Models for Monetising 5G Investments

STL Partners

GSMA 5G Live webinar series

15th July 2020

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Agenda

- Introductions

- The $1.4 trillion 5G opportunity

- Why telco financial models inhibit service innovation

- Potential strategies for addressing the 5G vertical opportunity

- Examples of telcos successfully investing in a vertical strategy: Telus and Elisa

- Q&A

STL Partners helps our clients innovate, grow, and stay ahead of existing and new competition in a digital world

Research

Consulting

Events

Today's presentation draws an extensive 5G research programme covered in five STL Partners reports…

Executive Briefing Service

STL PARTNERS

Executive Briefing

$1.4TN OF BENEFITS IN 2030: 5G'S IMPACT ON INDUSTRY VERTICALS

The unique benefits of 5G could unlock $1.4tn of value in eight industries in 2030. What steps should operators take to deliver these benefits? What business and organisational transformation must occur to unlock this opportunity?

Tilly Gilbert, Consultant | tilly.gilbert@stlpartners.com | October 2019

Growing Enterprise Revenues

STL PARTNERS

Executive Briefing

5G'S IMPACT ON MANUFACTURING: $740BN OF BENEFITS IN 2030

The unique benefits of 5G could unlock $740bn of value in manufacturing in 2030. This is based on models generated from 100+ interviews surveys with senior manufacturing industry executives. What steps should operators, manufacturers and others take to achieve these benefits?

Dalia Adib, Senior Consultant | dalia.adib@stlpartners.com | October 2019

Growing Enterprise Revenues

STL PARTNERS

Executive Briefing

5G'S HEALTHCARE IMPACT: 1 BILLION PATIENTS WITH IMPROVED ACCESS IN 2030

This report explores the impact of 5G on the healthcare industry. It illustrates the benefits and example use cases, as well as quantifying potential efficiency gains, that 5G will enable.

Darius Singh, Consultant | Darius.singh@stlpartners.com | October 2019

Executive Briefing Service

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Executive Briefing

5G REGULATION: ENSURING SUCCESSFUL INDUSTRIAL TRANSFORMATION

5G can transform the performance of industries and generate significant social and economic value. This report explores the role of regulators and governments in ensuring that 5G's promises are realised.

Chris Barraclough, Managing Director | chris.barraclough@stlpartners.com | October 2019

Executive Briefing Service

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Executive Briefing

CURTAILING CARBON EMISSIONS – CAN 5G HELP?

Data volumes are growing inexorably. 5G can help to improve networks' energy performance and curtail carbon emissions.

Philip Laidler, Director | philip.laidler@stlpartners.com | October 2019

…and work through our Edge Computing Practice

Unrivalled expertise and experience…

…and an industry-leading edge knowledge centre

Supported 4 major telecoms operators to develop a commercial strategy for edge computing

"STL brings edge expertise. They understand that landscape across telco and other ecosystems."

Head of Commercial & Partnering - Global MNO

"We worked closely with STL in true partnership to deliver high quality, actionable insights that were not available elsewhere."

Head of Cloud Edge - European MNO

"The consulting team produced high-quality output that could be repurposed in a wide variety of ways."

Product Manager - global software company

Advised global telco on hyperscaler partnership negotiation worth €0.5M

Interviews with over 50 enterprises and solution providers across different industries

Team of experts: leading industry analysts and consultants, IoT practitioners & cloud specialists

STL Partners' Edge Computing Ecosystem Tool

NPV of hyperscaler pricing scenarios vs monthly server growth
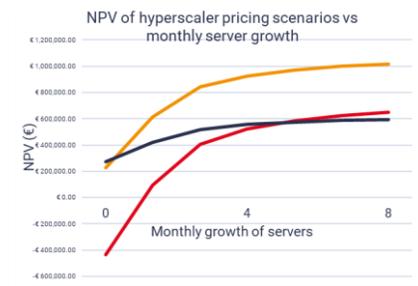
Database of 150+ use cases for MEC, private networks edge and on-premises edge

Interactive model for forecasting use case revenues

Ecosystem tool mapping 80+ vendors across the edge value chain

MEC site ROI model & hyperscaler negotiation tool

Telcos and others are investing huge amounts of capital to build networks... some of which will start to feed into edge

$ Billions

$350 — Telecommunications annual capital investments

$54 — Hyperscale capital investments (Amazon, Microsoft & Google)**

$2 — Edge investments (PE, VC, etc.)*
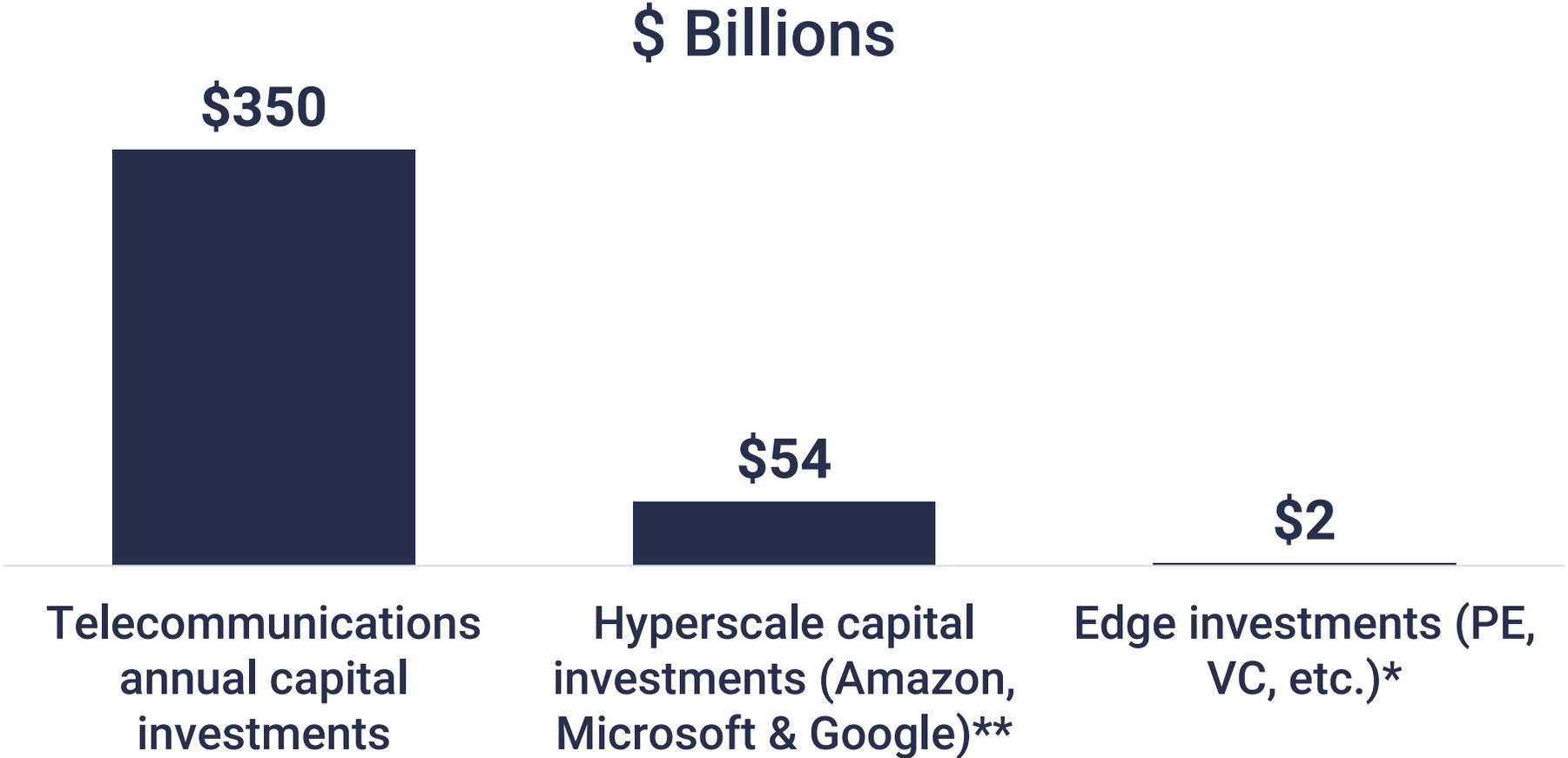
* largest edge investments recorded in STL Partners Edge Ecosystem Tool 2016-2020

**2019 fiscal year; Source: finbox.com

The good news: 5G is forecast to generate significant value for other industries

Benefits to industry attributable to 5G (USD trillions)

Legend (top to bottom):
- Media, sports & entertainment
- Agriculture
- Construction
- Energy & extractives
- Health
- Transport & distribution
- Retail
- Manufacturing

