Deliverable 3.2. cMDFs Manufacturing Capability Map and Repository

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Abstract	This task aims at creating a repertory of the existing manufacturing capacity, reinforcing it where machine or technology is lacking to enter the iPRODUCE platform. The deliverable will consist of two parts: The first part will be a thorough review of each cMDFs' technology and equipment, which is already being used as well as the actual production capacity, both in terms of machine and workforce. Secondly, we will link the cMDF equipment to their Use Cases and the need of their ecosystem to deduce the missing equipment, establishing a reinforcement strategy.

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Executive Summary

Deliverable D3.2 represents the first part of Task T3.2: Mapping and Reinforcing the Manufacturing Capacity of the cMDFs. In this first part, we will focus on establishing an inventory of available equipment within each of the cMDFs.

First, we will recall the scope of action of each cMDF as well as the different organisations being part of it and their activities —both within the iPRODUCE project and outside of it—. Then, we will proceed to a thorough review of the technology of each cMDF as well as the equipment that they are already using, such as IT equipment or machines, to determine their actual production capacity, both in terms of machine and workforce. We will also look at the different materials they are working on as well as the services and know-how of each of them. The aim is to get an accurate picture of the current production capacity of each of these cMDFs.

On the basis of the information gathered, we will then consider whether the cMDf needs a specific reinforcement strategy or whether its current constitution will allow the Uses case to be carried out successfully.

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Table of Abbreviations

ABS: Acrylonitrile Butadiene Styrene
AGV: Automatic Guided Vehicle
AI: Artificial Intelligence
AIDIMME: Instituto Tecnológico Metalmecánico, Mueble, Madera, Embalaje Y Afines
AR: Augmented Reality
BF: BetaFactory
BIO: Bio-Printing
CAD: Computer Aided Design
CAE: Computer-Aided Engineering
CAM: Computer-Aided Manufacturing
CBS: Copenhagen Business School
CEO: Chief Executive Officer
CERTH: Centre for Research And Technology Hellas
CFD: Computational Fluid Dynamics
CFF: Continuous Fibre Fabrication
CFO: Chief Financial Officer
cMDF: Collaborative Manufacturing Demonstration Facility
CMM: Coordinate-Measuring Machine
CNC: Computer Numerical Control
CO2: Carbon Dioxide
DIY: Do It Yourself
DLP: Digital Light Processing
DNN: Deep Neural Network
EBM: Electron Beam Melting
EDM: Electrical Discharge Machining
EEN: Enterprise Europe Network
EU: European Union
EM: Electromagnetic
FDM: Fused Deposition Modelling
FEM: Finite Element Method
FFF: Fused Filament Fabrication
Fraunhofer FIT: Fraunhofer Institute for Applied Information Technology
GPU: Graphics Processing Unit
HMI: Human-Machine Interface
HPC: High Performance Computing
ICT: Information and Communication Technologies
IMA: Industria Macchine Automatiche
IoT: Internet of Things
LPBF: Laser Powder Bed Fusion
MDF: Manufacturing Demonstration Facility

MDF: Medium-density fibreboard
MIG: Metal Inert Gas
MJ: MultiJet
MS: Microsoft
MSB: MakerSpace Bonn
MMC: Manufacturers, Makers And Consumer Communities
MSC: Management, Communication And Society
N°: Number
PA: Polyamide
PCB: Printed Circuit Boards
PP: Polypropylene
PET: Polyethylene Terephthalate
PETG: Polyethylene Terephthalate Glycol-Modified
PLA: Polylactic Acid
PMMA: Polymethylmethacrylate
R&D: Research and Development
RFID: Radio-frequency identification
RTOs: Research and Technology Organisations
SLA: Stereolithography
SLM: Selective Laser Melting
SLS: Selective Laser Sintering
SMEs: Small and Medium Enterprises
STEM: Science, Technology, Engineering and Mathematics
TIG: Tungsten Inert Gas
UI: User Interface
UX: User eXperience
VR: Virtual Reality
XR: Extended Reality

1. Introduction

1.1. Scope and objectives of the deliverable

The aim of this deliverable is to establish an inventory of cMDF equipment, both in terms of machines and workforce. For this purpose, we will review the six pilot cMDFs, taking into account the different structures that compose them, their purpose and ambitions in order to establish a precise picture of the skills and capabilities of each of these cMDFs. The objective is to have all the information that will enable a future user to search for a partner cMDF to support him or her in the realisation of a future project. We will therefore make sure to include information on the machined materials, skills, know-how, machines, IT equipment and the personnel authorised to use it. In the second deliverable of T3.2, we will review this information with the Use Cases presented in D2.5 to deduce which equipment and skills are missing, establishing a reinforcement strategy.

1.2. Structure of the deliverable

The deliverable will present each of the 6 cMDFs of the iPRODUCE project, taking care to outline the scope and purpose of each cMDF and the stakeholders that are part of it. We will then go into the details of each partner by presenting the materials they are able to handle, the list of the available machining equipment, the IT equipment and their associated characteristics. We will also present the services that each of its structures offer as well as their know-how. Finally, we will list the staff that the structures have at their disposal as well as the equipment they are authorised to use

1.3. Relation to other tasks and deliverable

T3.2 is closely linked to the following tasks: Mapping and Assessment of Co-creation and Open Innovation Methods, Tools and Practices, T2.4 Defining the Local Collaborative MDFs, Use-Cases, Innovation Challenges and KPIs, T2.5 Social Manufacturing Reference Model and Framework Evolution, T3.1 Lean Operational Models for Local cMDFs and their Federation, Setup the Network of local cMDFs.

1.4. Methodology

This deliverable is largely based on the information provided by the various cMDFs. The objective being to build an accurate picture of the entities that make up each cMDF, we sought to define the most relevant information to collect in order to build both the strategy for strengthening the cMDFs and facilitate research by end users when they enter the iPRODUCE platform with a specific need. We have therefore defined what we will need as technical information (the manufacturing equipment, the IT equipment as well as the materials that the cMDF is able to work with), general information (the services and know-how offered by each of the cMDF entities) and staff information (their position as well as the equipment they are able to work with).

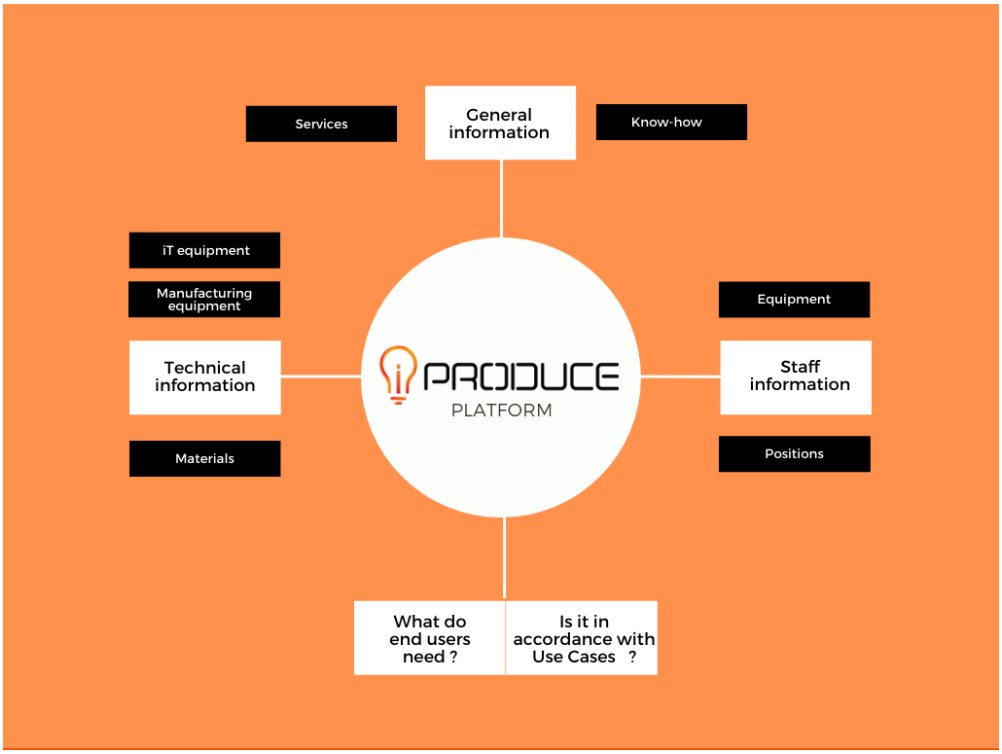

Figure 1 iPRODUCE platform methodology

2. Spanish cMDF

2.1. Composition and Purpose of the cMDF

The objective of this cMDF (Collaborative Manufacturing Demonstration Facility) is to enable collaborative engineering between the furniture manufacturing companies, the MDF (Manufacturing Demonstration Facility) and the FabLab, together with the community of experts/makers, allowing them to develop customer-driven products with complex specifications that the furniture producer cannot tackle by themselves.

The cMDF is composed of three entities:

- **AIDIMME:** (Instituto Tecnológico Metalmecánico, Mueble, Madera, Embalaje y Afines): AIDIMME is the metal-processing, wood, furniture, and packaging technology institute. It is a non-for-profit association whose aim is to foster the competitiveness of its manufacturing SMEs (Small and Medium Enterprises) through research and innovation activities.
- **Lagrama**: Lagrama is a specialist in furniture and living room furniture and manufactures all products to furnish rooms: cabinets, beds, bunk beds, desks, containers, shelves, etc. It acts as a furniture manufacturer and will be representing the manufacturing companies that can approach a cMDF.
- **Océano Naranja:** Océano Naranja is a Fab Lab with more than 20 years specialisation in the production of models and prototypes. Océano Naranja has machinery and resources to mechanize, assemble and finish prototypes, promoting the Do it Yourself (DIY) (and Do it Together) philosophy and the maker culture in order to reduce costs, share spaces, collaborate in projects and intervene in regulated and non-regulated training.

