WORLD CIRCULAR ECONOMY FORUM JAPAN

The Future Of Information Technology For Circular Economy

Circular Economy's Frontier of Knowledge

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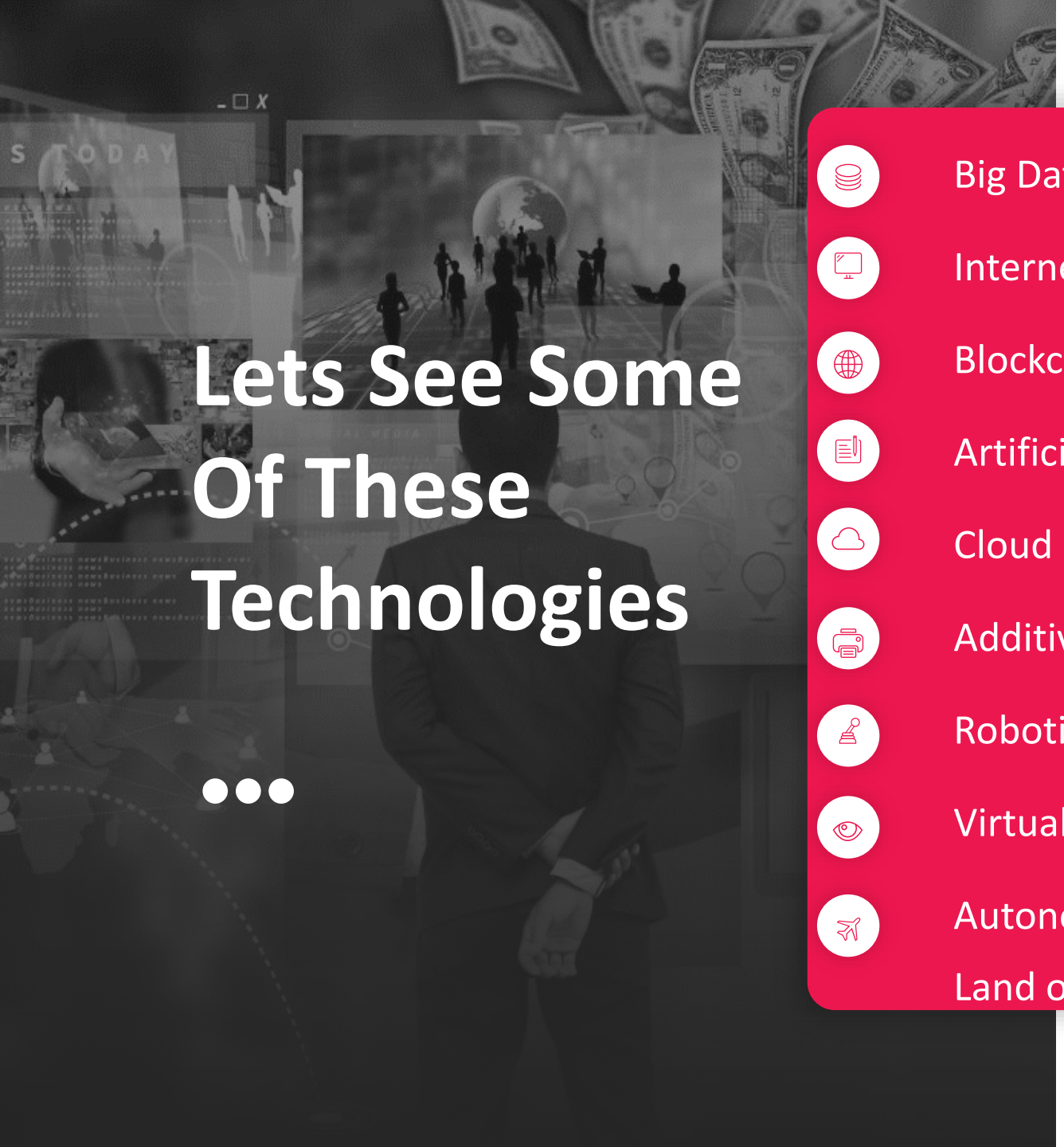
WCEF 2018 Tokyo



Lets See Some Of These Technologies

...

