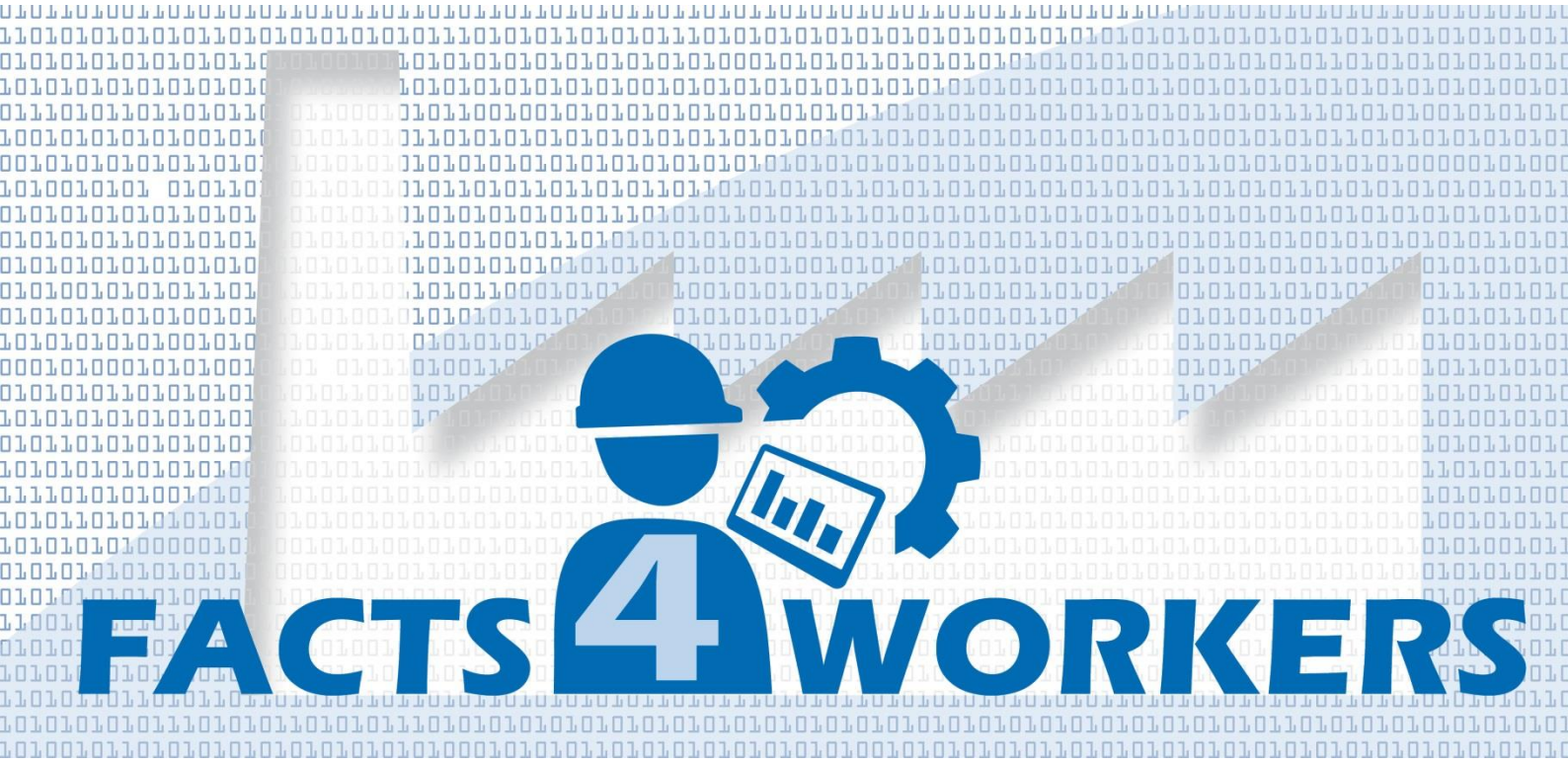
Volume 1.0

Project Deliverable 7.5

Activities Report

Worker-Centric Workplaces in Smart Factories

www.facts4workers.eu



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Worker-Centric Workplaces in Smart Factories

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About this document

Executive Summary

This document presents the achieved results of dissemination and exploitation activities in the third year of the FACTS4WORKERS project. This document covers the main work done in fields of dissemination and exploitation and outlines the plans in these fields for the project' final year. The document is structured as follows: 1) Communication 2), Dissemination process management in the third year, 3) Dissemination: Project activities in the final year, 4) Exploitation, 5) Balance of efforts and priorities between stakeholder's interests, different results and partners.

