A NETWORK FOR THE FUTURE
VISIONS FOR FUTURE COMMUNICATIONS SUMMIT
LISBON, 23-24 OCTOBER 2017

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OUTLINE

› 5G Vision
        Traffic Volume
        Mobile Technologies
        Devices
        Use Cases

› New Technologies in the Architecture

› Issues around Technology

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ERICSSON MOBILITY REPORT
5 YEAR INDUSTRY OUTLOOK

ERICSSON MOBILITY REPORT

JUNE 2017

OVER ONE MILLION NEW MOBILE INTERNET USERS ADDED EVERY DAY

4G WILL BE THE DOMINANT ACCESS TECHNOLOGY GLOBALLY BY 2018

TOTAL MOBILE DATA TRAFFIC GREW BY 70% BETWEEN Q1 2016 AND Q1 2017
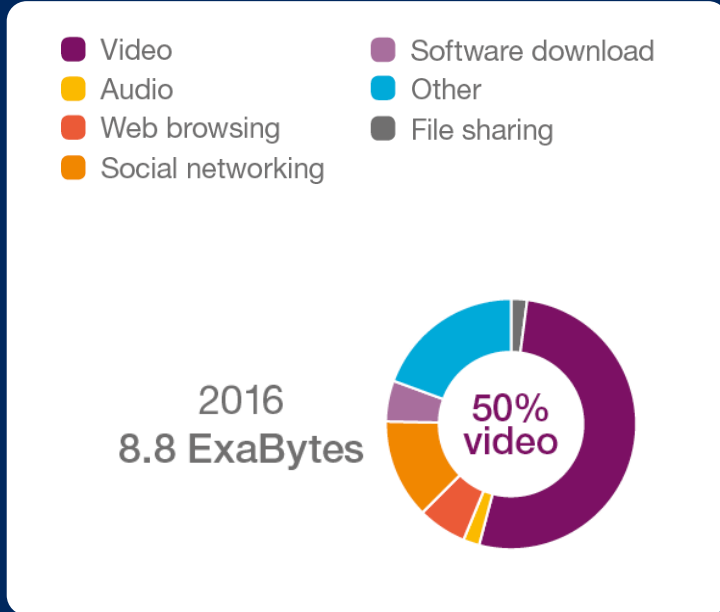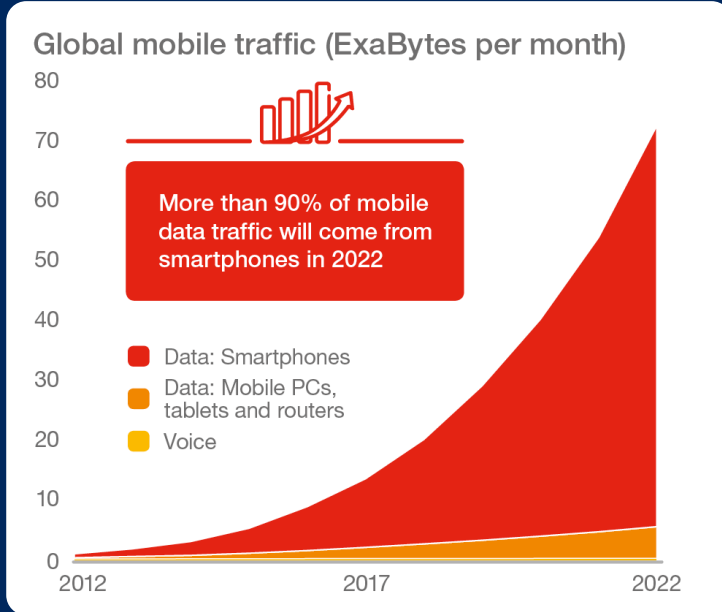
VOLTE SUBSCRIPTIONS TO REACH 4.6 BILLION BY 2022 – 90% OF ALL LTE SUBS

THERE WILL BE HALF A BILLION 5G SUBSCRIPTIONS GLOBALLY BY 2022

SMARTPHONE GROWTH CONTINUES

Global mobile traffic (ExaBytes per month)

