Business Plan for RECONECT Spinoffs

Deliverable D5.3

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Abstract (for dissemination, 100 words)	This deliverable follows the journey from RECONECT innovation exploration through to business model development and preparation for the commercial market. It aims to support the upscaling of NbS but enabling commercial exploitation of NbS-supporting tools / models / technologies / services (innovations) to actualise and become sustainable in the market beyond the RECONECT project.
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Executive Summary

This report describes the innovation process which has taken place over the last four years, from innovation landscape exploration to eventually focusing on six innovations selected from within RECONECT, working with their owners to develop business plans and timeline planning, to try to be closer to reaching the market.

This deliverable is part of fulfilling the exploitation piece for RECONECT, aiming to support the exploitation of RECONECT outputs, dealt with here in the form of business start-ups which are being developed or advanced within the project.

The process started with research into innovation from a business and research perspective, including work on the Lead User Method done by Hamburg University of Technology (TUHH). It continued through a workshop held in Zurich (May 2022), exploring the 10 types of innovation by Doblin and the innovations within RECONECT.

RECONECT innovations were collated and investigated further for their potential, using the Technology Readiness Level and Commercial Readiness Level means to assist in their assessment. A workshop in Nijmegen (November 2022) helped to fill some of the gaps and gather knowledge regarding the existing innovations within the RECONECT project.

Six innovations were eventually chosen for more in-depth development, which started with the development of a business model, using the Business Model Canvas method. This acted as a starting point for the last workshop held in Hamburg (May 2023) where innovation owners (i.e., IHE Delft, Amphi, HYDS, HydroLogic, InterAct, DTU) had input sessions from some experts within the start-up, incubation and innovation fields. This resulted in further development of their business models, some timeline planning for the development steps for their business and a wrap up from each innovation owner of their learnings, priorities and next steps from here.

This approach has been recorded here for this deliverable, but is designed to be replicable by other innovators wanting guidance on how to develop an innovation idea into a start-up. The innovation pathway walked during the development of this methodology has been a valuable learning curve and a summary of recommendations for future projects can be found within this report.

The main learnings and recommendations are:

- Perform critical questioning early in the process
- Use a business model / framework to assist in structuring an idea into a business plan
- Ensure a solid and well-researched financial plan is created
- Thoroughly explore and research the market the start-up aims to operate in
- Similarly, thoroughly research the client, get to know their needs and wants
- Employ the expertise and connections of other people, inside or outside of the start-up organisation
- Set KPIs, then measure and review these regularly
- Allow for realistic timescales for progress, and be prepared to reassess and change plans and the product along the way as required

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Abbreviations

RECONECT - **R**egenerating **ECO**systems with **N**ature-based solutions for hydro-meteorological risk r**E**du**CT**ion

NbS – Nature-based Solutions

WP – Work Package

IHE – IHE Delft

TUHH – Hamburg University of Technology

TRL – Technology Readiness Level

CRI – Commercial Readiness Index

LUM – Lead User Method

EXETER – the University of Exeter

EI – Expected Impacts

HMR – Hydro-meteorological Risks

HMH – Hydro-meteorological Hazards

Glossary of Key Terms

Term	Acronym	Explanation
Nature-Based Solution	NbS	Collective term for innovative solutions to solve different types of societal and environmental challenges, based on natural processes and ecosystems.
Hydro-meteorological risk	-	Natural phenomenon related to water and caused by atmospheric pressures and extreme weather conditions which result in floods, erosion, and/or droughts.
Large-scale NbS	-	NbS located either in rural areas or in combination with urban areas, as they adopt a larger regional system approach comprising of river basins and coastal landscapes. What makes an NbS large-scale is its system approach, holistically connecting multiple water features instead of being a standalone, separate solution.
Upscaling	-	Process related to the diffusion of information, knowledge, and experiences from NbS case-studies. It is a scale-related progression to reach greater impact.
Replication	-	Implementation of a similar NbS intervention based on previous project experience, in an area with similar challenges that the NbS can solve.
Barriers	-	Conditions that can hamper the development of NbS.
Enablers	-	Conditions that can facilitate the development of NbS.
Exploitation	-	The utilisation of results to support upscaling the use of NbS for hydro-meteorological risk reduction.
Business case	-	Document that clearly communicates the benefits of a project, thus providing the arguments for initiating a project. A strong business case is essential in overcoming barriers.
Co-creation	-	Collaborative approach to engagement which allows stakeholders to collectively design and build more inclusive and sustainable mechanisms for change. RECONECT social innovation approach is underpinned by co-creation processes involving researchers and other stakeholders iteratively throughout the stages of co-assessment and planning; co-design; co-implementation, operations, and maintenance; and co-monitoring and evaluation.
Technology Readiness Level	-	Evaluation of the technological maturity of an innovation.
Commercial Readiness Index	-	Evaluation of the technology by its commercial and market conditions, assessing further than just the technology maturity.

1 Introduction

RECONECT is an interdisciplinary international project that aims to contribute to the European reference framework on *large-scale Nature-Based Solutions (*called *NbS* in this report), by stimulating a new culture for land use planning that links the reduction of risks with local and regional development objectives in a sustainable way.

Stimulating this new culture of nature-based risk reduction will not only ensure the adaptation of society to climate change, but also create opportunities for enhanced wellbeing of humans and nature. This requires that experience and knowledge from existing NbS are properly captured and utilised to upscale NbS to other locations in Europe and beyond.

RECONECT encompasses the three spheres of Water, Nature, and People, as the dominant themes driving the implementation of NbS globally. While the more measurable benefits of NbS fall within the hydro-meteorological / flood protection (i.e. Water) sphere, NbS in reality allow us to meet needs and reap benefits in the Nature and People spheres additionally.

Within Europe and further afield, there is a demand for a broader uptake of NbS over traditional grey solutions, however there are many missing elements to support easier mainstream uptake. While RECONECT focuses on many cross-cutting themes across different work packages, this report focuses on the market demand for tools, technologies, services, and/or models etc. (referred to in general as 'innovations' in this report) which can help support the upscaling and uptake of NbS across Europe and globally, specifically by looking at the links between commercial exploitation of innovations, business models and mainstreaming of NbS.

This report follows the innovation process which has taken place over the last four years, eventually focusing on six innovations selected from within RECONECT, each being strongly linked to at least one of the three spheres (Water, Nature & People) and often spanning the three, by nature of the inherent overlap and interlinkages of these themes.

Previous projects and RECONECT partner experience shows that without a solid business plan, including a financing plan, start-ups often fail. This deliverable introduces a methodology and a process to tackle this big challenge, by showing how RECONECT innovation ideas have been supported through innovation exploration, technology development, business model creation and future timeline planning.

1.1 Scope of this deliverable

This report describes how RECONECT has been working with the topic of innovation within NbS, and specifically outlining the approach, co-developed through a close collaboration between Ramboll, Hamburg University of Technology (TUHH) and the University of Exeter (EXETER), in actively addressing commercial exploitation as a key component of the overall goal of upscaling NbS within Europe and beyond.

The work described here ran from 2019 to 2023, and aims to enable maximal exploitation of RECONECT outputs, supporting the upscaling of NbS, specifically by developing a methodology covering the process from conceptualisation and innovation,

development of an idea, business models and financial planning, outlining key actions for development and timeline planning.

This deliverable introduces a methodology followed by the owners of the innovations, and describes the methodology followed and clearly documents the steps, decisions and learnings from this approach. Towards the end of this work, focus was narrowed down to six potential start-ups evolving through RECONECT, to help them develop their business case and work towards exploiting their outputs from RECONECT, aiming to progress towards operation in the open market.

The concepts of Technology Readiness Level (TRL) and Commercial Readiness Index (CRI) are used in this methodology to help inform the level of development along the growth journey, from the research and development stage up to being tested, quality controlled and available in the market.

The valuable recommendations from this journey are also presented in this deliverable.

This deliverable is structured in the following way:

- Section 1 introduces the project and approach, this deliverable, the exploitation strategy, the upscaling strategy and the links this deliverable has to other work packages and other deliverables within WP5.
- Section 2 explores how previous Horizon 2020 projects have approached innovation and start-ups, and what learnings could be gathered from their experiences.
- Section 3 introduces the research and work within the innovation landscape of RECONECT which took part in the early stages of this approach.
- Section 4 outlines what was done regarding following the innovations from RECONECT and developing guidelines for defining TRLs and CRIs of the innovations.
- Section 5 looks into the funnelling of a long list of innovations, and further development of the six selected innovations to progress their business models and development step timeline planning.
- Section 6 presents recommendations from the approach followed.

This methodology has been developed in coordination with specific RECONECT partners and the process documented along the way. The methodology is designed to be replicable by other potential start-ups, to enable further exploitation of other RECONECT outputs or outputs of other Horizon Europe (formerly Horizon 2020) projects.

1.2 Background and methodology

Working with innovation through a collaborative approach and a pragmatic lens, several ideas were explored within RECONECT since 2019.

In the initial stages of developing this deliverable, a preliminary demand analysis for business model development was conducted, to better understand what practitioners needed to develop a stronger business model. The vast amount of information already existing within RECONECT was assessed to get a preliminary understanding of requirements for tools / models / technlologies related to business model development. The initial analysis was conducted by screening existing deliverables within RECONECT, followed by interviews with the practitioners.

Most of the demands were found to be in the planning and design phase of NbS projects, i.e., tools/models for risk assessment, cost-benefit analysis, and quantification of NbS benefits. The common denominator of these demands is the need to increase support from decision and policy makers, landowners, and citizens. Particularly the ability to evaluate the benefits of NbS is in high demand. In an EU survey conducted in 2021, this demand was one of the most relevant topics respondents would like to learn more about (see more about this in D4.3 – RECONECT's Upscaling Strategy). This demand is strongly linked to the demand for cost-benefit analysis.

This "internal" demand analysis was followed up by a literature review. This process revealed a gap in supporting literature or materials focusing on the development of tools addressing the identified demands (explored more in detail in Section 2). Given these gaps, it was considered essential to enable the development of tools / models / technologies, referred to more generally in this deliverable as "innovations", to meet some of these needs and better enable and support upscaling of NbS.

Previous partner experience and previous projects from members of the consortium indicated that the absence of a clear plan (including financing plan and seed money) is often the cause of failure for start-ups. While D5.7 – Business Models and Roadmaps seeks to address the broader business model exploration and financing plans, D5.3 was developed in response to the identified gaps as discussed in the above paragraphs, aiming to support in the development of an innovation, from idea through to start-up entering the market. The approach has been designed to be replicable for other innovators, to enable impact beyond the RECONECT project and timeline.
This report outlines the approach that was created in detail. An overview of the steps to develop this methodology can be seen in Figure 1.

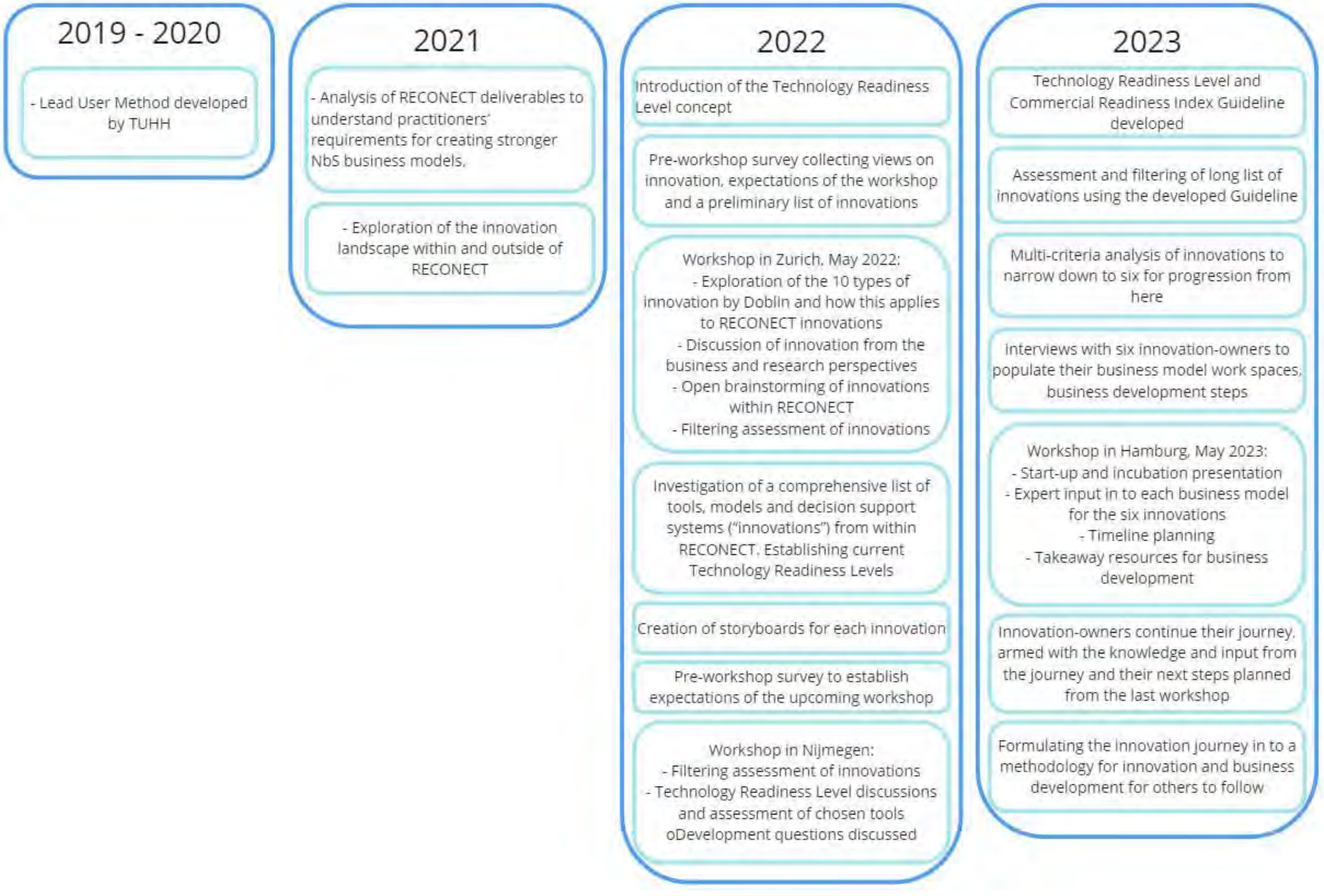


Figure 1 - Methodology timeline

1.3 Exploitation

Exploitation is defined here as the use of results to support upscaling the application of NbS for hydro-meteorological risk reduction. Results are outputs generated by RECONECT that can be used to create impact. These outputs might include data, reports, collaboration platforms, knowledge, skills, education materials, guidance documents and standards, research publication, software etc., and are mainly directed to four target groups, as represented in fig. 2.

Figure 2 - Project results and target groups involved in exploitation for Horizon 2020 projects (modified from EC, 2024)

Commercial exploitation in this context refers to using these results to reach the industry, perhaps through software, prototypes, market offerings or similar. Innovations that can be developed into a start-up, can create revenue, create jobs, enter and operate in the industry and on the market. Within this report, specifically innovative ideas generated within the RECONECT project: these might be in the form of software, prototypes, services, tools, or models whose developers are aiming to create a start-up and enter the commercial market.

Given this focus, this deliverable is expected support in reaching the RECONECT Expected Impact #4: Enhanced market demand for NBS for hydro-meteorological risk reduction and climate change adaptation.

1.4 Links to other work packages and deliverables

Lessons learnt from previous projects and from partners in the RECONECT Consortium show that the absence of a clear plan is often cause for failure of commercial exploitation, and more specifically financing (e.g., seed money) for spinoff creation. Hence, this deliverable should be considered in conjunction with D5.7 – Business Models and Roadmaps, to encompass financing mechanisms and financing options on the basis of the overall NbS business model framework (developed in D5.7).

The rationale behind this is that, regardless how much work is put into spinoff development, if a clear financing plan is lacking from the start, spinoffs will either not be created or fail within a very short period given lack of a clear plan and sustained funds. Another key component often overlooked is the time scale of successful spinoff creation. It can take many years before a spinoff enters the market and enables commercial exploitation of NbS. The work on this report accounts for a realistic timescale that exploits the full potential of RECONECT.

This deliverable has been co-created alongside WP1, where innovations from RECONECT have been examined and followed during their development. The work with investigating the tools and the assessments made in the WP1 work lead directly into this report, defining which innovations should be considered for progression and also by developing a guideline to define TRLs and CRIs.

The innovation owners who have been part of this journey are linked with other RECONECT work packages respectively.

2 The innovation landscape

Previous Horizon 2020 projects have been reviewed to understand how innovation and start-ups have been approached and so that the success and learnings from those could help form how RECONECT deals with these concepts.

Commercially it appears that while the intention of many of the projects includes exploiting results and creating start-ups, none of the literature reviewed indicated a clear record of successful start-ups reaching a commercial level where they are operational in the market.

2.1 PHUSICOS

A main Horizon 2020 project dealing with innovation and NbS is PHUSICOS. PHUSICOS aims to demonstrate how nature-based solutions provide robust, sustainable and cost-effective measures for reducing the risk of extreme weather events in rural mountain landscapes (PHUSICOS, Horizon 2020, 2023).

Within PHUSICOS, innovations were defined as research results leading to new or improved products, services, methods or knowledge which create value for the user of the results. For the purposes of the PHUSICOS project, the innovation process was viewed as a value chain, starting with the creation of intellectual property such as research results, followed by appropriately securing or protecting the intellectual property (copyright, patenting etc) and finally exploitation of the results for commercial or academic purposes. In its reports, the project mentions web-based tools developed as an NbS inventory and a platform for NbS analysis (PHUSICOS deliverables 7.1 and 7.2). There is also a wide array of scientific publications produced within PHUSICOS, openly available presentations and video resources, policy briefs / synthesis reports, a data platform webpage and a virtual reality game, all available on their PHUSICOS webpage.

PHUSICOS deliverable 1.5 (PHUSICOS - According to nature, Deliverable D1.5, Innovation Management Plan (NGI, 2020)) outlines the principles and expectations regarding the management of the innovations resulting from PHUSICOS. This project aimed to support the adaptation of NbS technology and philosophy into the mainstream of risk management for climate change in rural areas (NGI, 2020). PHUSICOS discussed the challenge of identifying the innovations within the project results, and how to encourage activities that would bring the innovations to a broader use in the market.

One of the focusses of PHUSICOS was to help enable upscaling (defined specifically by an upscaling strategy in PHUSICOS which differs from RECONECT's upscaling strategy) of solutions for real-world application by demonstrating application of the solutions. How PHUSICOS worked with upscaling can be briefly summarised as taking a niche innovation, known to only a few, and with little specific tangible value, and aiming to extend this to become accessible, available, familiar and broadly applied, thereby creating value for stakeholders. While the upscaling definition within PHUSICOS and RECONECT are quite different, when each is applied to the area of innovation and start-ups, the upscaling goal becomes similar and the approaches have strong links in process and final aims.

Tangible results and innovations were intended to be made available for public use or provided as commercial services to the market, and the success of this goal was intended to be measured via indicator parameters measuring the update of PHUSICOS innovations in other projects, activities and contexts. It acknowledges this uptake

requires time and would not be measurable within the timeframe of the PHUSICOS project. An alternative method was outlined, setting ambitious goals related to enabling upscaling, dissemination and uptake of PHUSICOS results, that can continue after PHUSICOS was completed, and it is clarified that the responsibility falls on the owner of the results to decide how their results will be disseminated and promoted to the market.

2.2 OPERANDUM

Another Horizon 2020 project focusing on large-scale NbS to counteract hydro-meteorological risks is OPERANDUM. Its aims are to deliver tools and methods for the validation of NbS in order to enhance resilience in rural and natural territories, and to address and overcome barriers for the implementation of NbS through the construction of 10 Open-Air Laboratories. These open-air laboratories are natural and rural Living Labs that cover a wide range of hazards with different climate projections, land use and socio-economic characteristics (OPERANDUM, Horizon 2020, 2024).

2.3 One of the five main objectives of OPERANDUM was defined as "Strengthen technology innovation in the area of NBS". Within this project, innovation appears to focus mainly on the provision of concrete, flexible and transportable frameworks to expand the adoption of green/blue/hybrid infrastructures across Europe and in developing countries. Similarly, market exploitation was considered through the lenses of enhancing the attractiveness of (and thus the demand for) NbS for hydro-meteorological risk reduction and climate change adaptation.NATURVATION

NATURVATION is a four-year Horizon 2020 project with an aim to develop an understanding of what nature-based solutions can achieve in cities, examine how innovation can be fostered in this domain and contribute to realising the potential of nature-based solutions for responding to urban sustainability challenges by working with communities and stakeholders (NATURVATION, Horizon 2020, 2022).

They have some open source tools developed through the project, accessible via their website, along with a Massive Open Online Course (MOOC), a PODCAST, some films and blogposts. There are many more resources available on their webpage regarding developing policy, engaging citizens, creating business models, enabling financing, navigating innovation pathways and comparing international experiences.

Their sections on innovation pathways cover several areas of innovation:

- Innovation pathways for Climate Adaptation
- Taking action for urban nature – innovation pathways
- Innovation pathways for water challenges
- Innovation pathways for urban forests

These have been reviewed and not considered particularly similar to the work within RECONECT and innovation.

Some innovations which have become publicly accessible tools which were reviewed in the context of the RECONECT innovation work are described below.

2.3.1 Urban Nature Atlas

The Urban Nature Atlas was developed as part of the NATURVATION project, and it consists of a comprehensive database of NbS for cities. It resulted from a survey of NbS in 100 European cities and provides a basis for the analysis of socio-economic and innovation patterns associated with urban NbS within Europe (NATURVATION, Horizon 2020, 2022). As of November 2020, the Urban Nature Atlas was updated and extended, now consisting of a collection of more than 1000 NbS from European cities and beyond Europe. This appears to be a successful start-up within the NATURVATION project, though has remained open-source.
https://www.naturvation.eu/atlas.html
https://una.city/

2.3.2 Urban Nature Navigator

The Urban Nature Navigator is a tool used to assess potential contributions of NbS solutions to various urban sustainability challenges (NATURVATION, Horizon 2020, 2022). It generates information around the ecological, socio-cultural and economic factors generated by different types of NbS. This tool appears to be another start-up developed through the NATURVATION project, though again it is open source so not considered a commercial start-up.
https://www.naturvation.eu/assessment.html

2.3.3 Urban Nature Explorer

Urban Nature Explorer is open-access software tool developed under NATURVATION. It takes the form of a web-based interactive platform which aims to support the development and visualisation of alternative nature-based solution scenarios and assess their costs, benefits and impacts on selected sustainability challenges. It can be customised to a project location and is intended for use in the idea and planning stage of a project. This appears to be another start-up developed through the NATURVATION project, though again it is open source so not considered a commercial start-up.
https://www.naturvation.eu/explore.html

2.3.4 Urban Nature Exhibition

The virtual exhibition complements a physical exhibition which was planned for some European cities, and provides a collection of insights into the benefits, opportunities and challenges of mainstreaming NbS. With a RECONECT lens, this tool is considered a great dissemination tool but not a commercial exploitation of results.

2.4 UNaLab

UNaLab is another Horizon 2020 project, started with the implementation of NbS in three front-runner cities in 2017/2018:

- Eindhoven (Netherlands)
- Tampere (Finland)
- Genova (Italy)

UNaLab developed a replication framework to help share the knowledge from the front-runner cities with follower cities (Stavanger, Prague, Castellón, Cannes, Başakşehir, Hong Kong and Buenos Aires and observers (Guangzhou and the Brazilian Network of Smart Cities).

There is a website where the UNaLab project can be viewed, giving access to publications and deliverables from the project including deliverables based around co-creation, dissemination and communication, business models and financing strategies and many other areas which may be useful resources. They have also produced a Best Practice Toolkit which covers valuable information regarding stakeholder engagement, financing nature-based solutions, governance, impact monitoring and evaluation and other initiatives.

There does not appear to be record of any commercial start-ups eventuating from the UNaLab project, or of innovation development being a specific focus area in the project.

2.5 ANYWHERE

ANYWHERE is another Horizon 2020 project, providing early warning products and locally customisable decision support services. They aimed to influence the paradigm, by pushing to emphasize what the weather might cause in time and space (impact forecasting) rather than what the weather might be (meteorological forecasts).

ANYWHERE developed a business hub (explained within deliverable 7.3), intended as a consultancy centre, allowing the analysis, development, customisation and roll-out of the ANYWHERE products and tools directly to users and suppliers platforms and applications. They intended to create a spin-off company dedicated to the promotion, support and sales of ANYWHERE products commercially after the termination of the ANYWHERE project (ANYWHERE, Horizon 2020, 2019).

Part of their outcome of service offerings includes tools developed for specific situations, that citizens and enterprises can use to enhance their pro-active capacity of response to extreme weather-induced risks (ANYWHERE, Horizon 2020, 2019). They also developed a Europe-wide platform to support decision-making for extreme climate risks, allowing identification of risks prior to critical / hazardous situations for the population or economy.

Their products and services are aimed at municipalities, disaster relief institutions or other authorities, along with services developed for citizens and enterprises. Their website explains the services developed within ANYWHERE, along with deliverables and other resources.

The openly available deliverable 7.3 also covers (but does not go into detail) how ANYWHERE and the business hub focus on three main themes: exploitation, innovation, and market assessment. Additional themes within the core ones were: Marketing & Exploitation Committee for the exploitation partners, and SME & Industry Collaborative Network and / or the 18 companies providing services in the project spaces. Moreover, part of their overall aim is to enable society to make innovative steps towards disaster management.

There appears to be a wealth of valuable tools and services eventuating from this project. However, there does not immediately appear to be a clear (or openly available) strategy regarding the process of developing these innovations, how innovation was worked with within the project, and whether the showcased tools and services have been commercialised or not.

2.6 Learnings from Horizon 2020 project reviews and aim of this report

Through reviewing previous Horizon 2020 projects, the conclusion was drawn that while there is evidently a wealth of extremely valuable work within the innovation and creation

space, with many resources, tools and services having been developed and made available through the various project platforms, there appears to be a gap where this report could provide essential insight and guidance. This has taken the form of a clear methodology for innovation development, to support innovations (aimed at those supporting NbS) and guide them to develop from idea to launch to the market.

Similarly to the analysed projects, the RECONECT project did not get as far into the exploitation process as to produce start-ups ready to enter the market. However, by sharing the concrete activities created and used in the project to allow for the identification and commercialization of potential innovations, this report aims at easing this process for future projects, so that they may be able to take the extra step in launching start-ups. Table 1 presents an overview of the activities part of this innovation process in RECONECT, which will be described in detail in chapters 3, 4 and 5.

Table 1 - Overview of the RECONECT activities for the identification, tracking and commercialization of innovations

Chapter	Activity	Aim	Output
3 – Exploring innovation	Brainstorming and categorizing innovations*	Explore what type of innovation models exist in the RECONECT space	List of identified innovations in the project
	Assumption mapping: Knowledge and Importance*	Determine how much the partners know about the innovations and how important they think they are	Evaluation of the novelty and value creation of the identified innovations. List of innovation ideas with potential for commercial exploitation
	Assumption mapping: Feasibility, Viability, Desirability*	Assess the possibility of practical application of each innovation by assessing them on feasibility, viability, and desirability	
	Assumption mapping: Exploitation Value*	Map exploitation possibilities by assessing innovations based on their novelty and impact	
4 – Tracking progress	Interviews with owners of more advanced innovations	Selecting a smaller poll of advanced innovations	"Storyboards" describing the progress of the innovations
	Revisiting Value Creation*	Assessing feasibility, viability and desirability of the innovations at a more advanced stage	Confirm the relevance of the chosen innovations
	Technology Readiness Level Assessment*	Evaluating the Technology Readiness Level of the selected innovations	A TRL is assigned to the chosen innovations
	Development Questions*	Assessing development issues for the selected innovations	Highlight key issues to consider/overcome
5 – Dive towards commercializa-tion	Screening for commercial exploitation potential	Selecting a smaller number of innovations that have a higher commercial exploitation potential via Multi-Criteria Analysis	Final list of six commercially exploitable innovations
	Completing the Business Model Canvas (BMC)	Outline a solid business model, including expected deliveries, key partners and future activities	Completed BMCs for the six innovations

	Interviews with the Innovation and Incubation Expert Panel*	Give the innovation owners a chance to present their innovation and receive feedback from experts from the innovation and start-up scene	Suggestions from experts on how to improve the BMC and next steps
	Timeline Planning Activity*	Summarize the learnings from the innovation process and set longer term goals	Planning of future developments to reach full launch on market

**=Activities completed at a RECONECT Workshop*

3 Exploring innovation in RECONECT

At the early stages of exploration of the innovation space, the Ramboll and TUHH team wanted to understand what innovation models exist in this space, and what innovations were currently existing and evolving within RECONECT.

Innovation was defined as the practical implementation of ideas that result in the introduction of new goods or services or improvement in offering goods or services. It was established that to be an innovation, the idea must both have novelty as well as create value (Schumpeter, 1983-1950 (1983)).

3.1 Methods

Types of innovation

The ten types of innovation by Doblin was explored as an applicable model to frame RECONECT innovations. The types of innovation are displayed in Figure 3.
This research helped to formulate and initiate the Zurich workshop proceedings, presented in section 3.2.

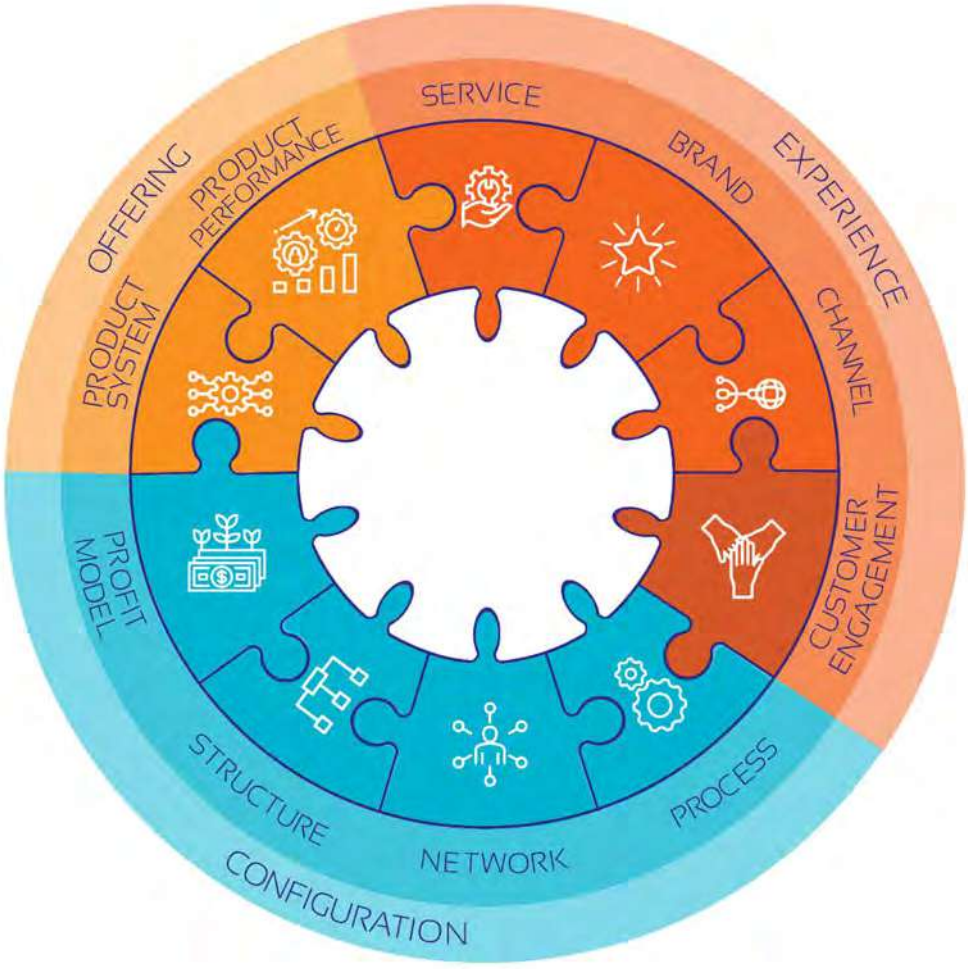


Figure 3 -The 10 types of innovation by Doblin

Lead User Method

Our methodology started with TUHH's involvement in the Lead User Method (LUM), (developed in 2019 to 2020), which was introduced as a form of scouting the field of hydro-meteorological risk mitigation around the world, exploring the innovation landscape in the field RECONECT is functioning in within. This helped to kick-start the collaborative process within RECONECT and give inspiration from global innovators (Lead Users).

