



Danish Ministry  
of Energy, Utilities  
and Climate

WORLD  
ECONOMIC  
FORUM



Office of the  
Tech Ambassador  
of Denmark

## **DENMARK & WORLD ECONOMIC FORUM :**

# **PROMOTING INTERNET OF THINGS IN PUBLIC SECTOR**

**In 2018, the Government of Denmark signed a partnership with the World Economic Forum's 'Center for the Fourth Industrial Revolution' in San Francisco.**

**Together with industry partners, we collaborate on pilot projects that pioneer intelligent and secure use of IoT data and real-time precise positioning in the public sector.**

## EXPLOSIVE GROWTH IN INTERNET OF THINGS

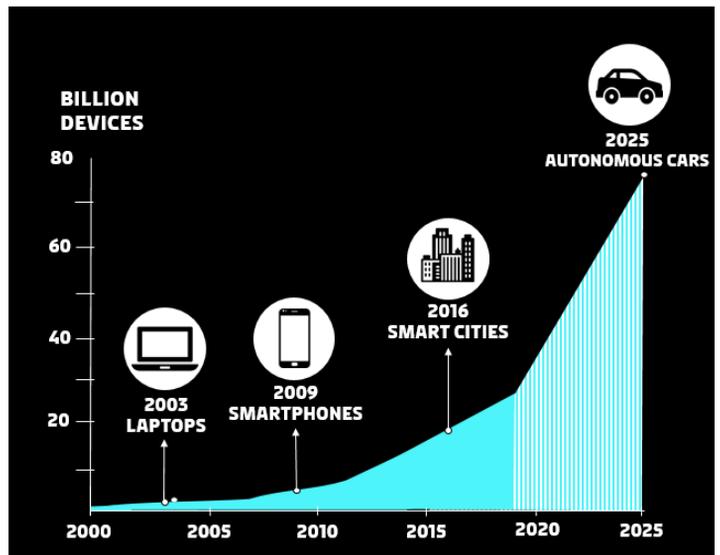
The Fourth Industrial Revolution opens up new business models, digital solutions and transformations across almost all sectors of society. It creates enormous opportunities for businesses, individuals and governments alike, but also new challenges and risks that public and private leaders need to face together.

Among the most profound technological advancements is the 'Internet of Things', whereby more and more devices - everything from cars and traffic lights to energy grids, garbage bins, refrigerators and smart home assistants - are connected via the Internet. By 2020, the number of connected devices globally is projected to exceed 30 billion, fueled by continued technological advances and the plummeting costs of computing, storage and connectivity.<sup>i</sup> Gartner predicts that by 2021 one million new IoT devices will be installed every hour.<sup>ii</sup>

## THE OPPORTUNITY

As one of the most digitalized countries in the world, Denmark is in a good position to benefit from IoT across society. Some studies suggest that the integration of IoT and other digital technologies within key sectors in Denmark could unlock more than 500 billion kroner (USD 80 billion) in societal value from 2016-2025.<sup>iii</sup>

## IOT - EXPONENTIAL INCREASE ACROSS SOCIETY



Source: Statista.com





## THE CHALLENGE

IoT can support more intelligent decisions and a safer, more sustainable, more comfortable, and healthier society. Yet the rapid deployment of connected devices also presents new challenges and questions that need to be addressed: safety and security, privacy and trust, data ownership, interoperability, equity and economic viability.<sup>iv</sup>

How can government agencies take advantage of IoT data to deliver better, cheaper and more efficient public services, while safeguarding the high level of security and privacy expected from our citizens?

## IoT DATA IN PUBLIC SERVICE

In collaboration with WEF and its partners, the Government of Denmark is exploring safe and secure ways to integrate dynamic IoT data and real-time positioning in the public sector. The project is anchored within the Danish Agency for Data Supply and Efficiency, which holds the responsibility for major parts of the Basic Data Program and public data infrastructure in Denmark and is a part of the Ministry of Energy, Utilities and Climate. The Ministry has posted a Government Fellow at the Office of Denmark's Tech Ambassador in Silicon Valley. The Government Fellow is driving the collaboration on IoT between WEF and agencies back in Denmark.

## LEVERAGING THE NETWORK

The IoT Partnership aims at leveraging WEF's industry and research network to bring additional expertise and insights to the table, allow for exchange of best practices, and build lasting relations in Silicon Valley and beyond.

