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BOOSTLOG PROJECT

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The BOOSTLOG project consortium consists of:

Part. No	Participant organisation name (short name)	Country
1 (Coordinator)	Alliance for Logistics Innovation through Collaboration in Europe, ALICE AISBL (ALICE)	BE
2	STICHTING SMART FREIGHT CENTRE (SFC)	NL
3	FUNDACION ZARAGOZA LOGISTICS CENTER (ZLC)	ES
4	STICHTING TKI LOGISTIEK (TKI Dinalog)	NL
5	HACON INGENIEURGESELLSCHAFT MBH (HACON)	BE
6	INSTITUTE OF COMMUNICATION AND COMPUTER SYSTEMS (ICCS)	GR
7	Vlaams Instituut voor de Logistiek VZW (VIL)	BE
8	FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E.V. (Fraunhofer)	GE
9	FIT Consulting SRL (FIT)	IT
10	FUNDACION DE LA COMUNIDAD VALENCIANA PARA LA INVESTIGACION, PROMOCION Y ESTUDIOS COMERCIALES DE VALENCIAPORT (VPF)	ES
11	TECHNISCHE UNIVERSITEIT DELFT (TU Delft)	NL
12	EUROPEAN ROAD TRANSPORT TELEMATICSIMPLEMENTATION COORDINATION ORGANISATION - INTELLIGENT TRANSPORT SYSTEMS & SERVICES EUROPE (ERTICO ITS EUR)	BE
13	LINDHOLMEN SCIENCE PARK AKTIEBOLAG (LSP)	SW

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Term	Definition
Experts	Persons with extensive knowledge or ability in an area of study or work.
Results	The main deliverables, publications etc. out of the projects. For EU Horizon 2020 projects, they are available through CORDIS projects pages
Outcome	Products, services, solutions or knowledge for business or policy applications aiming at addressing Pain Points and other value-added results potentially impacting the market (by creating it or transform it), the Companies operations as well as polices and regulation. Results that could set direction in Companies and Governments are considered Outcomes too.
Implementation Case	A concrete example in which causal links between public R&I funding and technology, organizational or process innovation in a specific logistics area can be established.
Logistics Cloud	A term used in the BOOSTLOG project to refer in a generic way to a freight transport and logistics domain providing flexibility in the way complex problems are defined and addressed.
Innovation Seeker[1]	Technology/solution buyer (industry and government) searching for innovative solutions to specific problems *(Pain Points)* and wanting to find and connect with the most promising solutions and partners.
Innovators, Implementation Cases and Innovation owners	An organisation that either has the IPR of the *Innovations/Outcomes/Implementation Cases* when it is subject to it or that have further developed project(s) results transforming them in *Outcomes* and eventually in *Implementation Cases or Innovations.*
Innovation Marketplace	A virtual platform that links *Innovation Seekers* willing to solve a problem *(Pain point)* with *Innovation owners (innovators)* that can provide a solution, or with Experts who can unpack the problem and develop solutions

[1] Joe Tidd. (2014). Open Innovation Research, Management and Practice. Imperial College Press, London

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1 Scope and structure deliverable

1.1 Scope of this deliverable

BOOSTLOG Vision is transforming European freight transport and logistics R&I ecosystem to perform optimally boosting impact generation out of R&I investment contributing to i) EU policy objectives towards climate neutrality, pollution, congestion and noise reduction, free movement of goods, internal security, digital transformation of logistics chains and data sharing logistics ecosystems and ii) sustainability and competitiveness generating value for society.

In order to do so, BOOSTLOG has identified 4 main areas of action: i) increase visibility and support valorisation of R&I project Results, Outcomes and Implementation Cases in the freight transport and logistics field ii) develop and implement valorisation strategies and guidelines to speed up the technological and organisational innovation uptake, including the creation of the Innovation Marketplace and issue recommendations to increase impact of R&I public funding, iii) Define high potential & priority R&I gaps to make efficient uses of R&I investments and iv) Strengthen R&I impacts communication and Stakeholders engagement in the innovation process.

This report focuses on the definition of valorisation strategies and guidelines to speed up the technological and organisational innovation uptake.

BOOSTLOG's first task was to map all EU funded R&I projects in the logistics sector (D2.1) and is assessing, Results, Outcomes and Implementation Cases in different domains called Logistics Clouds. The mapping, the assessment made, the experts interviews and workshops performed during the development of the Logistics Clouds on: Collaboration and Coordination (D2.2) and Urban Logistics (D2.4) have indicated that not all EU funded projects results have been further developed, taken-up and finally contribute to achieve impacts. D2.3 has reported these findings and identified barriers and positive framework conditions to enable implementations of projects results.

Based on D2.1 and D2.3, the EU valorisation strategy and current practices from regional logistics clusters such as TKI Dinalog, CLOSER and VIL, as well the marketplace concept from IMIS (HACON) a first draft of valorisation strategy and implementation guidelines has been developed. Dedicated guidelines proposed in this deliverable are targeted various stakeholders for implementing projects results facilitating knowledge transfer, thus delivering economic, social and environmental impacts.

In BOOSTLOG, four types of stakeholders are considered as shown below. A twofold strategy is developed; for innovation owners and innovation seekers, both possibly represented by all types of stakeholders. A set of guidelines for: before, during and after R&I projects is drawn up. Furthermore, general guidelines are described for each type of the stakeholders. At the crossroad of the innovation owners and innovation seekers strategy, special attention is given to the innovation marketplace and the strategy for ALICE, as an innovation platform, and regional and national clusters or platforms for the logistics sector.

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Table 1 Valorisation guidelines for different stakeholder groups

VALORISATION GUIDELINES for:	General	Funding bodies	Research	General
	Innovator companies	Policy makers	Education	ALICE
	Innovation seeker companies		Incubator	Regional and national clusters and platforms

Since valorisation can encompass a wide variety of activities it is difficult to make icult f ti(ake)8f1231s(i1 438.79 736.18 Tm

possible or too complex. Chapter 5 focuses on the concept of the "marketplace" and later in the guidelines for different stakeholders how to use the marketplace in their corresponding valorisation strategies. The "marketplace" will be managed by ALICE who is taking an important role in driving the innovation valorisation. While the "marketplace" is a key instrument to support ALICE's valorisation actions, ALICE will also build and use other instruments to support valorisation.

Chapter 6 describes ALICE's overall valorisation strategy and planned actions that provides a set of guidelines framework for all stakeholders' strategies and actions.

Chapter 7 provides implementation cases of both regional clusters or platforms for logistics innovations and companies. ALICE is in close cooperation with Regional and national logistics clusters, e.g. VIL (the Flanders Institute for Logistics) and TKI DINALOG (Dutch Institute for Advanced Logistics) to support each other in advancing innovation uptake and delivering impacts from R&I projects. Chapter 8 provides examples from companies.

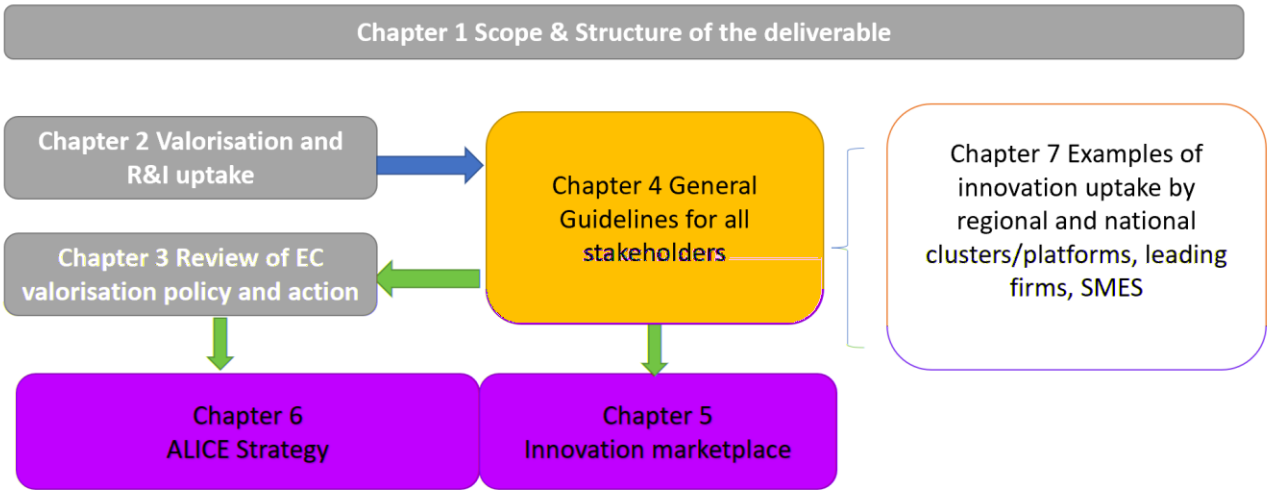

Figure 2. Deliverable structure and chapters' relations

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2 Valorisation and R&I uptake

2.1 Valorisation definition in BOOSTLOG

Uptake of (public) R&I project outcomes is defined in the context of the BOOSTLOG project as "the transfer mechanisms for dissemination and application of knowledge to logistics professionals and organisations to increase the added value of the logistics sector", based on Finne et al (2011)[5] and VSNU (2013)[6]. The added value of the logistics sector is positive impact both in terms of economic growth and on the challenges that society is facing, such as emissions reduction or accessibility.

Publicly funded research and innovation projects result in pre-marketable knowledge, technology and process innovations of lower TRL levels. To effectively realise R&I uptake, the gap has to be bridged from lower to high TRL levels and this knowledge needs to be transferred into valuable and viable products and services from which society actually benefits from. Valorisation can encompass a wide variety of activities as shown below:

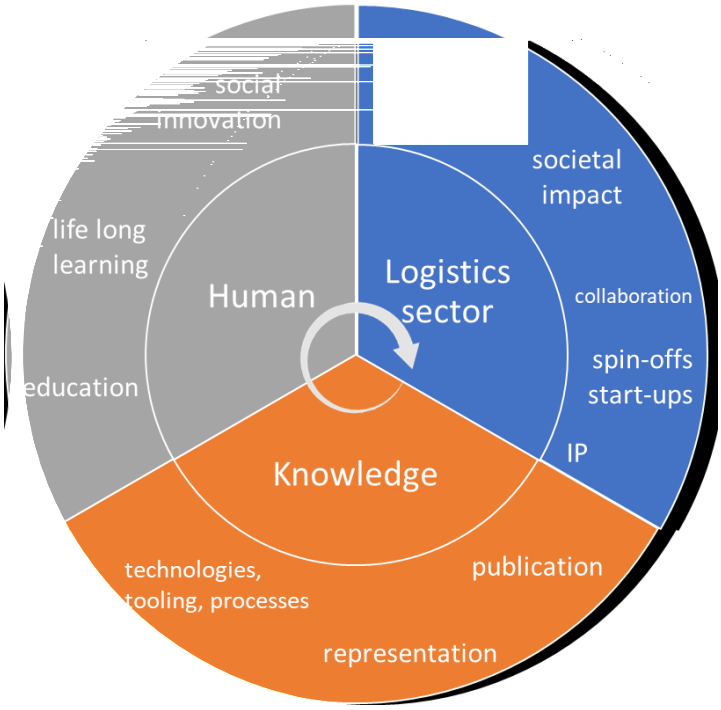

Figure 3. Activities of Valorisation of R&I results

[5] Finne et al. (2011). A Composite Indicator for Knowledge Transfer, Report from the European Commission's Expert Group on Knowledge Transfer Indicators. Brussels, European Commission

[6] Vereniging van Nederlandse Universiteiten (VSNU) (2013). Een Raamwerk voor Valorisatie-indicatoren (Framework for valorisation Indicators). Den Haag: VNSU

Valorisation of R&I project outcomes is beyond the sector itself, covering knowledge transferring and social innovation, and education for current and next generation of the workforce. Different stakeholders will take various roles in valorisation activities, thus strategies and guidelines for them vary.

2.2 Main challenges for the valorisation of R&I results

Several challenges have been identified and need to be addressed by a valorisation strategy:

EU funded project results (including products, services and solutions) are difficult to find and valorise IMIS project final report[7] highlights that dissemination and visibility of project outputs with respect to users has room for improvement; R&I Project are often not practical, not actionable and without clear identification of solutions and stakeholders addressed. Project deliverables are in most cases oriented to report activities rather than to be practical and actionable for the end users. Additionally, most of the times it is not clear who and how the stakeholders could benefit from the results.

