A Business Perspective to Networking

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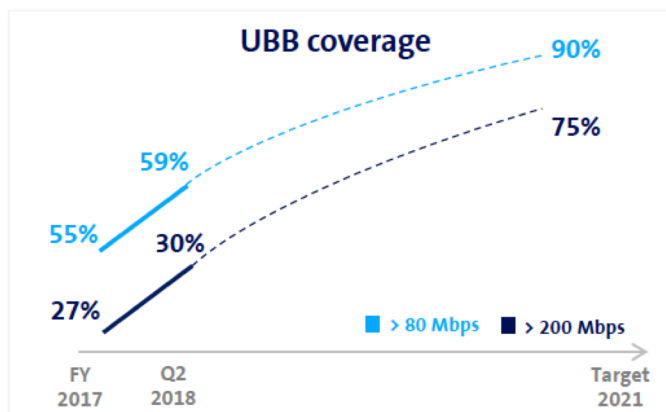**24/25 September 2018**
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Key figures Swisscom

1.5 million
Swisscom TV customers

6.6 million
mobile communications
customers

3.4 million
Ultra-fast broadband
connections

2 million
All IP customers

inOne

1.3 million
inOne customers

As of December 2017

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Current Network

W+ network update

> **Technology mix key** in bandwidth expansion

UBB coverage

90%

75%

59%

55%

30%

27%

■ > 80 Mbps   ■ > 200 Mbps

FY 2017   Q2 2018   Target 2021

> Currently ~**3.37mn fibre connections** o/w 1.39mn FTTH, enabling strong **HD (>96%) and UHD (>83%)** coverage for Swisscom TV

W- network update

Speedtest

500

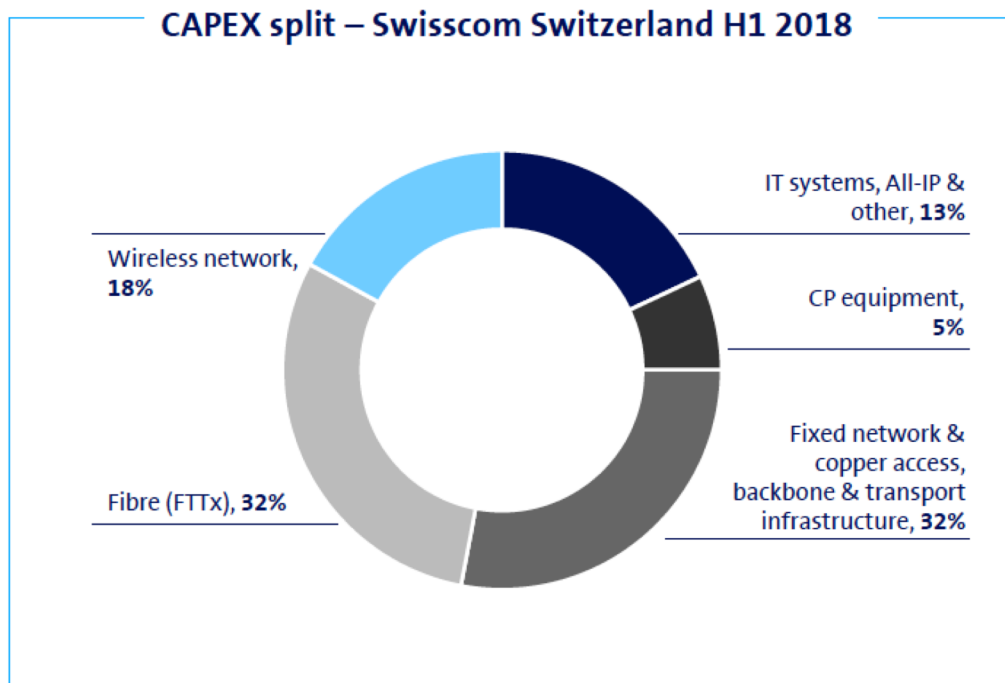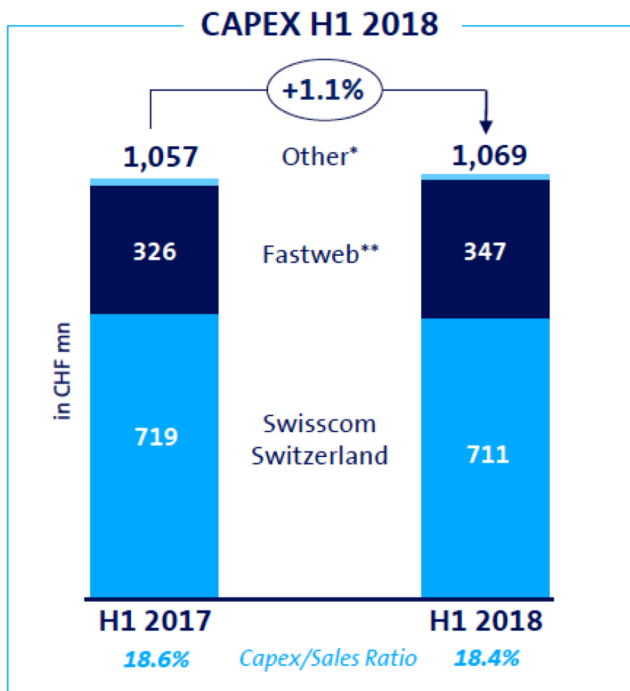0   1000

