

# INEDIT

open INnovation Ecosystems  
for Do It Together process

## D4.3. MONITORING AND ASSESSMENT OF THE DEMONSTRATOR'S DEPLOYMENT BASED ON THE FRAMEWORK

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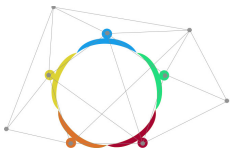
**WP4.3**


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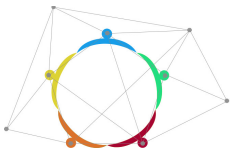


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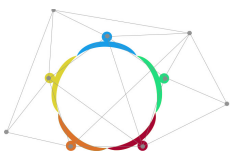
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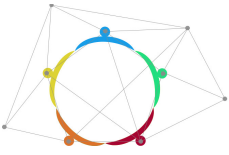


# Summary

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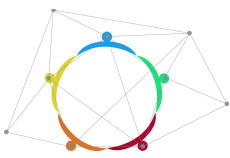
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## Executive summary

As described in D4.2, task 4.2 focuses on the definition of the ideal framework for the DIT Open Manufacturing Demonstrators (OMD) and its Open Manufacturing Demonstrators Facilities (OMDFs) specifications. This framework is supported by a model-based methodology (V-model introduced in D2.3) that specifies the architecture of the Do-It-Together OMD and its interacted OMDFs. The resulting model described the overall architecture of the OMD and its use cases, in terms of process, activities and tasks supporting its dynamical behaviour.

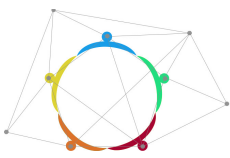
The task 4.3 consists then in the projection of this architecture on each OMDF to guide their development as integrated parts of the OMD. During this task, each OMDF will be monitored and supervised. **The purpose of this deliverable is to present the baseline structure of the tools and methods used to monitor the technological and organizational development of the future use cases according the ideal INEDIT framework.** In this report, **the details of the technological and organizational development of the future use cases will not be described since it will be the goal of WP6 (Tasks 6.2, 6.3, 6.4, 6.5).**

Between November 2020 and June 2021, the consortium codesigned & validated **2140 control criteria to implement and validate a global Open Manufacturing Demonstrator** (including 4 OMDFs, the digital platform and the co-creation process). After several iterations inside the consortium, **1186 control criteria are mandatory, 234 facultative**, and 720 will not be experimented during the INEDIT project. The interdependence of functions and partners in the success of the project, the wealth of data, the diversity of actors, the geographical distance, etc. require a fine, agile and creative management based on indicators and evidence of success. **We will not produce here all the elements capitalized to structure the deployment of the demonstrator:** 1420 excel lines spread over 60 sheets. These elements are available on request. In this D.4.3, **we propose an analysis of the development dynamics undertaken by the consortium.** Furthermore, the technological and organizational contents will be integrated in the user guide to design an OMDF (D4.5). To give the reader a better idea of the developments, we provide some illustrations (including links to videos of the technologies developed).

One major drawback that needs to be pointed out is that working remotely without the possibility of bringing the consortium together around the Use Cases has led to a real lack of visibility of the necessary links between the UCs. Moreover, this is a difficulty in the understanding of the tangible results regularly achieved. To remedy this situation, the WP4 leader has increased its investment in terms of manpower and designed of new strategies based on creative and agile methodologies:

- 1) to allow all partners to capitalize on their development.
- 2) to follow the progress of others and improve collaboration (dashboards are installed in the SharePoint of INEDIT project).
- 3) to highlight the links between all the technological and organizational developments to meet the requirements of the DIT framework, described through the 10 functions.

Thus, **the WP4 leader proposes two additional dashboards (Digital platform and Co-creation experts) to strengthen the coherence of the project and to follow both the physical and digital implementation.** Finally, in the global health context, this additional effort will be necessary to ensure the task 4.4 as initially described. These six dashboards allow to follow the evolution of the use cases based on the specifications



established in 4.2. Completed by key players and available for consultation by all, they generate data exchange and shared standard representations of products and processes (INEDIT physical and digital platforms). Following the DIT ideal framework, they ensure the compatibility of modelling and simulation with different process information systems. Nevertheless, **despite this extra effort, working at a distance without the possibility of seeing the physical spaces and working together in a real situation makes the process longer.**

This is the process we started in this task, and which is reflected in this deliverable. In early February 2022, 50% of the targets are partially or fully met. 33 % are not yet achieved and the status of 16% of the criteria remains to be clarified. Since the elements provided 45% of the objectives are fully (7%) or partially (38%) validated by WP4 leader. While the use cases require specific technological and organizational developments, many criteria require the platform to be put in place to be tested in a real context and validated.

In addition to the dependence on WP3, heavily impacted by the covid pandemic, developments have also suffered greatly from the health crisis. All the partners suffered from the periods of confinement not allowing access to the sites as well as the delay of supply for the materials. Some government directives forced some companies to cut back temporary staff and reduce working hours or the goods could no longer be delivered. However, we note that the university platforms engaged in a FabLab / open community logic seem to have been able to rebound more quickly. The pandemic has shown the difficulty of depending on globalized flows. Under certain conditions, collaboration between universities and FabLabs helps to establish Open-Innovation networks to initiate manufacturing that support customer-driven production all around Europe. This is an encouraging sign for the DIT approach.

### **Description of the tasks 4.3 & 4.4 from the proposal**

#### **Task 4.3: Technological and organizational development of the future use cases**

During this task, the partners supporting the future use cases will develop the technological and logistical aspect of their local manufacturing demonstrator facility according to the DIT approach in progress. AIMEN will develop a modular robotic cell for additive manufacturing of furniture; UL will identify a local closed-loop manufacturing network (potential local sources of waste material that can be considered as secondary raw material, based on indicators of quality and availability) and UL will also make the technical and organizational evaluation of the printability and manual injection of the recycled plastic; SCM will study the development parameters for the innovative manufacture of wood furniture. Additionally, this task aims to develop a parametric CAD / CAM software that transforms the 3D model, downloaded from the INEDIT platform, or designed by the tool developed in T3.1, into the optimized manufacturing strategy for the 3D printing robot in order to achieve the seamless integration of the manufacturing process.

#### **Task 4.4: Implement the framework into reality and validate or adapt it**

This last step aims to implement the demonstrators based on the specifications previously developed before organizing test and acceptability phases. Each phase is confronted with the specifications, which can evolve to adapt to the constraints encountered during implementation. Each partner supporting a use case will interact with its ecosystem to design a previous agile manufacturing network. E.g. UNIN will test and instantiate the implementation of prototypes in controlled FabLab environment of the proposed smartification solutions.