



Re-FREAM

Re-Thinking of Fashion in
Research and Artist collaborating
development for Urban Manufacturing



www.re-fream.eu



Re-FREAM is funded by the
European Union's Horizon
2020 research and innovation
programme under grant
agreement No 635617.



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Re-thinking of Fashion in
Research and Artist collaborating
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S+T ARTS
Lighthouse

Re-FREAM

Re-Thinking of Fashion in Research and Artist collaborating development for Urban Manufacturing

Working Package WP 7

Open Innovation Platform

Due date of deliverable: 30.11.2020

Actual submission date: 15.02.2021

Lead Beneficiary for this deliverable: WEAR IT BERLIN (WIB)

Contributions by: -

Project co-funded by the European Commission within H2020 Framework Programme		
Dissemination Level		
PU	Public	X
CO	Confidential, only for members of the consortium (including the Commission Services)	
Type		
R	Document, report (excluding the periodic and final reports)	
DEM	Demonstrator, pilot, prototype, plan designs	
DEC	Websites, patents filing, press & media actions, videos, etc.	X

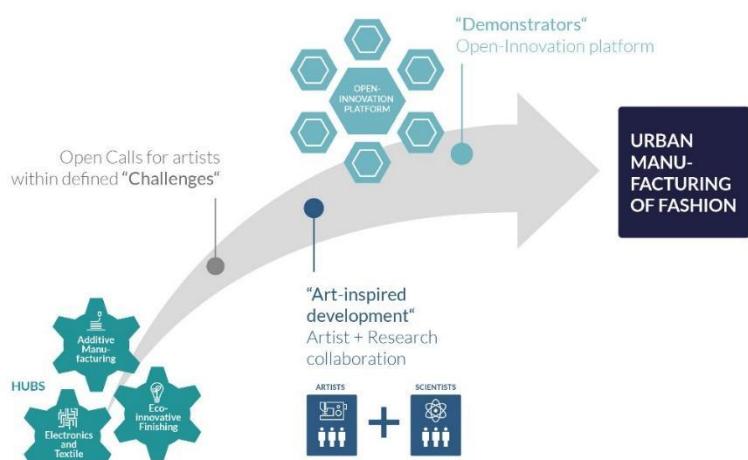
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1. Context Information

1.1 The Re-FREAM Project

Re-FREAM will support **art-driven innovation** in European R&I projects by inclusion of artists in research consortia via linked third-parties. The artistic community receives a strong support from art-related partners like the Art University of Linz (UFG) and the European Institute of Design (IED), creative hubs and facilitators like Wear It Berlin (FashionTech), AITEX, ARCA and Creative Region combined with remarkable technology from IZM Fraunhofer (E-textiles), STRATASYS, HARATECH (3D-printing), EMPA (3D body simulation), Care applications (Garment nebulization) and PROFACTOR (Additive manufacturing).



Re-FREAM boosts **art-inspired urban manufacturing**, where the city becomes a new production space. Especially for **creative fashion**, urban manufacturing offers a great opportunity to create an alternative to the much-criticized production in low-wage countries.

Three technologies (additive manufacturing, electronics on textiles and eco-innovative finishing of fashion) will be explored together. In **co-creation** 20 awarded Artist/ Researcher teams, digitalized manufacturing of fashion will be developed up to TRL 5 to enable small-scale production of fashion in urban environment. An **Open-Innovation Platform** will finally link the know-how and the communities of the hubs, will offer access to relevant facilities and make the Re-FREAM art-inspired urban manufacturing working model sustainable.

1.2 Document history

Version	Date	Change/Reason for change
V1.0	11.02.2021	Draft provided to PRO for review
V1.1	12.02.2021	Reviewed by PRO
V1.2	15.02.2021	Final version ready to be uploaded
V1.3	16.02.2021	Review by PRO
V1.4	25.02.2021	Revised version by WIB
V1.5	13.04.2021	Reviewed version by PRO
V1.6	28.04.2021	Revised version by WIB

1.3 Purpose and Scope of Deliverable Report D7.2

Online “toolbox” for urban manufacturing which is built up during the project will be available on the platform. The toolbox shall give an overview and summarize the technologies for urban manufacturing from WP4, 5 and 6, set up a

new Technology Value Chain and build up a collection of open innovation resources and demonstrate technology through good practice examples by the Re-FREAM project.

2. Introduction to the Open Innovation Platform

Common Vision for the Open Innovation Platform

The Open-Innovation Platform (OIP) is set up to present achieved results within the Re-FREAM project. This platform will be available for our target groups of artists, designers, SMEs and scientists, through a common project-website. It consists of components that were discussed in a common workshop on 16-17 May 2019 in Berlin.

The Open Innovation Platform represents a **set of tools** to share and make available the innovations and new technologies created within the Re-FREAM Project.

The **goal** of the Online Toolbox is to make the technologies and resources of the Re-FREAM project available to all readers. Moreover, making the results of the Technology Mapping (D4.2, D5.3 and D6.3), as well as demonstrating the technologies through good practice examples are further aims of the Online Toolbox. The industry and solution providers directly benefit from the results of Re-FREAM projects by finding out more about the learnings and experience of the Art/Tech teams, and especially seeing the value of the processes and results of co-creation. And this way, urban manufacturing comes into existence on its own.

According to Re-FREAM's **Objective 6: Open Innovation Platform**, the learnings of the art/tech process "are assessed and adapted to enable a transfer towards the existing regional manufacturers". Moreover, the "established products and innovation will be provided as services with contacts and contact persons to facilitate the enabling of urban small-scale manufacturing for decentralized and digitalized production possibilities", which is important for the implementation of future urban manufacturing.

The set **impact** of the Online Toolbox as a part of the Open Innovation Platform is to create an ecosystem for urban fashion manufacturing for sustainability, 3D-printing and e-textiles that remains sustainable even after the project's end.

