



**Long View Strategy Lab  
for Telefónica Deutschland**

Trend driver overview

Social Drivers



# Aging Population Prediction

By 2030, nearly 30% of the German population will be over 65 years old

**Context:** Increased living standards drive the aging of the population, disruptive changes might accelerate the life expectancy while new diseases might shorten it



The German population above 65 years will grow to 21.8 million people by 2030



The number of people below 20 years will stay stable while the number of people between 20 and 64 years will decrease significantly

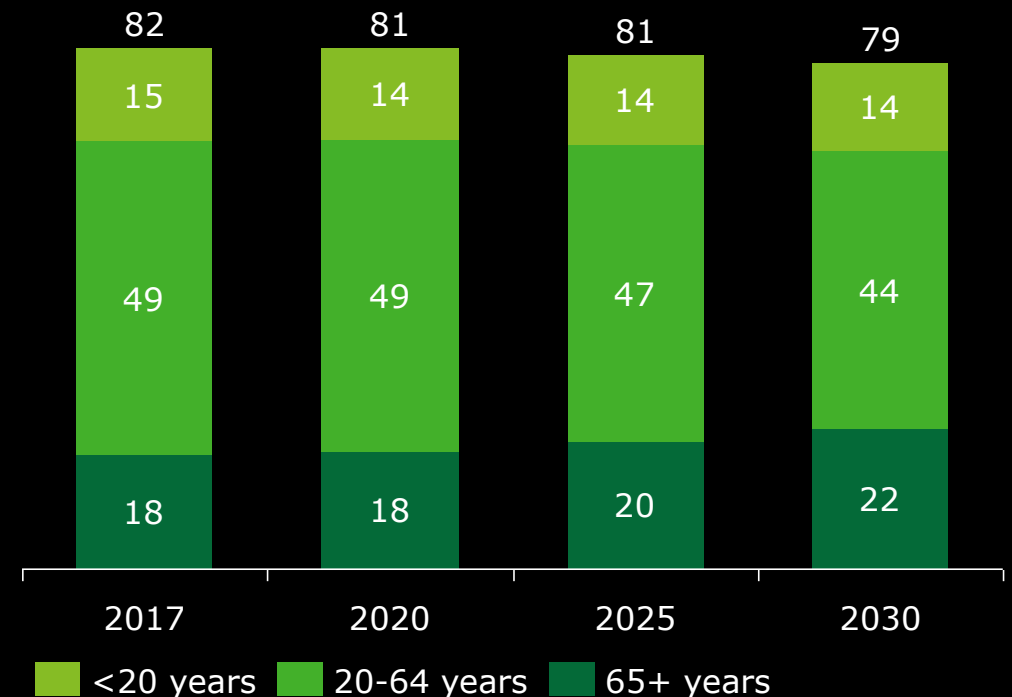


The difference between the youngest and oldest age group is enormous and can not be compensated by net immigration



By 2030, the 65+ age group will be about 25% bigger than in 2017

Population development in Germany [in m]:



# Competition for Talent Prediction

By 2030, skilled workforce will become the most important strategic resource for organizations

**Context:** With demographic change, the available number of highly skilled talent might become intense, on the other hand automatization might also reduce demand



## Challenges

The changes in demography, globalization, and social values will lead to a shortage of skilled workers in the industrialized countries like Germany



## Strategic resource

By 2030, people will become the most important strategic resource for organizations



## Counteraction

German companies can counteract by becoming a more attractive employer, by building cooperation and partnerships with other organizations, and by lowering their own demand for a skilled workforce



## Automation

Basic work needs to be automated and standardized to release capacity for more sophisticated jobs

# Changing Workforce (remote/mobile, agile/flexible) Prediction

By 2030, workplaces will become independent from time and location while demanding a more flexible and self-organized workforce

**Context:** Technological and demographic change might also affect the workforce, which could be more remote/mobile, but might also refocus on the office space



## Workplace

Workplaces will be adapted to multiple needs and purposes of the workforce and will enable people to work in the cloud



## Technology

By 2030, mobile technologies will enable teams to work jointly on projects and tasks, totally independent of their location and time zone



## Responsibility

Due to the changing environment, the workforce will have more responsibilities because of higher self-organization and changing hierarchies



# Preferred Payment Technology Prediction

By 2030, new and innovative payment solutions will slowly detach cash payments as preferred payment technology in Germany

**Context:** The future of payment is facing high disruption (Bitcoin, mobile payment, etc.), which might alter the preferred payment technology of customers



Despite the affinity of German consumers for cash payments, the preferred payment method will change in the long-run



New technological solutions and a young technophile generation will foster innovative payment methods in Germany



In the medium-term, cash payments will fall significantly below 50% of total payments in terms of transferred value in Germany



# Communication Behavior (Voice vs. Video vs. Text) Prediction

By 2030, visual (video) communication will be the preferred form of communication and will represent nearly 80% of the data passing over the networks

