The European Large-Scale Pilots Programme
Driving IoT Innovation at Scale in Europe

Take a Tour

Discover how the LSPs Programme is building a thriving Ecosystem in Europe

CREATE-IoT

European Large-Scale Pilots Programme

This project is funded by the European Union

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Dear Reader,

Internet of Things (IoT) has entered the next stage of development bringing new values through IoT- enabled pilots with broader vision of IoT as a combination of connected devices, connectivity, software, platforms, stakeholders, information and applications as part of integrated ecosystems and new IoT driven business models.

This eBook presents the IoT European Large-Scale Pilots (LSPs), providing an overview of the overarching goals of this initiative, facts and figures about each five different and specific focus areas, from smart living environments for ageing well, smart farming and food security, wearables for smart ecosystems, reference zones in EU cities and to autonomous vehicles in a connected environment.

The programme includes five LSPs - ACTIVAGE, AUTOPILOT, IoF2020, MONICA, SYNCHRONICITY and two coordination and support actions - CREATE-IoT, U4IoT and involves more than 250 organisations from 19 European countries addresses over 80 use cases that creates opportunities for entrepreneurs, expanding local businesses to European scale, and supports the development of secure and sustainable European IoT ecosystems.

The document gives an overview of the IoT demand drivers and trends, key elements for digital transformation through IoT in key vertical markets and summarises the IoT European Large-Scale Pilots Programme impacts and benefits.

Enjoy your reading!
Kind regards,
IoT European Large-Scale Pilots Programme Team

THE EUROPEAN LARGE-SCALE PILOTS PROGRAMME

A POLICY TO ACCELERATE DIGITAL TRANSFORMATION AND BOOST THE COMPETITIVENESS OF THE EUROPEAN INDUSTRY

THE EUROPEAN COMMISSION LAUNCHED IN 2016 A STRATEGIC INVESTMENT IN THE INTERNET OF THINGS (IoT) AS PART OF THE «DIGITISING EUROPEAN INDUSTRY» POLICY

A NEED FOR EUROPEAN ACTION

This policy strategy identified the need to accelerate the digital transformation of the European industry and to overcome the digitisation gaps across industries and countries "which lead Europe to capture only 12 percent of its potential from digital technologies, compared with the United States' 18 percent", as the Mc Kinsey Global Institute estimated in 2015.

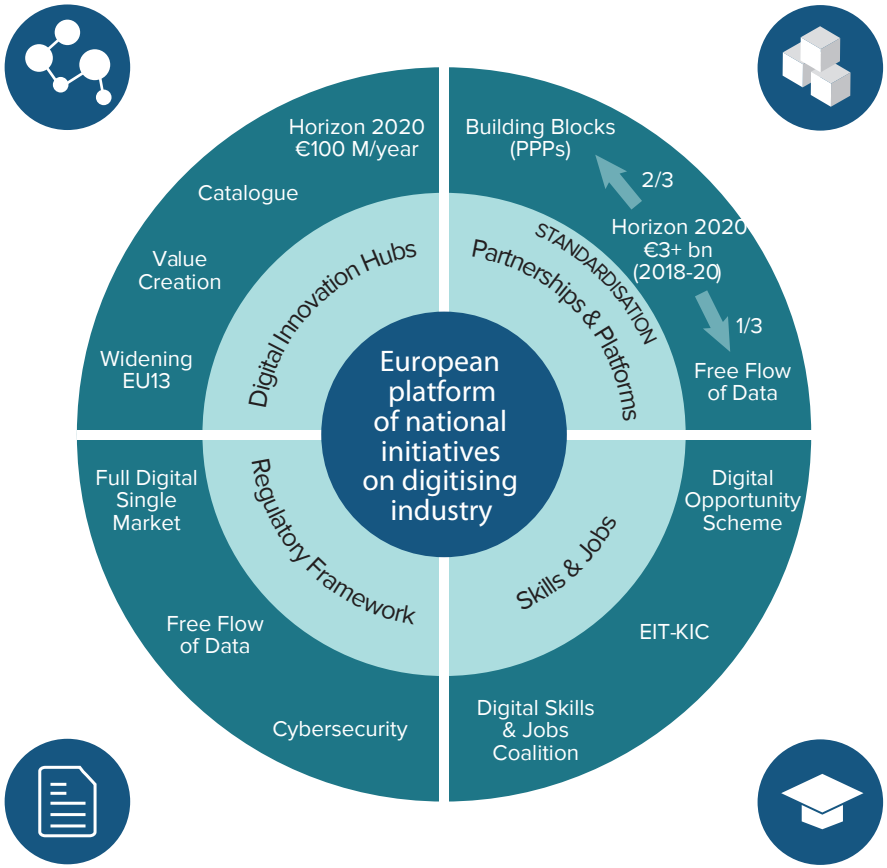
The "Digitising European Industry" strategy is particularly focused on boosting the ability of traditional industries and SMEs to capture the opportunities of digital innovation through coordination of private and public initiatives, increased investments and the development of the Digital Single Market.

A NEED TO BOOST IoT INNOVATION

Boosting the adoption of the Internet of Things in Europe is a keystone of the "Digitising European Industry" strategy because:

- IoT is a game changer, by connecting the physical and virtual worldthrough countless sensors, by generating huge data flows allowing to monitor, measure and predict events, by adding intelligence to the edge of networks
- The digital transformation of business processes as well as the development of innovative business models is driven by the combined adoption of multiple technologies, particularly the triad IoT, Big Data and Cloud Computing
- Barriers slowing down the take-up IoT in Europe required countermeasures, particularly the lack of trust by end users, uncertainty about the IoT investment business case, the markets fragmentation and proliferation of standards hindering interoperability, a key requirement of IoT value chains

European Communication
«Digitising European Industry» COM(2016) 180 final



THE EUROPEAN COMMISSION LAUNCHED IN 2016 A STRATEGIC INVESTMENT IN THE INTERNET OF THINGS (IoT) AS PART OF THE «DIGITISING EUROPEAN INDUSTRY» POLICY

MAIN CHALLENGES

Accelerating take-up of IoT in Europe

Overcoming security and privacy concerns

Fears of customer lock-in by proprietary platforms

Overcoming markets fragmentation, barriers to interoperability and data sharing

Uncertainty about business opportunities

PROGRAMME ACTIONS

Funding innovation consortia collaborating to foster the deployment of IoT solutions in key vertical markets

Meeting demand needs by demonstrating multiple IoT applications at scale in usage contexts as close as possible to operational conditions

Building interoperability, common reference architectures and standards through the integration of advanced IoT technologies across the value chain

Developing open ecosystems and opening business opportunities for multiple European stakeholders, including hundreds of high-tech SMEs recruited through open calls

IMPACTS AND BENEFITS

Improvement of citizens' quality of life, in the public and private spheres: well-being, convenience and comfort, access to better services, improved participation

Improved user acceptance and trust in IoT solutions through privacy by design and better security

Significant and measurable contribution to standards and implementation of open platforms

Validation of technological choices, sustainability and replicability, of architectures, standards, interoperability properties, of key characteristics such as security and privacy

Development of secure and sustainable European IoT ecosystems viable beyond the duration of the pilots

Exploration and validation of new industry and business processes, innovative business models and opportunities for entrepreneurs viable after the end of the pilots

WHY EUROPE INVESTS IN IoT: A €10 TRILLION OPPORTUNITY

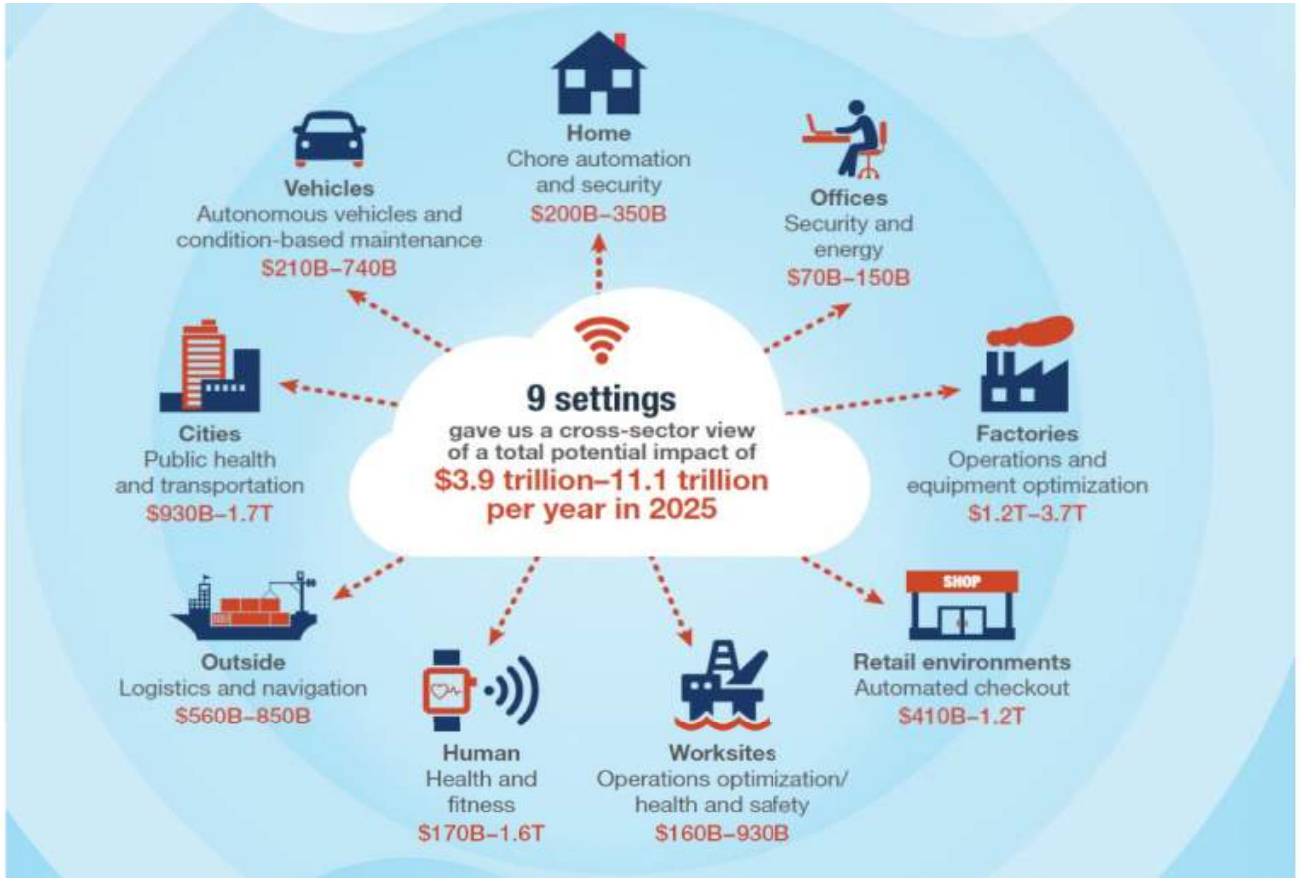
IoT-driven innovation in the main work and life application environments is expected to drive economic growth and business opportunities

Mc Kinsey forecasts the range of the IoT potential impacts on the global economy by 2025 in the range between $3.9 and $11.1 Trillion (€3.5 and €10 Trillion, including consumer surplus), based on the analysis of the physical settings (domains) where IoT technologies display their impacts.

The first EU Large-Scale Pilots have developed the IoT ecosystem in application settings of primary economic and industrial relevance for Europe: from devices attached to the human body and to the home (ACTIVAGE), to the innovation of operation processes (precision agriculture, IoF2020), automated vehicle (AUTOPILOT), to smart cities (SYNCHRONICITY, MONICA) and the great outdoors (MONICA, AUTOPILOT).

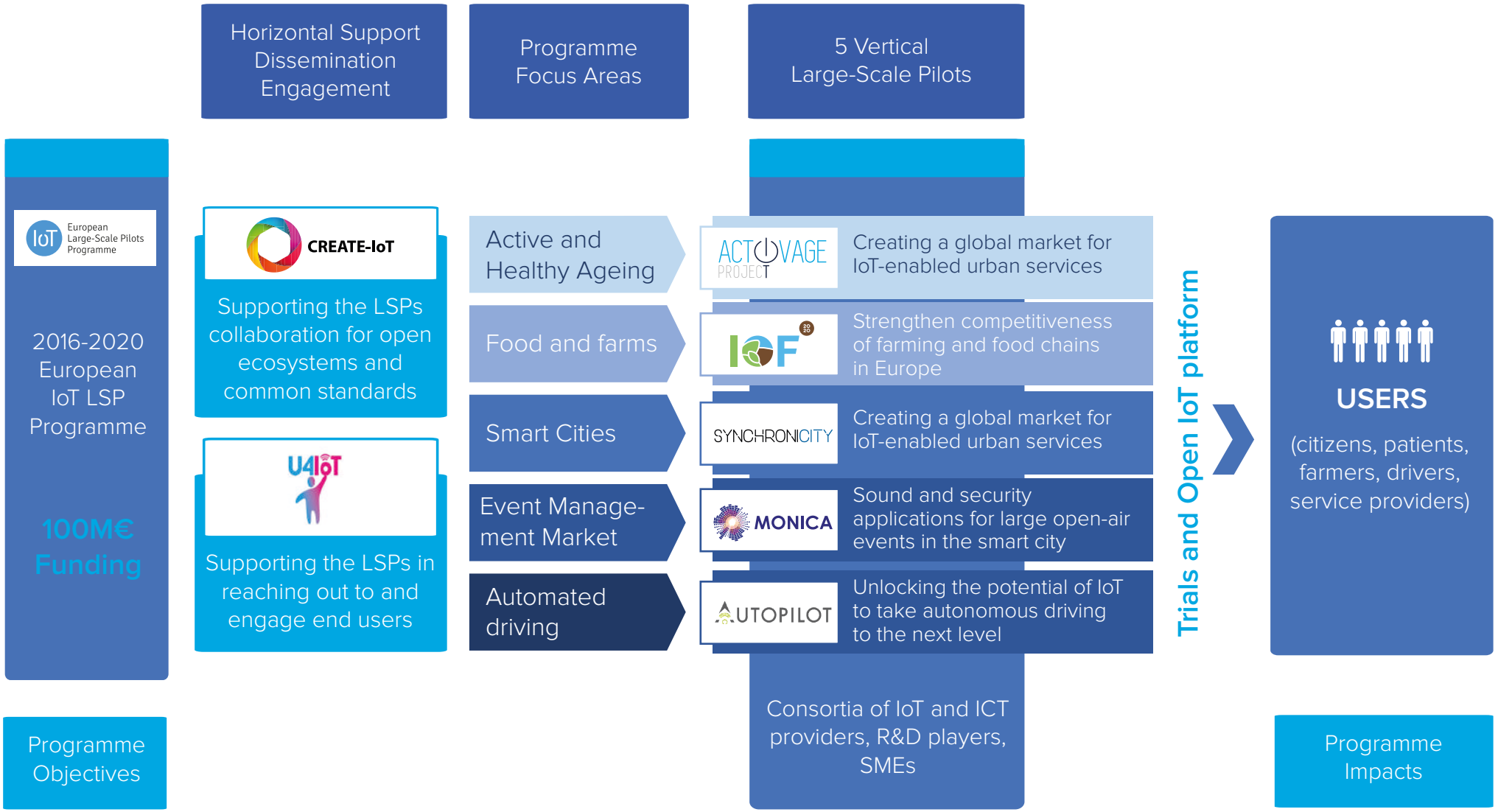
Together, the LSPs address application settings where IoT could generate economic impacts up to €7.7 Trillion by 2025, almost 80% of the total estimated by Mc Kinsey.

SCENARIOS OF THE POTENTIAL ECONOMIC VALUE GENERATED BY IOT IN THE ECONOMY BY 2025 IN THE WORLD (MINIMUM-MAXIMUM RANGE, $ TRILLION)



Source: Mc Kinsey Global Institute «The Internet of Things: Mapping the Value beyond the Hype»

THE PROGRAMME PROJECTS ARE TARGETED, GOAL DRIVEN INITIATIVES THAT PROPOSE IoT APPROACHES TO SPECIFIC REAL-LIFE INDUSTRIAL/SOCIETAL CHALLENGES



MEETING DEMAND NEEDS TO FOSTER IoT TAKE-UP IN EUROPE

DEMAND DRIVERS AND TRENDS

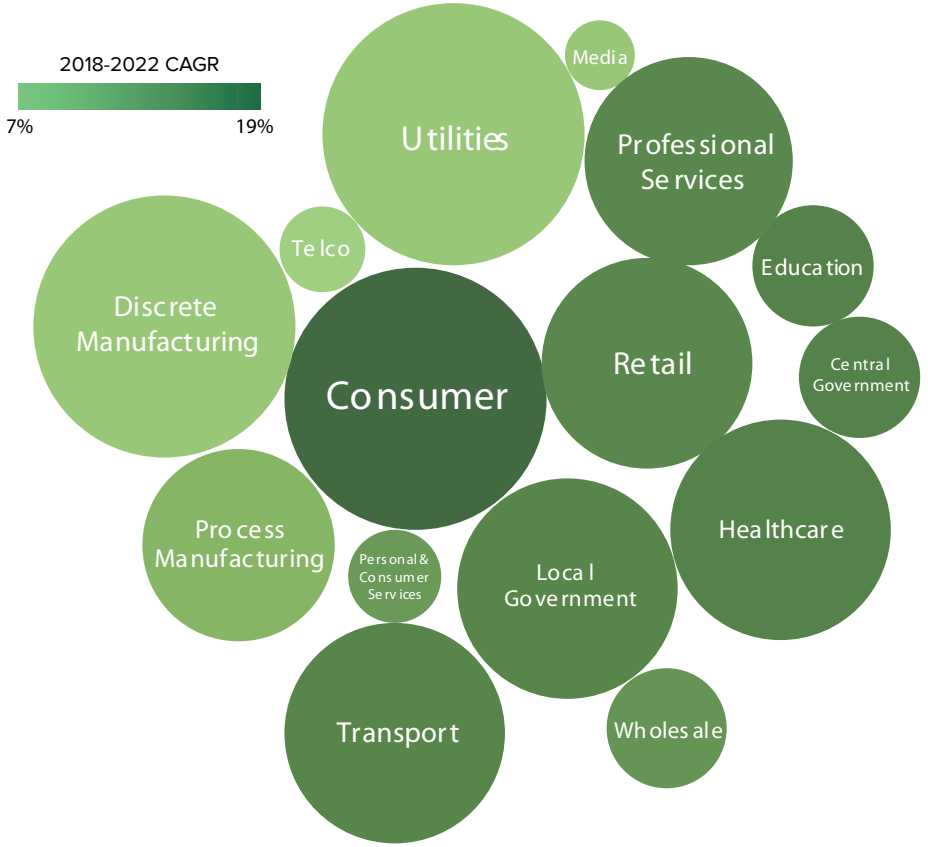
FOSTERING IoT TAKE-UP: BUSINESS OPPORTUNITIES ARISE FROM NEW VALUE CHAINS AND INNOVATIVE IoT-BASED SERVICES DRIVING REVENUE GROWTH

IoT solutions allow industries to address their specific business needs and implement digital innovation in a sustainable and cost-effective way, for example allowing to develop new services based on IoT – generated data flows and to manage the interaction with customers in real time.

THE IoT INDUSTRIES KEYWORDS IN 2019

IoT DEMAND DYNAMICS BY INDUSTRY

IoT spending is forecast to grow fast across all industries, including those like healthcare, previously slow in take-up. The consumer market boosted by smart home and personal wellness IoT devices is a great business opportunity.



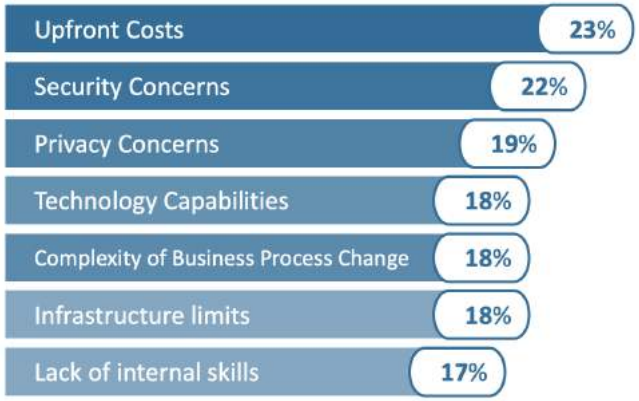
2018 IoT spending value = bubble size and 2018-2022 CAGR = bubble color

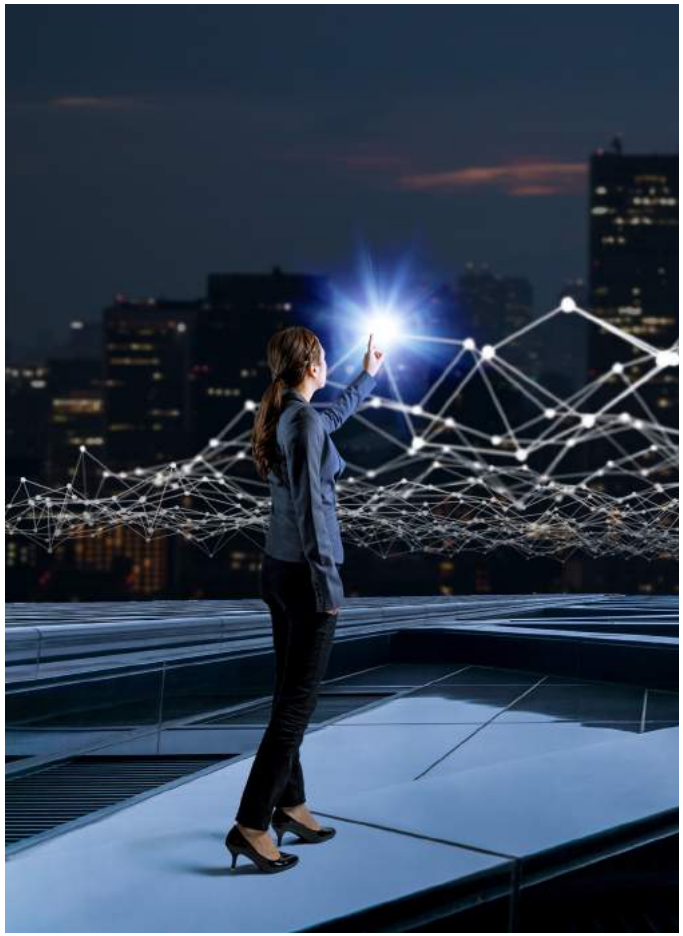
Source: IDC Worldwide Semiannual Internet of Things Spending Guide, 2019

THE LSPS PILOT TRIALS ARE DESIGNED TO ADDRESS INDUSTRY USERS' PRIMARY CONCERNS, DEMONSTRATE THE FEASIBILITY AND VALUE OF IoT INNOVATION AND SHOW THE VALUE OF THE BUSINESS CASE

WHAT ARE THE TOP CHALLENGES BLOCKING IOT PROGRESS IN EUROPE?

