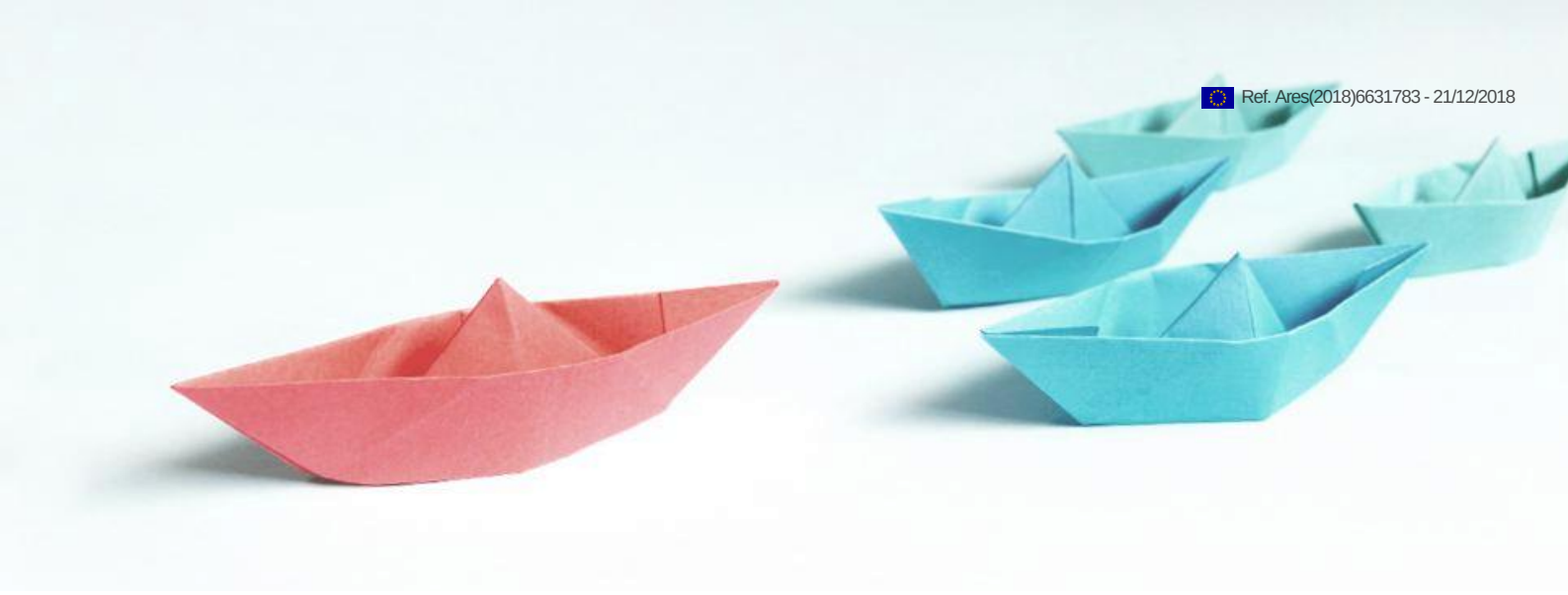

OpenMaker

D3.4

Final Impact Report

Grant Agreement	N. 687941
Project Acronym	OpenMaker
Project Full Title	Harnessing the power of Digital Social Platforms to shake up makers and manufacturing entrepreneurs towards a European Open Manufacturing ecosystem

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the

grant agreement No 687941.

Instrument	Research and Innovation Action (RIA)
Thematic Priority	CT–10–2015, Collective Awareness Platforms for Sustainability and Social Innovation
Work Package N. | Title	WP3 | Impact
Work Package Leader	**PlusValue**
Deliverable N. | Title	**D3.4 Final Impact Report**
Period	**M1 – M30**
Date of Delivery	**21 December 2018**

EXECUTIVE SUMMARY

The aim of this deliverable is to present the results of the activities carried out as part of WP3 during the final period of the project, and in particular to present OpenMaker's impact as a whole. In the first section an introduction to the final report is offered, followed by a presentation of the methodological framework on which the impact assessment is based. The third section "Final impact" constitutes the essence of this deliverable, presenting the final results of the activities carried out within OpenMaker during the last reporting period. In particular the impacts monitored reflect the activities carried out within WP1 – Local Enabling Spaces, WP2- Digital Social Platform and social media analysis and WP4 – Outreach and exploitation. The fourth and final section offers some concluding remarks.

GLOSSARY OF TERMS

CBA	Cost Benefit Analysis
CRM	Customer Relationship Management
CSR	Corporate Social Responsibility
DSP	Digital Social Platform
EC	European Commission
G8SITF	Global 8 Social Impact Investment Task Force
GECES	European Commission's Expert Group on Social Business Initiative
GRI	Global Reporting Initiative
IEF	Impact Evaluation Framework
LES	Local Enabling Space
PSS	Pilot Support Scheme
SEP&L	Social and Environmental Profit and Loss
SROI	Social Return on Investment
WP	Work Package

CBA	Cost Benefit Analysis
CRM	Customer Relationship Management
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DSP	Digital Social Platform
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LES	Local Enabling Space

PSS	Pilot Support Scheme
SEP&L	Social and Environmental Profit and Loss
SROI	Social Return on Investment
WP	Work Package

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1. Introduction

In the context of the OpenMaker project, the overarching goals have been set out by the Consortium as:

- Enhancing the productivity and competitiveness of the manufacturing sector in Europe.
- Promoting the 'Open Manufacturing Paradigm' through (i) Democratisation of Making, (ii) Supply Chains For Good and (iii) Corporate Citizenship (Young Foundation, 2015, http://uk.ukwon.eu/File%20Storage/4970285_7_SIE-Making- Good-our-Future-May-2015.pdf).
- Creating positive social impact in the community within which Makers and Manufacturers operate, by fostering processes of creativity, innovation, openness, inclusion, collaboration, inter-generational solidarity, up-skilling, and so on.
- Achieving sustainability of the OpenMaker project(s) over time.

The concerned Work Package 3 (Impact) aims to focus on the ex-ante and ex-post evaluation and on the constant monitoring of the social impact achieved by the project, in order to unlock the capacity of all the project's stakeholders to solve entrenched social issues through systematic innovation while developing economically sustainable products, services and/or ventures. A second aim is to ensure that the lessons learned from the project are synthesised in a methodological report allowing to replicate the experience in other places across Europe and beyond. WP3 cuts across the project's Work Packages 1 (accelerators), 2 (digital social platform), and 4 (outreach and exploitation) to help understand the impact of the OpenMaker project on different stakeholders and over time, with the overall aim of enabling innovation processes in open manufacturing for societal good. The impact strategy is also embedded within and across WPs 1,2 and 4 to maximise the impact creation and measurement potential for the OpenMaker project.

As a recap,

- WP1 (Local Enabling Spaces for Open Manufacturing communities) focuses on the construction and scaling of vibrant communities between traditional manufacturers, makers, citizens and stakeholders, with the aim of contributing

to raising collective awareness on open source manufacturing and of generating innovations in the sector;

- WP2 (OpenMaker Digital Social Platform) will define the conceptual framework to collect and describe both the knowledge sharing and collaborative actions; it will then create the digital space and deploy the necessary metrics to quantify and measure the key interaction modalities that define the success and failures of this system as a social network;
- WP4 (Outreach and exploitation) ensures that a sound communication and dissemination strategy is identified and applied throughout the project activities and results, thus supporting the achievement of the expected impact.

This report contains an overview of the impact achieved during the reporting period through the different activities developed under WPs 1, 2, 3 and 4. We first briefly summarise our Impact Framework that was tried, tested, and refined in collaboration with the LES Enablers at the Impact Training workshop on 28-30 March 2017 (M10), through their in-the-field practices and continuous feedback from all Consortium partners, and further adapted to the challenges emerged throughout the project. Inevitably, the impact assessment process is a complex and fluid one, whereby the question and answer to “are we doing any good or not” have to be constantly re-asked and re-answered. The next part of the report provides an assessment of the mid-term impact according to the developed indicators in the Impact Framework, by analysing data collected by LES Enablers through both offline (semi-structured interviews, feedback tools) and online tools (e.g. Digital Social Platform, on-boarding forms, and social media analysis) of LES Members. Interviews held between PlusValue and LES Enablers in the final stages of the current reporting period are also analysed to gain insight on meso-level project impact (outcomes and process) that may feed into future recommendations for country-specific project implementation and policies.

2. Methodological framework

The process of developing and finalising an Impact Strategy for the OpenMaker Consortium was described in Deliverables 3.1 and 3.2, and later implemented in Deliverable 3.3 (the Mid-term Impact Report). The Impact Strategy had a twofold objective: the first was to create a context-specific methodology based on the Social Return on Investment (SROI) framework, but adapted to the specific needs of the project that reflect the multiple overlapping scales of impact (micro, meso and macro) as well as OpenMaker's overarching goals according to the Open Manufacturing Paradigm in relation to democratisation of making, supply chains for good, and corporate citizenship. The second objective was to provide an Impact Framework for Consortium partners to map their key stakeholders, inputs, outputs and outcomes – and to provide them with the means to support stakeholders in increasing their positive socio-economic impact while innovating their business models.

The detailed methodological framework and finalised version of the Impact Strategy can be found in Deliverable 3.2.

2.1. An overview of impact according to overall project objectives

Although data is collected according to the IEF and largely grouped under Work Packages and scales (micro, meso and macro), it should also be emphasised that the framework cuts across project-specific impacts at innovation level, scientific/technological level, and at the societal/social innovation level. These are briefly highlighted below in the context of the current reporting period:

i. At innovation level: During the current reporting period, the IEF set out the overarching aim that the LESs become Open Manufacturing hubs, establishing strong connections between makers and manufacturers, and engaging other stakeholders that result in new projects, newly acquired skills and network, and employment. As the project progressed, these innovation data were used to analyse the effectiveness of OpenMaker's bottom-up, open, distributed, and participatory approaches – compared with existing solutions – for driving innovation in open manufacturing, as well as evaluating how

successful the project has been at engaging a critical mass of stakeholders in durable interdisciplinary collaborations that can be transposed across Europe.

ii. At scientific/technological level: The IEF set out multiple ways in which OpenMaker's Digital Social Platform (DSP) developed in WP2 could be used to collect impact data at the technological/scientific level including on community size and demography; levels of participation and engagement; social media interactions; social network analysis and connectivity metrics; and content analysis. The Framework further set out indicators to measure the scientific impact of the project in relation to the number of scientific papers published; hits, shares, and cross-references for published papers; international conferences participated in; and new research projects, partnerships, or collaborations on OpenMaker. Scientific/technological impact data has been combined with innovation impact data to further understand the effectiveness of OpenMaker's approach for engaging stakeholders, facilitating collaborations, and driving open manufacturing at the technological/scientific level.

iii. At societal/social innovation level: The IEF set the aim of combining the project's impacts at innovation level and technological/scientific level to better understand our impact at societal level, particularly in relation to 3 key dimensions of the Open Manufacturing Paradigm (Democratisation of Making; Supply Chains For Good; and Corporate Citizenship). The IEF identified indicators to measure the impact of the project in relation to the number of new policy and finance actions to support Open Manufacturing at local, national, and EU levels. The aim as set out in the IEF was to spread the Open Manufacturing Paradigm, innovating the traditional manufacturing sector, and achieving positive and sustainable societal impact (e.g. fostering creativity, innovation, openness, inclusion, collaboration, inter-generational solidarity, re-skilling, and so on) for Open Manufacturing communities at local, national, and EU levels.

