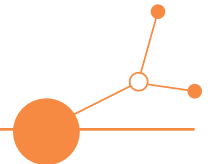


Solutions topic3: cargo bunding and tracking

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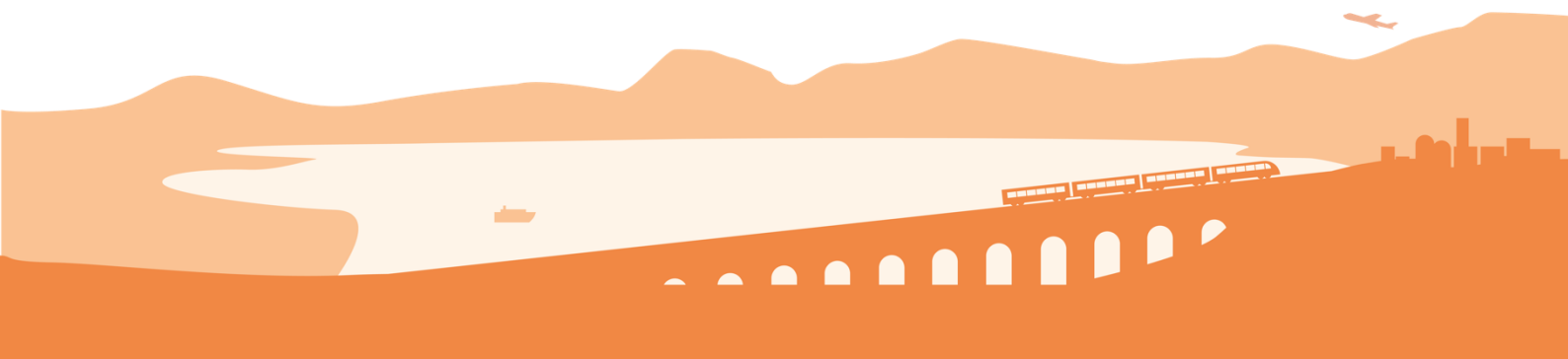




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1. Overview

This deliverable (D.3.1.3) provides the long-term sustainability guidelines for Solution No. 3 - Cargo Bundling and Tracking, jointly developed within the ACCESSMILE project.

The jointly developed solution focuses on improving cargo bundling and tracking logistics processes in order to facilitate the participation of small carriers, freight forwarders and shippers in coordinated freight flows and to improve their access to intermodal transport opportunities. Building on the lessons learned from the local pilot actions, the solution combines accessible digital information, shipment visibility, cargo coordination and booking support within a common and transferable operational approach.

The solution has been jointly developed from the complementary experiences of:

- PP10 - Gruber Logistics, Poland, focusing on the inclusion of small carriers in cargo bundling processes through the MyDesk digital environment;
- PP11 - Rostock Port, Germany, focusing on facilitating access to intermodal transport information and booking opportunities through the Digital Navigator and connected services such as Routescanner and Rail-Flow.

These two pilot actions should not be understood as forming a single integrated technological platform. Rather, their lessons learned contribute to a common approach based on the reduction of information barriers, improved cargo visibility, easier coordination among logistics actors and more accessible identification of road, rail and maritime transport options.

The ACCESSMILE jointly developed solution therefore identifies a set of complementary logistics processes that may be adapted to different operational and territorial contexts. These include:

- enabling smaller carriers to participate in cargo consolidation and freight bundling processes;
- improving the visibility and tracking of available cargo and transport services;
- facilitating access to information on intermodal connections and booking opportunities;
- supporting cooperation among shippers, carriers, freight forwarders, terminals and ports;
- integrating digital tools progressively into existing operational workflows.

The solution is particularly relevant for rural and peripheral regions, where logistics flows are often fragmented and small operators may face limited digital capacity, insufficient shipment volumes and reduced access to information on intermodal transport services. By lowering these organisational and information barriers, improved cargo bundling and tracking processes can support their participation in wider logistics networks and facilitate more reliable connections with TEN-T nodes and corridors.

From an environmental perspective, better cargo coordination and consolidation can contribute to improved vehicle utilisation, reduced empty or partially loaded journeys and more efficient transport planning. Greater visibility of intermodal alternatives may also facilitate the use of rail or maritime services where these are operationally and economically suitable. The scale of these benefits will depend on actual user uptake, available transport services and the local operating conditions.



2. SWOT analysis of ACCESSMILE jointly developed solution and adopted technical measures

The SWOT analysis assesses the ACCESSMILE jointly developed solution for improved cargo bundling and tracking logistics processes, derived from the lessons learned from the complementary pilot actions implemented by Gruber Logistics in Poland and Rostock Port in Germany.

Rather than evaluating the two pilot actions or their individual digital platforms, the analysis focuses on the common operational approach developed through the project. This approach aims to reduce information and organisational barriers, facilitate the participation of small carriers in coordinated freight flows, improve cargo visibility and tracking, and support access to intermodal transport information and booking opportunities.

The SWOT analysis considers both the operational dimension—including user accessibility, data exchange, cargo coordination and integration with existing workflows—and the conditions that may affect the continuation, transferability and possible replication of the jointly developed solution. Particular attention is given to its potential contribution to more efficient cargo consolidation, reduced empty or partially loaded journeys and improved access to logistics services for operators located in rural and peripheral regions.

Strengths	Weaknesses
• Common operational approach combining cargo bundling, shipment visibility and access to intermodal transport information. • Potential to facilitate the participation of small carriers and SMEs in coordinated freight flows and intermodal transport processes. • Modular and user-oriented digital tools that may be integrated gradually into existing operational workflows. • Improved availability of information and shipment visibility for carriers, freight forwarders and shippers. • Complementary lessons learned from a road-based cargo bundling environment and a port-centred intermodal information and booking environment. • Potential environmental benefits through better load consolidation, improved vehicle utilisation and greater visibility of intermodal transport options. • Particular relevance for small operators and logistics communities in rural and peripheral areas facing information, capacity and digitalisation barriers.	• Heterogeneous digital environments and limited interoperability among operators, platforms and public digital services. • Different levels of digital maturity and limited ICT capacity among micro and small transport operators. • Dependence on sufficient, reliable and regularly updated data provided by users and transport service providers. • Limited testing period and number of users, which do not allow firm conclusions on large-scale or long-term uptake. • Organisational effort required to engage users, provide support and keep information and services updated. • Environmental effects depend on actual changes in transport behaviour, load factors and modal choices and may not be directly measurable through the pilot actions. • Smaller operators may have limited financial and human resources for adopting and maintaining new digital procedures.
Opportunities	Threats
• Growing demand for transparent, trackable and better-coordinated logistics services.	• Insufficient user uptake may limit the operational relevance and financial sustainability of digital services.



- | | |
|--|---|
| <ul style="list-style-type: none">• Possible adaptation to other regions characterised by fragmented cargo flows, limited digital maturity and a high presence of small operators.• Greater inclusion of SMEs and small carriers in organised freight flows and intermodal transport chains.• Progressive integration with existing booking, tracking and transport management services.• Contribution to more efficient cargo consolidation and, where suitable services exist, increased use of rail or maritime transport.• Use of existing sectoral, regional and European networks to disseminate lessons learned and support possible uptake.• Improved access to logistics information and services for operators located in rural and peripheral territories. | <ul style="list-style-type: none">• Resistance to changing established manual or bilateral working practices.• Fragmentation caused by competing and non-interoperable digital platforms.• Differences in data availability, quality and technical standards among operators and countries.• Regulatory, contractual or data-protection requirements may complicate information exchange and platform integration.• Limited availability or competitiveness of intermodal services may reduce the practical benefits of improved digital access.• Lack of sufficient trust among users regarding data sharing, platform neutrality and commercial confidentiality. |
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Table 1 - Possible measures to support the continuation and adaptation of the jointly developed solution

The lessons learned from the pilot actions indicate that improved cargo bundling and tracking processes are more likely to be taken up when the supporting digital tools are accessible, user-oriented and compatible with existing operational workflows. Simplicity of use, modularity and gradual onboarding are particularly relevant for small carriers and SMEs with limited ICT resources.

The SWOT analysis also confirms that the effectiveness of the jointly developed solution depends on factors beyond the technical functionality of the individual tools. Reliable and regularly updated data, sufficient user participation, stakeholder trust, interoperability and the availability of suitable transport services are necessary to translate improved information and coordination into operational benefits.

From an environmental perspective, improved cargo information and bundling may contribute to better vehicle utilisation, fewer empty or partially loaded journeys and more efficient transport planning. Greater visibility of rail and maritime alternatives may also facilitate the use of intermodal transport where appropriate and competitive services are available. The scale of these potential benefits will depend on actual user uptake, cargo volumes, transport choices and local market conditions.

For rural and peripheral regions, the main potential benefit of the jointly developed solution lies in reducing the information, coordination and capacity barriers faced by smaller logistics operators. More accessible information on available cargo, transport services and intermodal opportunities may help these operators participate in wider logistics networks and improve their connections with TEN-T nodes and corridors.

The weaknesses and threats identified through the SWOT analysis should therefore be considered when planning the continuation, possible uptake or replication of the ACCESSMILE jointly developed solution. The following table presents proportionate measures that may support the adaptation of improved cargo bundling and tracking processes to different operational and territorial contexts



Key issues from the SWOT analysis	Potential measures to overcome weaknesses and threats	Expected effects
Heterogeneous IT environments and lack of interoperability among small carriers and public digital systems	Promote the adoption of open standards (API, EDI, XML), lightweight integration templates, and interoperable data exchange guidelines for SMEs	Smoother onboarding and lower technical barriers for new adopters; improved cross-system data consistency
Low digital literacy among micro and small enterprises in rural areas	Introduce continuous training programmes, e-learning modules, and local digital facilitators supporting SMEs during early adoption	Higher digital maturity and improved user confidence, enabling stable and long-term usage
Limited pilot timeframe and lack of large-scale validation	Extend testing periods through follow-up regional initiatives and Living Lab environments; engage new logistics operators for stress testing	More robust evidence base and stronger justification for policy integration and funding
Absence of stable institutional structures for cross-border digital coordination	Encourage the formation of regional user groups, corridor-level coordination clusters, and structured governance models	Continuity of cross-border cooperation and shared ownership of digital services
Risk of insufficient user uptake to ensure financial sustainability	Develop incentive schemes, phased subscription models, and public-private co-financing mechanisms	Increased adoption rates and long-term financial viability
Resistance to behavioural change among traditional transport operators	Launch awareness campaigns, real-life demonstrations, and pilot-based success stories illustrating tangible benefits	Faster behavioural shift and improved acceptance of digital workflows
Regulatory divergence across countries (data protection and transport rules)	Establish compliance guidelines, data governance templates, and harmonisation dialogues with national authorities	Reduced legal uncertainties and smoother cross-border implementation
Market fragmentation due to competing, non-interoperable private tools	Promote interoperability frameworks and encourage voluntary alignment with EU-level standards (eFTI, DTLF, DTCs)	Prevention of digital silos and creation of a unified logistics data ecosystem
Risk of fragmentation among non-interoperable platforms	Promote compatibility with existing tools and avoid unnecessary dependence on isolated or proprietary technical configurations.	Greater flexibility and a lower risk of creating additional digital silos.
Potential environmental benefits not systematically measured	Where suitable data are available, monitor indicators such as load factors, empty mileage, route	More credible assessment of environmental effects and better evidence for future investment decisions.



	efficiency and the use of intermodal services.	
Barriers affecting operators in rural and peripheral regions	Prioritise accessible interfaces, simple onboarding, low-investment solutions and information relevant to small and geographically dispersed operators.	Easier participation in cargo bundling processes and improved access to wider logistics networks and TEN-T connections.

Table 2 - Possible measures to support the continuation and adaptation of the ACCESSMILE jointly developed solution

3. Long-term sustainability goals and strategies of the jointly developed solution

Three long-term sustainability goals have been identified to support the continuation, gradual development and possible uptake of the ACCESSMILE jointly developed solution for improved cargo bundling and tracking logistics processes.

Building on the lessons learned from the pilot actions implemented by Gruber Logistics and Rostock Port, these goals address three complementary dimensions: the continuity of the supporting digital tools and operational processes, the involvement of logistics operators and final users, and cooperation aimed at preserving interoperability and facilitating the exchange of experience.

Particular attention is given to small carriers and SMEs located in rural and peripheral areas, which may face limited digital capacity, fragmented cargo volumes and difficulties in accessing information on intermodal transport services. The long-term sustainability of the solution therefore depends not only on technical maintenance, but also on accessible tools, proportionate user support, reliable data and gradual integration into existing operational workflows.

- **Goal G1: Maintain and progressively improve the digital processes and supporting tools.**
The first goal is to ensure the continued availability and gradual development of the digital functions supporting cargo bundling, shipment tracking and access to intermodal transport information. This may include the ordinary maintenance and updating of MyDesk and the Digital Navigator within the respective digital environments of Gruber Logistics and Rostock Port, as well as the continued use of relevant third-party services. Future developments should preserve modularity, ease of use and compatibility with existing operational processes, particularly for smaller users with limited ICT resources. Where technically and economically appropriate, additional data sources, transport services or logistics operators may be connected progressively. Any such development should be based on actual operational needs and user demand rather than on the creation of a single integrated technological platform.
- **Goal G2: Promote gradual uptake among logistics operators and other relevant stakeholders.**
The second goal is to facilitate the possible uptake of improved cargo bundling and tracking processes among carriers, freight forwarders, shippers, ports and other logistics stakeholders. Awareness-raising, practical demonstrations, introductory training and proportionate user support may help reduce the organisational and digital barriers faced by small and medium-sized operators. Cooperation with transport associations, chambers of commerce, regional logistics networks and other relevant organisations may also support the dissemination of lessons learned and the identification of potential users. Uptake should follow a gradual approach, allowing users to integrate the relevant functions into their existing workflows and to assess their operational value



before committing additional resources. Particular attention should be given to operators in rural and peripheral areas, for whom accessible information on cargo availability and intermodal transport opportunities may facilitate participation in wider logistics networks.

- **Goal G3: Support stakeholder cooperation, data exchange and interoperability.** The third goal is to maintain appropriate cooperation among the organisations involved in the provision and use of cargo bundling, tracking and intermodal information services. This cooperation does not require the establishment of a new permanent institutional structure. It may instead take the form of periodic technical exchanges, user consultations, cooperation with existing logistics networks or participation in relevant European and sectoral initiatives. Such exchanges may support the sharing of implementation experience, information on technical interfaces, data-management practices and relevant regulatory developments. They may also help identify opportunities for compatibility with existing tracking, booking or transport-management services, while each organisation retains responsibility for its own systems, services and commercial decisions.

Together, these goals define a comprehensive strategy for long-term sustainability, combining technological continuity, stakeholder engagement, and institutional anchoring.

The following table summarises the three long-term sustainability goals identified for the ACCESSMILE jointly developed solution. For each goal, it outlines possible implementation strategies and the expected long-term effects. The proposed measures should be adapted to the operational needs, available resources and digital maturity of the organisations concerned. Together, the three goals address the technical continuity of the supporting tools, the gradual involvement of users and stakeholders, and the cooperation needed to facilitate data exchange and interoperability.

No.	Long-term sustainability goals	Proposed strategies for implementation of goals	Expected long-term impact
G1	Maintain and progressively improve the digital processes and supporting tools	Ensure continuous investment in system upgrades; integrate new data sources; promote interoperability across corridors; support SMEs in onboarding.	Continued availability of cargo bundling, tracking and intermodal information functions; improved reliability of information; gradual adaptation to changing user and operational requirements.
G2	Promote gradual uptake among logistics operators and other relevant stakeholders	Develop training programmes; incentivise adoption through simplified procedures; foster public-private cooperation; align onboarding processes.	Lower organisational and digital barriers; increased awareness and possible participation of SMEs and small carriers; improved access to coordinated freight flows and intermodal transport information, particularly in rural and peripheral areas.
G3	Support stakeholder cooperation, data exchange and interoperability	Encourage periodic technical exchanges and user consultations; share relevant technical and operational information where appropriate; clarify responsibilities for data provision and management; explore compatibility with	Enhanced coordination among relevant actors; reduced risk of isolated digital solutions; improved conditions for future adaptation, interoperability and possible replication.



		existing booking, tracking and transport-management services.	
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Table 3 - Proposed strategies for the long-term continuation of the ACCESSMILE jointly developed solution for cargo bundling and tracking

3.1. Hints for continuation & extension of the solution

The continuation and possible extension of the ACCESSMILE jointly developed solution should build on the improved cargo bundling and tracking processes derived from the complementary pilot experiences of Gruber Logistics and Rostock Port.

The long-term objective is not to create a single integrated platform connecting MyDesk and the Digital Navigator, but to preserve and further apply the common operational principles identified through the project. These include easier participation of small carriers in cargo bundling processes, improved shipment visibility, more accessible information on intermodal transport opportunities and gradual integration of digital services into existing logistics workflows.

The lessons learned indicate that the continuation of these processes depends on maintaining accessible, modular and user-oriented digital tools. MyDesk and the Digital Navigator may continue evolving within the respective operational and digital environments of Gruber Logistics and Rostock Port, according to actual user needs, organisational priorities and available resources. Relevant third-party services, including booking, route-planning or intermodal information tools, may also continue to be used where they provide practical value and can be integrated under appropriate technical and contractual conditions.

For Gruber Logistics, continuation may focus on maintaining and progressively improving the functions that support small carriers in identifying cargo opportunities, coordinating shipments and participating in wider freight bundling processes. Particular attention should be given to usability, simple onboarding and compatibility with the established working practices of smaller operators, especially those with limited ICT capacity.

For Rostock Port, continuation may focus on maintaining accessible information on intermodal transport services and facilitating the identification of suitable road, rail and maritime connections. The Digital Navigator and connected services may help logistics operators compare available alternatives and obtain more transparent information on possible transport chains, subject to the availability and quality of the underlying service data.

The two experiences provide complementary lessons that may support the gradual adaptation of cargo bundling and tracking processes in other logistics contexts. Their continuation does not require the technical integration of the two platforms. Periodic exchanges of experience between the partners and with other interested organisations may nevertheless help identify common user needs, suitable data formats, relevant interoperability requirements and approaches for involving small logistics operators.

Possible extension of the jointly developed solution may include:

- involving additional carriers, freight forwarders, shippers or logistics service providers where sufficient interest exists;
- improving the quality and availability of cargo, tracking and transport-service information;
- connecting additional digital services where technically feasible and operationally useful;
- adapting interfaces and onboarding procedures to the needs of SMEs and small carriers;
- providing practical guidance, demonstrations or introductory training for new users;
- collecting user feedback to assess which functions generate practical operational value;
- exploring compatibility with existing tracking, booking and transport-management systems.



Extension should follow a gradual and demand-driven approach. New functions, users or services should be introduced only where they respond to identified operational needs and where responsibilities for data provision, technical maintenance and user support can be clearly defined. This reduces the risk of developing functionalities that are not sufficiently used or that create additional complexity for smaller operators.

The continuation of the jointly developed solution may also benefit from cooperation with existing logistics associations, chambers of commerce, regional networks, ports and transport service providers. Such cooperation could support dissemination, user engagement and the exchange of implementation experience without requiring the establishment of a new permanent institutional framework.

From an environmental perspective, continued use and possible extension of improved cargo bundling and tracking processes may contribute to better load consolidation, improved vehicle utilisation and fewer empty or partially loaded journeys. More accessible information on rail and maritime services may also help operators consider intermodal alternatives where suitable and competitive options are available. These effects will depend on actual user participation, cargo volumes, service availability and resulting transport choices.

The solution may be particularly relevant for rural and peripheral areas, where freight flows are often dispersed and small operators may have limited access to digital services, cargo information and structured intermodal transport opportunities. Accessible tools for cargo coordination, tracking and transport-service information may reduce these barriers and help smaller operators connect with wider logistics networks and TEN-T nodes.

Overall, the continuation and possible extension of the ACCESSMILE jointly developed solution should focus on maintaining practical and accessible digital processes, gradually involving additional users and services, and adapting the available functions to real operational requirements. The experience of the two pilot actions provides a common reference for this development, while leaving each organisation responsible for determining the most appropriate technical, operational and financial arrangements within its own context.

4. Financial indications related to the long-term sustainability

The long-term financial sustainability of the ACCESSMILE jointly developed solution depends on the continued availability of the digital tools and services supporting improved cargo bundling, shipment tracking and access to intermodal transport information. It also depends on the capacity of the organisations concerned to integrate these functions gradually into their ordinary operational and digitalisation activities.

The financial assessment should not be limited to the maintenance of MyDesk and the Digital Navigator as individual platforms. It should consider the costs associated with the wider logistics processes supported by the solution, including user onboarding, data provision, information updating, technical integration and assistance to small carriers and other logistics operators.

Where the relevant functions are already incorporated into the existing IT environments of Gruber Logistics and Rostock Port, their continuation may be supported through ordinary ICT and digitalisation budgets. The extent to which this is possible will depend on the future functions maintained, the number of users, the use of external services and the technical support required.

Possible long-term expenditure may include:

- ordinary software maintenance and technical updates;



- cloud hosting, licences or subscriptions, where applicable;
- cybersecurity, data protection and access management;
- maintenance of interfaces with tracking, booking, route-planning or transport-management services;
- acquisition, validation and regular updating of cargo and transport-service data;
- user assistance, onboarding and introductory training;
- adaptation of interfaces and functions to changing operational requirements;
- collection of user feedback and monitoring of relevant operational and environmental indicators.

The modular nature of the jointly developed solution may support a gradual approach to expenditure. Organisations may initially maintain or introduce only the functions that respond to identified user needs and subsequently consider additional services where sufficient demand and operational value are demonstrated. This can help limit initial financial exposure and avoid maintaining functionalities that are not sufficiently used.

This approach may be particularly relevant for small carriers, SMEs and logistics communities in rural and peripheral areas. These users may have limited capacity to bear significant initial costs or invest in complex technical integrations. Accessible interfaces, simple onboarding procedures and the use of existing digital infrastructure can therefore help reduce financial barriers to participation.

Possible funding sources for future continuation, adaptation or replication may include:

- ordinary ICT and digitalisation budgets of the organisations managing the relevant tools or services;
- European programmes supporting transport digitalisation, interoperability, multimodality and environmental sustainability, such as Interreg, the Connecting Europe Facility or Horizon Europe;
- national or regional schemes supporting SME digitalisation, logistics innovation or access to intermodal transport;
- cooperation with logistics associations, ports, digital service providers or regional development organisations;
- private contributions or user fees for specific additional services, where justified by actual demand and the value provided.

No single financial model is necessarily suitable for all contexts. The allocation of costs should reflect the ownership of the digital tools, the organisations responsible for providing and updating data, the users benefiting from the services and the type of functions offered.

Where commercial services are introduced, possible user contributions should remain proportionate and should not create excessive barriers for small operators. Basic information or onboarding functions could, where feasible, be supported through ordinary budgets or public funding, while more specialised analytical, integration or support services might be subject to separate financial arrangements. Any such model would need to be assessed by the organisation concerned on the basis of demand, operating costs and applicable commercial conditions.

Financial decisions should also take into account the potential operational and environmental benefits of improved cargo bundling and tracking processes. Better load coordination may help increase vehicle utilisation and reduce empty or partially loaded journeys, while improved information on intermodal services may support more efficient transport choices where suitable alternatives are available. These potential benefits may generate savings for users, but their scale will depend on actual uptake, cargo volumes and changes in transport behaviour.

For rural and peripheral regions, the economic value of the solution may also derive from improved access to cargo opportunities, transport information and wider logistics networks. By reducing information and coordination barriers, the solution may enable smaller operators to participate in freight flows that would



otherwise be difficult to access. These benefits should nevertheless be assessed against the costs of maintaining data, technical services and user support.

5. Recommended jointly developed solution governance schemes

To support the long-term continuation and possible extension of the ACCESSMILE jointly developed solution, appropriate governance arrangements should accompany the improved cargo bundling and tracking logistics processes. These arrangements should address not only the maintenance of the supporting digital tools, but also data quality, user involvement, interoperability, cybersecurity and adaptation to changing operational needs.

Governance should primarily be organised within the existing operational and organisational structures of Gruber Logistics and Rostock Port. Each organisation should retain responsibility for its own digital tools, services, data-management arrangements and relationships with users and external service providers. The jointly developed solution does not therefore require the creation of a single governance structure or the joint management of MyDesk and the Digital Navigator.

For Gruber Logistics, relevant governance arrangements may focus on:

- maintaining the digital functions supporting cargo coordination and bundling;
- defining responsibilities for the provision, validation and updating of cargo information;
- providing accessible onboarding and user assistance for small carriers;
- protecting operational and commercially sensitive data;
- collecting feedback from carriers, freight forwarders and shippers;
- adapting the service progressively to demonstrated user needs.

For Rostock Port, governance may focus on:

- maintaining reliable and updated information on intermodal transport services;
- coordinating, where appropriate, with ICT providers and providers of booking, route-planning or transport information services;
- ensuring appropriate management of interfaces, access rights and cybersecurity;
- involving logistics operators and other users in the assessment of information and service needs;
- adapting the Digital Navigator and connected services according to available data and operational priorities.

The lessons learned from the pilot actions indicate that governance of cargo bundling and tracking services should be proportionate to the functions actually provided. Not every digital service requires the same level of coordination or institutional involvement. The organisations concerned should identify the actors whose participation is necessary according to the type of data exchanged, the users involved and the operational processes supported.

Depending on the specific context, relevant stakeholders may include:

- carriers, freight forwarders and shippers;
- ports, terminals and intermodal service providers;
- ICT and digital service providers;
- logistics associations and chambers of commerce;
- regional or public authorities, where their involvement is relevant to the service or funding arrangement.



Where appropriate, stakeholder consultation may help ensure that the digital tools remain understandable, accessible and compatible with existing operational practices. This is particularly important for small carriers and SMEs, which may have limited staff, financial resources or digital capacity.

Data governance is also an important condition for continuation. Responsibilities should be clarified for providing, updating and verifying information on cargo, shipments and available transport services. Suitable access rights and data-protection arrangements should be applied where commercially sensitive or personal information is involved. The level of technical and organisational control should remain proportionate to the type of data processed and the functions provided.

Periodic exchanges between Gruber Logistics and Rostock Port may support the continued transnational value of the jointly developed solution. Such exchanges could concern lessons learned, user engagement, data quality, interoperability requirements and possible links with existing tracking or booking services. They would not imply the creation of a permanent joint governance body or the technical integration of the two platforms.

Existing projects, sectoral or European cooperation networks may also be used, if useful, to share experience with other logistics organisations. Participation in such exchanges should remain voluntary and focused on practical issues relevant to the continuation or possible adaptation of cargo bundling and tracking processes.

Environmental aspects may be considered within governance and service evaluation where suitable data are available. Relevant organisations may examine indicators such as vehicle load factors, empty or partially loaded journeys, route efficiency and the use of intermodal services. This could help determine whether improved cargo coordination is contributing to more efficient transport operations, without assuming that environmental benefits will arise automatically.

Governance arrangements should also consider the needs of users located in rural and peripheral regions. Simple onboarding, accessible interfaces, clear information and proportionate technical support may help prevent digital requirements from becoming an additional barrier for smaller or geographically dispersed operators. Consultation with these users can support the adaptation of the tools to their actual operational conditions.

6. Recommendations and suggestions for the replication of the jointly developed solution beyond the pilot area

The ACCESSMILE jointly developed solution for cargo bundling and tracking may provide a useful reference for regions and logistics communities seeking to improve the participation of small carriers in coordinated freight flows and facilitate access to information on intermodal transport opportunities.

The lessons learned from the pilot actions indicate that elements of the solution may be particularly relevant in contexts characterised by fragmented cargo flows, a high presence of small and medium-sized logistics operators, limited digital maturity and insufficient visibility of available transport services. These conditions are frequently found in rural and peripheral regions, where individual operators may lack the cargo volumes, digital resources or market information needed to access structured logistics chains and intermodal services independently.

Replication should focus primarily on the underlying improved logistics processes, rather than on the direct reproduction of MyDesk, the Digital Navigator or any other individual technological configuration. The transferable principles identified through ACCESSMILE include:

- facilitating the participation of small carriers in cargo bundling and consolidation processes;



- improving the availability and visibility of cargo and shipment information;
- supporting shipment tracking and operational coordination;
- making information on intermodal transport services and booking opportunities more accessible;
- reducing information and organisational barriers among shippers, carriers, freight forwarders, ports and terminals;
- introducing digital functions gradually into existing logistics workflows.

Before considering replication, the interested organisation or regional logistics community should assess its operational and territorial context. This preliminary assessment may examine:

- the degree of fragmentation of cargo flows;
- the number and characteristics of small carriers and SMEs operating in the area;
- existing practices for cargo allocation, consolidation and shipment coordination;
- the availability and quality of cargo and transport-service data;
- existing tracking, booking and transport-management systems;
- the availability, frequency and competitiveness of intermodal services;
- the digital maturity and technical capacity of potential users;
- the willingness of operators to share relevant operational information;
- applicable contractual, commercial, data-protection and confidentiality requirements.

On the basis of this assessment, the relevant components of the jointly developed solution may be selected and adapted to local needs. Replication does not require the simultaneous implementation of all functions. Depending on the identified barriers, an organisation may initially focus on cargo visibility, simplified onboarding of small carriers, shipment tracking, information on intermodal alternatives or access to existing booking services.

A modular and gradual approach is recommended. New functions should be introduced progressively, allowing users to test their operational relevance and provide feedback before additional investment or technical integration is undertaken. This approach may reduce implementation risks and avoid introducing digital services that are not sufficiently aligned with actual user needs.

The experience of Gruber Logistics provides relevant lessons for regions seeking to involve small carriers in more structured cargo bundling processes. Replication in another context may require accessible interfaces, simple registration procedures, practical user assistance and a clear explanation of the operational benefits for participating carriers. Particular attention should be given to ensuring that the digital process remains compatible with the daily working practices and limited administrative capacity of smaller operators.

The Rostock Port experience provides complementary lessons for logistics environments seeking to improve access to information on intermodal transport options. Digital tools may help operators identify available road, rail and maritime connections and obtain more transparent information on possible transport chains. However, the practical value of such services will depend on the availability, reliability and competitiveness of the underlying intermodal alternatives.

Successful replication should therefore remain adaptive and context-sensitive. The technological components, data requirements and organisational arrangements should reflect local cargo volumes, transport services, market conditions, institutional responsibilities and levels of digital maturity. A model that is appropriate for one region may require substantial adaptation before it can generate value in another.

Interoperability should be considered from the beginning. Where appropriate, the replicated solution should be capable of exchanging information with existing tracking, booking, transport-management or logistics platforms. Documented interfaces and commonly used data formats may facilitate integration and reduce



the risk of creating additional isolated systems. Nevertheless, the degree of technical integration should remain proportionate to the functions required and the resources available.

Reliable data are an essential condition for replication. Responsibilities should be defined for providing, verifying and updating information on cargo availability, shipments and transport services. Users should also understand who may access the data and for what purposes, particularly where commercially sensitive information is involved. Appropriate data-protection and confidentiality arrangements can support trust and participation among logistics operators.

User involvement is equally important. Small carriers, shippers, freight forwarders and transport-service providers should, where appropriate, be consulted when identifying operational needs and adapting the relevant functions. Practical demonstrations, introductory training and gradual onboarding may support acceptance and help determine whether the tools provide sufficient operational value.

Replication may also benefit from cooperation with existing logistics associations, chambers of commerce, ports, regional development organisations and transport networks. These actors may help identify potential users, disseminate lessons learned and support capacity-building activities. Such cooperation does not require the establishment of a new permanent governance structure and may be organised through existing networks and initiatives.

From an environmental perspective, improved cargo bundling and tracking processes may contribute to better load consolidation, increased vehicle utilisation and fewer empty or partially loaded journeys. More accessible information on intermodal services may also support the consideration of rail or maritime alternatives where these are available and competitive.

However, these environmental benefits should not be assumed automatically. Their scale will depend on the number of participating users, cargo volumes, actual improvements in load factors and resulting transport choices. Where suitable data are available, adopting organisations may monitor indicators such as:

- vehicle load factors;
- empty or partially loaded mileage;
- number of shipments coordinated or consolidated;
- route efficiency;
- use of available rail or maritime services;
- estimated fuel consumption and related emissions.

The solution may be particularly relevant for rural and peripheral regions. Small operators in these territories may face dispersed cargo volumes, longer distances to major logistics nodes, limited access to digital services and insufficient information on intermodal opportunities. Accessible tools for cargo coordination, tracking and transport-service information may reduce some of these barriers and facilitate their participation in wider freight networks.

Replication in these areas should prioritise simple onboarding, accessible interfaces, proportionate technical requirements and low initial investment. Digitalisation should facilitate access to logistics services rather than create new administrative or technical barriers for users with limited resources.

Possible replication should therefore follow a stepwise process:

1. assess local cargo flows, user needs and existing digital services;
2. identify the most relevant cargo bundling, tracking or intermodal information functions;
3. involve potential users in adapting the proposed processes;
4. introduce the selected functions gradually;
5. provide proportionate training and user support;
6. collect feedback and monitor operational effects;
7. consider further extension only where sufficient demand and practical value are demonstrated.



The ACCESSMILE jointly developed solution offers a common reference for the possible adaptation of improved cargo bundling and tracking processes beyond the pilot areas. Its replication should not be understood as the transfer of a fixed digital platform, but as the context-sensitive application of transferable operational principles aimed at reducing logistics fragmentation, improving information availability and facilitating the participation of smaller operators in coordinated and intermodal freight chains.

7. Conclusion. ACCESSMILE jointly developed solution to be taken up / upscaled.

The ACCESSMILE jointly developed solution under Topic 3 consolidates the complementary lessons learned from the pilot actions implemented by Gruber Logistics in Poland and Rostock Port in Germany into a common approach for improving cargo bundling and tracking logistics processes.

The two pilot actions addressed related but distinct barriers. The experience of Gruber Logistics focused on facilitating the participation of small carriers in cargo bundling and coordinated freight processes, while the Rostock Port experience focused on improving access to information on intermodal transport services and booking opportunities. These experiences should not be understood as forming a single integrated technological platform. Rather, they contribute complementary operational principles that may support more accessible, transparent and coordinated freight transport.

The jointly developed solution therefore focuses on:

- facilitating the participation of small carriers and SMEs in cargo bundling and consolidation processes;
- improving the availability and visibility of cargo and shipment information;
- supporting tracking and coordination throughout the logistics process;
- making information on intermodal transport options and booking services more accessible;
- reducing information and organisational barriers among shippers, carriers, freight forwarders, ports and transport-service providers;
- integrating digital functions gradually into existing logistics workflows.

The lessons learned indicate that cargo bundling and tracking services are more likely to generate practical value when they are modular, accessible and adapted to the operational capacity of their users. Simple onboarding, reliable data, user support and compatibility with existing working practices are particularly important for micro-enterprises and small carriers with limited ICT resources.

The effectiveness of the jointly developed solution nevertheless depends on conditions that extend beyond the technical functionality of the supporting tools. Sufficient user participation, regularly updated cargo and service information, trust in data-sharing arrangements and the availability of suitable transport services are necessary to translate improved digital information into operational benefits.

From an environmental perspective, better cargo coordination and bundling may contribute to higher vehicle load factors and fewer empty or partially loaded journeys. Improved visibility of rail and maritime services may also help operators consider intermodal alternatives where these are available, competitive and suitable for the cargo concerned. The scale of these potential effects will depend on actual uptake, cargo volumes and resulting transport choices and should therefore be assessed through suitable indicators where data are available.

The solution may be particularly relevant for rural and peripheral areas, where cargo flows are often dispersed and smaller operators may have limited access to digital services, cargo opportunities and structured intermodal transport chains. Accessible information, shipment visibility and simplified



participation in cargo bundling processes may help these operators connect with wider logistics networks and improve their access to TEN-T nodes and corridors.

The Topic 3 solution may also complement the improved transport flow and gate-management processes addressed under ACCESSMILE Topics 1 and 2. Cargo information and coordination can provide greater operational value when they are compatible with the digital processes used for vehicle management, terminal access and intermodal operations. Any future connection among these functions should nevertheless reflect actual operational needs and the technical environment of the organisations concerned.

The lessons learned also highlighted that cargo bundling and tracking solutions achieve their highest effectiveness when combined with the governance, gate automation and transport flow management approaches developed under Topics 1 and 2, contributing to the creation of an integrated and interoperable logistics ecosystem.

Overall, the ACCESSMILE jointly developed solution provides a common and transferable reference for the possible continuation and adaptation of improved cargo bundling and tracking processes. Uptake and upscaling should follow a gradual, demand-driven and context-sensitive approach rather than the direct replication of MyDesk, the Digital Navigator or any other fixed technological configuration.

The table here below summarises possible pathways for the continuation, uptake and gradual upscaling of the jointly developed solution. It does not prescribe a uniform digital platform or implementation model. The relevant combination of cargo bundling, tracking, information and booking-support functions should be determined according to the operational needs, resources, available services and digital maturity of each adopting organisation.

ACCESSMILE Solution Topic.3: Cargo bundling & tracking	
Final users/target groups	Small carriers and logistics SMEs, particularly those operating in rural and peripheral regions; shippers; freight forwarders; ports and terminals; intermodal transport providers; logistics associations; regional logistics communities; and other organisations requiring accessible cargo, tracking and transport-service information
Final user needs addressed	Accessible, modular, and interoperable digital platforms; real-time shipment tracking; improved coordination; capacity optimisation; environmentally sustainable logistics; simplified access to TEN-T network.
Co-design process (involved partners and country involved)	The jointly developed solution draws on the complementary pilot experiences of PP10 Gruber Logistics in Poland and PP11 Rostock Port in Germany. Through project exchanges, the partners compared the needs of small road carriers and users seeking access to intermodal services and consolidated the resulting lessons into a common set of operational principles for cargo bundling, tracking, information exchange and user accessibility. The co-design process does not imply that MyDesk and the Digital Navigator were integrated into a single platform.
Uptake strategy	Interested organisations should assess their cargo flows, user needs, available data, existing digital systems and intermodal service offer before selecting the relevant functions. Early



	involvement of carriers, shippers, freight forwarders and service providers can help ensure that the adopted processes respond to actual operational needs. Awareness-raising and training; modular adoption integrated with existing workflows; stakeholder engagement; demonstration of cost-efficiency and environmental benefits.
Up-scaling Strategy	Upscaling should be gradual and demand-driven. It may involve additional users, cargo sources, tracking functions, transport-service information or connections with existing booking and transport-management systems. Expansion should take place only where responsibilities for data provision, technical maintenance and user support can be clearly defined. Particular attention may be given to simple, modular and low-investment solutions suitable for small operators and logistics communities in rural and peripheral areas.

Table 4 - ACCESSMILE Topic 3. up-scaling strategy

In conclusion, the ACCESSMILE pilot actions implemented by Gruber Logistics and Rostock Port indicate that digitalisation, collaboration and inclusiveness are important elements in the development of more efficient and accessible European logistics systems. By addressing the needs of SMEs and small carriers, particularly those operating in rural and peripheral areas, the project has shown how accessible ICT tools and improved cargo bundling and tracking processes can help reduce information, capacity and geographical barriers and facilitate participation in wider logistics and intermodal transport networks.

The jointly developed solution should therefore be understood not only in terms of the technological tools tested, but also as a common operational approach based on accessible information, cargo coordination, shipment visibility and gradual integration into existing logistics workflows. Its possible continuation and upscaling may support local logistics ecosystems, contribute to better load consolidation and more efficient transport choices, and strengthen connections between peripheral regions and the TEN-T network. The extent of these benefits will depend on actual user uptake, the availability of reliable data and transport services, and the adaptation of the solution to local operating conditions.

Ultimately, the ACCESSMILE experience provides a clear message: the digital transition of European logistics should be inclusive, interoperable and anchored in real operational needs, targeting both the environmental sustainability and the engagement of shippers and logistics operators located in rural and peripheral areas. The cooperation between Gruber Logistics and Rostock Port has provided complementary lessons that may support the gradual development of more connected, sustainable and territorially inclusive freight transport, contributing to the broader objectives of a Green and Digital Europe.