The size of investments, security & privacy concerns are the main reasons why users struggle to scale IoT to their mainstream processes. This is why the IoT Programme priorities include proving the business case, demonstrating scalability and developing secure and trustworthy multi-user platforms. Collaboration between stakeholders across the ecosystem is also a way to respond to the digital capacity and skills gaps suffered by potential users.





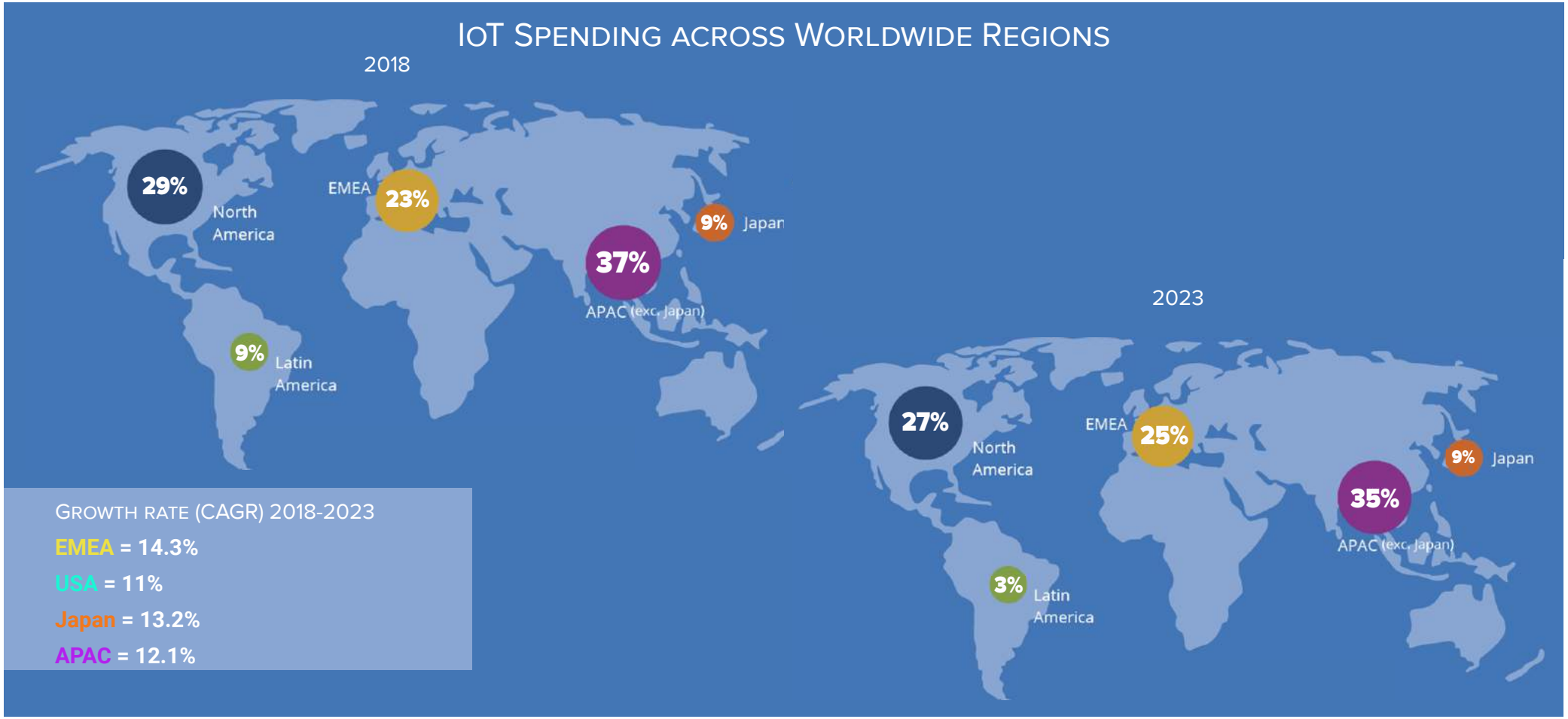
WHY ARE YOU ADOPTING IOT?

Knowledgeable users understand that moving to automation-oriented IoT solutions, helping to monitor assets and manage safety can actually improve cost efficiency and security. In addition quality and productivity improvements are positive drivers of adoption.

Source: IDC Global IoT Decision Maker Survey, 2018-2019 (N=970, European IoT adopters)

THE TAKE-UP OF IoT IN EUROPE IS ACCELERATING AS THE MARKET MATURES AND BARRIERS TO DEMAND ARE OVERCOME

Europe's share of the global IoT market is forecast to increase as spending growth rises faster in EMEA (Europe, Middle East and Africa) than in other world regions - but also in mature Western Europe the forecast growth 2018-2023 is a healthy +13.5%.



Source: IDC Worldwide Semiannual Internet of Things Spending Guide, 2019 - Sum of percentages may differ from 100% due to rounding

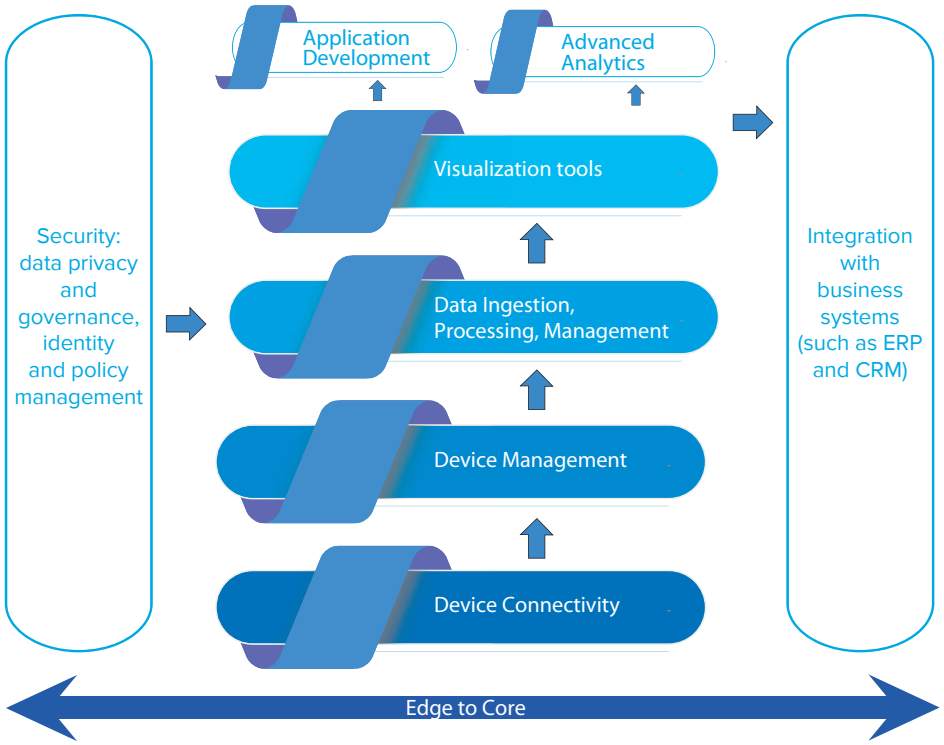
BUILDING IoT ECOSYSTEMS BASED ON OPEN PLATFORMS AND STANDARDS

TO SCALE UP IoT INNOVATION AND STRENGTHEN THE COMPETITIVENESS OF THE EUROPEAN INDUSTRY

IoT ECOSYSTEMS GROW AROUND SUPPLY PARTNERSHIPS AND IoT PLATFORMS ALLOWING DATA SHARING AND DATA MANAGEMENT, SECURITY, AND PRIVACY

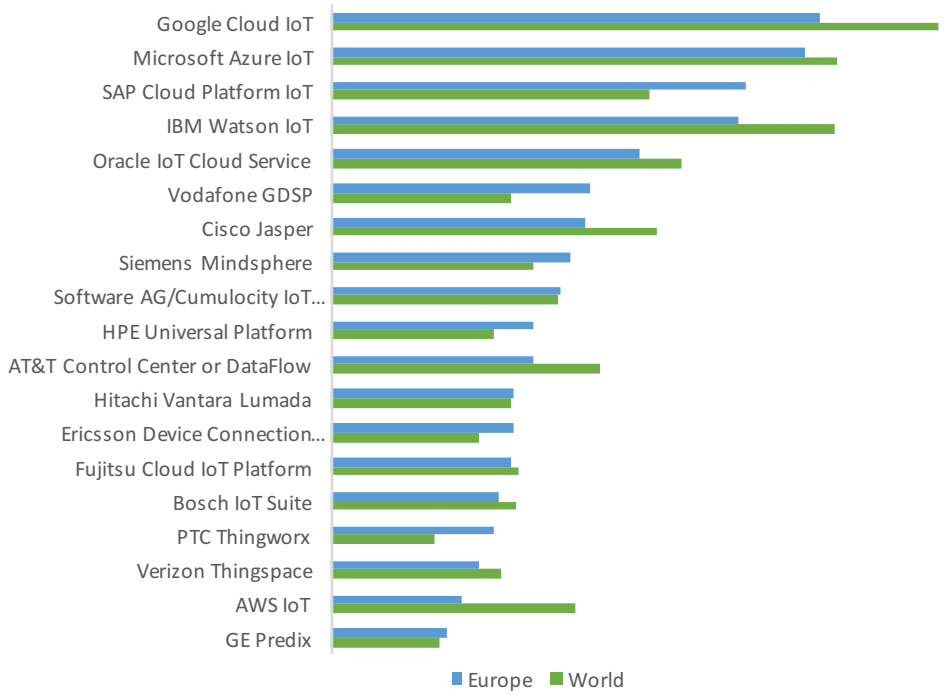
What is an IoT Platform?

An IoT Platform is software that packages together key pieces of functionality to collect, manage, and analyze various forms of IoT data, while monitoring IoT network connectivity and connected devices.



IoT platforms offer an efficient way to scale up IoT deployments, by providing a secure way to quickly access, analyze, and take action on data. But today, the offering is dominated by non-European and proprietary industry platforms. This might create risks of customer lock-in and barriers for SMEs adoption.

IoT Platforms in Europe and the World-number of users



Source: IDC Global IoT Decision Maker Survey, 2018-2019 (N=3,727, Worldwide IoT adopters)

THE DEVELOPMENT OF OPEN IoT PLATFORMS AND STANDARDS GUARANTEE INTEROPERABILITY AND FACILITATE ACCESS TO THE ECOSYSTEM MULTIPLYING BUSINESS OPPORTUNITIES

As underlined by the "Digitising European Industry" communication, if European companies can achieve leadership in IoT platforms, this will stimulate the development of open ecosystems where SMEs, researchers, entrepreneurs and innovators can develop multiple IoT-based services and applications, improving the competitiveness of the European industry. Open platforms can more easily achieve critical mass, allowing platform owners to encourage third party developers, suppliers and users, as well as competitors while also preserving the role of leading European stakeholders in key markets.

IoT Interoperability adds Value

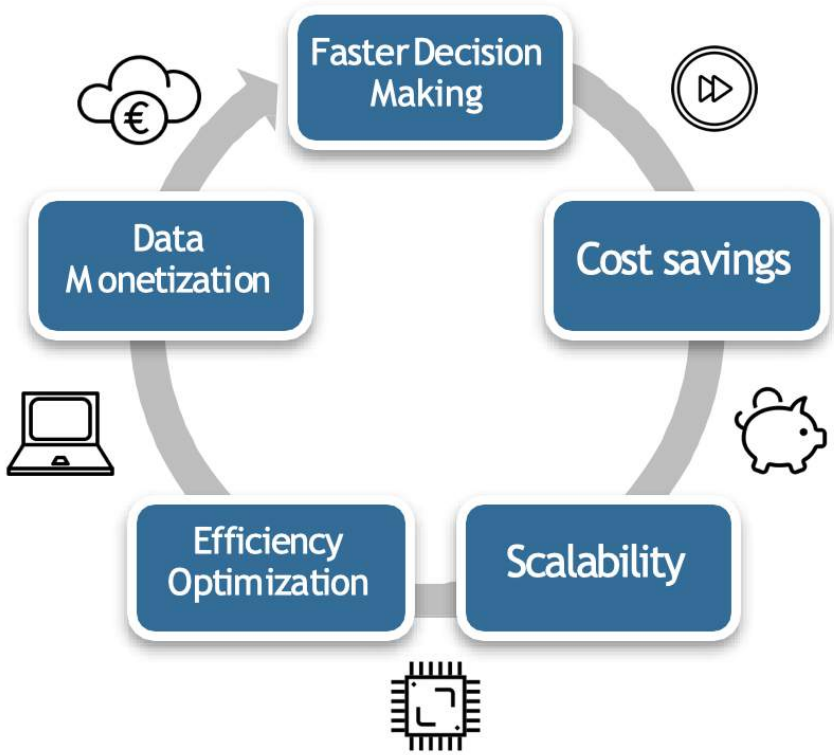
Open platforms ensure interoperability among IoT systems, which is required to capture 40 percent of the potential economic benefits – in the factory and production environment up to 60 percent of the potential value requires the ability to integrate and analyse data from various IoT systems (source McKinsey).

Few, consolidated and shared standards remove uncertainty

Too many standards can be worse than none, creating complexity, uncertainty about relevance and access rights for potential innovators, time-consuming interactions between multiple technical communities, and a risk of irrelevance in global markets. For example, in 2016 when the EU IoT Programme started there were more than 600 IoT standards in Europe.

The IoT LSP Programme is helping the IoT research community navigate the technology environment, identify priorities and gaps, and define increasingly important reference architectures.

Expected benefits



EUROPEAN IoT LSP PROGRAMME FOCUS AREAS

DRIVING DIGITAL TRANSFORMATION THROUGH IoT IN KEY VERTICAL MARKETS

FOCUS AREA:

ACTIVE AND HEALTHY AGEING

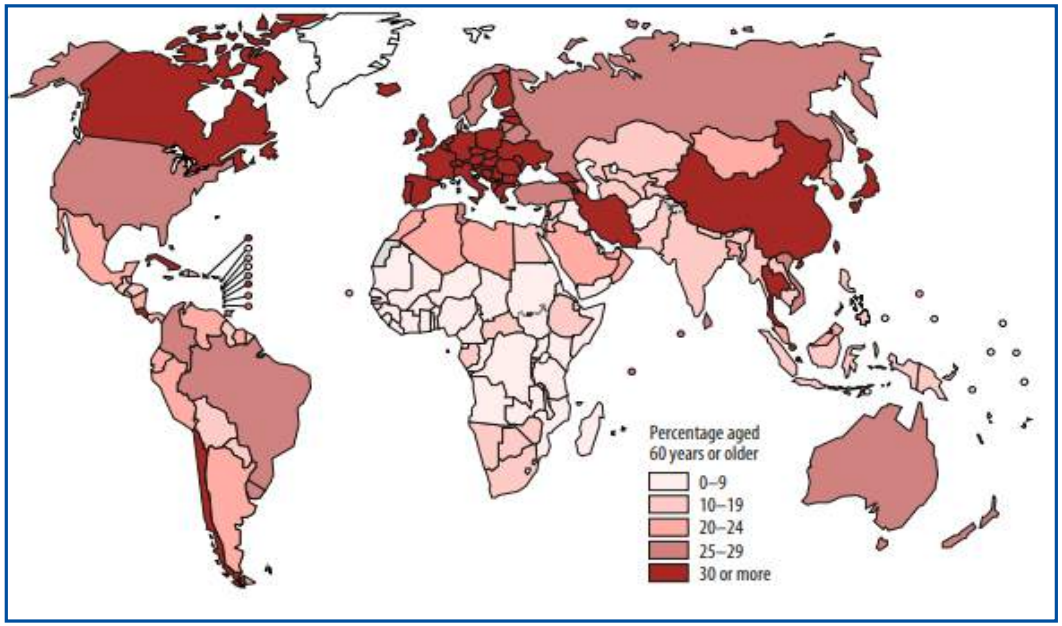
IoT-DRIVEN INNOVATION IN ACTIVE AND HEALTHY AGEING

Active and Healthy Ageing is a major societal challenge, linked with the development of several intertwined markets: healthcare, assisted care, but also lifestyles solutions in fitness, housing or transportation. All these applications will rely heavily on digital technologies and the IoT.

Market Perspective: Seniors to become a large social group with high purchasing power

- By 2050, 65+ will represent 17% of world (and 28% of European) population
- Seniors will fuel consumption in developed countries due to longer life expectancy and rising purchasing power

AGEING OF THE SOCIETY



Source: WHO, 2015

OPPORTUNITIES

Ageing of the society: 60+ population is growing faster than other younger age groups

Age-related public expenditure in Europe accounted for 8% of GDP and for 40% of total social spending in 2012 and is expected to grow

THREATS

Shortage of health workers projected by 2020 due to ageing population

Vast majority (around 80%) of older people will live in low-income countries by 2050*

Source: IDATE data for CREATE-IoT 2019, * World Health Organization

MEETING THE NEEDS OF OLD AGE THROUGH IoT: A WIDE RANGE OF USE CASES AND POTENTIAL SERVICES

USE CASE	DESCRIPTION	TECHNOLOGIES/SOLUTIONS
CONNECTED HEALTH	Neurological, cardiac and apnea and sleep monitoring for prevention, diagnostic, monitoring and wellbeing	Wearables, sensors connected cameras
ROBOTICS & GAMES	Interaction of elder people with robots mostly for entertainment purposes	Robotics, AI
KNOWLEDGE FOR AN ACTIVE AND HEALTHY LIFESTYLE	Tools/apps for data analytics that support a healthy and active lifestyle	Wearables
AGE-FRIENDLY ENVIRONMENT INCLUDING SMART HOME SOLUTIONS	Technologies proving elder people with autonomy	Smart meters, sensors, connected cameras
DRIVERLESS CARS	Autonomouscars to increase mobility of elder people	Self-driving vehicles, infotainment systems

Source: IDATE; Technopolis. The EU Silver Economy report

DRIVERS OF IoT ADOPTION IN HEALTH AND AGEING USE CASES

An ageing population and an increase in chronic conditions

- ICT can be a tool to reduce the high cost of hospitalisation which is seen as a benefit by both the patient and the health system
- Assistive technologies are a partial solution to the important rise in demand for assistive care and the lack of caregiving professionals
- Current tech-savvy adults will transform into tech-savvy seniors in the future

Multiple initiatives and solutions

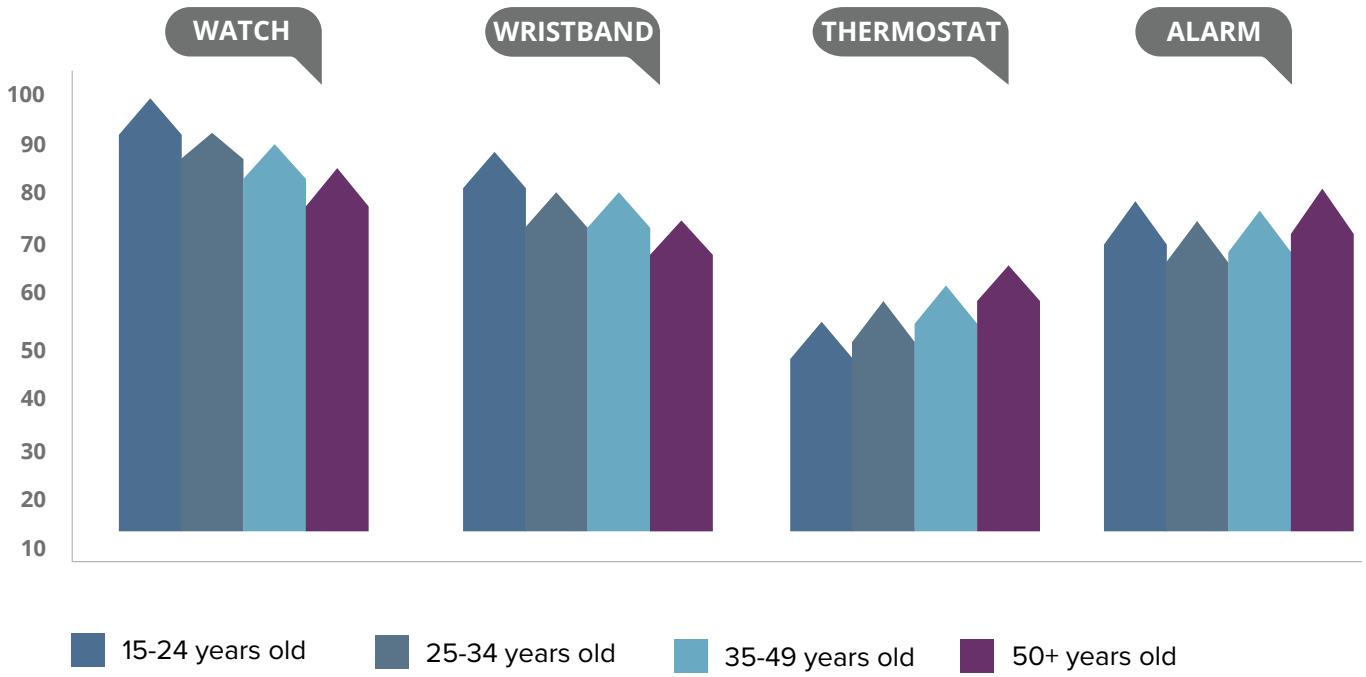
Healthy and Active Ageing is a concept encompassing many sub-segments

- There are many players in loop
- and many solutions for seniors
- Leading to numerous opportunities for a strong market development

The senior DO purchase technology

- The senior purchase power is greater than for the rest of the population
- Some surveys show higher adoption for a selection of smart home objects
- Home security is a major concern for them and they are willing to pay for such solutions

Adoption of some consumer connected objects, by age, in France, 2017



Source: French Ministry of Industry

MAIN BARRIERS TO THE ADOPTION OF IoT

Perception of technology is low

- Seniors are less tech savvy, compared with the rest of the population
- Most of them say they need assistance with the electronic devices in general

An uncertain business model

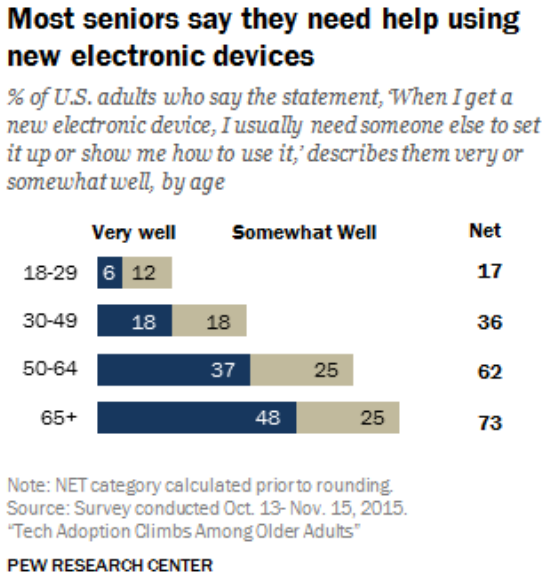
- The value chain is complex: there are many dimensions and parties involved and various potential ways of financing products and services (direct purchase, insurance systems, public healthcare systems...)
- In the current model, high costs are most often being shouldered largely by users