After having a number of exchanges and dedicated workshops with Re-FREAM stakeholders, Wear It Berlin identified and defined the critical learnings from the efforts of building and maintaining a community across different projects. As part of the strategy for providing value to the community also after the project's end, Wear It Berlin has initiated and organized an exchange with community managers of different platforms: S-T-ART-S, Worth and Wear Sustain. The purpose of the exchange is to compare the experience and learnings in all projects, and create a common strategy that will bring a long-term value not only to the Re-FREAM community, but also across other projects. The outcome should help Re-FREAM to avoid mistakes and come up with the right set of goals and strategy to implement a sustainable roadmap for urban manufacturing even after the official Re-FREAM project timeline has ended.

2.1. Dissemination & Open Innovation – Responsibilities and Goals

Work packages 7 and 8 seem to have many tasks in common and seem to overlap when it comes to their individual responsibilities. In fact, there is much less of an overlap but much more of a sophisticated collaboration strategy established in between both task groups. Both work packages work together hand in hand according to a clear workplan that differentiates goals, tasks and benchmarks for each WP. The following sections give insights into how the WPs work together and where the differences are.

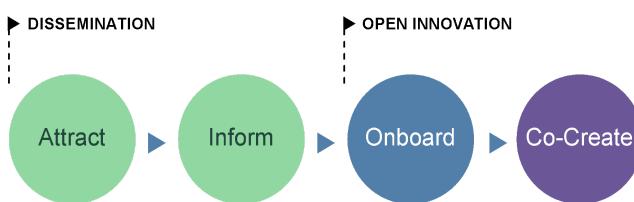
2.1.1. Target Groups

The dissemination activities of WP8 aim to reach out to as many targeted individuals as possible. Its goal is to foster awareness for the Re-FREAM project and to attract mainly multipliers like bloggers and journalists amongst direct participants of the Re-FREAM platform.

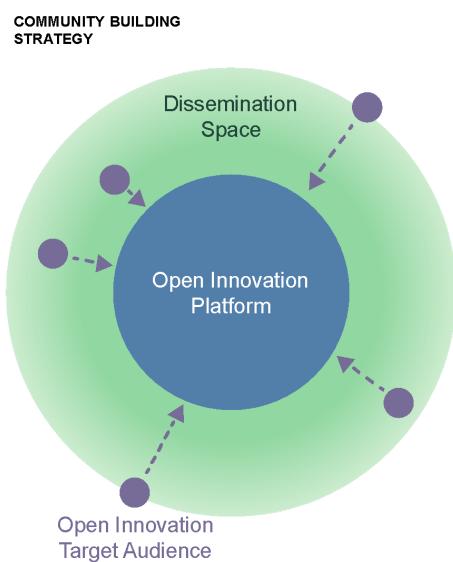
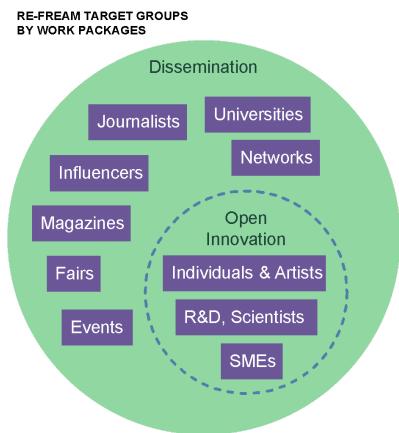
The Open Innovation Platform created and managed by WIB within WP7 focuses its efforts on a subset of the dissemination target groups. Its aim is to make a value proposition to activate leads that were attracted by the dissemination activities of WP8. So in contrast to WP7, for WP8 the sheer number of new leads is less important, here the qualification of the contacts is key: "Do the leads have the skills and interest to become engaged in the co-creation process?" The aim is to foster co-creation amongst individual designers, scientists and SMEs with the goal to put forward new strategies and projects for urban manufacturing.

2.1.2. Collaboration Scheme for Dissemination and Open Innovation Platform

As described above, WP7 and WP8 work together hand in hand following a clear collaboration scheme. The aim of the dissemination activities managed by WP8 is to present Re-FREAM to an audience that is not necessarily familiar with the project. The goal is to trigger new audience members to get interested into learning more about Re-FREAM and thus e.g. visiting the website (lead generation). The website not only presents more information about Re-FREAM, but is also host to the Open Innovation Platform and toolbox. When the new audience is guided to the Open Innovation section of the website, WP7 is in charge: Here the leads (activated new converted leads) get access to all the Open Innovation Tools that Re-FREAM has to offer.



The schematic above illustrates the steps that WP8 and WP7 undertake to reach out to attract a new audience, offer them more information on the website and social media channels



and guide them to the Open Innovation Platform. There, the new leads get onboarded into the Re-FREAM community, e.g. in the LinkedIn Exchange Group and get provided with all the tools to co-create with other peers.

2.1.3. User Story: How the audience is onboarded through WP8 to WP7



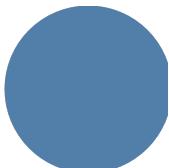
1. Maria is an Innovation Manager at Smarttech International, a SME from Belgium and looking for innovative solutions and applications of electronics on textiles.



2. She is browsing Instagram for fashion technology and runs into a picture by Peter Bella from Rome showcasing their collaboration results with Fraunhofer IZM on a new innovative jacket that has sensors integrated.



3. On the project website, she learns more about Re-FREAM and is now really excited about the other projects she found there. Next, she wants to know more about the art/ tech teams involved and understand what resources were used in the projects. This is where WP8 has succeeded and WP7 takes over.



4. Maria finds the desired resources, like machines and partners involved, in the Open Innovation section of the website. She is now ready to present her results as a first impression to her teammates to evaluate the projects.



5. Smarttech International wants to go a step further, that's why Maria has joined the LinkedIn Group where she can now network with the people behind the projects. She also meets other companies there that can support her with even more interesting materials. They schedule a zoom call and evaluate cooperation.

