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SECOND DISSEMINATION, COMMERCIAL EXPLOITATION, AND SUSTAINABILITY REPORT

D7.3

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25	ZANNINI-SPA	ZAN	Italy
26	FERRAM STROJIRNA SRO	FERRAM	Czech Republic
27	HYDAL ALUMINIUM PROFILER AS	Hydal	Norway
28	NABLADOT SL	Nabladot	Nabladot
29	ENDEF ENGINEERING SL	ENDEF	Spain
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DOCUMENT HISTORY

Version[1]	Issue Date	Stage	Content and Changes
V0.1	11.02.2020	Deliverable Structure.	Structure defined
V0.2	23.02.2020	All inputs delivered.	Dissemination report, marketing & design approach and commercial exploitation and sustainability plan for the Digital Marketingplace have been delivered.
V0.3	06.04.2020	1st quality check.	Corrections of the quality ckeckers have been included.

[1] Integers correspond to submitted versions

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1 EXECUTIVE SUMMARY

This deliverable will report on all dissemination activities during the second period of the project (M19-M30). The deliverable will describe all dissemination activities conducted, dissemination and training events organised and attended, and community feedback collected and analysed. It will also describe IPR management.

Further this deliverable will report on all the commercial exploitation, impact and sustainability activities in the reporting period. The report will include detailed analysis of the impact planned and achieved by experiments and the project as a whole. Moreover, it will describe commercial exploitation and sustainability plans of experiments and the Digital Marketplace (delivered by project partner SUPSI). Commercialisation also deals with the later appearance of the Digital Marketplace (DM) and connected marketing and communication goals.

Therefore, this deliverable will include a graphic layout draft for the CloudiFacturing Project result, the emGORA Digital Marketplace, created by project partner cloudSME. The first layout draft has been created in March 2019 and it was further developed in this project period in several meetings of the project consortium – especially in close collaboration between WP6, who defined the general requirements for design of a digital marketplace, and WP7.

2 INTRODUCTION

This deliverable has been created based on the detailed description of WP7 objectives and tasks in the dissemination plan in close collaboration of the work package leader with the project coordinator and the partners, as well as the DIHs. cloudSME as the WP7 leader is responsible for the content of the deliverable which was produced and shared with partners for review, feedback and contributions.

The aim of this deliverable is to present a 9-month report on the dissemination and communication activities carried out by the project partners within the framework of the CloudiFacturing project. It outlines the dissemination and communication objectives and strategies of the reporting period and presents the instruments, tools and activities used to achieve the objectives defined in the dissemination plan.

3 I4MS

3.1 Joint activities between the IAs and the CSA

This chapter describes the activities in which the IAs and the CSA have decided to cooperate by creating collaboration links and setting up an action plan to carry them out. The activities identified will leverage on the cooperation with related ecosystems and initiatives and have been planned to follow the opportunities arisen at EU and partners' level.

In order to make the most out of the participation in events, during each monthly call the CSA is informing about the EU upcoming events in order to plan a joint participation if possible and identify

events of common interest. Moreover, the connections among all projects done via other members of the ecosystem or project partners have been the main driver of joint participation in events.

DIHs Annual event, 27-28 November 2018. The Digital Innovation Hubs Annual Event was set up with the aim of reinforcing the capacity of DIHs to support European companies in their digital transformation. SMEs, start-ups, research and technology organisations, DIHs and policymakers from all around Europe joined this world class event. The presence of Mariya Gabriel, European Commissioner for Digital Economy and Society, and Jadwiga Emilewicz, Minister of entrepreneurship and technology Poland, rewarded the effort made, whilst participating and endorsing it in many phases of the event. They took a main role in the Disruptors Awards prize awarding session. In numbers, the DIH Annual Event congregated around 30 representatives of EU member states, 60 speakers (experts in their respective fields) and around 400 attendees. It also allowed 12 application experiments to showcase their developments. I4MS CSA was the coordinator of the event, together with the Polish Ministry of Technology and DG CONNECT, European Commission. The active participation of I4MS IAs and beneficiaries was during the following activities:

I4MS Panel "SUCCESS STORIES FROM SUPPORTED SMES" & Disruptors Awards Prize: the session aimed to present examples of SMEs having received financial support from different funding mechanisms and technological support from DIHs for their digital transformation. They shared how this opportunity helped them grow and the importance of having worked in an international environment. The panel enabled participants to learn about the challenges and barriers faced by SMEs and learn how DIHs could address them through their various services.

- Luis Pérez, Nabladot, Spain (CloudiFacturing, I4MS)
- Andreas Ocklenburg; cloudSME, Germany (cloudSME, I4MS)
- Clara García, COMPASSIS, Spain (Fortissimo, I4MS)
- Stefan Meulesteen, Montr BV, Netherlands (Tetramax, SAE)
- Cyril Chabert, WEGOTO, France (FED4SAE, SAE)

Also, during the DIHs Annual Event held in Warsaw I4MS CSA organised a workshop together with representative of all IAs, MIDIH, AMable, CloudiFacturing, L4MS and BeinCPPS (IAs active during phase II) for DIHs on training for SMEs. The discussions covered the type of skills needed and who should be providing training to adapt the EU workforce to the new competences required. Educational institutions were pointed out as important part of delivering specific trainings and identifying key challenges of the workforce.

FIGURE 1: THE PARALLEL SESSIONS OF THE REGIONAL DIHS WHERE CLOUDIFACTURING WAS PRESENT.

ICT Event Vienna, 4th-6th December 2018. Co-organised by the European Commission and the Austrian Presidency of the Council of the European Union, took place in Vienna. This research and innovation event attracted 4800 visitors and focused on the European Union's priorities in the digital transformation of society and industry. I4MS CSA and CloudiFacturing participated with a networking session coordinated together with the Smart Anything Everywhere (SAE) initiative, its name was "From experiment to market: SAE & I4MS support in cascade funding projects". Also, CloudiFacturing brought one beneficiary of an Application Experiments, LCM, to have the vision of a participant in I4MS calls and give their vision on the initiative. Before it, a brief presentation of I4MS was given with its fields of work and open calls. Also, the I4MS CSA and again CloudiFacturing and some of the DIHs having supported SMEs were present at the booth.

Mobile World Congress. **25th – 28th February 2019.** The largest mobile event in the world, bringing together the latest innovations and leading-edge technology from more than 2,400 leading companies, with a highly rated conference programme assembling today's visionaries to explore the hottest topics influencing the industry[1]". Also, daily sessions on 2019 open calls were displayed at the MWCB stand. Every day, at 11:15, one of the active Innovation Actions under I4MS umbrella were invited to give a pitch of 15 minutes of their projects. L4MS and CloudiFacturing answered the call.

[1] Mobile World Congress, 2019, https://www.mwcbarcelona.com/attend-mwc/. Accessed 24th January 2019

Smart Business Festival in Bratislava. 24th September 2019. I4MS and CloudiFacturing presented the open calls and best practices when it comes to funding digital transformation experiments. The event took place in Bratislava, Slovak Republic, it was strategic in order to promote the open calls in this EU area given the low number of participants from the Eastern European countries.

Smart Business Festival Czech Republic. 23rd October 2019. The festival was opened by Deputy Prime Minister for Economy and Minister of Industry and Trade of the Czech Republic. Mayte Carracedo, FundingBox, introduced the I4MS Initiative and other examples of financing the development of digital innovation in Europe. Cascading funding helps small and medium-sized businesses take advantage of technologies that would otherwise be unavailable to them. E.g. I4MS financed Estonian companies to buy a robot that helped them improve their production process. Tomáš Karásek, from IT4Innovations of the National Supercomputing Center of VŠB-TUO Ostrava, representing CloudiFacturing**,** spoke about support within the CloudiFacturing project - the way to higher competitiveness of European companies. The idea behind the National Supercomputing Center is to enable small and medium-sized businesses to optimize their technologies and processes using CloudiFacturing.

Stakeholders forum 2019. 13th -15th November 2019. This year's Digitising European Industry Stakeholders Forum, DEIForum2019, gathered 624 attendees, 50 panellists and 15 stands and over 1800 tweets shared Europe's vision on: "Artificial Intelligence and Digital Innovation Hubs - beyond 2020". I4MS was represented in a stand and also in the different panel session where example of successful application experiments supported by the Innovation Actions participated giving their vision. During these days, Ms. Mayte Carracedo, coordinator of the CSA for I4MS, leaded a panel discussion composed of DIHs and SMEs on how to involve more SMEs in digital transformation, during the Parallel Session "Digital Innovation Hubs - success stories". I4MS has also announced the winner of the 2019 edition of the I4MS Disruptors Awards: Elaphe Propulsion Technologies. Finalists from CloudiFacturing have been our experiment partners NablaDOT, Hanning Elektro-Werke and i-Deal.

FIGURE 2: LEFT TO RIGHT: ANTONIO GOMEZ FROM NABLADOT (FINALIST), MAYTE CARRACEDO (I4MS), LUKA AMBROZIC (WINNER), MATTHIAS KUOM (EC), RALF DE LA HAYE FROM HANNING ELEKTRO-WERKE (FINALIST), AND ALESSANDRO CANEPA FROM I-DEAL (FINALIST).

3.1.1 I4MS catalogue of DIHs expanded

The catalogue of DIH included in the I4MS website, gathers the information of the DIHs created with the support or under the sponsorship of I4MS during Phase II and also those actively participating in the IAs. With the aim of giving visibility to the DIH working within the I4MS technologies, the I4MS CSA has updated 3 times the catalogue and included 22 new DIHs in the last update (September 2019). This information was also used to include an updated map of DIHs and their main technological expertise.[2]

FIGURE 3: MAP OF EUROPEAN DIHS.

[2] Sources: I4MS brochure 09/ 2019 and I4MS website.

3.2 I4MS-SAE label identity

At the end of 2019 the SAE initiative decided to create a label to be assigned to SMEs that participated in the labelled experiments to prove the excellence of their experiment when requesting further support to regional governments, but also to national funding bodies and Digital Innovation Hubs (DIHs). The I4MS-SAE Label recognises the value of the AEs and helps other funding bodies to get access to the best innovators who have a connection to the specific region. Ultimately, the goal is to give visibility to strong and well-performed application experiments at regional level to inspire other SMEs to start adopting digital transformations.

The I4MS-SAE label was designed and approved by the IAs and all companies selected by the IAs received a personalised certificate together with a guidelines for SMEs on how to use this label.

The I4MS CSA elaborated a background document shared with the IAs in order to establish the rationale, the criteria to award the I4MS-SAE label and the next steps. With the feedback of the IAs the criteria under which the label is awarded were selected considering the performance of the AEs and the ambition.

In CloudiFacturing, the companies having received the label are the following:

- Hanning Elektro Werke, from Nordrhein-Westfalen, Germany, Experiment “OPTIMIZING DESIGN AND PRODUCTION OF ELECTRIC DRIVES” from project CloudiFacturing
- Linz Center of Mechatronics, from Upper Austria, Experiment “OPTIMIZING DESIGN AND PRODUCTION OF ELECTRIC DRIVES” from project CloudiFacturing
- Endef, from Aragon, Spain, Experiment “OPTIMIZING SOLAR PANEL PRODUCTION” from project CloudiFacturing
- Nabladot, from Aragon, Spain, Experiment “OPTIMIZING SOLAR PANEL PRODUCTION” from project CloudiFacturing
- CloudSigma, from Zürich, Switzerland, Experiment “OPTIMIZING SOLAR PANEL PRODUCTION” from project CloudiFacturing
- i-Deal, from Piemonte, Italy, Experiment CAPSUle from project CloudiFacturing
- TroTusTex, from North East Romania, Experiment CAPSUle from project CloudiFacturing

FIGURE 4: I4MS CERTIFICATE OF EXCELLENCE

4 DISSEMINATION ACTIVITIES AND RESULTS

The importance of disseminating knowledge and achievements from research projects has been recognized by the European Commission as one of its most important arrangements. Dissemination of results is a contractual obligation of participation in research initiatives supported under the European Union's Horizon 2020 research and innovation programme.

Like in past deliverables, we have made clear that the specific aims of this plan are to promote knowledge sharing, greater public awareness, transparency and awareness. Although, it is also an opportunity to publish the benefits of the results of the SMEs involved and thus have the tools to be more efficient in the face of the challenges of digitization worldwide. This aspect may provide a look into to the Project's future once it is completed and it will be possible able to commercialize it.

4.1 Webpage analysis

As we stated before, the Project's website plays multiple roles as:

- A communication resource to promote the Project, objectives reached, Open Calls and news about the experiment's partners
- A communication resource to update about the results and outcomes from the respective experiment's wave
- A communication resource to inform about events, conferences, scientific papers release and attendance at trade fairs

Below, we show you the CloudiFacturing's timeframe from the 1st. of May 2019, to the 25th of February 2020. It can be seen that the traffic was higher during the months in which the Open Calls were open, as a result of increased dissemination and outreach performed independently by partners and DIHs.

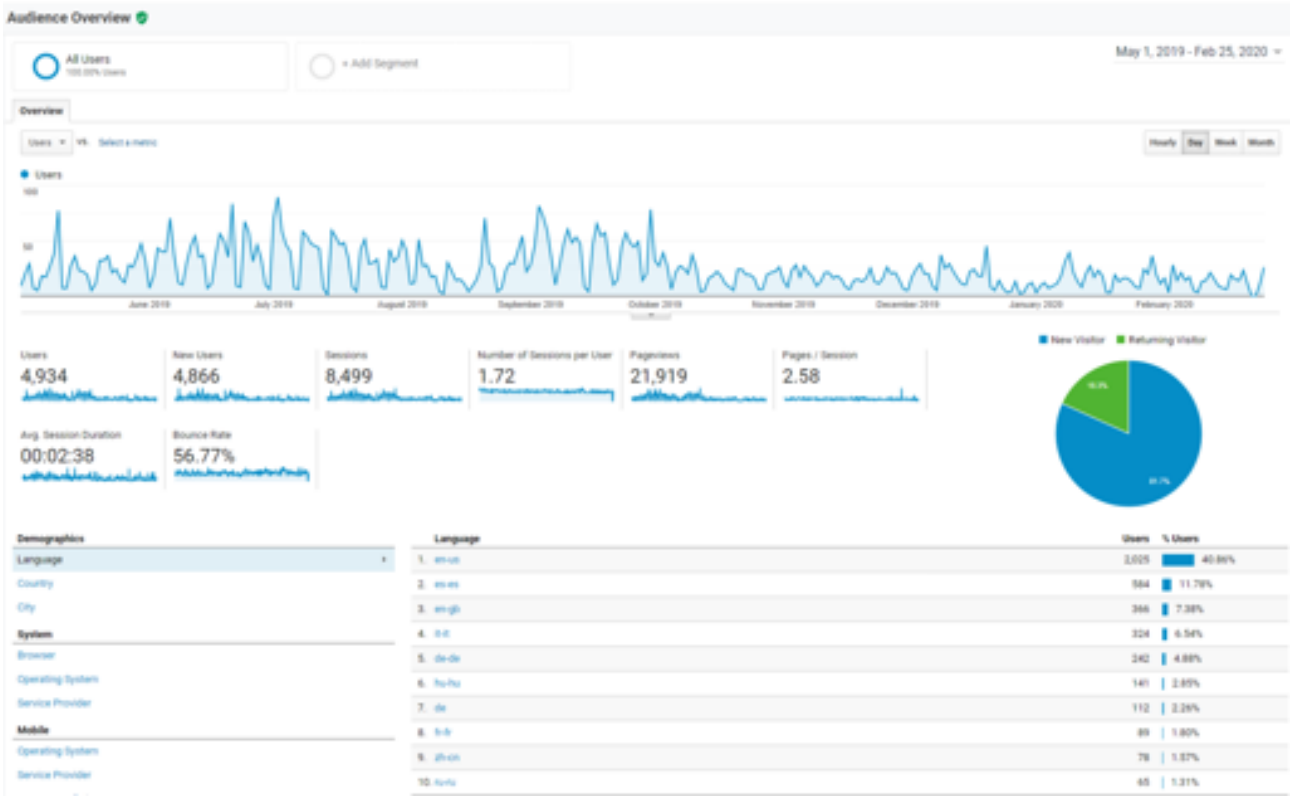
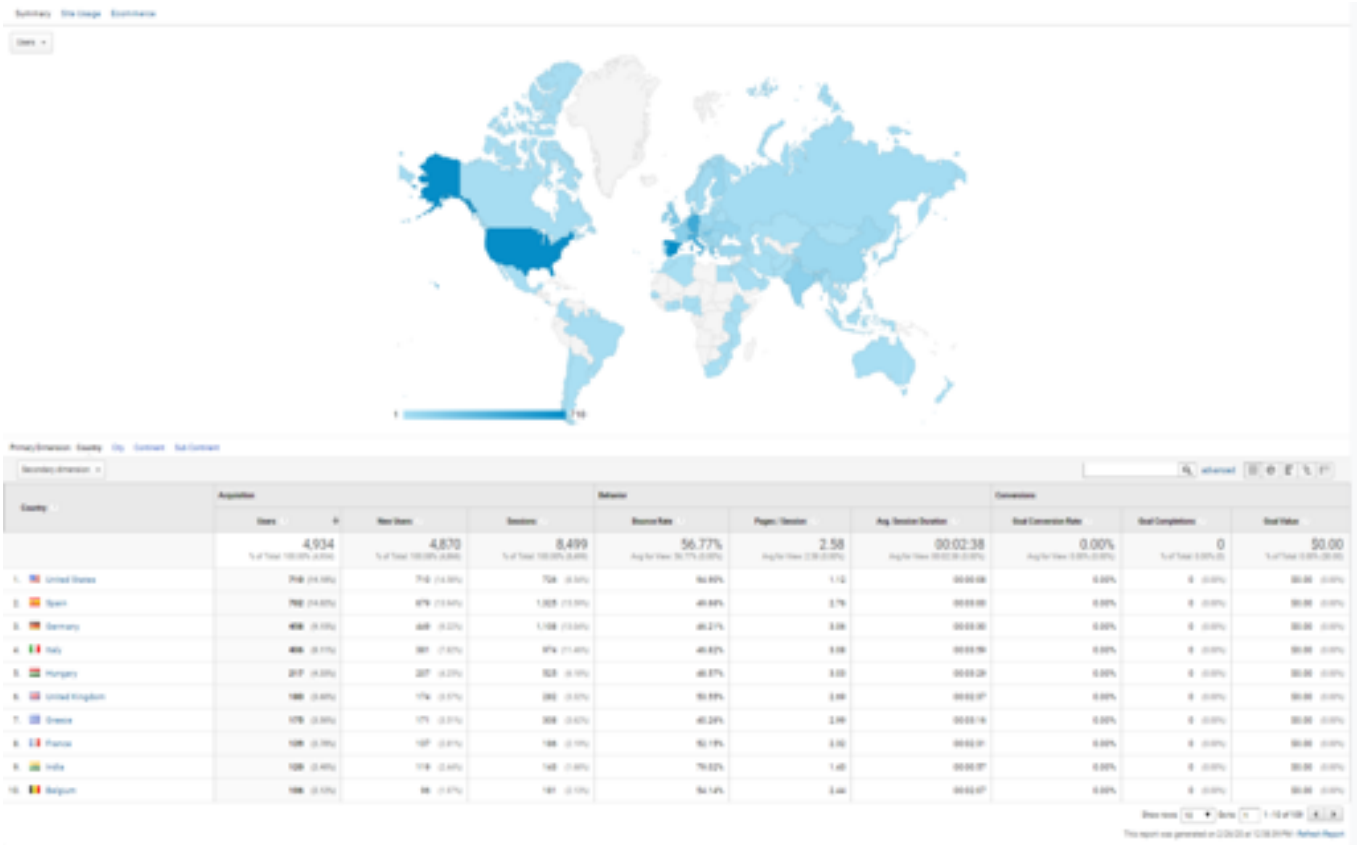


FIGURE 5: WEBSITE TRAFFIC OF CLOUDIFACTURING.EU BETWEEN MAY 2019 AND FEBRUARY 2020.

On this image, we can take a look at the countries which visited CloudiFacturing's website and United States of America is on the first place, followed by Spain and Germany.



	Users	New Users	Sessions	Bounce Rate	Pages / Session	Avg. Session Duration	Goal Conversion Rate	Goal Completions	Goal Value
	4,934	4,870	8,499	56.77%	2.58	00:02:38	0.00%	0	$0.00
1. United States									
2. Spain									
3. Germany									
4. Italy									
5. Hungary									
6. United Kingdom									
7. Greece									
8. France									
9. India									
10. Belgium									

FIGURE 6: MAIN COUNTRIES WHICH VISITED THE CLOUDIFACTURING WEBSITE.

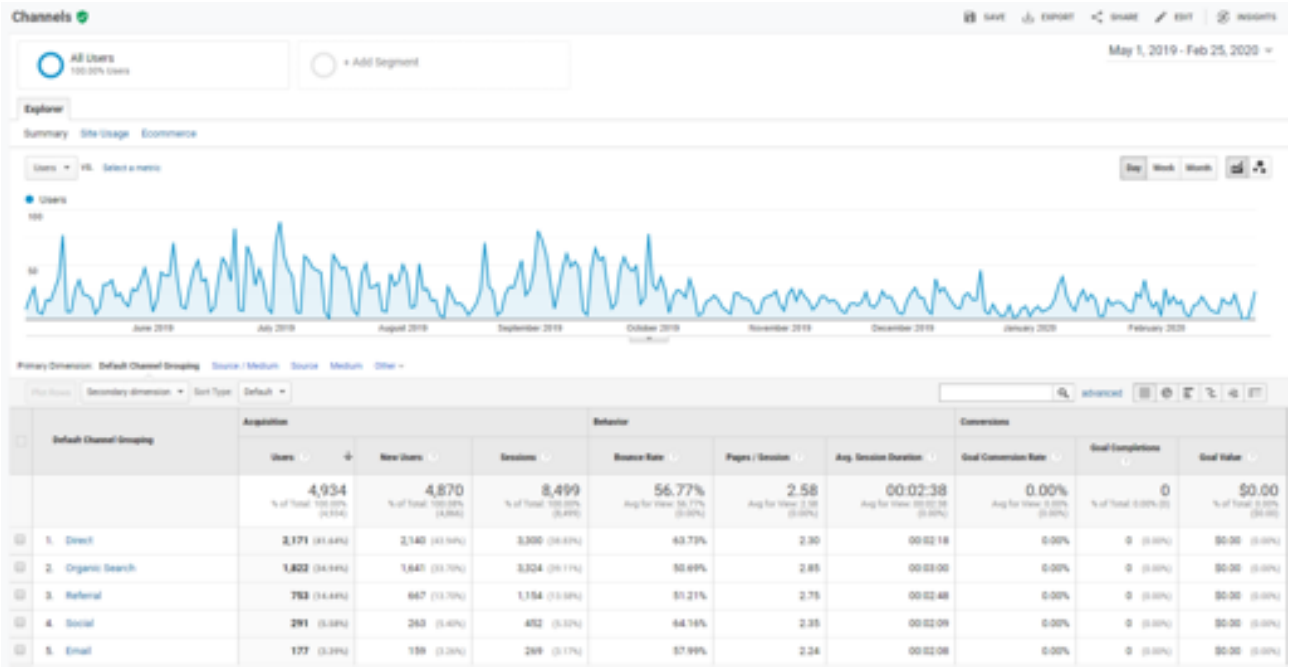


FIGURE 7 : WEBSITE VISITORS BY SOURCE.

4.2 Newsletter

As stated before, the function of the newsletter is to highlight project results and include project and external news, as well as any information regarding the experiments partners and other relevant information like webinars, fair trades, conferences, open calls, etc.

The newsletter will be sent out to:

- Project partners
- Stakeholders database contacts
- Any other interested individuals

4.2.1 Newsletter #5

The fifth newsletter (Figure 8) was sent to 737 recipients, including 77 bounces, with a delivery rate of 660 emails successfully delivered. The total opens were 699, the unique opens 184, unique clicks 23 and an overall click of 39.[3]

[3] **Bounce rate**
Description: If an e-mail cannot be delivered, the newsletter tool receives a bounce message.

Total opening rate
To measure the opening rate a so-called counting pixel is built into the e-mails (HTML or text) as an image. If this is downloaded, the server of the Newsletter Tool registers the opening. This indicator allows you to see on an individual person level who is "open". Since most e-mail clients block the automatic downloading of images, this type of measurement is not very reliable. As a rule, the real opening rate should be higher than indicated in the statistics.

Unique opening rate

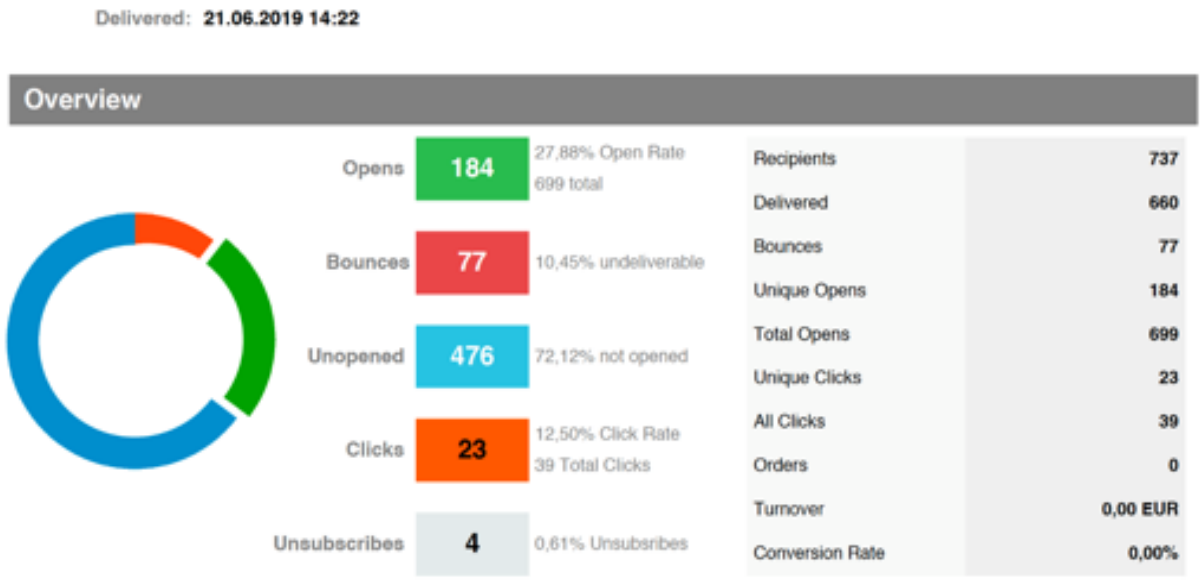


FIGURE 8: OPENING RATE OF NEWSLETTER #5

The explanation given in the footnotes indicates that the newsletter has an opening rate which is above the average (27,88%).[4] The number of total opens shows that recipients were highly interested in the content displayed. The number of clicks (unique & total) indicates that that either recipients were informed sufficiently by the information shown in the newsletter or they didn't find it interesting enough to click further. This might be a hint, that there could be more work on teasers that create curiosity. Unsubscribes were mostly due to regular revisions of mailing lists and the deletion of no longer existing e-mail addresses.

Unique opens are, in contrast to total opens, defined as the number of the distinct recipients that have opened your campaign. For each recipient that has opened your campaign, only one open is added to the Unique opens sum, no matter how many times the recipient has opened and reopened the newsletter they received.

Unique click rate
Description: The server of the newsletter tool can register the click through a special tracking link that redirects to the actual URL target. With the "unique" click rate each recipient is counted exactly once. The click rate is considered the most important key figure in email marketing, since it is assumed that someone who clicks is really interested.

Total click rate
Here it is measured how often all recipients have clicked together - in contrast to the "unique" click rate, multiple clicks also count. This indicator can be used, for example, in newsletters with several topics to determine whether readers click on more than one link

[4] According to a study conducted by Newsletter2go.de, the average opening rate of newsletters is 25 percent. The basic data for their statistics is over 390 million emails sent via Newsletter2Go from June 30, 2018 to June 30, 2019. They looked at over 29 industries in terms of open rate, click-through rate, click-through rate, unsubscribe rate and bounce rate. Source: Newsletter2go.de, Klickraten & Öffnungsraten im E-Mail Marketing – Der große Branchen-Benchmark (Translation: „Click rates & opening rates in e-mail marketing - The big industry benchmark"), 2019, https://www.newsletter2go.de/whitepaper/klickraten-oeffnungsraten-newsletter-benchmark/, last opened on 2 April 2020.