The LUM is a bottom-up innovation process to detect Lead User-created NbS and evaluate their effectiveness. These innovations are usually highly frugal, often very sustainable solutions, oriented towards local communities and local problems, with potential for scaling or adaptation to other areas.

Despite many existing platforms that contain both knowledge and practical relevance to existing NbS projects it is still difficult to identify cases that show and document how NbS Assumay benefit nature and people. The LUM tackles this problem since it enables finding tested and proven Lead User innovations related to NBS, developed by the people themselves while facing hydro-meteorological risks. The LUM is a step-by-step process to identify user innovators and find ways to up-scale the most valuable innovations and to make them generally available for those in need.

The process of the LUM is organized in the following four steps displayed in Figure 4.

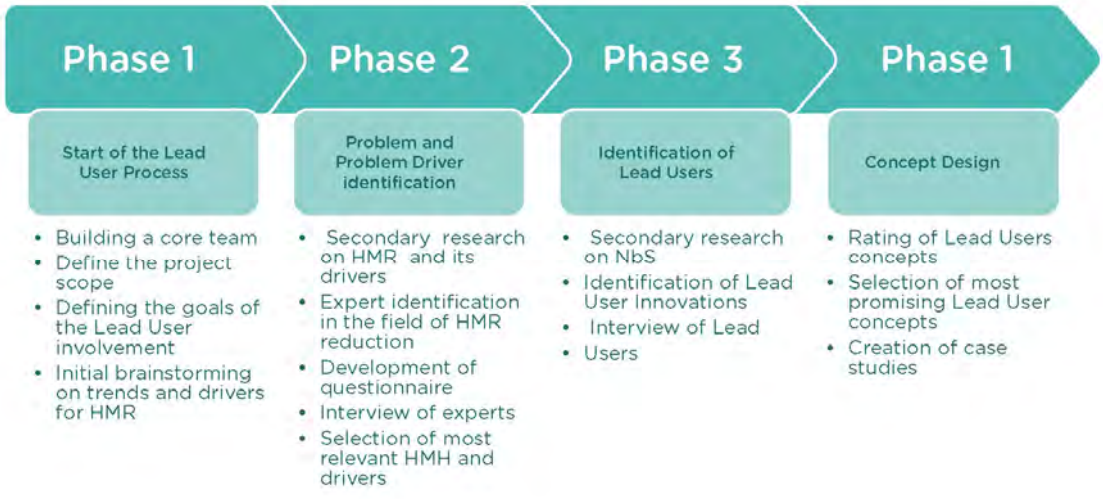


Figure 4 - LUM phases 1-4 *(TUHH, 2021)*

HMR: Hydro-meteorological risk
HMH: Hydrometeorological hazard

The LUM was used during the early stages of exploration of the innovation landscape and was employed as inspiration during the first collaborative workshop on managing innovation, held in Zurich in May 2022, discussed in section 3.2.

3.2 Workshop Zurich May 2022: Managing Innovation

The presented background research propagated the workshop held at the 7th General Assembly in Zurich (Figure 5). The aim of the workshop was to define how the methodology intended to work with innovation going forward. This included defining

innovation within the context of RECONECT and concretely outlining how innovation would be worked with to contribute to the overall exploitation strategy of RECONECT.

Figure 5 - Workshop Zurich May 2022

Innovation was presented to participants from both the business perspective, by René Hoejmakers, Innovation Expert, Ramboll, and from the research perspective, by Dr Vytaute Dlugoborskyte, Senior Research Fellow, TUHH.

The business perspective learnings included:

- Ensure the innovation has clear alignment to the strategic goals
- Perform sufficient market-led validation
- Ensure the innovation is scalable and repeatable
- The importance of business confidence in and support for the founders, the business model and the solution
- The importance of readiness for substantial investment and a clear strategy for the use of funds
- Ensuring a clear commercial opportunity

The research perspective learnings included defining ‘innovation’ by asking:

- Is the solution a novelty?
- Will it have a significant and positive impact on the expected outcomes of the project?
- Is it novel and does it create value? ***Novelty + Value Creation = Innovation***

3.2.1 Brainstorming and categorising RECONECT innovations

After an introduction to the Doblin innovation types, participants were asked to brainstorm a thorough collection innovations they know of or have experience with in RECONECT and assign them to the appropriate Doblin innovation category. Figure 6 shows the brainstorming activity from the online session, the result from the in-person session is reported in Annex A (Fig. A1).

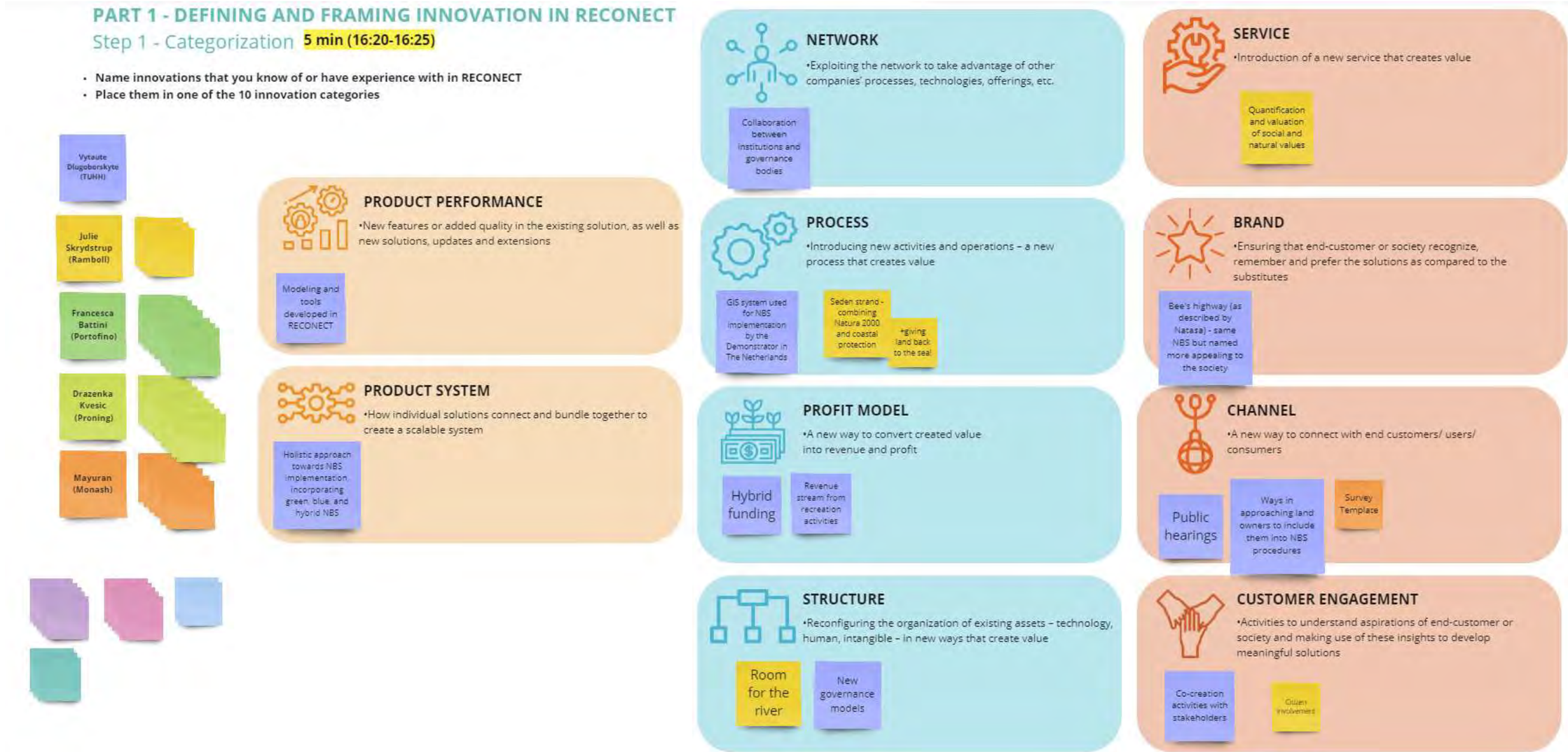


Figure 6 - RECONECT innovation ideas categorised in to the 10 Types of Innovation by Doblin, from the online workshop

The next stage of the workshop screened and categorised the innovations through different steps, explained in section 3.2.2 to section 3.2.4.

3.2.2 Assumption mapping: Knowledge and Importance

This step involved participants assessing the brainstormed ideas for the existing knowledge around the innovation topic and the importance of the innovation, placing each RECONECT innovation on a coordinate plane with extremes “unimportant – important” and “known – unknown”, as shown in Figure 7 and Figure 8. In these figures, each post-it represents an innovation that was identified in the previous step (i.e., the innovation post-its in Fig. 6 are the same as those classified in Fig. 8). It can be seen how almost all innovations are seen as important, and almost equally divided between “known” and “unknown”. Assumption mapping in this way helped to evaluate the novelty and value creation, thereby assessing the factors in the *Novelty* + *Value Creation* = *Innovation* definition.

Figure 7 - Assumption mapping: Knowledge and Importance, in-person workshop

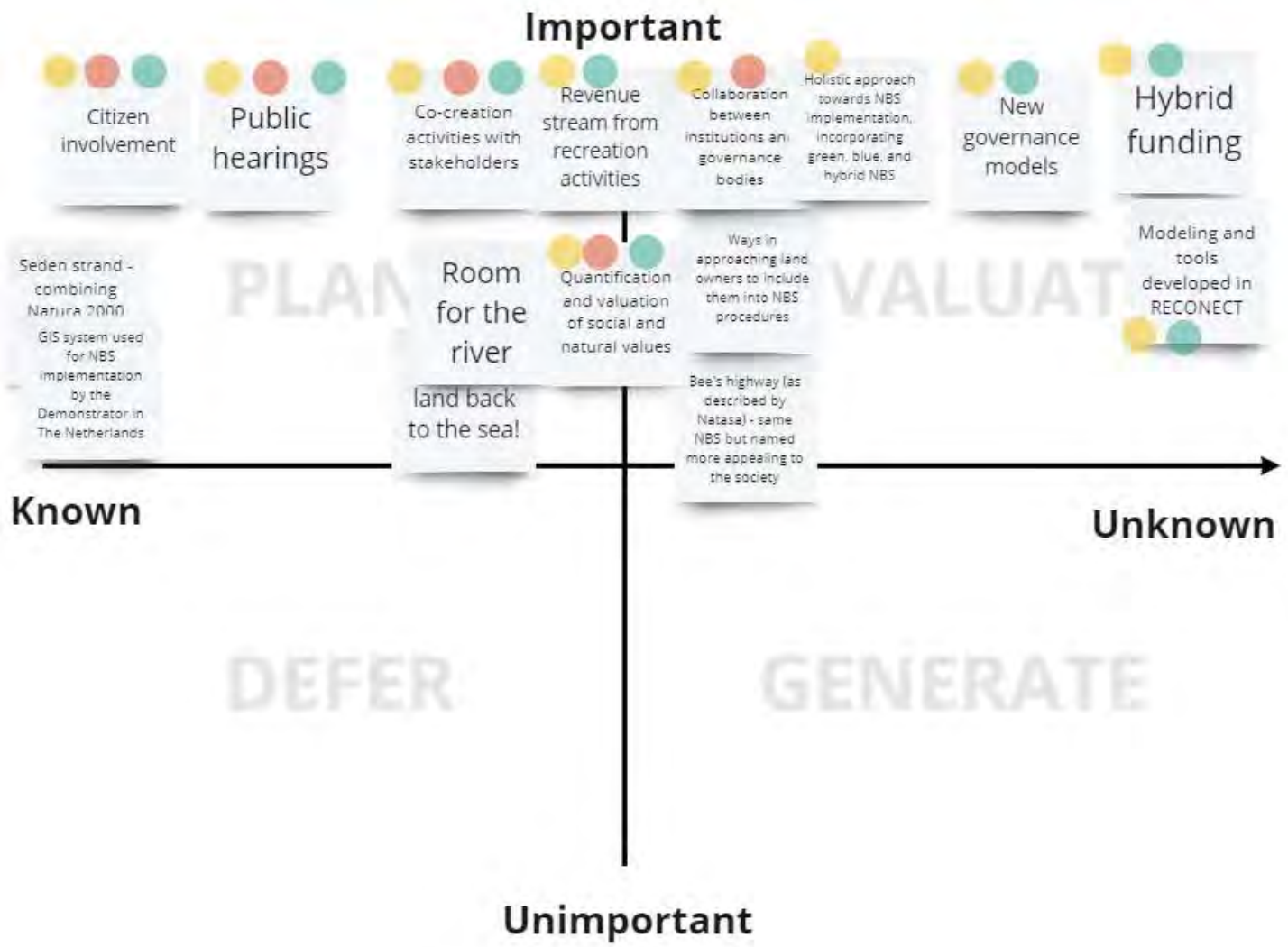


Figure 8 - Assumption mapping: Knowledge and Importance, online workshop

3.2.3 Assumption mapping: Feasibility, Viability, Desirability

The next activity engaged participants to evaluate each innovation based on desirability, feasibility and viability, to assess the possibility of practical application.

This step is represented in Figure 9, and the results from the in-person and online workshops are represented by coloured dots placed on the post-its from Activity 2, in Figure 7 and Figure 8.

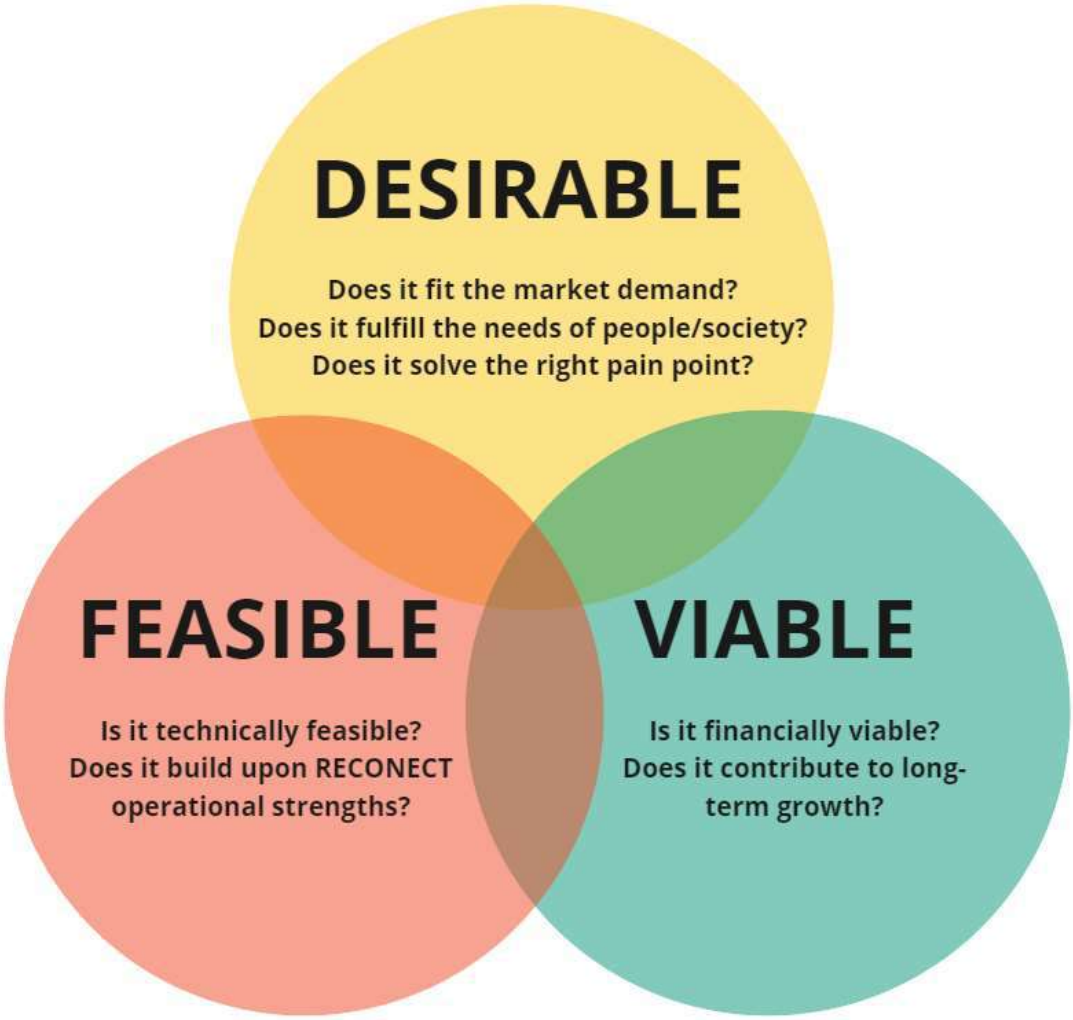


Figure 9 Value creation assessment

3.2.4 Assumption Mapping: Exploitation Value

The third activity planned for the workshop was not completed due to time constraints but is considered a valuable step in this methodology for anyone aiming to follow this approach. This step involves conducting an exploitation mapping, placing each innovation according to their novelty and impact. This mapping exercise can be carried out an axis such as Figure 10. The output of using this mapping results the overall degree of innovativeness for each idea assessed (referring again to the *Novelty + Value*

Creation = Innovation equation).

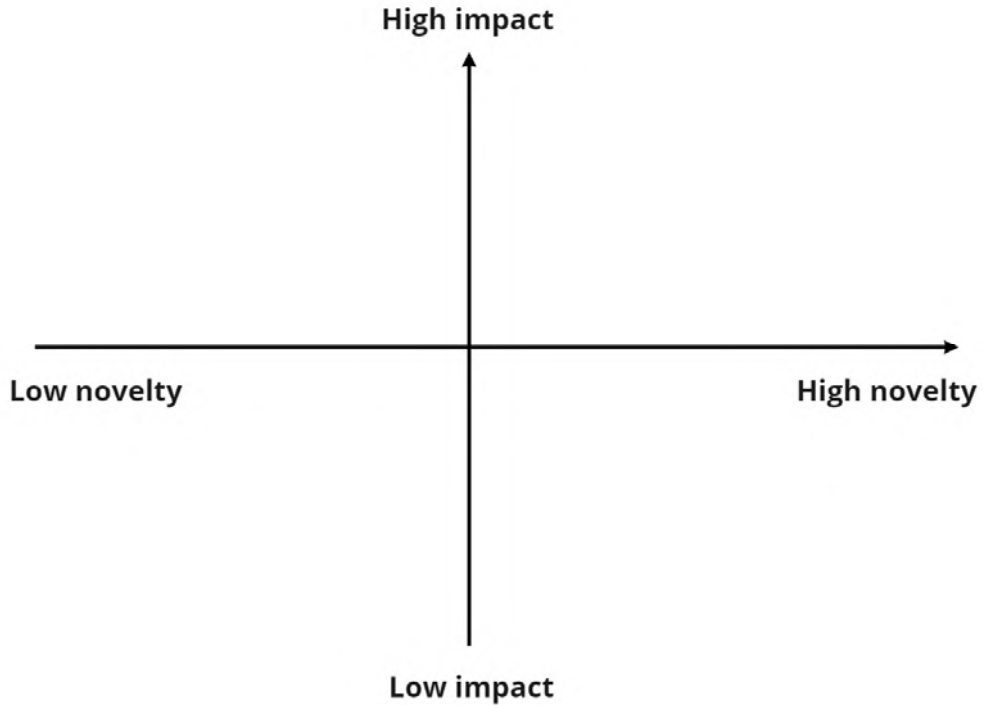


Figure 10 Exploitation mapping: novelty vs impact (the figure is empty because due to time restrictions the activity was not completed during the workshop)

3.2.5 Outcome from Zurich Workshop

Learnings from the workshop and discussions are summarised by the following:

- 'Innovation' itself appears to be a moving target, with different perspectives and no particular goal in itself.
- Research and Practice perspectives complement each other.
- Agreement in following a pragmatic approach in RECONECT.
- RECONECT innovation ideas need to be properly assessed through the lens of innovation, exploitation and upscaling moving forward.
- This innovation work is not confined to one specific deliverable in RECONECT. It is addressed in WP1 but full anchoring is in WP5.
- Link to the WP5 Exploitation Strategy is clear.

The workshop resulted in an extensive list of RECONECT innovations which were able to be considered after the workshop, and sorted for those that are appropriate for commercialisation and those which were not(Figure 11 and Figure 12). This division was made based on the combined results of the three assumption mappings (sections 3.2.2 to 3.2.3). The main obstacles for those innovations that were not deemed appropriate for commercialisation were that they either did not have a high feasibility (e.g., they consisted of a broad concept/approach without a concrete framing) or were not easily financially viable.

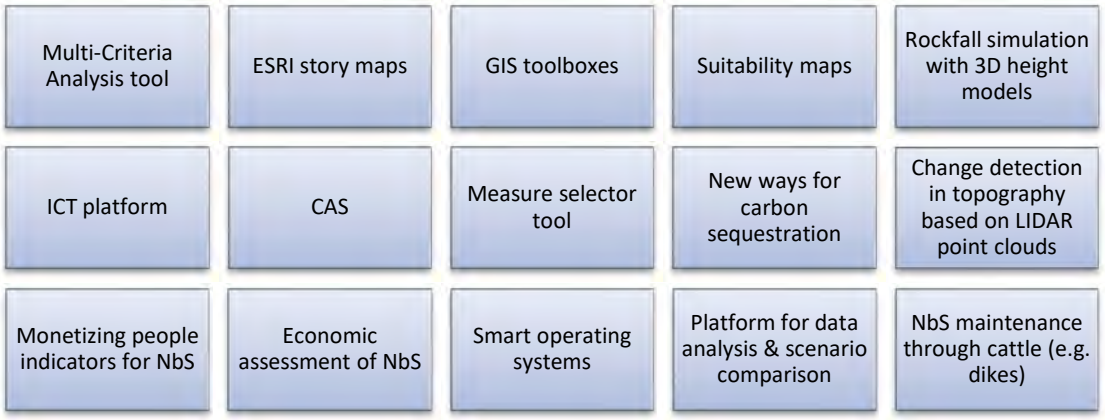


Figure 11 RECONECT innovation ideas with potential for commercial exploitation

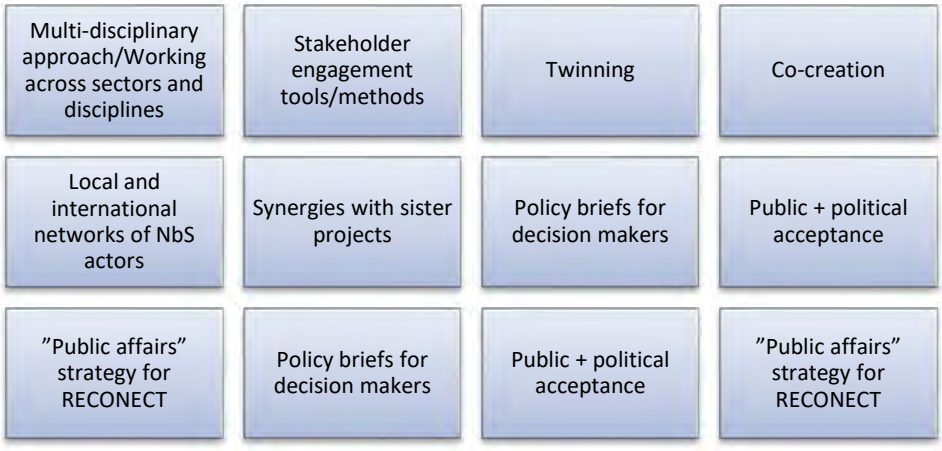


Figure 12 RECONECT innovation ideas without clear potential for commercial exploitation

4 Tracking progress of RECONECT innovations

This section outlines how RECONECT innovations were further explored and their progress tracked along their development journey, as part of work carried out by the University of Exeter for WP1 and leading in to the work carried out by TUHH and Ramboll in WP5.

4.1 Compilation of long-list of innovations

Firstly, a long list of innovations (tools / models / technologies) was compiled by scouring existing deliverables from RECONECT, and from the previous workshop results (Zurich, May 2022). While this expanded the innovation list again, it allowed for developments and new innovations that might have been missed in the workshop brainstorming, to enter the pool of potential start-ups. This list originally consisted of around 36 innovations related to RECONECT or to partners in some way.

4.2 Technology Readiness Levels, Commercial Readiness Index, and storyboards

The concept of the Technology Readiness Level (TRL) of an innovation was introduced at the early stages of the project. This scale was originally defined by NASA as system to assess the maturity level of a technology. The TRL evaluates the technological maturity on a scale of 1 to 9, where 1 indicates basic principles are documented, and 9 indicates the technology has been released and is in industrial production. With regards to EU-funded projects and in the case of RECONECT, TRLs have been used as a reference point for determining the development or maturity of research and its readiness for market uptake (APRE, CDTI, 2022). The full guidelines of the application of TRL in RECONECT were produced by EXETER and TUHH, and can be found in Deliverable 1.8 – Selection and enhancement of supporting tools/models/technologies for NbS implementation and evaluation. The TRL as defined in the guidelines are summarized in Table 2.

Table 2 - Definitions of TRL

Scientific research activities belong to the first TRLs 1-4	
TRL-1	Paper studies with basic properties.
TRL-2	Technology is limited to analytical studies. Applications are speculative, with no proof of concepts to support assumptions.
TRL-3	Proof of Concept. Related to active research and development activities, including analytical and laboratory studies to physically validate previous analytical predictions and assumptions.
TRL-4	Known as the “ugly prototype” or “pre-prototype”, includes the integration of ad-hoc hardware in the laboratory environment and basic technological components have a low fidelity compared to what the eventual system would be

Prototyping is considered development activities TRLs 5-7	
TRL-5	Pre-prototype tested in lab. Development activities start with the integration of components with reasonable and realistic supporting elements for testing in a simulated environment.
TRL-6	Technology is tested in a relevant environment and can be considered as a representative prototype to be tested in a high-fidelity (accurate) laboratory environment or in a simulated operational environment.
TRL-7	Testing is now within operational environments. First fully approved prototype.
Innovation is limited to the last two TRLs 8-9, technology has been proven to work and is now in its final form and works under expected operational conditions	
TRL-8	Pre-serial manufactory. Tests and evaluations of the systems are made; design specification, including quality and safety and operational suitability are evaluated to overcome any future mass production issues.
TRL-9	Product on market. Technology is shaped in its actual application, meeting production configuration, and under real conditions such as those identified during operation tests and evaluation.

The guideline defines TRL-1 to TRL-9 as the “path from idea to market”, however it specifies that TRL-9 does not imply the product is properly branded or nearing a successful product, only that there is purchasing power to buy the product, no disruptive competition and that it is proven in its operational environment. To meet this need, the Commercial Readiness Index (CRI) was introduced by EXETER and TUHH, of which there are six levels:

- CRI-1 - Hypothetical commercial proposition
- CRI-2 - Commercial trial
- CRI-3 - Commercial scale up
- CRI-4 - Multiple commercial applications
- CRI-5 - Market competition driving widespread deployment
- CRI-6 - "Bankable" grade asset class

The overlap / interaction of TRL and CRI is shown graphically in Figure 13 (from the WP1 TRL and CRI work).

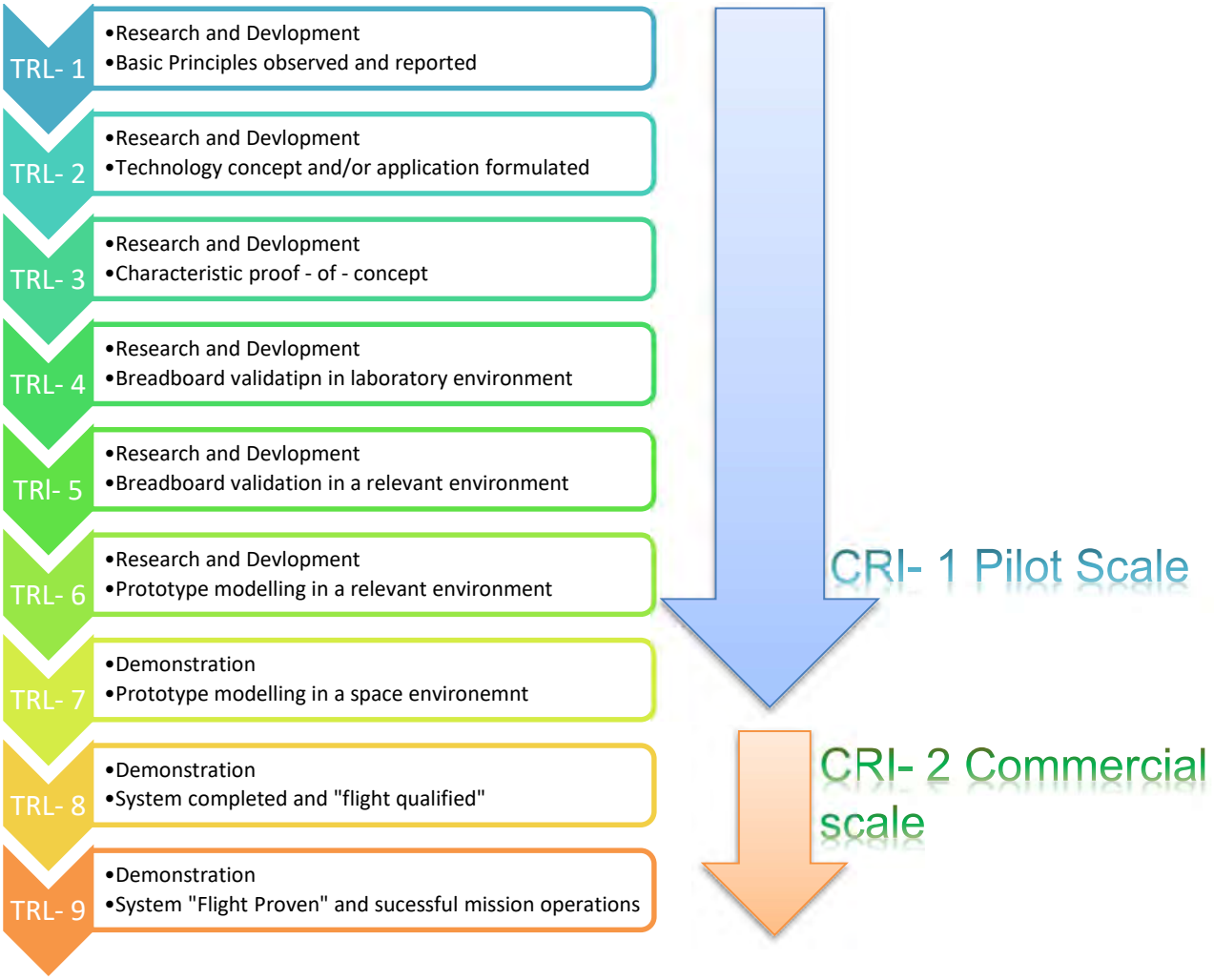


Figure 13 Comparison of TRL and CRI adapted from (Héder, 2018) and (NASA, 2021)

These two assessment means were combined in the guideline in to a flowchart to help each innovation owner to clearly establish where their innovation is currently at. The flowchart is show in Figure 14.