2.2. AIDIMME:

2.2.1. General information

The AIDIMME Institute offers a great deal of different services with different scopes, such as marketing, business intelligence or creativity, building a transversal service offer. Within the iPRODUCE project, the AIDIMME Institute will be able to offer the following services to future users:

List of proposed services
Engineering services for new product design (mainly related to electronical devices embedded in the product)
Software development for sensors monitoring
Training
Design Thinking workshops
Business Intelligence workshops
Market research

Table 1 List of proposed serviced by AIDIMME

In order to guarantee an adequate response to users' needs, AIDIMME will rely on the following know-how to offer the previous services:

List of the main know-how
Electronic and mechanical design and prototyping
Small and medium series with 3D printing
Knowledge of metal-mechanic sector, furniture sector, packaging sector
Research projects
Software development
Design thinking
Group creativity
Busines Intelligence
Technology Surveillance
Market Observatory
Strategic Innovation
Business Model Innovation
Market & Commercial Research

Table 2 List of the main know-how of AIDIMME

This entity will work on the following materials:

List of the materials AIDIMME is working with
Wood-based panels
Methacrylate
PA (Polyamide), PP (Polypropylene)
Copper powder
Titanium powder
ABS (Acrylonitrile Butadiene Styrene)
Tooling and inox steel powder
Photo-curing resins

Table 3 List of materials AIDIMME is working with.

In order to adequately respond to end-user expectations and needs, and in accordance with the institute target markets (i.e. furniture manufacturing), AIDIMME is able to work with the following equipment and machines:

Number (N°) of machines	Name of the machine (model)	Short description	Part dimension min L x W x H (mm)	Part dimension max L x W x H (mm)
1	Speedy 360 - TROTEC	The machine is intended exclusively for laser engraving and laser cutting material, in accordance with the intended use of the machine, by using the supplied software. It can cut some plastics, paper, wood, metal foils up to 0,5 mm, as well as engraving and marking metal, wood, plastic, cardboard, etc.	N/A	600 x 400
1	3D Jet Fusion 5200 printer	The HP 3D Jet Fusion 5200 Printer is ideal for production environments. It has a printing speed of 5058 cm^3 / h, a printing volume of 380 x 284 x 380 mm and a resolution of 1200 dpi.	N/A	380 × 284 × 380
1	ARCAM a2 EBM (Electron Beam Melting)	Metal printer. Electron Beam Melting principle. Powder bed Fusion technology. Used mainly for Titanium and Copper	N/A	250 x 250 x 400
1	Viper Si 2	Stereolithography system.	N/A	250 x 250 x250
1	Electron Beam Melting Arcam A2X	Metal printer. Electron Beam Melting principle. Powder bed Fusion technology. Used mainly for Titanium and Copper	N/A	250 x 250 x 400
1	Selective Laser Melting, LPBF (Laser Powder Bed Fusion), experimental 4KW	Experimental laser fusion 3D printer. Metals	N/A	150 x 150 x 225
1	LPBF PRIMA Print Genius 150	Selective laser printer Metals.	N/A	150 x 150 x 225
1	LPBF PRIMA Print Genius 250.	Selective laser printer Metals.	N/A	250 x 250 x 300
1	DLP (Digital Light Processing) Envision Tec (polymers)	3D printer. Direct Light Processing technology	N/A	100 x 100 x 75
1	CFF (Continuous Fibre Fabrication) Mark forge Two (reinforced	3D printer. Continuous fibre technology	N/A	300 x 130 x 150

	polymers)			
1	SLS (Selective Laser Sintering) sinterstation 2500	Selective Laser Sintering, Polymers	N/A	250 x 250 x 300
1	FDM Prusa i3 (polymers)	3D printer. Fused Deposition Modelling,	N/A	200 x 190 x 190

Table 4 List of the main equipment and machine of AIDIMME

The AIDIMME Institute also possesses a list of IT equipment and software, which can be put at the disposal of iPRODUCE end-users, in order to satisfy their needs.

N°	Name of the tool	Short description
1	ANSYS	Structural simulation software
1	HYPER WORKS	Create model structures, mechanisms, fluids, electromagnetics, electrical, embedded software, systems design, and manufacturing processes.
1	SOLID WORKS	Product design software
1	ORCAD	Electronic circuits design

Table 5 List of IT equipment and software used by AIDIMME

As demonstrated via the previous inventory, the AIDIMME Institute has a great deal of skills, tools, and machines to be put at the disposal of the iPRODUCE platform to satisfy end-users needs.

2.2.2. Staff information

In order to guarantee an effective use of the machines and equipment in accordance with health and safety regulations, the AIDIMME Institute brings in 8 technical advisors with various technical, IT and business intelligence skills.

N°	Position	Activities in the cMDF	Equipement use
1	Technical advisor	Electronic devices design - Arduino Prototype validation: test design, test carrying out, validation report	Arduino boards and electronic items
1	Technical advisor	Laser engraving	Laser cutting and engraving machine
1	Technical advisor	Product design and simulation of different physical variables	Software
1	Technical advisor	3D printing	3D printer
1	Technical advisor	IT development	Open-source technologies

1	Technical advisor	ITC Research and development	Different software applications
1	Technical advisor	Market & Business Strategy. Design thinking, ideation, and creativity in group activities	BI application
1	Technical advisor	Market & Business Strategy. Design thinking, ideation, and creativity in group activities	BI application

Table 6 Staff of AIDIMME

2.3. Lagrama:

2.3.1. General information:

As a furniture manufacturing, Lagrama represents a type of future manufacturing company that could show interest and join the iPRODUCE platform. Within the iPRODUCE project, Lagrama will be able to offer the following services to future users:

List of proposed services
Furniture design
3D printing
Production
Programming
Materials

Table 7 List of proposed serviced by Lagrama

In order to adequately response to and satisfy end users' needs, Lagrama will rely on the following know-how for their proposed services:

List of the main know-how
Prototyping
Lot size one series
Design office
Furniture
Assembly
Melamine plywood finishes and designs
Furniture fittings

Table 8 List of the main know how of Lagrama

2.3.2. Technical information

This entity will work on the following materials:

List of the materials Lagrama is working with

Melamine plywood
Steel
ABS
Cardboard
Zamak
Aluminum

Table 9 List of materials Lagrama is working with.

In order to adequately respond to end-user expectations and needs, and in accordance with Lagrama's market (i.e.,furniture manufacturing), Lagrama will be able to work with the following equipment and machines:

N° of the machine	Name of the machine (model)	Short description	Part dimension min L x W x H (mm)	Part dimension max L x W x H (mm)
1	Nesting Rover A	Cut the melamine plywood in small pieces	70x70	2850x2100
1	Giben	Cut the melamine plywood in small pieces	70x70	2850x2100
1	Homag	Edge banding machine	70x70	2850x2100
1	IMA (Industria Macchine Automatiche)	Edge banding machine	70x70	2850x1500
1	Author 632s	Pantographer that makes the holes in the pieces	70x70	2500x1200

Table 10 List of the main equipment and machine of Lagrama

Lagrama also possesses a list of IT equipment and software that be put at the disposal of iPRODUCE end-users, in order to satisfy their needs.

N°	Name of the tool	Short description
N/A	Dell Poweredge R440	Server that stores all main processes and files

N/A	Autodesk Inventor	Software entitled to design new furniture
N/A	Aspan	Software that makes holes schemas for drilling machines
N/A	Lisa	Software that controls production
N/A	Marge	Software entitled to received orders
N/A	MicGestio	Software for purchasing accounting and finance
N/A	Adobe cloud	Adobe programs for the design Department
N/A	LibreOffice	Office suite

Table 11 List of IT equipment and software used by Lagrama

As demonstrated via the previous inventory, Lagrama has a great deal of skills, tools and machines to be put at the disposal of the iPRODUCE platform to satisfy end-users' needs.

2.3.3. Staff information

In order to guarantee an effective use of the machines and equipment in accordance with health and safety regulations, Lagrama brings in 5 staff members with various and complementary skills, such as IT, finances or administration.

N°	Position	Activities in the cMDF	Equipement use
1	Administrator	Calls, reunions, documents, projects	Computer
1	Financial	Documents	Computer
1	Technical Office	Projects	Computer
1	Coordination	Projects	Computer
1	IT	Projects	Computer

Table 12 Staff of Lagrama

2.4. Océano Naranja:

2.4.1. General information

As a FabLab, Océano Naranja represents a remarkable added value to the iPRODUCE project, since it guarantees a direct contact with other FabLabs, makers, consumers and even universities. Furthermore, Océano Naranja has the possibility to handle a great deal of different materials and machines, closely related to the characteristics of the other Spanish entities in the furniture market. As part of the iPRODUCE project, Océano Naranja will be able to offer the following services to future users:

List of proposed services
3D Printing
CNC (Computer Numerical Control) milling

Laser cutter and engraving
Wood cutter
Assembly of products, furniture etc
Model design and assembly
Product design
Training
Collaboration with universities and design schools

Table 13 List of proposed services by Océano Naranja

List of the main know-how
Prototyping
Small series
Models
Replications
Assembly and mounting
Finishing
Design and develop Office

Table 14 List of the main know how of Océano Naranja

2.4.2. Technical information

This entity will work on the following materials:

List of the materials Océano Naranja is working with
PMMA (Polymethylmethacrylate), PET (Polyethylene Terephthalate)
MDF (Medium-density fibreboard), Plywood
Every kind of wood
Polycarbonate
Polyurethane
ABS, PLA (Polylactic Acid)

Table 15 List of the materials Océano Naranja is working with

In order to adequately respond to end-user expectations and needs, Océano Naranja will be able to work with the following equipment and machines:

N° of machines	Name of the machine (model)	Short description	Part dimension min L x W x H (mm)	Part dimension max L x W x H (mm)
1	CNC Milling Machine Multi Cam 3304R	Plywood, MDF, PMMA Polyurethane	2000X3000X100	N/A
1	CNC Milling Machine (Custom Made)	Plywood, MDF, PMMA Polyurethane	2000X3000X300	N/A
1	CNC Milling Machine Cam Graf	Plywood, MDF, PMMA Polyurethane	909X1200X50	N/A
1	Laser Aplus Donalsson /Rufin	MDF, Plywood, PMMA, Material,	3000X2000	N/A
1	Laser Cutter Red Sail	MDF, Plywood, PMMA, Material, Leather	900X1200	N/A
1	Laser Cutter Red Sail	MDF, Plywood, PMMA, Material, Leather	900X1201	N/A
N/A	Drills	Manual Drills	N/A	N/A
N/A	Welder	Manual Welders	N/A	N/A
N/A	Sanders		N/A	N/A

Table 16Table 17 List of the main equipment and machine of Océano Naranja

Océano Naranja also possesses a list of IT equipment and software, which can be put at the disposal of iPRODUCE end-users in order to satisfy their needs.

