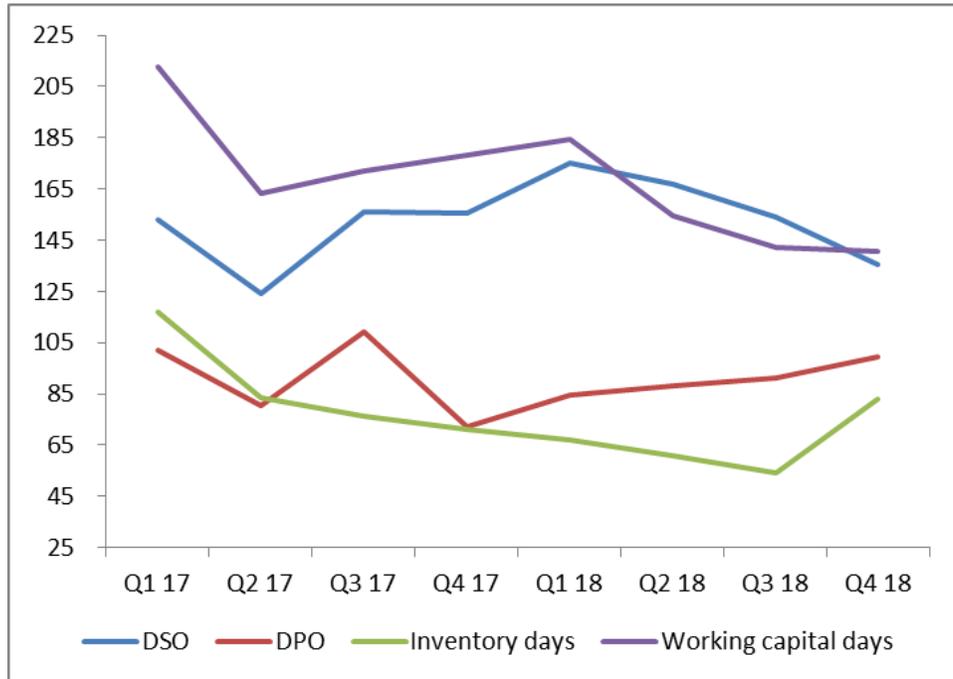
crore	FY 18	% of net revenue	FY 17	% of net revenue	growth %
R&D	87	11.7%	77	9.4%	12.4%
SG&A	108	14.6%	105	12.8%	3.0%
Total	195	26.3%	182	22.2%	7.0%

Quarterly trends - profitability



- The PAT for Q4 17 and Q4 18, are inclusive of deferred taxes recognised
- Costs are non-linear to the revenues. Hence, EBIT/EBITDA are sensitive to the revenues

Quarterly trends – improving working capital and cash flows



Credit rating

- ICRA Credit rating - reaffirmed long term and short term rating for LOC is ICRA A and ICRA A1 respectively;
- Outlook on long term rating revised from STABLE to POSITIVE

