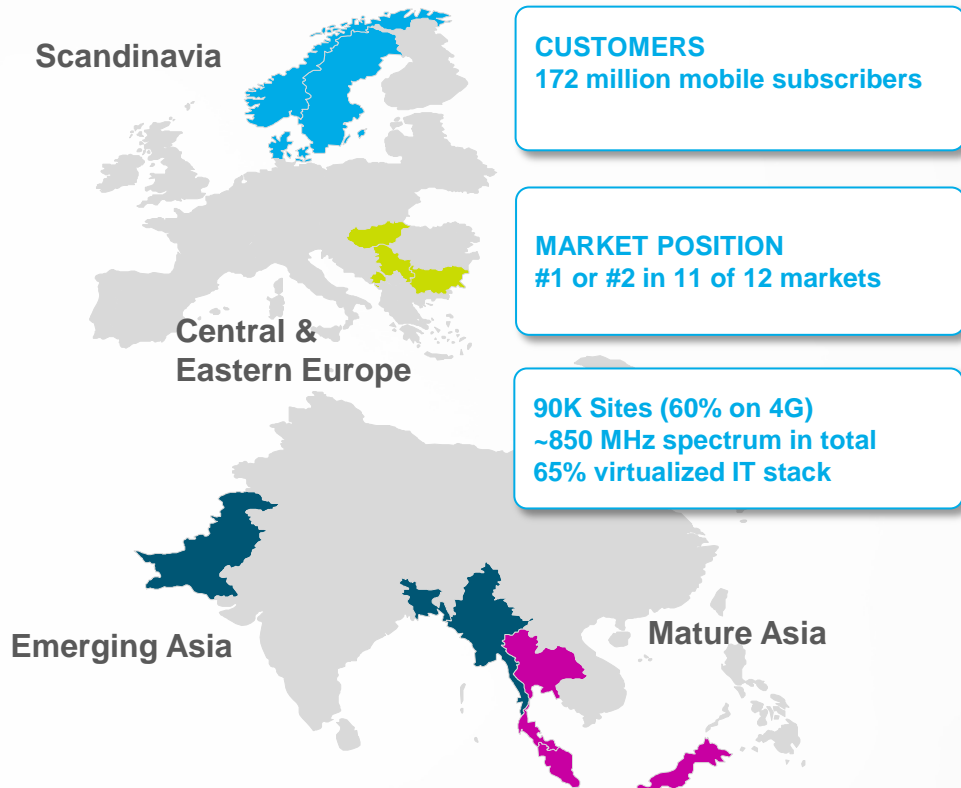# DRIVING EFFICIENCY AND SIMPLIFICATION IN TELENOR

Ruza Sabanovic, Head of Technologies and Services, Telenor Group

Berenberg CTO Conference 4 October 2017

TELENOR IS COMING FROM A STRONG POSITION

- A diversified portfolio with strong market positions in Europe and Asia

- Strong operations based on quality networks and mass-market distribution capabilities

