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BOOSTLOG PROJECT

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BOOSTLOG welcomes feedback and input on this deliverable. An updated release of this document will be issued in July 2023. The work will be taken up by ALICE and other BOOSTLOG partners, so we encourage you to provide your feedback, experiences and further references through: <u>info@etp-alice.eu</u>.



The BOOSTLOG project consortium consists of:

Part. No	Participant organisation name (short name)	
1 (Coordinator)	Alliance for Logistics Innovation through Collaboration in Europe, ALICE AISBL (ALICE)	
2	STICHTING SMART FREIGHT CENTRE (SFC)	
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
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Definitions of terms used in this deliverable

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 (<i>Pain Points</i>) 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 <i>Innovations/Outcomes/Implementation Cases</i> when it is subject to it or that have further developed project(s) results transforming them in <i>Outcomes</i> and eventually in <i>Implementation Cases or Innovations</i> .
Innovation Marketplace	A virtual platform that links <i>Innovation Seekers</i> willing to solve a problem (<i>Pain point</i>) with <i>Innovation owners (innovators)</i> 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



EXECUTIVE SUMMARY

BOOSTLOG vision is transforming European freight transport and logistics R&I ecosystem to perform optimally² boosting impact generation out of R&I investment contributing to EU policy objectives3 and Companies sustainability and competitiveness generating value for society. To achieve this vision, it is critical to ensure that R&I investments support not only knowledge generation, but also its implementation, thus delivering positive impacts to economy, environment and the society.

The first version of this deliverable, D 3.1, provided strategies and guidelines to support uptake of innovation by various stakeholders in the logistics sector. It reviewed current practices and EC policies and instruments to support valorisation. EC supports projects' valorisation through project boosters, EIT KIC, gap fund, prizes etc. General guidelines to all type of stakeholders in the logistics innovation ecosystem were provided including companies, governments, R&D and Civil Society in different phases of the projects lifetime: before the project, during the project and after the project.

D3.4 provides an update on the following points:

- Implementation Cases
- Internal and external feedback using outcome of Alice events and organised workshops
- Feedback from other BOOSTLOG Workpackages (WPs)

² R&I systems are complex ecosystems which need various elements to perform optimally. These include a solid public science base producing high quality outputs; strong business participation in innovation activities; fluid and abundant knowledge flows across R&I actors; and good framework conditions that allow business innovation to flourish. *European semester thematic factseet. Research & Innovation.* https://ec.europa.eu/info/sites/info/files/file_import/european-semester_thematic-factsheet_research-innovation_en.pdf

³ namely: decarbonization, emissions and congestion reduction, free and seamless movement of goods and sectorial digitalization capabilities upgrade. <u>https://ec.europa.eu/info/priorities_en</u>



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) *Companies* sustainability and competitiveness generating value for society.

In order to do so, BOOSTLOG has identified 4 main areas of action: i) to increase visibility and support valorisation of R&I project Results, Outcomes and Implementation Cases in the freight transport and logistics field ii) to 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) to define high potential & priority R&I gaps to make efficient uses of R&I investments and iv) to strengthen R&I impacts communication and Stakeholders engagement in the innovation process.

Initial outputs related to the definition of valorisation strategies and guidelines to speed up the technological and organisational innovation uptake were reported in D3.1. Considered as an update to that deliverable, D3.4 provides an update on the four points mentioned above by reviewing and revising the previously defined valorisation strategies. This is done by integrating the results of the outputs of the logistics cloud reports (D2.4 up to D 2.8), the mapping of all EU funded R&I projects in the logistics sector and the concrete barriers (D2.9) and the reasons for success of the Implementation Cases perceived by the interviewed stakeholders, internal and external feedback and Alice mirror group and ALICE Clusters meeting. In addition to the sector-based strategies mentioned in D3.1 and updated in D3.4, a project-based strategy is proposed where these stakeholder groups should work together to ensure the highest value is achieved from a project.