**Context:** With technological and social changes, also the communication behavior among consumers will alter



## Challenges

By 2030, visual (video) communication will represent nearly 80% of the data passing over the network



## Strategic resource

Standard-definition will disappear, and high-definition will become the norm, as 4k and 8k video becomes more widespread



## Counteraction

The focus on visual communication will be enabled through new data transmitting technologies



## Automation

Visual (video) interaction will be preferred as it is a form of digital communication being closest to normal human interaction

Technology Drivers





# Artificial Intelligence Prediction

By 2030, more advanced AI technologies will finally be part of everybody's life after years of research and development

**Context:** In the past, computers were only as smart as the user/software using it. With increasing processor speed, natural language processing and machine learning, Artificial Intelligence is possible - leaving the question if it is applied and usable in daily lives



Substantial increase in the future uses of AI applications, including self-driving cars, healthcare diagnostics, and other assistance can be expected



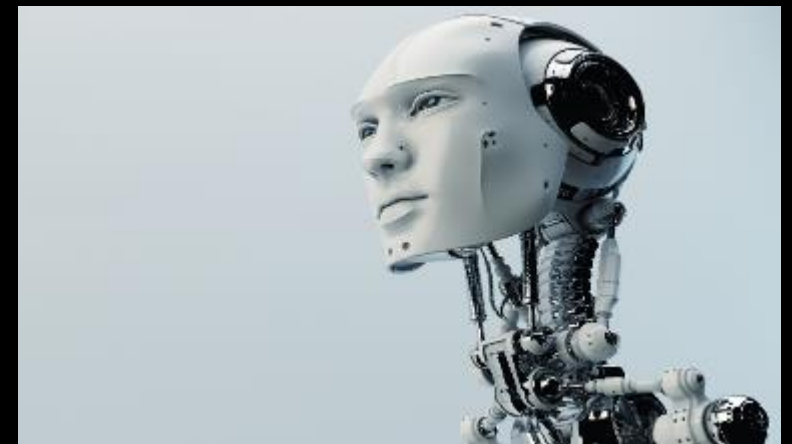
All AI systems are specialized to accomplish particular tasks and therefore require years of focused research and unique construction



People's future relationship with machines will become more nuanced, fluid, and personalized



AI research is shifting towards building intelligent system that can collaborate with people including ways for humans teaching robots



# Li-Fi (Wireless Communication Technology Using Light) Prediction

By 2030, light fidelity will replace Wi-Fi technology in the near future due to higher speed and more security

**Context:** Li-Fi is a wireless communication technology using LED light bulbs to pulse and transmit data at 100 times the speed of Wi-Fi



## Light Fidelity

Light Fidelity is a form of optical data transfer using light ray as transportation medium for information



## Capacity

Li-Fi will replace Wi-Fi until 2030 as it is much faster with more than 200GB/s and more secure than the established wireless connection



## Advantage

Li-Fi is also advantageous due to a ten thousand times broader frequency spectrum as transportation medium compared to radio airwaves



# 5G / Mobile Communication Cell Network Structure / Small Cells / FTTH Prediction

By 2030 5G technology will be standard allowing a bandwidth of 10 GB/sec

**Context:** 5G is the next mobile communication standard that aims at higher capacity and lower latency than current 4G, allowing a higher density of mobile broadband users and supporting device-to-device, ultra reliable, and massive machine communications. Also, 5G will facilitate IoT and other applications. The network mesh-up can alter the number of access points, either having only licensed players or also private players in unlicensed spectrum in the market



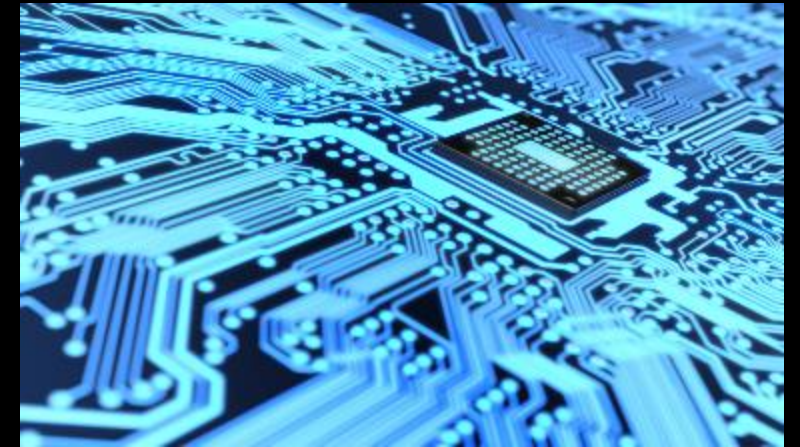
Until 2020, the 5G technology will be able to be rolled out for mobile communication with a bandwidth of 10 GB/s



