



Opportunities for IE & IM in partnerships for societal impact

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- UG is unique in the Netherlands in having a strong engineering orientation within a comprehensive, academic environment.
- Long tradition of engineering research and education at a classical university (since 1950).
- Faculties with Engineering science and education:
 - Fac. Science and Engineering,
 - Fac. Economics and Business (Logistics Engineering)
 - Fac. Medicine (Biomedical Engineering),
 - Fac. Spatial Sciences (Spatial Planning and Design).
- Because of the engineering orientation of UG:
 - => discussion with 4TU about more structural collaboration.
 - => Participate in national sector plans engineering.





In this presentation:

Dutch grant programs for public-private partnerships

Organising public-private partnerships

Examples of transdisciplinary research projects

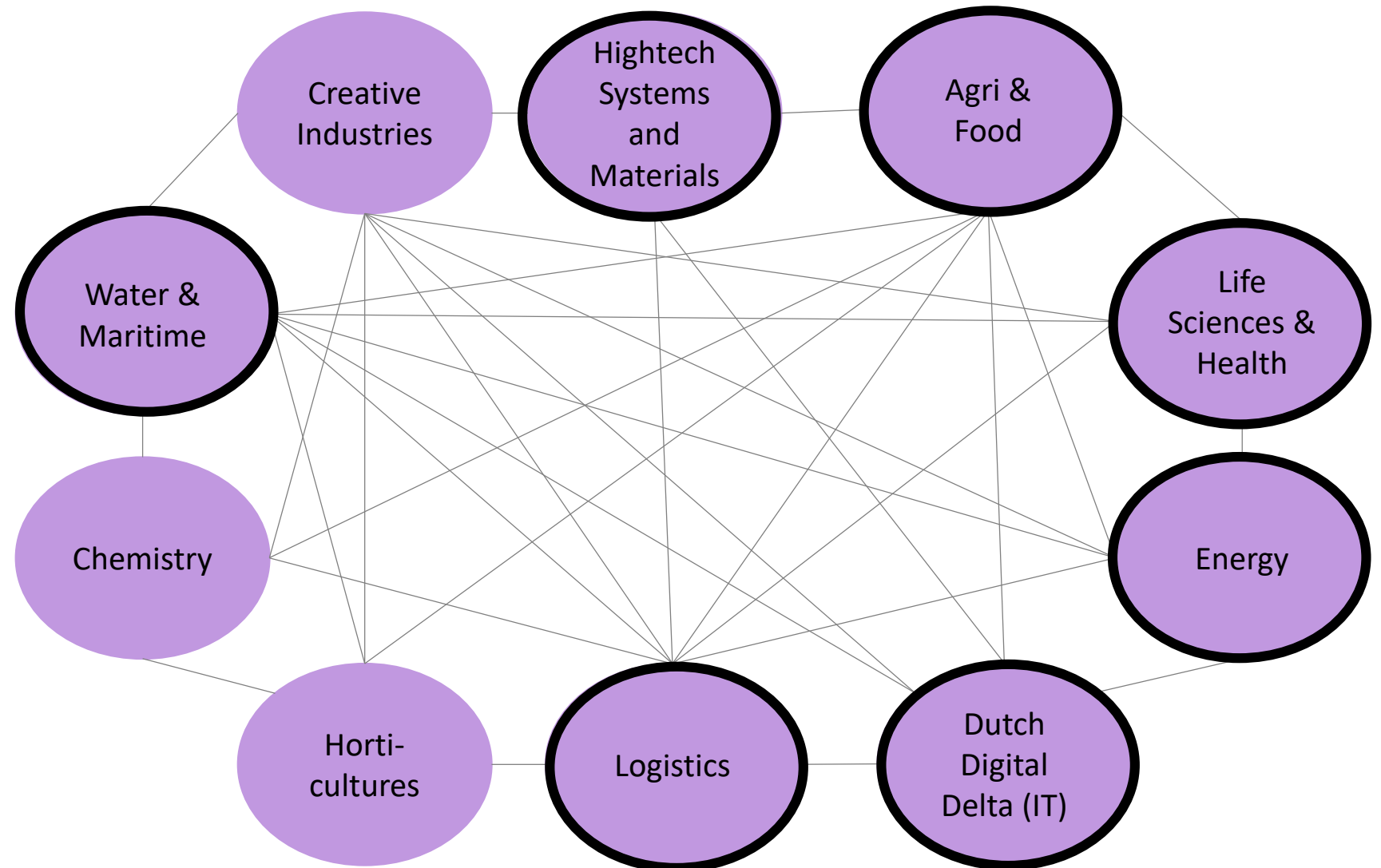
Dutch sectorplans and Human capital agendas