- Big Data
- Internet of Things (IoT)
- Blockchain
- Artificial Intelligence
- Cloud
- Additive manufacturing (3D Printing)
- Robotics
- Virtual Reality
- Autonomous Vehicles (Man or Unmanned, Land or Air)

Some Facts, Figures

- 87% of the consumers never heard the term Internet of Things (IoT)
  - [Accenture The Internet of Things: The Future of Consumer Adoption]
- by 2020 ‘around 25 billion connected “things” will be in use’ and their ‘disruptive impact will be felt across all industries and all areas of society’
  - [Gartner, Gartner Says 4.9 Billion Connected ‘Things’ Will Be in Use in 2015]
- IoT will have a total economic impact of USD 3.9–11.1 trillion per year by 2025, with customers capturing most of the benefits.
  - [McKinsey & Company, The Internet of Things: Mapping the Value beyond the Hype (2015)]

Some Applications

Rubicon

Rubicon's cloud-based, big-data platform connects waste producers with a network of independent waste haulers which enables higher diversion rates from landfill, creative reuse of waste material, optimised truck routes and the detailed analysis of waste data.[Source WEF 14 Sep 2017]

Apple

Liam, Apple's iPhone disassembly robot, has 29 arms and is capable of dismantling a discarded iPhone in 11 seconds, and separating its component parts into usable materials. To date, Apple has captured 61 million pounds of material that is reusable in future products, including 2,204 pounds of gold, to a value of $40 million. [Source WEF 14 Sep 2017]