- Majority ownership enabling strong governance and global scale benefits

- Growth above peers, with solid profitability in most markets

Scandinavia

Central & Eastern Europe

Emerging Asia

Mature Asia

CUSTOMERS
172 million mobile subscribers

MARKET POSITION
#1 or #2 in 11 of 12 markets

90K Sites (60% on 4G)
~850 MHz spectrum in total
65% virtualized IT stack

AN INCREASINGLY GLOBAL AND DIGITAL WORLD REPRESENTS NEW OPPORTUNITIES

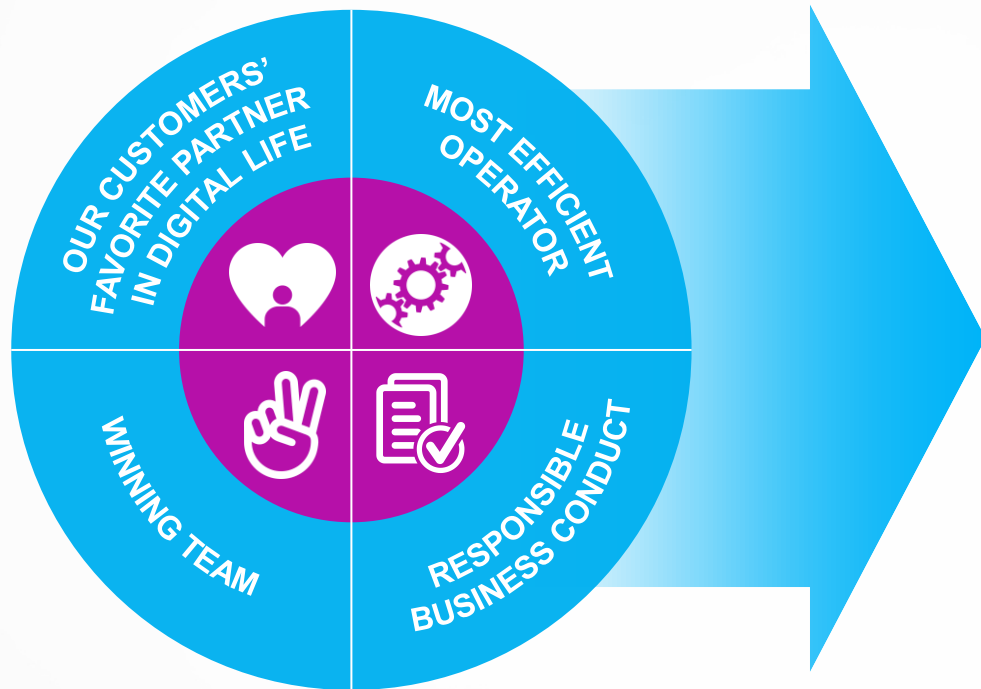**MORE SIMILAR**

THAN DIFFERENT

DIGITAL BEHAVIOR

CONNECTED WORLD

- **Rapid technology development**

- **Global operating models for products, network and IT**

- **Digital customer interactions**

- **Improved customer insight through multiple digital touchpoints**

- **Software defined networks and cloud-based IT platforms**

STRATEGY AND EXECUTION:
FOCUS ON DIGITIZING CORE BUSINESS

OUR CUSTOMERS' FAVORITE PARTNER IN DIGITAL LIFE

MOST EFFICIENT OPERATOR

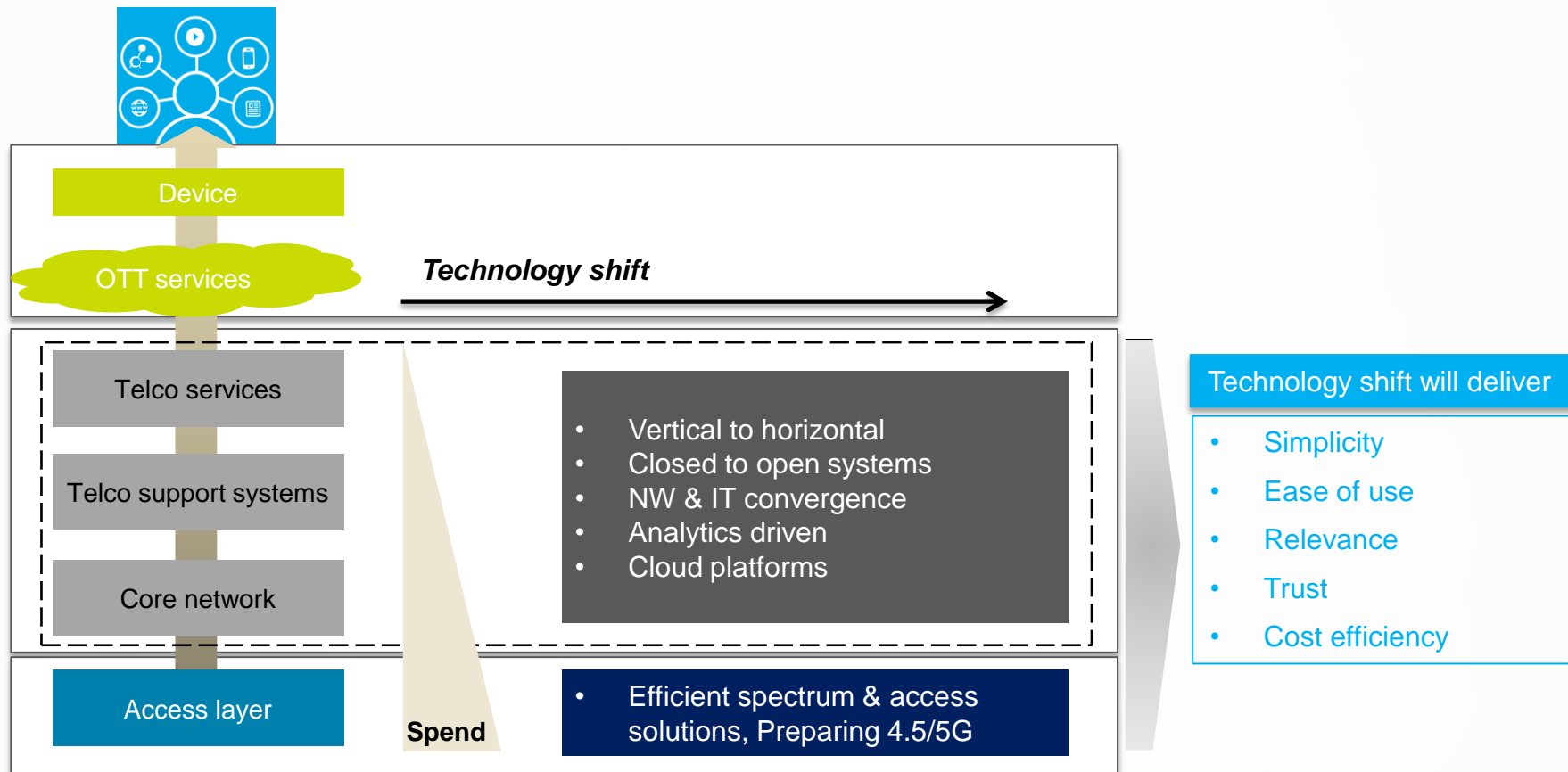WINNING TEAM

RESPONSIBLE BUSINESS CONDUCT

DIGITIZING THE CORE

Mid-term ambitions:
Capex/sales ~15%
Net opex reductions of 1-3%/year

PRODUCTS SUPPORTING OUR TELCO OFFERING

NEW DIGITAL BUSINESSES

DIGITALIZING THE CORE IS ABOUT ACCELERATING THE TECHNOLOGY SHIFT IN THE TELCO STACK

Device

OTT services

Technology shift

Telco services

Telco support systems

Core network

- Vertical to horizontal
- Closed to open systems
- NW & IT convergence
- Analytics driven
- Cloud platforms

Access layer

Spend

- Efficient spectrum & access solutions, Preparing 4.5/5G

Technology shift will deliver

- Simplicity
- Ease of use
- Relevance
- Trust
- Cost efficiency

2017 - 2020 TECHNOLOGY JOURNEY

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| Technology focus areas	Y17	Y20
Spectrum on 4G	57%	80%
Cloud infrastructure	65% IT virtualized	90% of mobile core functions & IT applications
Global APIs	40	250
Global operating model	45%	100%
Digital customer interactions	Journey started	80%

IMPROVE EFFICIENCY AND ENABLE GROWTH WITH LOWER CAPITAL INTENSITY

Annual net opex reductions (NOK bn)