The opening rate of newsletter #5 states that most openers were German. That might be due to German customer base of cloudSME who has been taken into account in the mailings. (Figure 9)[5]:

Origin

	Country	Opens	% Open Rate
1.	Deutschland	(304)	38 %
2.	United states	(106)	13 %
3.	Lithuania	(76)	10 %
4.	Spain	(53)	7 %
5.	Österreich	(45)	6 %
6.	Italy	(42)	5 %
7.	Belgium	(20)	3 %
8.	United kingdom	(17)	2 %
9.	Romania	(8)	1 %
10.	Turkey	(8)	1 %

FIGURE 9: RECEIVERS OF NEWSLETTER #5 BY COUNTRY.

4.2.2 Newsletter #6

The sixth newsletter (Figure 10) was sent to 678 recipients of which 671 were successfully delivered. There were 7 bounces, 188 unique opens and 468 total opens. Additionally, there was an overall of 36 clicks.

Delivered: **17.09.2019 14:15**

Overview

Opens	188	28,02% Open Rate 468 total
Bounces	7	1,03% undeliverable
Unopened	483	71,98% not opened
Clicks	25	13,30% Click Rate 36 Total Clicks
Unsubscribes	4	0,60% Unsubsribes

Recipients	678
Delivered	671
Bounces	7
Unique Opens	188
Total Opens	468
Unique Clicks	25
All Clicks	36
Orders	0
Turnover	0,00 EUR
Conversion Rate	0,00%

FIGURE 10: OPENING RATE OF NEWSLETTER #6.

[5] Translation of the graphic: 1. Germany, 2. United States, 3. Lithuania, 4. Spain, 5. Austria, 6. Italy, 7. Belgium, 8. UK, 9. Romania, 10. Turkey.

The countries the newsletter #6 was delivered to, counted with the following opening rate (Figure 11):

Origin

	Country	Opens	% Open Rate
1.	Deutschland	(180)	35 %
2.	United states	(59)	12 %
3.	Turkey	(48)	9 %
4.	Spain	(47)	9 %
5.	Italy	(23)	5 %
6.	France	(13)	3 %
7.	Greece	(13)	3 %
8.	Österreich	(12)	2 %
9.	United kingdom	(11)	2 %
10.	Poland	(11)	2 %

FIGURE 11: RECEIVERS OF NEWSLETTER #6 BY COUNTRY.

4.2.3 Newsletter #7

The seventh newsletter (Figure 12) was sent to 697 recipients of which 664 were successfully delivered. There were 33 bounces, 160 unique opens and 361 total opens and an overall of 61 clicks.

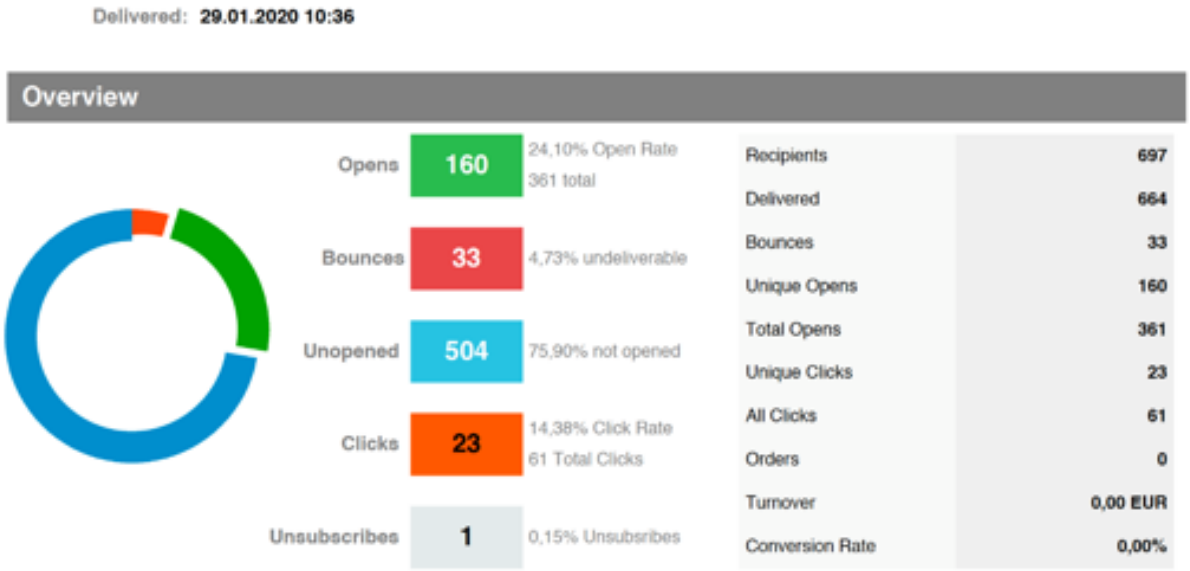


FIGURE 12: OPENING RATE OF NEWSLETTER #7.

Origin			
	Country	Opens	% Open Rate
1.	Deutschland	(154)	29 %
2.	United states	(124)	23 %
3.	Italy	(27)	5 %
4.	Spain	(24)	5 %
5.	Österreich	(19)	4 %
6.	United kingdom	(10)	2 %
7.	Poland	(10)	2 %
8.	Portugal	(6)	1 %
9.	Netherlands	(6)	1 %
10.	Croatia	(5)	1 %

FIGURE 13: RECEIVERS OF NEWSLETTER #7 BY COUNTRY.

4.3 Social Media

With the increasing popularity of social media platforms, scientific work and scientific publishing have undergone major changes in recent years. The way in which society and researchers use the web has inevitably changed.

Therefore, the social media profiles are one of the most important tools we count with, and it plays an important role in the CloudiFacturing project in order to ensure visibility and its results for a broader audience.

Contributions and updates to the developments and news of the project are published at regular intervals. Similarly, stories and news are shared that are relevant to both the public and our stakeholders.

4.3.1 Twitter

Twitter is a very helpful tool to spread information to the wider public and a more business oriented, politicly interested target group at the same time. It helped us to bring news and updates quickly and to the point on a twice per week basis. Sometimes, due to the variety of information that were available we have posted almost daily.

Our list of followers has grown by an average of 9 people per month, meaning we have 82 more followers and a total of 229.

In the table in **Appendix 1** gives a brief overview of the values achieved so far for the most important social media key indicators for Twitter during the timeframe between May 2019 and February 2020.

4.3.2 Facebook

We have noticed in the past two years that Facebook is a useful tool for spreading information about the participation in events, trade fairs and conferences. As it's a more community oriented network it regularly provokes more reactions in the CloudiFacturing community. Posts were sent out on average 4 times a week.

The following figure (Figure 14) shows the estimated reach of posts on the CloudiFacturing Facebook page as well as the total reach of CloudiFacturing content on Facebook (Figure 15), which includes shares and ads for example. It can be seen that traffic clearly increased in the months and especially at the beginning of the last open call.

FIGURE 14: FACEBOOK POST REACH

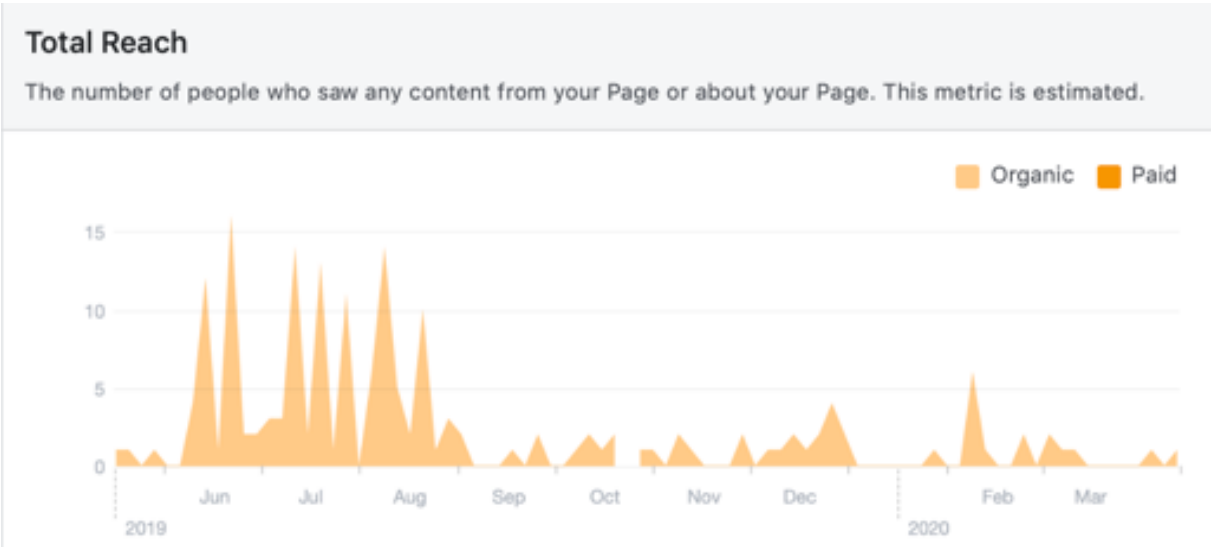


FIGURE 15: FACEBOOK TOTAL CONTENT REACH

The tables in **Appendix 2** also give a brief overview of the values achieved so far for the most important social media key indicators for Facebook.

4.3.3 LinkedIn

In LinkedIn, which is a social media application that puts in contact with other professionals, we have a closed group with 34 members. These members were part of the first two waves of experiments.

In this group we post news about the development of the project, as well as interesting news the partners would like to share with us in a closed way.

The table in **Appendix 3** gives a brief overview of the LinkedIn posts the group CloudiFacturing made for the timeframe of May 2019 and February 2020.

4.4 Dissemination Activities executed by the Consortium Partners

The Consortium Partners have done their own dissemination activities by attending different sorts of events disseminating the CloudiFacturing project. The following list covers the events from February 2019 to March 2020. The actual reporting period covers the months from March 2019 to March 2020, but due to the fact that some information on dissemination activities hasn't been available at the time of submission of D7.2, they weren't included. Therefore, they are listed in this deliverable. This procedure will be the same in D7.4 to ensure, all dissemination events are reported.

Date D/M/Y	**Participants**	**Event name**	**Audience/dissemination level and quantity**	**Additional Information**
2019				
21/2/19	nablaDot	Nafems Workshop	Scientific/academic/research	Attended as participant
25-28/2/19	CFG, nabladot	MWC2019	Researchers, Technical crew, Decision makers, Politics	Speaker and participant
26/2-1/3/19	nablaDot	Genera (Energy Fair)	Companies representatives	Attended as participant.
11.03.19	clesgo	Open Innovation Kongress Baden-Württemberg 2019	Scientific community, Industry, General Public, Policy makers, Medias, Investors, Customers	Attended as participant
14-15 March, 2019	CFG	2nd. European Simulator Users Conference	Researchers, Technical crew, Decision makers, Politics	Speaker
14-19 March 2020	CloudSME	CloudFest	Researchers, Technical crew, Decision makers, Politics	Attended as participant
21-22/3/2019	Innomine	Startup Europe Summit	SMEs, startups, innovators	Attended as participant
28-30/3/19	Machineering, Nissatech, UniBo	MECSPE	Scientific community, Industry, General Public, Policy makers, Medias, Investors, Customers	Attended as participants. Machineering held a presenation on CFG.
01-05/04/19	CloudiFacturing, Fraunhofer, cloudSME, clesgo, DFKI, INSOMNIA, ScaleTools	Hannover Messe	Scientific community, Industry, General Public, Policy makers, Medias, Investors, Customers	With booth
01-05/04/19	cloudSME	CAE Forum	Scientific community, Industry, General Public, Policy makers, Medias, Investors, Customers	2 Presentations
2/4/19	Innomine	Smart Conference	Scienific community, business, policy makers	Attended as participant

3/4/19	STAM, clesgo, Innomine	6th meeting of the Working Group on Digital Innovation Hubs	Scientific, academic, researchers, industry	Attended as participants
9-10/4/19	Fraunhofer	ProSTEP iViP	Scientific, academic, researchers, industry	Attended as participant
10/04/19	i-Deal	Alliance meeting, organised by Stam	Defence and technical clothing. +-35 px	Attended as participant
24/4/19	Innomine	InnoPécs (Pécs)	Manufacturing SMEs, ISVs, university	Presentation / main leader
24/4/19	Innomine	Networkshops (Győr)	Industry, Scientific community, Policy Makers	Presentation / main leader
24/4/19	Innomine	Alliance (Training, Budapest)	Industry, Scientific community, Policy Makers	Organizer.
14-17/5/19	TTT	Messe Frankfurt	Technical textile and clothing manufacturers and machinery producers. +-500 px	Attended as participant
21-23/5/19	Innomine	ADMA - Advanced Manufacturing training, case study	Industry	Attended as participant
27/5/19	IT4I	Meeting of platform for DIHs	DIH representatives, policy makers. +-50 px	Attended as participant
27-31/5/19	Fraunhofer	WSCG 2019 - 27th International Conference on Computer Graphics, Visualization and Computer Vision	Scientific, academic, researchers, industry	Fraunhofer IGD held a presentation there.
28/5/19	Innomine	Smart Factory Hub Final Conference on The Future of Manufacturing	SMEs, manufacturing companies	Attended as participant
28-30/5/19	Fraunhofer	Siemens PLM	Scientific, academic, researchers, industry	Attended as participant

5/6/19	INSOMNIA	Open Insurtech Hub	SMEs, companys, RTOs, University, Public Authorities. +-80px	Organizer (along with other corporates)
6/6/19	Innomine	Alliance (Workshop, Budapest)	Industry, Scientific community, Policy Makers	Organizer.
11/6/19	SZTAKI	Horizon 2020 – Horizon Europe Forum (organized by NKFIH)	higher education, Research, Industry, Civil Society, Policy makers, Medias	Presentation
12/6/19	SZTAKI	Industry 4.0, innovation and clouds (seminar of special college at OE)	Higher education	Presentation
13/6/19	IT4I	27th SVSFEM ANSYS Users' Group Meeting and Conference	Researchers, engineers. +-60px	Attended as participant
19/6/19	IT4I	Smart Export Forum 2019	Policy makers. +- 130 px	Attended as participant
20/06/19	Vodena	Belgrade AI #2	Policy makers, companies, researchers. +- 450 px	Attended as participant
20-26/06/19	TTT	ITMA	Textile and clothing manufacturers and machinery producers. +-500 px	Attended as participant
22-23/6/19	SUPSI	Factories of the future Community days	Policy makers. +-100	Attended as participant
25-27/6/19	Fraunhofer	RapidTech	Policy makers, scientific, academic, researchers, industry	Attended as participant
26/6/19	IT4I	First regional workshops for DIHs	DIH representatives, policy makers. +- 100 px	Attended as participant

26-28/6/19	ITAINNVOA	BDV PPP Summit	BD scientifics, partitioners, DIHs and EU authorities. +-200 px.	Presenter
27/6/19	INSOMNIA	Innsomnia TECH SUMMIT 2019	SMEs, companyes, corporates, startups. +-120px.	Organizer and host
1/7/19	Insomnia	Seventh meeting of the Working Group on Digital Innovation Hubs	Industry, Scientific community, Policy makers	Participant
4/7/19	SZTAKI	Horizon 2020 and Evaluation Forum (organized by NKFIH)	higher education, Research, Industry, Civil Society, Policy makers, Medias	Presentation
5/7/19	Fraunhofer / UoW	CloudiFacturing 2nd Open Call – 2nd Q&A session	Industry, Startups, SMEs, companies	Organizer and host
11/7/19	Stam	IEEE Services 2019 Industry Program	Researchers, Industrial Stakeholders. +-320px.	Attended as participant
16-18/7/19	Fraunhofer	Daimler EDM CAE Forum	Scientific, academic, researchers, industry	Attended as participant
20/7/20	DENN	Farnborough International Airshow 2020	Industrial customers. +-1000px	Attended as participant
28/7 - 2/8/19	Fraunhofer	SIGGRAPH	Industry and R&D+-130px.	Attended as participant
7-9/19	Fraunhofer	CloudiFacturing 2nd Open Call	Industry, Start-ups, SMEs, Tech-Companies	Organizer
7-15/9/19	CERTH	Thessaloniki International Fair 2019	Industrial stakeholders and general public. +- 500 px	Attended as participant
13/9/19	Fraunhofer / UoW	CloudiFacturing 2nd Open Call – 2nd Q&A session	Industry, Startups, SMEs, companies	Organizer and host
9/19	DFKI	11. Innovationstag der SmartFactory-KL	visitors 40	Attended as participant

18-19/9/19	Innomine, SZTAKI	ICT Proposer's Day	Policy makers, scientific, academic, researchers, industrial players. +-1000 px	Attended as participant. SZTAKI gave a workshop there.
20/9/19	Stam	ICT Proposers' Day	Policy makers, scientific, academic, researchers, industrial players. +-1000 px	Attended as participant
23-25/9/19	CERTH	12th International Conference on Computer Vision Systems (ICVS 2019)	Academia & Research. +- 60 px	Attended as participant
24/9/19	IT4Innovations	Smart Business Festival SK	Policy makers, researchers, DIH representatives. +- 120 px	Attended as participant
25/9/19	INSOMNIA	Forum VLC Tech	SMEs, companyes, corporates, startups, Public Authorities. +-180px.	INSOMNIA has participated in this event with its own stand
30/9 – 2/10/19	Fraunhofer	24th International Symposium on Vision, Modeling, and Visualization	Industry and R&D. +-230px.	Attended as participant
2-4/10/19	INSOMNIA, Innomine	South Summit	SMEs, startups, entrepreneurs, innovators, industry, public authorities. +-150px.	INSOMNIA has participated in this event with its own stand
04/10/19	i-Deal	Linea Pelle	Leather and clothing manufacturers and machinery producers. +- 800px	Attended as participant
10/10/19	CERTH	Z-Fact0r Industrial Workshop	Industrial end-users and stakeholders. +-40 px	CERTH has organised this event
16/10/19	INSOMNIA	Ports 4.0 Program Presentation	SMEs, startups, entrepreneurs, innovators, industry, public authorities. +-35px.	INSOMIA has organised this event
16-23/10/19	BMS	K-MESSE	Plastic processors, machinery buyers. +- 500 px	Attended as participant

17-19/10/19	INSOMNIA	Retail Future CV	SMEs, startups, entrepreneurs, innovators, industry, public authorities	INSOMNIA has participated as a speaker in this event
21/10/19	INSOMNIA	Ports 4.0 Program Presentation	SMEs, startups, entrepreneurs, innovators, industry, public authorities. +-60px.	INSOMIA has organised this event
22-23/10/19	i-Deal	3DBodyTech		Attended as participant
23/10/19	IT4Innovations	Smart Business Festival CZ	Policy makers, researchers, DIH representatives. +- 100px	Attended as participant
24/10/19	INSOMNIA	La digitalizadora de Castilla León - 2da edición	SMEs, startups, entrepreneurs, innovators, industry, public authorities	INSOMIA has organised this event
29/10/19	RBF-Morph / RINA Consulting	CAE Conference	Business and technology people in the Simulation-based Engineering scene	Attended with oral presentation
Oct/Nov 2019	ITAINNOVA/THO/BMS	Tercer Milenio	Scientific/Technological Newspaper Booklet (Heraldo de Aragón). +- 30px	Attended as participant
3-4/11/19	Insomnia	Digitalisation and New Technologies in Agri-food and S3P Agrifood's International B2B meetings	DIHs, Policy makers, Public Authorities, European Commission, Corporates & SMEs	Participation as a DIH
4-7/11/19	INSOMNIA	Websummit Lisbon	SMEs, startups, entrepreneurs, innovators, industry, public authorities	Attended as participant
5/11/19	DENN	Blechexpo	Industrial customers. +- 300 px	Attended as participant
6/11/19	DENN	Fabtech	Industrial customers. +-150 px	Attended as participant
6-9/11/19	BMS	Moldplas	Plastic processors, machinery buyers	Attended as participant

8/11/19	Stam	CoF - 2019	Policy makers, scientific, academic, researchers, industrial players. +- 500px.	Attended as participant
13-15/11/2019	ITAINNOVA, IT4Innovations, i-Deal	Digitising European Industry Stakeholder Forum 2019	General. +-1200 px	Attended as participant, i-Deal held a presentation there.
14-15/11/2019	Fraunhofer	Spatial European Workshop	Scientific, academic, researchers, industry	Attended as participant
19-21/11/2019	Fraunhofer	3DEXPERIENCE Conference	Scientific, academic, researchers, industry	Attended as participant
24-27/11/19	Fraunhofer	CHANGE Scientific Workshop	Scientific, academic, researchers, industry	Attended as participant
26-28/11/2019	DFKI/SmartFactory-KL	SPS IPC Drives	trade visitors 65700 (2018)	Attended as participant
28/11/19	UNott	Connected Everything II	Scientific, Academic. +-200px	Attended as participant
2/12/19	UNott	Trust, Privacy & The Internet of Things Early Career Workshop	Scientific, Academic. 30px.	Organizer
2/12/19	IT4I	Workshop: European User Industry Taskforce	Policy makers, industry, researchers	Attended as participant
3/12/19	Insomnia	Digitalization, industrialization, I+D+i: financing opportunities and challenges	SMEs, Startups, companies, public authorities	Attended as participant
3-4/12/19	Insomnia	Digitalisation and New Technologies in Agri-food and S3P Agrifood's International B2B meetings	DIHs, Policy makers, Public Authorities, European Commission, Corporates & SMEs	Participated as a DIH
09-12/12/19	Nissatech, Lund University	IEEE BigData 2019	Academic, industry. +- 120 px.	Attended as participant

16/12/19	Insomnia	Open Innovation: how to digitise your company	SMEs	Attended as participant
12/2019	DFKI	Study on UI design and usability	Students of Kaiserslautern University >=15px	Attended as participant and organizer
2020				
1/2020	Stam	Stam tech center launch	Researchers, Industrial Stakeholders. 50px.	Attended as participant
27-29/1/ 2020	Insomnia	Paris Fintech Forum	Coporates, SMEs, entrepreneurs, policy makers	Attended as participant
2/2020	Stam	START 4.0 thematic workshop	Researchers, Industrial Stakeholders 50px.	Attended as participant
24-29/2/20	CFG, cloudSME, Insomnia	MWC2020	Researchers, Technical crew, Decision makers, Politics	Webinar due to the cancellation of the event. I4MS led presentation by cloudSME. Insomnia intended to have its own stand there.
14-19/3/2020	*cloudSME*	*CloudFest*	*Researchers, Technical crew, Decision makers, Politics*	*Participation planned. Event has been cancelled due to the Corona Pandemic.*

FIGURE 16: DISSEMINATION ACTIVITIES EXECUTED BY THE CONSORTIUM PARTNERS

4.5 Press Releases

The Second Press Release the CloudiFacturing project released was on **April 29, 2019** and it was disseminated to proper media outlets (press, web portals, chambers, other H2020 projects for its distribution).

This Press Release was distributed through several channels and networks which ensured a broad awareness of the Project across the spectrum of relevant European stakeholders:

- E-Newsletter
- Social Media (Facebook, Twitter)
- LinkedIn groups
- Relevant EC projects and initiatives
- DIHs

Other partners are encouraged to publish articles and press releases at regional, national and international level, making use of their own communication networks and channels.

The press release for the 2019 Open Call, was sent to numerous channels which included: Tech news websites, chambers and tech media.

The images in **Appendix 4** show where the press release was published.

4.6 Patents, trademarks, registered designs

The following is the applications for patents, trademarks, registered designs, etc. that were made within the reported period.

LIST OF APPLICATIONS FOR PATENTS, TRADEMARKS, REGISTERED DESIGNS, ETC.					
Type of IP Rights[6]:	***Confidential Click on YES/NO***	***Foreseen embargo date dd/mm/yyyy***	***Application reference (s) (e.g. EP123456)***	***Subject or title of application***	***Applicant (s) (as on the application)***
Patents	YES	08/04/19	2018P61570 DE	GPU-based Polynomial Finite Element Matrix ssembly for Simplex Meshes	Fraunhofer-Gesellschaft
Trademark	NO	N/A	EUTM 018036885	SemWES	clesgo GmbH

FIGURE 17: PATENTS, TRADEMARKS, REGISTERED DESIGNS IN THE REPORTED PERIOD.

[6] A drop down list allows choosing the type of IP rights: Patents, Trademarks, Registered designs, Utility models, Others.

4.7 Scientific Publications

The following scientific peer-reviewed publications on project-related topics were produced and published during the third reporting phase.

LIST OF SCIENTIFIC (PEER REVIEWED) PUBLICATIONS, STARTING WITH THE MOST IMPORTANT ONES										
No	**Title**	**Main author (s)**	**Title of the periodical or the series**	**Number, date or frequency**	**Publisher**	**Place of publication**	**Year of publication**	**Relevant pages**	**Permanent Identifiers (if available)**	**Is /will open access provided totthis publication?**
1	Joint schedule and Layout Autotuning for Sparse Matrices with Compound Entries on GPUs	Johannes Sebastian Mueller-Roemer	Vision, Modeling and Visualization	---	The Eurographics Association	Rostock, Germany	2019	---	DOI:10.2312/vmv.20191324 ISBN: 978-3-03868-098-7	yes
2	(SUBMITTED)Reference architecture based multi-cloud orchestration of Spark for machine learning	Enikő Nagy	Advances in Engineering Software journal	1	Elsevier		2019			yes
3	Paper: "A Digital Twin cloud-based architecture to enhance quality control in manufacturing processes and foster waste reduction."	RBF Morph, RINA Consulting, ANSYS Inc., CMS, DFKI and University of Rome "Tor Vergata".	---	---	---	---	2020	---	---	
4	PAVED: Pareto Front Visualization for Engineering Design (accepted for EuroVis 2020)	Lena Cibulski, Hubert Mitterhofer, Thorsten May, Jörn Kohlhammer	Computer Graphics Forum, in print	Vol.39, No 3	Wiley Online Library	Norrköping	2020	None given	To be given	yes

FIGURE 18: SCIENTIFIC PEER-REVIEWED PUBLICATIONS ON PROJECT RELATED TOPICS IN THE REPORTED PERIOD.

5 COMMERCIAL EXPLOITATION

The commercial exploitation plan for each experiment is described in detail in Deliverable D1.2.

Additionally the project website (www.cloudifacturing.eu) summarizes the outcomes of each experiment in a separate "outcome section" of the website (Figure 19). Each outcome page is clearly structured as follows:

- Experiment description
- Technical impact
- Economic impact
- Outcome summary
- Testimonial by an experiment partner (typical: end user)
- Involved partners

The experiment partners, to avoid publishing of business secrets approved all the outcome pages. The content will be used also to create printed outcome magazines/leaflets or success stories for other publications later on.

FIGURE 19: FIRST WAVE OUTCOMES.

5.1 Commercial Exploitation at the level of the individual experiments

Significant part of the impact of the CloudiFacturing project is expected to be generated by the application experiments. The project runs 21 application experiments in three waves. Partners for the first wave have been included in the project consortium from the start, while 14 additional experiments have been recruited via two rounds of open calls. The final estimated impact figures from the first wave of experiments have already been reported in deliverable D7.2. By the time of this current deliverable wave 2 experiments have also finished. Therefore, this deliverable reports on the final impact figures of this second wave. Additionally, as wave 3 has just kicked off by the time of writing this deliverable, a short summary of their preliminary impact numbers based on their proposals is also presented.

5.1.1 Expected impact of wave 2 experiments

Expected impact KPI metrics have been requested individually from Wave 2 experiment partners as part of their proposals for the open call and were also included in the technical annexes of their third-party contracts. These preliminary figures have been reported in D7.2. During the implementation of the experiments, these impact figures have been updated and reported in D1.3. Detailed analysis of these KPIs at the level of individual experiments can be found in Section 2 of deliverable D1.3. Here in we present the updated impact summary table. This table represents the final estimation of wave 2 experiments after completing their implementation. The numbers that changed when compared to the original proposal are presented in red with a "+" or "–" sign indicating the direction of change. As it is shown by the table, there are no major differences in the predictions and the majority of reported numbers. This illustrates that implementing the experiment did not significantly change the original expectations and the participating companies are still expecting the same or similar benefits.

