CASSI Transport strategy

Transporting MTN into the Future

Leading Digital solutions for Africa's progress

MTN is the leading telecoms operator in Africa

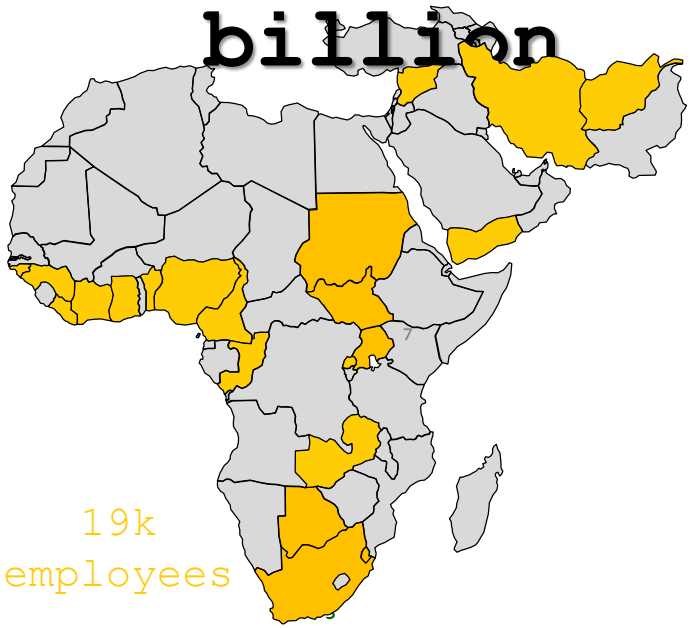
Focused on connectivity and platforms

277.3 million
subscribers

117.4 million
active data users

48.9 million
active MoMo users

Service revenue of
R81.9 billion



Across 20 markets
Most valuable African brand

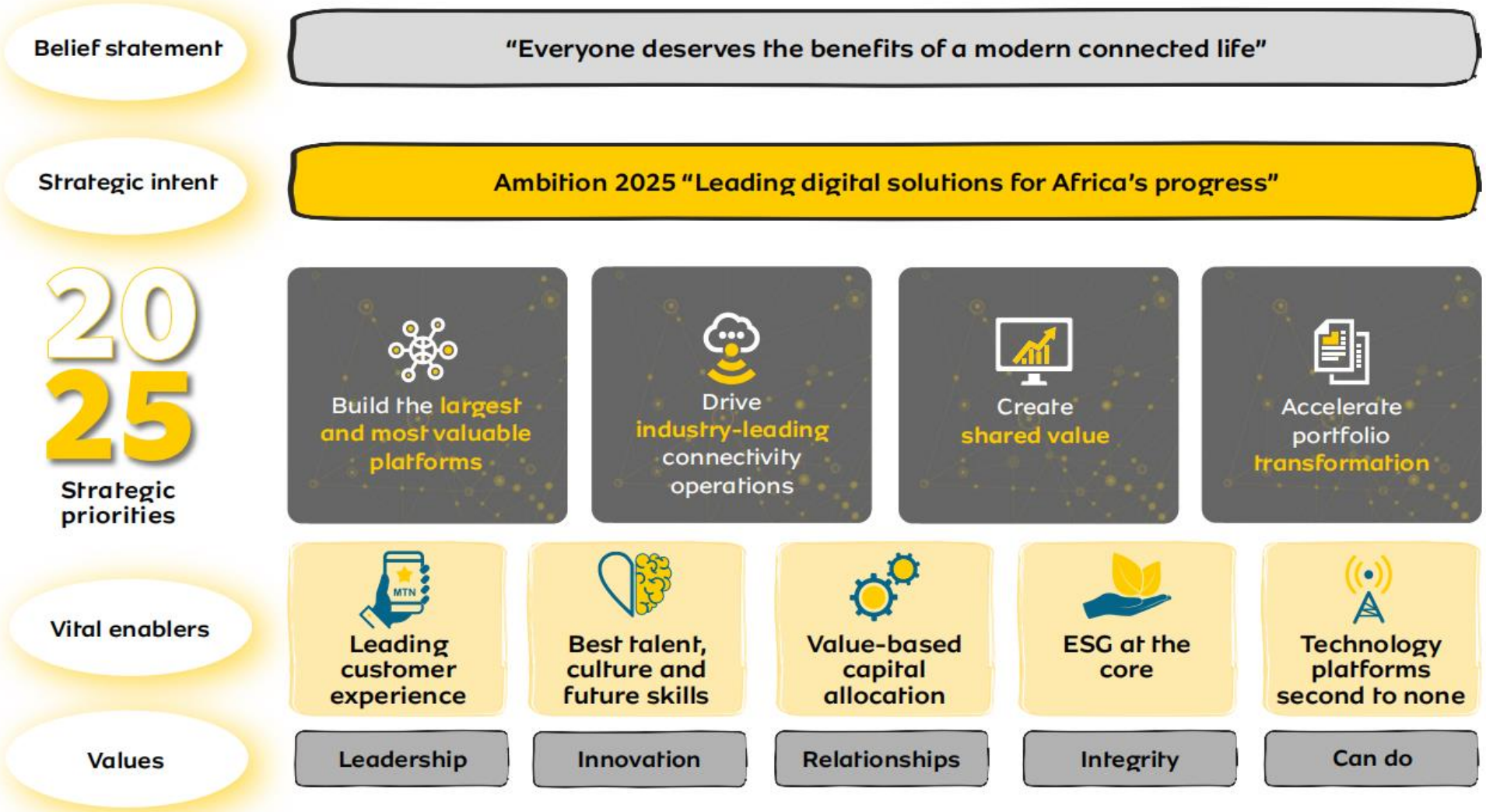
44.9%
EBITDA margin

+32.2%
Data revenue

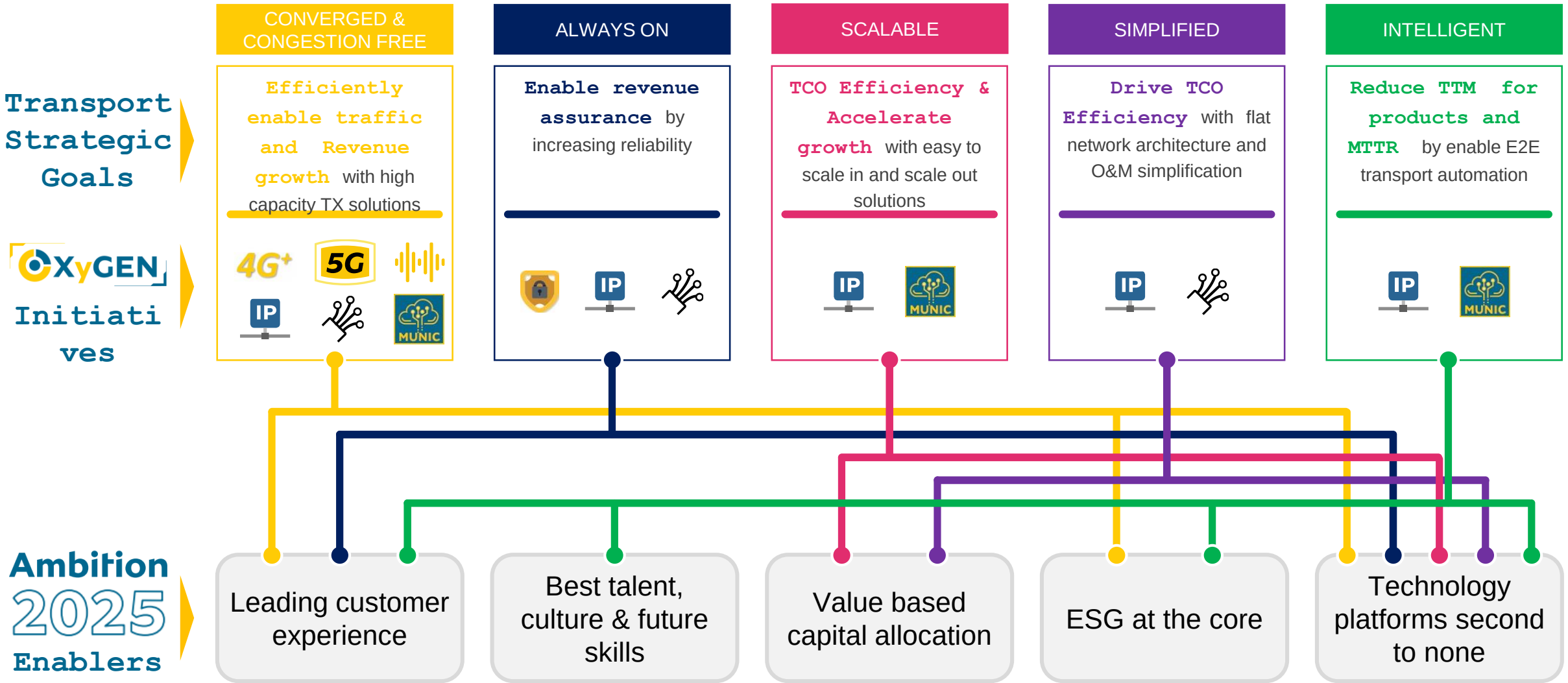
+39.7%
Fintech revenue

Our 2025 Ambition for technology platforms second to none

Embedding No.1 Connectivity & No.1 Platform into MTN strategy