3. Online toolbox

3.1 Toolbox as part of the Open Innovation Platform

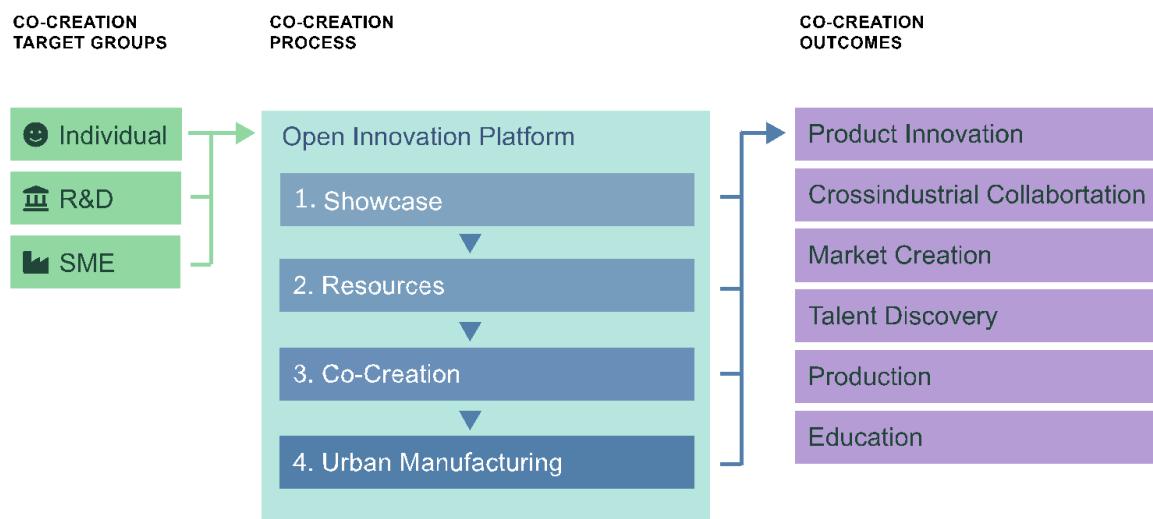


Figure 1: Open Innovation Process Diagram

When defining the target audience of the WP7 Open Innovation Platform, the Re-FREAM consortium has shaped three personas and their needs in accordance to Re-FREAMS overall dissemination and communication strategy:

- o **Individual Designers, artists, makers** that are interested in finding out which technologies are available and how they can be applied to their own products and processes
- o **R&D staff like Scientists, engineers, programmers** that would like to learn about cross-industry collaborations and implement a more design-thinking approach into their processes, structures or fields of research.
- o **SMEs** that are interested in urban manufacturing for the future of fashion, scouting talents for their respective companies, and picking up early-stage product innovations for small and medium sized product developments.

Before the creation of the Open Innovation Platform (OIP), the three personas have been separated and have mostly seen few intersections between their field of speciality. However, Re-FREAM is bringing them together on the OIP, where they are accompanied throughout the process of re-thinking their own methods and strategies. The OIP providing them access to different tools, a community of like-minded individuals, a platform to exchange, as well as best practice examples of combining art and technology.

As an essential part of the OIP, the Online Toolbox is providing the target audience with the necessary “tools” and mechanisms to achieve their individual goals:

- o The **website** is the first touch-point of the audience with the Re-FREAM project. It works as a tool for dissemination and serves the purpose to foster engagement in the open innovation platform. Thus, the website has an informative role (communicating relevant information, such as open calls, technologies available in the consortium etc) and is host to the online toolbox of the OIP.

- o **Atlas of urban manufacturing in Europe:** An interactive map that provides an **overview of technology** which is creating value to the community by offering a sustainable ecosystem for urban fashion manufacturing for sustainability, 3D-printing and e-textiles in Europe. It showcases not only the resources provided within the Re-FREAM consortium, but also 3rd party industry stakeholders such as maker labs, universities, technology providers or events within the continent.
- o **Technology value chain:** a database that showcases all technologies and services available in the consortium
- o **A collection of resources,** such as public deliverables, Scientific Papers published within the framework of Re-FREAM Project or the Art/tech Toolbox and Methodology
- o **A blog** which documents the co-creation process between the artists and the scientists and thus demonstrating good practice examples to third parties

The journey of the audience on the OIP is overall contributing to Re-FREAM's goal of enabling the industry to re-think the traditional methods and processes, and ultimately contribute to a more sustainable fashion in the future. The Online toolbox presented in this report, will be implemented by the end of the Re-FREAM project in November 2021.

3.2 Overview of technologies in urban manufacturing

3.3.1 Concept of the Atlas

Within Re-FREAM's workplan, Task 7.1 *Technology Mapping* deals with a "sustainable roadmap of the art inspired technology development in fashion out of the collected roadmaps from WP 4, 5, 6 and a respective desktop research" which will be set up on the OIP.

An interactive map function has been integrated into the project website. The map will summarize, amongst others, all the already-existing technology mapping, and desktop research on urban fashion manufacturing for sustainability, 3D-printing and e-textiles. Wear It Berlin is responsible for the functionality of the atlas, as well as onboarding the partners into adding their research and technology mapping to the OIP. WP 4, 5 & 6 leaders, as well as every partner with input on the topic, have the responsibility to "feed" the atlas with information.

Before the COVID-19 pandemic and related counter measures (lockdown, etc.), stakeholders had the chance to meet potential clients or collaborators during events. Since this wasn't possible anymore since March 2020, Wear It Berlin identified a demand for a tool to better find potential clients/partners in the geographical vicinity. The tool, which is available on the OIP, will offer visitors the chance to quickly find solution-providers or potential partners based on certain criteria (location, industry, type of institution or company etc.) as it is shown in **Figure 6**. This will contribute to the set impact of creating a sustainable ecosystem for urban fashion manufacturing for sustainability, 3D-printing and e-textiles.

implementation plan

Wear It Berlin proposes that the Atlas should be launched by the end of August 2021. The database for the Atlas should consist of a minimum of 150 pins (resources) before the opt-out email has been sent, thus ensuring a significant amount and quality to the users.