3. Final impacts

3.1. WP1 – Local Enabling Spaces

In this section the main impacts generated through the activities carried out within WP1 (Local Enabling Spaces) will be presented. The main areas that will be covered are the onboarding form, the semi-structured interviews conducted with LES members and enablers, the impact workshops, and the Pilot Supporting Scheme.

3.1.1. Onboarding Form

The Onboarding Form represents the first source of data on the Members of the DSP: it includes a short set of requests of inputs aimed at building a simple yet thorough registry of personal data consisting in name, age, location, occupation, and a few questions related to the Member's interests and making-related activities.

As of December 2018, the number of registered Members is 509, with a geographical distribution that spans across Europe, and higher density around the Local Enabling Spaces (Figure 1).

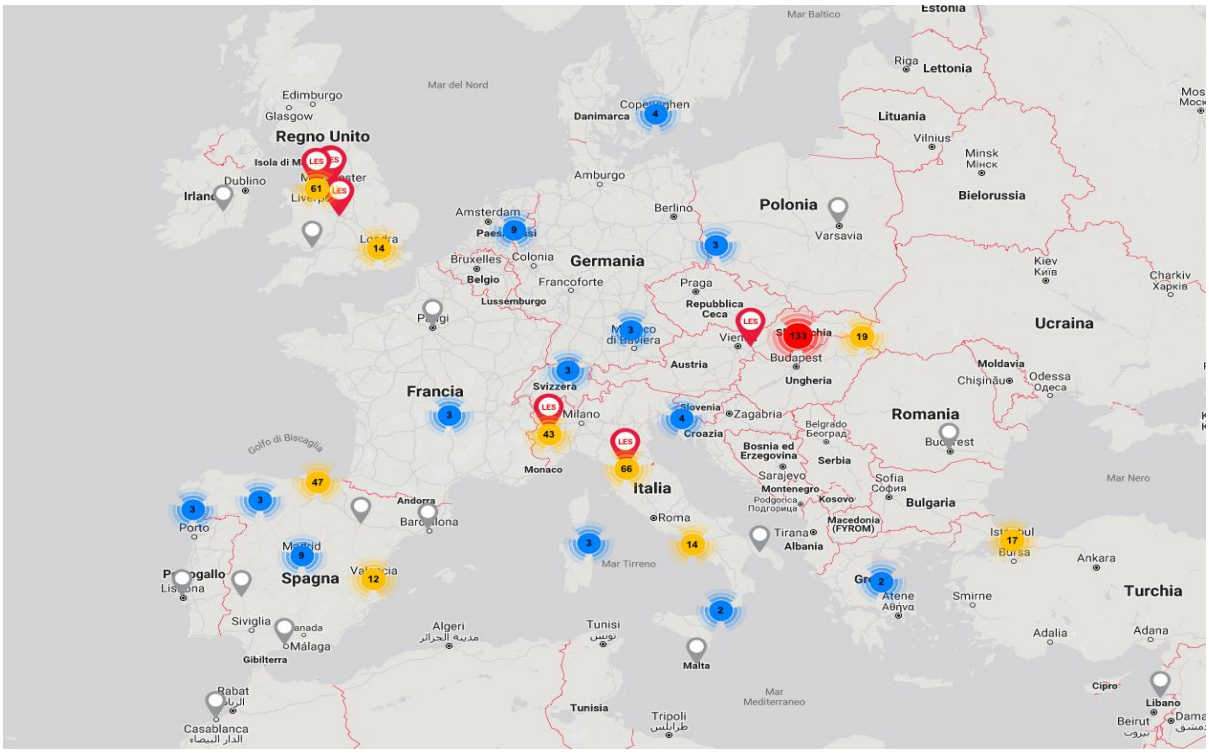


Figure 1 – Geographical distribution of DSP Members (accessed 5 December 2018)

According to the data gathered through the onboarding form, the most represented countries are: Slovakia – 153; Italy – 134; Spain – 78; United Kingdom – 76. In terms of cities, Bratislava, Liverpool and Florence are the most represented (Figure 2).

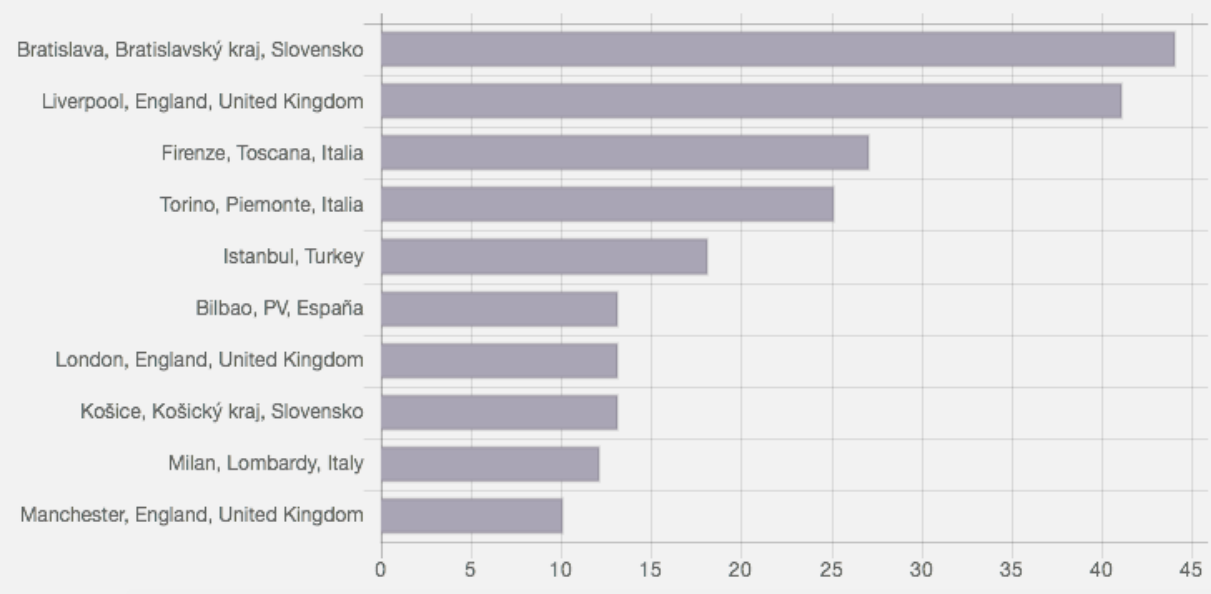


Figure 2 – Distribution of DSP Members across cities (accessed 5 December 2018)

Members of the DSP present a wide variety of occupations, as shown in Figure 3. The most common employment statuses are designer, researcher, project manager, CEO, entrepreneur and student.

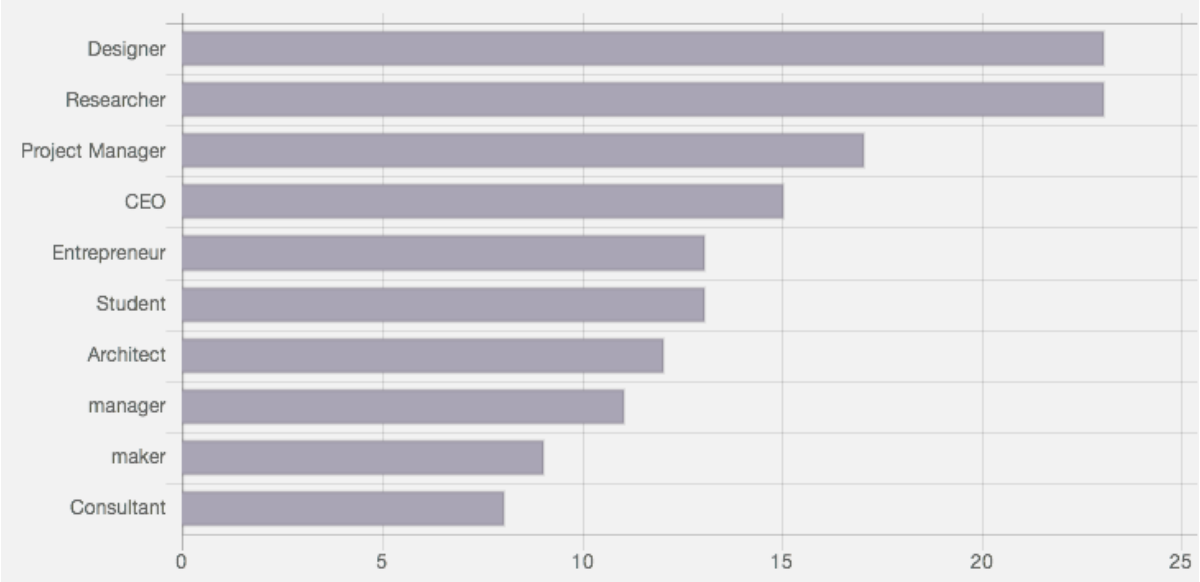


Figure 3 – Job distribution of DSP Members (accessed 5 December 2018)

As part of the Onboarding Form, new Members are asked to enter up to 5 keywords about themselves, their profession and/or their values (Figure 4). The most common are Innovation, Design, Education, Research, Engineering and Social Innovation, showing high consistency from the beginning of the project (when the most common words were Innovation, Design, Education and Social Innovation).

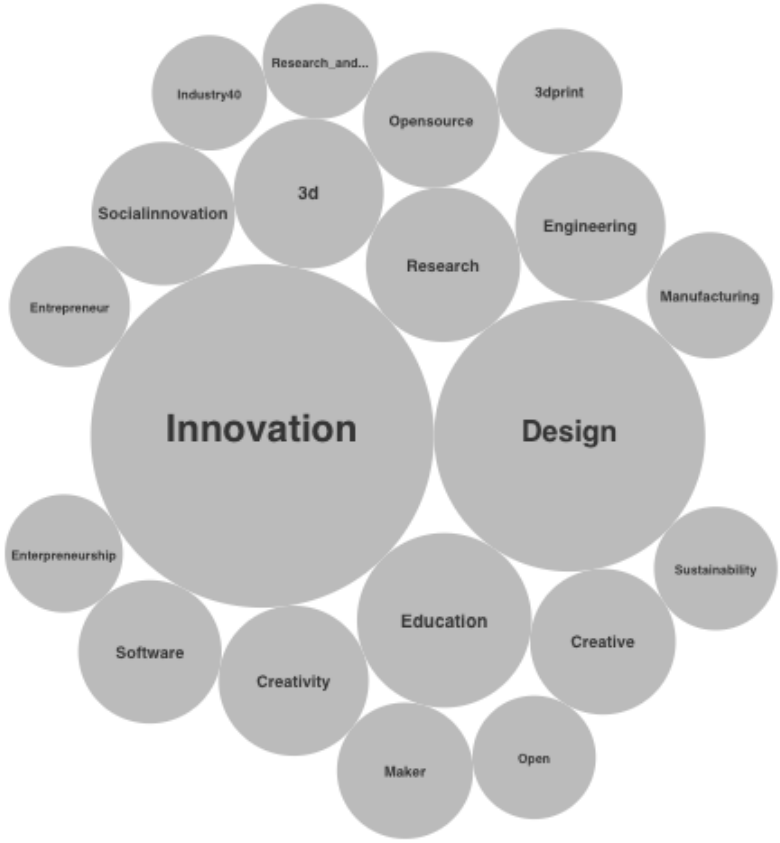


Figure 4 – Word cloud of DSP Members (accessed 5 December 2018)

3.1.2. Semi-structured Interviews with LES Members

Semi-structured interviews constitute a key element of the impact evaluation framework. LES Enablers conducted semi-structured interviews with LES Members twice over the course of the project. The initial semi-structured interviews were used as a basis for the follow up interviews carried out at the end of the project in order to gather data on what has changed for LES Members as a result of the project, compared to when they enrolled. The interviews have focused on:

- How has OpenMaker helped LES Members face their challenges?
- What solutions has OpenMaker helped LES Members achieve?
- What types of expertise have LES Members gained?
- What criteria have LES Members used to assess the usefulness of the OpenMaker programme?
- What values have OpenMaker helped to achieve?