Technology interrogations

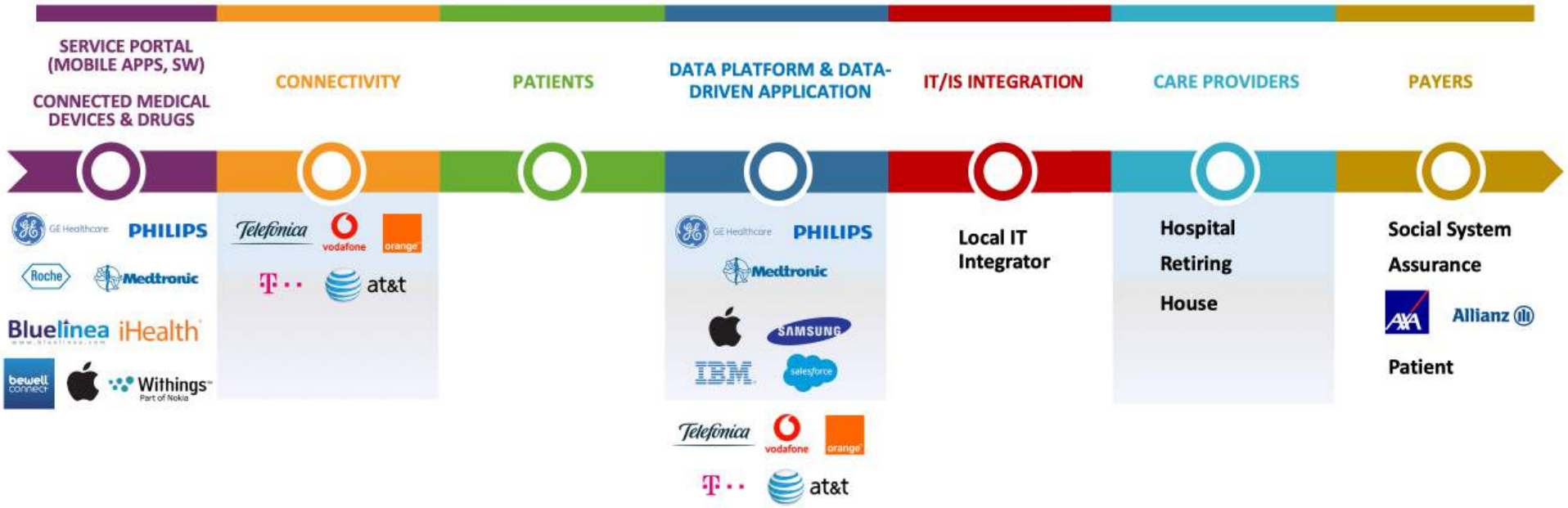
- Interoperability issue with products
- Continually evolving technologies, which worry senior citizens
- Technological solutions with unproven cost-effectiveness
- Strict data and privacy regulation

Most seniors say they need help using new electronic devices

% of U.S. adults who say the statement, 'When I get a



THE COMPLEXITY OF THE VALUE CHAIN CREATES CHALLENGES TO THE UPTAKE OF IoT SOLUTIONS IN THE HEALTH AND AGEING MARKET



Pure players & wearable makers are in competition with medtech giants who dominates the market limiting opportunities for new entrants	Data control is at the core of a strong competition between platforms and applications with risks of creating data silos threatening the whole industry	Payer Issue: There are several answers to the “who pays?” question but without a clear, definitive and simple solution for the whole ecosystem: each use case faces a different situation.

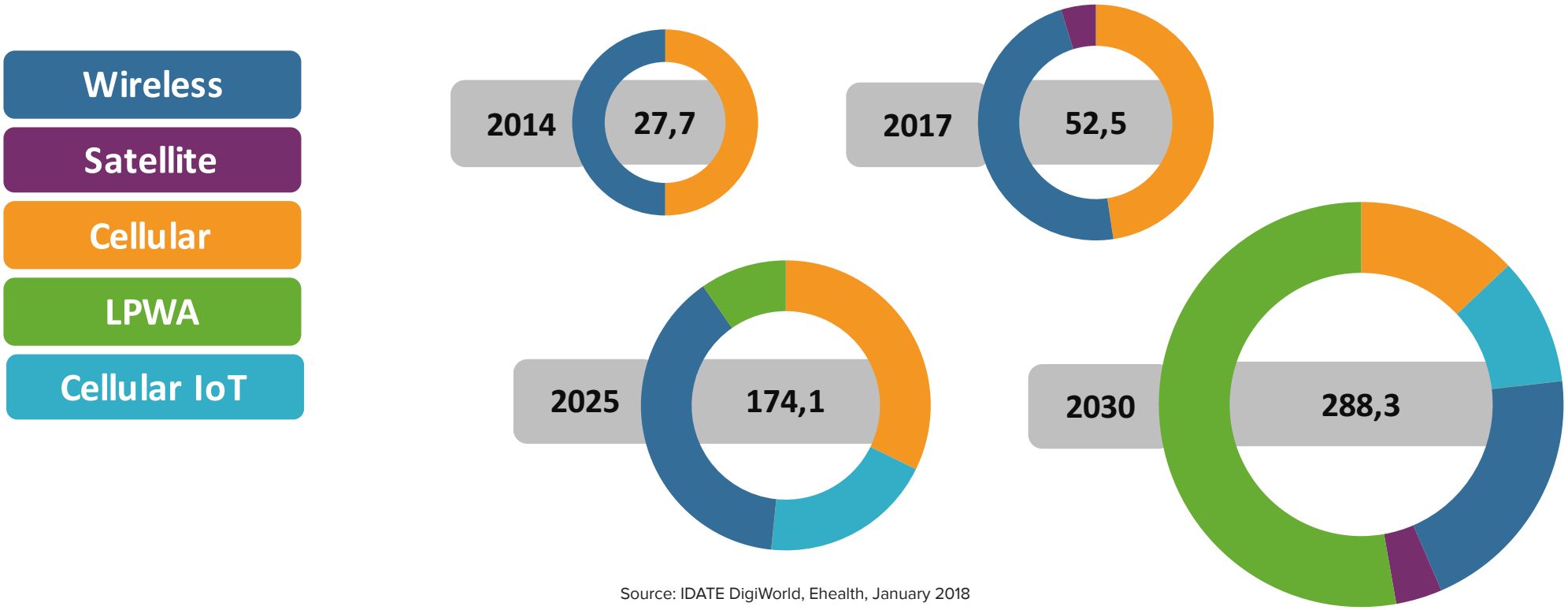
Source: IDATE data for CREATE-IoT 2019

HEALTHCARE IS THE LARGEST MARKET AMONG IoT APPLICATIONS FOR ACTIVE AGEING. HOWEVER, TODAY ONLY FEW COMPANIES OFFER SPECIFIC SOLUTIONS

WORLDWIDE REVENUE OF CONNECTED HEALTHCARE SERVICES, 2015-2021 (MILLION EUR)

2015	2016	2017	2018	2019	2020	2021
12,630	16,289	20,271	24,482	28,878	33,410	38,026

BREAKDOWN OF THE HEALTHCARE & WELLNESS IOT MARKETS BY TECHNOLOGY IN 2014, 2017 AND PROJECTIONS UP TO 2030, MILLION UNITS



Source: IDATE DigiWorld, Ehealth, January 2018

THE VISION OF THE IoT MARKET DEVELOPMENT FOR ACTIVE AND HEALTHY AGEING IS VERY PROMISING

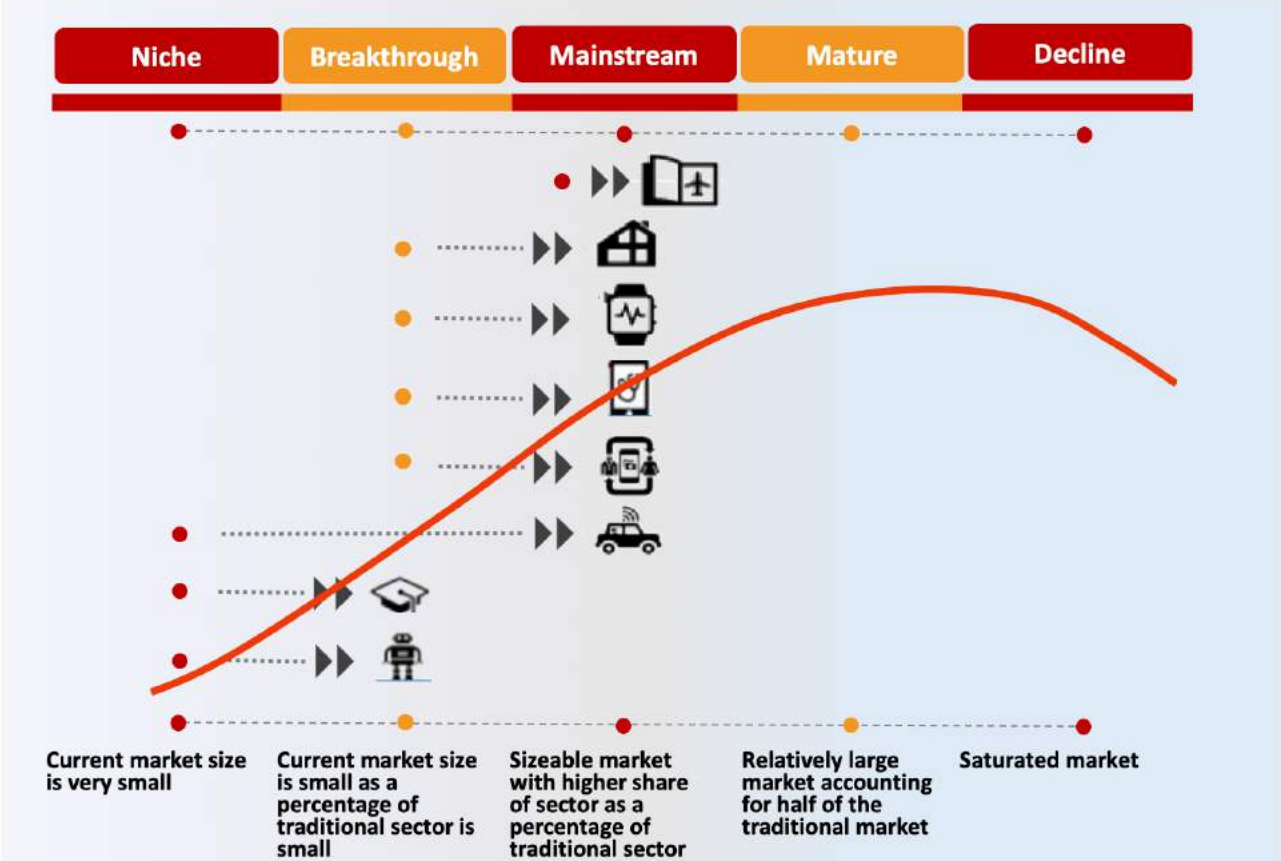
IoT APPLICATIONS FOR ELDERLY PEOPLE TO BECOME MAINSTREAM

- In 5-10 years, applications in smart environment
- eHealth, autonomous cars should become mainstream

CURRENT TRENDS IN eHEALTH

- Medico-economic evaluation of eHealth applications
- New payment models for healthcare professionals
- Care pathway redesign and reinforced trans-sectoral collaboration

Despite the adoption barriers, such as seniors low understanding of technologies and uncertainties in the business model, demand is expected to grow rapidly.



Source: Technopolis. The EU Silver Economy report

ACTIVAGE VALUE PROPOSITION

ACTIVAGE PROJECT

"BREAKING BARRIERS FOR A SUSTAINABLE ACTIVE AND HEALTHY AGEING THROUGH IoT TECHNOLOGIES"

ACTIVAGE IN NUMBERS

50 partners

>200 ACTIVAGERS

7 countries

>7k users

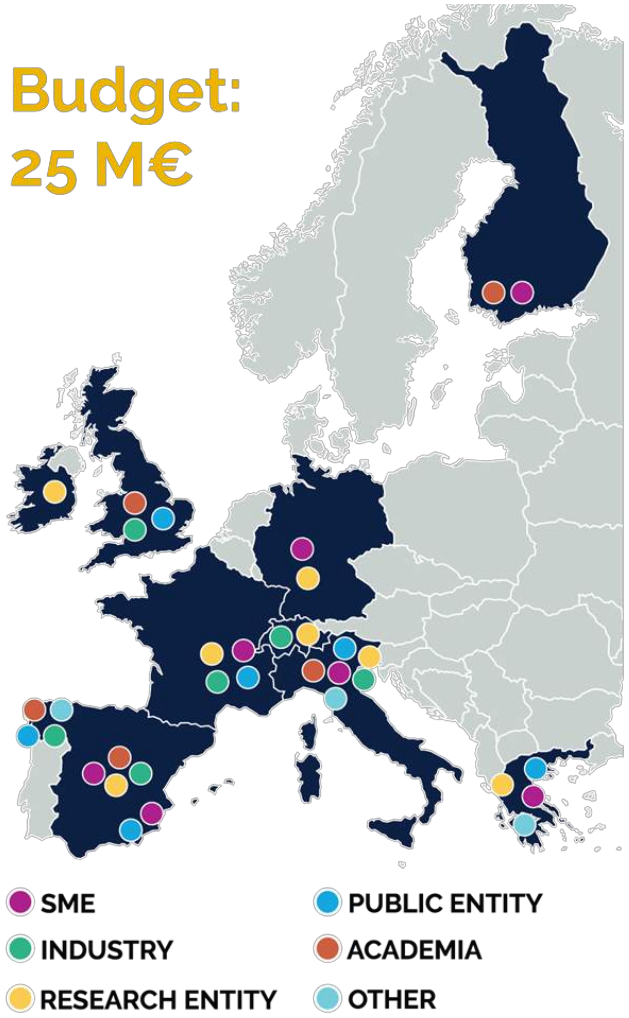
9 pilots

22 Demand partners

43k devices

25 Supply partners

Budget: 25 M€



Source: IDATE DigiWorld, Ehealth, January 2018

ACTIVAGE DEVELOPS IoT-ENABLED ACTIVE AND HEALTHY AGEING SERVICES

Living outdoors with freedom

- Monitoring outside home
- Support for transportation and mobility
- Exercise promotion

Living safe at home

- Daily activity monitoring at home
- Safety, comfort and Security at home

Preventing mental decline

- Cognitive stimulation
- Exercise promotion

Taking care of diseases

- Integrated care for chronic conditions
- Emergency trigger

Promoting social connections

- Prevention of social isolation

... IMPROVING SOCIAL WELFARE AND ECONOMIC GROWTH

Making your care system sustainable. Create new business models that maximize the value of technology, open data, open systems and open services. Pursue the value-based-social care model.

Creating your own data economy. Use of continuous generated data from users through Big Data and data analytics for research, to improve services delivery and adaptation, to anticipate changes and demands, to improve global quality

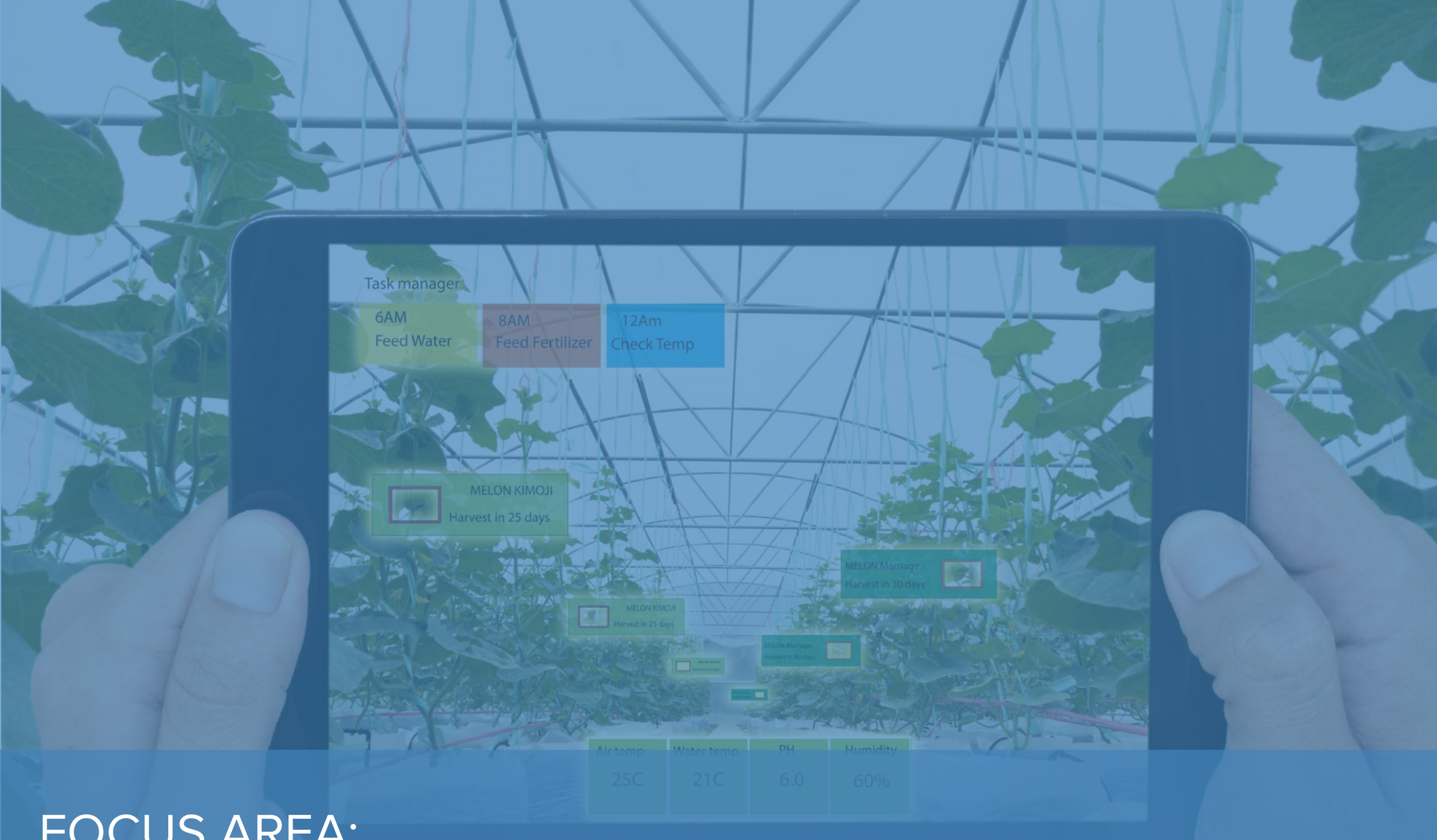
To create and foster a culture of social participation. Engage your stakeholders in co-creation open processes that maximize benefits within a model of sustainability that includes older people and their families.

BENEFITS FROM THE USE OF ACTIVAGE TECHNOLOGICAL FRAMEWORK...

Create the conditions or sustainability and scale up. Easy setup of truly IoTSmart Living Environments ecosystem adapted to your local conditions, legacy systems and policity

Improve the quality of life **elder population at general and individual levels.** Scaling up the population served by enabled services at lower cost per head count, and scaling up the portfolio of services adapted to specific needs.

Receiving more value for you money. Unlocking existing vendor locked ecosystems. Creating new opportunities for the growth of an ecosystem of small and medium size, highly specialized service providers, innovative SMEs and start ups.



