

The Future X Vision towards UBB and cognitive operations

Speech at Infocom Cyprus

- Dr. Herbert Mittermayr
- 28-11-2017

The Mission from 1925 – valid more than ever

Solving great challenges to meet ‘recognized need’ in communications and networking



RESEARCH LABORATORIES
of the
AMERICAN TELEPHONE AND TELEGRAPH COMPANY
and the
WESTERN ELECTRIC COMPANY, INC.

The Bell System Research Laboratories

By EDWARD B. CRAFT

Chief Engineer,

Western Electric Company, Inc., and

International Western Electric Company

The history of the development of the telephone in America has been a succession of scientific achievements followed by immediate and large scale application, so that today the Bell Telephone System represents one of the largest aggregations of capital and personnel to be found in the industrial world.

In most cases a development is undertaken to meet a recognized need. Often, however, a line of investigation is pursued with a view to extending our general scientific knowledge; and such a study sometimes bears fruit where least expected.

Out of the results of the work of the laboratories directed toward the major problems of telephone and telegraph communication, arise many interesting by-products which often have valuable applications in other fields.

Bell Labs influence on the future

Unrivalled track record of innovation since 1920's

1300+

Patent applications
(in 2016)

8

Nobel Prizes

4

Turing Prizes

2

Grammys

1

Emmy

1

Oscar

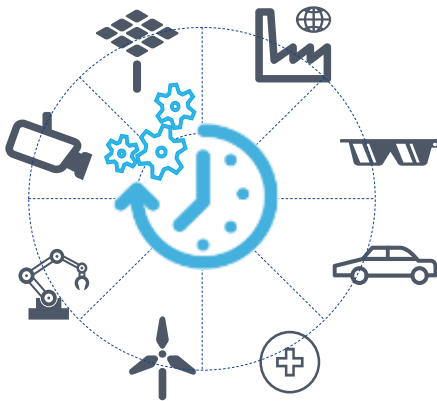
Defining the future – The formula for automation of everything