Dutch Top sectors

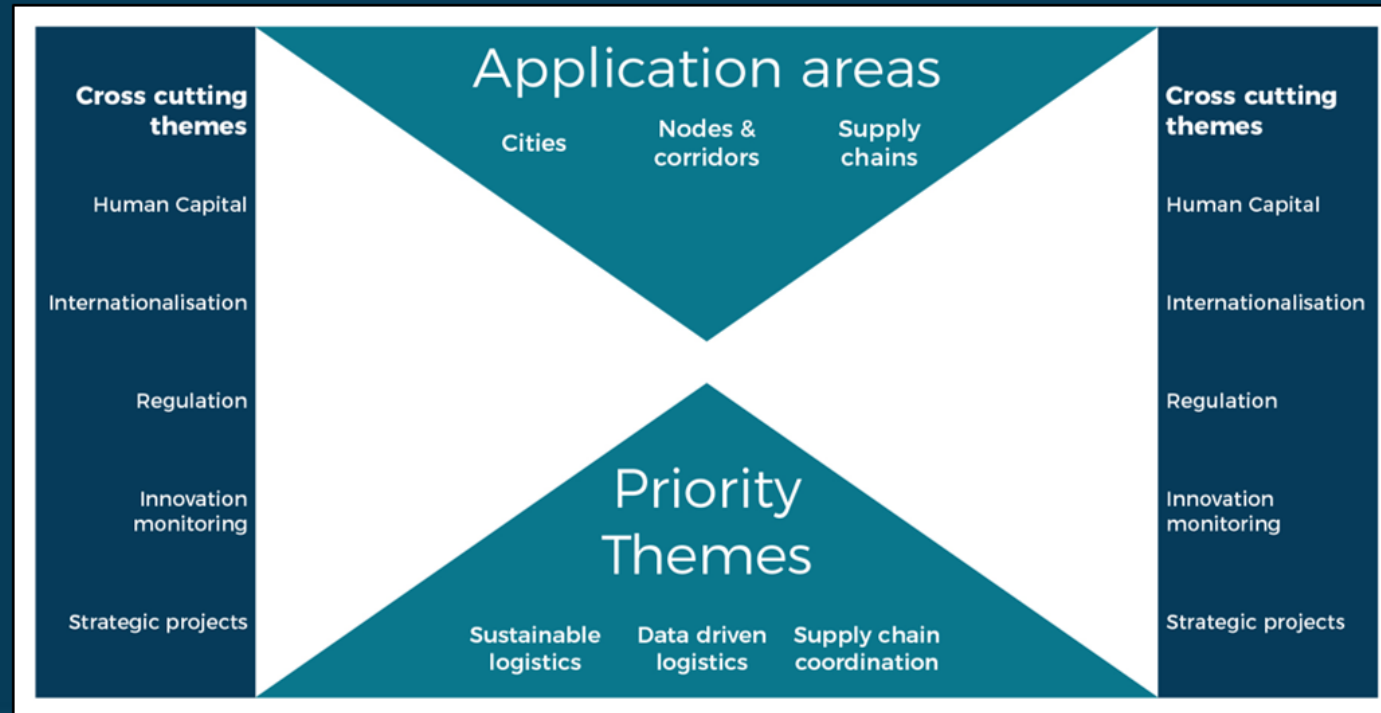
2011: Start

Top sector Alliance for Knowledge & Innovation (TKI)