Over the course of the project, a total of 162 interviews were conducted, 64 of which at the end of the project, and 98 at the beginning (Table 1). The targets of the interviews were mainly makers, but other interviewed categories were manufacturers and other stakeholders.

	Start point	End point
Italy	32	18
Slovakia	20	10
Spain	28	27
UK	18	9
Total	**98**	**64**

Table 1 – Number of semi-structured interviews with LES Members

Although the overall turnout of the interviews was successful and allowed to gather valuable insight both at the start and at the end point, it must be noted that the slightly smaller number of interviews collected at the endpoint was due to a certain difficulty in engaging with stakeholders that did not succeed in the early stages of the PSS. Especially makers and project ideas that applied for the PSS and were not successful, they tended to engage less with the LES community although it was reported that live events were successful in stimulating bringing together a wider community built around not only winning ideas.

The start point semi-structured interviews were based on the need to understand the nature of the OM community, and in particular they requested a description of the interviewee – both makers, manufacturers and other stakeholders –, and an analysis of their levels of openness and connectedness. The result of such first wave of semi-structured interviews served to define a baseline which is reported in D3.3 Midterm

Impact Report. The second wave, namely the end point semi-structured interviews were carried out during the months of October and November 2018 and their purpose was to understand to what degree OpenMaker has been successful in supporting manufacturing 4.0 and in particular LES Members (makers, manufacturers and other stakeholders). The main findings of the endpoint semi-structured interviews are summarised in Table 2 and divided into the following 9 areas: technical skills, networking, process, supply chain, business model, product, technology, other.

SOFT SKILLS	MAKERS
	• OM helped to adapt to needs of manufacturers • OM helped to learn how to communicate value of the prototypes • OM helped to develop a market-ready solution (from theory to market) • OM brought about Increased confidence in proposing ideas to manufacturers • OM helped to learn how to work with other people • OM helped to increase resilience • OM helped to develop teamwork skills • OM helped to develop presentation and public speaking skills • OM helped to learn how to communicate with suppliers
	MANUFACTURERS
	• OM helped to develop problem solving skills • OM helped to be more open minded in terms of content and process • OM helped to learn to work with interdisciplinary teams
TECHNICAL SKILLS	MAKERS
	• OM has provided access to equipment that would not normally be available and resulted in new techniques • OM helped to produce a prototype more quickly • OM helped to build flexibility into the programmes

	• OM helped to improve makers' practice • OM helped to learn about industrial production chains • OM helped to learned technical skills that are adaptable to different sectors • OM helped to increase makers' knowledge of materials
	MANUFACTURERS
	• OM helped to try out new ways to use materials • OM helped to develop dormant inventions that were not going anywhere • OM helped to learn about new technologies presented by the makers
NETWORKING	MAKERS
	• OM helped to develop a process of networking that was useful in gaining information • OM helped to develop close partnerships between makers coming from different countries • OM increased the connection with industrial partners and suppliers • OM helped to nurture some existing relations and partnerships with new contents and ideas • OM helped to strengthen ties with other actors in the region • OM helped to bridge a big cultural gap between makers and manufacturers
	MANUFACTURERS
	• OM helped to discover new applications through networking
PROCESS	MAKERS
	• OM helped to develop new processes, including new ways of collaborating • OM resulted in improved CSR strategies • OM resulted in increased visibility • OM helped to focus more on sustainability

	• OM helped to focus more on sharing knowledge and innovation • OM helped to establish structured processes
	MANUFACTURERS
	• OM helped to prototype new industrial processes, both in terms of assistance and solutions • OM helped to learn about open innovation
	STAKEHOLDERS
	• OM helped to expand existing models
SUPPLY CHAIN	MAKERS
	• OM helped to develop a supply chain, or widening the range of suppliers • OM has led to an increase in private commissions
	MANUFACTURERS
	• OM helped to broaden the list of potential suppliers
	STAKEHOLDERS
	• OM helped to develop a mode of collaboration where people want to work within an umbrella or loose collective
BUSINESS MODEL	MAKERS
	• OM helped to improve makers' reach • OM helped to develop new business models • OM helped to add new consultancy service offers • OM helped to become autonomous, and start to have clients • OM forced makers to clarify all aspects of the business plan
	MANUFACTURERS
	• OM helped to develop new key activities, revenue streams, key resources, customer relationships, and value propositions
PRODUCT	MAKER
	• OM helped to develop prototypes where there was not one yet • OM helped to develop a broader catalogue

	• OM helped to develop a new product based on new services • OM helped to improve products' design
	MANUFACTURERS
	• OM helped to focus on customization • OM helped to develop new products
TECHNOLOGY	MAKERS
	• OM helped to develop new online learning tools and to invest in growing technologies • OM helped to test new technologies with external suppliers
	MANUFACTURERS
	• OM helped to test and discover new technologies • OM helped to upgrade existing technologies
OTHER	• OM required too much administration • Some follow-up project would be welcome • Difficult to manage the PSS money largely because considered insufficient

Table 2 – Summary of the semi-structured interviews main findings

The outcome of the semi-structured interviews with LES members shows an interesting combination of appreciation for the results achieved, some clear signs of penetration of the open making paradigm into the mindsets of manufacturers, and a touch of frustration related to the fact that some of the more capital-intensive ideas realised that the lack of funding available through other sources meant that they are now struggling to proceed past a prototyping phase.

An important trend throughout all interviews is the idea that OpenMaker represented an important opportunity. For some of the makers it consisted in the opportunity to increase the level of professionality of their projects, as testified by one maker affirming "I'm not afraid to say that this has changed my life. I am now giving up my

'day job' to practice full time. Before Open Maker - nobody had ever believed in me". Other makers and manufactures valued the importance of "[being] part of a community and have access to European partners, as that would not have been possible otherwise", and that of having "a clear structure and time span to work towards". While some of the projects believed that the PSS prize "was not enough money to make a difference", this was strongly counterbalanced by the "great visibility on local and national media". Together with the high returns in terms of visibility, manufacturers have shown appreciation for the fact that the partnerships with makers allowed many of them to "solve some production challenges", thus showing the mutually advantageous nature of the open making paradigm.

3.1.3. Semi-structured Interviews with LES enablers

Another set of semi-structured interviews was carried out with the LES enablers during the months of October and November 2018 with the aim of gathering important inputs on the project from the perspective of those who supervised the whole process. The LES enablers were asked to reflect on the change that was brought about by OpenMaker on a wide array of themes, including the evolution of openness and connectedness of the community, gender representation and more generally the impact of the project.

Among the most common themes in the interviews we find the general satisfaction with the project, which constituted an important opportunity for makers to deal with the questions concerning how to turn their activity into a sustainable business and for entrepreneurs to open up to innovative solutions to some of their production challenges.

All the enablers that were interviewed highlighted the fact that OpenMaker was extremely successful in getting the communities surrounding each LES to know more about the open innovation paradigm. This is true both for the initial phase during which potential stakeholders were mapped and engaged, and the second phase, when the physical events hosted at each LES were instrumental to reach a broad audience. According to one enabler the latter were "a fundamental catalyst. Without events there would not have been all the rest, it served as a means to create many connections within the community". Events also created the basis for further

interaction between makers and manufacturers, sometimes leading to new partnerships.

Another interesting form of engagement between makers and manufacturers that goes beyond the PSS is that of challenges issued by big manufacturing companies looking for input from makers to solve production issues. For example, Volkswagen issued an innovation brief to which makers responded and whose input will be brought up in front of a committee of the company itself. Mondelez, multinational chocolate producer, also issued an innovation briefing with a problem concerning fondant loading. Following such briefing, 5 Slovakian innovators teams presented their activities and solution to the committee of 5 members of the company's engineering department, whose feedback was very positive. Following the positive experience, Mondelez is considering repeating the competition next year. Electrolux and ANT Foundation were among the companies involved with the OpenMaker project through open innovation challenges.

Engagement of the manufacturing sector was largely positive, but with some differences: despite the fact that OpenMaker changed the perspective towards open forms of innovation, some LES enablers pointed out that many companies who have participated to the project did not fully buy into the paradigm of open source processes and products yet. There appears to be high interest in openness when the latter is related to crowdsourcing innovation and ideas from outside, but very few companies are interested in opening up the results of their innovation. According to the interviewees the size of the companies did not affect their likelihood to cooperate very much: although small enterprises were more easily engaged, there were examples of medium-large companies engaging with makers and the open innovation paradigm. At the same time, SME showed a protective approach towards their innovation. An important factor in shaping the collaboration between makers and companies was the degree of innovativeness: as one LES enablers pointed out "more innovative companies tended to build peer relationship [with the makers], otherwise the relationship was more similar to a kind of mentorship or advice".

The theme of gender representation, which was identified as a crucial topic from the outset, remains at the end of the project still an issue, although some positive signs

have emerged. In particular, the Slovakian LES displayed surprisingly high levels of gender balance for a traditionally male dominated sector as the tech one: the representation was in fact 60% male 40% female – an encouraging sign. According to one of the interviewees, topics also have an impact on gender representation, with technical topics being more commonly followed by men. Attendees at Blockchain workshops, for example, were 80% men". More generally, women representation seems to be generally low, and despite this being reason for deep concern for some of the LES enablers, some took an opportunity to effectively act on it. As noted by the UK LES enabler, "on a positive note this experience has made us research and commence actions about gender bias within the tech/maker and manufacturer sectors", which included engagement with local, regional and national policy makers to ensure that future programmes focus on social innovation diversity.