$1 + 1 + 1 = 11 \quad | \quad 12 + 123 + 999 \dots$

Automation of everything – the next technological revolution



Pervasive digital-physical systems drive life and business automation

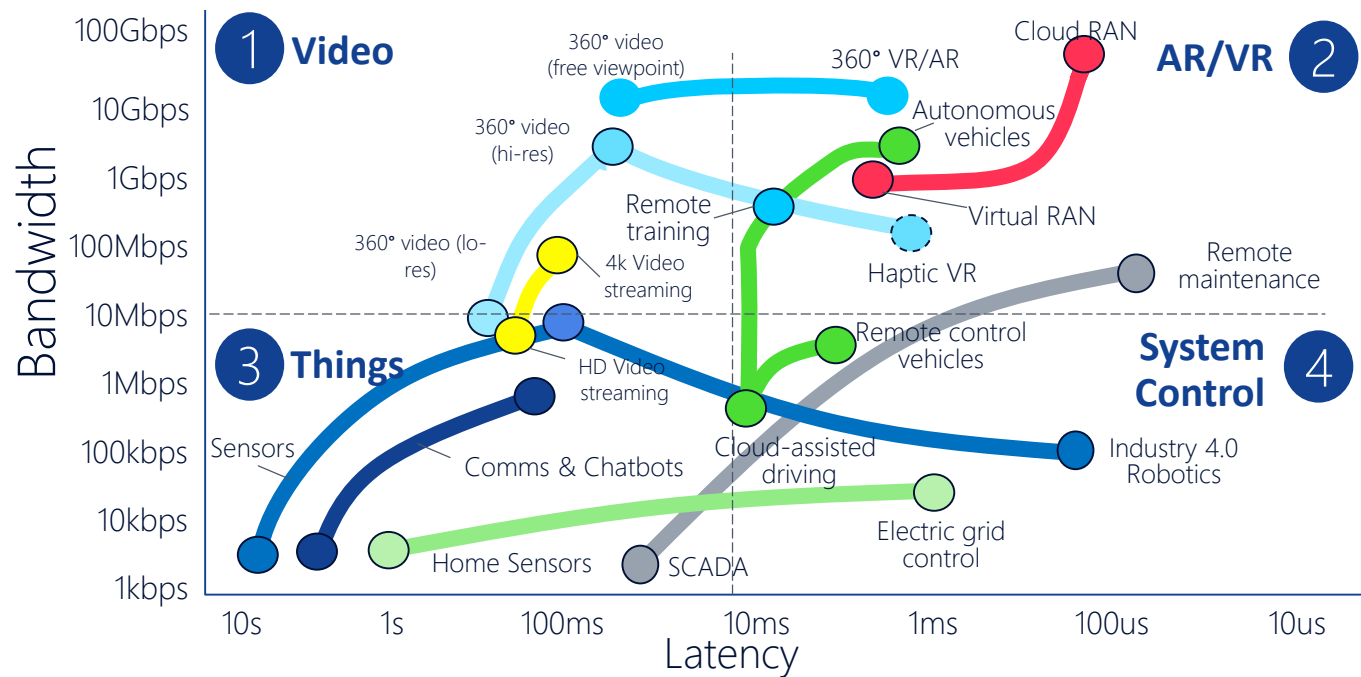


Automation of everything transforms economy and society and creates time

A word cloud of cloud computing terms. The words are arranged in a circular pattern. The largest word is "Infinite capacity". Other prominent words include "latency", "100x", "trust", "global-local alliance", "imperceptible", "security", "SLA", "augmented cognition", and "terascale". The words are in various shades of blue and grey.

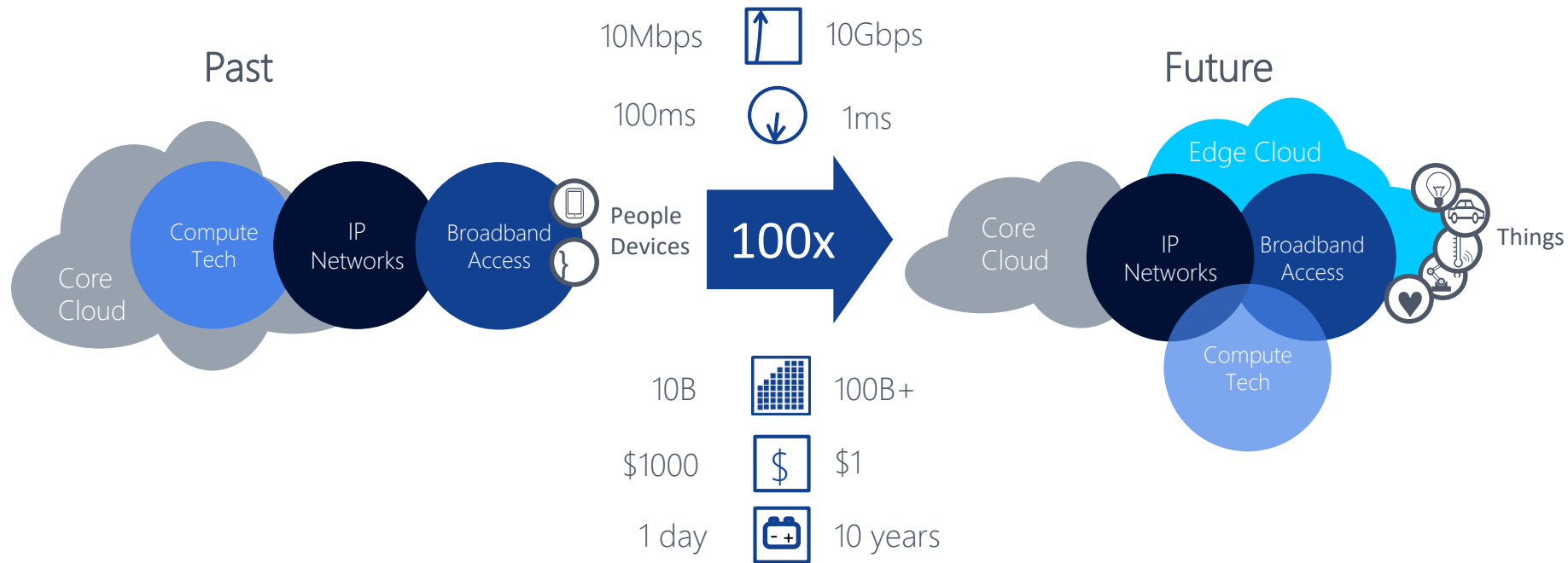
Fundamental digital needs
demand radically new
network architecture