FOCUS AREA:

INTERNET OF FOOD AND FARMS

IoT-DRIVEN INNOVATION IN THE AGRI-FOOD INDUSTRY: INTERNET OF FARMS

AGRI-FOOD IS A LARGE INDUSTRY FACING MULTIPLE CHALLENGES AT ONCE. DIGITAL TRANSFORMATION HELPS DEAL WITH THEM

OVERVIEW OF KEY CHALLENGES IN AGRICULTURE

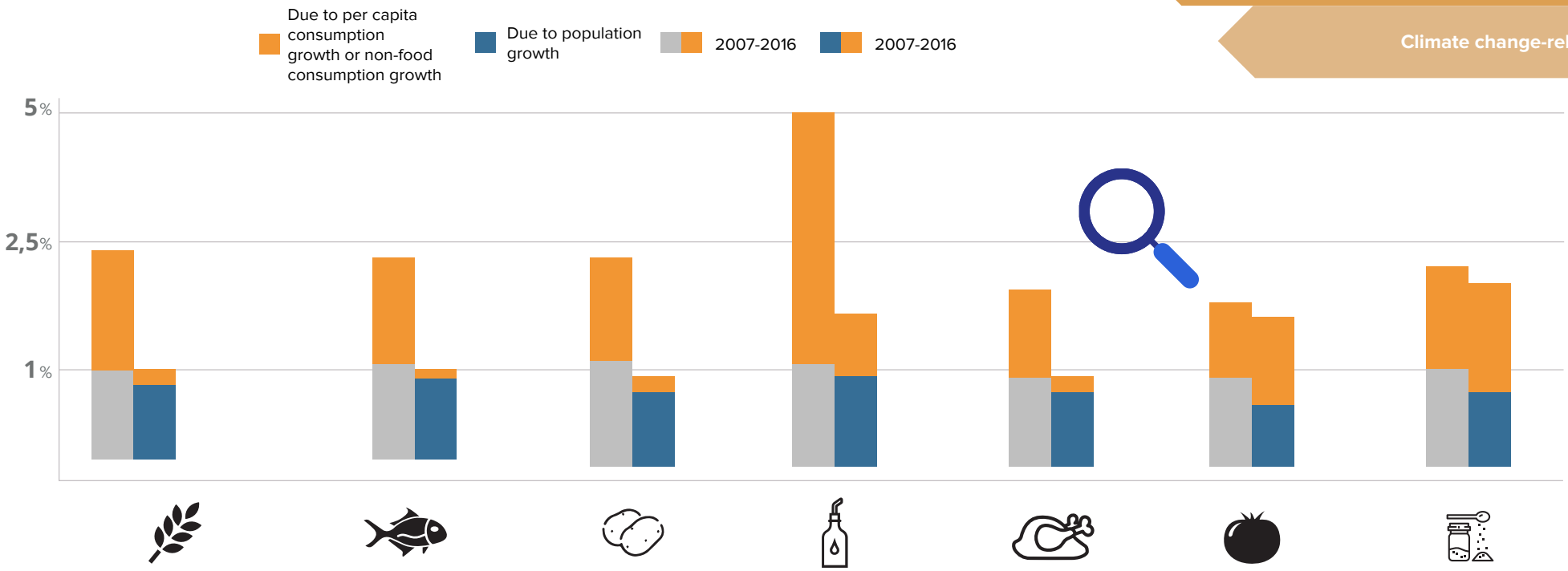
- Agriculture is a mature market with many risks and low margins
- There is a global trend towards domination of large players

OPPORTUNITIES

- Increase of an average farm size -> larger economies of scale
- Strong financial stakes around births and health in general

THREATS

- Saturated market with poor growth opportunities
- Demand for agricultural products slowing down
- High entry barriers due to increasing size of players
- Natural disasters risk
- Climate change-related threats

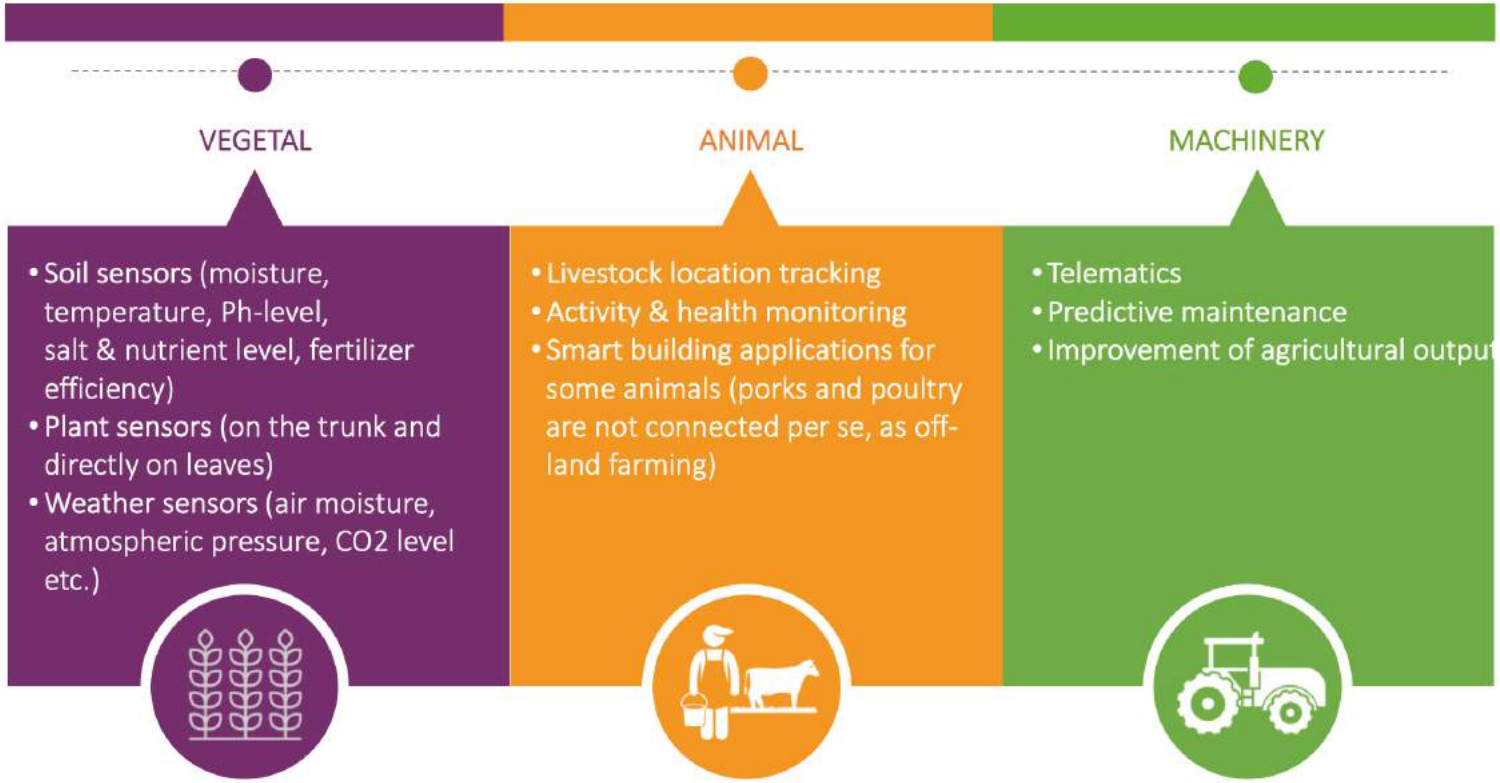


Source: IDATE – OECD/FAO 2017

IoT TECHNOLOGIES DRIVE PRECISION AGRICULTURE AND ARE A KEY SUCCESS FACTOR OF SMART FARMING

Digital transformation in the food industry is focused on enhancing the transparency of food supply chains and traceability of food quality, through the interconnection of existing supply chain software and data bases, and connectivity at the vehicle or infrastructure level rather than through IoT connected objects. For this reason this chapter focuses mainly on IoT-driven innovation in Agriculture.

The IoT use cases in agriculture address all type of productions (vegetal and animals) and also deploy in the tools and machineries already used in the farms. With the help of IoT technologies higher yields and better quality produce are within reach. Pesticide and fertilizer use will drop and overall efficiency is optimized.



Source: IDATE for CREATE-IoT 2019

MULTIPLE FACTORS DRIVE DIGITAL TRANSFORMATION AND IoT DEMAND IN AGRICULTURE

Rising interest in precision agriculture

- Agricultural equipment manufacturers have come to realise the potential of new precision tools: nearly 80% of agricultural equipment sold today has a precision component, reports CEMA.

Subsidies

- Some countries – including many in Europe - provide financial and fiscal measures to help farmers equip themselves

Climatic deregulation

- IBM Research estimates that 90% of crop losses are due to weather: by combining weather prediction models with precision farming techniques, this damage could be reduced by 25%.

Regulation on crop protection products

- The obligation to justify practices requires sound records.
- Those who use digital tools are subject to less control because potential fraud is more limited.

Tax exemption

- Tax breaks favour more ‘green’ devices such as connected input spraying.

Need for operating profitability

- Primary source of motivation for the acquisition of technological solutions.

Reduction of administrative tasks

- Trackers on agricultural equipment render unnecessary the use of logbook to record operator working hours and limit fraud.

Word of mouth

- More efficient user community today than in the past.

Source: IDATE for CREATE-IoT 2019

BARRIERS TO ADOPTION RANGE FROM FEAR OF TECHNOLOGY TO INSUFFICIENT MATURITY OF THE OFFERING

Low internet adoption and coverage

A significant (and non-marginal) proportion of farmers is not connected. Broadband coverage is poor in rural areas.

Fears for too much precision, not enough agriculture

Many farming voices are calling for more attention to “AgTech”: “Precision agriculture (high tech) without agronomy (low tech) allows big mistakes to be made with great precision”.
The farmer will always know their farm better.
Artificial Intelligence is not ready to take the lead - automation already exists but exclusively on the areas of agriculture above ground.

No or low consideration of financial issues

Farmers are not always aware of the notion of return on investment (investing in the short term to save in the medium term).

More gaps to fill the siloed approach

A platform to aggregate data from various solutions is clearly needed.
The DKE Data Initiative is set to arrive on farms early in 2019.
Today, much data is generated but it requires frequent repeats or being shared, as with phytosanitary checks or CAP Declarations.

The digital ecosystem shows little enthusiasm for the sector

Telecom operators show negligible pro-active empathy for solution providers.
Current offerings are not very attractive.
Low adoption rates of Internet adoption, and poor digital coverage.

THE IoT VALUE CHAIN IN FARMING

A COMPLEX ECOSYSTEM: EACH OF THE 3 USE CASES SHOWN BELOW AS EXAMPLE IS OFFERED BY A DIFFERENT MIX OF SUPPLIERS

- Most players specialize on a specific application
- Device/equipment manufacturers mostly offer their solutions along with software or platform applications
- Connectivity providers are key to the development of these services, they can be traditional cellular operators but also LPWA players and satellite operators

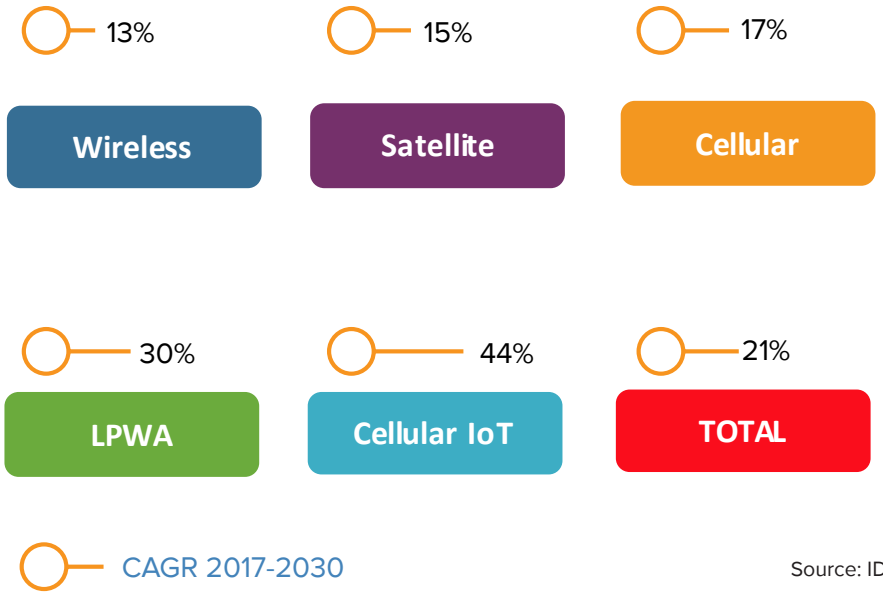
Source: IDATE data for CREATE-IoT 2019

CONNECTED AGRICULTURE IS STILL A SMALL MARKET DESPITE AN INCREASING NUMBER OF PRODUCTS AVAILABLE, BUT WITH A HIGH GROWTH POTENTIAL

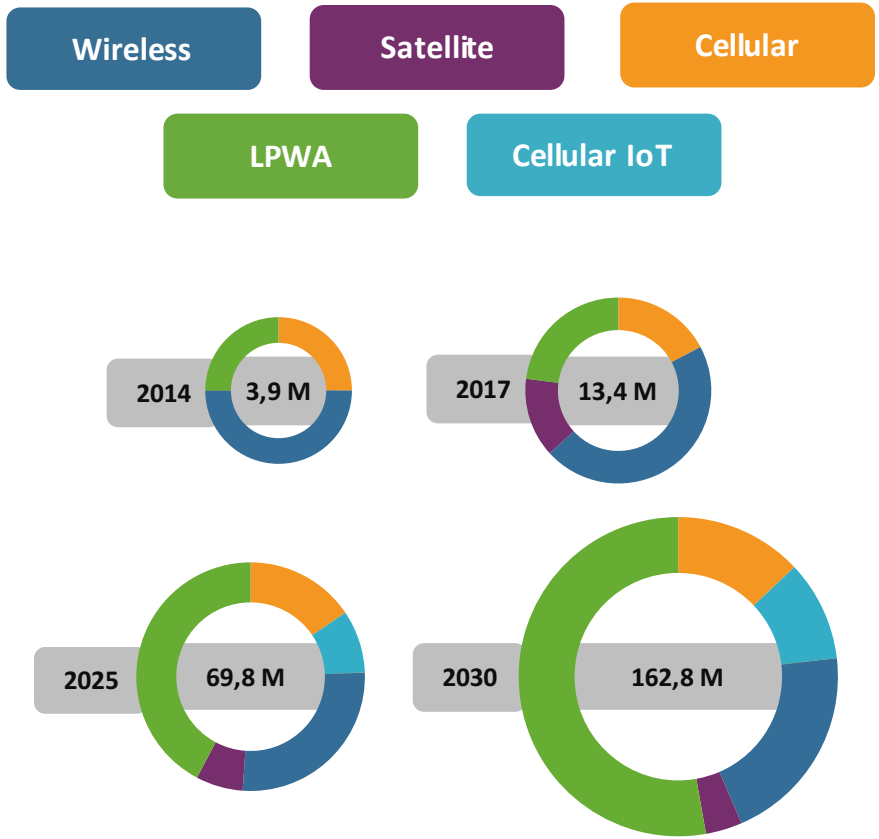
KEY FIGURES

- 163 million connected objects in agriculture & livestock by 2030
- CAGR 2017/30 of more than 21%
- LPWA (Low Power Wide Area) as a dominant technology

CONNECTED AGRICULTURE AND LIVESTOCK MARKET CAGR (COMPOUND ANNUAL GROWTH RATE) 2017-2030



CONNECTED AGRICULTURE & LIVESTOCK MARKET SIZE IN 2014 AND 2017 AND FORECAST UP TO 2030 (MILLION EUROS)

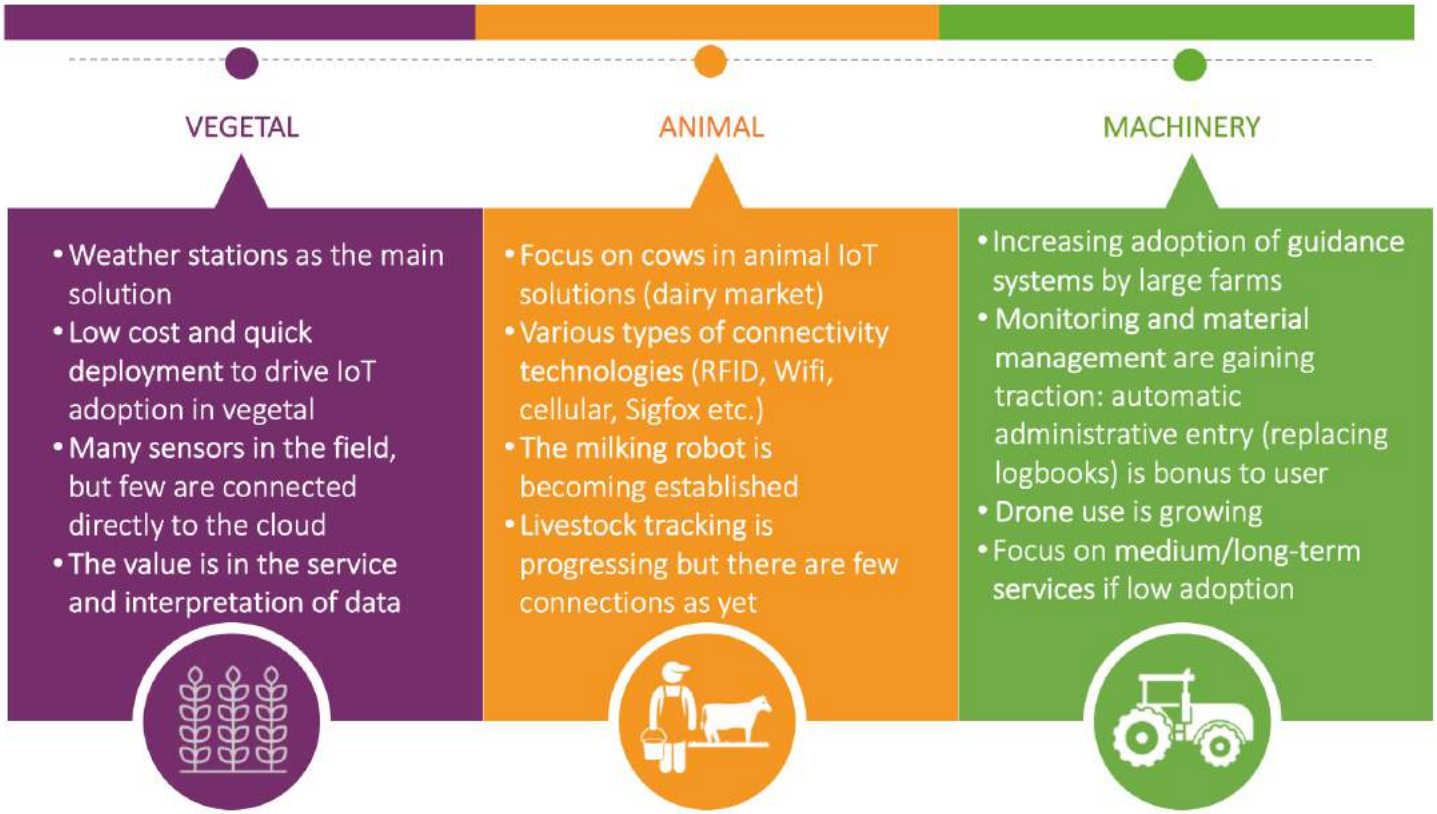


Source: IDATE data for CREATE-IoT 2019

A VISION OF THE MARKET DEVELOPMENT PATHS WHICH DIFFER BY TYPE OF USE CASE

MARKET DEVELOPMENT FOCUS BY USE CASE

- Fragmented market in need of consolidation
- Today's market consists mainly of startups with similar offering
- Aggregation of all the agricultural data needed
- Overall increase in adoption rate though mostly by larger farms
- Data platforms as a new competition area



Source: IDATE data for CREATE-IoT 2019

IoF2020 VALUE PROPOSITION

INTERNET OF FOOD & FARM

“TO TEST AND DEMONSTRATE THE BENEFITS OF IoT FOR AGRIFOOD”

INTERNET OF FOOD & FARM 2020 (IoF2020) EXPLORES THE POTENTIAL OF IoT FOR THE EUROPEAN FOOD AND FARMING INDUSTRY

Thirty-three use-cases organised around five sectors (arable, dairy, fruits, meat and vegetables) in 22 Member States develop, test and demonstrate IoT technologies in an operational farm environment.

The goal is to make precision farming a reality and to take a vital step towards a more sustainable food value chain.

ARABLE

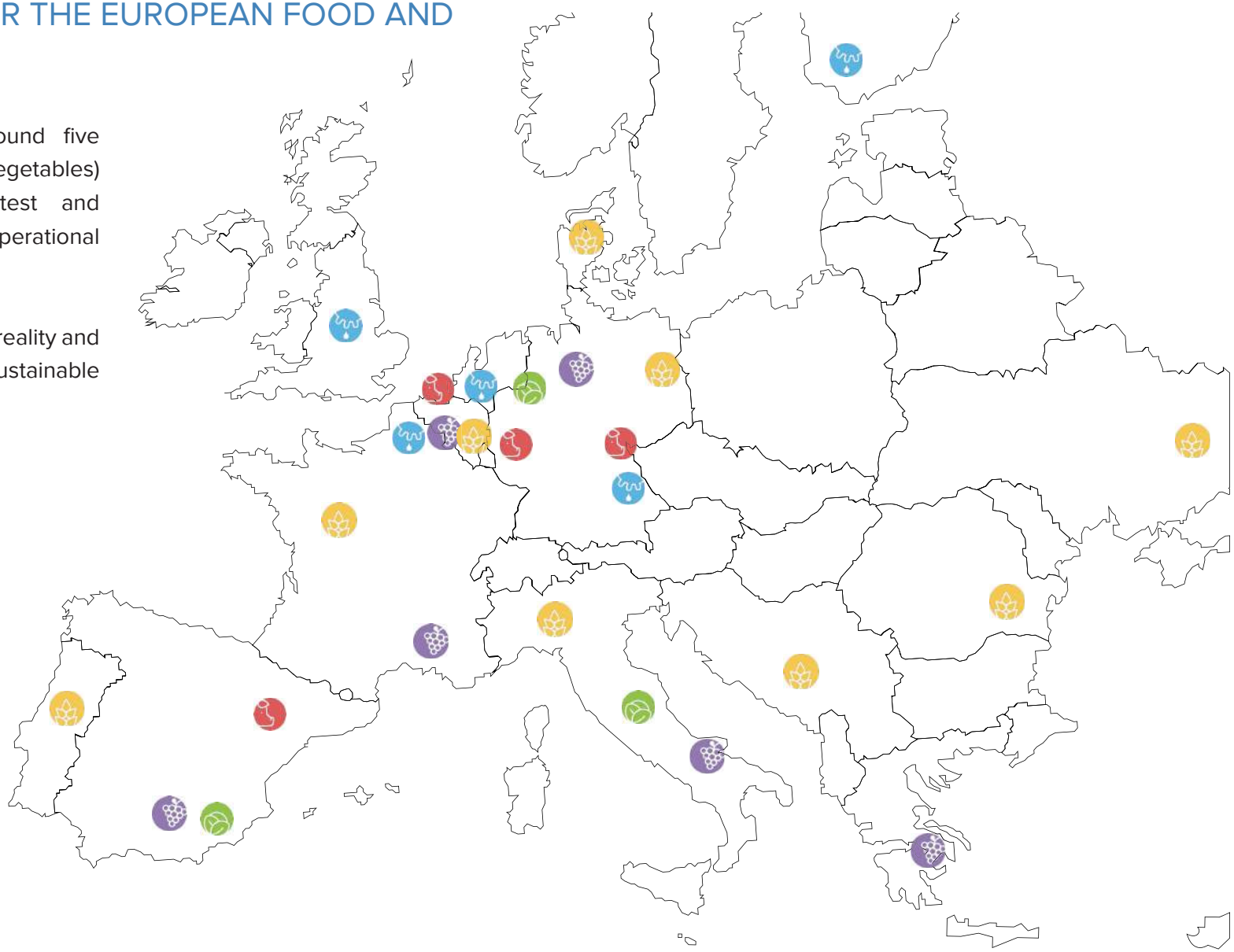
FRUITS

DAIRY

VEGETABLES

MEAT

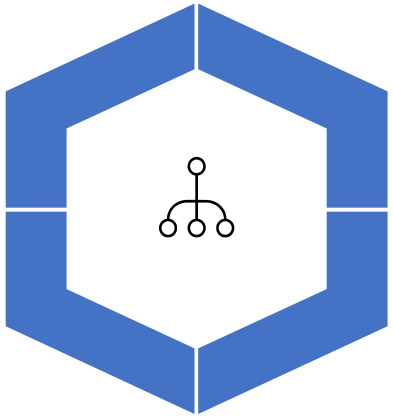
A MAP OF IoF PILOTS ACROSS EUROPE



IoF2020 APPROACH: A CROSS-CUTTING APPROACH TO DIVERSITY IN THE DEVELOPMENT OF IoT SERVICES FOR AGRIFOOD

Huge Diversity in the Ecosystem

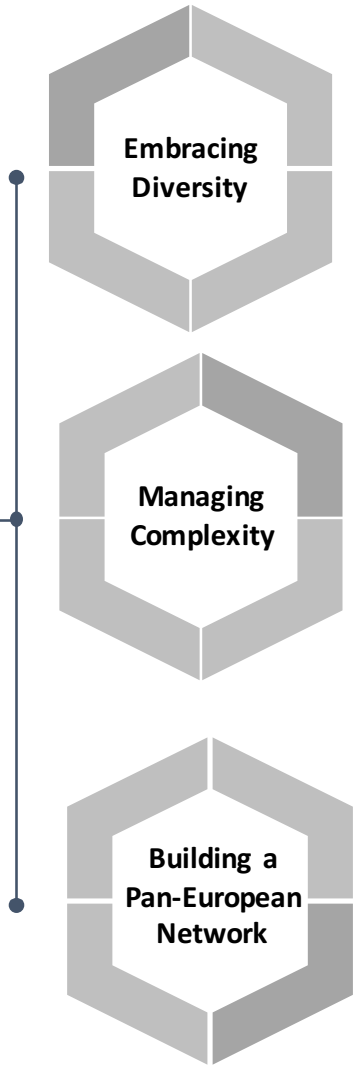
- Geeks/ Farmers
- Small farmers/ Big corporates
- Scientists/ Business people