Transport | Framing our strategic priorities to drive business value



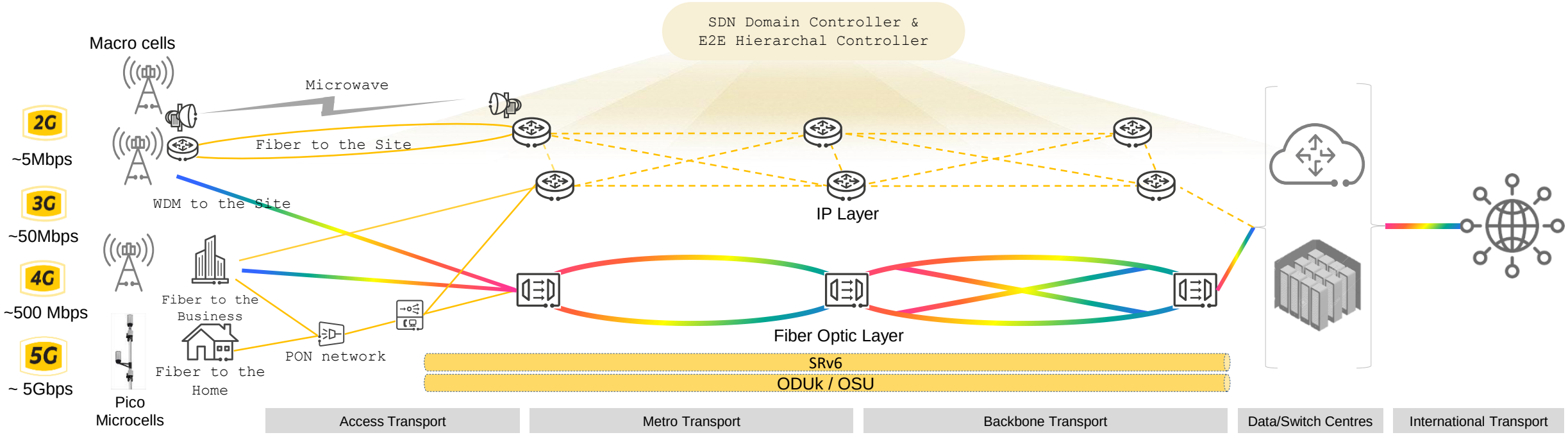
Deconstructing service requirements into key CASSI initiatives that deliver value

Service	Trend & Changes	Key transport Network Initiatives ("CASSI")
Business • Wholesale • Connectivity • IoT/ UCC /Mobility	• +30% DOU/Traffic growth • Video Content Bundling • Speed based Tariff(5G)	**Converged & Congestion free** • Fiber coverage capability • Service bandwidth guarantee capability • Service interconnection capability
Consumer • Voice/Basic data/video • Value-added Service (Digital, messaging & mobile advertising) • Fintech	• Wi-Fi becomes Bottleneck • Multi Apps @ Home • Speed based competition	**Always ON** • Network reliability protection • Fault detection sensitivity • Clock precision assurance capability
Home • 4K/8K/AR/VR • Smart home • Intelligent Wi-Fi Network	• ICT one stop services • Hybrid Cloud • Lower/Consistent Latency	**Scalable** • Flexible service access and grooming capability • Future traffic satisfaction • Easy to scale in and scale out
Cloud / Security • Inter/ Infra Data Center Connectivity • Network Security		**Simplified** • Network flatness • Consolidated transport • O&M simplification
		Intelligent • NaaS • Network Automation • Close-Loop