This resulting draft/final document are shared with BOOSTLOG partners to collect their feedback, based on their extensive experience to address their regional/national perspectives. In addition, feedbacks obtained from external surveys consulted with R&I programmes at the Cluster level in Europe, for example with Closer in Sweden, Logistics in Wallonia, Belgium, Flemish institute for Logistics (VIL) in Belgium, Logistop in Spain are considered as they have specific R&I programmes for freight transport and logistics.

In summary, this deliverable seeks to achieve the following:

- To review and update strategies proposed in D3.1
- To see if implementation cases mirror these strategy updates.
- To bring the guidelines together and create an ecosystem to maximize impact (a holistic and collaborative approach)

This is done by

- Assessing the positive framework conditions and barrier assessment (Chapter 3)
- Assessing the updates on the valorisation strategies from European Union (Chapter 4)
- Feedback from the stakeholders groups (Chapter 5)



The input gathered results in the adjusted valorisation guidelines as reflected in chapter 6, maintaining the overall valorisation guidelines from Deliverable 3.1 (see also table 1 for the structure).

Table 1 Valorisation guidelines for different stakeholder groups



1.2 Structure of the deliverable

Figure 2 shows the structure of the deliverable and different chapters.





BOOSTLOG project - D3.4 Valorisation Strategy Guidelines (ii)



2 Valorisation and R&I uptake

2.1 Valorisation definition in BOOSTLOG (summary and reminder)

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)⁴ and VSNU (2013)⁵. 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:



⁴ 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

⁵ Vereniging van Nederlandse Universiteiten (VSNU) (2013). Een Raamwerk voor Valorisatie-indicatoren (Framework for valorisation Indicators). Den Haag: VNSU



3 Input from positive framework conditions and barrier assessment

As mentioned, the BOOSTLOG project has focused quite some effort on identifying positive framework conditions leading to successful R&I projects. The published deliverable D2.3 provides clear actions which are needed from all types of stakeholders to create positive frameworks.

- Funding providers (mainly European Commission, but also including national funding providers)
- Project practitioners (i.e. organizations participating as partners in funded R&I projects)
- External stakeholders (industry and business) who may not participate in R&I projects but can benefit from project results.
- Associations including technology platforms representing various sectors who play a key role in advocating for R&I funding, e.g. ALICE.

Deliverable 2.9 provides additional suggestions for setting up R&I projects and programmes building on experiences of a Task Force on accelerating innovation uptake for sustainable transport. The Task Force consists of representatives from nine EU funded projects. A number of conclusions that are drawn in D2.3 and D2.9 are relevant to consider when looking at the valorization strategies that have been identified and updated in the next sections. The update of the valorisation strategies build upon these observations and recommendations. The full list of barriers and recommended actions can be found in D2.3 and D2.9.

Barrier Before a project starts: Proposal evaluation does not consider implementation possibility;

> Propose: Requiring business plan in the proposal, if applicable

> Propose: Facilitating knowledge transfer and developing guidelines for business plan;

<u>Barrier before a project starts</u>: Logistics innovation implementation often requires competitors working together;

> Propose: Demonstrating successful experiences to industry stakeholders;

<u>Barrier during project</u>: Consortium and funding organisation do not evaluate progress towards implementation during project duration;

> Propose: Evaluate potential impacts and potential implementation throughout the project duration.

Barrier after project has ended: Inadequate evaluation of usage of project outcomes and expected impacts;

> Propose: Post-project audits to evaluate the expected impacts of projects, creating of a learning

mechanism in order to strengthen the current approaches to steer towards impact in industry

practice;



<u>Barrier after project has ended</u>: Mismatch of demand and supply; innovative suppliers may not reach potential users and potential users may not be aware of or able to find innovations they need.

 \succ Propose: All project participants should strengthen exploitation activities and benefit from various instruments provided by the EC

<u>Barrier after project has ended</u>: Lack of funding or financial support to bridge efforts needed to transfer project outcomes to market ready solutions.