After the official launch of the Atlas later the year this The interactive map can be accessed here:

<http://www.re-fream.eu/location/>

The details of the implementation plan and resources gathering can be found below. Curated Resources supporting new projects and designers

As mentioned before, the proposed Atlas was created to bring added value to users of the Open Innovation Platform. As experts, Wear It Berlin and other partners know and understand the quality and importance of the resources used and researched in the realm of Re-FREAM. The aim of the Atlas is therefore to use this knowledge in order to offer our community a curated selection of resources. The Atlas does not aim at replacing a Google Search. It should be a first step for users to start their research or project, allowing the research process to be of high quality. For example, based on the target groups of the Open Innovation Platform, users could be a designer seeking to create a dress, a researcher looking to test a new technology or a SME (small and medium-sized enterprise) searching for proven technologies or projects or even the human resources needed to create a new product. In the long term, the Atlas will bring all types of users together and enable them to interact with the community on LinkedIn for example.

Benefits for our community of makers and designers to foster a new way of urban manufacturing of fashion

The main goal of the atlas is to create a curated research tool for users. It will make the navigation through all resources available on the internet easier for the users, enabling them to access resources fast and in an efficient way. They will have the assurance that the resources featured are reliable and of high quality.

3.3.2 Data management

In order to gather state of the art data to be featured on the Atlas, the following process was implemented. First a list of resources was created as part of the report D5.3 Mapping “e-Textile Ecosystem and Network”. The list included general information about the resources, such as Name of the company or institution, Website URL, Email... Based on the previous report a list of data already exists. In order to cover all aspects of the Re-FREAM realm, Wear It Berlin is seeking input from other partners to add their own resources to the list. These data will then be added to the database of the website and will appear as pins on a map as well as a list of resources, see Figure 6. The resources should be curated to the Re-FREAM project. Data must be of international spectrum to provide as many options as possible. The Covid pandemic has indeed shown that users would focus on resources available in their country or region. The data listed on the Atlas should also have a proven record of projects and works.

Data management is of essence, an email will therefore be sent to all resources listed on the website to inform them of the project as well as to offer them the possibility to opt-out of the Atlas. Following this email, a non response will be considered as a consent and the data will remain available on the Atlas. If however the resources decide to opt-out, their information will be deleted from the Website.

The database will be maintained and updated by Wear It Berlin until the end of the Re-FREAM project in November 2021. After that date, the database will be taken over by IED and integrated to the RE-CODE Platform.

The RE-CODE Platform is created to establish a direct connection to the real fashion ecosystem and make the re-FREAM projects accessible, the processes understandable and enable inspiration and education to the fashion sector. The Re-FREAM projects indeed represent important added value, but have a very scientific and technical approach, making it difficult to be accessible to everyone. The RE-CODE platform will be targeting Fashion designers, brands and production chain actors of the fashion industry and people developing projects, such as startups, designers, artists, researchers etc. The vision behind the Platform is to create a collaborative tool to help explore dimensions of fashion processes, discover techniques and technologies and connect with other people involved.

The goals of the platform are:

- to share the Re-FREAM projects and make them accessible and understandable to all actors of the fashion ecosystem.
- enhance the continuity of the projects after the end of the Re-FREAM Program

IED also proposes to take over the communication plan, focusing first on the Re-FREAM project to capture the community and then promoting the platform. The platform is being developed and will be launched after the end of the Re-FREAM project.

3.3.3. User experience

Figure 6 is an example of what the Atlas looks like on the website. It is designed with the intention of being user-centered. The database will be structured with categories such as 3D printing, Sustainable technologies.... The users will have the possibility to narrow down their search using filters, and therefore obtain a selection of resources targeted at their specific needs. The map gives an overview of the resources available, easy to access and to understand. It also enables the viewer to find local resources.

The Technology Mapping (<http://re-fream.eu/technologies/>) already available on the Re-FREAM website displays technologies used for the Re-FREAM projects. These technologies will also be listed in the Atlas. The fashion designers will thus be able to understand how the technologies have been used in the past and how they could be implemented to their own projects. The learnings are also available and will be updated on the blog and social media such as the Re-FREAM linkedin group. More information regarding the Technology Value Chain can be found in the next section.

Proposed legacy plan for the Atlas

At the end of the Re-FREAM project in November 2021, the atlas and all its resources will not be maintained and updated. In order to maintain the added value brought to the users by the Open Innovation Platform, Wear It Berlin elaborated in collaboration with other partners such as IED a legacy plan to keep the data from the Atlas accessible in the long run.

As part of the Re-FREAM Project, IED is planning to create an online platform (RECODE) to enable smaller entities of the fashion industry to access innovation, technologies of the market and compete with bigger already established groups. Surfing on the results and added value of the Re-FREAM project, the RECODE platform aims at creating a connection between the value of the RE-FREAM project and the fashion sector. It will make the technical and scientific approaches of Re-FREAM available and understandable to actors of the fashion industry.

The RECODE Platform is targeting the existing fashion industry ecosystem such as designers, brands and production companies and other people developing projects for instance startups, designers and artists, researchers or Maker-spaces. It will enable those actors to discover new techniques, technologies and materials, establish new creative processes, meet and connect with other actors of the fashion industry and disseminate their work to the world. As for the Atlas, it will not only gather resources from the Re-FREAM project but also add to the research done and expand the knowledge. Users of the platform will therefore be able to use it as a tool to find the best “recipe” for their projects, i.e. research, partners, materials, resources, technologies etc. Once a project has been created using the platform, it will also be available on the RECODE platform for other users to use and learn from it. The platform aims at providing resources but also at building up information from projects created and developed using the RECODE platform.

In order to maintain and disseminate the Re FREAM Data, the processes of the 20 Art/Tech Projects will be decoded and integrated to the RECODE platform. This will enable the data gathered for Re-FREAM to be maintained and kept up to date as well as reaching a bigger audience outside of the Re-FREAM realm. The RECODE platform is still at the development stage. A visual is therefore not yet available, Wear It Berlin and IED are working together to define the best approach to develop both tools, their implementation and collaboration in the long run.

At the end of the Re-FREAM project, the Atlas and its data will be kept alive and online as part of the RECODE Platform (a link to IED website) on the Re-FREAM Website. Users will therefore have access to the information available at the end of the project. A link to the RECODE platform of IED will also be available on the website. Thus allowing the audience to access the up to date information of Re-FREAM and other features of the RECODE platform.