44.8 — 2015
46.9 — 2016
2017
2018
2019
2020
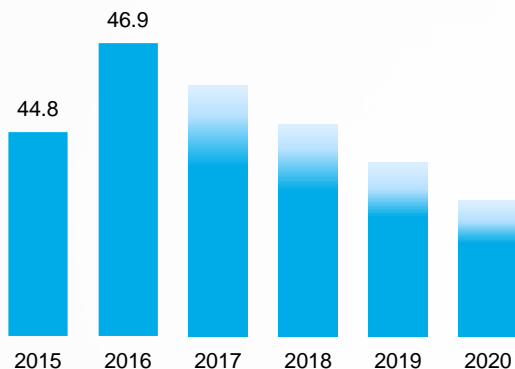
- Targeting NOK 1 bn opex reductions in 2017
- Aiming for savings within all functional cost areas towards 2020

Gap vs benchmark

~ NOK 5 bn

Telenor | Top 3
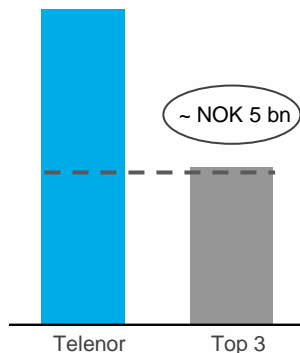
- Cost gap vs top 3 in sector representing approx. NOK 5 bn
- Largest addressable potential within customer interactions and network operation & maintenance
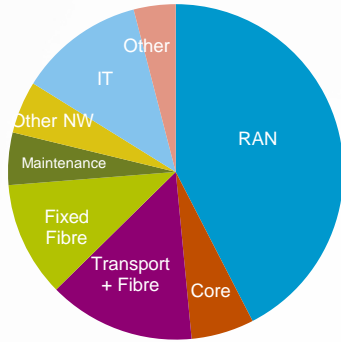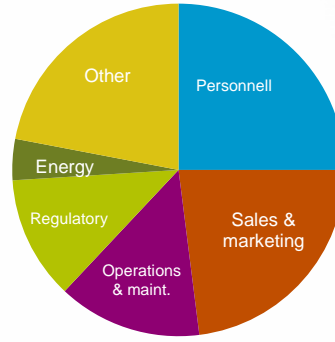
Capex (NOK bn) and capex/sales ambition

24 — 2015 — 18%
23 — 2016 — 17%
~20 — 2017 — 15-16%
2018
2019
2020
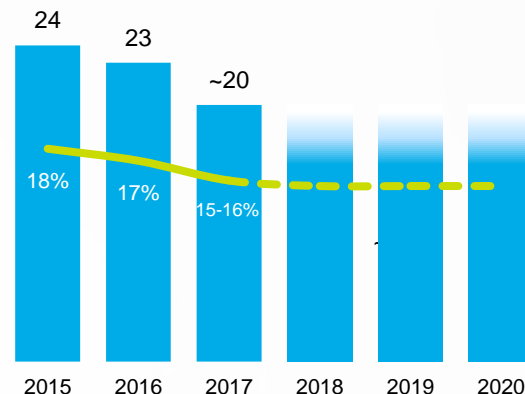
- Scrutinize capex spend to ensure efficiency and right prioritizations

TECHNOLOGY HAS A SIGNIFICANT INFLUENCE ON SPENDING

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Capex split 2016	Opex split 2016	Mobile data growth estimates

Capex split 2016
- Other
- IT
- Other NW
- Maintenance
- Fixed Fibre
- Transport + Fibre
- Core
- RAN

Opex split 2016
- Other
- Energy
- Regulatory
- Operations & maint.
- Personnell
- Sales & marketing