Values by year:
- 2020: $0.00
- 2021: $0.01
- 2022: $0.02
- 2023: $0.04
- 2024: $0.1
- 2025: $0.1
- 2026: $0.3
- 2027: $0.4
- 2028: $0.7
- 2029: $1.0
- 2030: $1.4
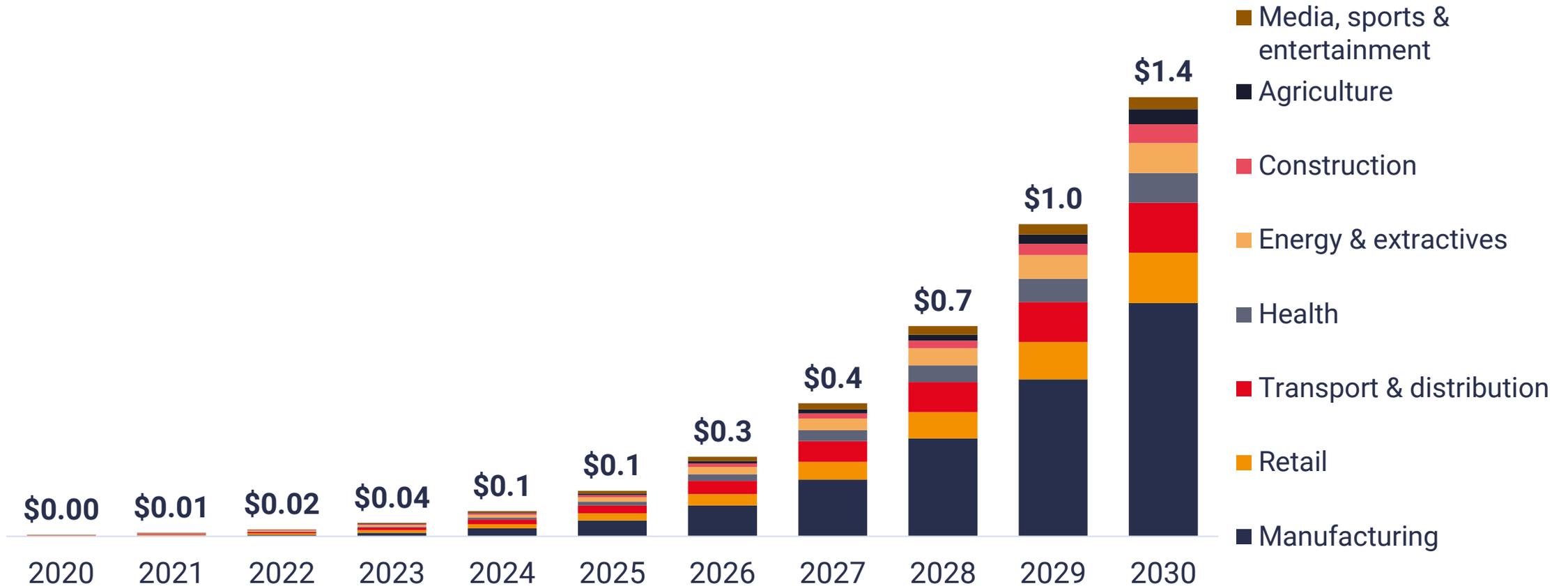
The absolute size of each industry is a key factor in the absolute size of 5G's impact

2030 Global GDP by Industry (with no 5G) - USD Trillions

Industry	Value
Manufacturing	17.5
Retail	10.2
Health	9.7
Construction	7.2
Agriculture	4.7
Transport & distribution	4.6
Energy & extractives	2.0
Media, sports & entertainment	1.0
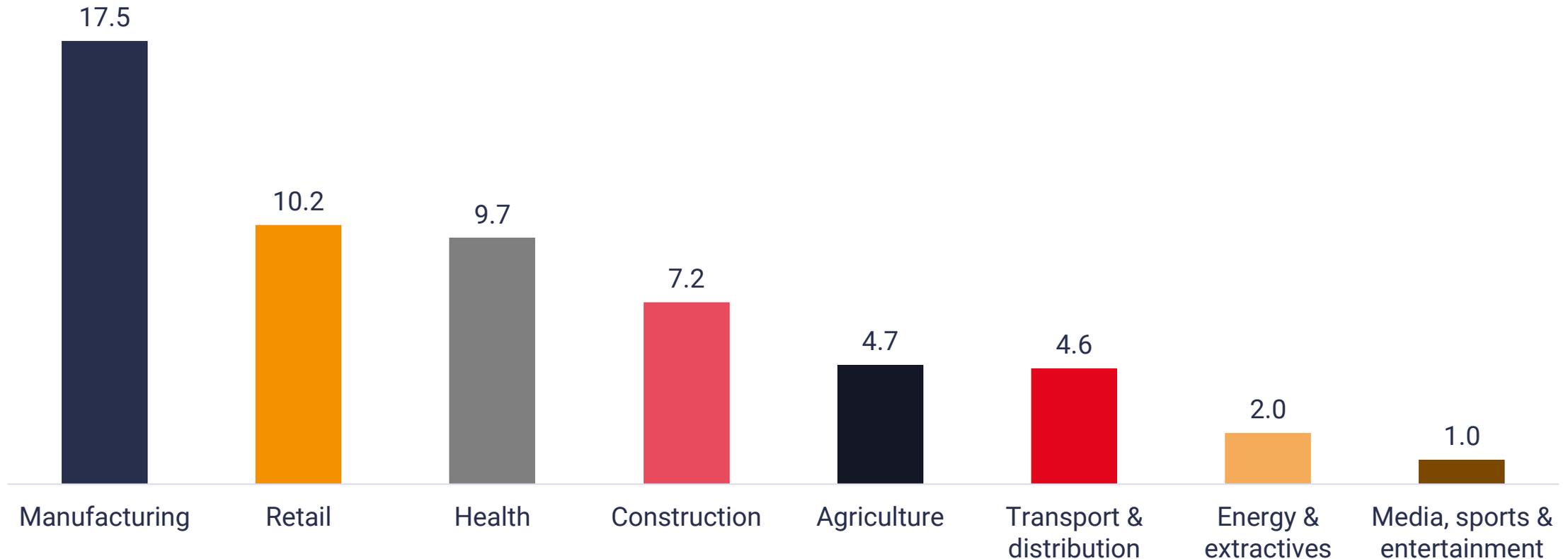
The percentage increase in GDP from 5G varies significantly by industry

5G's percentage increase to global industry GDP in 2030

Several compelling use cases and relatively fast technology adoption

Fewer compelling use cases and/or relatively slow technology adoption

Manufacturing	Energy & extractives	Media, sports & entertainment	Transport & distribution	Retail	Agriculture	Health	Construction
5.1%	4.9%	4.0%	3.5%	1.6%	1.0%	1.0%	0.8%
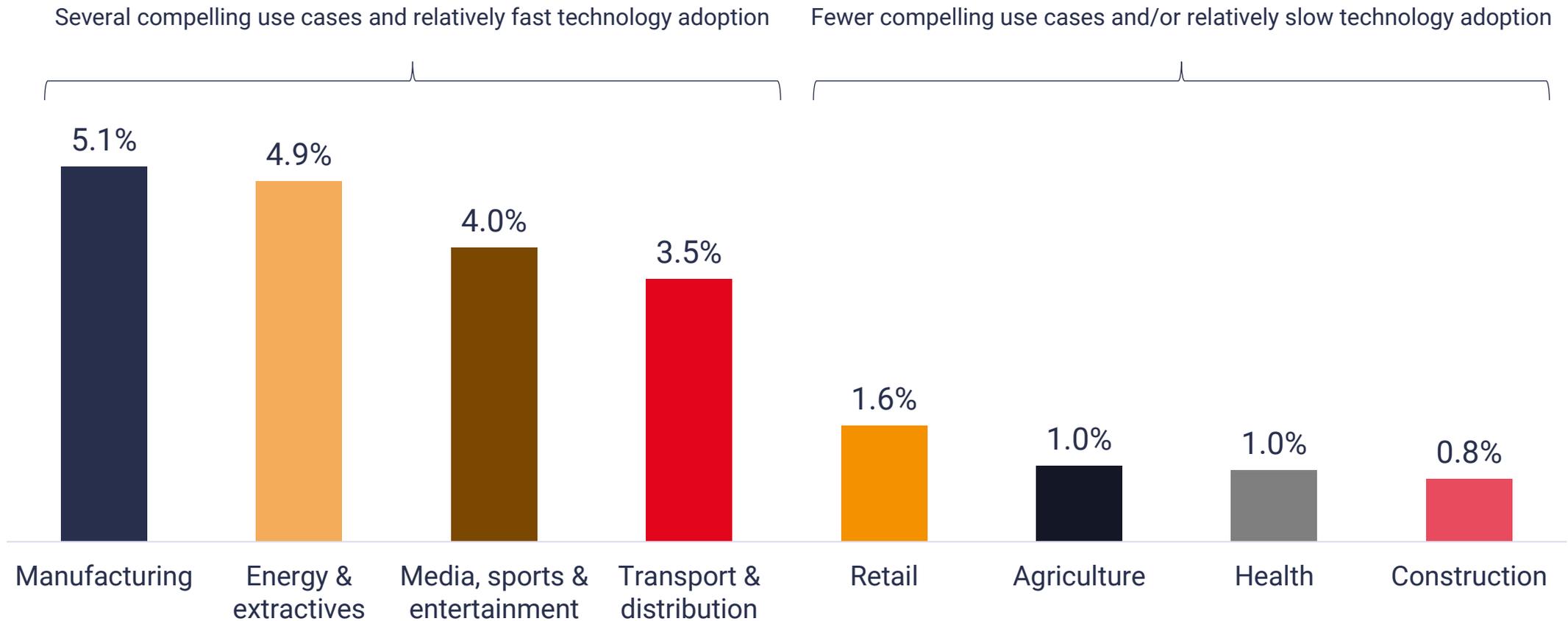
The bad news: There is no guarantee telcos will reap rewards with the current business model...as seen with 4G