Regulation, market fragmentation and resistance to change are barriers that slow down the uptake of R&I results by and hinder impact generation. Maximising the impacts of public R&I funding will increasingly depend on the existence or setting up of well-functioning markets and smart regulations that avoid market fragmentation and appropriate access to financing[8].The H2020 programme interim evaluation[9] identified several factors that impede full effectiveness in terms of market uptake such as regulatory obstacles, lack of standards, market fragmentation[10] or customer acceptance of new solutions. Several projects e.g. IMIS[5], SENSE[11], SETRIS[12] and WINN[13] have identified customer acceptance of new solutions as an important barrier for innovation uptake. Change involves absorbing transition cost and managing the transition, which means need to assume a risk of change. The starting point from them is usually a well stablished and profitable situation which discourage risk taking. Moreover, most of the freight transport and logistics innovations do not provide a long-lasting competitive advantage i.e. the innovation followers get similar value to innovation leaders so most of the stakeholders' advance based on best practices rather than on internal innovation processes.

2.3 Levels and reach of R&I uptake and valorisation: current practices

The Topsector Logistics[14] distinguished three levels of transfer of the knowledge towards uptake of research and innovation project results, where the first two are instrumental to the reach the goal for the third level:

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[7] Towards a single and innovative European transport system. Implementation of multimodal innovative solutions ("IMIS"): final report – Study. Brussels, (2020). ISBN: 978-92-76-14652-0, DOI:10.2832/19492

[8] European Commission DG Research. (2017).

[9] European Commission (2017) . (SWD 220 & 221)

[10] European Commission DG R&I.. (2018). .

[11] Accelerating the Path Towards Physical Internet, SENSE. H2020 project. Grant agreement ID: 769967

[12] Strengthening European Transport Research and Innovation Strategies, SETRIS.

[13] European Platform Driving KnoWledge to INNovations in Freight Logistics, WINN. FP7 project. Grant agreement ID: 314743

14 Brügemann, L.M. , Dijk, H. (2019). Valorisatie Topsector Logistiek Programma, april 2019 – internal document

I. Base layer with information on current projects to be found and accessed by the sector. The European Commission provides this layer with CORDIS[15].

II. Dissemination of project results to inspire the sector (including publications and press coverage):

   a. Direct project results, such as deliverables. This covers most dissemination and communication activities by project consortia, such as presentations, seminars and publications, either via their own channels or via the funding organisation, scientific or public news channels.

   b. Cross-cutting project results, such as outcomes or presenting these collaboratively. Some project consortia or their funding bodies collaborate to disseminate their combined learnings.

III. Uptake and implementation of the project results to adopt and expand in the sector as concrete examples of implementation cases.

The three levels of this uptake process can be illustrated as a pyramid shape:

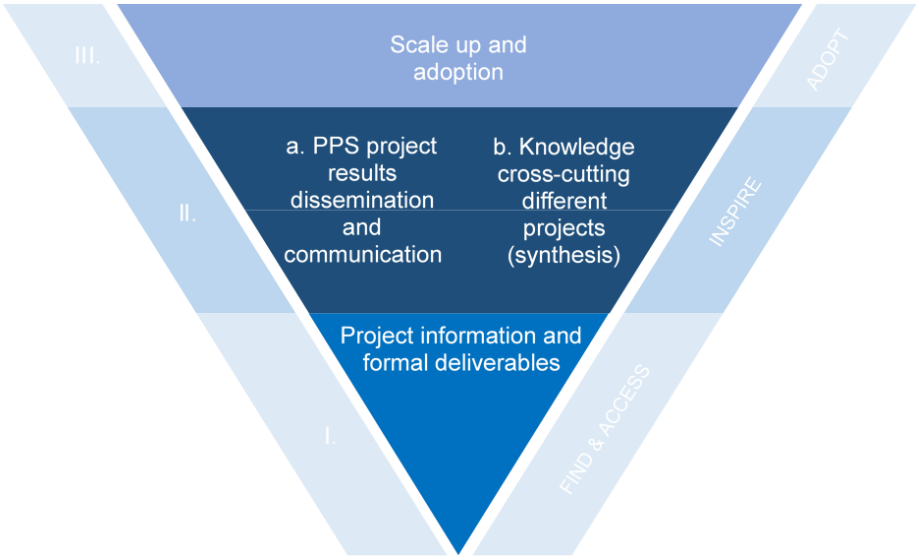

Figure 4. Levels in the R&I uptake process

Our aim is to achieve a wide reach of the results and R&I uptake that could really benefit the society. The wider the reach, the larger the possible impact. With the R&I uptake strategies and guidelines, we aim to increase the reach of project results:

1. from project partners (1),
2. to direct environment (2) — Project consortium
3. and wider environment (3)
4. and cross sector (4)** — Program organisation — Market

[15] https://cordis.europa.eu/projects/en

The first two reach levels of stakeholders can be done by the R&I project consortia themselves during the project. Here, the composition of the at the definition of the R&I project support the success of uptake to level III. This is supported by the interviews conducted in WP2 of BOOSTLOG.

The project consortium is usually not capable of reaching a wider environment or other sectors. Here, the program organisation could play a role in supporting the outreach, e.g. a sector organisation, an organisation as ALICE or the European Commission itself with additional support or programs towards the end or after the project.

The wider the reach, the higher the impact, but the less influence the consortium or program organisation has on the reach or impact. Knowledge will be dispersed or shattered and might reach stakeholders that the project has no contact or even knowledge of. This is known as the impact model16:

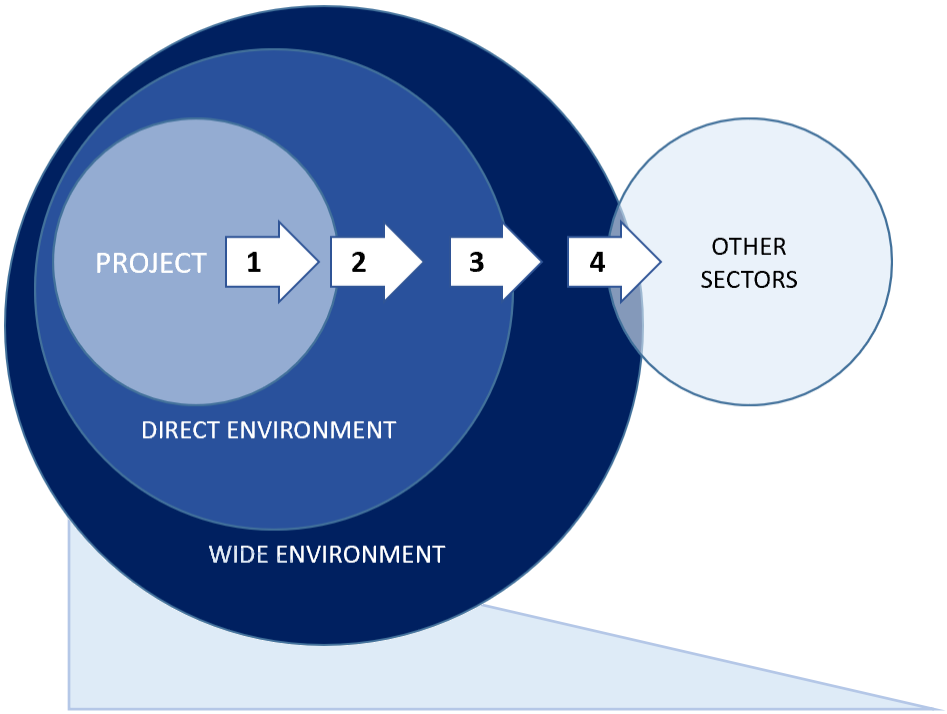

Figure 5. Impact model of a project

16 NWO WOTRO projectanalyse 'De Impact van onderzoek', 2018

3 Review of the current EU valorisation policy and relevant instruments

Valorisation is becoming increasingly important for measuring success of research and innovation (R&I) activities. EU has published valorisation policy aiming to make research results work for all society[17]. The policy describes the different means at our disposal to

- improve how we transform research results into new sustainable solutions
- identify and analyse the main channels for the uptake of research and innovation results
- get better at spreading excellent national practices
- highlight best practices from Europe and beyond

The EU's valorisation action focuses on six main channels:

1. Academia-industry joint research and mobility: exchange between industry and academia helps academic knowledge and results flow into industry. Likewise, it gives researchers the opportunity to increase their skills and gain a better knowledge of industry needs.
2. Research-driven spin-offs and start-ups: spin-offs and start-ups are of key importance, as they offer students or academics an entrepreneurial route to commercialising the knowledge they have developed.
3. Intermediaries and knowledge transfer: intermediary organisations – such as knowledge transfer offices, technology transfer offices, business incubators and science parks – help researchers and innovators commercialise their solutions, products and services.
4. Citizens and public bodies: engaging with citizens ensures that new knowledge leads to innovative solutions, and ones that matter to people.
5. Intellectual Property (IP) and standards: the valorisation of the IP generated by the European research framework programme enables fair and transparent access to well-being as well as ecological and digital solutions.
6. Knowledge dissemination and policy uptake: ensuring that advances in science and technology are as open as possible is vital in our knowledge-driven world, where data are increasingly valuable and access to data considered a competitive advantage.

The following tables provides a summary of current EU actions such as policies, reports, instruments, etc. that advance valorisation of R&I project outcomes at EU levels. As EU's instruments are covering all sectors this deliverable will focus on the logistics sector, and also learn from those instruments and propose uniform approaches (guidelines) that are specific for logistics innovation projects and can be used by different stakeholders.

[17] https://ec.europa.eu/info/research-and-innovation/research-area/industrial-research-and-innovation/eu-valorisation-policy_en

Table 2 EU Valorisation Action

Channels	Dedicated policy or report	Instruments available
1. Academia-industry joint research and mobility	, published in 2021[18]	European Partnership, a key implementation tool of Horizon Europe by bringing the European Commission and private and/or public partners together to address some of Europe's most pressing challenges through concerted research and innovation initiatives. Marie Skłodowska-Curie Actions - actions supporting mobility and joint research programmes.
2. Research-driven spin-offs and start-ups	N.A.	Funding opportunities from European Innovation Council (EIC): • EIC Accelerator: Funding and investments through the EIC Fund for individual start-ups and small companies to develop and scale up game changing innovations • Business Acceleration Services for all EIC supported projects and companies get access to coaching, mentoring, partnering and other EIC Business Acceleration Services • EIC Prizes rewards Europe's leading innovators
3. Intermediaries and knowledge transfer	N.A.	• Horizon 2020 D&E booster: a service providing tailor-made support to disseminate research results and increase exploitation potential and access to market. • EIT - Knowledge and Innovation Communities: partnerships that bring together businesses, research centres and universities, creating favourable environments for creative thought processes and innovations to flourish.
4. Citizens and public bodies	N.A.	European Capital of Innovation (iCapital) Award: annual prize awarded to the European city that is best able to demonstrate its ability to harness innovation to improve the lives of its citizens;

[18] https://op.europa.eu/en/publication-detail/-/publication/a795bea8-19bb-11ec-b4fe-01aa75ed71a1/language-en/format-PDF/source-231121896

		Horizon Impact Award: recognises and celebrates societal advancements through research and innovation
5. Intellectual Property (IP) and standards	An EU Strategy on Standardisation - Setting global standards in support of a resilient, green and digital EU single market, published in 2022[19]	European IPR Helpdesk: Commission service supporting cross-border SME and research activities to manage, disseminate and valorise technologies and other IPRs. IP Booster: specialised professional IP service for public research organisations to get value from their research results, supported by the Commission.
6. Knowledge dissemination and policy uptake	Disseminating knowledge and informing policy making (Factsheet), published in 2022[20]	Horizon Results Platform: platform presenting results of Horizon 2020 projects; it allows stakeholders to reach innovators and industry and potentially form fruitful partnerships. Policy support tools: • JRC Policy Lab: space designed to foster creativity and engagement, and to develop interactions, processes and tools able to bring innovation into European policymaking

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4 Valorisation Strategy and guidelines

4.1 Exploring R&I valorisation strategies

The valorisation strategy aims to grow to Technology Readiness to Market Readiness to Commercialisation Readiness. Ideally R&I is geared to the development of and reaching the longer term objectives or points on the horizon for the ambition of economy and society. For example, in case of ALICE, the R&D roadmaps have formulated the ambition on the Physical Internet as a lever to reach and affordable transition towards climate neutrality and zero emission logistics. These have been defined by broad consultation of Innovation Seekers and all types of stakeholders in logistics. So, the R&I that is undertaken by the projects in the domain and ALICE members, should be geared towards these ambitions based on these needs: a pull strategy. The partners active in these projects are developing innovation and are the (Innovators). But to reach the ambitions, the Innovators should be able to reach out and impact all Innovation Seekers (a push strategy). Vice versa the Innovation Seekers should be able to find Innovators to adopt their knowledge.