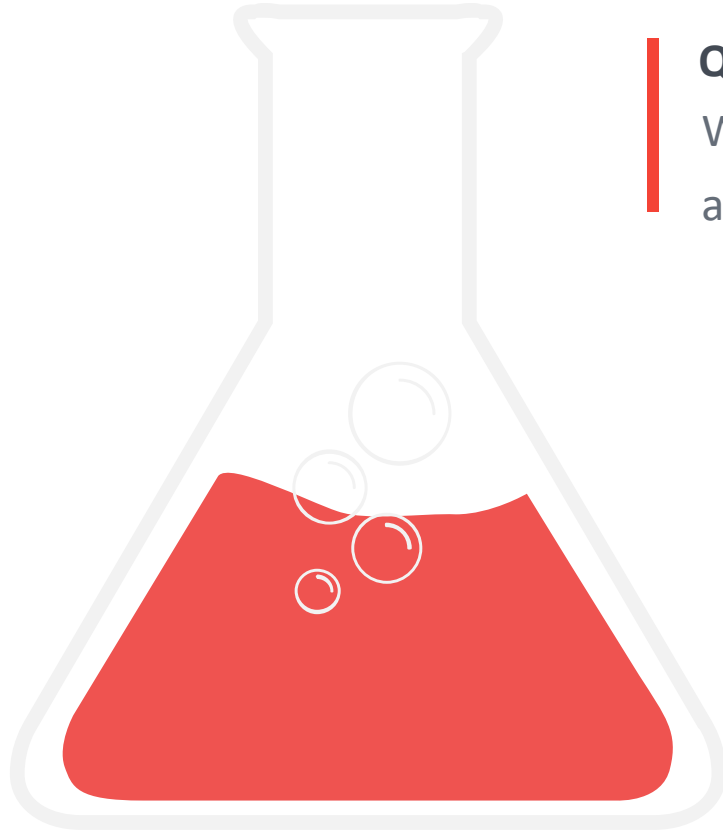
2019: Mission-driven



Scope Action Agenda 2020 - 2023



2015: Start



QUESTION!

What would you like to
ask scientists?

THE RESULT:

12 000 questions in total

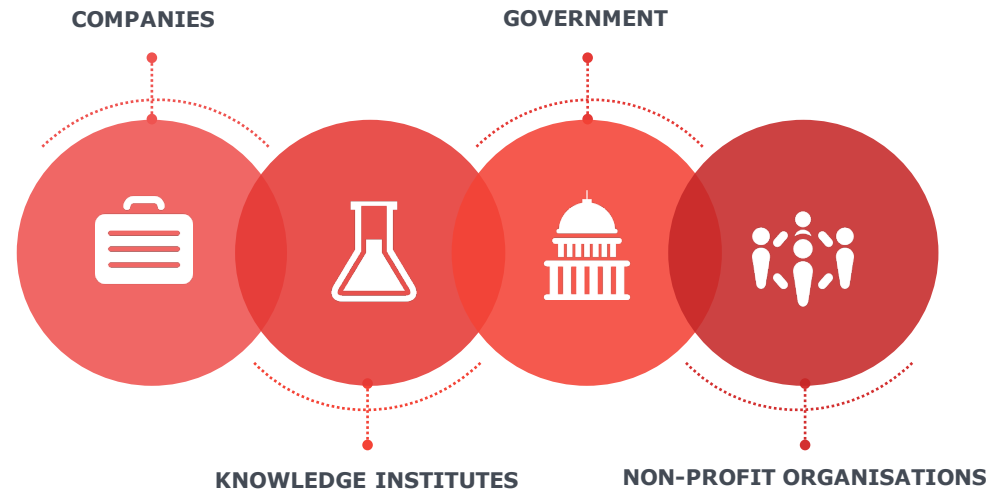
140 scientific questions selected by **panels** clustered in **themes**