No "One-size Fits All"

- Technologies
- Business models
- Communication strategies

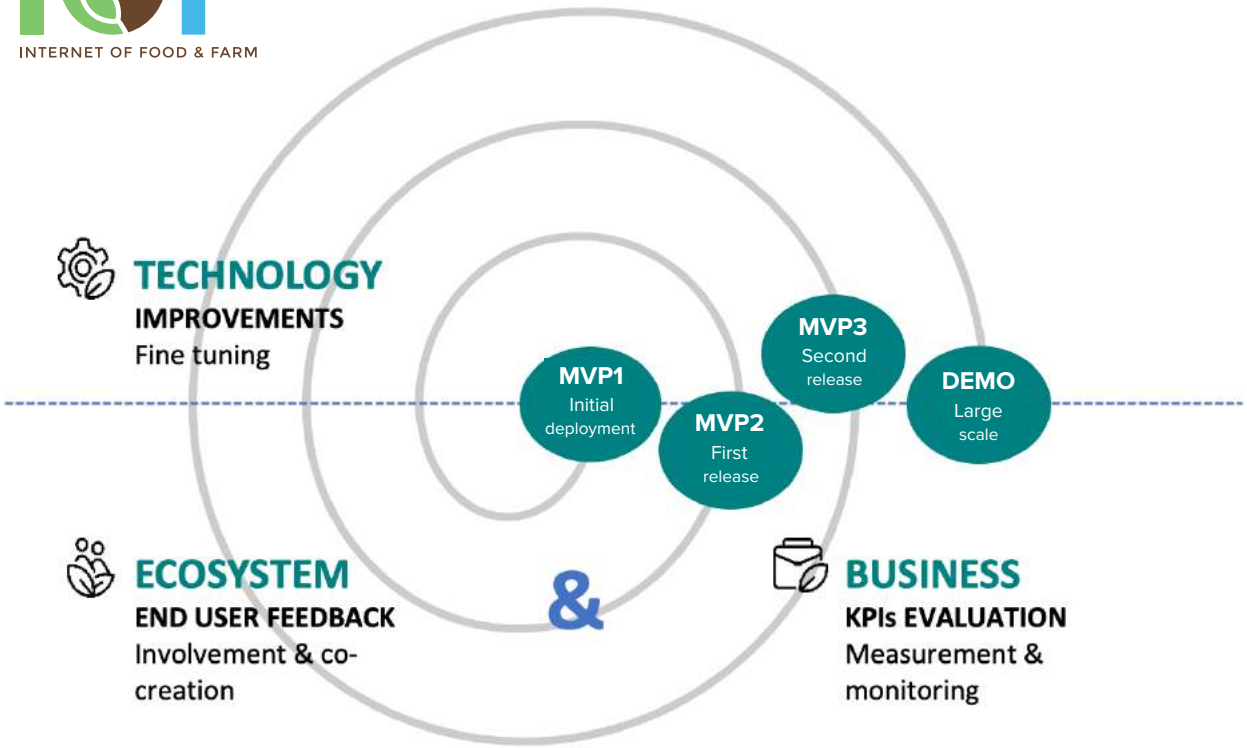
Essence of a Cross Cutting Approach



IoF2020 APPROACH: 3 PERSPECTIVES IN MVP (MINIMUM VIABLE PRODUCT) METHODOLOGY

INTERNET OF FOOD & FARM

TESTED THROUGH



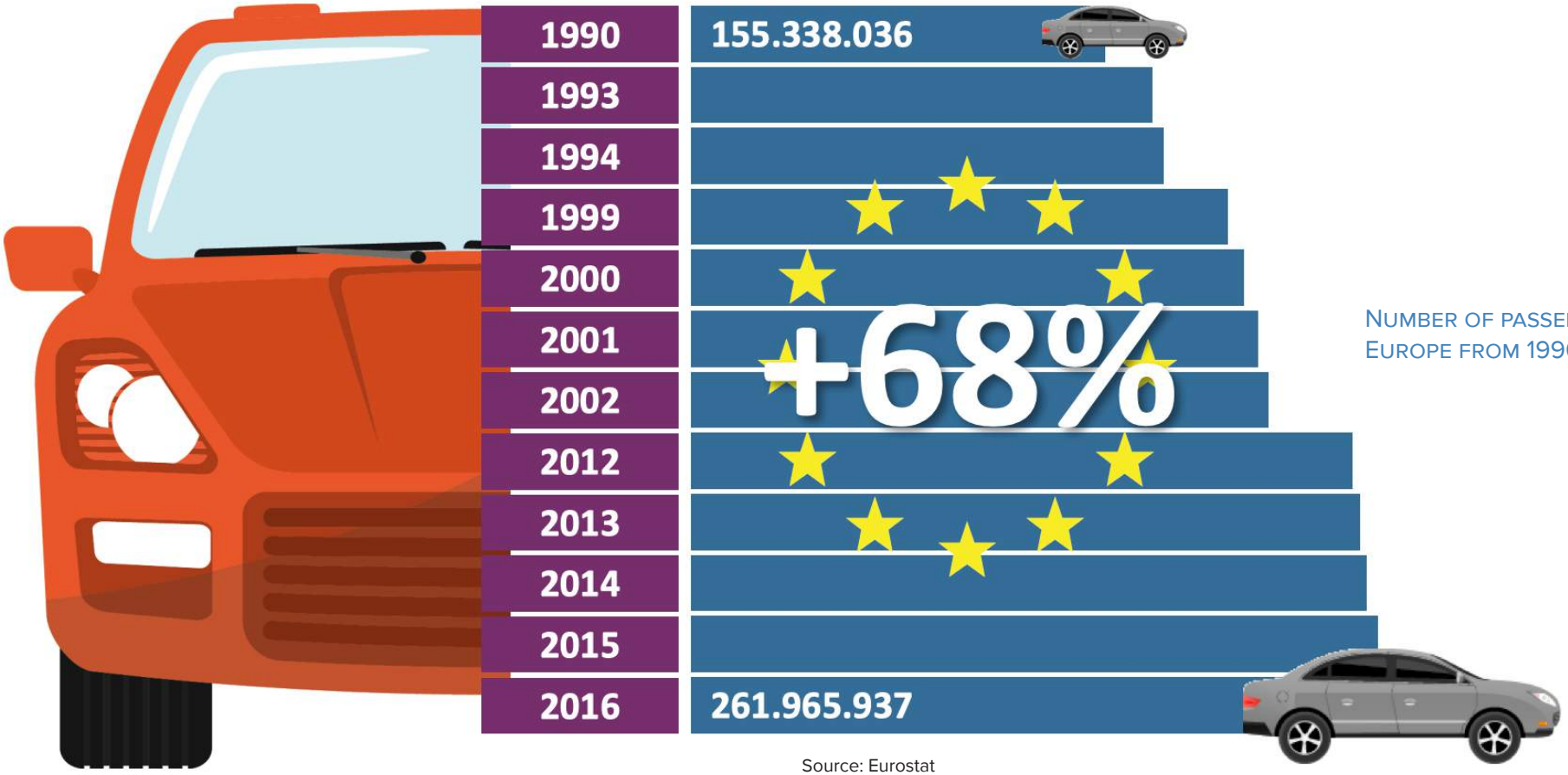
VALIDATED LEARNING:

- Demonstrating progress through MVPs
- Constant feedback from end-users
- Driven by the market requirements

FOCUS AREA:
IoT FOR AUTOMATED DRIVING

CONNECTED VEHICLES: RETHINKING THE TRADITIONAL AUTOMOTIVE INDUSTRY MARKET

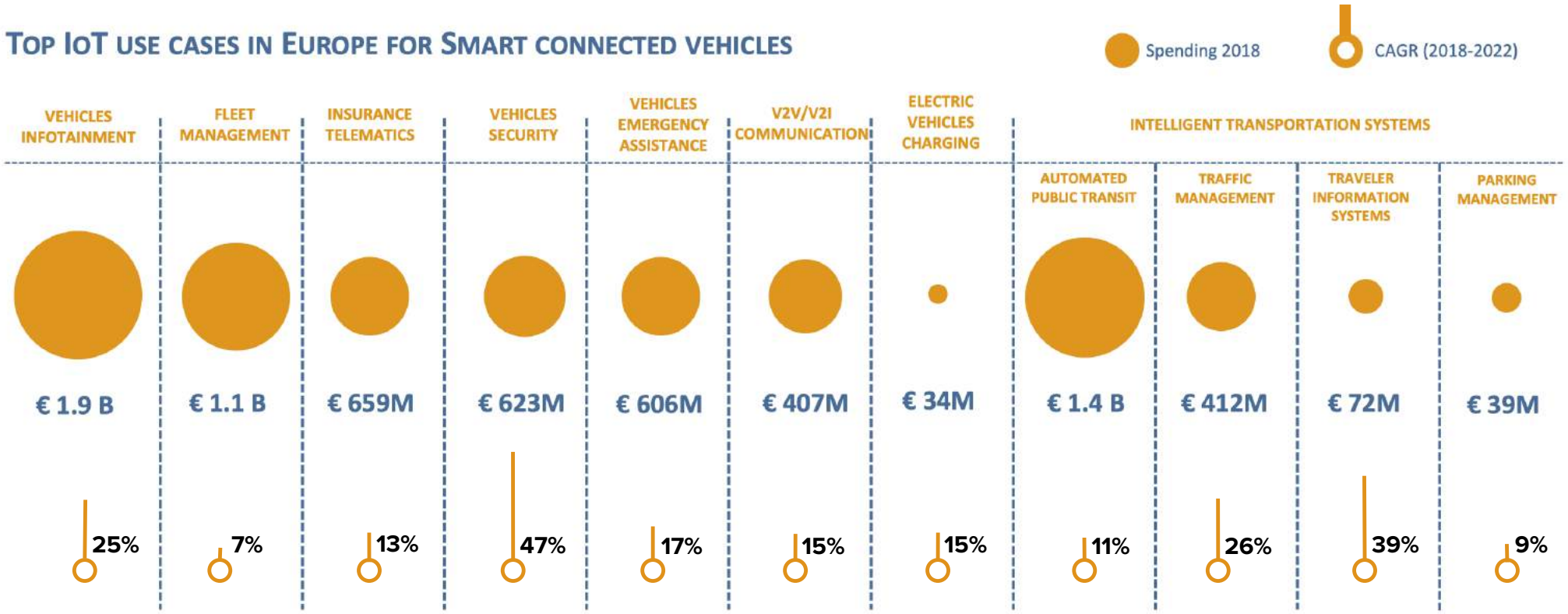
The transport concept is changing rapidly, going beyond the traditional approach based on individual ownership of vehicles, rigid separation between public and private transport, and limited insights on optimal journey choices towards more flexible mobility services.
As the picture shows, car use has increased over the past 20 years in all European countries.
Automotive players are strongly investing on a full digitalization of their products and services, with regulators and providers in the sector promoting the adoption of common data management rules and data platform design principles in order to cultivate an open and competitive connected vehicles data marketplace. This will enable safer, more efficient and sustainable mobility, while fostering new business models and opportunities in the broad sector ecosystem.



NUMBER OF PASSENGER CARS IN EUROPE FROM 1990 TO 2016

Source: Eurostat

IN-VEHICLE DRIVER EXPERIENCE AND LOGISTIC EFFICIENCY ARE THE IoT USE CASES FOR CONNECTED VEHICLES DRIVING THE HIGHEST SPENDING



Source: IDC Worldwide Internet of Things Spending Guide, 2019

CONNECTED VEHICLES EVOLUTION AT THE CROSSROAD BETWEEN NEW TECHS AND MARKET ENTRANTS BOOST, AND SKILLS, INFRASTRUCTURE AND SECURITY BARRIERS

65% of EU drivers are interested in the connected vehicle concept, with an eye on benefits such as improved road safety, traffic flow optimization, and easier parking.

By 2020 25% of OEMs in Europe will monetize their contributions to connected vehicle data marketplace

DRIVERS

- Technological advances open new vehicle features scenarios, such autonomous driving, while enabling new business models opportunities for sector players including mobility as-a-service and subscription based models
- AI-enabled augmented driving experience. The car of the future will allow hands-free experience connecting information, music, video, communication and more while making travel safer and more convenient
- New entrants disrupting the market. The barriers to the automotive market have now changed with tech companies such as Google andApple entering the market and taking their digital driven approach to the sector

BARRIERS

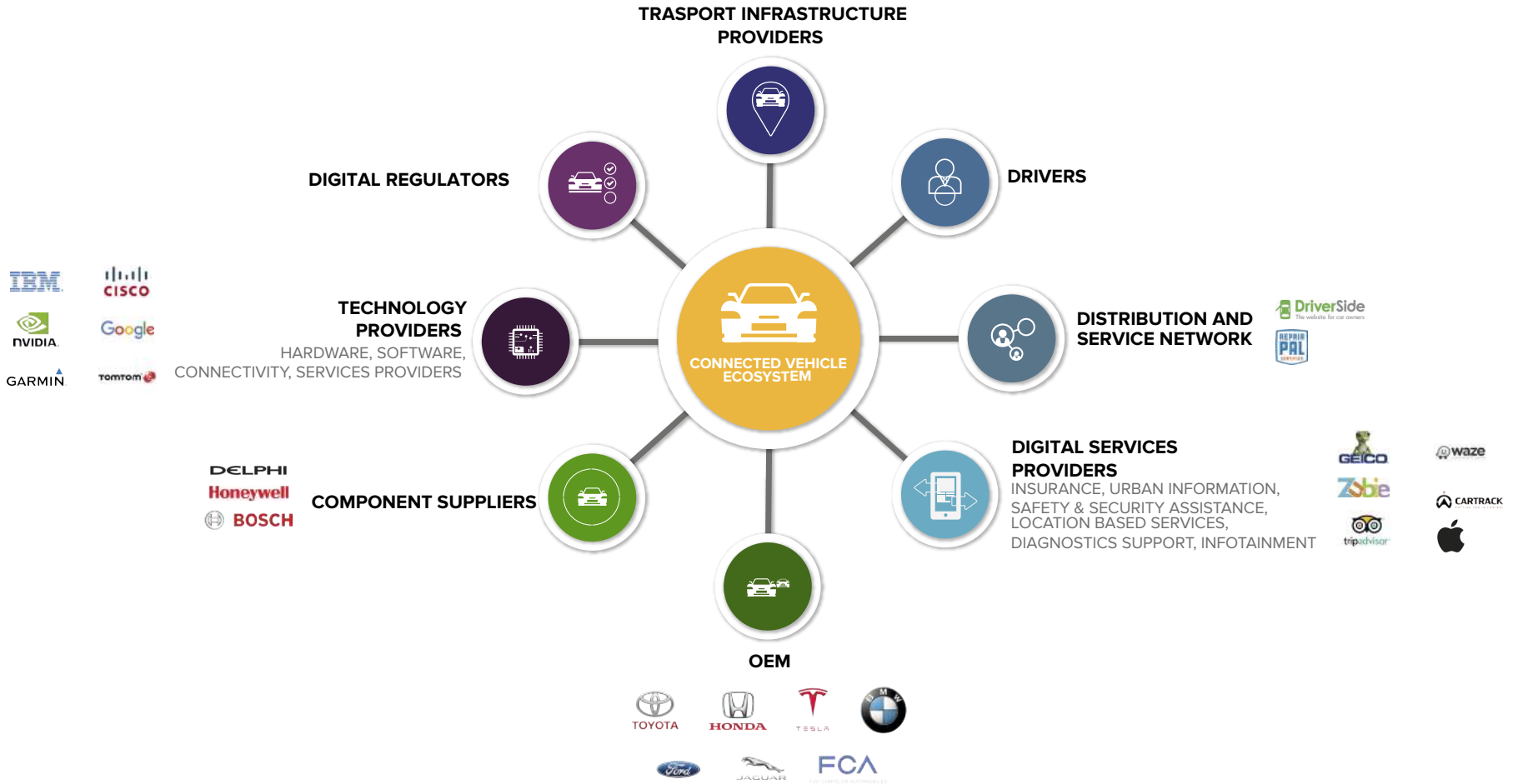
- Traditional supply value chain scenarios are changing, manufacturers need to learn how to interact with tech companies and service providers
- Data analytics skills have become key to understand how to use data with a relevant impact on business processes
- Limited existing infrastructure capabilities
- Security and Privacy issues arise as new opportunities for collecting and using customers- data emerge. Who is going to use these data and which are the key questions.Cyberattack threats also increase barriers

Source: IDC data for CREATE-IoT, 2019

REINVENTING THE TRADITIONAL VALUE CHAIN AND UNCHAINING NEW BUSINESS SERVICES

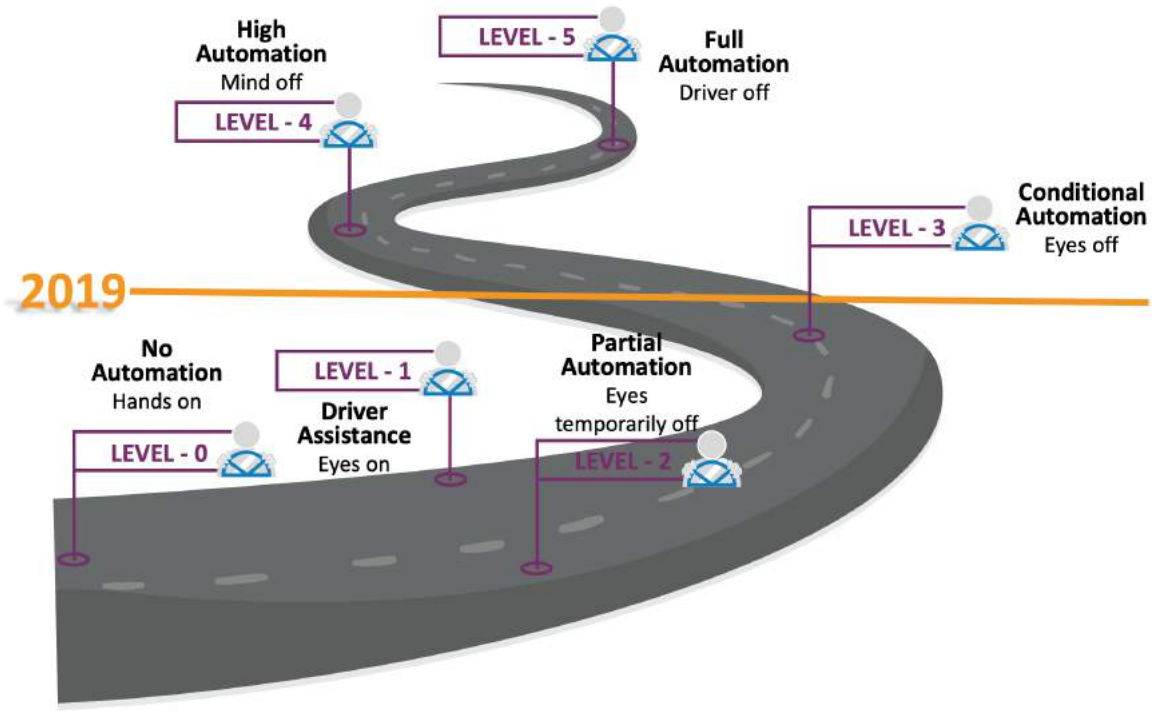
The traditional automotive value chain has been replaced by a complex ecosystem where besides automakers, suppliers and dealers, a number of new players bringing new capabilities are entering, including technology providers, transport infrastructure providers, digital regulators and digital services providers.

This results in an **ecosystem fueled by the flow of data generated by the connected car and the associated new digital services** including insurance services, location-based services, infotainment, and diagnostics support.



THE JOURNEY TOWARDS FULL AUTOMATED DRIVING IS ENABLED BY IoT

The Society of Automotive Engineers has established a classification system in the industry to define the evolution of cars automation capabilities. The taxonomy includes 6 levels of driving automation, ranging from no automation (Level 0) to full automation (Level 5).



Level 0: No Automation

With Level 0 the driver performs all driving tasks. The driver can be supported by warning and momentary assistance like blind spot or lane departure warnings.

Level 1: Driver Assistance

In Level 1 the vehicle is still controlled by the driver but has a single aspect of automation that assists the driver in steering, speed, or braking control.

Level 2: Partial Automation

In Level 2 vehicle takes over both steering and acceleration/deceleration capabilities combined in certain situations. The driver is still in control of the vehicles all the times. Self parking is an example of Level 2 driver support features.

Level 3: Conditional Automation

Level 3 vehicles represent the lowest-tier system classified as automated driving system as opposed to a manual one. Vehicle can take over driving in a mapped environment. The driver needs to take control to handle variations and unexpected situations. Level 3 features include traffic jam chauffeur.

Level 4: High Automation

The vehicle is capable of performing all driving functions under limited conditions and automated driving features will not require the driver to take over driving. The driver may have the option to control the vehicle. Examples of Level 4 features include local driverless taxi.

Level 5: Full Automation

The vehicle is completely autonomous and can perform all driving functions under all conditions.