N°	Name of the tool	Short description
N/A	AutoCAD	AutoCAD® is computer-aided design (CAD) software that enables architects, engineers, and construction professionals to create accurate 2D and 3D drawings.
N/A	Rhinoceros 3D	Rhinoceros 3D also commonly known as Rhino 3D or Rhino is a 3D drawing software that allows you to model a wide variety of shapes

N/A	Solid Work	SOLIDWORKS 3D CAD solutions offer easy to master and extremely powerful features that shorten product development times, reduce costs, and improve quality.
N/A	Aspire	Aspire provides a powerful but intuitive software solution for creating and cutting parts on a CNC router.
N/A	Solid Edge	Solid Edge combines the speed and simplicity of direct editing with the flexibility and control of parametric design for unparalleled efficiency.
N/A	Manual Milling Machine	A manual mill has its table, spindle, quill, and other parts moved by hand, requiring skilled use at every stage If good work is to be produced.
N/A	Mitter Saw, Circular Saw	Miter Saws can cut more precisely, whereas Circular Saws have a handheld nature that allows the user to cut in a variety of angles and cuts.
11	Computers	
1	Plotter	
1	Printer	
1	Scanner	

Table 17 List of IT equipment and software used by Océano Naranja

As demonstrated via the previous inventory, Océano Naranja has a great deal of skills, tools and machines —which are complementary to Lagrama's and AIDIMME's —to be put at the disposal of the iPRODUCE platform to satisfy end-users needs.

2.4.3. Staff information

In order to guarantee an effective use of the machines and equipment in accordance with health and safety regulations, Océano Naranja brings in 5 staff members with various and complementary skills, such as IT, technical skills, creativity, design or administration.

N°	Position	Activities in the cMDF	Equipement use
1	Technical and creative director	Contributes to the definition of all projects and lead them	Every kind in the FabLab
1	Technician 1	Develops the technical work related to the projects	Every kind in the FabLab
1	Technician 2	Develops, installs, builds and paints by hand the projects/products	All except the digital production ones
1	Manger and administration	Manages and leads the administrative tasks and plans the projects	All except the digital production ones
1	Designer	Designs the products	Depends

Table 18 Staff of Océano Naranja

3. German cMDF

3.1. Composition and Purpose of the cMDF

The objective of this pilot is to enhance the co-creation capacity of manufacturing SMEs for consumer product innovation, introduce SMEs to the Maker scene and capitalise the FabLab mentality and working processes. To do so, it will first understand and determine the relationship between SMEs and MakerSpaces. Then, it will establish a concise list of services that are of interest and could be beneficial for SMEs, in order to develop the mechanisms to facilitate initial equipment usage for new machine users and the corresponding processes and tools to support iterative prototyping with electronics.

The cMDF is composed of three entities:

- **Zenit GmbH**: Zenit GmBH is a Public Private Partnership working in interdisciplinary teams. The stakeholders are the State of North Rhine-Westphalia (represented by the Ministry of Economics), a consortium of banks and an association of approximately 180 enterprises. Zenit works closely with technology driven SMEs, scale ups and spin-offs to realize its tasks within various regional and EU (European Union) projects on transfer and innovation. In this cMDF, it will help organising events, acting as a networking partner and providing contact and information to SMEs.
- **MakerSpace Bonn:** The MakerSpace Bonn (MSB) is part of the global Maker community and movement. It is a FabLab and innovation hub located in Bonn and open to all citizens. It is a place where one can come, meet like-minded people, makers, experts, beginners, helpers, teachers and be creative, help oneself and create things that bring added value to the individual or the whole society. This cMDF will be hosting workshop and machinery as well as being a support for dissemination actions and be the production partner.
- **Fraunhofer FIT:** Fraunhofer FIT (Fraunhofer Institute for Applied Information Technology) is the leading organisation of Institutes for applied IT research and development in Europe. Future-oriented strategic research is carried out with the aim of promoting innovations in key technologies with an economic and social relevance in the next five to ten years. Fraunhofer collaborates in industrial consortia on technical issues ultimately destined to improve the competitiveness of European industry. In this cMDF, it is the research partner and will be the one responsible for the methodology.

3.2. Zenit GmBH:

3.2.1. General information

As a networking partner, closely connected to SMEs, Zenit GmBH could attract SMEs, motivating them to join the iPRODUCE platform. Within the iPRODUCE project, Zenit GmBH will be able to offer the following services to future users:

List of proposed services
Consultancy for innovation funding
Organisation of expert workshops
Dissemination of results
Partner search for R&D (Research and Development) projects (via the EEN [Enterprise Europe Network])

Table 19 List of proposed serviced by Zenit GmBH

To offer these services, Zenit GmBH will rely on the following know-how:

List of the main know-how
Consultancy for innovation management
Funding consultancy
Organisation of events
Network management (innovation network on additive manufacturing)
Securing skilled workers at youth stage (support & management of STEM [Science, Technology, Engineering and Mathematics] activities)

Table 20 List of the main know how of Zenit GmBH

3.2.2. Technical information

Zenit GmBH does not have technical capacities such as machines, and only has IT equipment since it is mainly dedicated to consultancy, organisation of events and networking.

N°	Name of the tool	Short description
N/A	MS (Microsoft) Office	Office tools
N/A	Miro	Collaboration tool
N/A	Zoom	Video / Collaboration tool
N/A	WebEx	Video / Collaboration tool
N/A	MS Teams	Video / Collaboration tool

Table 21 List of IT equipment and software used by Zenit GmBH

As stated in the previous inventory, Zenit GmBH offers a great deal of services and know-how, mostly non-technical, which could attract SMEs and other relevant stakeholders, motivating them to join the iPRODUCE platform.

3.2.3. Staff information

In order to effectively satisfy the needs and expectations of SMEs, Zenit GmBH has 2 staff members, which hold the position of consultants, having transversal and complementary skills such as communication, events organisations or consultancy.

N°	Position	Activities in the cMDF	Equipement use
1	Consultant	Concepts and organisation for Workshops, consultancy for SMEs, dissemination of events and results via diverse media channels	PC, PowerPoint, Miro…
1	Consultant	Concepts and organisation for Workshops, consultancy for SMEs, dissemination of events and results via diverse media channels	PC, PowerPoint, Miro…

Table 22 Staff of Zenit GmBH

3.3. MakerSpace Bonn:

3.3.1. General information

MakerSpace Bonn, as a FabLab and innovation hub, open to citizens and close to customers, could play an important role in the iPRODUCE platform, attracting Makers but also citizens, who could also be part of the iPRODUCE platform. Within the iPRODUCE project, MakerSpace Bonn will be able to offer the following services to future users:

List of proposed services
3D Printing
Consulting
Part Design
Training
Programming
Electronics Development

Table 23 List of proposed serviced by MakerSpace Bonn

To offer these services, MakerSpace Bonn will rely on the following know-how:

List of the main know-how
3D Printing
Electronics Development
Programming
Microcontroller
3D Modelling/Design
CAD
AR (Augmented Reality)/VR (Virtual Reality)/XR (Extended Reality)
Teaching
Sewing
Embroidery
Woodworking
Audio/Video Production
Arts
Networks
Production Ramp Up

Table 24 List of the main know how of MakerSpace Bonn

3.3.2. Technical information

This entity will work on the following materials:

List of the materials 3.3. MakerSpace Bonn is working with
PLA
Plastics

Resin
Wood
Aluminium
Paper
Fabric

Table 25 List of materials MakerSpace Bonn is working with

In order to adequately respond to end-user expectations and needs, MakerSpace Bonn will be able to work with the following equipment and machines:

N° of machines	Name of the machine (model)	Short description	Part dimension min L x W x H (mm)	Part dimension max L x W x H (mm)
1	3D Printer Ender 3 Pro heavily modified (25 Pcs)	Goto 3D-Printer for PLA (Small Production runs up to 1000 similar parts)	N/A	240x240x249
1	Resin Printer	Resin 3D Printer For Fine Structures	N/A	100x100x100
1	Table Saw, Table Router, Drill Press, Belt Sander	Wood Workshop	N/A	4000x2000x120
1	Laser cutter (China)	Modified Chinese Laser Cutter	N/A	450x350x8
1	Brother PR600II	Embroidery Machine for Fabric	N/A	300x300
1	Sewing Machines (Singer) 6pcs	Workshops	N/A	N/A
1	Oscilloscopes, Frequency Analysers, Spectrum Analysers	Various Equipment for Prof. Grade Elec. Development	N/A	N/A

Table 26 List of the main equipment and machine of MakerSpace Bonn

MakerSpace Bonn also possesses a list of IT equipment and software, which can be put at the disposal of iPRODUCE end-users in order to satisfy their needs.

N°	Name of the tool	Short description
1	Huawei Server Rack 100 Cores 250 TB Storage	AI (Artificial Intelligence)/Rendering/Server
1	A0 Plotter HP	Plotting
1	Render Workstation	3D Modelling
1	Laptops for Workshops (60pcs)	For workshops or rental for schools

Table 27 List of IT equipment and software used by MakerSpace Bonn

As demonstrated via the previous inventory, MakerSpace Bonn has a great deal of skills, tools and machines to be put at the disposal of the iPRODUCE platform to satisfy end-users needs.

3.3.3. Staff information

In order to guarantee an effective use of the machines and equipment in accordance with health and safety regulations, and in order to effectively satisfy the needs of makers and citizens, MakerSpace Bonn brings in 5 staff members with various and complementary skills, such as consulting, technical skills, finance, or administration.

N°	Position	Activities in the cMDF	Equipement use
1	Co-CEO (Chief Executive Officer)	Workshops, Use Cases	3D Printing, Laser Cutter
1	Co-CEO	Workshops, consulting	3D Printing, CNC
1	CFO (Chief Financial Officer)	Finance	3D Printing, Wood Workshop
1	Administration	Workshops, administrative	Sewing/Fabrics/3D Printing
1	Workshop Leader	Workshop leader	3D Printing/Everything else

Table 28 Staff of MakerSpace Bonn

3.4. Fraunhofer Institute for Applied Information Technology (FIT):

3.4.1. General information

As a research partner within the iPRODUCE project, FIT will be able to offer the following services to future users:

List of proposed services
Ideation methodology training
Design thinking methodology training
Co-creation methodology training

Usability engineering
Inclusive design / Accessibility studies

Table 29 List of proposed serviced by FIT

To offer these services, FIT will rely on the following know-how:

List of the main know-how
Wireframing
Ideation Methodology
Design Thinking Methodology
Co-Creation Methodology
Theoretical Knowledge on Learning and Training
Usability Engineering
Inclusive Design / Accessibility

Table 30 List of the main know how of FIT

3.4.2. Technical information

FIT does not have technical capacities such as machines, and only has IT equipment since it is mainly dedicated to methodology training and design.