Similarly to the first wave, although most involved companies expect impact almost immediately (one year) after the experiment, much more significant impact is anticipated within a five year period. Cumulatively, the 18 Wave 2 experiment partners predict 21 enhanced/new products or services to be created as the direct outcome of the CloudiFacturing project within one year after the experiment, and 40 products and services within 5 years. The predicted turnover increase is over 4.5 million Euros within a year, and almost 30 million Euros within 5 years. Most companies predict significant increase in employment (121 within a year, 330 within 5 years), in the number of business partners (61 within a year and 216 within 5 years), and in making business partners in countries that are new to them (at least 24 in a year and 88 within 5 years). Additionally, 94% of the companies anticipate more efficient business processes and 89% of them expect better increased business practices in both short and longer term. Finally, all partners expect improvement in customer satisfaction (at a rate between 1% to 95+% better customer satisfaction), and 83% of them anticipate reduction in time to product/market (at a rate between 1% to 100% time-reduction).

	KPI Metrics									
partner name	year after experi-ment	enhanced/ new products/ services	increase in turnover [K€]	increase in employ-ment	new contacts/ partners	more efficient business processes	reduction in time to product / market	improvement in customer satisfaction	increase in business practice	partners in new countries
DENN	1	1	1,000	1	4	10%	20%	30%	30%	2-
	5	3	5,000-	10	12	30%	40%	50%	80%	9-
Quantech	1	1	100	1	4	30%	35%	30%	30%	2
	5	2	400	3	12	75%	50%	60%	75%	5
i-Deal	1	1	350	9+	1-	25%	Yes	90%+	Yes	1
	5	1	7,400+	32-	11-	100%	Yes	95%+	Yes	5-

	KPI Metrics									
partner name	year after experi-ment	enhanced/ new products/ services	increase in turnover [K€]	increase in employ-ment	new contacts/ partners	more efficient business processes	reduction in time to product / market	improvement in customer satisfaction	increase in business practice	partners in new countries
TroTusTex	1	1	1,000	90	2	10%	Yes	60%	Yes	1
	5	1	2,500	215	5	15%	Yes	80%	Yes	5+
Thermolympic	1	1	50	1-	8	Yes	No	Yes	N/A	1
	5	1	150-	5+	10	Yes	Yes	Yes	N/A	3+
Belgian Monitoring	1	1	100	1	3	Yes	Yes	Yes	N//A	1
	5	1	500	2	6+	Yes	Yes	Yes	N/A	3
ITAINNOVA	1	1	125	1-	5	Yes	Yes	Yes	Yes	2+
	5	1	350	5+	18+	Yes	Yes	Yes	Yes	8+
DURIT	1	5%	450	4	3	Yes	Yes	Yes	Yes	2
	5	15%	5,000	12	5	Yes	Yes	Yes	Yes	7
Brascontrol	1	3	50	2	2	Yes	N/A	Yes	Yes	1
	5	3	300	8	3	Yes	N/A	Yes	Yes	3
CMS	1	1	500	2	2	10%	5%	10%	10%	1
	5	5	4,000	5	6	20%	5%	15%	15%	3
RBF Morph	1	1	15	1	5	20%	50%	20%	20%	2
	5	2	60	2	15	20%	50%	20%	30%	4
RINA-C	1	1	40	1	3	10%	20%	20%	10%	2
	5	3	150	2	10	15%	20%	30%	20%	5
Ansys	1	2	50	1	1	1%	N/A	1%	1%	N/A
	5	2	500	5	10	2%	N/A	2%	2%	N/A
MV Engineering	1	3	1,500-	1	1	3%	2%	5%	5%	1
	5	15-	8,000+	10	5	10%	10%	10%	10%	3
Vodena doo	1	2	450-	5+	5-	N/A	N/A	10%	10%	1-
	5	3+	3,150+	15+	30+	N/A	N/A	30%	30%	3-
Netico	1	1	20	1	5	Yes	15%	5%	Yes	2
	5	3	400	5	50	Yes	20%	20%	Yes	5-
EMDIP	1	1	15	0	1	No	5%	5%	Yes	1
	5	3	150	2	5	Yes	15%	10%	Yes	2
Nissatech	1	1	5	1	3	Yes	15%	5%	Yes	1
	5	2	100	2	20	Yes	20%	20%	Yes	10
Overall	**1**	**23**	**5,820-**	**123+**	**58-**	**for 94%**	**for 83%**	**For all**	**for 89%**	**24-**
	5	**51-**	**38,110-**	**340+**	**221+**	**for 94%**	**for 83%**	**For all**	**for 89%**	**83-**

5.1.2 Expected impact of wave 3 experiments

Wave 3 experiments were selected as a result of the second open call. The conduct and outcomes of this call are described in detail in deliverable D1.3. During the process, each experiment had to provide expected impact figures, similarly to wave 2 experiments. This expected impact was one aspect of the selection criteria. A summary of expected wave 3 experiment impacts is provided below. During the implementation process these impact figures will be iteratively refined and modified as necessary.

Please note that, although being an aspect and criteria of selection, not all presented figures are refined sufficiently at the moment. This is the major reason why figures currently reported for wave 3 are lower than the previous waves. Work will be undertaken during the implementation of the experiments, especially as part of the business planning activities, to clarify these aspects.

	KPI Metrics									
partner name	**year after experi-ment**	**enhanced/ new products/ services**	**increas e in turnove r [K€]**	**increas e in employ-ment**	**new contact s/ partner**	**more efficient business processe s**	**reductio n in time to product / market**	**improveme nt in customer satisfaction**	**increase in business practice**	**partner s in new countri es**
UAB ENERSTE	1	1	15 %	0	10	yes	2 weeks	Yes	Yes	2
	5	3	75 %	20	50	yes	5 weeks	Yes	Yes	25
Wikki GmbH	1	1	13 %	0.5	10	yes	N/A	Yes	Yes	3
	5	2	25 %	1	15	yes	N/A	Yes	Yes	6
Makabi Agritech	1	1	0	0	5	1	<50%	Moderate	40%	3
	5	3	50	0	10	3	<50%	Moderate	40%	6
In silico	1	1	0	0	5	1	<60%	Significant	60%	3
	5	5	150	2	25	10	<90%	Significant	80%	15
Ascalia	1	1	0	0	5	1	<60%	Significant	40%	3
	5	5	100	2	25	10	<90%	Significant	60%	15
FERMENTI A	1	1	30	1	2	5%	10%	30%	20%	2
	5	10	200	5	10	20%	20%	30%	30%	5
SPINSPLIT	1	1	20	1	10	30%	5%	20%	40%	8
	5	2	100	3	20	50%	50%	50%	80%	15
ESSITECH	1	1	10	0	2	30 %	20 %	30 %	30 %	2
	5	1	50	2	18	50 %	40 %	30 %	150 %	15
GOYA	1	1	100	3	4-10	Yes	N/A	Yes	Yes	WW
	5	1	500	5	20	Yes	N/A	Yes	Yes	WW
ARCTUR	1	1	10	0	2	Yes	Yes	Yes	Yes	EU
	5	2	100	1	5	Yes	Yes	Yes	Yes	EU
DP	1	1	5,000	5	N/A	90%	90%	Yes	Yes	EU
	5	2	10,000-30,000	20	N/A	Yes	90%	Yes	Yes	WW
In-Vision	1	0	3,000	0	15	15%	0%	15%	0%	0
	5	0	7,000	6	15	33%	15%	50%	15%	2
Vive-LAB	1	0	0	0	0	N/A	N/A	N/A	0%	N/A
	5	1	300	2	20	N/A	N/A	N/A	30%	N/A
ELSAP	1	0	N/A	N/A	N/A	Yes	N/A	Yes	Yes	N/A
	5	1	N/A	N/A	N/A	Yes	N/A	Yes	Yes	Medt
Plegma Labs	1	1	5%	2-3	N/A	N/A	50%	N/A	Yes	N/A
	5	1	20-40%	4	N/A	N/A	N/A	N/A	Yes	N/A
RISA	1	1	1%	1	N/A	N/A	N/A	N/A	Yes	N/A
	5	1	10%	2	N/A	N/A	Yes	N/A	Yes	N/A
GLN	1	1	40	1	1	No	Yes	Yes	Yes	1
	5	6	200	3	6	Yes	Yes	Yes	Yes	3
Pragma	1	2	55	1	4	Yes	Yes	Yes	Yes	1
	5	4	450	3	15	Yes	Yes	Yes	Yes	3
E@W	1	1	50	1	3	Yes	N/A	Yes	Yes	1
	5	3	350	3	20	Yes	N/A	Yes	Yes	3
Overall	**1**	**20**	**8,665**	**16**	**81**	**for 79%**	**for 63%**	**For 84%**	**for 89%**	**29**
	5	**55**	**29,550**	**84**	**274**	**for 84%**	**for 68%**	**For 84%**	**for all**	**98**

5.1.3 Overall expected impact of all three waves

As a summary we provide the overall impact figures represented by all three waves of experiments cumulatively. As highlights we can summarise that the CloudiFacturing project is expected to generate 177 new or enhanced products or services, over 68 Million Euro turnover increase, 474 new jobs, 680

new business customers and 255 new international contacts within 5 years after the end of the experiments.

	KPI Metrics									
Wave	**year after experi-ment**	**enhanced/ new products/ services**	**increase in turnover [K€]**	**increase in employ-ment**	**new contacts/ partner**	**more efficient business processes**	**reduction in time to product / market**	**improvement in customer satisfaction**	**increase in business practice**	**partners in new countries**
Wave 1	1	19	1,645	13	>52	for 81%	10-80%	5-100%	for 75%	>17
	5	82	8,545	60	>190	for 81%	20-80%	10-100%	for 75%	>69
Wave 2	1	21	4,570	121	61	for 94%	for 83%	For all	for 89%	24
	5	40	29,960	330	216	for 94%	for 83%	For all	for 89%	88
Wave 3	1	20	8,665	16	81	for 79%	for 63%	For 84%	for 89%	29
	5	55	29,550	84	274	for 84%	for 68%	For 84%	for all	98
Overall	**1**	**60**	**14,880**	**150**	**194**	**For most**	**For most**	**For most**	**For most**	**70**
	5	**177**	**68,055**	**474**	**680**	**For most**	**For most**	**For most**	**For most**	**255**

5.2 Commercial Exploitation and Business Sustainability of the Digital Marketplace

The Digital Marketplace (further also simply referred to as “DM”) will be the central channel to commercialise the CloudiFacturing results; in other words, the Digital Marketplace is the default entry point to the CloudiFacturing solution. This means that the Digital Marketplace will directly interact with the CloudiFacturing platform components and it will therefore enable the execution of artefacts available within the execution engines (as a result of the three waves of experiments and the services from WP4 and WP5).

The Digital Marketplace aims to become the single point of access in Europe and beyond to manufacturing SMEs for ICT-enabled solutions, including cloudified Computer-aided tools (CAx), simulation and visual analytics software for big factory data running on flexible Cloud and HPC resources, as well as training and consultancy services to facilitate the adoption of the advanced technology.

The Digital Marketplace is inspired by the concept of *agora*, aiming to gather assemblies and markets within the same space; in our case, the community and the marketplace of ICT-enabled solutions for manufacturing SMEs. The Digital Marketplace aims to foster and support the cultivation of a community around ICT technologies for the manufacturing industry. The purpose of the Digital Marketplace is to be recognized as an online space, where manufacturing SMEs can learn and experience technology trends and solutions for their own businesses. However, and from the point of view of the manufacturing SMEs, it is not only about gathering information, but also about having the opportunity to interact and communicate with other members of the community, who could look for similar information or who could already have solved similar challenges.

By building and cultivating this community, we want to facilitate the engagement with the technology offered by the Digital Marketplace. Manufacturing SMEs should in the first line perceive the Digital Marketplace as a neutral source of know-how for them, regardless of their intention to use or purchase any of the executable artefacts being offered. Notwithstanding, we believe that a positive engagement with the community and a positive endorsement of other members will lead to an increment in the number of adopters and users of the technology offered by the Digital Marketplace and its partners.

For a successful joint commercial exploitation of the CloudiFacturing results, we would need to define the commercial model and the legal framework that facilitate a feasible commercialisation, accounting for the granting of rights and the provision of support. For a long-term sustainability of the CloudiFacturing results, we would need to establish a suitable commercial operation that ensures the professional development of the customers, considering the availability of the solution and the provision of services.

5.2.1 Study of the context and trends

The aim of this study is to set the foundations for a scalable and sustainable business model for emGORA (the brand behind the CloudiFacturing solution), so that the project will effectively be in operation and grow beyond the duration of the EC- funded period. This section provides a first study of the context along with the trends and market that will allow us to formulate a proper vision and mission statements for the CloudiFacturing solution in view of the target segments (not from a technical perspective). The initial study will also deal with the analysis of the competition and the business models already in place by similar 3rd parties on the market.

With the aim of improving production processes and optimising producibility of manufacturing SME in Europe, the CloudiFacturing project brings advanced ICT in the field of ICT/HPC-based modelling and simulation.

emGORA is composed by different elements: the Digital Market place, the central user management, the central billing system, the repository for executable artefacts, the artefact execution system, data transfer and browsing system, the workflow executor, the application executor, and the executable artefacts (for more details, please refer to deliverable D2.2)

The Digital Marketplace in turn is composed by different elements such as:

- Information: home, presentations, regional info, webinars, press releases, newsletter;
- Community: blog, matchmaking, collaboration, professional networking, forum;
- Cloud/HPC services: user support, artefact management, artefact execution, artefact creation, resource management;
- Financial services: accounting, billing, payment, statistics;
- User account management;
- Security services: authentication, authorisation, data protection, privacy management, trust management.

Manufacturing-focused marketplaces help ICT solution providers to market their services to a global audience. These marketplaces cover different needs in a single online platform for peculiar areas and allow them to execute a particular service, to collaborate and discuss in real time and/or to exchange information and ask for a quotation for example. Often, locating a new supplier and follow the

traditional RFQ (request for quotation) processes could lead to long and expensive discussion while buyers are looking to save time and money instead.

Even though on a manufacturing marketplace it would be more natural to attract prospects interested in those kinds of services in contrast to a standard social network, the marketing efforts behind the marketplace should anyhow be consistent, including for instance consultancy services, the creation of quotes, communication and so on. Marketplaces should offer more than RFQs, they should intersect different information, both quantitative and qualitative, in order to present the best matching option for the buyer.

Creating a complete customer profile in the marketplace is very important to educate prospects searching for a specific service; within emGORA, this is probably related to ISVs and VARs that need to have a consistent profile, in order to be found and chosen. Other than the usage of the standard services, being part of a marketplace could also optimise the search engine optimisation of the company, and it will be important to propose this benefit to the emGORA prospects.

An important feature of online manufacturing marketplaces is the rating system that allows to rank the different suppliers and buyers as it is done on major e-commerce website (e.g. Amazon, eBay, etc.). As it is the case for e-commerce, it should be taken into account the possibility that the prospects will consult the marketplace to then explore a traditional partnership with the stakeholders scouted on the platform (take away: there should be a contract that allows emGORA to benefit from the value generated between a buyer and a supplier or ICT solution providers thanks to the touch point they created on the marketplace for a certain period of time).

The business models of these marketplaces are very different; they can be free, time-based subscriptions and other charge a percentage of each awarded RFQ. Some factors that can portrait the match of a certain marketplace with a customer could be number of buyers / suppliers / stakeholders, the number and quality of services, the industrial focus to check whether it is in line with the company profile, and the specific business goal of the company.

5.2.2 Flexible business models for emGORA

The shift to cloud-based computing allowed for moving from traditional business models such as for example upfront licensing towards pay-per-use model, subscription model or again a combination of both. Indeed, nowadays most of the Software as a Service (SaaS) solutions are offered in such kind of business models. These new business models allow companies to avoid incurring into high startup fees and to have a usage period of about typically six months, where the company can experience the solution. The new models empower companies to gradually increase their use of the solutions based on the actual need, giving also more feedback about the product usage such as pricing policies and how to consolidate offers into packages to drive higher margins.

Moreover, the shift to the cloud and thus to the pay-per-use model from an accounting point of view enabled companies to move from capital expenditure (CapEx) to operational expenditure (OpEx). In fact, the argument behind this switch on the balance sheet refers to the transition from a traditional technology investment towards recurring fluctuating costs. Entrepreneurs prefer OpEx to CapEx given the ability to deduct more expenses minimising the income tax that are charged on the company's gross income.

The Internet of things and Big data trends are envisioned to unleash in the future the creation and adoption of internet connected devices, facilitating the better monitoring of the usage of a product, in order to easily adapt pay-per-use business models also for physical objects.

In the pay-per-use and subscription model, billing is much more complex due to the variety of resources and services a customer could use at different times with multiple users, and with diverse prorated accounts. In this topic, a little error can tangibly and negatively affect the customer churn. Invoices should be accurate, transparent and simple to understand, in order to build long-lasting customer relationships. Often pay-per-use is a convenient business model, when the usage of the solution happens in a discrete manner (e.g. few times a month).

Although these new business models permit allow customers to be more flexible, as a drawback such flexibility might hinder the capability to forecast revenues for a company providing this service in the medium and long-term. Indeed, revenue and profits generated from the solutions are less predictable from a pay-per-use or subscription model. In order to have a continuing adoption /usage, solutions deployed via these business models need to have billing amounts controllable and really well predictable, as a customer needs to know in advance whether exceeding a certain threshold means an extra charge in the pricing.

A subscription model fosters the increase of the lifetime value of a customer against a traditional one-time-sale model. With subscription, businesses can easily forecast revenue flows as they can usually build on a loyal customer base. Cancelling a subscription is also usually seen as a hassle because the transaction cost of moving from a service to another is perceived as to be big. Indeed, a lost customer from a service depends usually more on the service quality than other issues. The automatic billing feature translates into reduction of inconveniences for the users.

The following table highlights some pros and cons of a pay-per-use business model.

Pros	Cons
Transparent pricing to the customers	Unpredictable revenue for the company providing this service
Business model mainly driven by customers' needs	Leaving customers after the trial period is expired
Lower barriers to new customers' adoption due to reduced setup costs	High number of order transactions, difficult to report financial statements
Lower prices to new customers	
Greater customers' feedback (i.e. for refining pricing)	
Moving from CapEx to OpEx	

The pay-per-use model influences the business strategy of a company through several factors.

flexible packaging
scalable delivery
consumption-based billing
rapid service innovation
continuous customer engagement

Moreover, there are different types of pricing methodologies. Usually, a company should start with two or three basic surprising pricing tiers and should adjust them over time while learning from users. Some of the pricing methods used are represented in the following table:

Unlimited subscription: unlimited quantity, features, devices.
Pre-defined subscription: access to a specify quantity of product or of its features for a pre-defined period.
Consumption-based: pay-per-use generally with minimum purchase or commitment.
Outcome-based: monetisation based on value delivered to the customer, measured on quantifiable outcomes;
Overage charges: all pre-defined but with any overage billed based on actual use.
Free trials
Virtual coupons: one-time discount.
Early bird offers: discounts if joining in a certain period.
Freemium: basic services for free while charging a premium for advanced or special features.
Bring in your license: using companies existing licenses.

When designing a manufacturing-focused digital marketplace, different questions should be taken into account from a market and customer adoption point of view such as for example:

- Is there a large addressable market or the solution is too focused on a niche?
- Does the value proposition meet the real customer pain point?
- Can the product/service be engineered to scale with highly variable cost (vs. fixed)?

In order to do so, it will be important to focus a lot on the customers relationships and:

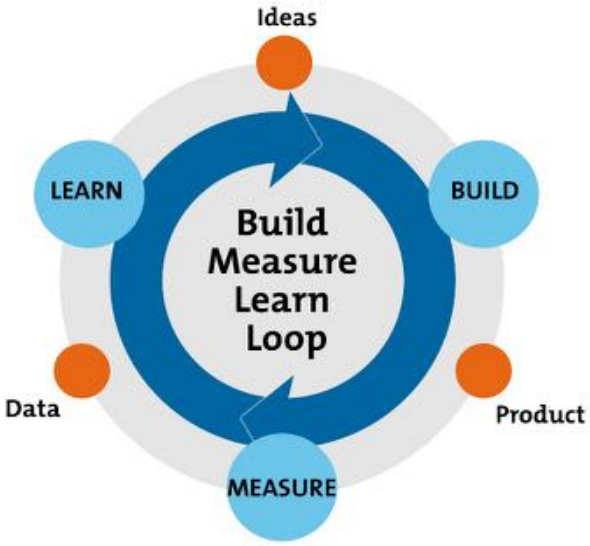
- Define clear buyer personas and deep understanding of how the customer use emGORA;
- Develop deeper customer relationships for maximising feedback from the users;
- Understand when to offer different combinations of pricing methods and at what point in time;

5.2.3 5.2.3 Lean startup applied to CloudiFacturing

The Lean Startup is a method that looks at the development of innovative new products/services/solutions highlighting fast iteration and customer insights. Products change constantly through the process of optimisation (tuning the engine), less frequently the strategy might have to change (a pivot). However, the overarching vision rarely changes. Such paradigm is described in the image below.

FIGURE 20: LEAN STARTUP PARADIGM

This process shall be adopted within the CloudiFacturing project as well. During the project, development partners (teams) should try to think big but start small, avoiding adding many unvalidated features to the platform initially but should try to observe real customers' behaviours, interact with real customers and learn about their needs.



One of the main errors of high-tech startups is to spend tons of hours over-optimising software and in the end, they are realizing that their value proposition is far from the customers' desire. Learning is the essential unit of progress for any innovative project and validated learning is backed up by empirical data collected from real customers; this improves the startup's core metrics. To do so, the product should not be over-optimised as the project is postponing getting any data until are certain of success.

While developing the CloudiFacturing project, all the development teams should always think about the build-measure-learn loop, which is at the foundation of the lean startup movement. For any upgrade / optimisation made by the teams, the customer should be involved for feedback, resulting in the monitoring of relevant KPIs. In case such KPIs are improving then the teams can persevere on the optimisation; in the opposite case, it will be important to decide what kind of pivot it is needed.

FIGURE 21: BUILD, MEASURE, LEARN LOOP.

Different types of possible pivots are described in the following table.

Pivot type	Description
Zoom-in pivot	what previously was considered a single feature in a product becomes the whole product
Zoom-out pivot	what was considered the whole product becomes a single feature of a much larger product
Customer-segment pivot	the product solves the real problem, but for another customer segment from the original it was planned to be served
Customer-need pivot	the problem we are trying to solve is not really important for our customers. Because of our customer intimacy, we though discover what the real problem is, so we fix our existing product towards the ideal
Platform pivot	refers to a change from an application towards a platform or vice-versa. Usually these startups start creating a killer app and their platform is meant for that app, which is then extended to third parties
Business-architecture pivot	from high margin low volume (usually associated with B2B) towards low margin high volume and vice-versa (usually associated with consumer goods)
Value-capture pivot	a new revenue or monetisation models (e.g. from fixed license towards subscription or pay as you go)
Engine for growth pivot	there are three of them: viral, sticky, and paid growth models. A company here changes though its growth strategy to seek faster and more profitable growth
Channel pivot	the way the company delivers its product to the customer (e.g. online vs. physical distribution)
Technology pivot	achieving the same solution with a different technology. Maybe a new tech can provide a better price tag and /or performance compared to existing technology

5.2.3.1 KPIs to be monitored in the CloudiFacturing project - innovation accounting

Every time an upgrade / improvement is pursued in CloudiFacturing, the different users should be involved in a testing session for getting feedback and understand, whether such optimisation was beneficial. Here are some examples of potential KPIs to be adopted, according to the types of features to be monitored.

Marketing & sales	acquisition
	activation
	retention
	referral

	revenue
User experience	simplicity
	intuitiveness
	feedback
	guidance
Service	innovation
	quality
	performance
	added-value

The KPI's that are identified for the different aspects of emGORA should be understood by the customers and written down. Such KPIs should be actionable (demonstrating cause and effect) and accessible (simple to be understood).

The tables below are just an example of how the metrics should be monitored by the different teams in CloudiFacturing. For each new improvement of the features from the different teams, the metrics should be quantified and reported to understand, whether to persevere with the optimisation or to make a pivot. (The numbers in the table are just random numbers.)

Marketing and sales KPIs

KPI	V1	V2	Vn
Acquisition	5%	17%	
Activation	17%	90%	
Retention		4%	
Referral		5%	
Revenue			

User experience KPIs

KPI	V1	V2	Vn
Simplicity			
Intuitiveness			
Feedback			
Guidance			

Service KPIs

KPI	V1	V2	Vn
Innovation			
Quality			
Performance			
Added-value			

Overall lean startup method applied to CloudiFacturing

The following scheme shows how the lean startup method could be applied to CloudiFacturing. Starting from the left side, the CloudiFacturing team is developing and optimising a feature and it believes (the value hypothesis) that this feature will increase the value of the solution for whatever reason (user experience, efficiency, etc.). Indeed, this feature will be used by its users; to test whether the value hypothesis is true, the new/improved feature is presented to the users, who are asked to test and provide feedback through a specific set of questions. These questions allow us to define quantifiable, accessible and actionable KPIs. Eventually, such KPIs give some indications, regarding if it should go ahead with such development or whether a change is needed. In the end, the development team take action on what has been decided.

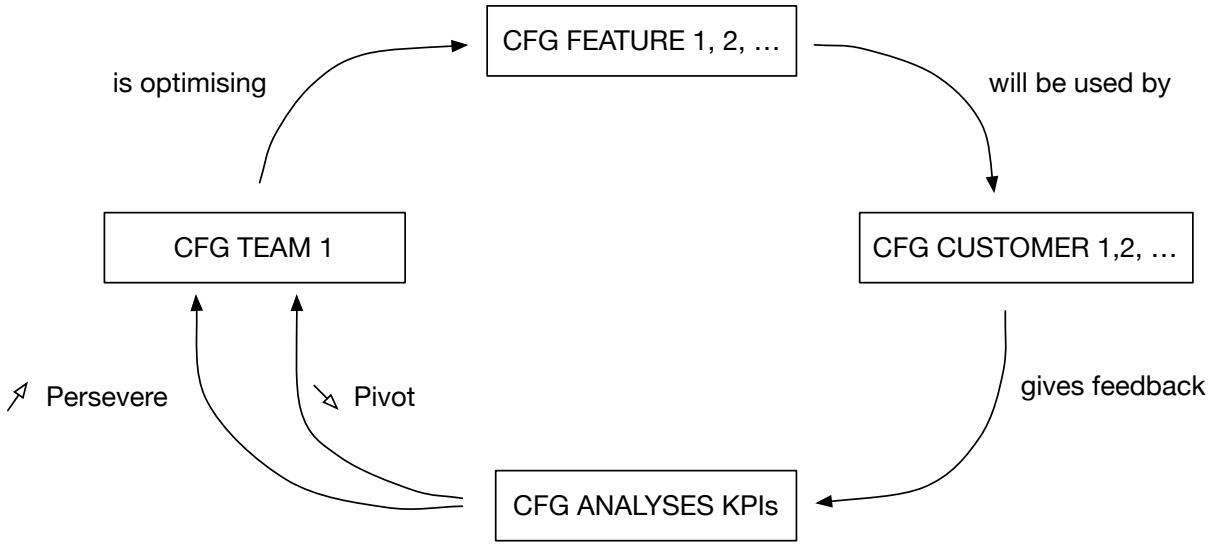


FIGURE 22: LEAN STARTUP METHOD APPLIED TO CLOUDIFACTURING.

5.2.4 Customer archetypes

emGORA will serve different customer archetypes; some of them will be consumers of the offerings and some of them will contribute to the provision of the offerings. The following classification considers the 13 customer archetypes defined in deliverable D6.1 (including the customer stories) and it groups these into primary and secondary consumers and primary and secondary providers:

- Primary consumers:
  - End users
- Secondary consumers:
  - Advertisers
  - Communities
- Primary providers:
  - ISV (own web portal, dedicated desktop GIU, without dedicated GUI)
  - VAR
  - Platform providers
  - Platform component providers

  - Execution engine providers
  - Marketplace operators
- Secondary providers
  - Resource providers
  - Consultants
  - Trainers

5.2.5 Monetisation models of the Wave 1 experiments

The aim of this section is to analyse experiments involved in the project to better comprehend what could be a potential monetisation model for CFG and how it could be applied.