In general, successful R&I uptake strategies focus on Innovators or Innovation Seekers:

- Innovator (Innovation Owner) strategy: to implement the innovation through leading innovators with their cluster of business network (innovation leaders influence their innovation-driven competitiveness by their characteristics (size, role in the cluster, knowledge, vision) . The Lean & Green Europe initiative to stimulate greening the operation of logistics service providers builds upon the leader firm strategy, by showing the example and therefore driving others from related industry to follow suit. These stakeholders are not necessarily large companies, but have a leading role by innovation driven competitiveness; e.g.
  - Customers/ clients can take their suppliers in their slipstream as customer is king. (Shippers and retailers)
  - Capacity to invest in innovation and attraction to human capital (Regional education-business (SME) clusters)
  - Leading role in innovation processes in their (regional, industry, consultancy or innovation) cluster and sector peers (Sector and interest groups, economic clusters, development agencies, node organisations (mainports, regional terminals), accountants, banks)
  - Shippers can drive innovation at their service providers, logistics service providers take their subcontractors with them in their innovation efforts, ICT integrators can include innovation in their applications to drive implementation at their clients (Shippers, consultants, large logistics service providers (with or without own fleet), ICT integrators)
  - in conversation with policy makers to initiate change (Policy makers, municipalities, customs and inspection organisations)

21 Van den Bosch et all (2011). 'The strategic value of the Port of Rotterdam for the international competitiveness of the Netherlands: A first exploration'. Rotterdam: Rotterdam School of Management ISBN: 978-90-817220-2-5

- Innovation Seeker strategy: There are many stakeholders that experience challenges and look for solutions, but do not actively participate in R&I projects. Perhaps due to the unknown or the lack of capacity (in finance or time). And even these stakeholders are not aware of solutions that could be valuable to them. These are not necessarily SMEs. But as are smaller and more fragmented and often have less innovative power, they often follow with innovation later. These could also be municipalities that want to implement city distribution concepts, or IT providers that could use developed algorithms. The strategy to reach these stakeholders requires a more push effort of the developed results towards the market and easily accessible ways to jump on the innovation bandwagon, with e.g. a plug and play strategy for followers. There is a need for standardisation/ codification to implement knowledge fast, reliable and with a wide reach to followers. Seekers adopt knowledge if directly available and with a direct competitive advantage.

  In particular, SME engagements in the process should be facilitated to reach massive impact and governments may need to sustainable solutions adoption within this stakeholder group. This strategy has different sub-strategies following the innovation model circumstances:

  - CONTEXT: Dissemination into regional and local clusters or matching needs and solutions by a marketplace. A recommendation for the innovation marketplace is proposed by the IMIS project.
  - RELATED INDUSTRY: Plug & play ICT solutions. The Opticharge ROI Tool resulted from an innovation project by VIL and offers SMEs direct insight in saving costs through automation to stimulate them to take up this innovation. Another example is supporting developing applications based on research open-source ICT results in logistics and supply chain management through an open source platform which stimulates the further development and wider uptake of R&I.
  - FACTOR: Learning uptake: Equip (future) professionals and the industry with the knowledge and inspiration. Developing teaching cases and tools on newly developed knowledge enables transferring this knowledge to students that can implement the knowledge in their working environment. The Netherlands offers innovation vouchers to develop teaching materials based on R&I output.

22 Albino, V., Garavelli C., Schiuma, G. (1998). 'Knowledge transfer and inter-firm relationships in industrial districts: the role of the leader firm. Technovation, Volume 19, Issue 1, November 1998, pages 53-63

23 Langen, P.W. & Nijdam, M. H (2003). 'Leader Firms in de Nederlandse maritieme Sector – Theorie en Praktijk' (. Rotterdam, Stichting Nederland Maritiem Land April 2003

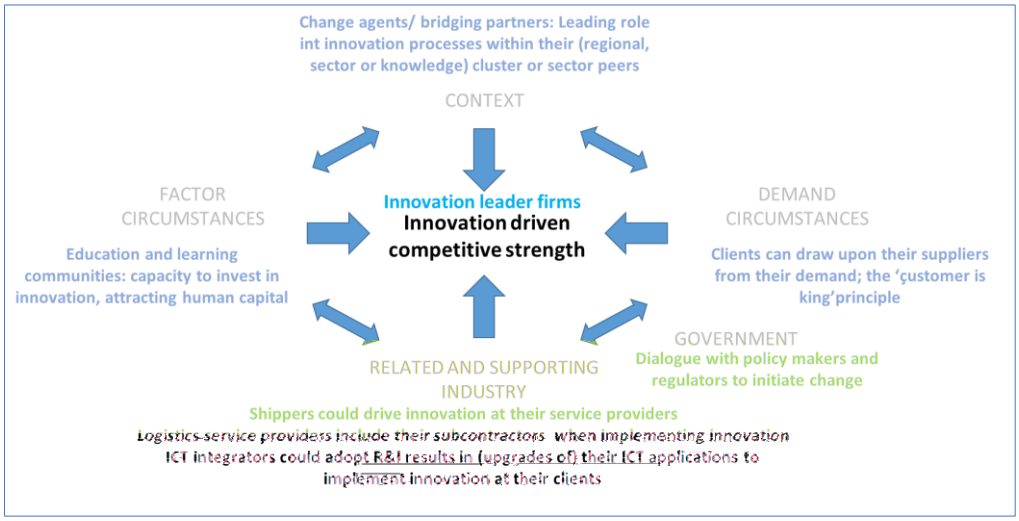

Figure 6. Porters Diamond model adapted by Van den Bosch et al, 2011

4.2 Guideline set for R&I project uptake

Based on the quadruple helix stakeholder categories and the diamond model, and the implementation cases we investigated, these strategies have learnings for the different phases in R&I and its uptake:

1. Before the project in the initiation phase (B)
2. During the project in the execution phase (D)
3. After the project ended (A)

Based on the first analysis, further examples of successful R&I uptake were explored. The strategies were translated into concrete guidelines acknowledging the different stakeholders and levels of R&I uptake, e.g. individual project partners from the quadruple helix perspective, project consortia as a whole, program organisations facilitating R&D programs, and other stakeholders. The guidelines are elaborated after the overview.

Table 3 Valorisation guideline set for public funded R&I projects

	Companies	Government	R&D	Civil Society	<<< INNOVATION SEEKER STRATEGY INNOVATION OWNER STRATEGY >>>
BEFORE	B1. Articulate the needs and a clear, broadly supported point on the horizon				
	B2. Engage the right partners with competitive innovation strength	B3. Define calls for proposals or design programmes based on the needs of society and sector B4. Require an R&I uptake plan and deliverables (outcome) for project proposals		B5. Engage the right partners with competitive innovation strength, e.g. regional clusters or sector organisations; especially network	
	D1. Develop a R&I uptake strategy, including ownership				

DURING	D2. Share Project information and results				
	D3. Develop R&I uptake business models alongside the technological innovation	D4. Be involved to listen to and act on possible legislative or policy impediments to change to enable or stimulate R&I uptake	D5. Involve the Impact centre, incubator or campus in the project to identify opportunities	D6. Disseminate (intermediate) results to a broad audience and ecosystem	
AFTER	A1. Further elaborate the R&I results and keep engaged in the ecosystem				
	A2. Invest and implement results in product portfolio (innovator and demand or related industry)	A3. Follow-up on monitoring progress after the project finalisation A4. Facilitate further development towards higher TRL levels and start-ups	A5. Convert knowledge to teaching materials A6. Convert knowledge to implementation tools for students and civil society to engage with companies A7. Support start-ups	A8. Engage the networks on national, regional and local levels with the R&I Results, with dissemination, inspiration and implementation support in other programmes. A9. Enable access for Innovation Seekers	

Note different colours of the guidelines for different types of stakeholders have been applied.

4.3 Guidelines - before the project (B)

B1 Articulate the needs and a clear, broadly supported point on the horizon

To ensure uptake of research results, these should meet the needs of the sector and society. The project objective should therefore be in line with the vision and needs that companies, institutes, government and civil society see. If there is no interest in the results, there is little chance the sector will take up. Project should be designed not only on the needs of society but also on the identified needs to solve the main barriers to innovation. This could be regulation and policy, acceptance, potential and negative impacts. etc.

A project consortium or initiating body can actively draw upon needs defined; by developing a clear, broadly shared point on the horizon to which the sector will or has to develop, involving all stakeholders and conducting a thorough needs analysis, from a broad base of stakeholders. The project definition should adhere to this vision and needs.

the ALICE Roadmaps contain a vision and priorities agreed by all stakeholders, upon which research and innovation strategies are defined.

B2 Engage the right business partners with competitive innovation strength

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The companies that are partners in the project consortium largely define the probability of uptake of the R&I results after the project. Therefore, it is important to carefully choose the project partners and for funding bodies include this in their assessment for awarding the project proposal. The project partners should have the competitive innovation strength as mentioned in section 4.1 following the Innovatorstrategy. This competitive innovation strength can be either based on demand circumstances, factor circumstances or context circumstances as they are more likely to take up the results after the project and make impact. Also innovative supply chain partners can drive implementation of the innovation results with their clients, e.g. logistics chain partners or ICT integrators for data driven logistics solutions.

It is critical that demanding and highly motivated users (Innovation Seekers) of the solutions to be developed are engaged in the project clearly setting the demand, interest and needs. Innovators supporting the solutions generation need to have a clear ambition to fulfil the market need and go beyond the project duration as innovation owners.

In certain logistics research fields, public bodies are indispensable supply chain partners: when developing innovations involving customs processes, the customs or inspection organisation should be involved from the start (as Innovation Seekers), to ensure the innovation fits their processes and gains support from within the organisation. For example, with innovations in city distribution, municipalities should be involved to bring in their perspective. Otherwise, the acceptance will result in 'not invented here' and not fitting the needs and possibilities of the stakeholders that have to actually implement and accelerate the R&I results.

TRI-VIZOR (CO3 and NEXTRUST projects) and MIX MOVE (iCargo project) had the ambition and innovative strength to further develop R&I uptake and inspire supply chain partners to take up the R&I results that the developed into their product offering. Demanding users (e.g. 3M in iCargo) were deeply involved in the project.

B3 Define calls for proposals or design programmes based on the needs of society or sector.

Following guideline B1, funding bodies such as the European Commission, national and regional funding bodies should meet with their topics in calls for proposals the vision and needs as recognized in the sector and society. Therefore, it is important to - at least from the sideline - be involved in the process towards the creation of vision and roadmaps and actively bring in the policy needs to create understanding of this policy as a framework for the future. If the call for proposals does not relate to the sector and society needs, one will not attract the right industry partners in consortia and thus impeding R&I uptake from the start.

ALICE actively brings the logistics vision and needs to the European Commission to include in the policy and innovation strategies.

B4 Require an R&I uptake plan and deliverables (outcome) for project proposals. Request companies and R&D to demonstrate previous projects exploitation plans execution and achieved impact.

When defining the project proposals, research consortia should take the R&I uptake strategies into account and include this in the approach. Otherwise, R&I results in paper products without a form enabling the right stakeholders to develop, implement and scale up further. Requiring a plan ensures that the R&I results have a bigger chance to be taken up. During the project, the consortium should be involved in dissemination of results, but also define or develop a realistic scenario for take up after the project with a clear R&I owner. This 'valorisation strategy' should be included in the project proposal and be weighed in the assessment for granting.

TKI Dinalog and CLOSER respectively the Netherlands and Sweden, already include this as a requirement and assessment criteria in their call for proposal and monitor and support the strategy. The DenCity case illustrates this guideline.

Still, most of the governments/funding agencies, do not follow or check if the business and exploitation plans are implemented after the project duration. This is complex and potentially not legitimate. Still, they should ask for proof of success and accountability when the same organizations apply for new grants and demonstrate their capability to create value out of the R&I results generated either directly or indirectly through other partners.

B5 Engage the right partners with competitive innovation strength, e.g. regional clusters or sector organisations; especially networks

Civil Society can be a driving stakeholder in R&I, with engaging the users of the innovations and reaching out to a broad network for the R&I results to be taken up widely. The reach to a large group of stakeholders beyond the project consortium is key here. This could be sector organisations such as member's organisations or regional clusters or organisations, such as regional development agencies or employer's organisation in a certain area. These have developed the trust as a knowledgeable partner and unite individual supply chain partners. Furthermore, they have the capacity to organise network events to enable the meeting of Innovators and Innovation Seekers.

the bundling at source location control tower could not have been widely implemented if the sector organisation would not have been involved and a broad member base could not have been reached during and after the research project to achieve the high impact.