N°	Name of the tool	Short description
N/A	Mural	Online whiteboarding software, it provides the placement of shared files on an on-screen shared whiteboard. It is used in combination with videoconferencing software and allows several people to work on the image at the same time, each seeing changes the others make in near-real time. It is used for collaborative Ideation mostly.
N/A	Miro software	Online whiteboarding software, it provides the placement of shared files on an on-screen shared whiteboard. It is used in combination with videoconferencing software and allows several people to work on the image at the same time, each seeing changes the others make in near-real time. It is used for collaborative Ideation mostly.
N/A	MS Office	Office tools
N/A	Zoom	Video / Collaboration tool
N/A	WebEx	Video / Collaboration tool
N/A	MS Teams	Video / Collaboration tool

Table 31 List of IT equipment and software used by FIT

As indicated via the previous inventory, FIT has a great deal of skills – complementary to the other entities in the German cMDF – to be put at the disposal of the iPRODUCE platform to satisfy end-users' needs.

3.4.3. Staff information

In order to satisfy the needs of end-users, FIT brings in 3 staff persons, which hold the position of Research associate.

N°	Position	Activities in the cMDF	Equip ment use
1	Research associate	Research on design thinking, Makerspace Training approach and innovation methods	Mural, Miro
1	Research associate	Research on design thinking, Makerspace Training approach and innovation methods	Mural, Miro
1	Research associate	Research on design thinking, Makerspace Training approach and innovation methods	Mural, Miro

Table 32 Staff of FIT

4. French cMDF

4.1. Composition and Purpose of the cMDF

The objective of this pilot is to accelerate, through co-design, co-creation and open-innovation methods and tools, the time to market and to develop new production processes adapted to rapid demand and technology evolutions. On the one hand, this pilot will work on making the FabLabs equipment, tools, and machines more accessible to potential users or product developers by creating virtual and digital trainings, tutorials, and courses. On the other hand, it will be supporting entrepreneurs' and SMEs' projects, especially in the mobility and electro-mobility sectors, by introducing and encouraging them to involve social and collaborative manufacturing in their product design and development processes

The cMDF is composed of three entities:

- **FabLab Vosges:** FabLab Vosges was established in 2014 by entrepreneurs that had need of computer numerical control machines. Today, the FabLab counts around 50 members, including companies, makers, local universities and hobbyists. The main goal of the FabLab is sharing knowledge, while guiding people through their projects. In this cMDF, the FabLab will organise events and workshop, provide equipment and materials and help in the dissemination process towards companies and consumers.
- **Excelcar:** Excelcar is an industrial FabLab/open innovation platform founded in 2015 by the automotive cluster iD4CAR, industrial companies, laboratories and technical centres. Excelcar's first goal is to accelerate time to market of product-process innovations in the automotive industry. To do this, the platform provides real estate resources, equipment and human resources. In this cMDF, it will help with the detection of entrepreneurial projects related to micro-mobilities, the organisation of open-innovation challenges. It will also provide equipment and access to facilities.
- **Materalia:** Materalia is a French competitiveness cluster leader for cooperative innovation in materials and processes. Materalia fosters and builds up collaborative and innovative projects bringing together companies, laboratories and higher education. Materalia focuses on the industrial markets of automotive, aeronautics, medical and energy, working on the challenges raised by the materials of tomorrow such as greater efficiency, lighter materials, functionalities, and sustainable development and additive manufacturing. In this cMDF, it will help with the detection of partners or end users, the detection of projects and the organisation of events and workshops as well as the dissemination of the iPRODUCE project.

4.2. FabLab Vosges:

4.2.1. General information

Within the iPRODUCE project, as a FabLab closely to Makers and citizens, FabLab Vosges will be able to offer the following services to future users:

List of proposed services
Trainings (partial design, Use of prototyping equipment, programming)
Partial designing regarding the Design to Function & Design to Manufacture
3D Printing
Laser cutting

Milling (out of service at the moment)

Table 33 List of proposed serviced by FabLab Vosges

To offer these services, FabLab Vosges will rely on the following know-how:

List of the main know-how
Prototyping
Design office
Design to function & Design to manufacture
LoRaWAN IoT (Internet of Things) applications
R&D
Benchmarking

Table 34 List of the main know-how of FabLab Vosges

4.2.2. Technical information

This entity will work on the following materials:

List of the materials Fablab-Vosges is working with
PLA filaments (for 3D printings)
Plexy glass - Acrylic (for Laser engravings)
Aluminum (for Laser engravings)
Cork (for laser engravings)
Foam boards (for laser engravings)
Birch Plywood (For laser engravings)
Steel and Aluminum (For the CNC milling machine / Not available at the moment)

Table 35 List of materials FabLab Vosges is working with

In order to adequately respond to end-user expectations and needs, FabLab Vosges will be able to work with the following equipment and machines.

N° of machines	Name of the machine (model)	Short description	Part dimension min L x W x H (mm)	Part dimension max L x W x H (mm)
1	Scalar 3D Printer	This printer is mostly used for prototyping purposes without respecting the right material selected for the end-user product (Prototypes are mainly made using PLA)	5 x 5 x 2	250 x 250 x 250
1	Flashforge creator 3D Printer	This machine is special because it could be closed: the printing environment could therefore be controlled, especially in prototypes using materials with high melting temperatures. This closed environment would reduce the contact between the printed part and the cold air flux, in order not to damage the printing process and its	N/A	150 x 150 x 200

		result. (We can print with ABS, PLA ...)		
1	Thunder laser cutting machine	Currently used for personnel purposes and projects (cutting and engraving on aluminium, Birch Plywood, Foam boards, Plexiglas, Cork)	5 x 5 x 1	800 x 500 x 4
1	CNC Milling Machine	The machine is currently out of order	200 x 200 x 2	2000 x 1500 x 6

Table 36 List of the main equipment and machine of FabLab Vosges

FabLab Vosges also possesses a list of IT equipment and software, which can be put at the disposal of iPRODUCE end-users in order to satisfy their needs.

N°	Name of the tool	Short description
6	HP Laptops	Used by the users and makers in their product prototyping process
1	Z Book	Used by the Part Time mechanical for the company's product development projects
1	Fusion 360 (Not the professional version)	Used for CAD designs, animations, renderings, and manufacturing process simulations)
1	Arduino IDE (Integrated Development Environment)	Programming the Arduino microcontroller
1	Cura	Generating the G-Code for the Scalar 3D printer
1	Flashprint	Generating the G-Code for the Flashforge creator 3D printer
1	Inkscape	Generating plots that could be engraved or cut using a Laser cutting machine
1	Thunder Laser	Generating plots that could be engraved or cut using the Thunder Laser cutting machine
1	Blender	Rendering the CAD designs or some useful animations
1	Visual Studio 2020	
1	Visual Studio Code 2020	Programming the Pycom microcontroller
1	Microsoft Office	Use of all the Pack Office

Table 37 List of IT equipment and software used by FabLab Vosges

As demonstrated via the previous inventory, FabLab Vosges has a great deal of skills, tools, and machines to be put at the disposal of the iPRODUCE platform to satisfy end-users needs.

4.2.3. Staff information

In order to guarantee an effective use of the machines and equipment in accordance with health and safety regulations, and in order to effectively satisfy the needs of makers and citizens, FabLab Vosges brings in 2 staff members with various and complementary skills, such as technical skills, marketing and business.

N°	Position	Activities in the cMDF	Equipement use
1	General manager	Helps the dissemination of the D7 events thanks to his wide and large connection base, uses his great experience in the marketing and commercial business to reach out for investors and project holders	Microsoft Office Pack
1	Part Time Mechanical Engineer	Uses his experience in the mechanical designing, prototyping and project management fields to contribute and help the development of the new innovative, Helps disseminate the project's events through his network, Gives trainings and workshops (CAD designs/ the use of the FabLab equipment such as 3D printers, the CNC milling machine and the Laser engraver machine/ Arduino microcontroller programming/ VB.NET…) to boost the makers' capacities and make them skilled enough to prototype and design on their own.	Laser cutting and engraving machine

Table 38 Staff of FabLab Vosges

4.3. Excelcar:

4.3.1. General Information

Within the iPRODUCE project, as an industrial FabLab/open innovation platform close to the automotive cluster iD4CAR, industrial companies, laboratories, and technical centres, Excelcar will be able to offer the following services to future users:

List of proposed services
Part design
3D printing
Innovation methodology to develop project from idea to product
Benchmarking

Table 39 List of proposed serviced by Excelcar

To offer these services, Excelcar will rely on the following know-how:

List of the main know-how

Prototyping
Welding
Robotics
Automation
Designing of parts
Assembling
Slicing
Data analysis
Knowledge of the automotive sector
Mechanical assembly
3D Printing
Designing to cost/function/produce
Innovation methodology

Table 40 List of the main know how of Excelcar

4.3.2. Technical information

This entity will work on the following materials:

List of the materials Excelcar is working with
Steel
Aluminium
PLA
ABS
Composites
PET

Table 41 List of materials Excelcar is working with.

In order to adequately respond to end-user expectations and needs, Excelcar will be able to work with the following equipment and machines:

N° of machines	Name of the machine (model)	Short description	Part dimension min L x W x H (mm)	Part dimension max L x W x H (mm)
2	Cobot Universal Robots 10e	Collaborative robot with a simple programming interface and a load capacity of 10kg.	N/A	N/A

1	Cobot Fanuc CR35iA	Collaborative robot with a load capacity of 35kg.	N/A	N/A
2	Robotiq Gripper 2F140	Plug and play gripper for the UR10 with a stroke of 140mm, two gripping modes and a force of 10 to 125N	N/A	N/A
1	Schunk Gripper CO-ACT EGP-C-64	Plug and play gripper for the Fanuc cobot with a stroke of 20mm and a force of 65 to 230N.	N/A	N/A
1	Cognex camera 7905 Patmax	Machine vision system that allows inspections to be carried out on industrial applications. The optics and lighting are modular.	N/A	N/A
1	Keyence sensor LJ-V	Laser sensor / profilometer with a speed of 64000 profile / sec	N/A	N/A
1	FastCAM Mini AX200 Photron	The Photron FASTCAM Mini AX200 camera provides very high frame rates	N/A	N/A
1	Digital Microscope Keyence VHX-6000	Digital microscope model with a large depth-of-field and advanced measurement capabilities for inspection and failure analysis.	N/A	N/A
4	RFID (Radio-frequency identification) system	RFID antenna system for traceability applications.	N/A	N/A
1	Ultimaker 2 Ext	3D Printer		223 x 220 x 205
1	Welding gun ARO	Industrial welding gun for steel or aluminum - Mount on robot	N/A	N/A
1	Mechanical Workshop	Workshop composed of several equipment allowing mechanical manufacturing (drill press, grinder, sander, band saw, folding machine, ...)	N/A	N/A
1	ScanArm FARO - Probe + Scanner	The FARo arm is a metrology arm that allows you to inspect and scan parts.	N/A	N/A
3	AGV (Automatic guided vehicle) ASTI EASYBOT41 -	The ASTI Easybot is a magnetic circuit guided AGV. They are dedicated to towing loads in	N/A	N/A

	EASYBOT48	industries and logistics circuits.		
1	Automation platform	Automation platform composed of HMI (Human-Machine Interface) and a Schneider PLC as well as WAGO input / output cards and a power controller.	N/A	N/A

Table 42 List of the main equipment and machine of Excelcar

Excelcar also possesses a list of IT equipment and software, which can be put at the disposal of iPRODUCE end-users in order to satisfy their needs.