Mobile data growth estimates
- 1.7 (2016)
- 2.8 (2017)
- 4.3 (2018)
- 6.2 (2019)
- 8.6 (2020)
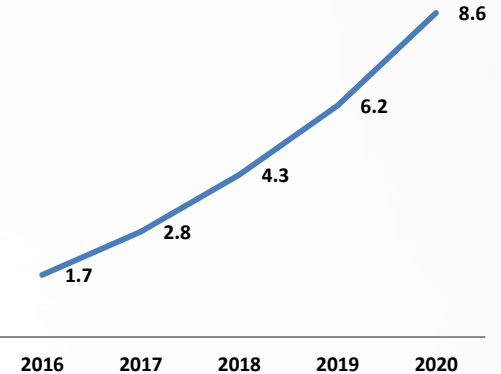
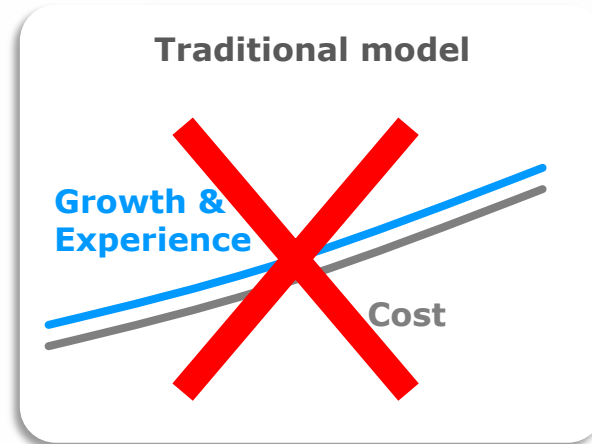**2/3rd of technology cost base in access layer**

EFFICIENCY AND SIMPLIFICATION
TO DECOUPLE GROWTH AND GOOD EXPERIENCE FROM COST

Traditional model

Growth & Experience

Cost

KEY PILLARS TO DELIVER EFFICIENCY AND SIMPLIFICATION

SMART ACCESS

Best quality & most cost efficient

DIGITAL CUSTOMER JOURNEYS

Faster, simpler & easy to use

GLOBAL SCALE AND STANDARDIZATION

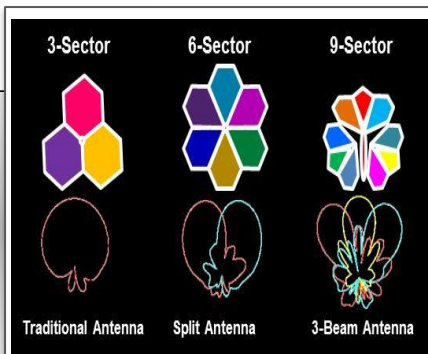Reducing costs
Enhancing capabilities

MAKING ACCESS SMART IS HYGIENE FOR BEING PROFITABLE AND DRIVING CUSTOMER EXPERIENCE

SMART ACCESS

Best quality & most cost efficient

Extracting more from each MHz

3-Sector 6-Sector 9-Sector

Traditional Antenna Split Antenna 3-Beam Antenna

2X traffic volume - Spectrum efficient planning & features

2016 2020

- 2G: 22% / 8%
- 3G: 28% / 12%
- 4G: 50% / 80%
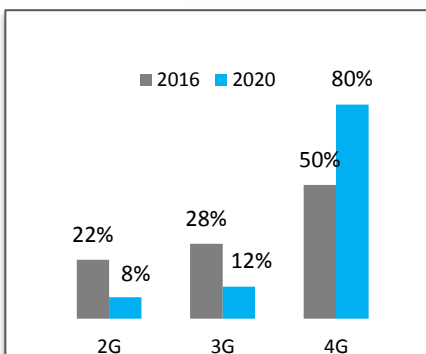
Faster spectrum refarming & tech agnostic deployment