However, the further development of the technology and the high financial investments will not make a market launch economically reasonable before the mid 2020s



By 2030, the 5G network will possibly be the standard mobile communication technology



## 6G Prediction

By 2030, the new 6G technology will be developed but it is probably less efficient than 5G

**Context:** 6G is proposed to integrate 5G with satellite networks for global coverage. It is considered to be a cheap and fast internet technology to provide unbelievable high data rates or very fast internet speed access up to 11 GB/s on air through wireless and mobile devices while travelling or in a remote location



Due to the lower energy efficiencies and network adaptability of the 6G technology, the 6G communication is not likely to succeed in Germany



However, the 6G technology might be an option for less developed areas of the world

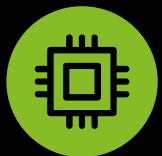




# Blockchain Prediction

By 2030, the blockchain databases will allow companies to work more agile with stored data

**Context:** Blockchain is a distributed database that maintains a continuously growing list of ordered records, called blocks. Each block contains a timestamp and a link to a previous block. The blockchain has the potential to disrupt various industries and sectors



## Development

By 2030, blockchain technology has the potential to replace intermediaries and to disrupt business processes such as payment or asset accounting



## Evaluation

The emerging blockchain technology replaces the need for third-party institutions to provide trust for financial, contract, and voting activities



## Storage

By 2030, over 10% of the global gross domestic product will be stored using blockchain technology



## Ability

Governments will be able to collect taxes for the first time using blockchain in the end of the 2020s

# Robotics Prediction

By 2030, "semi-sentient" robotics process automation tools help businesses improve the effectiveness of services fast and at a lower cost than current methods

**Context:** The dramatically improved automation (AI, machine learning driven) of telco processes will reduce errors and increase customer experience while also reducing overhead costs and replacing service agents, e.g. through softwareization of the network, Robotics, and application of advanced chatbots



## Replacement

By 2030, Robotics and Artificial Intelligence will make 35% of current jobs in Germany obsolete



## Industries

Industries being most at risk are waste management, transportation and manufacturing



## Nature of jobs

However, in many cases the nature of the job will change rather than the complete disappearing of the position



# (Mobile) Bandwidth / Latency Development Prediction

By 2030, the demand for bigger bandwidth and quicker latency will have substantially grown

**Context:** Due to more efficient usage of technologies that are in place and new technological developments the bandwidth and latency speed is increasing



The importance and demand for speed and faster user experience is steadily growing until 2030



By 2030, latency, the time from the source sending a packet to the destination receiving it, will further decrease



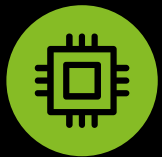
Bandwidth, the maximum throughput of logical or physical communication paths, is estimated to increase and become much cheaper until 2030



# Data Storage Development (Size) Prediction

By 2030, the amount of stored data will have grown exponentially leading to enormous requirements in terms of size and speed for storage

**Context:** The size of data has been tremendously increasing in the past and is expected to further grow exponentially, impacting the communication environment. New compressing technologies or data formats might change it



## Stored Data

The amount of data stored is doubling in size every two years and until 2020 the data we create and copy annually will reach 44 trillion gigabyte



## Growth

This development of the amount of stored data is likely to continue until 2030 leading to exponential growth of the required storage



## Emerging Markets

In 2018, the mature markets like Europe and the US will be overtaken by emerging markets concerning the total percentage of stored data

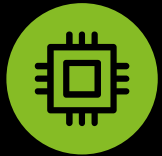




# Computing Technology (data Processing Speed of Devices – Moore`s Law) Prediction

By 2030, the size and processing speed of computer chips will have developed exponentially leading to fast and nano-sized chips

**Context:** Computing technology has been strongly developing since it started, leading to Moore's law stating that the number of transistors in a dense integrated circuit doubles approximately every two years. It has been called death several times but remains still valid. Quantum technology can lift data processing speed to yet unknown spheres



In the early 2020s, it will be possible to build chips close to the size of individual atoms with high data processing speed



In the 2020s, carbon nanotubes or a similar technology will reach mass market, creating a paradigm that allows Moore`s Law to continue



By 2030, the development could lead to a technological singularity in the future, when machine calculation power is exceeding the human brain calculation capacity



# Customer Interaction / Self-Service – Digital Platforms for Customers Prediction

By 2030, customer interaction will be a mainly digital self-service with fulltime accessibility

**Context:** Digital platforms enable customer interaction across devices, medias and business functions, impacting the customer experience and the interaction with the customer



## Customer interaction

User-friendly, cross-platform digital technologies are offering consumers a wider range of flexible options



## Business models

By introducing innovative digital tools, technology start-ups have been able to provide services quicker, more conveniently, and at lower cost



## Flexibility

By 2030, the customer interaction will be a mostly digital, convenient, and all-day service for customers, where and when they need it



