



NGPON

Next Generation PON-Technologies

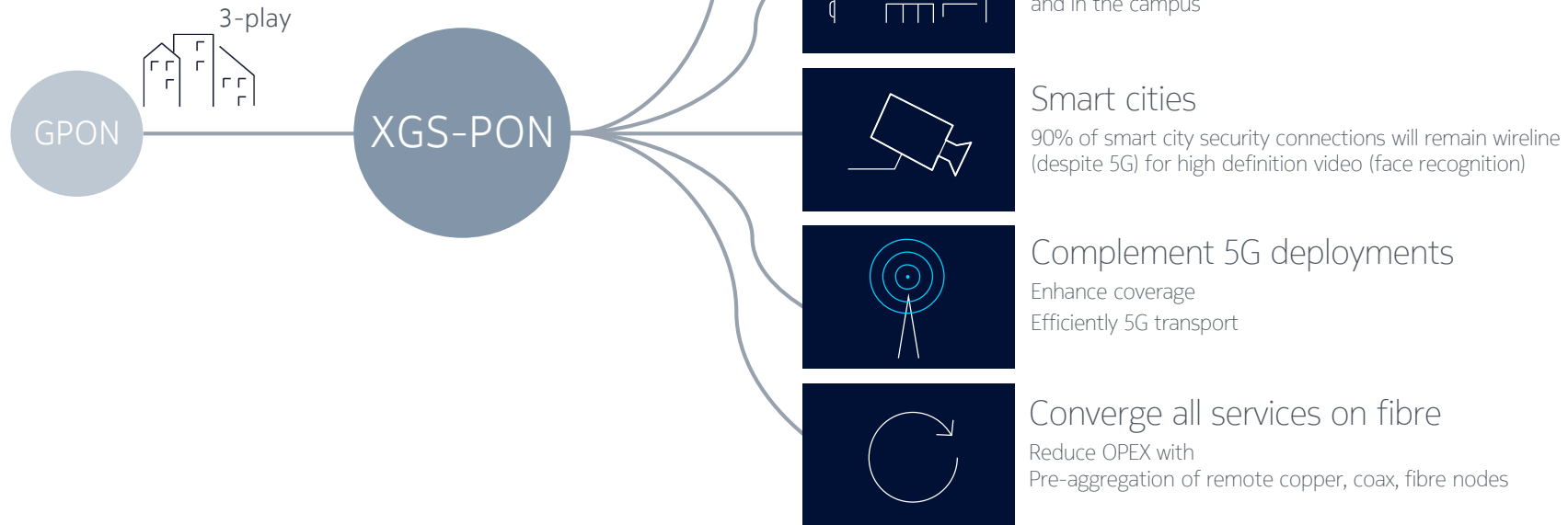
Armin Winter

Fixed Networks, Nokia

Nov 2020

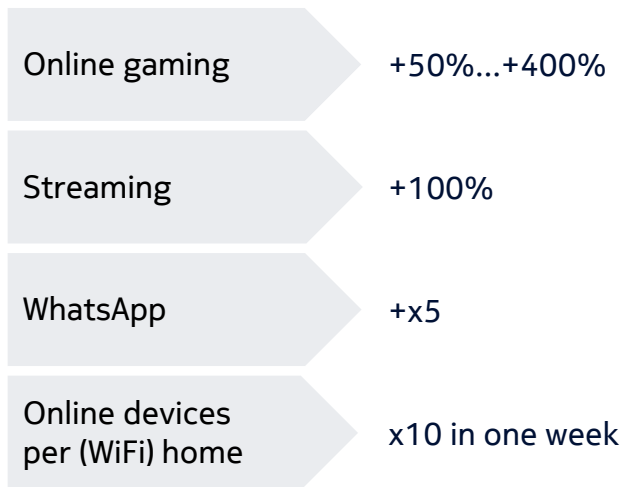
Next generation PON changes the role of fibre