Source: Society of Automotive Engineers (SAE) “Levels of driving automation”

AUTOPILOT VALUE PROPOSITION

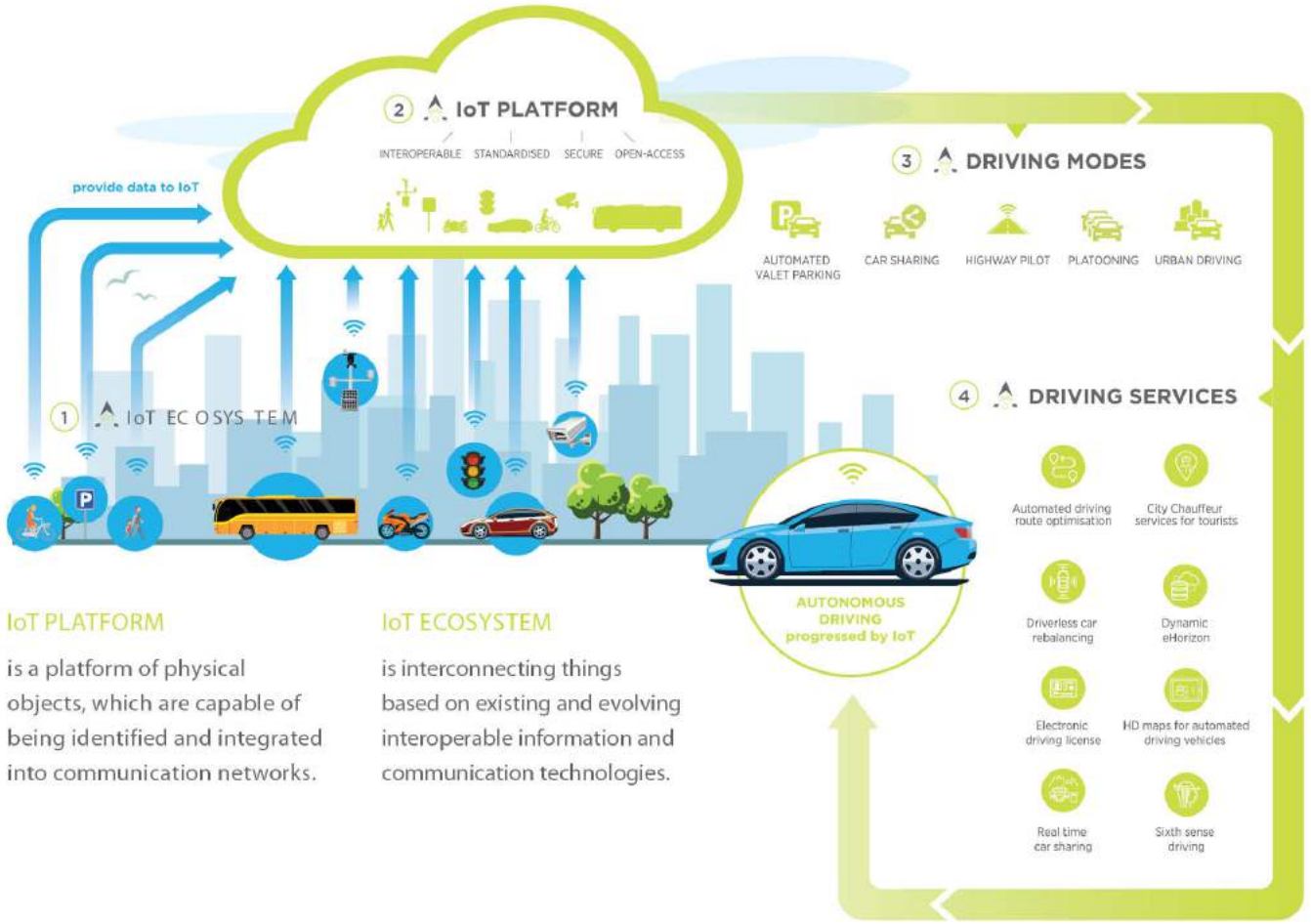
AUTOPILOT

"ENHANCE DRIVING ENVIRONMENT BY IoT TECHNOLOGIES TO FOSTER INNOVATION IN AUTOMOTIVE, IoT AND MOBILITY SERVICES"

AUTOPILOT ECOSYSTEM AND PILOTS

HOW DOES IT WORK?

1. Objects provide data to IoT platform using IoT standardised protocols
2. Objects are created virtually in the IoT
3. AUTOPILOT IoT platform develops applications using data from IoT data
4. AUTOPILOT applications enable services that support autonomous driving



IoT PLATFORM

is a platform of physical objects, which are capable of being identified and integrated into communication networks.

IoT ECOSYSTEM

is interconnecting things based on existing and evolving interoperable information and communication technologies.

AUTOPILOT VALUE PROPOSITION PER PILOT / USE CASE

Versailles - Urban Driving

The Versailles Pilot offers an Urban Driving service for car sharing. During the automated drive around and in the Castle's garden a program with tourist information can be played

Versailles - Platooning

Platooning in Versailles is used to automatically rebalance the car sharing fleet based on historical demand (e.g. peak hours) or real-time demand (response via app)

Livorno - Urban Driving

The technology for the Urban Driving use case in Livorno is used to ensuring the road safety in a mixed industrial and touristic area of the Port of Livorno
Detection of road situation and VRUs through smart traffic lights equipped with cameras

Livorno - Highway Pilot

The Highway Pilot in Livorno will contribute to the avoidance of accidents caused by speeding in roadworks areas.
The road situation and roadworks are being detected and communicated to the automated car.

Tampere - Urban Driving

Urban Driving in Tampere optimizes the already in use GLOSA (Green-Light-Optimal-Speed-Advisory) technology and detects VRU to ensure traffic safety in the city

Tampere - AVP

The AVP Use Case in Tampere studies the IoT influence on automated parking in outdoor areas. It aims for higher comfort for the driver's parking process.

Brainport - Platooning

The platooning in Brainport is not used to rebalance fleets but for convenient travel for private cars. The Use Case enables Co-Driving with a private lead vehicle and an automated private vehicle that can follow the leader.

Vigo - AVP

The AVP Use Case in Vigo specializes on indoor parking areas. These parking areas are used by automated and non-automated cars.
During discussions with local stakeholder the idea occurred, to use the technology for the parking process of cars in the port area before boarding ferries.

Vigo - Urban Driving

The Urban Driving Use Case in the main area of Vigo's city center is supposed to ensure the traffic safety. The area if mainly used by cars, motorcycles and pedestrians.

Brainport - Urban Driving

The Urban Driving Use Case in Brainport is technology orientated and build the fundament for a fully-automated car sharing scenario. The Use Cases uses connected RSU as IoT objects.

Brainport - AVP

AVP in Brainport is tested in the campus area. The Use Case also features the optimization of (re-) routing the cars to free parking spaces, if any barriers occur.

Brainport - Highway Pilot

The Highway Pilot features automated road condition detection to enhance the traffic safety on the highway. The cars are informed and can act about the incident.

FOCUS AREA:

IoT FOR THE EVENT MANAGEMENT MARKET

IoT AND WEARABLES ARE SHAPING THE FUTURE OF THE PUBLIC EVENTS MARKET

In 2017 23% of people living in cities within EU28 reported to suffer from noise pollution

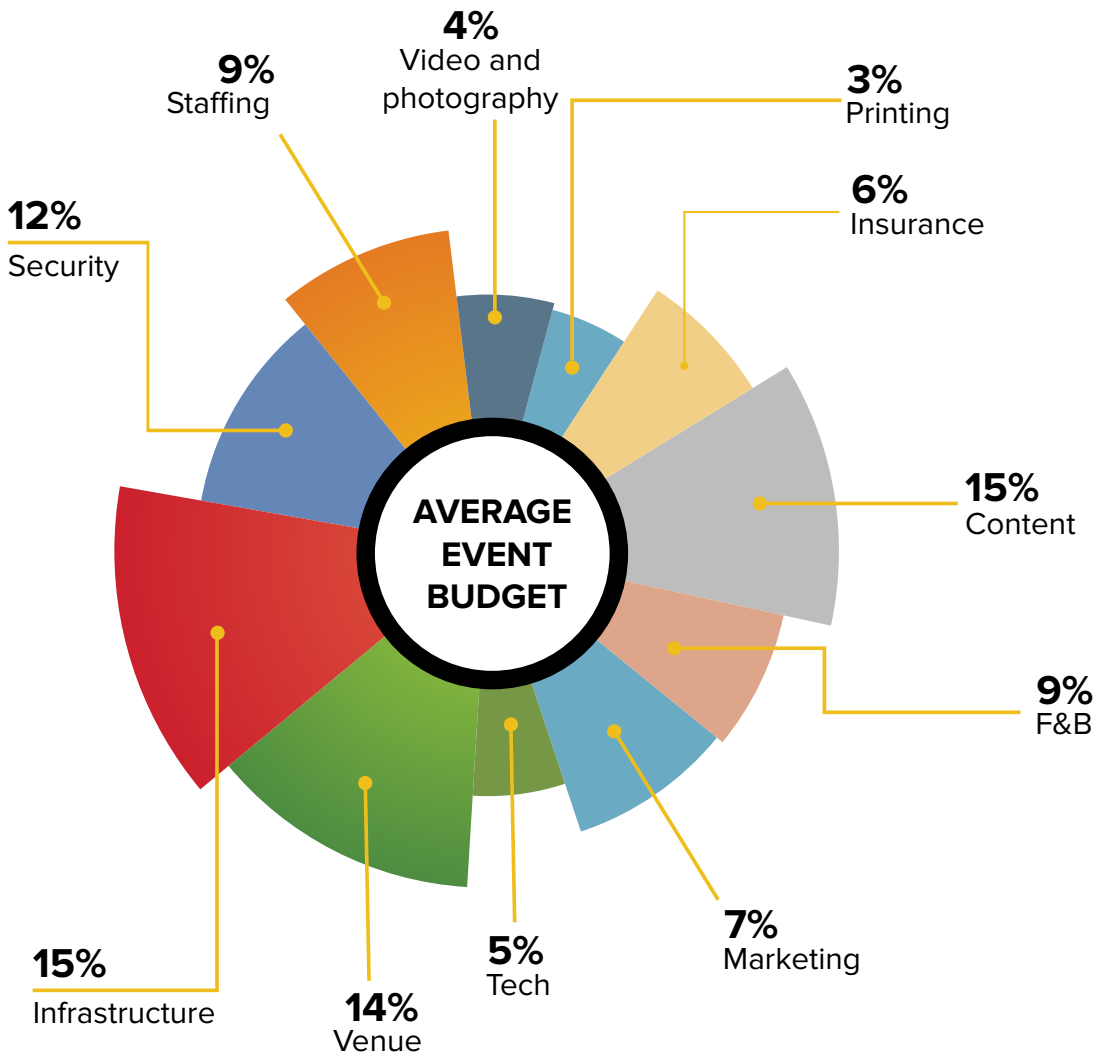
Wearable technologies and smart devices are rapidly breaking into every aspect of consumers' lives including how they experience entertainment. Outdoor events, including concerts, festivals, sporting events, have become commonplace in many European cities.

The events, attracting millions of participants, bring a number of benefits to European cities including tourism and revenues. However, there are also a number of challenges related to crowd management that come along such as noise pollution and security.

IoT technologies, wearables and smart devices provide a valuable way to address the increasing challenges that open–air event management is facing.

How budget is used by Event Organizers Companies

Looking at how event organizers' budget is broken down by type of spending it is possible to see that security has the fourth largest spending share. The smaller portions of the budget are devoted to printing and video & photography confirming that the digitalization is highly changing the industry.



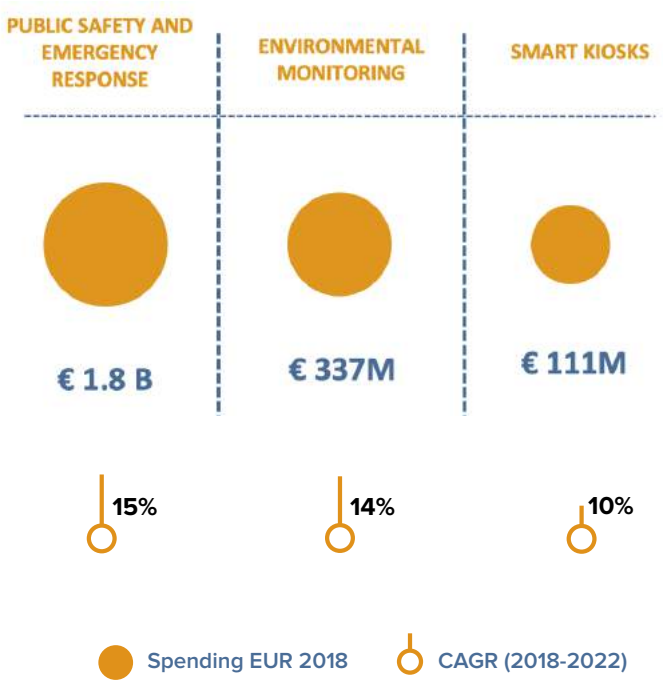
Source: Eurostat – Eventbrite Pulse Report 2016

CITIZENS SAFETY, ENVIRONMENTAL CONCERNS AND CITIZENS ENGAGEMENT ARE THE PRIORITIES

The event industry has seen a major shift in driving attendees and engaging them in a more personalized way thanks to technological progress.

Through IoT, event managers and planners can collect and use a large amount of data that can be helpful to improve decision making. IoT enabled services range from automated check-in, to attendees' tracking for improved queue and crowd management, to wearables for engaging attendees, to smart lighting based on attendees' movements.

Use cases respond to different strategic priorities: top level use cases for spending are emergency response for data-driven public safety, environmental monitoring for improved sustainability, and smart kiosks acting as public, one-stop contact point for emergency and information services. The IoT use case generating the largest spending in 2018 was public safety and emergency response (€ 1.8 Billions).



Source: IDC Worldwide Internet of Things Spending Guide, 2019 - IDC Worldwide Smart Cities Spending Guide, 2019

AUDIENCE ENGAGEMENT AND ATTENDEES' INSIGHTS EXTRAPOLATION DRIVING THE MARKET

DRIVERS

- Improve event organization and planning
- More engaging and personalized experiences for attendees
- Better crowd monitoring and management
- Support local tourism and revenues
- Higher security and emergency response
- Lower noise pollution for local citizens

BARRIERS

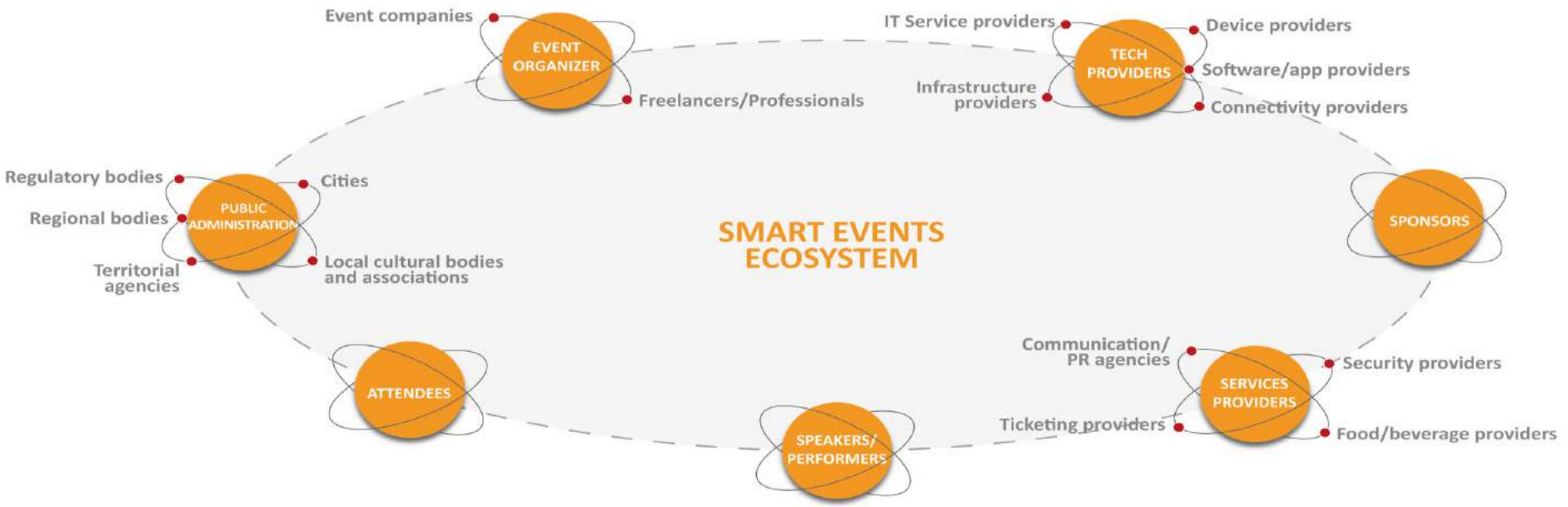
- Making technology a priority for event planners' agenda. Event organizers are under budget constraints and only a small share of budget is currently devoted to technology
- Pilots and trials are needed before implementing new solutions on large scale events
- Cost of the technology is still a barrier as customized features are required for each event and there is a high risk of investing into devices used as disposable
- Lack of regulation that can incentivize adoption

Source: IDC data for CREATE-IoT, 2019

SMART EVENTS ECOSYSTEM: BRINGING TOGETHER PUBLIC AND PRIVATE PLAYERS

This ecosystem puts together a number of traditional and new players. The traditional players include for example the event organizer willing to maximize ROI, the public administration willing to support tourism and local business and the sponsors willing to enhance their brand image and public relations.

As a result of this transformation new players have entered the ecosystem such as technology providers including device manufacturers, connectivity providers, infrastructure providers and software providers. Other players will enter on the wave of new technologies adoption such as Augmented and Virtual Reality or Blockchain applications.



4 MAIN TRENDS SHOWING HOW DIGITAL TECHNOLOGIES WILL CONTINUE TO TRANSFORM THE EVENTS MANAGEMENT MARKET

Technology innovation will keep shaping the events industry in the coming years improving efficiency in planning and pricing, making consumption more social and collaborative and buying processes more secure.

1. The increased use of AI and real-time data will help event organizers to improve event planning and management improving security and participants' experience.
2. Participation to events will become increasingly digital and virtual. VR technologies and 3D models will make it possible to experience the event in real time irrespective of the location.
3. Blockchain technologies have the potential to resolve tickets selling and buying pain points making the whole process transparent, decentralized and secure.
4. 5G technologies will ensure connectivity speed and reliability in large-scale events making more feasible to incorporate cutting-edge technologies into events.

Source: IDC data for CREATE-IoT, 2019

MONICA VALUE PROPOSITION

MONICA

"DEMONSTRATE MULTIPLE IoT TECHNOLOGIES FOR SMARTER LIVING
STARTING FROM SOUND, SECURITY AND USER EXPERIENCE AT LARGE, OPEN-AIR EVENTS"

MONICA PILOT CITIES AND EVENTS

Bonn, Germany
Rhein in Flammen
Open-air festival
90,000 visitors

Pützchens Markt
Open-air festival
1 million visitors

Torino, Italy
Kappa FuturFestival
Electronic music festival
50,000 visitors

Movida
Nightlife in the centre
Thousands of visitors

Hamburg, Germany
Hafengeburtstag
Harbour festival
1 million visitors

Hamburger DOM
City goose fair
8 million visitors

Lyon, France
Nuits Sonores
Electronic music festival
+140,000 visitors

Fête des Lumières
City light festival
1.8 million visitors

Copenhagen, Denmark
Tivoli Gardens
Friday Rock concerts
500,000 visitors

Leeds, UK
Emerald Headingley Stadium
Cricket and rugby games
+400,000 visitors

MONICA IMPACT: PILOTS AND SERVICES

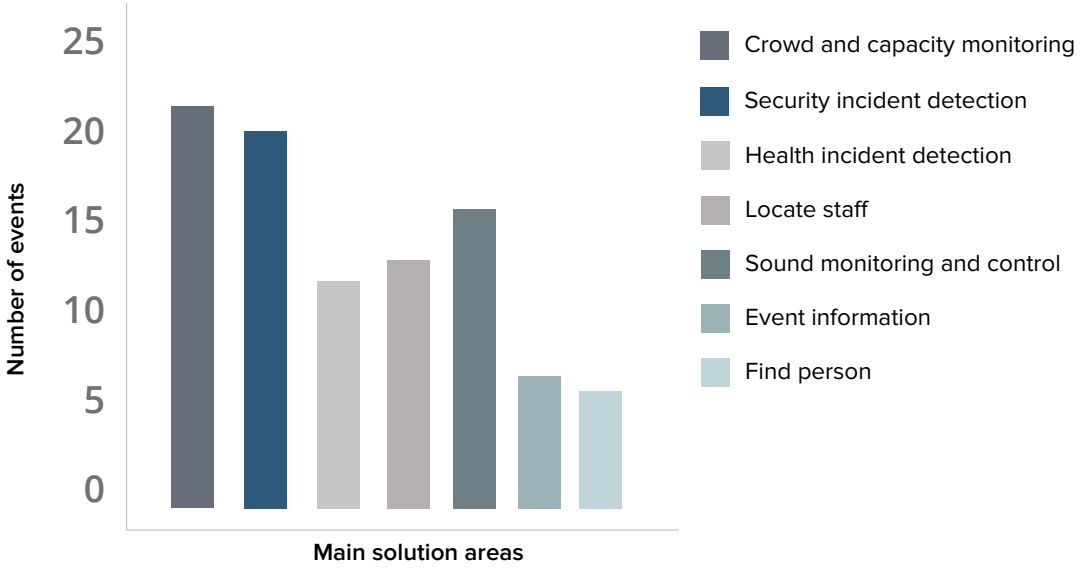
Benefits:

- Integrate crowd and acoustic knowledge from several IoT sensors into one operations centre with decision support functionalities;
- Achieve high performance video analytics for counting and tracking in crowded scenes;
- Minimise the sound emission outside the audience area and consequently the noise impact on neighbours.