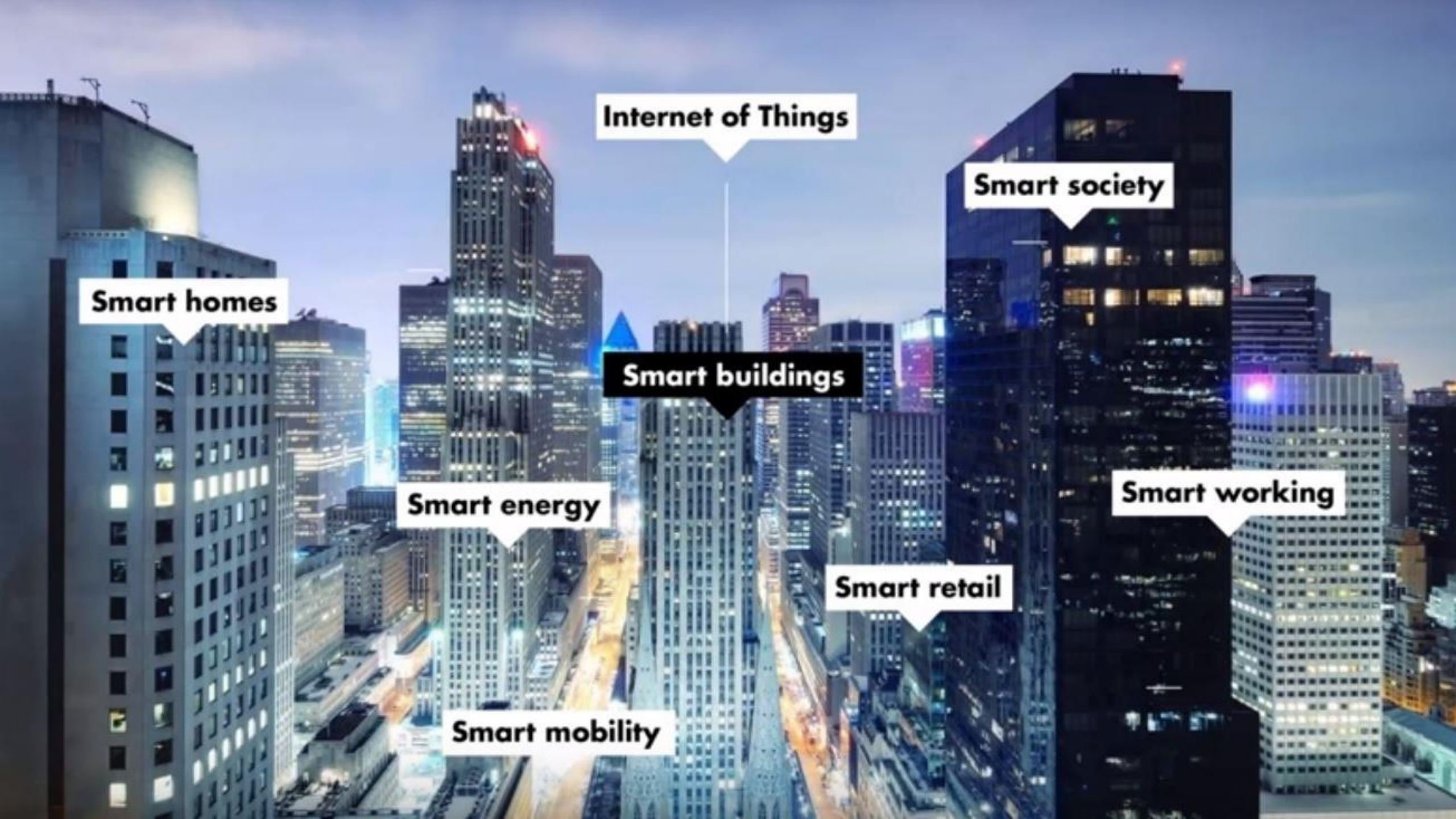
Hello Tractor

Hello Tractor uses mobile technology to enable over 250,000 small-hold farmers to obtain tractor services on demand, improving their food and income security. Furthermore, the tractors are fitted with M2M technology to share information on the vehicle and its efficiency, in turn maximising the utilisation, extending the tractor's usable lifecycle, and increasing the value yielded from the machine. [Source WEF 14 Sep 2017]

The Edge (Deloitte, Amsterdam)

- **The Edge** is the most Sustainable building in the world (98%)
- It includes a number of Innovations like **Light over Ethernet powered by LED system** and not from a traditional 230 Volt cable.
- The **32000 sensors** in the building enabled a tremendous data flow (big data)
- They have achieved a remarkable space optimisation given that approximately **35% of the offices** are empty during a working week
- Cleaning services are being **optimised** based on actual use of spaces Health has been also in the focus. **Airflow management** based on office occupancy and density.
- Heating is tweaked to a **precise degree** to be able conserve energy by detecting when spaces are unoccupied.
- **<u>Very important:</u>** The Edge is producing **10% more** energy than the one consuming