Research shows that 3 out of 4 IoT deployments do not make it past the pilot stage. The partnership between WEF and Denmark can help identify models and solutions, which could be scaled internationally.



## 3 CONCRETE PROJECTS

The partnership has 3 concrete work streams – all aimed at testing specific solutions in Denmark and share learnings globally.

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### INTEGRATE IoT IN PUBLIC DATA INFRASTRUCTURE

This work stream aims at further developing the public sector governance and data infrastructure in Denmark in order to integrate IoT sources. Denmark is already a world leader in digital government. Data that is more regularly updated, comes from a greater variety of sources, and is larger in quantity, could provide added-value and societal benefit for businesses, citizens and public sector entities alike. Based on the Danish Basic Data Program, there is a need to futureproof Denmark's public data governance and infrastructure to handle these new sources of data.



### APPLY IoT TO LESSEN OVERSIGHT BURDEN IN AGRICULTURE

This work stream aims at testing new ways to combine accurate, dynamic positioning and image recognition technology in the agricultural sector. This could allow for more efficient control and surveillance of crops, and potentially minimize the regulatory burden for farmers and regulators.



### LEVERAGE IoT FOR HYPER-PRECISE POSITIONING IN CITIES

This work stream aims at demonstrating Denmark's unique testbed for precise positioning and autonomous systems in urban areas (TAPAS). The TAPAS platform is located in Denmark's second largest city, Aarhus, and consists of a very dense network of 11 reference stations. In conjunction with satellite-based navigation systems (such as Galileo), TAPAS can provide extremely accurate, real-time dynamic positioning. The platform is free to use for both public bodies and private companies and could be applied to test autonomous vehicles, drones, and other smart city initiatives in dense urban settings. The collaboration aims to facilitate international use of TAPAS, and dialogue around its further technical development.



## FURTHER AREAS OF COLLABORATION

In addition to the IoT partnership, WEF and Denmark are leveraging their network to gain unique insights on how emerging technologies, such as precision medicine, will transform the healthcare sector in the coming years, how to create a dynamic environment for digital innovation, including in Artificial Intelligence; and lastly to explore new agile ways to promote human-centered, inclusive and sustainable policy-making in the future.

## CONTACT

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<sup>i</sup> [https://www.huffingtonpost.com/entry/cisco-enterprises-are-leading-the-internet-of-things\\_us\\_59a41fcee4b0a62d0987b0c6](https://www.huffingtonpost.com/entry/cisco-enterprises-are-leading-the-internet-of-things_us_59a41fcee4b0a62d0987b0c6)

<sup>ii</sup> [http://www3.weforum.org/docs/WEF\\_Realizing\\_the\\_Internet\\_of\\_Things.pdf](http://www3.weforum.org/docs/WEF_Realizing_the_Internet_of_Things.pdf)

<sup>iii</sup> 'Unlocking Digital Value to Society in Denmark', Accenture, link: [https://www.accenture.com/t20170505T140853Z\\_w\\_/dk-en/\\_acnmedia/Accenture/Conversion-Assets/DotCom/Documents/Local/PDF/Strategy\\_2/Accenture-Unlocking-Digital-Value-Society-Denmark.pdf?\\_ga=2.140853Z\\_w\\_/dk-en/\\_acnmedia/Accenture/Conversion-Assets/DotCom/Documents/Local/PDF/Strategy\\_2/Accenture-Unlocking-Digital-Value-Society-Denmark.pdf](https://www.accenture.com/t20170505T140853Z_w_/dk-en/_acnmedia/Accenture/Conversion-Assets/DotCom/Documents/Local/PDF/Strategy_2/Accenture-Unlocking-Digital-Value-Society-Denmark.pdf?_ga=2.140853Z_w_/dk-en/_acnmedia/Accenture/Conversion-Assets/DotCom/Documents/Local/PDF/Strategy_2/Accenture-Unlocking-Digital-Value-Society-Denmark.pdf?_ga=2.140853Z_w_/dk-en/_acnmedia/Accenture/Conversion-Assets/DotCom/Documents/Local/PDF/Strategy_2/Accenture-Unlocking-Digital-Value-Society-Denmark.pdf)

<sup>iv</sup> [http://www3.weforum.org/docs/WEF\\_Realizing\\_the\\_Internet\\_of\\_Things.pdf](http://www3.weforum.org/docs/WEF_Realizing_the_Internet_of_Things.pdf)