⬇ DOWNLOAD
801
Mbit/s

Powered by inOne

> **4G+** with speed up to **1 Gbps**
> Download speeds over 800 Mbps are now possible for the 1st time
> **Extending technical lead** of Switzerland's best network to offer the **best experience** with high-definition videos, gaming, virtual reality and lightning-fast surfing
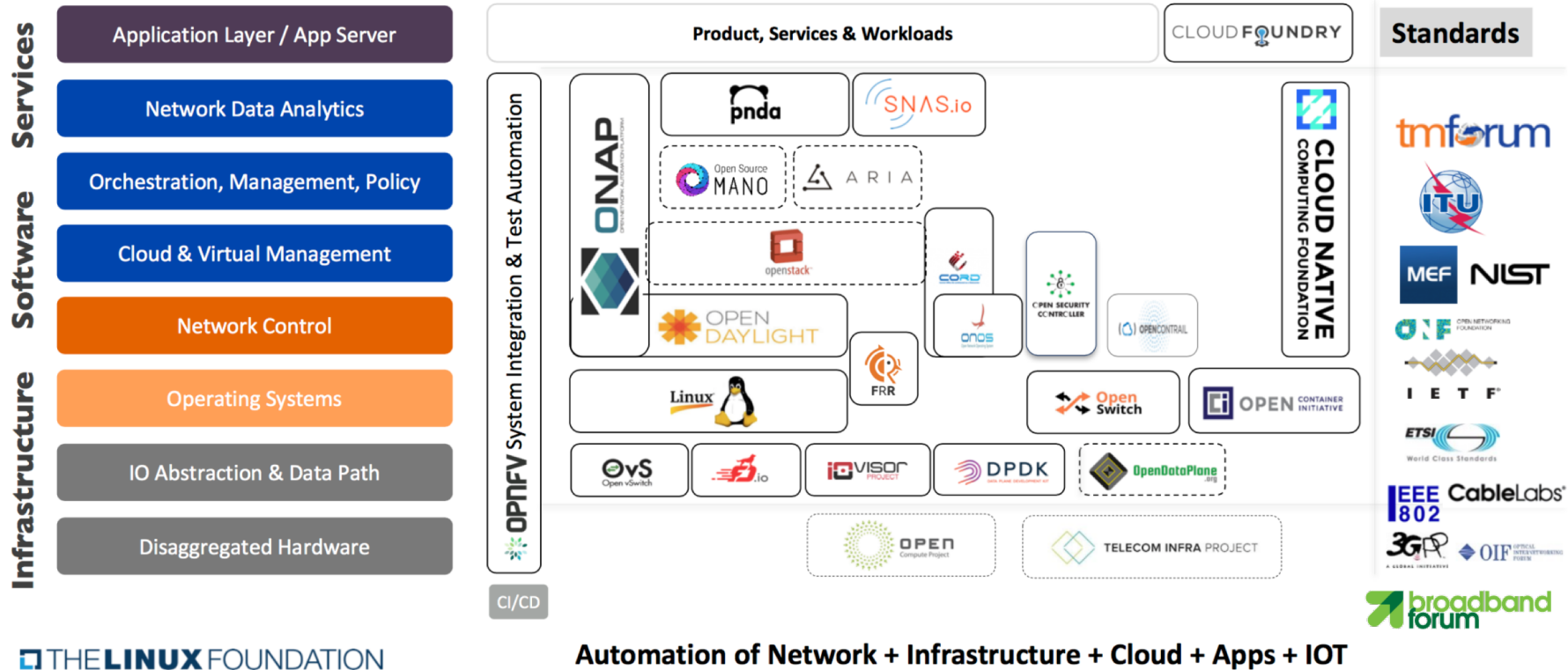> Pop coverage: **99% 4G** and **>80% 4G+**

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Issues

> CAPEX

> Market Penetration

> 5G from initial deployment to new business

> Customers

> Simplification and Automation

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Large CAPEX -> how to reduce?