Lean infrastructure

Lean infra design & sharing operating models

Maximize spectrum assets - No legacy investment

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ANALYTICS DRIVEN APPROACH ON PLANNING WITH INCREASED FOCUS ON ROI

Basic traditional planning

Coverage / Capacity based

- Planning driven basis traditional OSS KPIs on coverage and capacity

Evolution to cluster approach
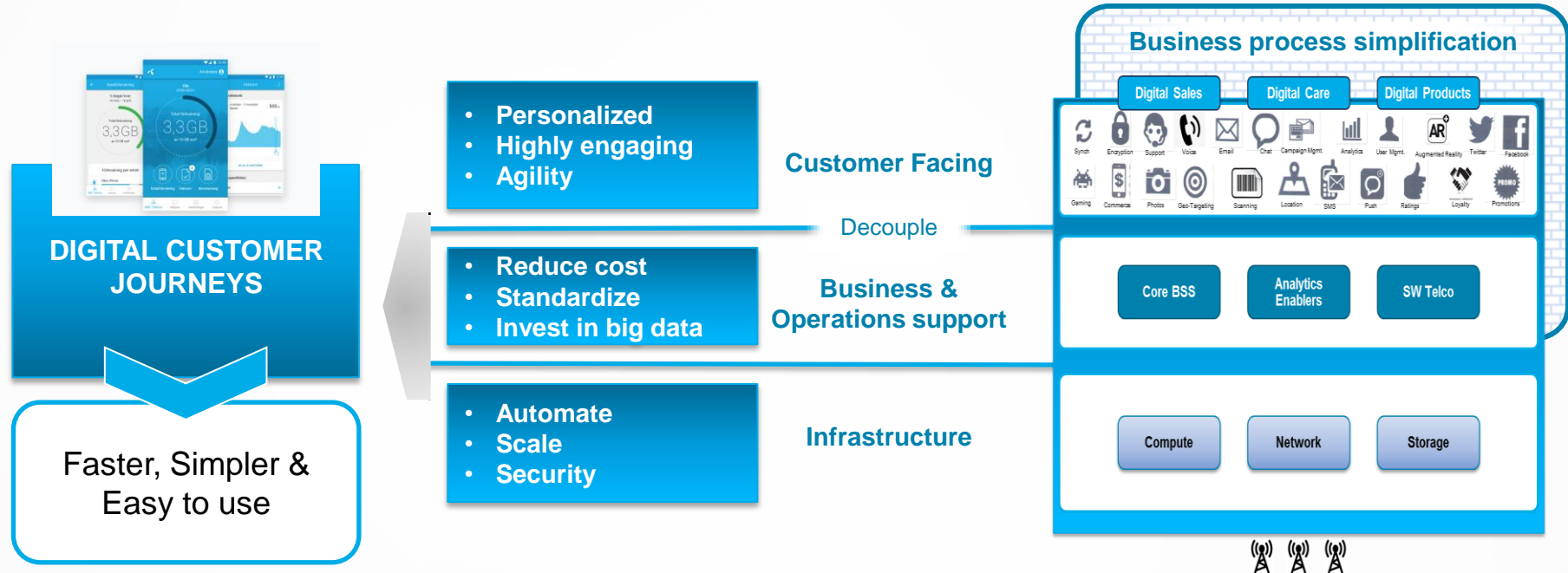
Cluster way of work

- Joint prioritization with commercial teams
- Cluster way of work
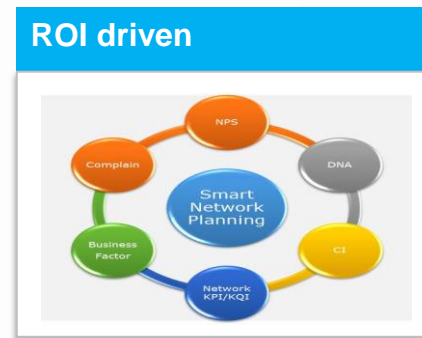
ROI driven

Advanced Analytics based

- Fact based, customer experience & service based planning
- ROI Driven with strong prioritization

EFFICIENT DIGITAL CUSTOMER JOURNEYS REQUIRE CHANGES IN THE COMPLETE VALUE CHAIN

DIGITAL CUSTOMER JOURNEYS

Faster, Simpler & Easy to use

- **Personalized**
- **Highly engaging**
- **Agility**

Customer Facing

Decouple

- **Reduce cost**
- **Standardize**
- **Invest in big data**

Business & Operations support

- **Automate**
- **Scale**
- **Security**

Infrastructure

Business process simplification

Digital Sales

Digital Care

Digital Products

Synch | Encryption | Support | Voice | Email | Chat | Campaign Mgmt. | Analytics | User Mgmt. | Augmented Reality | Twitter | Facebook

Gaming | Commerce | Photos | Geo-Targeting | Scanning | Location | SMS | Push | Ratings | Loyalty | Promotions