Enabling Growth initiatives

TCO Efficiency Initiatives

Future-oriented Optical Transport Network Architecture

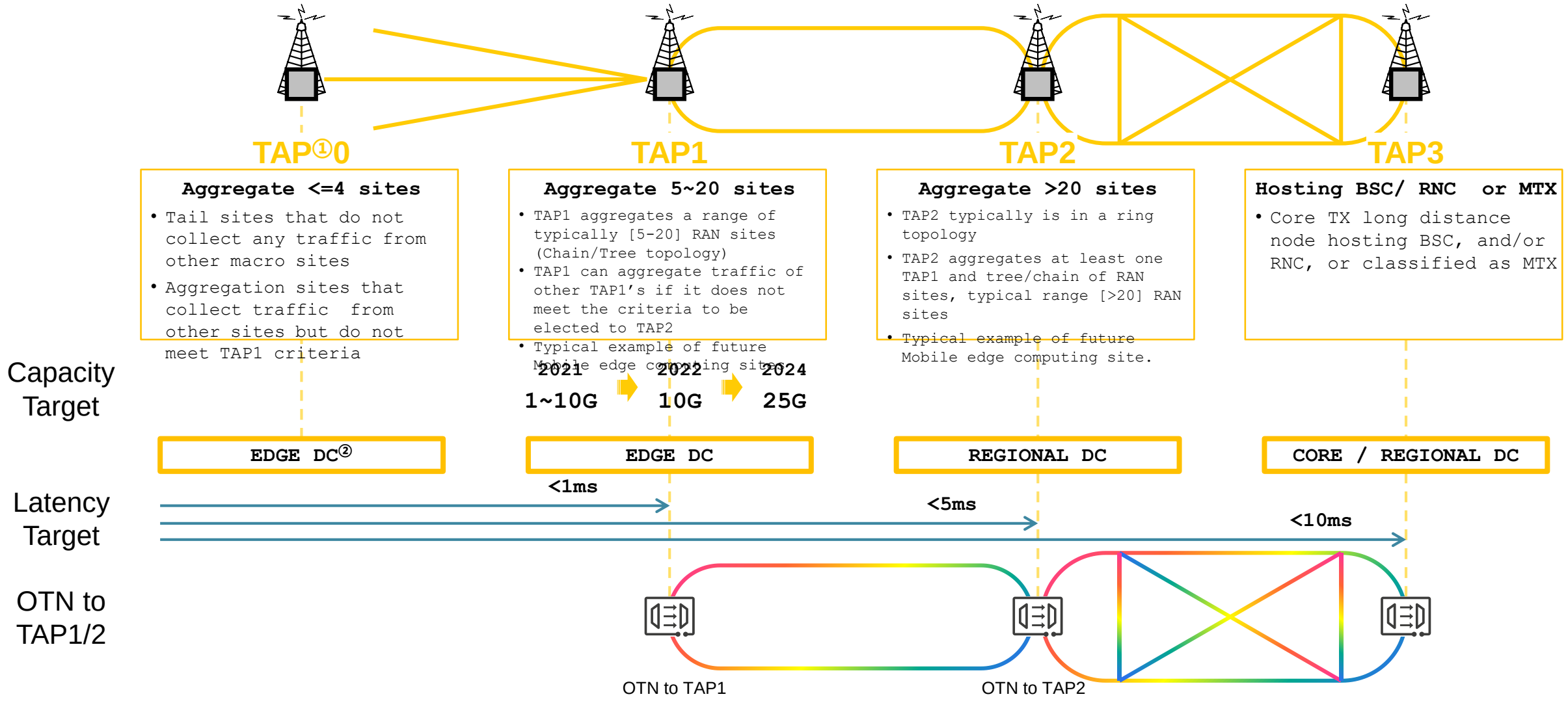


CASSI Strategy & Architecture in Optical Domain

Converged & Congestion Free	Always ON	Scalable	Simplified	Intelligent
● 100G/200G OCH and 40% OCH headroom ● Express Backbone with frog hop, one-hop connection for IPCORE and DCI ● OTN to AGG: Flat Metro with frog hop, one-hop connection from OLT/AGG to RSG ● OTN CPE to Enterprise ● WDM to Site enable 5G Fronthaul, where applicable	● Ring/MESH fiber topology ● ASON protection: • Reliability ≥99.99% for backhaul service (service downtime is 0.88hr/yr), • Reliability ≥99.999% for IPCORE/DCI/Enterprise service (service downtime is 0.088hr/yr)	● Programmable 100G/200G: RTU mode preferred, expansion with software control ● ROADM/OXC ● 40% OMS headroom	● One box for multi service transport ● ROADM/OXC	● Network visualization ● Network automation ● Network as a service

Converged & Congestion Free, continue to expand fiber & OTN to the edge

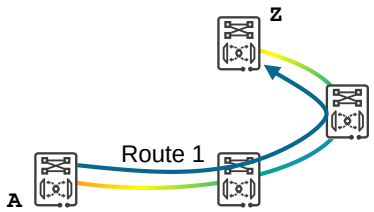
Readiness for 5G and future strategic deployment of mobile edge computing



① *TAP, Transport Aggregation Points*
② *Depending on specific need to maintain latency at <1ms over air interface*