From fibre to the home to
fibre to everything



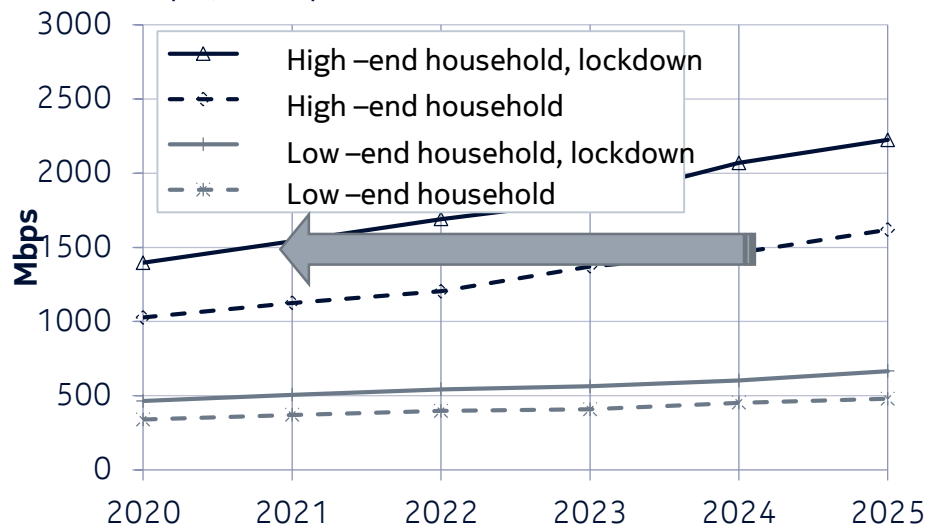
Digital behaviour activities in COVID-19 times accelerate network upgrades

Work + school + play from home:



Overall fixed networks broadband **30%–60%**
Upstream increase up to **300%!**

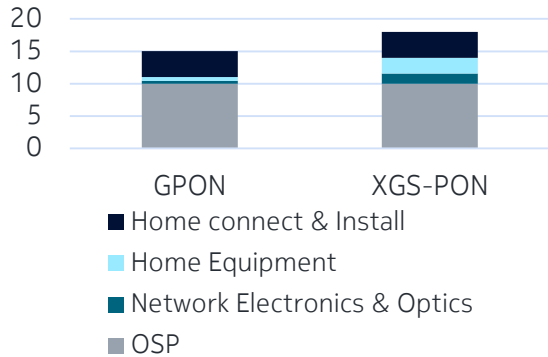
Aggregate downstream peak bandwidth on PON
(1:32 split, 1Gb/s peak buffer)



GPON upgrades accelerated by **>3 years**

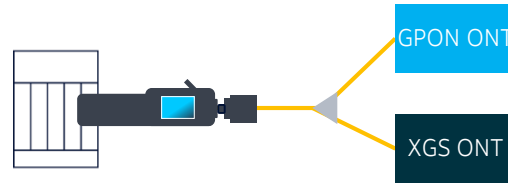
Optimizing introduction of XGS-PON

Greenfield:
Start with XGS-PON



- Small cost difference
- More revenues
- Future proof
- Competitive advantage

Brownfield:
Multi-PON simplifies migration



Multi-PON delivers GPON and XGS-PON simultaneously from a single PON port

- Makes you 10Gb/s ready from day 1
- Upgrade users remotely
- Less cables, less equipment, less effort

Improve network efficiency



- Save cost in fibre feeder with higher split ratio
- Reduce OPEX by running one network for all services
- Introduce Wi-Fi6 for better in-home coverage, lower latency and mobile offload
- Automate and simplify with SDN

Mobile transport is the foundation for 5G success, and PON will play a key role

OMDIA mobile operator 2020 survey:

1

Cost is #1 concern for x-haul according to operators

[Bell Labs study](#) shows that PON-based 5G x-haul is **>50%** more cost-efficient than other approaches