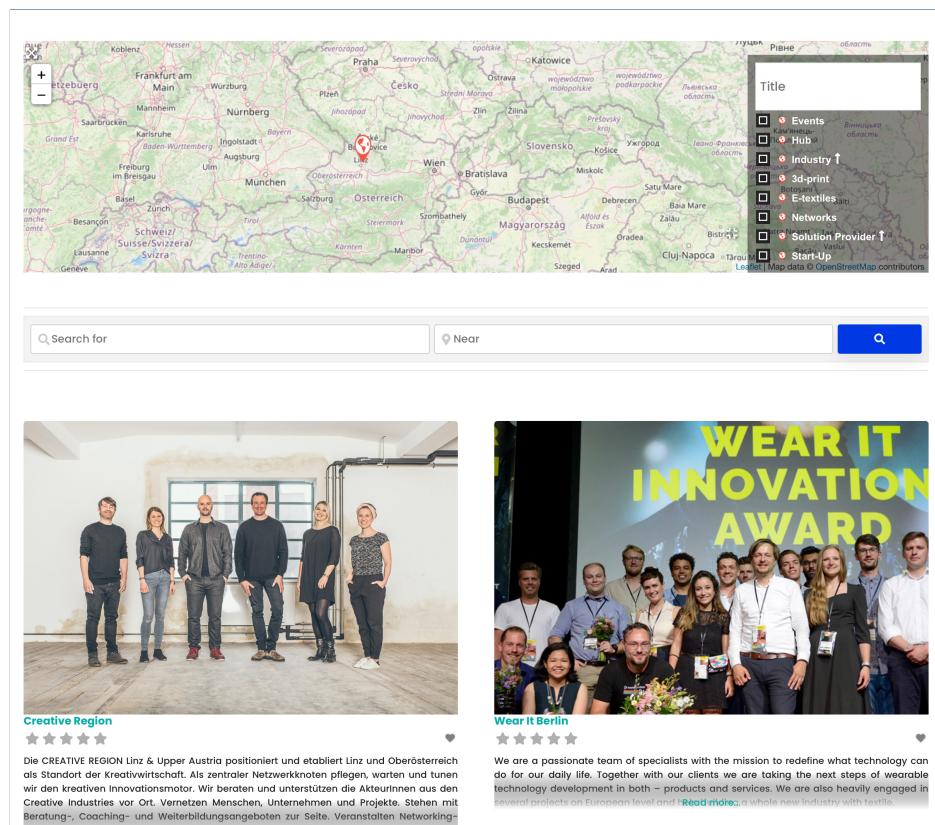


Figure 6: first look at the interactive map on the project website

3.3 Technology Value Chain

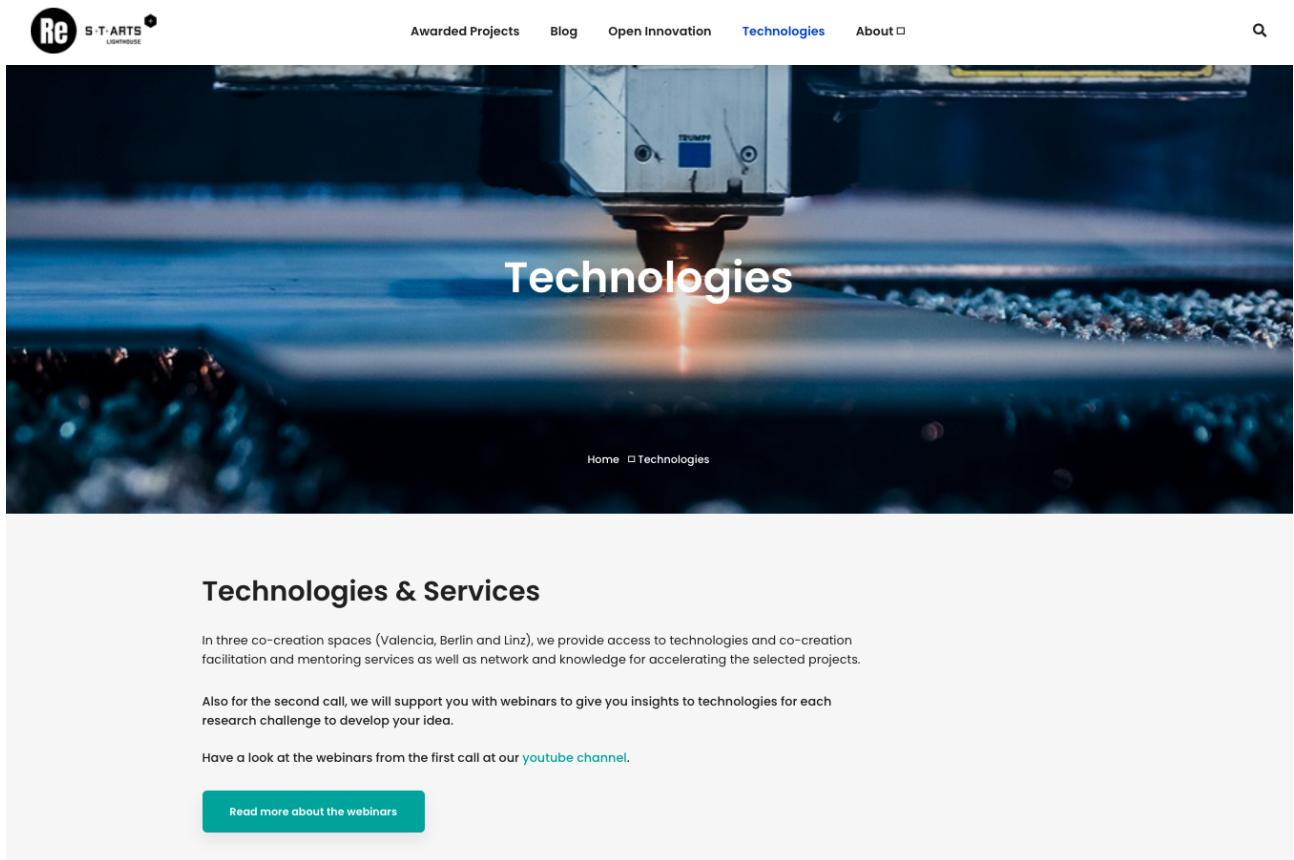
Besides being the first touchpoint for readers that want to know more about the Re-FREAM Project, the website also sets up a new Technology Value Chain in the form of an online toolbox. Therefore, Wear It Berlin integrated a resource database that shows all technologies and services available in the consortium.