In doing so, the experiments of the first wave have been considered with the calculated mean of the costs (showed as variable and fixed costs).

Experiment	Software / HPC in house (no CFG)		Pay per use / Subscription (with CFG)	
	Variable costs	Fixed costs	Variable costs	Fixed costs
Exp 1	Depending on # of utilization hours (100h – 500h – 2000h): 1,800 € light users; 13,000 € heavy users; 18,500 € super heavy users	20,000 €/year (software)	11 €/h: software fee Cloud resources (10% of SW fee): 1.1 €/h Total: 12.1 €/h	
Total			12,650 €[7]	
Exp 2	25,000 €/year: manufacturing costs	20,000 €: design costs 13,200 €/year: HPC costs Total: 33,200 € (1st year)	15,000 €/year/boat: manufacturing costs 0.05 €: cloud resources (500 core/h)	20,000 €: design costs
Total			150,000 €/year[8]; 25 € HPC	20,000 €
Exp 3		10,000 €/year: software 10,000 €/year: upfront investment 19,080 €/year: HPC infrastructure + maintenance	15 €/hour: software fee (+ upfront investment spread in the first year) (1,500 h)	1,425 €/year: digital twin + monitoring + reports

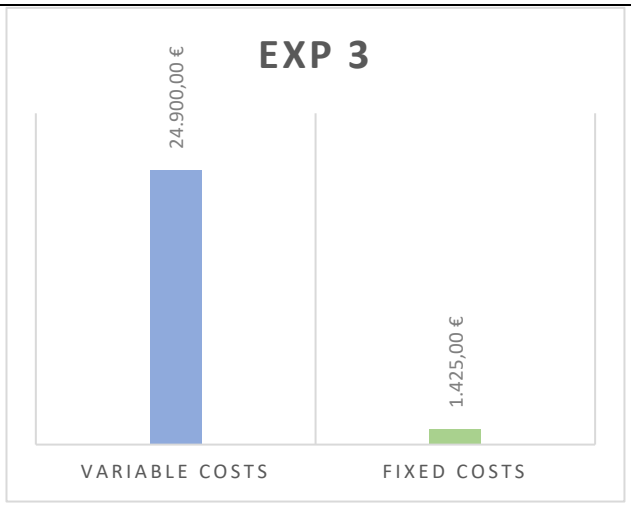
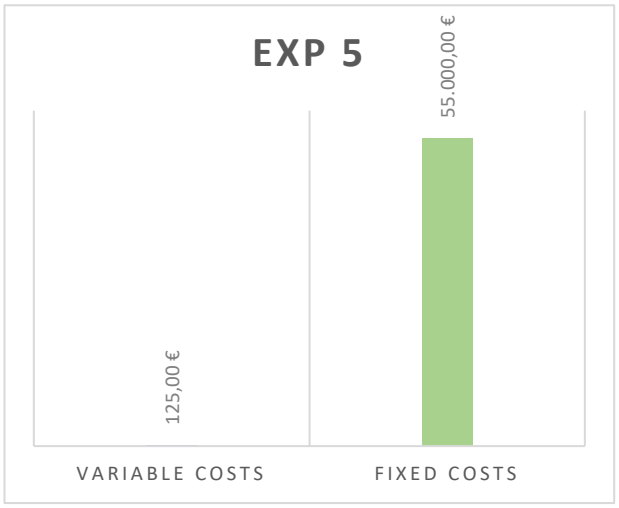
[7] Refer to deliverable D1.2 for explanation.
[8] For 10 identical boats.

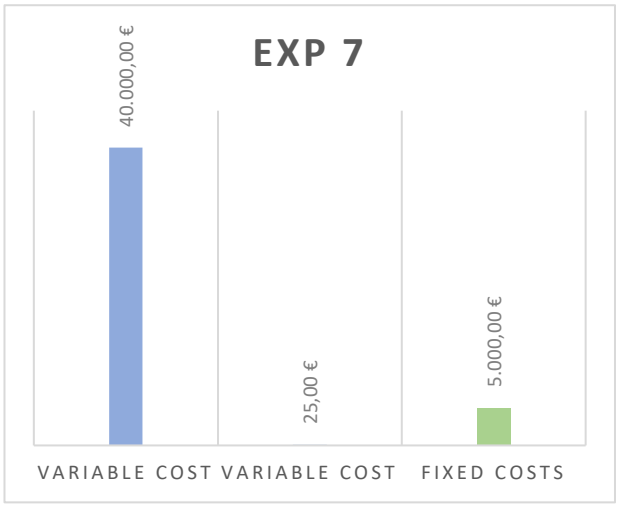
		1,425 €/year: digital twin + monitoring + reports	0.05 € * core/h: cloud resources (48,000)	
Total			24,900 €/year	1,425 €/year
Exp 4		40,000 €/year: licenses 50'000 €/year: people 100,000 €/year: HPC infrastructure + maintenance	0.05 € per core/hour: software fee (1M core/h)	25'000 €/year: people
Total			50,000 €/year	25,000 €/year
Exp 5	30,000 €/year: non quality costs	50,000 €/year: setup costs Workstation (+ SW support) costs depending on # of simulation hours: 7,302 €/year with 96h 9,604 €/year with 48h 13,208 €/year with 24h	0.05 € per core/hour: software fee (2,500 core/h)	50,000 €/year: setup costs 5,000 €/year: SW support
Total			125 €/year	55,000 €/year
Exp 6	250 €/month: software license	1,000 €: one-time investment 5,080 €/year: HPC + maintenance 3,300 €/year: travel + consultants 48,000 €: investment (customization) 4,300 €/year: maintenance + infrastructure	0.05 €/core: HPC (120,000 core/h) 250 €/month: software fee (12 month)	1,000 €: one-time investment 48,000 €: investment – customization
Total			6,000 €/year HPC; 3,000 €/year SW	49,000 €
Exp 7		160,000 €: one-time investment 16,000 €/year: SW support 12,400 €/year. workstations + server + maintenance 5,000 €: model development	0.05 € per core/hour: cloud resources (500 core/hour) 400 €/day: daily basis (100 days)	5,000 €: model development

Total		25 €/year HPC; 40,000 €/year SW	5,000 €

Summary:

Experiment	Variable costs	Fixed costs	Graphic summary
Exp 1	12,650 €	0 €	
Exp 2	150,000 €/year; 25 € HPC	20,000 €	
Exp 3	24,900 €/year	1,425 €/year	

			
Exp 4	50,000 €/year	25,000 €/year	
Exp 5	125 €/year	55,000 €/year	
Exp 6	6,000 €/year HPC;	49,000 €	

	3,000 €/year SW		
Exp 7	25 €/year HPC; 40,000 €/year SW	5,000 €	

Below it is presented the table of savings for each experiment. Savings are considered for each year and are calculated as the costs of performing the simulation in house minus the costs of using the CFG solution.

Experiment	**Savings (from in house to cloud)**					
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**
Exp 1 (500 h)	20,350 €	40,700 €	61,050 €	81,400 €	101,750 €	**305,250 €**
Exp 2	112,800 €	262,350 €	511,600 €	760,850 €	1,010,100 €	**2,657,700 €**
Exp 3 (1500 h)	12,680 €	12,680 €	12,680 €	12,680 €	12,680 €	**63,400 €**
Exp 4	114,000 €	228,000 €	342,000 €	456,000 €	570,000 €	**1,710,000 €**
Exp 5 (48h)	3,129 €	6,258 €	3,012 €	18,891 €	15,645 €	**46,935 €**
Exp 6 (120,000 core/h)	46,860 €	44,720 €	42,580 €	40,440 €	38,300 €	**212,900 €**

Exp 7 (100 day/year)	147,375 €	134,750 €	122,125 €	109,500 €	96,875 €	**610,625 €**

Monetisation Model proposal for the different experiments:

Experiment	**Monetisation Model**	
	AS IS	**TO BE**
Exp 1	**Pay per use model:** • Software fee: 11 €/hour • Cloud resources: 10% of software fee – 1.1 €/hour	Variable costs are 100 % of the total costs. Proposal: **pay as you go**.
Exp 2	**Pay per use model (annual demand – based):** • Manufacturing costs: 15,000 €/boat • Design costs: 20,000 € • Cloud resources: 0.05 €/core	Variable costs are 88% of the total costs, among which manufacturing costs are 99.98%. Proposal: **annual / monthly fee (subscription)**.
Exp 3	**Subscription – pay per use model:** • 15 €/hour: software fee (+ upfront investment spread in the first year) • 0.05 € * core/h: cloud resources	Variable costs are 95% of the total costs. Proposal: **pay as you go**.
Exp 4	**Pay per use model:** • 0.05 € * core/h: cloud resources • People: 25,000 €/year	Variable costs are 67% of the total costs. Proposal: **pay as you go**.
Exp 5	**Pay per use model**: • Setup costs: 50,000 € • Cloud resources: 0.05 €/core	Fixed costs are 99.97% of the total costs. Proposal: **annual / monthly fee (subscription)**.
Exp 6	**Subscription – pay per use model**: • License: 250 €/month • Cloud resources: 0.05 €/core • Investments: 49,000 €	Fixed costs are 85% of the total costs. Proposal: **annual / monthly fee (subscription)**.
Exp 7	**Pay per use model**: • Cloud resources: 0.05 €/core • Daily basis: 400 €/day • Model dev: 5,000 €	Variable costs are 89% of the total costs. Proposal: **pay as you go**.

5.2.6 Competitor analysis

Preliminary selections of competitors have been conducted. The competitors are categorized into a) IaaS provider with SaaS offering for manufacturing and b) marketplaces for manufacturing SaaS.

5.2.6.1 IaaS provider with SaaS offerings fo manufacturing

This category is composed of established IaaS providers or a group of established IaaS provider, which started offering SaaS solutions for the manufacturing industry.

5.2.6.1.1 GOMPUTE

Gompute delivers solutions for HPC, in-house or in cloud. It includes remote desktop functionality, Gompute scheduler (to implement corporate resource usage policies), Phyton API for job submission, and third-party integration (to let third-party application benefit from the cluster's capabilities).

Gompute provide the possibility to license two different packages:

- *Gompute HPC Cloud Platform* with all its proprieties (Gompute analytics, on demand connector, HPC data stager, distributed resource manager, license management, gsub, remote desktop and remote desktop wan accelerator);
- *Gompute on demand* with Gompute HPC cloud platform integrated.

Gompute's features include software, remote desktop and data Stager (file transfer system that include big data analytics system providing useful insights into the health and utilization of corporate WANs, security during the transfers is guaranteed).

Engineering applications available in Gompute:

Comsol
Siemens
Ansys
Paraview
Matlab
Ensight
Code Aster
Scilab
LS-Dyna
Ansa
OpenFOAM
XFlow
Abaqus
Smokeview
Netbeans
GNU Octave
CAESES
Abinit

Gompute's partners:

Partner	Type
Nvidia	Hardware
Comsol	ISV
Siemens	ISV
Lenovo	Hardware
Ansys	ISV
Friendship	ISV
Code Aster	ISV
BetaCAE	ISV
IBM	Hardware
Next Limit Technologies	ISV
Sourceflux	ISV
Intel	Hardware
Numascale	Hardware
Mathworks	ISV
WIKKI	ISV
DHCAE Tools	ISV
CoolSim	ISV
LSTC	ISV
ABAQUS	ISV

Gompute pricing policies

Gompute delivers solutions for High Performance Computing, both **in-house and as a service**. Solutions:

- *Gompute HPC on demand for data intensive applications*: **0,03 €/hour**.
  Service created for these sectors: aeronautics, civil engineering, digital, electrical engineering, energy, health, manufacturing, maritime.
  Company account subscription: **150€/month** (includes 1 user account, application repository and 100 GB of storage);
  Computing price: Starting from **0.027 €/Core Hour** (price for 3 years commitment).
  Other cost: application license.

- *HPC on demand*: **0.02 €/hour.**
  Company account subscription: **150€/month** (includes 1 user account, application repository and 100 GB of storage);
  Computing price: Starting from **0.019 €/Core Hour** for 1-year commitment.
  Other cost: application license.

Success story: characterization of wind flow over urban areas.

Solution: tool that integrates all the necessary factors required to calculate the optimal placement of turbines.

Organizations involved: KLiUX Energies (end user), University of Zaragoza (HPC expert), nablaDot (host center) and Gompute (HPC provider).

5.2.6.1.2 CPU 24/7

First solution: CAE As a Service

Computer Aided Engineering (CAE) as a Service. The process of designing, configuring, tuning and operating HPC systems requires highly specialized expert knowledge and years of experience, which is rarely found at a standard IT service organization. In addition, investing into building up a comprehensive HPC system and to operate it is expensive. CPU 24/7 provides its customers with a flexible, pre-configured and "ready-to-use" CAEaaS infrastructure hosted in the CPU 24/7 Cloud.

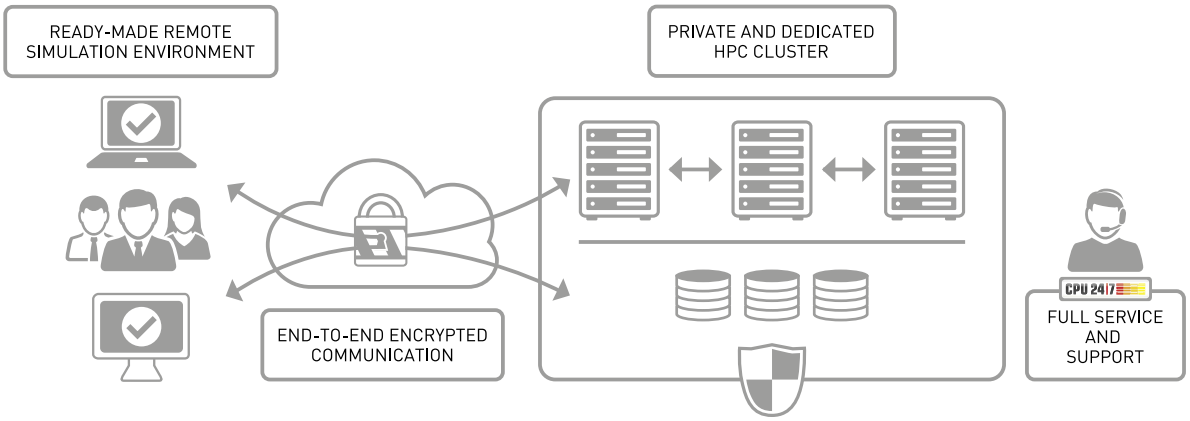


FIGURE 23: FUNCTIONING CAE AS A SERVICE.

Second solution: CAE Express

CPU 24/7 offers CAE Express for specific processing power. It can be deployed to the customer via a remote desktop or SSH. It works according to the following process (Figure 24):

- Start phase (the project starts): selection of pre-configured application;
- Phase of hosting: operations on data center and monitoring;
- Phase of operations and support: updating and upgrading;
- End phase (the project ends).

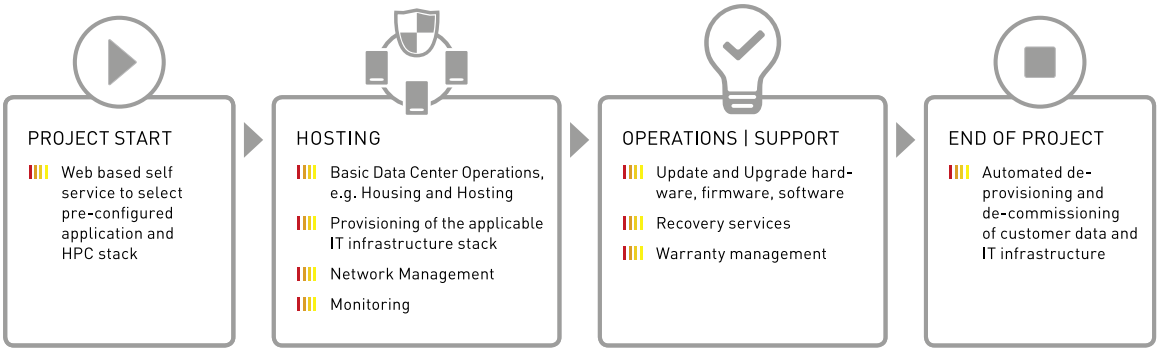


FIGURE 24: FUNCTIONING OF CAE EXPRESS.

You only pay for the capacity and duration of the computing services that have been used.

Third solution: CAE Enterprise

It provides highly customised HPC cluster solutions built exclusively for the customer. CAE Enterprise works cyclically and includes the following macro phases (Figure 25):

- Consulting and customising: HPC cluster design;
- Purchasing: purchase of data center, installation, configuration and testing;
- Hosting: operations on data center and monitoring;
- Operations and support: updating and upgrading;
- Reporting, analysis and tuning.

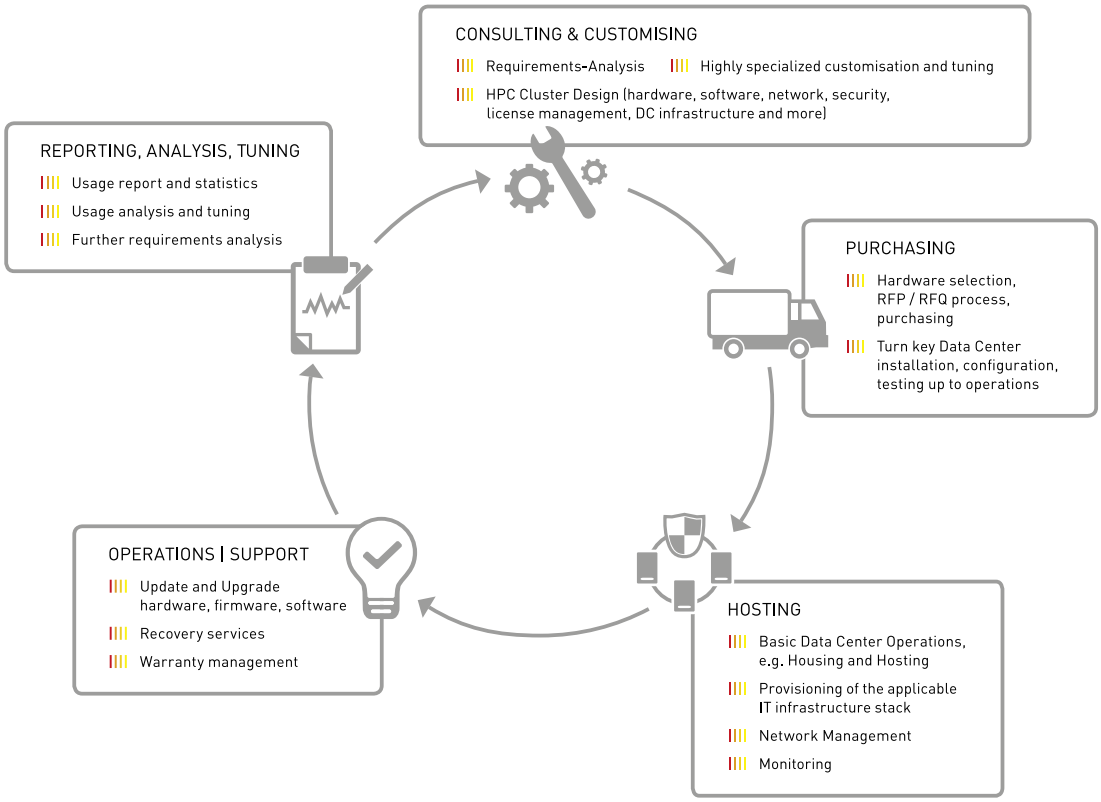


FIGURE 25: FUNCTIONING OF CAE ENTERPRISE.

CPU 24/7 partners:

Ansys
AVL
CD-adapco
Comsol
LS-Dyna
Friendship system
MSC Software
Nice
Numeca
Univa

Mellanox Technologies
E-shelter
SIBB (association)
Asc(c (non-profit association)

CPU24/7 pricing policies

Pricing includes support from highly skilled HPC experts, and there are no hidden costs for data traffic and storage, based on hardware configuration different type of servers are used.

Pricing:

- Price per core-hour starts from **0,049 €**;
- Price per TFlops-hour starts from **1,199** €;
- Discount pricing options based on volume or contract period are available.

5.2.6.1.3 FORTISSIMO

It provides hardware, software, and expertise required for computationally intensive simulations. Fortissimo gives the opportunity to do this via on-demand, pay-per use or one-stop shop model.

Fortissimo has different feature:

- On demand access to advanced simulation and modelling resources;
- Access to state of the art HPC facilities;
- Matchmaking services;
- Accesso to Capability register advertising and promotion services;
- Run simulations in hours rather than days;
- Access to best-practice guides.

Fortissimo's partners

Epcc
Arctur
Intel
Gompute
Genci
Sicos
AVL
Compass
Datapixel
DCU
aAmbiente

Pricing policies

The Fortissimo Marketplace offers a large amount of solutions, including HPC resources, software applications and expertise and tools.

Examples[9]:

- CP2K (ARCTUR): **1,80 €/hour**. The software CP2K is released as a service.
- ARCTUR HPC Consulting: **65,00 €/hour**. Fortissimo delivery HPC consulting services. Software: ANSYS, OpenFOAM, Paraview, Numeca CFD.
- Cloud Computing Services: **0,04 €/hour**. Infrastructure as a service, big data PaaS and cloud consultancy. Software: OpenStack.
- And many others.

5.2.6.2 Marketplaces for manufacturing SaaS

Competitors, which have no attachments either to a resource provider neither to a software provider, but that bring the two groups together to create a combined added value, represent this category.

5.2.6.2.1 RESCALE

Rescale is a global player for enterprise big compute. By leveraging HPC in the cloud, Rescale is a platform that helps solve challenging problems:

- Transformed it agility
- On-demand turnkey platform (immediate access to applications)
- Accelerated time to market (no queues)
- Reduce capital expenditures (using pay-as-you-go for hardware and software)

Rescale provide different solutions for different industries (aerospace, automotive, Oil & Gas, life science, electronics), by role (engineering, CxOs, HPC management, academia) or by focus (machine learning, digital twin, IoT and Big Data, etc).

Rescale has a long list of **partners**. Some are mentioned below.

Amazon Web Services
Ansys
Autodesk
AVL
CADFEM
CAE Solutions
Comsol
Convergent Science
Cradle North America
Cybernet
Dassault Systemes
Dynamic Computing Technology

[9] https://www.fortissimo-project.eu/buy-services

EDEM
ESI Group
ESSS
Flowtech
Fraunhofer-Gesellschaft
Function Bay, Inc.
Future facilities Ltd.
Siemens

Pricing policies

Rescale sold in pay as you go model.

- Hardware:

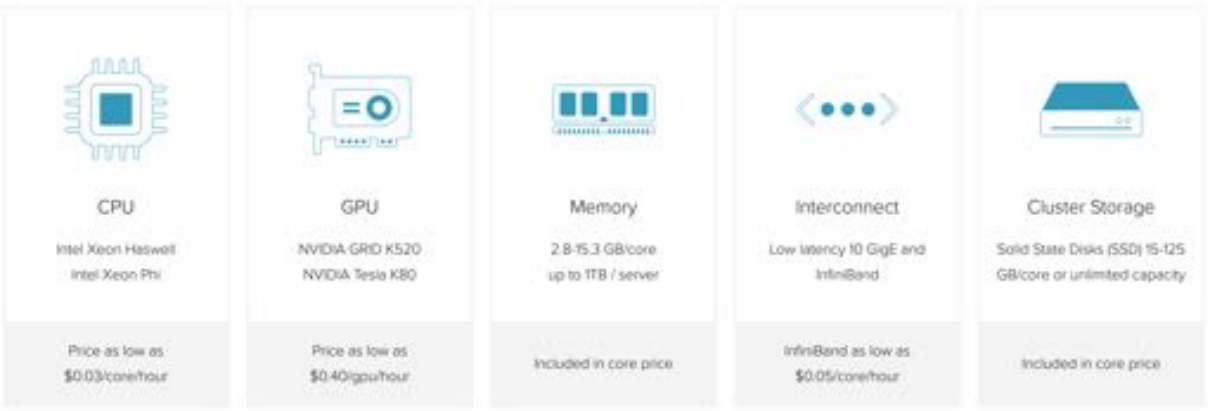


FIGURE 26: RESCALE PRICING POLICIES.

Rescale offers different core types, different in memory (GB/Core), network IO, Storage (GB/Core) and processor.

- Storage (per user):
  - First 100 GB: free
  - 100 GB – 1 TB: 99 $/month
  - 1 TB +: 99 $/TB/ month
- Transfer (per user):
  - First 100 GB: free
  - 100 GB – 1 TB: 99 $/month
  - 1 TB +: 99 $/TB/ month

Rescale provides more usage models: instant, on Demand, low Priority and prepaid.

Rescale offers free trial, with 300 simulation and deep learning packages, instant HPC clusters on demand, 100GB free storage & data transfer per month, up to 240GB of RAM per node & SSD storage, secure SSL data transfer & encryption at rest and share & clone simulation jobs (Figure 26).

5.2.6.2.2 AWESIM

It provides businesses with competitive solutions for simulation-driven design. It provides modeling & simulation (M&S) on HPC via online modeling & simulation apps, training courses and experts and consultants.

Simulation-driven design with M&S on HPC allows for less expensive computer simulations, which reduces the time to take products to market, improves quality, and cuts costs.

AweSim provide different solutions for different experience level (inquisitive, engage or fully engaged). Costs are also estimated for each solution.

For AweSim, the three different customers are described as follow:

- **Inquisitive**: the company knows M&S, but it does not use it. It is required by customers to use M&S; competitors are using M&S; company is using CAD, CAM, PLM or ERP software.
- **Engage**: the company makes some use of M&S; it is looking to offer additional services; it is expanding beyond spec manufacturing; and it are seeking custom workflows/apps.
- **Fully engaged**: the company makes significant use of M&S; it is interested in the latest M&S tools; it is looking for better M&S services; it wants to engage suppliers in M&S.

For the **first type** (Inquisitive), the offered solution is:

Discovery Engagement Program: learn how Modeling & Simulation can help your business.
Example client engagement: they provide a pilot feasibility study for a startup company's product concept.
Example cost estimates: 5,000 $ (expert consultants) + 1,000 $ (HPC resources).

For the **second type** (Engage) the offered solution is:

Project Consultants: get help on the M&S project from the community of M&S experts.
Example client engagement: they provide ongoing access for multi-physics analysis of device design iterations.
Example cost estimates: 400 $/month (HPC resources) + 100 $/hour (Software).

For the **third type** (Fully engage) the offered solution is:

Product Apps and Software: get started right away using commercial apps and software.
Example client engagement: they provide resources to run a sophisticated 4-month aerodynamic analysis project.
Example cost estimates: 85,000 $ (HPC resources).

5.2.6.2.3 UBERCLOUD

They run simulations on a cloud infrastructure. It works in a simple way: bower-based access (instant access anytime/anywhere from a laptop or tablet); fully interactive GUI.

UberCloud is an ANSYS Advanced Solution Partner.

UberCloud’s features:

- Fast;
- Easy (simple browser-based access);
- Secure;
- Flexible (environments are provisioned on-demand);
- Predictable (platform validated by Intel, Microsoft, ANSYS, and more);
- Economical (UberCloud offers low costs).

Pricing policies

UberCloud offers different type of pricing models.

Examples:

- OpenFoam Advania data centres: $179 / 1,000 anytime core hours starting at 16 CPU cores;
- OpenFoam Amzon Web Services: $199 / 16 cores X 24h;
- OpenFoam NephoScale cloud computing: $199 / 32 cores X 24h;
- OpenFoam CPU 24/7: $1,880 for 10,000 core-hours with CPU 24/7 HPC resources;
- OpenFoam Ohio Supercomputer Center: $500 for 4 hours block;
- OpenFoam support from CFD support (starter): $200 up to 2 hours of support;
- OpenFoam support from CFD support (advanced): $10,000 for big conceptual project of hundreds of hours.

5.2.6.3 Competitors summary

This is a categorized summary of the preliminary selected competitors. Their business models have been evaluated in regard of features and their monetisation model and compared to the targeted emGORA business model.