2

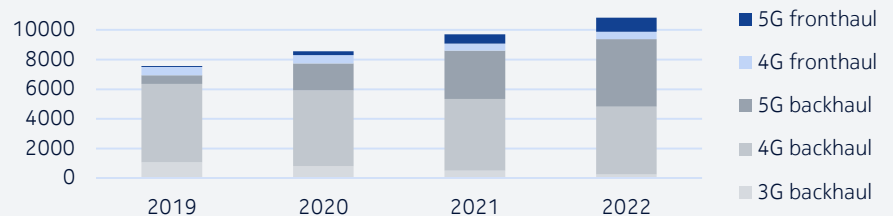
PON based x-haul is gaining traction

4x operators planning PON x-haul
2019 → 2021

3

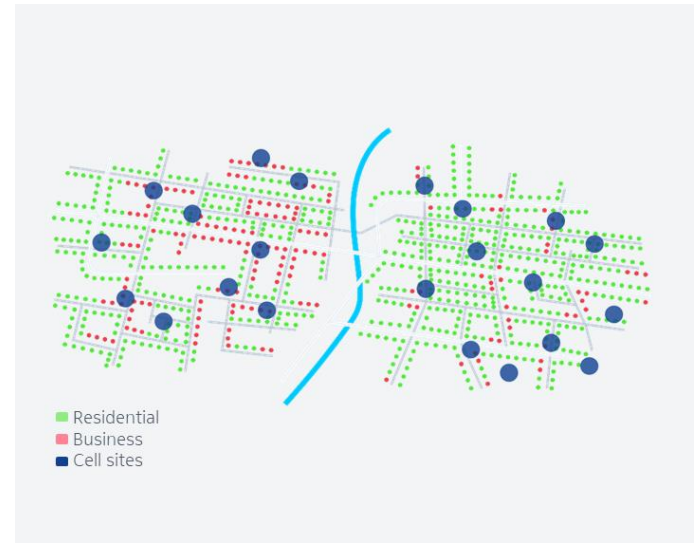
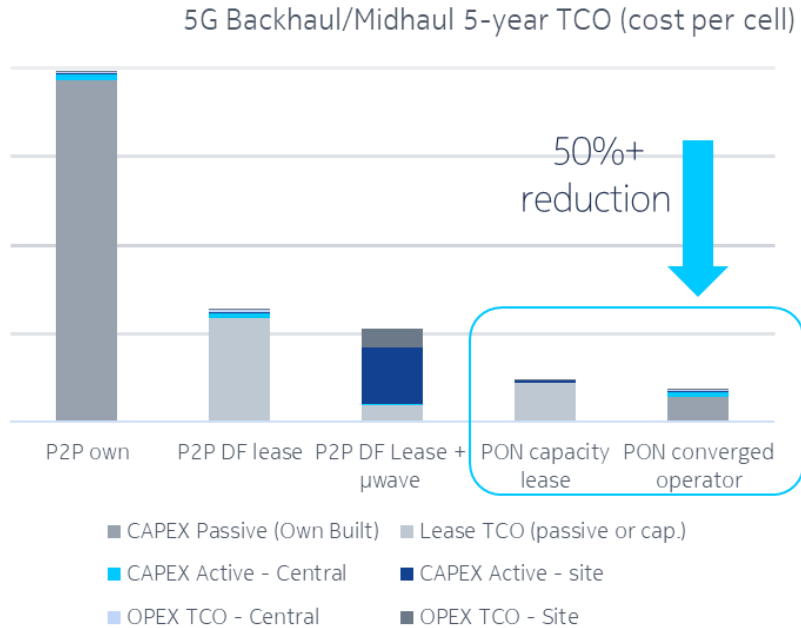
Anyhaul market is growing

Anyhaul forecast per type and radio technology [m\$]

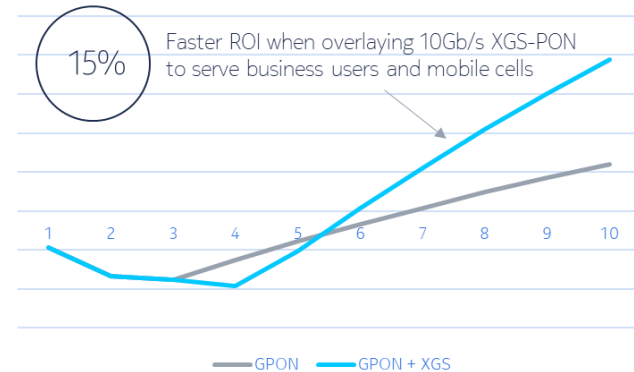


Leverage existing FTTH for efficient transport

Benefits for mobile and converged operators

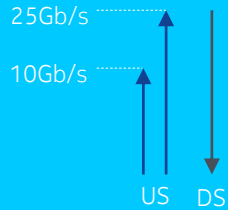


CDCF for incremental investment



25G PON: the best way to supercharge fibre networks

25G PON



Bandwidth



That will take you a long way

Value



Efficient 5G transport
Enterprise services

Cost



Leverage volume data center optical technologies
Simple technology, no tunable lasers