Now Imagine the Edge example in a bigger landscape

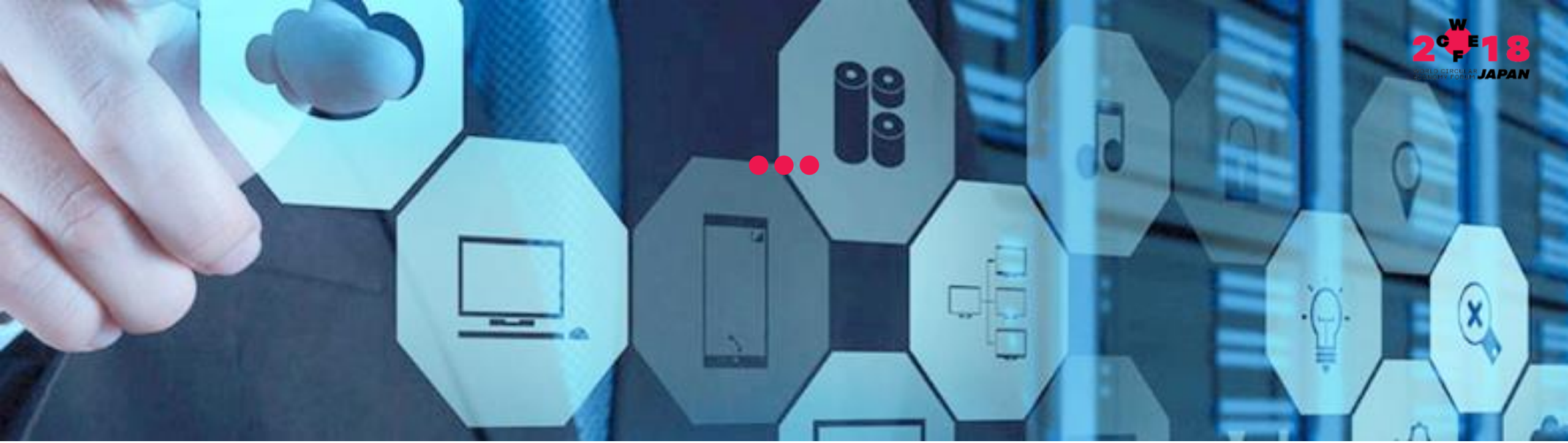

Internet of Things
Smart society
Smart homes
Smart buildings
Smart energy
Smart working
Smart retail
Smart mobility

ONGOING RESEARCH

Sustainable Development*

“as the development that meets the needs of the present without compromising the ability of future generations to meet their own needs”

*defined by the Brundtland Commission



CE-IoT Framework
Pairing Circular Economy and IoT:
IoT as an enabler of the Circular Economy
Circularity-by-design as an enabler for IoT (CE-IoT)

Ideal- Cities

Intelligence-Driven Urban Internet-of-Things Ecosystems for Circular, Safe and Inclusive Smart CITIES

The aim is to provide a **novel, open and extensible platform** to enable **secure, resilient acquisition and sharing of information** with the goal to improve the **well-being and inclusivity of citizens**, produce more effective response to crime or other emergencies, and make **Smart Cities feel more secure and safe to the citizens living in them**.

https://www.ideal-cities.eu/#

Ideal- Cities

FORTH

Bournemouth University

École des Ponts business school

BLUESOFT EFFICIENT SOLUTIONS

Nodalpoint

cablenet

"This project has received funding from the European Union's Horizon 2020 research and innovation staff exchange programme (RISE) under the Marie Skłodowska-Curie grant agreement No 777855"

I-BiDaaS
Industrial-Driven Big Data as a Self-Service Solution

Industrial-Driven Big Data as a Self-Service Solution

https://ibidaas.eu

I-BiDaaS aims to empower users to **easily utilize** and **interact** with **big data technologies**, by designing, building, and demonstrating, a unified framework that: significantly increases the speed of data analysis while coping with the rate of data asset growth, and facilitates cross-domain data-flow towards a thriving data-driven EU economy.

Objectives

- Break the industrial silos
- Cross-sector flow of data
- Processing and managing big data in a user-friendly way
- I-BiDaaS as a Self-Service solution

I-BiDaaS – solution towards Big Data as a Self-Service

- Easy to use, even for the non-IT user
- Users define the analytics on the requested data sources

Industrial Challenges

- **Banking/Finance Industry**
  - *Enhance control of third parties*
  - *Advanced analytics for fraud and risk mitigation*
  - *Achieve regulatory and compliance objectives*
- **Manufacturing Industry**
  - *Produce/reconfigure plans*
  - *Streamline logistics and production chain*
- **Telecommunications Industry**
  - *Employ more realistic bots in call centers*
  - *Optimize the placement of telecommunication equipment*
  - *Accurate location prediction with high traffic and visibility*