N°	Name of the tool	Short description
1	Cluster DELL	Intensive computing machine composed of several computing servers.
3	Workstation PC HP Z440	Work PC for design applications.
1	Diota projector, tablet and software	Augmented reality system by projection or superposition(tablet) on physical elements.
1	HoloLens 2	System of augmented reality by glasses.
1	Guided software (Microsoft - HoloLens)	Software associated with HoloLens for creating augmented reality environments.
1	HTC Vive	Virtual reality system
1	Cura	Cura is open-source slicing engine for 3D printing
1	CAM2 Faro	Metrology software for Faro Arm

Table 43 List of IT equipment and software used by Excelcar

As demonstrated via the previous inventory, Excelcar has a great deal of skills, tools and machines to be put at the disposal of the iPRODUCE platform to satisfy end-users needs.

4.3.3. Staff information

In order to guarantee an effective use of the machines and equipment in accordance with health and safety regulations, and in order to effectively satisfy the needs of makers and citizens, Excelcar brings in 7 staff members with various and complementary skills, such as consulting, technical skills, coaching, or data management.

N°	Position	Activities in the cMDF	Equipement use

1	General Manager of Excelcar	Development of cMDF network / Identify iPRODUCE projects for use-case / Coaching projects on technical aspects, value chain, business models, skills research / developing resources and tutorials for equipment use	N/A
1	Project Leader - Engineer - Excelcar	Development of cMDF network / Identify iPRODUCE for use-case / Coaching projects on technical aspects, value chain, business models, skills research/ developing resources and tutorials for equipment use	N/A
1	Project Leader - Marketing - Excelcar	Development of cMDF network / Identify iPRODUCE projects for use-case / Coaching projects on technical aspects, value chain, business models, skills research	N/A
1	Expert assembly - Excelcar	Technical activities: Design mechanical assembly / Simulate mechanical strength / Prototype mechanical assembly	Mechanical equipment
1	Expert robotic and industrial vision - Excelcar	Technical activities: Programming robotic / Programming camera automation	Vision system
1	Expert data - Excelcar	Technical activities: Data management, analysis, and establishment of decision plan	N/A
1	Expert design and prototyping - Excelcar	Technical activities: CAD designing / Virtual reality rendering / augmented reality implementation / 3D Printing	CAD software / Slicing software / 3D Printing

Table 44 Staff of Excelcar

4.4. Materalia:

4.4.1. General information

As a competitiveness cluster, at the core of the Materials, Processes and Solutions ecosystem, closely related to a great deal of different stakeholders such as RTOs (Research and Technology Organisations), SMEs, FabLabs or decision-makers, within the iPRODUCE project, Materalia will be able to offer the following services to future users:

List of proposed services
Networking with different stakeholders (funders, companies, institutions…)
Funding consultancy
Project management
Creativity workshops
Business Intelligence (information monitoring)
Communication (events organisation, dissemination, visibility)

Table 45 List of proposed serviced by Materalia

To offer these services, Materalia will rely on the following know-how:

List of the main know-how
Project management
Networking/soft skills
Business Intelligence
Organisation of events (webinars, workshops, creativity workshops)
Knowledge of the ecosystem
Support in funding innovative projects

Table 46 List of the main know-how of Materalia

4.4.2. Technical information

Materalia does not have technical capacities such as machines, and only has IT equipment since it is mainly dedicated to consultancy, organisation of events and networking.

N°	Name of the tool	Short description
N/A	MS Teams	Collaborative work tool
N/A	Adobe Acrobat Pro	Adobe Acrobat Pro is the reference software for creating, editing and sharing your PDF documents with your teams for collaborative work.
N/A	Adobe Creative Cloud (Adobe Photoshop, InDesign, Adobe Premiere)	Adobe Creative Cloud is a set of applications and services from Adobe Inc. that gives subscribers access to a collection of software used for graphic design, video editing, web development and photography.
N/A	Canva	Canva is a graphic design platform, used to create social media graphics, presentations, posters, documents and other visual content.
N/A	SendinBlue	SendinBlue is an email marketing solution for businesses that want to send and automate email marketing campaigns.
N/A	Feedly	Feedly is a news aggregator application used in business intelligence
1	Printer/Scan	
4	Laptops	

Table 47 List of IT equipment and software used by Materalia

As indicated via the previous inventory, Materalia has a great deal of skills – complementary to the other entities in the French cMDF – to be put at the disposal of the iPRODUCE platform to satisfy end-users needs.

4.4.3. Staff information

In order to satisfy the needs of end-users, Materalia cut put at the disposal 4 staff members, which hold different transversal and complementary positions, such as Innovation Coordinator, Communications officer and Competitive Intelligence Officer.

N°	Position	Activities in the cMDF	Equipement use
1	Innovation Coordinator	Networking with relevant stakeholders, funding consultancy, partner search	Laptop, MS Teams, Printer/Scan
1	Innovation Coordinator	Networking with relevant stakeholders, funding consultancy, partner search	Laptop, MS Teams, Printer/Scan
1	Communications Officer	Dissemination, project exploitation, visibility, organization of events (webinars, workshops)	Laptop, MS Teams, Printer/Scan, Canva, Adobe Creative Cloud
1	Competitive Intelligence Officer	Information monitoring, benchmark, partner search	Laptop, MS Teams, Printer/Scan, Feedly

Table 48 Staff of Materalia

5. Italian cMDF

5.1. Composition and Purpose of the cMDF

The objective of this pilot is to enable collaborative engineering between the microelectronics manufacturing companies, the cMDF and the FabLabs, involving the community of experts/makers, local start-ups and SMEs to address the development/enhancement. The cMDF will serve as a partner for companies and professionals, mainly in the design and realization of mechatronics and microelectronics appliances and support companies and professionals —especially SMEs—to design and build up components and devices with innovative technologies that are not available to them regionally.

The cMDF is composed of three entities:

- **ProM Facility FabLab of Trentino Sviluppo:** Trentino Sviluppo is a company established by the Autonomous Province of Trento to foster the sustainable growth of the "Trentino system" by developing actions and services aimed at supporting the creation of new entrepreneurial and innovation projects. ProM Facility is the Manufacturing Facility of Trentino Sviluppo (ProM is not a legal entity; it is a lab owned by Trentino Sviluppo) and will be the reference lab of the Italian cMDF. It will be the manufacturing partner of this cMDf and help with the electronic design.
- **Muse FabLab[1]:** Muse FabLab is the FabLab of the Trentino regional Science Museum, working with students, researchers, and companies. It will cooperate in the realisation of some parts of the objects made by ProM. In this cMDF it will help with the training on additive manufacturing and the realisation of goods.
- **Noitech Makerspace**: Noitech Makerspace is a 400m^2 makerspace, mainly targeting companies. It will cooperate in the realisation of some parts of the objects made by ProM. In this cMDF it will help with the realisation of goods and act as the makerspace.

5.2. ProM Facility FabLab of Trentino Sviluppo:

5.2.1. General information

Within the iPRODUCE project, Trentino Sviluppo, in contact with SMEs, could motivate SMEs to join the iPRODUCE platform. It will be able to offer the following services to future users:

List of proposed services
Climatic and vibrational test
Metal and polymeric 3D printing
Hybrid (additive and subtracting) manufacturing
5 axis milling machine
4-axis lathe machine
Electronic board prototyping
Mechatronic integration of systems and sub-systems
Hands-on training

[1] MUSE and Noitech have been included since their facilities and equipment will be available to use cases. After agreement signature, they will be integral part of the cMDF.

Wire EDM (Electrical Discharge Machining) cutting
Mechanical test (stress-strain, compression, fatigue)
3D scanning
Laser Cutting (fibre and CO2 [Carbon Dioxide])
Computed tomography analysis
EM (Electromagnetic) emission test

Table 49 List of proposed serviced by Trentino Sviluppo

To offer these services, Trentino Sviluppo will rely on the following know-how:

List of the main know-how
Training on additive and other prototyping activities (for students, SMEs)
Mechatronic prototyping
Small series
Assembly
Design for additive

Table 50 List of the main know-how of Trentino Sviluppo

5.2.2. Technical information

This entity will work on the following materials:

List of the materials Trentino Sviluppo is working with
Materials For 3D Printing: Stainless Steels, Aluminium, Titanium, Inconel, CoCr, Polymers (Pa11-12, Resins)
CoCr
(For Hybrid Machine) Aisi 431, Aisi415, H11, H13, Ferro55, Inconel 625, Inconel 718, Bronze, Maraging Steels, 17-4ph

Table 51 List of materials Trentino Sviluppo is working with

In order to adequately respond to end-user expectations and needs, Trentino Sviluppo will be able to work with the following equipment and machines.

N° of machines	Name of the machine (model)	Short description	Part dimension min L x W x H (mm)	Part dimension max L x W x H (mm)
1	DMG Mori Lasertec 65 3D	Hybrid (milling+3D printing) industrial machine	N/A	650x400x400
1	Renishaw AM 400	SLM Machine	N/A	250x250x280
1	Concept Mlab	SLM Machine	N/A	90x90x80

1	Sharebot Metal ONE	SLM Machine	N/A	80x80x80
1	HP 4200 MJF	Polymeric 3D printing	N/A	380x284x380
1	Excetec	Wire EDM Machine	N/A	N/A
1	DMG alpha 500	Lathe machine	N/A	
1	FormLabs Form 2	SLA 3D Printer	N/A	125x125x175
1	Aberlink Axiom	CMM Machine	N/A	N/A
1	Angelantoni	Climatic chamber + shaker	N/A	N/A
1	Metrascan 3D	3D Scanner	N/A	N/A
1	Zeiss Metrotom 1500	Computed tomography	N/A	N/A
1	Cielle	Laser Cutter	N/A	N/A
1	MTS	Mechanical test	N/A	N/A

Table 52 List of the main equipment and machine of Trentino Sviluppo

Trentino Sviluppo also possesses a list of IT equipment and software, which can be put at the disposal of iPRODUCE end-users in order to satisfy their needs.