Bottom-up initiative driven by the **Dutch public**

Revealing the **complexity** of issues **challenged** by the **Dutch society**

Knowledge, Innovation and Human Capital

Dutch Topsectors



Dutch Knowledge and Innovation Covenant (KIC)

- 4 societal themes
- Key enabling technologies

Societal themes

- Energy Transition and Sustainability
- Agriculture, Water and Food
- Health and Care
- Safety

Key Enabling Technologies

- Nanotechnology
- Quantumtechnology
- Fotonics
- Artificial Intelligence
- Big data
- Blockchain

Dutch Science Agenda



Human Capital Agenda

National Growth Fund

- 2021-2025: Fund of 20 billion euros for long-term, incidental investments in addition to regular policies to contribute to economic growth.
- *Themes:*
 - Energy and sustainable development;
 - Agriculture and environment;
 - Health and care;
 - Safety and digitalisation;
 - Mobility;
 - Key technologies.
 - Education;
 - Lifelong Development.
- *Project size and duration:* at least 30M euro subsidy for 15 years.
- *Examples of projects* in which Industrial Engineers participate:
 - AINed (human-centric Artificial Intelligence);
 - Green hydrogen;





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Activities in building public-private partnerships



Representation &
Visibility

Building new
inter-/multi
disciplinary
programs of
cooperation

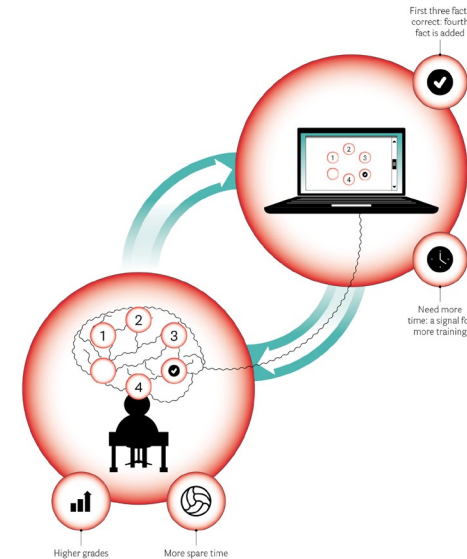
Professionalising

Why?:

- Building networks and management of relations internally and externally;
- Representation of research projects;
- Creating credibility for new projects with potential partners;

How:

- Representation in networks;
- Increasing visibility of interdisciplinary projects of cooperation with external partners;
- Building trust.



Why?:

- Interdisciplinary cooperation with external partners asks for different skills. It is, for example, important to start to learn to speak the language of your colleagues working in different disciplines and the languages of governmental organisations as well as companies.
- Learning by doing, coaching and sharing experiences can contribute to a further growth in programs of cooperation.

How:

- Discussions with and learning from your peers.
- Attending workshops (e.g. UIIN).
- Getting inspiration from talks with professionals in the field, by company visits etc.
- Attending professional conferences, reading professional journals.

Building transdisciplinary programs of cooperation

- Working towards sustainable cooperation. Each trajectory is tailor-made.
- In building internal and external relationships, we distinguish the following key factors:
 - patience,
 - trust,
 - time,
 - mutual involvement
 - shared vision.
- Many seeds will be planted to grow as much of them as possible with proper care and investment.
- Connecting to regional and national eco-systems.