ARPU (Indexed) (y-axis, 50 to 110)

% of mobile broadband subscribers on 4G (x-axis, 0% to 90%)
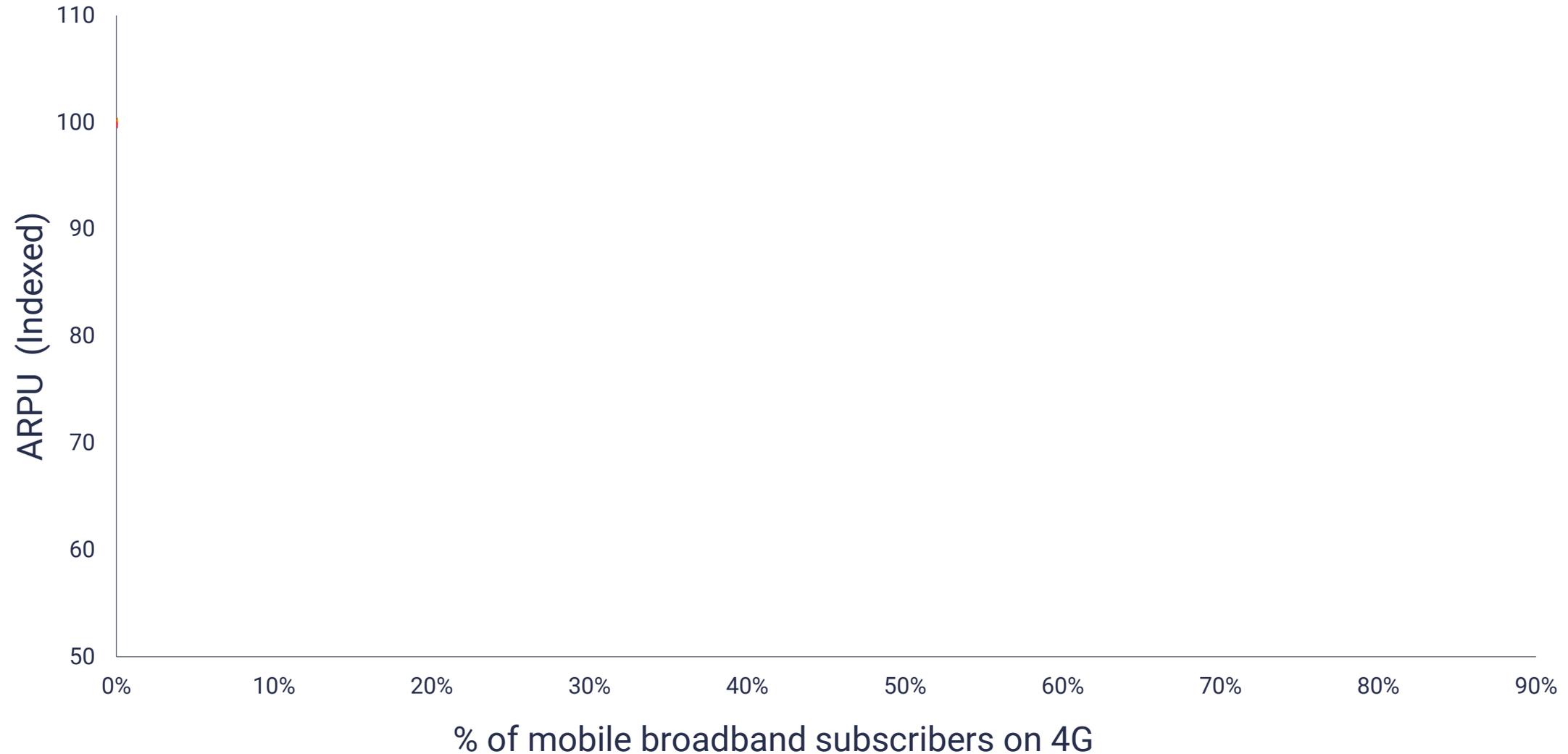
In fact, telcos are facing a stagnant or declining market in all regions

Annual growth in service revenue is tending to 1% in Asia Pacific, North America and Western Europe

Telecoms services revenue ($ Billions)
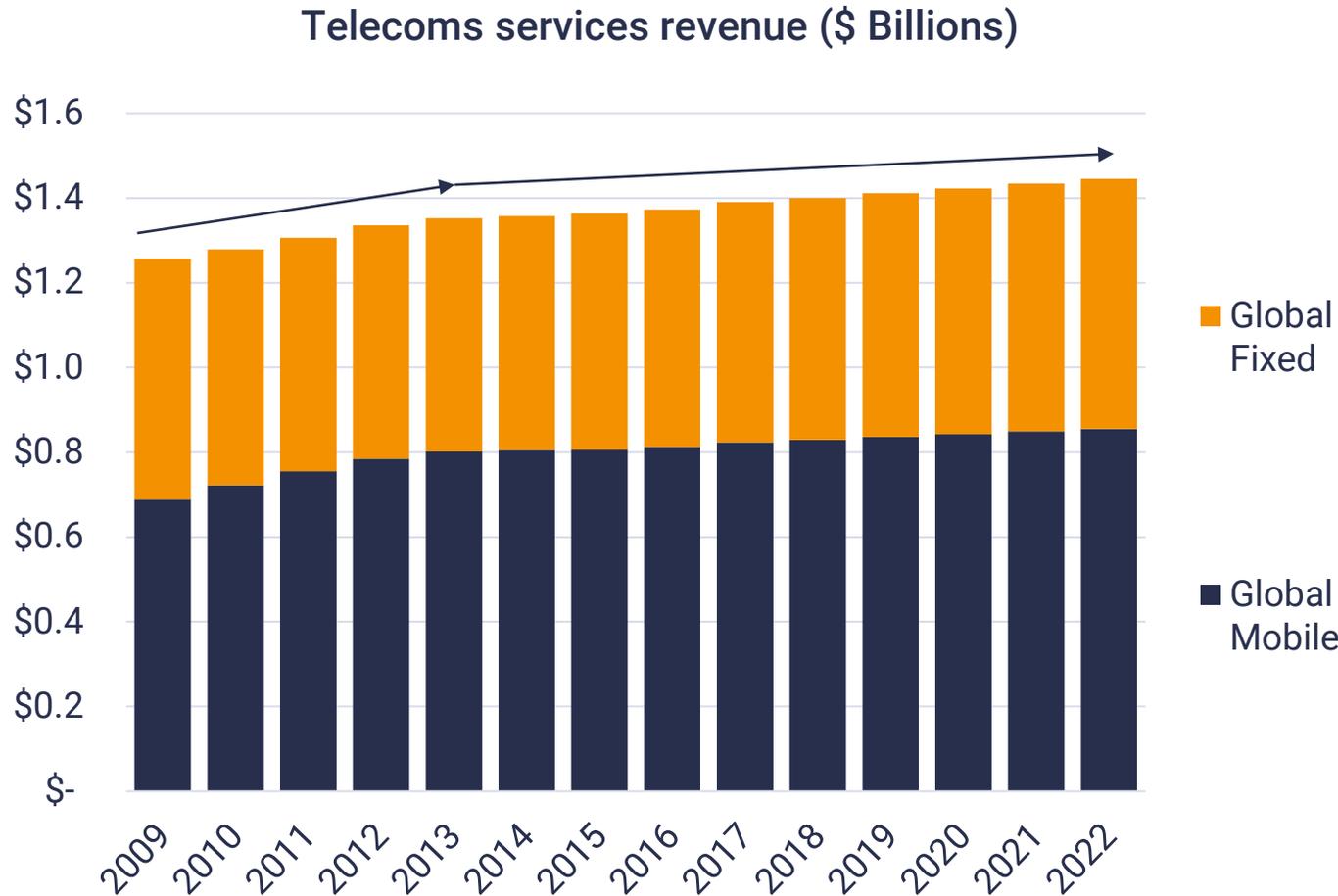
- Operators have focused on short-term cost-cutting and technology leadership

- This may boost individual operators profitability for a while…

- …but, inevitably, will lead to further price reductions and margin compression

Where does growth & value come from in a competitive commodity market?

Source: Data from 165 company filings, STL Partners analysis and forecasts

Telcos are moat builders (with leaky moats) and are radically out-invested in service innovation by tech companies

R&D and Capex % of Revenue, 2017

Bubble chart with axes:
- Y-axis: R&D OpEx as % of Revenue (0% to 20%)
- X-axis: CapEx as % of Revenue (0% to 25%)

Quadrant labels:
- **Service Differentiators** (top-left)
- **Service Differentiators with moats** (top-right)
- **Moat builders** (bottom-right)
- **No future or nirvana** (bottom-left)

Tech companies (orange): Facebook, Intel, Ericsson, Oracle, Cisco, Alphabet, Amazon, Microsoft, Apple

Telco companies (red): China Mobile, SingTel, AT&T, Verizon, America Movil, Orange, Vodafone, Deutsche Telekom, Telefonica

Legend:
- ○ $100bn revenue
- ▢ Tech (orange)
- ▢ Telco (red)

- Historically, service innovation = network capex:
  - Outsourced to Network Equipment Players (NEPs)

- Now, services are independent of the network (thanks to Internet)

- Telcos still invest only in capex but value is increasingly in network-independent services

Source: Company accounts; STL Partners analysis

Reality check: Market capitalisation of seven internet players is more than all telecoms operators combined!

