DIGITAL DIALOGUES

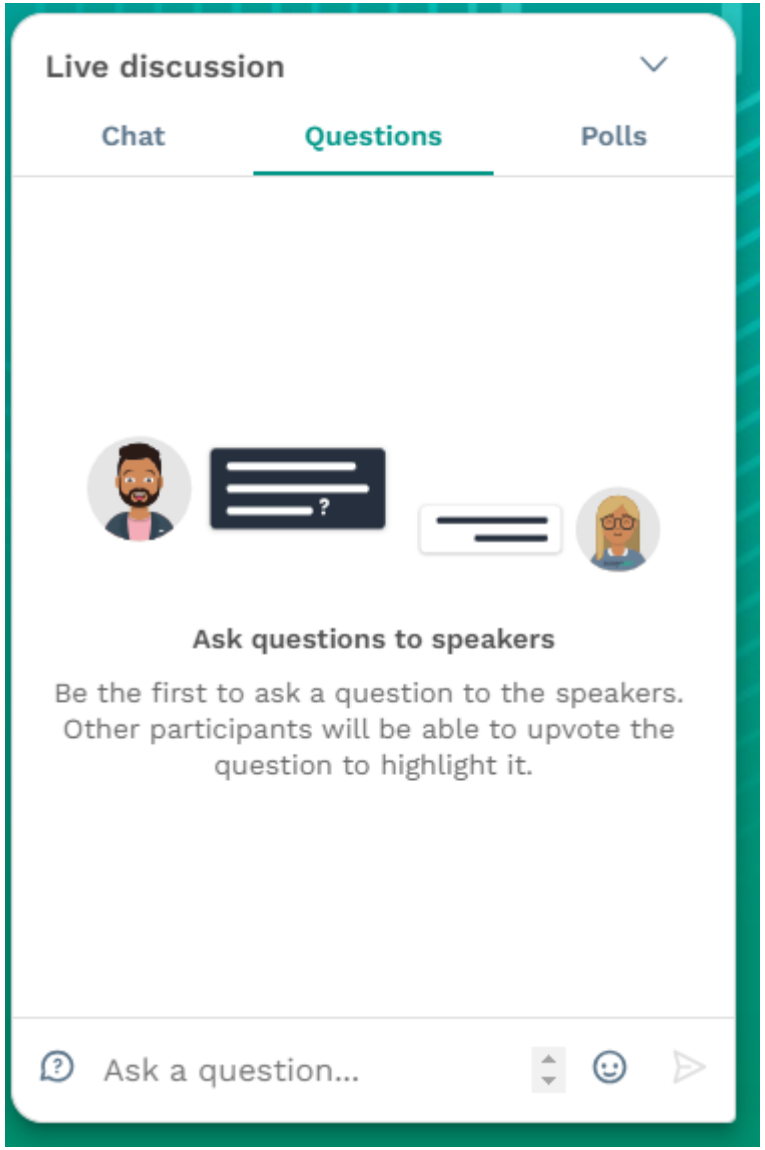
How can Europe turbocharge the transition to 2050 with digital technologies?

13 June 2023

The European Chemical Industry Council, AISBL - Belliard, 40 - 1040 Brussels - Belgium

Logistics

- Please do not use the chat tab for questions.
- For **questions to be addressed,** please use the Q&A section.
- A written summary and presentation slides afterwards.
- Before you leave, please leave your feedback in the polls



Report Presentation and case studies

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A discussion with

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DIGITAL DIALOGUES

The Study: Digital Technologies for Sustainability in the European Chemical Industry

MARINA SAMOYLOVA

Innovation Manager, Cefic

DIGITAL DIALOGUES

DIGITAL TECHNOLOGIES FOR SUSTAINABILITY IN THE EUROPEAN CHEMICAL INDUSTRY

Digital Dialogue – 13 June 2023

Marina Samoylova
Innovation Manager, Digitalisation, Cefic

Digital technologies are key enablers of the EU chemical industry's transformation towards sustainability objectives

Objectives

- Identify **key digitalisation priorities**, determine where and how digital technologies are expected to contribute the most to the major sustainability objectives in the EU chemical industry.
- Define **non-technical priorities** essential for a beneficial implementation of digital technologies in the chemical sector.

Methodology

- **Interviews** with 15 senior digital and sustainability experts.
- **Survey** of >70 experts from 50 different-sized enterprises and diverse chemical segments, >110 sustainability priorities.
- **Roundtable discussions** with 10 global digital technology experts outside the chemical industry.

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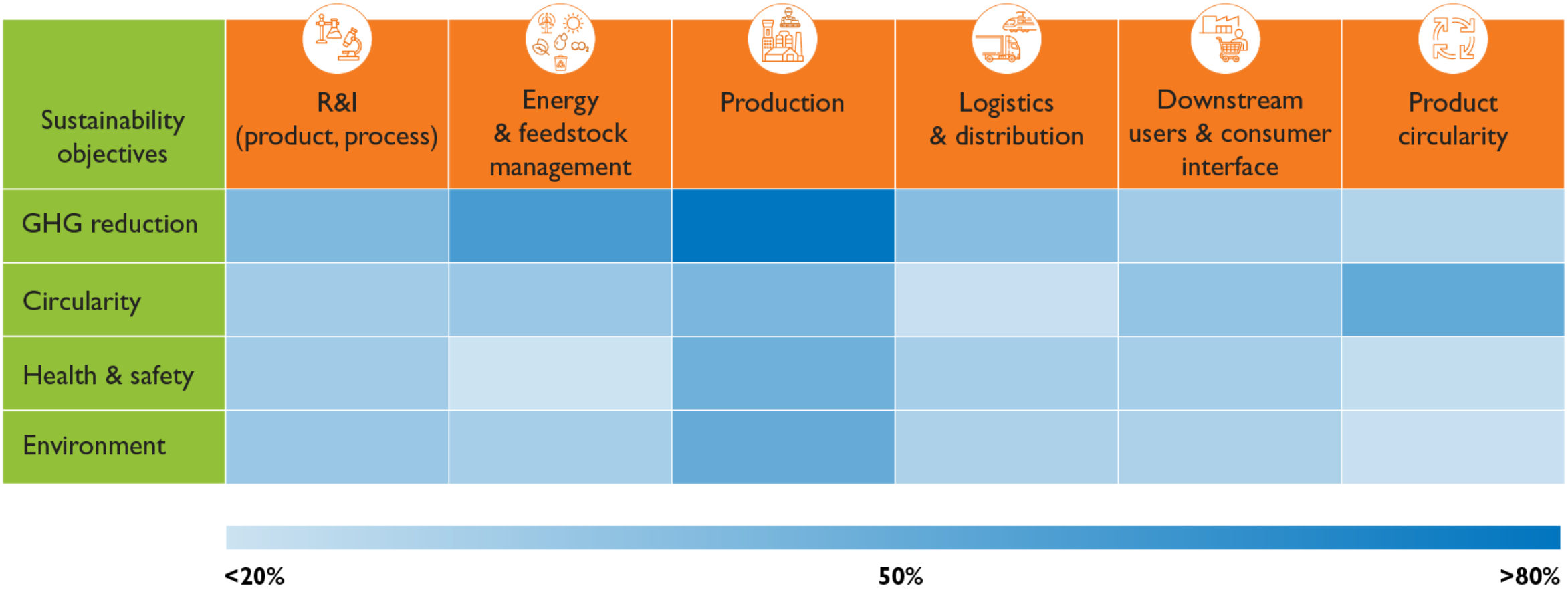
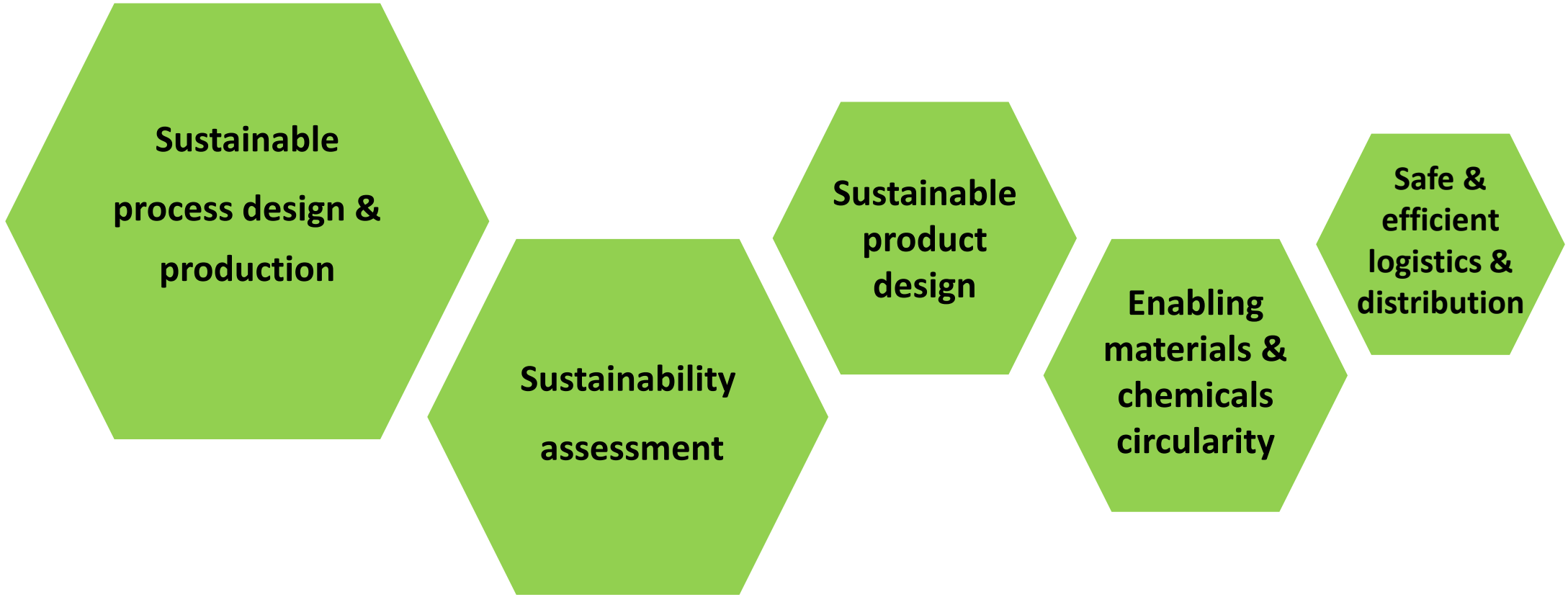
Digital technologies can contribute to all sustainability objectives across the entire value chain