Some examples of regional eco-systems for IE



Universiteit
van het Noorden



hive·mobility



Ai hub
NOORD
NEDERLAND



BuildinG



5G GRONINGEN



CHEMPORT
EUROPE



New
Energy
Coalition



greenwise
campus



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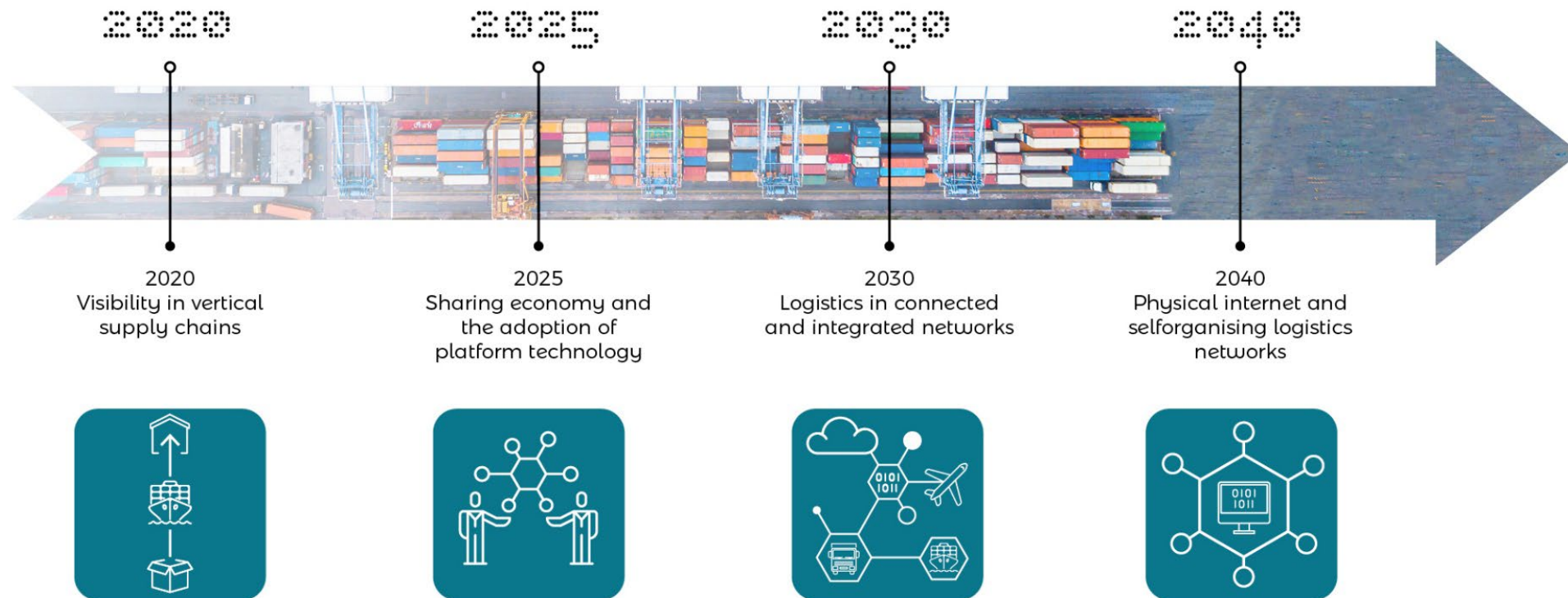
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Examples of transdisciplinary research projects