The landing page, as shown in **Figure 7**, can be accessed here: <https://www.re-fream.eu/technologies/>

The individual entries can be filtered according to the users' interests (Technology, Service, Know-How, Infrastructure) as seen in **Figure 8** below.

The technologies used during the Re-FREAM project presented on the above mentioned landing page can be disseminated on the LinkedIn platforms and other social media channels. This is part of the collaboration created between WP7 and WP8 in regards to dissemination. Indeed both work packages are complementary in their dissemination processes as they target different audiences (more information about the collaboration can be found above in the Introduction to OIP). The aim of the dissemination activities managed by WP8 is to present Re-FREAM to an audience that is not necessarily familiar with the project. The goal is to trigger new audience members to get interested in learning more about Re-FREAM and thus e.g. visiting the website (lead generation). The website not only presents more information about Re-FREAM, but is also host to the Open Innovation Platform and toolbox. When the new audience is guided to the Open Innovation section of the website, WP7 is in charge: Here the converted leads get access to all the Open Innovation Tools that Re-FREAM has to offer.

The "Technologies" Tabs of the Website is a Collection of all the technologies that were used within the Re-FREAM. They will also be featured in the Atlas as they represent Useful tools for the website users. To differentiate the Atlas represents a research tool for external users of the website, whereas the Technologies Tab represents a summary of all resources used during Re-FREAM.



Technologies & Services

In three co-creation spaces (Valencia, Berlin and Linz), we provide access to technologies and co-creation facilitation and mentoring services as well as network and knowledge for accelerating the selected projects.

Also for the second call, we will support you with webinars to give you insights to technologies for each research challenge to develop your idea.

Have a look at the webinars from the first call at our [youtube channel](#).

[Read more about the webinars](#)

Figure 7: Landing page showing the Technology Mapping

Awarded Projects **Blog** **Open Innovation** **Technologies** **About** 

All **Technology** Service Know How Infrastructure



R+D Garment finishing laboratory with Micro-Nebulization ECOFinish technology
Infrastructure, Know How, Service, Technology



Calendering technology
Infrastructure, Service, Technology



Laser Technology
Infrastructure, Service, Technology



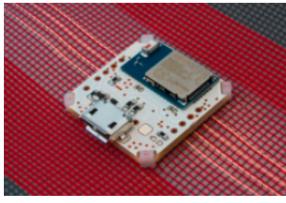
Ozone Technology (colour fading)
Infrastructure, Service, Technology



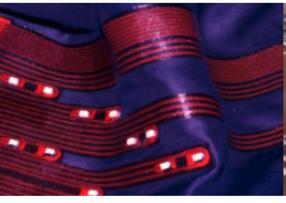
Support in eco-design and physical computing
Know How, Service



Flexible, soft and elastic textile-integrated conductors
Know How, Service, Technology



E-Textile hardware
Know How, Service, Technology



Integration of electronics into textiles
Service, Technology



Thermal sweating manikins and instruments for characterisation of wearing comfort
Service, Technology

Figure 8 : Landing Page showing the Technology Mapping and options for filtering content

The technologies offered within Re-FREAM were especially prominently presented on the website before the two Call for artists (in 2019 and 2020, respectively) for applications, in order to encourage artists and designers to apply to the Re-FREAM challenge.

New Value Chain of Fashion

In order for the consortium to be prepared for the end of the Re-FREAM project, it has been proposed to summarise how Re-FREAM managed and created the new value chain of fashion. A story telling concept was suggested to all involved partners in order to facilitate dissemination, reporting and reviews. The new value chain of fashion is based on the co-creation phase of the Re-FREAM project. Each project represents a small part of the big picture that is the value chain of fashion. During the Consortium Meeting of May 2021, each technology partner presented their new technologies created for the Co-development phase. Here is a summary for each partner:

- Profactor developed a way to print on fabrics, this is meant to solve challenges encountered and has created new challenges and will bring new materials to textiles. This will be further developed and implemented with

the artists during the co-creation phase, and will enable Profactor to tackle additive manufacturing for textiles.

- Empa collected Data with regards to sweat mapping, wet discomfort and skin temperature sensitivity. This helped to extend the existing simulation tools created for previous artists' projects. This simulation tool, aimed at developing and optimizing functional garments and protective equipment. In the coming months Empa wants to build a physiological data interpretation tool.
- Haratech developed three technologies within the Re-FREAM project:
 - Fused filament fabrication (FFF), used for 3D printing, which will be optimizing the ecological footprint of fashion, using less and more sustainable material
 - Vacuum Casting using a new resins, which is transparent, flexible and durable and thus opening up more creation possibilities to the urban manufacturing
 - 3D scanning based on a mobile application for precision body scanning. This technology facilitates the use of 3D modelling and printing.
- The technologies developed by UFG are based on earlier outcomes and learnings from projects of the first Call of Re-FREAM. UFG created a tool for parametric design, customization and urban manufacturing. The Tool for parametric includes custom grading, design and customization possibilities and G CODE generation for non-planar FFF 3D printing.
- IZM developed textile-based circuit boards (TexPCB) that could be used by artists for the co-development phase. The Fraunhofer Institute also developed a E-textile hardware-kit and bonding technique, which enables a maximum of 12 contacts to be bonded on one module at the same time. TO further develop this, a technology for contacting 26 pads is being researched.
- Care Applications created the ECOFinish technology. This technology aims at creating mechanical accessories to be installed in existing washing / Dyeing machines. It intends to make traditional machines more versatile and sustainable. The ECOFinish nebulization system is contributing to the environmental and social benefit, improving the efficiency of resources for small-scale production and individualized customisation for the garment textile industry.
- Aitex also developed different new technologies for the Re-FREAM project:
 - Ozone: which is an already available sustainable technology helping to avoid chemical products for bleaching and creating different fading shades
 - Laser technology: allows to create ZeroWaste clothing as well as design effects and changes in colour without using dyes and in a very fast, clean process. Clothes customization can be done faster.
 - New Material and Fibers development: in this case Altex used cork powder in the nebulization and spray has been inspiring, as new materials powder-based can be used now for new biomaterial research. This technology explores the usage of industrial waste and leftovers.