4.4 Guidelines - during the project (D)

D1 Develop a R&I uptake strategy, including ownership

Following the requirement as stated by the funding body in the project proposal, it is important to develop the R&I uptake strategy parallel to the R&I itself. It is important to include all partners and clearly define a leading role for ownership for uptake after the project. R&I projects could work towards outcome that can be shared for further development or towards use in business models to ensure the R&I results have a revenue model (see guideline D3). Having defined this as a clear deliverable, keeps the focus on the R&I strategy during the project. Projects may also be built on existing infrastructure (e.g. living labs, test beds etc) to maximise investments from various funding schemes.

the DenCity case involved all partners during the project and resulted in an implementation guide, with a clear product owner and communication strategy.

D2 Share project information and results

During the project, the information of the projects description of work is broadly shared to enable other stakeholders to gain interest and new project consortia focusing on developments beyond these project objectives. Partners sharing the project information strengthen their innovative competitiveness position by showcasing being involved in developments for the future. During the project, intermediate results are already shared broader than the project consortium. This is often done in dissemination and communication activities, which is required to be specific activities in project's work packages.

In particular, it is critical that the actual innovation seekers and innovators are directly engaged in dissemination of the results as this increase interest within those audiences that are critical for further exploitation.

D3 Develop R&I uptake business models alongside the technological innovation

If a R&I result cannot be included in a revenue model, uptake by industry is not likely; a partner or other company should see the potential to offer this to their current or new clients and therewith gaining competitive advantage or offering their client competitive advantage. Sublime technological innovation without a good business model, will not fly. The innovation should match the commercial interest of the companies.

in the fashion control tower model, next to delivery time harmonisation a whole set of additional services was developed to make it interesting for further stakeholders to participate, such as electronic delivery time notification, return of packaging in stores or a buffering service for logistics service providers were tested and optimized parallel to the delivery time harmonisation algorithm.

D4 Be involved to listen to and act on possible legislative or policy impediments to change to enable or stimulate R&I uptake

By defining policy, setting the requirements for what is allowed and what is not allowed, and drawing up specific regulations, government is creating the playing field in which innovations can flourish. With innovation development, regulation can lack behind these developments and thus impeding the uptake of the R&I results as developing and implementing legislation takes time and often does not have envisaged the possibilities of

future innovation. The alignment and coordination of policy and operation could develop effective policy in sync with and even accelerating the innovation. Government should be open to implement adaptive policy to be at par with the technological advancements and enable constructive dialogue with other stakeholders such as companies during research projects and R&I development.

super eco combi transport is not allowed on public roads yet in most countries, whilst in conditioned circumstances it could already be possible and effective as has been shown in other countries.

D5 Involve the impact center, incubator or campus in the project to identify opportunities

Often universities or knowledge institutes include impact centers that are specifically focused on the technology transfer, next to the role of universities in education and research. In order to transform technological innovations into applications that bring value to society, these centers involve other stakeholders, investors or support scientists with entrepreneurial capacity in incubator schemes. They often have a large and valuable ecosystem and know the possibilities for scaling up and act as catalysts for regional collaboration, start-up facilitation or company interest of leading companies. Therefore, it is important for researchers to not develop their research in their silos, but actively involve and inform these impact centers as part of the institute during the project to already identify opportunities and possible partners or campus facilities for further development towards larger R&I uptake.

D6 Disseminate intermediate results to a broad audience and ecosystem

Based on the context circumstances, civil society partners in a research project have the capacity to reach out to a broader network and ecosystem and thus interesting these for the R&I results. These could be sector based (see guideline B5) or regionally based; public-private organisation can specifically bridge the gap between companies, R&I organisation and regional/ local governments to build a strong and shared-value network for uptake in the regional society.

Citizen engagement is relevant to change consumer behaviour and therewith facilitating the uptake of R&I and reaching e.g. sustainability goals.

implementation of good (consumer) conduct and best practices especially towards responsible consumption, e.g. e-commerce lead times, delivery schemes, greening of delivery methods, alternative concepts of receipt/return etc. contribute to livable cities without much congestion or hazardous emissions.

4.5 Guidelines - after the project (A)

A1 Further elaborate the R&I results and keep engaged in the ecosystem

The ending of a funded R&I project should not automatically mean the ending of a consortium or ecosystem. Embedding the partners in a wider ecosystem stimulates the further uptake of R&I, development to higher TRL levels and eventual R&I uptake. This continuation should be addressed during the project to ensure engagement after the project.

A2 Invest and implement results in product portfolio (Innovator and demand or related industry)

Participating companies should be willing and able to invest and implement results to create valuable commercial products and services. When the R&I project meets the companies' objectives and a commercial

interest, it is more likely that companies are willing to further invest in the development of the R&I output. Companies that see a valuable business proposition can reach their current and new client base or partners in the supply chain to really enable uptake of the R&I results.

TRIVIZOR, MIXMOVE and GS1 invested further in the developed of the R&I output to successfully expand their offering or creating access to a more sustainable solution for the whole industry ecosystem.

A3 Follow-up on monitoring progress after the project finalization

In line with guideline A1 to continue involvement of the consortium and created ecosystem, the funding government body should also remain interested in the R&I output and evolvement after the project. For evaluating the effectiveness of their R&I investments, but also to be able to monitor progress, improve future R&I investments and support further TRL development. They can be instrumental in introductions to regional networks, certain R&D partners for further research questions that arise during or after the project and international markets.

, TKI Dinalog funded the support of international dissemination for the fashion control tower to stimulate the R&I uptake.

A4 Facilitate further development towards higher TRL levels and consistently work beyond TRL towards market readiness and commercial readiness.

R&I project never result in readily available projects, as the funding is public. With fundamental research, the results can be further elaborated with applied research and with testing demonstrators and proofs of concept in lab and life environments. Government's funding bodies should be able to support in different stages of this knowledge pipeline for R&I. Furthermore, they or e.g. regional partners could be instrumental in preparing implementation and communication to increase R&I uptake.

the Topsector Logistics in the Netherlands focuses – besides stimulating and financing R&D – on the preparation for implementation and further R&I uptake with support and funding, as demonstrated by the Synchro Maturity Model.

A5 Convert knowledge to teaching materials

The students of today, whether in university or lifelong learning programmes, are the professionals of tomorrow. With the innovation advancement, curricula (and their teachers!) should be updated with the latest knowledge derived from R&I projects. In order to facilitate this update with a wide reach, knowledge of R&I projects can be developed by research and education organisations into teaching materials such as slide sets, education clips, massive open online courses, serious games that can be broadly shared and used by multiple educational institutes, whether public or private.

the Synchro Maturity Model was also incorporated in a Masterclass and teach-the-teacher materials.

A6 Convert knowledge to implementation tools for students and civil society to engage with companies

Scientific papers are hardly accessible for companies and other R&I results are not readily available in a recognizable way for companies. To reach the companies, this knowledge should be converted into easy accessible and applicable tools to advance the companies, gain their interest and facilitate uptake of the R&I.

R&D organisations, especially those involved in applied research (and education) are fully equipped to convert the knowledge into tools with which students, but also e.g. regional development organisations, sector organisation or business service intermediaries can engage with the companies.

the Synchro Maturity Model Scan based on the Synchro Maturity Model provides a tool with which students can engage with companies to analyze the multimodal potential of the companies and draw up advice for further maturity in implementing multimodal transport.

A7 Support start-ups

Excellent researchers not necessarily make excellent entrepreneurs. To transfer new technology and R&I results to valuable products and services from which society benefits, R&D organisation should foster their inventions and research from laboratory to industry and society. R&D organisation therefore should equip researchers or scientists with entrepreneurial skills by investing in start-ups, by offering education programmes focused on entrepreneurship and by coaching starting companies, e.g. in incubator facilities on campus.

A8 Engage the networks on national, regional and local levels with the R&I Results, with dissemination, inspiration and implementation support in other programmes

Just as during the project, civil society partners like regional development agencies, advisory bodies and sector organisations can use their networks to disseminate the R&I results, inspire other stakeholders to take these up and actively support the implementation of the R&I results. They are a trusted party, by membership or regional context and are able to gather stakeholders for dissemination activities.

MODINT engaged their member base as well as international sister sector organisations for the successful take up of the fashion control tower concept. In the Joint Corridor Off Road programme, regional brokers actively engage with companies to explain and activate them to consider and implement multimodal transport.

A9 Enable access for Innovation Seekers

Innovation Seekers are often not aware of what solutions are available. They do not always participate in R&I projects and are therefore not seated front-row. These innovation seekers are not necessarily but very often SMEs that lack capacity to scout the market. To support R&I uptake, especially beyond the project consortium.

the IMIS project offers a digital market place where Innovation Owners and Innovation Seekers can be linked and Log!Ville® offers a physical demonstration center where innovation owners can showcase their technological innovations in logistics.

4.6 General valorisation guidelines for companies

The primary stakeholder for valorisation is the companies that will apply the innovation and reap the benefits to make the impact towards the required transition. And companies that have developed R&I knowledge will have to find a market for their products and services to make more impact and growth.

One important step for a company is to consider public funded R&I projects in a centre of its innovation strategy, and actively participate in activities related to the whole cycle of R&I projects, from identifying R&I needs, participating in projects, monitoring development, implementation to impact assessment.

For companies that participate in public funded R&I projects, business plan is recommended to be developed before joining any R&I projects. The business plan should be developed in cooperation between R&I team and business development team to ensure that innovation to be developed will be used for the company for its commercial interests.

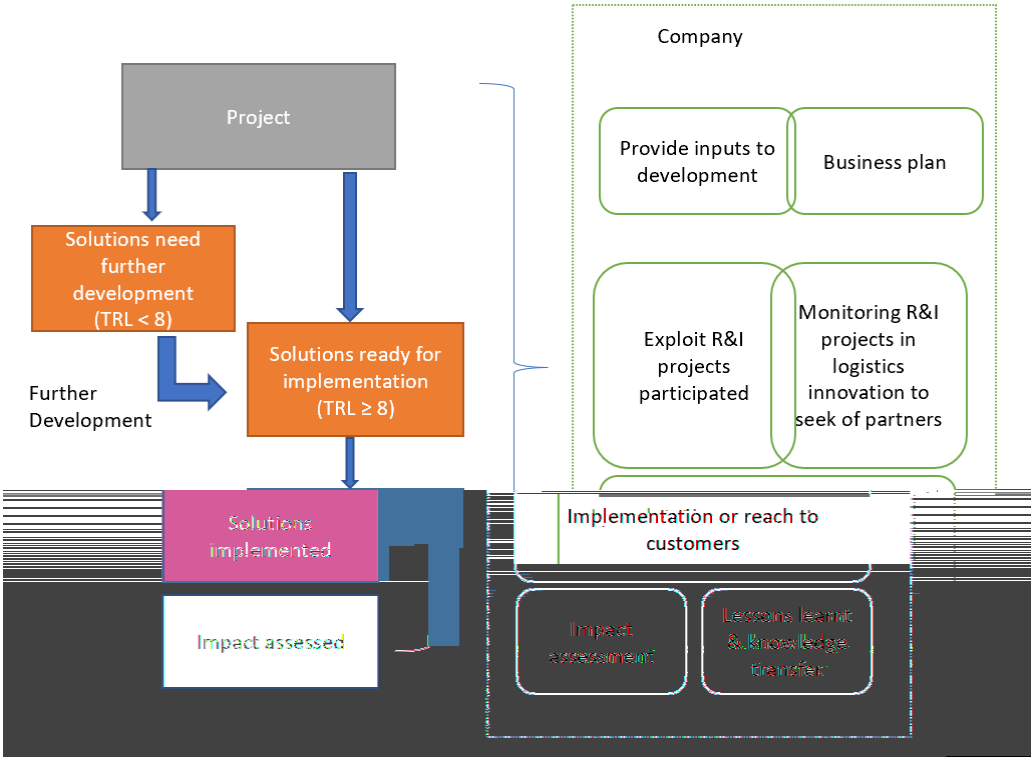

Figure 7. Company's valorisation guidelines

4.7 General valorisation guidelines for Government

For the logistics management of freight flows and supply chain coordination, valorisation towards government as partner in logistics is indispensable. Sometimes, policy and legislation can impede the uptake of research and innovation, and it is government that could change this to enable uptake and therewith impact. An example is the liability legislation for autonomous vehicles or the antitrust rules for cross chain collaboration. Government stakeholders include national government, regional authorities such as provinces and municipalities as well as implementing authorities and port authorities. Government also participates together with companies in public-private organisation such as regional development authorities. On the other hand, government is a large stakeholder for R&I uptake for example to reach the sustainability goals. For example city policy on zero emission zones can drive the uptake of electric vehicles.