	FEATURES	MONETISATION MODEL
IaaS provider with SaaS offerings for manufacturing		
GOMPUTE	✓ Remote desktop ✓ Compute scheduler ✓ Phyton API for job Submission ✓ Third part integration	✓ HPC on demand: 0.03 €/hour ✓ Firm account subscription: 150 €/month (1 user account, app repository and 100 GB of storage ✓ Computing: 0.027 € / core-hour (with 3 years commitment) ✓ If it's not data intensive than 0.03 -> 0.02 and 0.027 -> 0.019
CPU 24/7	✓ CAE as a service ✓ CAE express ✓ CAE enterprise (highly custom)	✓ Computing: 0.049 €/core-hour ✓ 1.199 €/TFlops-hour

FORTISSIMO	✓ On-demand access to advance simulation and modelling resources ✓ Access to SOA HPC facilities ✓ Matchmaking services ✓ Access to a capability register advertising and promoting services ✓ Run simulation in hours rather than days ✓ Access to best practice guides	Different pricing models ✓ … $ fixed per service ✓ … $/item ✓ … $/hour ✓ …$ core/hour
Marketplaces for manufacturing SaaS		
RESCALE	✓ Simulation platform ✓ Workflow ✓ Visualisation ✓ File management ✓ API ✓ IT administration portal ✓ On-Premise HPC & scheduler integration ✓ Comprehensive license management ✓ Support	Storage and transfer (per user) ✓ First 100GB free ✓ 100GB - 1TB 99 $/m ✓ 1TB + 99 $/TB per month More usage models: instant, on demand, low priority, prepaid.
AweSim	✓ Online Modelling & Simulation apps and tools ✓ Educational materials and training courses ✓ Industry specific expertise and consultants	Experience level (inquisitive) ✓ Expert consultant: 5,000 $ ✓ HPC resources: 1,000 $ Experience level (engaged) ✓ SW: 100$/hour ✓ HPC resources: 400 $/month Experience level (power user) ✓ HPC resources: 85,000 $
UberCloud	✓ Cloud simulation platform ✓ Cloud CAE and cloud HPC	✓ Different pricing models per service used ✓ $179 / 1,000 anytime core hours starting at 16 CPU cores ✓ $199 / 16 cores X 24h ✓ $199 / 32 cores X 24h ✓ $1,880 for 10,000 core-hours with CPU 24/7 HPC resources ✓ $500 for 4 hours block ✓ $200 up to 2 hours of support ✓ $10,000 for big conceptual project of hundreds of hours

5.2.7 emGORA monetization model

5.2.7.1 Introduction

The goal of this section is to determine the most suitable commercial model that takes into account all the stakeholders involved and the services/components offered for the whole CFG platform. The ultimate goal is to define the final end user price for the emGORA. A possible view for comprehending the costs that an end user has to sustain while using emGORA is related to (1) the costs connected with the usage of the solution (ISVc) and the costs behind the usage of the emGORA itself along with its services and components. A possible formula for the end user price is reported here below. The formula accounts also for a markup both for the ISV and for the CFG platform.

$$P_{eu} = ISV_c + ISV_{\%} + CFG_c + CFG_{\%}$$

Where:

- P_{eu} = End user price;
- ISV_c = ISV costs (the costs for providing the ISV solution to the end user);
- $ISV_{\%}$ = ISV markup;
- CFG_c = CloudiFacturing costs (the costs sustained by CFG for providing the solution[10]);
- $CFG_{\%}$ = CloudiFacturing markup;

The first part of the equation is related to the ISV's costs and markup. These costs will be derived through the iterative break-even point analysis of the experiments studied in the different waves of the project for which different generalized revenue scenarios will be proposed by stressing the importance of flexible monetisation models (e.g. pay per use, subscription, etc.) to foster the adoption of this solution by EU manufacturing SMEs. Whilst, the second part of the equation regarding the CFG costs and markup will be identified throughout the emGORA analysis itself, which looks at the market in depth by considering competitive business models of similar platforms as well as it inspects the heterogeneous cost structure of the emGORA components.

The aim of the next sections is to highlight what are the different economics flows and monetisation models for the different components and sub-services of the . In doing so, it is important to better comprehend what are the different components and related hidden costs. When an end user indirectly consumes the CFG services / components, different providers (e.g. platform providers, resource providers, etc.) make available their capabilities in order to perform the different tasks (e.g. executing an artefact). This process involves costs which ultimately have to be covered by the final end user.

5.2.7.2 emGORA general monetization model

The aim of this section is to identify the interactions and economic flows that arise between the entities involved in the emGORA when an end user runs a solution and is billed. The first peculiarity of the monetisation model derives on the typology of the ISV. As a matter of fact, the section 1.4 shows different categories of ISV:

[10] Note that these costs might be indispensably related to the execution of an artefact

1. ISV with own web portal;
2. ISV with dedicated desktop GUI;
3. ISV without dedicated desktop GUI.

In the first case the end user does not have direct contact with CFG but is essentially using the ISV solution which in background runs over the CFG components. This is for example the case of the LCM solution named SymSpace in wave 1. Conversely, in the second and third case indeed the end user accesses the digital marketplace to find a solution with or without dedicated desktop GUI. So, in the first case there is a direct interaction with the ISV and the end user does not directly communicate with the emGORA. On the contrary, in the second and third case the end user does not communicate with the ISV but directly with the emGORA which is deploying the solution.

In case 1, the end user is billed by the ISV which will have its internal costs (e.g. solution fee, consulting, maintenance, etc.) as well as external costs generated by the usage of the emGORA components and execution engines (see Figure 27 below). The ISV in turn, is billed by the emGORA for the usage of the components and execution engines. As mentioned above, the end user in this case does not have direct contact with the digital marketplace (DM), that is the reason why the box DM has been made transparent in the figure below. The arrows in the scheme below indicate the payment flows.

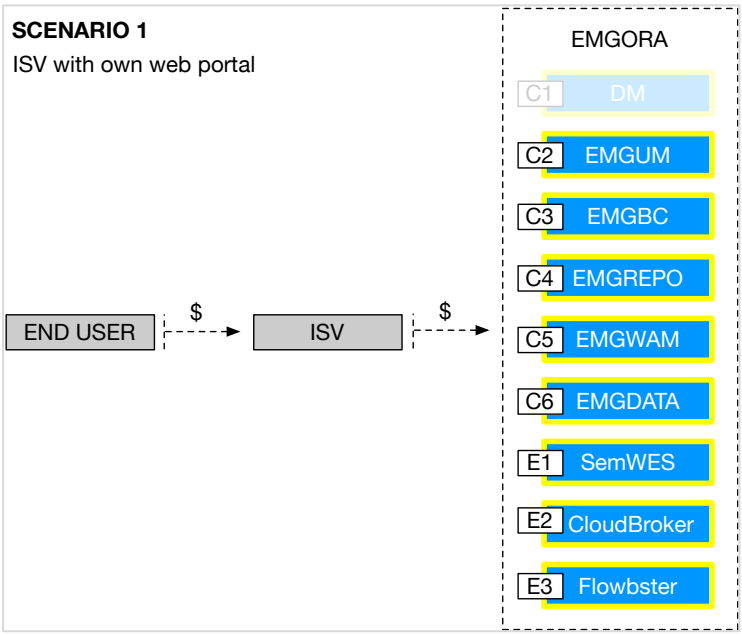


FIGURE 27: ISV WITH AND WITHOUT GUI.

In the second and third case the end user interacts directly with emGORA. It accesses the digital marketplace and runs the needed solution. The end user is billed by the emGORA which then pays the ISV in accordance with the corresponding usage of the solution.

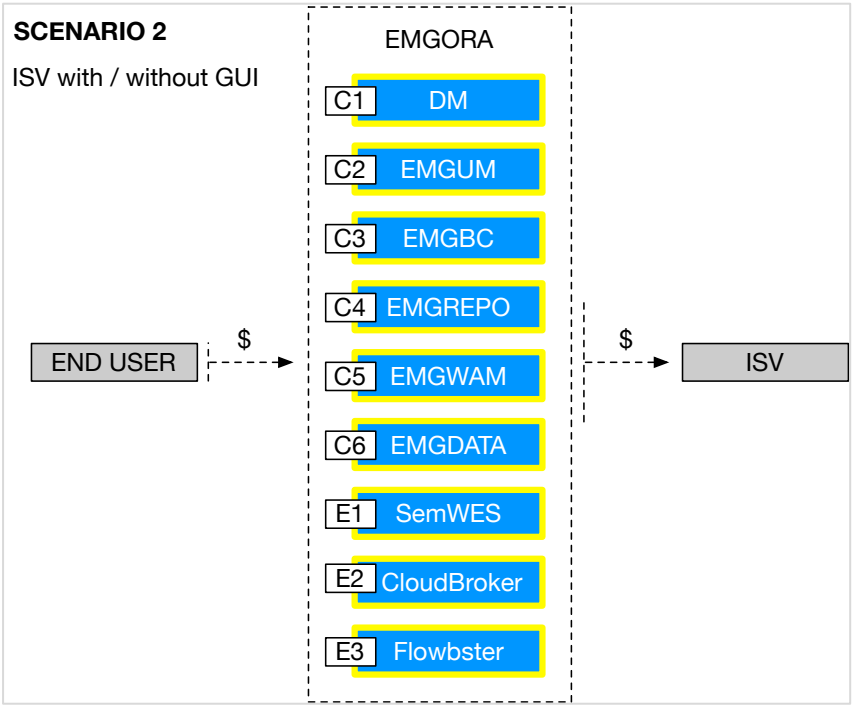


FIGURE 28: ISV WITH OWN WEB PORTAL

It is important to note that from the point of view of the price the consumer is different for the emGORA. In scenario 1, the emGORA interacts only with the ISV and does not have direct contact with the end user. The consumer in this case is indeed the ISV itself which is charged for the used resources. In scenario 2, the consumer is instead the end user, it finds, selects and runs the needed solution over the emGORA platform components and execution engines. In this case the ISV can be seen as a provider more than a consumer as it provides a solution which is deployed over the emGORA and is used by the end user. As a matter of fact, the emGORA pays the ISV accordingly to the solution's usage from the end users.

It is important to note that there will be other costs related to the usage of the emGORA independently of the execution of an artefact. In fact, the platform components and execution engines - that will be deployed in separated virtual machines (M) in a cloud provider - will in any case generate running costs for the operators of the CFG solution. Afterwards, the execution of an artefact will require its deployment into an independent VM which will generate some costs directly related to the execution of the artefact in this case.

5.2.7.3 emGORA Operation Costs

The emGORA operation costs are summarized in the table below.

Cost item	Cost
Personnel (2 FTE): • Preparing offerings • Invoicing • Monitoring transaction • Technical monitoring of the solution • Customer support / satisfaction	120,000 €/year

Marketing and communication (booths, media, etc.):	10,000 €/year
Third party services (accountant, lawyers, freelancers, etc.)	12,000 €/year
Hosting the solution / running operation	12,000 €/year
Total	154,000 €/year

5.2.7.4 Digital Marketplace Costs Structure

The table below reports the estimated cost structure for one full-time developer supporting the customers using the solution and the providers publishing new apps, including the further development of the Digital Marketplace, the monitoring of the running solution and adaptations needed to integrate with the CloudiFacturing platform.

Cost item	Cost
Personnel costs	78,000 €/year (65,000 €/year + 20% social security)
Hardware cost	600 €/year (High-end computer depreciated in 3 years)
Software cost	300 €/year (Subscriptions for enterprise software)
Training costs	1,000 €/year (At least one workshop / seminar per year)
Office rent	3,000 €/year (250 €/month per workplace)
Operational cost	300 €/year (Utilities and consumables)
Insurance cost	300 €/year (Proportion of the total costs)
External services	1,500 €/year (E.g. accounting, proportion of the total costs)
Total	**85,000 €/year**

5.2.7.5 emGORA financial model

This section presents the financial model of the emGORA solution.

The *input sheet* includes information on the calculation of revenues and total revenues, cost of goods sold (COGS), fixed costs, capex and amortization tables.

The summary of all the revenues and the fee are reported in the table below.

Year	**2021**	**2022**	**2023**	**2024**	**2025**

TOTAL DEMAND	12	75	129	191	255
TOTAL REVENUE WAVE 1	70,058 €	274,590 €	463,568 €	669,038 €	835,494 €
TOTAL REVENUE WAVE 2	31,231 €	198,766 €	379,366 €	550,223 €	710,340 €
TOTAL REVENUE WAVE 3	37,983 €	177,509 €	316,100 €	457,223 €	579,688 €
TOTAL REVENUE	139,272 €	650,865 €	1,159,034 €	1,676,484 €	2,125,521 €
FEE (scenario 1)	20,891 €	97,630 €	173,855 €	251,473 €	318,828 €
FEE (scenario 2)	41,782 €	195,259 €	347,710 €	502,945 €	637,656 €
FEE (scenario 3)	62,673 €	292,889 €	521,565 €	754,418 €	956,485 €

The total demand corresponds to the sum of all end users who use the platform over the 5 years of forecasts. The three total revenues relating to the three experiments' waves reflect the sums of the revenues that are expected to be generate by all the experiments (see tables below). Total revenue is calculated as the sum of total revenue per wave considering the increase in demand. The last three columns correspond to the commission imposed by COGS calculated on the total revenue. Three different scenarios have been constructed, in which the profit varies based on the percentage associated with COGS (15%, 30% and 45%).

The considered COGS with the relative scenarios are those in the following table.

COGS			
	Scenario 1	Scenario 2	Scenario 3
TOTAL	15%	30%	45%
Execution engine providers	2.5%	5%	7.5%
CBC	2.5%	5%	7.5%
DM	10%	20%	30%

The *scenario* considered for the calculation of the revenue is represented in the tables below, in which the experiments of the Wave 1 and Wave 2 were involved.

Wave 1:

EXP. 3					
Year	1	2	3	4	5
Revenue	34,128 €	49,776 €	99,552 €	149,328 €	199,104 €
End user demand	1	2	4	6	8
ISV solution	30,800 €	43,120 €	86,240 €	129,360 €	172,480 €

Computing	3,328 €	6,656 €	13,312 €	19,968 €	26,624 €

EXP. 4

Year	1	2	3	4	5
Revenue	100,000 €	150,000 €	250,000 €	350,000 €	450,000 €
End user demand	2	6	10	14	18
Computing + ISV solution	50,000 €	150,000 €	250,000 €	350,000 €	450,000 €

EXP. 5

Year	1	2	3	4	5
Revenue	50,375 €	250,375 €	400,375 €	600,375 €	750,375 €
End user demand	1	5	8	12	15
ISV solution	50,000 €	250,000 €	400,000 €	600,000 €	750,000 €
Computing	375 €	375 €	375 €	375 €	375 €

EXP. 6

Year	1	2	3	4	5
Revenue	9,000 €	225,000 €	315,000 €	450,000 €	585,000 €
End user demand	1	25	35	50	65
ISV solution	3,000 €	75,000 €	105,000 €	150,000 €	195,000 €
Computing	6,000 €	150,000 €	210,000 €	300,000 €	390,000 €

EXP. 7

Year	1	2	3	4	5
Revenue	40,025 €	240,150 €	480,300 €	680,425 €	800,500 €
End user demand	1	6	12	17	20

ISV solution	40,000 €	240,000 €	480,000 €	680,000 €	800,000 €
Computing	25 €	150 €	300 €	425 €	500 €

Wave 2:

EXP. 8

Year	1	2	3	4	5
Revenue	3,380 €	10,140 €	16,900 €	27,040 €	40,560 €
End user demand	1	3	5	8	12
ISV solution	500 €	1,500 €	2,500 €	4,000 €	6,000 €
Computing	2,880 €	8,640 €	14,400 €	23,040 €	34,560 €

EXP. 10

Year	1	2	3	4	5
Revenue	10,749 €	85,992 €	150,486 €	204,231 €	268,725 €
End user demand	1	8	14	19	25
ISV solution	9,800 €	78,400 €	137,200 €	186,200 €	245,000 €
Computing	949 €	7,592 €	13,286 €	18,031 €	23,725 €

EXP. 11

Year	1	2	3	4	5
Revenue	435 €	870 €	1,305 €	1,740 €	2,175 €
End user demand	1	2	3	4	5
ISV solution	374 €	748 €	1,122 €	1,496 €	1,870 €
Computing	61 €	122 €	183 €	244 €	305 €

EXP. 12

Year	1	2	3	4	5
Revenue	2,950 €	17,700 €	35,400 €	53,100 €	73,750 €
Customer demand	1	6	12	18	25
ISV solution	2,750 €	16,500 €	33,000 €	49,500 €	68,750 €
Computing	200 €	1,200 €	2,400 €	3,600 €	5,000 €

EXP. 13

Year	1	2	3	4	5
Revenue	17,385 €	34,770 €	69,540 €	139,080 €	208,620 €
Customer demand	1	2	4	8	12
ISV solution	14,400 €	28,800 €	57,600 €	115,200 €	172,800 €
Computing	2,985 €	5,970 €	11,940 €	23,880 €	35,820 €

EXP. 14

Year	1	2	3	4	5
Revenue	27,562 €	248,060 €	485,100 €	675,255 €	826,850 €
Customer demand	1	10	22	35	50
Computing + ISV solution	27,562 €	248,060 €	485,100 €	675,255 €	826,850 €

The total costs for the emGORA operator are listed below. A cost of 60,000 €/year it is considered for each FTE. The cost items involved in the analysis are estimated to grow by 10% every year.

FIXED COSTS

emGORA OPERATOR

Year	1	2	3	4	5
TOTAL COST	154,000 €	157,400 €	281,140 €	285,254 €	349,779 €
FTE	2	2	4	4	5

Marketing	10,000 €	11,000 €	12,100 €	13,310 €	14,641 €
3 party services	12,000 €	13,200 €	14,520 €	15,972 €	17,569 €
Hosting the solution	12,000 €	13,200 €	14,520 €	15,972 €	17,569 €

CAPEX

Year	1	2	3	4	5
HW costs digital marketplace	2,000 €				

AMORTIZATION TABLES

Year	1	2	3	4	5
Tangibles					
HW costs digital marketplace	400 €	400 €	400 €	400 €	400 €

A comparison between the fee (the percentage of total revenue) and the fixed costs considering the three scenarios is shown in the following figure (Figure 29). It can be seen that in the first year the costs are higher than the revenue. But from the second year, apart from scenario 2 (the one in which the profit percentages are lower), the costs are covered, and the gap increases quite rapidly.

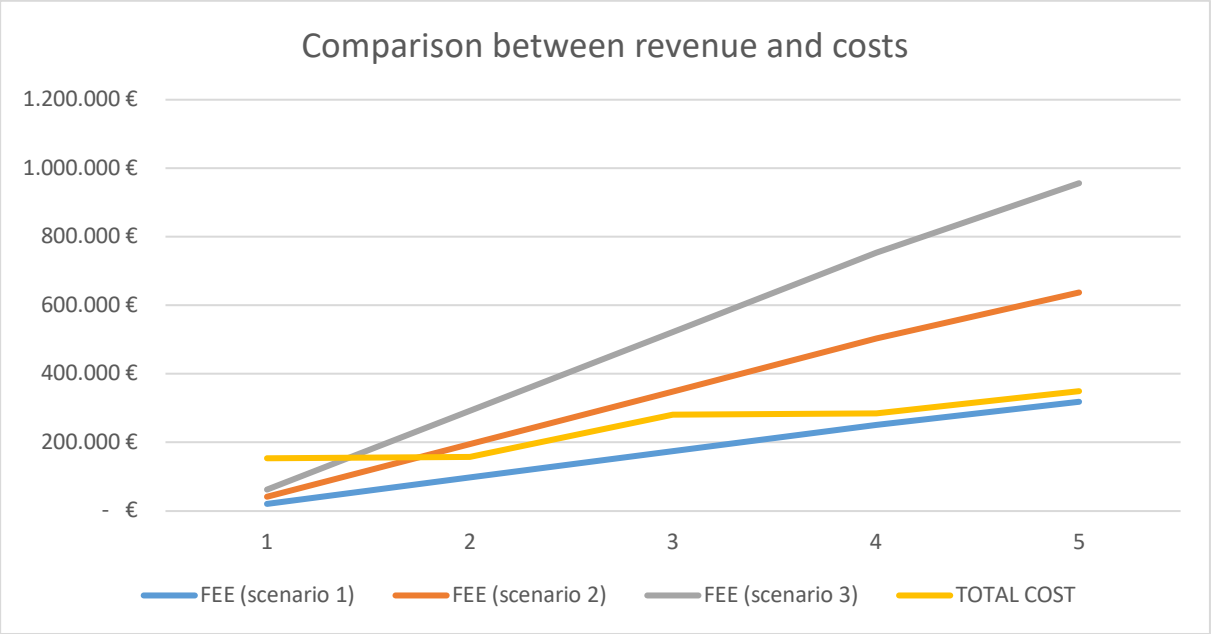


FIGURE 29: CHART OF REVENUE AND COSTS.

The financial performance over five years is provided by the income statement presented below.

Year	1	2	3	4	5
REVENUE	139,272 €	650,865 €	1,159,034 €	1,676,484 €	2,125,521 €
COGS	41,782 €	195,259 €	347,710 €	502,945 €	637,656 €
GROSS PROFIT	97,491 €	455,605 €	811,324 €	1,173,539 €	1,487,865 €
FIXED COSTS	154,000 €	157,400 €	281,140 €	285,254 €	349,779 €
EBITDA	- 56,509 €	298,205 €	530,184 €	888,285 €	1,138,086 €
EBIT	- 56,909 €	297,805 €	529,784 €	887,885 €	1,137,686 €
PROFIT	- 39,837 €	208,464 €	370,849 €	621,520 €	796,380 €
%	-29%	32%	32%	37%	37%

Profit considers the impact of taxes at 30%.

The comparison between profit, total costs and total revenue are considered in the figure below (Figure 30). It can be seen that the total costs are covered from the second year and, as above, the gap between the profit and the costs grows more and more over the years.

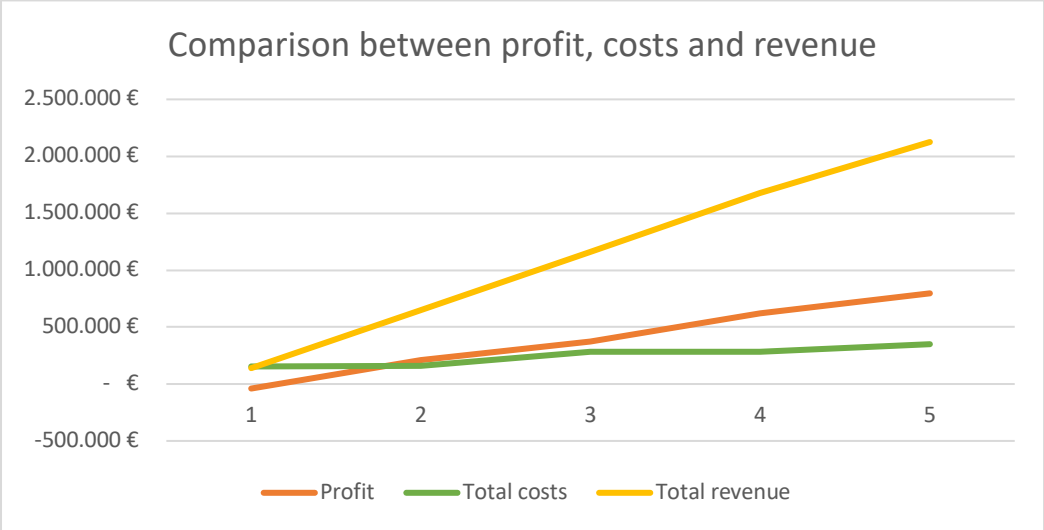


FIGURE 30: CHART WITH PROFIT, COSTS AND REVENUE.

6 DESIGN APPROACH FOR THE EMGORA DIGITAL MARKETPLACE

The emGORA Digital Marketplace will be the frontend implementation of the CloudiFacturing platform in the background. It will be available under the domain www.emGORA.eu, the homepage, which will be the main entry point to the services of the DM in the internet. The web presence of the DM aims to showcase its services (defined in the Guidelines for the Modular Layout of the Digital Marketplace), to directly sell services to customers, and to support the development of a community around the CloudiFacturing technology (e.g. cloud/HPC, big manufacturing data, data analytics, simulation software, engineering and manufacturing, etc.). Therefore, it is supposed to inform the visitor in a short and clear way about the purpose of the website and its functions.

The initial draft of the Marketplace highlighted emGORA's provisions for ISVs, VARs and resource providers as they will be the first customers of the emGORA Marketplace. In the review process of the first web layout of the DM it has been argued, that the draft initially didn't address manufacturing SMEs well enough as they will be the actual main consumer of software offered on the DM. The initial draft focused more on the underlying infrastructure and compute power and it also used many technical terms which could be intimidating for manufacturing SMEs.

The current draft will therefore clearly highlight the Marketplace idea as this is a meaningful term which can be understood by anyone without a deeper knowledge. ("Things will be offered on this marketplace by a number of merchants and someone will be able to consume them").

6.1 The Homepage

Often seconds decide whether potential customers take a closer look at a website or if they just leave the website again. The structure of the website and the quality and structure of the content is a strong influencing factor. A site that looks poorly structured could quickly be considered irrelevant and be abandoned. Every website looks different and every user has his own way of looking at websites. Therefore, it's important to understand what one's own target group will primarily look for.

6.1.1 General design aspects

WP7 decided to create a clear and professional design which takes into account and highlights all offers in a democratic manner (Figure 31).

- **General design:** The focus in this layout draft was to implement a clear, not overloaded and well structured website which offers a logical and easy navigation to the entry points for the different customers.
- **Meaningful pictures and icons:** They facilitate understanding of the web content and helps guide the user through the webpage. High-quality images and graphics increase attention. Images with people, are usually perceived as inviting and automatically attract attention.[11]

[11] More meaningful pictures with regard to modelling and simulation should be requested from the partners as the development process proceeds. This sort of high quality pictures is not easy to get from other sources, like photo stocks, etc. The design approach therefore uses only a few pictures. With regard to publication the use of more meaningful pictures from the area of computer simulation and modelling should be considered.

- **Colour:** Colour is an important factor regarding the appearance user impression of a website. Psychological studies on colour effects have shown that users can be influenced consciously and unconsciously by the colour scheme of a website. The colour of the website is a warm blue, almost a corn blue. Blue is usually positively associated with competence, trust, duty, efficiency, serenity, duty, logic, coolness. Negative associations using blue can be coldness, aloofness, lack of emotion, unfriendliness, old-fashioned, conservative. We therefore decided for a very warm blue, capital letters and a fresh font (DIN-Pro). This generates a warm and slightly playful look without undermining the professional image. A fresh green or sometimes a warm red highlights function buttons. The green is used for normal, expected buttons. The red is used for special call-to-actions as shown for example in the webinar advertisement since the color change on a call-to-action button can result in a significant improvement in the conversion rate. **Figure 32** shows the colours used for the emGORA layout in detail.

FIGURE 31: PREVIEW OF THE EMGORA HOMEPAGE.

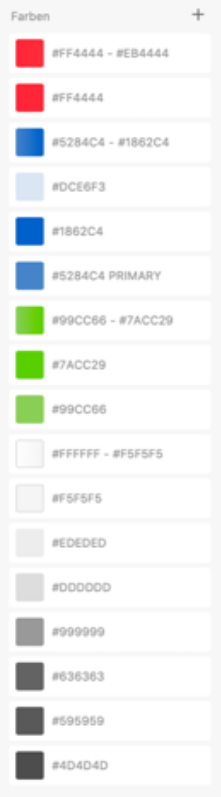


FIGURE 32: COLOURS USED FOR THE EMGORA LAYOUT.

The start page of course shows an overview for the customer as it may be the first entry point for the customer. More likely the potential customer will approach the website from a subsite. Therefore, the logo will lead them to the start page from where they can access all other areas. The design approach doesn't include an extra „Home Button“ in the main menu since perception studies about websites have shown, that website visitors don't necessarily expect this option to be there in place anymore.

6.1.2 Header and main menu

The header includes the logo and the main tagline. As the Marketplace will be the main but not the only entry point to the provisions offered on the emGORA website the term “emGORA Solutions” for Digital Engineering was chosen for the main tagline. The term “Digital Engineering” is the most meaningful term to explain the purpose of the marketplace from our point of view. It refers to the consistent use of digital methods and tools in the product development and production process, which aims at improved planning quality and process control over the entire product life cycle. Thus, it understandably describes what can be expected from the DM.