Supply Chain Strategy

Sukhvinder Kumar

President – Global Manufacturing Operations



Manufacturing Facility



Facility Building



System Integration



Testing, Qualification

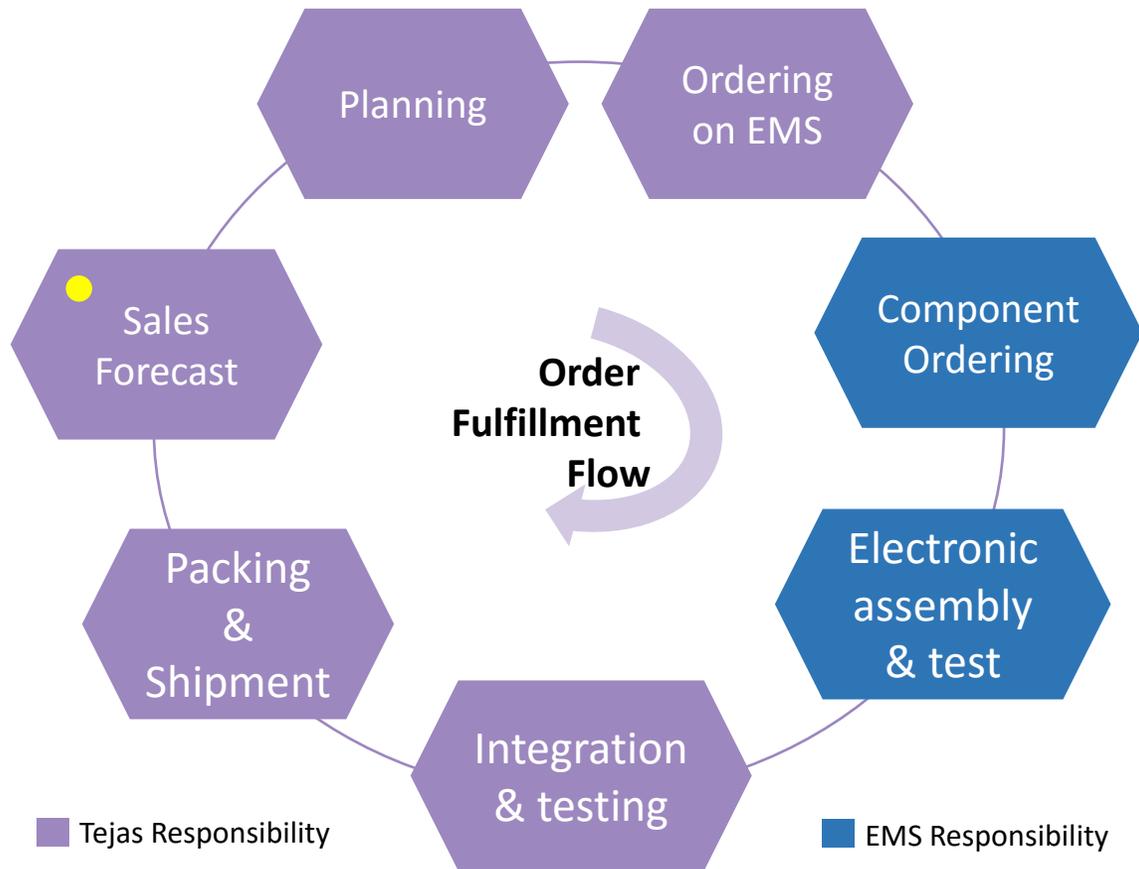


Warehouse

Summary

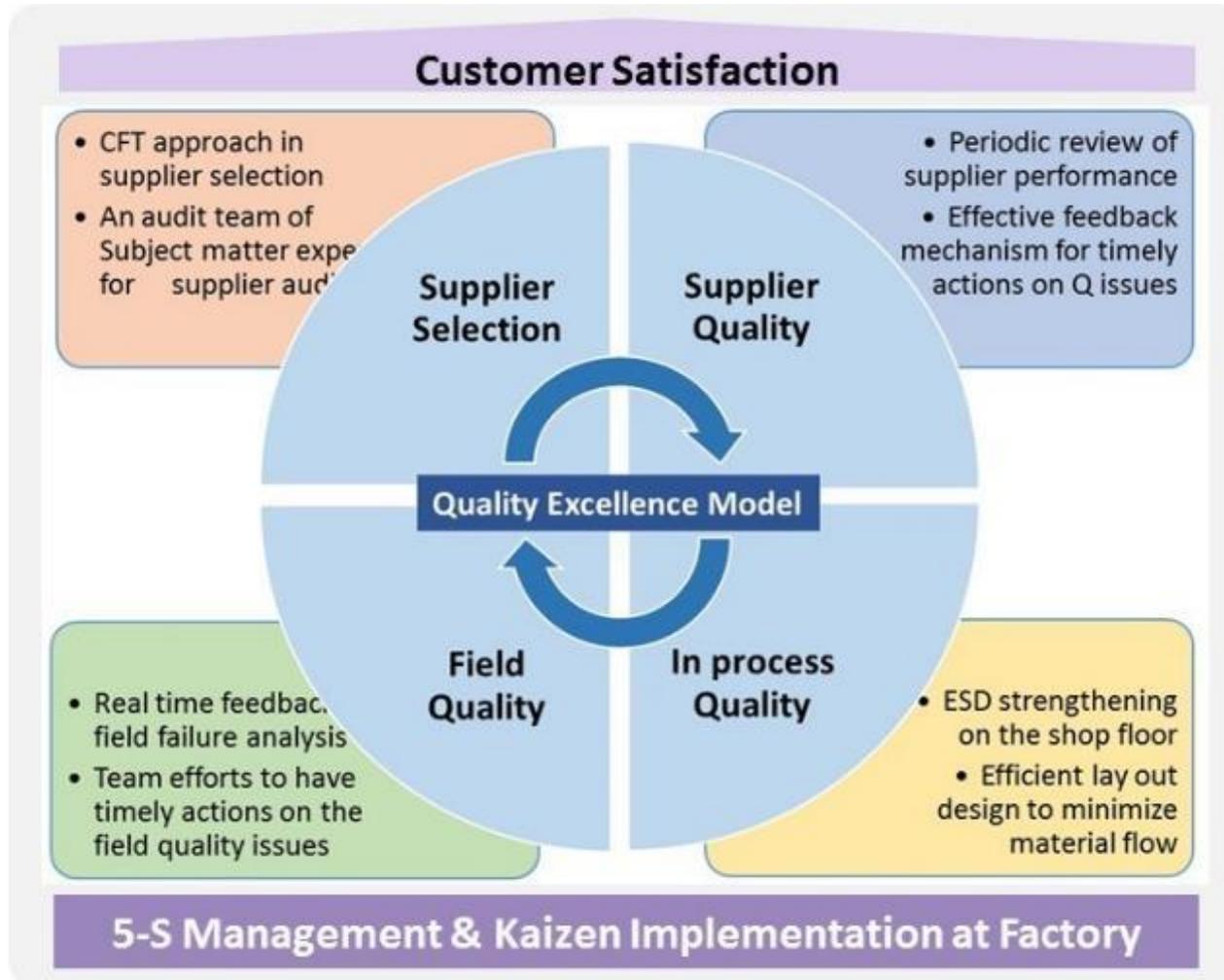
- State of the art Integration & Testing facility with 72000 sq. ft. built up area
- Dedicated shop floors for Export (EHTP) and Domestic (DTA) sales.
- 70+ Highly skilled and motivated employees augmented by flexible resources support to manage peaks.
- Temperature and ESD compliance at shop floor, including elevated Temperature testing chambers to ensure high Quality of our products.
- 18000 Sq. Ft of warehouse space for Components, Assemblies & FG