Revenue and Market Capitalisation, 2017, Telco vs Internet

Trillions

- $4.5
- $4.0
- $3.5
- $3.0
- $2.5
- $2.0
- $1.5
- $1.0
- $0.5
- $0.0

Telecoms industry | Selected internet giants

Revenue

Legend:
- ■ Tencent
- ■ Alibaba
- ■ Microsoft
- ■ Amazon
- ■ Facebook
- ■ Apple
- ■ Google
- ■ 165 telcos
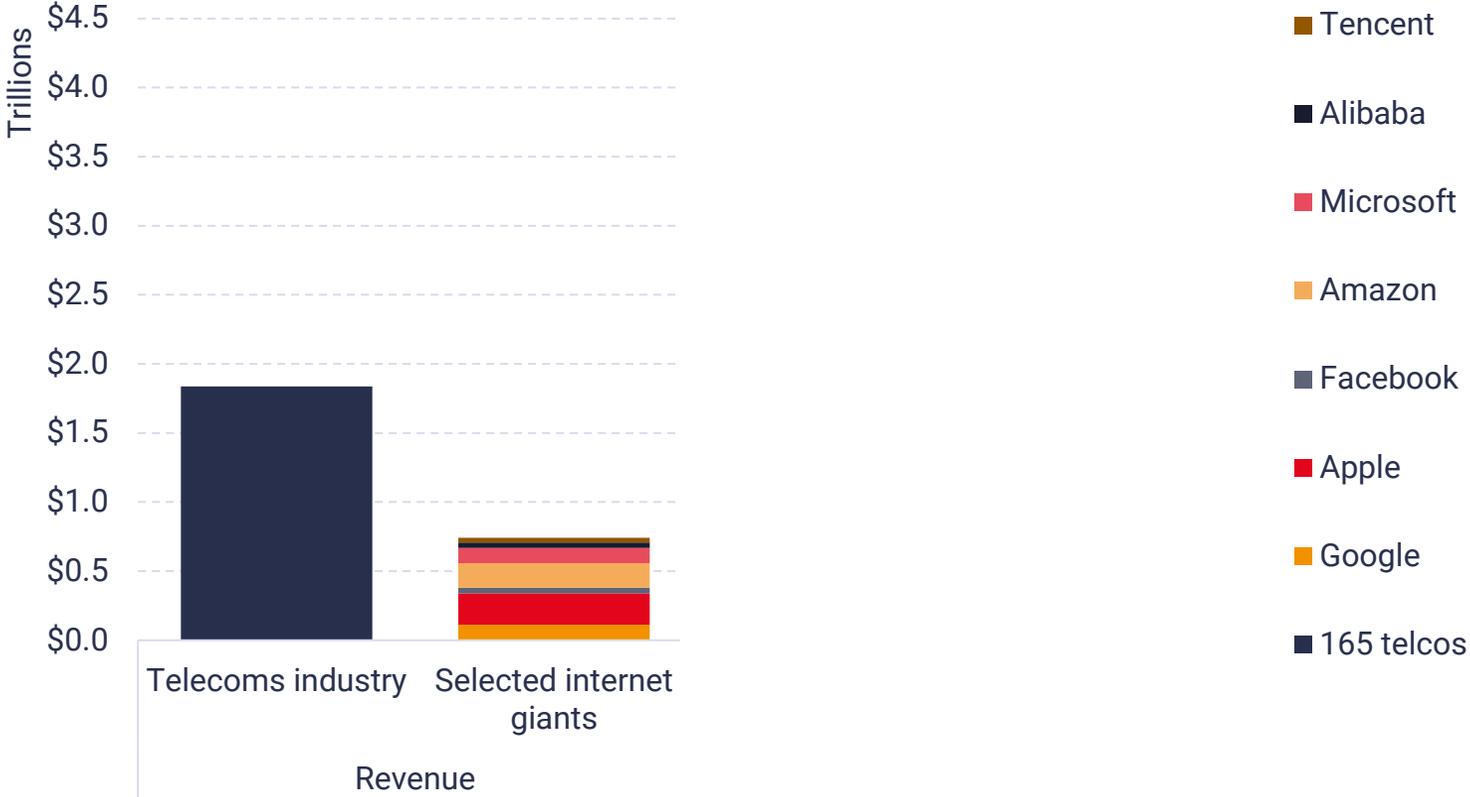
Why?

Service innovation + moats

=

Profitable growth

=

Future value creation

Source: Company accounts, stock market data; STL Partners analysis

Operators need to shift from a horizontal strategy to a vertical strategy

From large-scale standardised commodity products for all…

Past

Voice
Messaging
Connectivity

…to higher-value solutions tailored for specific target industries

Now & future

SaaS

PaaS

NaaS

New:
- Skills
- Partners
- Business models
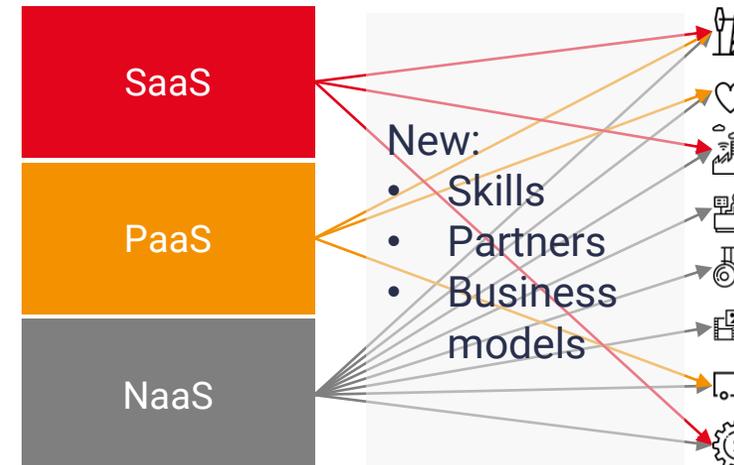
A vertical strategy means resources must be allocated differently

R&D and Capex % of Revenue
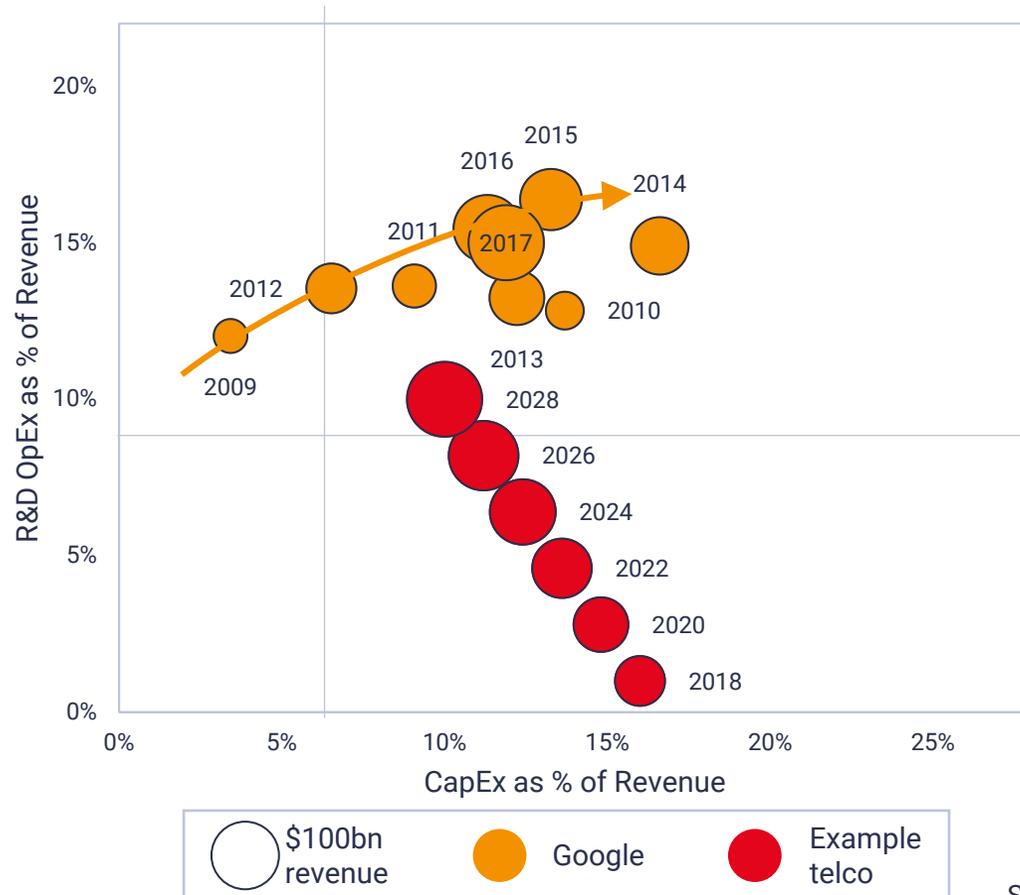
- Greater telco investment on platforms & services to move beyond connectivity…

- …means correspondingly less on CapEx – i.e. 5G investment

  Impossible?