CAPEX H1 2018

+1.1%

1,057	Other*	1,069
326	Fastweb**	347
719	Swisscom Switzerland	711

in CHF mn

H1 2017		H1 2018
18.6%	Capex/Sales Ratio	18.4%

CAPEX split – Swisscom Switzerland H1 2018

- IT systems, All-IP & other, 13%
- CP equipment, 5%
- Fixed network & copper access, backbone & transport infrastructure, 32%
- Fibre (FTTx), 32%
- Wireless network, 18%

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CAPEX reduction through Open Source for collaborative development Incl. white box hardware

Services
Software
Infrastructure

- Application Layer / App Server
- Network Data Analytics
- Orchestration, Management, Policy
- Cloud & Virtual Management
- Network Control
- Operating Systems
- IO Abstraction & Data Path
- Disaggregated Hardware

THE LINUX FOUNDATION

OPNFV System Integration & Test Automation

CI/CD

Product, Services & Workloads — CLOUD FOUNDRY

ONAP · pnda · SNAS.io · Open Source MANO · ARIA · openstack · CORD · OPEN SECURITY CONTROLLER · OPENCONTRAIL · CLOUD NATIVE COMPUTING FOUNDATION · OPEN DAYLIGHT · onos · FRR · Linux · Open Switch · OPEN CONTAINER INITIATIVE · OvS Open vSwitch · fd.io · iovisor PROJECT · DPDK · OpenDataPlane.org

OPEN Compute Project · TELECOM INFRA PROJECT

Automation of Network + Infrastructure + Cloud + Apps + IOT

Standards

tmforum · ITU · MEF · NIST · ONF Open Networking Foundation · IETF · ETSI World Class Standards · IEEE 802 · CableLabs · 3GPP · OIF · broadband forum

Ref: https://actionweek.tmforum.org/wp-content/uploads/2017/09/TMF-Keynote-LF-Networking-ONAP-Sept-2017-vfinal.pdf