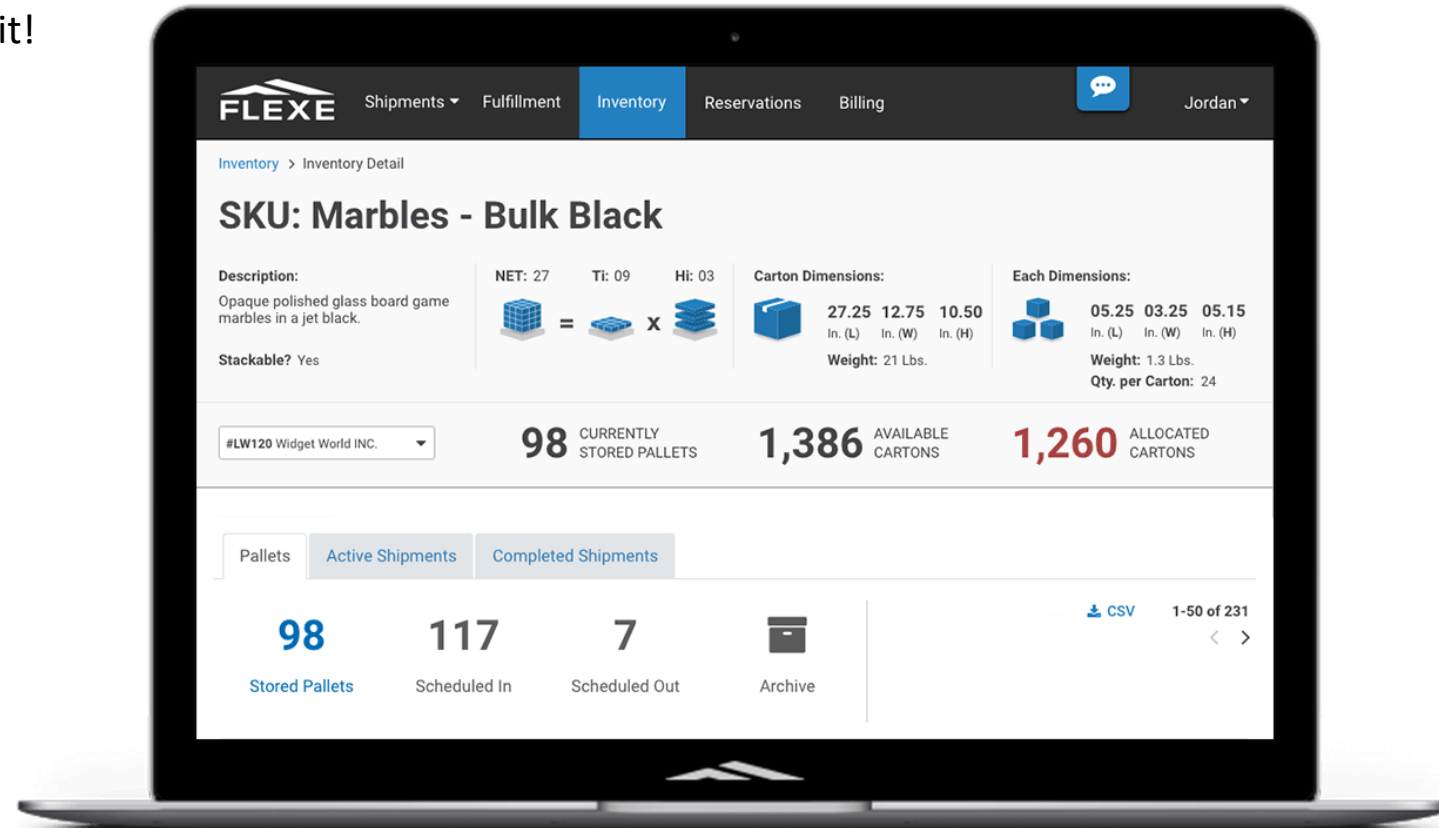
Dutch sectorplans and Human capital agendas

Topsector Logistics: Supply Chain Coordination

The future of supply chain coordination



The **Physical Internet** sounds big, futuristic and intangible... However, we are already getting used to it!



PI Lab at UG



Towards Virtual Ports in a Physical Internet

Towards Virtual Ports in a Physical Internet

Academic partners: Delft University of Technology
Main industry partners: Port of Rotterdam; Groningen Seaports
Duration: January 2016 – June 2021
(Co-)funding: 85% by NWO through the program “Vitale logistiek”;
15% by the industry partners

Werkpakket 1

Concepten voor
de nieuwe rol
van havens

Werkpakket 2

Modellen voor het
physical internet
achterlandnetwerk

Werkpakket 3

Stakeholder
engagement en
maatschappelijke
impact



FINAL REPORT NWO/TKI DINALOG PROJECT
TOWARDS VIRTUAL PORTS IN A PHYSICAL INTERNET (2016-2021)

The role of
ports and their
hinterland
networks in the
logistics of
the future

Final report for the program 'Vital Logistics'
of NWO and TKI Dinalog



<https://www.rug.nl/cope/projecten/physical-internet/report>

SMiLES



Shared connectivity in Mobility and Logistics Enable Sustainability

The **goal** of this project is to establish a Living Lab to:

1. study barriers and opportunities for open sharing networks in a comprehensive way through an interdisciplinary lens;
2. develop innovative business and organisation models for open sharing networks to enable efficient, effective and emission-free transport;
3. investigate the role of technology, human behaviour, ethical and legal boundaries, trust, governance, information and privacy considerations on the functioning of an open sharing network;
4. perform studies in practice to gain new insights from practice for theory development, as well as to test concepts in a public-private-people cooperation.