Simple introduction



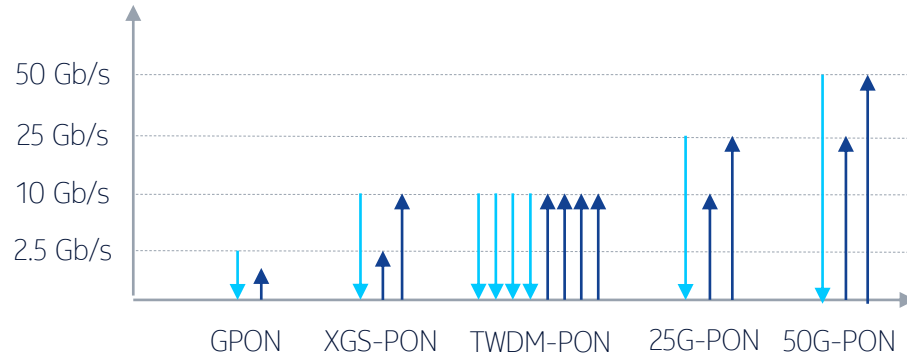
Co-existence and migration on the same Nokia hardware

Time to Market

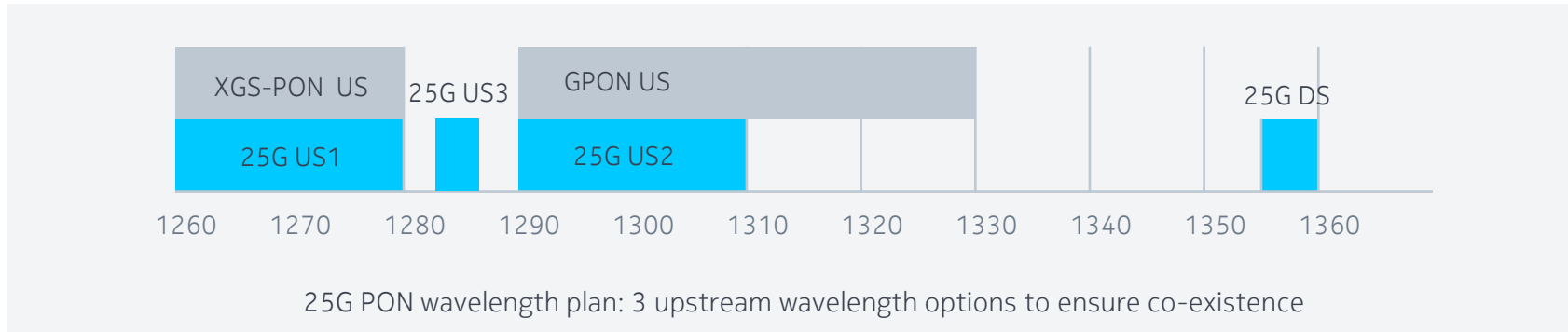


Mature eco-system of optics

25G PON is designed for simplicity and cost-efficiency

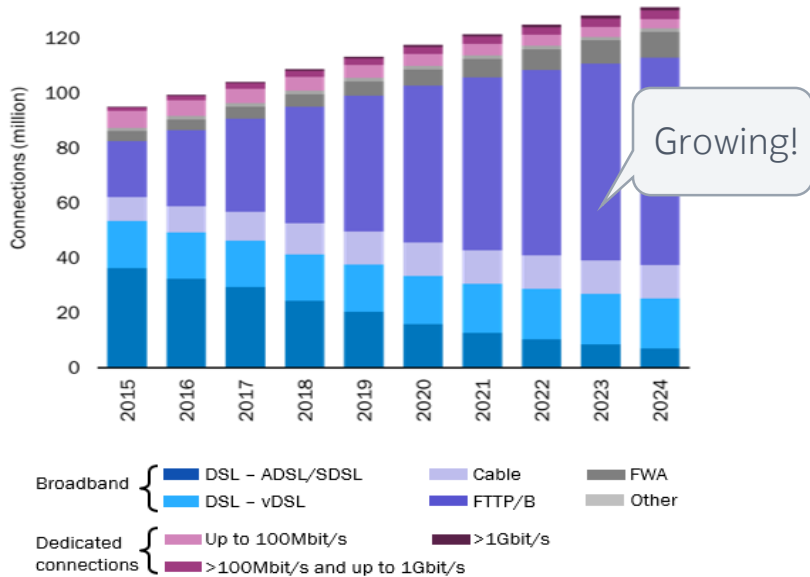


- Leverage the existing mature eco-system
- Simple technology – no tunable lasers
- Co-existence with GPON, XGS-PON or both
- Matches 25G physical interfaces in radio units
- Bitrate tiers up to 20Gb/s

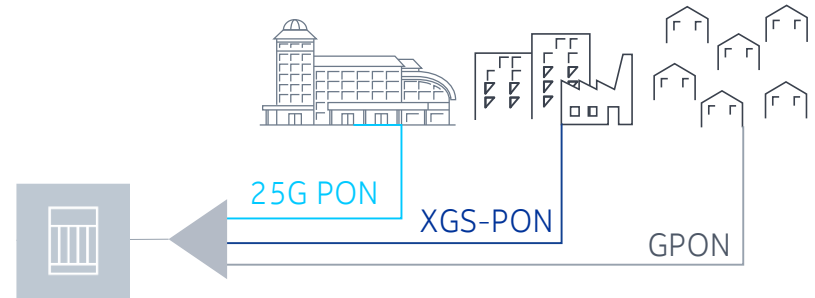


Realizing the growing Enterprise opportunities with 25G PON