3.1.4. Impact workshops

At the end of the PSS, during the months of October and November 2018 a set of workshops were organised and delivered with the aim of supporting the impact potential of winning ideas as well as the whole communities of makers and manufacturers surrounding each LES. Although the delivery of the workshops varied slightly from one LES to another, due to the fact that different experts were tasked to lead the activities, harmonisation of the latter was ensured by PlusValue's coordination. PlusValue itself was responsible for the delivery of the workshop at the Slovakian and Italian LES, whereas in the British and Spanish LES local staff was responsible for the activities. In all the LES the workshop touched upon the themes of social and environmental impact, and opened up a discussion on how to identify, maximise and communicate one's impact.

Case study

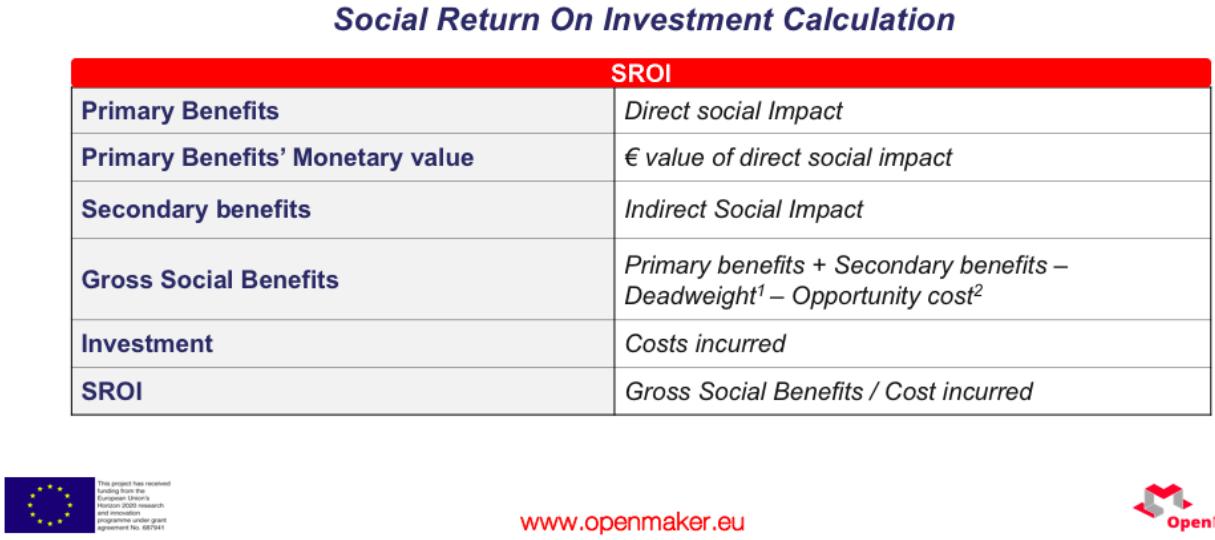
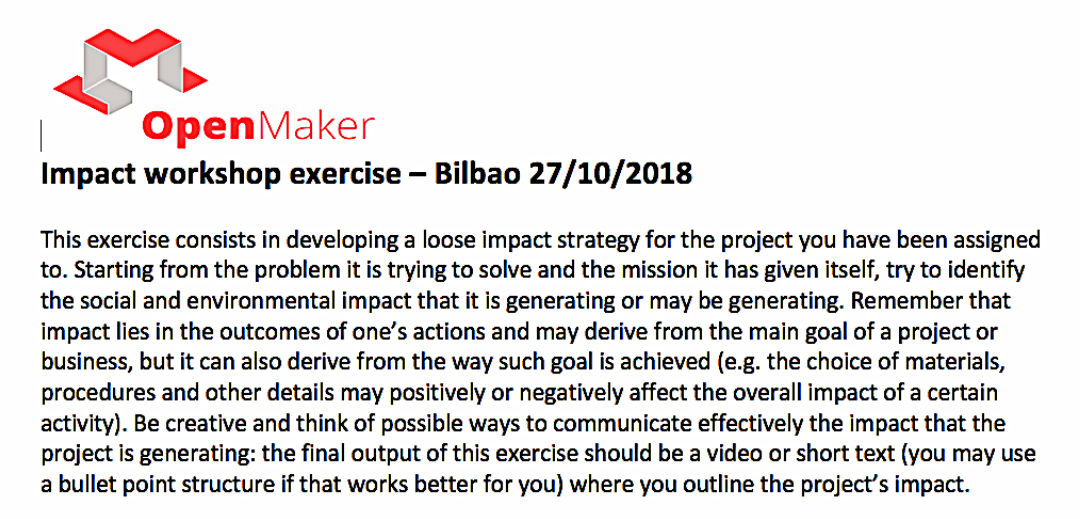


Figure 5 – Impact workshop – SROI exercise

The workshops were divided in two sessions. During the first session impact experts delivered an interactive lecture on the topics of social impact and social impact evaluation. The themes that were touched upon included an introduction to the idea of (social) impact and its relevance in the context of the open manufacturing paradigm; the role of impact investing and the opportunities it can create for micro, small and medium enterprises; a strategy for identifying and mapping the types of impacts that makers and manufacturers are able to generate and may be generating through their projects; and finally the essential tenets of impact assessment. Concerning the latter point, a range of instruments were introduced, with a particular focus on the Social Return On Investment approach: although delivering a full scale SROI course was beyond the scope of the workshops, the participants were exposed to the core ideas that guide such impact evaluation method.


OpenMaker

Impact workshop exercise – Bilbao 27/10/2018

This exercise consists in developing a loose impact strategy for the project you have been assigned to. Starting from the problem it is trying to solve and the mission it has given itself, try to identify the social and environmental impact that it is generating or may be generating. Remember that impact lies in the outcomes of one's actions and may derive from the main goal of a project or business, but it can also derive from the way such goal is achieved (e.g. the choice of materials, procedures and other details may positively or negatively affect the overall impact of a certain activity). Be creative and think of possible ways to communicate effectively the impact that the project is generating: the final output of this exercise should be a video or short text (you may use a bullet point structure if that works better for you) where you outline the project's impact.

Figure 6 – Impact workshops practical exercise

During the second session participants carried out a practical exercise: the teams of each PSS winning idea was assigned another winning idea from the same LES and asked to design or scale up its impact strategy. They were asked to spell out the impact elements of the other idea's business model, to reflect upon key elements of a potential impact strategy (answering questions on the primary/secondary benefits generated, the externalities deriving from the supply chain, the process and product innovations that may be activated), and to sketch out the core elements of a SROI evaluation. After each team had devised an impact strategy and a SROI sketch, they presented their plan to the others – thus sparking a discussion on current and potential impacts of each team.

The workshops represented an important opportunity for the LES community and in particular for the winning ideas to expand both their understanding of the theme and to brainstorm opportunities to scale up their social and environmental impact. It appeared that the practical exercise session was particularly successful in allowing to engage the LES community in a debate, and to let different individuals contribute to each other's projects by suggesting further potential innovations. Suggested innovations took many forms, including potential partnerships, process innovation, the use of different material, access to different markets, and although it is early to assess whether such inputs will generate positive change, they were clearly instrumental in stirring up a debate and thus increasing OpenMaker's impact.

3.1.5. Pilot Supporting Scheme

A total of 137 proposals (30 from Italy, 51 from Slovakia, 30 from Spain and 26 from the UK) were submitted to the PSS. This surpassed the expected number of LES Users applying (80 applications), implying the wide reach of the OM project and the short supply of funding for collaborative innovation. Following the established procedure, in November out of these 137 applications, OM selected 40 (10 from each country) semi-finalists to enter the final competition in December.

The projects that were selected as semi-finalists showed a collaboration of 310 Makers, Manufacturers and Other Stakeholders, where 80% are male and 20% female. During the process of project development, it had the potential engagement of more than 7000 people (from estimate of total number of employees of applicants). Internationally also, there is impact: collaboration with 8 different countries including 6 EU [France (2); Czech Republic (2); Austria (1) and the Netherlands (1)] and other countries (China and US).

A note on gender distribution of semi-finalists (Figure 7):

- Spain shows the lowest rate of female semi-finalists (13%)
- Closely followed by Italy with only 15% female semi-finalists
- UK shows the highest with 33% of the Users selected as semi-finalists being female.

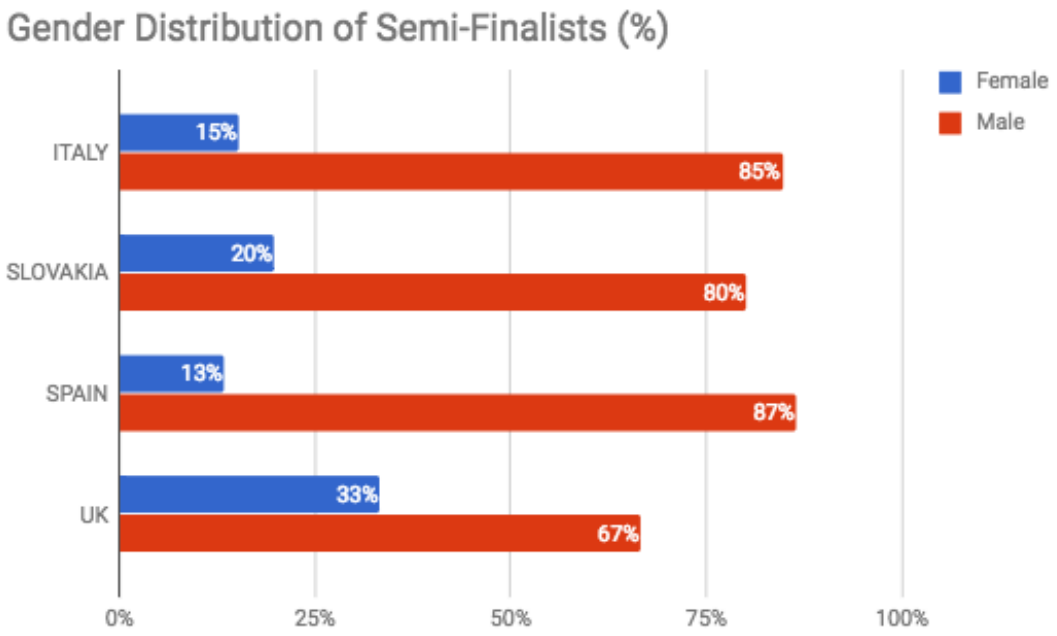


Figure 7 – Gender distribution on PSS semi-finalists

Participants presented incredibly innovative projects born from strong partnerships between Makers and Manufacturers. Digital manufacturing, 3D printing, waste recycle, AI, Robotics, STEM education - are only a few of the fields in which the applicants aim to develop their ideas. Above all, their disruption innovations present great added value on their sustainability and social impact. More information on the launch and summary of semi-finalists can be via the link http://openmaker.eu/pilot-support-scheme

Some examples of project proposals from OM Semi-Finalists:

Italy

Circular Wool: innovating the commercial value of Tuscan wool, with far-reaching economic, social and environmental impact. This project seeks to find a commercial and the avoidance of pollution from illegal disposal methods.

Yogaramp: increasing physical access for a variety of locations. YogaRamp is a flexible solution that seeks to improve the accessibility of shops, public places, museums, offices etc. and remedy existing solutions, whether permanent or

removable, that are currently not effective. YogaRamp is a folding and collapsible product able to respond to different space configurations. Its aim is to improve accessibility in urban locales through the development of innovative solutions.