The sub-tagline reads “emGORA is Europe’s largest HPC Infrastructure Management Platform for Digital Engineering”. It enables your company to boost innovation on demand through the power of advanced Simulation, Modelling and Data Analytics for Industry. Therein the sub-tagline gives an additional information on the main tagline above which will be understood by end-users.

Below the user finds a clear "call-to-action" to get in contact and a search line where she can directly browse the publicly available offers of the DM.

The main menu is kept clean obtaining only five bullet points. It picks up the main propositions of the marketplace (the marketplace itself, offering a variety of simulation solutions, the technology behind and the information that there's already a growing community). The five main menu items are “MARKETPLACE”, “SOLUTIONS”, “PLATFORM”, “COMMUNITY” AND “SUPPORT”. The menu structure will be further developed in the course of the evolving platform and its services.

Menu item “Marketplace”

Hovering over the “MARKETPLACE” menu item the following menu offering an entry point to the marketplace and displaying the general services on the emGORA platform (Figure 33). Clicking on it, it will also lead to an overview page, where solutions can be sorted by personal needs (Figure 35). More detailed offers will be taken into account by the layout as the platform evolves.

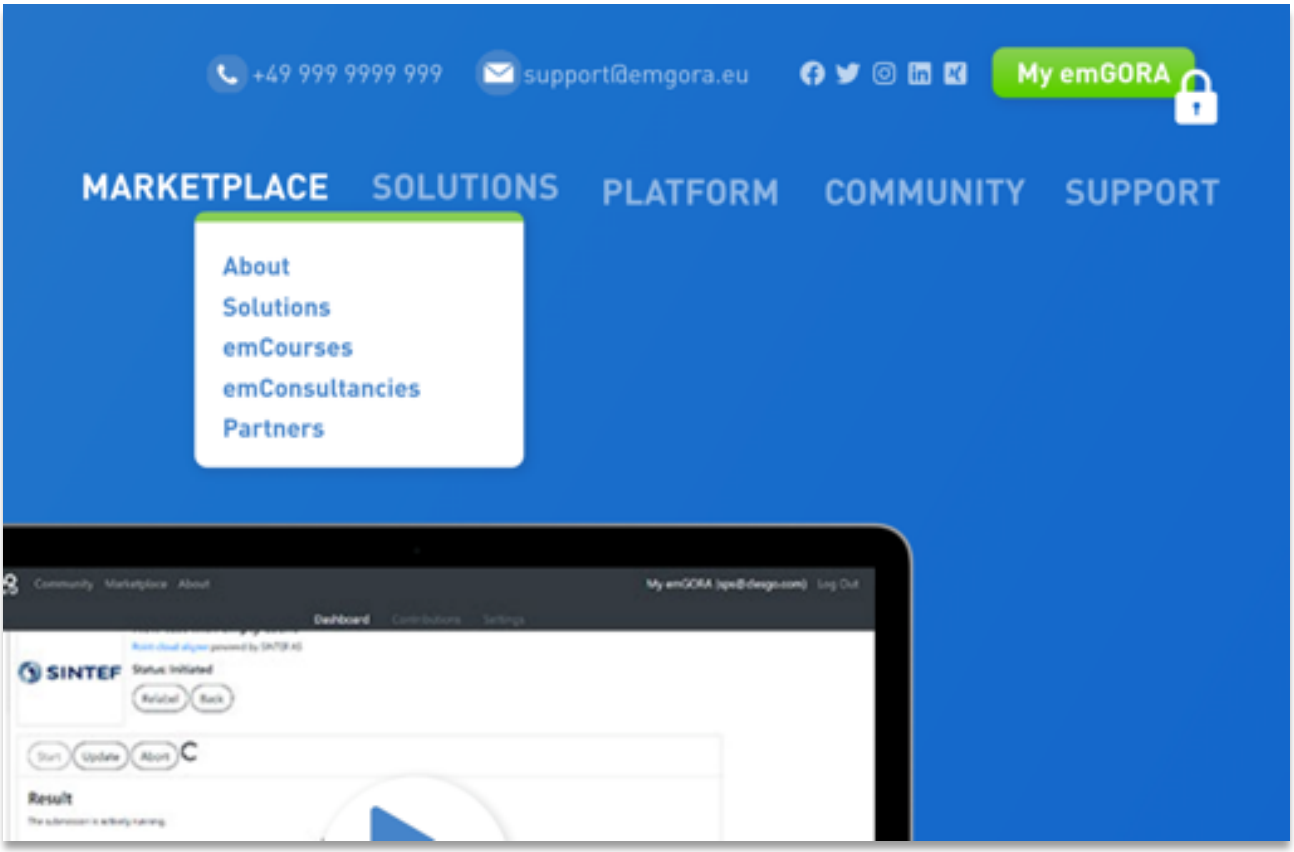


FIGURE 33: GENERAL SERVICES FOR THE EMGORA DIGITAL MARKETPLACE.

Menu item "Solutions"

Hovering over the "SOLUTIONS" menu item the following menu opens showing a sorting mechanism (by simulation field, by industry and by brand) of the software solutions on the emGORA platform (Figure 34). If this is not detailed enough a click will open up an overview page including a more detailed sorting mechanism (Figure 35). More detailed offers will be taken into account by the layout as the platform evolves.

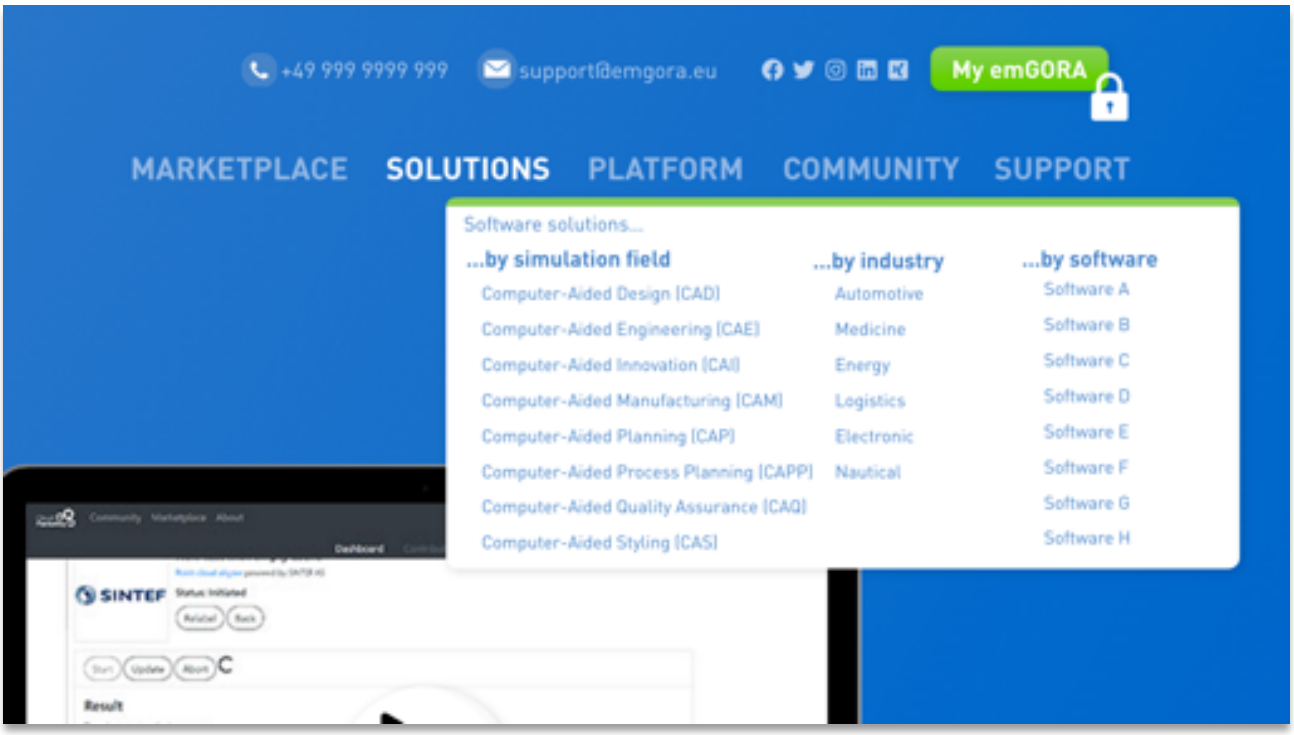


FIGURE 34: SOFTWARE SOLUTIONS AVAILABLE ON THE EMGORA PLATFORM.

FIGURE 35: SOLUTIONS OVERVIEW PAGE OFFERING SORTING MECHANISM.

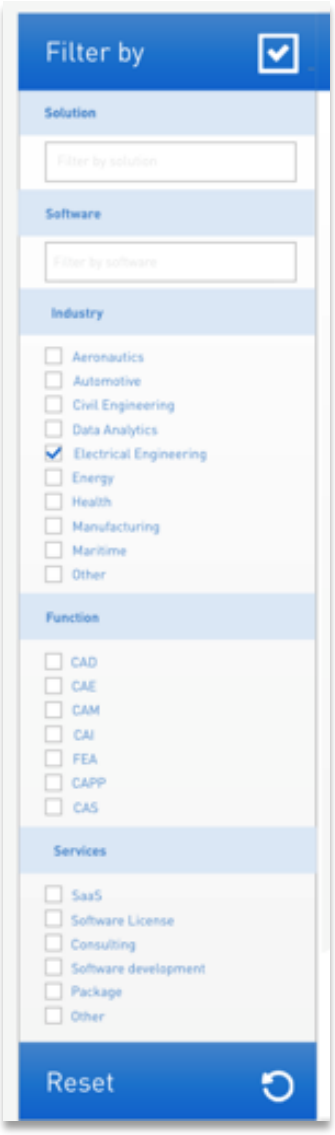


FIGURE 36: SOLUTIONS SORTING MECHANISM - DETAIL VIEW.

Menu item “Platform”

Hovering over the “PLATFORM” menu item the following menu (Figure 37) will open. It will lead to detailed information on the platform underneath (history, platform components, execution engines, etc.) clicking on the "overview" menu item. The next item will further explain the resources that can be used via the emGORA platform. The following items are more or less self-explanatory. This menu will particularly provide detailed technical information for the interested visitor. Detailed offers will be taken into account by the layout as the platform evolves.

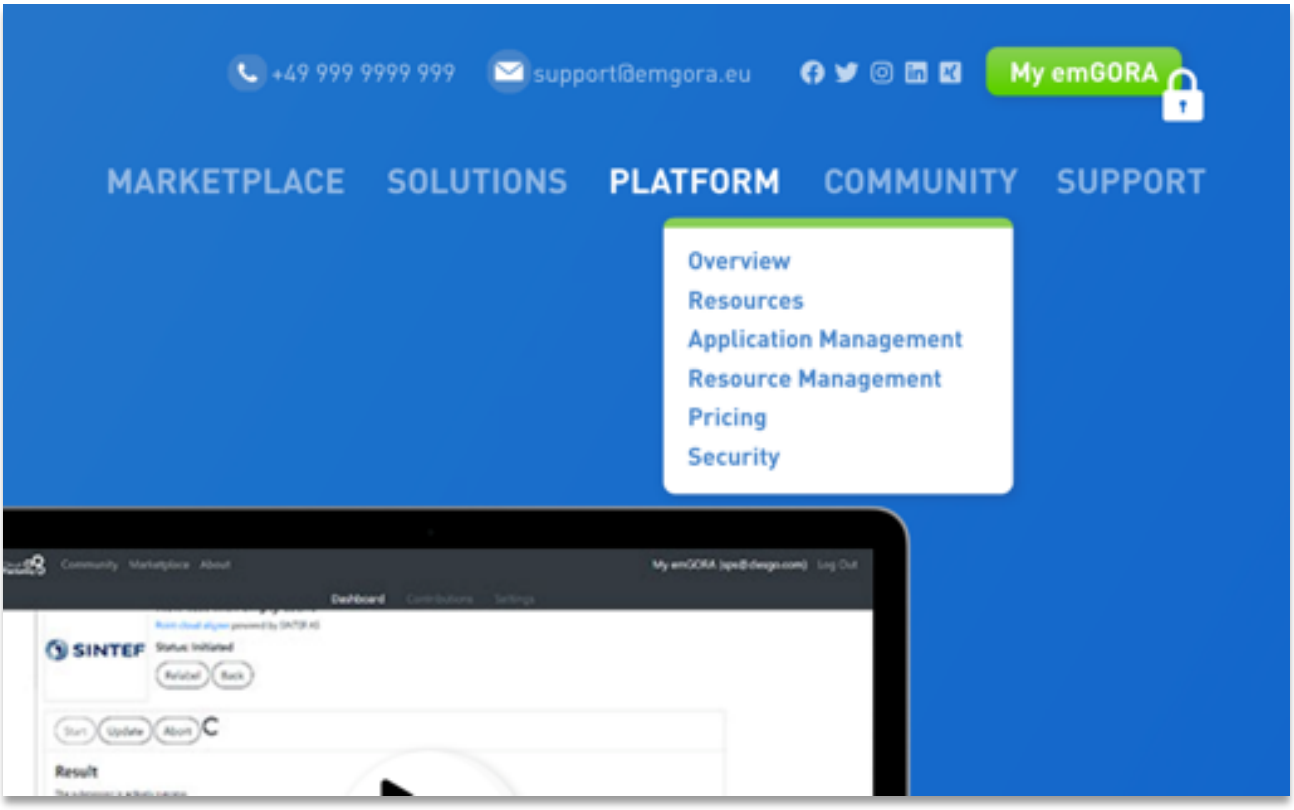


FIGURE 37: DESCRIPTION OF THE PLATFORM SERVICES.

Menu item “Community”

The “COMMUNITY” item will provide access to various technical forums, called “emSpaces” here, where technical topics can be discussed and support and advice can be obtained.

Hovering over this menu item, an appearing menu will further provide entry points to all community related topics, like matchmaking services, information services, articles (industry insights), tutorials, webinars and access to training material (Figure 38). It is foreseen that this area will also provide content services, which means that users who have a profile on the emGORA platform will be able to purchase content services which include publishing of own content and marketing support (e.g. special highlighting of the company’s solution on the platform) on the emGORA DM. More on this topic can be found in the section on “Digital Marketing” below.

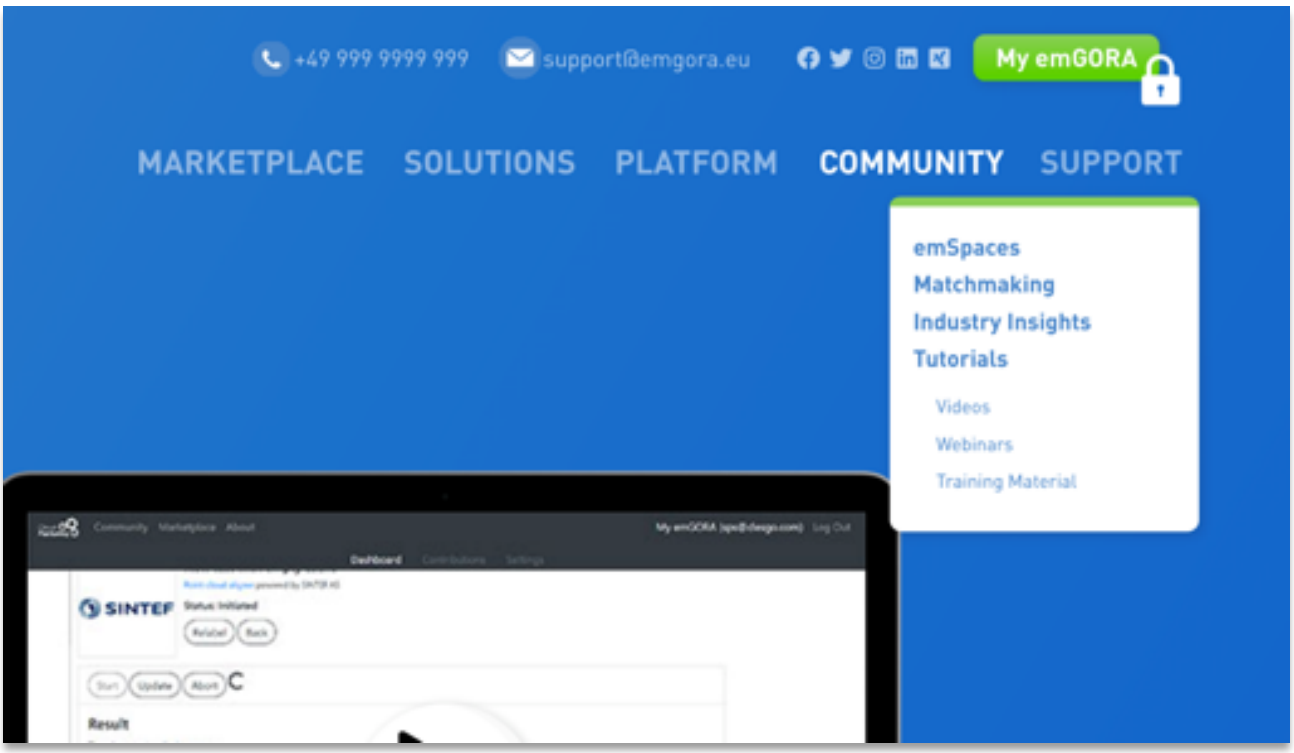


FIGURE 38: THE COMMUNITY MENU PROVIDES ACCESS TO COMMUNITY SERVICES.

Menu item “Support”

Under the “SUPPORT” item users will find various options to get in contact and / or receive further information and help (Figure 39).

Clicking on “contact”, the user will be led to a contact form (**Figure 40**). Here they can also find other entry points, like an option to register for the newsletter or to create a personal profile. The following menu items are more or less self-explaining. Here it is important to mention here is, that some menu points (like “Helpdesk”, “Technical Support”, “Training & Consulting”) are listed in this menu, because they’re not only available for registered users, but they will lead to many offers that will be restricted to the latter. Therefore, this can also be seen as “invitation points” to create an own profile. The user will voluntarily create an own profile as it will facilitate the interaction without feeling rejected by compelled actions.

For common questions there will be a subsite offering Frequently Asked Questions (FAQ) to the customer. This is not least supposed to lower the administration duties on the platform.

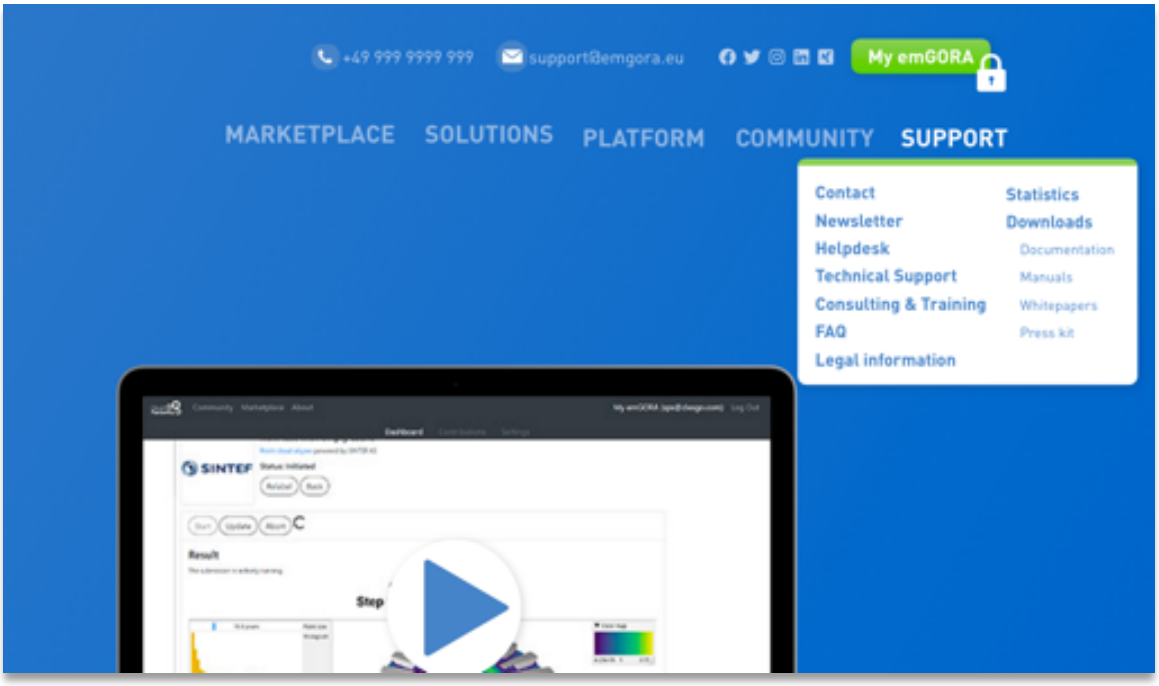


FIGURE 39: SUPPORT MENU OFFERING CONTACT OPTIONS, CONCRETE SUPPORT, TRAINING AND INFORMATION SERVICES.

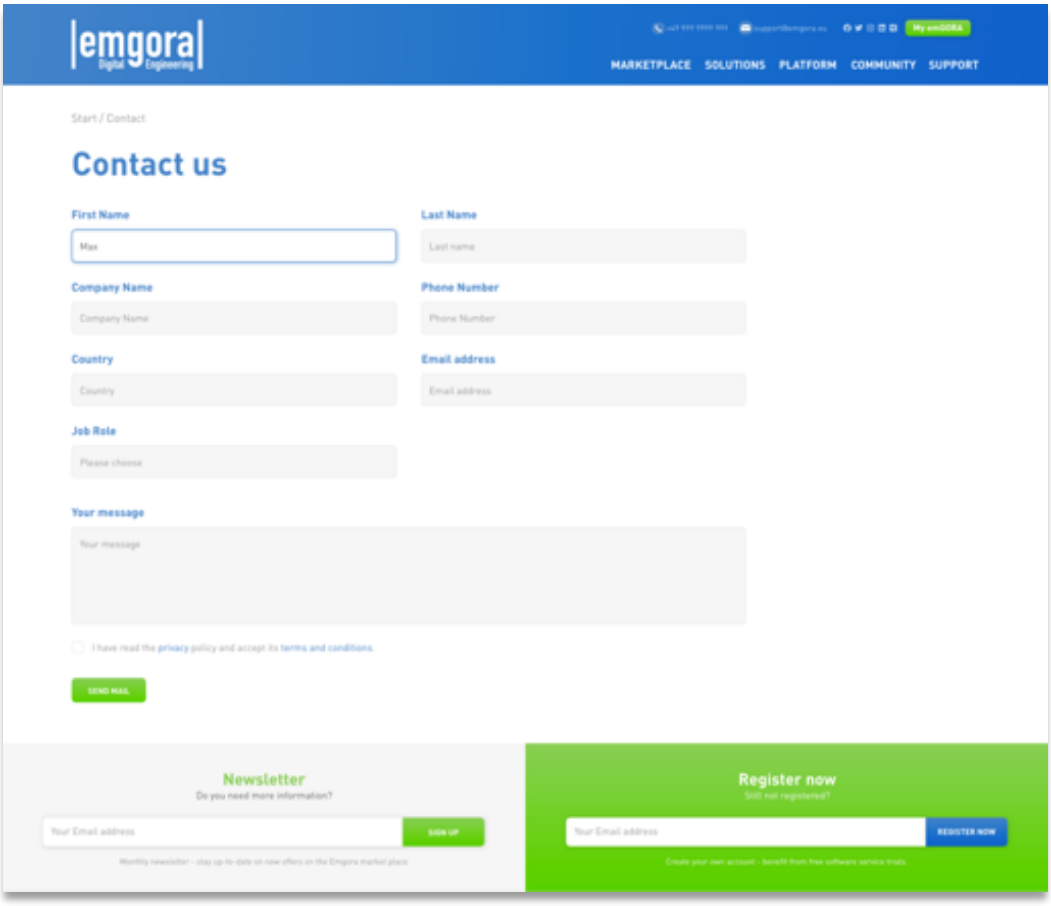


FIGURE 40: DIFFERENT POINTS TO CONTACT.

6.1.3 Main provisions highlighted in three central tiles

As cited above, the emGORA Marketplace is supposed to particularly provide access to 1.) the marketplace for simulation software solutions for engineering and manufacturing, 2.) a living community where ideas can be shared and matchmaking can take place and 3.) an area describing the opportunities for technology providers (ISVs, VARs, compute resources providers).

The design approach particularly highlights three boarding points in three tiles in the middle of the page. This is supposed to be one of the first areas to attract the visitors' attention:

1. Marketplace: Leading to an overview of available solutions on the platform.
2. Join the community: Leading to a website where the user can make his own account.
3. Become a partner: Leading to an overview site explaining the different provisions for technology providers.

All areas are equipped with meaningful icons that immediately evoke an association in the user and support the meaning of the text.

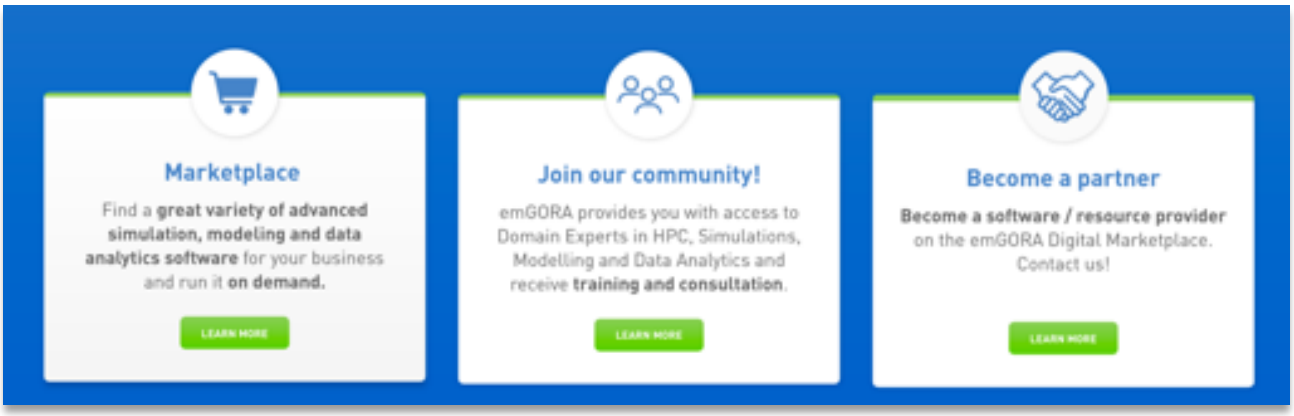


FIGURE 41: MAIN PROVISIONS HIGHLIGHTED IN THREE CENTRAL TILES.

6.1.4 Advertising section for internal content

There needs to be space for marketing on the emGORA Marketplace. For own purposes of course, but the emGORA marketplace shall be seen as a marketing platform where customers find best conditions to reach their customers and /or interesting partners. Users who have their own profile will therefore obtain different publishing options (packages to be purchased) to present themselves on the marketplace.

Beyond that this external content will be a perfect support for emGORA's own marketing, as continuously updated websites which offer high quality content containing important SEO keywords, will be rewarded by search engines, like Google. This will be the case with regard to articles in particular. Of course, there need to be guidelines to avoid that users just publish own advertisements and rather have an incentive to present themselves as knowledge experts. More on this issue will be found in the section dealing with "Digital Marketing" below.

Figure 42 is the continuation of the startpage showing an ad for a webinar. The idea behind this advertisement is not only to offer a webinar, but to offer a webinar "on-demand" (which will take place if there is a sufficient number of interested people) which represents a low-threshold opportunity to get users interested and / or in contact with emGORA. To book a webinar on demand, the user of course leaves contact credentials and can be contacted afterwards.

