



Priority 4: Innovation and resilience

Innovation capacities and uptake of technologies (SO 1.1)

Artificial Intelligence for SMEs in NWE

AI-NWE

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What challenge(s) is your project addressing in the NWE territories?

SMEs facing challenges from AI – not knowing what it may do, how it can work, what the opportunities and threats really are and what to do about them

What is the objective of your project?

Using our expert partners' AI insights, develop tools so SMEs can make the best of AI to grow their businesses

What impact/results is your project aiming for?

SMEs grow, innovate, increase productivity using tools we devise that help them harness the value of AI

What kind of partners are you looking for? Indicate country and/or type of organisations and/or expertise needed.

Business support organisations
Research organisations with expertise in AI applications for SMEs

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Unveiling the Domino Effect

A Digital Twin Approach to Urban Challenges



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CASCADE

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What challenge(s) is your project addressing in the NWE territories?

Cities are facing **complex** challenges, woven into the fabric of their existence. As different domains are becoming increasingly **interconnected**, these challenges are creating a complex web where one event's impact ripples through others – a **cascade effect**. We aim to address these challenges by employing a Digital Twin approach.

What is the objective of your project?

The Hague's 2020-2023 **Digital Twin Pilot** visualised cascading effects of extreme rainfall, consolidating partner data into a central platform.

Our **ground-breaking data-sharing** approach renders our model highly **scalable** and **reproducible** for diverse cities and scenarios. Our mission is to elevate this model by **simulating** other scenarios paving the way for **resilient urban futures**.

What impact/results is your project aiming for?

1.Prevention: Implementation of resilience-enhancing measures for key assets based on insights gained from simulated scenarios.

2.Preparation: Incorporating cascade effects into exercises and the development of crisis plans to enhance preparedness.

3.Response: Quick access to real-time information about critical assets during incidents to facilitate effective response efforts.

What kind of partners are you looking for? Indicate country and/or type of organisations and/or expertise needed.

We are looking for **partners** who want to implement and further **develop** our **innovative Digital Twin** themselves such as, regional, local and- public authorities, universities, infrastructure and public service providers, SME's and sectoral agencies.



Unlock the visual story –
Scan the QR code

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AI-based Connected & Digitalised Urban Freight Systems

CODIFREIGHT 32

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Enhancing protection and preservation of nature, biodiversity, and green infrastructure



Experiment with the potential of blockchain in the digitalization of rail maintenance operations



Highlight the potential of the AI-based autonomous vehicle for multimodal road and railway smart mobility



Propose a concrete proof of an AI-based predictive maintenance model

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What challenge(s) is your project addressing in the NWE territories?

- The project aims to improve in-territorial and extra-territorial mobility, prioritising urban mobility and rail transport.
- Give railway infrastructure managers the means to modernise their maintenance techniques, particularly predictive maintenance (= competitive advantage for rail transport and multimodal smart mobility).
- Improve rail transport through autonomous vehicle approaches based on AI (autonomous train).

What is the objective of your project?

- We are enhancing the protection and preservation of nature, biodiversity, and green infrastructure, including in urban areas, and reducing pollution.
- The main objective is to analyse and experiment with the potential of blockchain and AI in the digitalisation of railway maintenance operations to support urban freight and passenger activities.
- We want to highlight the potential of the AI-based autonomous vehicles for multimodal smart mobility.

What impact/results is your project aiming for?

Blockchain & AI aim to meet the major challenges of tomorrow's mobility

- Supply chain operations within agglomerations are continually refined through new information systems
- Increase the coordination and efficiency of urban delivery operations
- Logistics aim to meet the demand for urban businesses and consumers for new services
- Improve the connectivity of transport modes within territories

What kind of partners are you looking for? Indicate country and/or type of organisations and/or expertise needed.

Several skills are needed and this implies the formation of a multidisciplinary consortium: higher education and research organisations, enterprises, SMEs, railway national companies, port authorities, business support organisations, transport associations, academic research laboratories, regional and national public authorities, infrastructure service providers, airports etc.:

Countries of the Consortium: France, the Netherlands, Belgium, and Switzerland

Secure end-to-end communications in a ship or boat

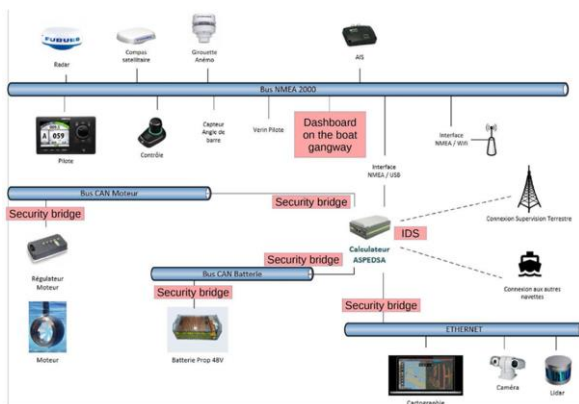
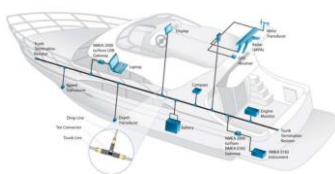


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Cybersecurity regulations for shipping industry are now in place.