Economic Drivers



## Industry Consolidation Prediction

By 2030, consolidations in the industry will continue, while cross-boarder M&A will become more important to prepare for a range of demand scenarios

**Context:** Extent to which the industry participants are affected by market consolidation



### Consolidation

Business consolidations will continue as telecommunication is a capital-intensive industry, but returns on capital are declining



### Advantages

Telco companies will make better use of digitalization, big data, and analytics through consolidations



### Cross-boarder

Until 2030, the current focus on in-market consolidation is likely to give way to a new round of cross-boarder M&A



### Vertical

Operators will be increasingly interested in acquiring new vertical specific capabilities in order to be prepared for changing customer needs

# Industry Alliances Prediction

By 2030, industry alliances and partnerships will play an even more crucial role in the industry and unlock new opportunities for growth

**Context:** Inter und intra industry alliances



## Alliances

By 2030, industry alliances will play an even more important role for innovation because of high development complexity and cost



## Business2Business

Operators must reconsider areas where they can take more discrete value chain positions as B2B approaches become a key aspect of value creation



## Customers

Telecommunication companies are actively pursuing partnerships in the new digital ecosystem in order to extend the offering and to meet customer demand



# Vertical Integration of Telco Players Prediction

By 2030, the opportunity for entering new industry verticals will be increasingly attractive

**Context:** Extent of vertical integration of Telco players to either diversify the business model or to integrate new parts along the value chain



In 2030, telecommunication companies will be increasingly interested in building and acquiring new vertical specific capabilities



Market players are also expanding the scope of their offerings, disrupting different industry verticals in the process



Entering new industry verticals will be seen as an important deal rationale for M&A transactions



Telecommunication companies must focus on business models, which are considering different use cases, while deciding for the best digital growth opportunity





# Dark Analytics (Structure vs. Unstructured Data) Prediction

By 2030, structured data analytics will help companies to generate valuable additional insights and will lead to better decision making

**Context:** Definition of the focus in data analytics



Across most enterprises, ever-expanding stores of data remain unstructured and unanalyzed



Advances in computer vision, pattern recognition, and cognitive analytics are making it possible for companies to understand the untapped sources



By 2030, organizations will use dark analytics to structure data and derive valuable insights



The insights will lead to better experience and decision making across all functions of the business



# Digital Divide Prediction

By 2030, the inequality with regards to access to information and communication technology is likely to decrease but will probably still exist

**Context:** Social and economic inequality with regards to access to, use of, or impact of information and communication technology



Digital Divide refers to inequality between individuals, households, and businesses at different socioeconomic levels



Part of the UN Sustainable Goals (SDGs) is to ensure equal access for all people to basic services and technology by 2030



However, differences in technology and information accessibility between countries are likely to still exist in 2030





Environmental Drivers



# Energy Consumption Prediction

By 2030, the global energy consumption will increase, while in Germany the consumption will stay stable with a higher share of renewable energy

**Context:** Global increase of the energy consumption



The global trends of growing population, GDP and primary energy will underpin the growing energy consumption until 2030



World primary energy consumption is projected to grow by 1.6% p.a. adding up to 36% to global consumption by 2030