Defining the future: The 4 key business value dimensions



Future X business has high bandwidth, low latency, and many many connections

The Future X Network: The 100yr, 100x shift



Radically new distributed Future X network architecture

Evolution of telecom services and its operation

3 directions will drive transformation

Today:

services

- B2C + SME
- B2B
- Wholesale
- M2M
- Safety

network

- IP core
- Mobile core
- Mobile access
- FTTH, FTTC, Ethernet
- IT datacenters
- IP Edge
- SDH, DWDM

operations

- NOC
- SOC
- Systems
- Silos

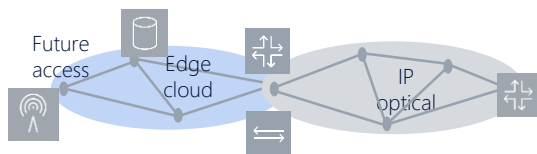
Future X Vision:

Future X Services

Service evolution
(make old school -> virtualized)

New emerging services

Future X Networks



Future X Operations

- Automated NOC for self-healing networks
- Abstraction of network functions for self-provisioning SOC
- Analytics of services for self-service by clients

Drivers:

Flexibility

Capture new service opportunities which are not yet known today

Be prepared for various QoS, bandwidth, security requirements

Simplification

Simple architecture

Harmonized metro/core

Edge cloud for performance

Future remote access

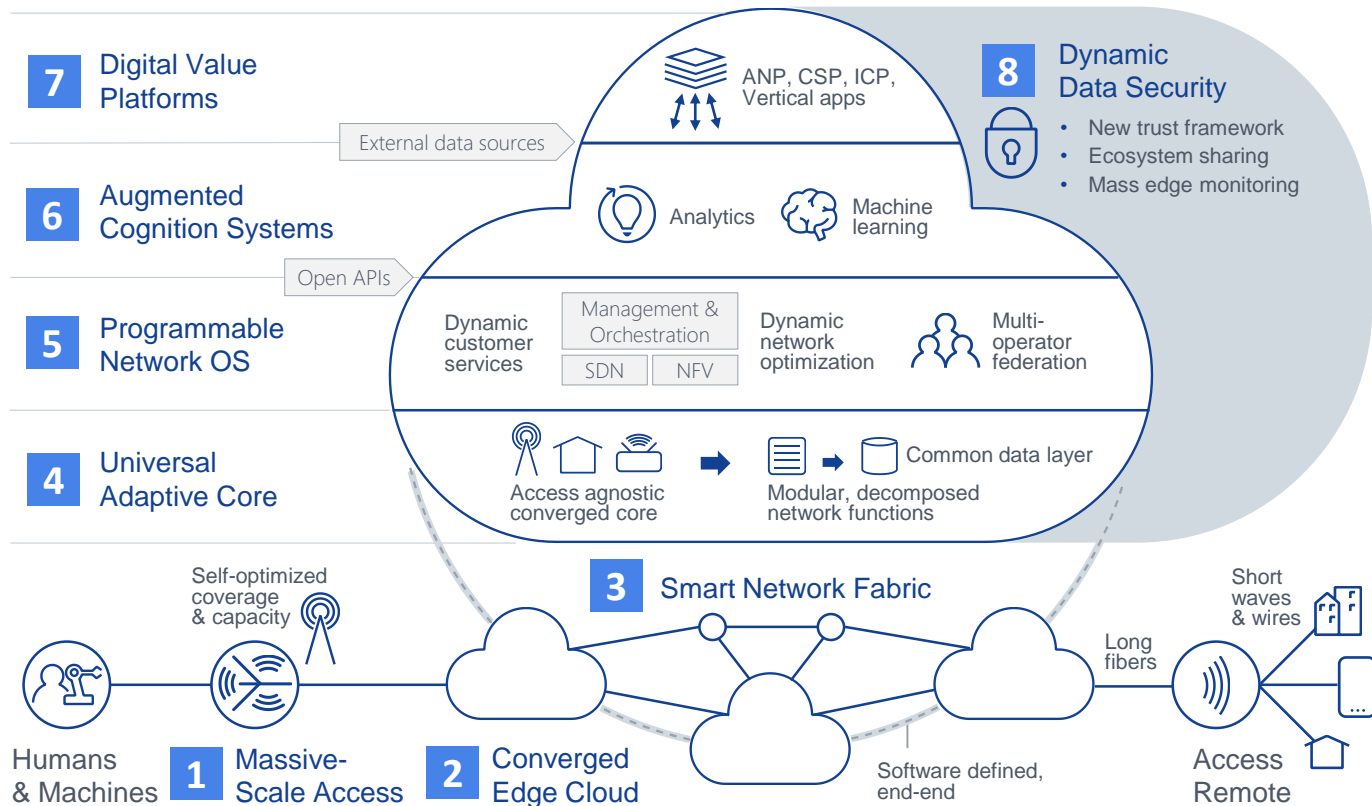
Automation

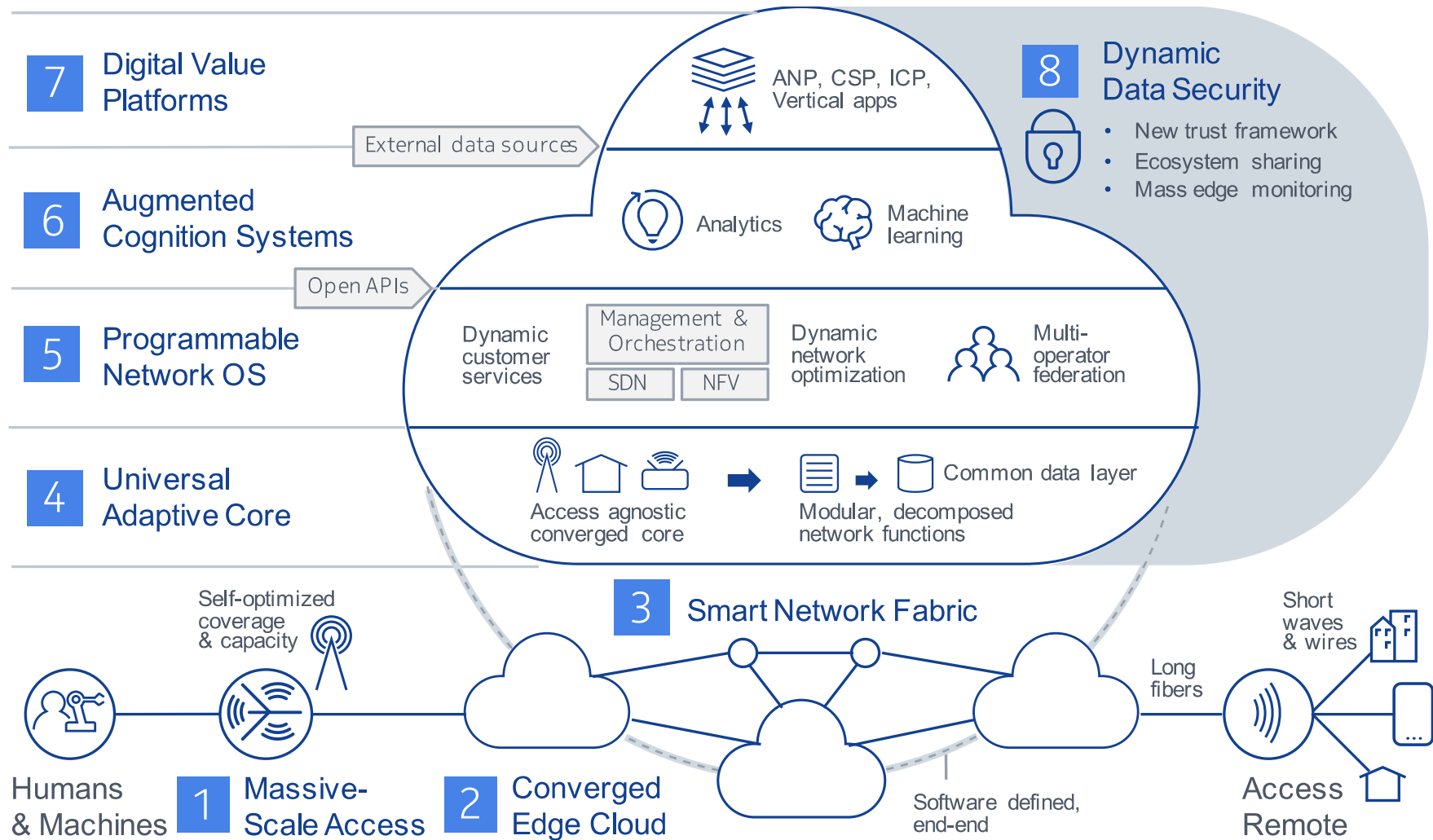
Self healing networks

Analytics for continuous improvements

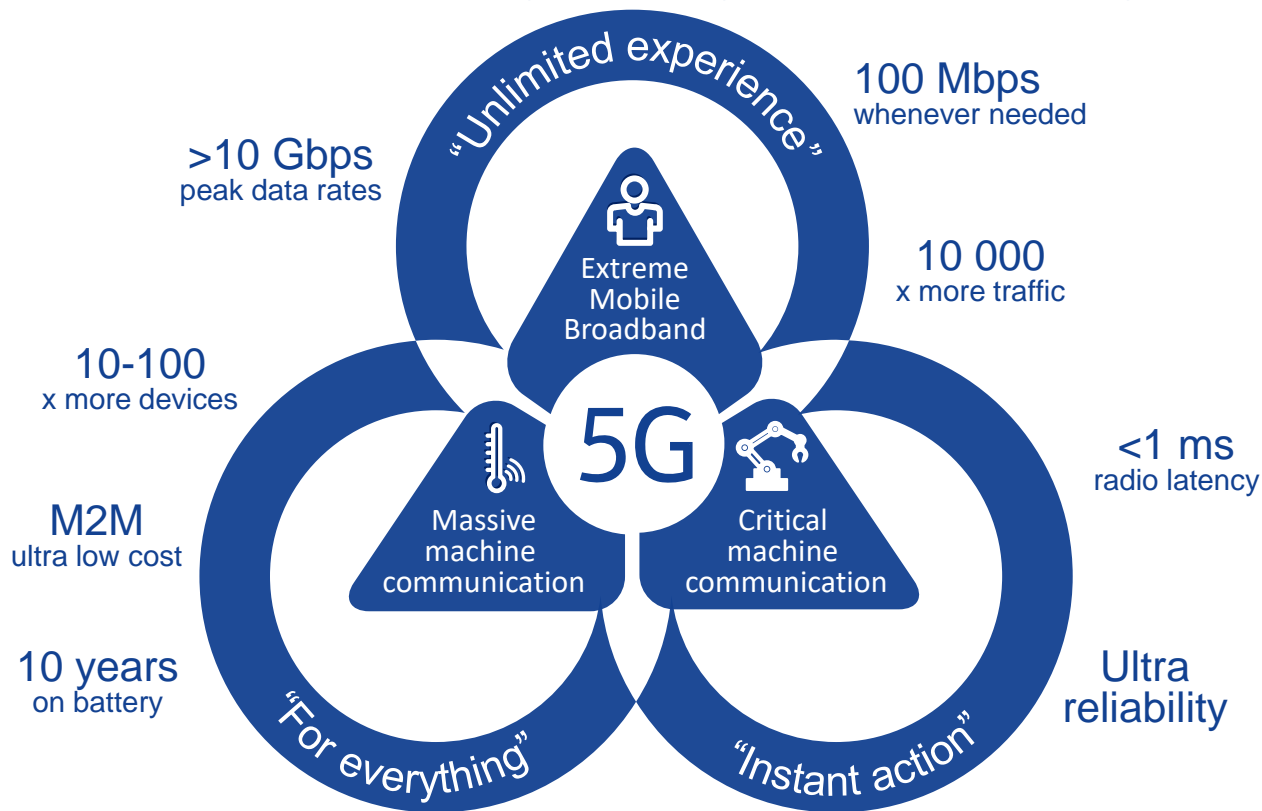
Self-service service creation