The activities performed in the third year cover the most important breakthrough activities in field of dissemination, mainly the project video and the new webpage. Outlines for these breakthroughs ware laid already in previous deliverables (D7.2.-updated, D7.3, D7.4) whereas the main bulk of activities was done in the first half of the project's third year.

Exploitation effort within WP7 also received a new boost with the completed Business plan. In combination with achieving and – most importantly, greatly surpassing - the project plan in field of scientific dissemination as outlined in the project' application and with an active outreach to industry associations and representatives the project is in good position to kick-off into a plan very successful final year.

Partners are already actively planning roll-out and post-roll out activities especially in regard to one hand raising awareness among workers at pilot UC plants about benefits of the developed solutions and on the other in achieving a wide impact. In this regard, modularity of the FACTS4WORKERS will be deeply explored in the fast year and efforts will be made in replication and upgrade of the solutions to ensure a wide reach. Concurrently a strong outreach to industrial and scientific associations on regional and national levels will be made building on the push made in the third year (which is also explained in this document).

The breakthrough made in the third project year was acknowledged also by the visit from the European Commission's Reviewer. His remarks were put into

consideration by all members of the consortium and all are very well motivated in putting a concentrated effort into ensuring that the FACTS4WORKERS solutions are successfully deployed, tested and evaluated by the shop floor workers. In this way the FACTS4WORKERS project can show concrete and competent results that can later on be replicated on a much wider European level fulfilling the project's goal of developing solutions that would be beneficial for multiple branches of European industry in the 21st century.

Keywords

#FACTS4WORKERS, #Dissemination, #Exploitation, #Business plan #Deliverable, #Communication, #Strategy

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Document authors and reviewers

This page presents authors, reviewers and contributors of deliverable 7.5 – Activities Report. Sincerely thanks to contributors and reviewers.

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Contributors

All project partners contributed information about their activities that was needed for the preparation of this deliverable.

Table of Contents

Table of Figures

Index of Abbreviations

SIA..... SiEVA d.o.o.

ITA.....Instituto Tecnológico de Aragón

TUW..... TU Wien

EVO.....Evolaris next level

EMO.....EMO Orodjarna

UZH.....University of Zurich

IMI.....IMINDS

LUT.....Lappeenranta University of Technology

TKSE..... ThyssenKrupp Steel Europe

UNIFI..... Università degli Studi di Firenze

SCA..... Schaeffler

THO..... Thermolympic

HIR.....Hidria Rotomatika

HID..... ..Hidria TC

VIF.....Virtual Vehicle Research Center

UC ..... use-case

IP ..... industrial partner

KER..... key exploitable results

1 Introduction

This is a live document that outlines the framework for dissemination activities within the FACTS4WORKERS - ‘‘Worker - Centric Workplaces in Smart Factories” project. The document outlines the communication activities performed in the third year of the project, dissemination activities and their relation to exploitation. The document covers relation of planned vs. done activities in year 2017 and planned activities for the final project year 2018.

The document presents the efforts that were put into and results that were achieved in dissemination and exploitation fields of 7th WP. The implications of the work done for plans in 2018 is also laid out.

1 Introduction

2 Communication

The scope of this chapter is to present dissemination as the key tool to raise awareness about the project and project results. The dissemination strategy of FACTS4WORKERS foresees ***internal and external*** actions.

- Internal communication and dissemination allows members of the FACTS4WORKERS project consortium to be involved in every project activity and share their knowledge and experience, which is essential for successful project execution.
- External dissemination and communication has utmost importance for the project, because in this way we present the project to the wide target audiences and raise project awareness amongst our most important stakeholders.