Spain

Aqua Pioneers: promoting sustainable urban farming using aquariums. The project aims to promote sustainable urban farming in households, offices and schools with a process called Aquaponics, an ancient cultivation technique that allows cultivation on water without soil, making use of fish excrements as fertiliser. Through a collaborative partnership between Maker (Aquapioneers), and two Manufacturers (the Institute for Advanced Architecture of Catalonia and Nodo, a team of designers), the aim of the project is to test and develop the tools to develop the Aquaponic Kit.

Green Divisor 3D Clay Wall: promoting a modular system of 'flower beds' made of baked clay using 3D printing technologies, helping to build wall divisions and to create green domestic or urban spaces. A partnership between Abad Design, the Manufacturer, and Loitz as the Maker, the project aims to test the prototype and develop a green partition for outdoor spaces in architectural projects, that allows for flexibility as well as water retention and saving. This product once tested has the potential to be a strong market contender.

Slovakia

Automatic farm system for organic vegetable growing: testing and developing an automated system of ecological production, for households as well as large-scale agricultural production. Through a collaborative effort between Manufacturer (Grow Cube) and Maker (Parsnip, centred on IT and data analysis), the project aims to develop a prototype of autonomous raised bed garden driven by CNC machine - Farmbot and a software application based on the knowledge of ecological agriculture. It has the overall aim to contribute to sustainable food production with social and environmental impact.

Extreme Motors: creating integrated motors for solar transport. Through collaborative efforts between Maker/Innovator (extreme motor design) and two manufacturers (Osmos and SkModel), the project has visionary aims to develop integrated motors for solar transport and utilization of renewable energy. The project has high potential in the emerging solar transport industry, with positive spillover impacts in job creation and the environment through lowering of carbon emissions.

United Kingdom

Aqua Running an inclusive bodysuit to increase rehabilitation and wellbeing for all. Developed by a Maker with personal experience of rehabilitation in collaboration with a private manufacturing company based in China, the Aqua Running Bodysuit is a new technology to advance medical rehabilitation. It is a unique bodysuit which allows anyone of any age, ability or disability to exercise comfortably in deep water with no impact on bones, joints and muscles. This not only contributes to wellbeing but also to rehabilitation from illness and injury. Inclusivity is even embedded in the Maker's business plan: employing disabled workforce.

Microhome: affordable prototypes as a response to the housing crisis in the UK. Within the context of homelessness more than doubling in the last four years, the project aims to test an innovative solution through a partnership of Salford Makers, a multidisciplinary and creative group of practitioners, and a private social housing provider. It will test affordable liveable and workable spaces in a range of custom-built design prototypes, with a live residential community. The expected social impact is vast, at local, regional and national levels. It also aims to create a model for social businesses interacting with suppliers in social housing.

Analysis of the 40 Semi-Finalists in terms of connection and potential community-bridges:

Most common terms appearing from title and abstracts (Figure 8)

- Italy and Spain have high frequency of '3D'.

- UK uses ‘digital’ frequently that suggests the context of Creative & Digital (C&D) policies in the UK.
- Slovakia shows a smooth distribution with words such as design and prototype.

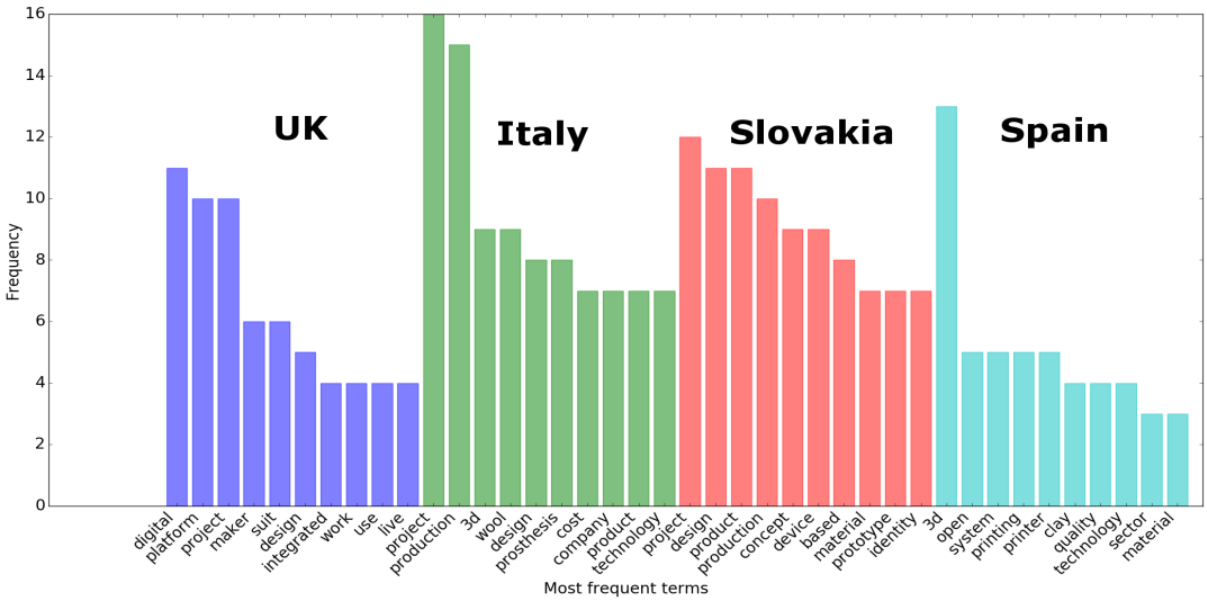


Figure 8 – Most common terms appearing in PSS semi-finalists titles and abstracts

Looking at the connections within the OpenMaker community, Figure 9 offers a graphical representation of the relations between the PSS semi-finalists. In the figure the colour of the nodes corresponds to the country of origin (Red = Slovakia, Purple = United Kingdom, Green = Italy, Light Blue = Spain), while their size is proportional to the strength of interaction. It is interesting to note that a number of strong connections exist especially between Italian ideas, and thanks to the similarity of technologies employed. This is reflected by the results of semi-structured interviews, which confirmed on the one hand strong connections further improved by the Italian LES, and on the other hand the creation of interactions across different LES around sectors and technologies, such as aquaponics and 3D printing.

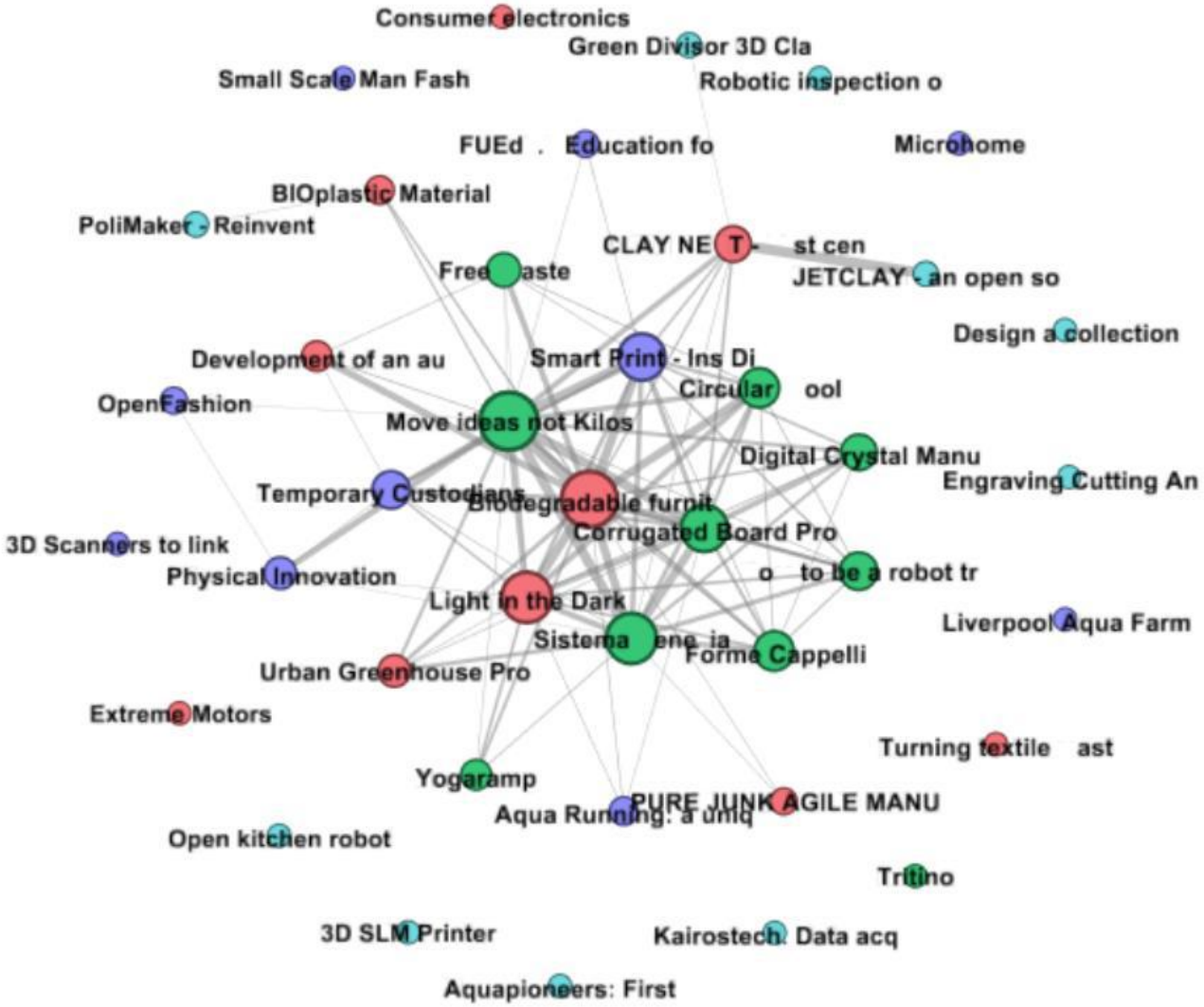


Figure 9 – Network of connections between PSS semi-finalists

Self-assessment form

In order to gauge the successfulness of the PSS winning ideas, the latter were requested to fill a self-assessment form at the end of the project. The winning ideas were asked to reflect on themes than ranged from the ability to prototype an innovation to their applicability, and scalability etc. The results once again confirm the tendency observed throughout interviews and other impact assessment instruments. Overall the project was deemed successful in providing makers and manufacturers the support they needed to produce actual prototypes through the help of a dedicated and skilful team, thereby working as an incubator of sorts, but also fostering an open innovation approach through cooperation between different stakeholders.

OpenMaker's ideas were on average slightly less successful in delivering results on the expected timeframe, and also in leveraging other resources as part of a wider strategy. Table 3 presents the aggregate results of the self-assessment form.

