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Abstract	This deliverable is the final version of the Sustainability and Exploitation Plan of the iPRODUCE project. It summarizes the potential exploitable project results and qualifies the Key Exploitable Results (KERs). An analysis is done for each KER, along with the associated Intellectual Property Rights (IPRs)

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Executive Summary

This deliverable is the final version of the Sustainability and Exploitation Plan of the iPRODUCE project. It describes the methodology and the main ideas used in this Plan and moves on to identify and collect all potential exploitable results derived in the project. The exploitable results are then linked to the activities in the project and are categorized in terms of their technology readiness level. The ones with the highest market potential are qualified and further examined with respect to the existing competition and market trends. The IPRs linked to each of the qualified exploitable results (identified as KERs) are examined and summarized in the IPR registry.

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List of Acronyms

CA	Consortium Agreement
cMDF	Collaborative Manufacturing Demonstration Facilities
DIY	Do-It-Yourself
DMP	Data Management Plan
DoW/A	Description of Work/Action
GDP	Generative Design Platform
PC	Project Coordinator
SC	Steering Committee
IEM	Innovation & Exploitation Manager
GA	Grand Agreement
BPMN	Business Process Modelling Notation
ERP	Enterprise Resources Planning
IPR	Intellectual Property Rights
IR	Innovation Results
KER	Key Exploitable Result
NLP	Natural Language Processing
TRL	Technology Readiness Level

PaaS	Platform as a Service
SaaS	Software as a Service
SEP	Sustainability and Exploitation Plan
STEM	Science Technology Engineering Mathematics

1 Introduction

1.1 Purpose of the Document and link to relevant material

This document is the final version of the Sustainability and Exploitation plan and describes the methodology used for the collection and the analysis of the exploitable results reached within the project. A systematic approach is followed for the collection and analysis of the results reached in the project's duration. This analysis has been used to (a) ensure that the intended audience has been reached by the project's activities and (b) create a guide on how to use the results that are more mature.

The contents of this deliverable are linked to the several project activities, beyond the technical scope, which:

- Conduct the analysis of the context for the results reached in the project (T7.1 Analysis of Market Trends and Practices)
- Develop the Business Models for the implementation and growth of cMDFs (T7.2)
- Analyse and stimulate the Ecosystem around the cMDFs (T6.1), including the identification and engagement of the stakeholders
- Engagement of 'early adopters' (T6.3 Ambassador Programme for early adapters), that is engagement of the core users who will formulate the critical mass for further take-up

These tasks act complementary, not only to the technical development, but also to the identification of the stakeholders (along with their value and benefits, with respect to the offerings of the iPRODUCE project), as well as the identification of the exploitation paths, which may be formed by the interaction with the individual end-users.

The results from the relevant activities can be found in these deliverables (produced by the iPRODUCE in parallel to this report):

- D7.1: Analysis of Market Trends and Practices (M18)
- D7.2: Business Models and case development for iPRODUCE cMDFs (M24) – D7.3 (M36)
- D6.1: Engagement and Ecosystem establishment review (M18) – D6.2 (M36)
- D6.5: Ambassador programme for early adapters (M36)

2 Methodology

This chapter presents the approach that was adopted to develop the Sustainability and Exploitation Plan (SEP) that was used by all partners throughout the IPRODUCE project. IPRODUCE SEP is based on the principles of “Guideline for Innovation Management” introduced by the European Committee for Standardization/Technical Specification (CEN/TS 16555-1) [1]. This standard provides guidance on establishing and maintaining an Exploitation Management System (IMS) that can be applied to all public and private organizations regardless of their sector, type or size. According to the CEN/TS 16555-1, the SEP is composed by **key elements** (Figure 1) that are summarized below:

- Understanding the context (Section 2.1);
- Identifying and fostering innovation enablers/driving factors (Section 2.2);
- Evaluating and improving the performance of the SEP (Section 2.3);

Considering that the standard is mainly conceived for structured small-medium organisations, some adjustments are made to exploit this specification within the concept of IPRODUCE project (e.g. in terms of leadership, roles and responsibilities that can differ from those usually foreseen for a company).

Therefore, starting from the general SEP key elements presented in detail in this chapter, the next chapters describe the adjusted plan for the scope of the iPRODUCE project.

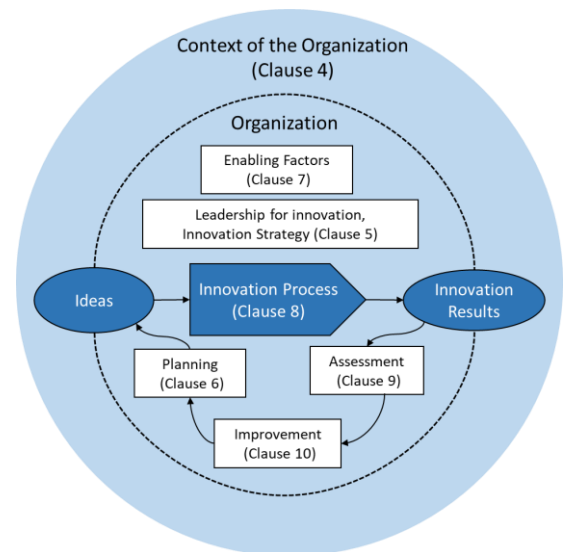


Figure 1 Key elements of the Innovation Management System as described in CEN/TS-1655-15

2.1 Understanding the context

Firstly, a clear understanding of the context has been reached by determining the key internal and external issues relevant to the SEP and the related potential boundaries within which the project operated. In more details,

- The **internal issues** consist of all the internal practices used to manage and potentially take up innovation (if any), the main cultural aspects (such as the attitude towards innovation) and the capability aspects within the partner stakeholders.
- The **external issues** consist of several aspects (market, technical, political, economic, and social) that represent some of the main topics that were regularly taken into consideration in the analysis and influence the market potential and positioning of the project innovations and results.

Moreover, the interested parties should be defined and consulted to identify their needs and expectations. In our analysis, we use the distinction of interested partners to internal and external stakeholders, where:

- **Internal stakeholders** are the main organisation members, while
- **External stakeholders** are considered suppliers, distributors, customers (potential end-users of the developed solutions) and/or public authorities.

As an “Innovation Action”, IPRODUCE project has a strong focus on the innovation aspect. The project aims to upscale concepts from the maker community (DIY manufacturing, fablabs & makerspaces) through innovative technology solutions and make them available to multi-stakeholder ecosystems, called collaborative Manufacturing Demonstration Facilities (cMDFs). Both the nature and objective of IPRODUCE are two main drivers to understand its context, i.e. the main internal and external issues and the stakeholders that are mainly impacted by the project success.

Concerning the internal issues of IPRODUCE project (as were defined above), a task dedicated to innovation management has been foreseen in the IPRODUCE work plan. In particular, Task 10.6 “Exploitation Strategy Plan and Activities” of WP10 “Impact Creation” deals with the potential exploitation paths for the project’s results. It works in parallel with the activities of WP7 (“Sharing Economy Business Models and Execution Tools”) and in particular with the development of Business Model cases and the analysis of Market trends and practices. The coordination with these tasks provides the partners with the knowledge of the competition already in place, the main customer needs and pains. The results of the analysis in these tasks has been used by individual partners to identify their value proposition and drive their tools towards specific customer pains. The results of this analysis are summarized briefly in this Report under Section 3. Relevant to the exploitation activities, the ‘Impact Creation’ activities under WP10, such as Dissemination (T10.1-10.2) and Impact Activities – Awareness and Outreach (T10.5) have a direct relationship to the material presented in this report.

In addition, the internal stakeholders for the case of IPRODUCE project are mainly project members. IPRODUCE brings together a multidisciplinary team of 20 partners including companies that provide services in the production of consumer goods market sector, research institutions, universities, organizations, large IT enterprises, SMEs, and fablabs. These are driving the project implementation that is considered as input to the development of the innovations by the technical partners.

Moving to the external issues of IPRODUCE project, the main challenges and external conditions concerning the potential success of IPRODUCE innovation plan are mainly related to:

- Market, economic, commercial, or political aspects, such as:
 - The cost of the IPRODUCE innovative solutions may not be low enough for widespread use.
 - Competitors may provide alternative products before IPRODUCE solutions are introduced to the market.
 - Financial crisis in some of the EU countries may be a bottleneck for the exploitation of innovative solutions provided by the IPRODUCE project.
 - Product adaptation strategies resulting from the policy framework at local, national or international level may have difficulties to be implemented.
- Technical aspects, such as:
 - IPRODUCE solutions may fail in actual operating conditions.
 - IPRODUCE resilience solutions may be applicable only in the context of the two pilots.
 - Potential lack of simplicity and usability of the IPRODUCE proposed solutions and platform.

All these challenges were regularly taken into consideration by management, technical and exploitation activities of several tasks of the IPRODUCE project during its entire life, as described in the description of work (DoW).

The external stakeholders can assure that IPRODUCE technical solutions properly address all the end user requirements and they are able to increase the deployability and acceptance of the IPRODUCE solutions at national and/or EU level from the very beginning. Process and product innovation is the basis of the core business and the main driver for most of the consortium industrial partners.

2.2 Identifying and fostering innovation enablers/driving factors

Section 2.1 presented the assignments of the roles, the responsibilities of all partners (especially the responsibilities of the innovation and exploitation manager) and the operational planning of the IPRODUCE project to meet all the innovation objectives. Apart from these driving factors there are some other key innovation enablers that should be covered by IPRODUCE project and summarized below:

- **Resources.** They are needed for the establishment, implementation, maintenance and continual improvement of the SEP (e.g. human resources, equipment, facilities and budgets);
- **Competences.** The resources working with innovation activities and the development of them should have the proper competences;
- **Awareness.** The importance of a realistic innovation should be understood by the resources working with innovation activities, by having clear the innovation vision and strategy together with the importance of their contribution to make the SEP more effective. A strong innovation culture could support this;
- **Communication.** Internal and external communication relevant to the SEP should be established taking into consideration aspects such as “what to communicate”, “when”, “to-“ and “by whom”, together with the provision of communication channels and the intended feedback;
- **Collaboration.** A defined policy for internal and external collaboration should be elaborated, so that ideas and knowledge can be shared across different persons, groups and units that will be encouraged to collaborate, develop ideas and share knowledge;
- **Strategic human resources.** The SEP should incorporate a strategic approach to human resources that should among others: (i) foster creativity, learning and dissemination of knowledge; (ii) encourage open interactions, trust, diversity and tolerance; (iii) allow persons’ access to relevant information from management;
- **Intellectual property (IP) and knowledge management.** A policy should be outlined in order to regulate the produced innovation.

2.2.1 Resources and competences

All IPRODUCE partners are responsible to provide resources, expertise, competence and operational capacity to achieve the innovative objectives of the project. A detailed description of each partner, its key persons including the persons that are involved in the innovation management, resources (e.g. human resources, equipment, facilities and budgets) and competences (e.g. publications, relevant products, projects) is provided in the DoW. According to this description, it is evident that IPRODUCE partners have ensured the achievement of the innovation goals. In fact, the equilibrium between industrial and research partners, in conjunction with their demonstrated experience, has been a positive indication that the project provided innovative results and achieved all its objectives.

2.2.2 Communication, awareness and collaboration

Communication, awareness and collaboration concepts are intrinsically connected and tend to overlap; thus they are discussed together in this section. Communication, awareness and collaboration actions can be divided in two categories: the **internal** and the **external**. All these actions aim to maximise the knowledge-sharing and present the results of the innovation process within the consortium.

Concerning the internal actions, iPRODUCE possesses a well-defined structure (Figure 2) specially created to maintain a thorough communication and collaboration among the partners, with a scope also to increase the synergy to ensure the quality of the results. The main channel of the communication structure between the partners of the consortium is the Project Coordinator, who receives or prepares the information of different nature (reports, minutes, etc.) and is responsible to spread the information to the rest partners. This is achieved by different means, such as:

- Collaborative web based tools to facilitate the coordination between partners and the sharing of relevant information (Google Drive & Slack/ Skype are used in iPRODUCE).
- Regular e-meetings/conference calls to keep the partners updated on the going status of WPs in order to monitor and share the progress and the quality of the project outputs.
- Workshops to align the developed work in IPRODUCE with stakeholders' interests and feedback (virtual workshops and physical meetings have been used in tandem in the post-COVID era).

Concerning the external actions, IPRODUCE promotes its innovation output through two distinct but complementary approaches:

- Dissemination and Communication Plan ('Content Marketing and Growth Hacking Playbook') as presented in D10.1 that is part of WP10 "Impact Creation". This deliverable describes the strategy and plan to drive content marketing, grow the project's target groups and communicate the project results. This goal is approached not just through a monolithic dissemination approach, but the project seeks also to find synergies with similar research activities, as well as the partners' networks. This action is realized in T10.3 Clustering and Cooperation with relevant initiatives – with the early results documented in D10.4 (Report on Cooperation Activities).
- Exploitation Plan The exploitation strategy and relevant activities of the IPRODUCE project were enhanced throughout the project lifetime, while its progress is presented in this document.
- In more detail, the exploitation plan has been fully aligned with IPRODUCE Business Models and case Development for cMDFs (T7.2), which proposes early business cases for each of the pilot ecosystems.

The overall structure of IPRODUCE has reached key audience with the main messages to promote the innovation action and its results and to foster a continuous internal and external collaboration.

2.2.3 Intellectual Property (IP) and Knowledge Management

IPRODUCE results foresee a generation of new products and knowledge (e.g. software). Hence, specific measures have been applied by the partners to ensure the effective management of the Intellectual Property Rights (IPR) and the innovations that will result. For this reason, DoW addresses the concept of IPR and Knowledge Management. In general, IPRODUCE has adhered to three principal goals of IPR management: (i) fostering a focused project approach towards generating IPR as one of the main drivers of the project work, (ii) evaluating project results to identify opportunities for IPR protection, and (iii) avoiding premature disclosure, which could compromise the ability to secure patents.

First of all, the IP Management is also correlated to the Data Management Plan (DMP) that was presented in D1.5 "Data Management Plan". The DMP details the data that was collected and generated, how this data needs to be handled, classified and stored to comply with data protection regulations and good practices, and which data can be shared or need to be protected/restricted. The DMP has evolved during the lifetime of the project and according to the status of the project reflections on data management and security.

Moreover, the IPRODUCE Consortium Agreement (CA), which has been based on the DESCA template, defines all IPR related issues and enhances the Consortium's capacity to exploit the results of the project. The purpose of the CA was to establish a legal framework for the project to provide clear regulations for issues within the consortium related to the work, IP-Ownership, Access Rights to Background and Results and any other matters of the consortium's interest. It has also allowed partners, collectively and individually, to pursue market opportunities arising from the project's results. The following general rules apply concerning the IPR management in IPRODUCE project:

- Pre-existing know-how remains the property of the partner having brought it into the project.

- Pre-existing know-how has been made available, by their owners, as required for the implementation of the project needs. Usage outside the project was decided among the owners and the potential users on a case-by-case basis in accordance with the terms of the CA.
- Knowledge remains the property of those partners who were involved in its generation / production.
- Knowledge jointly generated (without possibility to identify the individual share of work) is the joint property of the concerned partners.

According to H2020 rules for participation, the CA covers dissemination, access rights and use of knowledge and intellectual property. To make sure that these terms are followed, to avoid disputes and to facilitate business planning, the exploitation and innovation manager of the IPRODUCE project will maintain an IPR Registry (see Section 3.6 for more details) throughout the lifetime of the project. This document lists all items of knowledge relating to the work of the project (both pre-existing know-how and results developed in the project), and makes explicit for each item: (a) the owners, (b) the nature of knowledge and the potential for exploitation and (c) the currently agreed status of the item concerning plans to use the knowledge in exploitation, or plans to disseminate it outside the consortium. The Registry was regularly updated and made available to all partners. It forms a key tool to enable knowledge management. Moreover, the Steering Committee (SC) with the support of the Project Coordinator (PC) continuously verifies these guidelines and provides recommendations for improvements, or solution of problems.

2.3 Continuous update of the SEP

To ensure the suitability, adequacy and effectiveness of SEP, a continuous evaluation and improvement took place to identify potential bottlenecks and propose specific solutions. IPRODUCE continuously tracked the performance of SEP by:

- i. Continuously monitoring the progress of the innovation and exploitation activities. The leader for this task was the Innovation and Exploitation Manager (partner: ED) as was described in DoW, but she was also supported by the other members of the Steering Committee and the Project Coordinator.
- ii. Regularly updating the IPR Registry (see Section 3.6) and the reports concerning the exploitation of results as was described in the DoW. The final version of the Registry is submitted in the final version of this report, i.e. this document

3 IPRODUCE innovation and exploitation management plan

Taking into account the output of the methodology as was presented in Section 2, in this section we illustrate the innovation and exploitation management plan that has been adopted in IPRODUCE project and was followed by all partners during the entire duration of the project to finally ensure the achievement of the demanding innovation and exploitation goals that were set by the consortium. Figure 2 presents the main phases of this plan as were also described in [1].

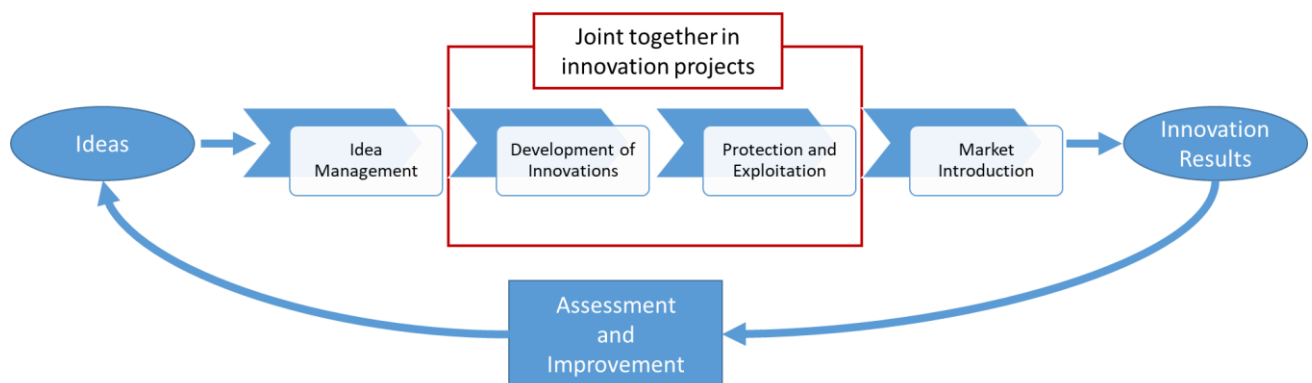


Figure 2 Schematic representation of the innovation and exploitation management process of IPRODUCE

All the phases of the innovation and exploitation process are strongly interlinked. Next we describe the phases of the process:

- **Phase 1 – Idea Management** includes the generation, capturing, evaluation and selection of the new ideas. This phase was carried out and completed at the very early stages of the proposal, where the development of IPRODUCE 's idea and potential was articulated and presented.
- **Phase 2 and Phase 3 – Development of Innovations, Protection and Exploitation.** These two phases are strictly linked in H2020 innovation projects. Development of Innovations is the phase where the implementation of the idea takes place following a dedicated methodology. For the IPRODUCE case, the methodology was depicted in the overall work plan presented in Section 2. Also during this phase, all the actions and measures needed for the implementation of the project took place. Finally, during the phase of development several end-users and the project advisory board members were actively involved to deliver high level advice. During the Protection and Exploitation phase, all the results coming from the development phase either from each individual partner or from the entire system were protected. All partners of the IPRODUCE project were committed to protect their results and were restricted to follow the European Commission regulations concerning the protection of results by signing the IPRODUCE Grant Agreement (GA). Moreover, special care and actions for the protection of results has been taken by the exploitation and innovation manager and the project coordinator of the project. Concerning the innovation output of IPRODUCE, the exploitation and innovation manager is responsible to regularly review, revise, and refine the partner-specific and joint/collaborative exploitation plans. Furthermore, all the exploitation and innovation outcomes of IPRODUCE have been monitored, evaluated, and documented (D10.9 and D10.10) during the entire life of the project.
- **Phase 4 – Market introduction.** The introduction of markets during this phase is of major importance as it increases the chances for finding additional clients. For this reason, in IPRODUCE dedicated business model have been deployed at the early stages of the project (D7.2), several workshops have been organized with several participants from the broader area

of the maker community, while the evaluation of the project in multiple maker ecosystems (cMDFs), which provide a realistic view of the current market, further augmented the interest from new end-users.