Always ON to protect revenues

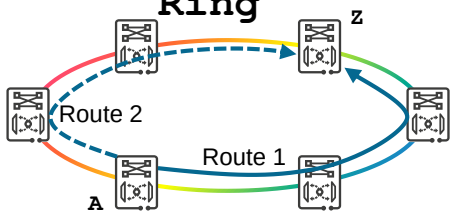
No Protection @ Chain



Pros:
- Less fiber resource required

Cons:
- Low reliability, service interrupted once fiber cut

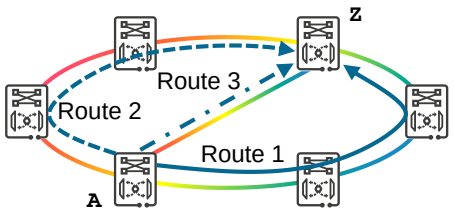
SNCP 1+1 Protection @ Ring



Pros:
- Improved reliability

Cons:
- Service interrupted with multiple fiber breaks

ASON / WSON Protection @ MESH



Pros:
- High reliability with ASON / WSON protection

Cons:
- Extra investment to build new routes and enable ASON / WSON protection

Reliability improved by Ring & MESH

Parameter	Assumption Route 1	Assumption Route 2	Assumption Route 3
Fiber Cut Rate (FCR, times/year)	40	35	30
Mean Time To Repair (MTTR, hours/time)	12	6	4
Route Service Time (hours/year)	8,760	8,760	8,760
Route Downtime ① (hours/year)	480	210	120
Route Availability ②	94.521%	97.603%	98.630%

Protection	Topology	Reliability ③	Service Downtime
No Protection @ Chain	Route 1	94.521%	479.96 hr/yr
SNCP 1+1 @ Ring	Route 1&2	99.869%	11.48 hr/yr
ASON/WSON @ MESH	Route 1&2&3	99.998%	0.18 hr/yr

*① Route Downtime = FCR*MTTR*
*② Route Availability = (1- Route Downtime/Route Service Time)*100%*
③ Final Reliability = 1- (1-Route 1 Availability)(1-Route N Availability)*