For governments, key guidelines for valorisation include:

- Identify R&I activities to support policy objectives;
- Evaluate impact of R&I projects (post project evaluation) if such R&I projects have delivered expected impacts;

- Support policy implementation using R&I project outcomes (e.g. data-driven regulation)
- Cooperation with companies, R&I organisations to support R&I uptakes through incubators, innovation campus, regional clusters and gap funds

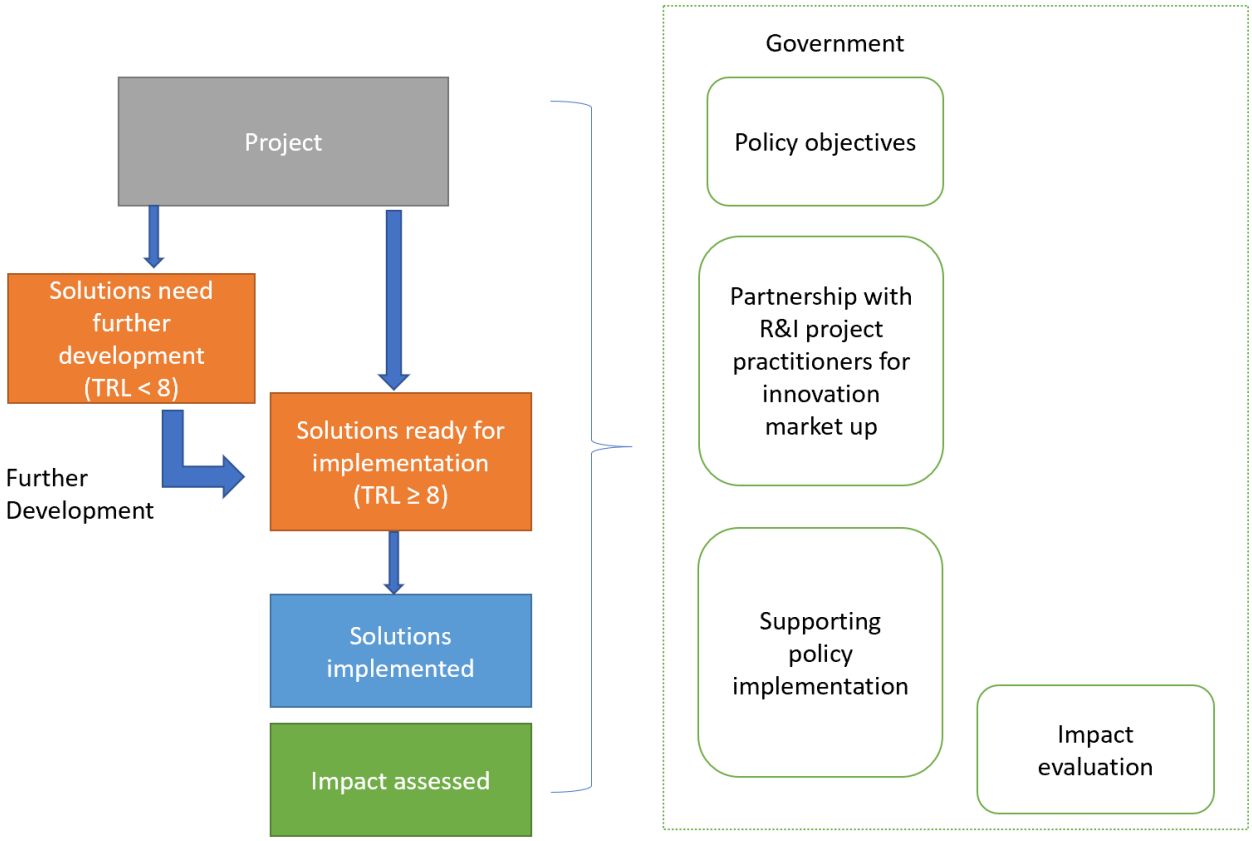

Figure 8. Government's valorisation guidelines

4.8 General valorisation guidelines for R&D organisations

R&D organisations plays a role in both the (further) development of knowledge as well as creating new education activities (especially for R&D universities and other educational institutes with practical research) the channel to reach and equipping (future) professionals with innovative knowledge to apply in practice. In recent years, the focus has shifted from the application of knowledge to the regional anchoring or 'embedding' of education and research. Incubators and innovation campuses in which the R&I organisations play a central role, acting as catalysts for this type of regional collaboration. Incubators serve as training grounds for young entrepreneurs. Innovation campuses and science parks attract business people who see the proximity to a university as a valuable draw card for their business operations, due to contacts with relevant researchers or the use of research facilities.

For R&D organisations, key guidelines for valorisation include:

- Knowledge gained through R&I projects should be used to generate high-quality publications (contributing to literature);
- Cooperation with incubators, innovation campus and regional clusters to set up start-ups;
- Seek partnership with leading companies to further develop or implement innovative solutions;

- Build education and training materials from R&I projects and implementation cases.

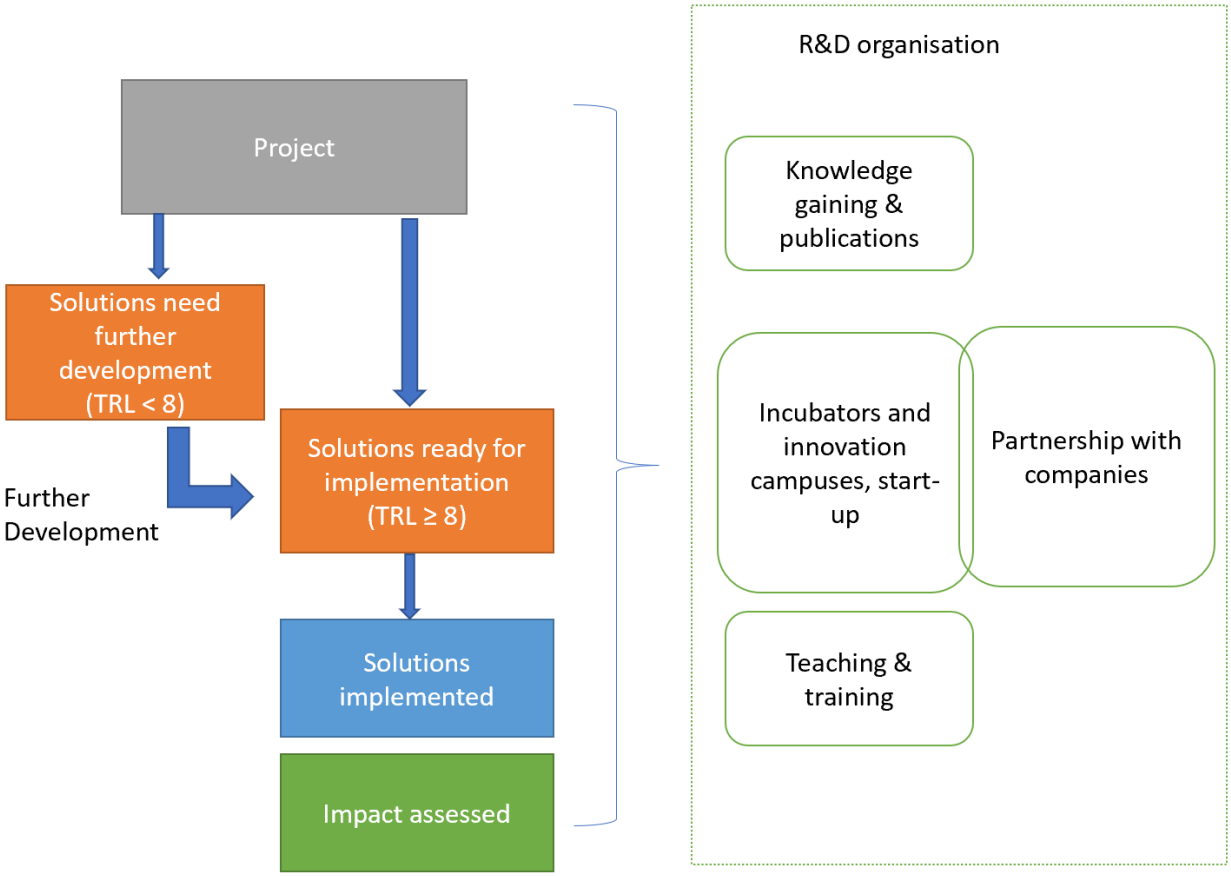

Figure 9. R&D organisation's valorisation guidelines

4.9 General valorisation guidelines for Civil Society

Civil society is embedded in the Quadruple helix together with companies, R&D, government, as it affects citizens to contribute to societal challenges. Dissemination and implementation of knowledge generated through R&I to the general public could benefit the overall objectives of the logistics industry as well. It could leverage the implementation of good (consumer) conduct and best practices especially towards responsible consumerism, e.g. e-commerce lead times, delivery schemes, greening of delivery methods, alternative concepts of receipt/return etc. Plus, the research and innovation uptake could benefit society as a whole, think of sustainable development goals, improvement of health, decrease of food spillage and decreasing poverty. Other community stakeholders are public development organisations that can thrive the uptake of innovations with regional or local SMEs or sector organisations towards their members in a certain field. For civil society, key guidelines for valorisation include:

- Identify R&I activities to support needs for society and provide recommendations to policy makers and R&I practitioners;
- Cooperation with companies, R&I organisations and governments to support R&I uptake to ensure innovation delivering impacts to the society
- Evaluate impact of R&I projects and disseminate best practices.

- Focus on communication for citizens to make more informed decisions (science based)

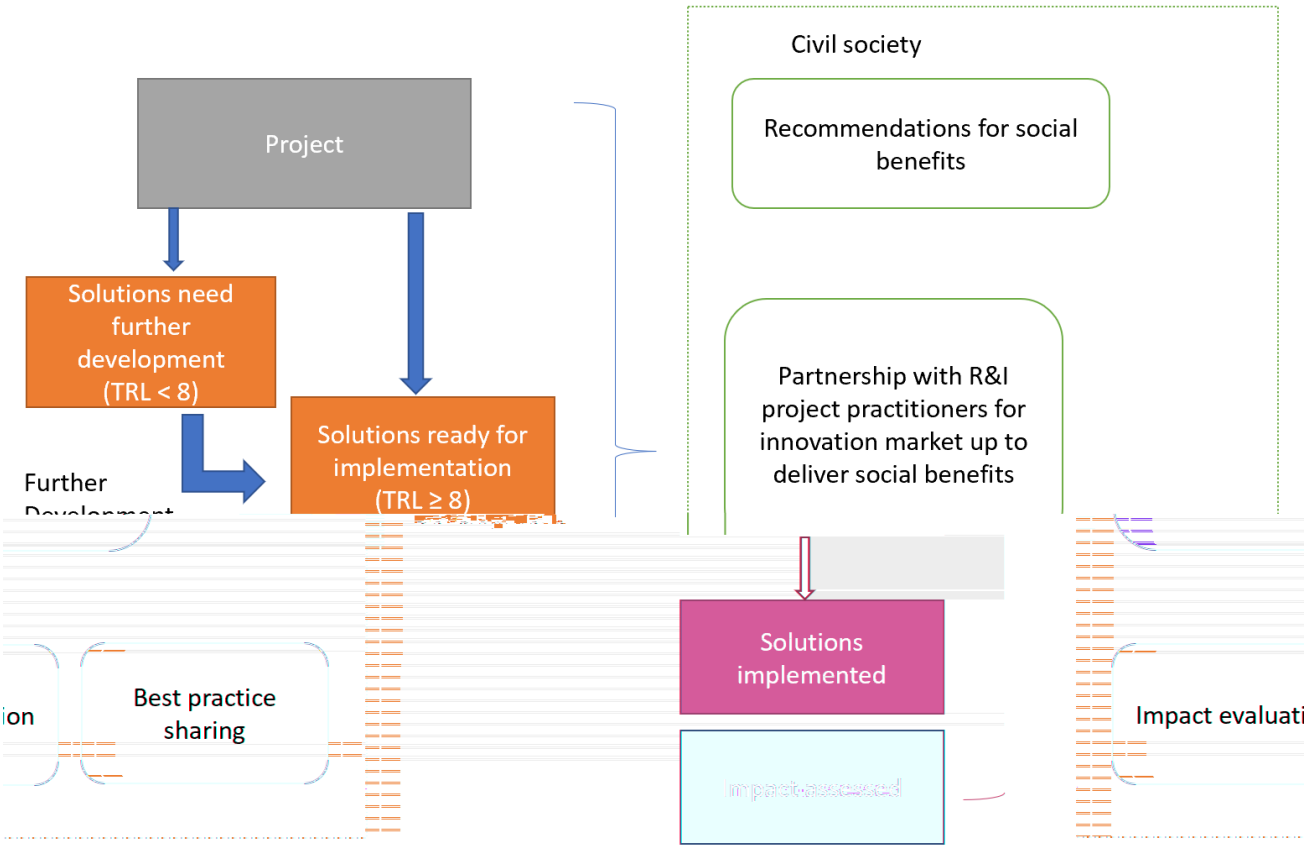

Figure 10. Civil society's valorisation guidelines

5 Innovation Marketplace

5.1 Principles for innovation marketplace

Generally, Innovation Seekers are not eager to invest much time in searching databases for solutions when alternative search engines on the internet are showing faster and more clearly arranged results. Current databases of EU funded projects, e.g. CORDIS[24] for all projects, or TRIMIS [25] which is the dedicated database for transport projects. According to IMIS recommendations, the currently available R&I databases are mostly organised by project, not by the solutions they offer. It is therefore a great need for presenting at a more transparent and straightforward way on the solutions developed per project or in a series of projects. A specialised database to facilitate an easy and time-effective access to specific information that is presented in a better way than the internet search.