More than 90% of mobile data traffic will come from smartphones in 2022

Legend:
- Data: Smartphones
- Data: Mobile PCs, tablets and routers
- Voice

Y-axis: 0, 10, 20, 30, 40, 50, 60, 70, 80
X-axis: 2012, 2017, 2022

Legend (right chart):
- Video
- Audio
- Web browsing
- Social networking
- Software download
- Other
- File sharing
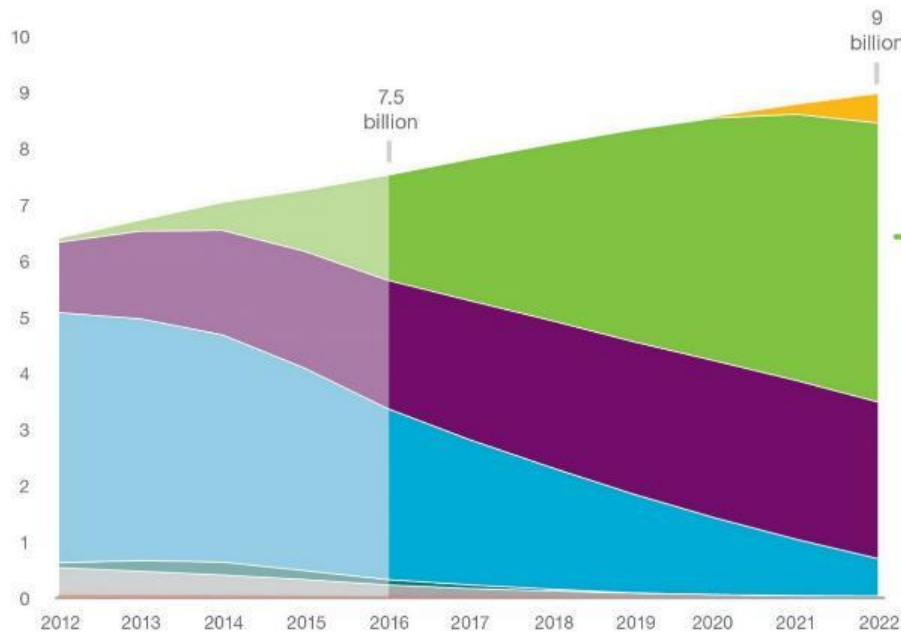
2016
8.8 ExaBytes

50% video

- Total mobile data traffic will increase 8 times – exceeding 70 EB/month in 2022
- Smartphone traffic will increase 9 times – reaching 66 EB/month in 2022
- In 2022, video will account for around 75% of mobile data traffic

SUBSCRIPTIONS BY TECHNOLOGY

Mobile subscriptions by technology (billion)

5 billion LTE subscriptions by the end of 2022

- 5G
- LTE
- WCDMA/HSPA
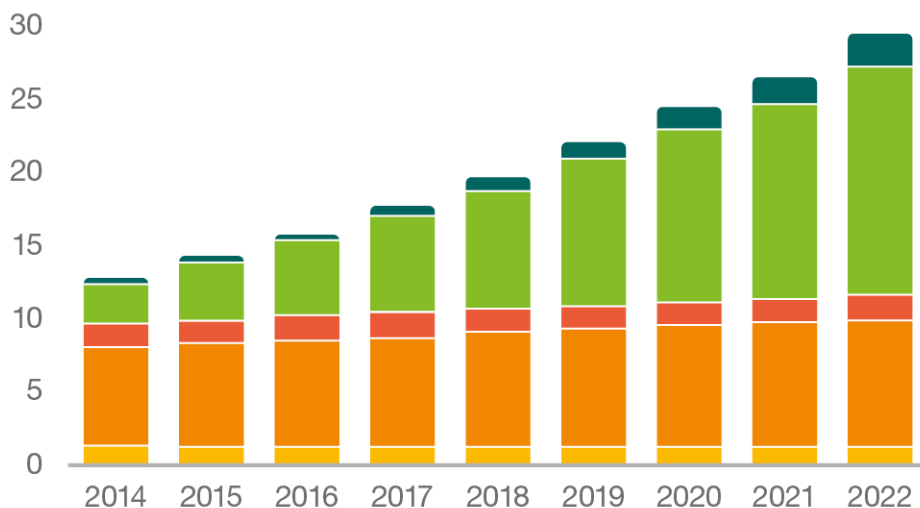- GSM/EDGE-only
- TD-SCDMA
- CDMA-only
- Other