CRITERIA	RESULTS
1. Fostering collaboration between makers and manufacturers	8,39
2. Prototyping an innovation including products, production processes, supply or value chains, distribution or ownership	8,32
3. Having the potential to deliver a local social benefit and/or a wider social benefit	8,18
4. Having the potential to be sustained, scaled or replicated	7,74
5. Having the opportunity to be applied and/or demonstrate potential within the market place	7,85
6. Being supported by a team with skills and dedication to implement / deliver the innovation project	8,47
7. Being feasible / deliverable within the available resources and 9-month project timescale	7,60
8. Levering other resources, impacts or added value, being part of a wider strategy or programme	7,35

Table 3 – Aggregate results of self-assessment form

One of the most interesting results, especially from a comparative point of view, concerns the fact that with the exception of the Slovakian LES, all other ideas graded extremely high (from 8,33 to 8,90 compared to 7,13 in Slovakia) their potential to deliver a social benefit, with an aggregate value well over 8 out of 10 (8,18).

3.2. WP2 – Digital Social Platform – Social Media Analysis

In the context of WP2 activities, a range of analyses of the Digital Social Platform based on complex network science were conducted. These outputs are based on a series of analytic modules aimed at collecting information on the OM community. These are:

- **Spirometer**: produces time stamped user and community scores using the ids and twitter usernames of members from the CRM, influencers from watchtower.
- **OpenMaker Twitter Community Analytics**: produces community and member-based social network analysis (SNA) metrics, topics, and keywords using friends, followers, and tweets of the OM followers obtained from Watchtower. This information is used to gain insight about the community.
- **OpenMaker Network Analysis module**: produces maps and recommendations based on the tags declared by members. It uses complex networks methods described in deliverable D2.4.
- **Personalized Recommendation Engine**: For the purpose of providing member specific recommendation on content and persons computes complementarity, similarity, and social capital matrices and vectors database. Recommendations are provided to the Explorer that provides member-specific user experiences.
- **Text Analytics**: Produces psychrometric analysis of documents that are to be used in recommendation models.

From an impact point of view the most relevant of these are the network analysis module and the personalised recommendation engine.

3.2.1. Network analysis module

The network analysis module, which will be presented in more detail within D2.4, aimed at producing information on the evolution of the OM community, based on data concerning skills, interests and values (as well as geographical location) of community members. The purpose of such information is to provide users as well as the community manager with inputs on how to understand existing and potential

interactions as well as creating more efficient connections. Figure 10 presents a distribution of the community members based on the location declared during the onboarding and the betweenness centrality of the node, where a larger radius of the circle corresponds a higher importance of the node in the network.

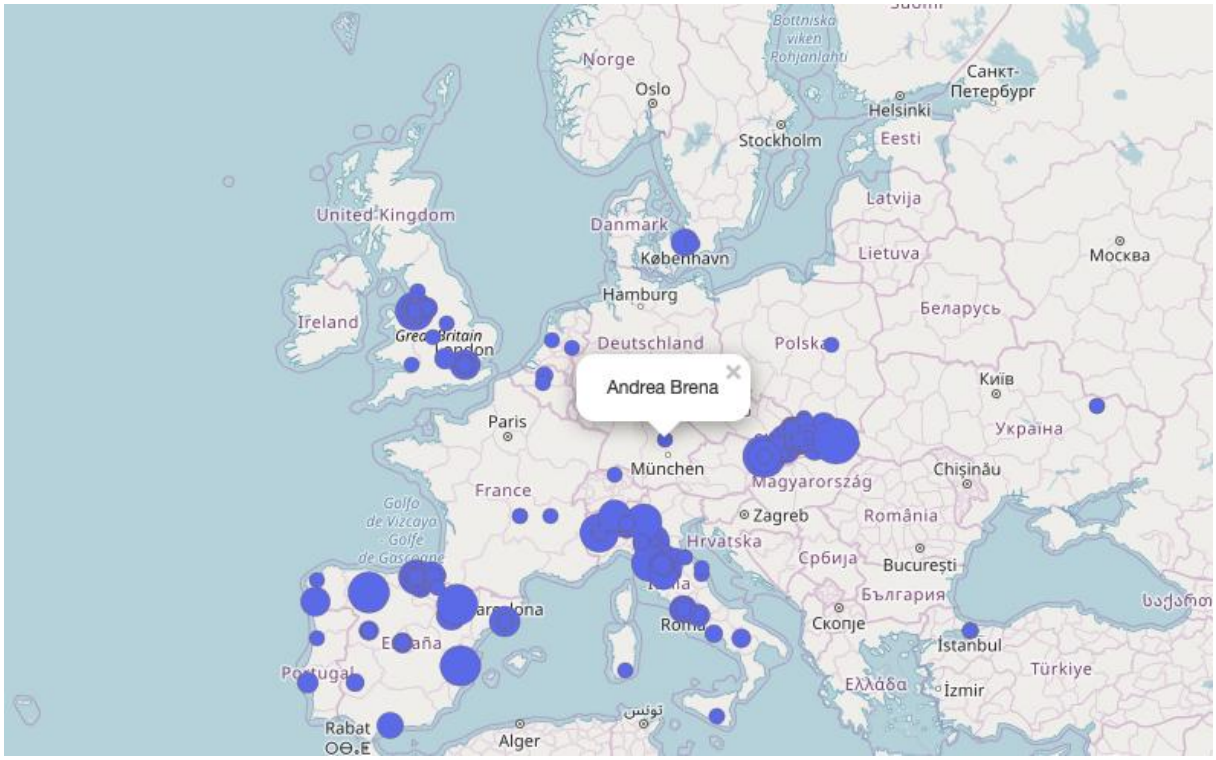


Figure 10 – Map of the OM community

Figure 11 presents a network overview of the community connection: every blue circle on the map represents a user, while each edge indicated that the two connected nodes share at least two tags (keywords signalling thematic interests that were selected during the onboarding form). This information was then used to identify sub-communities within the global OM community.

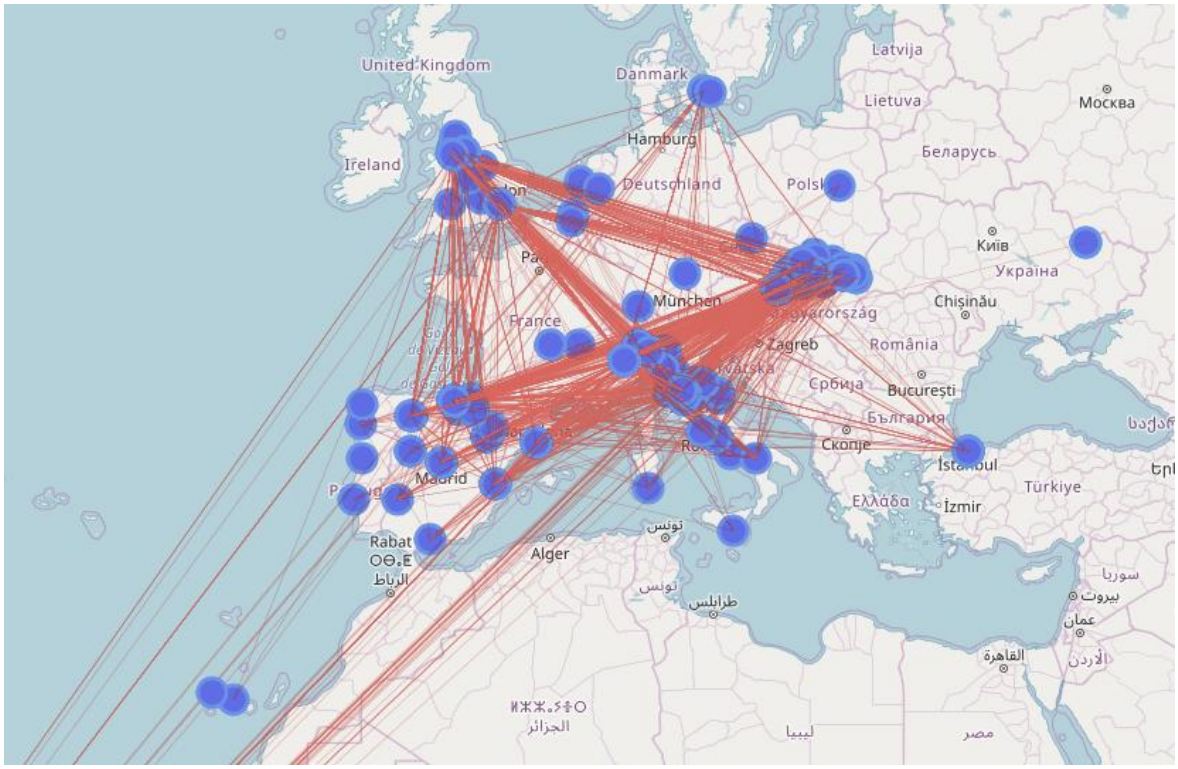


Figure 11 – Network map of the OM community

In order to further investigate the degree of connectedness within the DSP, a community detection algorithm has been applied to reveal other structure. A community is defined as a subset of members that share a number of connections larger with respect to the other members, i.e. is a subset of people that share a common set of tags and skills. Figure 12 shows the OM community divided in 8 subsets (identified with 8 different colours). The geographical and chromatic representations allow to understand how the OM community is indeed both connected (by interests, skils and values), and international, with these connections crossing national borders.

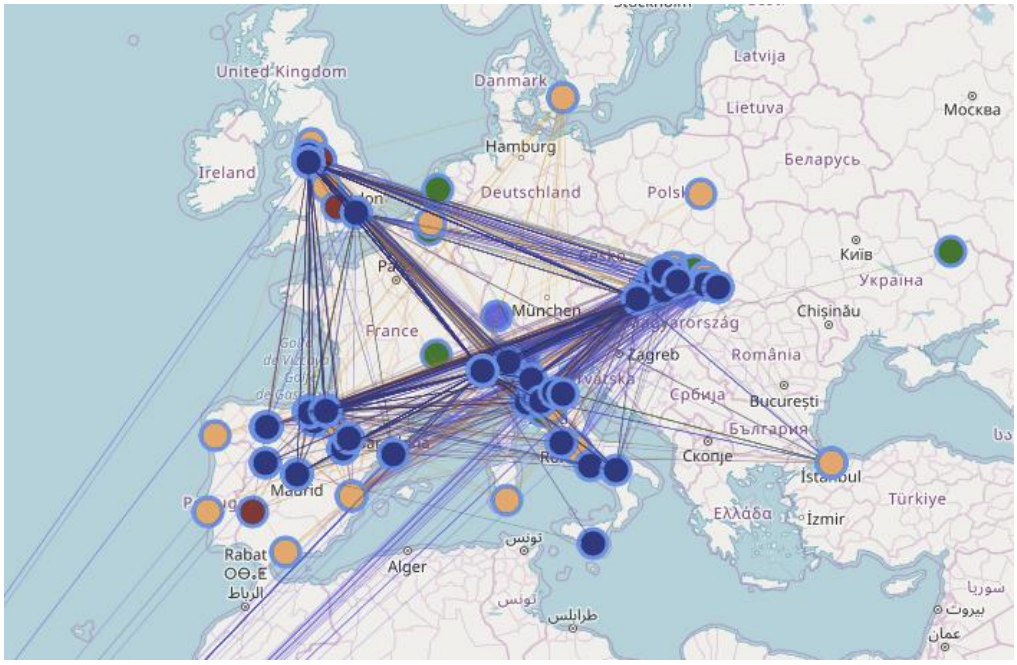


Figure 12 – Thematic Sub-communities of the OpenMaker Network

3.2.2. Personalized Recommendation Engine

The Personalised Recommendation Engine is a tool that allows a machine learning algorithm to suggest OM community members interactions a skills uptake based on their features. The approach adopted for the Personalised Recommendation Engine is based on actual data sets concerning values, skils and tag collected during the onboarding phase, that are fed into a machine learning model. Although this model will be analysed more in detail in D2.4, it can be noted that observed skills, technologies as well as project specifications within the community have been used to derive compatibility and similarity scores between pairs of members as of their area of interests. Their mutual and distinct social network connections were used to measure their affinity to collaborate, and their explicitly declared preferences regarding their collaboration behaviours are used both at ranking and filtering their potential collaborators.