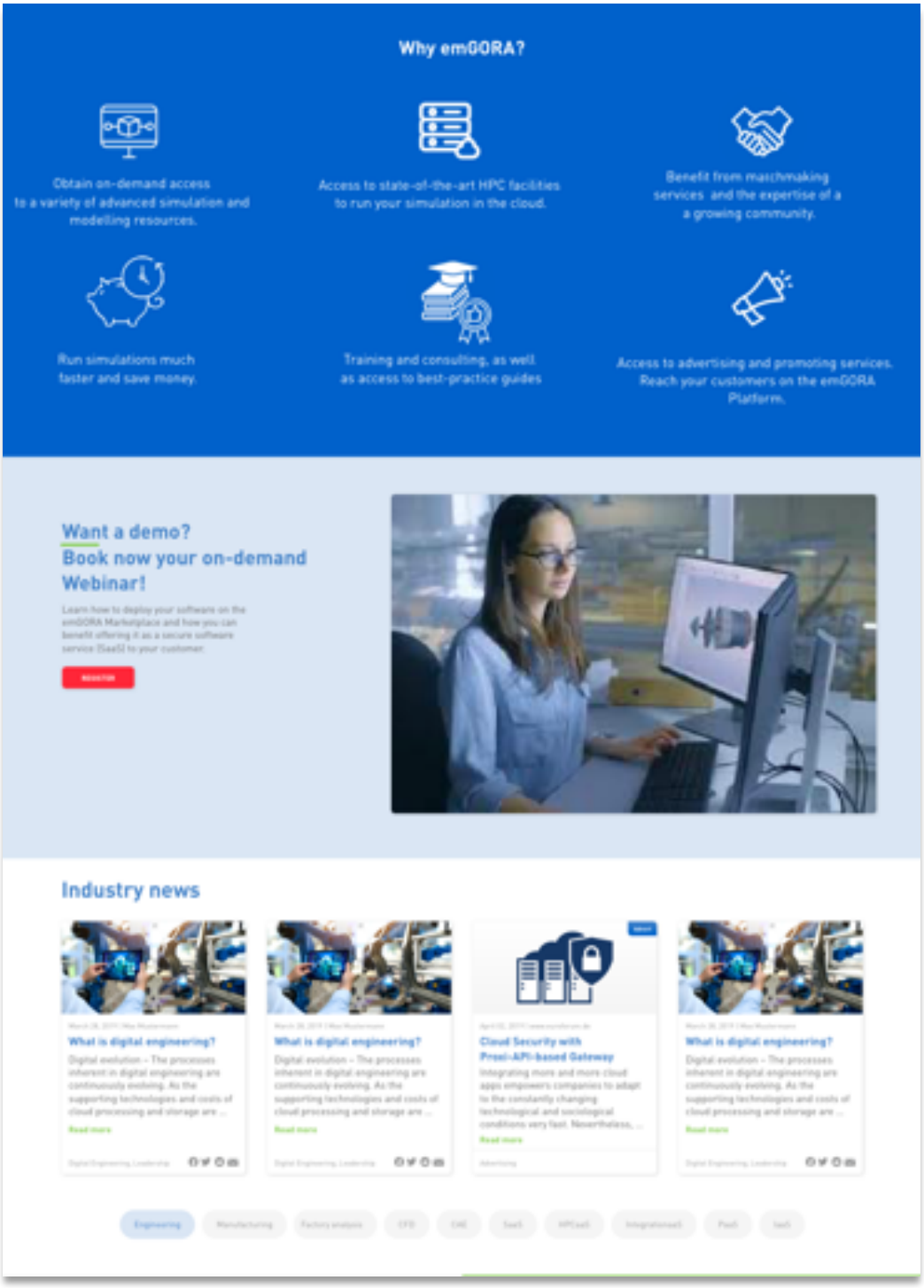


FIGURE 42: HOMEPAGE – ADVERTISING SECTION.

6.2 Industry Insights (News blog)

The news section - called "Industry Insights" - is available in the bottom area of the homepage and provides various advertising opportunities (**Figure 43**). As already described, this section will be very important for online marketing purposes as continuously updated SEO content will help to increase the visibility of the emGORA DM. However, it will be crucial that the content is of high quality and there’s no content created just for the sake of containing keywords.

Figure 43 shows different options for users to place own content on emGORA. These options should be linked to special offers (content packages). These offerings will be available in the personal area.

FIGURE 43: NEWS SECTION PROVIDING VARIOUS ADVERTISING OPPORTUNITIES.

6.3 My emGORA

The personal profile will be available – according to today's web user expectations – in the upper right corner. **Figure 44** shows the button when the user is not logged in. Clicking on the button will automatically direct the user to a field, where she can insert his user credentials. If she has no personal profile at that point in time, she will be able to create one in the subsequently shown menu. Once logged in, this area will offer services that are only available to users with a profile. For more information on different content types and availability by subscription form, see also section 7.4.

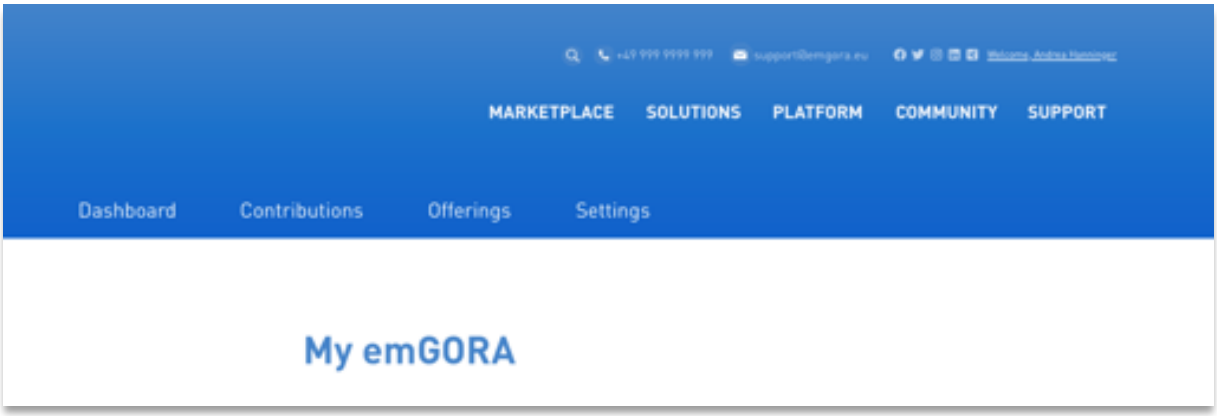


FIGURE 44: MY EMGORA - SECURED PERSONAL AREA.

7 CONCRETE MARKETING MEASURES AND TOOLS

The following sections contains some ideas on marketing tools and mechanisms (as far they haven't been already mentioned, yet) that should be implemented, to reach the different target groups of the DM. This preliminary marketing approach won't deal in detail with common marketing methods (and associated editorial plans), such as social media, newsletter, press releases, ads (online & offline), articles in magazines and on relevant online platforms, etc.

The regular use of these tools is foreseen for the marketing of the emGORA Digital Marketplace and a detailed plan displaying their concrete use / deployment, has to be elaborated when the platform is ready to be published. So far, this marketing plan is restricted to marketing mechanisms that are directly tied to certain offers of the DM that are already fixed.

Being a generic, open Marketplace that supports plenty of software brands, emGORA aims to offer the opportunity to stakeholders to publish articles (e.g. on service topics, regarding their own software in the emGORA Digital Marketplace) in the emGORA News Area in the form of sponsored articles. This will be a threefold marketing tool, enabling SEO content on a regular basis, gaining revenue as the service will be a paid offer and the outlook, emGORA will be able to invest in its brand building, being perceived as a marketing platform.

7.1 Digital Marketing Approach - Preview

Since a website is an inevitable marketing tool today which offers unique marketing options, a digital marketing strategy must inevitably focus on digital and in particular on content marketing.

Information services or content marketing are necessary for brand building, user information services and will also offer a mechanism to get favoured by search engines if contents contain the right keywords. Worthful content that really helps the user, will not only increase website traffic, but also the positioning at search engines through search engine optimisation (SEO).

SEO (supported by SEA and common marketing measures)[12] will help to increase the awareness of the marketplace overall. Relevant articles, forum contributions (some of them are supposed to be publicly available for content marketing purposes, but also to lower entry barriers), etc. will give emGORA an expert status and make users return if they find the information useful.

Content Marketing therefore belongs to pull marketing by its nature. This means, content marketing uses an existing interest among potential customers and attracts them by delivering high-quality content that matches the interest and it therefore offers added value. The customer is not the passive part here, but the active one, searching for information on the internet. Thus, pull marketing creates demand in an indirect way while push marketing nowadays rather deters and annoys customers. The measures of pull marketing are directly aimed at the target customer and strengthen his already existing interest.

From a digital marketing perspective, the web content which will be generated for these purposes can be distinguished in paid, owned and earned media.[13]

[12] Digital Marketing Tools, like Search Advertising Tools and Social Networks will of course be used in the digital marketing campaign as mentioned above. But they won't be part of this particular marketing approach preview which focuses on website inherent marketing tools which are particularly based on SEO measures. A detailed marketing plan is part of the current work of WP7 and will be further developed (concomitant to the web layout) as the platform evolves.

[13] Owned media: Owned media helps to draw attention to a brand as a useful resource of information in the first step, and also to a product in the second step. This kind of media includes every form of website content, but especially blog content, e-books, whitepapers and the content you distribute on your social media channels. This kind of media can be combined with earned media as it is intended with regard to the emGORA Marketplace.

Earned media: Earned media consists of all the content and conversation around a brand or product that has been created by somebody else and published somewhere other than owned channels. Earned media can include press coverage, social media mentions, shares and retweets, product or company reviews, and blog posts authored outside one's own company. Increasing the visibility and reach of one's own content through social media engagement will increase earned media.

Paid media: Paid media consists of any marketing that money is paid for. Traditionally this would include TV adverts, radio spots, and print advertising. Online, there are a few subcategories, such as Pay Per Click (PPC) adverts. One of the most common forms of PPC is search engine advertising (SEA).

Shared media: Shared media is when some people specially distinguish shared media is what you share on social networks or is shared by your followers.

7.1.1 Website Content by Access

To encourage the customer to get in contact and set-up an own profile on emGORA, there will be different levels of availability of the content.

On the one hand there will be publicly available content to create awareness and fulfill the above-mentioned SEO goals. On the other hand, there must be a collection of specialized content formats that will require at least to sign-up to the marketplace (e.g. training material & articles or less confident material). More specific content, like training material or webinars will – if not used for marketing purposes only – be a paid offer.

7.1.1.1 Public content

In summary the content elements that will be publicly available, are:

1. owned media:
   - industry insights articles (articles about technical updates, new solutions and providers, regional information), videos and selected webinars
   - selected downloads (e.g. presentations, webinar brochures and other PR material / Press Kit).
2. earned media: publicly available community forums and sponsored articles by software providers and advertising customers (emGORA DM will give its customers visibility while it establishes a revenue stream at the same time. This will also help the marketing purposes of emGORA, as the website will continually be updated with content in an ideal case.)

7.1.1.2 Newsletter / content subscription

This type of content will actually be publicly available and therefore SEO relevant, but restricted to users who leave some user credentials. So, this kind of content can generate potential leads, emGORA staff will be able to pursue.

1. owned media: people who sign up for the newsletter, will have access to the general newsletter or maybe other newsletters generated for special topics. Of course, this category of people will have access to the publicly available content, described above.
2. Owned / earned media: most downloads as well as selected sponsored articles by software providers for instance. In this case, articles can be hidden as “special content” that can be unlocked by the submission of contact details.

7.1.1.3 Membership

Owned / earned media:

1. A membership will enable access to all sorts of media and to media services which enable to write and publish (after review) own content.
2. Confidential technical data, documentations, training material, etc.

7.2 emGORA Community Training – Academy Approach

An “offline” marketing approach that has already been discussed intensively within the project consortium is the installation of something like an academy / a certificate which enables to train consultants on the specifications of the emGORA Digital Marketplace who can serve their customers with that knowledge / services. Next to the training courses, consulting and webinars which will be given / held by the emGORA team mainly this will be an important mechanism to gain trust. If emGORA will be seen as a certified trainer this can be a powerful instrument to promote the emGORA brand. The drafted academy approach would in addition make the services of the platform scalable "offline".

8 COMPLETION AND MARKETING TIMELINE

Due to a change regarding the integration approach of the wave 2 experiments in the CloudiFacturing Project some experiments will be completed with a slight delay (to be outlined in D1.3). Accordingly, WP7 slightly restructured the timeline for the publication and marketing in consultation with the project consortium (Figure 45). As agreed with the consortium the marketing will be scheduled into three main phases with the emGORA Digital Marketplace will be publicly available in M34 under www.emGORA.eu, publicly accessible and testable in M39 and commercially launched and marketed by M42 (for a better overview see the simplified Figure 46 showing the major phases towards publication). It’s important that the domain will not be published before July. Therefore, the marketing campaign, which will be led by WP7, will start in July and intensify with regard to the start of I4MS phase 4 in September.

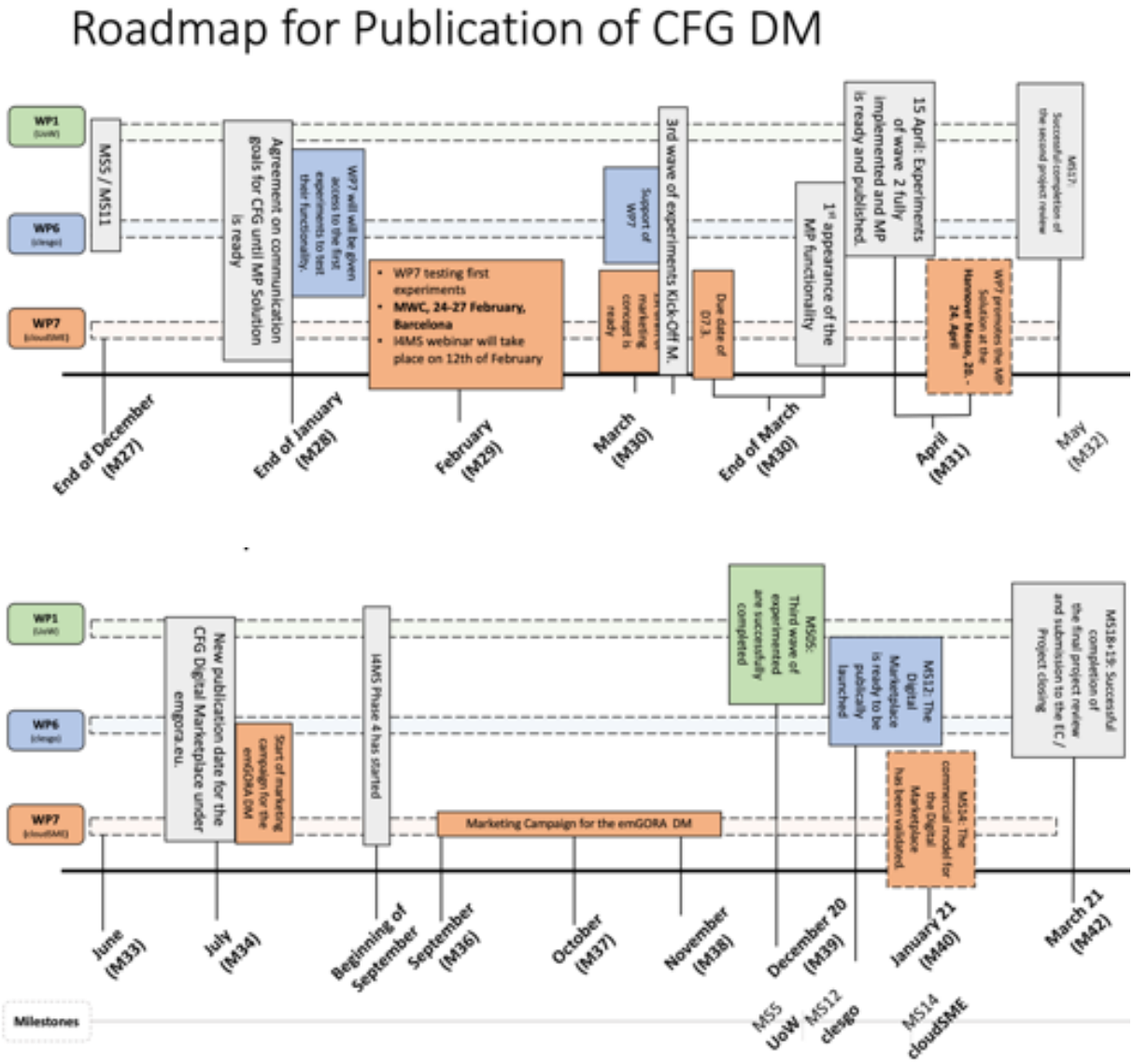


FIGURE 45: ROADMAP FOR THE PUBLICATION OF THE EMGORA DIGITAL MARKETPLACE

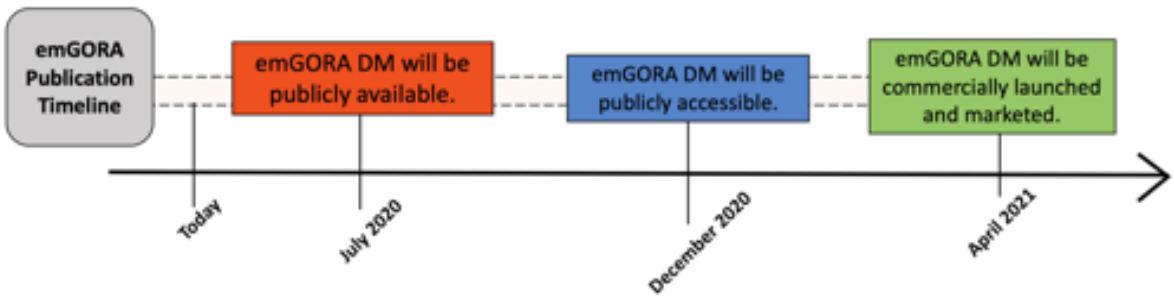


FIGURE 46: MAJOR PHASES REGARDING THE PUBLICATION OF THE EMGORA DIGITAL MARKETPLACE.

Although this deliverable section identifies a path to the emGORA marketing activities, marketing actions will have to be discussed with the other WPs (especially WP6 and WP1) and adapted to the development timeline, published in D6.3.

9 DIH'S IMPACT

IT4Innovations in its role as DIH, increased the industrial impact of several experiments from wave 1 and 2. In particular experiments 1, 4 and 5 of wave 1, and experiments 8,10 and 11 from wave 2. This was done by the dissemination of the experiments and their results at events, trade fairs, workshops and IT4Innovations network of partners.

The actions carried out by IT4Innovations DIH to ensure impact of experiments are:

- Promotion of experiments 1, 4, 5, 8,10,11 at Smart Business Festival SK held in Bratislava, Slovakia
- Promotion of experiment 4 at trade fair Aluminium 2018, Dusseldorf, Germany
- Promotion of experiment 4 in IT4Innovations DIH publication https://www.it4i.cz/wp-content/uploads/2018/12/IT4I-brozura-EN-web.pdf

Insomnia. The role of Insomnia DIH to increase the industrial impact of experiment number 5 of wave 1 and experiments 10 and 11 from 2 have mainly consisted in disseminating and promoting the experiment results among Insomnia's clients and partners network with a commercial approach. In this sense, Insomnia DIH works to increase the visibility of the mentioned experiments helping them to gain visibility in the Spanish and European markets.

Actions carried out by Insomnia DIH to ensure impact of experiments:

- Promotion of experiments 5, 10 and 11 among Insomnia industrial partners in order to promote commercial and procurement relations between end-users and ISVs and big corporations.

- Marketing and visibility actions for experiments 5, 10 and 11. As a success story, Insomnia has proposed experiment number 5 under the I4MS-SAE label competition, which recognizes the excellent implementation, high potential for further deployment and innovative aspect. Experiment number 5 has been awarded with the I4MS SAE label in February 2020.

Innomine Digital Innovation Hub's role was to manage and support experiments 3. and 6. (first wave) and 13. (second wave) and lead the promotion of the experiments and create awareness about the solutions used within the experiments. Based on the experience of innomine Group to maximize external impact a mix of communication actions are needed: use of social media and

website to reach a wide range of audience and create awareness, participate at conferences to ensure more attention of the audience and deliver more in depth content and finally direct contacts with other potential end-users and multipliers to organize workshops, 1:1 meetings to go into details.

Innomine reached this objective through different communication activities using different channels and implementing the following activities:

- Promoted the experiment results within SME and ISV communities by creating awareness through presentations at major conferences
    - Promotion of Experiment 3 and 6 at Future of Manufacturing (Smart Manufacturing Hubs) conference in Maribor, Slovenia http://p-tech.si/wp-content/uploads/2019/04/Smart-Factory-HUB-Final-conference_Third-draft-Agenda.pdf
    - Promotion of experiment 3 and 6 at Startup Europe Summit in Cluj Napoca (Rumania) https://ec.europa.eu/digital-single-market/en/news/startup-europe-summit-2019
    - Promotion of experiment 3 and 6 at ICT Proposers Day in Helsinki, Finland https://ec.europa.eu/digital-single-market/en/ict-proposers-day
    - Promotion of experiment 3 and 6 at InnoPécs event, Pécs, Hungary https://innopecs-2019.ticketninja.io/
    - Promotion of experiment 3 and 6 at DIGITALL conference in Budapest, Hungary https://ivsz.hu/esemenyek/digitall-2018/
    - Promotion of experiment 3 and 6 at Mobile Application conference in Budapest, Hungary
    - Promotion of experiment 3 and 6 at Open for Business conference in Pécs, Hungary
- Promoted the solution by reaching out to SMEs directly and initiated direct contacts and workshops, demos. This has been started by an email campaign to approx. 50 SMEs and initiated individual discussions with approx. 20
- Used social media channels to promote Cloudifacturing project and its results (via innomine's Twitter, LinkedIn and Facebook account)
- Reached out to other digital innovation hubs in the Central-Eastern European region to explain Cloudifacturing solutions, the experiments and cooperation opportunities

STAM Digital Innovation Hub played a key role in supporting Experiments 2 (from wave 1), 9 and 14 (ongoing). Moreover, STAM presented the CloudiFacturing at several conferences and workshops such as the IEEE Cloud Computing conference in Milan in July 2019, the SINNOVA workshop. These activities are examples of the actions STAM undertook with the 3-fold goal of:

- Promoting the CloudiFacturing Open Calls → the awareness and participation goals were achieved and surpassed;
- Promoting the CFG project → over 2000 professionals were reached, over 300 organizations operating in fields related to manufacturing and digitization;
- Supporting experiments partners in maximizing their impacts → Experiment 9 was awarded with the I4MS-SAE Label as an outstanding example of work within these initiatives.

Moreover, STAM led the introductory DIH session held during the 3rd wave of experiments kick-off.

10 DIH'S TRAINING ACTIVITIES

Insomnia

Insomnia has provided training to selected experiments 5, 10 and 11 both at the open call stage and the experiment execution phase. In both cases, the training has tackled the conditions to participate at the open call and to be part of the CloudiFacturing consortium respecting all the necessary internal regulations and governance procedures and bodies.

IT4Innovations

IT4Innovations provided training to experiments 4, 8 and 11 on how to use HPC infrastructure which IT4Innovations provides for the project. Experiments 4 and 8 were also trained in terms of the CloudiFacturing concept. The main objectives and existing tools such as the Marketplace and the reporting procedure, as well as CloudiFacturing rules and best practices, were also part of the training.

Innomine

innomine provided training for the partners of experiment 3., 6. and 13. on how to use Cloudifacturing resources and how to manage the experiments. On top of this innomine provided trainings to external parties on Cloudifacturing solutions, on the Open calls and delivered training on digitization of SMEs operation and on using H2020 funds to win further resources to accelerate the digital transformation at company level.

STAM

STAM supported and trained over 30 companies in the reference period of this deliverable, between experiment partners and SMEs willing to participate to the project Open Calls. Training consisted in a presentation of the project, an assessment of the synergies between the SMEs' goals and the CFG objectives and a link with technical partners based on the SMEs specific needs. Moreover, STAM organized the project CodeCamp held in Genoa for wave 2 experiments.

11 CONCLUSIONS

The second period of dissemination towards stakeholder of CloudiFacturing can be concluded as very satisfying, the interest raised for the project was all-in-all very high but can be improved. The communication within the project is still challenging but manageable – to keep the high influence on the communication channels for stakeholder it is important to engage project partners to support the general distribution of news, tweets, links. This will be pursued with high effort in the third phase of the project. Within the past wave the communication in the eastern part of Europe was recognisably weak in comparison to the other parts of Europe. This has been improved in the last project phase as there was put special emphasis on the integration of eastern European States – especially with the second Open Call.

WP7 and WP6 collaboration has created better ideas for increasing the impact and the sustainability of project results. Together the teams elaborated a reasonable future vision of how the emGORA

Digital Marketplace and its business model(s) could look like. These models will be further developed as the commercialization of the Digital Marketplaces evolves.

Overall the work has been delivered successful and provoked significant results. For the next period we can build on and extend this success.

12 APPENDIX

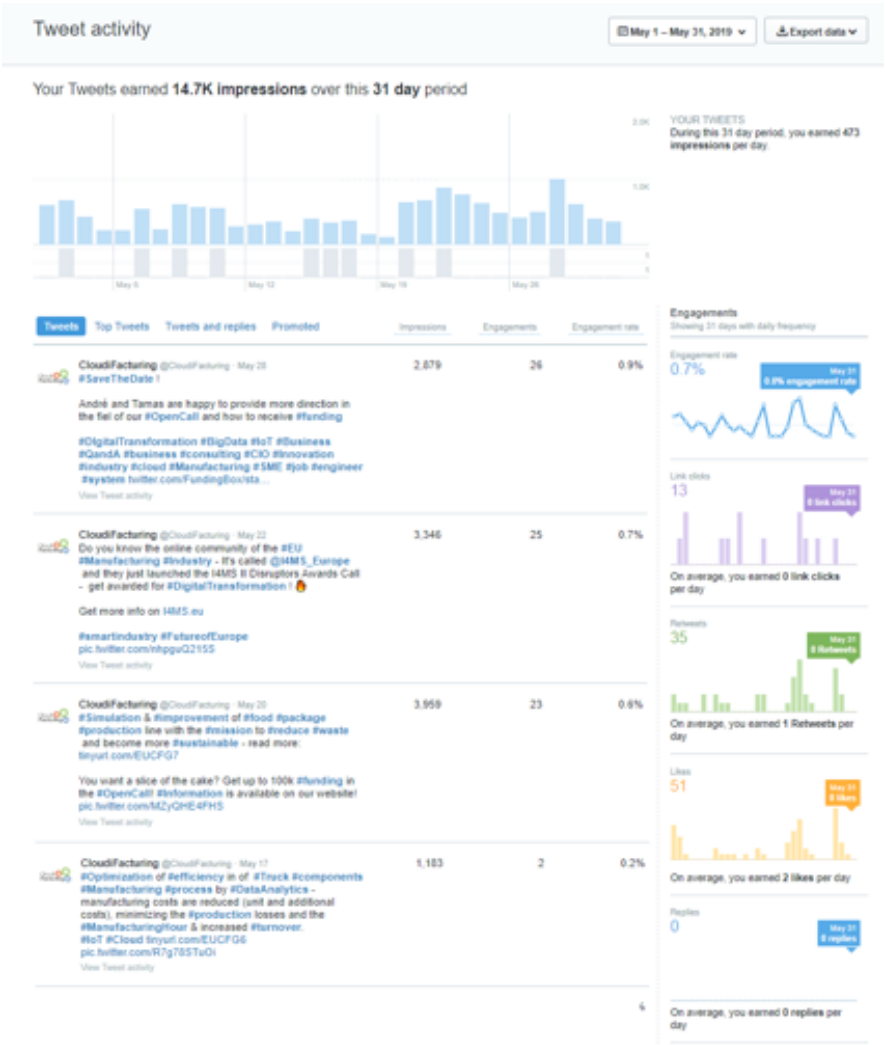
12.1 Appendix 1

Social Media Statistics – Twitter

Cloudifacturing Keyfigures of Twitter:

All mentioned data refers to the timeframe from the 1st of May 2019, to the 25th of February 2020. Due to the way Twitter-Analytics does work, the data was split into several sets.

01.05.2019 – 31.05.2019



Your Tweets earned **104.7K impressions** over this **91 day** period

YOUR TWEETS
During this 91 day period, you earned **1.2K impressions** per day.