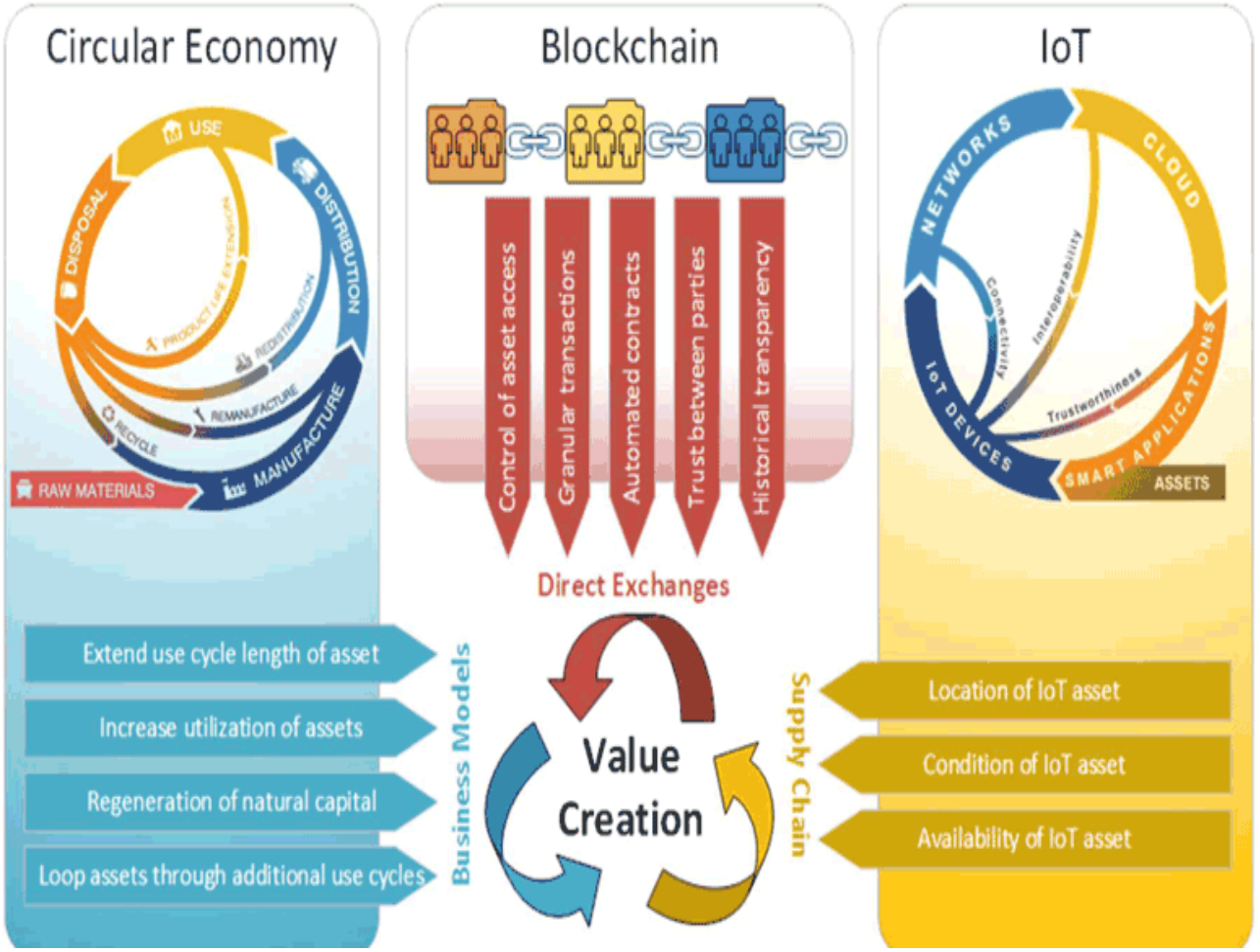
Big Data and **Analytics** can positively advance management towards **Circular Economy**, by feeding sustainability-oriented decision-making processes with the required information. [Jabbour et al. 2017].