➤ Propose: Calls of funding schemes for applications should take consideration of timelines of ongoing R&I projects to enable them to prepare for application during the project periods.

4 Update of valorisation strategies from European Union

"People expect science to be a driving force that will support the transition towards a greener and fairer society." research-and-innovation.ec.europa.eu

The EU commission develops a strategy to accelerate the potential uptake of research and innovation results and data with the goal to increase the impact of research and innovation investments.

In 2008 the Commission adopted a recommendation (<u>Council Recommendation on the guiding</u> <u>principles for knowledge valorisation</u>) on the management of intellectual property in knowledge transfer activities and the Code of Practice for universities and other public research organisations (C(2008)1329). This was updated in 2022 to address new challenges and developments such as such as increasingly complex knowledge value-chains, new market opportunities created by emerging technologies, new forms of collaboration between industry, academia and public sector, involvement of citizens, as well as research and innovation foreign interference and reciprocity in the managing intellectual assets in international research and innovation cooperation. Updates ensure maximising the value of all knowledge assets generated by different types of actors in a dynamic research and innovation ecosystem.

In March 2023, the European Commission has launched two communities of practice to co-create two new codes of practice on:

- 1. Industry-academia collaboration for knowledge valorisation (comprising more than 210 participants representing a variety of stakeholders)
- 2. Citizen engagement for knowledge valorisation (comprising more than 120 members from a variety of organisations linked to research and innovation)



They will provide inputs, analysis, and recommendations for the codes of practice and the final output is expected by June 2023. The new codes will support the previous Council Recommendation on the guiding principles for knowledge valorisation (link above) by providing more detailed guidance on certain areas of knowledge valorisation.



5 Feedback from the stakeholders groups

5.1 Feedback from Logistic Clusters

There are clusters or platforms for logistics innovations at regional or national level that play a similar role as ALICE in their respective regions or countries. Those clusters/platforms can mirror ALICE's strategies and take actions with their members at regional or national levels. In addition, regional clusters/platform can build local logistics innovation centres to provide a demonstration space for showcasing innovation solutions. Clusters are able to connect local business with project consortia to support local business in the uptake of innovative solutions. Alice and the partners in the BOOSTLOG consortium organised a meeting with the clusters to share the valorization strategies and to learn from experiences clusters already have. In this chapter, we will share the main observations and results that are taken into account when updating the strategies listed in the next chapter.

Learnings from the clusters

• Too much focus is towards setting up new projects, given a certain valid ambition, opportunity and availability of funding. This leads to the observation that too little time can be spent on monitoring of projects and their results.

➤ Propose: Resources at cluster level, but also within consortia, should be allocated to monitoring of results.

• A strategy to be more effective in valorization is the way projects are initiated up front. In many cases research institutes are in the lead when setting up R&I projects. There are also successful examples of have the industry in the lead when setting up projects. By using the drive and sense of urgency from an industry point of view the chances of adoption of results increase.

➤ Propose: See if calls and instruments for R&I funding can be setup in a way that it is more attractive for industry partners to take the lead in setting up projects.

• Valorization should be mandatory. In many cases valorization is a small part of a project proposal and written down in terms of dissemination and communication. Valorization requires serious attention and partners should be held accountable for that part as well.

➤ Propose: Make sure that during the project phase partners are responsible for the execution of valorization activities.

It is important to have a communication strategy in place focused on results and valorization. It turns
out to be difficult to bring actual results forward, but by having a number of show cases it triggers
many stakeholders to look a bit deeper into the value of R&I projects and their outcomes. Having
ambassadors in place that tell stories to the industry partners can be part of this

➤ Propose: Rethink the way clusters and projects (stakeholders) communicate about the results of a project and turn them into show cases.