N°	Name of the tool	Short description
1	Topology	complex lattice structure, implicit modelling, simulation, topology opt.
1	Siemens NX	CAD + CAM (Computer-Aided Manufacturing) + CAE (Computer-Aided Engineering) software
1	Ansys	FEM (Finite Element Method) analysis
1	Autodesk Inventor	CAD software
1	Autodesk AutoCAD	CAD software
1	Autodesk Generative Design	Generative Design
1	Altair Inspire	Multibody topology optimization
1	Materialise Magics	3D printing preparation software
1	Siemens Star-CCM+ (Coordinate-Measuring Machine)	CFD (Computational Fluid Dynamics) analysis
1	Matlab	Numerical computing software

1	Altium Designer	PCB (Printed Circuit Boards) design
1	Geomagic Design X	Reverse engineering software
1	Geomagic Control X	Inspection and metrology software
1	Lambda Blade	GPU (Graphics Processing Unit) server for deep Learning
1	Nvidia DGX-1 server	GPU server for deep Learning
1	HPC (High Performance Computing) cluster	Proprietary server farm for high performance computing
1	Materialise Magics	3D printing preparation software

Table 53 List of IT equipment and software used by Trentino Sviluppo

As demonstrated via the previous inventory, Trentino Sviluppo has a great deal of skills, tools and machines to be put at the disposal of the iPRODUCE platform to satisfy end-users needs.

5.2.3. Staff information

In order to guarantee an effective use of the machines and equipment in accordance with health and safety regulations, and in order to effectively satisfy the needs of SMEs and citizens, Trentino Sviluppo brings in 19 staff members with various and complementary skills, such as technical skills, design, software development or additive manufacturing.

N°	Position	Activities in the cMDF	Equipement use
2	Additive Manufacturing Expert	Design for additive, processing	Metal and polymeric 3D printers
2	Electronic Engineers	Design and prototyping of electronic boards	Electronic devices and Pick&Place tool
2	Mechanical Technician	Machine tooling and CAM/CAD design	Milling and turning machine
1	ICT (Information and Communication Technologies) Engineer	Software development	PC
3	AI expert	Deep learning	DNN (Deep Neural Network) supercomputer
2	Materials Expert	Parameter and process Development for specific applications	Metal and polymeric 3D printers
3	PhD (Engineering)	Additive Manufacturing and materials	Metal and polymeric 3D printers
1	Economist (researcher)	Research on business plan/model of the facility	N/A

1	Managing Director	Managing of the manufacturing facility	N/A
1	Chief Scientific Officer	Scientific coordination	N/A
1	Chief Technical Officer	Technical coordination of technicians	N/A

Table 54 Staff of Trentino Sviluppo

5.3. Muse FabLab:

5.3.1. General information

Within the iPRODUCE project, thanks to a its close relationship with students, researchers, and companies, Muse FabLab will be able to offer the following services to future users:

List of proposed services
3D Printing
Coding
Laser cut
Training
Design

Table 55 List of proposed serviced by Muse FabLab.

To offer these services, Muse FabLab will rely on the following know-how:

List of the main know-how
Prototyping
Small series
Assembling
Design
Control

Table 56 List of the main know how of Muse FabLab.

5.3.2. Technical information

This entity will work on the following materials:

List of the materials Muse FabLab is working with
ABS, PLA, Nylon, Resin
Plexiglas, Plywood

Table 57 List of materials Muse FabLab is working with.

In order to adequately respond to end-user expectations and needs, Muse FabLab will be able to work with the following equipment and machines:

N° of machines	Name of the machine (model)	Short description	Part dimension min L x W x H (mm)	Part dimension max L x W x H (mm)
4	Creality Ender 3	3D printer used with ABS, PLA	N/A	Unknown
1	Zortrax M200	3D printer used with ABS, PLA	N/A	Unknown
1	Ultimaker Original+	3D printer used with ABS, PLA	N/A	Unknown
1	Formlabs 2	3D printer used with resin	N/A	Unknown
1	CNC shopbot		N/A	Unknown
1	Roland Camm-1 Servo	Vinyl Cutter	N/A	Unknown
1	Epilog Legend 36EXT	Laser Cutter used with plywood, plexyglass	N/A	Unknown
1	Modela MDX-20	3D milling machine	N/A	Unknown
1	Brother Innovis 100	Sewing machine	N/A	Unknown
1	Brother F440E	Embroidery machine	N/A	Unknown
1	3D system scanner sense		N/A	Unknown

Table 58 List of the main equipment and machine of Muse FabLab

Muse FabLab also possesses a list of IT equipment and software, which can be put at the disposal of iPRODUCE end-users in order to satisfy their needs.

N°	Name of the tool	Short description
N/A	Ultimaker Cura	Software for 3D print
N/A	Rhinoceros	Sofware for 3D modelling
N/A	CorelDRAW	Vector graphic software for laser cut

Table 59 List of IT equipment and software used by Muse FabLab

As demonstrated via the previous inventory, Muse FabLab has a great deal of skills, tools and machines to be put at the disposal of the iPRODUCE platform to satisfy end-users needs.

5.3.3. Staff information

In order to guarantee an effective use of the machines and equipment in accordance with health and safety regulations, and in order to effectively satisfy the needs of students, researchers and companies, Muse FabLab brings in 3 staff members with various and complementary skills, such as organisation, teaching and prototyping.

N°	Position	Activities in the cMDF	Equipement use
1	Coordinator and founder	Organisation, teaching	ALL
1	FabLab Manager	Organisation, making	ALL
1	Collaborator	Making	ALL

Table 60 Staff of Muse FabLab

5.4. Noitech MakerSpace:

5.4.1. General information

Within the iPRODUCE project, Noitech MakerSpace, in contact with companies, could motivate them to join the iPRODUCE platform. It will be able to offer the following services to future users:

List of proposed services
3D printing
Milling
Testing
Finishing
Electronic board development
Education
Hands-on training
3D Scanning
CO2 Laser cutting

Table 61 List of proposed serviced by Noitech MakerSpace

To offer these services, Noitech MakerSpace will rely on the following know-how:

List of the main know-how
Prototyping
Assembling
Mounting
DIY electronics

Woodworking

Table 62 List of the main know-how of Noitech MakerSpace

5.4.2. Technical information

This entity will work on the following materials:

List of the materials Noitech Makerspace is working with
Wood
Aluminium
Nylon
TPUR
Resins
Electronic components

Table 63 List of materials Noitech MakerSpace is working with.

In order to adequately respond to end-user expectations and needs, Noitech MakerSpace will be able to work with the following equipment and machines.

N° of machines	Name of the machine (model)	Short description	Part dimension min L x W x H (mm)	Part dimension max L x W x H (mm)
2	MIG/MAG	Welding Machine	N/A	N/A
2	Ultimaker	3D printer FDM	N/A	200 x 200 x 200
1	Geomagic Capture	3D scanner	N/A	190 x 175
1	BCN3D Epsilon W50	3D printer FDM	N/A	420 x 300 x 400
1	Trotec Speedy 400	Laser cutting CO2	N/A	1000 x 610
1	QBOT MiniMill	CNC milling machine	N/A	175 x 150 x 66
1	Roland VersaUV LEF-12i	UV printer	N/A	N/A
1	Sinterit LISA Pro	3D printer SLS	N/A	N/A
1	3D Systems zPrinter 650	3D printer	N/A	N/A
1	EMAG Emmi	Ultrasonic washing machine	N/A	N/A
1	Knuth	Lathe	N/A	N/A
1	Instron	Universal testing machine	N/A	N/A

Table 64 List of the main equipment and machine of Noitech MakerSpace

Noitech MakerSpace also possesses a list of IT equipment and software, which can be put at the disposal of iPRODUCE end-users in order to satisfy their needs.

N°	Name of the tool	Short description
N/A	Arduino	Integrated Development Environment for Arduino environment
N/A	Fritzing	Electronic Prototypes
N/A	Blender	3D Designing
N/A	FreeCAD	CAD Software

Table 65 List of IT equipment and software used by Noitech MakerSpace

As demonstrated via the previous inventory, Noitech MakerSpace has a great deal of skills, tools and machines to be put at the disposal of the iPRODUCE platform to satisfy end-users needs.

5.4.3. Staff information

In order to guarantee an effective use of the machines and equipment in accordance with health and safety regulations, and in order to effectively satisfy the needs of students, researchers and companies, Noitech MakerSpace brings in 3 staff members with various and complementary skills, such as training, project development or coordination.

N°	Position	Activities in the cMDF	Equipment use
1	Project Manager	Project development and coordination	ALL
1	Technician	Training of users, maintenance, production	ALL
1	Public Relations	Advertising, event organization	N/A

Table 66 Staff of Noitech MakerSpace

Danish cMDF

5.5. Composition and Purpose of the cMDF

The Danish cMDF aims at democratizing 'making' by expanding the knowledge and expertise about possibilities of local production through partnerships with distinct sets of stakeholders, including educational institutions (schools and universities), SMEs and businesses. Among the activities of the cMDF, a mobile lab unit containing a set of machines has been created and equipped to provide a mobile production facility that can be deployed to various locations, linked to specific maker/on site production workshops and activities.

The cMDF is composed of two entities:

- **BetaFactory (BF):** BF is a company in the BETALAB organisation. BF has two makerspaces in Denmark focused on providing space, equipment and community to hobbyists, entrepreneurs, educational institutions and businesses. BF aims at providing the best facilities to do prototyping work and small-scale manufacturing and build its know-how from running community driven prototyping facilities a.k.a MakerSpaces or FabLabs. It also aims at extending its service offerings to those entrepreneurs who succeed in prototyping and want to start manufacturing at a small-scale while staying agile. In this cMDF, BetaFactory will be responsible for local production on site, equipment and development of the mobile unit, running workshops and disseminates local production capabilities through events and partnerships with potential partners from educational institutions (schools and universities), SMEs and businesses.
- **CBS (Copenhagen Business School):** CBS is one of the world's leading business universities, ranking no. 10 in the world and no. 6 in Europe in Business & Management Studies. iPRODUCE is anchored at the Sustainable Urbanisation Team at the Department for Management, Communication and Society (MSC). MSC addresses the role of business in society bringing together a number of connected themes and fields the researchers, MSC explores how globalisation changes and challenges management, organisations and governance across the boundaries of the local and the global and the private and public spheres. In this cMDF, it will support and co-develop with BetaFactory workshops and project-related activities, identifies, and develops sustainable business models, based on BF's vision and goals, aligned with market opportunities, and helps BF to solidify and expand its business towards a healthy and sound development.