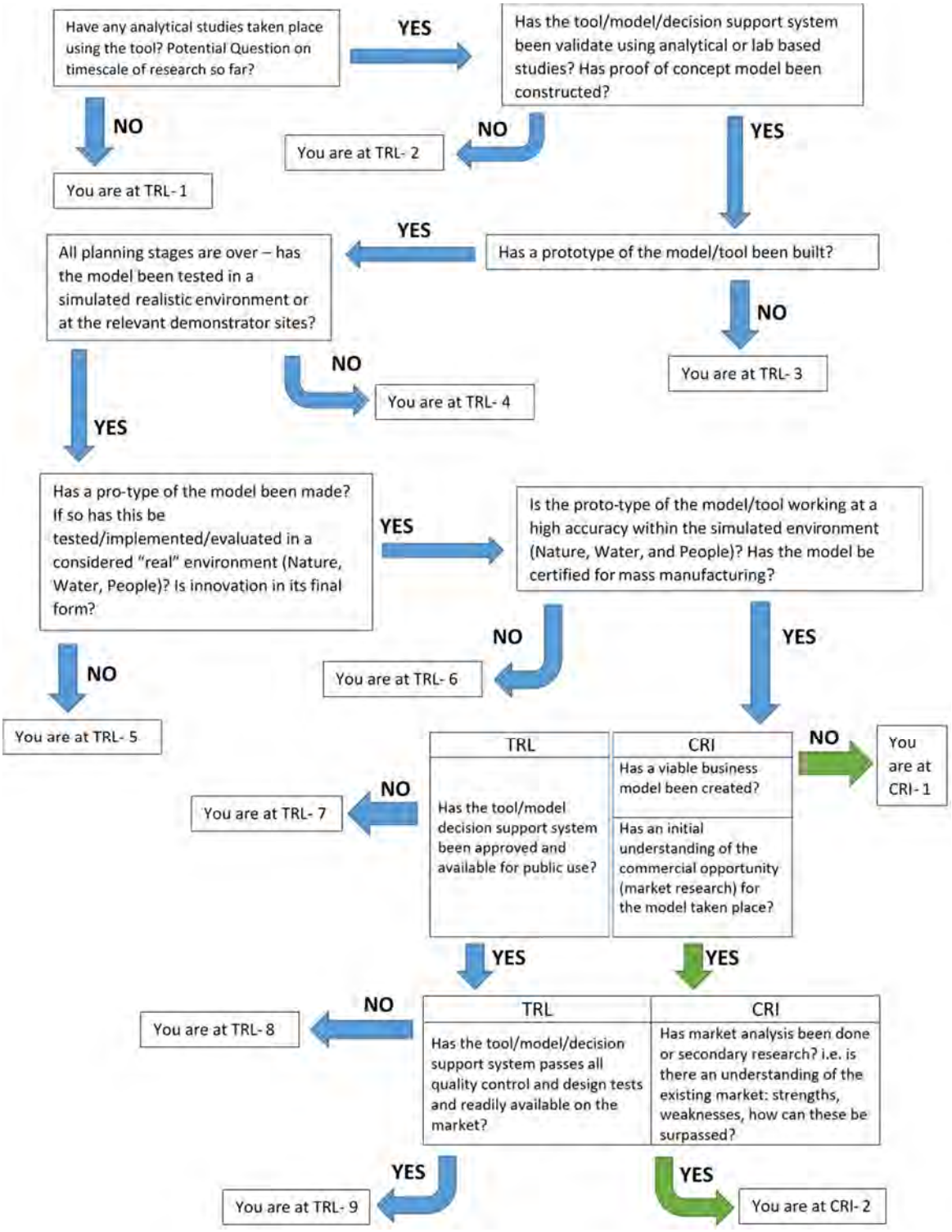


Figure 14 Flowchart for TRL and CRI placement from the EXETER guideline (from D1.8 - *Final report on the selection and enhancements of supporting tools/models/decision support systems for NBS implementation and evaluation as per the TRLs*)

Through interviews with the innovation owners, conducted by EXETER, further detail was collected on many of the long list of innovations. This allowed some of the long list to be culled, for example where the innovation was not directly related to RECONECT, or if

the idea had been dropped during the RECONECT journey. An information sheet, or 'storyboard', was developed for each remaining tool. By investigating the current function of each innovation, their development stages and their desired destinations as the innovations evolved, the innovation development trajectories were able to be tracked and revisited over time.

The long list of innovations and work done to collect the background information about these innovations, along with tracking their TRLs (as these were often progressing over time), can be viewed in WP1 (deliverable 1.8 – Selection and enhancement of supporting tools/models/technologies for NbS implementation and evaluation) along with the storyboards that were created.

4.3 Workshop Nijmegen November 2022

To gain further input, information and opinions from the wider Consortium members (not only the owners of the innovations), a workshop was run during the 8th General Assembly in Nijmegen. This was a hybrid workshop (both online and in-person, Figure 15 and Figure 16). While the schedule overrun of the General Assembly caused the in-person workshop to be cut right down in length and content, the online workshop was held regardless, and the planned activities are outlined in this section as they are considered a valuable step in this methodology.

Considering the then-current list of innovations, a selection of those known to be directly related to RECONECT (developed, used or improved within the project) and where sufficient information and clarity was available around them at that time, were used as the focus of this workshop.

At this stage in the journey, these included:

- eDNA
- ARGOS
- Measure Selection Tool
- Indicator Selector
- HydroNET dashboard
- TeleControlNet

Figure 15 Nijmegen in-person workshop November 2022

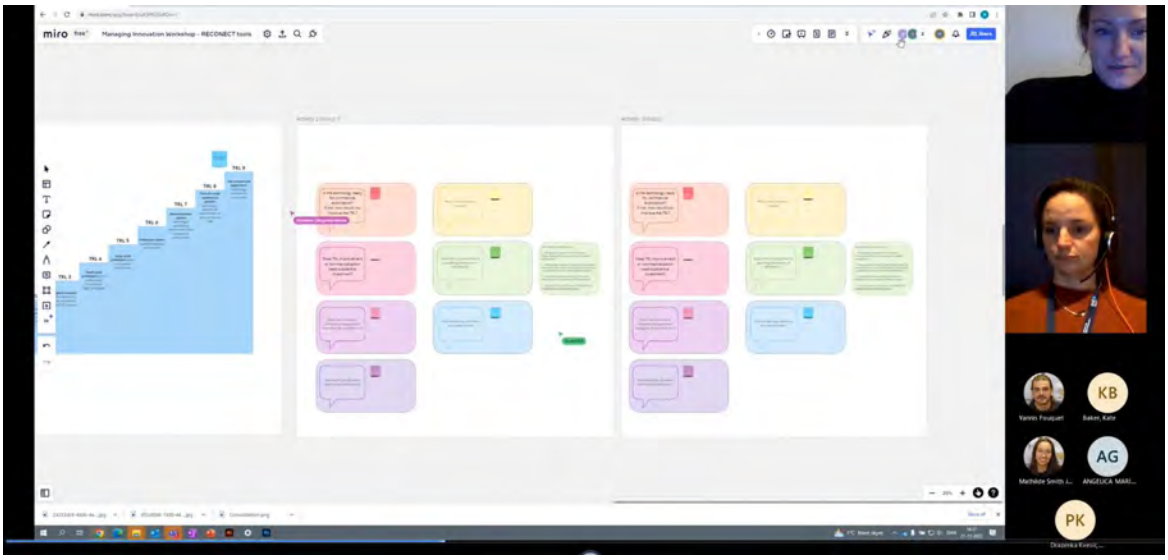


Figure 16 Nijmegen online workshop November 2022

4.3.1 Revisiting Value Creation

Firstly, the workshop participants were asked to take a look at the EXETER storyboards for each of these six innovations and apply the desirable, feasible and viable lenses (as displayed in Figure 9) to each innovation. The online participants completed this step, shown in Annex B (Fig. B1). The online workshop suggested participants thought that all the innovations discussed with in this workshop were feasible, viable and desirable.

4.3.2 TRL assessment

In order to apply in practive the concept of TRLs, the workshop participants were then asked to choose one innovation to focus on with their group (maximum six people per group) and to place it where they agree it fits on a 'TRL staircase', shown in **Error! Reference source not found.**. The online group went through two rounds of this activity, and chose to focus on the Measure Selection Tool and eDNA. Because of time restrictions, it wasn't possible to assess more innovations. However, the TRLs of all RECONECT innovations can be found in D1.8 - *Final report on the selection and enhancements of supporting tools/models/decision support systems for NBS implementation and evaluation as per the TRLs.*

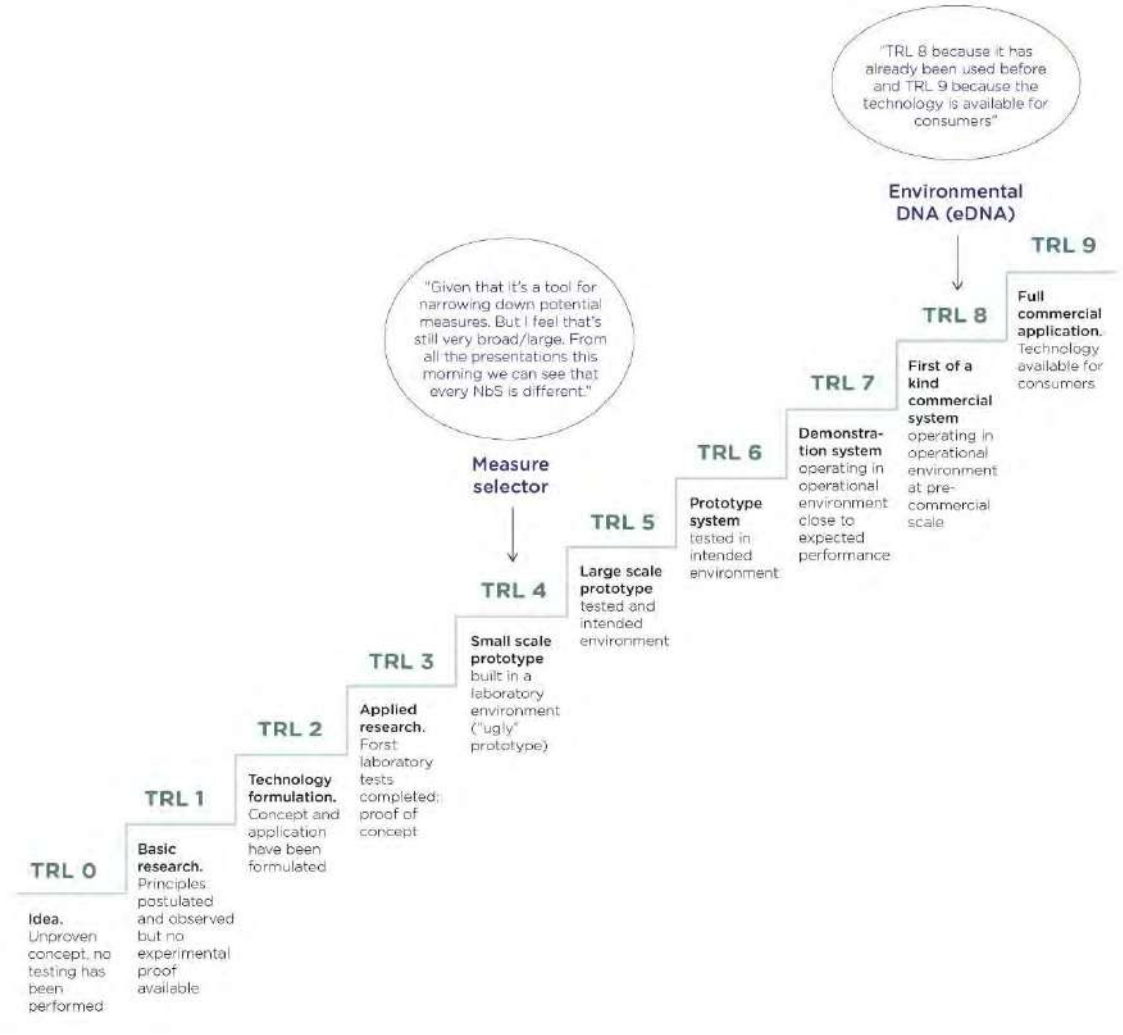


Figure 17 Technology Readiness Level Staircase applied to two innovations chosen as examples during the workshop, reported together with the comments of the workshop participants (in the bubbles). These TRLs are not a definitive finding, but were rather used to instigate discussion and generate input

4.3.3 Development questions

In the same groups, the participants then attempted to address some important development questions regarding the innovation they had chosen to focus on:

- Does it hold a commercial opportunity? How great do you think that opportunity is?
- Is the technology ready for commercial exploitation?
- If not, how would you improve the TRL?
- How would you go about commercial innovation?
- Does Technology Readiness Level improvement or commercialisation require substantial investment?
- Does the tool contribute to upscaling framework of RECONECT?
- Are there any improvements you would make?
- Who is the customer / market?

One example of the outcomes of this activity is displayed as a visual overview in Figure 17 (the results for the other innovations can be found in Annex B, Fig B2 to B7) and the detail of the inputs is discussed in section 4.3.4.

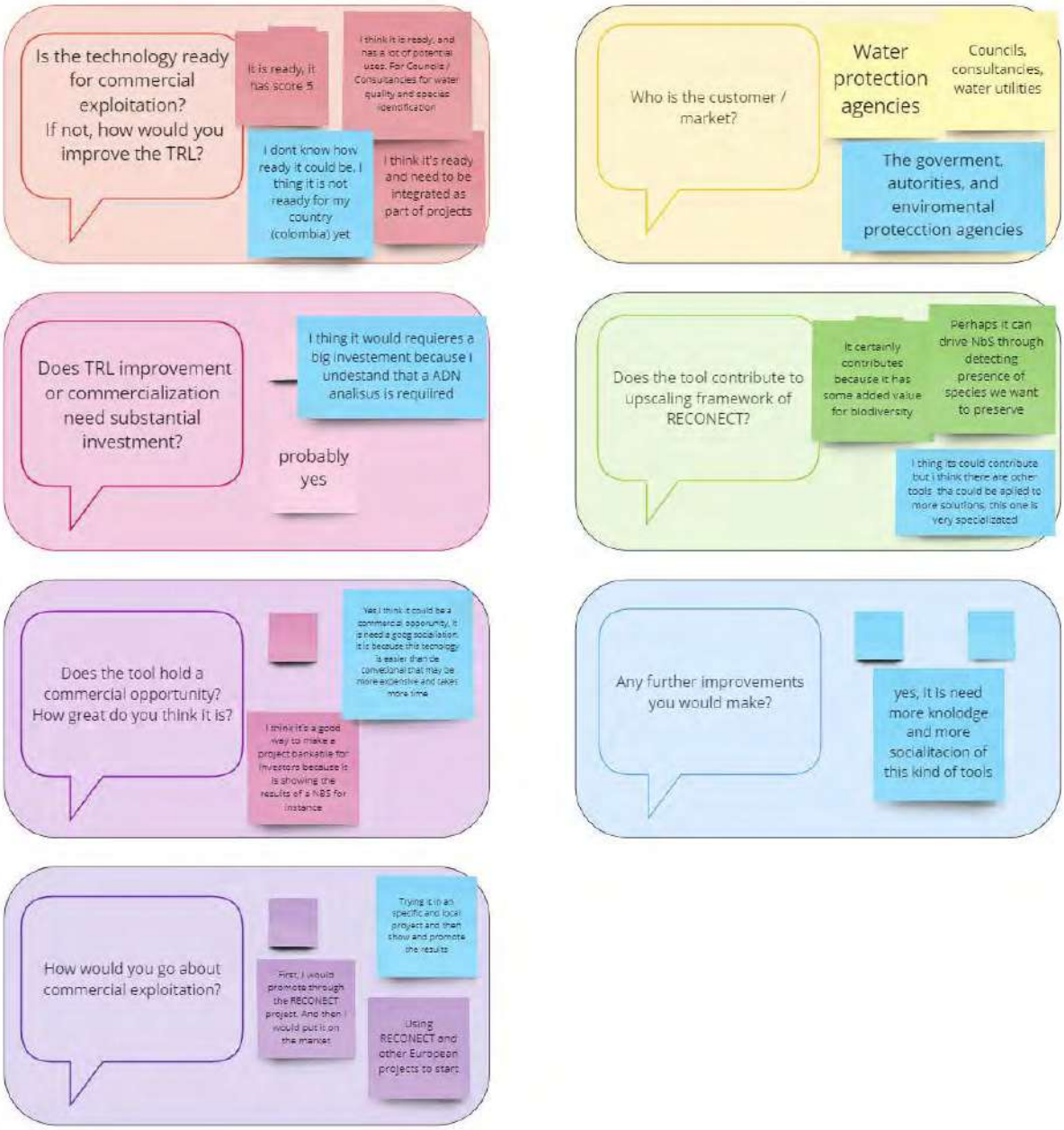


Figure 17 eDNA Development questions, online workshop

4.3.4 Outcome

While the in-person workshop had little opportunity to immerse in the activities planned for the workshop, some valuable discussion took place. It proved successful for sharing knowledge around the tools and gathered perspectives on whether tools are exploitable in different markets and how that might look, given the differences between the commercial innovations vs the research-based innovations, open source vs paid services and how to handle these differences for the purposes of this methodology.

It should be noted that the list of six innovations discussed in the Nijmegen workshop was not the final list of innovations, and one of the outcomes of the workshop was in fact that further innovations were added or re-introduced into the current pool of innovations at that time.

To utilise the planned activities in this step and gather further inputs for the next steps, that were not able to be captured during the shortened workshop timeframe, the updated (and now more thorough) list of innovations was included in a Miro board which was then widely shared with workshop participants and left open for input after the General Assembly. In this way, there was also the opportunity for partners to add innovations they were working with that they considered worth including in this step.

Where innovation owners responded to this opportunity and answered for the Development questions for their innovation as part of the follow up from the workshop, the outputs gathered are included in Annex B.

Some examples of the type of outputs received from this workshop and the open Miro board are:

- eDNA:
    - The market for this could be in environmental protection agencies, water protection agencies, councils, consultancies, water utilities
    - It could contribute to driving (and upscaling) NBS, through detecting high presence of species the client wants / needs to preserve, so providing motivation for NBS over grey solutions
- Measure Selection Tool:
    - Contributes to the upscaling potential in RECONECT because as NBS become more and more important/known, it is important to have good tools for planning/selecting NBS, and this tool is applicable to all NbS
    - To improve this innovation, multi-language support might be of added benefit. For example, next to English, also offer a French and German translation, and possibly other languages depending on required effort to do this
- ARGOS:
    - Substantial investment not required at a technological level but perhaps at a marketing or commercial level
    - There are no known competitors with the same scope as ARGOS currently

Outputs helped to inform the next stages of this methodology.

5 Deeper dive towards commercialisation

This section outlines how business model development was then focused on a selection of innovations in order to help them progress towards exploitation. It includes the steps involved in selecting the final innovations to work with, some focus sessions with each innovation owner and a workshop held in Hamburg where external innovation and incubation experts attended to provide input for the innovation owners.

5.1 Screening by the University of Exeter

Armed with the assessment Guideline and a thorough understanding of each innovation, an informed screening was carried out by EXETER. Those innovations with higher TRLs and CRIs were short-listed, so that focus could be targeted towards those closer to being ready to launch to the market from here forwards.

5.2 Screening by Ramboll and TUHH

Given the variety of innovations from the broad spectrum of RECONECT partners, an additional screening took place. Here, each innovation was further scrutinised, running them through a multi-criteria analysis (where criteria can be adapted according to the field this methodology is being applied in), assessing them for their *commercial* exploitation potential and suitability for progression.

Criteria applied:

- What differentiates this from competitors?
- Is it appropriate for commercialisation? (i.e., to leave the research environment)
- Is there clear value? Where's the value?
- Is this ready to be trialled?
- Is this directly related to RECONECT?
- Could this become a stand-alone offering (i.e., independent of universities or other existing platforms already in the market, like ArcGIS)?
- Is this already a proprietary software?

From these assessments, the six most developed and appropriate innovations were chosen to progress to the next, more intensive development stage. The tools remaining at this stage are described in this section, under sections 5.2.1.1 to 5.2.1.6.

It was important that the innovations selected had alignment with RECONECT, upscaling NbS or addressing the Water, Nature, People aspects. For example, QuantiAmenity focuses on helping to quantify benefits in the People sphere (inevitably touching on Nature sphere), while the Measure Selector Tool helps to streamline the selection process when assessing suitable NbS for a site (supporting easier NbS uptake, thereby supporting all spheres). The Crowdsourcing Information Collection Tool provides an additional data collection source using public input from visitors to an NbS site (primarily supporting the People or Nature spheres, depending how it is applied), and eDNA provides a species identification package while also looking to bring quantification of species in to their testing, thereby helping to support the case for NbS over grey solutions (strongly supporting the Nature sphere and the upscaling strategy). The remaining two (ARGOS and TeleControlNet) offer monitoring support for NbS, from real-time data and alert systems up to GIS-viewer platforms where information can be superimposed with other visual layers (primarily supporting the technical side of the

Water sphere (the hydro-meteorological risk reduction part of the project, though can also be applied to support the Nature sphere).

5.2.1 Selected Innovations

Because of the new screenings described above and the advancements of new innovations (i.e., QuantiAmenity), the six selected innovations in this step differ slightly from the ones listed in Section 4.3.

5.2.1.1 Environmental DNA (eDNA) (Amphi)

Environmental DNA identification (eDNA) is currently used for single-species identification and community analysis when doing a biodiversity assessment. The monitoring of rare and threatened species in freshwater and marine ecosystems can sometimes be a challenge when using conventional monitoring methods. By taking water samples in a water body, eDNA technology identifies the presence of a species by extracting its eDNA. The service Amphi are developing offers a package where they can design eDNA test procedures for a specific site, carry out the testing, send the samples off to a laboratory and report on the results for a client, making this process smooth and scientifically effective for those who do not have the in-house expertise. Currently this is purely a presence / absence technology, however Amphi are working towards creating a method to quantify species using eDNA as well. If successful, it will be added to their service offering.

www.amphi.dk
Marzenna Rasmussen mr@amphi.dk, Lars Briggs lb@amphi.dk

5.2.1.2 Measure Selector Tool (IHE)

The Measure Selector Tool provides a screening of an extensive list of NbS measures for hydro-meteorological risk reduction, to assist in narrowing down which NbS may be suitable for a given location. The user can input factors such as hazard type, area features at location of feature, affected area type etc. Six filters are applied to the input variables and a shortened list of potential NbS are given to the user. This tool may be useful to those who do not have the in-house knowledge and expertise already. It has been developed in an academic environment currently and used by RECONECT partners.

http://www.reconect.eu/services-platform/measure-selector-tool/
Laddaporn Ruangpan l.ruangpan@un-ihe.org

5.2.1.3 ARGOS (Hyds)

ARGOS is a family of services to provide information, warnings and help in the emergency management of different weather-induced hazards. It is able to integrate hazard information from different sources (both observations and forecasting), vulnerability and exposure information, incidents, etc. The different services cover from first responders at national level to municipal or even single activities being held in risk-prone areas. Through the links with RECONECT, Hyds hope to expand ARGOS' service offering to supporting the monitoring of NbS.

http://www.reconect.eu/services-platform/argos/
Xavier Llort xavi.llort@hyds.es

5.2.1.4 Crowdsourcing Information Collection Tool WaterDetective (HydroLogic)

This tool is developed as a web-based form of collecting input from the public (i.e. visitors to an NbS), for example, by displaying a QR code on an information board at the site, which brings them to a simple data input portal. They may notice something needing maintenance, or have observations of wildlife: it can be tailored to ask questions to the user about information desired by the owner / manager of the NbS and can allow photograph upload. In this way, more frequent observations can take place by (voluntarily) involving the public in the monitoring of a site.

http://www.reconect.eu/services-platform/hydronet/
Marcel Alderlieste marcel.alderlieste@hydrologic.com

5.2.1.5 TeleControlNet (InterAct)

RECONECT's ICT platform is based on TeleControlNet (TCN). This is a commercial SaaS for industrial Internet of Things applications. All RECONECT demo sites supply data to TCN, which stores it for the long term in the internal database. The data can be read directly from the sensors, which also makes real-time application possible, or can be read in via external web portals. The collected data can be supplemented with external meta data from third parties, such as weather forecasts. In some cases, the data can be used to feed artificial intelligence algorithms. This allows early warning systems to be built. Or if there are control options at locations, for example by pumping or influencing water flows with lochs, TCN can also Real Time Control (RTC) these remote locations with a centrally programmed set of "decision rules".

http://www.reconect.eu/services-platform/telecontrolnet/
Micha Huybrechts mhoybrechts@interact.nl

5.2.1.6 QuantiAmenity (DTU)

QuanitAmenity will enable the quantification of NbS intangible amenity values such as recreation and sense of place in a monetary manner. Amenity values will be quantified for user-defined NbS layouts and locations. The quantification will be performed based on open socio-economic data, data obtained from surveys performed in the RECONECT project, and other existing studies. Results will be presented in a spatially explicit manner and users will be able to specify which NbS configuration should be considered.

Roland Löwe rolo@dtu.dk

5.3 Business model development

Through intensive interview sessions with each innovation owner, business models were drafted for each of these six innovations. The Business Model Canvas (BMC) was chosen for this approach, using the template of questions included in Figure 18. Interviews were used to guide the innovation owners through the questions, to ensure that as much information as possible was extracted and included in the BMC for each innovation. While there are many business models out there, it may be appropriate to choose an alternative model depending on the field and type of innovation that is being dealt with. Deliverable 5.7 – Business Models and Roadmaps includes further detail on business models.

The BMCs created during the interviews remained open for further input from the innovation-owners in the coming weeks, and these were used as the basis to inform the next workshop planning.

Each resulting BMC is included in Annex C (Figures C1 to C6).

<table>
<tr><th colspan="2">Value Creation</th><th></th><th colspan="2">Value Capture</th></tr>
<tr><td>PARTNERS 7</td><td>KEY ACTIVITIES 5</td><td>VALUE PROPOSITIONS 1</td><td>CUSTOMER RELATIONSHIPS 4</td><td>CUSTOMER SEGMENTS 2</td></tr>
<tr><td>Who are your key partners?
Who are your key suppliers?
Which key resources are you acquiring from partners?
Which key activities will partners perform?</td><td>What key activities do your:
(1) value propositions require?
(2) your distribution channels require?
(3) your customer relationships require?
(4) your revenue streams require?</td><td>What value do you deliver to the customer?
Which one of your customers‘ problems are you helping to solve?
What bundles of products and services are you offering to each segment?
Which customer needs are you satisfying?
What is the minimum viable product?

START HERE</td><td>How do you get, keep, and grow customers?
Which customer relationships have you established?
How are they integrated with the rest of the business model?
How costly are they?</td><td>For whom are you creating the value?
Who are your most important customers?
What are the customer archetypes?</td></tr>
<tr><td></td><td>KEY RESOURCES 6
What key resources do your:
(1) value propositions require?
(2) distribution channels require?
(3) customer relationships require?
(4) revenue streams require?</td><td></td><td>CHANNELS 3
Through which channels do your customer segments want to be reached?
How do other companies reach them now?
Which ones work the best?
Which ones are most cost-efficient?
How are you integrating them with customer routines?</td><td></td></tr>
<tr><td colspan="3">COST STRUCTURE 9
What are the most important costs inherent to your business model?
Which key resources are the most expensive?
Which key activities are the most expensive?</td><td colspan="2">REVENUE STREAMS 8
For what value are your customers really willing to pay?
For what do they currently pay?
What is the revenue model?
What are the pricing tactics?</td></tr>
</table>

Figure 18 Business Model Canvas: based on Strategyzer methodology, sourced through Harvard Business Review (Osterwalder, 2013)

5.4 Formulation of development steps

Beside a solid business model, having a solid forward plan is important for the sustainability of an innovation aiming to become a start-up. Previous projects and RECONECT partner experience implied that without a solid business plan, including a financing plan, start-ups often fail.

To help equip all innovations within this RECONECT journey to progress towards becoming a start-up in the market, this step involved research and collation of planning milestones or development steps in the innovation, incubation, business development and marketing spheres for planning the near future timeline and beyond. These development steps were incorporated into the Hamburg workshop, as explained in section 5.5.

The development steps are included below in Table 3 and Table 4.

Table 3 Near future development steps

Create a marketing & sales strategy	Consider bringing in external people to help with these parts. Develop a clear strategy on how to bring potential customers through to real customers and how to keep them coming back. Who will you target? How will you reach them? What happens once they've seen your add / met you / heard about your product? For sales conversations, get familiar with the customer's business, ambitions, obstacles, fears. Ensure you connect with the right people (i.e. who makes decisions and who understand the technology you offer). Become familiar with your sales steps and track results for improvements.
Set growth KPIs	To ensure growth happens, track and measure "growth key performance indicators", or areas of your business which influence profitability. KPIs may vary per business but there are some common KPIs you can research for business growth, and you might include KPIs such as revenue generation, cost per acquisition, retention rate or daily active users.
Establish partnerships	Consider what key partnerships are needed to, for example, develop the product/service, introduce it it to the market, create an advanced version of the product/service, introduce it in the different markets or countries, create a relationship with potential customers, expand the offer, etc. These could be any companies in your value and supply chains.
Establish customer relationships	Consider what networks you would need to be embedded in to build your customer base, to get to different customer segments and establish the relationship with them. Think about the ways you get to a potential customer, and what is needed from you to keep the customer, to make them buy your product/service, use it, subscribe to it. What could be ways to keep this relationship and engage with the customer, so they do not opt for the competitor's offer.
Secure key resources	What resources (e.g., tangible, human resources) are still needed to deliver the value of your product/service to the customer, to increase the quality of the offer, or develop a second generation of the product/service. Consider the resources that would help to establish the relationship with the customer, to tailor the offer to the customer's needs. There could also be resources outsourced by establishing particular partnerships, or acquired to reduce the costs that you now have to deliver the product/service to the market. The resources could also open new opportunities to enter new markets, serve new customer segments or different countries.
Market research	Research your competitive landscape, competitive offers in the market, substitutes for your product, the pricing and value delivered by these competitors and substitute solutions. Based on that, think about particular customer segment in the market you serve with your offer. What characterizes your customer? How much is your customer willing to pay for your product/ service? For what value are they willing to pay (for solving a pain, fulfilling particular need)? Think about the size of your market, of your customer segment, and what part of that customer segment you can serve. Consider different offers to serve different customer segments.
Launch to the market	Think about the last steps needed to launch the product/service to the market. How will you introduce it to your potential customer segments, how will you differentiate your product. Is it the pricing, the quality or other strategies you choose to differentiate your product from competition and substitute offers? What channels are needed for the launch? How do you ensure you inform your customer of your product/service's existence. How will you make sure this will translate to potential customers actually buying/subscribing to your offer.

Validating the tool / product / service	Consider the activities that are needed to prove the concept/prototype will work in the real life environment and can be used at a large scale. Does the product actually deliver what it was intended to deliver? Does it fulfill the needs of the customer? Does it do what customer expects it to do and has characteristics that the customer asked for? What is needed to make sure there will be no errors when customer uses the product/service?

Table 4 Long term development steps

Create a business model	Your BMC is a basic business model. Business models can range from basic but lacking finer nuances of business strategy, to detailed documents and tools that can become too large to respond to real-world change. Whatever tool you use, a solid business model is part of the essential foundation work for future success.
Create a value proposition that makes you money	Your BMC includes your first development of your value proposition. This is a statement about how your solution adds value to the life of a customer, why it's better or different from the competition ane what the customer can expect to achieve with your solution. May be different for different customers.
Define a pricing strategy that maximises revenue	Value-based pricing should be planned according to what value you create for your customer, whether it will give them a return greater than what you're charging them. This will differ per customer. Track and review each business case, estimates, forecasts and outcomes to refine prices for future.
Create a brand story and visual identity	Create a compelling, clear and consistent brand story that helps customers to understand how you can help them. The story should tell them why they should use your product, one ambition your customer wants to achieve, one clear path your customer needs to go down and the offer you can make to help them. This is the basis of your website, pitch, sales conversations, sales materials. This should be consistent with your visual brand and identity, which helps build credibility, trust and professionalism. Your visual identity should remain consistent in colours, fonts, imagery, logo.
Track and measure growth KPIs	Keeping track of your growth KPIs allows you to respond to any changes, know what marketing is working well, identify your most profitable customer types and find ways to increase the value of each customer to your business.
Establish distribution channels	Establish how you will distribute your product / service. Will this be a direct line from you to the customer? Will you have a third party / partner involved, such as an existing service provider or a consultant who can provide your services to customers? Will your service be a part of a larger platform or your product as part of the bundle of offers? When will these channels be established?
User interface creation	Creation of the interface that users will use. This should be developed with the end user in mind. Think about their experience when using the interface, what do they require from it? Does it deliver the value to the user that you intended to deliver via your product / service? Is it easy to navigate for the user? How does it represent your product / service? Is it in line with your branding and does it reflect your intent for the product / service? This may require external experts / partners depending on your in-house expertise.
Prototype testing (real environment)	An important step in the development of your prototype is testing this in a real environment. This could be done with the help of the partners, that provide the conditions to conduct a pilot study. In this stage it is essential to indicate any problematic areas that need to be solved before the launch of the product/service.