- Phase 5 – Innovation results.** In this phase, the actual assessment of results took place. Depending on the output of the assessment, further actions were adopted to improve the innovation management process and the impact of the results. In the IPRODUCE project, all the potential innovation results for all the work packages were firstly identified and classified according to their maturity level (TRL). Next, the innovation results with relatively low TRL (such as preliminary scientific studies, publications in conferences or journals) were further investigated to identify the possibility of increasing their maturity level by adopting new actions. Furthermore, for the innovations with higher TRL, a stepwise approach was adopted to ensure their maximum exploitation. The exploitation steps that will be followed for all the exploitable results of the IPRODUCE project are presented in Figure 3.

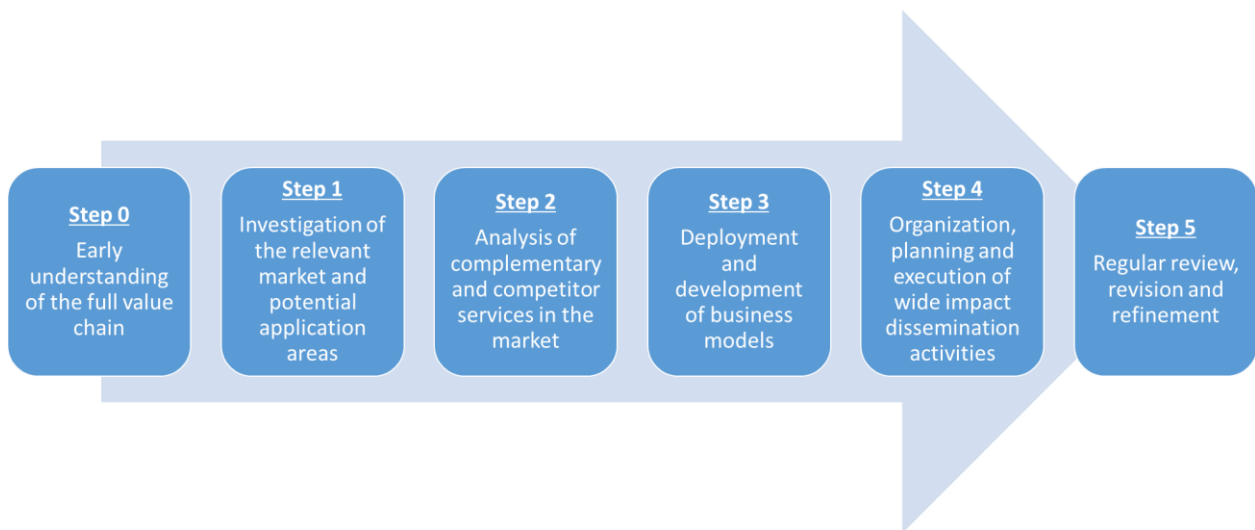


Figure 3 IPRODUCE exploitation steps

The IPRODUCE project aims to exploit all its innovative results at both consortium and partner level as it is presented in Sections 3.1 and 3.2 respectively. The preliminary innovation/exploitation plan and its principles that were followed by IPRODUCE are presented in the rest of this chapter.

3.1 Innovation/exploitation (initial) plans at partner level

Apart from commercialisation of the complete system, each outcome per partner module could be exploited by those who own the specific technology. In that case, each partner or partners involved in the development of the specific technology could seek commercial exploitation of their intellectual property on their own. For this, each individual partner has already defined some preliminary innovation/exploitation plans that are described in Table 1 below:

Table 1 Innovation and exploitation plans for each individual partner

Partner	Individual exploitation plan
AIDIMME	AIDIMME's exploitation plan focuses on the development of expert profile in smart factory and digital manufacturing domains and also knowledge and technology transfer to the industry through ongoing and new consultations and collaboration programs.

	<p><u>Commercial exploitation know-how:</u> AIDIMME expects that its participation in iPRODUCE will open doors to attract a significant number of enterprises and establish different approaches of technology transfer. The project results will be applied through the collaboration with different industries. AIDIMME will attract the interest of manufacturing companies and product designers establishing new collaborations through the cMDF structure and its commercialization.</p> <p><u>Scientific exploitation:</u> AIDIMME aims at publishing research results originating from the project in different conferences and journals. It is intended to attend at least one conference and provide 2 publications in AIDIMME's bulletin.</p>
LAG	<p>As an industrial partner, LAG will primarily focus on commercial exploitation of the iPRODUCE results. LAGRAMA's exploitations channels will be: (i) direct integration of iPRODUCE results into the production facilities of LAGRAMA (ii) direct integration of iPRODUCE results into the LAG value chain – through promoting the uptake and utilisation of iPRODUCE solutions by product designers.</p>
VLC	<p>Main objectives: FABLAB VLC will exploit the results of iPRODUCE both directly and indirectly. Direct exploitation will be achieved through the protection of the knowledge created by FABLAB VLC in the course of the project (foreground knowledge) through copyright, etc. Indirect exploitation can be carried out by increasing the visibility of FABLAB VLC in its technological area (digital manufacturing) and research (citizen science and social innovation) at European level.</p> <p><u>Technical knowledge of commercial exploitation:</u> FABLAB VLC expects that the technologies validated in iPRODUCE will attract the interest of companies, professionals, makers and general citizenship (for example, children and young people, university students, entrepreneurs) and can start new collaborations with industrial partners towards the transfer of technology (and grant licences for its use or collaboration) and its commercialization. No. of records: 1 (for the technology asset kit Fablab).</p> <p><u>Scientific exploitation:</u> it is expected that the participation of FABLAB VLC in the iPRODUCE project together with the results of the relevant projects will increase the research capacity of the organization, in which we participate with the Universitat Politècnica de València, which leads with part of the financing to make an agreement related to the university. In addition, the exploitation of the results of the project from a scientific / research point of view will be carried out in terms of new findings and at least 1 publication, which will increase the critical mass of research results produced within the organization. VLC will engage makers and product designers from different universities, as part of the iPRODUCE community..</p>
FIT	<p>Main exploitation objectives: Fraunhofer FIT seeks to establish itself in agile working environments with a focus on user experience design, user-centered design and design thinking. To follow this goal, Fraunhofer FIT will develop fitting workshop formats meant for knowledge exchange between end-users and employees of SMEs. The envisioned services are:</p> <ul style="list-style-type: none"> General consultancy regarding user centered methods and end-user involvement in the product development cycle. Providing training courses and workshops for end users and employees of SMES on the application of co-creation and DIY techniques. Consultancy for public authorities and stakeholders from the industrial sector and the maker scene. Working space/Fablab for knowledge exchange, creative idea generation and agile working methods. <p><u>Commercial exploitation know-how:</u> FIT expects that the services and methods created will attract the interest of startups and SMEs as well as end-users to engage in co-creation and knowledge exchange over the design of future products.</p>

	<p>Scientific exploitation: As a research institute, Fraunhofer FIT is interested in generating academic output, such as journal papers or presentations on scientific conferences. FIT will use the lessons learned from elaborating and evaluating their design thinking expertise to generate impact for scientific contributions. Furthermore, FIT's Ph.D. candidates will be able to input their research into the project and to generate further insights from applying it in iPRODUCE .</p> <p>Other: FIT expects to create a set of workshops and teaching methods for further application in the business/SME and end-user context.</p>
ZENIT	<p>Main exploitation objectives: ZENIT will exploit the iPRODUCE results especially for the use of its clients, the SMEs, universities and other relevant organizations and create an added value for them. Furthermore, it is planned to create synergies between the project iPRODUCE and ZENITs activities as connecting SMEs with regional Fablabs and makerspaces.</p> <p>Other: The increase of workload is not expected to finance additional personnel but to provide already existing consultants a better insight into the German cMDF ecosystem.</p>
MSB	<p>MakerSpace Bonn (MSB) will grow in number of users and visitors as well as in relevance as a local hub with a focus on product development, creation, making things and demystifying the technology used in the modern world via education and trainings.</p> <p>Momentarily, our premises are only open in the afternoons/evenings. Hiring a part time employee due to the project allows us to establish opening hours during the day which in turn allows us to cooperate with the local SMEs and enables their staff to use MSB facilities during their working hours. By participating in the project, new machines and resources can be made available to the community, allowing the fabrication of even more advanced products and immersing into the exploration of further fields of technology.</p> <p>Furthermore, the MSB will match SMEs and the maker community, allowing both sides to benefit in tackling problems that arise during product and idea development as well as finding novel, creative, and collaborative approaches to solve them.</p> <p>By participating in the project, new machines and resources can be made available to the community, allowing the fabrication of even more advanced products and immersing into the exploration of further fields of technology.</p>
MAT	<p>The aim of the cluster is to facilitate the development of new projects. The results of IPRODUCE and the knowledge gained during the project will be exploited within the consortium but will also be used as baseline/database in order to develop and improve the quality of other projects in the cluster consisting of 300 members, about two thirds of them are companies. With the project results the cluster will: (a) organize workshops for industries/manufacturers and research organization about innovative and collaborative design, (b) enhance the visibility of its members through the participation in IPRODUCE (c) stimulate innovation: facilitate the development of new projects and collaborative work through the platform.</p>
Vosges	<p>Main exploitation objective: The FabLab Vosges will exploit the project's digital open innovation space to develop a social manufacturing framework on a local scale at first, and being a representative on the national level. Other: The FabLab Vosges would like to be a "showroom" of AR solutions in the "Grand Est" of France for hobbyists, makers and industrials, in order to demonstrate the possibilities of AR in industries and SMEs, to show customers real time advancement in customer's needs.</p>
Excelcar	<p><u>Main exploitation objectives:</u> Excelcar will exploit the results of the iPRODUCE project with its expertise in user-oriented industrial design and the addition of its service catalogue. Excelcar will exploit IPRODUCE results both directly and indirectly. Direct exploitation will be achieved through knowledge valorization in new services and exploiting new facilities for Exclecar's stakeholders (companies and end users). Indirect exploitation will be achieved through the upscaling of Excelcar activities in its ecosystem and at EU level though the network of cooperative manufacturing hubs.</p>

	<p><u>Commercial exploitation:</u> Excelcar will gain new technologies in IPRODUCE which will be used by companies in other goods manufacturing industries beyond the current stakeholders involved (agriculture, health and maritime industries). This will provide additional gains and a new business model for Excelcar. In addition, the networking at EU level will also bring new EU users for Excelcar platform and hub.</p> <p><u>Scientific exploitation:</u> Excelcar participates in the main events on “industry 4.0” and new collaborative production modes. Communication of the findings and outcomes of the project will be made during these events in Europe, and in Canada and USA where contacts are already active. Papers and pitch will be published for these events, and will be exploited by Excelcar R&D partner laboratories as a basis for further R&D.</p> <p><u>Other:</u> Through its platform, Excelcar will facilitate and support the creation of startup around the new mobility solutions ideas tested and co-created by the companies in cooperation with the end users. Excelcar IPRODUCE outcomes will also be used to train the stakeholders for developing collaborative manufacturing methods and tools.</p>
E@W	<p><u>Commercial exploitation:</u> algorithms and tools resulting from the iPRODUCE will be used to enhance and complete the offer, both in terms of services and products, which will actively build the E@W's portfolio. Hence, E@W's will have both direct advantages, related to the specific technologic and innovation benefits coming from iPRODUCE , such as patents and IPs, and indirect advantages, related to the improved position of E@W in its expertise area on a European scale. Furthermore, iPRODUCE will be an opportunity for E@W to improve its network of relationships, therefore increasing the number of potential partners, and opening the road to new opportunities for innovation in terms of both services and products.</p> <p><u>Scientific exploitation:</u> as a non-profit Organization, E@W will actively benefit from the contact with relevant Academic and Industrial Research stakeholders, with the specific aim to transfer the knowledge acquired during the iPRODUCE project.</p> <p><u>Other:</u> E@W is a fast-growing SME, hence, thanks to solid investments, it intends to develop marketable and competitive services starting from the research results and patents achieved throughout its history.</p>
TS	<p><u>Main exploitation objectives:</u> through this project, TS will broaden the scope of its technologies and business. In addition, TS will be able to test and adopt new co-creation methodologies coming from the partnership. As a private company with a public mission (TS is the local development agency of the Autonomous Province of Trento), it will also be able to foster technology transfer and the iPRODUCE approach within the industrial groups, SMEs and research centres within the Trentino region.</p> <p><u>Commercial exploitation:</u> TS expects that the use cases developed during the project (via the open competition challenges and the pilot phases) could be added to the portfolio of its ProM Facility Lab (the mechatronic and additive Facility built up with the support of ERDF funds and run by Trentino Sviluppo), with the possibility of new commercial exploitation.</p> <p><u>Other:</u> The co-creation experience gained in iPRODUCE will effectively enlarge the collaboration network of TS. Furthermore it will contribute to find out new business models related to its ProM Facility.</p>
CBS	<p><u>Main exploitation objectives:</u> CBS will exploit iPRODUCE 's results through direct and applied knowledge acquisition, application and improvement of methods and tools towards business development.</p> <p><u>Scientific exploitation:</u> CBS envisions publishing research articles, attending local and international events presenting iPRODUCE processes and outcomes. Development of educational materials and/or ad-hoc trainings; engage in further research related to iPRODUCE topics.</p> <p><u>Other:</u> Another key exploitation refers to CBS networking and liaising with external organisations and projects, engaging in preparing new projects building on iPRODUCE knowledge and/or outcomes; embedding iPRODUCE concepts, methods and results in other projects related to circular economy and novel business developments.</p>

<p>AidPlex</p>	<p><u>Main exploitation objectives:</u> AidPlex will leverage the iPRODUCE 's results both directly and indirectly. Direct exploitation will involve resulting in a design, provisional or utility patent to protect the knowledge gained and the final solution. Indirectly, AidPlex will be able to fully characterize and measure the results of the co-creation process, adjust it accordingly and apply the methodologies and activities in future product development, as well as future research programs participation.</p> <p><u>Commercial exploitation:</u> AidPlex expects that the back brace solution resulting from the co-creation process under iPRODUCE will be adapted and subsequently added to its portfolio of product offerings, attract the interest of wholesalers in the Medicare sector and used as a driving argument in future funding rounds with Venture Capitals, required for supporting the R&D activities of the company and certification and commercialization of its products.</p> <p><u>Scientific exploitation:</u> It is expected that AidPlex's participation to the iPRODUCE project in conjunction with outcomes from internal R&D activities will enhance its research portfolio and product range leading to an estimated 1.500.000 € in funding over the next two years and over 3.000.000 € in partnerships and sales related activities.</p> <p><u>Other:</u> The provided budget is expected to finance AidPlex's current personnel and an additional full-time researcher with strong knowledge in the medical field (bioinformatics or other) to enhance the skillsets of the team.</p>
<p>CERTH</p>	<p><u>Main exploitation objectives:</u> CERTH will exploit the iPRODUCE 's results both directly and indirectly. A direct exploitation will be achieved by means of protecting the knowledge created by CERTH in the course of the project (foreground knowledge) through e.g. by patents or copyright, etc.. Indirect exploitation may be realised by increasing CERTH's leadership in the respective technology areas of research on a European scale.</p> <p><u>Commercial exploitation know-how:</u> CERTH expects that the technologies validated under iPRODUCE will attract the interest of relevant enterprises (e.g. IoT & service providers, AR/VR developers, etc.) and can initiate new collaborations with industrial partners towards technology transfer (and granting licences for its use or collaboration with industry) and commercialisation.</p> <p><u>Scientific exploitation:</u> Exploitation of the project results from a research/ scientific point of view will be done in terms of new findings and publications (4 publications in conferences and 3 in journals) thus increasing the critical mass of research outcome produced within the organisation.</p> <p><u>Other:</u> The increase in workload is expected to finance the placement of 7 full-time research assistants and post-doctoral researchers with the additional aim to advance the organisations expertise in the field further.</p>
<p>ICE</p>	<p>ICE sees three strategic motivations in the iPRODUCE project. Firstly, deep involvement in the collaborative manufacturing platforms and community will allow us to test and validate our own solutions such as the ICE process environment, analytic suite and also ICE Data Platform (data harmonisation). This will allow quicker development of new technologies with better quality and more focused to target user domain. The validation of these will enhance our ability to 'sell' these developments to clients, and thus reduce the time to market. In particular, iPRODUCE will bring the digital manufacturing more into line with our core research and commercialisation focus areas. In the longer term we are interested in using a fully operational agile network creation and condition monitoring toolkit as part of our digital manufacturing platform offering. Finally, tools developed for e.g. data harmonisation, monitoring, self-service analytics and prototyping will be adapted to fit within the realm of ICE Data Platform.</p>
<p>SAG</p>	<p>Through this project, SAG will broaden the scope of its technology and business. In addition, SAG will be able to test and adopt new methodologies coming from the partnership. As a large enterprise, SAG will also be able to foster technology transfer and the iPRODUCE approach within the industrial groups, SMEs and research centres internationally.</p>

EDLUX	<p>EDLUX is a leading innovative IT company, acting internationally, which is constantly seeking to enlarge its current activities. EDLUX has proven in its long history that it can successfully launch new products and services in the international market, and this is proven by the number and the importance of its clients (see profile). In terms of iPRODUCE , EDLUX is very interested to enlarge its products and services with real needed solutions for the manufacturing industry continuing on the advancements of previous projects. EDLUX will exploit the project results in two ways:</p> <p>A. To enlarge its technical know-how, and services from the manufacturing towards SME manufacturing and crafting, which actually a new market. The marketplace tools will be exploited in the future for research and more importantly for commercial projects.</p> <p>B. To repurpose EDLUX's existing services for setting up workflows to new and innovative as well as competitive products and solutions for the specific domain of fablabs and crafting. The Automation process engineering has been configured for a collaboration design and development of new personalised and customised products. This enables EDLUX to operate in this domain and expand its services and activities through alliances with other players of the consortium in the relevant markets. The fact that it already operates internationally is giving a good starting point and ensures the potential success of iPRODUCE in the commercial world.</p> <p>C. To further extend its visibility in new domains through the project dissemination activities.</p>
F6S	<p>F6S exploitation strategy is based on the enlargement of the F6S network and outreach. F6S community has +3.0million users and this a good opportunity to move towards new communities and users (FOF, researchers, companies, ...). Therefore, increasing the F6S users network in the domain Factories of the Future, while positioning F6S as the platform to connect innovators, entrepreneurs, researchers, startups... is the main objective of F6S within iPRODUCE .</p> <p>F6S is constantly testing new monetization models with its users. So, increasing the F6S outreach and footprint in H2020 projects will end up increasing our commercial options.</p>
WR	<p><u>Main exploitation objectives:</u> WR is already active in the field of social research and social innovation applied in the urban context, also in the frame of bottom-up and collaborative production processes such as DIY initiatives, makers' communities, FabLabs, etc. The company seeks to gain additional expertise, experience and insights for the transfer of these methodologies to industries and SMEs as well as for the development of Open Innovation processes in the collaborative production and the industrial field.</p> <p><u>Commercial exploitation know-how:</u> WR is keen to apply the emerged knowledge and assets to its day-to-day commercial activities. The iPRODUCE methodologies, structures and tools will strengthen the capacity and arsenal of WR, who will actively seek to exploit them for supporting open innovation and collaborative production endeavours both of the public (e.g. municipal, regional) and private sector clients. Exploiting the network of the SMEs, consumers and the makers' communities that will be engaged during the project will also provide new opportunities for further collaboration or joint exploitation with regards to the collaborative production methodologies of the project (e.g. supporting business set-up, access to further funding, innovation management, etc.).</p> <p><u>Scientific exploitation:</u> WR is already leading market research and business development interventions in the circular collaborative urban production domain and in the makers' movement, under EU-funded projects (i.e. POP-MACHINA). Thus, through its involvement in iPRODUCE , WR will acquire further evidence-based knowledge in collaborative production and the transfer of bottom-up production processes to the industry sector coming from real cases, which will lead to further exploitation of the project's knowledge and assets in follow-up projects.</p>

3.2 Identification of innovation results per work package

In Table 2, we summarize some preliminary and indicative innovation results (IR) per work package of iPRODUCE project as they come from the DoW and the partners' input. This table presents all innovation results that have been identified, irrespectively of their maturity level. Each row of this table consists of: (a) the WP in which the IR was developed, (b) a short description of the IR, (c) the partners that contributed to the development of the IR, and (d) a unique ID of the IR.