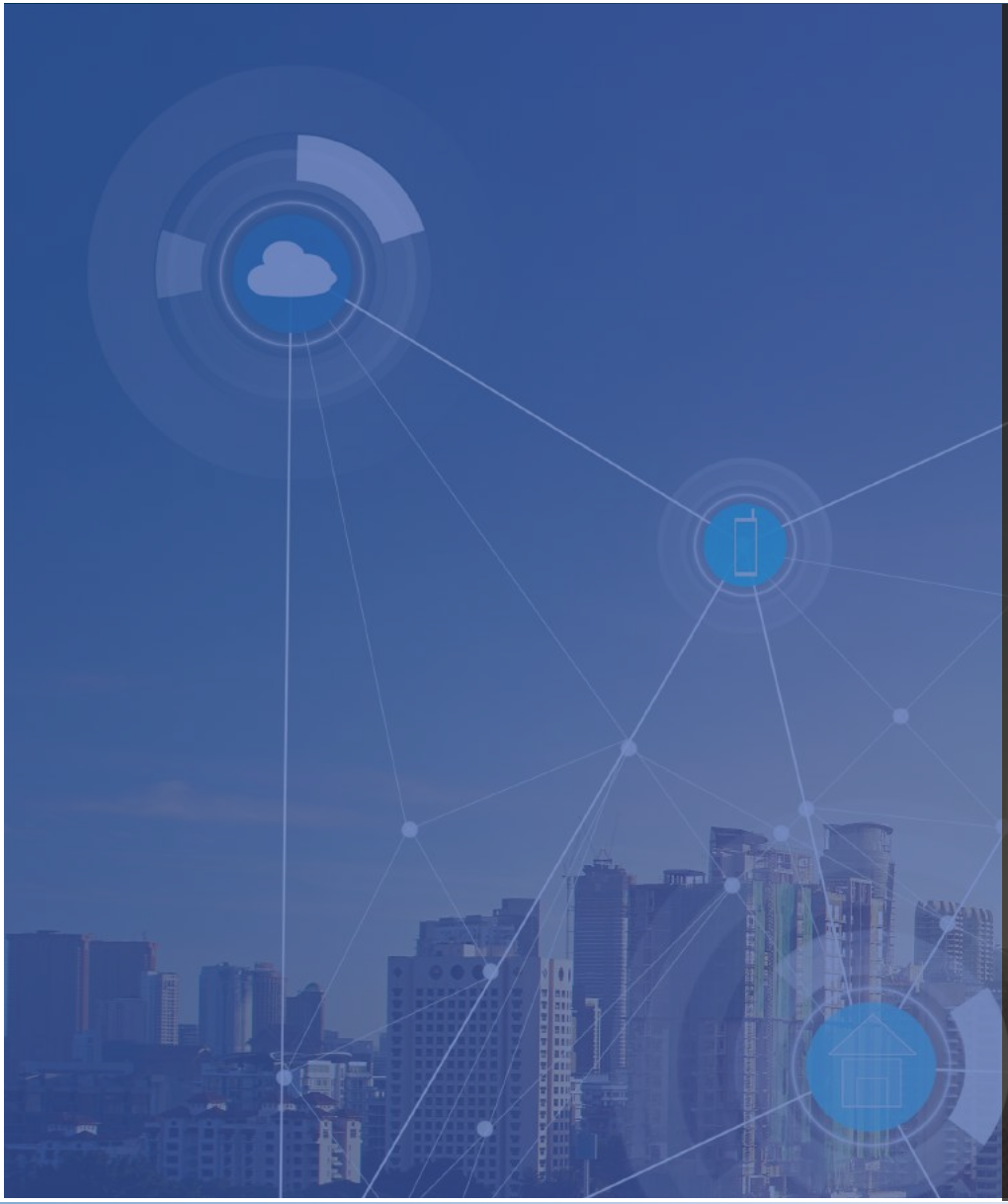
IoT Ecosystem engagement:

- Massive scale IoT operation demonstrated and validated by thousands of users;
- Involving the entire chain of stakeholders responding to their needs.

6 Cities, 22 Demonstration events:



MONICA IMPACT: REPLICATION



- Supplying an IoT platform built on open standards and architecture and with plug-in capabilities
- Leveraging cost-efficient wearables, low-cost devices and existing smartphones
- Providing business models, open data and developer tools for new applications and business opportunities
- Offering guidelines for replication and roadmaps for market uptake

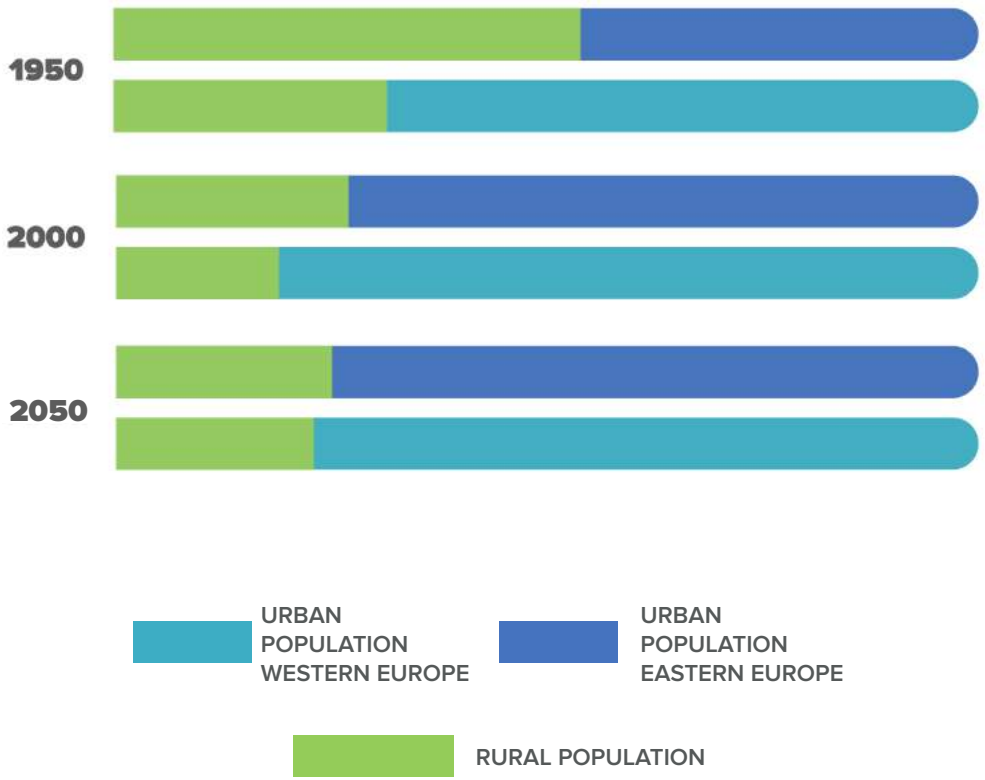
FOCUS AREA:

SMART CITIES

TOWARDS SMARTER CITIES ABLE TO MEET THE NEW URBAN CHALLENGES

INCREASING URBANIZATION THROUGHOUT EUROPE....

Urban population will constantly increase throughout Europe, exceeding 70% in Eastern Europe and 80% in Western Europe by 2030.



Source: United Nations – BBVA Research and United Nations

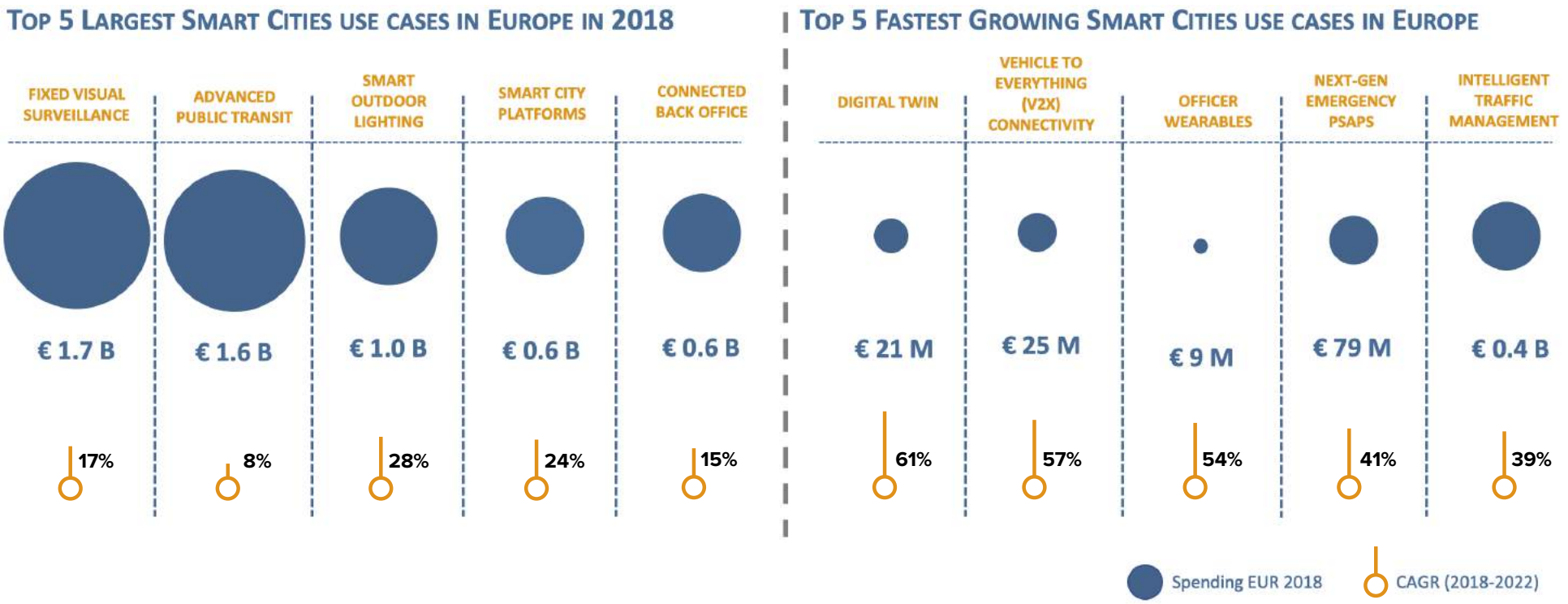
...LEADS TO NEW INVESTMENT PRIORITIES IN DIGITAL INNOVATION

Source: IDC Worldwide Smart Cities Spending Guide, 2019

IoT PLAYS AN IMPORTANT ROLE IN ALL LEADING SMART CITY USE CASES

Cities will prioritise digital investments in:

1. Data-driven public safety
2. Resilient energy and infrastructure
3. Intelligent transportation



Source: IDC Worldwide Smart Cities Spending Guide, 2019

SMART CITIES AS THE NEW ECONOMIC ENGINE

Drivers

- Cities as economic engines
- Growth in urban populations
- Fears around climate change
- Growth in energy needs
- Technology innovation

Barriers

- **Migrating from legacy.** Exiting legacy contracts without incurring technical debt and managing a growing ecosystem.
- **Strategy development.** Moving from piloting solutions to business models to scale city-wide, requires infrastructure and innovation.
- **Longer government sales cycles.** High bureaucracy and long procurement.
- The use of new digital technologies for visual surveillance, including facial recognition and other analytics, rises **privacy and ethics concerns.**
- **Uncertainty.** Confusion around ownership of assets, procurement process and technology standards may slow down the adoption process.

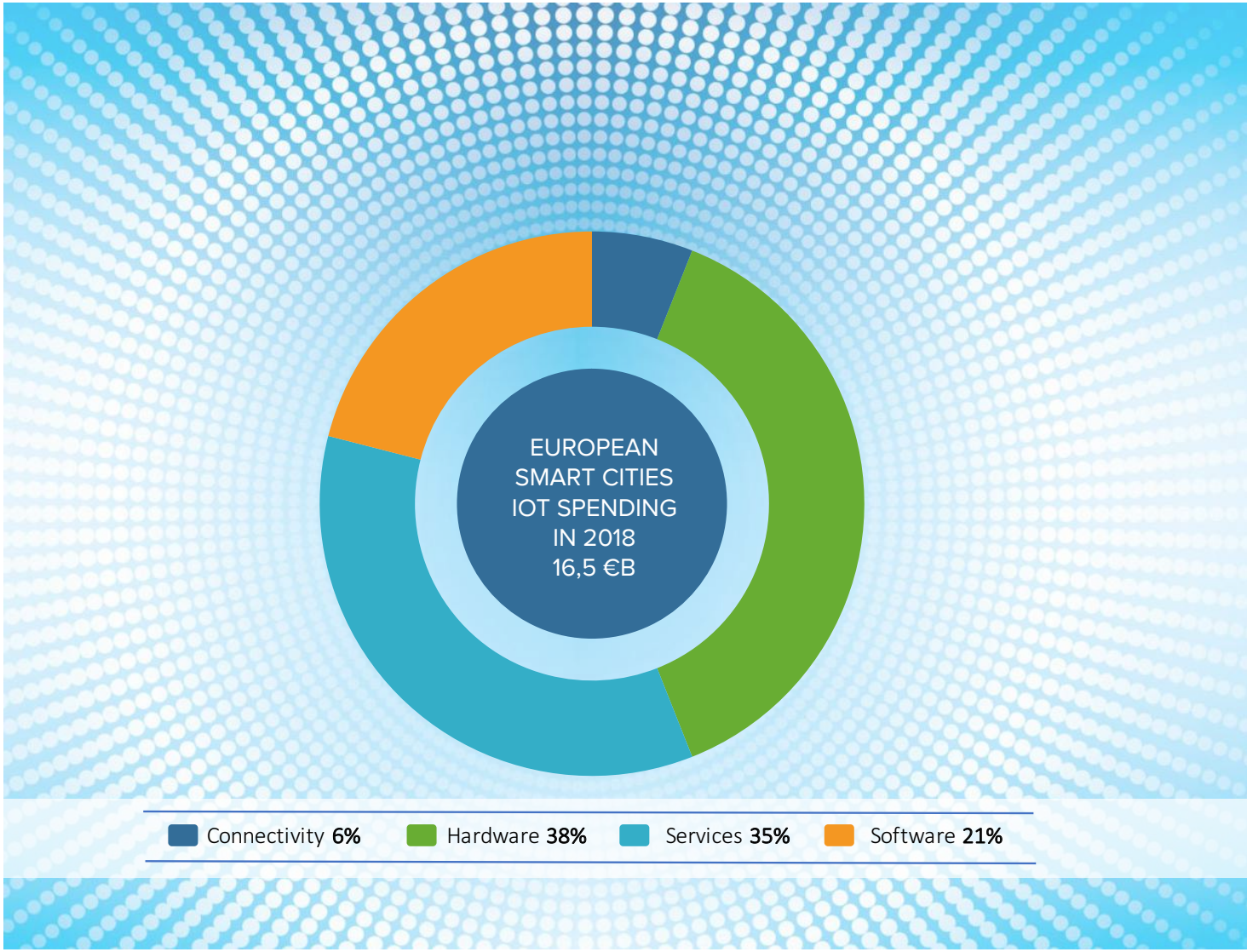
Source: IDC data for CREATE-IoT, 2019

IoT SPENDING IN SMART CITIES PROGRAMMES IS DRIVEN BY SOFTWARE AND SERVICES

European smart cities are in demand of interoperability and harmonized ecosystems for IoT-enabled smart city solutions, where IoT device manufacturers, system integrators and solution providers can innovate and openly compete.

Smart City programs are enabled by technologies spanning across 4 main tech areas: Connectivity, Hardware (sensors and devices), Services and Software (platforms, applications, and analytics).

Over 50% of Smart City opportunity lies in Services and Software, which are growing their shares. Hardware spending takes the largest technology spending share, but it grows less fast, due to price erosion and new use cases leveraging existing infrastructure.

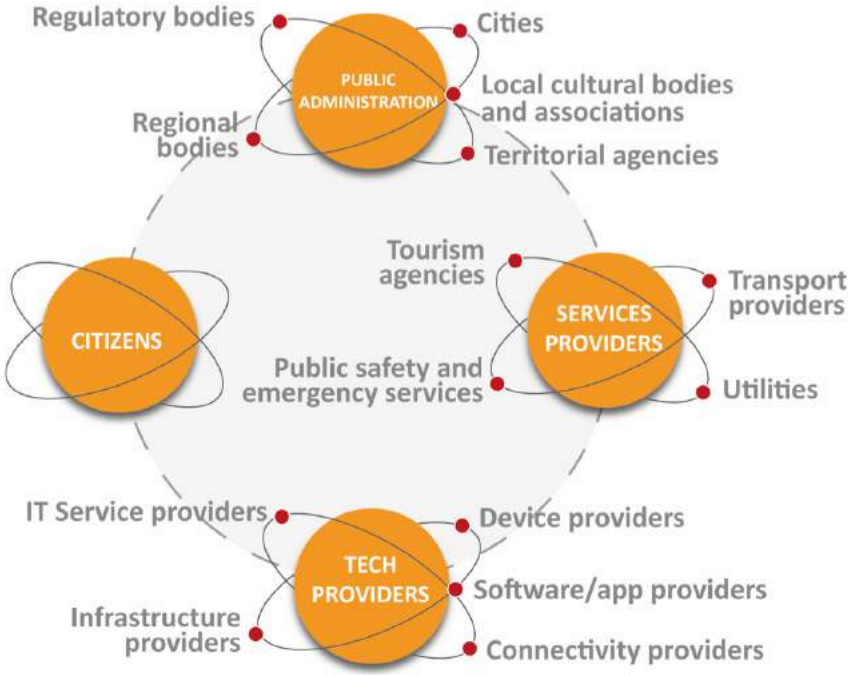


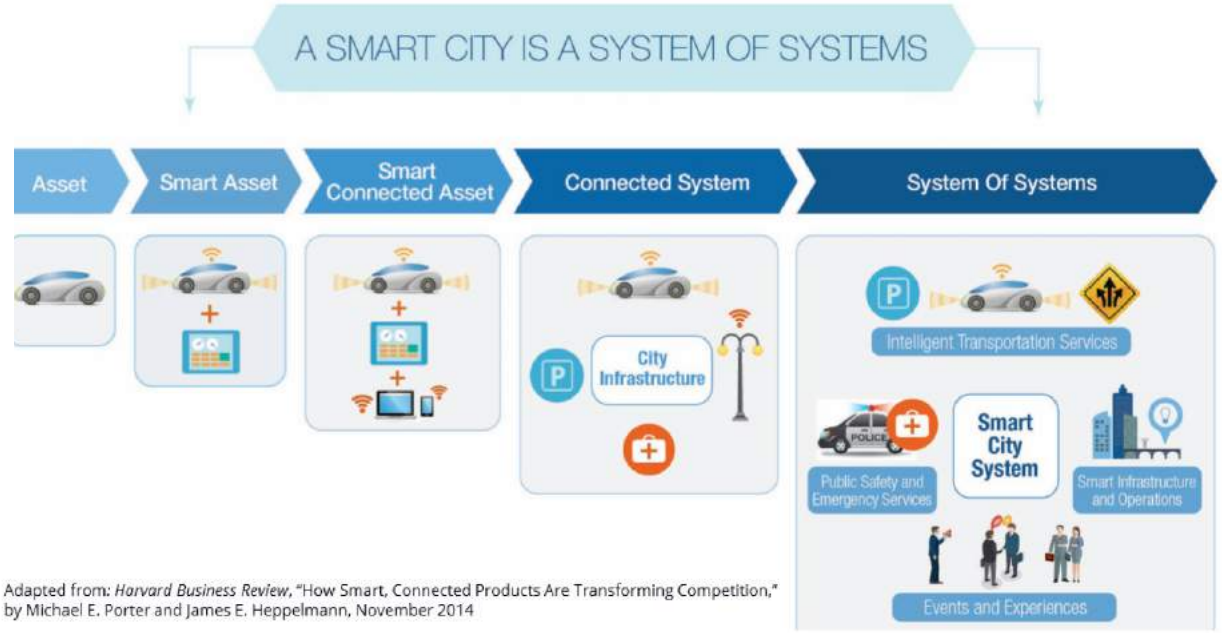
Source: IDC Worldwide Smart Cities Spending Guide, 2019

THE CITY OF THE FUTURE: NEW PLAYERS AND BUSINESS MODELS

A Smart City is a complex ecosystem interconnecting different systems and use cases and creating new ways to bring these different systems together to solve urban challenges.

This generates new business models and revenue opportunities, think about the Smart City IoT platform opportunity. Even though Smart City projects are usually promoted by local government authorities, they are typically collaborative initiatives involving stakeholders from a broader ecosystem, within the public sector and across several other industries such as transportation, utilities, telecommunications, IT providers, and other commercial businesses.





Adapted from: *Harvard Business Review*, "How Smart, Connected Products Are Transforming Competition," by Michael E. Porter and James E. Heppelmann, November 2014

Source: IDC data for CREATE-IoT, 2019

MORE DISRUPTION AND INNOVATION TO COME BETWEEN 2018 AND 2020

2018

Data Economy impacts city revenues

Major cities develop platform strategies

Partnerships and new models to expand broadband

2019

Ride-hailing as part of public transit

Distributed Ledger initiatives

Funding via Memorandum of Understanding (MoUs), non-profits non-profit Private and Public Partnerships (PPPs)

2020 and beyond

Vehicles connectivity capabilities to other vehicles or infrastructure and smart intersection solutions (V2X) Capabilities and smart intersections

Augmented Reality/ Virtual Reality (AR/VR) occurs Tri-Services

National cybersecurity standards

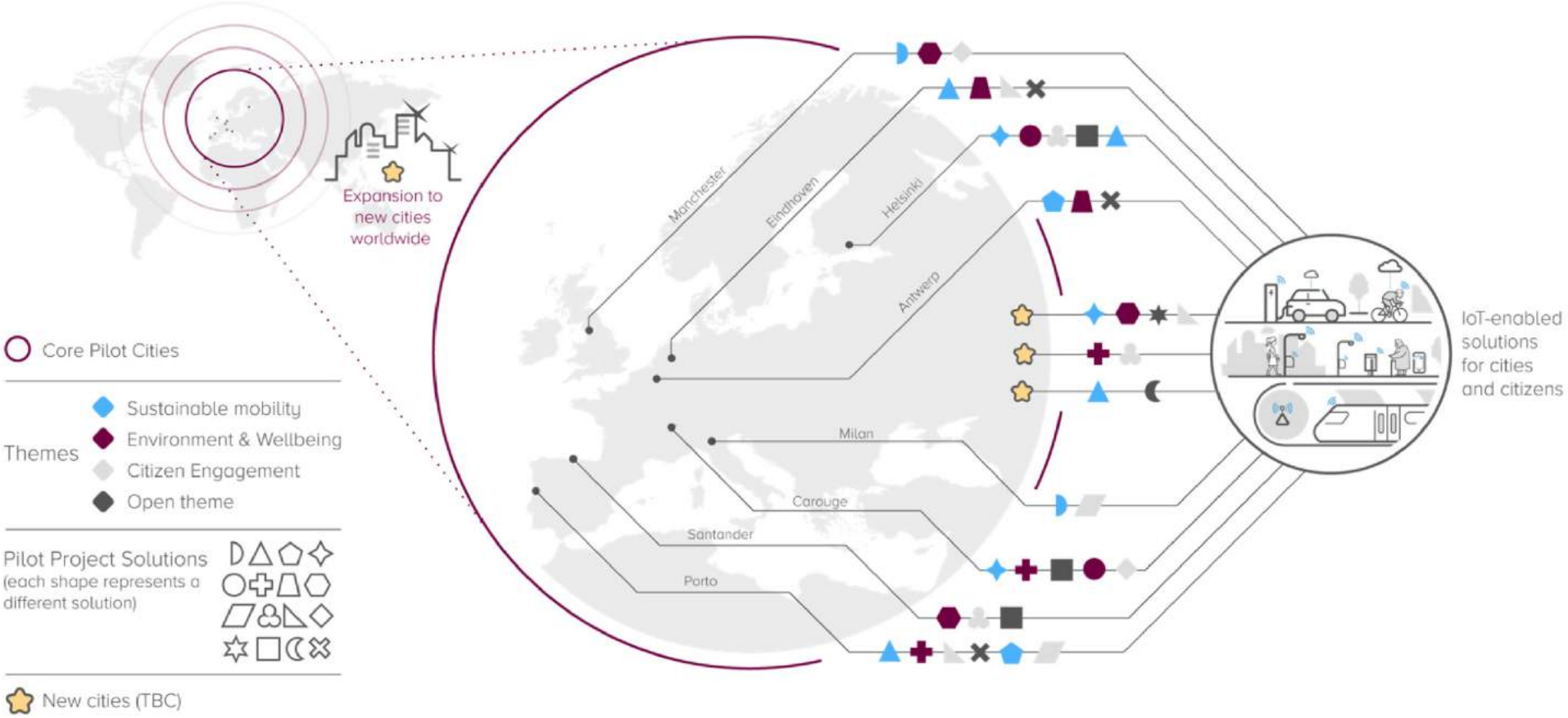
Source: IDC data for CREATE-IoT, 2019

SYNCHRONICITY VALUE PROPOSITION

SYNCHRONICITY

"DELIVER A MARKET FOR IoT - ENABLED URBAN SERVICES FOR EUROPE AND BEYOND„

SYNCHRONICITY PILOTS

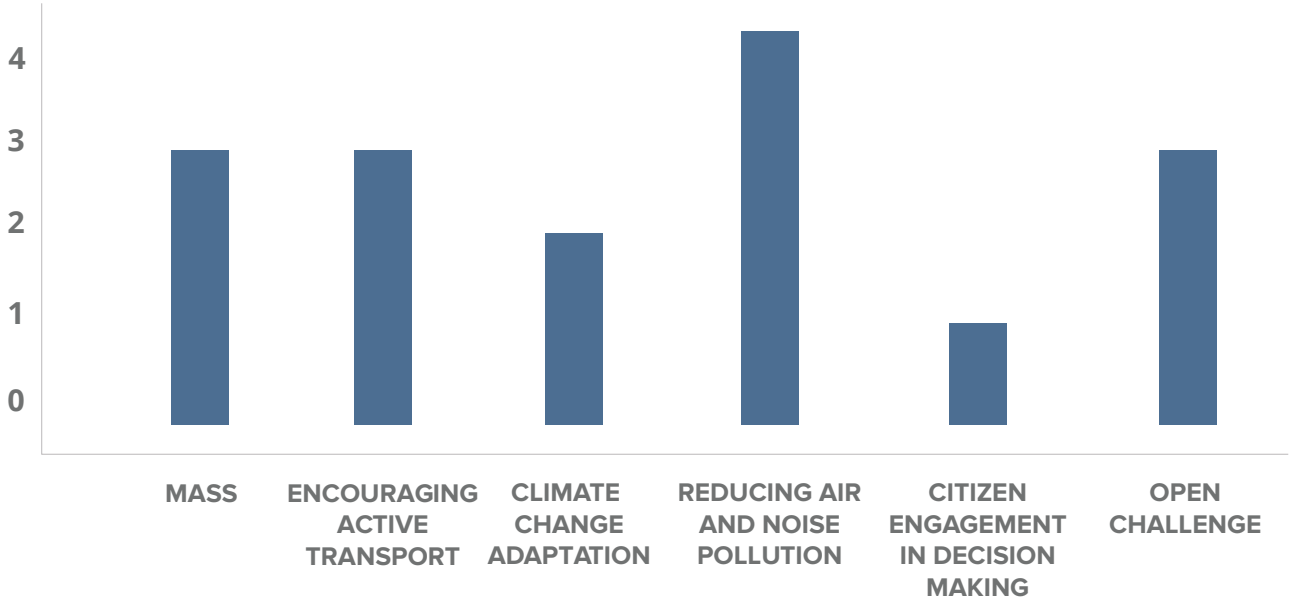


FROM OPEN CALL TO SERVICE DEPLOYMENTS

SynchroniCity Open Call:

- **133 group Applications** brought by 227 SMEs across 44 Cities
- **Top 16 selected** to test out the SynchroniCity framework architecture as “pilot groups”
- 16 IoT services across 19 cities bringing a total of **50 service deployments**

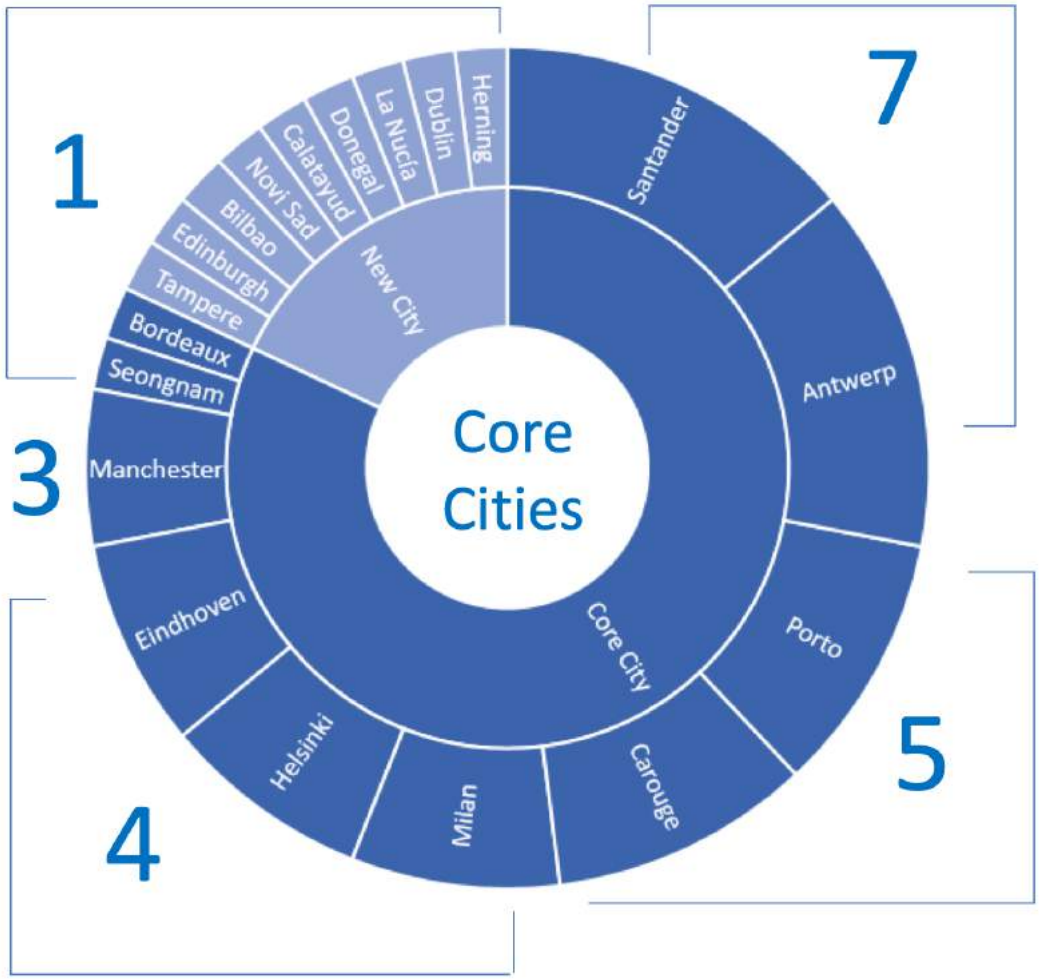
16 Pilots - Overview by Challange



19 CITIES PILOTING THE IoT TRANSFORMATION

From February 2019, partner cities from Europe and beyond will work together to:

- Test the groundwork needed to enable simultaneous deployment of IoT solutions across several cities
- Respond to their own urban challenges through IoT enabled responses



NUMBER OF DEPLOYMENTS

THE IoT LSP PROGRAMME

IMPACTS AND BENEFITS

THE IoT LARGE-SCALE PILOTS RESULTS DEMONSTRATE THE USERS BENEFITS AND BUSINESS OPPORTUNITIES ENABLED BY IoT

- Improvement of User acceptance and trust in IoT
- Benefits for Social welfare and quality of life
- Sustainability and replicability of IoT solutions and services
- Significant contributions to IoT standards
- A vibrant IoT ecosystem open to SMEs and local actors
- A range of innovative IoT-based business models

IoT INNOVATION PIONEERED BY LSPs IMPROVES SOCIAL WELFARE AND QUALITY OF LIFE (QOL) IN MULTIPLE DOMAINS...

Focus Areas	 Active and healthy ageing	 Event management	 Automated driving	 Food and farms	 Smart cities
LSPs	ACTIVAGE PROJECT	MONICA	AUTOPILOT	IOF 2020	SYNCHRONICITY
Users	Elderly and patients	Event participants/ organisers	Drivers, public users	Farmers, retailers, consumers	Citizens, city governments
Examples of benefits	Improved QoL for elderly, patients, informal caregivers; Improved quality of work for professional caregivers	Improved QoL thanks to noise reduction; Improved safety	Improved road safety; Improved personal mobility and sustainable mobility	Improved quality of work; Improved Public Health; Improved Food Quality	Increased perceived value by citizens, local governments and decision makers
Examples of solutions	*Smartwatch-based Solution to support Healthcare, Independent Living and Community Engagement*	*Video analytics to monitor crowd size, density and flow*	*HD Maps for Automated Driving Vehicles*	*SW Plug-In to read data from different sources*	*Autonomous Air Quality Management Solutions (AAQM)*

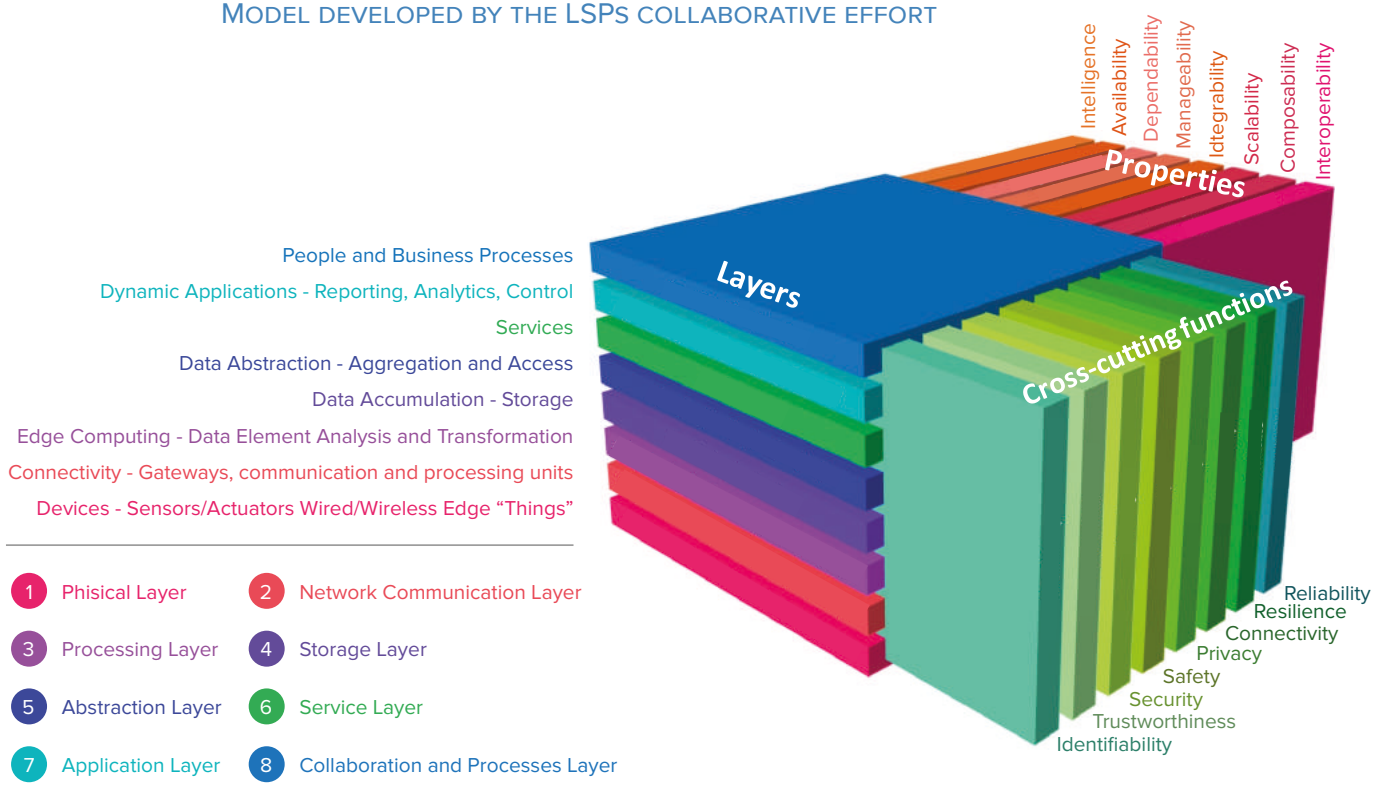
THE 3D REFERENCE ARCHITECTURE MODEL DEVELOPED BY THE LSPs

The LSP model offers an extension of current architectures and is aiming at:

- Ensuring a common view of the different layers of the IoT systems from Physical up to Business
- Providing additional viewpoints to the different stakeholders (not just to the developers) regarding some additional cross systems functions such as security, privacy or safety and the shared analysis of some properties (e.g., integrability) between different stakeholders

This additional dimension of properties is a new way to discuss the properties of the IoT system between different involved parties (e.g., users, contractors, designers) and identify the elements in support (e.g., functional building blocks, APIs) and those missing.

THE 3D REFERENCE ARCHITECTURE MODEL DEVELOPED BY THE LSPs COLLABORATIVE EFFORT



Source: IDC data for CREATE-IoT, 2019

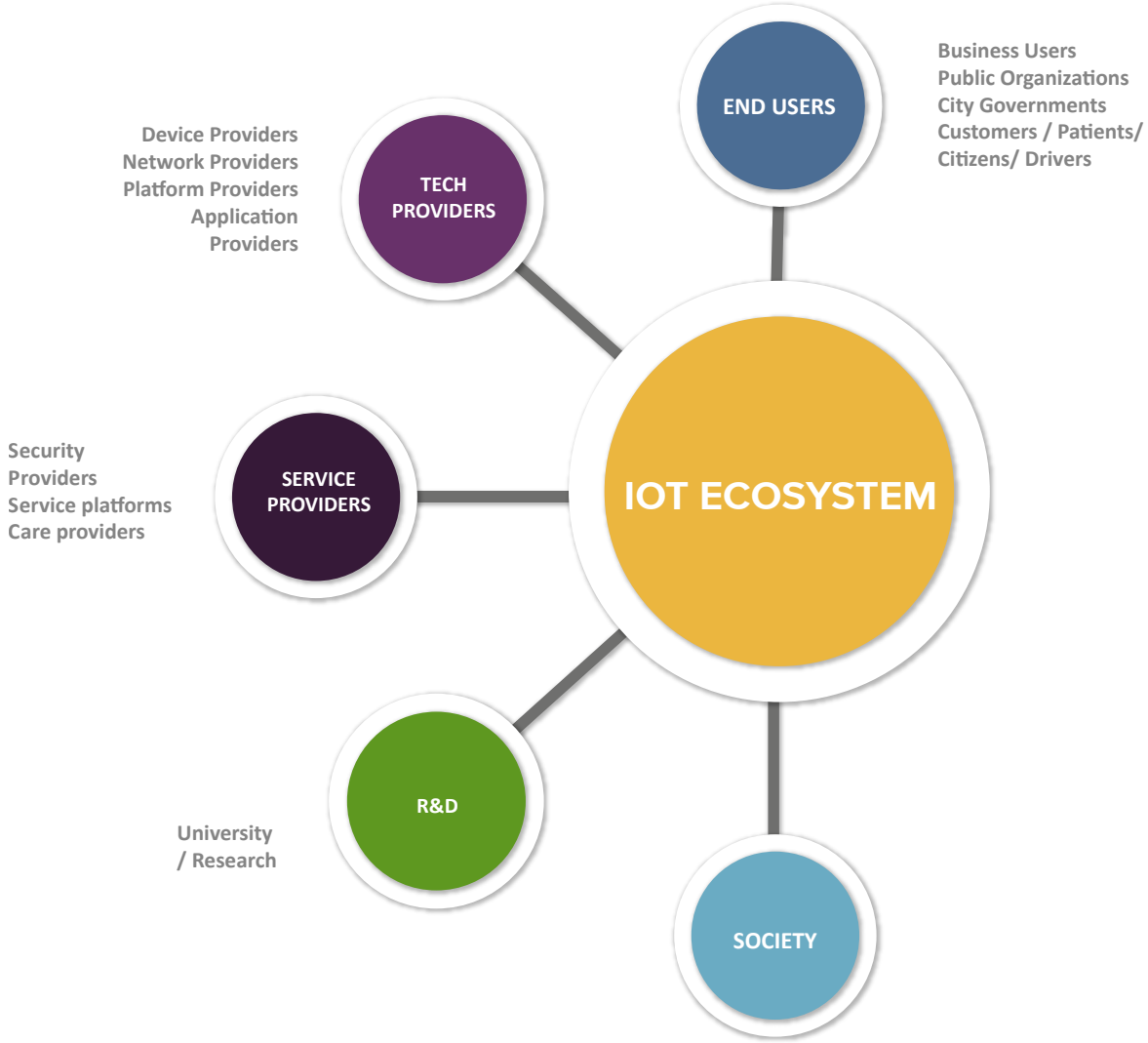
THE IoT LSPs GAVE A SIGNIFICANT CONTRIBUTION TO THE DEVELOPMENT AND CONSOLIDATION OF IoT STANDARDS

MAIN CONTRIBUTIONS INCLUDE FOR EXAMPLE:

- The collaborative development by LSPs of a 3D Reference Architecture model expanding the reach of architecture specification and aimed at contributing to standardisation
- The development by MONICA project of requirements for a new standard for time-critical data links for IoT sensors (partner Ring Advocacy has made a submission for a new wireless interface);
- The LSPs contributions to SAREF (Smart Appliances REFerence ontology) a modular network of standardised semantic models led by ETSI, which is being extended to IoT application environments such as Smart Cities and Smart Agri-food, contributing to the development of a strong EU standards ecosystem
- The contributions of SYNCHRONICITY to the ITU Study Group 20 on IoT and Smart Cities, where two standards promoted by the project are under work since 2017: Draft recommendation on Open API for IoT in Smart Cities and the Technical Report on Artificial Intelligence in the IoT and Smart City ecosystem. SYNCHRONICITY is also contributing to the Focus Group (FG) on Data Processing and Management

BUILDING THRIVING IoT ECOSYSTEMS THROUGH THE ENGAGEMENT OF ALL ACTIVE STAKEHOLDERS

Each of the LSPs consortia involves the main actors of the IoT value chain and reaches out to end-users and interested third parties – involving communities up to hundreds of organizations.



Opening Opportunities for SMEs through Open Calls

The development of Europe-led IoT industry and vertical platforms opens new opportunities for innovative SMEs: for example developing services/ applications with a clear societal and economic value on top of the IoT platforms.
3 LSPs are successfully involving hundreds of SMEs in their ecosystems through Open Calls.

ACTIVAGE PROJECT · IOF 2020 INTERNET OF FOOD & FARM · SYNCHRONICITY

THE NEW PROJECTS BUILDING THE DIGITAL INDUSTRIAL PLATFORMS OF THE FUTURE IN EUROPE

The 5 IoT LSPs funded in 2016 are completing their journey and moving to the market. The European Commission is funding a new wave of H2020-DEI Large-scale Pilots to continue developing the industrial ecosystem in Europe focused on the following goals:

- Develop next generation digital platforms, supporting interoperability between existing platforms and the development of new standards
- Integrate relevant digital technologies such as IoT, AI, photonics, robotics, cloud and Big Data
- Validate platforms through pilots and experimentation facilities, leveraging also those developed by previous LSPs and projects, and build the ecosystem to support the market roll-out

The new research and deployment community will include...

3 Digital Manufacturing Platforms projects (start 2018)

eFactory

ZERO DEFECTS Manufacturing Platform ZDMP

QUALITY

8 New Digital Industrial Platforms (start 2019)

Agricultural digital integration platforms
- 3 new LSPs -

Big data solutions for energy
- 2 new LSPs -

Health&Care
- 3 new LSPs -

COORDINATED AND SUPPORTED BY

OPEN DEI
Aligning Reference architectures, open platforms and LSPs in Digitising European Industry

EUROPEAN DIGITAL INVESTMENTS WILL BE DOUBLED BY THE NEXT EU MULTI-ANNUAL FINANCIAL FRAMEWORK 2021-2027

European investments in digital technologies in the next years will be implemented through 3 complementary programmes: Horizon Europe (HE), focusing on R&D and pre-commercial deployment, the new Digital Europe Programme (DEP), focusing on large-scale digital capacity and Infrastructures building, interoperability and standardization, and the Connecting Europe Facility 2 providing the high-speed digital infrastructures needed by the services and technologies proposed by DEP. The IoT platforms and ecosystems building initiatives will be continued mainly under the umbrella of the DEP but also through synergies and collaboration with HE.

Horizon Europe will provide extensive support to research, technological development, demonstration, piloting, proof-of-concept, testing and innovation including precommercial deployment of innovative technologies

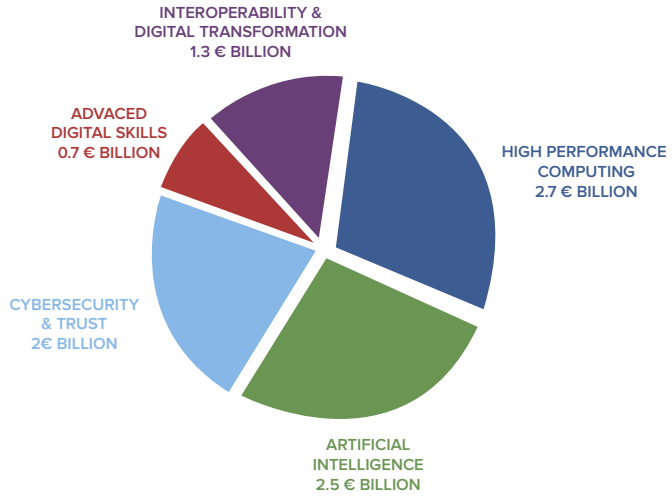
The Digital Europe Programme will maximise the benefits of digital transformation by reinforcing Europe's capacities in key digital technology areas and widening their diffusion and uptake in areas of public interest

The Connecting Europe Facility 2 will provide the infrastructure necessary to support the digital transformation of industry, economy, public administration and society at large.

HORIZON EUROPE - €97.6 billion -

Pillar 1	Pillar 2	Pillar 3
Open Science	Global Challenges and Industrial Competitiveness	Open Innovation

Strengthening the European Research Area



CONNECTING EUROPE FACILITY 2 - €42.3 billion -

Trans-European Networks (TEN) Transport – Energy Digital	Deployment of High-capacity Digital Networks

CONTACT INFORMATION

European Large-Scale Pilots Programme

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Editorial Board: IDC and IDATE for CREATE-IoT
In collaboration with ACTIVAGE, AUTOPILOT, IoF2020, MONICA, SYNCHRONICITY AND U4IoT

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European Large-Scale Pilots Programme

CREATE-IoT

U4IoT

ACTIVAGE PROJECT

AUTOPILOT

IoF2020

MONICA

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