All technologies developed during the Re-FREAM Project add to the new value chain of Fashion. They will be listed in the Technology section of the Re-FREAM website and in the long run integrated to the Atlas. Thus enabling the website users to access and discover the new technologies that emerged thanks to the art/tech collaboration of Re-FREAM. As part of the Atlas, the new technologies will be transferred to IED to be integrated into the RE-CODE platform, once the Re-FREAM project ends.

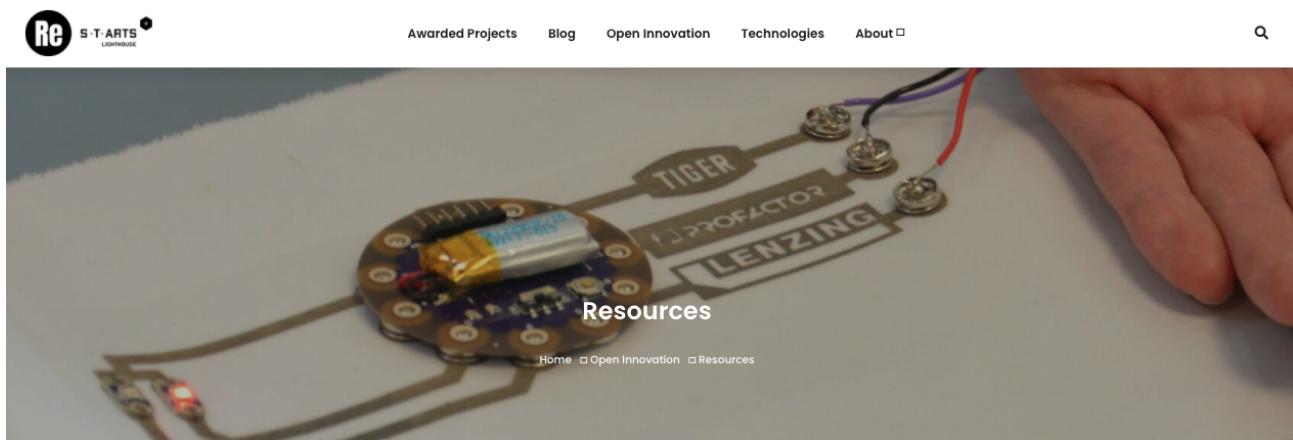
3.4 Collection of resources

The Re-FREAM OIP has also implemented a collection of resources, with the aim of making different tools available, such as:

- Re-FREAM public deliverables

- Art/tech Toolbox and Methodology
- Scientific Papers published within the framework of Re-FREAM Project

As **Figure 9** below shows, the landing page has already been created by Wear It Berlin. Further efforts regarding improving the design and contents are an ongoing process, and will continue until the project ends. The page can be accessed at: <http://www.re-fream.eu/open-innovation/resources/>



Re-FREAM public deliverables (2019-2020)

Re-FREAM is a pillar of the **STARTS Programme** (Science + Technology + Arts), an initiative of the European Commission under the Horizon 2020 research and innovation programme. Within this framework, the partners are developing and publishing various deliverables and papers, which are listed below for public access.

- D2.1 Art/Tech Transfer Toolbox
- D2.2 Training concept
- D2.3 Co. Research Guidelines
- D3.1 Final Call structure and launch of call for first round
- D4.1 First printed prototypes fabricated by using optimized software
- D5.1 Guideline for eco-design process for the creation for environmental friendly artworks
- D5.2 First version of four E-textile artworks and two eco-designed art-works
- D7.1 Online exchange platform up and running

Re-FREAM scientific papers

- Dilis, C.; Werft, L.; Walter, H.; Zwanzig, M.; von Krshiwoblozki, M.; Schneider-Ramelow, M. (2019): *Investigation of the Mechanical and Electrical Properties of Elastic Textile/Polymer Composites for Stretchable Electronics at Quasi-Static or Cyclic Mechanical Loads*

Figure 9: Collection of Open Innovation Resources

The resources created during the project by the partners have created a great value to the community through the tools they provided in understanding co-research, the technologies available and how these can be implemented. This page will continue to be nurtured until the end of the project by the partners. Hopefully, more scientific papers, success stories from the co-creation meeting the industry, as well as all other public deliverables will be added to the list of resources. The Re-FREAM partners are working together for a sustainability plan for the OIP, which will be covered in Deliverable D7.5.

3.5 Project Blog

The main aim of the artistic and scientific blog is to document the co-creation process between the artists and the scientists and thus demonstrating good practice examples to third parties. The blog can be accessed here: <https://www.re-fream.eu/blog/>

In January 2021, 78 blog posts were already posted and published on the project blog and a minimum of 60 posts documented the art/tech process of the 1st Call. The artistic and scientific teams presented their experience, learnings and the general development of the process. They also showed how they adapted the projects to the challenges posed by the COVID-19 pandemic, and showed the incredible results at the end of their projects.