- There is a shared need and urgency to monitor outcome and output from R&I projects. It is difficult to follow up upon results out of a project through time, because stakeholders have their own initiatives from the end of a project and there is no entity that is responsible for monitoring
 ➢ Propose: Create a system within the eco-system that is able to follow innovations through time and report about the results.
- It is important to have a mediator role within a cluster and/or project. Realise that stakeholders might have different interests and even hidden agenda's. By initiating a 'safe' environment in which interest can be shared and common goals can be identified is an important basis to come to results and successful valorization of output.

➤ Propose: create a neutral ground to share idea's and interest given a certain challenge. Create an environment where conflict of interest can be addressed.

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. Discussion on best practices amongst the clusters may lead to additional insights in the valorisation strategies. This way the outcome of BOOSTLOG is sustained after the project has ended.



6 Valorisation Strategy and guidelines (Update)



Figure 4. Porters Diamond model adapted by Van den Bosch et al, 2011

6.1 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 and are updated versions of the guidelines listed in deliverable 3.1.



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Table 2 Valorisation guideline set for public funded R&I projects

	Companies	Government	R&D	Civil Society	
BEFORE	B1. Articulate the needs and a clear, broadly supported point on the horizon				INNO
	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	OVATION OWNER STRATEGY >>
DURING	RING D1. Develop a R&I uptake strategy, including ownership D2. Share Project information and results D4. Develop R&I uptake standardisation processes alongside the technological innovation			novation	V
	D3. Develop R&I uptake business models alongside the technological innovation	D5. Be involved to listen to and act on possible legislative or policy impediments to change to enable or stimulate R&I uptake	D6. Involve the Impact centre, incubator or campus in the project to identify opportunities	D7. Disseminate (intermediate) results to a broad audience and ecosystem	<<< INNOVA
AFTER	A1. Further elaborate the R&I results and keep engaged in the ecosystem				TION S
	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	EEKER STRATEGY

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



6.2 Guidelines - before the project (B)

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

Stakeholders: all

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.

For example, 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 *Stakeholders:* **Companies/ all stakeholders**

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.

For example, 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. *Stakeholders:* **Government**



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.

For example, ALICE actively brings the logistics vision and needs to the European Commission to include in the policy and innovation strategies. Additionally, the implementation case of the Rome Logistics Living Lab (see Cloud report 2.4 Urban Logistics) explicitly mentions that the established living lab structures supported the development of a new call for proposals based on the needs derived from the Living Lab ecosystem.

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. *Stakeholders: Government/funding agencies*

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.

For example, 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

Stakeholders: Civil Society

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.

For example, 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.



6.3 Guidelines - during the project (D)

D1 Develop a R&I uptake strategy, including ownership

Stakeholders: all

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.

For example, 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

Stakeholders: all

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

Stakeholders: Companies

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.

For example, 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 Develop R&I uptake standardisation processes alongside the technological innovation *Stakeholders: all*

In many cases technological progress has bene achieved within a project, but the full exploitation of those results is difficult because the specific technological solution cannot be integrated (easily) into current business to business or business to government processes. There is an urgent need to set standards and to take into account existing standards that lead to wide acceptance of proposed technological solutions.



For example: within the AEOLIX project work has been done on integration of systems in a logistics setting. To align flows of information ISO standards have been developed (ISO 23795-1) that makes sure that the solutions designed in the future can be integrated into existing business models. See also cloud report on Data Sharing (D2.6)

D5 Be involved to listen to and act on possible legislative or policy impediments to change to enable or stimulate R&I uptake

Stakeholders: Government

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.

For example, 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. Additionally, another example is the implementation case of Fast Customs Corridor (see Cloud report 2.6 data sharing) demonstrates an implementation that has overcome the main barrier of legislation; the port authority of Genua was involved, and the implementation case involved recommendations for regulatory interventions in the legal framework of Italy that enabled the creation of the Fast Customs Corridor.

D6 Involve the impact center, incubator or campus in the project to identify opportunities *Stakeholders:* **R&D organisations**

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.

D7 Disseminate intermediate results to a broad audience and ecosystem *Stakeholders:* **Civil Society**

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.



For example, 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.