Our initiatives for Always ON

Improve reliability and redundancy to prevent revenue and reputational loss

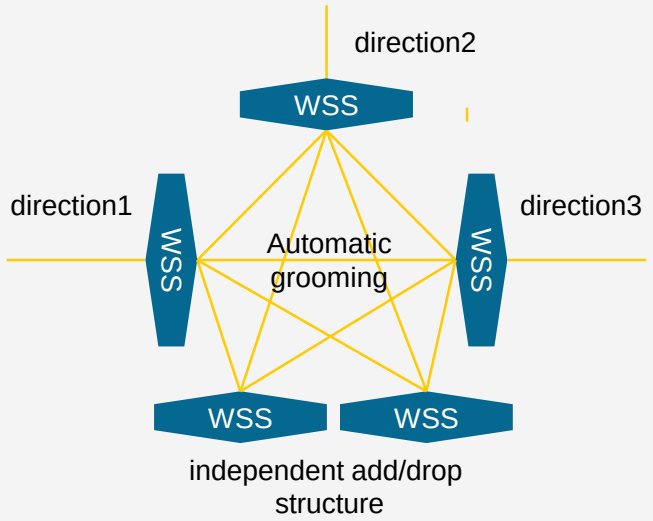
- Chain to Ring to deploy SNCP 1+1 protection
- Split large Ring to MESH to reduce multiple fiber cuts risk and make it is possible to deploy ASON / WSON
- Deploy at least 3 directions at Core sites to improve core services availability with ASON / WSON

Improved Protection Capability using OTN-ASON and WSON

- OTN ASON : For backbone applications, especially with many high attenuation hops
- WSON : For metro applications with short distance, low attenuation hops and ROADM platform

Scalable & Simplified Optical Layer, cost efficiently for growth and demand

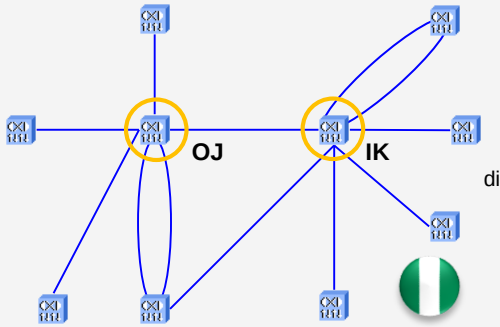
Once-and-for-all architecture meet traffic growth

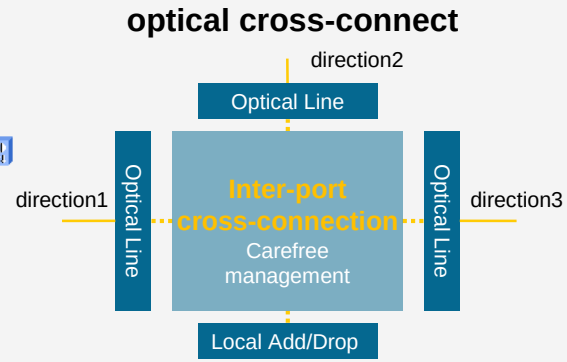


Modernize to all ROADM based network

- Fast TTM and cost efficiently by avoiding site by site fiber connection for service provisioning
- Online wavelength grooming on demand
- Ready for 400G+ in future

Innovative OXC in Switch/DC sites





Dimensions increase continuously

New (DC) site interconnection

New links for mesh networks

Metro & BB interconnected

OXC saves resource and improve efficiency

Category	AS IS	OXC Evolution	Improve
Space	3 cabinets	1 cabinet	↓ 66%
Power (W)	4,000	600	↓ 85%
Fiber Connections	~600	~120	↓ 80%
TTM (days)	3	1	↑ 66%

Intelligent, Group SDN Reference Model and Architecture to enable NaaS

BSS/OSS

OSS/BSS

SMUNIC E2E Orchestration

Service API

Service API

Communication Service Management Function (CSMF)

Hierarchical Controllers

E2E Transport Service Abstraction

E2E Transport Network Control

- End to End visibility of all segments and layers
- E2E Transport Service Abstraction towards OSS / E2E Orchestrator
- NaaS API with SDN controller, NBI for legacy NMS
- E2E slicing management for GPON/MW/IP/DWDM

Network slice Management Function (NSMF)