- Google shifted to greater CapEx investment between 2009 and 2017

Source: Google/Alphabet accounts; STL Partners analysis

# Where should all this new operating expenditure go?

Skills, assets, capabilities

Infrastructure	Vendor management
	Operational efficiency
	Service assurance
	Network quality of service
	Congestion management
	Provisioning
	Capital investment planning

Existing capital expenditure and network operating expenses

# The telco CFO needs to preside over a fundamental change in financial and commercial models

Potential resource breakdown for a typical telecoms operator

New skills, assets, capabilities

Legend:
- EBIT
- (Non-network) service innovation and delivery
- Sales and customer care
- Operations (to run infrastructure)
- Amortisation of intangibles
- Capital Expenditure (ie depreciation)

Opex

Data by year:

	2020	2022	2024	2026	2028	2030
EBIT	9%	9%	10%	12%	13%	14%
(Non-network) service innovation and delivery	3%	6%	8%	10%	12%	14%
Sales and customer care	16%	15%	14%	13%	12%	11%
Operations (to run infrastructure)	50%	49%	48%	47%	45%	44%
Amortisation of intangibles	6%	6%	6%	6%	6%	6%
Capital Expenditure (ie depreciation)	16%	15%	14%	13%	12%	11%

Source: Telecoms operator accounts, STL Partners estimates and analysis

Operator management must determine their vertical focus and their role in the ecosystem

1. Who are you serving?

Energy & Extractive industries	Healthcare	Manufacturing	Retail
Financial services	Logistics & Distribution	Agriculture	Media & Entertainment

Consumers
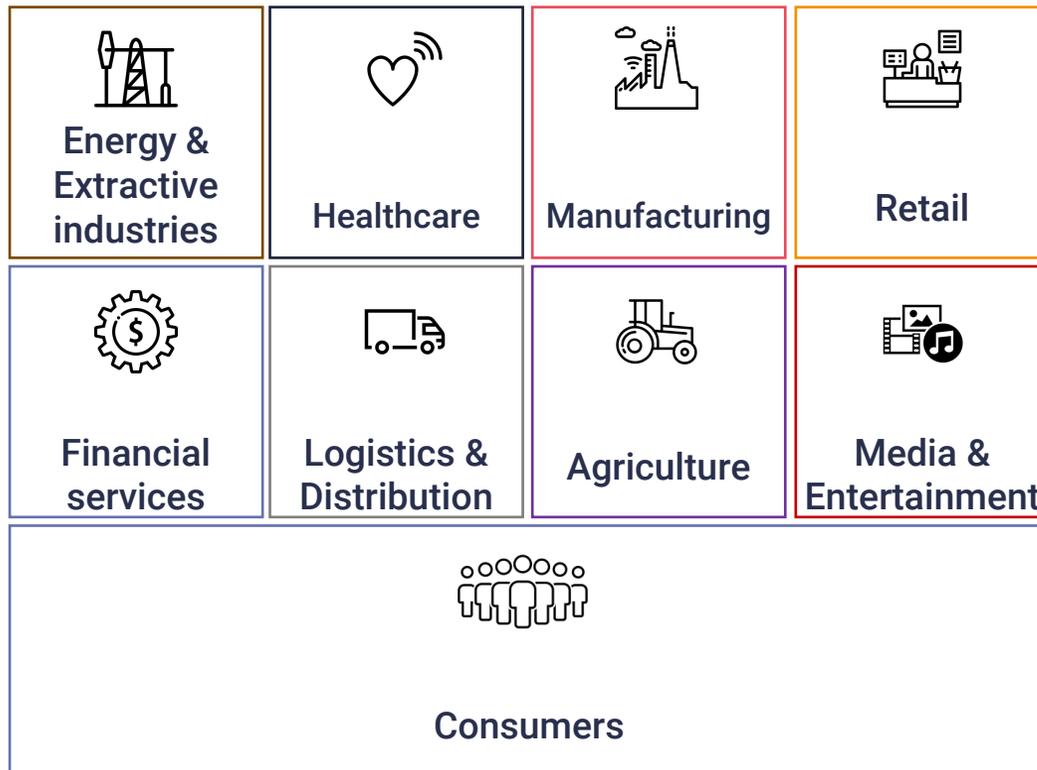
2. What are you doing for them?

Applications and solutions

Specific vertical solutions and applications.

Application enablement

Aggregation platforms for data, applications and enablement services.

Network-as-a-service

Customised cloud-like networks.
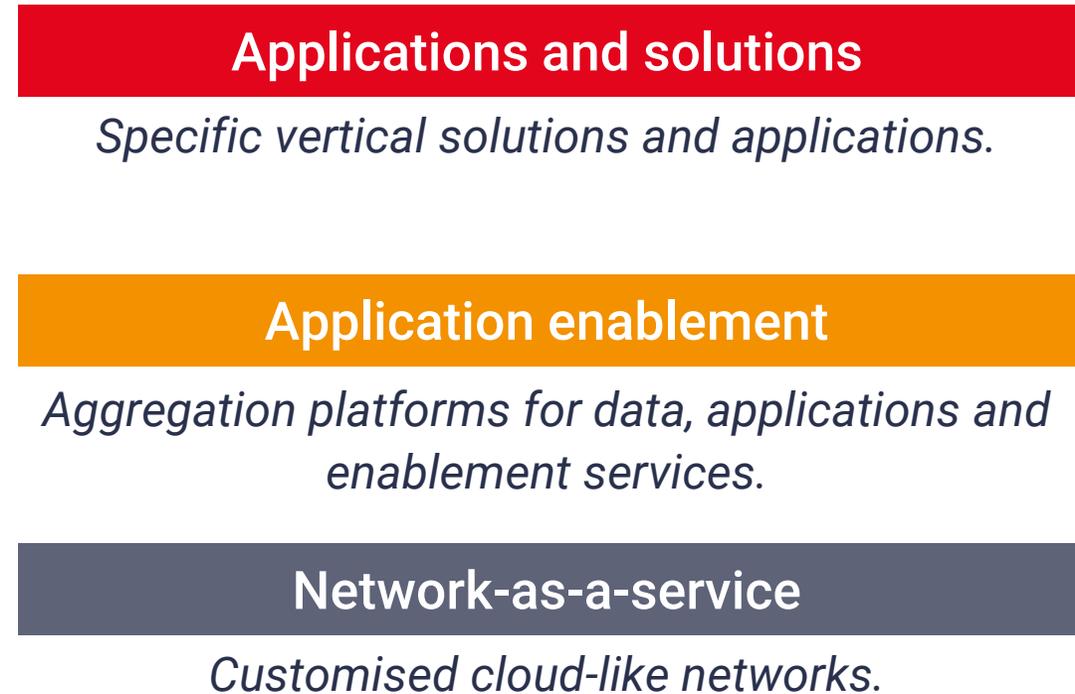
Poll 1: Which business model do you believe your organisation should focus on to deliver 5G growth?

1. Applications and solutions

2. Application enablement

3. Networks-as-a-service

1. Operators have some structural advantages in some industries...and disadvantages in others

Degree to which connected technology
can change the industry

	Low	Medium	High
National	Fishing Construction Mining Agriculture	Energy Transport & logistics	Healthcare Manufacturing Banking
Global		Oil & gas	Fashion Insurance Media Wellness