I-BiDaaS Solution can aid data waste management towards Circular Economy.

This project has received funding from the European Union's Horizon 2020 Research and Innovation program under grant agreement No 780787.

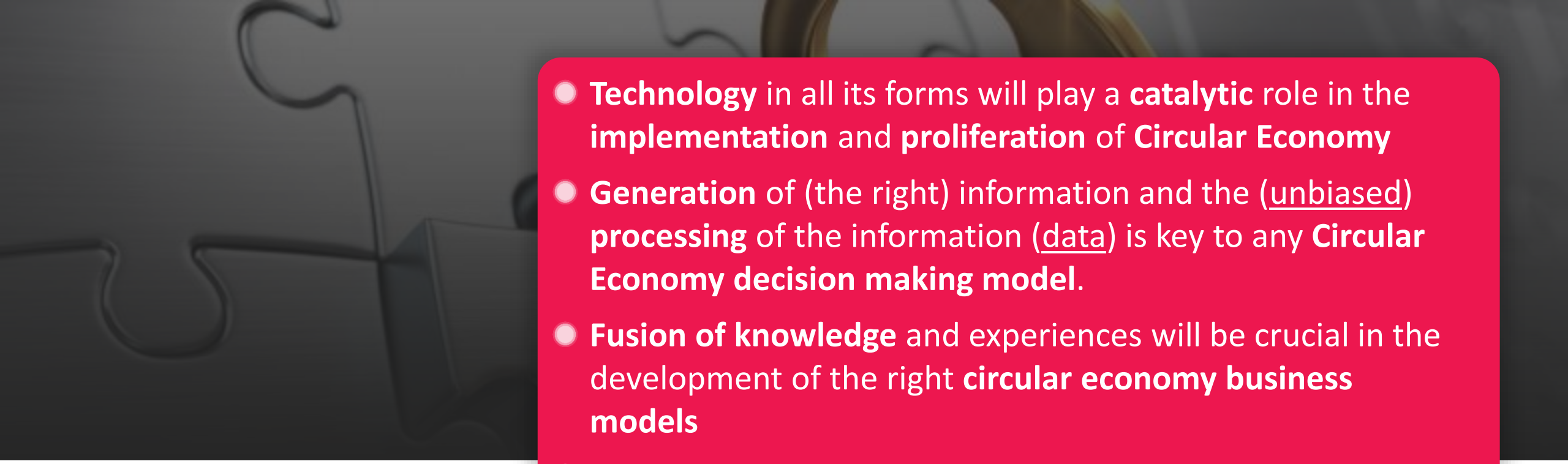
Blockchain-enabled Intelligent Asset Exchange for a Circular Economy

https://ercim-news.ercim.eu/en110/special/blockchain-enabled-intelligent-asset-exchange-for-a-circular-economy