Domain Controllers

SDN Domain NBI

Service API

GPON Domain

MW Domain

IP Domain

OTN/WDM Domain

MUNIC DC

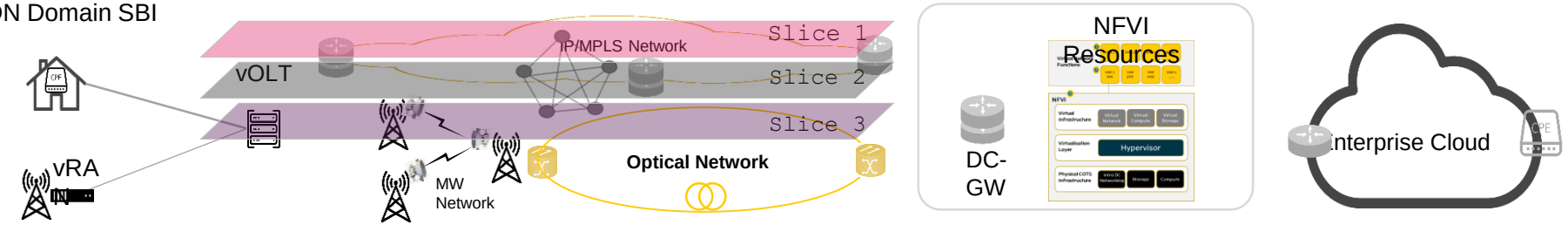
SD-WAN

- Close-loop network automation
- Service-oriented API for NaaS, such as topology, connectivity and analysis services
- Single domain slice management

Network slice subnet Management Function (NSSMF)

Network Elements

SDN Domain SBI



3GPP/ONAP Defined Slice Management Functions Architecture

Domains

Access
- Managing disaggregated functions (vOLT)
- Access-specific features (e.g. mobility, network slicing)

MW , IP & Optical BB
- Automation in multi-vendor networks
- Real-time optimisation across IP and optical
- Enabling Network slicing

MUNIC Data Centre
- Traffic optimisation, load balancing. Multi-tenancy, scaling of cloud and NFV.
- New service options through chaining

Enterprise
- Enterprise network automation through SDN WAN

Key initiatives for optical evolution - CASSI alignment

Strategic Key Element	Technology Initiative	Category	Description
Converged & Congestion free	Fiber to the Sites	1	Increase deployment of fiber-to-the-site (FTTS) technology to TAP1 sites to future proof network against increasing data demand
	Core optical Network Expansion	3	Upgrade DWDM/OTN layer to support data traffic growth (Metro & NLD). Consider OTN to the edge capacity requirements
	Inter-country Optical Links	2	Extend the existing OTN network to the national border, build the Pan-African fiber network
Always ON	Resiliency & Stability	1	Increase reliability and address single points of failure on the network
Scalable **S**implified	Fixed Mobile Convergence	1	Converge all existing transport networks into a single OTN network serving Mobile, Fixed and Enterprise
	ROADM/OXC Modernization	3	Deploy ROADM/OXC in new sites, upgrade existing FOADM to ROADM/OXC
	Advanced Features	3	Introduce OSU cross-connect for consolidated transport to improve efficiency
Intelligent	SDN Transport	2	Progressive deployment of national transport SDN Controllers across BH, BB and IP, Optical, and SDN based TC connectivity

The Initiatives categories definition

Category	Category description
1	*Mandatory technology initiatives/enablers applicable to all local markets*
2	*Mandatory technology initiatives/enablers applicable to specific markets*
3	*Optional initiative technology initiatives/enablers to be implemented based on market needs and commercial priorities.*

Roadmap for future proof evolution

Key Services and user experience enhancements

- Automated Network Operation and Service Assurance & Network Analytics
- 3G&4G Data Performance Enhancement
- Differentiated Enterprise Connectivity (OTT, ISP, Large Enterprise, Banking&finance, Government, etc.)
- Home Broadband Coverage
- 5G: eMBB, eMTC. uRRLC

	2021	2022	2023	2024	2025	
Transmission initiatives to drive evolution						
Capacity:	100G/200G		200G/400G		400G+	1 3
OTN to AGG/TAP1:	TopN cities&districts @ Tier1&Tier2			In All OpCos		1
OTN CPE to Enterprise:	In Tier1&Tier2			In All OpCos		1
WDM to the Site:			In Tier1			1
Reliability:	SNCP in All OpCos	MESH and ASON				2
ROADM/OXC:	Tier1&2			In All OpCos		3 4
ONE OTN Network:	Migrate SDH to OTN					4
Intelligent:	SDN @ Tier1&Tier2		In All OpCos			5

1. **Converged & Congestion free**
2. **Always ON**
3. **Scalable**
4. **Simplified**
5. **Intelligent**

CASSI Framework OpCos Maturity Tracker

10%~30%	30%~50%	50%~70%	70%~90%	90%~100%
Beginner	Emerging	Progressive	Leader	Breathe Digital

Thank You