Level at which economies of scale operate

← **Telecoms sweet spot**

← Global internet players, hyperscalers, other technology companies, have strategic advantages here
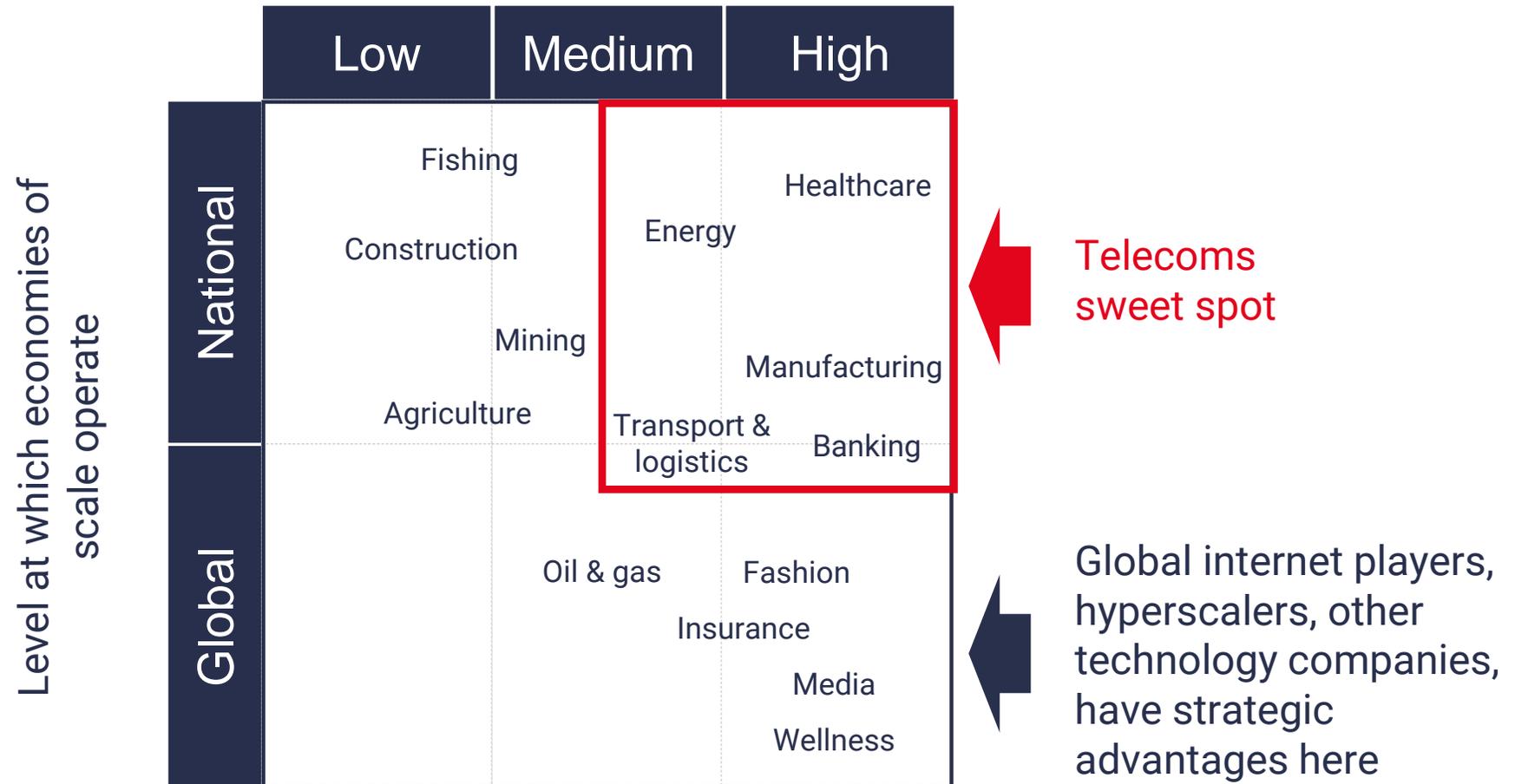
2. Each ecosystem role offers different opportunities, has different characteristics, and requires different skills...

	Revenue & profit pool	Market & competition	Fit with current skills
Applications and solutions	70+%	Fragmented specialists, intense competition	Low
Application enablement	20-25%	Consolidated, large tech players, intense competition	Medium
Network-as-a-service	5-10%	Consolidated, large telcos, intense competition	High

...so management must balance implementation risk against market risk

Telco strategic roles summary

Size of opportunity (vertical axis: High, Medium, Low)

Ability to compete (horizontal axis: Low, Medium, High)

- Applications and solutions
- Application enablement
- Network-as-a-service
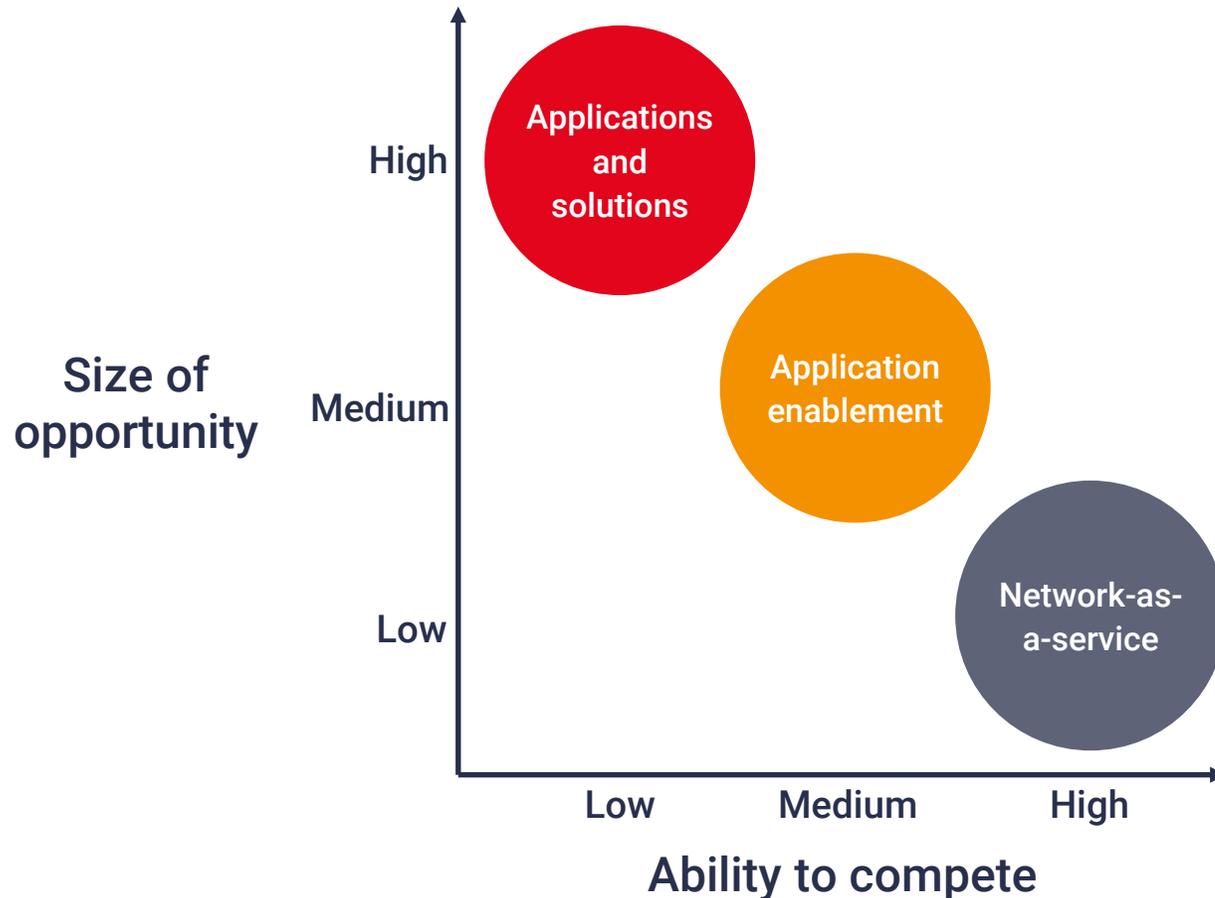
Be ambitious and risk implementation failure?

versus

Be cautious and risk being squeezed by market decline?

We are seeing examples of telcos starting to focus on specific customer segments

Energy & Extractive industries

Healthcare

TELUS Health

Manufacturing

elisa
SMART FACTORY

Retail

Financial services

orange bank
Orange Cash
Orange Money

Logistics & Distribution

Agriculture

Media & Entertainment

Singtel
HOOQ
AMOBEE
DataSpark

Poll 2: To what extent is verticalisation core to your 5G strategy?

1. **We are not focused on verticalisation**: we see future 5G growth coming from our horizontal connectivity business

2. **We are exploring verticalisation**: we see B2B being a key growth engine in 5G but do not yet have a clear strategy

3. **We are starting to invest in verticalisation**: we have selected our verticals and are exploring organic and inorganic growth options

4. **We are actively investing in verticalisation:** we have already made some acquisitions and/or organic investments in our select verticals

Telus: Key learnings from a flagship telco-health business providing solutions and platforms

Case Study

STL PARTNERS

Each vertical requires a detailed analysis of roles and the 'right to play' for a telco

Healthcare opportunities for the telecoms industry

Network-as-a-service

Connectivity · Low-latency · Speed · Volume · Efficiency

Seamless fixed-wireless convergence · Security
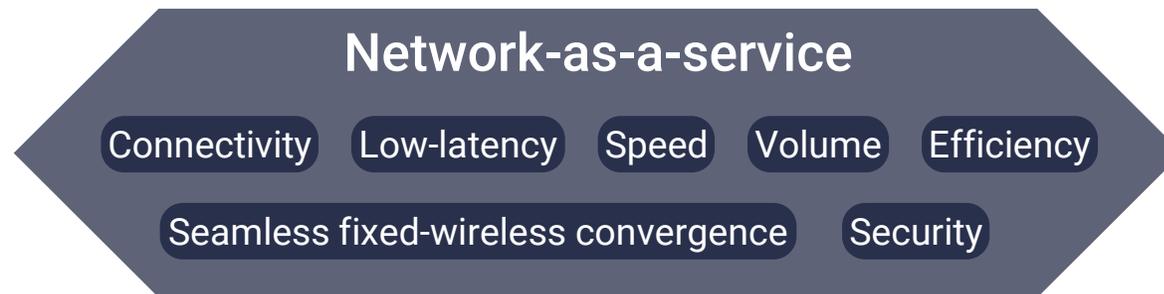
1. Healthcare network focus:
- Healthcare-specific propositions?
- New sales channels, partnerships?
- Client-specific network solutions?