Table 1 Innovation Results (IR) of iPRODUCE according to the DoW and the partners' input.

Work Package	Innovation Result (IR)	Contributors	IR No.
2	iPRODUCE Social Manufacturing Vision and Reference model	CERTH, cMDFs, WR	IR.2.1
3	Operational Models for cMDFs	TS, AIDIME, E@W, CBS	IR.3.1
	Workflow automation - orchestration of the design and production process	ED, AIDIMME	IR.3.2
	Digital twin development tool	ICE	IR.3.3
	AR Training Toolkit	CERTH	IR.3.4
4	Data structures for the description of makers, consumers and products in the context of social manufacturing	ICE, SAG, CERTH, ED	IR.4.1
	OpIS data repository	ICE, CERTH	IR.4.2
	Marketplace for open innovation and user interaction	ED	IR.4.3
	Matchmaking tool & Agile Network creation	ICE, CERTH,WR	IR.4.4
5	Product ForgeService	FIT, MSB	IR.5.1
	GDP as social community	SAG	IR.5.2
	NLP for verbal interaction with users (in Spatial Instructor)	SAG	IR.5.3
	Video Intelligence	SAG	IR.5.4
	AR/VR tool	CERTH	IR.5.5
	Data Analytics tool	E@W	IR.5.6
	Guidelines on Environmental Life Cycle Management	AIDIMME, FIT, MATERALIA , VLC, MAT	IR.5.7
6	Mobile application for the collection of user's feedback for open innovation propositions	ED,WR	IR6.1
	Open Competitions on consumer products innovation challenges	F6S	IR6.2
	Methodology for iPRODUCE ecosystem establishment	WR, cMDFs, AIDIMME	IR6.3
7	Business Models and case development for cMDFs	CBS	IR7.1
	Riccardian Toolkit	CERTH	IR7.2
8	Demonstration of federated cMDF models	VLC, cMDFs	IR8.1
	Implementation of the cMDF concept	AIDIME	IR8.2
9	Evaluation methodology for cMDFs services	AIDIMME	IR9.1
	Innovation services to MMCs	AIDIMME	IR9.2
10	iPRODUCE Website	F6S	IR10.1

The innovation results from this table, with high TRL are analysed further with a view for their positioning in the market. These are called Key Exploitable Results (KERs). The Innovations results with lower TRL fed to the dissemination tasks in order to promote them in the research and scientific community or the relevant stakeholder groups.

All the KERs (innovation results with higher TRL) have been further analysed in Table 3 in terms of: (i) the partners that have contributed in the development of this KER, (ii) the partners that are responsible to take actions to exploit the results, (iii) the way that the result is planned to be exploited (e.g. Software, Software as a Service, Consultancy, Material for Courses, Publication, Patent, Know-how, use by public stakeholders), and (iv) a unique ID that will be used for identification purposes.

3.3 Analysis of the Exploitable Results

The following table summarizes the Key Exploitable Results in IPRODUCE and structures them in terms of the responsible activity in the project (WP), main contributors and exploitation responsible, their potential exploitation form and their Technology Readiness Level. Each Key Exploitable is assigned with the unique identifier which is used in the analysis of each of the results in the following sections.

Table 2 Summary of Key Exploitable Results of iPRODUCE

Work Package	Key Exploitable Result (KER)	Contributors	Exploited by	Potential exploitation form (patent, know-how, publication etc.)	TRL (Start-Finish)	KER No.
3	Operational Models for cMDFs	NA	NA	Know-how, Service, Publication	5	KER1
	Workflow automation - orchestration of the design and production process	ED, AIDIMME	ED, AIDIMME	Software, SaaS, Know-how	8	KER2
	Digital twin development tool	ICE	ICE	Software, Know-how	6-7	KER3
	AR Training Toolkit	CERTH	CERTH	Product, service, publication	6	KER4
4	Marketplace for open innovation and user interaction	ED	ED	Product, PaaS, Know-how	7	KER5
	Matchmaking tool & Agile Network creation	ICE	ICE, ED	Software as a Service	6-7	KER6
5	Product Forge Service	FIT	FIT	Know-how, Service, Publication	7	KER7
	GDP as social community	SAG	SAG	Software	5	KER8
	NLP for verbal interaction with users (in Spatial Instructor)	SAG	SAG	Software	5	KER9
	Video Intelligence	SAG	SAG	Software	6	KER10
	AR/VR tool	CERTH	CERTH	Product, service, publication	5	KER11
	Data Analytics tool	E@W	E@W	Product	6	KER12

	Guidelines on Environmental Life Cycle Management	AIDIMME, FIT, MATERIALIA , VLC, beta Factory, MAT	AIDIMME, FIT, MATERIALIA , VLC, beta Factory, MAT	Know-how, Publication	8	KER13
6	Mobile application for the collection of user's feedback for open innovation propositions	ED	ED	Product, PaaS, Know-how	8	KER14
	Business Models and case development for cMDFs	CBS	CBS	Service, Publication	NA	KER15
7	Riccardian Toolkit	CERTH	CERTH	Product, service, publication, patent	3-6	KER16
8	Implementation of the cMDF concept	NA	NA	Know-how	NA	KER17
9	Innovation services to MMCs	NA	NA	Service, Publication	NA	KER18
10	iPRODUCE Website	F6S	F6S	iPRODUCE Website	N/A	KER19

3.3.1 KER: Operational Models for cMDFs

	Title of your KER
at Brief Description	The Operational Model for cMDFs is a management and business model that can handle a plurality of members and objectives under a common operational model and preserve, at the same time, the differences and enhance the points in common. The Model considers federations made up of makers, fablabs, professionals and manufacturing facilities, each operating with different clients (makers, SMEs, DIY, etc.) and different business models and could work with prototyping and manufacturing.
Main result	<ul style="list-style-type: none"> List of Kaizen and Lean methodologies available to be implemented: Continuous Improvement; Gemba Kaizen; The Seven Wastes (Muda); Kaizen and Management; Processes and Results; Value Stream Map; 5S; Kanban. List of Lean Transformation Models and Kaizen activities available to be implemented: Situational Approach (the Roof); Process Improvement; Capability Development; Responsible Leadership; Basic Thinking, Mindset, Assumptions (the Floor); Operating Model Canvas. Definition of the best solution - the hybrid model - for the implementation of the operational model; Definition of the Lean Operational Model - based on the Hybrid Model - comprising all the operational steps to be run by the Federation: The Phase-gate Approach; Project Development & Deming Cycle; From Contract to Proof of Concept; Teams and Meetings; Barashi Board; Pull Planner; A3 Project Initiation; 6 Weeks Planner; Obeya Room; Work Breakdown Structure; Kanban Definition of an Implementation Roadmap that considers the Ideation Phase, the Engineering Phases, the Industrialisation Phase and the Market Landing. Establishment of a set of guidelines for applying Lean Transformation: Guidelines for the Measurement of the Federation Performances; Guidelines for the Correct Organization of Workplaces and of Information Flow through the Nodes; Guidelines for Daily Project Activity Management; and Guidelines about Redundancies and Shortcomings
Value Proposition	The Operational Model for cMDFs is able to provide: <ul style="list-style-type: none"> a lean operational model for hybrid governance structure, including visual management tools for the project management and lean activities; an evolution roadmap: from the project to the market;

	<ul style="list-style-type: none"> a set of guidelines useful to implement the roadmap in line with the lean principles.
Primary Target customers	A network of bodies (validated for prototyping bodies such as makerspaces, fablabs, manufacturing facilities, etc.) operating in the same area with different business models, operational models and governance.
How it will be offered to customers/ segments/ Licenses	Free to use from the iPRODUCE webpage https://iproduce-project.eu/resources-and-results/deliverables/
Other uses of the result	N/A
Competitors	N/A – the Model is a common operational guideline at support to the business creation of new Federations
Current Status & future directions for improvement	The solution being developed in the iPRODUCE project is a technology validated in a relevant environment. Current Status: TRL: 5
TRL	
Cost estimate to sustain the result	No cost foreseen to sustain the results.
Status of IPR: Background (type and partner owner)	The methodology is free to use. The Deliverable “D3.1. Lean Operational Model for cMDFs’ Federations” is public (& accessible from this link: https://iproduce-project.eu/resources-and-results/deliverables/)
Status of IPR: Foreground (type and partner owner)	The methodology is free to use. The Deliverable D3.1. “Lean Operational Model for cMDFs’ Federations” is public.
Exploitation: Sources of financing foreseen after the end of the project	<ul style="list-style-type: none"> Competitive agreement with cMDFs that choose to adopt it beyond a time period of 12 months after the end of the project Additional funding by similar co-funded EC projects
Means of promotion beyond the end of the project	<ul style="list-style-type: none"> Word of mouth by members of cMDFs that continue to use it Network of partners and stakeholders committed to supporting it (TS, Kaizen Institute, CBS) Channels of partners committed to supporting it (TS, Kaizen Institute, CBS): social media, website
Alignment with relevant EC policies	The EC is committed to actively supporting the creation of communities, fablabs, and the creators' movement, in line with its broader agenda of promoting innovation and creativity across the region. To this end, the Operational Model for cMDFs has been designed to help facilitate this support by providing a powerful methodology that can help collaborate different entities with different missions and visions. The developed methodology enables Federations to operate with the correct business model and to implement several Kaizen tools to benefit all the members.

3.3.2 KER: Workflow automation - orchestration of the design and production process

	Workflow Automation (T3.4)
Brief Description	The Workflow Automation tool is an orchestrator (facilitates the coordination between different actors) for the design and prototyping process of industrial consumer products (for example furniture). The interaction between the actors assumes a structured format and the Workflow Automation tool collects the necessary information at the appropriate phases of the interaction by redirecting the previous input by other actors and structuring the interaction in well defined steps.

Main result	<p>The design and prototyping process has been modelled as a Business Process Model and the software solution has been coded in Java/ Camunda environment offering:</p> <ol style="list-style-type: none"> 1. frontend: <ol style="list-style-type: none"> a. an interface that allows users to view/ access the tasks assigned to them b. dedicated forms for the task at hand c. exchange of files d. creation of documents from the input submitted (.docx & pdf format) e. project management functionalities such as assigning tasks to users, setting deadlines, etc. 2. backend: process engine that <ol style="list-style-type: none"> a. keeps track of the open tasks b. the progress along the overall production process c. assigns tasks to users according to the production process d. can be instantiated many times to model multiple production processes in parallel
Value Proposition	<ul style="list-style-type: none"> ● Reduces the communication effort between the actors (information is exchanged in a centralized manner) ● Makes certain that the necessary information has been collected at each design preparation phase (realizes the phases of traditional 'design thinking') and all relevant actors have consented (are committed) to the goals ● Provides Project Management functions enabling the engineering manager to coordinate more complex interactions (with a number of design requirements)
Primary Target customers	<ol style="list-style-type: none"> 1. cMDFs with semi-structured design and prototyping phases towards complex products 2. fablabs/ makerspaces
How it will be offered to customers/ segments/ Licenses	<p>free for use by local communities/ makerspaces/ fablabs with (some low level of) tech support</p> <p>The tool is accessible online at the link: https://spanish-iproduce.eurodyn.com/ (authentication is granted only for users registered for the specific Use Case – demo available by contacting the partner ED)</p>
Other uses of the result	<ol style="list-style-type: none"> 1. Extend/ adapt its functionalities to similar use-cases, but with potentially different audience, for example social innovation solutions (software/ hardware) for: <ul style="list-style-type: none"> ● waste management ● circular economy applications 2. The Workflow Automation tool is a fork of the Manufacturing Process Management System (MPMS), which is a company product offered as open source. Some new functionalities added in this tool will be used to enhance the original tool (MPMS) by ED and a custom service was implemented in the project by ED as well. 3. The implementation of this tool for any given collaborative process that involves end users and cMDFs and their systems can be implemented and configured as necessary in the basis of cost and material.
Competitors	<p>N/A – the tool is heavily customized to the underlying process and hence there is no general purpose tool. The Workflow Automation is based on the open source project Camunda</p>
Current Status & future directions for improvement	<ul style="list-style-type: none"> ● The Workflow is fully functional on the servers of ED and is used to serve the needs of the Spanish cMDF (especially for the 3x Use Cases considered in iPRODUCE) <p>Current Status: TRL: 8</p>
TRL	
Cost estimate to sustain the result	<p>~1MM/yr for support and low effort interventions</p> <p>Assuming hardware/ infrastructure provided by respective entity (ED or cMDF)</p>
Status of IPR: Background (type and partner owner)	<p>ED: Business Process Modelling, know-how in the development of process-orchestration applications with Camunda-SpringBoot</p>

Status of IPR: Foreground (type and partner owner)	ED & AIDIME maintain the foreground for the Workflow Automation, for the instance created/ customized for the Spanish cMDF
Exploitation: Sources of financing foreseen after the end of the project	<ul style="list-style-type: none"> Competitive agreement with cMDFs that choose to use it beyond a time period of 12 months after the end of the project Additional funding by similar co-funded EC projects
Means of promotion beyond the end of the project	<ul style="list-style-type: none"> Word of mouth by members of cMDFs that continue to use it Network of partners committed to support it (ED, some cMDFs) Targeted promotion to affiliated makerspaces in the region Channels of partners committed to support it (ED, some cMDFs): social media, website
Alignment with relevant EC policies	EaSI (Employment and Social Innovation programme), under the 3d axis Microfinance and Social Entrepreneurship, 2 nd thematic section Social economy and inclusive entrepreneurship

3.3.3 KER: Digital Twin Development Toolkit

	Digital Twin Development Kit (T3.4)
Brief Description	The Digital Twin Development Kit allows users to easily develop digital models that replicate the behaviour of physical entities
Main result	<p>list of key functionalities:</p> <ul style="list-style-type: none"> The toolkit allows the creation of digital models that replicate the behaviour of physical entities within a digital environment. The toolkit allows the creation of digital twins without requiring a physical model. Storage and sharing of digital twins Digital twins can execute synthetic scenarios The capability to design and import custom 3D models is provided 3D model view: shows a comprehensive 360-degree view of the 3D model. Users can rotate, zoom in and zoom out and observe the 3D model from different angles. Grafana dashboard: Allows for the monitoring and analysis of data related to the digital twin, BPMN sequencer: Enables the automation and control of processes within the digital twin The integration of a video display feature provides a real-time visual representation of the physical factory, allowing for the synchronous observation of the movement of physical assets in relation to the corresponding 3D model.
Value Proposition	<p>Efficiency: The Digital Twin Development Tool Kit offers a fast and efficient way to create digital twins.</p> <p>Learning and Training: Digital twins created through this toolkit can be used for learning and training purposes. By simulating the behaviour of the product/entity, users can learn and practice in a safe and controlled environment without the need for expensive resources or equipment.</p> <p>Rapid Prototyping: The tool kit enables users to develop a rapid prototype and test new designs and ideas in a digital environment before implementing them physically.</p> <p>Collaboration: Digital twins created using the tool kit can be shared among team members, enabling collaboration and teamwork for faster and more efficient development and implementation of solutions.</p>
Primary Target customers	cMDFs

How it will be offered to customers/ segments/ Licenses	Through the iPRODUCE platform we offer free access to the tool for all its users (https://iproduce-tools.iti.gr/main/dt). This means that anyone who has access to the platform can utilise the toolkit at no cost. Moreover the opensource code is being released on github for future research and development on this project.
Other uses of the result	The tool is adaptable and can be customized to fit the specific needs of different domain such as manufacturing, logistics and ehealth. Therefore, it has the potential to be used in various contexts beyond the current project
Competitors	There are well-established digital twin platforms available at the international level, such as Azure Digital Twin and Oracle Digital Twin. These cloud-based digital twins primarily focus on data analysis. But, the digital twins developed using the iPRODUCE Digital Twin Development Tool Kit provide detailed insights into the behaviour and appearance of a specific entity or product. This enables creators to gain valuable insights and knowledge about the product before manufacturing it. Additionally, the tool kit is completely free and open source, so users can easily download the tool kit and develop digital twins, as well as contribute to the maturity and enhancements of the open-source toolkit.
Current Status & future directions for improvement TRL	<p>The digital tool is fully functional and has been validated in a similar environment Further development is going to be placed for the addition/ enhancement of these functionalities”</p> <ul style="list-style-type: none"> • A dashboard to view and manage multiple digital twins • Some user interface improvements • better and improved user experience, to make the purposes of some functionalities clearer for the users • There is a possibility to clean up, modify or enhance some of the functions <p>Current Status: TRL: 6-7</p>
Cost estimate to sustain the result	<p>The digital twin solution developed in the iPRODUCE project can be used to model different types of manufacturing assets. However, currently the learning curve for the users is high due to the use of specialised technologies. Also, the connectivity of digital twins with real-world assets is currently hand-coded. These aspects can be further strengthened to make the tool market ready. The expected effort to enhance the current functionality is described below:</p> <ul style="list-style-type: none"> • Automated connectivity with diverse assets using standard APIs: 4MMs • Integration of different modules in an intuitive dashboard: 2MMs • Packaging and documentation: 2MMs
Status of IPR: Background (type and partner owner)	ICE: core components have been developed prior to the iPRODUCE project
Status of IPR: Foreground (type and partner owner)	ICE (software)
Exploitation: Sources of financing foreseen after the end of the project	<ul style="list-style-type: none"> • ICE plans use to this tool kit to develop digital twins for different industries (manufacturing, maintenance, logistics). For that purpose, ICE will continue to invest in the development and maturity of the tool kit to be able to create a robust solution for its clients.
Means of promotion beyond the end of the project	<ul style="list-style-type: none"> • Word of mouth by members of cMDFs that continue to use it • Use in future research endeavours • A dedicated website is being developed for the DT tool kit and this will be promoted using web and social media channels and ICE's contacts in different industries.
Alignment with relevant EC policies	The EC is committed to actively supporting the creation of communities, fablabs, and the creators' movement, in line with its broader agenda of promoting innovation and creativity across the region. To this end, the Digital Twin Development Tool Kit has been designed to help facilitate this support by providing a powerful tool that can help generate new ideas and validate them. The digital twins created using the toolkit enable creators to test out new concepts and validate them before committing resources to physical prototypes or production.