Number of business fixed broadband connections worldwide
Source: Analysys Mason, 2020



Accelerating return on investments with 25G PON on a converged network



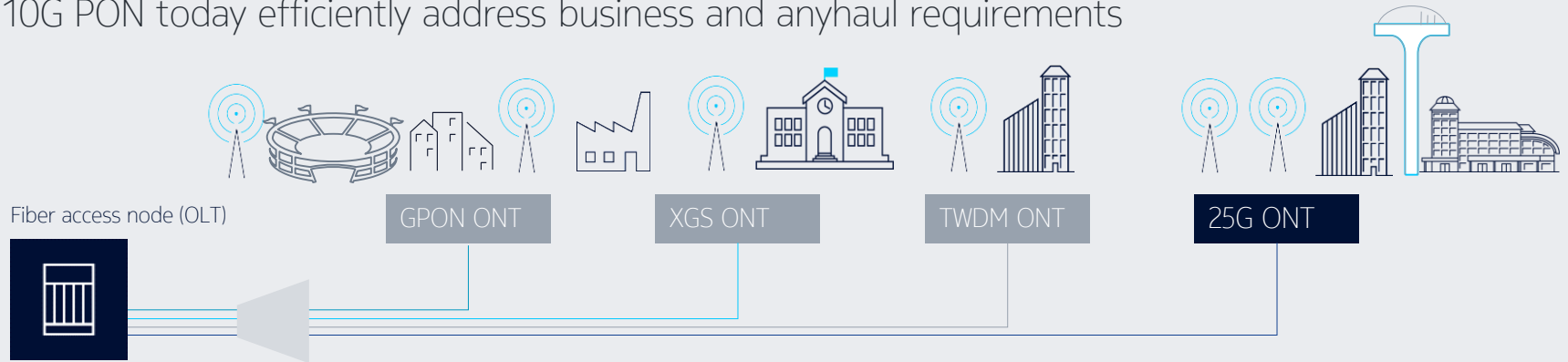
One network is cheaper to deploy, operate and maintain

Meets bandwidth demands for all tiers

Separation per services for dedicated QoS

25G symmetrical PON unlocks the ultimate convergence

10G PON today efficiently address business and anyhaul requirements



25G PON enhances Broadband Anyhaul for:

Higher density

2.5x more cells or enterprise customers on a PON

Higher throughput

Speed tiers up to **20GE**
4x (RF BW) or 2x (RF BW & MIMO)