Each vertical requires a detailed analysis of roles and the 'right to play' for a telco

Healthcare opportunities for the telecoms industry

Application enablement platform

- Data/information mgt.
- Transactions
- Security
- Billing
- Device/app mgt.
- Analytics
- Revenue mgt.

Network-as-a-service

- Connectivity
- Low-latency
- Speed
- Volume
- Efficiency
- Seamless fixed-wireless convergence
- Security
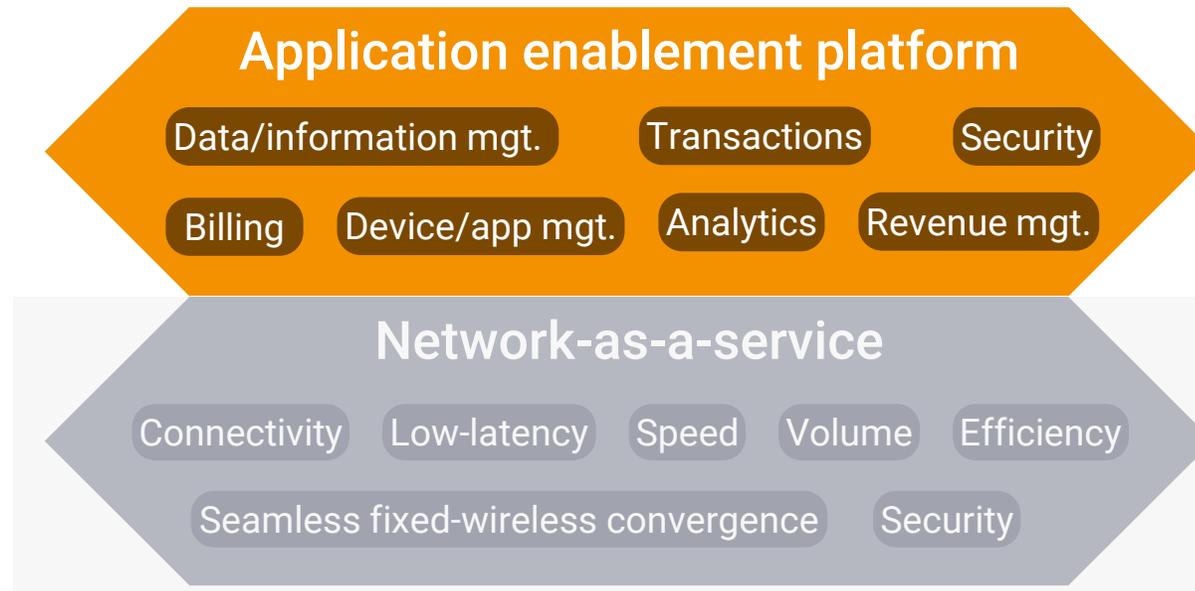
2. Healthcare enablement platform:

- Health (data) exchange only?
- Add additional enablement capabilities?
- What to do alone, in partnership, exclude?
- Interoperability with other platforms?
- How to integrate with Network-as-a-service solution?

Each vertical requires a detailed analysis of roles and the 'right to play' for a telco

Healthcare opportunities for the telecoms industry

Solutions and applications

Communications — IT — Portals: hospital, GP, patient

Condition-specific solutions: cardio, renal, diabetes, etc.

Application enablement platform

Data/information mgt. – health records — Transactions — Security

Billing — Device/app mgt. — Analytics — Revenue mgt.

Network-as-a-service

Connectivity — Low-latency — Speed — Volume — Efficiency

Seamless fixed-wireless convergence — Security
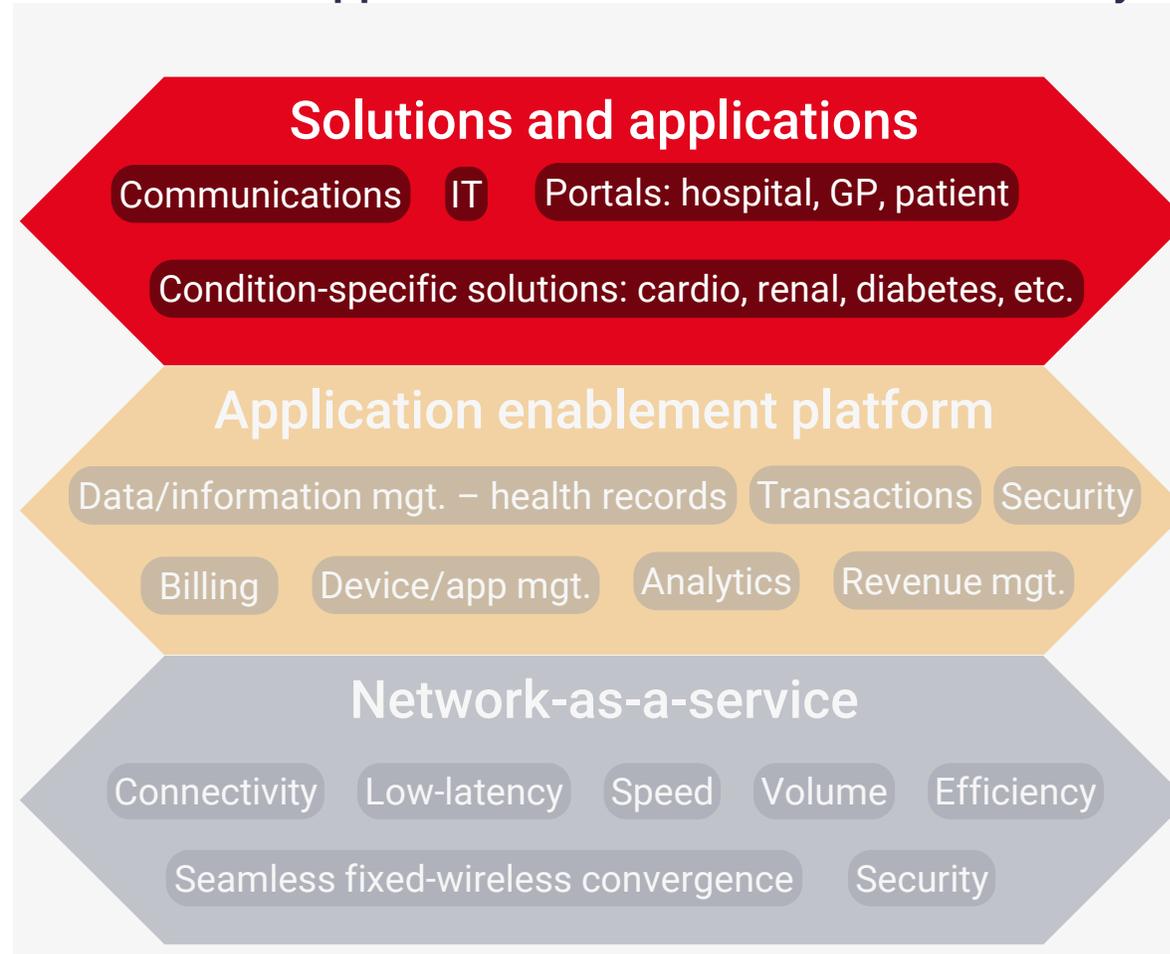
3. Healthcare Solutions and applications:

- Where to specialise?
- How to integrate with other specialists, other enablement platforms?
- Add-on to an enablement platform solution or separate focus?
- How to integrate with Network-as-a-service solution?

TELUS Health - a flag ship for telcos in health?

What are they doing?

APPS & SOLUTIONS
- Claims settlement
- Consolidate Canadian EMR market
- Remote monitoring
- Employee insurance & wellness

APP ENABLEMENT
- Canadian health data exchange
- Licence technology to other telcos globally

How are they doing it?

1. Build reach → Emergis claims settlement
EMRs for GPs
Pharmacy IT

2. Drive collaboration → Mobile apps
Gvt contracts

3. Improve outcomes with analytics → Babylon

What have they achieved?

#1 EMR provider

#1 pharmacy IT provider

eClaims → reaches 5 different user groups

2017: awarded national e-prescription contract

LIVE
eClaims + EMRs

IN DEVELOPMENT
Virtual care + remote monitoring

TELUS Health revenues

Bar chart showing TELUS Health revenue (CAD millions, left axis 0–1000) from 2011 to 2018, with an orange line showing "As a % of TELUS total revenue" (right axis 0%–8%).