University of Groningen

Faculty of Economics and Business

Faculty of Behavioural and Social Sciences

Faculty of Law

Faculty of Spatial Sciences

Faculty of Philosophy

Faculty of Science and Engineering

Faculty of Campus Fryslân

Key educational partners: Hanze University of Applied Sciences; Noorderpoort

Key industry partners



What obstacles and challenges do you note to start tomorrow with the physical internet?

Answers representatives of companies

- Trust;
- Current interests and established order;
- Dare to share;
- Availability of data;
- Lack of a platform.

Answers student IT-law

- Prevent monopoly;
- Secure privacy and data security;
- Cybersecurity;
- Technological and legal framework (e.g., liability);
- Vulnerability of platforms.

Shared storage

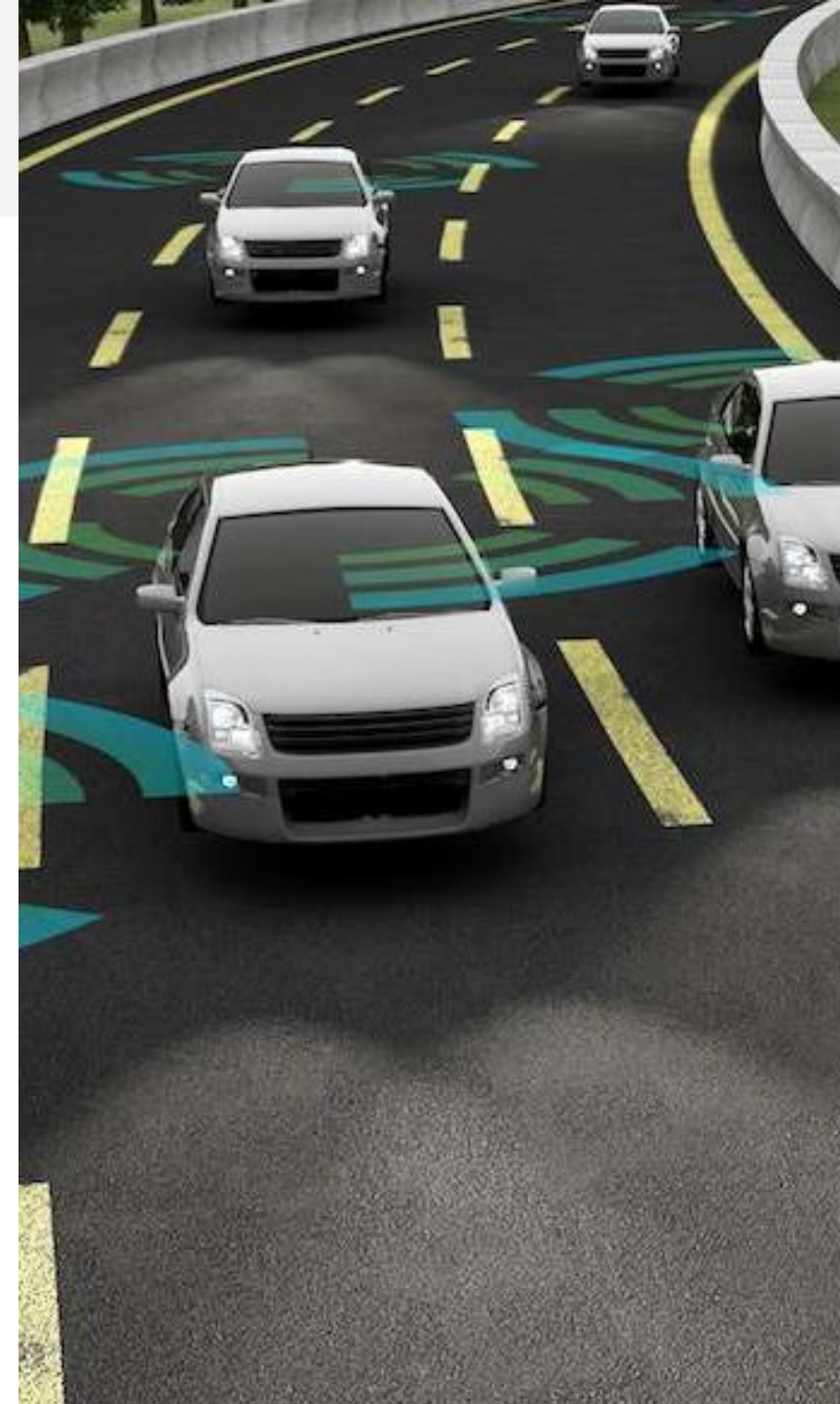
The Physical Internet makes liability for damage more complex