Prototype testing (simulated realistic environment)	Prototype testing in a simulated realistic environment could involve testing only a part of the product, it's individual parts, which in later stages are tested as a system. This step is essential before the launch of the offering to the public and exact customers. It could involve partners that provide the conditions to simulate the realistic environment so the prototype can be tested.
Final prototype	Development of the final prototype after the prototype testing steps. This should incorporate the lessons learned from your testing. The timeline for this may depend on progress with prototype testing but having a timeline on paper for this is a good way to help keep on track and progress your product / service development. In this final prototype the developers need to ensure all parts of the product / service / offer work as a system that is validated and to be functioning without errors, delivering the intended value to the user / customer.
Final prototype testing (demonstrator sites or similar trial environment)	When your final prototype is ready, this can be tested in pilot sites, potentially within Demonstrator sites or in other similar environments. This may be with potential customers who are interested in your technology, or in conjunction with partners you have established. This step can be a part of "Prototype testing (real environment)."
Development of advanced version or second generation of the product / service	How will you develop your product / service further? Are there any additional functions your customer / user would appreciate? Would additional functions or an advanced version of the product / service / offering open up new markets or customer segments? What is the expected timeline for this development? What does this development depend on?
Launch of advanced version or second generation of the product / service	When will your advanced version / second generation be launched to the market? This may depend on several factors to do with your development, but setting a proposed timeline for this is important to help things stay on track and progress. Estimate what tests and pilot studies need to be conducted to ensure the smooth functioning of this offer. Evaluate, how easy it will be to integrate this new product / service in the existing system. Will this need new distribution channels or partnerships to be established?

5.5 Workshop Hamburg

This section lays out the workshop process for the third workshop involved in this journey, held in Hamburg at the 9th General Assembly in May 2023 (Figure 19).

The goal of this step was to further evaluate and develop the business plans (BMCs) of the six innovations. The idea was to focus on any gaps or areas that were hard for the innovation owners to answer when completing their BMC, as well as planning steps forward towards the market for each innovation in the short and longer term, with the end-goal of exploiting these innovations to create start-ups.

Figure 19 Hamburg workshop May 2023

5.5.1 Dashboard workspace

A dashboard workspace was created for each innovation, as a way of record-keeping and note-taking during the workshop. This was designed for the innovation owners to take away with them to refer back to and incorporate in their forward planning.

The BMCs previously composed during the interviews with innovation owners (discussed in section 5.3) were included in the dashboards as the starting point for these sessions.

A photograph of the Measure Selection Tool dashboard is included in Figure 20 to illustrate these. Dashboards can be created appropriately for the activities planned, and are a great canvas to facilitate active participation in a workshop, as well as a way of capturing outcomes for the facilitators and the participants.

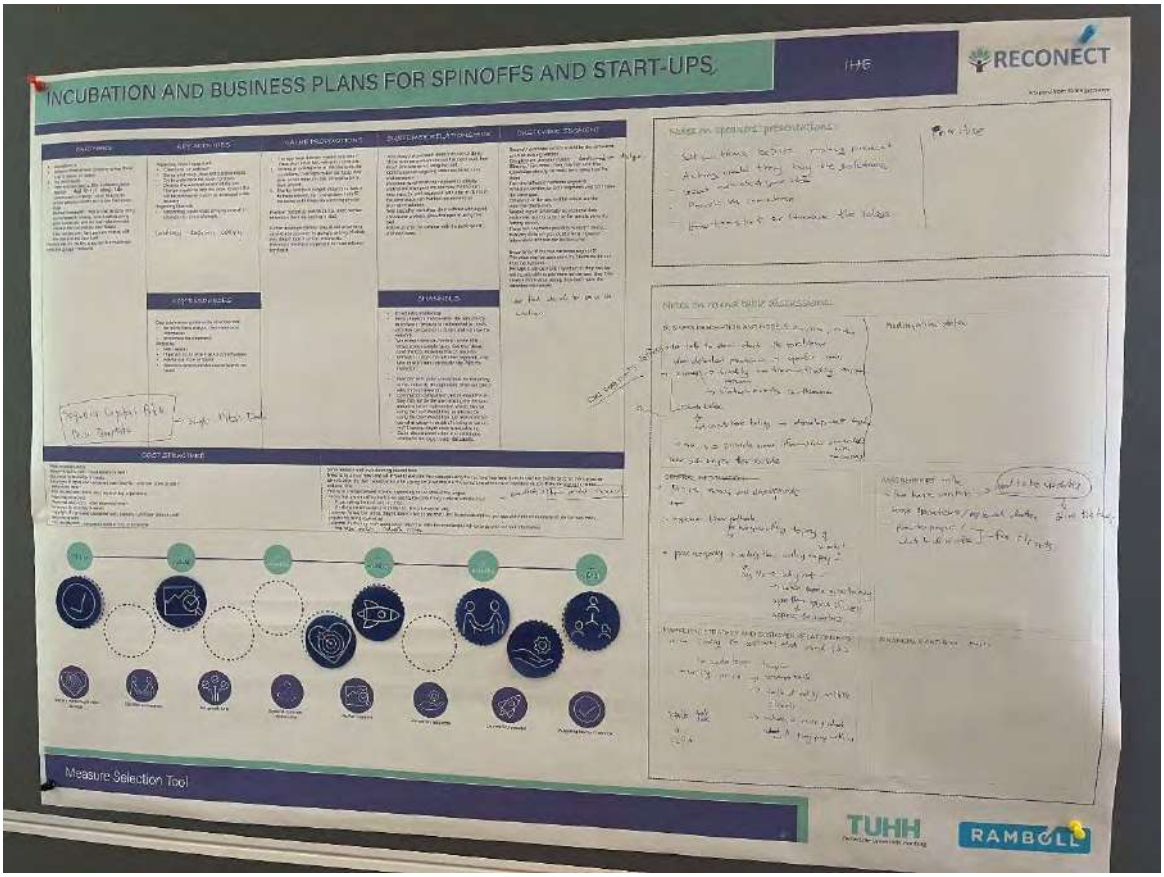


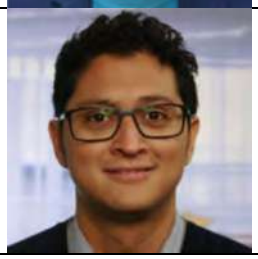
Figure 20 Measure Selection Tool Workshop Dashboard

5.5.2 Innovation and Incubation expert panel

Experts selected from the Hamburg innovation and start-up scene (and one from inside RECONECT) were invited to join the workshop held for the six innovations. The experts covered relevant focus areas according to their expertise, and were given ten minutes one-on-one time with each innovation owner to discuss their current business model, provide input, answer any questions the innovation owner might have, or question the innovation owners on areas they chose to delve in to. The experts were briefed in advance of the workshop on the six innovations and were provided with background material, so they were ready to dive straight into the discussions in each session. These sessions were fast and effective, kept short to accommodate a full rotation of each innovation and expert, and aimed at extracting key insights from the experts on the spot.

The experts who participated are listed in Table 5.

Table 5 Expert panel for Hamburg workshop

Area of expertise	Expert	
Business description and models	Dr. Christian Salzmann Executive Director, Startup Dock, TUHH	
Marketing strategy and customer relationships	Hilko Aikens, Investor Relations, Hamburg Investors Network	
Design, research and development	Dr. Stephan Buse Deputy Director, Institute for Technology and Innovation Management, TUHH	
Partnerships	Silke Schleiff Project Manager, Enterprise Europe Network - TUTECH INNOVATION GMBH Consultancy & Competence Development	
Monetisation of data	Prof. Dr. Moritz Göldner Data-Driven Innovation, TUHH	
Financials and risk	Alvaro Fonseca Senior Chief Project Manager, Ramboll	

5.5.3 Timeline planning activity

Using the development steps composed in section 5.4, the last activity employed the near-future development steps included in Table 3, asking the tool owners to place these

development steps (produced in sticker form for the workshop) on their one year timeline provided in their dashboard.

This activity was designed to bring the learnings from the workshop together and transfer them in to real, tangible steps to take away and work on, in the drafted timeframe. An example photo of this completed exercise is shown in Figure 21.

Figure 21 One-year timeline planning, ARGOS, Hyds

Longer term planning is also considered a vital step in this methodology. While this workshop was already packed to capacity timewise, the longer term development steps previously researched and formulated (in section 5.4), displayed in Table 4, were distributed to participants to take away and utilise for their work going forward.

These timeline planning resources used in the workshop and as take-away planning material are included in Annex D.

5.5.4 Summary of learnings

It was discussed as a learning from this process, that the innovations being dealt with in RECONECT are not ‘regular’ in the start-up field. Rather than coming from a common innovation approach where an innovator sees a gap or demand in the market and then tries to design to meet the demand, many of these innovation owners have come to this challenge from having an idea or technology they are working on, and then trying to see how it can fit in the market.

Given this background, the overall impression from the experts was that these innovations are advanced, with developed offerings already designed and in many cases, created and being tested. However, there are still many steps and gaps for each innovator to fill before being ‘ready to launch’. One key recurring theme being understanding the market and demand for their product and understanding the customer.

Another recurring gap is financing, where most of the innovations do not yet have a clear financing plan or investors. RECONECT deliverable 5.7 – Business Models and Roadmaps aims to help to fill this knowledge gap by developing a framework that supports: (i) the development of strong business cases for NbS which can account for both the cost-effectiveness of reducing hydro-meteorological risks and a wide range of multiple societal benefits; (ii) obtaining more diverse sources of funding.

The workshop was reported to be successful in helping the innovation owners plan forward, requiring them to bring the ideal planning steps into actual tangible timelines. There was a noticeable range of starting points, from research-based innovations to transforming existing products with an existing company and financial backing behind them. There was also a noticeable range of trajectories of aspiration for the innovations involved, where some intend to grow and sell their business idea, some discussed taking the journey on their own and maintaining control of the start-up, some discussed selling their idea to others to develop or merge into an existing platform and there were many options in between.

Workshop expert discussions have been processed and some of the useful highlights for each innovation are outlined in each of the sections respectively below.

5.5.4.1 Environmental DNA (eDNA)

Current challenges:

The Amphi eDNA team are currently unsure how many clients are willing to pay for this service. The laboratory testing itself is expensive, however the service offers time and labour savings compared with traditional monitoring methods, and opens up the possible monitoring windows to be more flexible (seasonally and daily), thereby also enabling project cost savings.

The Amphi eDNA team are still trying to clearly establish who their future users and partners could be, and to frame their offering from a commercial perspective.

Focus areas:

They intend to focus on market research, establishing partners, customer engagement and securing resources. They also hope to progress their species quantification method so that this can be added to their offering.

Main outcomes and recommendations from expert discussions:

- These types of tools are often used to make policy, for example, a policy outlining that for each NbS, eDNA species identification should be carried out to establish what species are present in the NbS area. It is the EU responsibility to regulate that analysis such as this are done, as it is currently not being regulated.
- Possible clients could be environmental associations, which are not strong in Denmark but are in Germany. The client base could be expanded to Germany and Poland. However, travelling to other places to do the analysis will become a bottleneck. Options can be explored, such as having partner companies in those locations or Amphi designing the testing, but having the client collect the samples and send them to Denmark.
- Perhaps the laboratory testing could be taken in-house or done through a partner, thereby reducing this cost?
- It is important to define customer segments. Market options could be municipalities or developers, and both of these options could be followed to see if they lead to clients.
- Perhaps a landing page could be created to find and engage new customers.
- There may be a need for formal ties with universities or laboratories. Contracts and collaborations are essential. While an analysis of potential partners has not yet been done, this could be done by an employee (e.g. masters student, seeing this is a small company).

- Could the customer be interested in getting a report in some sort of interactive way?
- A current competitor is Niras but there may be more unknown.
- One challenge for this service is to organise and standardise it. Standardisation can be difficult when it is knowledge that is being sold.
- Revenue would come from either selling a solution as a service, but there could also be an option to sell kits for testing with precise instructions.
- There could be a market in private clients, for example, for people to identify species in their pond in their garden. This could work well with the kit idea, where they receive a kit with instructions to sample and send back to Amphi.

Timeline:

The one-year timeline (in planned chronological order) set by the Amphi team consists of:

- Creating a marketing and sales strategy
- Establishing customer relationships
- Establishing partnerships
- Setting growth KPIs
- Securing key resources
- Market research
- Launching to the market
- Establishing partnerships (revisited)
- Setting growth KPIs (revisited)
- Validating the tool / service
- Creating a marketing and sales strategy (revisited)

Figure 22 shows the eDNA dashboard and Lars Briggs presenting it to the workshop attendees at the end of the session.

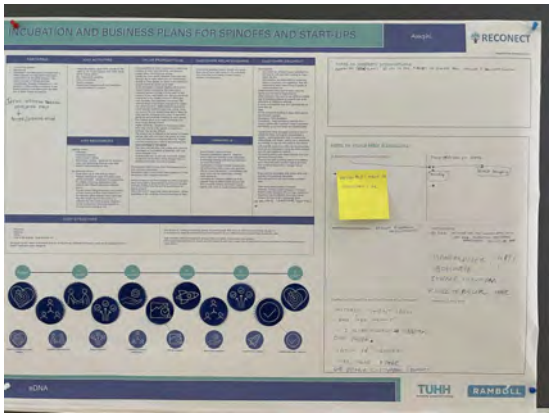


Figure 22 eDNA summary

5.5.4.2 Measure Selector Tool

Current challenges:

The Measure Selector Tool owner is unsure currently of the willingness to pay for this tool, as selling knowledge can be difficult, especially when it's not protected knowledge.

Finding the right users who will gain value in the accessibility of this knowledge through using this tool is one of the first challenges.

Focus areas:

Conducting market analysis, establishing partners and creating a market strategy have been identified as focus areas by the Measure Selector Tool owner.

Main outcomes and recommendations from expert discussions:

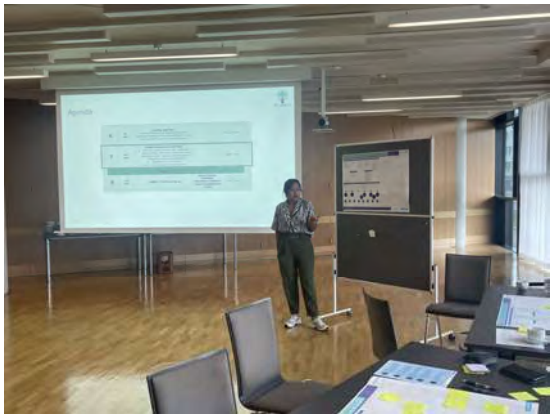
- As this started as a research initiative, the business and market potential have not been investigated. Starting with RECONECT partners who are currently using the Measure Selector Tool, the tool owner intends to ask: would you pay for this service? If not, why not? What could be improved to make it worth buying for you?
  It is important to talk directly to people.
- It is important to have proof of concept and customers before approaching investors.
- Could a free basic version be available, as well as a comprehensive paid version? This was thought to be difficult to keep it free because of the required updates. However, if this option is pursued, the basic version would help to catch the customer, then develop the offer further. Perhaps the extension of offer could include consultancy / customised advising.
- Could it be used with a subscription? Setting a price is difficult. An option could be to use the Willingness-to-Pay pricing strategy.
- Could perhaps be sold as a system to another company who will use it and update it, or to a software development company to further develop and market themselves.
- It is important to prepare the data in a way that provides the most information to the user.
- Currently this could be useful for city planners, landscape architects, authorities, municipalities, banks and insurance companies. Banks and insurance companies lose money through floods and don't typically have this depth of knowledge in the hydro-meteorological risk field, therefore could have an interest.
  Landscape architects and city planners could link authorities and municipalities to the tool where appropriate.
- It could be relevant to look into the EU taxonomy.
- Regional data could be included, and Regional Councils could be possible partners.

Timeline:

The one-year timeline (in planned chronological order) set by the Measure Selector Tool owner consists of:

- Validating the tool / service
- Market research
- Creating a marketing and sales strategy
- Launching to the market
- Establishing partnerships
- Securing key resources
- Establishing customer relationships

Figure 23 shows the Measure Selection Tool dashboard and Laddaporn Ruangpan presenting it to the workshop attendees at the end of the session.



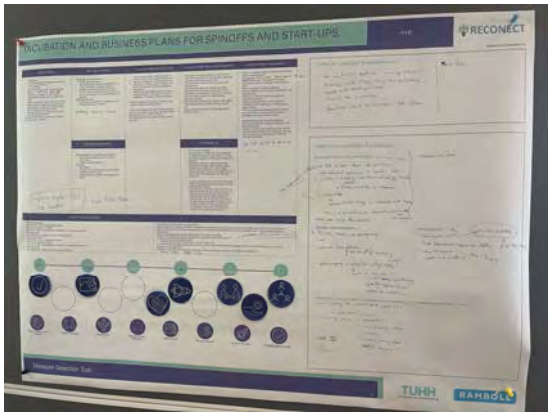


Figure 23 Measure Selection Tool summary

5.5.4.3 ARGOS

Challenges:

Identifying the potential users and partners is one of the challenges at this stage. The ARGOS team have identified a need for more prototype testing within RECONECT by partners, with feedback for development. Funding is another challenge which will need to be addressed.

Focus areas:

Identified areas for focus include market analysis, establishing partnerships and building customer relationships.

Main outcomes and recommendations from expert discussions:

- Regarding building a customer base, consultancies could introduce the customer to the product. Can existing customers connect Hyds with suitable people? i.e. other departments, municipalities? Could contacts in RECONECT help connect Hyds with customers?
- Establishing partnerships is very important now. Research institutions could be a focus for your partnerships.
- Market analysis could be conducted with potential clients to find out which improvements might be needed, perhaps using a showcase of the product. Focusing on the customer's needs is important, and each customer segment is highly specific.
- Maybe client organisations can showcase with live data? Leading to advertising opportunities, relevant for cities / authorities.
- Data from Water, Nature and People could be included in the tool.
- Thought and research needs to go in to the questions:
  - what will clients DO with this data?
  - what is the PROBLEM they need to solve?
- Would this system result in less floods / emergencies? It could be interesting (and logical) to combine emergency management with NbS offering, selling it as emergency management + NbS monitoring. This would bring about extra cost to monitor Nature + People spheres.

Timeline:

The one-year timeline (in planned chronological order) set by the ARGOS team consists of:

- Market research
- Validating the tool / service
- Securing key resources
- Establishing partnerships
- Establishing customer relationships
- Creating a marketing and sales strategy
- Launching to the market
- Setting growth KPIs
- Establishing partnerships (revisited)

Figure 24 shows the ARGOS dashboard and Xavier Llort presenting it to the workshop attendees at the end of the session.

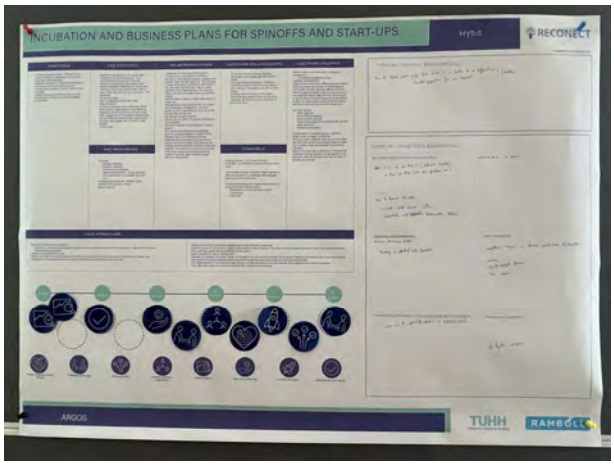


Figure 24 ARGOS summary

5.5.4.4 Crowdsourcing Information Collection Tool WaterDectective

Challenges:

Currently the willingness to pay is unknown and the customer and partner identification is hampering clearly defining the tool.

Focus areas:

Immediate focus areas include market analysis, establishing partnerships, customer engagement and validating the tool. Once the users are established, they can be integrated into development as soon as possible.

Main outcomes and recommendations from expert discussions:

- Perhaps this could be opened up from solely a monitoring tool, and progress in to tourism and / or regional marketing. These stakeholders (i.e. tourism boards) may have an interest in advertising an NbS as a recreational area to promote visits to their area / region. Advised to look into citizen science: birdwatching etc. Buergerwissen.de

was suggested as an inspiration and benchmarking for this product. It could be useful to integrate with an existing tool / service.

- A clearer framing of the problem being addressed would help to define what the impacts of this service are. I.e. it could potentially benefit a city where stakeholders are made aware of the problem, and can take action to assist in monitoring the NbS to address that problem. Communication with the audience is the key.
- This could be tested out as there is little to loose (minimal investment required to trial it), so you know quickly whether the concept is worth progressing.
- Possible partners could be small consultancies, water companies etc. these need to be defined and a focus group can be formed to determine if there is room for improvement.
- While the tool can be used alone or integrated in to another platform, it can also be diversified for commercialisation (i.e. with additional services). Integration and innovation could be delivered by external partners, i.e. universities.
- There is a need for a clear business strategy. There is a clear value in the service, but how does it add value to NbS? Clearly relevant for management of NbS but no successful application yet.
- Revenue streams need consideration. Who will pay for the service? Describe the revenue streams and their costs. Understand the costs and where the low hanging fruit are. It is important to showcase it to potential customers. To determine the price for a subscription, take a look at the costs (currently low). Look at competing companies and their cost structures. An option could be to sell it as a package.
- Some similar tools for research and benchmarking: APPINIO and OpenIDEO.
- Could consider adding capability to operate by offering rewards for information to encourage public engagement. This may be in the form of information that is not available for free, i.e. bird grounds, plant identification, coffee spots etc.

Timeline:

The one-year timeline (in planned chronological order) set by the Crowdsourcing Information Collection Tool owner consists of:

- Market research
- Establishing customer relationships
- Validating the tool / service
- Establishing partnerships
- Creating a marketing and sales strategy

Figure 25 shows the Crowdsourcing information collection tool WaterDetective dashboard and Marcel Alderlieste presenting it to the workshop attendees at the end of the session.

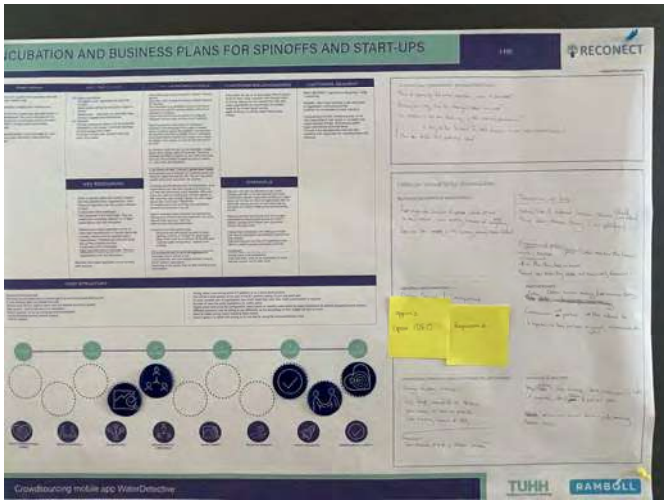


Figure 25 Crowdsourcing information collection tool WaterDetective summary

5.5.4.5 TeleControlNet, InterAct

Challenges:

The InterAct team are finding it challenging to rebrand their existing product under a new domain – moving from standard monitoring in to the NbS field. This encompasses the outstanding question around what the problem is that TeleControlNet is addressing.

Focus areas:

Some identified focus areas for TeleControlNet development are building new domains and establishing new partnerships. The InterAct team also intend to identify the problem that TeleControlNet can address, through conducting market analysis.

Main outcomes and recommendations from expert discussions:

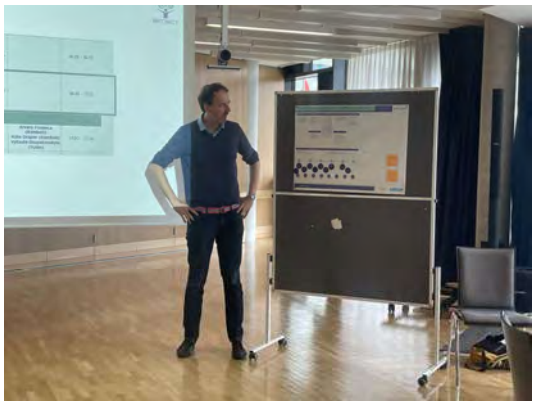
- A recurring theme in these discussions was coming back to what the problem is and what the impact of TeleControlNet is. The question of the *potential* of the data provided was posed and discussed, this requires further thought on their development journey.
- Identifying potential partners and engaging stakeholders in workshops could be a useful step in the process for defining and developing TeleControlNet.
- The business model was discussed. Currently their revenue model is pay up-front for a package that InterAct offer. It would be useful to carry out an overview of cost and revenue streams.
- Discussion took place around how to establish workstreams internationally, the difficulties of this due to different structures and the concept of getting a foot in the door then spreading the product by word-of-mouth.
- Currently pilot versions are running for stormwater, which could be exploited for NbS offering, from elements of the stormwater version, to full NbS monitoring.
- Clearly identify what TeleControlNet can offer.
- Explore new markets by establishing new domains in different countries.

Timeline:

The one-year timeline (in planned chronological order) set by the InterAct team consists of:

- Securing key resources
- Setting growth KPIs
- Establishing customer relationships
- Establishing partnerhsips
- Validating the tool / service
- Market research
- Securing key resources
- Setting growth KPIs (revisited)
- Establishing partnerships
- Launching to the market

Figure 26 shows the TeleControlNet dashboard and Christian Panzer presenting it to the workshop attendees at the end of the session.



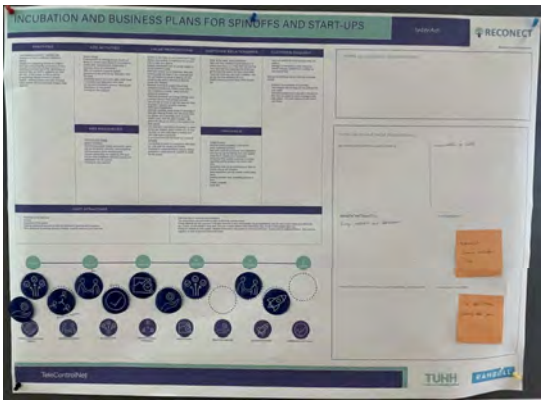


Figure 26 TeleControlNet summary

5.5.4.6 QuantiAmenity, DTU

Challenges:

Currently it is unknown how willing potential users would be to pay for this product. It is not thought to currently be a strong enough offering to stand alone (according to the innovation owner), so may require integration in to a larger platform (such as SCALGO) or package. Pricing strategy is a main challenge at this stage also, seeing the value added is not simply quantified and how it will be offered is not yet clear.

Focus areas:

A major focus area identified is building partnerships, which could include collaboration with international financing institutions (World Bank or similar), asking them where recreational value can be created within their projects.

Main outcomes and recommendations from expert discussions:

- This tool might be of use to city planners, and this context led on to discussion around the possibility of application beyond NbS.

- There could be benefit to collaborating with other research projects.
- Finding a commercial partner would be a great step now, and students could be valuable to help identify potential partners. Could stakeholders become shareholders?
- It was discussed that coding the front end of this tool to be useable takes around two weeks. Looking in to potential partners could be helpful to bring the cost / time down for these parts of the work.
- Promoting the tool through customers (starting with approximately 20 core customers) could be a good way to gain visibility.
- It could be helpful to clearly present the information in the form:
  Problem → Solution → Product
- Applying innovation steps in to the business plan could be useful:
  - talk to the customers and evaluate their feedback (market research)
  - where can this tool go further?
- There was discussion around the importance of getting the economics worked out clearly:
  - Establish revenue and cost streams

Potential ***business*** case in creating a license to enter the platform

- Could potentially be a possibility to sell the tool to consultancies to use for proposals.
- Currently, seeing the tool is developed by a university, it is open source, but as a commercial offer, it will be sold with a license. There is a need to quantify / describe the value the tool delivers (i.e. time saved / value added) for the client.

Timeline:

The one-year timeline (in planned chronological order) set by the QuantiAmenity innovation owner consists of:

- Market research
- Establishing partnerships
- Securing key resources
- Validating the tool / service
- Launching to the market

Figure 27 shows the QuantiAmenity dashboard and Roland Löwe presenting it to the workshop attendees at the end of the session.

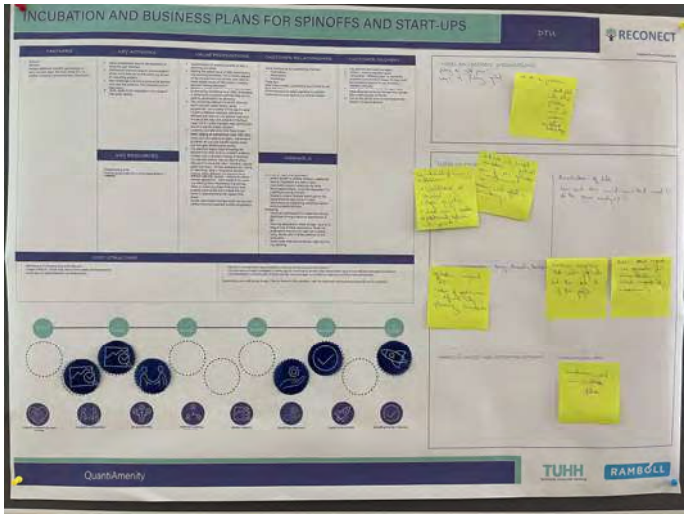


Figure 27 QuantiAmenity summary

5.5.5 Final remarks on the business model activities

Each of the start-ups left the workshop with their dashboard annotated with their learnings and notes from the three hour session, their timeline of development steps which they formulated during the session, and the short and long term development step resources to aid them in their progress on their planned path and in to the coming years.

It is now the responsibility of each innovation owner to use these resources and the learnings so far to progress their start-up towards the market. It is expected that in the final stages of the RECONECT project, the six innovation owners will be contacted again to provide a status on the planned activities.

6 Recommendations

From the RECONECT innovation journey, the following recommendations are outlined to support exploitation and business development for an innovation aiming at becoming a successful start-up.

Perform critical questioning early in the process. Specifically, take time to formulate the business statement of WHY an innovation is needed in the market. Being able to properly state the "WHY" will facilitate the upcoming work. Doing this will require some homework, especially researching the market to map the competitive landscape and identify similar offerings for the product or service.

Use a business model / framework such as Business Model Canvas to assist in structuring a business plan and identifying gaps or weaknesses, as well as strengths and possible opportunities. Regardless of the model / framework used, it is imperative that a value proposition that generates revenue is developed. The value proposition is a statement about how an innovation or solution adds value to the life of a customer, why it's better or different from the competition and what the customer can expect to achieve with this solution.

Ensure the financial plan is thoroughly explored and solid: this is essential for sustainability of a start-up. RECONECT Deliverable 5.7 – Business Models and Roadmaps provides insights into addressing potential financing gaps that may exist in the business plan. Regardless, it is recommended a realistic value-based pricing strategy is developed that maximises revenue, and preferably includes segmentation per customer type.

It is important to **thoroughly get to know the market**. Research competitors and gaps in the market to find where the start-up can succeed and where it can offer value that others do not already provide. This should be done early in the process, so there is room to re-think the innovation depending on the market demand.

It is also imperative that **the developer of the start-up really knows the client**. Each customer segment is highly specific. It is important to spend time listening to clients, learning about their problems and then aim to develop solutions to fit the clients and their needs. Having a view to the end product is important while on the development journey, but the innovation owners / developers should be ready to revise this as they get to know the market and customers.

It can add enormous value to **use other people inside and outside of the organisation for inspiration and idea generation or screening**. Relying on existing connections and taking opportunities to create new connections can all help bring ideas and critical thinking to the process. These connections might be experts in the innovation field, in start-up creation, in the market area the start-up will operate in, or someone else. No one is an expert in everything, so making use of others' skills, experience, and expertise where possible helps bring diversity of thought and expertise.

Set realistic and informed KPIs to help keep on track and maintain focus in the development. Revisit and revise these KPIs regularly along the journey.

Allow for realistic timescales: it often takes years before a start-up enters the market.

These final recommendations, together with a summary of the whole process undergone within RECONECT, are gathered in the knowledge product reported in Annex E of this deliverable.

6.1 Business Foresight

It has become apparent from this journey that one of the key actions to support the progression of a start-up is planning for the future, with an action-oriented approach. The timeline activity explained in section 5.5.3 and the development steps discussed in section 5.4 are intended to assist in this forward action planning.

However, another key piece to business forward planning that has become apparent through this work is the importance of business *foresight*, not solely forecasting and planning. In a field of rapid change, with complexities and uncertainties around the market, technologies, governance / legislation etc, business foresight allows the understanding that the future is uncertain and not predictable, with an ever-incomplete evidence base. Foresight combined with business planning can allow for consideration of multiple alternative futures and their implications, posing key questions while developing a strategy and questioning assumptions and expectations built into the current landscape / scenarios.