The Bell Labs Future X vision



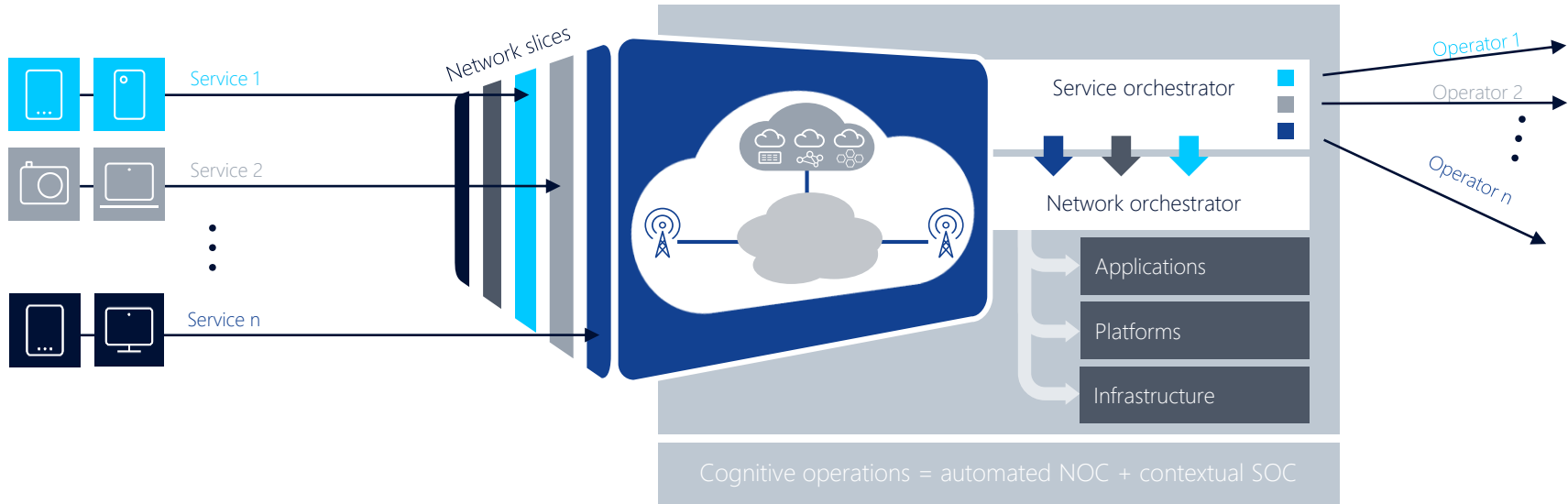


5G will connect everybody and everything



Future X Business – Abstraction of Service from Resource

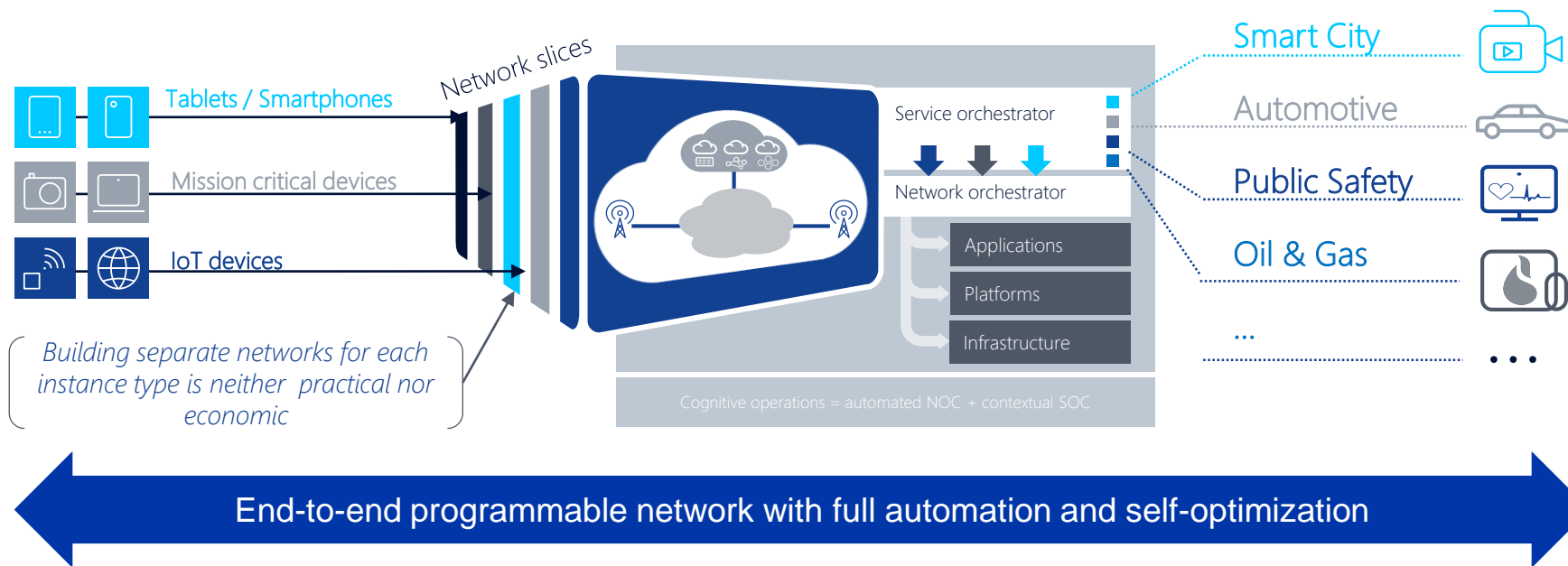
Network slicing separates physical network from logical services



Network slicing is the entry ticket for new business models

Programmability and virtualization

Essential for new revenue services at low cost, high scalability and maximized infrastructure resources usability in Cyprus



Defining the future – The formula for success



$1 + 1 + 1 = 11 \quad | \quad 12 + 123 + 999...$

ms Gbps Tn €Tn Processes Services Contexts

Bell Labs

Revision history and metadata

Document ID: BLC speech
Document location:
Organization:

Version	Description of changes	Date	Author	Owner	Status	Reviewed by	Reviewed date	Approver	Approval date
vFinal	For organizer	24-11-2017	Herbert				DD-MM-YYYY		DD-MM-YYYY