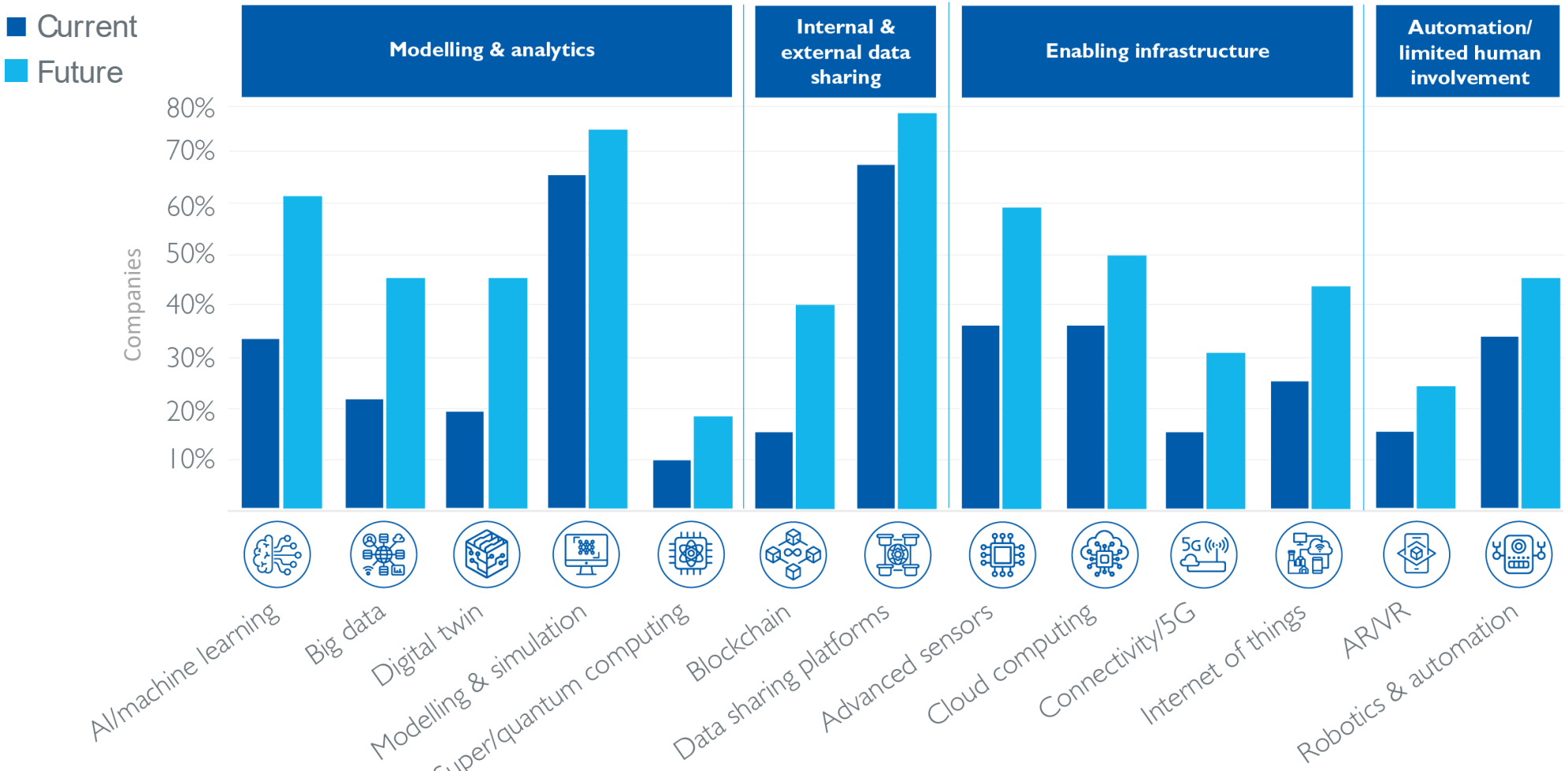


Top 5 sustainability priorities for chemical companies for implementation of digital technologies

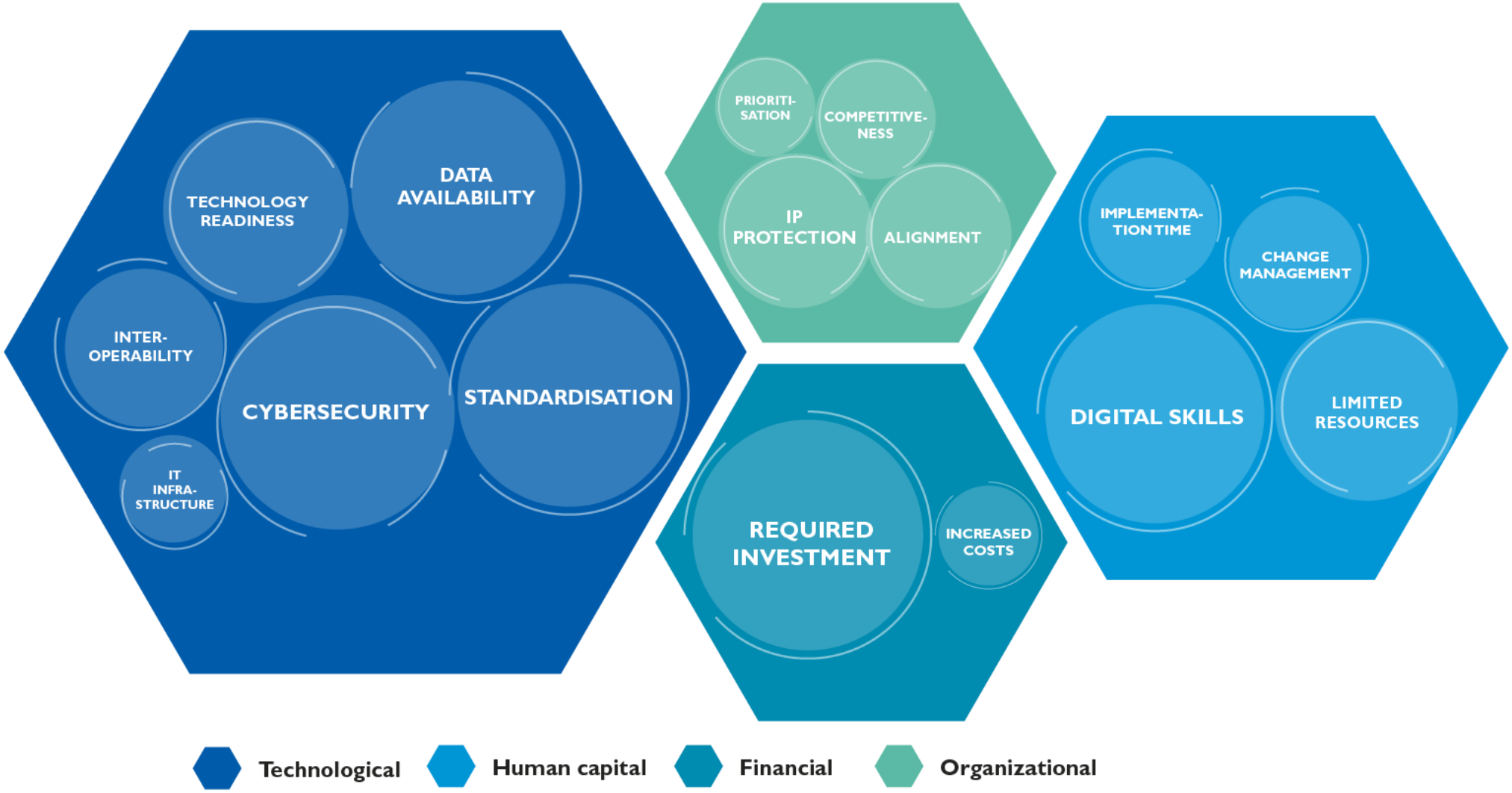


Data availability and data sharing are key starting points towards digital transformation.