The OECD (OECD, 2024) explains a range of methodologies for use when implementing business foresight. These cover:

- Horizon scanning: Searching for signs of change visible in the present and exploring their future potential impacts
- Change drivers: Identify potential changes which could have significant impact on the field of operation, or may be the most surprising changes
- Scenarios: Develop several potential future scenarios to explore and learn from
- Opportunities and Challenges: Explore what could change in the regulation / legislation / policy landscape that may open up opportunities or remove barriers to achieving business goals and how to meet regulation / legislation / policy objectives
- Policy implications: Develop perspectives for present actions which help to inform policy making

While business foresight was not an area which was explored in detail during this methodology, a recommendation from this approach is that applying business foresight while allowing for flexibility and adaptability in the future of a start-up would help support successful business growth and sustainability in the market.

7 Conclusions

There is a long road from idea generation through the development and testing process and to reaching the market, and then into generating revenue. The sustainability of the business progress relies on many things, but some essential pieces are the business and realistic timeline planning, research of the operating landscape including the customer market and competitors, asking difficult questions early on so the goals and vision is clear and understood, securing sustainable financial backing and being prepared to learn and adapt the innovation path along the way.

The innovation pathway followed in RECONECT has been a steep learning curve for all project partners involved. Working with innovation demands a collaborative mindset and a proactive attitude towards co-creation of commercial exploitation strategies and business plans for spinoffs and/or startups, which altogether have the overall goal of upscaling, mainstreaming and replicating NbS in Europe and beyond.

Despite not reaching the launch to the market, RECONECT has successfully produced some innovations that have been tested and recognized as plausible commercial spinoffs with a concrete chance of being commercialized. Moreover, five out of the six identified innovations expressed the intention of planning for a market launch in their timeline, which should be re-assessed towards the end of the project.

This innovation process has not only involved the innovation owners, but for the most part has been catered to the whole project consortium to inform and guide on identification and testing of exploitable project results. Finally, by detailing the RECONECT journey with innovation, this report is expected to ease future NbS projects in the process of developing commercial spinoffs.

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Annex A. Extra outputs from the Zurich Workshop May 2022

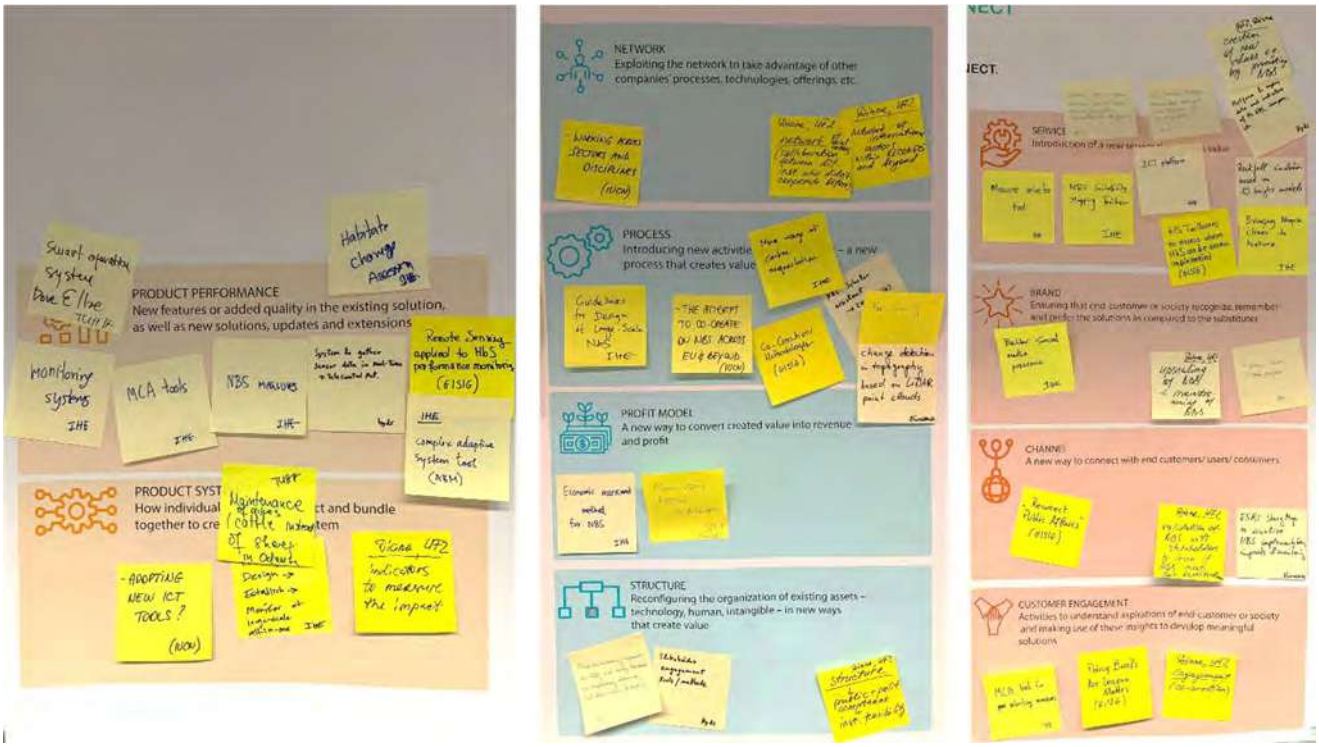


Figure A1 - RECONECT innovation ideas categorised into the 10 Types of innovation by Doblin, from the in-person workshop

Annex B. Extra outputs from the Nijmegen Workshop November 2022

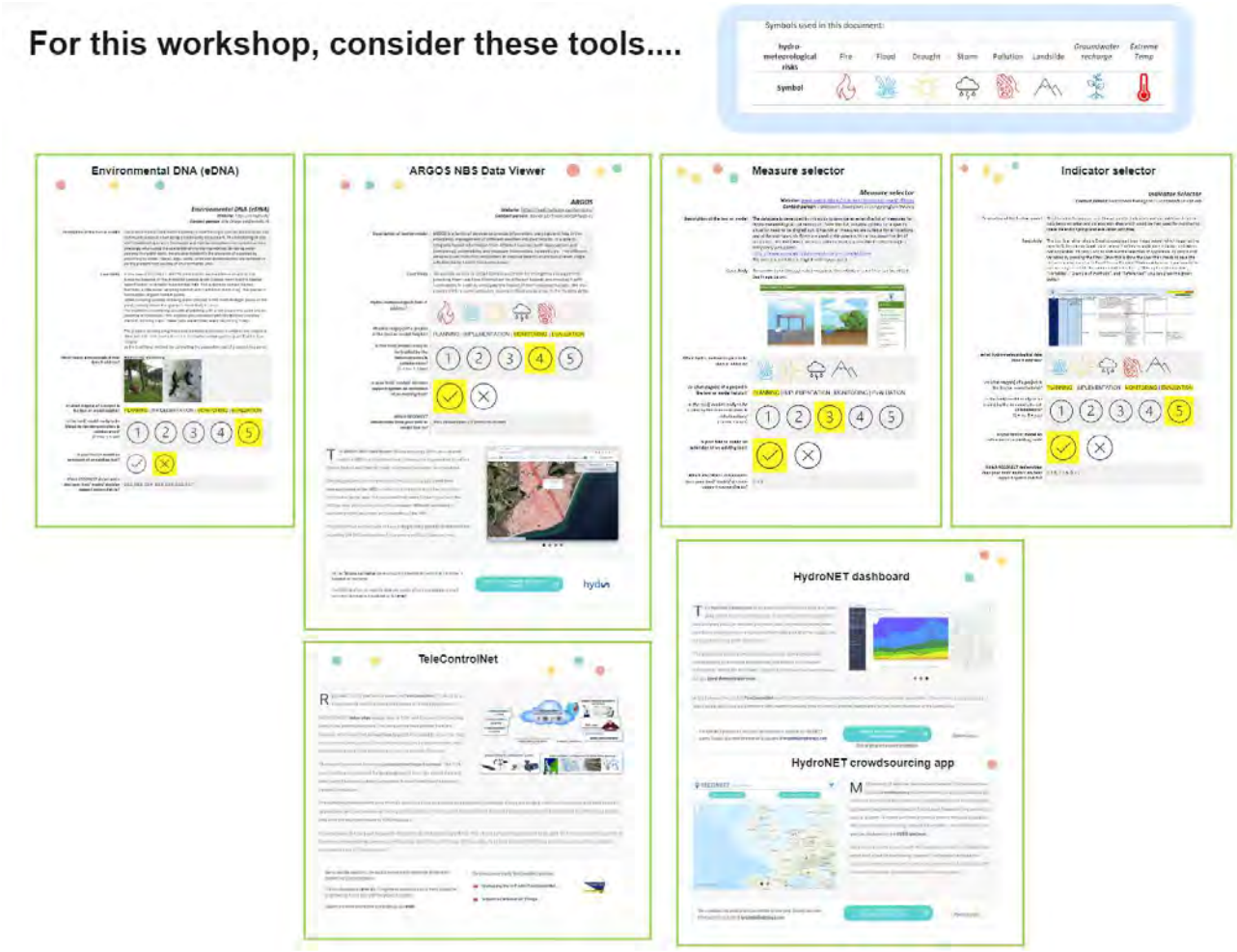


Figure B1 – Revisiting value creation, online workshop

QuantiAmenity / NBS Impact Tool

Key

QuantiAmenity / NBS Impact tool

Contact person: *Karsten Arnbjerg-Nielsen karn@env.dtu.dk*

Description of the tool or model	The NBS impact tool will enable the quantification of NBS amenity values such as recreation in a monetary manner. Amenity values will be quantified for user-defined NBS layouts and locations. The quantification will be performed based on socio-economic data from the demonstrators, surveys performed in the RECONECT project, and existing studies. Results will be presented in a spatially explicit manner and users will be able to specify which NBS configuration should be considered.
Case study	One benefit of NBS is the reduction of flood risk, which is often expressed as average economic damage (€/year). However, NBS provide additional benefits, such as recreational areas for citizens, or the reduction of noise and pollution. These benefits can also be quantified in a monetary manner. When planning an NBS, stakeholders may wish to perform a cost-benefit analysis, i.e. do the benefits of the NBS outweigh the cost of investment and operation. The quantification of amenity benefits will in this context frequently be important to local politicians or funding providers. In addition, the cost and benefits of NBS will vary depending on where they are placed and how they are configured (e.g. how big). Computing the amenity benefits of different NBS layouts can help to find an ideal location and configuration for a planned NBS.
What hydro-meteorological risks does it address?	
At what stage(s) of a project is the tool or model helpful?	PLANNING | IMPLEMENTATION | MONITORING | EVALUATION
Is the tool/ model ready to be trialed by the demonstrators & collaborators? (1 = no, 5 = yes)	1 2 3 4 5 **But wants input from demonstrators & collaborators*
Is your tool or model an extension of an existing tool?	
Which RECONECT deliverables does your tool/ model/ decision support system link to?	The tool is intended for early-stage planning and co-creation where multiple stakeholders can get instant quantative performance data on suggested solutions.

Is the technology ready for commercial exploitation? If not, how would you improve the TRL?

NO

The tool is currently being developed. We exoect to go from TRL2 to TRL 4 or 5, depending on whether it is feasible to implement the tool in the RECONECT platform.

Who is the customer / market?

City planners

Does TRL improvement or commercialization need substantial investment?

YES, I would expect substantial needs for software development, integration with e.g. flood simulation tools

Does the tool / platform contribute to upscaling framework of RECONECT? (Framework at top of page)

NO

Does the tool / platform hold a commercial opportunity? How great do you think it is?

Yes, but it would likely need to be integrated in other platforms like SCALGO

Any further improvements you would make?

The tool is still under development, so we are not sure of the final scoping

How would you go about commercial exploitation?

Do you know of any tools / platforms that may be competitors in the same market?

https://www.susdrain.org/resources/best.html

Figure B 2 - QuantiAmenity follow-up on Development questions

NBS POTENTIAL

NBS POTENTIAL

Website: www.klimatilpasning.dk/tools/

Contact person: *Hjalte Jomo Danielsen Sørup hjds@env.dtu.dk*

Description of the tool or model	NBS Potential addresses the needs of utility companies in the early planning and design phase of NBS for retrofitting in existing urban areas, where a high degree of collaboration among stakeholders from different sectors. The tool builds on a database containing results from approximately 50 000 SWMM simulations to assist the user in quickly assessing two key overall performance indicators of an NBS: 1. Return period for overflow, and 2. Impact on the annual water budget of the catchment. The final Danish version of the tool is in its final stages of development and will be released during the fall of 2021 at the Danish EPA portal
Case study	The first version of the tool (see image below) has been designed for typical Danish conditions (see here for details) and we would like to reach out for partners that could be interested in supplementing the current database with data from other climatic regions. 
What hydro-meteorological risks does it address?	
At what stage(s) of a project is the tool or model helpful?	PLANNING | IMPLEMENTATION | MONITORING | EVALUATION
Is the tool/ model ready to be trialed by the demonstrators & collaborators? (1 = no, 5 = yes)	1 2 3 **4** 5
Is your tool or model an extension of an existing tool?	✓ ✗
Which RECONECT deliverables does your tool/ model/ decision support system link to?	The tool is intended for early-stage planning and co-creation where multiple stakeholders can get instant quantative performance data on suggested solutions.

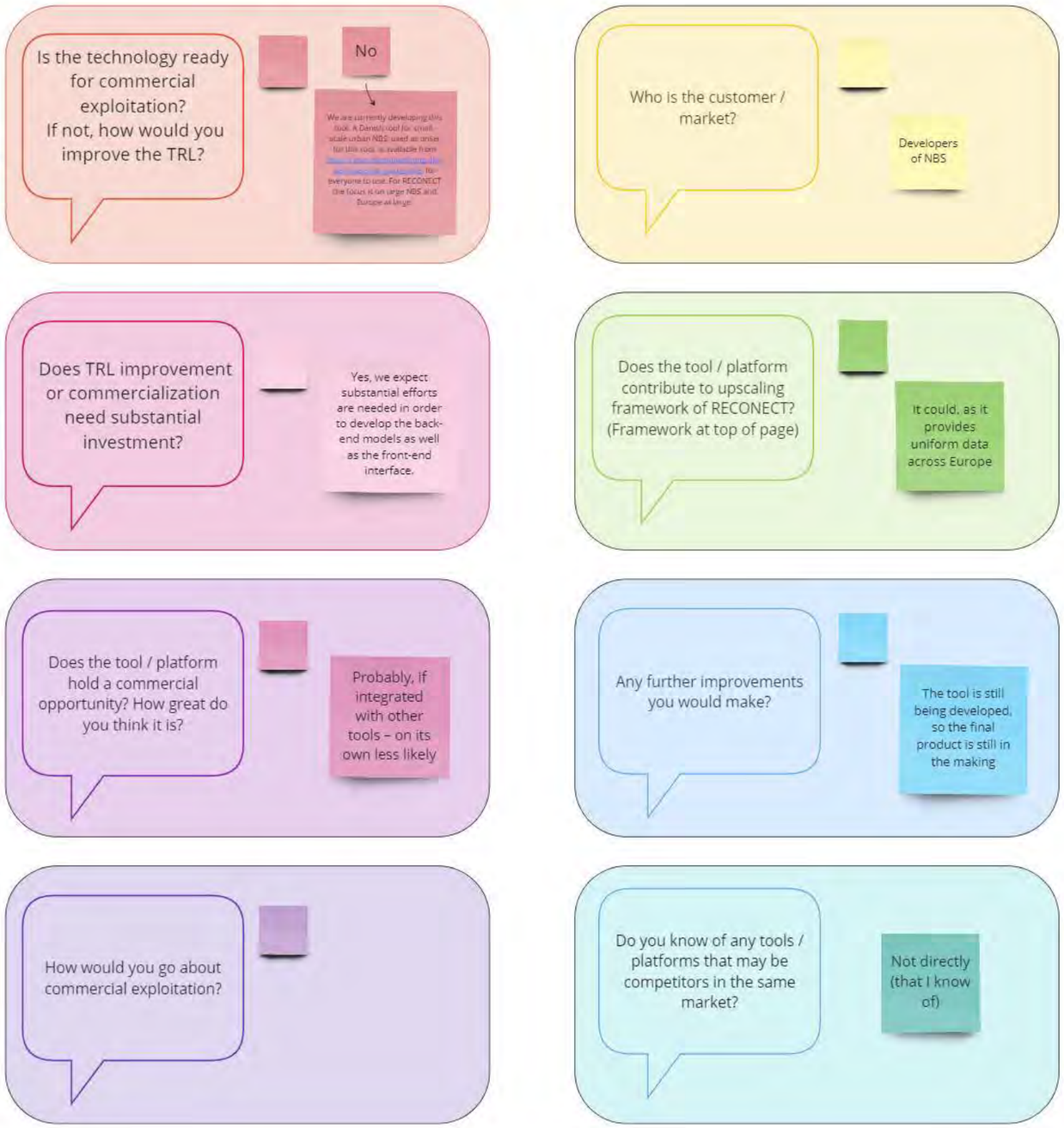


Figure B 3 - NbS Potential follow-up on Development Questions

CLIMATE CHANGE INFORMATION TOOL

CLIMATE CHANGE INFORMATION TOOL

Website: *https://cds.climate.copernicus.eu/apps/95335/climate-change-information-tool*

Contact person: *Hjalte Jomo Danielsen Sørup hjds@env.dtu.dk*

Description of the tool or model	The tool provides quick access to information on expected climate change for locations anywhere in Europe. It builds on open data and tools from the European Copernicus platform. To access the tool, you need to sign up for the free Copernicus platform (see website above)
Case study	When planning NBS in Europe, this tool can give the user quick information on expected climate change impacts with respect to basic climatology (changes in mean temperature and precipitation) as well as extremes related to maximum precipitation amounts and length and frequency of dry spells. These are essential variables to consider when evaluating which conditions NBS implemented today should be able to withstand in the future.
What hydro-meteorological risks does it address?	
At what stage(s) of a project is the tool or model helpful?	PLANNING | IMPLEMENTATION | MONITORING | EVALUATION
Is the tool/ model ready to be trialed by the demonstrators & collaborators? (1 = no, 5 = yes)	
Is your tool or model an extension of an existing tool?	
Which RECONECT deliverables does your tool/ model/ decision support system link to?	The tool is meant to be a used directly by the Demonstrators

Is the technology ready for commercial exploitation? If not, how would you improve the TRL?

No, I would not, see below

Who is the customer / market?

Developers of NBS

Does TRL improvement or commercialization need substantial investment?

It would

Does the tool contribute to upscaling framework of RECONECT? (Framework at top of page)

It could, as it provides uniform data across Europe

Does the tool hold a commercial opportunity? How great do you think it is?

No it doesn't

Any further improvements you would make?

No, we are not developing this tool any further

How would you go about commercial exploitation?

Do you know of any tools / platforms that may be competitors in the same market?

There are today plenty of (primarily national) platforms out there that provide data on climate change impacts, that should be taken into account when designing infrastructure.

Figure B 4 - Climate Change Information Tool follow up on Development Questions

TeleControlNet

RECONECT's ICT platform is based on **TeleControlNet** (TCN). This is a commercial SaaS for Industrial Internet of Things applications.

All RECONECT **demo sites** supply data to TCN, which stores it for the long term in the internal database. The data can be read directly from the sensors, which also makes **real-time** applications possible, or can be read in via external web portals. The collected data can be supplemented with external meta data from third parties, such as weather forecasts.

The data is presented in various **process/trend/report screens**. The TCN user interface is optimized for **technical use**. In time, the stored data will also (partly) be made publicly accessible in user-friendly and intuitively operable webpages.

The collected measurement data from all demo sites can be studied and analyzed by partners. During the project, Inter Act contributes with NBS specific applications and user screens at the request of partners. The long-term data collected during the project can serve to demonstrate the differences before and after the implementation of NBS measures.

In some cases, the data can be used to feed artificial intelligence algorithms. This allows early warning systems to be built. Or if there are control options at locations, for example by pumping or influencing water flows with locks, TCN can also Real Time Control (RTC) these remote locations with a centrally programmed set of "decision rules".

Due to possible sensitivity, the data is currently only accessible for Reconect partners via a login procedure.

TCN has developed by **Inter Act**. The gathered measured data is freely accessible to partners up to one year after the project has ended.

Support and more information is available at this **email**.

The videos below clarify TeleControlNet functions:

- **Managing the IoT with TeleContolNet**
- **Industrial Internet of Things**

Is the technology ready for commercial exploitation? If not, how would you improve the TRL?

Yes it is. The basis ***is*** our commercially exploited SaaS TeleContolNet

Who is the customer / market?

We are active in smart city, water, industry 4.0 and energy areas

Does TRL improvement or commercialization need substantial investment?

No. We do however keep investing in the product itself and with the needs and requirements from the RECONECT project we gathered new insights and further improve our product

Does the tool / platform contribute to upscaling framework of RECONECT? (Framework at top of page)

Definitely! Monitoring data from all sensors is gathered in the platform and made available directly via the (technical) UI, but also via API for other tools.

Does the tool / platform hold a commercial opportunity? How great do you think it is?

See above and our website https://www.interact.nl/

Any further improvements you would make?

We keep improving the platform with new features and requirements

How would you go about commercial exploitation?

Do you know of any tools / platforms that may be competitors in the same market?

Figure B 5 - TeleControlNet follow-up on Development Questions

ARGOS NBS Data Viewer

ARGOS

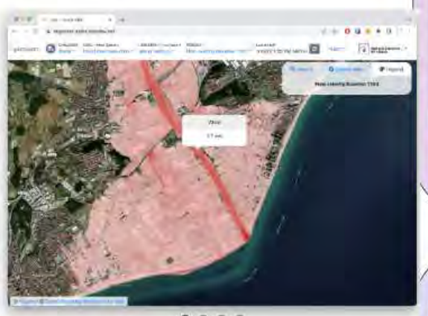
Website: *https://web.hydsdev.net/services/*
Contact person: *Xavier Llort xavi.llort@hyds.es*

Description of tool or model	ARGOS is a family of services to provide information, warnings and help in the emergency management of different weather-induced hazards. It is able to integrate hazard information from different sources (both observations and forecasting), vulnerability and exposure information, incidents, etc. The different services cover from first responders at national level to municipal or even single activities being held in risk-prone areas.
Case study	We provide service to CECAT (Catalunya Center for emergency management) providing them real time information for different hazards and crossing it with vulnerability in order to anticipate the impact of the forecasted hazards. We also provide EWS to some campsites located in flood prone areas in the Tordera delta.
Hydro-meteorological risks it address?	
At what stage(s) of a project is the tool or model helpful?	PLANNING | IMPLEMENTATION | MONITORING | EVALUATION
Is the tool/ model ready to be trialled by the demonstrators & collaborators? (1 = no, 5 = yes)	1 2 3 **4** 5
Is your tool/ model/ decision support system an extension of an existing tool?	✓ ✗
Which RECONECT deliverables does your tool or model link to?	WP3 deliverables ICT platform-related

The **ARGOS NBS Data Viewer** allows exploring all the data related with the NBS in a structured way following the organization by pillars (Water, Nature and People), goals, sub-goals, indicators, and variables.

Once logged into one demonstrator, the user can explore **real time measurements of the NBS** monitoring equipment and other sources of information in the area, the calculated indicators for each goal and the NBS general information data. Also **compare different scenarios** to evaluate the risk reduction ad co-benefits of the NBS.

The platform allow the users to have a **single entry point to all information** regarding the NBS and explore it in a simple and homogenized way.



For the **Tordera** and **Aarhus** demonstrators, a development version of the viewer is available for the public.

The ARGOS platform is owned by **Hyds** and usually offered as a **service**. Support and more information is available at this **email**.

ACESS THE ARGOS NBS DATA VIEWER

hyds

Is the technology ready for commercial exploitation? If not, how would you improve the TRL?

Almost. We hope that yes at the end of the project could be in good shape for exploitation

More testing. More users input.

Who is the customer / market?

Water agencies, other organizations interested in monitoring the NBS or the rivers themselves (civil protections, etc.)

Does TRL improvement or commercialization need substantial investment?

Not at technological level. At marketing or commercial might be.

Does the tool contribute to upscaling framework of RECONECT? (Framework at top of page)

We think so, it is a transversal tool (not attached to a specific demo) that could be easily upscaled.

Does the tool hold a commercial opportunity? How great do you think it is?

We think so, but not sure about the market yet.

Any further improvements you would make?

Some viewer new capabilities.

How would you go about commercial exploitation?

Do you know of any tools / platforms that may be competitors in the same market?

Up to my knowledge, not with the same scope.

Figure B 6 - ARGOS follow up on Development Questions

Numerical model for shallow landslide propagation

Guido Paliaga gpaliaga@gmail.com

The model deals with shallow landslides susceptibility assessment and it has been published (https://www.mdpi.com/2073-445X/10/2/162): we have developed and applied it in the Portofino area but it may be applied in different contexts. Considering business applications, I have successfully applied it in two consultancy activities recently.
Besides, it has been implemented in the ArcGis model that has been developed by Vishal Devanand for his Msc. Thesis (a Zoran student that I supported as co-supervisor for this aspect).

We have developed another model which is mainly dedicated to man made terraces identification along the slopes using LiDAR data: it has been published too (https://www.mdpi.com/2072-4292/14/15/3586).

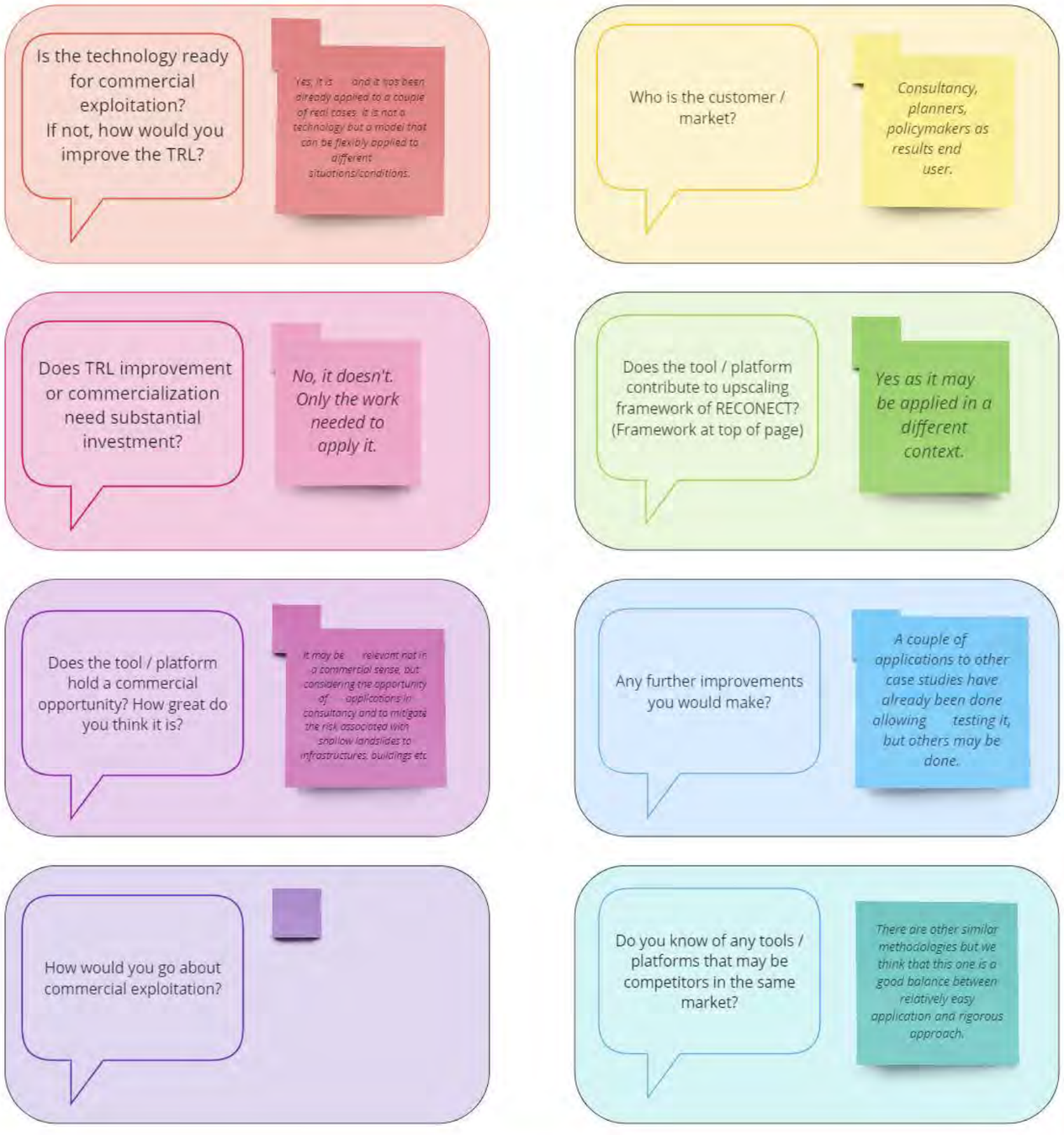


Figure B 7 - Numerical model for shallow landslide propagation follow up on Development Questions

Annex C. Results of BMC for the six selected innovations.

PARTNERS

- 2 current key partners
- Laboratories
- Universities? (had discussions in the past with a Polish university but they didn't have experienced staff to do the eDNA analysis). They could cover part of the key activities.
- Consultancies: Strategic cooperation i.e. with Ramboll, or other private consultants, to use Amphi's product in something like the extension of Seden Strand for example.

KEY ACTIVITIES

- Define the product: agree which species for the client. I.e. for Annex 4 species (list) which will be set for Danish clients
- Buy materials for sampling
- Carry out sampling
- Send to analysers
- Receive and interpret results and make them understandable for customer

KEY RESOURCES

Existing version:

- Personnel
- Sampling materials
- Outsourcing of testing
- Advertising / comms - personnel for communication and advertising channels (may need specific field knowledge for this)

For advanced version:

- Same resources as with existing version
- Perhaps need specific types of analysis which will be contracted - adjustment for outsourcing.
- To validate: Financing. Application of the method with different species and different places.
- The new person being employed: say 6 months of them working on this? They will look in to the data and define what the scale might look like, then Amphi have to find out how to calibrate this. Have some projects where this can be incorporated. Resources required to have someone working on this.

VALUE PROPOSITIONS

- Gives possibility to make inventories in a wider time window, so much more flexibility, and reduced project delays, therefore cost savings.
- Usually you have specific timeslots (seasonally and through day or night) where you can (traditionally) analyse (or find) species. I.e. some of the traditional analysis had to be carried out at night.
- So for developers, or people dealing with Environmental Impact Assessments, this helps solve a mismatch between ecology and the need for fast analysis. ie. you need results now, but you cannot do inventories in the middle of Autumn. eDNA give more flexibility. This translates in to money with reduced delays in the project. Very good for screening, narrowing down, detect presence absence for crucial species, therefore saves time, money. Once you account for one sample being able to detect so many species, compared with a team of specialists going out and physically checking for each species.
- This method allows us to make inventories over much longer periods of time.
- Higher sensitivity - possible to find species where there may only be a few species, so traditional methods may be very difficult.
- The product can be tailored to the species of interest, and can deal with more than one species at a time.
- Costs and expertise are aligned differently. People who are sampling don't need to be ecologists who have knowledge on the species.
- May have cost reduction with a large area / pond to investigate or if probability of detection with traditional methods is low.
- Analysis does cost, so can't say how much cheaper it's going to be but likely will be cheaper if they're assessing more than one kind of species.

Municipalities need to know where these species are so they can issue permissions.
Developers need to know where these species are if they are going to plan mitigation activities.

Advanced version: can then broaden the offer, offer extra value, being able to graduate the importance of an area and help prioritise importance with quantification of species present.
Within RECONECT: large scale nature restoration - eDNA applicable to this, could be a future monitoring for NbS.

CUSTOMER RELATIONSHIPS

Chose those (existing / known clients) who Amphi know are willing to use money on this, and those who know they have species in their territory.
Maintain communication.

CHANNELS

- Direct contact / direct sell work.
- Previously established network - those for which Amphi are currently house consultants.
- At this stage, starting with existing clients and can build from there.
- Investigation of Annex 4 habitat directive: this will be the direct offer to start with, send this offer to chosen developers / municipalities. Use some of the German clients they currently check species for.
- Advertised on a product website (yet to be created): helps to define Amphi as a provider. This is more for visibility but doesn't usually lead to work. Work is usually through relations.

CUSTOMER SEGMENT

Municipalities

- one Amphi are already a house consultant for, and they're a 20 year client, looking for frogs
- others like this
- Municipalities are responsible for protecting nature. Compliance with legislation. They are supposed to know where Annex 4 species of habitat directive are.