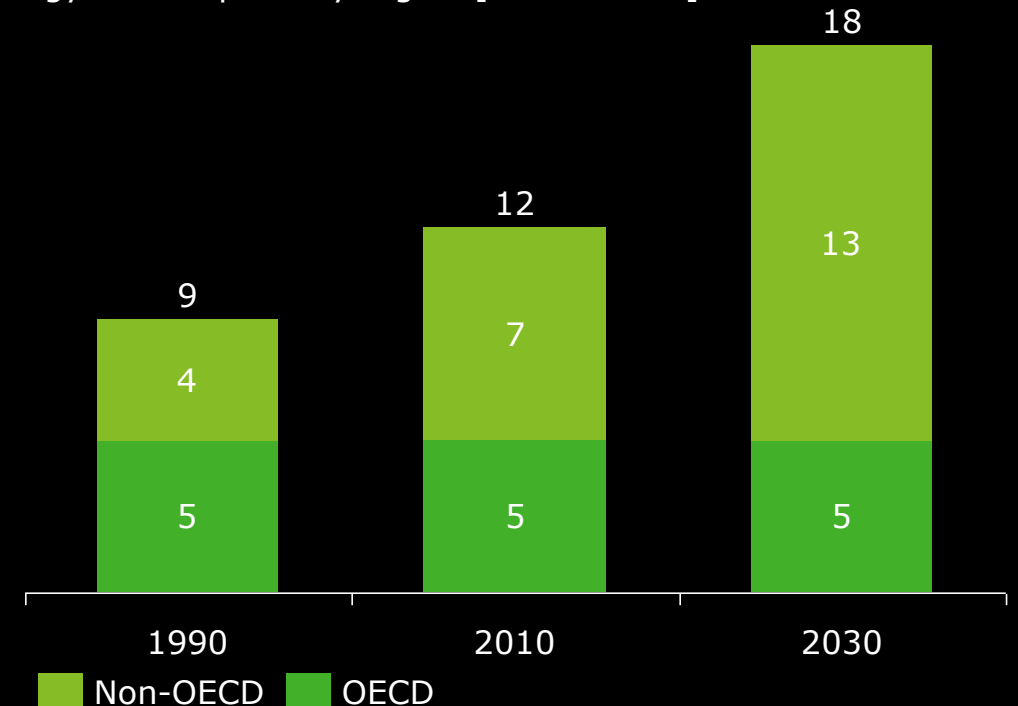


Almost all (93%) of the energy consumption growth is due to the development in non-OECD countries



Germany's energy consumption will stay relatively stable, while the share of renewable energy will increase to 27% by 2030

Energy consumption by region [in billion toe]:



Political Drivers



# Privacy Regulation Law Prediction

By 2030, privacy information are the most important resource of the future, but if intended by people and politics, the privacy regulation law will adjust

**Context:** Extent to which the privacy protection is supported by law



## Availability

The value of digital businesses is hardly founded on material assets but intangible values such as customer data and insights



## Smart Applications

With the help of smart applications, all processes with personnel data are expected to run fully automated by 2030



## People

However, the privacy regulation law can keep pace with the technological development, if it is intended by the people and politics



# Net Neutrality Prediction

Although some forces try to abolish net neutrality, net neutrality is likely to perpetuate due to its importance for innovation power and efficient market competition

**Context:** Extent to which net neutrality is enforced



The European Union wants to assure net neutrality for all member countries



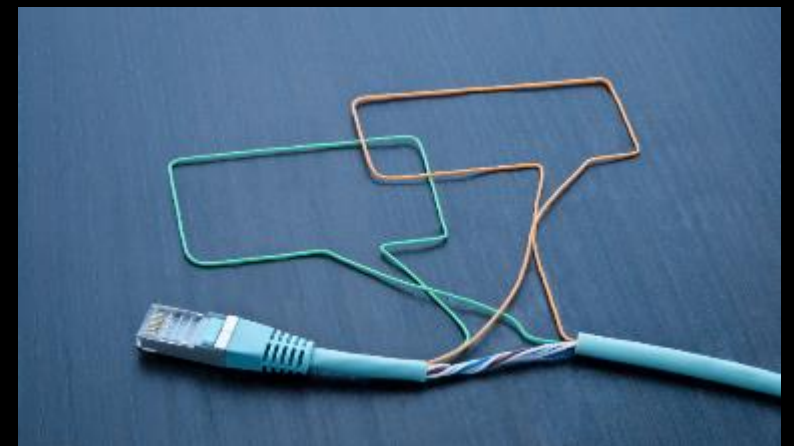
By 2030, all data quantities will probably still be transmitted regardless of size and origin



However, the exponentially growing amounts of data will bring new challenges, investments and high costs for many technological companies



Net neutrality will be important, as it maintains a high level of innovation and fosters the competition in the worldwide economic system