Digital technologies are already extensively used to help achieve sustainability goals and will continue to grow in importance



Challenges in implementing digital technologies in the chemical sector



Chemical industry needs to work more closely with EU institutions to ensure beneficial implementation of digital technologies

Key recommendations for the chemical industry:

- Collaborate across ecosystems
- Establish common data and technology standards
- Explore new business models
- Drive targeted investment
- Train and attract digital talents
- Demonstrate best practices
- Engage in shaping digital policies and regulations

Key recommendations for the EU institutions:

- Ensure a coherent and innovation-friendly policy and regulatory framework
- Facilitate creation of data standards
- Facilitate data sharing across ecosystems
- Consider risk-sharing measures to address technology gaps and provide support to smaller companies

THANK YOU!

SARAH ECKERSLEY

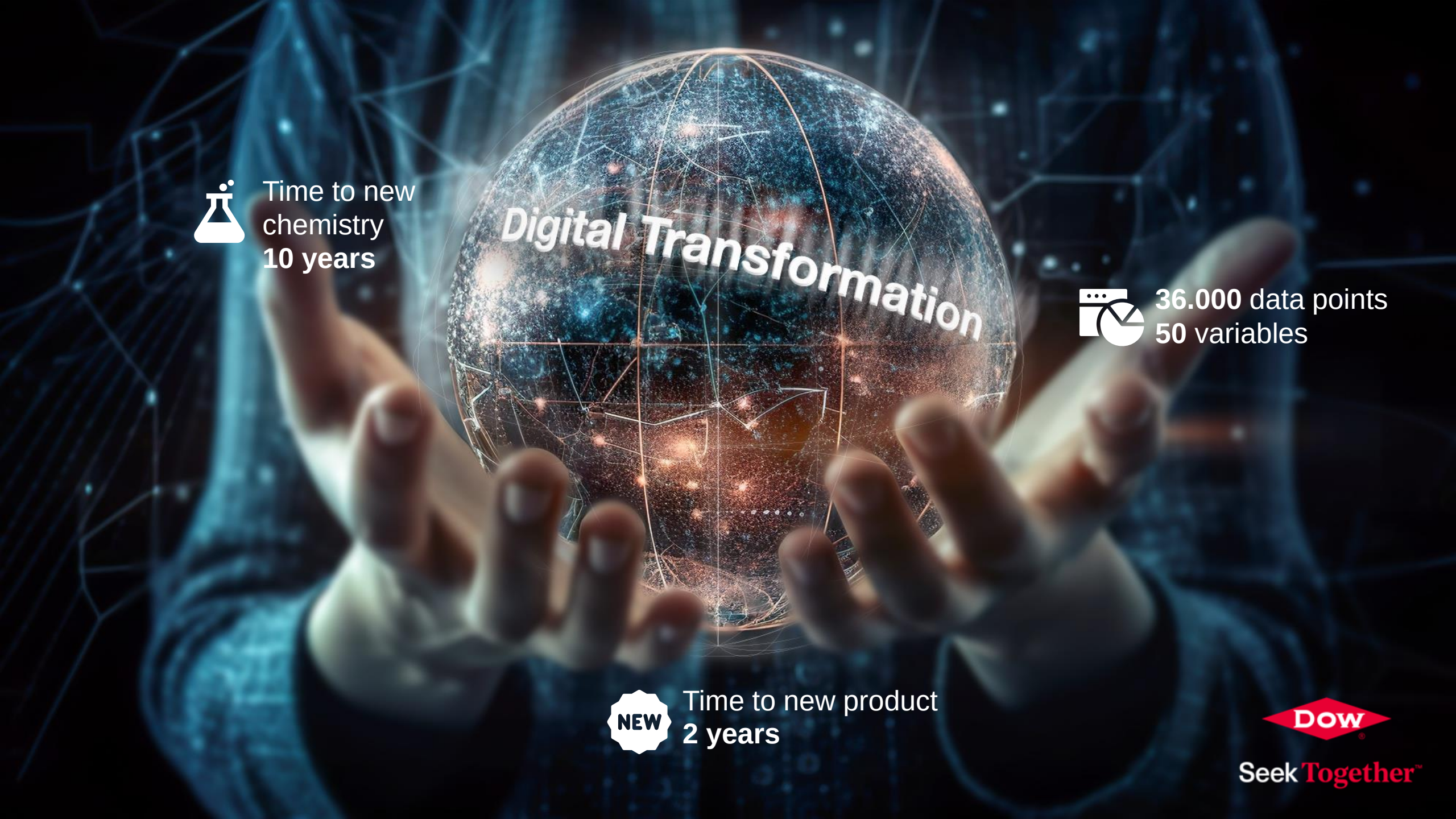
Vice President R&D, Industrial Intermediates & Infrastructure, Dow

Predicting a Sustainable Future for the Chemical Industry

Sarah T. Eckersley, Ph.D.

Vice President of Research & Development, Industrial Intermediates & Infrastructure, Dow

13 June 2023


Digital Transformation
Time to new chemistry
10 years
36.000 data points
50 variables
NEW
Time to new product
2 years
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Smarter, faster solutions
DOW
Harnessing the power of data for every customer interaction.
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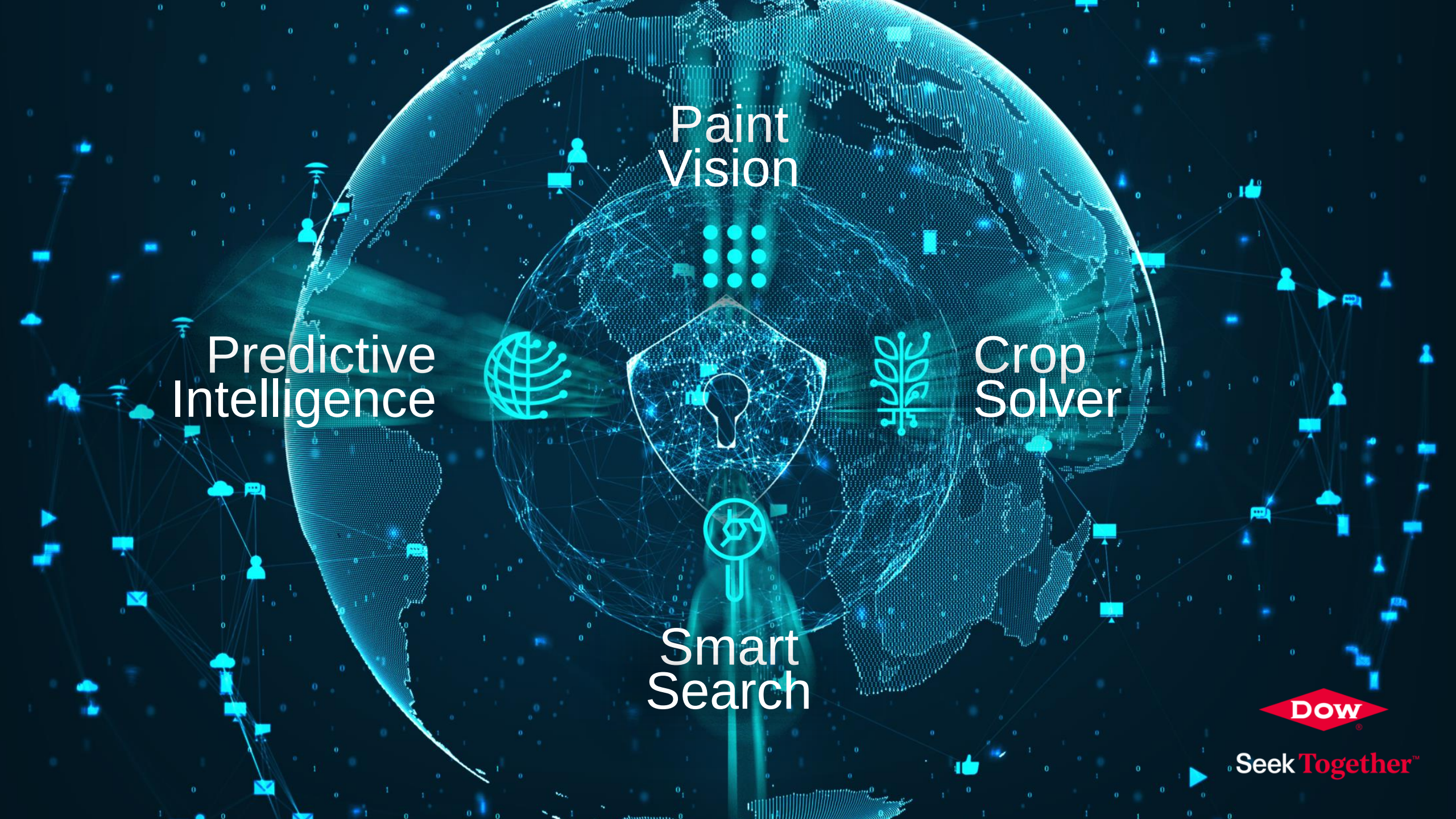
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THANK YOU