Some situations, they want to know where the species are that they're responsible for.
Other situations: they want to use eDNA as a better way of checking presence at a specific site, as an alternative to traditional methods.
In some municipalities they don't prioritise this. In some they do.
State
Private companies building in areas where species identification required
Developers / NbS developers
Consultants - large consultants (perhaps this is more or additionally a partner?) Large consultants less flexible, so can use Amphi as a subcontractor

Typical client: nerdy biologists wanting to know if species are there, working for municipalities in species / nature protection. Keen to explore this methodology with Amphi. Used to be in universities as scientists, so they are stimulated by this chance with scientific exploration within the municipalities. Some are not interested in using the eDNA method, and still want traditional method.
The starting point is with these scientists ,then you get known through them.
They use the data by putting species in to databases of where they exist, and this helps to prioritise how to restore and protect / manage natural habitats.

If you work for developers, they would rather that you don't find anything! (generally).
NGO will not find it now and it makes problems later.

Other focus areas outside of Denmark:
Denmark, Germany (sister company in Germany)
Poland? (sister company) This is a huge market but legislation may be different. Also costs may be cheaper for them to do it themselves there.

COST STRUCTURE

- Personnel
- Materials
- Office
- Cost of lab analysis - large external cost

Advanced version: needs confirmation that out of this already collected information, more can be squeezed out of it.
Doesn't need extra costs categories.

Add on option - offering monitoring already to existing clients, then this is an additional service they can pay for.
It could grow to stand alone product. Has been included in to two different products but perhaps develop this idea.

High value for client as methods will develop better and better. Can monitor many species.
If EU makes it standard that you should do eDNA before & after your project, this will help build business and revenue from enthusiasts out to wider clients.

Figure C1 - BMC: eDNA, Amphi

PARTNERS

- Consultant / s
- Software development company (unless there is an IT person on-board)
- City municipality
- Open sources data i.e. ESA (European Space Agency)
- Construction company - could be good to advise potential clients and to use their knowledge
- Partner in research - help to trial versions, bring some research funding, have students doing pilot studies etc. and this may help showcase where it has successfully been tested.
- Case studies: may have partners coming with the client for the case itself.

Partners are not the key to success but could help enter the groups / networks

KEY ACTIVITIES

Regarding Value Propositions:
- Create and run webinars
- Set up pilot study, show and publicise results
- Try to understand the issues / problem
- Develop the advanced version of the tool
- Find an investor to help this move forward. If it will be commercial, it can't be developed under research

Regarding Channels:
- Networking, conferences: bringing yourself in amongst this group of people

KEY RESOURCES

Data information to inform the advanced tool:
- for multicriteria analysis, need more local information
- Investment input (money!)

Personnel:
- Milk (expert)
- IT person (to do what InterAct currently does)
- Maybe one more on board
- Advanced version: maybe a social scientist on board

VALUE PROPOSITIONS

1. The tool helps decision makers to screen / make short list of NbS relevant to their site.
2. Instead of looking in to all the measures, the consultancy / decision maker can focus their time on the measures that are applicable to their project.
3. Shorter time (and budget) required to look in to those relevant. I.e. cutting down from 50 measures to 15 measures screening process.

Problem: budget & time restraints. Sheer number of options there are existing in NbS.

Further developed version should add prioritising value to the customer by giving a ranking of which they should look in to first, second etc.
This would involve more people for more information input.

CUSTOMER RELATIONSHIPS

Pilot study / showcase if there is money to do so.
Show customers where the tool has been used, how much time was saved using the tool.
Communication targeting resources saved: time and personnel.
Important to establish the relationship initially, understand their problem and how the tool can help them. I.e. with insurance: with a lot of claims in the same place, can this tool recommend an alternative solution.
Next step after workshop: do a webinar with a pilot / showcase problem, show the ease of using this tool.
Follow up after the webinar with the participants and their cases.

CHANNELS

- Direct sales (marketing)
- Perhaps need a middle-seller like consultancy or software company to recommend to clients and they can pass on to others and increase the network.
- Workshop / seminar / webinar where Milk shows some example cases, how they developed the tool. Advertise this on LinkedIn.
- Webinar to target the customer segments, may have to sell it very specifically, like "NbS for Insurance"
-
- Investor? With good connections. So the selling comes indirectly through them. Often see direct sales through investors.
- Construction companies? Unsure about this as they may not be the ones making the decision around what is implemented. Would they be using the tool? Would they be affected by using the tool? Would they just receive instruction after design is decided? Linking to taxonomy? Showing they're more sustainable etc.
- Could discuss construction companies as a channel in the expert panel discussions.

CUSTOMER SEGMENT

Second / extended version would be the same end users as existing version:
City planners, decision makers
Banking / insurance - they may not have this knowledge already, so could be a useful tool for them
Two very different customer segments!
Similar properties for both segments and both have the same goal.
Difference in the use: first lot would use the outcome themselves.
Second would potentially recommend their customers use the outcome. I.e. private owners / factory owners.
These two segments probably wouldn't interact, two very different groups of clients. However information and use can be the same.

Importance of the two customer segments:
The value may be seen more by 2 because it's not their background.
Perhaps 2. will be more important as they may be willing and able to pay more for the tool, they may receive more value seeing they don't have the expertise themselves.

COST STRUCTURE

Most important costs:
Personnel salary costs - most expensive here?
Insurance for reliability of results.
Copyright, IP rights and associated costs (lawyer) - unknown scale of cost?
Networking costs
Pilot studies costs - some extra costs on top of personnel
Most important costs:
Personnel salary costs - most expensive here?
Insurance for reliability of results.
Copyright, IP rights and associated costs (lawyer) - unknown scale of cost?
Networking costs
Pilot studies costs - some extra costs on top of personnel

Some research and brainstorming needed here
Need to figure out how long will it take to evaluate the measures using the tool and how long it would take the clients to do so themselves to identify what the client would actually be paying for (if we consider the saved time as the most important factor). They are paying for is the reduced time.
Pricing to change between clients, depending on the scale of the project.
Decide first are we selling the tool or selling the consultancy / advice with the tool?
- If just selling the tool, one set price.
- If selling the consultancy with the tool, the price would vary.

Customer 1s, buy tool alone, they're able to directly use that. User-based subscription, perhaps with limit on numbers of use (i.e. how many projects it's being applied to)
Customer 2s, buy tool with consultancy. They may need the knowledge / advice to go with the tool information.

Figure C2 - MBC: Measure Selector Tool, IHE

PARTNERS

- Companies selling sensors - HYDS can recommend companies to clients but it's not something they offer themselves
- Research institutions - subcontract university or so to do a specific study where needed
- Hosting services partner (Amazon Web Services currently)
- National cartographic Institute used currently but could be in the future someone privately providing GIS

KEY ACTIVITIES

- Implement the system at the specific place
- Connect in to local data sources - time consuming (how to connect, licensing)
- Platform is multilingual, but perhaps need further translation depending on market area
- Training of user once implemented - how to use it, what they can use it for, limitations - very important
- Re-training yearly
- Prior to aquisition of the client / job:
- Show the demo
- If client is interested, have a discussion about how it can be implemented in the clients site, analysing how this could look, visit site potentially (usually not with emergency management but with NbS on a smaller scale, maybe could be done) and suggest how it could be implemented
- Discuss costs

KEY RESOURCES

- Personnel
  - software engineers
  - hydraulic engineers
  - environmental engineers
  - commercial personnel - usually engineer who understands the problem, the client etc.
- Computational resources - flexible, using Amazon Web Services currently
- Data is essential

VALUE PROPOSITIONS

- Centralised & homogenized information. Usually they're using data from different sources i.e. river network sensors, underground sensors, radar info, GIS layers etc. This provides a single entry point to all data for NBS monitoring both static and real-time. Data is usually spread in many systems/places. Not homogeneous, not seen at the same time in a coherent manner
- ARGOS makes it easier to exploit data, use for a model, etc.
- Homogensation very important for civil protection (emergency management). How this applies to NbS is something to think on, as this is a new field for this tool.
- Can connect to other systems
- Models can run within the system (hydrological and hydraulic)
- Research if needed, for development / personalisation
- 24/7 service and maintenance (potentially could be included? Maybe if needed? This is offered in the Civil Protection currently)
- Response time alters depending on environment at the time (i.e. keep costs down by not needing to be immediately available during fine weather). This usually works for civil protection as there are usually pre warnings when the weather is coming, again could be thought about for NbS solution

CUSTOMER RELATIONSHIPS

- Try to show the tool during a meeting
- Give a demo user so they can test by themselves
- Try to get potential customers to attend a conference where HYDS is showing casing a demo already, if the paying user allows showcasing
- Showing system working in other places
- Some existing customers could be also new customers for the NbS version. Could be an add on for them

CHANNELS

Existing network - with known contacts
Cold door - try interaction without previous interactions

How to reach to other countries / water agencies in different countries is a challenge, with language barriers and lack of contacts.

Probably advertising not so appropriate because of the governmental agency nature.

- Workshops or forums for direct contact
- Conferences
- Trade-fairs

CUSTOMER SEGMENT

Existing version: civil protection / emergency management

- Civil protection agencies, police

Customer characteristics:
Loads of information from different sources they're trying to process very quickly (in an emergency).
From public, weather agencies, different systems.
This tool works alongside early warning systems to help evaluate impacts after an event, prioritisation of actions after an event through the centralisation of data. Can help predict where will be the impact and help to form picture of what is happening.

New NbS version:

- Water Agencies
- Governmental agencies
- Environmental agencies
- Person responsible for monitoring NbS (usually water agencies)
- Perhaps municipalities

Characteristics of customer group / segment:
Haven't been so deep in to this yet.
The focus here is different: more around how does the NbS work in terms of ecological status / wellbeing of people. These are the pillars that are fairly unknown.
Water is the pillar that is well known. Therefore the challenge is seeing how can this be applied to the unknown areas. We already know how to apply to flooding for example.

COST STRUCTURE

Personnel is the most costly resource

- Operation, maintenance and support requires someone to be available 24/7 for some clients - major part of this cost
- Implementation personnel

Amazon hosting services is a cost
Training - perhaps some material prep but mostly pre-prepared, then run some sessions. So this is not a major cost.
Development of specialised algorithms usually this cost is passed straight on to the client.

Analyse cost and give proposition depending on what the client is requiring.
Paying for access to this system - usually implemented in cloud, they pay a fee, they access the system, can see the data, can configure notifications, warnings, exploit the functionalities of the system.
Level of service: i.e. have it running 24/7?
Depends on customer but mostly things are moving to be more open to provided cloud service instead of all stored on the customer's premises.
Take care of everything, implementation cost, fee to access the system and make use of all the functionalities.
The implementation is not aiming to make money, try keep cost down so it's not a barrier. Then ongoing subscription for services.
They often then come to ask for more functionality / data for increased fees.

Figure C3 - BMC: ARGOS, Hyds

PARTNERS

- HYDS for ICT platform full integration and their link with Torderra case
-
- Organisation managing the Torderra case
-
- TAUW with link to Issel case and water board in the Netherlands. This one is not essential but TAUW are main coordinators of this site within RECONECT, so their inputs are probably valuable
-
- Outside RECONECT: not at this stage yet, want to prove within RECONECT before looking outside

KEY ACTIVITIES

For value propositions:
- Sit together with organisation to tailor the product.
- Signal public visiting the area (QR on signs or similar)
- Maintenance - Hydrologic to continually keep on top of updates and maintenance

For channels:
- Existing conferences where it can be presented
- Establishing pilot studies - technical challenge being language barrier here
- Evaluation of pilot area. Decide if there has been value added

KEY RESOURCES

- Dutch or Spanish demo site contacts, interact with the potential pilots organisations / sites- Personnel required to set this up from initiation to finish.
- IT personnel within Hydrologic
- Sales personnel within Hydrologic. They can create pitch, marketing material, try to reach organisations with this information

- Relatively low impact application so not so many staff requiredDutch or Spanish demo site contacts, interact with the potential pilots organisations / sitesPersonnel required to set this up from initiation to finish.
- IT personnel within Hydrologic
- Sales personnel within Hydrologic. They can create pitch, marketing material, try to reach organisations with this information

Relatively low impact application so not so many staff required

VALUE PROPOSITIONS

Being able to gain more information / quicker / different aspects.
Save time / staff / budget by allowing reduced resources for site visits.
This information is an additional source of information (combined through ICT services platform, with info for example from sensors)
Output from this tool can be plotted on a map and integrated with the other info from the ICT platform.

Doesn't guarantee a fixed stream of information: depends on the willingness of the public to partake.
Quality of reports may be less detailed or accurate than the customer would like but better than no information.
Could potentially be detailed from people with in depth knowledge of the system, or could be the other end of the scale.

I.e. Portofino: public will pick up new landslide / changes sooner than a regular check by the owner. They know landslides are likely to happen but don't know when they will occur. The tool helps to speed up action to resolve (i.e. clean tracks after landslide).

Customer can choose tailored input boxes that Hydrologic can modify for them. Currently a generic photo upload and comments box is included, but a tailored version can easily be created for a specific NbS. This can help collect specific information required by the customer.

Hydrologic provide development and maintenance. Some organisations may have skills or support to set this up but often the maintenance part is forgotten. Often seen where they start out working well, but after updates or after time, they stop working. Typically the client organisations don't have huge IT department.
Hydrologic give the tool and make sure everything is updated and continues to run well.

Doesn't necessarily solve a problem, but provides and additional set of information the organisation can use to optimise their resources / staff time.
Helps to build solid information base.

Examples of how this could be used:
- Monitoring rare bird species: as public to report sightings, could be an indicator for good quality water, which could be an indicator for the NbS goals.
- Could be a gate needing fixing / pothole in the driveway.

Idea is client gets access to the data directly. Hydrologic just provides the tool, it's up to the organisation to investigate reports and act or not.
Could potentially add some analysis function on top in the ICT platform (speculative).
Depending on the reports, they can take required actions when relevant.

CUSTOMER RELATIONSHIPS

Once pilots are set up as showcases where it proves to be of value, build customer base through word of mouth, letting the word spread from the pilot cases, organisation by organisation. It probably needs to be spread slowly like this.
Again building on existing client relationships initially.

CHANNELS

Signs up in the park: put QR code on sign at park entrance, with info on the park and the tool in there.
Could be the customer organisation sending out a news report, but this may not reach the right people. Want to avoid false reports, just want to reach those who are interested and willing to make reports and are visiting the site.

Reaching the client who will pay for it: hard to reach individually but wrapping this service up in the ICT platform package gives a better value proposition.
Monitor the whole chain.

Finding those organisations and setting up contacts: main type of organisation: governmental, therefore not large budgets.
Then promising you can make the organisation more efficient / improve people's perception of the NbS.

Conferences.
Word of mouth, visit existing clients and let them know.
Existing clients to be ambassadors.
Small scale trials / pilots for an organisation (3 month trial over summer, see if it adds value).

CUSTOMER SEGMENT

Within RECONECT, organizations designing / using / monitoring.

Generally: main target customer is the NbS owner or organisation monitoring the NbS.
Could be the municipality or water authority.

Characteristics of client: monitoring team of the NbS, depending on their scope: ie. ecologist may require pictures of birds. Maintenance person might want photos of broken fence.
The user is less management, more the data analysing staff, responsible for matching needs with resources.

COST STRUCTURE

- Personnel is the major cost
- Pilot study would involve cost (in time) to get it up and running and working well
- IT costs relatively light, but include time cost
- Develop some 'flavour' options rather than full detailed build from scratch
- Sales capacity - staff to talk about the application
- Some IT capacity - to set up and do general maintenance
- Cost for hardware systems needing hosting
- Costs for websites

- Pricing: either cross selling within ICT platform or as a stand alone product.
- This will be a small portion of the cost of the ICT platform seeing it's just one small part.
- To price, consider size of organisation, how much detail they want, how much customisation is required.
- Number of users has price implications (ie. public users).
- Project phase (and price) for configuration, then a yearly or monthly subscription to cover maintenance & updates (ongoing income stream).
- Different customers may be willing to pay differently, as the percentage of their budget will vary so much.
- Need to create pricing matrix including these factors.
- Haven't gone in to detail with pricing as it's not that far along the commercialisation track.

Figure C4 - BMC: Crowdsourcing Information Collection tool, HydroLogic

PARTNERS

- Local installation partner: customer may outsource or have a preferred installation partner.
- Looking in to designing devices on a higher level and outsourcing the production of them.
- Looking at outsourcing further depending on partners they can find for updating the 'look and feel' of the system, so this would be programming (design remains in-house)
- Pipelife - internal partners and new structure
- Future partner for cloud services: Amazon Web Services?

KEY ACTIVITIES

- System design
- If replacement for existing device, install our device or connect their device if using existing.
- Usually 80% standard work, integrating or replacing device & connecting it
- 20% non standard, customer specific
- Evaluation of any pilot set up, discussion with the client
- Potentially extend the system after initial install / connection and discussion with client
- For the local installation partners: training and information for the partner
- Training for the customer

KEY RESOURCES

- Technical sales people
- System architects
- Technical personnel (install, connection, reaching the distribution channels, communicating with customers, device development)
- Devices (where they are replacing with ours)
- For the local installation partners: training and information for the partner
- Training for the customer
-

VALUE PROPOSITIONS

- System is very open, so can connect third party sensors and devices. Competitors can connect only to their own devices.
- Reduce operational costs by giving insights in to the customer's data.
- Real time control: i.e. in Eindhoven, there are tunnels under the road. If rain is forecast and the well inside the tunnel is getting full, the pumping can start in advance so that the tunnel isn't flooded.
- Machine learning to predict failures and schedule maintenance. Rolled out as pilot to two customers currently. Saves time and personnel resources.
- Technical personnel can change settings /start a pump / control their process remotely.
- Can just use as a tool to get raw data and show in graphs / reports / process overview.
- Warning of breakdowns.
- Example: currently active mostly in sewerage: a well gets filled by flushes, the well pump turns on, pumps up to sewerage plant. If pump doesn't start, then the asset manager / set personnel will get an alarm in the system or to their phone.
- Can store and view data in the system, i.e. when pump was installed, serial number etc., so they can look up when they need to replace and with what type of pump etc.
- If no connection with cell tower etc., it should still work.
- Can provide a system in conjunction with pipes etc. now with the merge with Pipelife
- Providing in-house developed devices, battery powered or mains powered. Specific to needs for the system.

CUSTOMER RELATIONSHIPS

- Once 'at the table', show prototypes.
- Start with one installation, grow provision of service from there. I.e. if they have 500 existing wells, start with just replacing one while they get to know the system and grow from there.
- Cross-sell: once they see what is possible, they ask do you have solutions for x,y,z
- Exploit existing customer base within Pipelife too.

CHANNELS

- Tender for work.
- Word of mouth spreading of the service.
- Local installation partners
- Start with a pilot at a customer, one installation and they can get the feeling for it, and expand if they like it. Usually this is successful.
- Sometimes they've been previously in contact regarding another product that wasn't sufficient.
- Competitor may not be performing so TeleControlNet pick up the customer.
- Sales department and the Pipelife division sales teams.
- Existing customer base, extending services to them.
- Twitter / LinkedIn
- Trade fairs
-

CUSTOMER SEGMENT

- Technical personnel: those actually using the product.
- Manager of the system to plan resources.
- Overall manager: benefit from a system can take care of itself.

End user is a different person from the purchaser usually.

- Common characteristics of customers:
- Technologies they're using are not sufficient for their needs.
- Technical background or has had in the past so that they can speak the same language as the sales person. The sales people are very technically skilled.
-
-

COST STRUCTURE

- Personnel is the main cost
- Devices
- Operation of the system
- Training: personnel required to train for installation partners and customers
- R&D: personnel to develop devices, software, machine learning, cloud services

- One-time fee for hardware and installation
- The subscriptions are preferable as that's a recurring revenue stream.
- Pricing depends on the customer: if the end customer is not a municipality / large organisation, you can buy a subscription plus device for, say, 2 years. So not locked in long term. This was a recent addition with one device, may not be on the market right now.
- Paying for insights to their system, valuable information, one system to control and monitor. Saving costs for potential failures. Visit sites less regularly so save on technical personnel times.

Figure C5 - BMC: TeleControlNet, InterAct

PARTNERS

- SCALGO?
- Ramboll?
- Perhaps additional scientific partnerships to carry out work down the track, either DTU or another university / economist from ThinkTank?

KEY ACTIVITIES

1. Value propositions require: development of attractive user interface
2. Distribution channels require: communication of the tool's features to end-users, e.g. as part of consulting projects
3. Main challenge is to find a commercial partner who sees the potential. The University isn't in that space.
4. Likely needs to be integrated in to a product that exists already.

KEY RESOURCES

Programming time
Time to go to trade fairs / write dissemination material

VALUE PROPOSITIONS

1. Quantification of amenity benefits of NBS in planning processes
2. Making the added value of NBS visible during city planning processes. This is mostly requested by city planners and utilities, who want to make added values of NBS visible in political decision making processes
3. Minimum viable product: simple value function as derived by Skrydstrup et al. 2022, embedded in some easily accessible interface that can be used by stakeholders for planning
4. The underlying method will be the same for each customer: same version, same programme. Just a matter of the way it's used. Linked to different interfaces addressing different end-users.I.e. City planner may want to look at the map, click around to find best value. Utility / water manager may want to look only at a specific project location.
5. Currently, concrete wins! With flood investment: looking at maintenance costs, NbS often come out more expensive (space, maintenance of plants, etc.) so cost-benefit usually comes out with grey infrastructure on top.
6. City planners require ways of loading the benefits from NbS, built on scientific evidence. Creates trust in decision making. In Denmark, city planners tend to have an idea of where they want to move the cities / direction. Usually green transition / climate adaptation etc. Trying to feed these ideas in to political decision making. Often different city planners have different agendas (people / streams & nature / climate adaptation) . There needs to be someone offering these Masterplanning services. When in screening phase, finding out what projects make sense: this is where this can come in. QuantiAmenity can support this phase.
7. Simple, web-based interface which can be used without technical expertise (unlike competitors)

CUSTOMER RELATIONSHIPS

Same methods as for establishing channels:
- Publications
- Associations
- Workshops

Trade fairs.
After initial contact, customer to buy license to use from the server.
Initial intentions & needs identified in scientific workshops but not done in a customer context.

CHANNELS

Channels to reach end customers:
- Added benefit to another product / additional feature. Integrated as a layer in your map-based solution where you do other flood-based analysis. Could be integrated in to a platform such as SCALGO.
- Roland is unsure if people would pay for the QuantiAmenity data alone if it were stand-alone, so integrating would be a better / more successful solution.

Marketing:
- Technical publications? I.e. magazines that are distributed through planning departments in DK.
- Planning associations: Water Europe - post on a blog of one of these associations. These are publications that the end-users are currently using. Ideally refer in those platforms to the publication.
- Stakeholder-oriented worskhops, trade fairs for city planning.

CUSTOMER SEGMENT

1. City planners and water managers
2. Utilities - more in regulator space
3. Consultants - different types. I.e. Ramboll's economic consultants in-house. Or they could be commercial partner to use internally / maintain internally.
4. Other types of consultants who don't have these expertise could use the tool and include this in their services to clients.
5. Can do the job for some current economists (feeds in to job statement)

COST STRUCTURE

- Maintaining IT infrastructure and software
- Create interface - initial cost. Allow some weeks of development.
- Some days for advertisement, conferences etc.

- We don't currently know how customers would be willing to pay for the license.
- City planners and water managers currently pay for consultancy projects that assess flood risk and cost-efficient management options.
- Consultants don't currently pay for such services, but could gain a competitive edge by providing improved services.
-

Establishing users willingness to pay / how to research this unknown: topic for discussion during expert panel exercise in workshop

Figure C6 - BMC: QuantiAmenity, DTU

Annex D. Development steps as used in the Hamburg Workshop May 2023

Near future and long terms development steps and associated icons. See the attached pdf.

DEVELOPMENT STEPS

Included in the legend below is a list of development goals relevant for the near future. After reading the goals listed below, you are invited to reflect on a one-year timeline and place the stickers in dotted circles in the lower left corner of your board. This is an exercise for you to assess the development goals according to their relevance to your product. We invite you to reflect on the chronology and it's impact on your company's development.

CREATE A MARKETING & SALES STRATEGY

Consider bringing in external people to help with these parts.
Develop a clear strategy on how to bring potential customers through to real customers and how to keep them coming back. Who will you target? How will you reach them? What happens once they've seen your add / met you / heard about your product?
For sales conversations, get familiar with the customer's business, ambitions, obstacles, fears. Ensure you connect with the right people (i.e. who makes decisions and who understand the technology you offer). Become familiar with your sales steps and track results for improvements.

ESTABLISH CUSTOMER RELATIONSHIPS

Consider what networks you would need to be embedded in to build your customer base, to get to different customer segments and establish the relationship with them. Think about the ways you get to a potential customer, and what is needed from you to keep the customer, to make them buy your product/service, use it, subscribe to it. What could be ways to keep this relationship and engage with the customer, so they do not opt for the competitor's offer.

ESTABLISH PARTNERSHIPS

Consider what key partnerships are needed to, for example, develop the product/service, introduce it it to the market, create an advanced version of the product/service, introduce it in the different markets or countries, create a relationship with potential customers, expand the offer, etc. These could be any companies in your value and supply chains.

MARKET RESEARCH

Research your competitive landscape, competitive offers in the market, substitutes for your product, the pricing and value delivered by these competitors and substitute solutions. Based on that, think about particular customer segment in the market you serve with your offer. What characterizes your customer? How much is your customer willing to pay for your product/ service? For what value are they willing to pay (for solving a pain, fulfilling particular need)? Think about the size of your market, of your customer segment, and what part of that customer segment you can serve. Consider different offers to serve different customer segments.

SECURE KEY RESOURCES

What resources (e.g., tangible, human resources) are still needed to deliver the value of your product/service to the customer, to increase the quality of the offer, or develop a second generation of the product/service. Consider the resources that would help to establish the relationship with the customer, to tailor the offer to the customer's needs. There could also be resources outsourced by establishing particular partnerships, or acquired to reduce the costs that you now have to deliver the product/service to the market. The resources could also open new opportunities to enter new markets, serve new customer segments or different countries.

SET GROWTH KPIS

To ensure growth happens, track and measure "growth key performance indicators", or areas of your business which influence profitability. KPIs may vary per business but there are some common KPIs you can research for business growth, and you might include KPIs such as revenue generation, cost per acquisition, retention rate or daily active users.

LAUNCH TO THE MARKET

Think about the last steps needed to launch the product/service to the market. How will you introduce it to your potential customer segments, how will you differentiate your product. Is it the pricing, the quality or other strategies you choose to differentiate your product from competition and substitute offers? What channels are needed for the launch? How do you ensure you inform your customer of your product/service's existence. How will you make sure this will translate to potential customers actually buying/subscribing to your offer.

VALIDATING THE TOOL / SERVICE

Consider the activities that are needed to prove the concept/prototype will work in the real life environment and can be used at a large scale. Does the product actually deliver what it was intended to deliver? Does it fulfill the needs of the customer? Does it do what customer expects it to do and has characteristics that the customer asked for? What is needed to make sure there will be no errors when customer uses the product/service?

LONG LIST OF DEVELOPMENT STEPS

The long list of development goals is provided for you to review. These development goals may apply on a longer timeline, but you find these relevant for your one-year planning, feel free to write them on the timeline on your board.

CREATE A BRAND STORY AND VISUAL IDENTITY

Your BMC is a basic business model.
Business models can range from basic but lacking finer nuances of business strategy, to detailed documents and tools that can become too large to respond to real-world change. Whatever tool you use, a solid business model is part of the essential foundation work for future success.

CREATE A VALUE PROPOSITION THAT MAKES YOU MONEY

Your BMC includes your first development of your value proposition.
This is a statement about how your solution adds value to the life of a customer, why it's better or different from the competition ane what the customer can expect to achieve with your solution. May be different for different customers.

DEFINE A PRICING STRATEGY THAT MAXIMISES REVENUE

Value-based pricing should be planned according to what value you create for your customer, whether it will give them a return greater than what you're charging them. This will differ per customer. Track and review each business case, estimates, forecasts and outcomes to refine prices for future.

CREATE A BRAND STORY AND VISUAL IDENTITY

Create a compelling, clear and consistent brand story that helps customers to understand how you can help them. The story should tell them why they should use your product, one ambition your customer wants to achieve, one clear path your customer needs to go down and the offer you can make to help them. This is the basis of your website, pitch, sales conversations, sales materials. This should be consistent with your visual brand and identity, which helps build credibility, trust and professionalism. Your visual identity should remain consistent in colours, fonts, imagery, logo.

TRACK AND MEASURE GROWTH KPIS

Keeping track of your growth KPIs allows you to respond to any changes, know what marketing is working well, identify your most profitable customer types and find ways to increase the value of each customer to your business.

ESTABLISH DISTRIBUTION CHANNELS

Establish how you will distribute your product / service. Will this be a direct line from you to the customer? Will you have a third party / partner involved, such as an existing service provider or a consultant who can provide your services to customers? Will your service be a part of a larger platform or your product as part of the bundle of offers? When will these channels be established?

USER INTERFACE CREATION

Creation of the interface that users will use. This should be developed with the end user in mind. Think about their experience when using the interface, what do they require from it? Does it deliver the value to the user that you intended to deliver via your product / service? Is it easy to navigate for the user? How does it represent your product / service? Is it in line with your branding and does it reflect your intent for the product / service? This may require external experts / partners depending on your in-house expertise.

PROTOTYPE TESTING (REAL ENVIRONMENT)

An important step in the development of your prototype is testing this in a real environment. This could be done with the help of the partners, that provide the conditions to conduct a pilot study. In this stage it is essential to indicate any problematic areas that need to be solved before the launch of the product/service.

PROTOTYPE TESTING (SIMULATED REALISTIC ENVIRONMENT)

Prototype testing in a simulated realistic environment could involve testing only a part of the product, it's individual parts, which in later stages are tested as a system. This step is essential before the launch of the offering to the public and exact customers. It could involve partners that provide the conditions to simulate the realistic environment so the prototype can be tested.

FINAL PROTOTYPE

Development of the final prototype after the prototype testing steps. This should incorporate the lessons learned from your testing. The timeline for this may depend on progress with prototype testing but having a timeline on paper for this is a good way to help keep on track and progress your product / service development. In this final prototype the developers need to ensure all parts of the product / service / offer work as a system that is validated and to be functioning without errors, delivering the intended value to the user / customer.

FINAL PROTOTYPE TESTING (DEMONSTRATOR SITES OR SIMILAR TRIAL ENVIRONMENT)

When your final prototype is ready, this can be tested in pilot sites, potentially within Demonstrator sites or in other similar environments. This may be with potential customers who are interested in your technology, or in conjunction with partners you have established. This step can be a part of "Prototype testing (real environment)."

DEVELOPMENT OF ADVANCED VERSION OR SECOND GENERATION OF THE PRODUCT / SERVICE

How will you develop your product / service further? Are there any additional functions your customer / user would appreciate? Would additional functions or an advanced version of the product / service / offering open up new markets or customer segments? What is the expected timeline for this development? What does this development depend on?

LAUNCH OF ADVANCED VERSION OR SECOND GENERATION OF THE PRODUCT / SERVICE

When will your advanced version / second generation be launched to the market? This may depend on several factors to do with your development, but setting a proposed timeline for this is important to help things stay on track and progress. Estimate what tests and pilot studies need to be conducted to ensure the smooth functioning of this offer. Evaluate, how easy it will be to integrate this new product / service in the existing system. Will this need new distribution channels or partnerships to be established?

Annex E. Knowledge product

Visual summary of the knowledge gathered through the innovation process in RECONECT. See the attached pdf.

RECONECT

Enhancing Innovation

- a RECONECT initiative to support start-ups that pursue innovation in Nature-based Solutions

RAMBØLL

TABLE OF CONTENTS

A short introduction

RECONECT (**R**egenerating **ECO**systems with **N**ature-based solutions for hydro-meteorological risk r**E**du**CT**ion)is an interdisciplinary research and innovation project that aims to contribute to the European reference framework on *large-scale Nature-Based Solutions* (NbS), by stimulating a new culture for land use planning that links the reduction of risks with local and regional development objectives in a sustainable way.

RECONECT encompasses the three spheres of Water, Nature, and People, as the dominant themes driving the implementation of NbS globally. While the more measurable benefits of NbS fall within the hydrometeorological / flood protection (i.e. Water) sphere, NbS in reality allow us to meet needs and reap benefits in the Nature and People spheres additionally.