5.6. BetaFactory (BF):

5.6.1. General information

As an entity close to educational institutions entrepreneurs and businesses, BetaFactory could motivate them to join iPRODUCE. Within the iPRODUCE project, BF will be able to offer the following services to future users:

List of proposed services
Innovation workshops
Access to manufacturing equipment
Access to office space
Product development consultancy
3D printing

Turning
Milling
Bending
Technical trainings
Laser cutting

Table 67 List of proposed services by BetaFactory

To offer these services, BetaFactory will rely on the following know-how:

List of the main know-how
Prototyping
Small series manufacturing
Assembly
Educational workshops
Mounting
Finishing
PCB development
Electronic hardware development
Software development
CAD drawing

Table 68 List of the main know how of BetaFactory

5.6.2. Technical information

This entity will work on the following materials:

List of the materials BetaFactory is working with
Wood
Steel, iron
Plastic (3D printing, laser cutting & sheet molding), PLA, PE, PETG (Polyethylene Terephthalate Glycol-Modified), ABS, Nylon, PMMA
Aluminium
Electronics
Textile

Table 69 List of materials BetaFactory is working with

In order to adequately respond to end-user expectations and needs, BetaFactory will be able to work with the following equipment and machines:

N° of machines	Name of the machine (model)	Short description	Part dimension min L x W x H (mm)	Part dimension max L x W x H (mm)
1	CNC-router, 2500x1300mm	Furniture, metal elements	N/A	2500x1300x180
1	CNC-router, 3000x1500mm w/ tool change	Furniture, metal elements	N/A	3000x1500x50
1	Thicknesser	Furniture	N/A	4000x400x300
1	Planer	Furniture	N/A	4000x400x300
1	Band saw	Furniture	N/A	4000x400x300
1	Miter saw	Furniture	N/A	4000x80x80
1	Lathe	Furniture	N/A	1000x200x200
1	Belt sander	Furniture	N/A	1500x400x100
1	TIG (Tungsten Inert Gas) welding	Metal structures of all types	N/A	N/A
1	MIG (Metal Inert Gas) welding	Metal structures of all types	N/A	N/A
1	Pibe bender	Metal structures of all types	N/A	Ø36x2000
1	Bending machine	Metal structures of all types	N/A	2000x5x50
1	Band saw (metal)	Metal structures of all types	N/A	6000x170x170
9	3D Printers Craftbot + Prusa	Prototypes, figurines, any kind of object	N/A	300x300x280
1	Soldering iron	Electronics	N/A	N/A
Various	Power supplies	Electronics	N/A	N/A
1	Leather sewing machine	Textile work	N/A	N/A
1	Juki sewing machine	Textile work	N/A	N/A

Table 70 List of the main equipment and machine of BetaFactory

BetaFactory also possesses a list of IT equipment and software, which can be put at the disposal of iPRODUCE end-users in order to satisfy their needs.

N°	Name of the tool	Short description
4	Computer	
2	CAD/CAM workstation for members	CAD/CAM workstation for members
1	Vinyl cutter	
1	Large format printer	
2	Fusion 360	CAD/CAM solution for CNC, 3D-printing, Lasercutting
3	Adobe Illustrator	
2	Inkscape	
1	Corel Draw	
1	OfficeRnD	
5	Google Docs, Drive, Mail	
1	LightBurn	For operating laser cutters
1	RDworks	For operating laser cutters
1	Siluette Studio	For operating vinyl cutter

Table 71 List of IT equipment and software used by BetaFactory

As demonstrated via the previous inventory, BetaFactory has a great deal of skills, tools and machines to be put at the disposal of the iPRODUCE platform to satisfy end-users needs.

5.6.3. Staff information

In order to guarantee an effective use of the machines and equipment in accordance with health and safety regulations, and in order to effectively satisfy the needs of SMEs and citizens, BetaFactory brings in 6 staff members with various and complementary skills, such as technical skills, design, hardware development or community management.

N°	Position	Activities in the cMDF	Equipement use
1	CEO	Acquires machines, develops facilities, machine maintenance, meets with clients	ALL
1	General Manager	Acquires machines, orders materials, floor support, community management	ALL
1	Office Admin	Holds meetings, Floor Tours, Signs in members, pays bills, office community management	
1	Production	Designs, Produces, Delivers, runs CNC courses	ALL
1	Junior employee	Floor support, Coffee, cleaning, production, maintenance	ALL

1	Project hire	hardware development, maintenance	ALL

Table 72 Staff of BetaFactory

5.7. Copenhague Business School (CBS):

5.7.1. General information

As a business university closely related to a great deal of different stakeholders such as educational institutions and companies, within the iPRODUCE project, CBS will be able to offer the following services to future users:

List of proposed services
Business Model Canvas methodology training
Design Thinking methods and tools training
Co-creation tools methodology training
Business assessment
Economic assessment
Sustainability assessment

Table 73 List of proposed serviced by CBS

To offer these services, CBS will rely on the following know-how:

List of the main know-how
Business development planning
Design Thinking Methodology
Co-Creation Methodology
Sustainability & Economy planning
Service Design methodology

Table 74 List of the main know-how of CBS

5.7.2. Technical information

CBS does not have technical capacities such as machines, and only has IT equipment since it is mainly dedicated to research and business education.

N°	Name of the tool	Short description
N/A	MS Office	Office tools
N/A	Zoom	Video / Collaboration tool
N/A	WebEx	Video / Collaboration tool
N/A	MS Teams	Video / Collaboration tool

N/A	Miro software	Online whiteboarding software, it provides the placement of shared files on an on-screen shared whiteboard. It is used in combination with videoconferencing software and allows several people to work on the image at the same time, each seeing changes the others make in near-real time. It is used for collaborative work, online workshops requiring the participation of many contributors
N/A	Adobe Suite	Primarily Photoshop/InDesign to edit pictures and produce materials for project workshops
N/A	Slack	Communication among project partners

Table 75 List of IT equipment and software used by CBS

As indicated via the previous inventory, CBS has a great deal of skills – complementary to the other entity in the Danish cMDF- to be put at the disposal of the iPRODUCE platform to satisfy end-users needs.

5.7.3. Staff information

In order to satisfy the needs of end-users, CBS has put at the disposal of the iPRODUCE project working on with the cMDF 1,5 staff members, which hold different transversal and complementary positions, such as service design, business modelling, marketing, etc..

N°	Position	Activities in the cMDF	Equipement use
1	Post-doc	Help design, plan and carry out workshops and related activities. Assist in expanding the business network and help develop business models	Laptop, MS Teams, Printer/Scan, Miro, Adobe Creative Cloud
1	Research Assistant	Help with desk research	Laptop, MS Teams, Printer/Scan

Table 76 Staff of CBS

6. Greek cMDF

6.1. Composition and Purpose of the cMDF

The objective of this cMDF is to bridge the gap between SMEs and MakerSpaces. AidPlex, with expertise in medical sector, will help any company or customer to achieve better treatment experience. This will be done by leveraging expert opinion and experiential feedback to feed the design process supported by community makers. As a result, an innovative medical equipment outperforms current solutions in terms of comfort and efficiency, offering patients a chance to increasing their quality of life. The cMDF, apart from being focused on the medical sector, expands its services on micro-manufacturing and rapid prototyping to other sectors like robotics, agile tools, electronics and consumer lifestyle goods.

The cMDF will be represented by AidPlex supported by two other Greek partners[2]:

- **AidPlex:** AidPlex is a healthtech start-up based in Greece. The mission of AidPlex is to design and manufacture patient-centred orthopaedic products, providing patients a better and more eco-friendly treatment experience. AidPlex's products aim at providing advanced monitoring of vital indicators, as well as daily activities. AidPlex was founded with the objective of offering advanced orthopaedics solutions powered by new advanced materials fitted with sensors and communications modules for the IoT era. In this cMDF, AidPlex will play the role of research & facility partner and be responsible for the methodology.
- **CERTH (Centre for Research and Technology Hellas):** CERTH is one of the largest research centres in Greece. Its mission is to promote the triplet Research – Development – Innovation by conducting high quality research and developing innovative products and services while building strong partnerships with industry and strategic collaborations with academia and other research and technology organisations in Greece and abroad. CERTH has participated successfully in more than 1,200 competitive research projects. CERTH will support this cMDF by opening its facilities to MMCs (Manufacturers, Makers and Consumer Communities) for prototyping, demonstration of the final product, training activities on 3D printing & micromanufacturing and technical consultation.
- **OK!Thess**: OK!Thess is Thessaloniki's leading start-up hub and a catalyst for the growth of the local innovation ecosystem. OK!Thess entrepreneurs bring innovative ideas to market through an acceleration program that includes training, coaching, matchmaking with mentors and access to capital, locally supporting the matchmaking events and networking activities. As Ok!Thess will not have a producing activity in the cMDF, their equipment will not be listed in this repertory.

6.2. AidPlex:

6.2.1. General information

As a patient-centred start-up, within the iPRODUCE project, AidPlex will be able to offer the following services to future users:

List of proposed services
Product Design
Assembly Design

[2] OK!Thess has been included since their facilities and equipment will be available to use cases. After agreement signature, they will be integral part of the cMDF.

Programming
3D Printing
PCB Prototyping

Table 77 List of proposed services by AidPlex

To offer these services, AidPlex will rely on the following know-how:

List of the main know-how
Prototyping
Product Design
Innovation
Research
Internet of things
Mounting & Assembly
UI (User Interface) /UX (User eXperience design
Patent research
Design around patent research

Table 78 List of the main know how of AidPlex

6.2.2. Technical information

This entity will work on the following materials:

List of the materials AidPlex is working with
Plastic (thermoplastics like PLA)

Table 79 List of materials AidPlex is working with.

In order to adequately respond to end-user expectations and needs, AidPlex will be able to work with the following equipment and machines:

N° of machines	Name of the machine (model)	Short description	Part dimension min L x W x H (mm)	Part dimension max L x W x H (mm)
1	Creality CR10-5S	Fused filament fabrication	NA	500x500x500
1	Soldering station	PCB prototyping	NA	N/A

Table 80 List of the main equipment and machine of AidPlex

AidPlex also possesses a list of IT equipment and software, which can be put at the disposal of iPRODUCE end-users in order to satisfy their needs.

