Responsive and Reconfigurable value network for the manufacture of bulky parts

Type of action: HORIZON Research and Innovation Actions

Work programme topic addressed: HORIZON-CL4-2024-TWIN-TRANSITION-01-03

Deliverable 2.2 MaaS platform requirement and industrial target KPI definition

EC Grant Agreement number: 101178405	
Start date of project: 1st of October 2024	Duration: 36 months
Lead beneficiary of this deliverable: I3B	**Due date of deliverable: 28/02/2025**
Work Package: WP2	Task(s): T2.1, T2.3
Actual submission date: 15/04/2025	Status: Draft /In Review /**Final**

Project funded by the European Commission within the Horizon Europe Programme (2021-2027)

Type		
R	Document, report excluding the periodic and final reports	X
DMP	Data Management Plan	
DEM	Demonstrator, pilot, prototype	
OTHER	Software, technical diagram, etc.	
Dissemination level		
PU	PUBLIC Information	
SEN	SENSITIVE, restricted under conditions set out in Model Grant Agreement	X

DOCUMENT HISTORY

Version	Date	Description / Reason of change	Author
V0.1	20/12/2024	First Draf Version	Unai Arenal
V0.2	24/1/2025	First Version	Pedro de la Peña
V0.3	05/3/2025	version ready for revision	Pedro de la Peña

AUTHORS, CONTRIBUTORS AND REVIEWERS

AUTHORS

Partner	Name
I3B	Unai Arenal
I3B	Pedro de la Peña

CONTRIBUTORS

Partner	Name
TUDa	Benjamin Rähmer
SIN	Phu Nguyen
IDK	Alexander Iglesias
2LC	Miguel F. Astudillo
SMT	Alberto Cerezal

REVIEWERS

Partner	Name	Review Objectives
INTRA	Kourempanas Panagiotis	

DISCLAIMER

ACKNOWLEDGEMENT

This document is a deliverable of Reed project. This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement Nº 101178405

1 Executive Summary

1.1 Executive Factsheet

Who should read this deliverable? Who are the stakeholders concerned by this deliverable? (distinguish different types of organisations, roles in organisations and interest focus)	Why should s/he read this deliverable? What will s/he learn from this deliverable?	Which part of the content is most relevant for him / her?
Reed's Pilots	This document details the key components of the Reed project, which is designed to enhance comprehension of Reed's strategy to address manufacturing challenges related to bulky components.	Section 5
Reed's Components developers	This document will outline the production processes for the project pilots and the primary KPIs that the developed components are expected to achieve.	Section 4
All Partners	All partners will gain a better understanding of how Reed supports the needs of potential end users, and how the whole process is integrated	Section 4,5,6

1.2 Executive Summary

This document presents the functional requirements necessary for designing and developing the REED framework and outlines the methodology for managing these requirements throughout the project lifecycle. Additionally, it provides an overview of the Verification and Validation (V&V) strategy, recognizing the potential evolution of requirements within the project's scope.

The REED project aims to establish an advanced framework for the efficient manufacturing of large-scale components, integrating cutting-edge digital technologies and data-driven methodologies. Deliverable D2.2 builds upon the findings of Task 2.1 (Definition of Requirements for the REED Framework) and Task 2.3 (Analysis of Internal Systems of Involved Stakeholders), summarizing key outcomes and defining the requirements framework. The document also specifies the selection process for stakeholders based on economic, operational, environmental, and quality criteria.

The document details:

- The identification and specification of the essential requirements for REED, ensuring alignment with the needs of manufacturers, service partners, and customers.
- The elaboration of functional and non-functional attributes concerning order management, production scheduling, quality control, and logistics.
- The establishment of a methodology for requirement engineering based on ISO/IEC/IEEE 29148 standards, acknowledging the evolving nature of requirements throughout the project lifecycle.
- The integration of industrial Key Performance Indicators (KPIs) for monitoring progress and evaluating results across different industrial pilots.

Coordination activities have been carried out to ensure the seamless integration of contributions from all project partners. I3B has led the development of Task 2.1, structuring activities, distributing responsibilities, and overseeing progress through structured milestones. The coordination process included periodic virtual meetings, continuous email communication, and dedicated workshops with stakeholders. IDK has played a key role in Task 2.3, leading efforts to define the industrial use cases, facilitating site visits to collect firsthand information, and structuring a framework to enhance the adaptability of REED solutions across sectors.

Additionally, the document presents the foundational components of REED, including:

- Decentralized production scheduling
- Production management scoreboard
- Digital twin for environmental impact
- Manufacturing performance modeling
- Smart manufacturing devices
- Process tracking solutions
- Learning feedback loop
- Digital Product Passport (DPP) implementation
- REED operational framework
- Industrial Data Spaces integration

Furthermore, the document outlines the **non-functional requirements** necessary for ensuring a robust, secure, and interoperable REED framework. These include non-repudiation, confidentiality, modularity, co-existence, interoperability, usability, reusability, and time behavior.

In conclusion, this deliverable establishes the foundational requirements for the REED platform, ensuring that it meets industrial needs while maintaining adaptability and scalability. The next steps involve refining these requirements through ongoing validation processes, implementing pilot demonstrations, and continuously assessing the impact of REED solutions across different industrial contexts.