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Global Lead “Digital x Circular Economy“
Innovation, BASF

ILIAS IAKOVIDIS

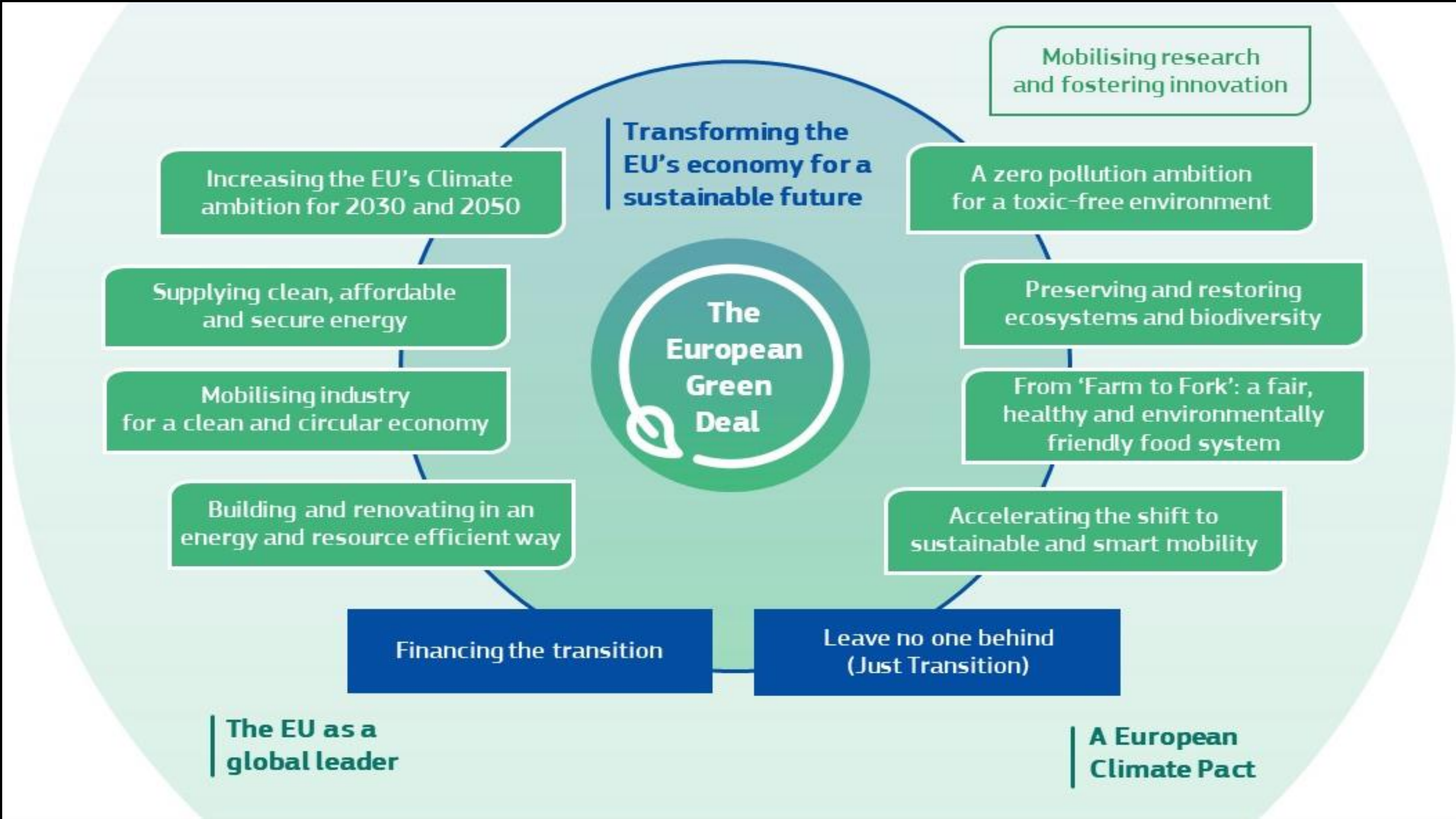
Adviser, Green Digital Transition - DG CONNECT
European Commission

Ilias Iakovidis DG CONNECT
William Neale DG ENV

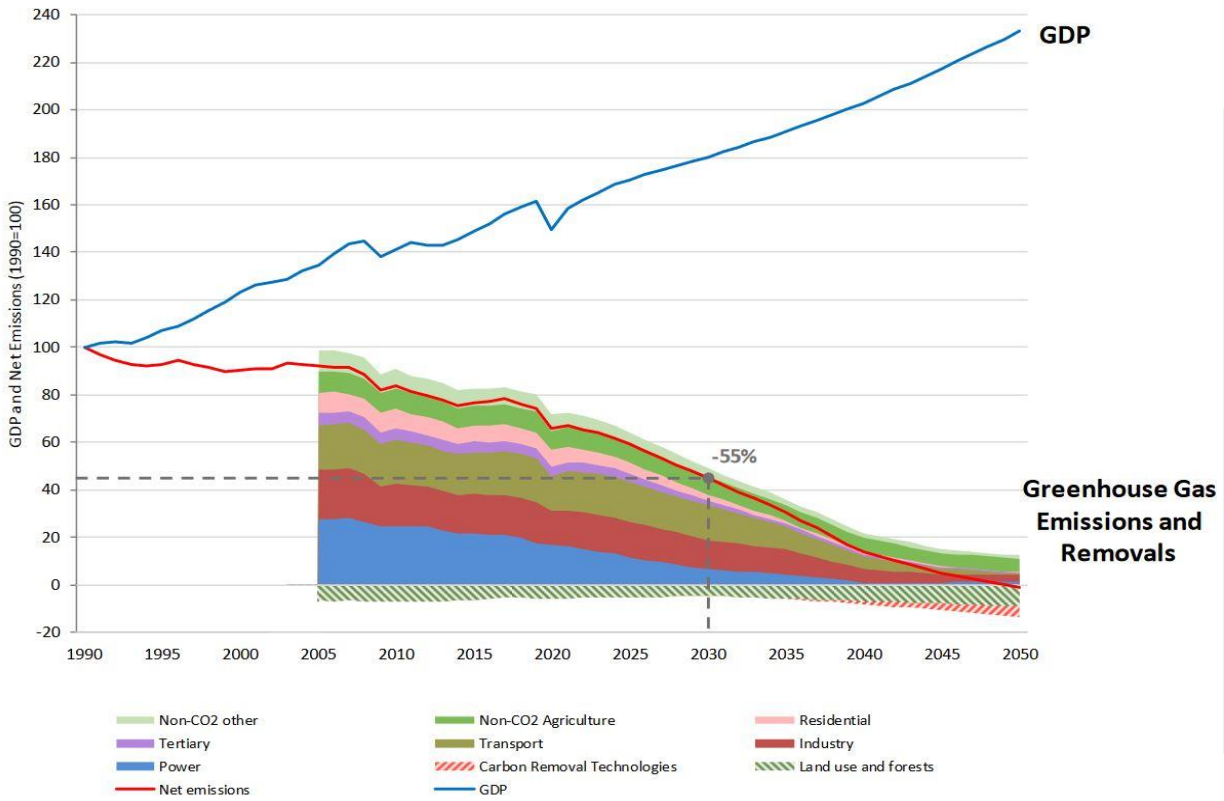
New Commission Priorities

- ***A European Green Deal***
- ***A Europe fit for the digital age***
- *An economy that works for people*
- *Protecting our European way of life*
- *A stronger Europe in the world*
- *A new push for European democracy*

*'..a once-in-a-generation opportunity to ensure Europe leads the way on the **twin ecological and digital transitions**'.*


Mobilising research and fostering innovation
Transforming the EU's economy for a sustainable future
Increasing the EU's Climate ambition for 2030 and 2050
A zero pollution ambition for a toxic-free environment
Supplying clean, affordable and secure energy
Preserving and restoring ecosystems and biodiversity
The European Green Deal
Mobilising industry for a clean and circular economy
From 'Farm to Fork': a fair, healthy and environmentally friendly food system
Building and renovating in an energy and resource efficient way
Accelerating the shift to sustainable and smart mobility
Financing the transition
Leave no one behind (Just Transition)
The EU as a global leader
A European Climate Pact

Reducing GHG emissions by 55% by 2030:
A challenging transition for energy-intensive industries



	2015	2030 (= -55%, variations due to different policy choices)
Total GHG	3611,2 $MtCO_2$/year	~2100 $MtCO_2$/year
Industry	635,7 $MtCO_2$/year	493 – 502 $MtCO_2$/year (- 21% – 23%)
Road Transport	731,8 $MtCO_2$/year	588 - 593 $MtCO_2$/year (-19% - 21%)