3.3.4 KER: AR training Toolkit (cMDF Training Platform)

	cMDF Training tool
Brief Description	The AR Training Tool's value lies in its ability to provide a comprehensive and effective training solution powered by cutting-edge AR technology
Main result	<ul style="list-style-type: none"> • Users have the ability to create training scenarios • Users have the ability to export training scenarios • Users have the ability to browse through the list of exported scenarios • Users have the ability to view AI Annotated Videos through the integration with the Video Intelligence tool of the project <p>Important external services:</p> <ul style="list-style-type: none"> • CERTH Hosted Procedure Server
Value Proposition	The AR Training Tool's value lies in its ability to provide a comprehensive and effective training solution powered by cutting-edge AR technology. By offering 3D animated training procedures on mobile devices through the View Tool, the platform ensures that users can learn and practice procedures in a highly immersive and engaging way. Finally, the Authoring Tool allows trainers to create custom training procedures and scenarios, tailoring the training program to their specific needs. Overall, the AR Training Tool offers a comprehensive and flexible training platform that can improve the quality and effectiveness of training programs for a wide range of industries and applications.
Primary Target customers	<ol style="list-style-type: none"> 1. cMDFs 2. fablabs/ makerspaces
How it will be offered to customers/ segments/ Licenses	<p>free for use from the OpIS platform</p> <p>The tool is accessible through the link: https://iproduce-tools.iti.gr/main/cmdf (requires authentication through the OpIS platform)</p>
Other uses of the result	<ul style="list-style-type: none"> • Through extended research in the user experience field, parts of the tool can be reconfigured to be more intuitive and approachable by the general public • The tool can be optimized and reconfigured to support a wider range of file sizes, training content and features.
Competitors	<p>The list of competitor's products include solutions offered by, among others, Yeppar, RE'FLEKT GmbH, InfiVR, VIRNECT CO., LTD., Hurix, Accenture plc, Microsoft Corporation, Samsung Electronics Co., Ltd., Sony, Alphabet (Google, Inc.), Magic Leap, Inc., Wikitude GmbH.</p> <p>Most of the solutions offered by the competition are mature enough and funded over a longer timeline than the one of the AR Training Tool. However the AR Training Tool can be used as an add on of existing infrastructure which servers training content, enhancing this way the preexisting establishment of Training Material Delivery applications.</p> <p>The AR Training Tool's unique value proposition of providing a complete cMDF training platform through AR technology positions it as a highly innovative and cutting-edge solution in the training industry. Its ability to offer 3D animated training procedures on mobile devices, along with an authoring tool, sets it apart from traditional training methods. The platform's flexibility and accessibility make it suitable for a wide range of industries and applications, including healthcare, manufacturing, and education. Additionally, the tool's ability to optimize the training experience for both trainers and trainees, with features such as the mobile viewer application and the desktop procedure creation application, sets it apart from other training solutions.</p> <p>Overall, the AR Training Tool's positioning in the relevant environment positions it as a highly effective and efficient solution for organizations looking to enhance their training programs.</p>
Current Status & future directions for improvement	CERTH aims to furtherly maintain and improve the working version of the tool while also repurposing it as an appropriate and feature complete product for further market distribution. The tool's plug n play and portable nature can become handy in the case of integration with existing training content delivery infrastructure in the industrial and other fields as well as a standalone suite of products(Viewer, Creator and Server) for commercial purposes.
TRL	

	Current Status: TRL: 6
Cost estimate to sustain the result	<ul style="list-style-type: none"> assuming centralized deployment) hardware infrastructure is provided by the company's servers - cost is covered by everyday activities (devops) maintenance, new functionalities ~ 3MM/yr (extra investment) external collaboration (design, ..) ~ 2MM
Status of IPR: Background (type and partner owner)	Core components of the application have been developed by CERTH as part of work prior to the iPRODUCE project
Status of IPR: Foreground (type and partner owner)	CERTH
Exploitation: Sources of financing foreseen after the end of the project	<ul style="list-style-type: none"> Additional funding by similar co-funded EC projects
Means of promotion beyond the end of the project	<ul style="list-style-type: none"> Word of mouth by members of cMDFs that continue to use it
Alignment with relevant EC policies	The tool can consume, process and display a variety of content as well as be extended with features such as collaboration, communication which are close to the EC values.

3.3.5 KER: Marketplace for open innovation and user interaction

	Marketplace (T4.3)
Brief Description	The iPRODUCE Marketplace went beyond the scope of an e-shop and delivered functionalities that support 'community building' activities and promotion of cMDFs and individual users.
Main result	<p>A platform that delivers the following functionalities:</p> <ul style="list-style-type: none"> manage community of users create teams and work on products collaboratively create and publish surveys create portfolio of products and give the option to redesign them with the users who want to engage in this practice register products contact - messaging between users (1-1 messaging, commenting, like) search for products, users view products, users, teams, communities purchase demo: shopping basket and checkout via paypal connection to social media: links in profile and publish surveys in twitter, gather fast and easy the users' feedback. Reduce cost to develop unwanted products. <p>important external services (to be developed or given by others if ownership is under ED):</p> <ul style="list-style-type: none"> user authentication and authorization view survey results matchmake users (ability to search has been implemented by ED for another reason) view in AR/ VR change design via generative tools.
Value Proposition	<p>community buildup:</p> <ul style="list-style-type: none"> cMDFs are collaborative communities. in order to attract the interest of new users cMDFs should have an <u>online presence</u> (page), describing their activities and the

	<p>activities of their users , promoting their products and offering new alternative designs matching specialised requests</p> <ul style="list-style-type: none"> ● cMDFs should be <i>managed</i> in terms of user membership (cMDF admin to accept new memberships) ● cMDF <i>members can interact easier</i> (get feedback from other users) <p>promote user collaboration:</p> <ul style="list-style-type: none"> ● <i>invite other users to work together from within a team</i> <p>promote ‘engaged’ users & user-user communication:</p> <ul style="list-style-type: none"> ● users obtain an online presence: <i>‘show me your work’</i>; individual users demonstrate their skills so that they can be findable by other users, for potential collaboration ● users are <i>‘findable’</i> (search for a user) ● users are <i>‘reachable’</i> (can interact via one-to-one channels, likes, views, comments, reach profile in social media, find in physical space/ cMDF) <p>collect ‘how to build’ knowledge by examples:</p> <ul style="list-style-type: none"> ● <i>how was this made?</i> (view the product description) ● where to find the <i>right piece of technology</i> ● find the <i>person to guide you</i> (find the right user or cMDF for guidance)
Primary Target customers	<ol style="list-style-type: none"> 1. cMDFs 2. fablabs/ makerspaces
How it will be offered to customers/ segments/ Licenses	<p>The specific implementation will be available for free for use by local communities/ makerspaces/ fablabs with (some low level of) tech support</p> <p>The marketplace as a tool, will be possible to replicate to serve as a basis for other marketplaces for example for the renovation of building.</p> <p>The tool is available at the link: https://iproduce-marketplace.euodyn.com/</p>
Other uses of the result	<ol style="list-style-type: none"> 1. Extend/ adapt its functionalities to similar use-cases, but with potentially different audience, for example social innovation solutions (software/ hardware) for: <ul style="list-style-type: none"> ● waste management ● circular economy applications 2. Potentially used as a data collection platform to better understand the users’ behavior (for the particular user groups discussed in the above)
Competitors	<p>An indicative list of similar digital solutions offered to the makers’ community – not necessarily Marketplaces, but with some similar functionalities (see Appendix A in D4.6 for more):</p> <ul style="list-style-type: none"> ● fablabs.io ● wikifactory ● distributed design ● hackaday.io ● hackster.io ● instructables ● welder.app ● thingiverse ● pinshape ● myminifactory ● maker.io ● maker.pro <p>Advantages against competition:</p> <ul style="list-style-type: none"> ● is offered to the community (cMDFs) without dependencies from commercial endeavours (the platform is not part of a marketing plan) ● platform functionalities are complementary (not overlapping) to the ones offered by other community tools (such as fablabs.io, https://distributeddesign.eu/)
Current Status & future directions for improvement	<ul style="list-style-type: none"> ● The Marketplace is fully functional on the servers of ED. Some initial traction has been created by users during the project activities (products, user profiles, cMDFs). ● The results of validation indicate that the advertised functionalities are acceptable by end-users.
TRL	

	<ul style="list-style-type: none"> Some targeted interventions have been requested in terms of aesthetics <p>Current Status: TRL: 7</p>
Cost estimate to sustain the result	~5MM/yr for support and low effort interventions (improve aesthetics) Assuming hardware/ infrastructure provided by respective entity (ED or cMDF)
Status of IPR: Background (type and partner owner)	Know-how from the development of relevant products (RAMP, e-PPS)
Status of IPR: Foreground (type and partner owner)	ED maintains the foreground for the Marketplace.
Exploitation: Sources of financing foreseen after the end of the project	<ul style="list-style-type: none"> Competitive agreement with cMDFs that choose to use it beyond a time period of 12 months after the end of the project Additional funding by similar co-funded EC projects
Means of promotion beyond the end of the project	<ul style="list-style-type: none"> Word of mouth by members of cMDFs that continue to use it Network of partners committed to support it (ED, some cMDFs) Targeted promotion to affiliated makerspaces in the region Channels of partners committed to support it (ED, some cMDFs): social media, website
Alignment with relevant EC policies	EaSI (Employment and Social Innovation programme) ¹ , under the 3d axis Microfinance and Social Entrepreneurship ² , 2 nd thematic section Social economy and inclusive entrepreneurship ³

3.3.6 KER: Matchmaking tool & Agile Network creation

	Matchmaking Tool
Brief Description	Matchmaking engine and associated interface to find close-matches between users of the OpIS platform. The main objective of the tool is to facilitate the identification of suitable partners to co-create.
Main result	<p>list of key functionalities (IPRs belong to ICE)</p> <ul style="list-style-type: none"> Advanced search functionality to search individuals, companies, products and services. Multi-criteria search for refined and accurate search results. Multi-criteria search allows users to search based on multiple criteria simultaneously. Filter search results based on different attributes of users and products Full-text search for more comprehensive search results The "Fuzzy search" feature allows users to find similar results even if the search terms don't match exactly View user profiles and product details from search results "AND" and "OR" search operators available for accurate search results Recommend teams based on the search keyword provided Real-time syncing with the marketplace for up-to-date search results. This helps users to find the most up-to-date information on users and products Rank users based on the relevance of the entered keywords and selected filters. Which helps users to find the most relevant users and products for their project. <p>important external services (to be developed or given by others if ownership is under ICE):</p> <ul style="list-style-type: none"> user authentication and authorization Kafka message bus
Value Proposition	Tool that enhances Collaboration:

¹ <https://ec.europa.eu/social/main.jsp?langId=en&catId=1081>

² <https://ec.europa.eu/social/main.jsp?catId=1084&langId=en>

³ <https://ec.europa.eu/social/main.jsp?catId=952&intPageld=2914&langId=en>

	<ul style="list-style-type: none"> By enabling users to find potential collaborations and partnerships, the matchmaking tool in iPRODUCE platform can enhance collaboration between stakeholders. It leads to the creation of new innovative products and services. <p>Tool that makes the co-creation efficient:</p> <ul style="list-style-type: none"> The Matchmaking tool can help users quickly and efficiently find relevant partners, teams with the right expertise and skillsets for co-creation. <p>Agile Network Creation:</p> <ul style="list-style-type: none"> The matchmaking tool enables the creation of agile networks that can jointly respond to new business opportunities based on matching and complementary capabilities <p>Tool that provides Access to a wide range of partners:</p> <ul style="list-style-type: none"> The matchmaking tool provides users access to a diverse range of potential partners. That includes makers, consumers, SMEs, and large companies. This can help users find partners that match their specific requirements and preferences, thereby increasing the chances of successful collaboration. <p>Tool that streamlines the co-creation process:</p> <ul style="list-style-type: none"> The matchmaking tool can help streamline the co-creation process by reducing the time taken to negotiate and set up a team.
Primary Target customers	cMDFs
How it will be offered to customers/ segments/ Licenses	free for use through the OpIS platform, accessible through the link: https://iproduce-tools.itl.gr/main/matchmaking (requires authentication through the OpIS platform)
Other uses of the result	Matchmaking is common in multi-sided digital platforms as this can enable users to connect with other partners for different purposes like finding partners and seeking collaborations and ICE has seen the potential to introduce match-making functionality in various digital platform development initiatives (in manufacturing, health and agriculture domains) where the company is currently involved. Based on this need, ICE is interested in further enhancing the matchmaking functionality and offer it as an add-on to digital platforms in different domains.
Competitors	N/A We offer a unique matchmaking service with a focus on co-creation. While there are other matchmaking functionalities available internationally on different platforms but these functionalities come as integrated features of the platform. Customizing an existing platform to fit our needs would be a costly endeavour. the matchamking functionality developed by ICE is a customizable and extensible feature that can be added in different platforms and marketplaces.
Current Status & future directions for improvement	The solution developed in the iPRODUCE project is already fully functional and has been validated in real-world scenarios. However, more maturity can be added in terms of being more robust and user-centric and it will not take a lot of effort and cost to make it more mature for production environments.
TRL	Current Status: TRL: 6-7
Cost estimate to sustain the result	Current estimate for market maturity are provided below: Generalising the connectivity through APIs: 4 MMs Generalising the interface: 2 MMs Generalising the backend algorithms to cater for different types of products and services: 4 MMs
Status of IPR: Background (type and partner owner)	Know-how from the development of similar systems
Status of IPR: Foreground (type and partner owner)	ICE (software)

Exploitation: Sources of financing foreseen after the end of the project	<ul style="list-style-type: none"> A bilateral agreement with ED (Marketplace owner) and other iproduce partners will be arranged in order to develop a commercial offering of the integrated OPIs platform. ICE will bear the cost of final development owing to the commercial prospect of the OPIs platform.
Means of promotion beyond the end of the project	<ul style="list-style-type: none"> Word of mouth by members of cMDFs that continue to use it
Alignment with relevant EC policies	The EC actively supports the creation of communities, fablabs, and the creators' movement. The matchmaking tool is designed to help facilitate this by providing a platform to connect users with similar interests to explore new ideas, create new products, and share knowledge.

3.3.7 KER: Product ForgeLive Prototyping Service

	Product Forge Service
Brief Description	Workshop Series concept that helps customers to get from an initial idea to a production plan in a human-centered way over the course of three workshop days.
Main result	<ul style="list-style-type: none"> Workshop concept consisting of three days that are conducted by different partners and go hand-in-hand, addressing different steps of the overall process <ul style="list-style-type: none"> Day 1: Challenge idea and work out details - Fraunhofer FIT Day 2: Develop prototype - Makerspace Bonn Day 3: Develop roadmap for production - Rossbach-Wojtun
Value Proposition	From idea to production planning in three days
Primary Target customers	Startups, inventors, SMEs
How it will be offered to customers/ segments/ Licenses	Consulting services paid by effort
Other uses of the result	Each workshop can be tailored to the individual needs of the customer. It is possible to order only single days of the workshop series
Competitors	General process consulting is widely available. The condensed three-day-version with the prototyping possibilities of the maker space do not exist elsewhere
Current Status & future directions for improvement	<ul style="list-style-type: none"> Workshop concept iteratively developed within iPRODUCE Tested with 4 external customers Continuous adaptations foreseen after every further workshop
TRL	Current Status: TRL: 7
Cost estimate to sustain the result	<ul style="list-style-type: none"> further adaptations based on paid customer workshops ~ 1MM
Status of IPR: Background (type and partner owner)	N/A
Status of IPR: Foreground (type and partner owner)	FIT, MSB, Rossbach-Wojtun
Exploitation: Sources of financing foreseen after the end of the project	Direct payment by customers paid by effort

Means of promotion beyond the end of the project	Reusing the dissemination material (booklet, poster) that was created during the iPRODUCE project
Alignment with relevant EC policies	N/A

3.3.8 KER: GDP as social community

	Generative Design Platform
Brief Description	Software tool with the main functionality to enable the generation of 3D models out of pre-defined parametric generators for dedicated use cases with different inputs or generating 3D layouts out of textual inputs from the user.
Main result	<p>list of key functionalities</p> <ul style="list-style-type: none"> • Integration into the OpIS platform: usage of the OpIS authentication & product data base. • Creation of products with different artefacts and sharing them with others (component "Products") • Generation of 3D models out of pre-defined parametric generators for dedicated use cases with different inputs (component "3D Configurator") • Transformation of user specific 2D images into 3D models with different perforation effects for material or price optimization (component "3D Configurator") • Transformation of user specific 3D geometries for material optimization and strength evaluation (component "3D Configurator") • Re-generation of the user specific 3D models filled with the pre-defined (or user specific) scaffolds for stability and material optimization (component "3D Configurator") • Generic optimization of the generated or transformed models against different parameters and optimization targets (component "3D Configurator") • Download and sharing of design results in different formats (component "3D Configurator") • Creation of the 3D models from scratch using only textual inputs, recognizing different commands and constraints (component "Spatial Instructor") • Definition of the room layouts (2D) and allocation of artefacts in such rooms for the virtual test of different facilities in 3D view (component "3D Layout")
Value Proposition	<p>community tool:</p> <ul style="list-style-type: none"> • GDP is connected to the overall iPRODUCE OpIS platform and so allows to exchange the results with other members of the community. • GDP was made accessible over the internet being developed with a web frontend, thus allowing access and participation in the co-design from any location, not bound to physical places. <p>collaboration platform:</p> <ul style="list-style-type: none"> • Results created within the GDP can be shared with other members and downloaded for their further processing. <p>tool that promotes creativity:</p> <ul style="list-style-type: none"> • create new designs for the selected use cases or transform models you already have by creating variations. • ask the tool for automatic optimization. • design new 3D layouts just specifying textual requirements.
Primary Target customers	cMDFs, fablabs/ makerspaces
How it will be offered to customers/ segments/ Licenses	<ul style="list-style-type: none"> • Free for use of individual and separated components by makerspaces/fablabs and other educational facilities without tech support • Licensed use for larger community/companies, with some tech support depending on the licence fee • Try it out with partner cMDFs in new projects.

	The tool is available through the link: https://iproduce-tools.iti.gr/main/gdp (requires authentication through OpIS)
Other uses of the result	<ul style="list-style-type: none"> research activities - the company wants to explore alternative directions, combinations of different technologies and their potentials for the end customers business perspectives – search for new markets, search for new use cases, new application scenarios for new technologies research acts as training for the company's human capital SAG aiming to handle different components to different industrial units for their further improvement and distribution to the business partners as stand-alone or integrated into SAG tools / services After adaptation and user research can be used in large industries and their business partners or/and customers for prototyping, sharing creative results among colleagues/partners, educational purpose, enriching company existing SW with new functionality
Competitors	N/A
Current Status & future directions for improvement TRL	<ul style="list-style-type: none"> Usability should be further improved based on the user research Direct rating of the design results by different community members not implemented in the GDP (using ratings functionality from Marketplace) Sharing of the results from “Spatial Instructor” component directly to the OpIS repository or other components Genetic optimization is missing for “Spatial Instructor” & “2D Layout” components <p>Current Status: TRL: 5</p>
Cost estimate to sustain the result	<ul style="list-style-type: none"> user research to fix the necessary functionality ~ 3MM improve the existing functionality w.r.t. better usability ~ 5MM maintenance ~ 5MM/yr external collaboration (implementation of some UI or other components) ~ 5MM
Status of IPR: Background (type and partner owner)	The consortium agreement lists the background (core components have been developed by SAG in the past)
Status of IPR: Foreground (type and partner owner)	SAG
Exploitation: Sources of financing foreseen after the end of the project	<ul style="list-style-type: none"> Company internal resources
Means of promotion beyond the end of the project	<ul style="list-style-type: none"> cMDFs are collaborations of maker communities and we have direct link to them dissemination activities of the project to the general public
Alignment with relevant EC policies	N/A

3.3.9 KER: NLP for verbal communication with users (Spatial Instructor)

	Spatial Instructor
Brief Description	Online software tool with the main functionality to enable natural language interaction with the user in form of an intelligent chatbot extended with the capability to create and visualize spatial layouts.
Main result	List of the key functionalities:

	<ul style="list-style-type: none"> Natural language understanding: a user can communicate in a natural language and will be understood by the system 2D & 3D layouts and objects creation corresponding to the user inputs: simple shapes of different colours and sizes can be combined in more complex product definition Layouts manipulation corresponding to the user inputs: model components can be copied, moved, scaled, recoloured Constraints handling for automatic manipulation of the layouts: a user can specify wishes in form of constraints that influence the generation of the geometries automatically Results storage and loading in different formats: textual format for chat storage, JSON format for the resulting layout storage Result export into OBJ format for their further usage in 3D modelling or/and visualization tools
Value Proposition	<p>Enabling Creativity:</p> <ul style="list-style-type: none"> Conversational UI to avoid long learning of the tool Easy to use interface for the natural communication among the user and the tool Immediate and automatic generation of 2D or 3D scenes corresponding to the verbal inputs from the user Effective 3D visualisation of the generated layouts with the properties <p>Enabling collaboration:</p> <ul style="list-style-type: none"> The 3D authoring tool is implemented as web-based allowing to be used from any location without installation and licensing Experience exchange: textual descriptions can be downloaded and exchanged as good practices of prompt examples Results exchange in JSON and OBJ format suitable for further manipulation or visualization
Primary Target customers	cMDFs, fablabs/ makerspaces
How it will be offered to customers/ segments/ Licenses	<ul style="list-style-type: none"> Free for use by makerspaces/fablabs and other iPRODUCE partners without tech support Licensed use for larger community/companies, with some tech support depending on the licence fee Try it out with partner cMDFs in testing projects.
Other uses of the result	<ul style="list-style-type: none"> research activities - the company wants to explore alternative directions, combinations with other technologies and tools and their potentials for the end customers business perspectives – search for new markets, search for new use cases, new application scenarios SAG aims to handle this tool to different industrial units for their further improvement and distribution to the business partners integrated into SAG tools / services
Competitors	Few tools based on Generative AI
Current Status & future directions for improvement	<ul style="list-style-type: none"> Extension with more basic shapes Documentation is needed to be updated corresponding to the further tool extension and integrated into the tool Improving the Generative Design capability for a faster creation of complex layouts <p>Current Status: TRL: 5</p>
TRL	
Cost estimate to sustain the result	<ul style="list-style-type: none"> user research to fix the necessary functionality/extensions ~ 3MM improve the existing functionality w.r.t. better usability ~ 5MM maintenance ~ 3MM/yr
Status of IPR: Background (type and partner owner)	The consortium agreement lists the background (core components have been developed by SAG in the past)
Status of IPR: Foreground (type)	SAG

and partner owner)	
Exploitation: Sources of financing foreseen after the end of the project	<ul style="list-style-type: none"> • Company internal resources
Means of promotion beyond the end of the project	<ul style="list-style-type: none"> • Over the link to the cMDFs as collaborations of maker communities • Company internal dissemination like conferences etc.
Alignment with relevant EC policies	N/A

3.3.10 KER: Video Intelligence

	Video Intelligence
Brief Description	Software tool with the main functionality to enable the analysis of video files including the transcription of audio tracks and recognition of objects on the video tracks.
Main result	<p>List of the key functionalities:</p> <ul style="list-style-type: none"> • Upload of the video files in mp4 format on the Video Intelligence platform for their further analysis • Transcripts generation for video files with audio tracks and English spoken content • Object recognition on the video tracks • Search for keywords through the transcripts and objects recognized, both within one given video and through the whole platform over all videos • Management of the videos on the platform
Value Proposition	<p>Community tool:</p> <ul style="list-style-type: none"> • Knowledge exchange among participants in video format • Easy to use interface for video information management <p>Enabling training of new community members:</p> <ul style="list-style-type: none"> • Tool integrated into the iPRODUCE's Training Platform allowing to be used with other project's training SW of the iPRODUCE partners • Automatic transcription of audio and visual information into textual one for search and browsing over the contents of the training
Primary Target customers	cMDFs, fablabs/ makerspaces
How it will be offered to customers/ segments/ Licenses	<ul style="list-style-type: none"> • Free for use by makerspaces/fablabs and other iPRODUCE partners with the limitation in file size without tech support • Licensed use for larger community/companies without size limitation • Try it out with partner cMDFs in testing projects. <p>The tool is accessible via the link: https://iproduce-tools.iti.gr/main/vi</p>
Other uses of the result	<ul style="list-style-type: none"> • research activities - the company wants to explore alternative directions, combinations with other technologies and their potentials for the end customers • business perspectives – search for new markets, search for new use cases, new application scenarios • SAG aims to handle this tool to different industrial units for their further improvement and distribution to the business partners integrated into SAG tools / services
Competitors	MS Office (not supporting all features of Video Intelligence)
Current Status & future directions for improvement	<ul style="list-style-type: none"> • Usability should be further improved based on the user research • Documentation is needed • Further improvement on video management and access management
TRL	Current Status: TRL: 6

Cost estimate to sustain the result	<ul style="list-style-type: none"> • user research to fix the necessary functionality/improvement ~ 3MM • improve the existing functionality w.r.t. better usability ~ 5MM • maintenance ~ 3MM/yr
Status of IPR: Background (type and partner owner)	The consortium agreement lists the background (core components have been developed by SAG in the past)
Status of IPR: Foreground (type and partner owner)	SAG
Exploitation: Sources of financing foreseen after the end of the project	<ul style="list-style-type: none"> • Company internal resources
Means of promotion beyond the end of the project	<ul style="list-style-type: none"> • Over the link to the cMDFs as collaborations of maker communities • Company internal dissemination like conferences etc.
Alignment with relevant EC policies	N/A

3.3.11 KER: AR/VR Tool

	AR/VR Tool
Brief Description	AR/VR Tool that enables the 3D visualization of CAD models in virtual and augmented reality. Can modify some visualization attributes such as color, texture, etc. The tool has an accompanying mobile application.
Main result	<ul style="list-style-type: none"> • Users have the ability to browse the list of products in the marketplace • Users have the ability to import available products in the marketplace into their personalized storage • Functionalities have been created which allow the modification and personalization of each user's products • Functionalities have been implemented which allow the communication between the involved users <p>Important external services :</p> <ul style="list-style-type: none"> • User Authentication via the OpIS platform • Product Data and Product Listing via the Marketplace platform
Value Proposition	The AR/VR Tool aims to empower designers and consumers through augmented and virtual reality technologies turning the traditional practices in the makerspace industry into new and improved immersive and collaborative experiences. Users have the ability to preview available products in a marketplace through the lens of augmented and virtual reality in their physical surroundings. In addition the ability to modify these products with various materials and colours, aids in transforming the process of product acquisition and designing into a more personalized experience. Furthermore, with the inclusion of communication features in the tool, users can also exchange ideas about the design process, which strengthens the collaborative nature of their endeavours.
Primary Target customers	cMDFs
How it will be offered to customers/ segments/ Licenses	The AR/VR Tool is not mature enough to be marketable in the immensely competitive market of immersive and extended reality industries. Although the application currently tries to accomplish multiple tasks across various platforms such as web, mobile, and HMDs, it can still serve as an ideal prototype for research purposes. If the scope of the project is limited, it can become the foundation for further extensions and optimizations in the future. This approach would help in overcoming the difficulties faced during the design, development, testing, and maintenance phases. In addition, the application is suitable as

	<p>an add-on to existing marketplace platforms that offer 3D data on top of the traditional product listings, to offer virtual and augmented reality previewing capabilities.</p> <p>The tool, along with the corresponding clients Mobile & Hololens AR) is accessible via the link: https://iproduce-tools.iti.gr/main/arvr (requires authentication via the OplS platform)</p>
Other uses of the result	<ul style="list-style-type: none"> Through extended research in the user experience field, parts of the tool can be reconfigured to be more intuitive and approachable by the general public The tool can be repurposed and used to other domains such as commercial platforms that are not part of the industrial domain
Competitors	<p>The list of competitor's products include solutions offered by, among others, Alphabet Inc., EON Reality Inc., Magic Leap Inc., PTC Inc., Wikitude GmbH, Qualcomm Incorporated and HTC Corporation. Most of them come in the form of freemium products that offer advanced functionalities once the user purchases a license. In addition all offered solutions are thoroughly optimized and tested as their parent companies have an impressive track record in designing and developing applications and they were invested heavily in the immersive reality and industry domains since its start.</p> <p>However, the advantage the AR/VR Tool has over the existing competition is its modularity and that it can be served as an extension of an already existing marketplace, database and user management infrastructure.</p>
Current Status & future directions for improvement	<p>CERTH aims to furtherly maintain and improve the working version of the tool while also repurposing it as an appropriate and feature complete product for further market distribution. Moreover, the immersive technologies market in conjunction with commercial outlets can offer new collaboration opportunities that can make use of the tool's capabilities enhancing their already established design and creative processes.</p> <p>TRL</p> <p>Current Status: TRL: 5</p>
Cost estimate to sustain the result	<ul style="list-style-type: none"> hardware infrastructure is provided by the company's servers - cost is covered by everyday activities (devops) maintenance, new functionalities ~ 3MM/yr (extra investment) external collaboration (design, ..) ~ 2MM
Status of IPR: Background (type and partner owner)	Core components have been developed by CERTH in the past
Status of IPR: Foreground (type and partner owner)	CERTH (software platform & mobile app)
Exploitation: Sources of financing foreseen after the end of the project	<ul style="list-style-type: none"> Additional funding by similar co-funded EC projects
Means of promotion beyond the end of the project	<ul style="list-style-type: none"> Word of mouth by members of cMDFs that continue to use it
Alignment with relevant EC policies	the tool supports the creation of teams, communication and collaboration on the designing process of products, elements that are close to EC values

3.3.12 KER: Data Analytics tool

Agile Analytics Tool	
Brief Description	Software tool that performs data analytics on data from the OplS platform and frontend for their presentation

Main result	<ul style="list-style-type: none"> • The tool can cross analyse the materials and equipment used for the products. It is also possible to filter the results to be displayed on the graph based on a subset of materials or equipment. • The tool displays histograms of the most liked and viewed products on the Marketplace, • It plots a pie chart and a bar chart on percentage and counts of products based on the materials or equipment exploited and its final price. • The tool plots bar charts on teams-related data, based on number of members, products created or contracts signed. • It displays a wordcloud on the skill of the registered users. • It plots the users of the platform on a map based on their location worldwide. • In the profile page, the user can have an overview of his personal information and eventually his own products and teams he is a member of. • The tool displays pie charts on the answers received on the surveys created on the Marketplace, if any. • There is a documentation section to describe the graphs and explain how to interpret the results. <p>Important external services (to be developed or given by others if ownership is under E@W):</p> <ul style="list-style-type: none"> • user authentication and authorization module, based on the platform's Keycloak method • Line graph plotting new products created on the marketplace over time • Line graph tracing the number of new users joining the OpIS platform over time
Value Proposition	<p>The Agile Data Analytics tool is conceived as a tool for viewing analytic results on platform usage data, highlighting links and extracting information that are not immediately visible. The information available in the tool can be effectively used to better target possible new partners and widen the customer audience, being the tool a decision support system for business and investments. The users, whether these customers, makers, manufacturing companies or members of the project cMDFs, can have a general overview of what is happening on the iproduce platform. They can monitor new users joining the platform and the related locations and skills, the teams created and active on the platform, and the products available on the marketplace. In this way, they can analyze the different types of materials and equipment used for certain products, and relate them to the corresponding price and the number of likes and views received on the marketplace. In this way, the user is able to monitor the characteristics and performance of competitors' products on the platform, using the tool as a support for future business decisions. In fact, through the tool it is possible to compare one's own products with others available on the marketplace, in order to make more targeted decisions for future investments. Furthermore, it is also possible to analyze the feedback received from the partners on the products being developed or created thanks to the collaboration with a team. Through the analysis and visual representation of the responses received to the surveys created on the marketplace, the tool can facilitate an easier collaboration even among geographically distributed partners for an effective development of an improved version of the product. No mandatory information is required by the user in order to exploit the tool as it is based on data generated by the other tools of the OpIS platform.</p>
Primary Target customers	cMDFs
How it will be offered to customers/ segments/ Licenses	<p>The tool is now available to all the users of the OpIS platform, bringing them local communities, fablabs, makers and companies. The continuous feedback gathering and analysis of the validation activities will contribute to expand its functionalities as it is used. The tool is accessible from this link: https://iproduce-tools.iti.gr/main/ada (requires authentication via the OpIS platform)</p>
Other uses of the result	<ul style="list-style-type: none"> • By investigating further implementations of algorithms, methods and smart frameworks, the tool might be enriched and adapted to other industrial and market contexts or fully tailored to a specific customer request and/or system • This kind of collaborative co-design platform data analysis and visualization can be applied to other type and structure of data, for entities who are looking for other customer segments and need decision support also in other domains
Competitors	<p>Relevant analytical platforms exist as a service on the international level, are mature platforms. Some examples are AWS Analytics, Google Analytics and IBM Cognos Analytics. Some of them are free to use but can only be applied to web pages; others are limited in the application domain, are not easy to use and demanding in terms of</p>

	<p>resources, computational capacity and maintenance. Our platform as-is at the moment is available for free and, in future versions of it, can be customize and adapted to any customers' contexts and requirements. Even in the paid versions, it can require less investment effort and can offer in return customizability in every part, from the algorithms and graphs exploited to the visual representation layout.</p> <p>At the current state of the tool, our primary users are the members of our cMDFs and any fablabs/collaborating partner inside the cMDFs networks within our reach. Users of the platform for business purposes (i.e. industry, companies) are as well some primary users of our tool, since it offers decision support. Our secondary users are the enlarged network of other sister fablabs or affiliated makers, the clients of the cMDFs and fablabs themselves, and random users who get to know the platform through word of mouth inside the maker community.</p> <p>The drivers that can facilitate the exploitation of our tool can be the flexibility and high level of customization the tool offers, as well with ease of use and low level of requirements from the technical point of view.</p> <p>On the other hand, too many competitors or market monopoly could be blockers or barriers for an effective exploitation of the tool, along with high costs, legal and marketing barriers. The proper strategy to overcome the mentioned barriers will be defined as a close-to-market version of the tool will be evaluated and developed</p>
<p>Current Status & future directions for improvement</p> <p>TRL</p>	<p>At the moment, we find our solution not yet ready to market. However, the programming language, framework, main features and visual identity has been defined and can be used as a baseline for future/final implementation activities. Now the tool is deployed on a private server and it is intended to be made available for free, but we are open to future collaborations in order to widen the type of customers, the functionalities available and the application domains. For example, the tool could be used as an add-on to other systems and platformσ managing similar type of data, to offer visual representation of data and analytics on hidden links. As regards the project, the tool is free for use by the local communities /makerspaces/fablabs with a certain level of tech support. It can be also adapted to private custom of new projects in the future.</p> <ul style="list-style-type: none"> • There might be internal collaborations in case a cMDF would like to customize the tool to its own context and/or integrate it with any platform they are currently using • Collaborations with external partners might bring the tool to an improved close-to-market version applied to other industrial contexts or customer segments • Collaboration with academia and other research centers might contribute to further develop the tool and reinforce its impact and usefulness, also by investigating other use cases and technological assets and by taking part to other European projects <p>Current Status: TRL: 6</p>
<p>Cost estimate to sustain the result</p>	<ul style="list-style-type: none"> • The tool is now hosted on a Linode cloud server. The extra cost required is ~ 10K €/year for a stable cloud system for a centralized development • First of all, it is important to test and validate the fully integrated complete and qualified system (TRL9).Therefore further implementation effort will be required to have a ready-to-market version of the tool. With an estimation of N.4 Sw developers (including one Scrum Master/Team leader), it is expected a cost of around 200K€ / yr. • At the startup, it is important to be ready to provide maintenance and customer support, with a foreseen operative cost of around 80K € / yr • Marketing activities can be initially estimated on the base of the revenue forecasts per year, with a preliminary estimation set around 200K € / yr for the first 2 years. • External collaborations and consultancy services (i.e. user experience, design, devops) ~ 50-150K€/ yr
<p>Status of IPR: Background (type and partner owner)</p>	<p>Know how from existing similar product "flexible data preprocessing tool"</p>
<p>Status of IPR: Foreground (type and partner owner)</p>	<p>E@W (software)</p>

Exploitation: Sources of financing foreseen after the end of the project	<ul style="list-style-type: none"> Additional funding by similar co-funded EC projects
Means of promotion beyond the end of the project	<ul style="list-style-type: none"> Word of mouth by members of cMDFs that continue to use it
Alignment with relevant EC policies	EC is supporting creation of communities, the fablabs, and the creators movement, this tool supports the creation of new business opportunities in a positive and non-competitive fashion. It pushes users to improve and modify their market choices in order to increase opportunities and expand networks for future collaborations

3.3.13 KER: Guidelines on Environmental Life Cycle Management

	Title of your KER
Brief Description	Integrated approach to waste reduction in productive environments such as fablabs, cMDFs and other collective or individual facilities.
Main result	6 Environmental Guidelines on green production from a life cycle management perspective
Value Proposition	<p>Interconnected guides with introduction videos to allow user the selection of best strategies and related tools according to their needs and profile (product ecodesign, production processes and specific technologies or environmental assessment tools).</p> <p>All the guides offer a good theoretical base but also are oriented to the practical application by companies. In this sense, each guide includes at the introduction the objectives and recommendations on how to use the guide.</p>
Primary Target customers	Fablabs, Makerspaces and cMDFs, and their communities. Mainly the environmental management bodies of the MakerSpaces/cMDFs or product design department, which are the ones managing the waste and material flow and product design respectively, but also other users that can take advantage of the knowledge in other scopes of their activity (students, quality or sustainability managers, director, etc.).
How it will be offered to customers/ segments/ Licenses	<p>The material is available for free at the website as an iPRODUCE result (https://iproduce-project.eu/environmnet-lcm/), for self-training processes.</p> <p>If the material is used by any other partner or external company to offer their own services, the property of the material should be properly cited.</p>
Other uses of the result	Training and support to more detailed and deeper consultancy: in case there is needed an adaptation of the material to a specific company, a translation to national languages, teaching by an expert or further consultancy, it will be offered as a service by the owner partner.
Competitors	<p>Environmental consultancy companies.</p> <p>Other Fablabs could be considered as eventual competition, but they usually do not have resources enough to transform their knowledge into training/consultancy material, and their experience is limited to their scope.</p>
Current Status & future directions for improvement	The material is a very complete base to start the implementation of environmental life cycle management at companies (and in this sense TRL is 8).
TRL	It can be further improved with more examples, transformed completely into videos, translated or adapted to be used in training activities for specific companies or industrial sectors.
Cost estimate to sustain the result	The potential improvements will be supported by the funded project, or service contracted by the customer company.
Status of IPR: Background (type and partner owner)	Existing knowledge
Status of IPR: Foreground (type and partner owner)	Existing knowledge

Exploitation: Sources of financing foreseen after the end of the project	Proportional to the average consultancy/training hour in each country. Two training/transfer modules foreseen: generic and generic + customized guidelines
Means of promotion beyond the end of the project	Main promotion mean is the iPRODUCE website (and introduction videos also available at You Tube) and any other project dissemination effort, since the guides can be freely downloaded from this website.
Alignment with relevant EC policies	Fablabs and MakerSpaces are well known for an efficient use of resources. cMDFs, consequently will share this approach. Waste management and zero waste approaches are well established trend in society. Besides new regulation on Extended Producer Responsibility Systems (EPRS) aiming to extend the ecodesign Directive to other product groups (final products and intermediate products) are focused on life cycle management of products, and companies will be supported by these guides to be aligned with the new regulation forthcoming in next years.