Better SLA

Zero compromise on peak rate
True 10Gb/s symmetrical for Enterprise

25GS-PON Multi Source Agreement to accelerate 25G PON

✓ The right performance
for business & 5G xhaul

✓ De facto standard –
Specification v1.0 ready

✓ Most cost-effective
step beyond 10G

www.25gspon-msa.org

Welcome to the
25GS-PON
MSA GROUP

CHORUS



中華電信
Chunghwa Telecom



Australia's
broadband
network



COMMSCOPE®

MACOM™



NOKIA



Sumitomo

ciena

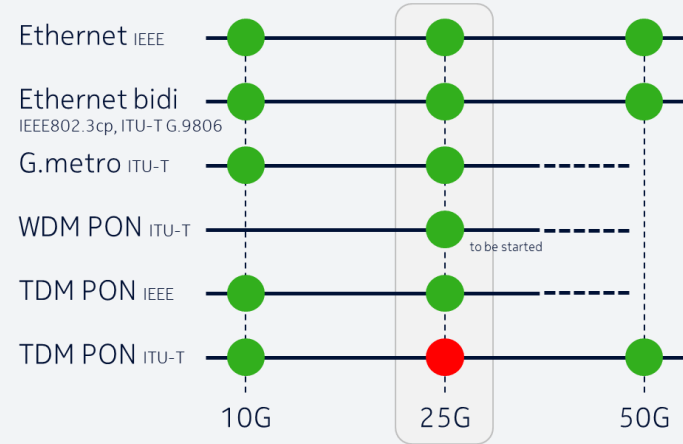
TIBIT communications inc

25Gb/s is accepted as a critical step by the industry

25G PON initiative supported by 18 ITU-T members:

- Other standard bodies have agreed on 25G as a stepping-stone between 10G and 50G
- 25G is delivers a critical cost optimization
- 25G PON was proposed in ITU-T by 18 co-signers including regionally diverse T1 operators and vendors
- Politics interfered and the proposal was procedurally blocked

All standards have 25G step, except ITU-T PON



The evolution of PON drives more use cases
And more revenues

25G-PON

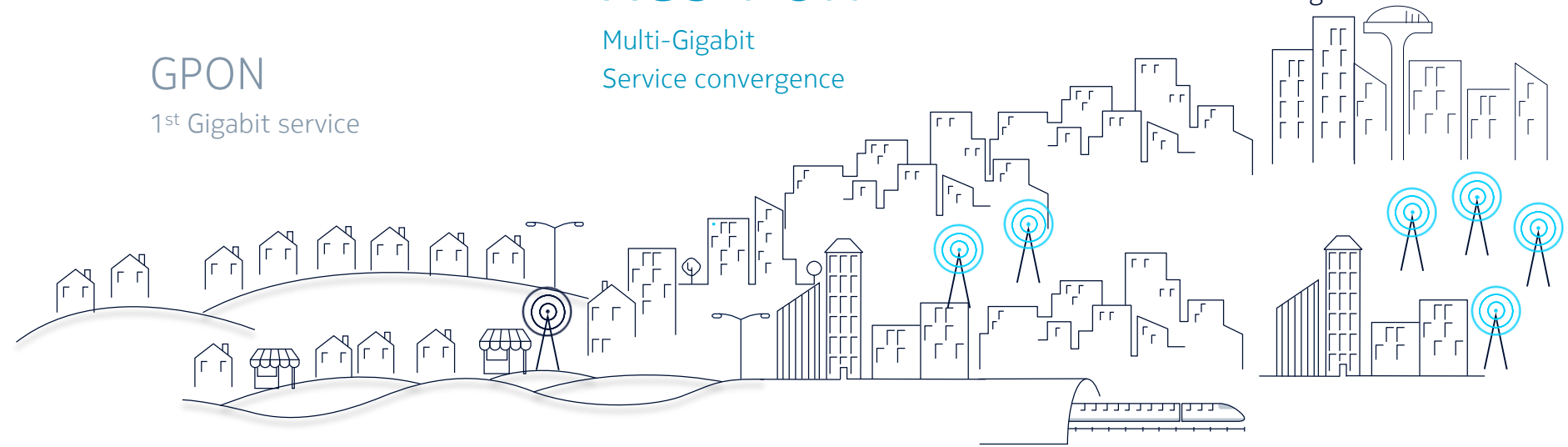
Premium services
Enhanced convergence

XGS-PON

Multi-Gigabit
Service convergence

GPON

1st Gigabit service



NOKIA

Many thanks for your attention