Sector	CO_2 abatement/year	Est. investment needs by 2030
Steel	-33 $MtCO_2$/year	~€26.5B
Chemicals	-28 $MtCO_2$/year	€18.5B
Cement	-10,2 $MtCO_2$/year	€7.7B
Road transport	-140 $MtCO_2$/year	~€59B

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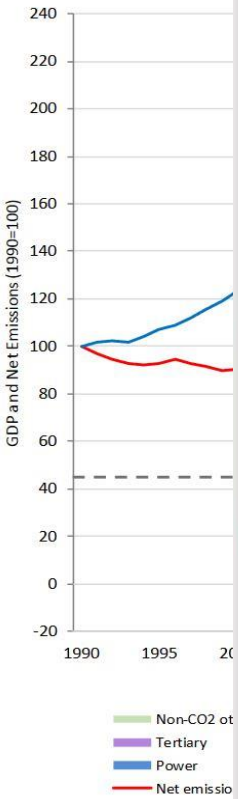


European Commission

Transition Pathway for the Chemical Industry

(= -55%, variations o different policy es)
0 $MtCO_2$/year
- 502 $MtCO_2$/year % – 23%)
593 $MtCO_2$/year % - 21%)

st. investment eeds by 2030
€26.5B
8.5B
.7B
€59B

2030 Digital Decade Targets

European Commission

DIGITAL SKILLS

Adults with basic digital skills

NOW 56%

TARGET 80%

Employed ICT specialists

NOW 8.4 million

TARGET 20 million

DIGITAL INFRASTRUCTURES

Gigabit network coverage

NOW 59%

TARGET 100% of households

5G coverage

NOW 14%

TARGET 100% of populated areas

The EU production of semiconductors, including processors, makes up

NOW 10%

TARGET ≥ 20% of world production in value

There are **10,000 edge nodes** in the EU for **better, secure and sustainable data processing.**

By 2025, the first **EU computer with quantum acceleration** is paving the way for cutting-edge quantum capabilities.

DIGITAL TRANSFORMATION OF BUSINESSES

BUSINESSES USING

Cloud computing services

NOW 26%

TARGET 75%

Big data

NOW 14%

TARGET 75%

Artificial Intelligence

NOW 25%

TARGET 75%

SMEs with at least a basic level of digital intensity

NOW 60%

TARGET > 90%

There are

NOW 122

TARGET **Double** the number of unicorn startups in Europe

DIGITALISATION OF PUBLIC SERVICES

Online access to key public services (related to career, studying, family, regular business operations, moving)

NOW 75/100 services for citizens

84/100 services for businesses

TARGET **All** services for citizens and businesses

TARGET 100% of Europeans with access to digital health records &

80% using a digital id

European Commission

Current legislative proposals on Green & digital

European Commission

Digital Transformation

- Data Act Regulation
- European Media Freedom Act
- Cyber Resilience Act
- ePrivacy Regulation
- European Chips Act
- Artificial Intelligence Act
- European Digital Identity Regulation
- Gigabit Infrastructure Act

- Declaration on Digital Rights and Principles
- Digital Decade Policy Programme

Green Transition

- Eco-design for Sustainable products
- Batteries Regulation
- Packaging Regulation
- Empower. consumers in the green Transition
- Green Claims
- Right to Repair
- Industrial Emissions & Portal
- Urban Waste Treatment
- Certification FW for carbon removals
- EU Taxonomy
- ....

European Commission

What Nexus ?

- Green transition and digital transformation are top policy priorities ..but their interplay is not
- There is not understanding of the interplay and no capacity to develop green digital strategy(e.g RRF)

What Nexus ?

Conflicts

- ICT footprint: 2.1 and 3.9% of total emissions; eWaste- fastest growing waste category
- Green transition may block certain digitalisations patterns (built in obsolescence, blockchain mining, single use electronics, etc).

Sustainable Digital Technologies

Climate Neutral and highly energy efficient datacentres by 2030: review **JRC's CoC,** the Energy Efficiency Directive and the Taxonomy Regulation

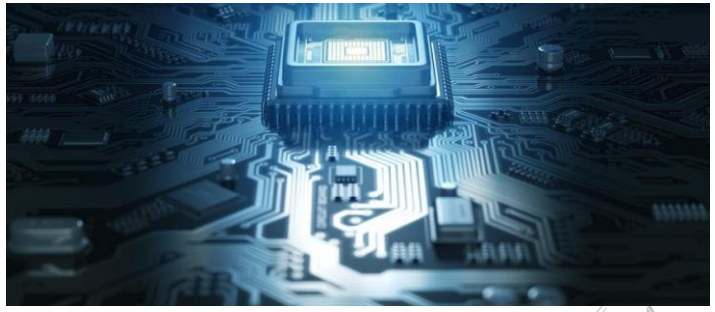
Greener electronic communications by 2030:

- Transparency measures
- Administrative incentives for green deployment

Circular Electronics Initiative: Better durability, reparability, refurbishment, recycling for consumer and industrial electronics & IoT

"Right to repair" for consumers.

Low power processors, software and AI: investing in new ultra-low-power



European Commission

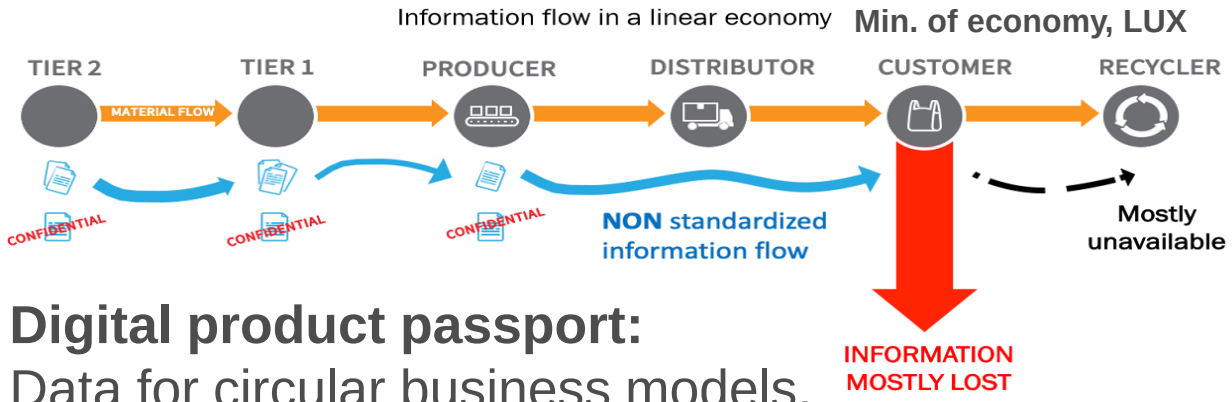
What Nexus ?

Conflicts

Synergies

- **Digital transformation for climate neutrality. It can reduce 15-20% of total GHG emissions**
- **Green transition for sustainable financing and new jobs in green digital transformation**

Digital contribution to environment & climate



Digital contribution: reduction by up to 15%-20% of total emissions with deployment of today's technology.

Digital product passport:
Data for circular business models, Sustainable, integrated Single Market

Smart mobility: reduction of transport emissions up to 37%; **smart buildings** with emissions reduction by 17%;

Destination Earth / digital twins: High Performance Computing, AI for better anticipation of extreme events prediction, climate modelling.

Also: smart energy networks; Precision farming, Blockchain for emissions accounting, smart cities; AI for climate; smart manufacturing;

European Commission

The nexus of Green transition & Digital Transformation

Conflicts are measurable (energy and material consumption, eWaste)

Synergies are so far expressed as ‘potential’ figures of enablement

To realise such potential we need science based & standardised **metrics**.

This will enable

- Sustainable finance for digitalisation (see EU Taxonomy Delegated Act on Climate mitigation)
- Green Public Procurements – GPP criteria exist for datacentres
- Market growth of green digital solutions in major sectros such as energy, transport, construction,

European Green Digital Coalition Declaration

37 CEOs of ICT companies, with 2040 Net Zero targets, have committed to take action in the following areas:

- Investing in the **development and deployment** of green digital solutions with significant energy and material efficiency that achieve a net positive impact in a wide range of sectors.

- Developing **methods and tools** to measure the net impact of green digital technologies on the environment and climate by joining forces with NGOs and relevant expert organizations.