The marketplace should enable search by either solutions, key technology, owners and projects. Information on the solutions should include a short summary, potentially links to related projects as well as information on the solution owner, related contact data and website. The marketplace should also include a comprehensive database of key innovation providers for various categories in logistics, e.g. urban delivery solutions.

As BOOSTLOG is aimed to enhance impacts of R&I projects, the marketplace will also be a dedicated platform for solution owners and project promoters to enable a transparent presentation of innovations and other outputs from R&I projects. A user can through the marketplace to get access to solutions from relevant project entries.

5.2 Building on the current ALICE Knowledge Platform

The BOOSTLOG project aims to build a dedicated innovation marketplace to present solutions developed by R&I projects. The marketplace will be done by updating the current 'ALICE Knowledge Platform' by providing a dedicated space for presenting solutions developed by R&I projects. Through the current knowledge platform, a user can get access to relevant projects or directly from an innovation owner (company). However, the current knowledge platform does not highlight project outcomes (solutions) and their innovation owners enabling them to contact potential Innovation Seekers

Contents of the current version of the ALICE Knowledge Platform include Projects, Physical Internet (PI) Companies, Funding Opportunities and Documents and Videos, as shown below:

[24] CORDIS is the Community Research and Development Information Service. It is the European Commission's primary public repository and portal to disseminate information on all EU-funded research projects and their results in the broadest sense, available: https://cordis.europa.eu/

[25] The Transport Research and Innovation Monitoring and Information System (TRIMIS) provides open-access information on transport research and innovation. TRIMIS aims to support the implementation of transport policies of the European Union and at Member States level and helps the development and monitoring of the Strategic Transport Research and Innovation Agenda (STRIA).

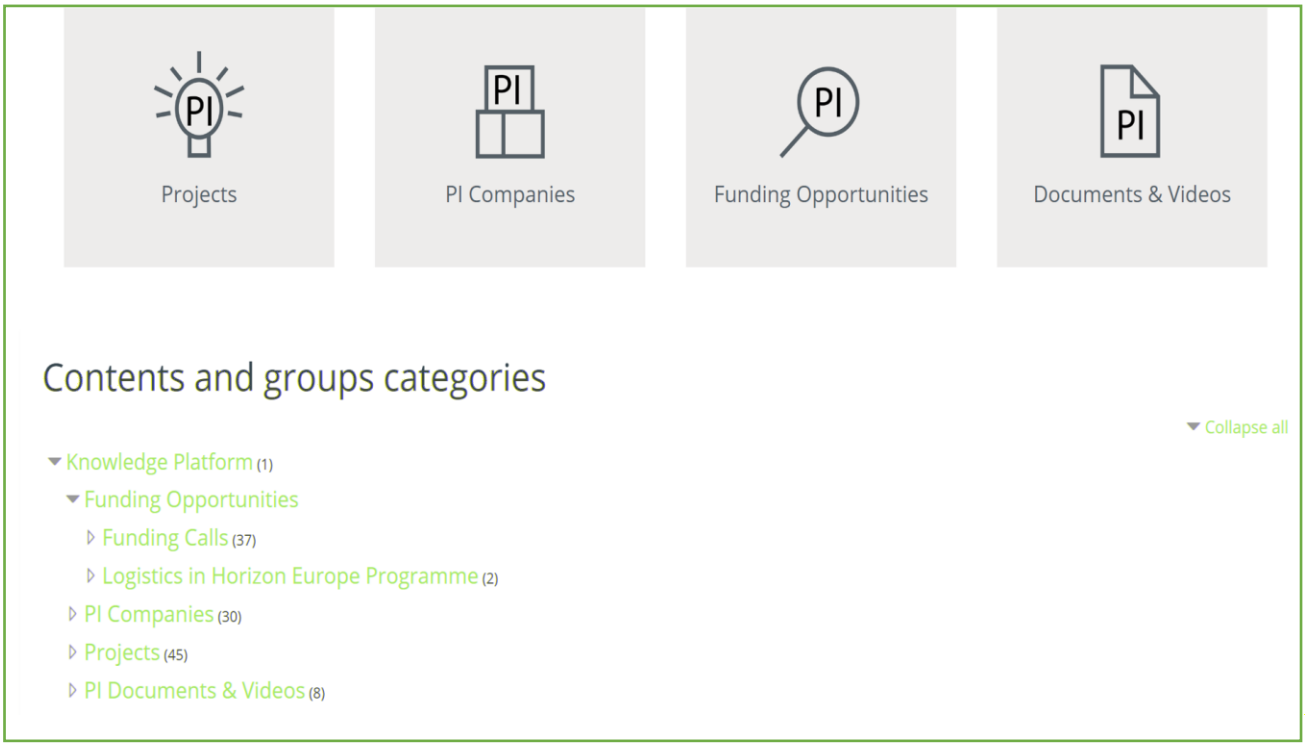

Figure 11. Contents of ALICE Knowledge Platform

The Innovation marketplace proposed will enable a solution seeker (or potential buyers) to find solutions easily either through 'key technology areas', i.e. to check what kind of solutions available in a key logistics area, e.g. urban delivery solutions', or through projects. For each of the projects, the project must give solutions that are TRL 7 or beyond so they are included in the Innovation marketplace. For each solution, it is important to present potential impacts or/and pain points the solution can address. The principle of presenting a solution is shown below:

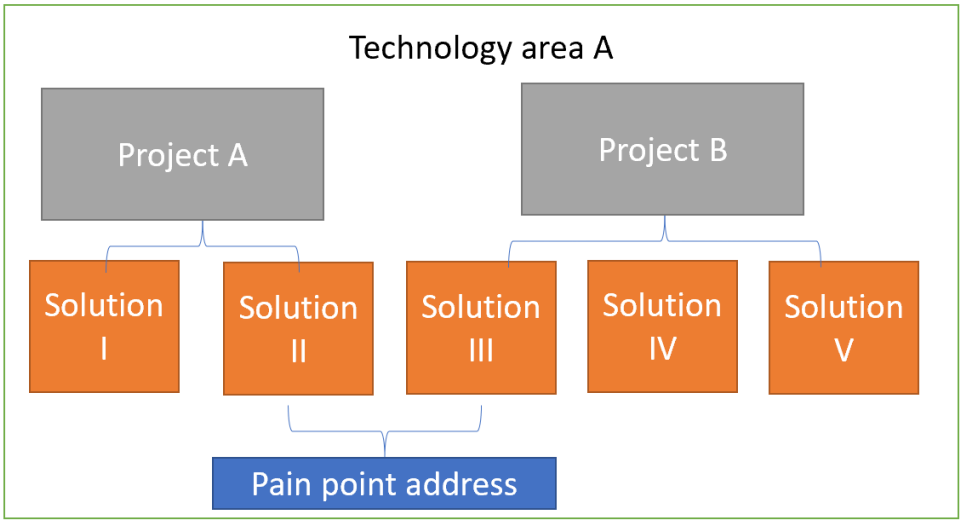

Figure 12. Relations of projects, solutions, technology area, and pain points

The marketplace will also include knowledge hub that will present best practices of innovation implementation cases. The marketplace may allow a buyer can register his/her interests, thus enabling solutions owners to proactively contact innovation seekers. The following figure shows the potential contents of the innovation marketplace. Details of the contents of the innovation marketplace will be described in BOOSTLOG Deliverable 3.3.

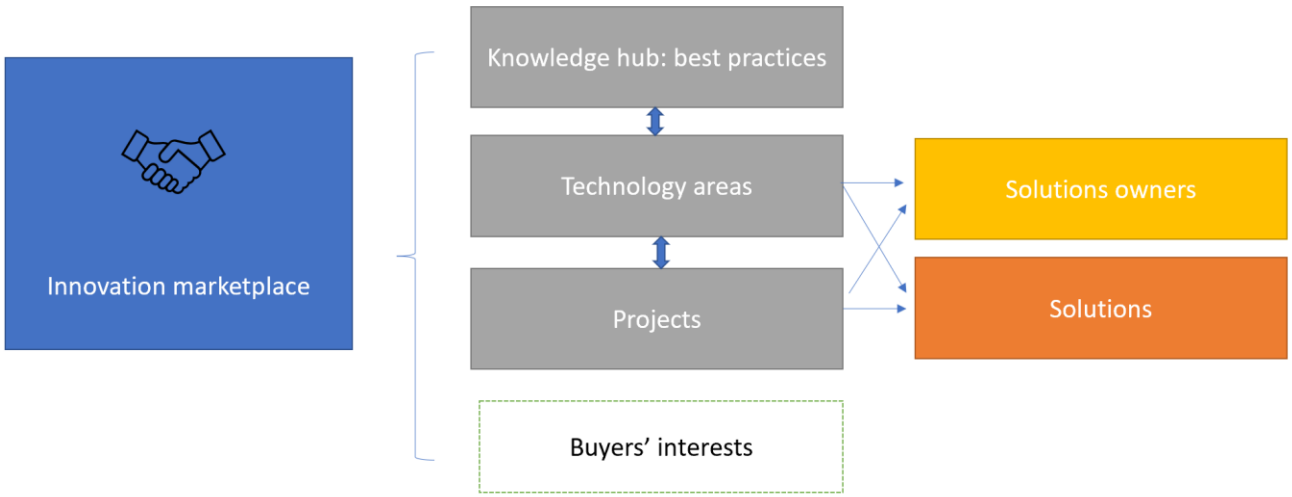

Figure 13. Potential contents of innovation marketplace

All solutions from projects will be categorised according to Technology Readiness Level (TRL) as:

- Solutions are ready for implementation.
- Solutions still need further development to be ready for implementation.

For solutions that are ready for implementation, owners look forward customers while for solutions that need further developments owners can find funding opportunities and/or partners through the marketplace for next steps. Potentially, the Market Readiness Level[26] and the Commercial Readiness Level[27] will be identified.

5.3 Getting contents to the marketplace

The marketplace will reply on solution owners to provide information. However, previous experiences show that without clear added values, it is not easy to motivate solution owners to provide information that can attract buyers, and even more challenging to maintain information. Therefore, in addition to promotion of the marketplace to attract solutions owners, the contents of the innovation marketplace will come from various channels:

- Open calls launched by ALICE based on common interests from potential buyers;
- BOOSTLOG Cloud Reports and ALICE Innovation Awards
- Assist current projects (ALICE Liaison Programme) on ALICE Knowledge Platform to present their solutions

Open calls will be launched by ALICE in cooperation with ALICE members. ALICE will work with its members to identify common interests for innovative solutions. For each of the identified common interests, dedicated open call on the common interests will be launched to reach out companies that have specific solutions for this topic. The first open will be for Urban Delivery Solutions. The concept note of the open call can be found in Annex. All collected solutions and their owners will be available on the marketplace. Note that not all solutions collected through an open call will be available on the innovation marketplace as the innovation marketplace aims for solutions developed through public funded R&I projects. If the solutions collected through an open call do not meet the criteria, they will be available on the ALICE Knowledge Platform.