6.4 Guidelines - after the project (A)

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

Stakeholders: all

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.

For example: as listed in cloud report 2.8 on the Physical Internet, one way of exploiting results after a project has ended is to keep participants involved in an ecosystem is the Open Logitics Foundation. This foundations builds upon R&I results but is able to match this with current and actual questions from the industry.

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

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.

For example, 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

Stakeholders: Government

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.

For example, 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.

Stakeholders: Government

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.



For example, 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 Stakeholders: **R&D organisations**

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.

For example, 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 *Stakeholders:* **R&D organisations**

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.

For example, 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

Stakeholders: **R&D organisations**

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 *Stakeholders: Civil Society*

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.

For example, 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

Stakeholders: Civil Society

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.

For example, 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.

6.5 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.

The following additional actions ensure maximization of the added value obtained from setting the business:



Figure 5. Company's valorisation guidelines (update)

BOOSTLOG project - D3.4 Valorisation Strategy Guidelines (ii)



- Setting clear objectives for valorisation. The objectives may be those that are specifically developed for participating in R&I activities towards further development (technology push) or objectives related to commercialization, product strategic development, etc.
- Ensure alignment between strategic objectives of the company and foreseen project results out of a collaborative I&R project.

6.6 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

To ensure maximum gain from the mentioned strategies, It is recommended that governments

- Conduct a thorough assessment of potential regulatory barriers before or at the initial phases of the project;
- Engage with the stakeholders participating in the project for defining best supporting policy implementation measures.
- Identify gaps for potential parallel support schemes such as gap funds in increasing the market update and impact based on the gaps found in the project and review phase.





Figure 6. Governn

Government's valorisation guidelines

6.7 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.

In addition, they can maximize their impact by:

• Partnership with government and public bodies on defining research direction and and setting roadmap for achieving policy goals



- Providing Input on clear objectives for valorisation. Define the objectives and goals of the R&D valorisation process. This can include objectives related to commercialisation, knowledge transfer, or societal impact.
- Developing communication strategy tailored towards the target audience
- Collaboration and networking between R&D and industry partners in a structural way, in addition to the incubators as part of communication strategy





6.8 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)

The following actions will facilitate achievement of the maximum benefit of the strategies:

- engaging civil society stakeholders in the R&D process to ensure that their needs and concerns are taken into account.
- Involving citizens in the design and implementation of research projects, as well as seeking feedback from civil society groups on research outcomes.
- Develop effective communication channels to communicate research outcomes to the general public in a way that is accessible and understandable, for instance by using clear language, visual aids, and other communication tools that are tailored to the needs and interests of different audiences.





6.9 Collaborative Valorisation Strategy for ALICE and intermediate clusters

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 and D2.9 has identified barriers in implementation of R&I projects and proposed positive framework conditions.

ALICE's valorisation strategy will be illustrated as following to show the relationship of different actions this is explained in more detail in D3.1:



Figure 9. ALICE's actions to support valorisation of R&I projects



ALICE plays an important role in a European context and in the alignment of regional and national R&I programmes. One aspect is the attention towards valorization activities. ALICE chairs a group of regional and national clusters that support innovation in the field of transport and logistics. It is important that these clusters have access to best practices and insights from their counterparts throughout Europa.

Each cluster plays an intermediate role in an ecosystem at a regional or national level. The context in which they act and the instruments they have differ however to a great extent. Still each of these clusters have a valorization strategy in place, some in more structured and detailed level than others. For reference we have added an example of a valorisation strategy implemented at the regional cluster level Flemish Institute for Logistics (VIL), see annex II. Meant as an inspiration for other clusters.

The aspects of the valorization scheme presented before for ALICE are applicable to the cluster organisations as well, being said that these elements carry other names and act in another context. Chapter 5 lists a number of common observations and suggestions to intermediate organisations like these clusters to act upon when looking at the valorization activities.

Collaborative valorisation strategies

For ALICE and intermediate clusters it is true that attention should be raised towards consortia to address a collaborative valorisation strategy. The valorisation strategies in the previous parts of this chapter focus on one entity. But taken from the observations clusters have and the success factors observed at implementation cases and from BOOSTLOG partners it is also required to interface with other related stakeholders and their respective valorization strategies. Depending on the R&I activities two or more of these stakeholders are involved that while ensuring the individual achievement, should reach a core value 2.



Figure 10. Holistic view to valorisation of R&I projects



The essence here is to have individual strategies aligned. The most important is that up front of an R&I project the common goals are clear and the expectations every stakeholder has are recognised as well. This also means that there is a need to discuss individual objectives and where they are in conflict this should be addressed.



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Annex I: Detailed description of Implementation cases

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.

This annex 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.

A.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.

Relation to valorisation guidelines:

- A8 Engage the networks on national, regional and local levels with the R&I Results
- A9 Enable access for innovation seekers

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.



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Figure 11. Example of a Log!Ville's event

A.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,...).

Relation to valorisation guidelines:

- B5 Engage the right partners with competitive innovation strength
- A2 Invest and implement results in product portfolio
- A6 Convert knowledge into implementation tools

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 OptiCharge ROI tool was also developed in the collaborative research and development project. The tool focuses on saving costs through automation. This can drastically improve both speed and cost of these loading and discharge operations. The tool enables companies to make the correct assessment as to such investments; The OptiCharge ROI-tool reveals the real 'return on investment'. By calculating the potential costs and savings



the tool offers a clear view on the ROI after 10 years and also calculates the estimated break-even period. This will enable more (SME) companies to invest in automation of loading and/or discharging.

A.3 MODINT: Control Tower for Fashion Industry

In the research projects "Bundling at source location" and "Delivery time harmonisation" supported by TKI Dinalog, a control tower concept has been developed. The projects' partners included knowledge institutes, logistics service providers and MODINT, the Dutch trade association for manufacturers and suppliers in the fashion and textile industry and their logistics partner Greenway Logistics. The concept bundles shipments of fashion supply chains from manufacturing locations to the brand outlets, thus reducing costs and improve efficiency.

Relation to valorisation guidelines:

- B5 Engage the right partners with competitive innovation strength
- A2 Invest and implement results in product portfolio
- A4 Facilitate further development towards higher TRL levels
- D6 Disseminate (intermediate) results to a broad audience and ecosystem
- A8 Engage the networks on national, regional and local levels with the R&I Results

Cities are more and more congested due to an overload of (freight) transport movements. On a daily base, individual shops receive many small shipments of many different suppliers, each organising their transport individually. "Bundling at source location" developed a way to do this differently. In this innovative solution, multiple suppliers of fashion retail products collaborate horizontally to bundle volumes in Asia and prepare shipments of multiple suppliers sorted for individual stores. This means that shipments containing goods of multiple suppliers are delivered to shops in one go (as opposed to many different shipment deliveries). It helps reduce CO2 emissions and transportation costs. A control tower was created coordination across the chains of several suppliers. The results are phenomenal: a decrease of 50% in transportation cost, less CO2 emissions and increased control over the entire supply chain.

In a follow up project, the delivery times of different suppliers and outlets were harmonised, resulting in a reduction of the number deliveries of up to 80% relieving the burden on cities and a potential saving of 640 million euros. Also, supporting services were developed to increase uptake.

The project was initiated by MODINT and its more than 800 members. MODINT represents approx. 75% of the Dutch fashion and textile sector and a total freight budget of over 1 billion euros.

They were a key partner from the start, from the perspective of needs definition, to involving multiple members in the research project and dissemination to their broad member base to engage more brand owners. They had the logistics expertise with their partner Greenway Logistics, which built upon a longer collaboration for logistics benefits for their members. This was key to the development of a realistic platform and the further roll-out.

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 <u>animation</u> 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 12. MODINT Concept

A.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.

Relation to Valorisation guidelines:

- A4 Facilitate further development towards higher TRL levels
- A5 Convert knowledge into teaching materials
- A6 Convert knowledge to implementation tools for students or civil society to engage with companies
- A8 Engage the networks on national, regional and local levels with the R&I Results

BOOSTLOG project - D3.4 Valorisation Strategy Guidelines (ii)



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)'.

A.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.

Relation to valorisation guidelines:

- B4 Require an R&I uptake plan and deliverables (outcome) for project proposals
- D1 Develop a R&I uptake strategy, including ownership
- A3. Follow-up on monitoring progress after project finalization



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.

A.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^{6,34}.

⁶ <u>https://www.etp-logistics.eu/first-alice-logistics-innovation-award-launch-of-the-cloud-report-on-coordination-and-collaboration/</u>



Relation to valorisation guidelines:

- 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-cargo⁷ 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.

A.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 operations⁸.

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 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 2030⁹.

⁷ iCargo - Intelligent Cargo in Efficient and Sustainable Global Logistics Operations. Project identifier: 288383

⁸ More details about MIXMOVE and the SMARTBox solutions can be found in BOOSTLOG D2.2 Cloud Report – Coordination and Collaboration

⁹ https://www.smurfitkappa.com/sustainability/survey/procter-and-gamble-aims-for-100-percent-recyclable-packaging-by-2030





GS1 SMART-Box: E2E Transformation benefits

Figure 13. Benefits of the SMART-Box

Relation to valorisation guidelines:

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

A.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 logistics¹⁰. 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.

¹⁰ More information can be found: https://press.bpost.be/driving-reduced-by-25-and-emissions-by-90-through-combined-citydeliveries-in-antwerp







The smart bundling of goods on the outskirts of the city immediately translates into a quarter fewer kilometers driven and 90% less emissions. The positive impact on mobility and the environment will increase as more companies join CULT (Collaborative Urban Logistics & Transport) for their goods flows. As community manager, TRI-VIZOR has set up the framework so that new companies as well as retailers in the city center can quickly and easily join. Within this structure, companies - even competing players - can cooperate transparently and fully in line with existing regulations. Moreover, this structure is easily transferable to other cities.

Relation to valorisation guidelines:

- B2 Engage the right business partners with competitive innovation strength
- A2 Invest and implement results in product portfolio (Innovator and demand or related industry)

A.9 Descartes integration of monitoring tool after Smart-CM project

The Smart-CM project focused its objectives to, a.o. evelop a neutral approach and service platform for secure

and interoperable data communications, define added value services and chain visibility enabling techniques for fulfilling operational requirements of the actors and develop prototypes of advanced applications in global container management, such dynamic scheduling at the containers.

This resulted in new ways of monitoring of customs related international movement of containers via the use of electronic seals. The project result was taken up by Descartes (project partner) and integrated to their internal monitoring platform.



Relation to valorisation guidelines:

- 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)

Descartes as industry partner in the R&I funded project 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.



Annex II: REGIONAL VALORIZATION STRATEGY: VIL, FLANDERS' SPEARHEAD CLUSTER FOR LOGISTICS

The regional cluster VIL was established in 2003 and even though at the start mainly focused on applied research, collaborative projects were an integral part of its activities from the early days onwards. As of 2008, the main focus shifted towards such collaborative projects with a high degree of participation and commitment from member companies, both in human resources as financial, also resulting in a drastic increase in our membership base which over a decade between 2008 and 2018 roughly tripled from around 150 to around 450 (+650 as of 2023). In itself a confirmation of the relevance of the projects, but not a real and measured indication of the impact of the projects.

Indeed, one of the lingering concerns was the effective follow-up on real-life implementations. For highprofile and larger projects this was somewhat visible as the efforts resulted in i.a., new routes, the establishment of associations or visible and well-promoted collaborations. For most regular projects this was much less visible. Often, real-life implementation of built-up knowledge was only discovered years later. There was no active follow-up nor a related strategy for measuring the impact.

The Flanders government revamped the innovation landscape of the region with the ambition to become one of Europe's most innovative regions culminating in a cluster strategy where for each spearhead sector there would be a dedicated innovation cluster.

As of 2018 VIL is recognized as this cluster and the main activity consists of setting up, initiating, leading or facilitating logistics innovation projects throughout the complete technology readiness level range. Recognising the missing link with the effective impact of the cluster's projects in its previous iteration, one very specific task consists of mapping the valorization of the innovation efforts through identifying the number of company cases resulting directly from innovation projects supported and/or run by the cluster.



Regional valorization (V) strategy VIL



Below is the list of actions from the start of a project all the way to the possible implementation of developed innovations:

- Project approach:

- \circ $\;$ Stimulate companies to test, evaluate, validate, and calculate business cases $\;$
- Take valorization into account when shaping a project and provide tools to stimulate companies. Organise activities to further inspire companies to implement (concepts and innovations (e.g. workshops after the closing event of the project to help them take the first steps)
- During the kick-off and the start of the project:
 - Clear communication that valorization is the real ambition of the innovation project
 - Clearly indicate that VIL expects that the reason why companies participate is to effectively valorize their efforts in the project (and that they will inform us about or register their implementations)
 - Gain insights into the needs and intentions of the participating companies so as to maximally include these in the project objectives and consequently guide them to company-specific implementation cases

- During the course of the project:

- Organise workshops specifically aimed at practical use cases and pilot projects. The objective is to stimulate all participating companies to draw their own conclusions and to create a "learning network". Seeing a concept work in real-life stimulates companies to take it upon themselves.
- Organise a specific workshop focusing on the company cases and the possibilities of additional funding of higher TRL-type funding schemes. In Flanders, the funding agency has innovation advisors and these are invited to these workshops. These workshops also are a hotbed for smaller partnerships to submit files to the funding agency (VLAIO)
- Questioning project participants (verbally & evaluation of project partners):
 - Regular intermediate evaluation of the project and possible bottlenecks.
 - Near completion of the project a final evaluation during the last joint meeting (not after making sure everyone responds) – with separate and specific questions about implementation opportunities
- Evaluation at close of project(survey tool)
 - Always ask for possible company cases. To be used as a starting point to keep in touch with participating companies and to also generate implementations outside of (after)the project.
- Thematic Research & Development calls:
 - Specific calls for Research & Development projects (high TRL) connected to the theme of the completed project.
 - Launched at the closing event of the project.
 - Promotion tools and knowledge library:
 - Tools that are the direct result of a project are included as an offering in the promotion tool of VIL (LogiBox) accessible to registered companies.
 - \circ $\;$ When downloaded this is registered and the company can be contacted for follow-up $\;$
 - Same goes for the knowledge library where reports and related open-access publications are made accessible.



- Workshops after closing event with the specific objective of initiating cases:
 - Closing events are organized about 3 months up front which leaves ample time to engage in valorization actions (part of the dissemination and valorization work package – a standard component of all VIL projects).
 - Organising workshops as to inspire and motivate companies to take the next step. Both participating as new interested companies with specific questions or expressed interest (e.g. companies that indicated during the closing event that they would like to implement the project learnings).
 - Follow-up of workshop participants short information survey and information gathering about the possible case
- Showcasing innovations in VIL's logistics demonstration center Log!Ville
 - \circ $\;$ Proof of concepts being showcased in our logistics innovation demonstration center LogIville
 - As a standard component of the cluster's projects.
 - During the 3 months after the closing event
 - Lead generation (of company cases) via the demonstration center
 - RFP: external suppliers commit to moving testing to Log!Ville upon completion of the project (whenever applicable)
 - Budget encapsulated in the project proposal
 - Demonstration day or thematic month in the VIL plaza at Log!Ville
- Survey tool open on VIL website where companies register their implementation cases
- Account Managers: following up on their company visits the account managers indicate possible company cases to the project leader who subsequently takes care of the registration and follow-up.