N°	Name of the tool	Short description
1	Solidworks	3D Design

1	Fusion 360	3D Design
1	Cura	Slicing 3D objects
1	EasyEDA	PCB Design

Table 81 List of IT equipment and software used by AidPlex

As demonstrated via the previous inventory, AidPlex has a great deal of skills, tools and machines to be put at the disposal of the iPRODUCE platform to satisfy end-users' needs.

6.2.3. Staff information

In order to guarantee an effective use of the machines and equipment in accordance with health and safety regulations, and in order to effectively satisfy the needs of patients, AidPlex brings in 6 staff members with various and complementary skills, such as technical skills, healthcare, prototyping or community management.

N°	Position	Activities in the cMDF	Equipement use
1	Electrical and Computer Engineer	Rapid prototyping, product design, testing	FDM (Fused Deposition Modelling), designing tools (software)
1	Electrical and Computer Engineer	Rapid prototyping, product design, testing	FDM, designing tools (software)
1	Information and Communication Systems Engineer	Rapid prototyping, product design, testing	FDM, designing tools (software)
1	Information and Communication Systems Engineer	Rapid prototyping, product design, testing	FDM, designing tools (software)
1	Information and Communication Systems Engineer	Rapid prototyping, product design, testing	FDM, designing tools (software)
1	Doctor (as an external partner)	Feedback and product design (Healthcare applications)	N/A

Table 82 Staff of AidPlex

6.3. CERTH:

6.3.1. General information

As one of the largest research centres in Greece, building strategic collaborations with academia and other RTOs, CERTH could motivate other RTOs to join the iPRODUCE platform. Within the iPRODUCE project, CERTH will be able to offer the following services to future users:

List of proposed services

Functional Part Desing
Product Design
Assembly Design
Programming
Scanning
CNC turning and milling
3D Printing
PCB Prototyping

Table 83 List of proposed services by CERTH

To offer these services, CERTH will rely on the following know-how:

List of the main know-how
Prototyping
Small Series
Medium Series
Product Design
Post-Process
Innovation
Research
Characterization, Testing, Quality Control
Machine Learning and Artificial Intelligence
Mounting & Assembly
Internet of things
3D designs solutions including graphics & animation

Table 84 List of the main know-how of CERTH

6.3.2. Technical information

This entity will work on the following materials:

List of the materials CERTH is working with
Plastic (photopolymers, thermoplastics)
Photopolymeric and Ceramic Resins
Metallic powders eg. Inconel (Ni-Alloy 718C), CoCr Alloy, Stainless steel (17-4PH-A)
Bio Materials (GELMA, Cellulose, etc)

Table 85 List of materials CERTH is working with.

In order to adequately respond to end-user expectations and needs, CERTH will be able to work with the following equipment and machines:

N° of machines	Name of the machine (model)	Short description	Part dimension min L x W x H (mm)	Part dimension max L x W x H (mm)
1	Da Vinci Color	Fused Filament Fabrication (FFF) Color	N/A	200x200x150
1	Prusa i3 MK3S	FFF	N/A	250x210x210
1	Prusa MINI	FFF	N/A	180x180x180
1	Ultimaker 3 Extended	FFF	N/A	215x215x300
1	Sinterit Lisa	SLS	N/A	150x200x150
1	Orlas Creator	Selective Laser Melting (SLM)	N/A	100x110x110
1	Formlabs Form 2	Stereolithography (SLA)	N/A	145x145x175
1	3D System Projet MJP 5600	MultiJet Printing (MJ)	N/A	518x381x300
1	Bio X Cellink	Inkjet-based Bio-Printing (BIO)	N/A	130x90x60
1	Voltera V-One	(PCB)	N/A	200x200x150
1	Agilent Cary 630 FTIR Spectometer	FTIR Spectometry (FTIR)	N/A	N/A
1	Ultrasonic Flaw Detector OLYMPUS Epoch 650	Ultrasonic testing (UT)	N/A	N/A
1	Digital Microscope Leica DVM6	Digital Microscopy (DM)	N/A	N/A
1	Bandam Tools Milling Machine	CNC Milling	N/A	N/A

Table 86 List of the main equipment and machine of CERTH

CERTH also possesses a list of IT equipment and software, which can be put at the disposal of iPRODUCE end-users in order to satisfy their needs.

N°	Name of the tool	Short description
1	HP 3D Scanner Structured Light Pro s3	3D Scanning

1	FARO Laser Scanner Focus S 150	3D Laser Scanning

Table 87 List of IT equipment and software used by AidPlex

As demonstrated via the previous inventory, CERTH has a great deal of skills, tools and machines to be put at the disposal of the iPRODUCE platform to satisfy end-users needs.

6.3.3. Staff information

In order to guarantee an effective use of the machines and equipment in accordance with health and safety regulations, and in order to effectively satisfy the needs of makers and citizens, MSB brings in 5 staff members with various and complementary skills, such as prototyping, designing or testing.

Number	Position	Activities in the cMDF	Equipement use
1	Mechanical Engineer	Rapid prototyping, product design, testing	FFF, SLS, SLM, SLA, MJ, FTIR, DM
1	Mechanical Engineer	Rapid prototyping, product design, testing	FFF, SLS, SLM, SLA, MJ, FTIR, DM
1	Mechanical Engineer	Rapid prototyping, product design, testing	FFF, BIO, PCB, SLA, Scan
1	Production and Management Engineer	Rapid prototyping, product design, scan to print	FFF, SLS, SLM, SLA,MJ, Scan
1	Electrical Engineer	Rapid prototyping, scan to print	FFF, Scan
1	Production and Management Engineer	Rapid prototyping, product design, scan to print, testing	FFF, Scan, UT, DM
1	Physicist	Rapid prototyping, testing	FFF, SLS, SLM, SLA, MJ,BIO, FTIR, DM, PCB
1	Electrical Engineer	Rapid prototyping, testing	FFF, CNC, PCB

Table 88 Staff of CERTH

7. Use Case-Based Reinforcement Strategy

In the previous pages, we have presented each of the partners according to three main categories: general information, technical information and staff information. This breakdown allows a better understanding of their missions and their means of action. These data have been put at disposal of D4.5 and the rest of the technical DLs to support the specification of the marketplace and the rest of the technical elements of the platform. They will be use to facilitate the search by the users who will be able to look for a cMDF according to the know-how, the services offered but also machines or specific skills enabling him to create co creation teams for his project. The information we have gathered about the resources currently available to each of the 6 cMDFs will enable the cMDFs to develop the use cases described in deliverable D2.5. In this section we will link them with their respective UC in order to outline the need for strengthening the cMDfs., To do so, we have analysed each of the use cases vs the available resources and the cMDF capacity to implement their respective UCs.

The table below summarizes the availability of resources to develop and implement the different use cases.

		Yes. Within our local IPRODUCE partners.	Yes. Within our local cMDF and core group of entities.	Yes. Within our current local ecosystem.	Yes. Within our network of local cMDFs, (in other cMDF)	No
ES	UC 1	x				
ES	UC 2		x			
ES	UC 3	x				
DE	UC 1			x		
DE	UC 2	x				
DE	UC 3			x		
DE	UC 4			x		
FR	UC 1		x			
FR	UC 2			x		
IT	UC 1		x			
IT	UC 2		x			
DK	UC 1		x			
DK	UC 2		x			
DK	UC 3		x			
GR	UC 1		x			
GR	UC 2		x			
GR	UC 3			x		
GR	UC4		x			
GR	UC5	x				
GR	UC6	x				

Table 89 Answers of each cMDF concerning their capacity of implementing the Uses cases.

Before analysing this table, let us first define the key terms that make it up:

- Local Iproduce partners: these are basically the partners making up the cMDF to which we can add the other iProduce partners who are not directly involved in the cMDF.
- Local cMDF and core group of entities: these represent the cMDF partners plus the first members recruited to strengthen the network and who have signed an NDA or a letter of support.
- Local ecosystem: this corresponds to the ecosystem with which cMDf partners have the habit or possibility of working but for which there is currently no formal relationship with iProduce.
- Network of local ecosystem: it corresponds to the network of cMDFs composing iProduce.

We quickly notice that none of the cMDFs answered "No" on these UseCase implementation capabilities, which confirms that the Uses Cases have been well sized for the partners.

The second point that emerges from this table is that each of the cMDFs is able to implement its use cases alone or with the help of its local ecosystem. At present, none of the use cases presented in D2.5 have been imagined under the spectrum of inter-cMDF collaboration. These collaborations will be developed at a later stage, once each of the cMDFs is well established.

The third category dealt with is the Use Cases for which the cMDFs answered "Yes within our local iPRODUCE partners". For these, no particular reinforcement strategy is suggested, as the cMDF concerned are self-sufficient to implement their Use Cases, 5 in total are concerned. This means that they do not need to strengthen their equipment or workforce.

For the next category, the one relying on their local cMDF and core group of entities. We can see that the cMDFs have taken the lead in seeking complementary partners where weaknesses have been identified, whether in terms of skills, equipment or workforce. These additional partners will be studied and their skills, know-how, equipment and workforce will be added to version 2 of this deliverable which is due for release in M24. 10 use cases are classified in this category.

For the remaining 5 Uses case, which are classified as "Yes. Within our current local ecosystem", the cMDFs concerned must quickly mobilise partners who are able to reinforce their pilot, whether in terms of skills, equipment or manpower. The contractualisation could take the form of an NDA or a letter of support as was done for the core entities. There is also the possibility of directly acquiring the material necessary for the development of the Use Cases. If no partners are found, cMDFs may also consider cooperation with other cMDFs in the network. This last option could be used as a demonstration of the ability of the cMDFs to collaborate as a federation.

In conclusion, from the answers given to this questionnaire, we can see that the majority (2/3) of the uses are implementable in the state with their own resources. There is no need for an urgent reinforcement strategy for those one. For the remaining third, reinforcement is necessary and it will involve the mobilisation of local partners, already known to the members of the cMDFs concerned, although the possibility of collaborating with other cMDFs should not be ruled out and will be studied in T3.1(Establishment of Local Collaborative Manufacturing Demonstration Facilities).

In the next deliverable, which is the M24, we will study the capacities of the members who were associated with the cMDFs in the second stage (core members), and with the data from T3.1 and the initial data from the Use cases execution and we will consider a further reinforcement strategy, ensuring that generic use cases are implementable with the identified ecosystems and involved partners..

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