Core BSS | Analytics Enablers | SW Telco

Compute | Network | Storage

INCREASE FLEXIBILITY IN CUSTOMER FACING CHANNELS BY MOVING INTERACTIONS FROM PHYSICAL TO DIGITAL…

DIGITAL CUSTOMER JOURNEYS

Faster, Simpler & Easy to use

All markets on My Telenor app

Call center volumes reduced significantly

API gateway in all markets
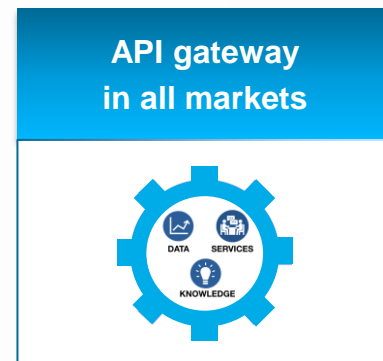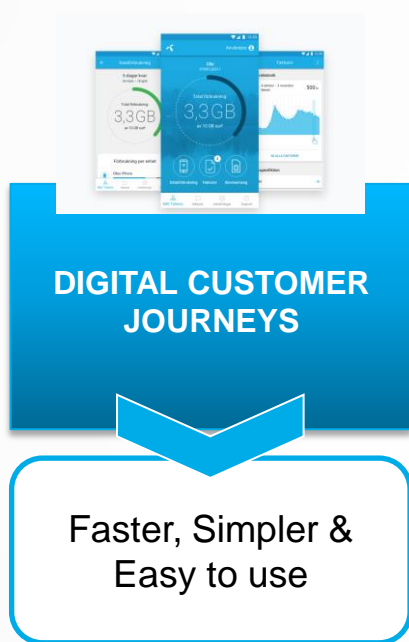
- Monthly active users of **My Telenor** app >10 million and growing
- 100% of Digi's dealers using **mobile sales app** on smartphone & tablet
- **Daily call center volumes** reduced >60% in Myanmar
- Telenor Norway realize **API monetization** through Telenor Fusion

…REDUCE COSTS & COMPLEXITY AND ENABLE REVENUE GROWTH BY MAKING FUNDAMENTAL CHANGES TO IT
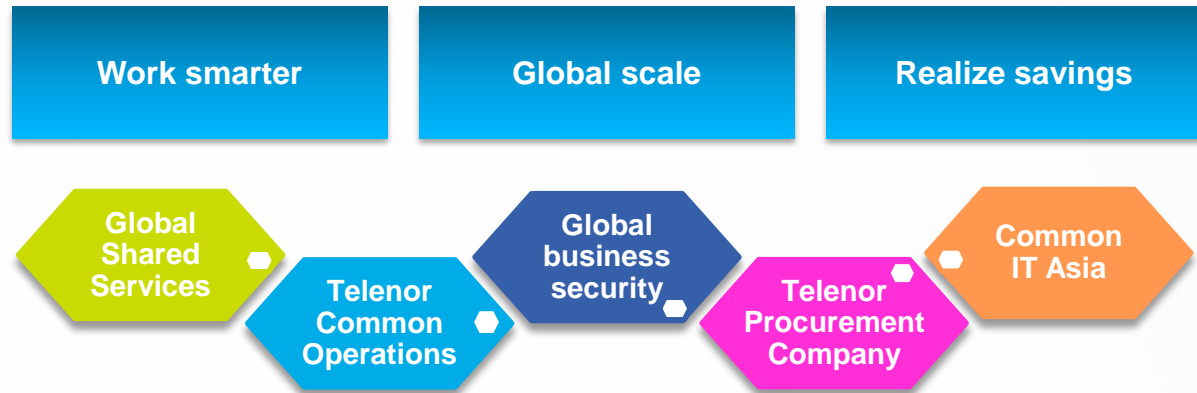
DIGITAL CUSTOMER JOURNEYS