Drivers



# Social Drivers

Social Drivers	Context
<b>Urbanization</b>	Globally, more people are attracted by urban areas, due to high living costs there, also an rural revival is thinkable (Urbanization <--> Rural revival)
<b>Aging population</b>	Increased living standards drive the aging of the population, disruptive changes might accelerate the life expectancy while new diseases might shorten this (Shorter life-expectancy <--> Aging is faster than expected)
<b>Competition for talent</b>	With demographic change, the available number of highly skilled talent might become intense, on the other hand automatization might also reduce demand (Little competition <--> Intense competition)
<b>Changing workforce (remote/mobile, agile/ flexible)</b>	Technological and demographic change might also affect the workforce, which could be more remote/mobile, but might also refocus on the office space (Focus on office <--> Focus on mobile/remote)
<b>Agile Management Methods</b>	Agile management methods are iterative, incremental method of managing the design and build activities with the aim to provide new product or service development in a highly flexible and interactive manner (niche topic <--> high applied)
<b>Crowd sourcing, collective intelligence</b>	Technological progress such as Artificial Intelligence enables using crowd sourcing/ collective intelligence. Nevertheless, the question if the swarm will be superior and widely applied arises (Niche topic <--> Swarm intelligence is widely applied)
<b>Comms Behavior(Voice/Video/Text)</b>	With technological and social changes, also the communication behavior will alter (Focus on voice/visual comms <--> Focus on text based comms)
<b>Acceptance of Digitalization in social life</b>	Customer acceptance of digitalization, the use of digital services in daily life and the error tolerance regarding provider services are subject to demographic and technological change (Low acceptance of digitalization <--> High acceptance of digitalization)
<b>Willingness to Pay for basic telco services</b>	Customers willingness to pay for basic telco services might shift depending on the utility-like status of telco services (Low willingness to pay <--> High willingness to pay)
<b>Preferred Payment Technology</b>	The future of payment is facing high disruption (Bitcoin, mobile payment...), which might alter the preferred payment technology of customers (Traditional payment methods <--> fully virtual money, no cash required)
<b>Demand for flexibility of product/contract bundling / unbundling of services (fixed mobile convergence, triple-play, quad-play)</b>	Customer demand for contract flexibility is affected by zeitgeist, but also by socio-economic factors (Low-flexibility/post-paid contracts <--> High flexibility/pre-paid contracts)
<b>Sharing economy</b>	Telco services could be offered as a bundle ("flatrates") or unbundled and offered in different packages (Unbundled offering <--> Bundled offerings)
<b>Customer loyalty</b>	The sharing economy changes the usage and possession of assets/services, which brings benefits and downsides (Stagnating application/customers prefer own asset/service possession <--> Increasingly used / customers accept sharing of assets/services)
<b>Number of personal devices used (non machine to machine)</b>	The customer loyalty of telco customers is impacted by various influencing socio economic drivers and can be triggered by actions of the telco providers, e.g. increase of brand awareness (Low customer loyalty/low brand awareness 1 <--> High customer loyalty/high brand awareness)
<b>Social Media</b>	Technological change could make most devices redundant or introduce new gadgets in consumers life (Decreasing number of devices <--> Increasing number of devices)
<b>Mobile vs. stationary usage</b>	Social media have risen in the last decade and have been widely applied by the digital natives, however they might shift to the offline space as a form of luxury (Decreasing sharing of content <--> Increasing share of content)
	Over decades, communication was only used in stationary applications, technological progress changed this. However, this might be reverted with decreasing mobility of users who use mainly their devices at home (Stationary-usage focus <--> Mobile-usage focus)

# Technological Drivers (1/3)

Technological Drivers	Context
<b>Artificial Intelligence</b>	In the past, computers were only as smart as the user/software using it. With increasing processor speed, natural language processing and machine learning, Artificial intelligence is possible - leaving the question if it is applied and usable in daily lives (low application <--> high application)
<b>Role of wearables</b>	Technological process enables small devices that can be used in various aspects that are worn under, within or above the clothes, e.g. smartwatches or smart clothes. However, will the technological possibility become applied reality? (Stagnating usage <--> Increasing usage)
<b>Virtual Reality</b>	Virtual Reality enables new user experiences, that can be applied in a B2C and B2B context, impacting the telco industry. This technology replicates an environment and simulate a user's physical presence in this environment. However, this will leave the question how applied those technologies will be (Niche topic <--> High application)
<b>Augmented reality</b>	Augmented Reality is a live direct or indirect view of a physical, real-world environment whose elements are augmented by computer-generated sensory input. This enables new user experiences, that can be applied in a B2C and B2B context, impacting the telco industry. However, this will leave the question how applied those technologies will be (Niche topic <--> High application)
<b>Holographic communication</b>	In the past, holographic communication was only thinkable in Science-Fiction. Technological progress might enable it, however will it also be widely used (Niche topic <--> Widely applied)
<b>Usage of language engineering/Speech recognition</b>	In the past, communication across cultures made knowledge of foreign languages necessary. Technological progress enables language engineering, which is a technological simultaneous translation. The necessary speech recognition can also be used for other (e.g. security) purposes. Leaving the question how applied it will be. (Niche topic <--> Broad usage)
<b>Cloud Solutions</b>	Currently, for many applications (business and private) the trend is going towards storing them in the cloud, which uses online storage, platforms and applications. Privacy concern could lead to an ever increasing need for private cloud solutions in secure environments (Private cloud standard <--> shift to mainly public cloud)
<b>Migration of last mile from electric/copper to optic technology</b>	Currently, transmissions is using electric wire communication i.e. copper centric networks. The switch to optic, fiber transmission will change the efficiency and reduce cost, e.g. due to reduced maintenance costs (electric <--> optic)
<b>Li-Fi (wireless communication technology using light)</b>	Li-Fi is a wireless communication technology using LED light bulbs to pulse and transmit data at 100 times the speed of Wi-Fi (remains R&D status <--> Li-Fi prevalent)
<b>Open source Wi-Fi</b>	In the past wireless protocols were heavily patented. Cheap open source software-defined radios enable open source wireless protocols. But will this be applied? (Niche topic <--> Highly applied)
<b>Printing (3D/ 4D)</b>	3D printing is already beyond R&D stage, impacting production processes and driving network demand to transfer necessary data. This might further accelerate with 4D printing, an emerging technology that will enable us to print objects that reshape or assemble themselves on-the-fly, based on intelligent data. (Niche topic <--> Highly applied)
<b>5G / Mobile communication cell network structure / Small Cells / FTTH evolution</b>	5G is the next proposed mobile communication standard that aims at higher capacity and lower latency than current 4G, allowing a higher density of mobile broadband users, and supporting device-to-device, ultra reliable, and massive machine communications and can facilitate IoT and other applications. The network mesh-up can also alter number of access points, either having only licensed players or also private players in unlicensed spectrum in the market (Similar to today <--> high capacity network)