- Ships in service (compliance with IMO Resolution)
- New constructions (compliance with UR E 26)
- Equipment/Solutions (compliance with UR E27)



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CyberNEAC 33

What challenge(s) is your project addressing in the NWE territories?

The Cyber-NEAC project aims to commercialise a cyber-protection solution for end-to-end communications architectures in a ship, capable of being deployed in many use cases (commercial, transport, military, etc.), and particularly in the case of autonomous boats. Building AI-powered security bridges to analyse data transfers and ensure safe behaviour

What is the objective of your project?

The ambition of the project is to cyber-protect digital data circulating on networks by predictive AI. This will include:

1. The various CAN bus networks, including NMEA 2000
2. Objects connected to the internet
3. Smart connected devices on board the boat
4. Data exchanges between ships by operating in swarms

What impact/results is your project aiming for?

TRUST in the use of "RESPONSIBLE DIGITAL" allows:

The development of IoT in ports, for maritime logistics and communication with ships

The development of river activity through the automation of procedures

The development of safe autonomous boats

Optimisation of ship routes, which reduces energy costs

What kind of partners are you looking for? Indicate country and/or type of organisations and/or expertise needed.

Countries involved in inland water transportation such as: Belgium, The Netherlands, Germany ...

Universities, Shipowners and port organisations

Expertise in cyber security of electronic components



Enhancing Design and Manufacturing of Composite Pressure Vessels through Realistic Digital Twins & Automated Fibre Placement

D4CPV

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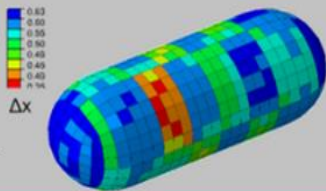
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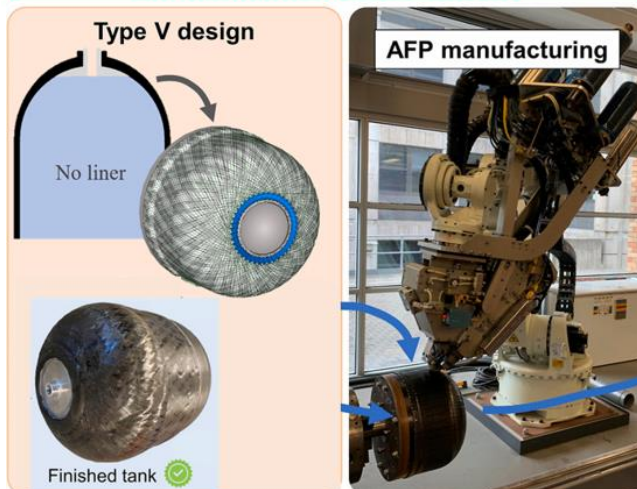
Digital twin of the pressure vessel

Digital shadow of the processed pressure vessel by correlation the machine data with the results from image processing

Target:
Continuous target-actual-comparison



Quantification of deviations



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What challenge(s) is your project addressing in the NWE territories?

In North-West Europe, the challenge addressed by this project lies in optimising the design and manufacturing processes of composite pressure vessels. Specifically, The aim is to pioneer advancements that align with the region's technological expertise and industrial capabilities, fostering innovation and competitiveness in the field of composite vessel production.

What is the objective of your project?

The objective of this project is to revolutionise the design and manufacturing of composite pressure vessels by implementing and refining the use of realistic digital twins and automated fiber placement. This includes: Optimising design precision, enhancing manufacturing efficiency, promoting technological innovation.

What impact/results is your project aiming for?

Enhanced Vessel Performance: Achieving higher-performing composite pressure vessels.
Cost Reduction and higher efficiency: Streamlining manufacturing through automated fiber placement and digital twin simulations can potentially reduce production costs.
Industry Standardisation: Potentially influencing and setting new standards or best practices.

What kind of partners are you looking for? Indicate country and/or type of organisations and/or expertise needed.

Better higher education; clusters; training centres, SMEs, R&D and business support organisations from Belgium, Ireland, The Netherlands, Luxembourg, Germany



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Open Distant Laboratories

ODiL

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What challenge(s) is your project addressing in the NWE territories?

ODiL addresses the need to tackle imbalances in innovation capacities in NWE by implementing open distant laboratories using digitalisation, IoT and artificial intelligence.