Faster, Simpler & Easy to use

Simplification of core IT

- Myanmar implemented **~ 50% of standard application** stack
- GP's application portfolio **reduced with ~ 40%** through 2016-2017
- Simplified future commercial framework - standard '**Telco-in-a-box**'
- Hard choices: Removing **business rules** complexities reducing cost

Analytics at global scale

- **Deep insight** of customer usage in all markets
- Contextual marketing **enabled in 10 of 12 markets**
- Next step: Hosting data in a **single cloud based multi-tenant** analytics environment reducing ~ 70 % analytics applications

Implement scalable & efficient infrastructure

- ~ 65% **servers virtualized** across all markets as of Q2 2017
- **Virtualized telco network** in Pakistan and Thailand
- Ongoing: Consolidate data centers through **hybrid cloud journey** reducing yearly run rate with ~ 60% in 2020

CHANGING CUSTOMER BEHAVIOUR & ENVIRONMENT TRIGGERS NEED TO CHANGE IN THE WAY WE WORK

GLOBAL SCALE AND STANDARDIZATION

Reducing Costs while enhancing capabilities

Work smarter	Global scale	Realize savings

Global Shared Services · **Telenor Common Operations** · **Global business security** · **Telenor Procurement Company** · **Common IT Asia**

- Established **Global architecture** & demand mgmt teams standardization and fast replication
- ROI driven optimization & prioritization- **Smart investment**
- Extending **common IT Asia operations** between India and Myanmar to Bangladesh, and **replicating** the model to remaining Asian markets
- **Common IT & network operations** in Central and Eastern Europe
- Telenor Procurement Company establishing standardized procurement and scale impact

COMMON DELIVERY CENTRE ASIA
MOVING FROM SYSTEM TO CUSTOMER DRIVEN OPERATION

Customer focused operations

From box centric to experience centric operation

Leverage innovative capabilities

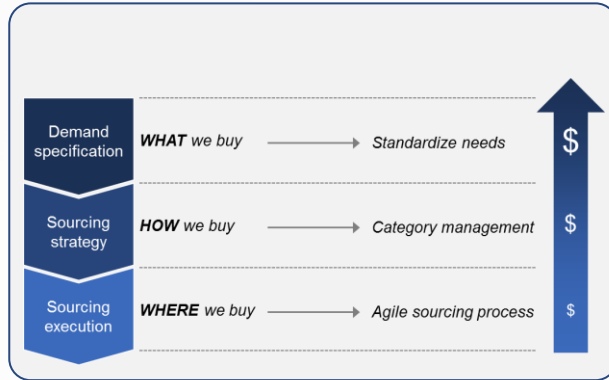Enhanced NOC automation, intelligent field operation, smart planning & optimization

Cost targets

Improve process cost efficiency

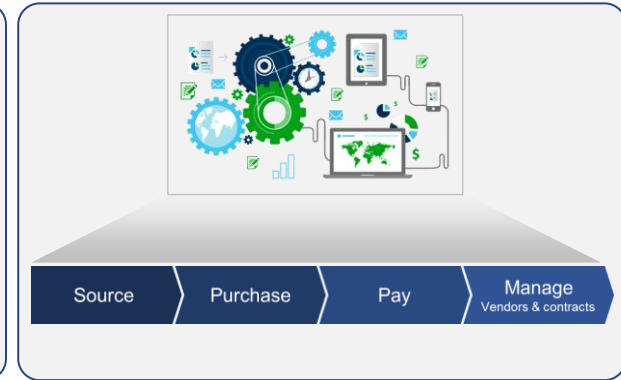# TELENOR PROCUREMENT COMPANY

Standardization

Global category management to develop expertise and support standardization

Scale

Leverage global volumes to achieve industry best cost levels across Business Units

Automation

Digitize source-to-pay process to drive efficiency, speed and transparency

- Telenor Procurement Company (TPC) is a separate legal entity
- Mandated to optimize external spend on behalf of Telenor Group
- Will take E2E accountability for global spend categories (~75% of global spend)

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KEY DRIVERS FOR VALUE CREATION TOWARDS 2020

GROWTH

EFFICIENCY

SIMPLIFICATION