BOOSTLOG will publish 8 cloud reports on various topics. Those reports will study past R&I projects and identify implementation cases. For each report, call for implementation cases will be launched. The BOOSTLOG consortium has launched three calls for implementation cases on Coordination and Collaboration[28], Urban Logistics[29], and Logistics Nodes[30]. Of the identified implementation cases, the BOOSTLOG consortium will invite key experts in the logistics sector to select winners for 'ALICE Innovation Awards'. The first Innovation Award has been issued in November 2021[31]. Collected cases and winners will be available on the innovation market. Contents from the cloud reports will be used to form 'Best Practices' to demonstrate how to transfer R&I project results into new sustainable solutions.

[26] https://www.cloudwatchhub.eu/exploitation/readiness-market-more-completing-software-development

[27] http://iea-retd.org/wp-content/uploads/2017/05/170515-RE-CRI-RETD-de-Jager.pdf

[28] https://www.etp-logistics.eu/call-for-submission-implementation-cases-on-logistics-coordination-collaboration/

[29] https://www.etp-logistics.eu/call-for-submission-implementation-cases-on-urban-logistics/

[30] https://www.etp-logistics.eu/call-for-implementation-cases-logistics-nodes/

[31] Detailed information about the first innovation award is available: https://www.etp-logistics.eu/first-alice-logistics-innovation-award-launch-of-the-cloud-report-on-coordination-and-collaboration/

There is a large number of past and ongoing R&I projects available at the ALICE Knowledge Platform. They are liaison projects with ALICE in the ALICE Liaison Programme[32] For each project, currently information at the ALICE Knowledge Platform only includes funding, consortium members, deliverables and key disseminate materials. ALICE will engage with project consortia and help those projects to describe solutions they developed and present those solutions with reference to those projects on the marketplace.

[32] Information about ALICE Liaison Programme can be found: https://www.etp-logistics.eu/alice-program-liaison-with-research-and-innovation-projects/

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6 Valorisation Strategy for ALICE

ALICE, as the technology platform for innovation in the logistics sector, plays an important role in valorisation. ALICE looks into the whole cycle of R&I projects from defining gaps to support market uptake and exploitation. ALICE assists practitioners and other stakeholders to exploit outcomes from R&I projects to maximize benefits and impacts. To ensure R&I projects will deliver impacts, appropriate guidelines should be in place from identifying priorities and type of projects, to evaluating projects after end of projects. BOOSTLOG D2.3 has identified barriers in implementation of R&I projects and proposed positive framework conditions.

ALICE's valorisation strategy will consist of the following objectives, actions that use existing ALICE networks, thematic groups and other instruments, as shown:

Table 4 Objectives and actions of ALICE Valorisation Strategy

Objective	Action	Description
Use public funding to support companies addressing societal challenges and support European Competitiveness	ALICE recommendations on priorities in R&I and type of research projects to EC and national funding organisations	Dedicated workshops for40.442s10(E)-5(me)5(

Highlight best practices from Europe and beyond	ALICE Innovation Awards ALICE R&I Valorisation Academy	ALICE will liaise with projects and industry key experts to identify successful implementation cases and acknowledge them by issuing ALICE Innovation Awards; Award winners will be highlighted at the Innovation Marketplace and invited to speak at the Innovation Marketplace Forum; ALICE will develop materials to summarise good practices and provide trainings to researchers and students on how to transfer R&I projects into new sustainable solutions.

ALICE's valorisation strategy will be illustrated as following to show the relationship of different actions:

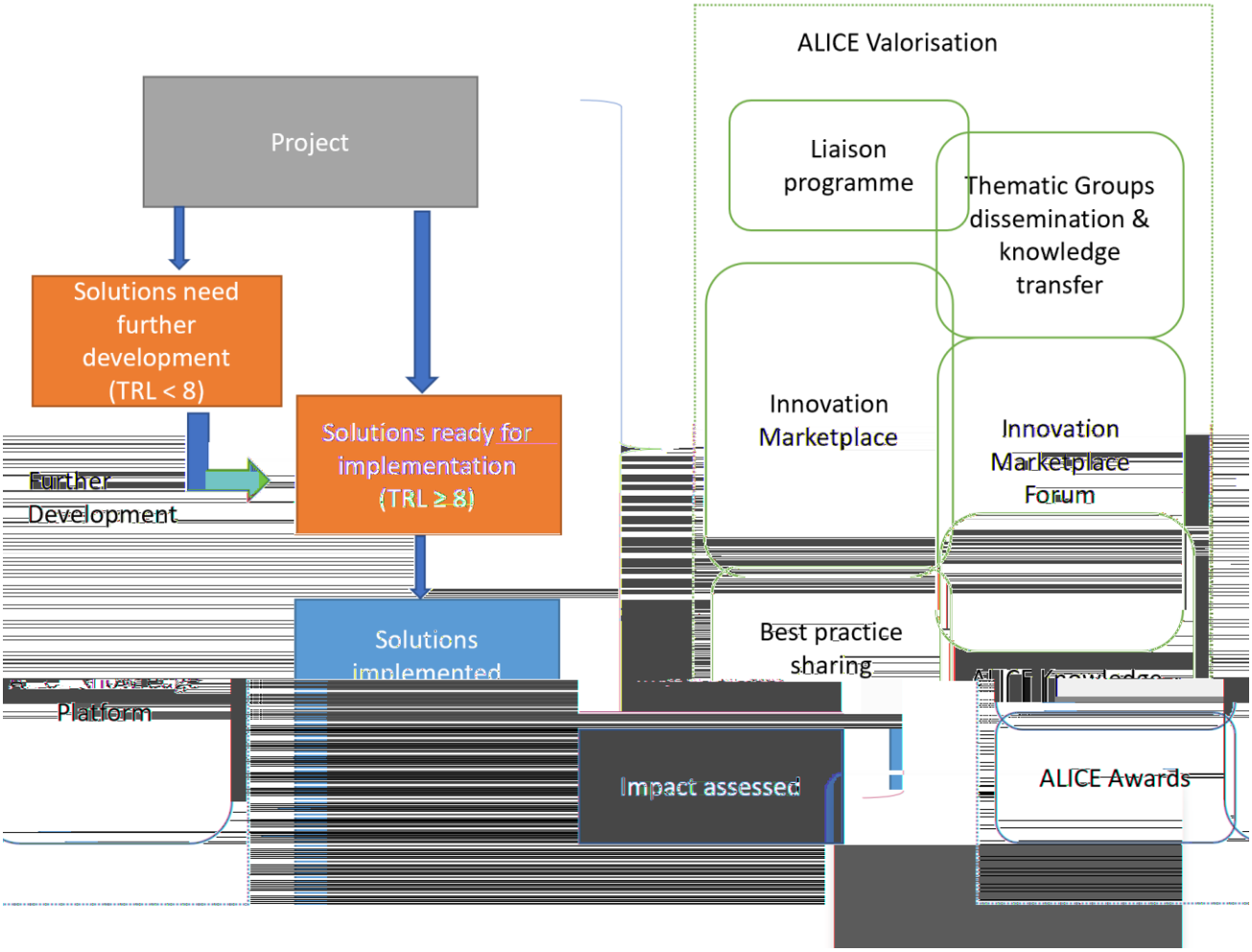

Figure 14. ALICE's actions to support valorisation of R&I projects

7 Implementation Cases

There are clusters or platforms for logistics innovations at regional or national level that play a similar role as ALICE in their regions or countries. Those clusters/platforms can mirror ALICE's strategies and take actions with their members at regional or national levels. In additional regional clusters/platform can build local logistics innovation centres to provide a demonstration space for showcasing innovation solutions. Regional/cluster platform can connect local business with project consortium to support local business to uptake innovative solutions. In this chapter, we will use two examples of regional and national clusters' actions to illustrate their valorisation actions:

- VIL, operating Log!Ville, a Flemish innovation centre and developing the OptiCharge ROI tool
- DINALOG supporting MODINT, a sector organisation and supporting regional Joint Corridor Off Road Program with the Synchro Maturity Model as part of the Dutch Topsector Logistics
- CLOSER, operating the implementation guide of the DenCity project.

Additionally, ALICE will share and exchange its valorisation strategy with the Research driven Clusters as part of ALICE membership to provide the regional dimension to the overall strategy to accelerate deployment of innovation and cross-fertilization of strategies.

This chapter concludes with two successful implementation cases from Innovators, both a large company (P&G) and a SME (TRI-VIZOR). Both P&G and TRI-VIZOR are ALICE's members and the implementations have been facilitated by ALICE through networks and Thematic Groups' activities.

7.1 Regional Innovation Centre Log!Ville®

Log!Ville® is considered as the landmark innovation centre for the logistics ecosystem in the region. Log!Ville® is operated by the 'Vlaams Instituut voor de Logistiek' (VIL) offering a digital and physical demonstration and experience centre for inspiration of innovative futures.

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Log!Ville® has particularly been set-up to transfer the knowledge development to R&I uptake; Companies can get acquainted with actual and future innovations in logistics. In the physical demonstration area they can explore innovative solutions that are market ready but not yet mainstream. The demonstration centre is home to the very latest technological supply chain advances. Automation, digitisation and the sustainability of the logistics ecosystem are the centre of focus. These technologies are presented by innovation partners – companies in logistics active in R&I - and start2scale up partners.

Besides a physical demonstration area, Log!Ville® hosts an experience centre with visualization and digital storytelling on trends and challenges to inspire to embrace logistical innovation and develop future-proof solutions.

Log!Ville® also includes a meeting centre where start-ups, companies and knowledge institutes can exchange expertise and co-creation.

VIL gathered a large number of partners. A physical centre and investment in experience development takes a considerable investment for a long term. Also, the partners contribute to reaching a broad ecosystem, increasing the reach for R&I uptake.

Log!Ville® successfully launched in autumn 2021 and has hosted the first events.

Figure 15. Example of a Log!Ville's event

7.2 OptiCharge ROI Tool

The research project 'OptiCharge' by VIL looked for more efficient loading and unloading processes through automation for both shippers and transporters. The complete process of loading and unloading was analysed at the participating companies (including related processes like pre-sorting, checks, storage,…).

Loading and unloading trucks is a time-consuming process that is mostly carried out manually. Truck drivers spend a significant amount of time every year waiting at warehouses to load and unload. For shippers these processes are seen as a necessary evil. VIL worked out the project 'OptiCharge' to see how automation can make loading and unloading more efficient.

VIL conducted a market study into the state-of-the-art loading and unloading solutions that can further automate the logistics chain. The systems can be categorized into three types:

1. Automated Guided Vehicle or AGV based systems: industrial robots that can move around independently .
2. One-shot based systems that can load and unload a full load in and out of the trailer in one go.
3. Semi-automated systems where human interaction cannot fully be eliminated.

In the project companies with large competitive innovative strength participated. VIL developed a successful business case and Proof of Concept at the chocolate manufacturer Barry Callebaut. A shot-shot based skate

system was able to unload 26 pallets in 10 minutes, without hitch or damage. This provides a clear time saving compared to the 45 minutes that manual unloading currently takes.

The Opt Charge ROI tool was also developed in the collaborative research and development [illegible]

The involved university further developed the algorithms to enable the alignment of delivery times for implementation and thus improving the concept to a higher TRL level.

MODINT also used its international networks to present the concept to IAF, the International Apparel Federation and therewith gained interest of sister organisations abroad. TKI Dinalog supported the international dissemination with support for the production of an English animation and visits with presentations in e.g. Denmark and Sweden. Also, the support encompassed the further international development with adding other manufacturing locations beyond China, e.g. Thailand and Bangladesh. The involvement of a partner like MODINT from the start was indispensable for the R&I uptake after the project(s). Greenways Logistics proved the partner to further invest in and implement the concept.

The fashion bundling control tower has many participants in the Netherlands, and it has been implemented in Denmark and Sweden, as well as by an international sports brand for their European-wide distribution. Sourcing countries include China and Bangladesh. Moreover, the concept has been adjusted beyond the fashion sector to the furniture industry.