# Technological Drivers (2/3)

Technological Drivers	Context
<b>6G</b>	6G is proposed to integrate 5G with satellite networks for global coverage. It is considered to be a cheap and fast internet technology to provide unbelievably high data rates or very fast internet speed access on air through wireless and mobile devices possibly up to 11 Gbps, while travelling or in a remote location (6G failed <--> 6G becomes the new standard)
<b>IoT - Internet of Things</b>	The Internet of things (IoT) is the inter-networking of physical devices and objects that enable these objects to collect and exchange data. This connectivity impacts and enables various dimensions such as autonomous driving or smart home, which has also consequences for the telco industry (no connectivity --> high adoption of connectivity)
<b>E-band (military frequency)</b>	E-band, a former NATO radio spectrum might be used for civil applications (niche topics <--> widely applied in civil sector)
<b>Geospatial technology</b>	E-band, a former NATO radio spectrum might be used for civil applications (niche topics <--> widely applied in civil sector)
<b>Blockchain</b>	Geospatial technology are tools that combine geographic mapping with social interaction with remote sensing and GPS applications. (Niche topics <--> Disruptive impact)
<b>Robotics: Automation of Telco provider processes</b>	Blockchain is a distributed database that maintains a continuously growing list of ordered records called blocks. Each block contains a timestamp and a link to a previous block. The blockchain has the potential to disrupt various industries and sectors (Niche topic <--> Disruptive impact)
<b>Digital Security / Network Security</b>	The automation of telco processes will reduce errors and increase customer experience while also reducing overhead costs, e.g. through softwareization of the network, robotics and application of chatbots, replacing service agents (High degree of manual provision <--> High degree of automatization)
<b>Big Data / data analytics</b>	Digital networks and infrastructure can constantly subject to unauthorized access, e.g. through hacking or security lapses. The security in the digital space will impact the telco business (insecure <--> secure)
<b>Software-defined networking (SDN) / softwarization of networks / Network Function Virtualization (NFV)</b>	With the increase of produced data, traditional data analysis is overchallenged. Due to technological progress, data can be more efficient and more in-depth analyzed which enables new business models (Niche topic <--> Highly applied)
<b>Authentication method</b>	Currently, the focus on telecommunication networks is on hardware. Technological developments showcase rather a software focus - will this trend be on-going and sustainable (Softwareized network <--> hardwareized network)
<b>VPN: Virtual private networks</b>	Today, signatures and pins are widely recognised authentication methods. Technological process allows new features such as face or voice recognition. However, eventhough they are technically feasible, will they be widely adapte or traditional methods stay in place (Traditional methods <--> New authentication methods)
<b>(Mobile) bandwidth / latency development</b>	Virtual private network (VPN) is a virtualized extension of a private network across a public network, like the Internet. It enables users to send and receive data across shared or public networks as if their computing devices were directly connected to the private network (Decreasing usage <--> Increasing usage)
<b>Data Storage Development (Size)</b>	Due to more efficient usage of technologies that are in place and new technological developments the bandwidth and latency speed is increasing. But how fast will this develop? (Slower than expected <--> Faster than expected)
<b>Computing technology (data processing speed of devices - Moore's law)</b>	The size of data has been tremendously increasing in the past and is expected to further grow exponentially, impacting the communication environment. New compressing technologies or data formats might change is (smaller than expected <--> larger than expected)

# Technological Drivers (3/3)

Technological Drivers	Context
<b>Robots (Physical machines)</b>	Robots are yet only applied in manufacturing, but could also enter social life and take over certain tasks, e.g. in healthcare, impact the telco industry. Also nanobots, which are machines in the scale of a nanometre are possible (niche topic <--> constant interaction)
<b>Customer interaction/ self-service - Digital platforms for customers</b>	Digital platforms enable customer interaction across devices, medias and business functions, impacting the customer experience and the interaction with the customer (niche topic <--> standard for customers)
<b>OTT player</b>	OTT players will become a significant threat for Telco companies by increasing their power in the market. They have data sovereignty over consumer user data and customer are willing to pay for their added services, thus impacting telco's future (no influence <-> significant power)
<b>Separation device / network (e.g. eSim)</b>	Development of the coupling of hardware to specific networks. eSim as a first step to enable an easy switch of the network provider (weak coupling <-> strong coupling)