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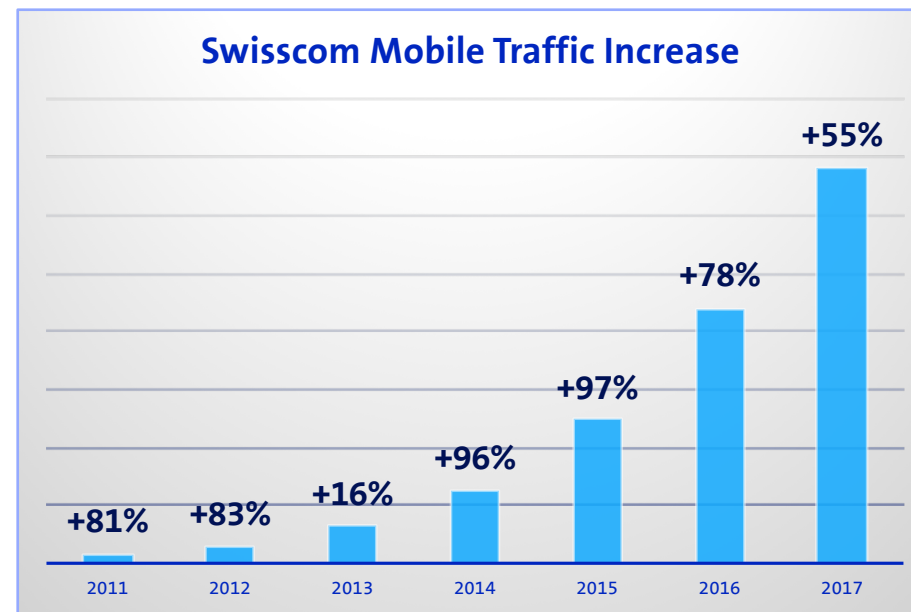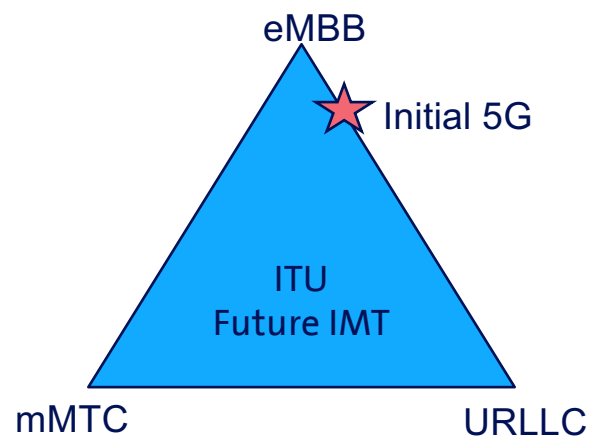# Market full penetration -> how to grow?
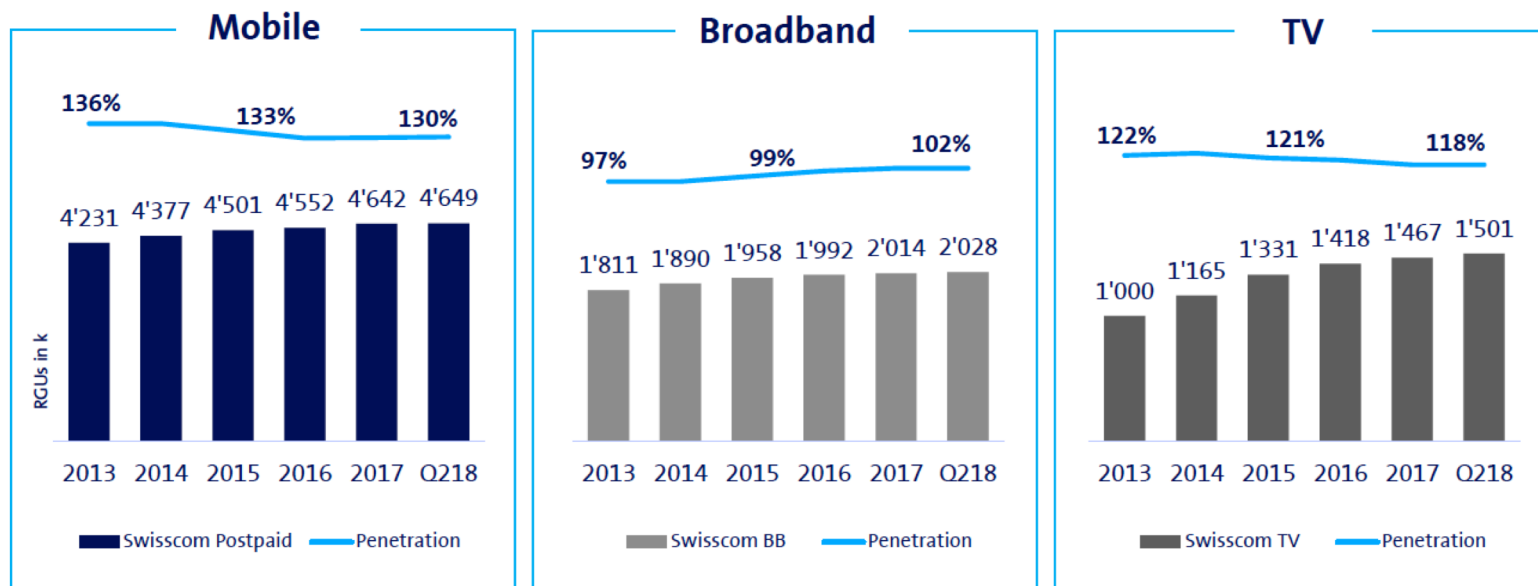
Initial 5G

> More of the the same
> Tackling the traffic growth
> IoT through LTE or other technologies

eMBB

Initial 5G

ITU
Future IMT

mMTC   URLLC

Swisscom Mobile Traffic Increase

+55%

+78%

+97%

+96%

+16%

+81%   +83%

2011   2012   2013   2014   2015   2016   2017

https://www.swisscom.ch/de/about/unternehmen/portraet/netz/5g.html

New Businesses

> B2B and B2B2C services
  - Reliability as a Service
  - Operation as a service
  - ICT as a Service
  - Solutions stitched from various components

> Leverage new 5G capabilities
  - Radio features for ultra-reliable and low latency
  - Slicing for resource separation and service isolation

> Willingness to pay extra?