Finally, the data driven technology and skill ontology were used to recommend new skills or technologies to acquire. Although the full functioning of the PRE will arguably achieved through a further refinement of its different components, it is important to highlight the impact that a similar tool can generate on a community such as

OpenMaker's: it will allow increased and more efficient cooperation between its members, as well as the evolution of their interests and skills, thus driving OM towards an increasingly more open and connected paradigm.

3.2.3. Other output of WP2 activities

The main dissemination activities carried out within WP2 in the context of the analysis of social media interaction and the DSP, concern primarily participation to conferences, academic and non-academic articles. Table 4 summarises the main outputs, which include 5 articles in the process of being completed/submitted, one submitted paper and 3 participations to international conferences.

ITEM	DESCRIPTION
Conference	**FINEXUS II**, Zurich-Switzerland (17-19.01.2018) (https://www.finexus.uzh.ch/en/events/conference-financial-networks-2.html) **Session**: Sustainable Finance and Citizens session link - Sustainable Finance & Citizens Engagement "Memes, values and worldviews" **Context**: Hamza Zeytinoglu (Clarifix Ltd/ BOUN) presentation on citizens engagement for collaboration and co-creation with examples from the OM research on Community Spirals and Values Mapping
Conference	**SIC Summer School**, Samsun-Turkey (9-11.05.2018) https://www.siceurope.eu/calendar/month/past-sic-events/previous-summer-school/sumsic-turkey-2018 **Session**: Social Platforms: Connecting the Innovators of Social Good and Co-design as Practice **Context**: Hamza Zeytinoglu (Clarifix Ltd/ BOUN) presentation on potential application areas for the OM DSP platform in the context of Social Innovation projects.
Conference	**SIC Final Event** "Beyond Imagination: a socially innovative Europe", Sevilla-Spain (12-13.01.2018) https://sicfinalevent.com/

	Session: Mainstreaming Innovation: Growing the visibility and impact of Europe's Social Innovation Community , Flyer offered to audience on Digital and Social Media mapping of Social Innovation actors **Context**: Hamza Zeytinoglu (Clarifix Ltd/ BOUN) presented in a break-out session an application of the Community Spirals and Values Mapping on twitter and digital media in the context of social innovation. The conceptual framework and the links to the OM DSP was discussed.
Publications (Submitted)	Semi-Supervised Psychometric Scoring of Document Collections **Journal submission (proceedings tba)**: IEEE International Conference on Data Mining, November 17-20.11.2018 in Singapore **Authors**: B. Suyunu, G.Ayci, M.Ogretir, S. Uskudarlı, B.Ozel, H.Zeytinoglu, T.Cemgil, A. Boyaci **Conference**: http://sentic.net/sentire/ Presented by Burak Suyunu (BOUN) **Target audience**: Data mining and Sentiment Analysis scientific communities.
Publications (Work in progress)	**Tentative title**: Location Prediction and Inference from Unstructured Social Media data **Authors**: Burak Suyunu, Gonul Ayci, Arman Boyaci, Enes Yalcin, Taha Kucukkatirci, Suzan Uskudarli, A. Taylan Cemgil, Hamza Zeytinoglu **Abstract**: Many profiles on social media are lacking a precise geographic location information. For example, on twitter only 10% of all the tweets are geotagged and about only 50% of users provide a textual location reference in their structured profile (which may or may not be true). However, it is often easy for a human being to guess the location at the level of a country or city from other 'context' but this task needs to be fully automated. In this paper, we will develop a probabilistic model for the inference

	of geographical locations from several information sources, such as the neighbors in a social graph, content shared by the user and the user's conversations. The algorithms are evaluated on the OpenMaker platform and implemented by the WatchTower.
Publications (Work in progress)	**Tentative title**: Personalized Recommendations based on data fusion from mixed data sources **Authors**: Berk Kocabagli, Güneykan Özgül, Burak Suyunu, Gonul Ayci, Arman Boyaci, Suzan Uskudarli, A. Taylan Cemgil, Hamza Zeytinoglu **Abstract**: We have developed a system, called Watchtower, for goal oriented harvesting and processing of social media data that is implemented as a backend module. The key goal of Watchtower is providing a structured and targeted social media monitoring service, aided by modern information retrieval and machine learning methodologies to go much beyond a simple web search. The central abstraction concept of the Watchtower is a topic, that can be created by any user by just providing a collection of anchor keywords. Once a topic is created by the user, we develop a set of related keywords and hashtags to enhance the topic definition. Subsequently, the social media data is concurrently monitored on various channels for accessible content related to each topic defined on the system. A flexible feature of the Watchtower is that it is designed to obtain data from several social media channels concurrently such as Instructables, Facebook, Google+, Twitter, Pinterest, Quora; it provides a unified view of publically available information for each topic, regardless of the source of data, organized under just four basic titles: • Audience (influential users around a topic) • News (Articles, blog posts) • Conversations (Discussions and Feedbacks) • Events (Past, Current, Future Events)

	This paper will describe recommendation and relevance ranking methods for a subset of the four titles (Audience, News, Conversations and Events) and we detail on evaluation mechanisms. Unlike most academic work on the subject of recommendation that is carried on static data, we are able to get feedback from the OpenMaker platform and perform A-B testing. We will illustrate that our methods tend to the quality of recommendations.
Publications (Work in progress)	**Tentative title**: Goal oriented and cost aware data access for efficient data framing using Markov Chain Monte Carlo **Authors**: Burak Suyunu, Gonul Ayci, Arman Boyaci, Hamza Zeytinoglu, A. Taylan Cemgil **Abstract**: When processing social media data from Twitter or any other platform a perceived problem is that data are essentially unbounded whereas the access bandwidth and disk space are limited. Hence algorithms have to be developed that are aware of these limitations. This paper deals with the simplified and idealized problem of generating recommendations when access to data is associated with a cost and a useful subset of the data needs to be identified; we refer to this problem as data framing. As a particular computational problem in this context, we will focus on matrix factorization using stochastic gradient descent. Stochastic Gradient selects only a single matrix entry at each iteration, and for convergence multiple passes over data must be carried out. In our approach, we will assume that only a very small subset of the entries of the target matrix are available to us initially. We denote this set as our 'working set' and we assume that we are able to do unlimited computation on the current working set. We will in parallel maintain a sampler that targets a Bayesian matrix factorization model that only runs conditioned on the working set. The goal of the sampler is to estimate the information gain to be obtained with each matrix entry, as

	measured by the uncertainty, such as the predictive variance. We will investigate mechanisms for the selection of the next entry to be included in our working set. Evaluation metrics will be adopted for this problem and several selection criteria will be compared.
Publications (Work in progress)	**Tentative Title**: A Recommendation Model to Bridge Communities via Social Semantic Approaches **Authors**: IMT, BOUN, UZH **Abstract**: Recommendation models typically focus on recommending content that falls in the interest of a user by identifying content and/or users that are similar to themselves. The cases of expanding a user's network with not so similar or even complementary is less examined. However, there are cases where recommendations that complete missing know-how to strengthen the network are called for. This work proposes an approach for bridging such gaps via semantically annotating social media content for use in a recommendation algorithm based on social network analysis to matching offerings. (A simple ontology may be utilized to represent for describing offers). Furthermore, the values of the parties will be factored into the recommendation in order to promote awareness as well as yield more suitable recommendations.
Publications (Work in progress)	**Tentative Title**: A multi-agent simulation model on open maker community formation dynamics **Authors**: Bulent Ozel, Angelo Facchini, Hamza Zeytinoglu, Guido Caldarelli, Stefano Battiston, Taylan Cemgil, Suzan Uskudarli, Laura Martelloni **Abstract**: We introduce an agent-based simulation model (ABM) that enables us to create a controlled experimentation set-up where we are able to address underlying dynamics around community formation and experiment a set of trust-rank metrics. From an ABM perspective, we conceive a community formation phenomena as the emergent results of members' interactions in

	complex social, cultural, geographical, and political environments. In that sense, the agent-based simulation modelling is employed to better understand impacts of individual and collective choices on emerging community specific values and social and/or collaboration network structures of maker communities. The outcome of such an exercise (i) may enable the enablers to compare different offline strategies towards acceleration of their community formation, (ii) may lead to gain informed insights for adjusting features of the OpenMaker digital social platform, (iii) may help to derive policy recommendations at promoting sustainable maker communities elsewhere.

Table 4 – WP2 dissemination activities

Beside strictly academic activities, the work carried out within WP2 resulted in a series of potential partnerships, which include the Middle Black Sea Regional Development Agency (Turkey), Loughborough University (United Kingdom), ASHOKA Turkey, Urban Workshop (Poland), Re-Imagine Europa (Belgium), Nesta (United Kingdom), Social Innovation Exchange - SIX (United Kingdom), and the project Social Innovation Community.

3.3. WP4 – Outreach and Exploitation

The role of WP4 was to engage a broad audience of citizens, researchers, policymakers and the user groups of makers and manufacturers in order to impact society by conveying the scalability and transferability of OpenMaker. Throughout the project, the strategy in terms of outreach and exploitation was to engage audiences as broadly as possible. In order not to miss any of the audiences (makers, manufacturers, innovators), the communication strategy was wide and touched different platforms and communication instruments. OpenMaker's outreach and exploitation strategy therefore aims at engaging multiple stakeholders across a wide array of traditional and new communications platforms, as well as through face-to-face interactions, in a more efficient and accessible manner.

3.3.1. Online Engagement

Online engagement was monitored mainly through OpenMaker's website and the project's Facebook, Twitter, YouTube accounts. A positive trend was registered throughout the last reporting period, with significant increases in terms of outreach, whereas the gender bias remains a trait of the project, with the audience twice more likely to be male rather than female (67% versus 33%). In terms of geographical origin, the most engaged countries outside the ones which hosted an OpenMaker's LES and/or staff were the United States, India and Indonesia.

Facebook

- 385 followers (107% growth from last reporting period), 358 likes (101% growth)
- Weekly Total Reach: 647 reaches
- Daily Engagement: 5 users per day

Twitter

- 1102 followers (273% growth from last reporting period);
- The account gained around 2.25 new follower per day over the last 12 months.