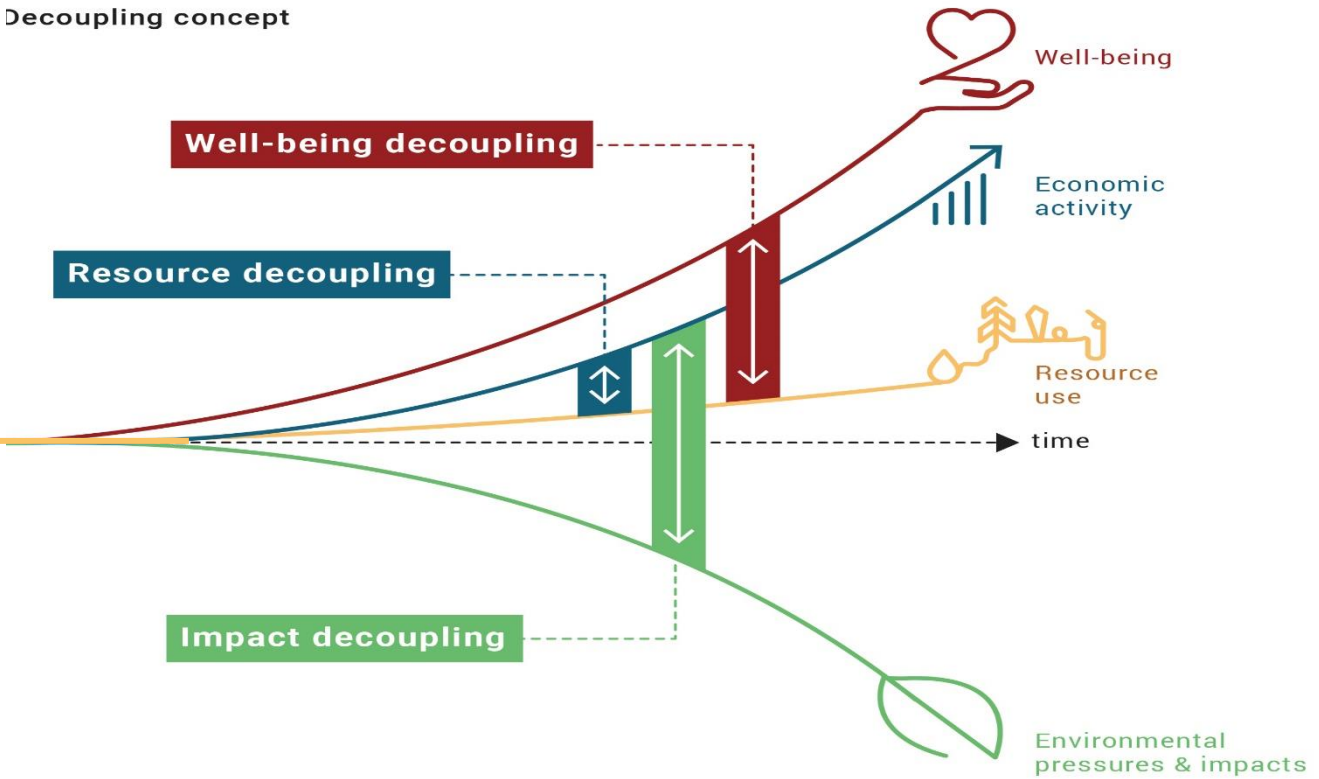
- Co-creating, with representatives of others sectors, **recommendations and guidelines** for green digital transformation of these sectors that benefits environment, society and economy.

https://www.greendigitalcoalition.eu/

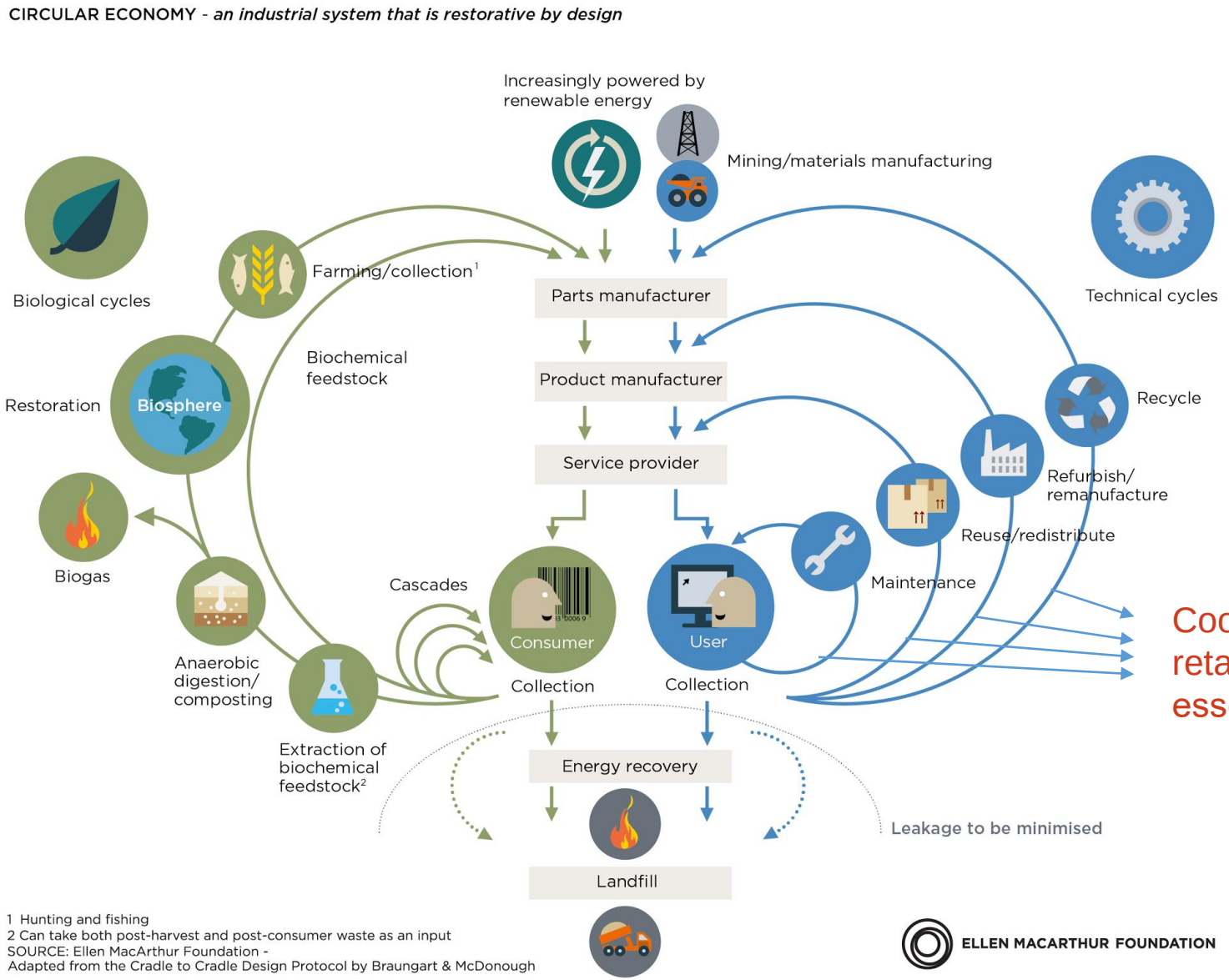
EGDC Members:

A1 Telekom Austria Group Thomas Arnoldner CEO	Accenture Jean-Marc Ollagnier CEO Europe	Aruba Stefano Cecconi CEO	Atos SE Nourdine Bihmane CEO	Beyond.pl Wojciech Stramski CEO	KPN Joost Farwerck CEO	Liberty Global Mike Fries CEO	Microsoft Brad Smith President	Nokia Pekka Lundmark President and CEO	NOS Miguel Almeida CEO	Telefónica José María Alvarez-Pallete Chairman & CEO	Telenor Group / Nordics Jukka Leinonen CEO & EVP	Telia Company Allison Kirkby CEO		
Bolt Markus Villig CEO	BT Philip Jansen Chief Executive	Capgemini Aiman Ezzat CEO	CISCO Chuck Robbins CEO	Dassault Systèmes Bernard Charlès CEO and vice-chairman	Orange Christel Heydemann CEO	OVHcloud Michel Paulin CEO	Proximus Guillaume Boutin CEO	SAP SE Christian Klein CEO	Scaleway Arnaud Brindejonc de Bermingham President	TIM Pietro Labriola CEO	Vodafone Group Nick Read CEO	Uber Dara Khosrowshahi CEO		
Deutsche Telekom AG Timotheus Höttges CEO	Ericsson Börje Ekholm CEO	Hewlett Packard Enterprise Antonio Neri CEO	Google Matt Brittin President, EMEA Business and Operations	IBM Jim Whitehurst President	Schneider Electric Jean-Pascal Tricoire CEO	SHIFT GmbH Carsten and Samuel Waldeck CEOs	Siemens Roland Busch CEO	Sopra Steria Cyril Malargé CEO	TDC Group A/S Henrik Clausen Group CEO & President					

Sustainability is not only about GHG emissions reduction



Key for Sustainability - Circular economy



Cooperation among manufacturers, retailers, repairers, recyclers, is essential to enable these ‘circles’