What is the objective of your project?

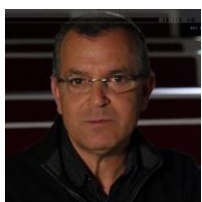
ODiL aims to improve the sharing and usability of experimental, research, training, testing, prototyping and monitoring equipment through remote access solutions.

What impact/results is your project aiming for?

- Better solutions taken up for innovation players to benefit from digital transformation of labs;
- Smart labs are better embedded into territorial strategies;
- Better territorial resilience in the face of crises and risks through distant access to equipment

What kind of partners are you looking for? Indicate country and/or type of organisations and/or expertise needed.

Higher education ; clusters; training centres, SMEs, R&D and business support organisations from Belgium, Ireland, The Netherlands, Luxembourg, Germany



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Opportunities and Resilience Of conurbation Responses to Ecological tranSitionS

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PROGRESS 36

What challenge(s) is your project addressing in the NWE territories?

The European Conurbation (E.C.) challenges for the Zero Net Land Take (ZNLTL) are:

- Finding new opportunities for the Ecological transition; (circularity, densification, mobility, energy, biodiversity etc.)
- Cultural, social, economic and political acceptability

What is the objective of your project?

- Studying the strategies put in place in E.C. to achieve ZNLTL (opportunities, constraints, obstacles)
- Comparing the way local or national policies apprehend the notion of ZNLTL (and soil quality issues)
- Designing new urban planning practices through experimental micro-projects

What impact/results is your project aiming for?

- Sharing the results of these experimentations
- Pooling best practices in place in E.C. to tackle this land take issue and to come up with innovative decision-making methods
- Building/increasing the resilience of E.C. to achieve ZNLTL

What kind of partners are you looking for? Indicate country and/or type of organisations and/or expertise needed.

- Institutional and associative partners in E.C.
- Design offices responsible for ZNLTL in E.C.
- Research centers working on ZNLTL in E.C.
- Our consortium is already composed by interdisciplinary partners from Belgium, France, Switzerland, Luxembourg and Quebec.



Resilience, mitigAtion, Governance & NARrative approaches

RAGNAR 37

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What challenge(s) is your project addressing in the NWE territories?

Despite the availability of scientific resources, the commitment of public authorities – of our societies – to the ecological transition remains weak: to meet the Paris Agreement commitments and reduce the vulnerabilities of our territory, it is essential that we imagine new narratives to embark representatives and citizens on a resilient trajectory.

What is the objective of your project?

The aim is to fully integrate the ecological transition into public action by (i) instilling a dynamic of change in local authorities, both by sharing good practices and defining new approaches, (ii) by strengthening cooperation between local authorities regarding this cross-disciplinary subject, (iii) by initiating a true culture of sobriety and developing efficient mitigation actions and (iv) by accurately assessing the risks and economic costs of inaction.

What impact/results is your project aiming for?

- Systematic consideration of ecological transition issues and the cost of inaction in public policies,
- Environmental and social assessment (i.e. life-cycle analysis) of the impact of subsidies and public purchases,
- Raising awareness among representatives, public employees and citizens through participative, sensitive, cultural and artistic approaches,
- Developing a risk culture against climate disruption,
- 55% reduction in carbon footprint by 2030 (Fit for 55)

What kind of partners are you looking for? Indicate country and/or type of organisations and/or expertise needed.

- Research centers in political sciences, cognitive sciences, sociology
- Local authorities
- Think tanks
- Associations
- Consultancy firms





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SAFE-M

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What challenge(s) is your project addressing in the NWE territories?

- Lack of cyber security resources for microbusinesses: making them vulnerable to cyberattacks.
- Varied Preparedness: resulting in an uneven landscape.
- Regulatory Adherence: Adherence and understanding of GDPR regulations vary significantly.
- Emerging Policies: new NIS2 policy might further impact microbusinesses.

What is the objective of your project?

Creating a significant increase in cyber resilience among participating microbusinesses by developing & piloting a toolkit. By intertwining research, innovation & the application of advanced technology, we aim to empower microbusinesses to safeguard their operations effectively & securely, in turn boosting business sustainability & resilience across partner regions.

What impact/results is your project aiming for?

- An AI-driven toolkit to increase cyber resilience in micro-businesses
 - A joint action plan to promote the uptake of the AI-driven toolkit
- Increased cyber resilience in microbusinesses to enhance competitiveness.

What kind of partners are you looking for? Indicate country and/or type of organisations and/or expertise needed.