eMBB

Initial 5G

ITU
Future IMT

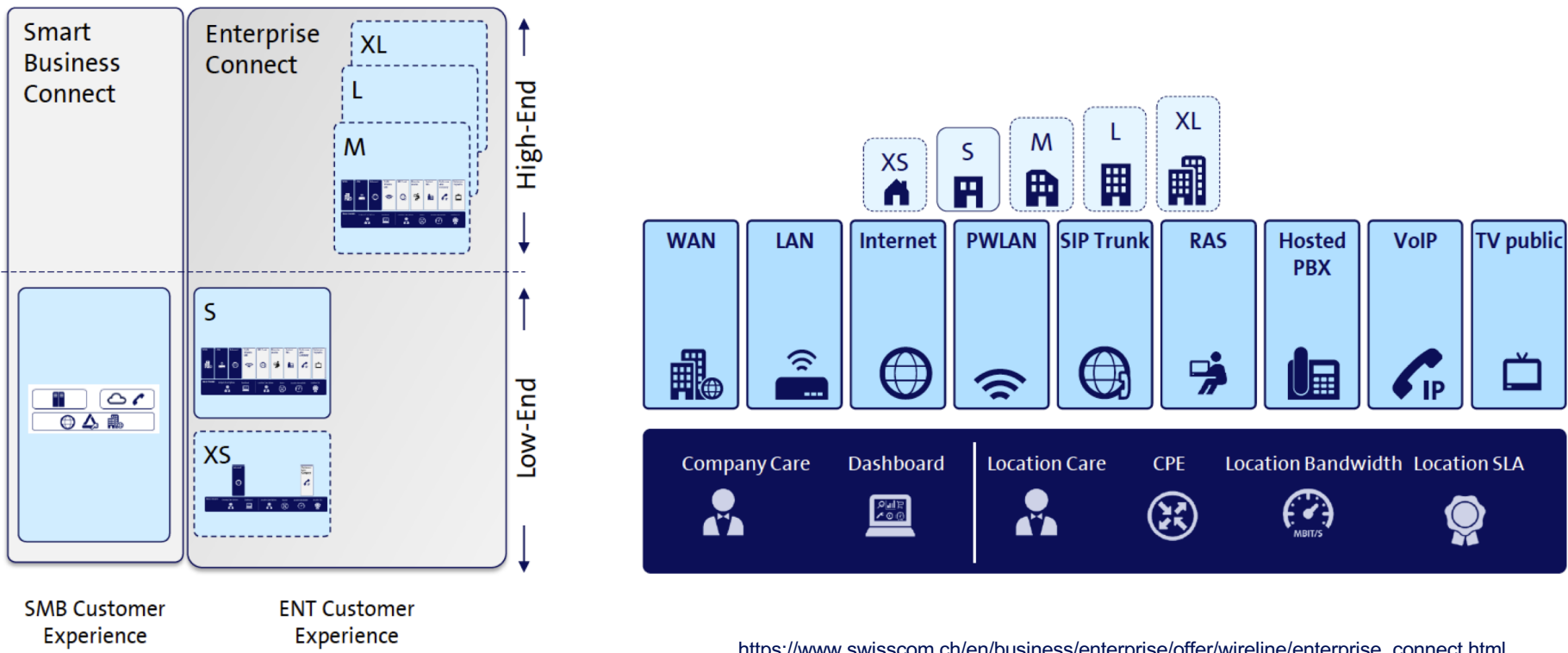mMTC   URLLC
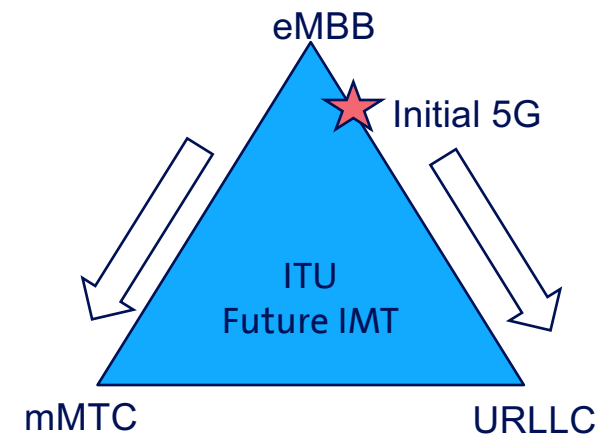
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Development of Digital Services

Today
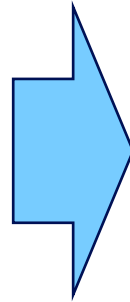
5G

Example: Enterprise Connect
Virtual Connectivity Services: self-care and on-demand

https://www.swisscom.ch/en/business/enterprise/offer/wireline/enterprise_connect.html