Legend: TELUS Health revenue — As a % of TELUS total revenue
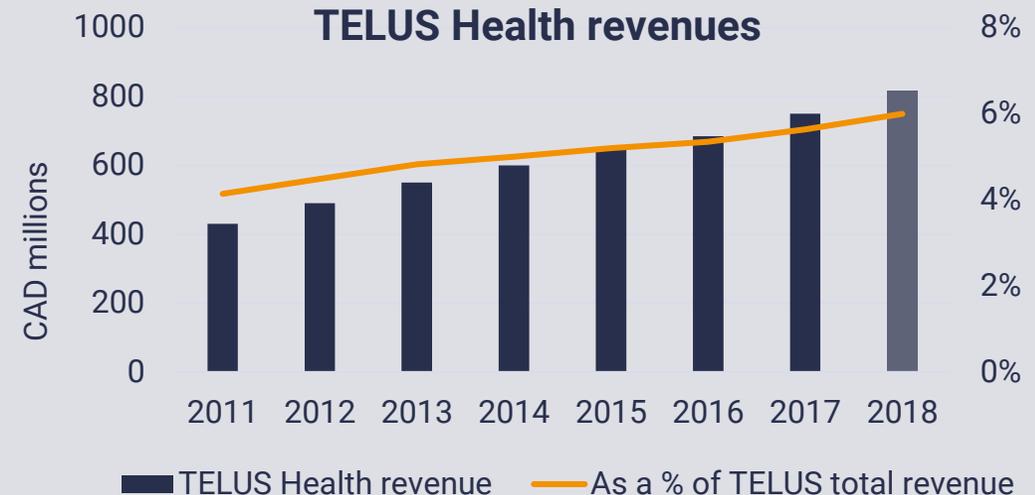
TELUS Health have an early stage remote patient monitoring solution – Home Health Monitoring

Home Health Monitoring solution	Key partnerships for delivery

Data

COPD   Heart failure

Hospital clinicians

Primary care

island health
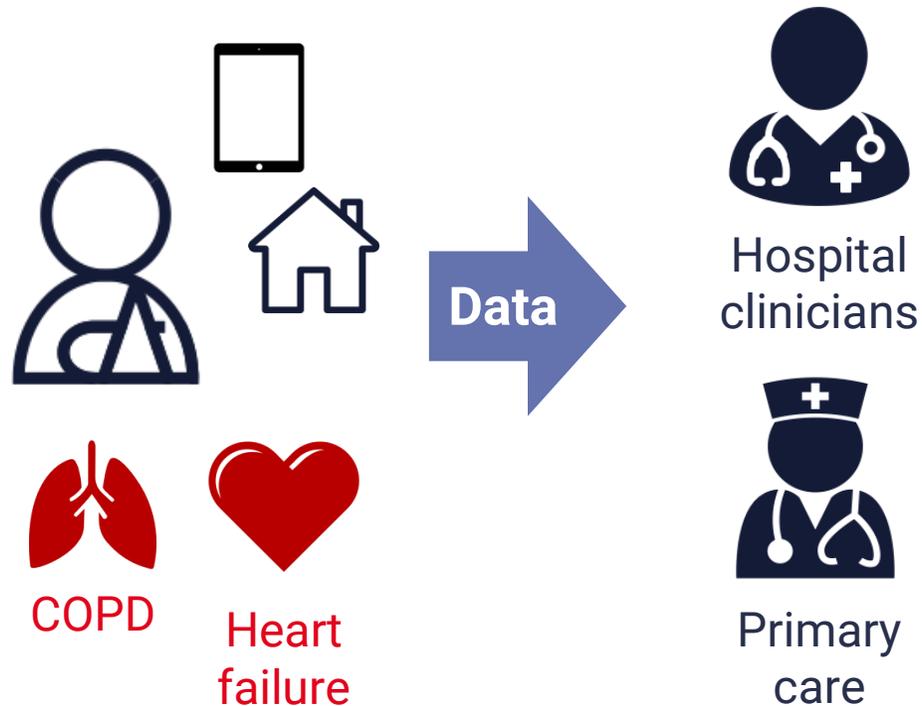
- B2B2C model
- Key channel for TELUS
- Built relationships through provincial EMRs

Tunstall

- Integrated Care Platform for managed service model
- Connected health technology

TELUS also have an early stage virtual consultation partnership

Babylon health services

Wellness assessment → AI-driven triage system → Text / video consultation

Key partnerships for delivery

babylon

- Go-to-market partner for TELUS
- Commercialised offering in UK and Rwanda

Success?

?

- In Canada – huge spike since COVID-19 pandemic
- In UK, more than 40,000 NHS patients registered

So, why do we need 5G?

Key challenges   **Supported via 5G?**

- Fear of duplicated efforts
- Lag impacting user experience   ✔
- Pixilation preventing visual diagnoses   ✔

Elisa: How building its own automated NOC helped the operator develop a smart factory business

Case Study

STL PARTNERS

Elisa has a decade of experience in automation

- Zero person Network Operating Centre since 2010

- 60 automated use cases for network operation

- 90% of incidents automatically resolved

- 75% corrected before visible to customers

- Automated NOC now provided to other telcos
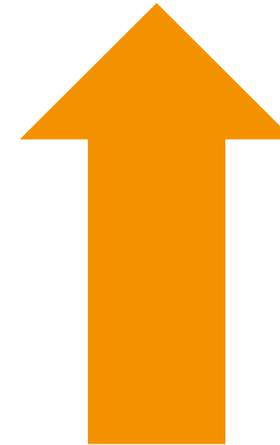
Significant improvement in NPS
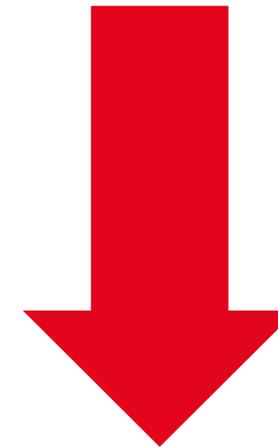
Significant cost savings – fast!

Elisa Smart Factory stems from the company's skills in telecom NOC automation

TRADITIONAL APPROACH *

IIoT CREATES A NEW LAYER OF DIGITAL TECHNOLOGY

L4	Business systems (ERP, SCM, PLM) Governance & planning
L3	Production execution (MES / MOM)
L2	Process monitoring (HMI-SCADA)
L1	Process sensing, manipulation (PLC)

L5 ELISA SMART FACTORY

CONNECT DATA

Integrate data

Understand data

Define models & KPIs

VISUALISE DATA

Real-time, role-based dashboards

3D/2D view of equipment and processes

ACT ON DATA

Real-time alerts

Automation through analysing data

AI and machine learning enable better and faster decisions
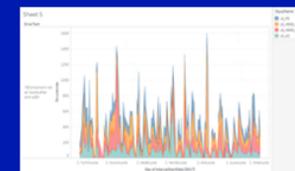
Reduce downtime

Improve product quality

Efficiency & safety

* ISA-95

Elisa creates a service operation centre in which everything is controlled through a single (virtual) pane of glass...


	Development cycle	Production cycle	User cycle
ACTIONS	3D digital twin	Predictive maintenance	
	e2e cockpit	Yield improvement	Supply chain forecast
INSIGHTS	**ANALYTICS** Predictions	Anomaly	Bottleneck	Optimization
	VIRTUAL DATA LAKE Data Integration	Data storage & caching	Data modelling
DATA	PLM — Product Data	CAD — CAD Data	FEM — Simulation Data	ERP — Process Data	MES — Machine Data	BDE — Feedback Data	CRM — Customer Data	CAQ — Test Data

...with multiple applications creating customer value

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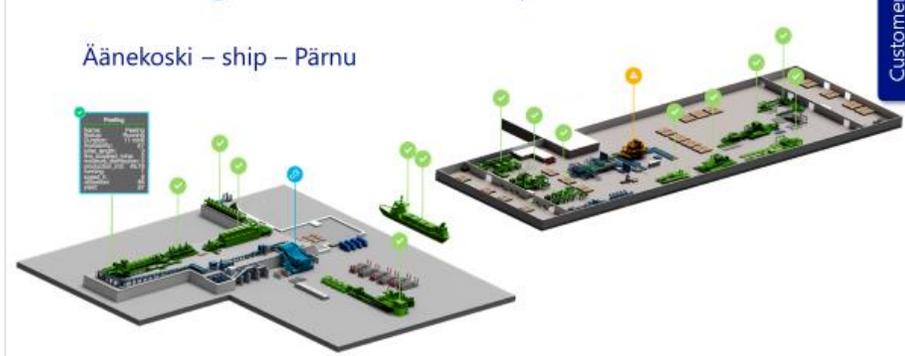
Why is manufacturing a good opportunity for telcos?

1. It's big, adopts technology readily, has tangible productivity and efficiency challenges

2. 5G can make a big difference – use cases are compelling and relatively understood by the industry

3. Telco NOC and automation skills are highly applicable to manufacturing

Summary lessons

Telus

- Acquisitions and partnerships can accelerate your go-to-market by quickly accessing solutions and customers…

- …But telcos will need to consider the role in the value chain and ensure you can piece (point solutions together

- Leverage your "local" nature and work closely with government - as a partner and/or a customer

- Separate organisational structure for B2B initiatives does not impede network upsell opportunities

Elisa

- Telcos can grow vertical businesses organically – as long as you can bring a world-class capability to them

- Think creatively about how to apply your skills to other industries

- Research, design, and test with a willing partner or customer – then scale

- Network independence may be a good (initial) strategy to promote speed

Poll 3: To what extent are you confident in your 5G verticalisation strategy and execution?

1. **We do not have a clear verticalisation strategy** - e.g. yet to focus on key industries)

2. **We are yet to finalise our verticalisation strategy** – need to define our business model(s)

3. **We have a clear verticalisation strategy but unclear execution plan** – need to decide how we will acquire skills/capabilities/customers

4. **We have a clear verticalisation strategy and execution plan** – already seeing indicators of success

Thank you!

To discuss any of this content in more detail please visit our **Edge Computing hub:**

www.stlpartners.com/edge-computing

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