3.3.14 KER: Mobile application for the collection of user's feedback for open innovation propositions

	Mobile App
Brief Description	Mobile app and backend system integrated with the Marketplace. Enables makers to create quick surveys that target the focused audience of the maker community, with regard to new ideas for consumer products.
Main result	Mobile app that enables groups of users to answer surveys posted by makers from the Marketplace. Survey creation functionality from a comprehensive interface through the Marketplace
Value Proposition	Ability to get quick input about product features (for products published in the iPRODUCE Marketplace) from trusted resources (cMDF members and collaborators in teams). Survey material directly linked to product posting on Marketplace
Primary Target customers	cMDFs, fablabs/ makerspaces
How it will be offered to customers/ segments/ Licenses	As an accompanying application to the Marketplace (bundled). The mobile app can be downloaded for Android and iOS via the respective Marketplaces under the name "iPRODUCE ": https://play.google.com/store/apps/details?id=com.eurodyn.iproduce
Other uses of the result	Follows other uses of the Marketplace
Competitors	Established competition (surveyMonkey, surveyplanet, limesurvey, etc.). The solutions provide general tools for the most common surveys and are available as an offering to the general public (no specification in terms of target audience). The proposed solution is integrated with the marketplace and provides direct access to the products and the members of the platform. The advantage of this solution is that it enables the direct communication between members of the community and is integrated with the Marketplace (web-platform that presents the maker-creations)
Current Status & future directions for improvement	Fully functional Current Status: TRL: 8
TRL	
Cost estimate to sustain the result	Follows Marketplace
Status of IPR: Background (type)	Know-how in the development of mobile applications (cross-platform applications)

and partner owner)	
Status of IPR: Foreground (type and partner owner)	ED software
Exploitation: Sources of financing foreseen after the end of the project	<ul style="list-style-type: none"> Competitive agreement with cMDFs that choose to use it beyond a time period of 12 months after the end of the project Additional funding by similar co-funded EC projects
Means of promotion beyond the end of the project	<ul style="list-style-type: none"> Word of mouth by members of cMDFs that continue to use it Network of partners committed to support it (ED, some cMDFs) Targeted promotion to affiliated makerspaces in the region Channels of partners committed to support it (ED, some cMDFs): social media, website
Alignment with relevant EC policies	EaSI (Employment and Social Innovation programme) ⁴ , under the 3d axis Microfinance and Social Entrepreneurship ⁵ , 2 nd thematic section Social economy and inclusive entrepreneurship ⁶

3.3.15 KER: Business Models and case development for cMDFs

	Business Models
Brief Description	Development of business models (including a governance model where appropriate) for the cMDFs, the federated network and the iPRODUCE platform.
Main result	<ul style="list-style-type: none"> Two rounds of business model co-development with the cMDF partners, resulting in a final set of business models - one for each cMDF and one for the federated network and iPRODUCE platform. These business models guide the exploitation of iPRODUCE post-project from a business perspective, consisting of a framework for marketing iPRODUCE on a cMDF level and on an iPRODUCE (general) level. Election of a governance model for iPRODUCE, namely, Hybrid Governance Model
Value Proposition	Support iPRODUCE exploitation by co-developing business models that will serve as framework for cMDF business operations and management.
Primary Target customers	Internal customers - cMDF partners
How it will be offered to customers/ segments/ Licenses	The business models were co-development with the cMDF partners, taking into account their vision of intra and inter cMDF collaboration, strengths and (business) gaps. The final set of business models were made available to the cMDF partners, who can/will now implement them post-project.
Other uses of the result	The work performed followed scientific research methodologies and rigour, and may be published in academic journals with focus on business, sustainability, innovation, user-driven design.
Competitors	There are no direct competitors to the individualised and tailored business models created in WP7.
Current Status & future directions for improvement	Current Status: completed TRL: not applicable
TRL	

⁴ <https://ec.europa.eu/social/main.jsp?langId=en&catId=1081>

⁵ <https://ec.europa.eu/social/main.jsp?catId=1084&langId=en>

⁶ <https://ec.europa.eu/social/main.jsp?catId=952&intPageld=2914&langId=en>

Cost estimate to sustain the result	<ul style="list-style-type: none"> • none
Status of IPR: Background (type and partner owner)	not applicable
Status of IPR: Foreground (type and partner owner)	not applicable
Exploitation: Sources of financing foreseen after the end of the project	<ul style="list-style-type: none"> • not applicable
Means of promotion beyond the end of the project	<ul style="list-style-type: none"> • not applicable
Alignment with relevant EC policies	not applicable

3.3.16 KER: Ricardian Toolkit

	IPR Authoring Tool
Brief Description	Software tool that allows multiple users to create Ricardian contracts
Main result	<p>Main functionalities:</p> <ul style="list-style-type: none"> • Notifications are sent to all involved users after the creation of a “Team Product” (via the Marketplace), prompting them to sign a new NDA contract through the IPR Authoring Tool. • All the user’s contracts are displayed on the main screen of the tool, along with their functionalities. • The status of each contract (Pending, Rejected, Deployed) is visible, and users can view partner details by clicking on their name. • The “Accept” and “Reject” options appear when the user clicks on the “Manage” option, and users can accept or reject the contract by clicking the corresponding button. • The “Edit” option allows users to edit the initial set of entities of the contract, and users can communicate directly with the other involved users during the editing process, by creating video calls, sharing their screen, or using the chat box. • The users can export the contract to various file formats and view previous revisions. • If a user “Edits” a contract, all involved users must “Accept” the contract again. A pop-up notification message appears if the contract is edited successfully. • The “Reject” option allows users to reject the contract, and a dialog box appears where the user can insert the reason for rejection. • The users can create a new contract for a respective product by selecting it from a table component that appears after clicking the “Create Contract” option. The user is prompted to insert the type of contract (e.g., NDA) before creating the new contract.
Value Proposition	The IPR Authoring Tool is an innovative solution changing the way co-creation activities, ideas and products are managed and protected. It offers a range of products and services that enable users (i.e. customers, makers, manufacturing companies, and members of iPRODUCE project or cMDFs) to protect their intellectual property rights. The tool provides a visual authoring tool that simplifies the creation and collaborative editing of smart contracts. This feature is supported by teleconference tools that allow users to work together on the contract in real-time. Additionally, the tool provides a set of rules in the

	<p>context of Design Thinking process stages for product co-creation, ensuring that users can proceed with the co-creation and finalization process without any obstacles or restrictions. Furthermore, the IPR Authoring Tool offers gain creators that simplify the co-creation process. It provides a fast process for NDA contracts and ensures the transparency and integrity of the contract process via blockchain technology. The tool also relieves customers from common pain points, including conflicts between agreements and access via diverse equipment. The tool enables users to customize their NDA contracts, receive feedback from the community (team members), and facilitate the process. Additionally, it addresses common customer pains, such as legislation differentiations between diverse countries and security of communication channels.</p> <p>Overall, the IPR Authoring Tool provides a range of benefits to users, including legal protection, confidence in co-creation, collaborative innovation, and efficient IPR management. It simplifies the IPR management process by providing a central platform, where users can manage and track their intellectual property rights. The tool is an essential solution for all participants in the iPRODUCE ecosystem, enabling them to protect their co-creation activities while engaging in collaborative innovation, and addressing common pain points and gain creators to provide a streamlined and efficient process.</p>
Primary Target customers	Users that co-create or have shared IPR
How it will be offered to customers/ segments/ Licenses	Through the OpIS platform, accessible via: https://iproduce-tools.itl.gr/main/ipr (requires authentication to the OpIS platform)
Competitors	<p>There are several solutions in the market that offer IPR management and protection, including: IP Shark, IPfolio, Anaqua, Monax Industries, Monetas, Blockstream, Coinbase, Bitfinex, BlockCypher, Chain, Coinify ApS, BitPay, GoCoin. However, compared to these solutions, the IPR Authoring Tool stands out due to its unique set of features and benefits, including a visual authoring tool, and fast NDA contract processes. Additionally, it enables users to protect their intellectual property rights, by offering legal patent protection, efficient IPR contract management and collaborative innovation. The aforementioned features make the IPR Authoring Tool an essential solution for all participants in the iPRODUCE ecosystem, providing a streamlined and secure platform for managing co-creation activities and intellectual property assets of the diverse cMDF members and other users of the iPRODUCE ecosystem.</p> <p>The IPR Authoring Tool is designed to meet the needs of market communities, SMEs, manufacturers, creative industries, industry 4.0, banking and government management. The primary users are members of the cMDFs and fablabs or makerspaces in Europe (as members of the consortium), while the secondary users include onboarded users, random people finding our tool from the interaction with existing users, and possible customers of the cMDFs.</p>
Current Status & future directions for improvement	CERTH intends to continue maintaining and improving the current working version of the tool, with the goal of repurposing it as a complete and suitable product for wider market distribution. Additionally, there is potential for collaboration opportunities within the immersive technologies market and commercial outlets, which can utilize the tool's capabilities to enhance their existing design and creative processes.
TRL	Current Status: TRL: 6
Cost estimate to sustain the result	<ul style="list-style-type: none"> • hardware infrastructure is provided by the company's servers - cost is covered by everyday activities (devops) • maintenance, new functionalities ~ 3MM/yr (extra investment) • external collaboration (design, ..) ~ 2MM
Status of IPR: Background (type and partner owner)	Know-how in the development of blockchain technologies and Riccardian contracts
Status of IPR: Foreground (type and partner owner)	CERTH

Exploitation: Sources of financing foreseen after the end of the project	<ul style="list-style-type: none"> Additional funding by similar co-funded EC projects
Means of promotion beyond the end of the project	<ul style="list-style-type: none"> Word of mouth by members of cMDFs that continue to use it
Alignment with relevant EC policies	N/A

3.3.17 KER: Implementation of the cMDF concept.

	Implementation of the cMDF concept.
Brief Description	In D3.4 the concept of cMDF was defined, as well as the composition of the communities and their initial activity plans. How to organize the work of the individual cMDFs -while taking into account the eventual Federated Structure and the OpIS platform- was the purpose of D3.5. D8.2 took all these elements and put them together in the complete implementation of the individual model. All the knowledge linked to these documents and processes is to be capitalised in the shape of a methodological material to help entities willing to define a cMDF or existing cMDF-like structures that will like to embrace the iPRODUCE approach.
Main result	An “implementation pack”, being a methodological corpus consisting of: <ul style="list-style-type: none"> a conceptual model on the cMDF structure. References to the engagement procedures (this is a more general outcome, which has their own exploitation strategy). Examples of the adopted agreements. Examples of the initial action plans Principles, values and operational procedures of the cMDF structure. A description of the iPRODUCE tools available, both intra-cMDF and for cMDF users.
Value Proposition	Organise, through training (self-learning or bespoke training) or consultancy, the cMDF creation taking advantage of the experience of iPRODUCE in situations such as: choosing the right stakeholders, defining the minimum infrastructure, attracting, engaging and keeping communities; integrating activities with the iPRODUCE Tools and Platform. A mentoring procedure can also be defined.
Primary Target customers	<ul style="list-style-type: none"> Local network of bodies (makerspaces, fablabs, manufacturing facilities, etc.) with supporting clusters of manufacturing companies. Intermediate entities such as cluster managing organisations, industrial areas managing facilities, etc. Industrial promotion entities (regional level).
How it will be offered to customers/ segments/ Licenses	<ul style="list-style-type: none"> Free to use simplified version from the iPRODUCE webpage https://iproduce-project.eu/resources-and-results/deliverables/ Knowledge transfer through cost-covered training and mentoring of the complete methodology. Alternative offerings could be contemplated: Licensing of the methodology to a third party (consultancy company).
Other uses of the result	N/A
Competitors	Not detected. The closest alternatives found are the industrial Cluster Guidelines, but they usually do not embrace open innovation so intensely, and do not usually include final users in their “communities”. Besides, their model is more focused on

	promotion/commercialization than in the provision of actual open innovation services and ventures.
Current Status & future directions for improvement TRL	Although DLs (D3.4, D3.5, D8.2) are self-explanatory, a simplification and integration work must be developed. Confidential information has to be eliminated and a more friendly format defined. References to other exploitable products must be made compatible with their current exploitation plans. Since the main exploitation path will be training and mentoring, didactic units and intellectual outputs must be defined. Current Status: TRL: 6
Cost estimate to sustain the result	Format adaptation to transform the results into transferable material (training). AIDIMME is committed to bear costs for this.
Status of IPR: Background (type and partner owner)	No relevant Background here.
Status of IPR: Foreground (type and partner owner)	The methodology is initially free to use in their simplified way and upon registration in their complete version. Therefore, contents can be accessed and interpreted freely by interested parties. All partners able to transfer the knowledge. However, AIDIMME is expected to coordinate the transfer through training.
Exploitation: Sources of financing foreseen after the end of the project	The implementation of the methodology will have two parts: an initial diagnosis and training on the cMDF concept (infrastructure, services, communities, link to the Platform, etc), plus a mentoring program during the first year. Tariffs will be setup in a non-profit making approach.
Means of promotion beyond the end of the project	<ul style="list-style-type: none"> • The networks of the members of the cMDFs (technical institutes, Fablabs, maker communities) and the communities of stakeholders). • Channels of partners committed to supporting it: social media, websites, etc. • Conferences and presentations.
Alignment with relevant EC policies	The EC is committed to actively supporting the creation of communities, fablabs, and the creators' movement, in line with its broader agenda of promoting innovation and creativity across the region. To this end, the cMDF Model and the guidelines on their implementation and operations are a solid tool to promote of such "design and manufacturing communities"

3.3.18 KER: Innovation services to MMCs

	Innovation services to MMCs
Brief Description	Support services to the cMDFs aiming at facilitating the implementation of the iPRODUCE pilots and ensuring that the necessary conditions and maturity are established within the MMCs for a successful outcome of the demonstrations.
Main result	<ul style="list-style-type: none"> • tailored guidance (coaching sessions) towards the completion of the OI missions and demonstrations, with varying outputs corresponding to the individualised need of each cMDF. • booklet of tools and methods that can be used as guidance for the launch of products and implementation of the demonstrations with focus on business development and marketing.
Value Proposition	Support iPRODUCE exploitation by co-developing clear value propositions and go to market strategies that will serve as framework for cMDF business operations and management.
Primary Target customers	Internal customers - cMDF partners
How it will be offered to customers/	The booklet is a living document which was made available to the cMDF partners. It is available online (project's online directory) has been used by the partners in the final stretch of the iPRODUCE project

segments/ Licenses	
Other uses of the result	The booklet can be continuously used post-project, as iPRODUCE further develops its business with more products or in new markets.
Competitors	There are no direct competitors, as this is a result that targets the internal stakeholders and was developed according to their specific needs.
Current Status & future directions for improvement	Current Status: completed TRL: not applicable
TRL	
Cost estimate to sustain the result	<ul style="list-style-type: none"> • none
Status of IPR: Background (type and partner owner)	not applicable
Status of IPR: Foreground (type and partner owner)	not applicable
Exploitation: Sources of financing foreseen after the end of the project	<ul style="list-style-type: none"> • not applicable
Means of promotion beyond the end of the project	<ul style="list-style-type: none"> • not applicable
Alignment with relevant EC policies	not applicable

3.3.19 KER: iPRODUCE Website

	iPRODUCE Website
Brief Description	iPRODUCE Website contribution to exploitation of the OpIS tools and results
Main result	<p>The website offers a range of functionalities designed to provide visitors with an overview of the project and access to key information and resources. It serves as an introduction to the project's goals, objectives, and features. The website includes sections such as "About Us," which provides detailed information about the project, its background, consortium partners, and funding sources. Visitors can get initial information about the OpIS platform, which facilitates collaboration between makers and the manufacturing industry. Additionally, the website hosts a dedicated section called "Resources and Results" where users can access project-related deliverables, publications, guidelines, promotional material, newsletters, and press releases. Other sections such as "News" and "Events" keep visitors informed about the latest project developments and activities. The website incorporates multimedia elements like images, videos, and infographics to enhance engagement and visually showcase project outcomes and success stories.</p>
Value Proposition	<p>The value proposition of the iPRODUCE project website is its "one-stop-shop" nature, where the main information and results of the project are available to visitors. Summarised:</p> <ul style="list-style-type: none"> • The website provides information about the iPRODUCE project, including its objectives, consortium partners, work packages, and overall progress. It offers a detailed overview of the project's scope, activities, and expected outcomes.

	<ul style="list-style-type: none"> • The website serves as a platform for engaging with stakeholders, both within and outside the project. It provides contact information, news updates, and social media integration to facilitate communication and encourage active participation and collaboration. • The website showcases the achievements, innovations, and impact of the iPRODUCE project. It highlights success stories, and research outcomes, demonstrating the tangible results and benefits of the project to various stakeholders. • The website acts as a resource hub for project-related materials, including publications, reports, toolkits, and deliverables. These resources provide valuable insights, best practices, and practical guidance for individuals and organisations interested in collaborative manufacturing. • The website fosters a sense of community among stakeholders by featuring blog posts, events, and encourages collaboration among project participants, researchers, makers, and other interested parties. • By having a dedicated website, the iPRODUCE project increases its visibility and raises awareness about the importance of collaborative manufacturing. It serves as a gateway to learn about the project, its goals, and its potential impact on the manufacturing ecosystem. <p>Overall, the iPRODUCE project website offers a comprehensive and interactive platform for stakeholders to engage with the project, access resources, and stay updated on its progress. It is a central point of information which promotes the value and potential of collaborative manufacturing within the European context.</p>
<p>Primary Target customers</p>	<p>The primary target customers for the iPRODUCE website are individuals and organisations interested in the project, its objectives, achieved results, and in general the topic of social manufacturing. This includes researchers, academics, professionals, and practitioners working in the fields of collaborative manufacturing, innovation, and related areas. Additionally, stakeholders involved in the maker movement, social manufacturing initiatives, and community-driven innovation will also find value in the website's content. The provides information and resources to a diverse audience interested in understanding and engaging with the iPRODUCE project and its activities.</p>
<p>How it will be offered to customers/ segments/ Licenses</p>	<p>The iPRODUCE website is available at https://iproduce-project.eu/. The website will remain active per EC guidance at least five years after the project ends.</p>
<p>Other uses of the result</p>	<p>N/A</p>
<p>Competitors</p>	<p>N/A</p>
<p>Current Status & future directions for improvement</p> <p>TRL</p>	<p>The website will continue to be updated as relevant until the end of the project. After the formal conclusion of the project it will remain active for at least five years. To ensure the best experience possible, updates will be addressed as requested by website visitors. In summary, and in regard to future improvements:</p> <ul style="list-style-type: none"> • User Experience: The website will be checked at frequent intervals or upon demand to ensure the website remains usable and delivers a proper user experience. The aim is to continue to be able to present information in a clear and organised manner, ensuring a seamless browsing experience. • Content Updates: Content updates may be introduced if relevant and new information associated to the project is made available. • Accessibility: Our commitment lies in ensuring that the website continues to meet accessibility standards, enabling individuals with disabilities to access its content. • Integration with Social Media: When relevant, the iPRODUCE social media channels will be updated to promote and share updates about new iPRODUCE results. This will enable broader engagement, wider reach, and seamless sharing of project-related content.

	It is important to note that the specific areas for improvement and future directions will be determined based on the goals, priorities, and valuable feedback received from our website users and stakeholders.
Cost estimate to sustain the result	N/A
Status of IPR: Background (type and partner owner)	N/A
Status of IPR: Foreground (type and partner owner)	F6S will manage the project website beyond the end of the project.
Exploitation: Sources of financing foreseen after the end of the project	The domain is set to automatically renew year to year.
Means of promotion beyond the end of the project	As aforementioned, updates to the website may still occur with new information relevant to our community. Given the relevance of the social manufacturing topic to the partners, it is expected that the iPRODUCE website - as a source of information and resources on the topic - will be promoted by all partners.
Alignment with relevant EC policies	N/A

3.4 Analysis of the Innovation Results

The section collects all the Innovation /scientific and technical results and the identified exploitable methods. Specific ways to exploit each of the results have been specified.