Transition to Circular economy

Sustainable products – durable, re-usable, reparable, refurbishable, …recyclable

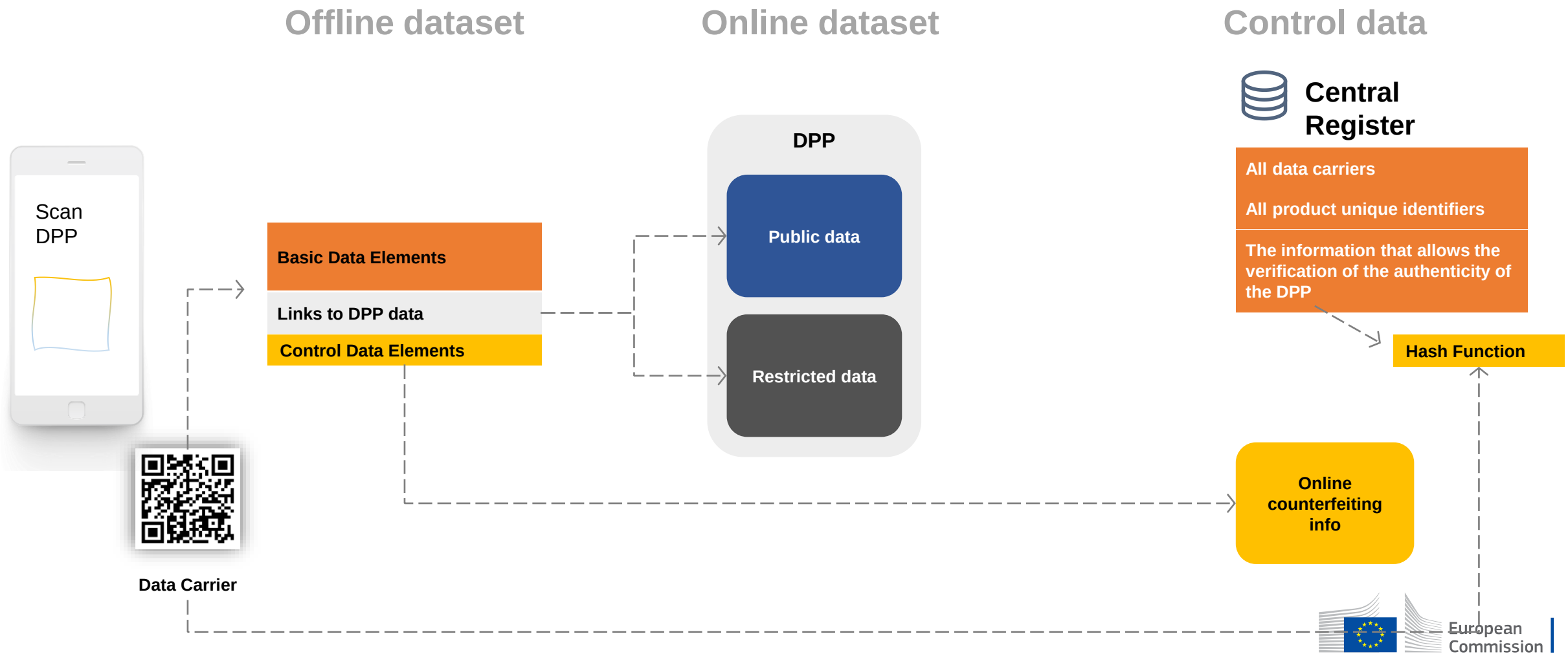
Sustainable Business models – e.g. Product as a service,

Key enabler: Digital Product Passport

Recent EU legislations:

- Ecodesign for sustainable products - European Commission – product requirements, information requirements across who supply chain, **Digital Product passport** (30.3.2022)
- Empowering consumers for the green transition - European Commission (30.3.2022)
- Proposal on the Directive on Green Claims (22.3.2023)
- Proposal for a Directive on common rules promoting the repair of goods (22.3.2023)

Summary of our design thinking so far



Digital Product Passport design

DPP-system

(to be developed before DPP deployment)

Digital Product Passport

DPP-data

(to be identified when developing product-group specific secondary legislation)

- All standards and protocols related to the IT architecture, like standards on:
  - Data carriers and unique identifiers
  - Access rights management
  - Interoperability (technical, semantic, organisation), including data exchange protocols and formats
  - Data storage
  - Data processing (introduction, modification, update)
  - Data authentication, reliability, and integrity
  - Data security and privacy
- The DPP registry

Possible Track & Trace identifiers

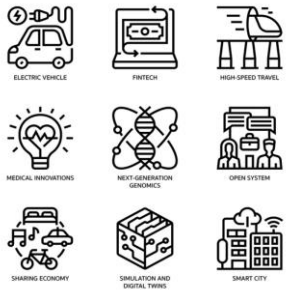
- Economic operator's name, registered trade name
- Global Trade Identification Number or equivalent
- TARIC code
- Global location number
- Authorised representative
- Reference of the back-up data repository
- …

Example of potential attributes

- Description of the material, component, or product
- Recycled content
- Substances of concern
- Environmental footprint profile
- Classes of performance
- Technical parameters
- …

ESPR
Digital Product Passport (DPP) – expected benefits

Tracking of **raw materials extraction/production**, supporting due diligence efforts



Enable **manufacturers** to create products **digital twins**, embedding all the information required

Tracking the life story of a product, enabling services related to its **remanufacturing**, **reparability, re-use/re-sale/second-life, recyclability**, new business models

Benefit **market surveillance authorities and customs authorities**, by making available information they would need to carry out their tasks

Make available to **public authorities and policy makers** reliable information. Enable to link **incentives** to **sustainability performance**

Allow **citizens** to have access to **relevant and verified information** related to the characteristics of the products they own or are considering to buy/rent (e.g. using apps able to read the identifier

DPP Pilot - Basics

- **1 Pilot** in at least 2 value chains (product categories) except batteries
- 6M€, simple grant - 50% funding
- Deployment at scale, with numerous economic actors – including SMEs, many interactions
- Benefits on **B2B** as well as B2C and B2B
- Important to demonstrate well-functioning of the **DPP system** with fit for purpose for the selected value chains – preferably chosen from the pre-identified standards in the *StandICT report*

https://www.standict.eu/landscape-analysis-report/landscape-digital-product-passport-standards

European Commission

DPP Pilot basics

Outcomes and deliverables

- Deployed and validated at scale and real life setting Digital Product Passports in at least two value chains.
- Report on further needs for standardisation and specifications to ensure interoperability, security, and acceptance by all the stakeholders.
- Recommendations based on the lessons learnt for the deployments of DPP in other value chains.

KPIs to measure outcomes and deliverables:

- Number of actors in value chain of varying sizes including the number of consumers' interactions;
- Number of products targeted within each value chain;
- Number of interactions, speed, user friendliness of the system in particular for SMEs, cyber security and performance; and
- Rating of consumes' and market authorities understanding of information in the DPP and their satisfaction.

FEDERICO MENNA

CEO, EIT Digital

European Institute of Innovation & Technology (EIT) Digital is a leading European organization for digital innovation and entrepreneurial education.

EIT DIGITAL IS AN IMPACT ORGANISATION

3000

EIT Digital Master School **graduates**

243

EIT Digital's Deep Tech **startup** portfolio

€1,3B

Total funds raised by EIT Digital supported **scaleups**

€100M

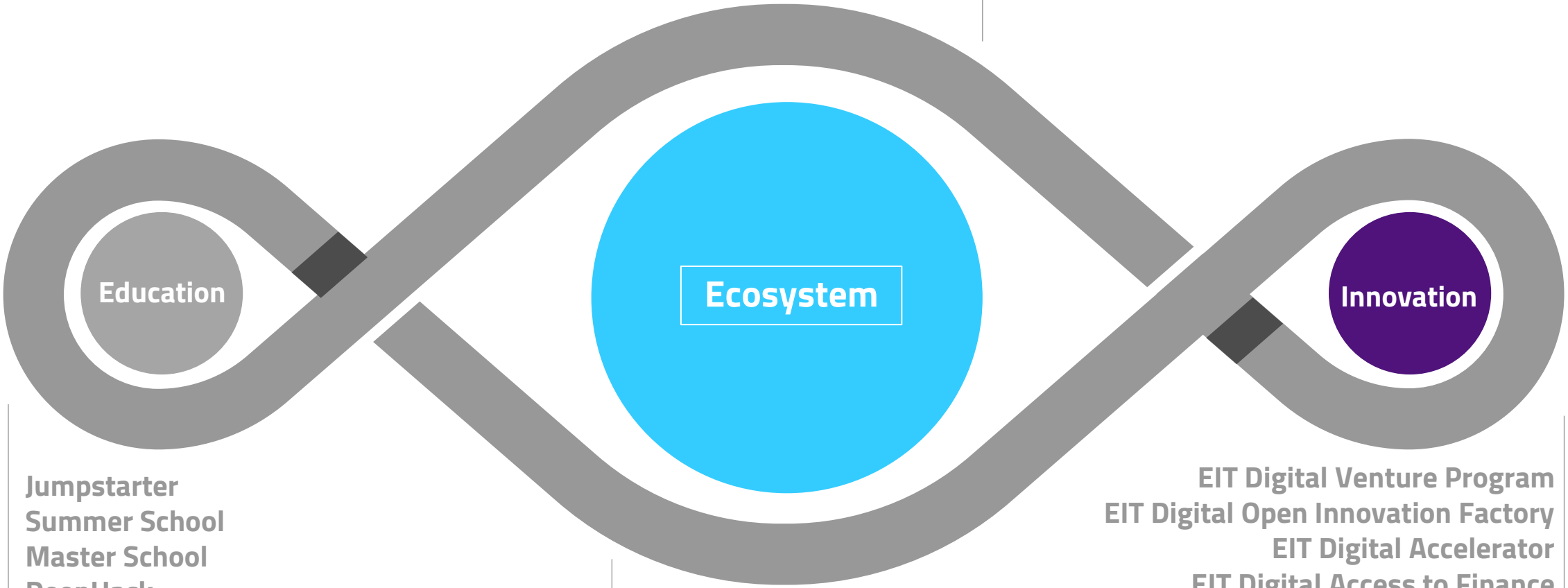
EIT Digital-led Strategic Partnerships and collaboration for **EU projects**

EIT Digital is partnership organisation. With an ecosystem of 350+ digital innovators, most of our programs and initiatives are made in collaboration with them.