Tweets | Top Tweets | Tweets and replies | Promoted

	Impressions	Engagements	Engagement rate
CloudiFacturing @CloudiFacturing · Sep 27 These are the very last days to apply for the #cloudifacturing #opencall @I4MS_Europe! Maybe use your #Fridayfeeling and apply?! :P #EUfunding for industrial #SME use cases improving production processes through #cloud & #HPC technology cloudifacturing.eu/open-calls-gen... pic.twitter.com/3tpWmaKjV8 View Tweet activity	2,355	19	0.8%
CloudiFacturing @CloudiFacturing · Sep 22 Do u know what happens when a #Packaging #manufacturer like Trevalli Cooperate unforeseenably has to stop #production lines (e.g due to a sudden breakdown of a machine) & cannot solve the issue in time? bit.ly/2IQeKGu #Cloudifacturing #H2020 #FoF #digitalmanufacturing pic.twitter.com/mPPWjqQiz View Tweet activity	1,925	24	1.2%
CloudiFacturing @CloudiFacturing · Sep 19 Last days to apply for the #cloudifacturing #opencall @I4MS_Europe! Receive up to 100,000 euros of subsidy for industrial #SME projects that improve their production processes through #cloud and #HPC technology cloudifacturing.eu/open-calls-gen... #H2020 #FoF #EUFunding #Industry40 pic.twitter.com/F6iPzG2UJu View Tweet activity	1,334	13	1.0%
CloudiFacturing @CloudiFacturing · Sep 18 The competitveness of #automotive manufacturer Bakony Elektronika depends on its capability to continuously decrease #Manufacturing costs, time & production losses - what they achieve using #ComputerSimulation through #Cloudifacturing #Cloud Platform. bit.ly/2IP5fS3 pic.twitter.com/xkZwfpmAbM View Tweet activity	956	9	0.9%
CloudiFacturing @CloudiFacturing · Sep 11 Last chance to register for the #QnA #webinar on the #CloudiFacturing #OpenCall with Tamas Kiss from @UniWestminster: bit.do/e4nFv #Innovation #InvestEUResearch #EUfunding #Industry40 #H2020 #HPC #digitalmanufacturing #digitalengineering @EU_H2020 @DigInvdEU twitter.com/I4MS_Europe/st... View Tweet activity	599	0	0.0%

Engagements
Showing 91 days with daily frequency

Engagement rate
0.4%

Link clicks
32

On average, you earned **0 link clicks** per day.

Retweets
51

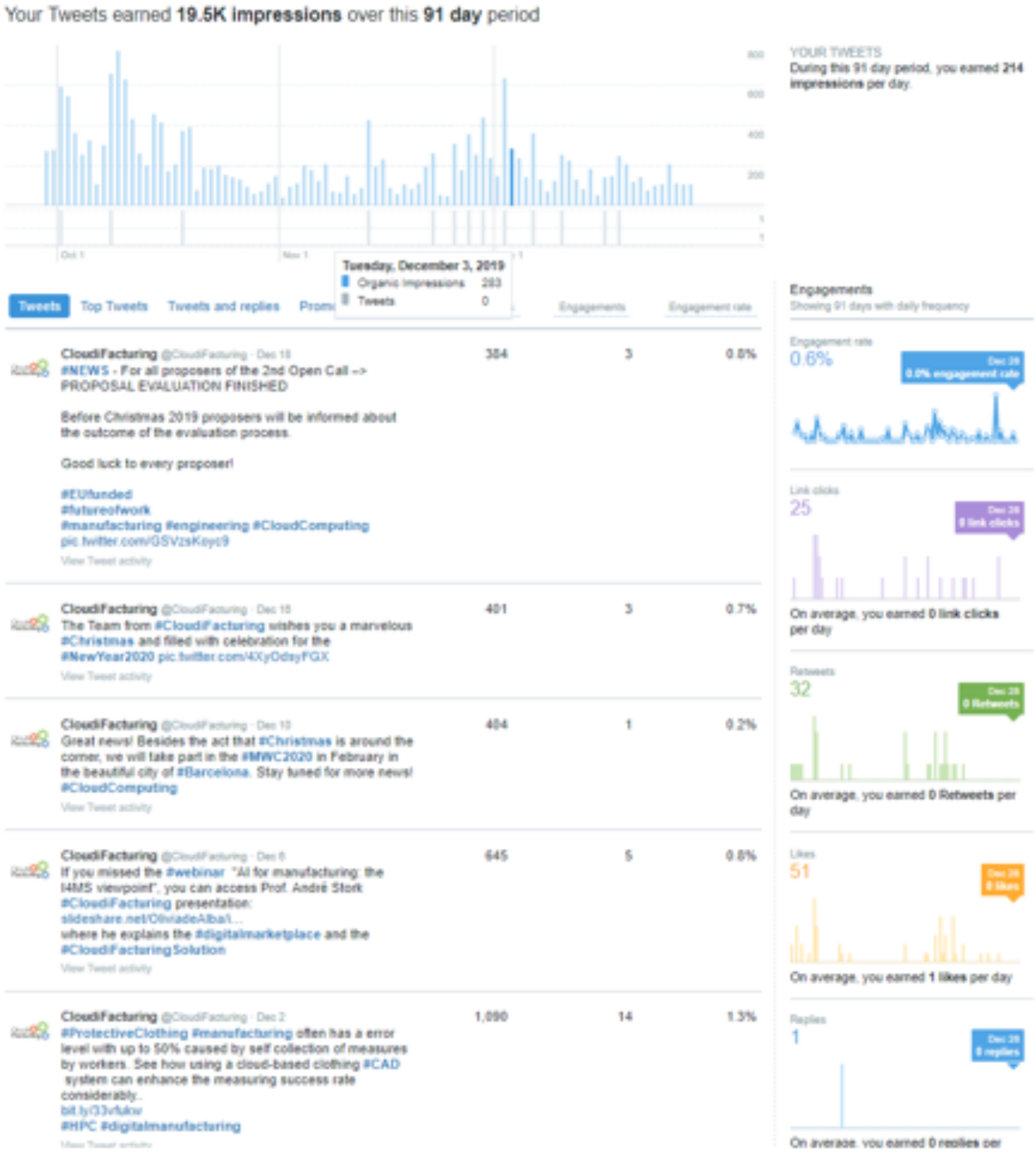
On average, you earned **1 Retweets** per day.

Likes
67

On average, you earned **1 likes** per day.

Replies
0

On average, you earned **0 replies** per day.


Your Tweets earned 19.5K impressions over this 91 day period
Tuesday, December 3, 2019
Organic impressions 283
Tweets 0
Tweets
Top Tweets
Tweets and replies
Engagements
Engagement rate
CloudiFacturing @CloudiFacturing · Dec 18
#NEWS - For all proposers of the 2nd Open Call --> PROPOSAL EVALUATION FINISHED
Before Christmas 2019 proposers will be informed about the outcome of the evaluation process.
Good luck to every proposer!
#EUfunded
#futureofwork
#manufacturing #engineering #CloudComputing
pic.twitter.com/GSVzsKoyt9
View Tweet activity
384 3 0.8%
CloudiFacturing @CloudiFacturing · Dec 18
The Team from #CloudiFacturing wishes you a marvelous #Christmas and filled with celebration for the #NewYear2020 pic.twitter.com/4XyOdsyFGX
View Tweet activity
401 3 0.7%
CloudiFacturing @CloudiFacturing · Dec 10
Great news! Besides the act that #Christmas is around the corner, we will take part in the #MWC2020 in February in the beautiful city of #Barcelona. Stay tuned for more news! #CloudComputing
View Tweet activity
404 1 0.2%
CloudiFacturing @CloudiFacturing · Dec 6
If you missed the #webinar "AI for manufacturing: the I4MS viewpoint", you can access Prof. André Stork #CloudiFacturing presentation: slideshare.net/OlviadeAlba/i... where he explains the #digitalmarketplace and the #CloudiFacturingSolution
View Tweet activity
645 5 0.8%
CloudiFacturing @CloudiFacturing · Dec 2
#ProtectiveClothing #manufacturing often has a error level with up to 50% caused by self collection of measures by workers. See how using a cloud-based clothing #CAD system can enhance the measuring success rate considerably.. bit.ly/33vfukw
#HPC #digitalmanufacturing
1,090 14 1.3%
YOUR TWEETS
During this 91 day period, you earned 214 impressions per day.
Engagements
Showing 91 days with daily frequency
Engagement rate
0.6%
Link clicks
25
On average, you earned 0 link clicks per day
Retweets
32
On average, you earned 0 Retweets per day
Likes
51
On average, you earned 1 likes per day
Replies
1
On average, you earned 0 replies per

Your Tweets earned **15.9K impressions** over this **60 day** period

YOUR TWEETS
During this 60 day period, you earned **265 impressions** per day.

Tweets | Top Tweets | Tweets and replies | Promoted

	Impressions	Engagements	Engagement rate
CloudiFacturing @CloudiFacturing · Feb 25 It is happening today! @andreas1605 will talk about Digital Marketplaces. Don't miss it! twitter.com/MIDIH_EU/statu... View Tweet activity	131	1	0.8%
CloudiFacturing @CloudiFacturing · Feb 19 The Webinar planned for the #MWC20 will take place on February 25th 2020, 12:00PM CET! We invite you to sign up in the link below! @andreas1605 will have an opportunity to talk about #CloudiFacturing and its #DigitalMarket twitter.com/i4MS_Europe/st... View Tweet activity	4,109	12	0.3%
CloudiFacturing @CloudiFacturing · Feb 17 The #MWC2020 has been cancelled. But @andreas1605 participation will be held in form of a #webinar on February 25th, 12PM CET. Stay tuned for more updates. View Tweet activity	187	4	2.1%
CloudiFacturing @CloudiFacturing · Feb 3 Optimization through Cloud-Simulation of Catamaran Production was the 2nd experiment from #CloudiFacturing first wave of experiments. The experiment was a breakthrough for the development of a new design and process of the catamaran hulls. Wanna read more? cloudifacturing.eu/experiment-2-c... pic.twitter.com/GcGaDAtkkN View Tweet activity	197	4	2.0%
CloudiFacturing @CloudiFacturing · Jan 28 We wish you a securely joyful #EuropeanUnion #DataPrivacyDay ! twitter.com/cloudSMEprojec... View Tweet activity	312	3	1.0%
CloudiFacturing @CloudiFacturing · Jan 24 Are you a #manufacturing #SME struggling to become digital? Don't miss the final I4MS webinar in which Andreas Ocklenburg and other experts will present all I4MS digitalization services for EU SMEs. Join us! More info: eventbrite.co.uk/e/webinar-digi... View Tweet activity	1,003	15	1.5%
CloudiFacturing @CloudiFacturing · Jan 22 Are you a startup or SME struggling to apply for public funding opportunities? In this FundingBox webinar they will guide you on how to do it! #fundingbox #i4ms #smes #H2020 eventbrite.co.uk/e/webinar-fund...	298	6	2.0%

Engagements
Showing 60 days with daily frequency

Engagement rate
0.5%
Feb 26 4.1% engagement rate

Link clicks
11
Feb 26 8 link clicks

On average, you earned **0 link clicks** per day.

Retweets
18
Feb 26 1 retweet

On average, you earned **0 Retweets** per day.

Likes
34
Feb 26 5 likes

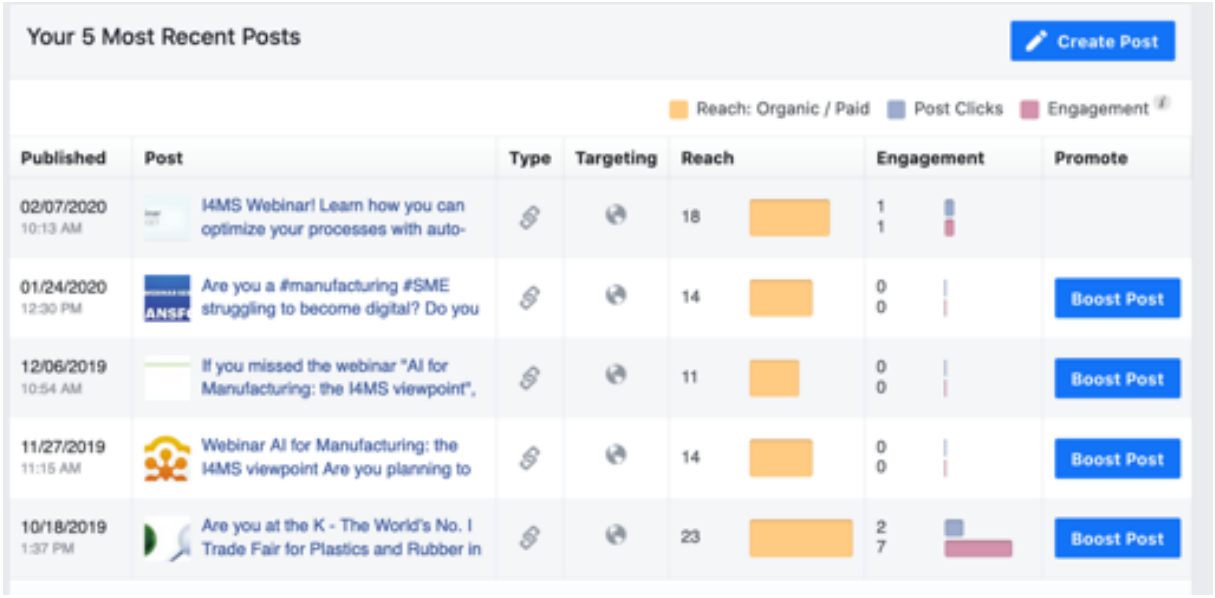
On average, you earned **1 likes** per day.

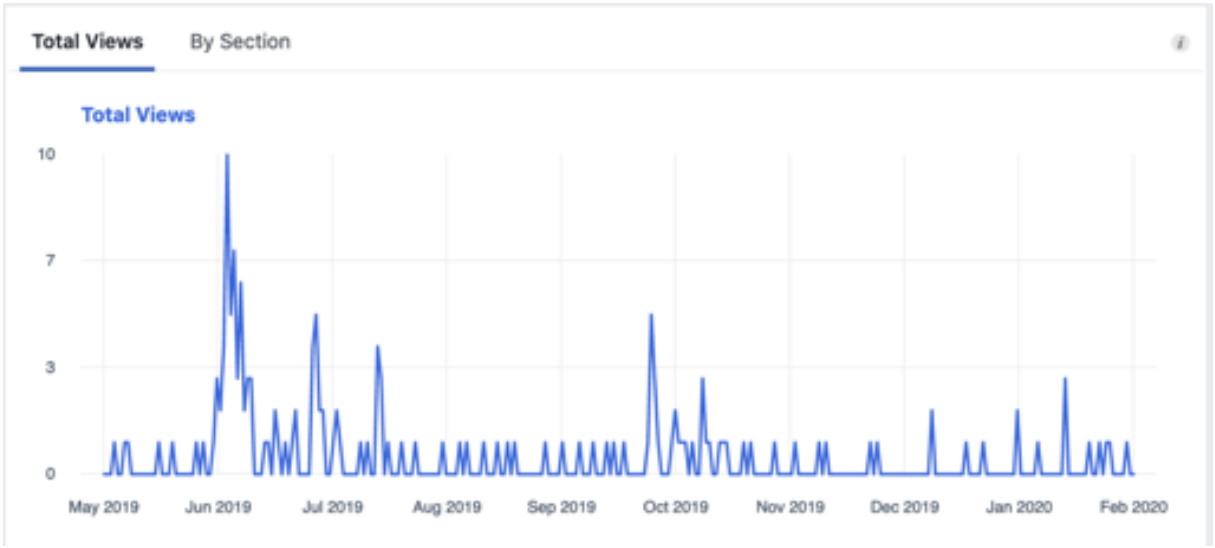
Replies
0
Feb 26 0 replies

On average, you earned **0 replies** per day.

12.2 Appendix 2

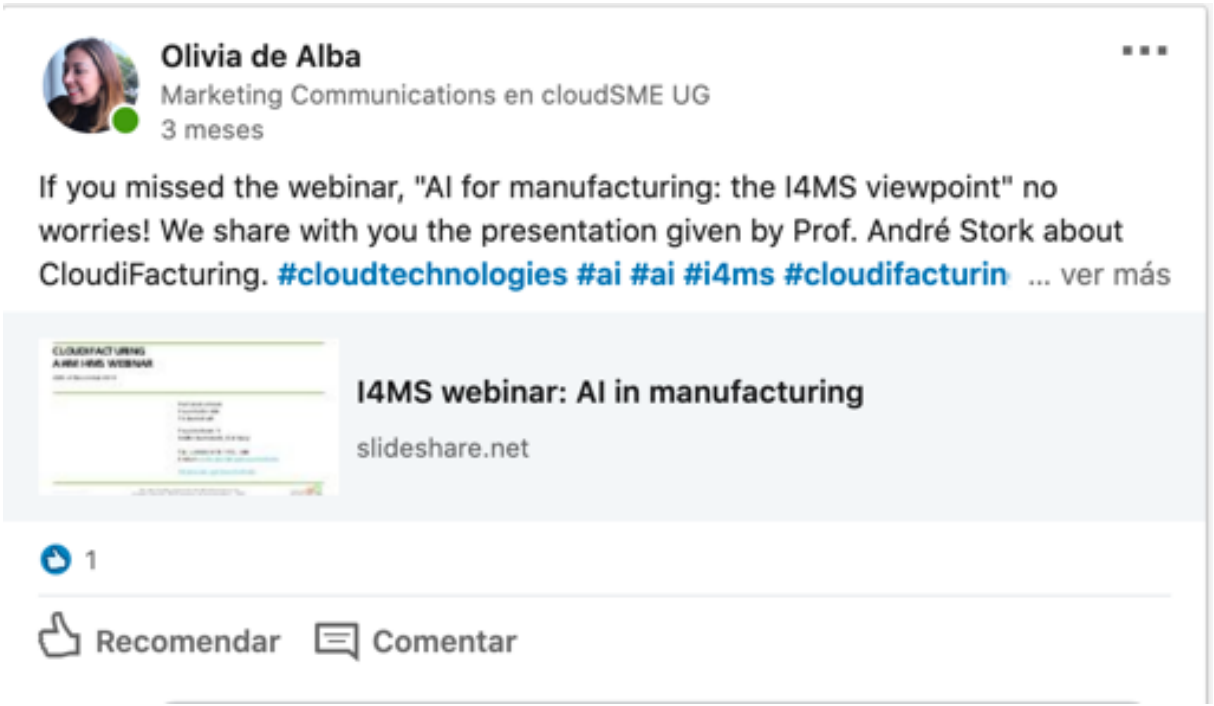
Social Media Statistics – Facebook

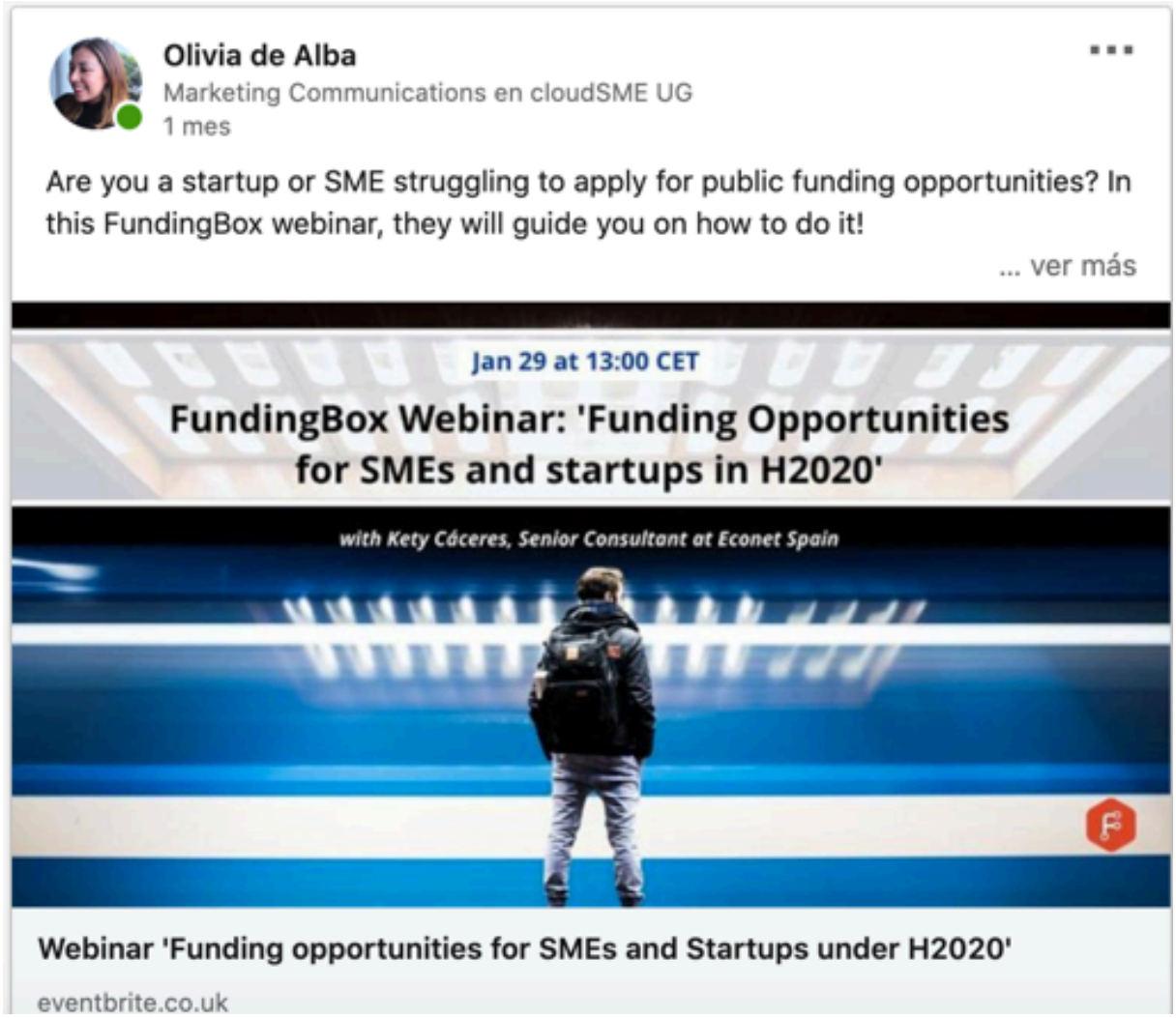




12.3 Appendix 3

Social Media Posts – LinkedIn


Olivia de Alba
Marketing Communications en cloudSME UG
3 meses
If you missed the webinar, "AI for manufacturing: the I4MS viewpoint" no worries! We share with you the presentation given by Prof. André Stork about CloudiFacturing. #cloudtechnologies #ai #ai #i4ms #cloudifacturin ... ver más
I4MS webinar: AI in manufacturing
slideshare.net
1
Recomendar
Comentar


Olivia de Alba
Marketing Communications en cloudSME UG
1 mes
Are you a startup or SME struggling to apply for public funding opportunities? In this FundingBox webinar, they will guide you on how to do it!
... ver más
Jan 29 at 13:00 CET
FundingBox Webinar: 'Funding Opportunities for SMEs and startups in H2020'
with Kety Cáceres, Senior Consultant at Econet Spain
Webinar 'Funding opportunities for SMEs and Startups under H2020'
eventbrite.co.uk

12.4 Appendix 4

Press Release “Open Call Second Wave of Experiments”

MAY 2, 2019

WEB NEWSWIRE

HOME CHANGE REQUEST SUBMIT

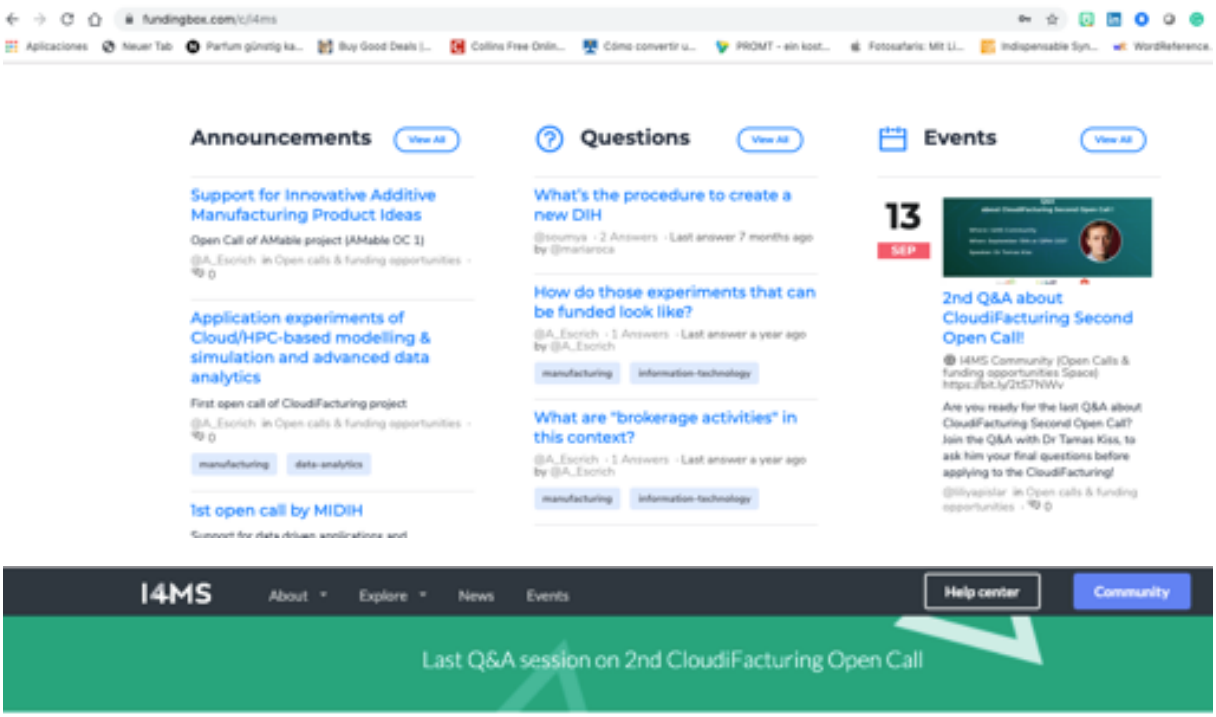
Search Results for: cloudifacturing

ANNOUNCEMENT OF 2ND. OPEN CALL FOR CLOUDIFACTURING

Cloudi Facturing

Duisburg, Nord-Rhein Westfalia (April 24th, 2019) — CloudiFacturing launched a new Second Open Call for its project. The goal...

TECH



Last Q&A session on 2nd CloudiFacturing Open Call

13-09-2019 - 13-09-2019

Online ()

https://www.eventbrite.co.uk/e/2nd-qa-about-cloudifacturing-second-open-call-tickets-65774678835?aff=i4MSEvents

I4MS and CloudiFacturing are organizing one final Questions & Answers session on their 2nd open call, which will take place on **13th Septemeber 2019, at 12:00 (noon) CEST**, in the **Open Calls & funding opportunities space** of the **I4MS Community**, as an opportunity to ask **Dr. Tamas Kiss** final questions before applying to this open call, whose application deadline is on 30th September 2019 at 17:00 hrs. (Brussels local time).

Registration is now available here.

Dr. Tamas Kiss from CloudiFacturing, who is a well-know reader in Distributed Computing and a principal researcher at the **CPC**, will answer the audience questions, will provide tips about how successfully fill an application form and will explain the criteria to be selected for funding.

CloudiFacturing - Cloudification of Production Engineering for Predictive Digital Manufacturing - is a European Innovation Action (IA) in the framework of Factories of the Future (FoF) with the mission of optimizing production processes and producibility. It is a part of the I4MS European initiative that supports the uptake of digital innovation by SMEs.


13
SEP
2nd Q&A about CloudiFacturing Second Open Call!
Q&A
about CloudiFacturing Second Open Call !
Where: I4MS Community
When: September 13th at 12PM CEST
Speaker: Dr Tamas Kiss


German Research Center for Artificial Intelligence
Deutsches Forschungszentrum für Künstliche Intelligenz
Search
PRESS CONTACT CAREERS DEUTSCH
RESEARCH TECHNOLOGIES & APPLICATIONS QUALIFICATIONS & NETWORKS NEWS & MEDIA ABOUT US
dfki.de » ANNOUNCEMENT OF 2ND. OPEN CALL FOR CLOUDIFACTURING
ANNOUNCEMENT OF 2ND. OPEN CALL FOR CLOUDIFACTURING
05/10/2019 | Press release | Industry 4.0 | Data Management & Analysis | Innovative Factory Systems | Kaiserslautern
Call for mid-caps, SMEs and manufacturing start-ups to receive support from the EU
Cloudi Facturing
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Simon.Bergweiler@dfki.de