Audience:

Interests	Audience %
Tech News	92%
Science News	91%
Space and astronomy	90%
Technology	89%

Table 5 – Twitter audience by interest

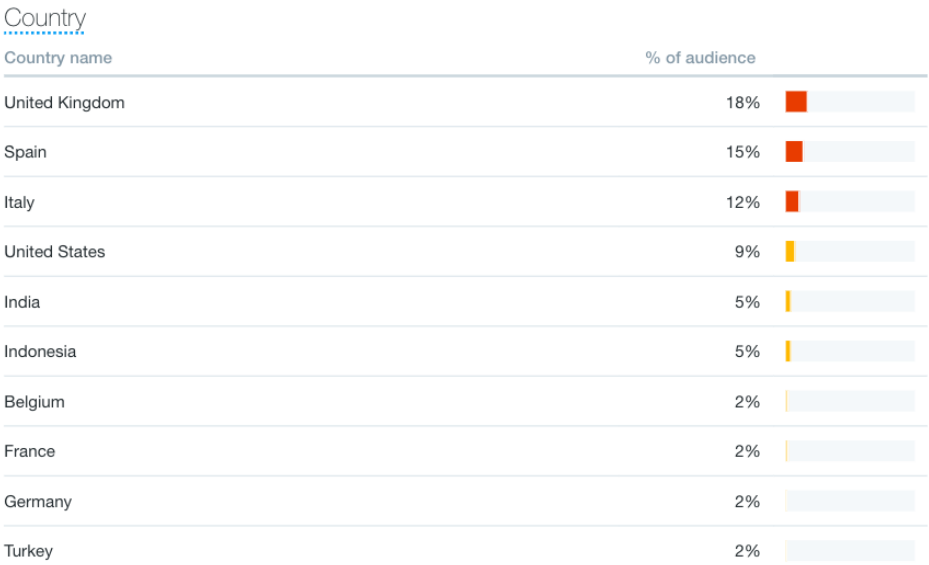


Figure 13 – Twitter audience by country

YouTube and Videos

- A total of 26 videos were produced and posted on the project's YouTube channels and media page on the website

Website (From 20 November 2017 to 15 December 2018)

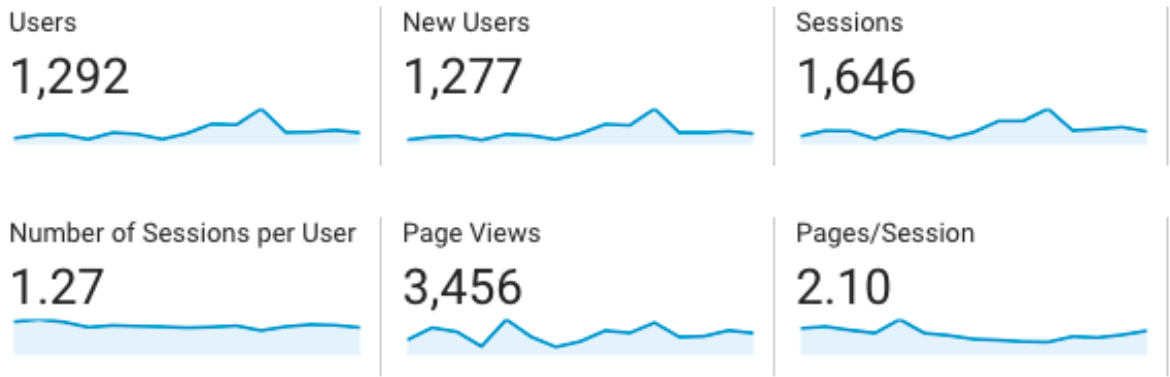


Figure 14 – OM website statistics

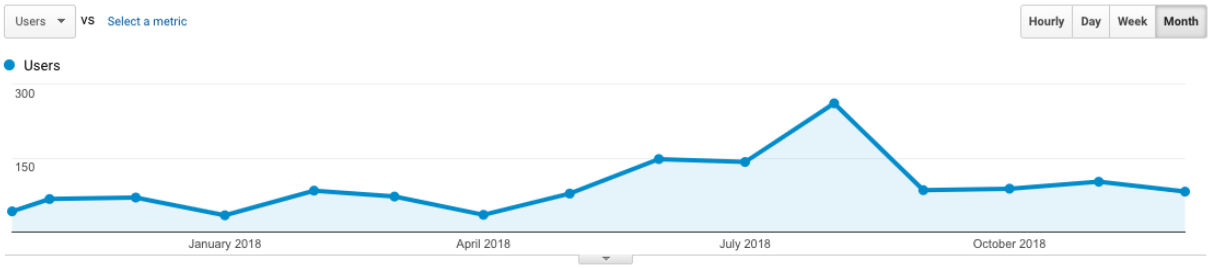


Figure 15 – Evolution of OM website statistics (Nov 2017 – December 2018)

3.3.2. Offline Engagement

Offline engagement was deemed by a majority of LES enablers a crucial element of the project, serving as the backbone of the communities in which the different activities have evolved. A strong emphasis was placed by each LES in the organisation of physical events, as testified by the large numbers provided in Table 6. Interestingly, there appears to be two different approaches to offline engagement – one in which all effort was devoted to put in place a large number of self-organised events (for example, it is the case of Slovakia, with 45 events against an average of 27.5), and another approach, which pushed less on self-organised events and more on the participation to third parties events (for example, the British LES organised 26 events, but participated to 20 third parties events, while the average across all LES is 11.25), which demonstrate a tendency to cross the borders of one's Local Enabling Space, and to build upon links and partnerships with other local entities. Locally organised events were 155, with a total of 6139 participants. At the international level OpenMaker participated to a total of 19 events between academic conferences, business festivals and maker faires.

	Self-organised events	no. of participants	Third parties' events	no. of participants
UK	26	551	20	1240
Spain	13	642	8	312
Italy	26	997	13	495
Slovakia	45	998	4	904
	110	**3188**	**45**	**2951**

Table 6 – LES and third parties' events

Date	Name of the event
1-2/2/2017	Digital Social Innovation conference in Rome, Italy
02/02/2017	Start-up Europe Initiative in Brussels
10/02/2017	Start-up panel and pitching, London
26-27/4/2017	StartUp Olé Inititative in Salamanca
23/05/2017	Digital Social Innovation Manifesto Workshop
24/05/2017	Machinery and Electro engineering Fair in Nitra, Slovakia
09/06/2017	Bratislava Design Week - International Festival of Contemporary Design
29-30/6/2017	EC WIRE conference in Kosice
10/07/2017	2nd CAPS Community Workshop
21/09/2017	Co-creation Workshop organised by H2020-funded project WE LIVE
24-28/9/2017	Oslo Innovation Week attendance
15/01/2018	Finexus Conference
08/03/2018	Woman entrepreneur of the year Award Event in Naples
19/03/2018	Start-up Europe Campfire in Paris
19 - 24/03/2018	Maker Fablab Santander
2-3/5/2018	Italy RestartsUp in London

6 – 7/6/2018	Digital Social Innovation Fair in Rome
12/06/2018	International Business Festival, Liverpool
13-14/6/2018	UrbanM Policy Clinic

Table 7 – OM participated international events

Another important activity of offline engagement was the high-level policy event "Hacking policy for the Maker Movement" held at the European Parliament on the 22nd of May 2018, hosted by Mr. Georgi Pirinski MEP and chaired by Luisa De Amicis, COO at PlusValue, with participation from Pēteris Zilgalvis, Head of Unit Startups & Innovation (DG Connect). The Policy Workshop aimed at stirring a debate about the European Industrial Policy Framework of the future was attended by MEPs and representatives of the European Commission as well as a total of 50 guests among innovators and practitioners.

4. Concluding remarks

Looking back at the whole project from the point of view of its impact, it should be firstly noted that OpenMaker has had many of the desired effects on a diverse range of stakeholders, and for this reason the overarching question “are we doing any good?” shall be answered in the positive. In order to delve deeper into the analysis of the project’s impact, the latter will be dissected into 2 categories: impacts on the open manufacturing and makers communities and impacts on society as a whole.

Impacts on the open manufacturing and making communities

One of the most important results of OpenMaker was to support the open manufacturing and making communities by providing innovators a platform and a forum for collaboration and knowledge sharing. OM has first and foremost connected a wide range of actors (makers, manufacturers, incubators and fab labs, innovators in general) active in an extremely innovative environment, and offered them the means to test new processes and products.

Most activities carried out within the project, including especially the Pilot Supporting Scheme and the Digital Social Platform had precisely the purpose of supporting cooperation between different actors and providing them with the resources and environment that allowed them to experiment an open paradigm. Although the results monitored are premature and true impact will be evaluated several months from now, some encouraging effects can be noted. First of all, more than 20 business ideas born out of collaboration between makers and manufacturers have sparked from the PSS: they have been selected, supported, evaluated, and many of them are now beyond the prototyping phase and getting ready to face the market. This is an outstanding impact, especially because it was able to generate effects in four extremely different countries, and because it exploited a previously untapped potential, i.e. that of collaboration between two worlds (manufacturing and making) that with few exceptions still tend to speak different languages.

Beside the results of the PSS, the project also put a strong emphasis on the creation of an OpenMaker community by offering innovators around Europe a platform to collaborate to compete on business-driven challenges and to join forces to transform

the way manufacturing is conceived. The most successful way in which such mission was achieved is the European network of Local Enabling Spaces, a group of four pre-existing (socially orientated) business incubators which through OM scaled-up their commitment to the open making paradigm. As analysed in the previous sections, all four LES were successful in creating opportunities for both existing makers and manufactures, and to expand the outreach of OpenMaker within local communities. Although the full effects of the Digital Social Platform are still to be seen, due to the fact that its definitive version has not had enough time to prove its efficiency, the DSP was another cornerstone of OM's impact in terms of supporting the creation of an identifiable community and the promotion of the open making and manufacturing paradigm.

Impacts on society as a whole

Although it is hard to single out the impacts of OpenMaker on society as a whole, some of them are rather evident. First of all, OM contributed to bring forward more sustainable means of production by connecting a local entrepreneurial fabric, which had suffered gravely from the outcomes of the financial and economic crisis of 2009, with a base of young innovators who similarly had found themselves in a hostile socio-economic environment. Beside the evident result of creating the conditions for a segment of society to find a way out of economic instability, though, OpenMaker also offered the basis for a dialogue on how to revolutionise the manufacturing sectors by advancing more sustainable (both environmentally and socially) practices. The orientation of the winning ideas towards social and environmental sustainability is a clear sign of the impact on society of OpenMaker, which was further increased through activities (such as the impact workshops) directed at amplifying and scaling those orientations.

Looking at the bigger picture the main impact OpenMaker has had on society was to prove the feasibility and transferability of a similar project, and therefore to open the door for future experimentations on a bigger scale. In this sense and through its policy activity, OM also helped to identify the domains for policy intervention in terms of regulation, legal measures, technology and institutional reorganisation that would be necessary at different governance levels to allow for such scale-up. Although in

this sense the future of the open manufacturing will hinge on the ability to capitalise on the successes of similar experiment, OpenMaker has planted an important seed to build upon.