- Business support organisations with policy influence
- Experts in the field of cyber security/cyber resilience in micro-businesses
- Policy influencers in the field of micro-businesses/cyber security
- Educational institutes in the field of cyber security, with links to businesses/government

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LIFE CYCLE SURVEILLANCE OF FOOD FOOTPRINTS AND WASTES VIA SMART DIGITAL TECHNOLOGIES

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SMARTFOOD360 39

What challenge(s) is your project addressing in the NWE territories?

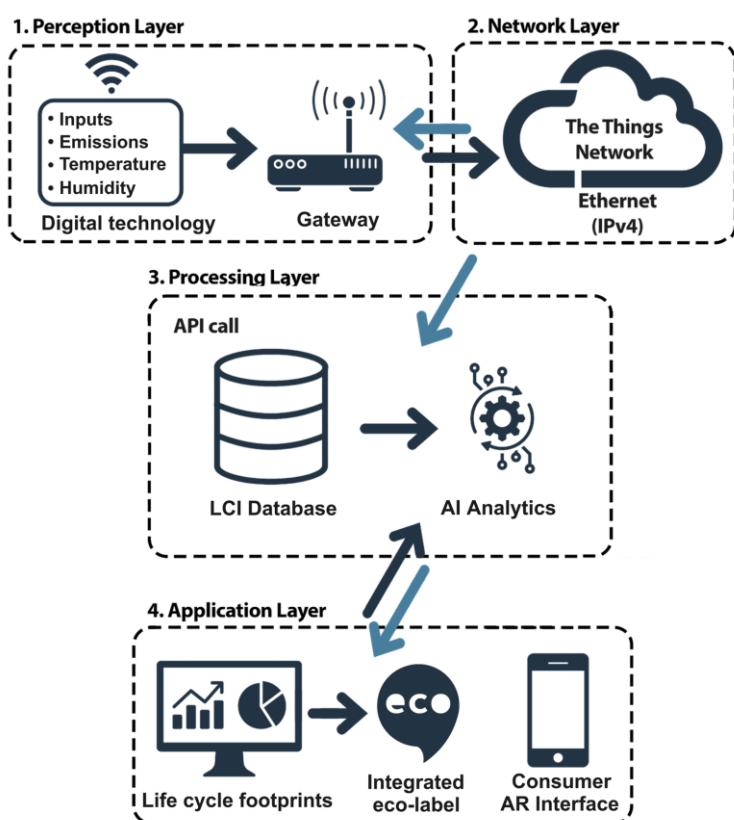
NWE struggles with a 40% food demand increase by 2050 and lacks effective environmental monitoring in the supply chain. Traditional methods don't offer real-time insights. Our project aims to change this, using real-time data collection to understand the environmental impact of food production and guide stakeholders towards sustainability in NWE's food sector.

What is the objective of your project?

The project aims to promote the sustainable development of the food sector by defining eco-innovation strategies focused on emerging digital technologies to detect and prevent food waste while minimising environmental impacts by providing reliable quantitative data on the environmental footprint of food products and waste.

What impact/results is your project aiming for?

Real-time data on the life cycle of food products will be collected using emerging digital technologies throughout the whole food chain and the Life Cycle Assessment methodology will be used to develop a unified eco-labeling methodological framework that involves producers, policymakers, and consumers in the decision-making process.



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What kind of partners are you looking for? Indicate country and/or type of organisations and/or expertise needed.

Food companies from different sectors and different stages of the supply chain
Association of consumers
Digital providers specialised in sensors and data transmission
Companies proficient in AI analysis and programming



Digital directory for social needs

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Innovation capacities and uptake of technologies (SO 1.1)

Soliguide 40

What challenge(s) is your project addressing in the NWE territories?

Where to find affordable food, clothes? Where to find social assistance? Every day in Europe 95.3 million people at risk of poverty or social exclusion ([Eurostat, 2023](#)) are asking themselves the same questions. Although a lot of helpful solutions exist, information on their location, their opening hours, or their acceptance criteria is often hard to find.

What is the objective of your project?

Soliguide is the first free, comprehensive, and up-to-date social directory in France. The platform guides and facilitates access to rights by referencing all the places and services targeting people in need, such as food, hygiene, reception, legal consultations, French classes, etc. According to [the SROI on our work conducted by ESSEC in 2022](#), for 1€ invested in Soliguide, 1,93€ of social value is created.

What impact/results is your project aiming for?

We firmly believe that if we aspire to overcome the current social crisis and prepare for future challenges, the social sector must embrace a robust information system. Such a system will enable quick and accurate guidance, while facilitating real-time data analysis for informed decision-making. To achieve this, it is essential to scale up our tools in order to truly reach all the beneficiaries involved.

What kind of partners are you looking for? Indicate country and/or type of organisations and/or expertise needed.

We are looking for associations, federations, tech for good actors in all the NWE territories operating at same or different scales to address a similar need and willing to optimise the development of our initiatives by sharing our experience and tools.



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