5G subscriptions will exceed half a billion by the end of 2022

Figure note: IoT connections and Fixed Wireless Access (FWA) subscriptions are not included in the above graph

TOWARDS AN IOT-DOMINATED WORLD

Connected devices (billions)

		2016	2022	CAGR
	Wide-area IoT	0.4	2.1	30%
	Short-range IoT	5.2	15.5	20%
	PC/laptop/tablet	1.6	1.7	0%
	Mobile phones	7.3	8.6	3%
	Fixed phones	1.4	1.3	0%
		16 billion	29 billion	

2022

Pervasive Data
8X Mobile Data Traffic
~75% Video
90% MBB subscriptions
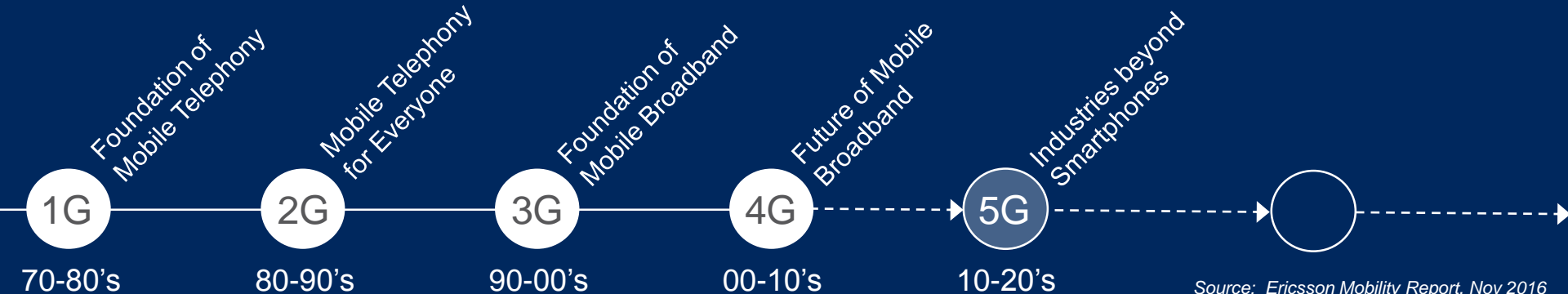
Ubiquitous Mobility
8.9B subscriptions
6.8B smartphones
80% LTE coverage