Table 3 Analysis of Innovation Results according to their respective exploitation methods

Innovation Result	Description	Related deliverable (s)	Conf. level	Exploitation methods
IR.2.1	iPRODUCE Social Manufacturing Vision and Reference model: structure and role of cMDFs in local communities and offered functions, services and stakeholder roles	D2.6,2.7,2.8	Public	<ul style="list-style-type: none"> ● Vision and Extensible model for social manufacturing, to be used for inspiring further innovation and take up. ● Open innovation environment built under a digital transformation for offering tools and services, based on IPR protection, governance mechanisms and regulations for circular economies.
IR3.1	Operational Models for cMDFs	D3.1	Public	Lean Operational Model that provides (among others) a hybrid governance structure and an evolution roadmap that can be used by the cMDFs or similar co-funded EC projects

IR.3.1	Workflow automation - orchestration of the design and production process	D3.6, D3.7, D4.1, D4.2	Public	<ul style="list-style-type: none"> • Software platform for use by all actors participating in the processes modelled • Public deliverable to be used as reference for the modelling and orchestration of additional processes
IR.3.2	Digital twin development tool	D3.6-D3.7	Public	Toolkit offered to all actors involved with cMDFs for use in training and educational activities. The Toolkit will be exploited as an open-source resource through publications on popular open-source platforms
IR.3.4	AR toolkit for training	D3.6-D3.7	Public	Software tool released as open source to relevant actors
IR.4.1	Data structures for the description of makers, consumers and products in the context of social manufacturing	D4.3-D4.4	Co	Descriptions of data formats for use by all actors to coordinate information usage. The result is reusable, given the repetitive nature of the information exchanged in the makerspace environment (processes and materials for specific consumer products tend to be repetitive in nature)
IR.4.2	OpIS data repository	D4.3-D4.4	Co	Implements the data structures for the description of makers and products. The structure can be replicated among different cMDFs and makerspaces. It is a component that follows the exploitation paths of the OpIS platform & currently contains the information related to users, products and teams created within the duration of the project by the cMDFs and their affiliated users
IR.4.3	Marketplace for open innovation and user interaction	D4.5, D4.6	Co	Software platform offered for all actors of the relevant cMDFs & their communities. It is an open-source platform with functionalities tailored to the functions of the maker community. Will be offered as a solution to relevant stakeholders. It is intended to be further expanded (with additional functionalities and aesthetic features) in similar activities (EC co-funded) that require community building & support functionalities. Possibilities to connect to existing services that are present in the maker community will also be sought as a parallel activity.
IR.4.4	Matchmaking tool & Agile Network creation	D4.7-D4.8	Co	Search features to be Integrated with any Marketplace. Within the project the Exploitation will be based on SaaS model where licences will be awarded to the digital platform or marketplace providers
IR.5.1	Product ForgeService	D5.1, D5.2, D5.11, D5.12	Public	Fast prototyping and innovation realization offered as a service, organized and managed by makerspace members. Exploited as a commercial service by selected cMDFs
IR.5.2	GDP as social community	D5.3, D5.4	Pu/Co	Software platform for use by different stakeholders participating in product definition and design
IR.5.3	NLP for verbal interaction with users (in Math Modeling)	D5.3, D5.4	Pu/Co	Used to understand the requirements of the end-users, as a pre-release/ guide towards a commercial product
IR.5.4	Video Intelligence	D4.1, D5.4, D3.7	Pu/Co	Software and cloud service for video materials to be used for trainings support

IR.5.5	AR/VR tool	D5.5, D5.6	Co	Software tool released as open source to relevant actors
IR.5.6	Data Analytics tool	D5.7, D5.8	Co	Reusable tool in other projects, which helps to develop user-profiles. Developed as a guide towards a commercial version of the tool
IR.5.7	Guidelines on waste reduction tools	D5.9, D5.10	Co	Open, reusable and extendable methodology for the evaluation of the different technological tools developed under the iPRODUCE project which could be perfectly promoted to other projects that developed new methods
IR6.1	Mobile application for the collection of user's feedback for open innovation propositions	D6.3, D6.4	Public	Software component (accompanies the iPRODUCE Marketplace platform) made available to all registered users to the OpIS (and consequently the Marketplace). Follows the exploitation path of the Marketplace, as it supports the community support (interaction) functions
IR6.2	Open Competitions on consumer products innovation challenges	D6.6	Public	These competitions inspired collaboration, and sharing of ideas to shape better solutions. Participants were able to tackle new problems and strengthen the ecosystem. The external stakeholders' engagement in the competitions proved valuable, as it allowed for the solicitation of ideas and evaluation of tools from a broader perspective. Each competition had its own structure, target audience, and rewards for winners, but they all offered support in the form of technical assistance and visibility. The experience gained from the dissemination, setup and coordination of these competitions will be used as a guide for the launch of similar events within the framework of Open Calls or Hackathons (with the potential participation of small business or startups)
IR6.3	Methodology for iPRODUCE ecosystem establishment	D6.1, D6.2	Public	Reusable methodology for engagement to be used in other projects or services. An elaborate, replicable methodology was put in place for the initiation and establishment of the iPRODUCE ecosystem of engaged stakeholders. The methodology integrates guidelines for (i) the mobilisation, engagement and increase of awareness of relevant key actors as well as (ii) a solid approach on how to best take advantage of "lead user" and "open innovation ambassador" theories so as to detect early adopters and champions of the project's assets and keep them engaged in major project activities and consultation processes.
IR7.1	Business Models (BM) and case development for cMDFs	D7.2, D7.3	Public	Business Models (BM) that can be reused by the relevant actors in similar use cases to the ones described in the iPRODUCE project. These BMs describe also the guidelines of how the cMDFs can further develop their businesses through the iPRODUCE platform services.
IR7.2	Riccardian Toolkit	D7.4, D7.5	Public	Methodology and software tool described in research publications. Offered as a software tool to cMDFs and potentially other collaborative online platforms and applications.

IR8.1	Demonstration of federated cMDFs models	D8.2	Co	Methodology and structured reporting of lessons learned and evaluation of cMDF's models reusable by other projects and normal activities of the actors participating to the cMDFs
IR9.1	Evaluation methodology for cMDFs services	D9.1, D9.2	Public	<ul style="list-style-type: none"> • Reusable methodology in other projects involved with: user-centric production, makerspaces & fablabs and organization & coordination of community-driven entities • Reports are public and reusable by individual stakeholders
IR9.2	Innovation services to MMCs	D9.4	Public	Reusable methodology and information for the creation of new cMDFs or relevant makerspace communities/ collaborations
IR10.1	iPRODUCE Website	D10.1, D10.2	Public	Website, supported beyond the end of the project, that informs about the project activities, concepts and redirects users to the appropriate material. Can be used by interested parties from the maker community and people involved in similar activities/ researchers of social innovation

3.5 The IPR Registry

The IPR Registry used in IPRODUCE captures the following information concerning each KER from all the partners of the project:

- **Information**
 - **Background (B):** information brought to the project from existing knowledge, owned or controlled by partners in the same or related fields of the work carried out in the project.
 - **Foreground (F):** information, including all kinds of exploitable results, generated in the action by the project partners, whether or not they can be protected.
- **Exploitation**
 - **Licensing (L):** selling using software licence contract.
 - **Service (S):** selling using service contract.
 - **Pay-per-use (PPU):** selling a pay-per-use contract.
 - **Software (So):** selling as software.
 - **Hardware (H):** selling as hardware.
 - **Software as a Service (SaaS):** selling as SaaS.
 - **Platform as a Service (PaaS):** selling as PaaS.
 - **Consultancy (C):** providing consultancy services.
 - **Maintenance & Support (M&S):** providing maintenance and support services.
 - **Making (M):** developing the products through own facilities and skills.
 - **Use (U):** internal use of the result increasing the current know-how of the partner.
 - **Spin-off (SP):** potential exploitation through spin-off-company.
 - **Other (O):** other means of exploitation such as patents, publications, or communication materials (leaflets, brochures, etc.)

Table 5 is the first version of the IPR Registry that will be updated with all the KERs of the IPRODUCE project and be extended in D10.10.

Table 4 IPRODUCE IPR Registry

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
	AIDIMME	LAG	VLC	FIT	ZENIT	MSB	MAT	VOSGES	EXELCAR	E@W	TS	CBS	AIDPLEX	CERTH	ICE	SAG	EDLUX	F6S	WR
KER1: Operational Models for cMDFs											C								
KER 2: Workflow Automation	U,O																F,So, C, O		
KER 3: Digital twin															B, So, U				
KER 4: AR Training Toolkit				F										B, S, PPU, O					U
KER 5: Marketplace																	F,Paa S,O		B, C, O C
KER 6: Matchmaking															SaaS				
KER 7: Product Forge Service				F	C, F, U	F													C, U, O
KER 8: GDP social community																B,C			U
KER 9: NLP for verbal interaction																B,O			
KER 10: Video intelligence																B,O, S			
KER 11: AR/VR Tool														B, L, S, PPU, O					
KER 12: Data Analytics tool										F									
KER 13: Guidelines on Environmental Life Cycle Management		C, U, O										O							
KER 14: Mobile app																	F,Paa S,O		U, O
KER 15: Business Models												O							
KER 16: Ricardian Toolkit														B, L, S, PPU					U

Conclusions

This deliverable has described the methodology and the main ideas involved in the collection and analysis of the exploitable results of iPRODUCE. The exploitable results have been collected at different levels (project, partner) and have been linked to the relative parts of the work done in the project. The analysis of these results has identified those with the highest potential for further market exploitation, this way identifying the Key Exploitable Results (KERs). A more comprehensive analysis of the result, the context of each innovation and the associated IPRs has been conducted for each KER by the responsible partner, leading to the association of all KERs to the respective partners in the IPR registry. Finally, all innovation results have been analysed in terms of their potential exploitation methods, this way making it easier to identify them and describe next steps for each of these results.

References

[1]	"Innovation Management System - CEN/TS 16555-1".
[2]	Wikipedia, "Business Model Canvas," Wikipedia Foundation, Inc., [Online]. Available: https://en.wikipedia.org/wiki/Business_Model_Canvas .

Appendix - VPC

The technical teams investigated the mapping between the business requirements, used as assumptions for the development of their tools and the user needs by filling out the Value Proposition Canvas given in the next pages. In terms of exploitation, the results reached for the technical tools, intend to cover the market segment/ user needs identified in the right-hand side of the canvases (inside the circle). The corresponding functionalities developed to cover these needs are given in the left-hand side of the canvases (inside the square)

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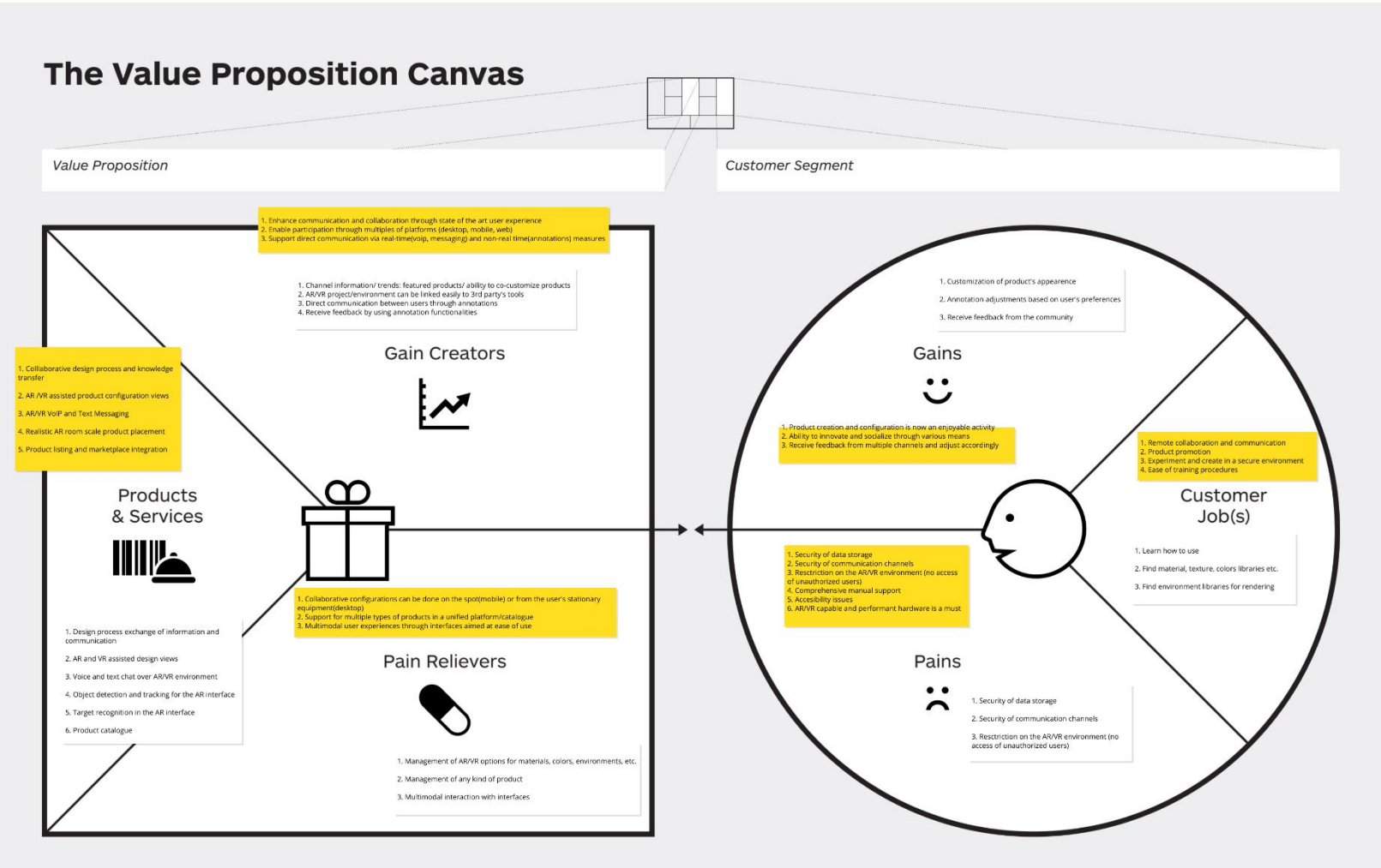