- Who is liable within a shared warehouse?
- What agreements are necessary (and possible) to handle damage as fairly as possible?



Usage of smart algorithms that take important decisions in seconds ...

- Who is liable for a disruption if an intelligent agent has acted improperly?
- How do you (legally) deal with manipulation of an intelligent agent, such as providing incorrect information in order to guide the decision?





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Human Capital Agenda in innovation projects

- Strong connection between innovation and education.
- Lifelong development (i.e., “Leven lang ontwikkelen”).
- Learning communities.
- Connecting and involving organisations for Vocational education (i.e., MBO).
- Building and upgrading regional public-private structures and regional human capital agendas.
- In project proposals typical a work package on human capital.

Sector plans in the Netherlands

- Coalition Agreement 2021 – 2025:
 - Investments in **higher education** via sector plans
 - Structural yearly budget of 200M euro for education and research for at least the coming 6 years.
 - Sector plans in the four domains: Social Sciences and Humanities (SSH), Beta sciences, Engineering (Engineering Technology Sciences and Design Engineering Sciences) and Medical Sciences.
 - National Sector Plan Committee was initiated in 2022.

- Two overarching goals of the four sector plans:
 - Stimulating cooperation between universities and together making choices on focus areas and profile of each university in research and education.
 - Creating “peace and space” by strengthening the basis of education and research and solving bottlenecks.

Ambitions Sector Plan Engineering II

- Joint ambitions for Engineering Technology Sciences and Design Engineering Sciences:
 - a) further strengthening of cooperation between the universities and making choices between and in universities with regard to tasks and profiles in education and research,
 - b) lowering work pressure (e.g., by means of decreasing student-staff ratio),
 - c) increasing diversity in staff and student populations,
 - d) investing in innovations and changes in educational programs.



- Plenty of opportunities for IE&IM in public-private partnerships to realise societal impact and initiatives for talent development.
- Composing and investing in a consortium/team:
 - Cooperate with people with a shared vision/ ambition /goals;
 - Invest in building and maintaining long-term relations.
 - Manage expectations beforehand.
 - Participating in a project means bringing and getting something;
- Project formulation:
 - Two-way traffic of inspiration: questions/knowledge of industry and your questions/knowledge;
 - Are you enthusiastic on the project?
 - Out-of-the-box transdisciplinary thinking?
 - Companies typically have another project horizon than academics.
- Many seeds need to be planted and taken care of to grow some excellent projects that can be harvested.

A photograph of a yellow and red boat at night. The boat is in the foreground, with a large offshore structure, possibly an oil rig, illuminated by yellow lights in the background. The water is dark, and the sky is a deep blue. A red banner is overlaid on the left side of the image.

**Thank you for
your attention.**



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groningen

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