Connected Things
29B Connected Devices
550M 5G Subscriptions

1G — Foundation of Mobile Telephony — 70-80's

2G — Mobile Telephony for Everyone — 80-90's

3G — Foundation of Mobile Broadband — 90-00's

4G — Future of Mobile Broadband — 00-10's

5G — Industries beyond Smartphones — 10-20's

Source: Ericsson Mobility Report, Nov 2016

5G IS USE CASE DRIVEN

Massive MTC

- LOGISTICS
- SMART AGRICULTURE
- FLEET MANAGEMENT
- SMART METER
- TRACKING

LOW COST, LOW ENERGY
SMALL DATA VOLUMES
MASSIVE NUMBERS

Critical MTC

- TRAFFIC SAFETY & CONTROL
- INDUSTRIAL APPLICATION & CONTROL
- REMOTE TRAINING
- REMOTE MANUFACTURING
- REMOTE SURGERY

ULTRA RELIABLE
VERY LOW LATENCY
VERY HIGH AVAILABILITY

Enhanced mobile broadband

- ENTERPRISE
- HOME
- VENUES
- MOBILE/ WIRELESS/ FIXED
- NON-SIM DEVICES
- SMARTPHONES
- VR/AR
- BROADCASTING
- 4K/8K UHD
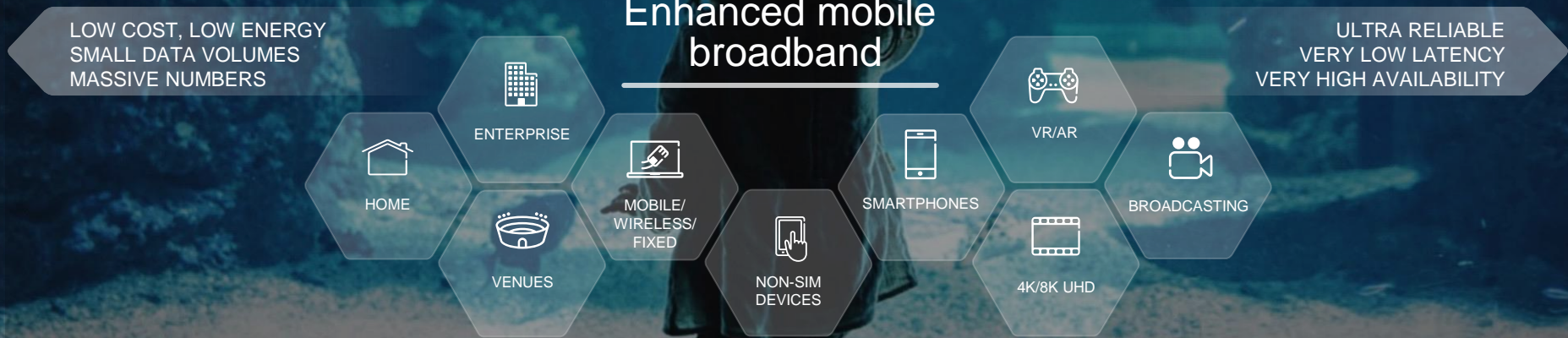
USE CASE EVOLUTION

		Current	**On the road to 5G**	**5G experience**
Enhanced Mobile Broadband		Screens everywhere	New tools	Immersive experience
Automotive		On demand information	Real-time information vehicle to vehicle	Autonomous control
Manufacturing		Process automation	Flow management and remote supervision	Cloud robotics and remote control
Energy & Utilities		Metering and smart grid	Resource management and automation	Machine intelligence and real-time control
Healthcare		Connected doctors and patients	Monitoring and medication e-care	Remote operations

Technologies			
	Multi-standard network Cat-M1/NB-IoT Cloud optimized functions VNF orchestration	Gigabit LTE (TDD, FDD, LAA) Massive MIMO Network Slicing Dynamic service orchestration Predictive analytics	5G NR Virtualized RAN Federated network slicing Distributed Cloud Real time machine learning/AI

5G
USE CASES

BROADBAND AND MEDIA EVERYWHERE

SENSORS EVERYWHERE

SMART VEHICLES, TRANSPORT

INFRASTRUCTURE, MONITOR AND CONTROL

CRITICAL CONTROL OF REMOTE DEVICES

INTERACTION HUMAN-IOT

5G SUCCESS FACTORS

› 5G System – Openness and horizontal network end to end
(5G is cloud/core, control, access and devices/sensors)

› Global ecosystem – Multiple use cases with one global eco-system
(Leveraging the scale of 4G/LTE)

› 5G enabling new business – Operators driving growth in IoT, media and industry transformation
(New capabilities for digitalization and mobilization)

› The Network platform - Relevance to other industries
(Speed is essential to position networks in the global web environment)

› Industry alignment - Standardization and open source approach
(A broader set of use cases requires cross industry collaboration)

5G RADIO ACCESS

LTE Evolution

Tight interworking

"NR"
No compatibility constraints

1 GHz   3 GHz   10 GHz   30 GHz   100 GHz

1 GHz   3 GHz   10 GHz   30 GHz   100 GHz
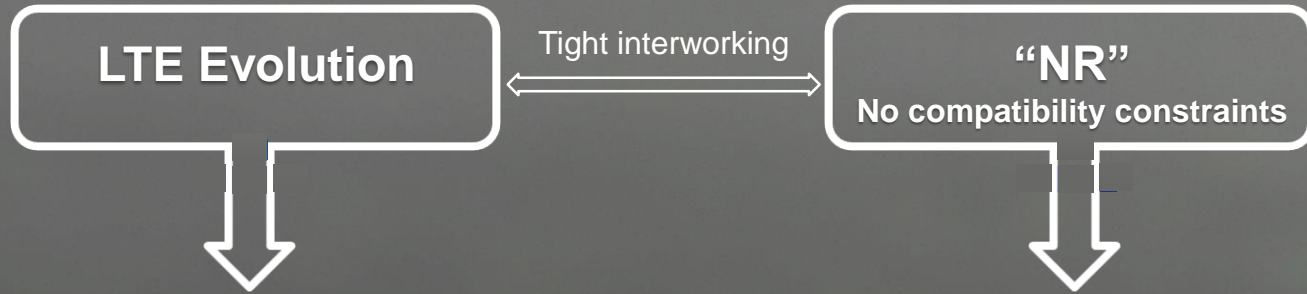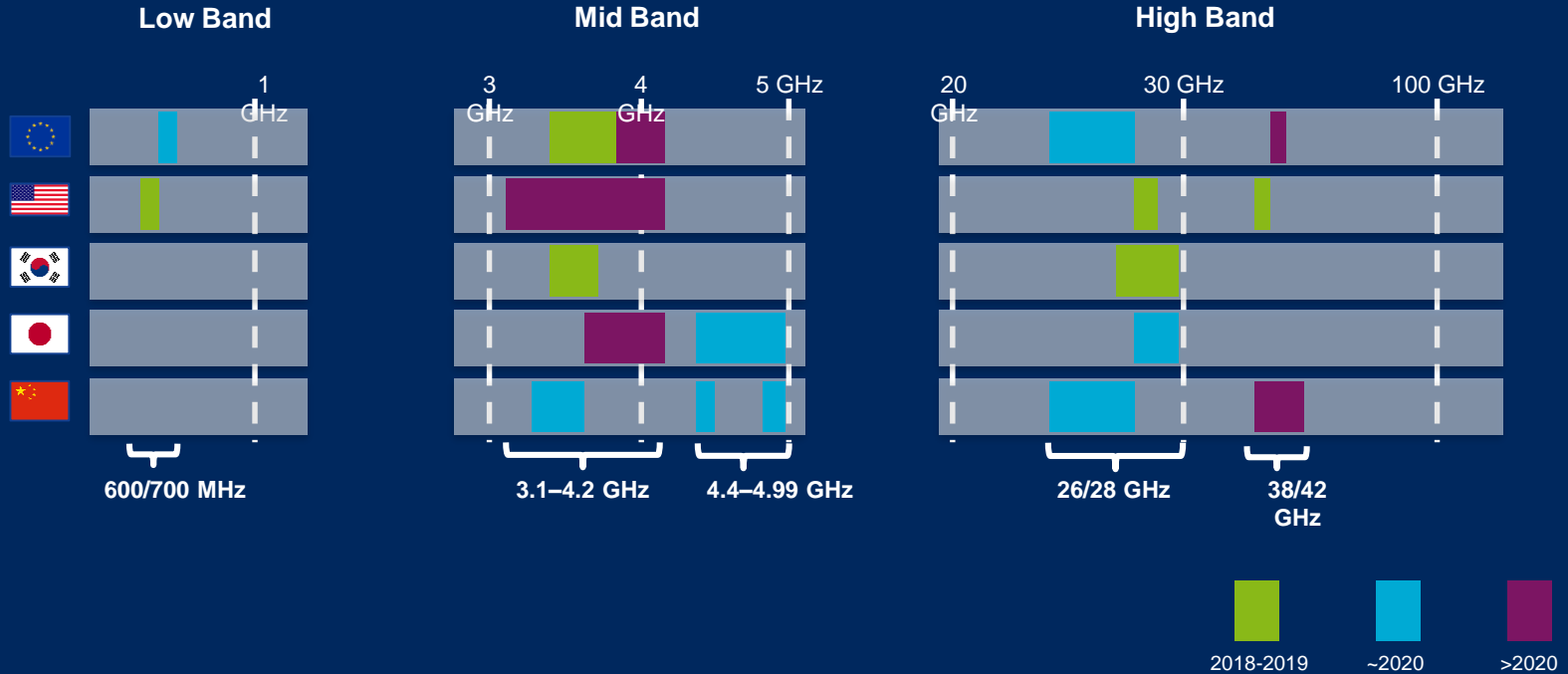
PATHS TO OUR DIGITAL FUTURE
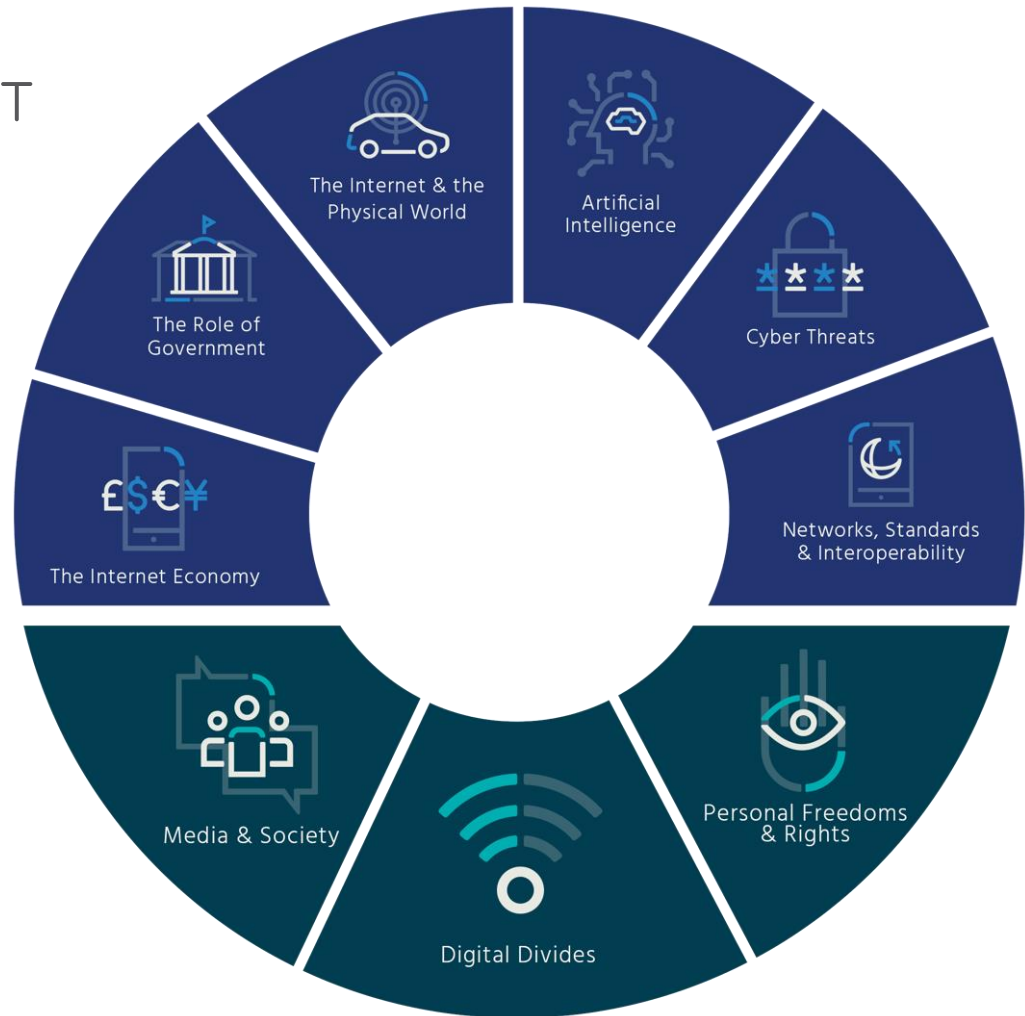
2017 Global Internet Report

Internet Society

STRUCTURE OF THE REPORT

› Drivers of Change

› The six key forces that will have a profound impact on the future of the Internet in the years to come.

› Areas of Impact

› The three critical features related to the future Internet, upon which the Drivers will have a decisive impact.

DRIVERS OF CHANGE

› Technological, economic, regulatory, security and network related challenges for the future Internet.

› In all cases, the implications of one Driver are inextricably tied to another.

The Internet and the Physical World
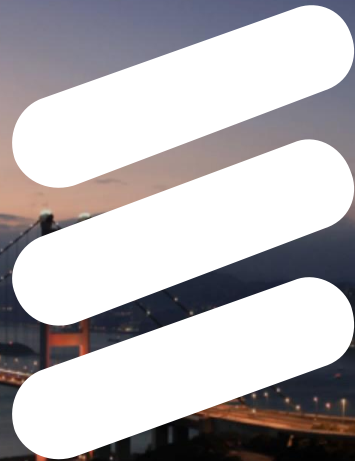
Artificial Intelligence

Cyber Threats

The Internet Economy

Networks, Standards and Interoperability

The Role of Governments