Within Europe and further afield, there is a demand for a broader uptake of NbS over traditional grey solutions, however there are many missing elements to support easier mainstream uptake. While RECONECT focuses on many cross-cutting themes across different work packages, this report focuses on the market demand for tools, technologies, services, models, and/or decision support systems etc. (referred to in general as 'innovations' in this report) which can help support the upscaling and uptake of NbS across Europe and globally, specifically by looking at the links between commercial exploitation of innovations, business models and mainstreaming of NbS.

In this report, we follow six innovations selected from within RECONECT, each being strongly linked to at least one of the three spheres (Water, Nature & People) and often spanning the three, by nature of the inherent overlap and interlinkages of these themes.

Previous projects and RECONECT partner experience shows that without a solid business plan, including a financing plan, start-ups often fail. In this deliverable, we discuss how we have supported these six innovation ideas to follow this methodology through the innovation exploration, technology development, business model creation and future timeline planning.

NATURE

WATER

PEOPLE

Scope

This document describes how RECONECT has been working with the topic of Innovation within NbS, and specifically outlining the approach, co-developed through a close collaboration between Ramboll, TUHH and EXETER, in actively addressing commercial exploitation as a key component of the overall goal of upscaling NbS within Europe and beyond.

The work described here, framed within a larger deliverable on actions for start-ups, aims to enable maximal exploitation of RECONECT outputs, supporting the upscaling of NbS, specifically by developing a methodology covering the process from conceptualization and innovation, development of an idea, business models and financial planning, outlining key actions for development and timeline planning.

Our methodology has been followed with the selection of innovations from within RECONECT and this journey will be covered in more detail in a separate report as part of a list of RECONECT deliverables.

Exploitation dealt with here is the utilisation of results to support upscaling the use of NbS for hydro-meteorological risk reduction. Results are outputs generated by RECONECT that can be used to create impact. These outputs might include data, reports, collaboration platforms, knowledge, skills, education materials, guidance documents and standards, research publication, software etc.

The exploitation channels are represented here:

Commercial exploitation in this context refers to using these results to reach the industry, perhaps through software, prototypes, market offerings. Innovations that can be developed in to a start-up, can create revenue, create jobs, enter and operate in the industry and on the market. Specifically here we are working with innovative ideas generated within the RECONECT project: these might be in the form of software, prototypes, services, tools, models or decision support systems whose developers are aiming to create a start-up and enter the commercial market.

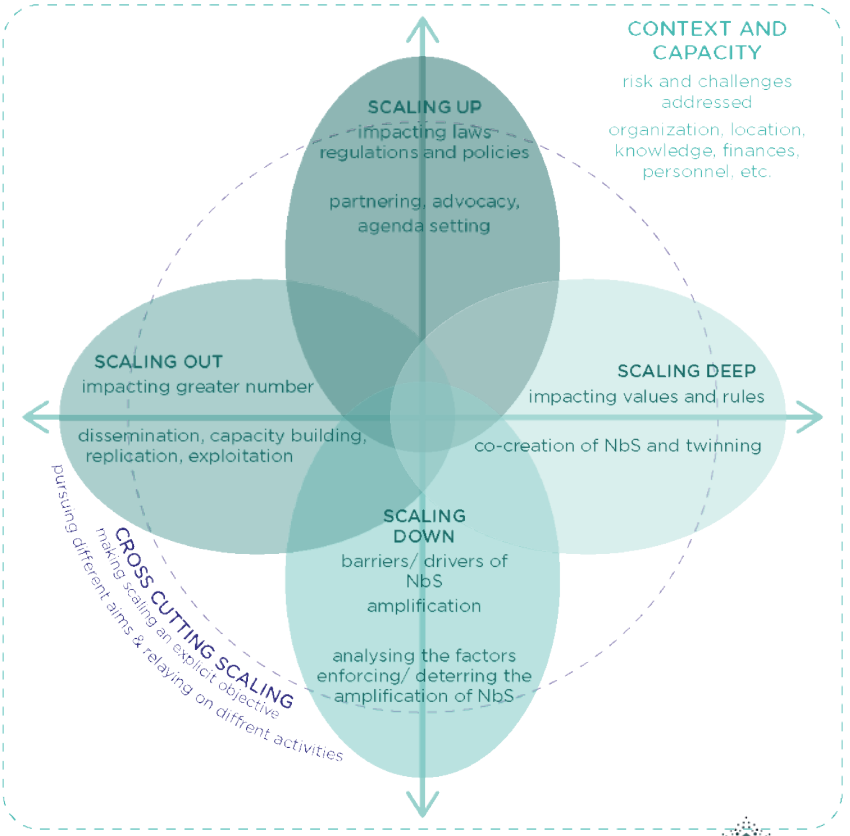
In order to understand the links with our RECONECT goals and the innovations we deal with in this deliverable, it is useful to understand the four types of upscaling discussed within RECONECT.

This includes activities aiming at:

- Changing the cultural roots of how hydro-meteorological risks are perceived and managed (scaling deep)
- Making a great number of stakeholders and people aware of the key outputs of RECONECT and building up capacities relevant for realizing NbS (scaling out)
- Changing laws and regulations so they more effectively enforce the uptake of NbS (scaling up)
- Analysing drivers and barriers to the uptake and implementation of NbS (scaling down)

The concepts of Technology Readiness Level and Commercial Readiness Index are used in this methodology to help inform the level of development along the growth journey, from the research and development stage up to being tested, quality controlled and available in the market.

While this methodology is intended as an approach to follow for any potential start-ups from RECONECT or other Horizon Europe projects, it has been developed in coordination with specific RECONECT partners (innovators / potential start-ups) and the process documented along the way.



Road map

Working with innovation through a collaborative approach and a pragmatic lens, we have explored several ideas within RECONECT since 2019. From Hamburg University of Technology developing and applying the Lead User Method in 2019 - 2020, outlining global innovations addressing hydrometeorological risk, through to defining the types of innovation and how RECONECT innovations fit with these, a brainstorming and scoping of all innovations within RECONECT, and deeper investigation of these innovations and assessment of their Technology Readiness levels, to development of the Technology Readiness Level / Commercial Readiness Index Guideline and filtering of innovations using this Guideline, developing several tailored collaborative workshops along the way. Following this roadmap, and after a multi-criteria assessment, we were able to identify six innovations with the highest potential to become start-ups that could, in time, enter the market and succeed as a business.

We were then able to focus on these six and help them establish and progress their business models and timelines for commercial development. Our approach is replicable for other innovators. Follow our journey below and take a deeper dive in the pages to come...

2019 - 2022

Lead User Method developed

Analysis of RECONECT deliverables

Investigation of a comprehensive list of tools, models and decision support systems ("innovations"). Establishing current Technology Readiness Levels

Workshop in Zurich, May 2022

2021

Exploration of the innovation landscape

2022

Introduction of the Technology Readiness Level concept

Pre-workshop survey

2023

Technology Readiness Level and Commercial Readiness Index Guideline developed

Assessment of long list of tools / models / DSS to funnel down to most progressed tools

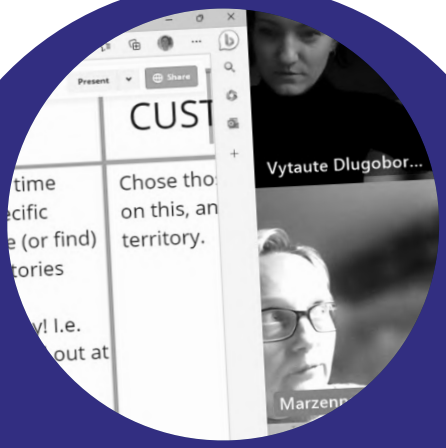
Further work with WP1, development of TRL / CRI assessment tool and storyboards

Multi-criteria analysis of innovations to narrow down to six for progression from here

Workshop in Nijmegen, November 2022

Formulating our journey in to a framework for innovation and business development for others to follow

Creation of storyboards for each innovation. Pre-workshop survey



Interviews with six innovation-owners to populate their business model

Preparation of upcoming workshop, dashboard work spaces, business development milestones

Workshop in Hamburg May 2023

Innovation-owners continue their journey, armed with the knowledge and input from the journey and their planned next steps

WE MADE IT HERE!

Formulating our journey in to a framework for innovation and business development for others to follow

RECONECT

Our work with innovation

With close links to a RECONECT deliverable dealing with the development of a NbS Business Model Framework, the early stages of this approach involved analysing the demand for business model development, which helped us understand what practitioners needed to develop a stronger business model. A strong business model and financing plan was identified early on as a recurring main barrier to start-up success.

Our methodology starts with TUHH's involvement in the Lead User Method, using this as a form of external scouting for innovations, and kick starting the collaborative process within RECONECT with an exploration of the innovation landscape:

UNDERSTANDING WHAT IS AN INNOVATION?

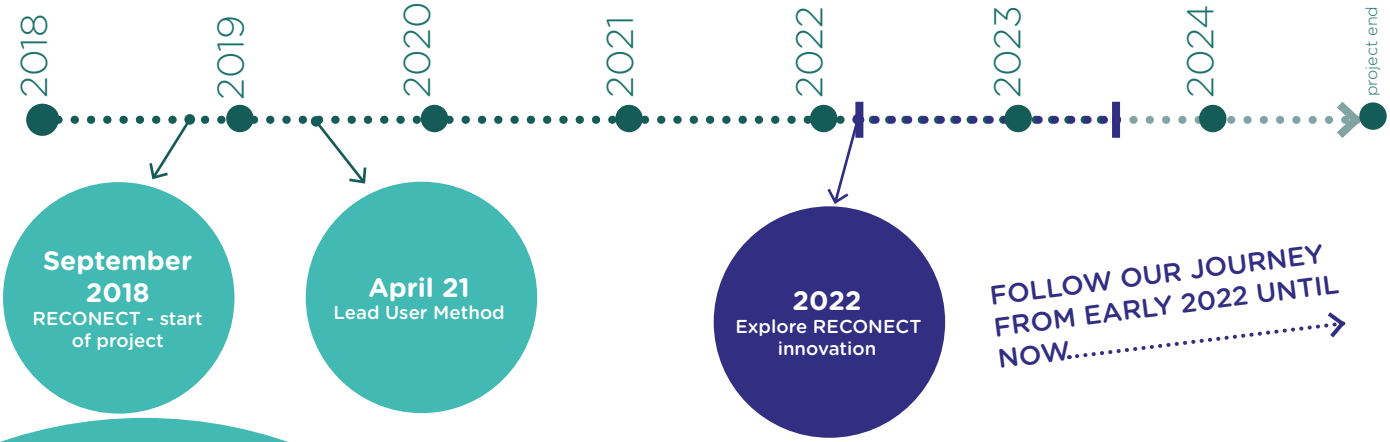
INSPIRATION FROM GLOBAL INNOVATORS (LEAD USERS)

WHAT ARE THE DIFFERENT TYPES OF INNOVATION?

TAKING A LOOK FROM A BUSINESS AND RESEARCH PERSPECTIVE

WHAT INNOVATIONS DO WE HAVE ALREADY IN OUR PROJECT?

HOW DO THESE CONTRIBUTE TO OUR GOALS?



What is innovation?

1.

How we define innovation:
Innovation is the practical implementation of ideas that results in the introduction of new goods or services or improvement in offering goods or services.

René Hoejmakers,
Innovation Expert, Ramboll

The business perspective

- Clear alignment to the strategic goals
- Sufficient market-led validation
- **Scalable and repeatable**
- Business confidence in and support for the founders, the business model, and the solution
- Readiness for substantial investment and a clear strategy for the use of funds
- Clear commercial opportunity

2.

How to prioritize innovation?

The research perspective

- Is the solution a novelty?
- Will it have a significant and positive impact on the expected outcomes of the project?
- **Novelty + Value Creation =**
- **Innovation**

Dr. Vytaute Dlugoborskyte
Senior Research Fellow, Hamburg University of Technology

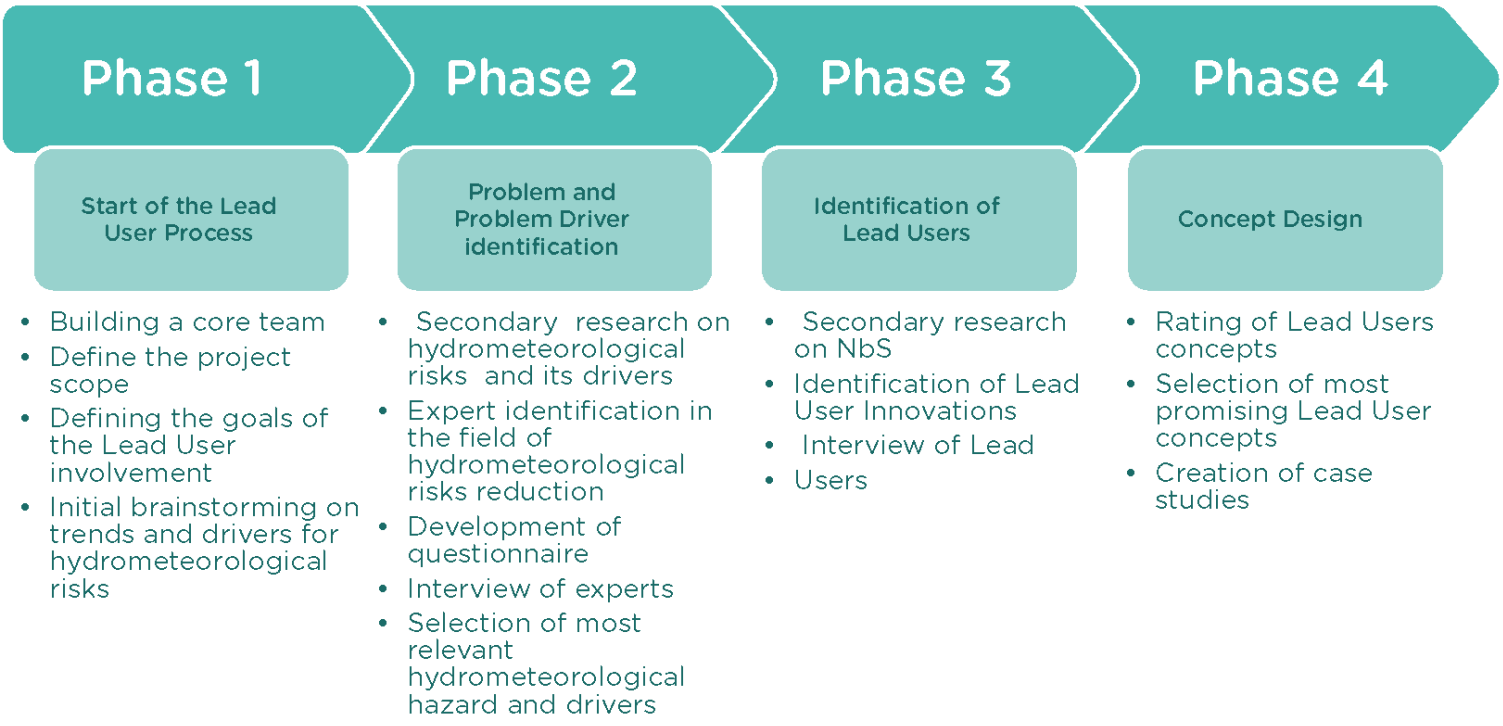
Lead User Method

The Lead User Method (developed in 2019 to 2020) was introduced as a form of scouting the field of hydro-meteorological risk mitigation around the world, exploring the innovation landscape in the field we are functioning in within RECONECT.

The Lead User Method is a bottom-up innovation process to detect Lead User-created NbS and evaluate their effectiveness. These innovations are usually highly frugal, often very sustainable solutions, oriented towards local communities and local problems, with potential for scaling or adaptation to other areas.

Despite many existing platforms that contain both knowledge and practical relevance to existing NBS projects it is still difficult to identify cases that show and document how NBS may benefit nature and people. The Lead User Method tackles this problem since it enables finding tested and proven Lead User innovations related to NBS, developed by the people themselves while facing hydro-meteorological risks. The Lead User Method is a step-by-step process to identify user innovators and find ways to up-scale the most valuable innovations and to make them generally available for those in need.

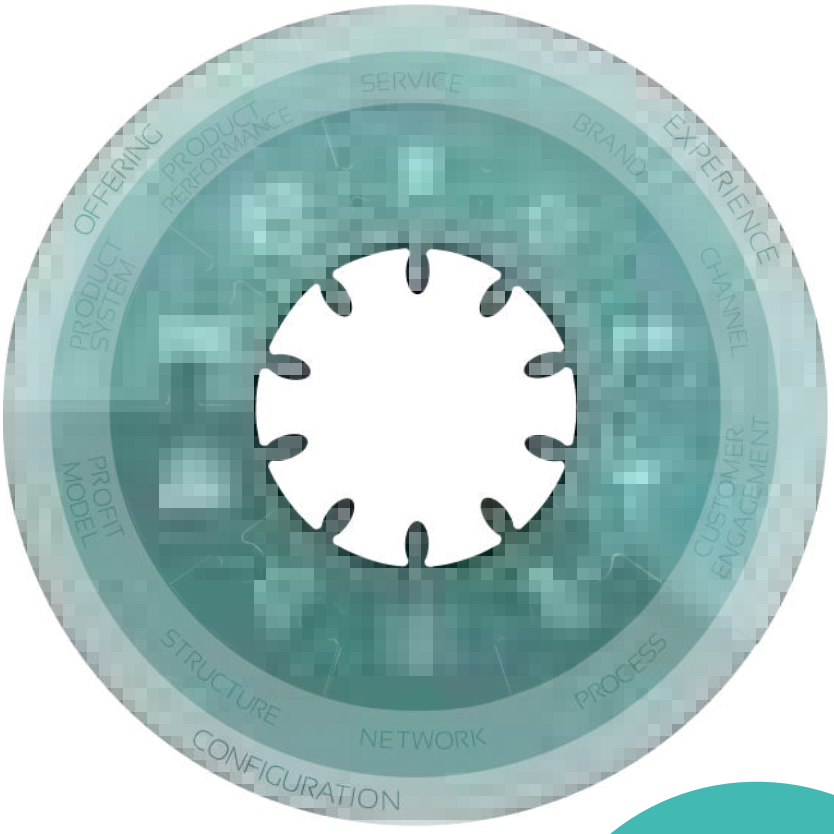
The process of the Lead User Method is organized in the following four steps:



Exploring Innovation in RECONECT

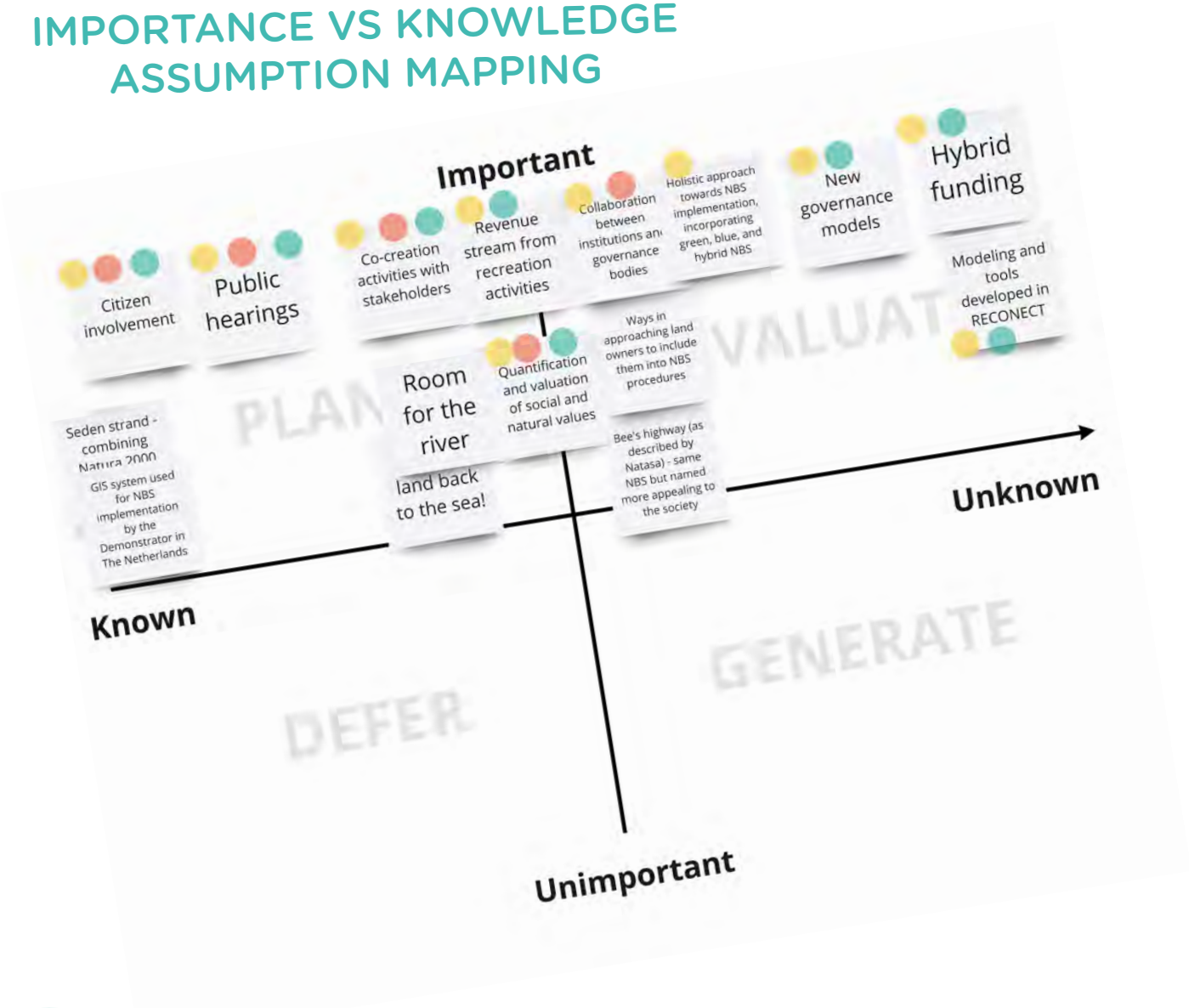
Our innovation exploration was then applied to our focus topic: RECONECT. During a workshop held in Zurich, an open **brainstorm** session collected an extensive list of bright innovation ideas within RECONECT and framed them using the 10 Types of Innovation by Doblin.

GIS toolboxes	Synergies with sister projects	Economic assessment of NbS	ESRI story maps	Platform for data analysis & scenario comparison	New ways for carbon sequestration	Smart operating systems	Local and international networks of NbS actors	"Public affairs" strategy for RECONECT
Public + political acceptance	Suitability maps	Multi-disciplinary approach/ Working across sectors and disciplines	Stakeholder engagement tools/methods	Policy briefs for decision makers	ICT platform	Policy briefs for decision makers	Twinning	CAS
Multi-Criteria Analysis tool	Rockfall simulation with 3D height models	Monetizing people indicators for NbS	NbS maintenance through cattle (e.g. dikes)	Co-creation	Change detection in topography based on LIDAR point clouds	"Public affairs" strategy for RECONECT	Measure selector tool	Public + political acceptance

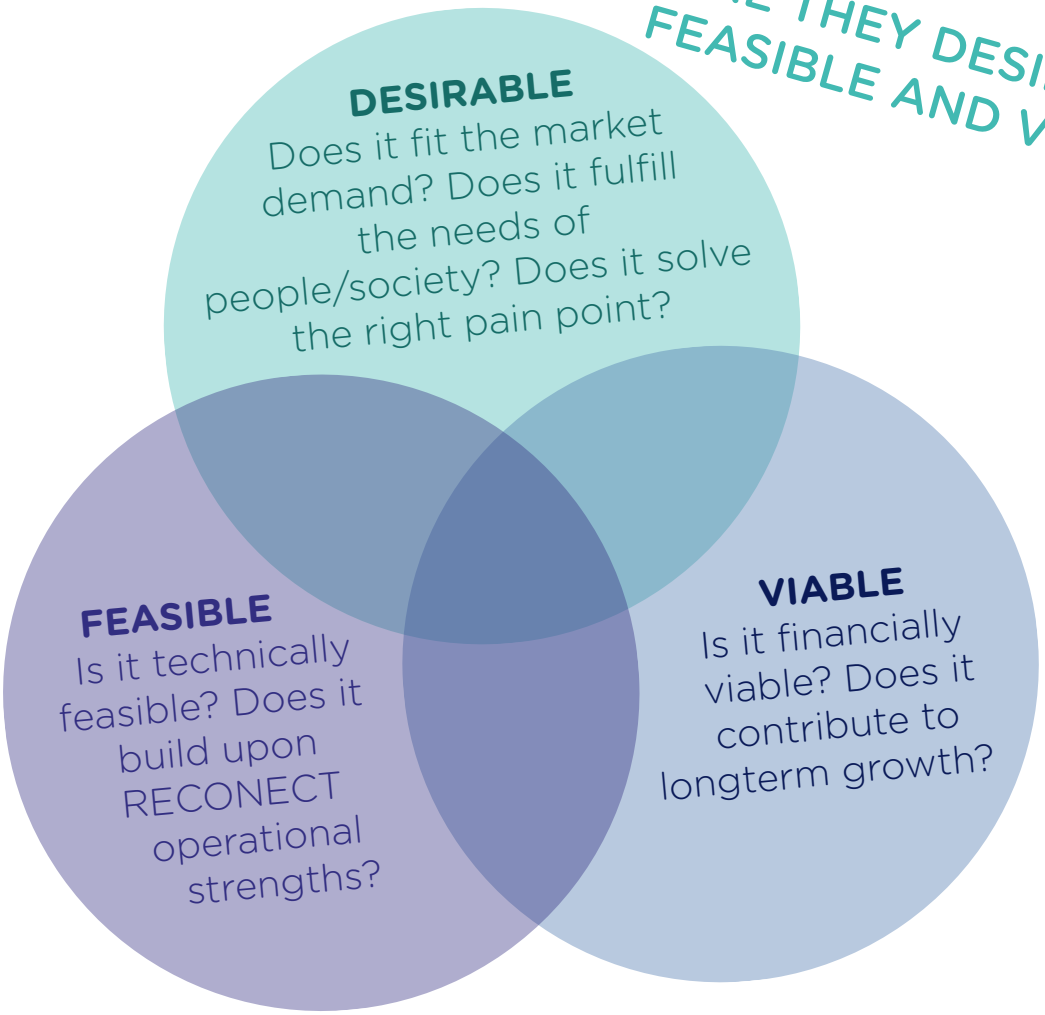


Geared with the innovation learnings so far, conceptually screening innovation ideas at an early stage helped focus time and energy on those with promise:

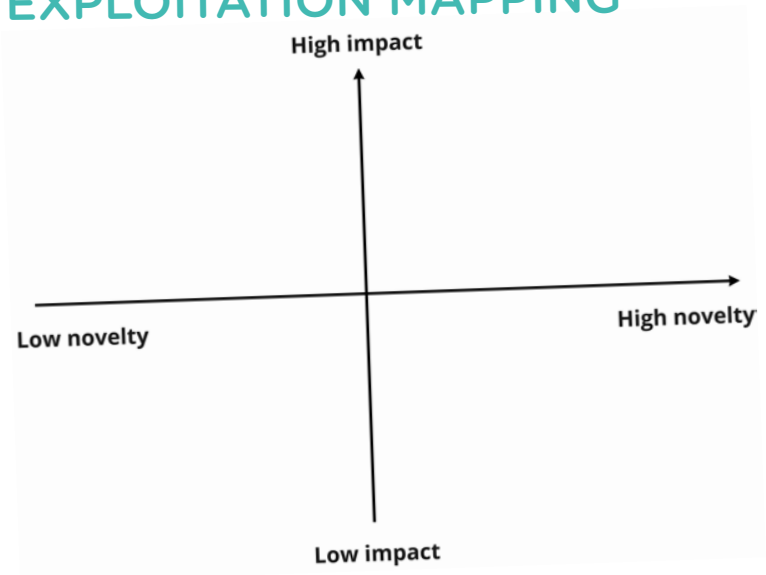
IMPORTANCE VS KNOWLEDGE ASSUMPTION MAPPING



ARE THEY DESIRABLE, FEASIBLE AND VIABLE?



IMPACT VS NOVELTY EXPLOITATION MAPPING



COULD THEY BE COMMERCIALLY EXPLOITABLE

?

Innovation exploration outputs

– potential for commercial exploitation

What did we learn?

- Innovation seems to be a moving target...different perspectives and not a particular goal in itself
- Research and Practice complement each other – big potential for Horizon2020 projects
- Innovation ideas need to be properly assessed through the lens of Innovation, Exploitation and Upscaling

This process concluded in a selection of innovations with commercial exploitation:

Economic assessment of NbS

ICT platform

GIS toolboxes

New ways for carbon sequestration

Multi-Criteria Analysis tool

Monetizing people indicators for NbS

ESRI story maps

Platform for data analysis & scenario comparison

Measure selector tool

Rockfall simulation with 3D height models

Smart operating systems

NbS maintenance through cattle (e.g. dikes)

Suitability maps

Change detection in topography based on LIDAR point clouds

CAS

First brainstorming

Following Innovations and 1st screening

The next step in this methodology includes a thorough exploration and desktop research to identify further innovations connected with the focus topic: in our case, exploitation of RECONECT outputs.

While this expanded our innovation list again, it allowed for developments and new innovations that might have been missed in the brainstorming, to enter the pool of potential start-ups.

By investigating the current function of each innovation, their development stages and their desired destination as the innovations developed, the innovation development trajectories were able to be tracked and revisited over time.

The Technology Readiness Level of an innovation is an important indicator of the maturity of a technology, and acts as a key reference point for this methodology.

- Technology Readiness Levels 1-4: in the scientific research stage
- Technology Readiness Levels 5-7: in the prototyping stage
- Technology Readiness Levels 8-9: innovation is limited to these last two

By developing a good understanding for each innovation, an informed screening can take place. In our case the innovation-owners worked with us to create storyboards representing each innovation.

For our RECONECT journey, this step included a workshop in Nijmegen, to gain further input and opinion from the wider Consortium members (not only the owners of the innovation):

- Revisit of the desirable, feasible, viable questions
- Where do members think the innovation is on the Technology Readiness Level scale?
- Does it hold a commercial opportunity? How great do you think that opportunity is?
- Is the technology ready for commercial exploitation?
- If not, how would you improve the TRL?
- How would you go about commercial innovation?
- Does Technology Readiness Level improvement or commercialisation require substantial investment?
- Does the tool contribute to upscaling framework of RECONECT?
- Are there any improvements you would make?
- Who is the customer / market?