The articles are written by the artists/tech teams together, and they allow readers to find out about different aspects in the Re-FREAM projects in different ways, e.g.:

- follow each project from the idea to the final prototype stage
- filter blog entries by different categories ("Idea", "Concept", "Realisation", etc.)
- filter all projects according to the Hub in which they develop the prototypes

The blog posts are accredited before publishing one or more categories. One of the categories relates to certain project phase, which aligns with the Art/Tech methodology and timeline:

Blog Category	Description	Phase of co-creation
Idea	The WHY (what is the purpose of the project, what problem does it solve), first sketches, how did the idea evolve during the Hub Kickoff Meeting	Phase 1 - Prepare: <ul style="list-style-type: none"> ● Welcome ● Envision ● Inspire
Concept	The co-defining and co-research of the project: what were the overall milestones, what difficulties they encountered, what changes were made to the initial approach, what are the next steps	Phase 2 – Experience: <ul style="list-style-type: none"> ● Co-Define ● Co-Research ● Mid-Term Presentation
Realisation	The co-creation and completion of the project: what were the steps after the mid-term presentation, what difficulties did the team encounter, what changes were made to the initial approach	Phase 2 - Experience <ul style="list-style-type: none"> ● Co-Create ● Prototype Presentation Phase 3 - Communicate <ul style="list-style-type: none"> ● Project Completion ● Project Documentation ● Final Presentation

In order to make the blog more user friendly for users not familiar with the Re-FREAM program, it is suggested to add a menu bar on the page. This will enable Wear It Berlin to organise the articles into subsections and users to see all blog posts related to one project or subject. Wear It Berlin, also suggests adding a drop down menu on the "Blog" tab featuring all artists from both Calls, in order to give the user a better visualisation of the projects. As a landing page all blog posts will remain visible as it is today organised with the latest articles first. The menu bar could be added on the top of the page under the "Blog" banner as already done on the "Technologies" Tab of the website. Each blog post also



now features the author of the article at the end as well as suggestions for related blog articles that could be of interest for the readers.

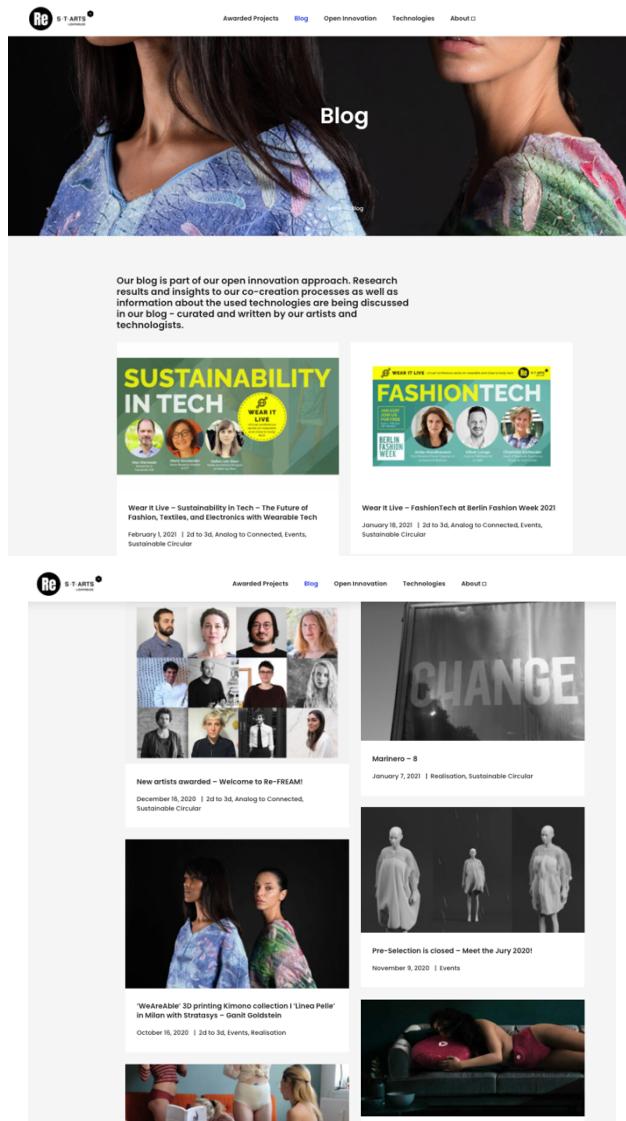


Figure 10: Impression of the blog posts as seen on the landing page

At least 60 more blog posts are expected from the 2nd round of projects. The art/tech teams have been briefed about the mission and vision of the OIP and have already drafted the first blog posts.

Wear It Berlin supported the Re-FREAM partners and Art/Tech Teams in the creation of the blog posts by creating an editorial plan and several tutorials on writing a blog post. This information and work progress has been summarized in intermediate reports throughout the course of the project.

4. Summary and outlook

The foundation of the Online Toolbox for urban manufacturing is already available on the OIP. This is a continuous process, which requires the contribution of many stakeholders in the Re-FREAM project. Each pillar of the Online Toolbox will further evolve until the end of the project (end of November 2021):

- The **project website** will continue to be adapted to the objectives of Re-FREAM in the project timeline, and at the end of the project it will highlight the 20 finalized prototypes
- Overview of **technologies for urban manufacturing**: An atlas with resources consisting of stakeholders in urban manufacturing for e-textiles, sustainability and 3D-printing will be available on the project website. The map is expected to have a minimum of 150 pins before the opt-out email.
- The technologies offered within Re-FREAM will continue being highlighted on the OIP. This will give readers a full overview of how they can be implemented hands-on in creating the 20 prototypes, contributing to the **technology value chain**.
- The **collection of resources** will be constantly updated with relevant tools throughout and until the completion of the project. This will encourage the Re-FREAM community of artists, designers, manufacturers and scientists to apply the learnings of the Art/Tech teams into their own products or processes.
- The evolution of the Art/Tech projects, as well as news about relevant events or highlights in Re-FREAM will continue to be published on the **project blog**. More input is expected from technology partners and even external articles.

The “toolbox” is planned to remain available also after the project phase, which will contribute to the set **impact** of creating a sustainable ecosystem for urban fashion manufacturing for sustainability, 3D-printing and e-textiles, as well as to the set goals and objectives of the Open Innovation Platform.

The Re-FREAM partners have worked on a new website structure which will highlight the value created by Re-FREAM even after the project ends. The new structure will already be implemented during the course of the project, and will be created with a user-centered focus in mind.

Regarding the components of the Online Toolbox, Wear It Berlin together with other project partners, are working on a sustainability plan for the OIP. This has already been discussed in a workshop and several meetings. The detailed strategy will be elaborated in the Deliverable D7.5 Sustainability plan for the Open Innovation Platform, due at the end of November 2021.