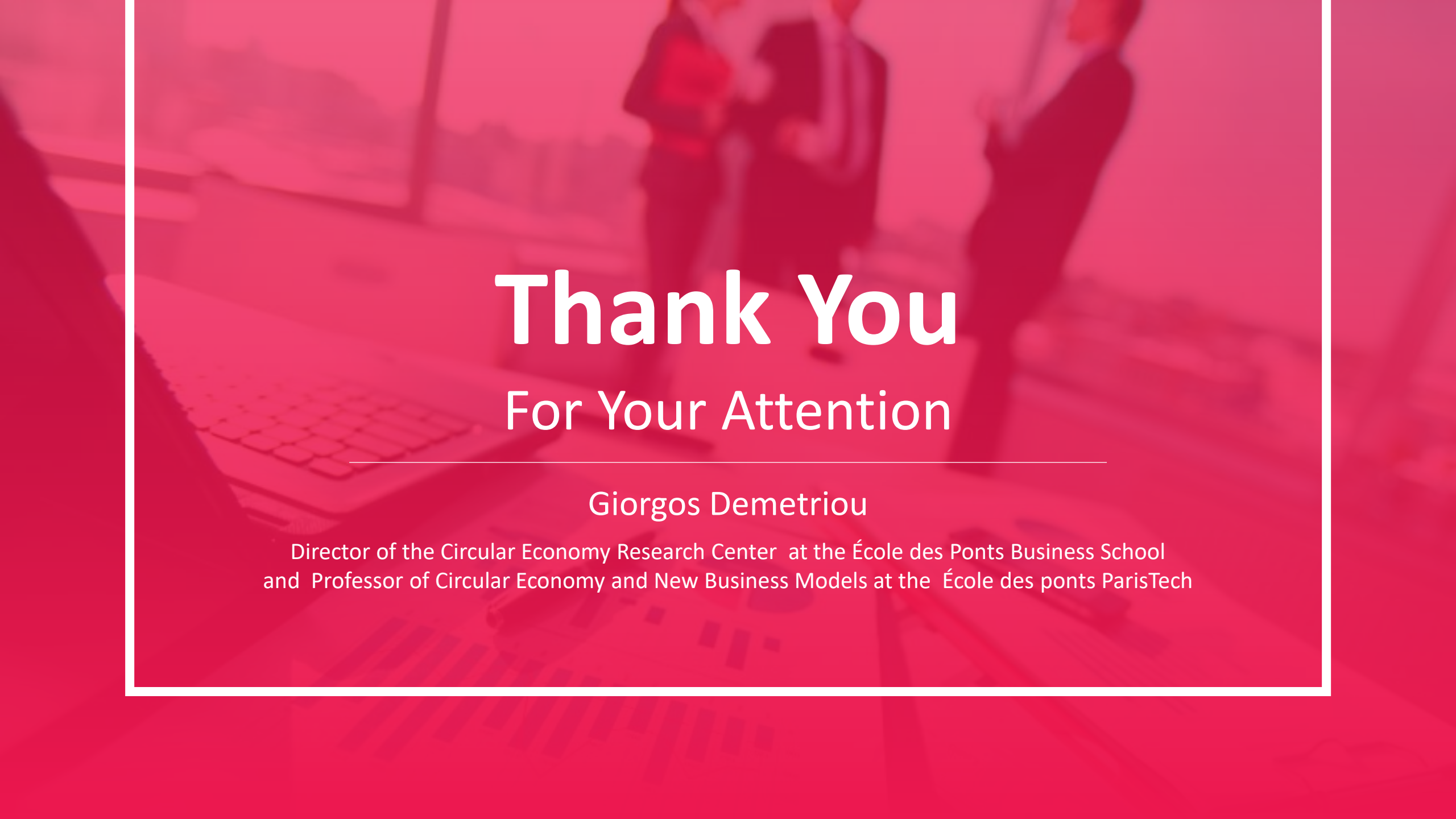
- In an ever-changing networked environment consisting of numerous assets, **ownership** needs to be dynamic, granular and adaptable in order to maximise gains

- Blockchain-based mechanisms can effectively serve this need by enabling **transfer of asset ownership** directly between parties participating in the circular economy while introducing trust, efficiency and automation in asset exchange contra



Key Take Aways

- **Technology** in all its forms will play a **catalytic** role in the **implementation** and **proliferation** of **Circular Economy**
- **Generation** of (the right) information and the (unbiased) **processing** of the information (data) is key to any **Circular Economy decision making model**.
- **Fusion of knowledge** and experiences will be crucial in the development of the right **circular economy business models**
- **Awareness and education** at all levels will be instrumental in **cultivating structurally and systematically the Circular Economy culture** to the economic and societal actors.
- **Break the silos of domains**, overcome **perceptions** and stereotypes (Circular Economy is not just about recycling) in order to be able to harvest its full potential
- **We are certainly looking at new frontiers of knowledge!**



Thank You

For Your Attention

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