Tejas Order Fulfillment Model



- Asset light scalable operating model with a combination of outsourced PCB assembly & in-house system integration & testing facility.
- Tie up with world class global EMS players for outsourcing of electronic PCB assembly
- Turn-key business model with EMS players for best in class Mfg. , Quality & Inventory controls.
- Focus on Inventory management with best industry practices like JIT (Just in Time)
- Consistent performance on OTD (On time delivery) to our customers. keeping it > 95%

Quality Excellence Model at Tejas



- Quality has the first & foremost importance in our Manufacturing Operations
- Our Quality Excellence model is focusing on achieving Customer Satisfaction

Quality Highlights:

○ Customer network uptime	99.999%
○ RITS (Return in time of Service)	0.29%
○ FQA (Final QA) Yield	99.5%
○ Customer FAT Acceptance	100%

Innovation Culture : 5-S & Kaizen



5S is a methodology that uses five Japanese words

SEIRI



SORT

Keep only necessary items in the workplace

SEITON



SET IN ORDER

Arrange items to promote efficient workflow

SEISO



SHINE

Clean the work area so it is neat & tidy

SEIKETSU



STANDARDIZE

Set standards for a consistently organized workplace

SHITSUKE



SYSTEMATIZE

Maintain and review standards

Kaizen is the Japanese word for continuous improvement

Kaizen is basically small small improvements carried out by any person or group of 2~3 members; who are actually doing the job in day to day work

Kai

Always
Continual
Change



Zen

Good
Improvement
for the better

Kaizen is Implementation & not just giving an idea

“5-S Management” is a structured, systematic approach for maintaining an organized, clean and high performing workplace

- **Factory divided in 11 5-S Zones** with dedicated Area Leader & Auditor
- Monthly 5-S round & rating criteria
- Monthly 5-S Round by Senior Management

“Kaizen implementation” - platform for every employee to participate in Innovation activities

- Initiative Started Apr'17
- **Total Kaizens Received** **151**
- Kaizens Implemented 100
- Under Implementation 15



Quality Policy & TL / ISO Certifications

Quality Policy

Tejas Networks is committed to achieving customer satisfaction delivering quality products. Tejas ensures this by continually improving its Business Management System by adhering to TL 9000 requirements, TL 9000 measurements & ISO 9001 requirements


Sanjay Nayak
CEO & MD



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Certificate of Registration

QUALITY MANAGEMENT SYSTEM – TL9000-H and ISO 9001:2008

This is to certify that: Tejas Networks Limited
Plot No. 25,JP Software Park
Electronics City,Phase-1
Hosur Road
Bangalore
Karnataka
560 100
India

Holds certificate No: **FM 599928**

And operates a Quality Management System which complies with the requirements of TL9000-V R5.5 / R5.0 for the following scope:

Product Design, Development and Manufacturing of Digital Transmission System Like SDH/SONET, Edge, Access, ROADM

Product Category: 3.2.2.1.2.1 Optical Transport Systems, 1.2.9.2 PTN-Edge, 1.2.9.3 PTN-Access, 3.2.2.1.2.3 ROADM [DWDM/WDM].

For and on behalf of BSI: 
Chris Cheung, Head of Compliance & Risk – Asia Pacific

Originally Registration Date: 29/01/2008 Effective Date: 30/01/2017
Latest Revision Date: 08/07/2016 Expiry Date: 14/09/2018

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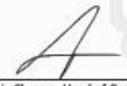
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Hosur Road
Bangalore 560 100
Karnataka
India

Holds Certificate No: **FM 639723**

and operates a Quality Management System which complies with the requirements of ISO 9001:2008 for the following scope:

Product Design, Development and Manufacturing of Networking Products like Routers (Core, Edge, Access, MPLS switch, Packet Switch), Optical Carrier Systems (SDH/SONET ADM, WDM, DWDM, OTN, ROADM, Digital Cross-connect), Wireless Transmission (LTE), Fiber to the user (GPON) and Telecommunication Network Management Systems.

For and on behalf of BSI: 
Chris Cheung, Head of Compliance & Risk - Asia Pacific

Original Registration Date: 08/09/2015 Effective Date: 08/09/2015
Latest Revision Date: 08/09/2015 Expiry Date: 29/08/2018

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THANK YOU!