# Economic Drivers

Economic Drivers	Context
<b>Globalization</b>	Progress of the globalization (no increase <-> rapid increase)
<b>Competitive development (market entry of tech players)</b>	Characterization of the market development. Competition becomes more intense from entrance of new players from the technological and media sector (little competition <-> highly competitive environment)
<b>Economic climate</b>	Change in the overall economic climate (economic crisis <-> upswing)
<b>Industry consolidation</b>	Extent to which the industry participants are affected by market consolidation (no consolidation <-> strong consolidation)
<b>Industry alliances</b>	Inter und Intra Industry alliances (decrease <-> increase)
<b>Outsourcing of services</b>	Extent to which services and processes are outsourced (low share <-> high share)
<b>Broadband infrastructure competition</b>	The possibility for various broadband standards significantly influences infrastructure competition (one standard <-> multiple standards)
<b>Vertical integration of Telco players</b>	Extent of vertical integration of Telco players to either diversify the business model or integrate new parts along the value chain (no integration <-> large integration)
<b>Monetization of customer data</b>	Degree to which customer data can be monetized (no usage <-> strong business model)
<b>Dark analytic (structured vs. unstructured data)</b>	Definition of the focus in data analytics (focus on structured data <-> focus on unstructured data)
<b>Sales channels</b>	Sales channels for telcos are currently multi-channel based. This structure can be identical or plenty of new sales channels evolve. Customers might use certain channels for information purposes only or do the information and buying decision in the same channel (remain identical <-> plenty of new sales channels).
<b>Additional content payment</b>	Expectation with regard to the predominance of additional content payment (not prevailing <-> strongly prevailing)
<b>Digital divide</b>	Social and economic inequality with regards to access to, use of, or impact of information and communication technology

# Environmental Drivers

Environmental Drivers	Context
<b>e-waste</b>	e-waste describes the handling of discarded electrical or electronic devices, e.g. antennas (no recycling <-> high level recycling)
<b>CO2 emissions</b>	The change in CO2 emissions compared to today (decreasing emissions <-> increasing emissions)
<b>Energy consumption</b>	Global increase of the energy consumption (significantly slower than expected <-> significantly faster than expected)
<b>Global warming</b>	Progress of the global warming phenomenon (significantly slower than expected <-> significantly faster than expected)

# Political Drivers

Political Drivers	Context
<b>Market regulation</b>	Definition of the extent to which the market is regulated (no regulation <-> strong regulation)
<b>International market structure</b>	Description of the international market structure (separated markets <-> common market structure)
<b>Privacy regulation law</b>	Extend to which the privacy protection is supported by law (no need for privacy protection <-> strong need for privacy protection)
<b>Liberalism vs. protectionism</b>	Prevailing political orientation (protectionism <-> liberalism)
<b>International stability</b>	Degree of the international stability (international discord <-> international stability)
<b>Public network build out funding</b>	Extend to which the build of networks is funded by the government (no funding <-> large funding)
<b>Net neutrality</b>	Extend to which net neutrality is enforced (low level <-> high level)
<b>Roaming regulations</b>	Political regulations that affect roaming (strict roaming regulations <-> elimination of roaming regulations)
<b>Regulation for deploying fiber (e.g. digging costs)</b>	Influence of political regulations on the deployment of fiber (hampering regulation <-> favoring regulation)
<b>Regulation on lock-in effect</b>	Influence of political regulations on the lock.in effect (hampering regulation <-> favoring regulation)
<b>Usage restriction for public players (Will public players use commercial networks or government owned safety networks?)</b>	Will public players use commercial networks or government owned safety networks? (public network focus <-> commercial network focus)



Deloitte refers to one or more of Deloitte Touche Tohmatsu Limited, a UK private company limited by guarantee ("DTTL"), its network of member firms, and their related entities. DTTL and each of its member firms are legally separate and independent entities. DTTL (also referred to as "Deloitte Global") does not provide services to clients. Please see [www.deloitte.com/de/UeberUns](http://www.deloitte.com/de/UeberUns) for a more detailed description of DTTL and its member firms.

Deloitte provides audit, risk advisory, tax, financial advisory and consulting services to public and private clients spanning multiple industries; legal advisory services in Germany are provided by Deloitte Legal. With a globally connected network of member firms in more than 150 countries, Deloitte brings world-class capabilities and high-quality service to clients, delivering the insights they need to address their most complex business challenges. Deloitte's more than 244,000 professionals are committed to making an impact that matters.

This presentation contains general information only, and none of Deloitte Consulting GmbH or Deloitte Touche Tohmatsu Limited ("DTTL"), any of DTTL's member firms, or any of the foregoing's affiliates (collectively, the "Deloitte Network") are, by means of this presentation, rendering accounting, business, financial, investment, legal, tax, or other professional advice or services. In particular this presentation cannot be used as a substitute for such professional advice. No entity in the Deloitte Network shall be responsible for any loss whatsoever sustained by any person who relies on this presentation.