Figure 4 AR-VR tool

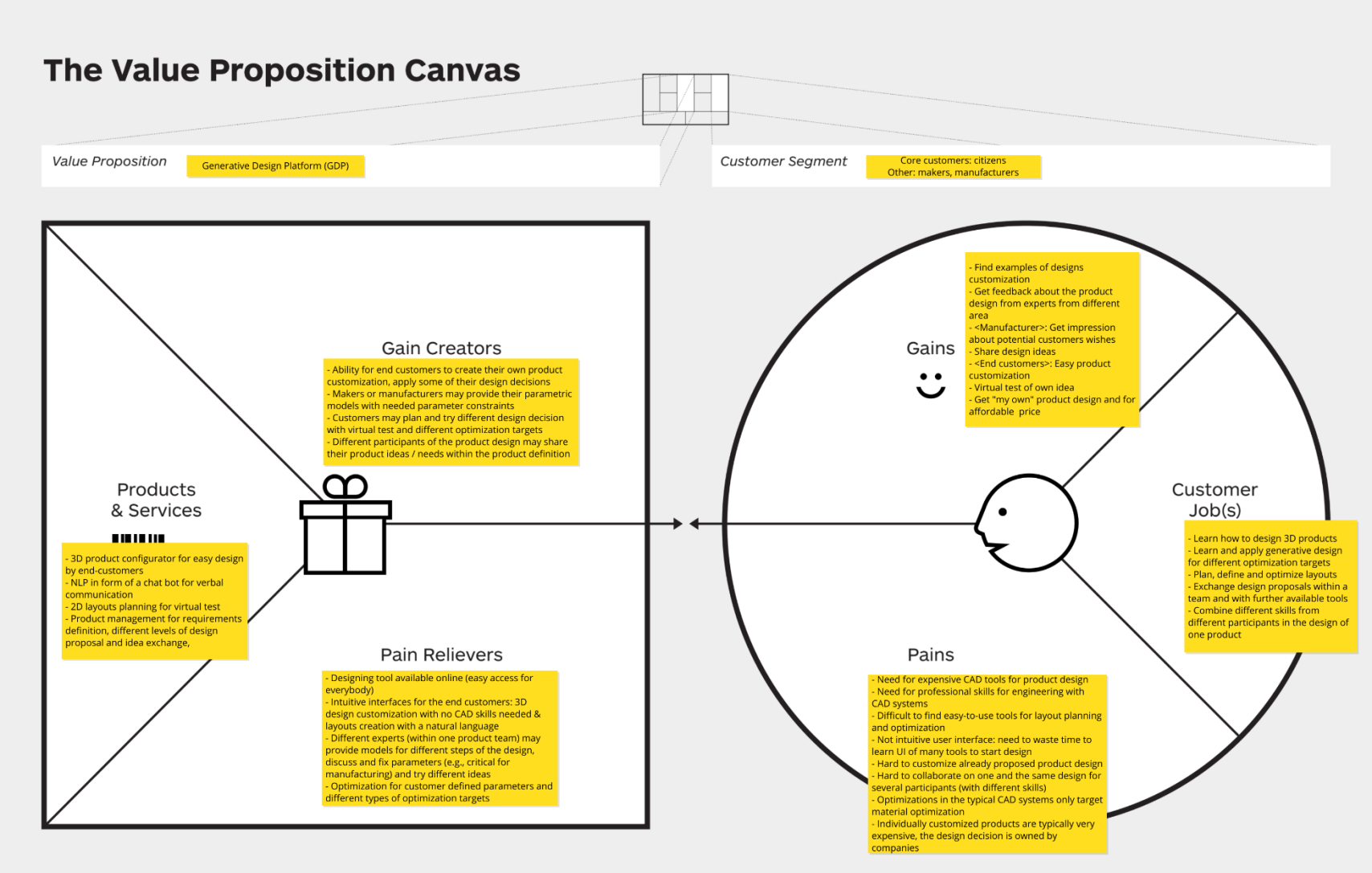


Figure 5 Generative Design Platform

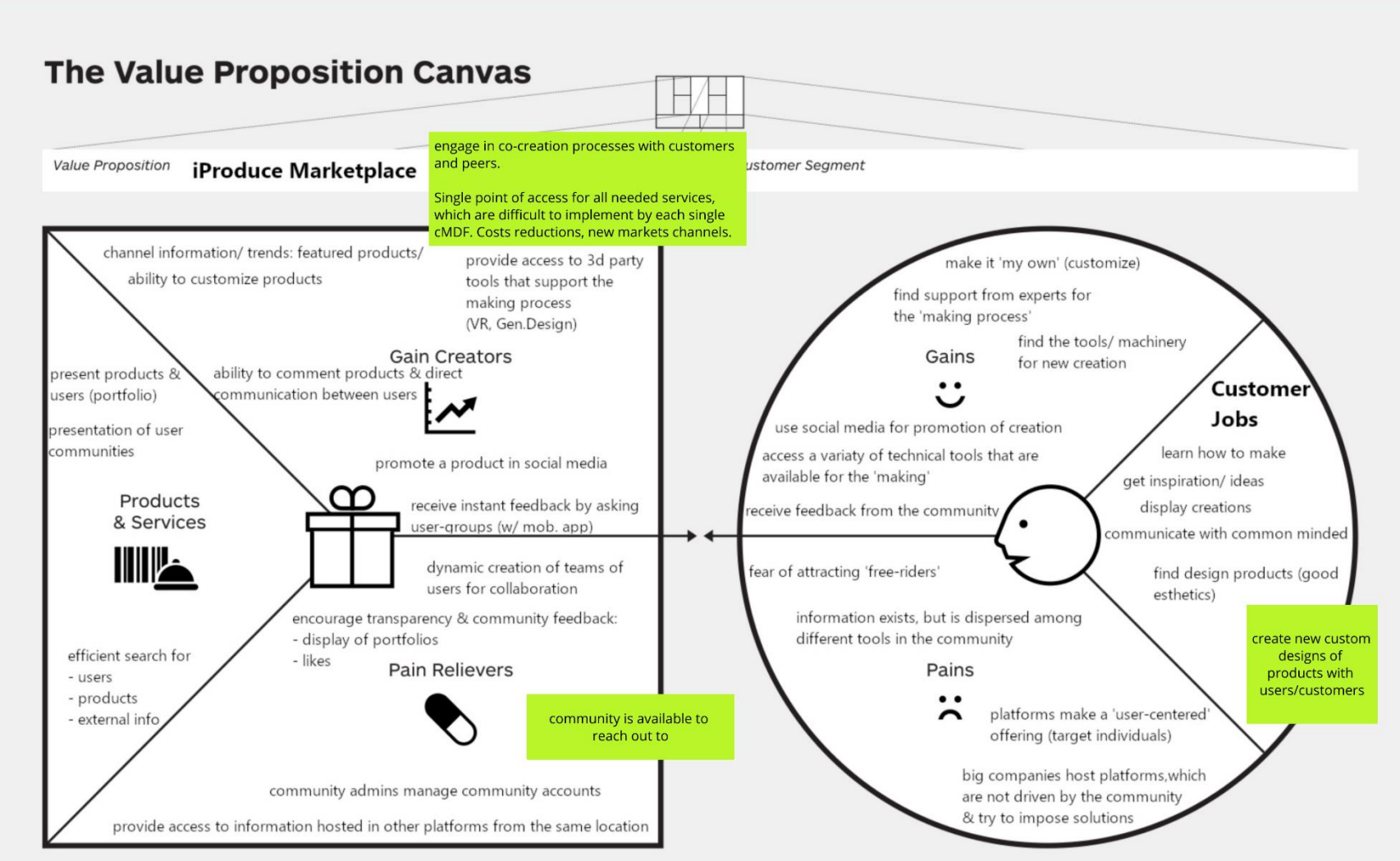


Figure 6 Marketplace

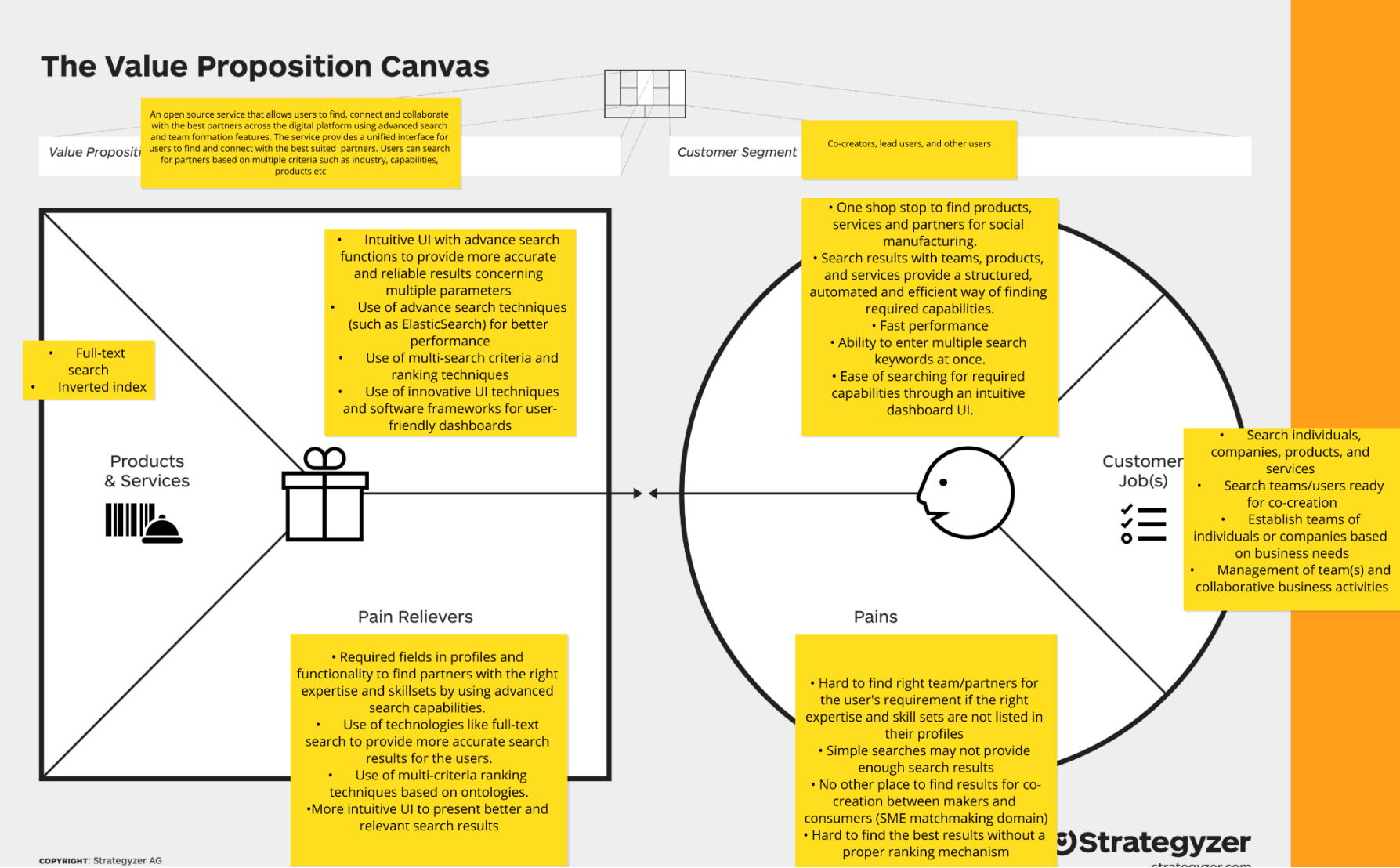


Figure 7 Matchmaking tool

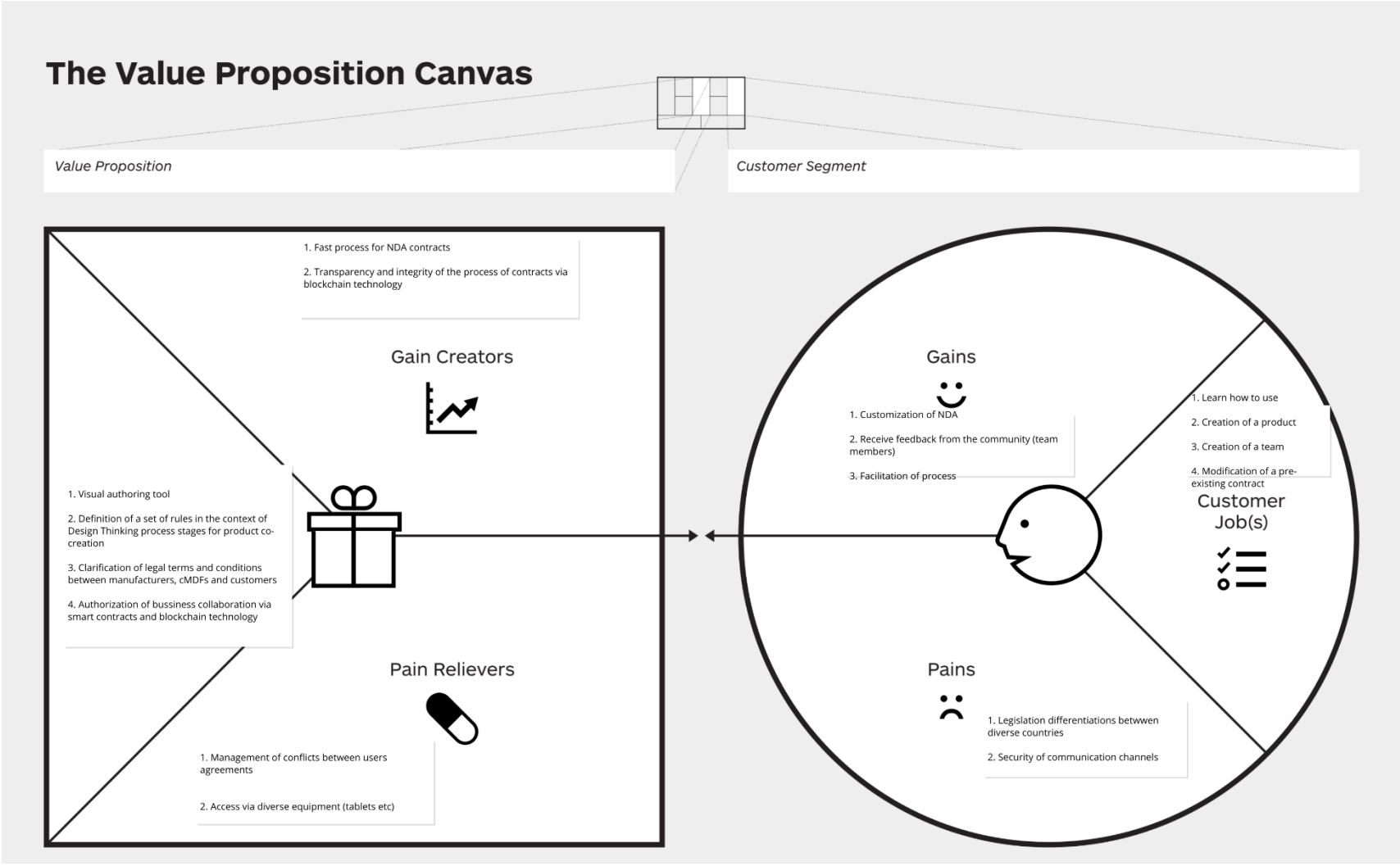


Figure 8 Riccardian Contracts tool

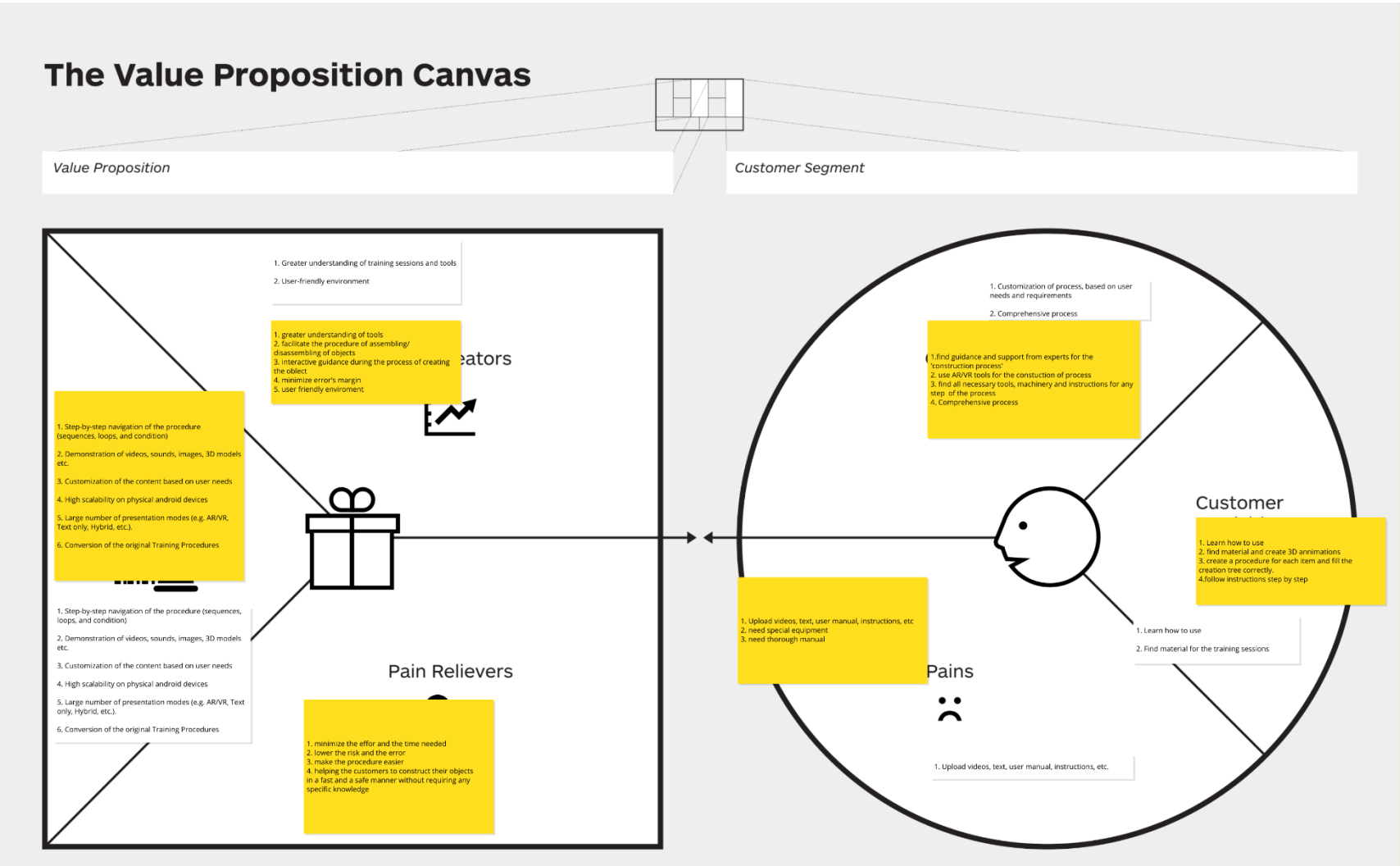


Figure 9 Training Support Tool

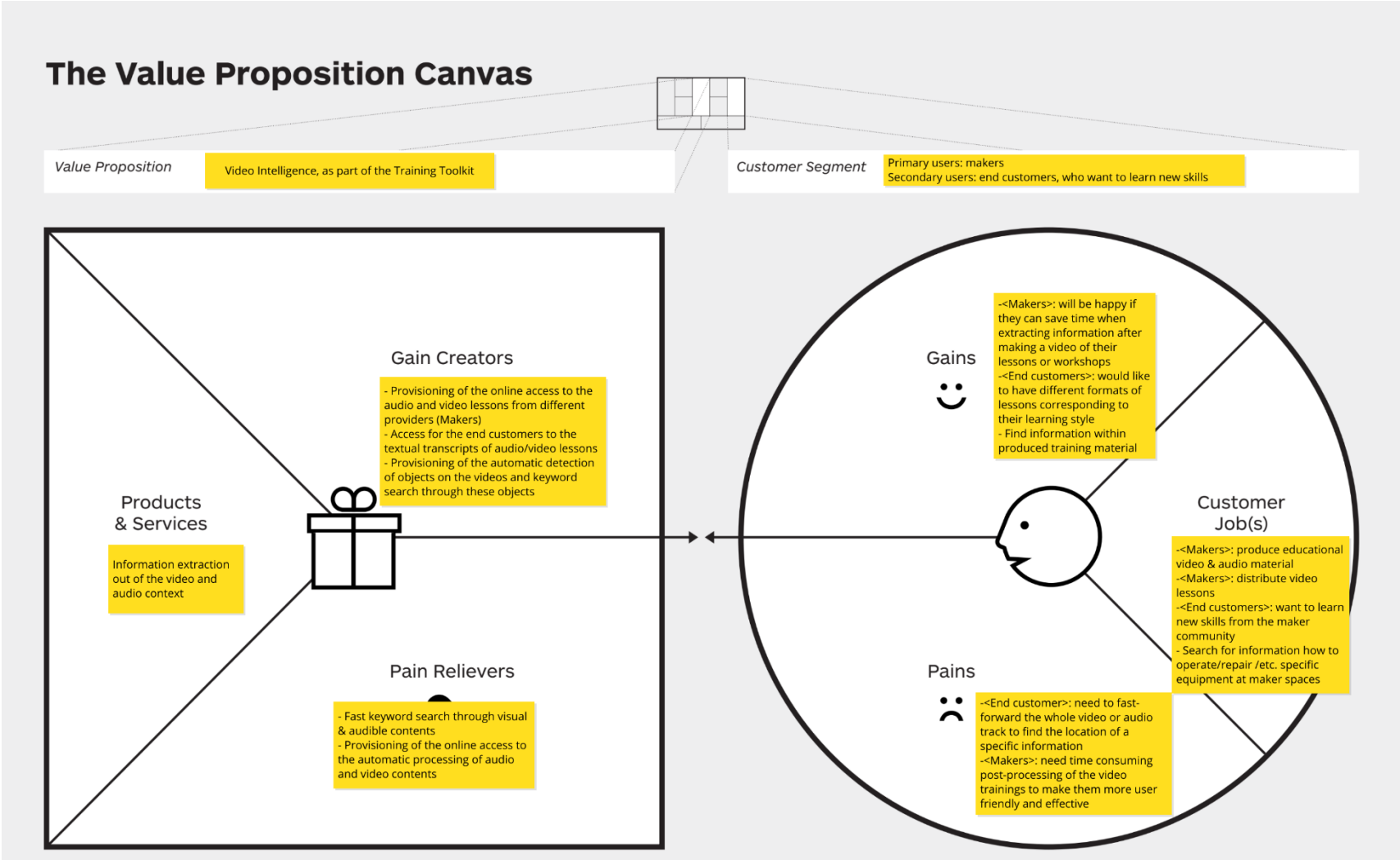


Figure 10 Video Intelligence

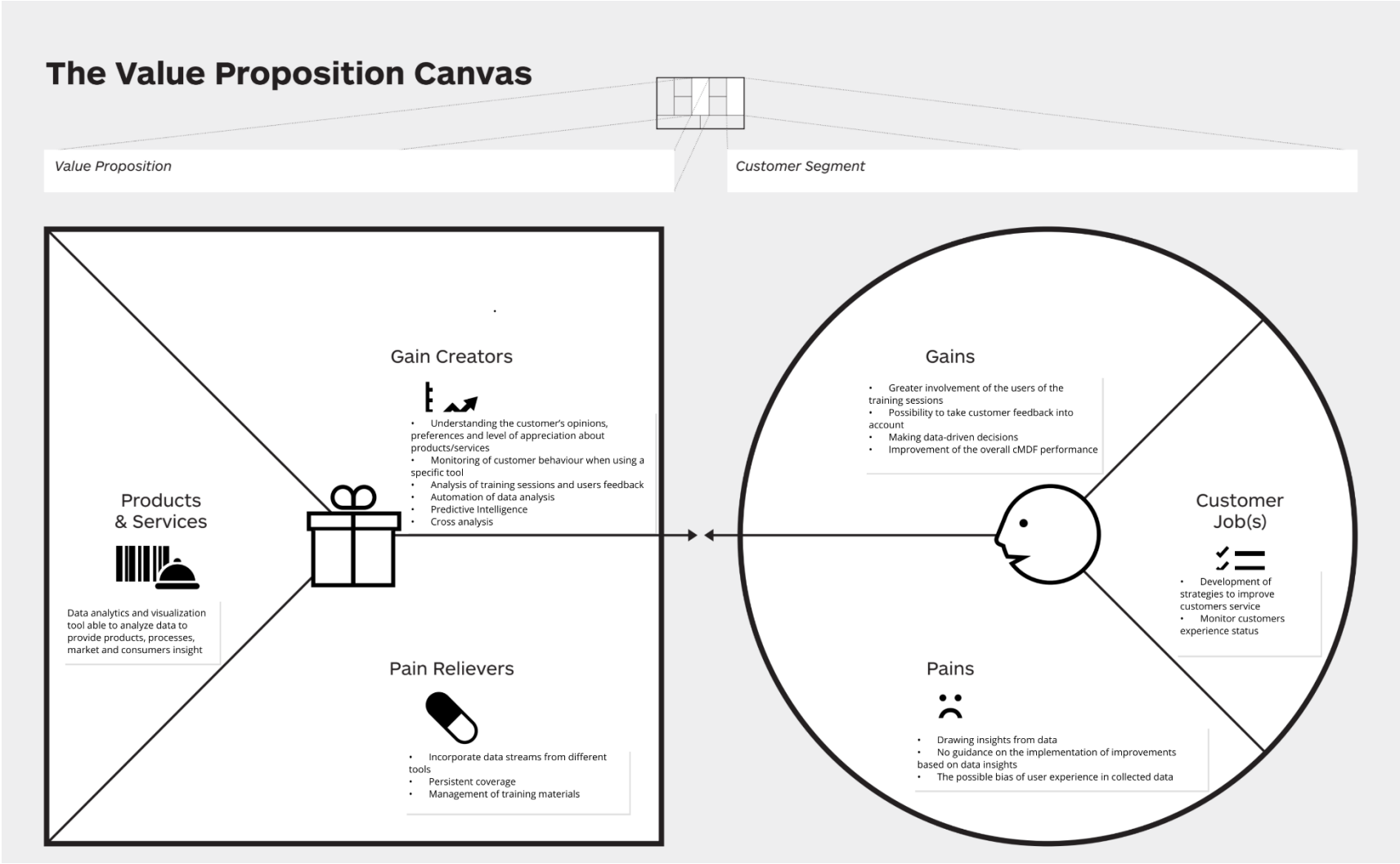


Figure 11 Agile Data Analytics Platform



PRODUCE

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TECHNOLOGY INSTITUTE

LAGRAMA

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NARANJA**

Fraunhofer
FIT

ZENIT



materalia
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CBS

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BUSINESS SCHOOL**
HANDELSHØJSKOLEN

BETAFACTORY

**Aid
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F6S



EUROPEAN DYNAMICS

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