Operational Challenges of 5G

> **Initial 5G**

  – Indoor coverage

  – Measurement of electromagnetic radiation for new technologies, e.g. beamforming

  – Benefits of higher-degree MIMO is deployment scenarios dependent (reflection)
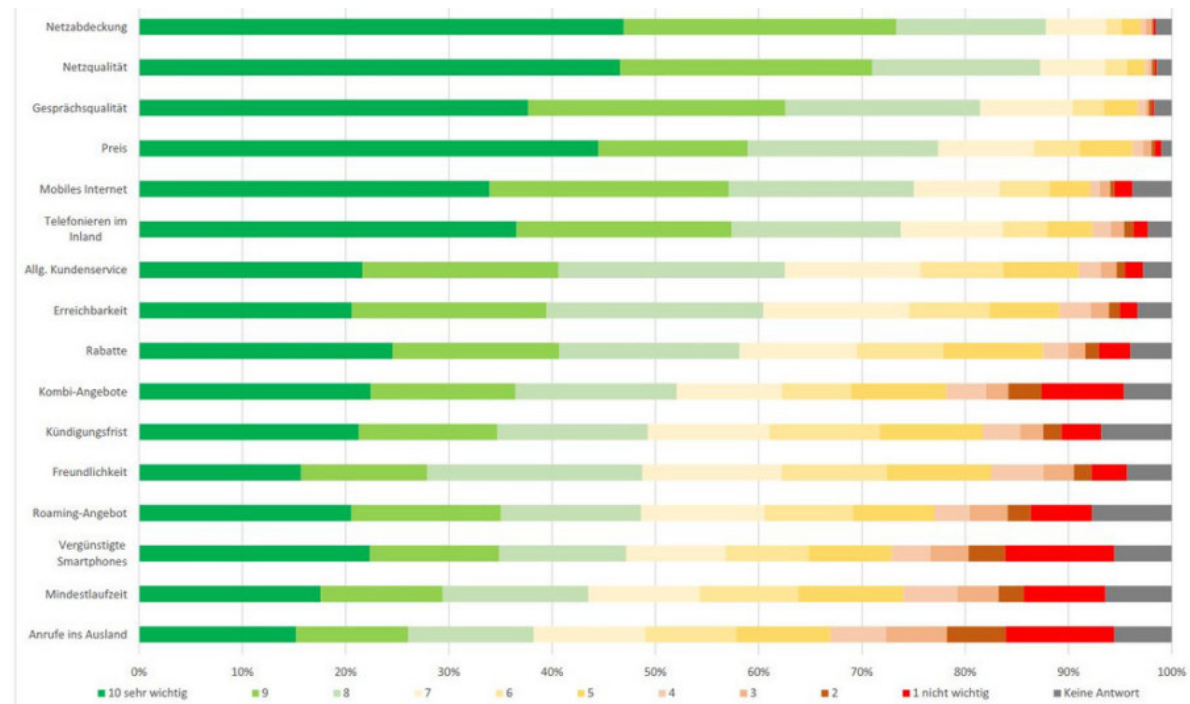
  – Regulation for Electro-Magnetic Emissions

> **Reliable 5G network deployments**

  – Reliability being part of an SLA

  – Large amount of different software components make management difficult

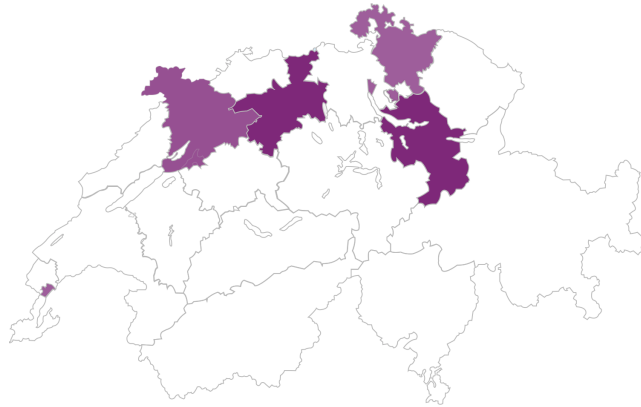 – Managing the Edge

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How to keep the Consumers happy?
Decision making for Mobile contract in Switzerland

- Coverage
- Network Quality
- Voice Quality
- Cost

OPEX reduction through Simplification and Automation

No POTS anymore

Converged Offers

Automation

Lonely phone booth (makes 1.4 CHF per year)

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Thank you

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