TRLs

evaluate maturity

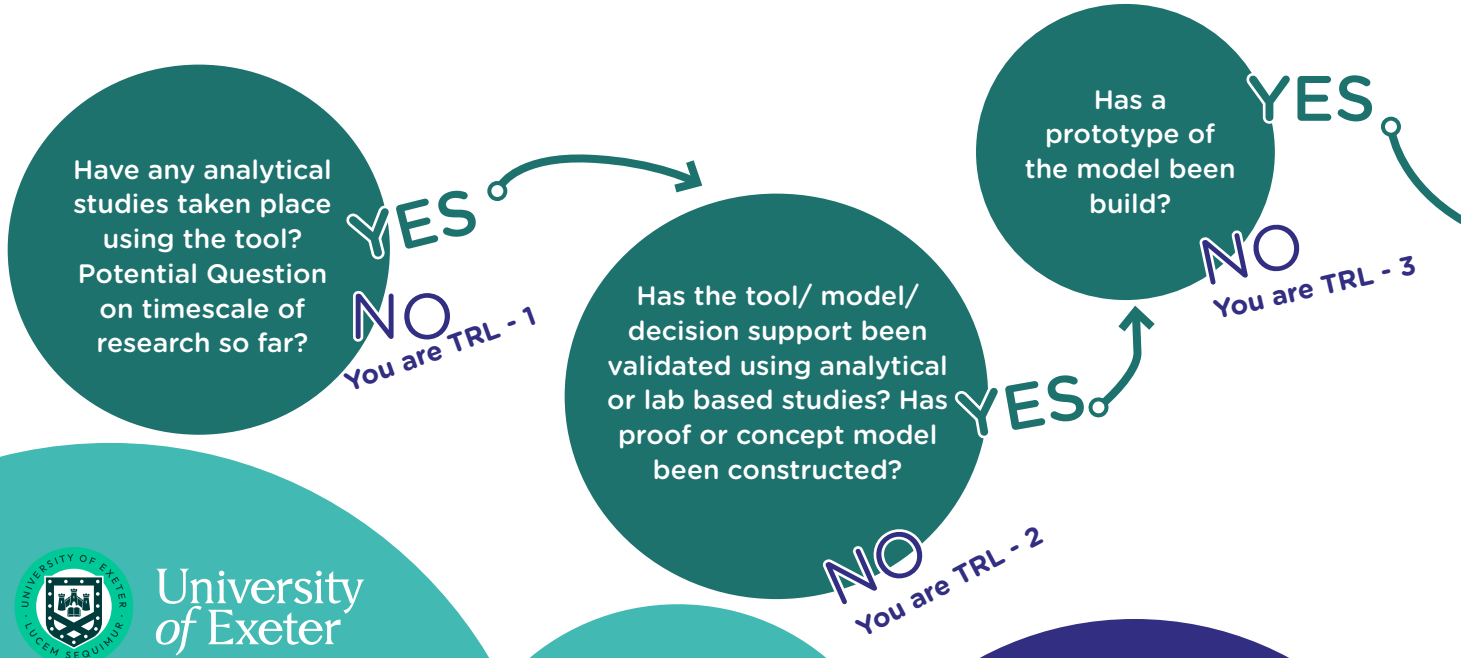
“idea to market”

where 1 is basic principle and 9 released for production

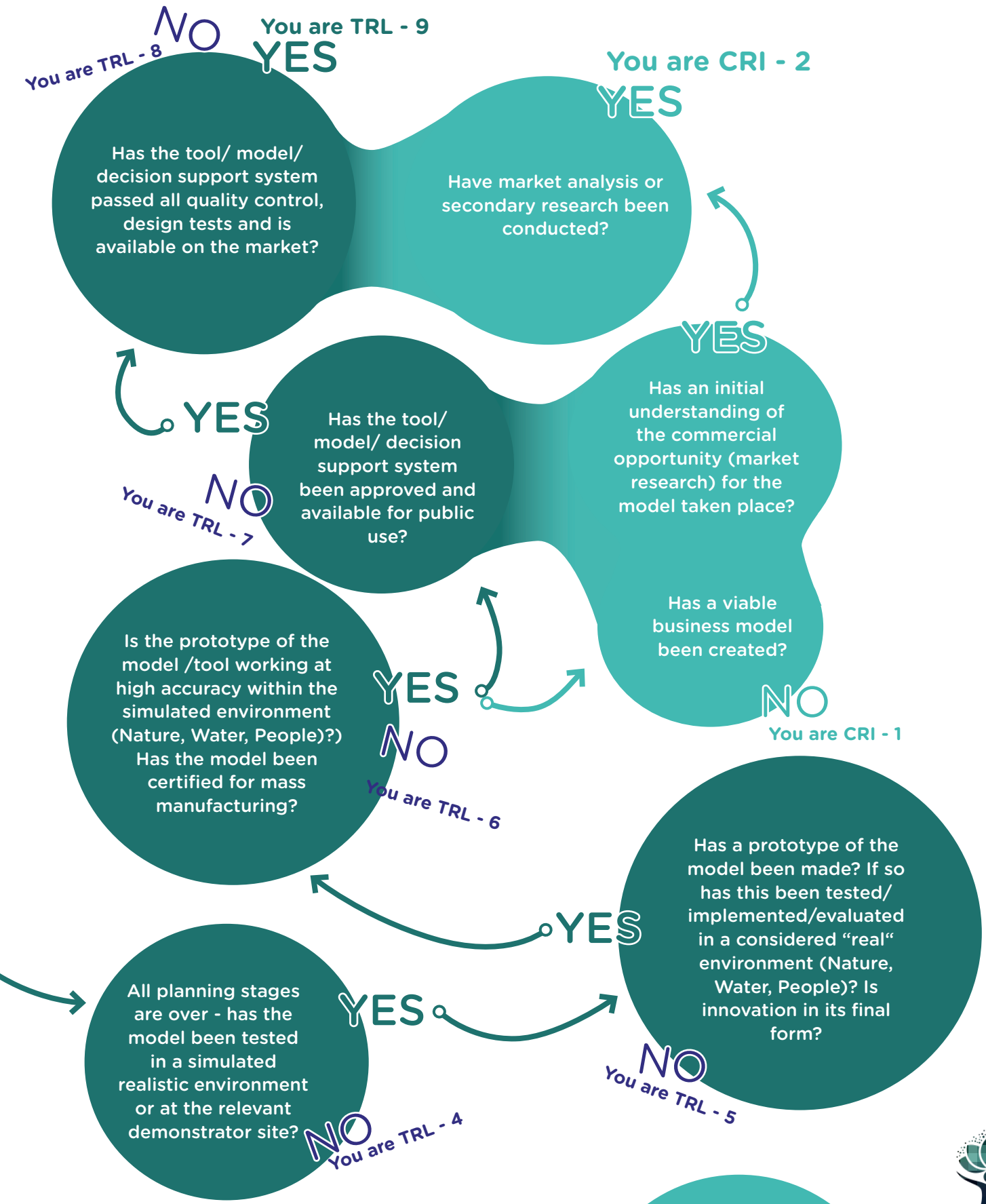
1st screening
Is this technology ready for the market?

Once a clear understanding of the innovation is established, the below flowchart from the Technology Readiness Level / Commercial Readiness Index Guideline, developed for this methodology, can be used to easily and clearly assess the Technology Readiness Level and Commercial Readiness Index. These levels will change as the innovation progresses, so revisiting this Guideline continually along the innovation development journey helps to track this progress.

Armed with the assessment Guideline and a thorough understanding of each innovation, this screening was carried out. Those with higher Technology Readiness Levels and Commercial Readiness Indexes were short-listed, so that focus could be targeted towards those closer to being ready to launch to the market from here forwards.



University of Exeter



Penny et al., n.d

2nd screening
commercial exploitation potential

Given our variety of innovations from our broad spectrum of RECONECT partners, for our journey, an additional screening took place in the form of a multi-criteria analysis. This round further scrutinised each innovation, running them through a multi-criteria analysis (which can be adapted according to the field this methodology is being applied in), assessing them for their commercial exploitation potential and suitability for progression:

IS THIS DIRECTLY RELATED TO **RECONECT**?

IS THERE **CLEAR** VALUE?

WHERE'S THE **VALUE**?

IS THIS **READY** TO BE TRIALLED?

IS THIS **APPROPRIATE** FOR COMMERCIALISATION?

COULD THIS BECOME A **STAND-ALONE** OFFERING?

WHAT **DIFFERENTIATES** THIS FROM COMPETITORS?

IS THIS ALREADY A **PROPRIETARY** SOFTWARE?

Innovations

Environmental DNA (eDNA)

Environmental DNA identification (eDNA) is currently used for single-species identification and community analysis when doing a biodiversity assessment. The monitoring of rare and threatened species in freshwater and marine ecosystems can sometimes be a challenge when using conventional monitoring methods. By taking water samples in a water body, we are able to identify the presence of a species by extracting its eDNA. Our service we are developing offers a package where we can design eDNA test procedure for a specific site, carry out the testing, send the samples off to a laboratory and report on the results for a client, making this process smooth and scientifically effective for those who do not have the in-house expertise. Currently purely a presence / absence technology, we are working towards creating a method to quantify species using eDNA as well. If successful, it will be added to our service offering.

AMPHI INTERNATIONAL

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Marzenna Rasmussen
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Lars Briggs
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IHE DELFT

Website: reconect.eu/measure-selector-tool
Laddaporn Ruangpan
l.ruangpan@un-ihe.org

Measure Selector Tool

Measure Selector Tool provides a screening of NbS, out of an extensive list of measures for hydro-meteorological risk reduction, to assist in narrowing down which NbS may be suitable for a given location. The user can input factors such as hazard type, area features at location of feature, affected area type etc. Six filters are applied to the input variables and a shortened list of potential NbS are given to the user.

ARGOS

ARGOS is a family of services to provide information, warnings and help in the emergency management of different weather-induced hazards. It is able to integrate hazard information from different sources (both observations and forecasting), vulnerability and exposure information, incidents, etc. The different services cover from first responders at national level to municipal or even single activities being held in risk-prone areas. Through the links with RECONECT, Argos hope to expand in to supporting the monitoring of NbS.

Argos

Website: reconect.eu/argos

Xavier Llort
xavi.llort@hyds.es

Crowdsourcing Information Collection Tool

This tool is developed as a web-based form of collecting input from the public (i.e. visitors to an NbS), for example, by displaying a QR code on an information board at the site, which brings them to a simple data input portal. They may notice something needing maintenance, or observations of wildlife: it can be tailored to ask questions to the user about information desired by the owner / manager of the NbS and can allow photograph upload. In this way, more frequent observations can take place by (voluntarily) involving the public in the monitoring of a site.

HydroLogic

Website: reconect.eu/hydronet

Marcel Alderlieste
marcel.alderlieste@hydrologic.com

TeleControlNet

Inter Act industrial automation

Website: reconect.eu/telecontrolnet

Micha Huybrechts
mhuybrechts@interact.nl

RECONECT's ICT platform is based on TeleControlNet. This is a commercial SaaS for industrial Internet of Things applications. All RECONECT demo sites supply data to TeleControlNet, which stores it for the long term in the internal database. The data can be read directly from the sensors, which also makes real-time applications possible, or can be read in via external web portals. The collected data can be supplemented with external meta data from third parties, such as weather forecasts.

In some cases, the data can be used to feed artificial intelligence algorithms. This allows early warning systems to be built. Or if there are control options at locations, for example by pumping or influencing water flows with locks, TeleControlNet can also Real Time Control these remote locations with a centrally programmed set of "decision rules".

QuantiAmenity

The NbS impact tool will enable the quantification of NbS amenity values such as recreation in a monetary manner. Amenity values will be quantified for user-defined NbS layouts and locations. The quantification will be performed based on open socio-economic data, surveys performed in the RECONECT project, and existing studies. Results will be presented in a spatially explicit manner and users will be able to specify which NbS configuration should be considered.

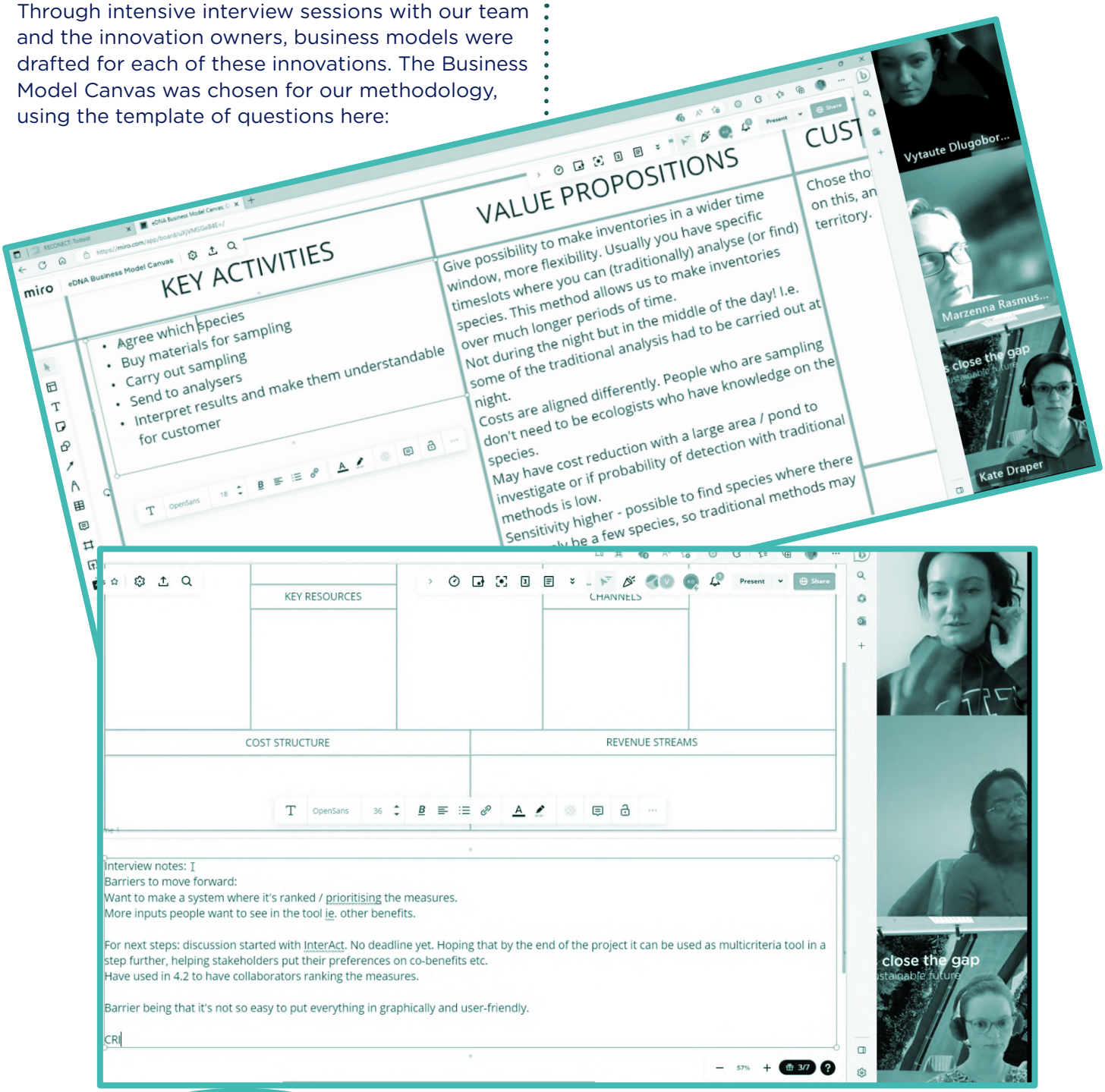
DTU

Roland Löwe, rolo@dtu.dk

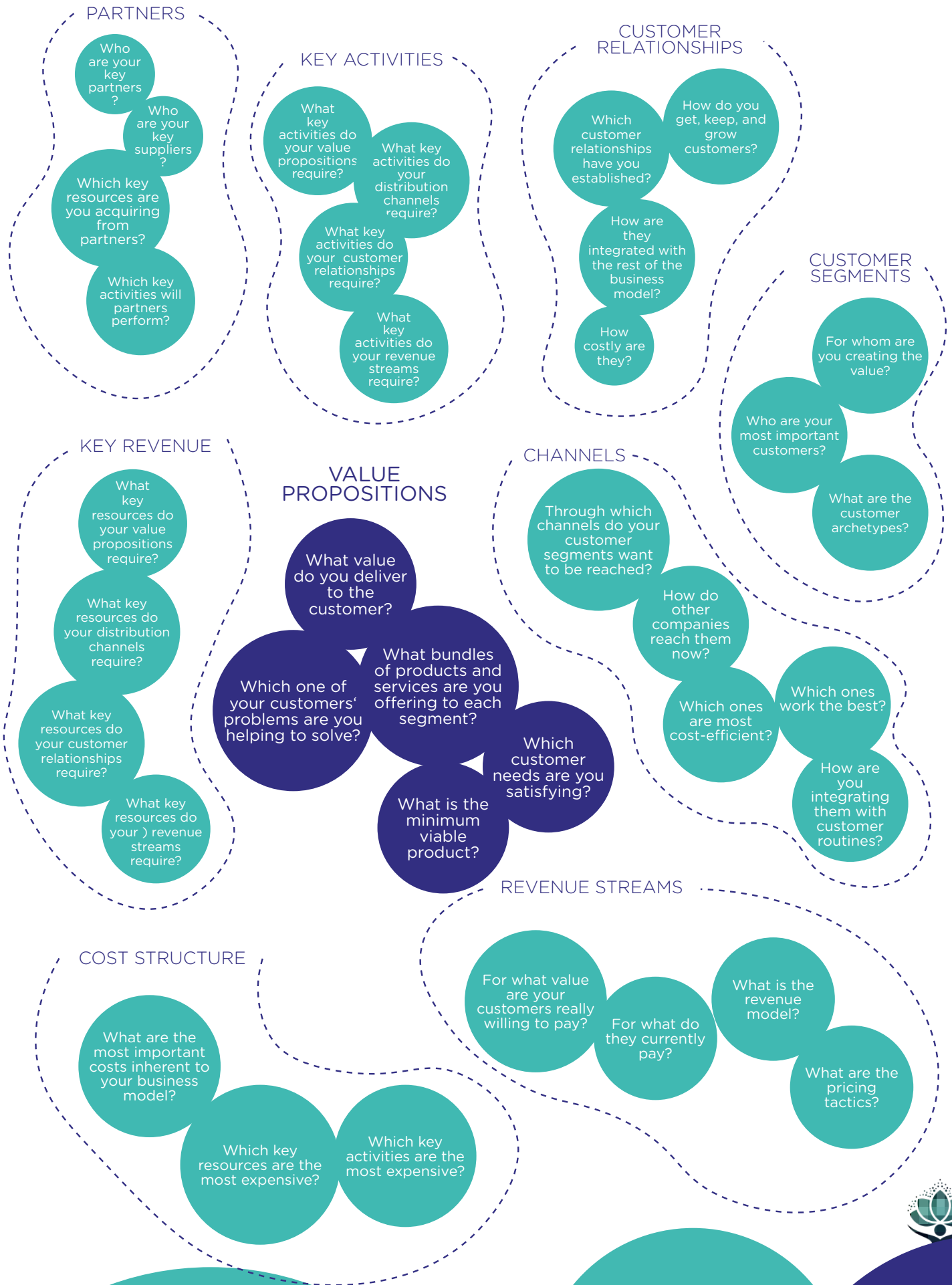
RECONECT

Deep dive into the business models

Through intensive interview sessions with our team and the innovation owners, business models were drafted for each of these innovations. The Business Model Canvas was chosen for our methodology, using the template of questions here:



Business Model Canvas' remained open for further input by the innovation-owners in the coming weeks, and this was used as the basis to inform the next workshop planning.



Based on Strategyzer methodology. Source: Harvard Business Review, 2013, Accessed at https://hbr.org/2013/05/a-better-way-to-think-about-yo

Expert advice

At this stage in the methodology, the goal is to further evaluate and develop the business plans, focusing on any gaps or areas that were hard for the innovation-owner to answer, as well as planning steps forward towards the market for each innovation in the short and longer term, with the aim of exploiting these innovation outputs to create start-ups.

Experts selected from the Hamburg innovation and start-up scene (and one from inside RECONECT) were invited to join a workshop held for the six innovations. The experts covered relevant focus areas given their expertise:

- Business Description and Models: Dr. Christian Salzmann, Executive Director, Startup Dock, TUHH
- Marketing Strategies and Customer Relationships: Hilko Aikens, Investor Relations, Hamburg Investors Network
- Design, Research and Development: Dr. Stephan Buse, Deputy Director, Institute for Technology and Innovation Management, TUHH
- Partnerships: Silke Schleiff, Project Manager, Enterprise Europe Network, TUTECH
- INNOVATION GMBH, Consultancy & Competence Development
- Monetisation of Data: Prof. Dr. Moritz Göldner, Data-Driven Innovation, TUHH
- Financials and Risk: Alvaro Fonseca, Chief Project Manager, Ramboll

During the workshop, each innovation-owner had a one-on-one session with each expert, to discuss their business model and gain insight from them in their specific focus area.

A dashboard workspace was created for each innovation, as a record-keeping and takeaway for the innovators. With the Business Model Canvas as a starting point for this three hour session, out of the workshop session, each innovation-owner walked away with their dashboard of notes, guided input from experts, their timeline planning of immediate milestones, next steps to progress and additional milestone resources to help them planning on a longer term scale.

Some feedback and quotes from this session:

> Who will be paying for it? Understand the costs, where are the low hanging fruits?

> When you have proof of concept and customers, then you can approach investors.

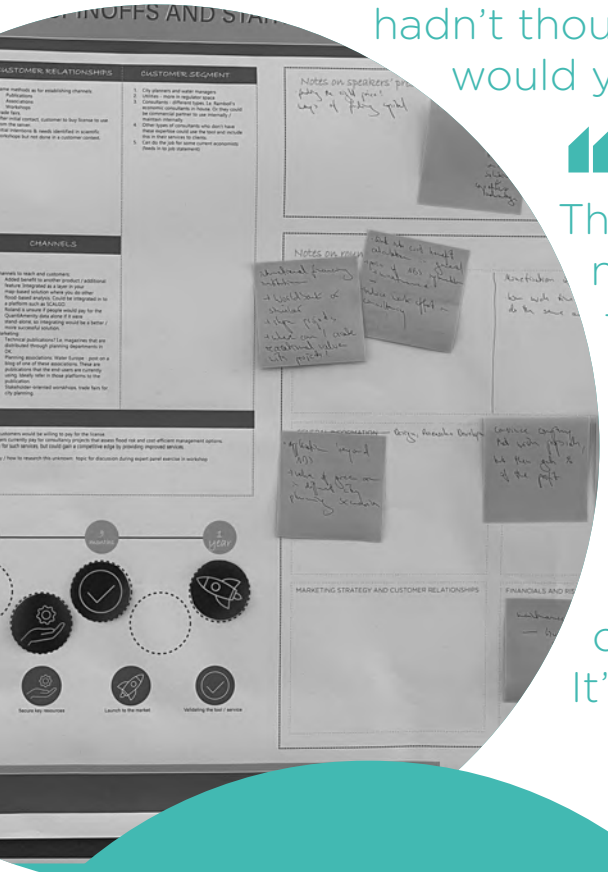
> Get stakeholders to become partners

> Understand the interest, talk directly to people.

> Identify the impact, how you get from science to practice.

> Each customer segment is highly specific.

> I haven't thought of it in a commercial lens previously, and hadn't thought to ask directly to the collaborators: would you buy this?



> These discussions have sparked multiple new and interesting ideas, which we will try and explore further in the coming year.

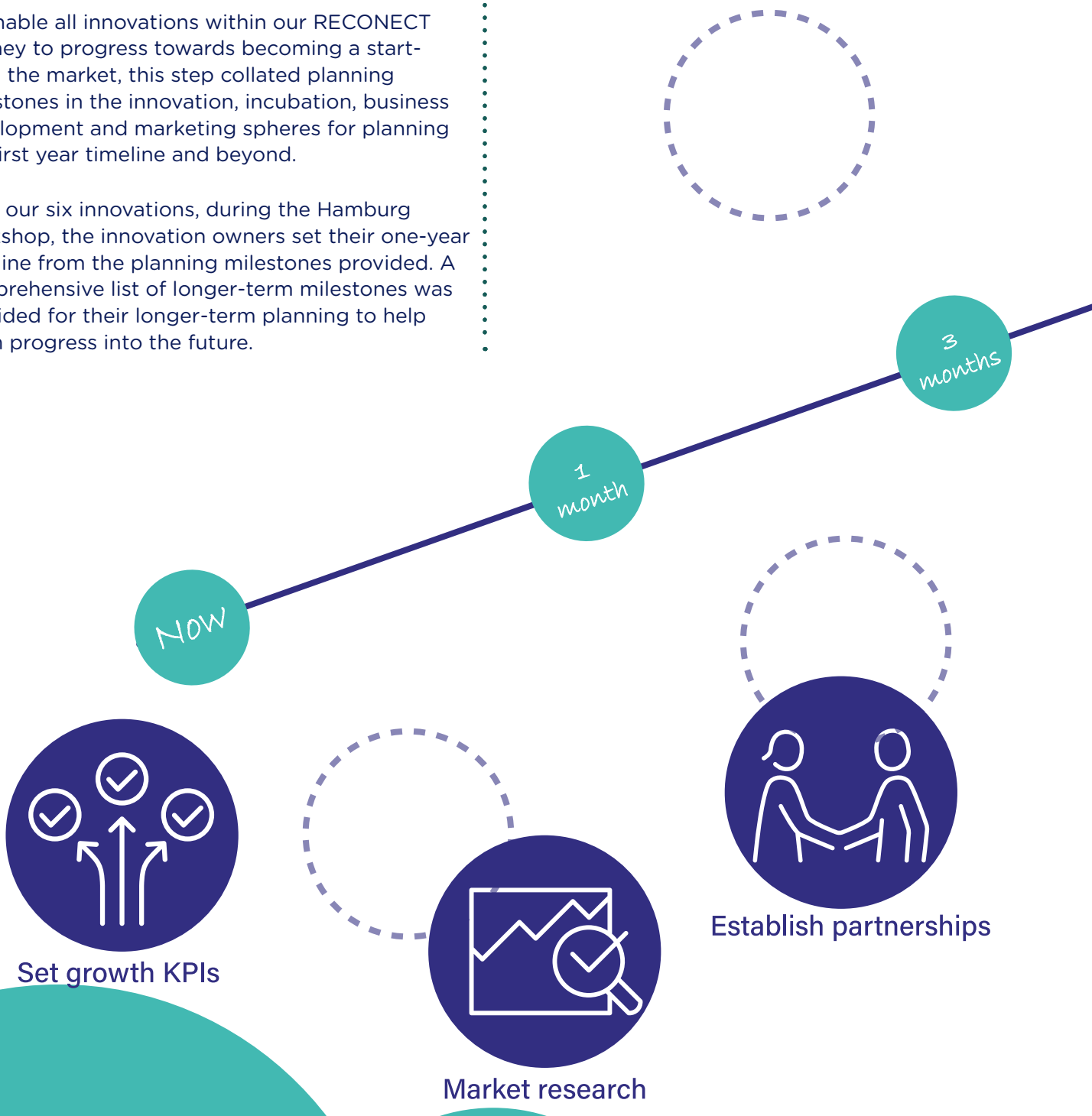
> The workshop and discussions with the experts has helped bring me to another level of thinking about the development of the Measure Selector tool.
> It's my dream now!

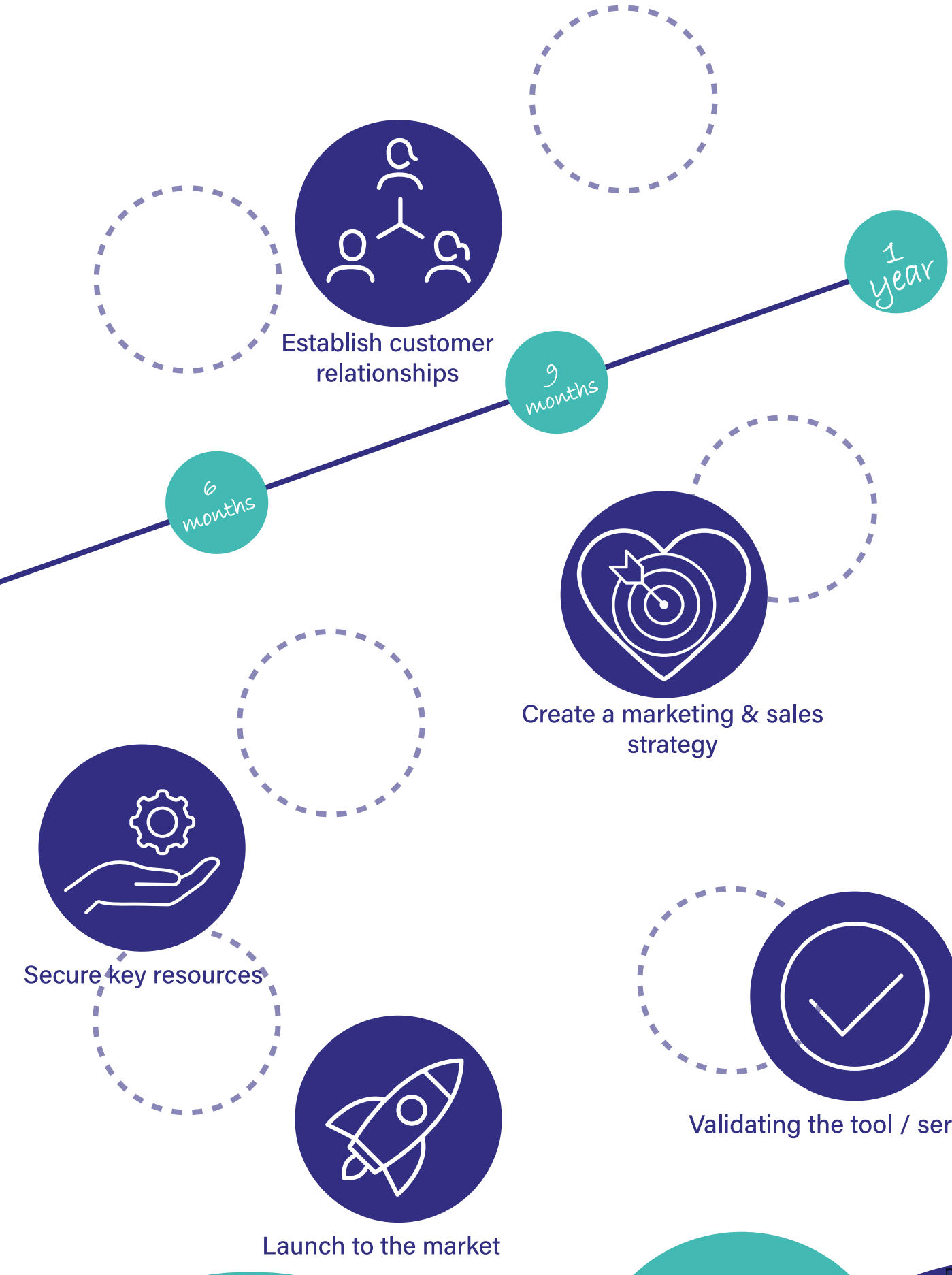
Defining the milestones

Planning ahead and becoming aware of the necessary steps in the future is important for the sustainability of an innovation as a new or potential start-up. Previous projects and RECONECT partner experience shows that without a solid business plan, including a financing plan, start-ups often fail.

To enable all innovations within our RECONECT journey to progress towards becoming a start-up in the market, this step collated planning milestones in the innovation, incubation, business development and marketing spheres for planning the first year timeline and beyond.

With our six innovations, during the Hamburg workshop, the innovation owners set their one-year timeline from the planning milestones provided. A comprehensive list of longer-term milestones was provided for their longer-term planning to help them progress into the future.




Establish customer relationships
6 months
9 months
1 year
Create a marketing & sales strategy
Secure key resources
Validating the tool / service
Launch to the market

Recommendations

The innovation pathway we have followed in RECONECT has been a steep learning curve for all project partners involved. Working with innovation demands a collaborative mindset and a proactive attitude towards co-creation of commercial exploitation strategies and business plans for spinoffs and/or startups, which altogether have the overall goal of upscaling, mainstreaming and replicating NbS in Europe and beyond. From this innovation journey, we can outline the following recommendations to support exploitation and business development for an innovation aiming at becoming a successful start-up:

Perform critical questioning early in the process. Specifically, take time to formulate your business statement of WHY your innovation is needed in the market. Being able to properly state your WHY will facilitate the upcoming work. Doing this will require some homework, especially researching the market to map your competitive landscape and identify similar offerings for your product or service.

Use a framework such as Business Model Canvas to assist in structuring your business plan and identifying gaps or weaknesses, as well as strengths and possible opportunities. Regardless of the tool used, it is imperative that you develop a value proposition that generates revenue. The value proposition is a statement about how your innovation or solution adds value to the life of a customer, why it's better or different from the competition and what the customer can expect to achieve with your solution.

Ensure your financial plan is thoroughly explored and solid: this is essential for sustainability of your start-up. RECONECT Deliverable D5.7 provides insights into addressing potential financing gaps you may have in your business plan. Regardless, it is recommended you develop a realistic value-based pricing strategy that maximises revenue, and preferably include segmentation per customer type.

Know your market! Look into competitors and gaps in your market so you know where you can succeed, where you can offer value that others do not already give.

Know your client! Each customer segment is highly specific. Spend time listening to clients, know their problems, develop your solutions to fit.

Have a view to your product while you are on your development journey but be ready to revise this as you get to know your market and customers.

Use others inside or outside of your organisation for inspiration and idea generation / screening. Rely on connections you have and take opportunities to create these connections. They might be experts in your specific field, in start-up creation, in your market area, or someone else. No one is an expert in everything, so make use of others' skills, experience, and expertise.

Set realistic and informed KPIs to help you keep on track and maintain focus in your development. Revisit these regularly.

Allow for realistic timescales: it can take years before a start-up enters the market.

There is a long road from idea generation through the development and testing process and to reaching the market and then into generating revenue. The sustainability of your progress relies on many things, but some essential pieces are your business and realistic timeline planning, research of your landscape including the customer market and competitors, asking difficult questions early on so you understand your goals and vision, securing sustainable financial backing and being prepared to learn and adapt your path along the way.

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