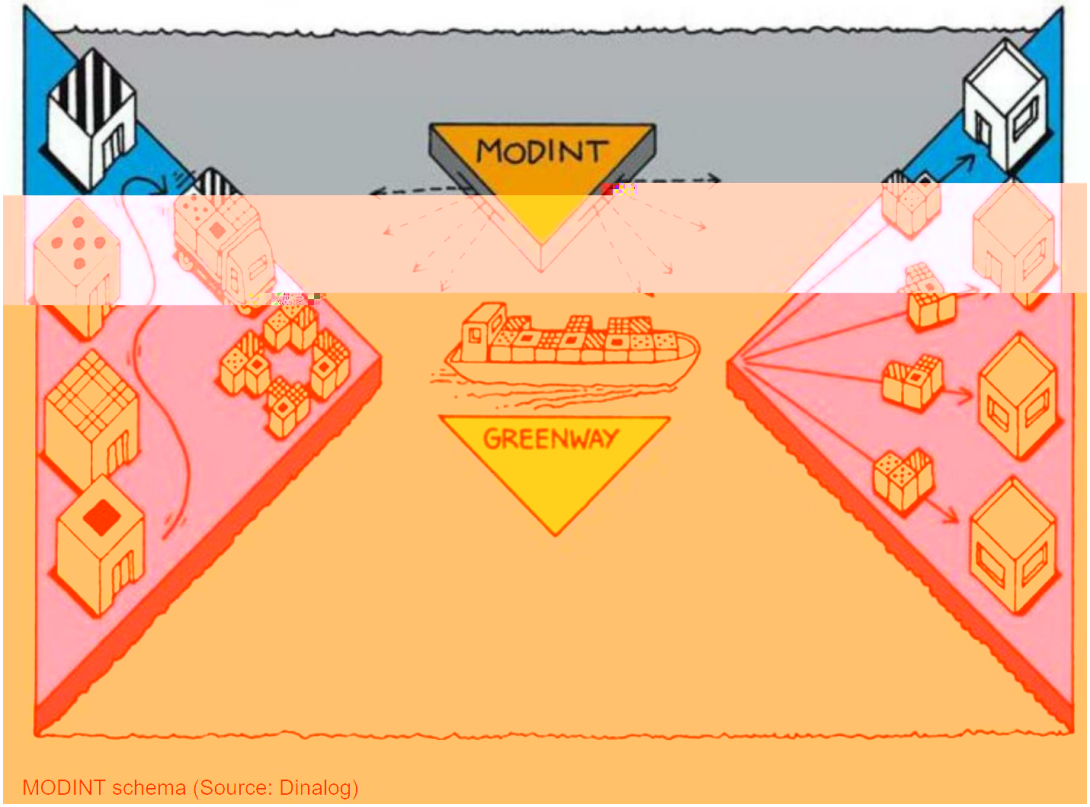

Figure 16. MODINT Concept

7.4 Synchro Maturity Model

A Dutch research project and the Interreg project SYN-ERGIE a Synchro Maturity Model has been developed to create awareness among companies about several aspects of organising synchromodal transport. The maturity level of companies is assessed by means of a questionnaire. The Model has been converted into

teaching materials and a quickscan that is used by students and regional multimodal brokers to engage with companies, particularly SMEs to stimulate synchromodal transport and reduce emissions.

Fontys University of Applied Sciences has developed a maturity model to create awareness among companies about several aspects of organising intermodal and synchromodal transport. Together with Rotterdam University of Applied Sciences and other parties this maturity model has been applied by more than 100 companies in the Netherlands and Belgium. As the model was developed in a quickscan questionnaire it can be used by Bachelor students and regional brokers to engage with companies to help them with making the important step from road transport towards intermodal (and synchromodal) transport. The model can be applied to shippers, forwarders and logistics service providers. Companies that participate in the quickscan get a practical advice on the current status and an advice on how to develop to a higher maturity level in intermodal or synchromodal transport taking into account the strategy and long term plans of the company. Finally, benchmarks with other companies will be given. Broad implementation of the quickscan achieves a large reach and impact.

Together with two other universities of applied science (from Breda and Zwolle) and the Joint Corridors Off Road Programme of the Topsector Logistics, they further developed a Masterclass Synchro Maturity as part of minor programs in the field of port and maritime management and distribution. The masterclass combines the knowledge from industry oriented research projects.

The Dutch Topsector Logistics actively supports the development of teaching materials and implementation tools based on R&I results to support the uptake of these results. A voucher scheme is available for research and education institutes as well as sector organisations to develop e.g. masterclasses, teaching cases or serious games to equip students with the latest knowledge to implement in their professional life. The voucher scheme also supports the development of implementation tools such as quickscans or scenario tools to assist intermediaries in their engagement with companies, especially SMEs.

The Synchro Maturity Model finds its way to several education programmes in the Netherlands and Belgium and is now developed throughout Europe. Furthermore, the quickscan is especially applied in the regional networks facilitated by regional universities of applied science and the regional brokers of the Joint Corridor Off Road Programme. The R&I project and tools have been awarded with the Private Sector Applicability Award by the Standing Committee on Intermodal Freight Transport' of the US 'Transportation Research Board (TRB)'.

7.5 DenCity Implementation Guide

DenCity was a Swedish mission-driven innovation project where business, academia and society developed and tested sustainable mobility solutions for people and goods. The project was funded by Vinnova and coordinated by CLOSER, a Swedish cooperation platform, knowledge hub and project workshop for increased transportation efficiency. The project had three phases, and started in 2012 and was ended in the spring of

2021. In the project, there was a clearly stated mission that developed and tested solutions should be possible to replicate.

From the start, it was clear that the project should result in replicatable results. Every actor involved in the project had to actively participate in this work and contribute to one of the project's main deliverables, the so-called implementation guide. To capture the requirements on the guide, make key activities visible and prioritize actual efforts, workshops were held with all the WPs and with representatives from cities, regions and academia. Output from these workshops:

- The main target group for the guide would be persons working with urban development in various forms.
- It should be a dynamic guide in web format instead of a more static document. (Take up of pdf documents had proved to be low).
- Solutions need to have a clear connection to national strategies, or similar, so a municipality, city or region easily can motivate implementation.
- Clear and scalable business models are key and need to be visible.
- Communication efforts that inspire, motivate, and put light on the benefits is important.

Since there was a clear synergy between communication and developing the implementation guide, the communications team was deeply involved in the work at an early stage. The team both planned and carried out workshops with the work packages. In addition to CLOSER's own communication team, an external agency with extensive experience of international work and EU projects was also involved in the work. The implementation guide uses a lot of filmed material and infographics: images were collected throughout the project to be used in the implementation guide.

An important question during the development of the guide was the one regarding ownership and future maintenance. The intention was to find an external part, but it was difficult to find a someone suitable that had not worked actively in the project. Finally, the ownership landed on CLOSER. With this decided, there are now plans to further develop the guide and include several projects and make it a comprehensive guide for logistics city solutions.

The communication work was resource-intensive during a certain period of the project, especially when the guide was created and launched.

To monitor usage, primarily google analytics is used. However, further analyses and evaluations need to be carried out to understand the usage and take up of the guide.

The project resulted in an online implementation guide, managed by CLOSER, structured as follows:

1. Concept - Describes the solutions and their functions.
2. Benefits - Describes the benefits of the solutions and how they contribute to sustainable urban development. The SDGs were also connected to the guide.
3. Implementation - describes intended business models and who will be responsible for operating and managing them.
4. Lessons learned - Describe the most important part of the project, success factors and main take-aways.

7.6 MIXMOVE start-up creation as an entrepreneurship effort after i-Cargo

MIXMOVE was awarded with the ALICE Innovation Award powered by BOOSTLOG project in the cloud on Logistics Coordination & Collaboration[33,34].

- B2 Engage the right business partners with competitive innovation strength
- D3 Develop R&I uptake business models alongside the technological innovation
- A2 Invest and implement results in product portfolio (Innovator and demand or related industry)

The entrepreneurs participating in the R&I funded project i-cargo[34] highlighted the following roles in the project as critical to achieve impact after the project duration:

- Very demanding user of the possible commercial solutions with a clear mission, expectation and pain point and willingness to invest in addressing it.
- Knowledge centers and companies able to explore the possible solutions through R&I, therefore getting he critical aspects to focus on.
- An organization committed to develop further the results and go beyond the technology readiness to create a market solution and after, a commercial solution.

The entrepreneurs highlighted the difficulties to advance in their exploitation plans after the projects and the risk they took as individuals to go beyond the valley of death (see challenges section). They highlighted the huge gap between projects results, even with TRLs 7-8, and actual impact generation through new market solutions. Most of the work to achieve impact was done after the project duration and with no other support, therefore, achieving impact seems to be far beyond what could be achieved with the current framework for EU R&I projects.

7.7 GS1 taking up the SMARTBox solution

The SMARTBOX is an innovative and reusable transport box to increase efficiency and sustainability in logistic processes. It was developed by GS1 under the framework of the "smartBOX" project which developed the technical design of the smartBOX as reusable container, designed a standardized pooling system including tracking and tracing technology and a business model for intelligent order control and cost splitting. The solution was initiated by a FP7 project, Modulushca. The goal of the Modulushca project was to demonstrate the concept of Interconnected Logistics, to test the prototype iso Modular Logistic units, and to show how transportation of Fast-Moving Consumer Goods (FMCG) would be with modular boxes. From those roots, the Consumers Goods Forum and GS1 have assessed the concept and made steps towards implementation. The project is becoming a reality and will be launch soon in real operations[35].

P&G is partnering with GS1 Germany to apply the reusable GS1 SMARTBox offering many advantages to help P&G to decarbonise its logistics activities. The box delivers efficiencies that result from modularity and

[33] https://www.etp-logistics.eu/first-alice-logistics-innovation-award-launch-of-the-cloud-report-on-coordination-and-collaboration/

[34] iCargo - Intelligent Cargo in Efficient and Sustainable Global Logistics Operations. Project identifier: 288383

[35] More details about MIXMOVE and the SMARTBox solutions can be found in BOOSTLOG D2.2 Cloud Report – Coordination and Collaboration

standardization: reduction in handling expenses, reduction in disposable packaging in retail, volume-optimized return, digital recognizability and reduction of the C02 footprint by up to 80%. This innovative solution is a key pillar to support P&G to achieve its ambition of achieving 100% recycling packages by 2030[36].

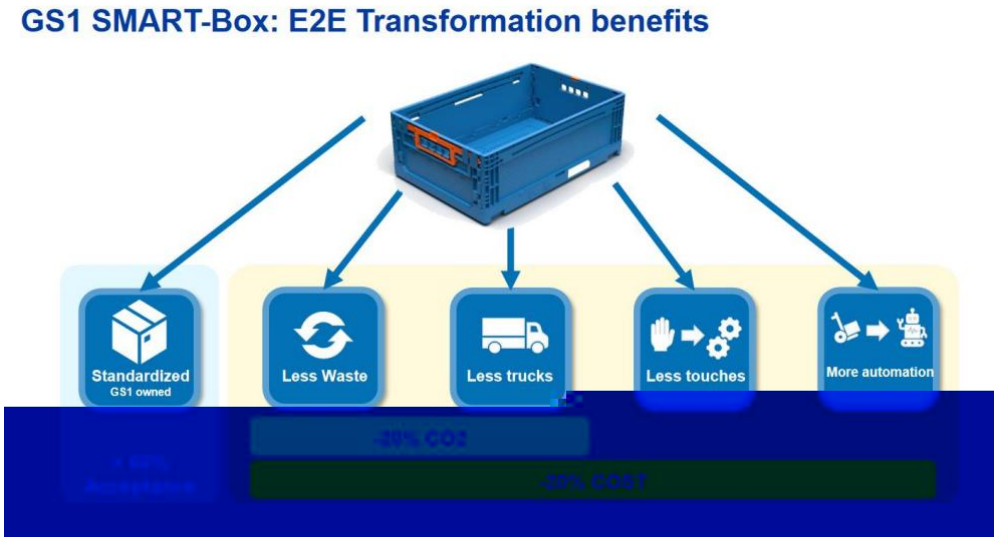

Figure 17. Benefits of the SMART-Box

7.8 SME's valorisation example: TRI-VIZOR

TRI-VIZOR is the first impartial orchestrator for transport and logistics, that prepares, designs, and operates horizontal partnerships and collaborative communities among shippers. The company, originally raised as a spin-off of the University of Antwerp in 2008, offers specialized knowledge and solutions to prepare, create, support, and orchestrate flow bundling and horizontal partnerships in transport and logistics based on the CO3 project, a FP7 project. TRI-VIZOR proactively prepares, designs and operates horizontal partnerships and collaborative communities among shippers. By bundling and synchronizing logistic activities across multiple supply networks, TRI-VIZOR creates double digit gains in cost, customer service and sustainability for its clients. It recently teams up with local business in Antwerp to launch the CULT project that consolidates logistics in the city centre, thus reducing emissions of urban logistics[37]. The companies Danone, Delhaize, Jacobs Douwe Egberts, Pro-Duo, Proximus, Telenet and Schoenen Torfs combine their deliveries of orders to retail outlets and individuals in the city of Antwerp and deliver them together.

[36] https://www.smurfitkappa.com/sustainability/survey/procter-and-gamble-aims-for-100-percent-recyclable-packaging-by-2030

[37] More information can be found: https://press.bpost.be/driving-reduced-by-25-and-emissions-by-90-through-combined-city-deliveries-in-antwerp

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