We are bringing together academia, research and innovation. Our aim is to build a competitive digital Europe, aligned with the UN Sustainable Development Goals.

Unrivalled partnership

500 startups
21 cities
Hub in Silicon Valley



Jumpstarter
Summer School
Master School
DeepHack

3000 Master School Talent Pool
Access to Talent Service
56 Universities
350 Partners

EIT Digital Venture Program
EIT Digital Open Innovation Factory
EIT Digital Accelerator
EIT Digital Access to Finance
EIT Digital Access to US Market

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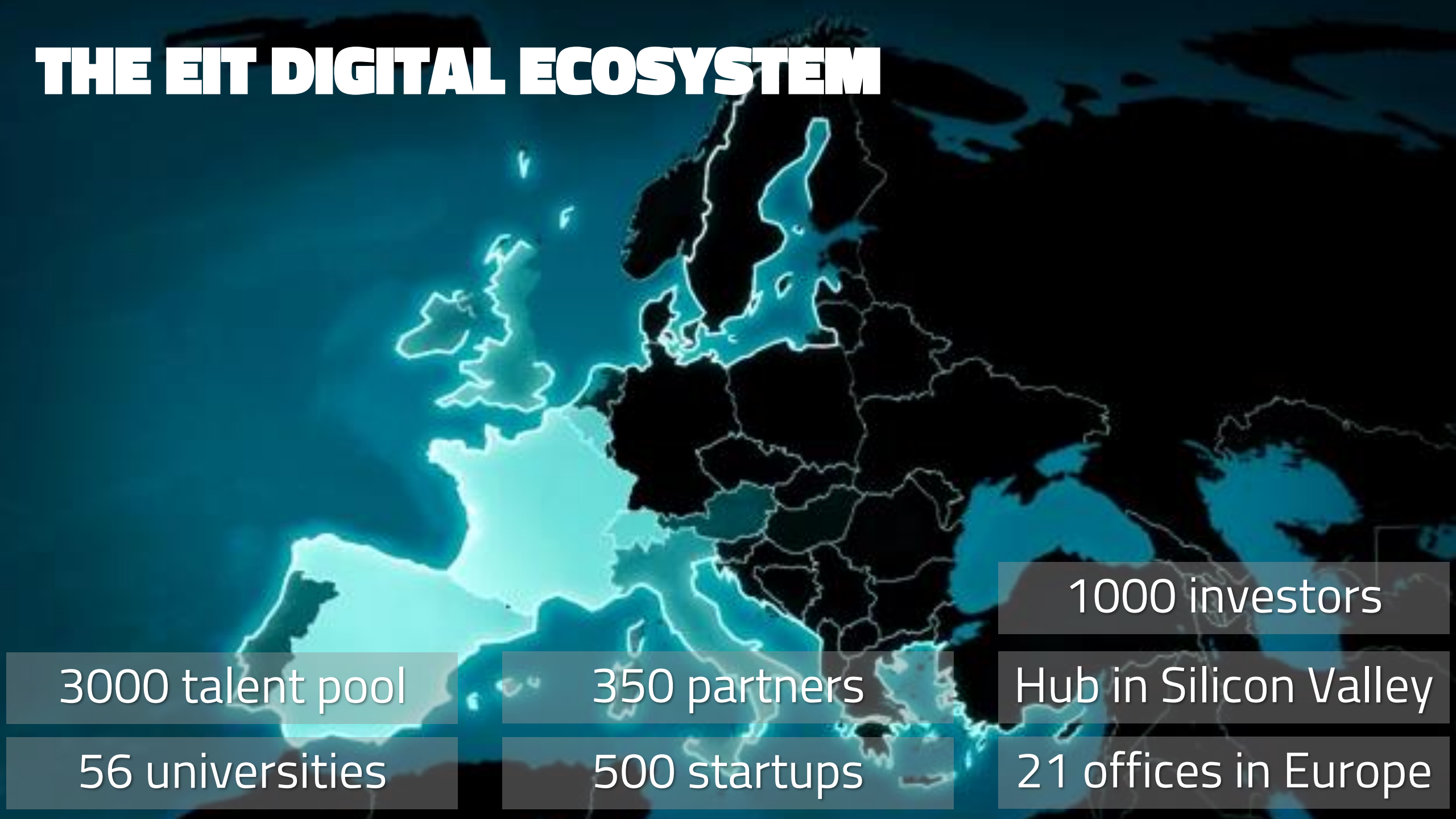
THE EIT DIGITAL ECOSYSTEM



1000 investors

3000 talent pool

350 partners

Hub in Silicon Valley

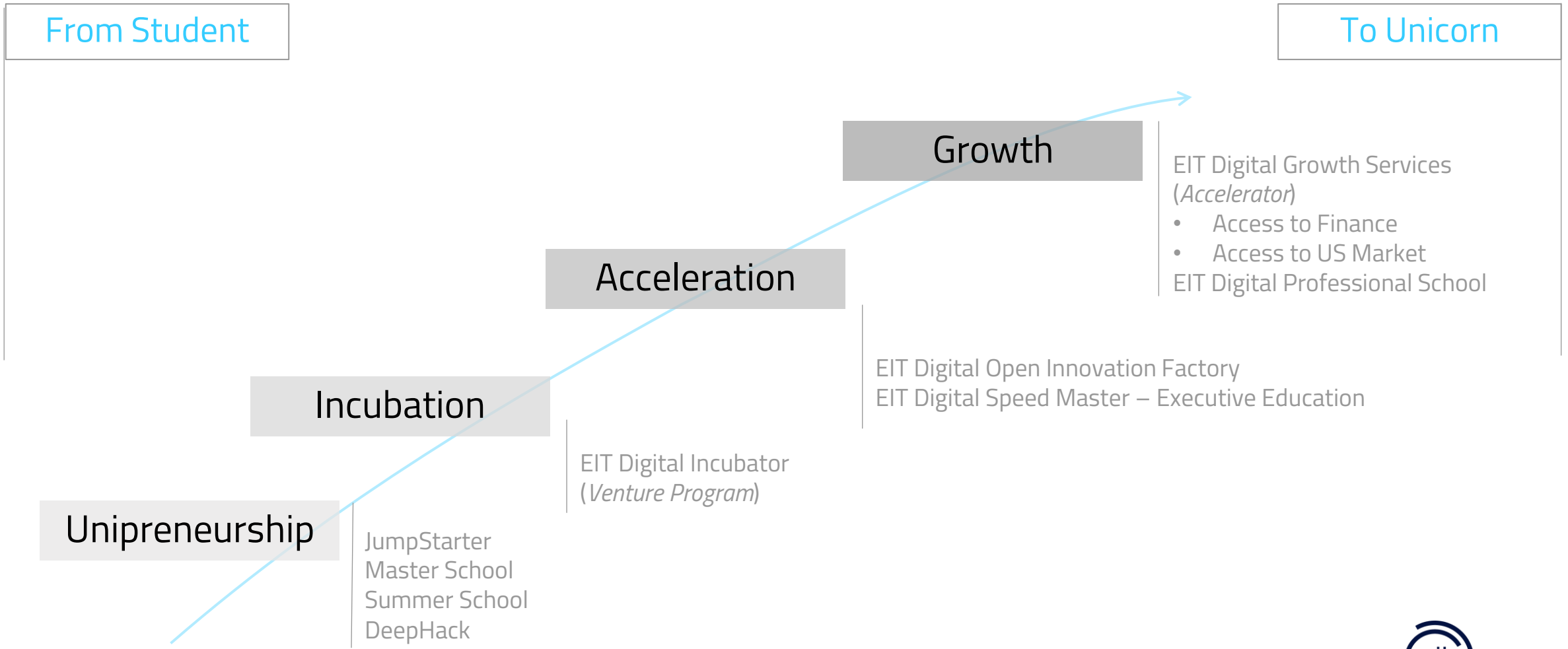
56 universities

500 startups

21 offices in Europe

Unrivalled entrepreneurship initiative

#DIGITAL
#DEEPTECH



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Questions?

Thank you for your attention

For more information, please contact
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And before you leave, please tell us what you think of this webinar: