



## PARALLEL PATHS TO RESILIENCE: HOW SARIL AND REMuNET ARE TRANSFORMING FREIGHT LOGISTICS

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In the face of unprecedented disruptions, such as pandemics, geopolitical conflicts, and climate-related crises, the transport and logistics sector is increasingly challenged to maintain efficiency and sustainability. Both the SARIL and ReMuNet projects aim to address these issues, each taking unique approaches that, while distinct, share common goals of enhancing resilience and promoting sustainability in freight logistics.

The modern global supply chain is a complex web, heavily reliant on the smooth functioning of logistics networks. However, the COVID-19 pandemic has exposed significant vulnerabilities, revealing how quickly these networks can become disrupted. Moreover, the pressures of climate change necessitate a transition to greener freight transport solutions. The urgent need for a more resilient, adaptable and sustainable logistics system has never been clearer.

Shaping collaborative European logistics: The physical internet

The European Physical Internet (PI) aims to transform logistics by creating an open, interconnected network for the movement of goods, inspired by the digital internet's structure. It envisions a system of standardized, modular containers that can seamlessly transition across different transportation modes. This interconnected network would allow goods to flow dynamically through optimized routes and nodes, similar to data packets on the internet. Companies collaborate within this system, sharing resources and infrastructure to reduce costs, empty trips, and emissions. Advanced data-sharing, IoT, and AI-driven algorithms support real-time tracking and predictive analytics to enhance efficiency and decision-making. Ultimately, the PI seeks to build a more sustainable, resilient logistics framework that reduces environmental impact and enables seamless cross-border trade.



## SARIL'S APPROACH: QUANTIFYING GREEN RESILIENCE

SARIL focuses on enhancing decision-making in multimodal transport and logistics systems in the face of disruptions by combining resilience and sustainability. A system is resilient and sustainable if it uses minimal resources to withstand and recover from disruptions. SARIL employs quantitative resilience assessments and key performance indicators to measure how well transport systems can withstand disruptions while minimizing their environmental impact.

SARIL operates through three distinct scenarios across various geographical scales—regional, national, and international—developing tools to model the impacts of natural hazards, pandemics, and geopolitical conflicts as well as mitigation options. By capturing the performance of transport systems under both normal conditions and during disruptions, SARIL provides valuable insights into vulnerabilities and strategies for improvement.



## REMUNET'S APPROACH: DYNAMIC AND COLLABORATIVE LOGISTICS

ReMuNet complements SARIL's efforts by emphasizing a collaborative, data-driven, and multimodal approach to freight logistics. Following the idea of the Physical Internet, the project's platform connects key players in the supply chain, including carriers, freight forwarders, and operators fostering real-time data sharing. This collaboration allows logistics



stakeholders to adapt swiftly to unexpected disruptions by dynamically rerouting shipments building on individual strengths of each transport mode on road, rail and inland waterways.

Central to ReMuNet's strategy is its focus on multimodal orchestration, which enables seamless transitions between different transportation modes. By utilizing advanced algorithms, the platform identifies alternative routes and optimizes transport networks, taking into account not only time and cost but also environmental considerations through integrated CO2 monitoring. This innovative approach positions ReMuNet at the forefront of resilient and sustainable logistics solutions.



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## **COLLABORATION: LEVERAGING SYNERGIES OF SARIL AND REMUNET**

Both SARIL and ReMuNet aim to enhance the resilience of freight transport systems and promote sustainability. They share a commitment to using data-driven insights to identify vulnerabilities and develop strategies for improvement. Furthermore, both projects emphasize stakeholder engagement, recognizing the importance of collaboration across the supply chain to achieve their goals.

However, their methodologies differ. SARIL focuses on quantitative assessments and scenario modelling to provide a comprehensive understanding of resilience, while ReMuNet prioritizes data-sharing and dynamic decision-making to adapt logistics operations as conditions change. Additionally, SARIL integrates green considerations into its resilience framework, while ReMuNet actively employs multimodal transport and environmental monitoring for its sustainability strategy.

The collaboration between SARIL and ReMuNet exemplifies how projects can work in parallel to tackle complex challenges in freight logistics. By leveraging each other's strengths, they can create a more comprehensive approach to resilience and sustainability. For instance, insights gained from SARIL's scenario modelling could enhance ReMuNet's algorithms for improving disruption management, while ReMuNet's data insights could inform SARIL's quantitative assessments.

Furthermore, the shared commitment to disseminating their findings to the scientific community and relevant stakeholders ensures that best practices and lessons learned will benefit the broader logistics industry. This collaborative synergy not only amplifies their individual impacts but also accelerates the transition towards a resilient and sustainable logistics network.

As both SARIL and ReMuNet continue their work, they represent crucial steps toward reshaping the future of freight logistics. By addressing immediate disruptions and laying the groundwork for sustainable practices, these projects are paving the way for a logistics system that is not only resilient but also environmentally responsible. Together, they exemplify the power of collaboration in achieving shared goals, ultimately contributing to a more adaptive and sustainable global supply chain and taking a big step towards realizing the Physical Internet.

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### **For more information and updates follow ReMuNet and SARIL on social media:**

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