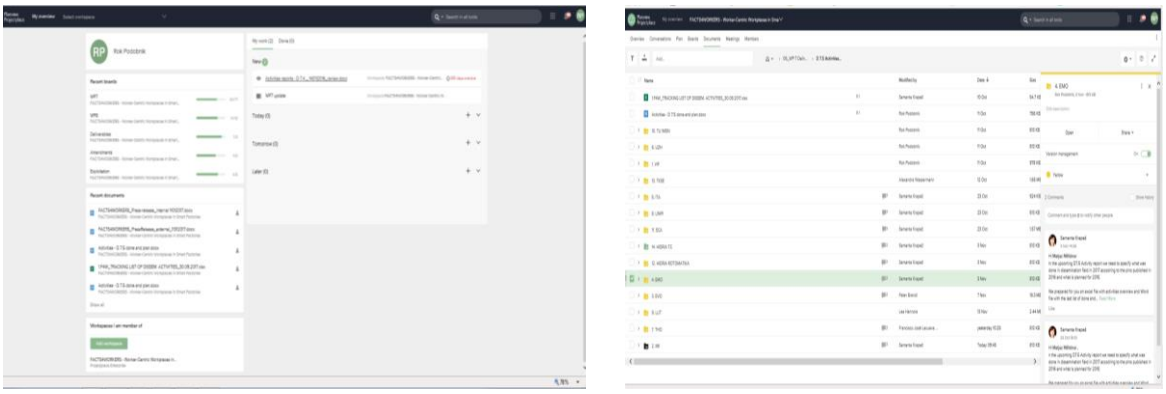
2.1 Internal communication

The same as in the first and second years of the project, internal communication in the second project year was mainly conducted ***via telephone-conferences, Webex meetings, e-mail and periodic physical meetings*** *of core teams.*

Data exchange in the second year was completely conducted on the ***Projectplace***[1] data transfer platform as was envisaged already in the previous year.

In field of dissemination and exploitation activities Projectplace was the **main tool for data management, report and deliverables'** preparation since it has proven its worth in enabling fast, regular and active update of documents from multiple authors and reviewers.

[1] www.projectplace.com



Figures 1 : Project Place first page (left) and an example of work being coordinated per partner for documentation preparation in WP7 (right)

As in the second project year, virtually all the main **project communication in the third year was made on the Projectplace** application and work undertaken in all WPs was smoother, easier to track and organized.

2.2 External communication

In its first project year the project aimed at making itself as visible as possible and define the general outreach goals. In the project's second year the external communication actions were defined. The project's communication effort in its third year built upon these foundations.

The focus areas and communication channels were defined in the previous deliverables: D7.2, D7.3, and D7.4. To repeat one more, the main target groups as defined for the project are:

These were:

- Scientific community.
- Industrial sector.
- Public.

The main channels are:

- Social Media (Facebook, Twitter, LinkedIn, YouTube, etc.).
- Publications (peer-reviewed scientific journal).
- Events (conferences, workshops, trade fairs etc.).

Having an already well-established project focus, in the project's third year the consortium retained the main project goals and targets as specified for the project's second half. These are as follows:

- ✓ Set up the dissemination mechanisms and strategies (e.g. conference plan, updated web page, etc.).
- ✓ Create a community composed by the project partners and interested stakeholders that may interact at all the project stages.
- ✓ Ensure targeted communication activities both tailored to different stakeholders' interests.
- ✓ Carry out dissemination activities, to raise international awareness and interest in project activities and achieved results in the scientific and commercial community and with the European public and social policy stakeholders.
- ✓ Investigate the routes by which the partners can secure a successful downstream exploitation of the results.
- ✓ Balance dissemination efforts between the partners.
- ✓ Contribute the relevant project results to the corresponding standardization bodies (if applicable).
- ✓ Liaison with other EU and national projects will maximize the impact.

In the previous two deliverables, D7.3 and D7.4, the project's focus was described as moving from collecting the necessary information and knowledge from the workers (internal communication or inward oriented communications) to building up momentum in external communication that would coincide with the first FACTS4WORKERS solutions' deployment phases and tests at IPs' UCs.

Our main communication **priority** in the project's third year was the building networking liaisons and communication channels with the **scientific community.**

The FACTS4WORKERS project was thus presented for the third time in a row on the **Mensch und Computer conference.** A specific novelty in the outreach to the scientific community were also presentations on **specific target websites** such as the Industrie 4.0 Fallstudien" Webpage and ResearchGate website.

In this regard one must not forget to mention that the FACTS4WORKERS project deepened its **cooperation with the academic sector.** FACTS4WORKERS consortium provided information needed for completion of a **Master Thesis** at our partner **Technical University of Vienna** - TUV (an additional Bachelor Thesis is planned for 2018). In similar regard, partner VIF employed help of an outside partner **TU Graz** for writing and completion of the FACTS4WORKERS **Business Plan** (D7.7), which is also regarded as a major dissemination and exploitation milestone achieved in 2017.

A major external communication push in 2017 was made also in regard with **communication towards the general public.** Two major breakthroughs occurred in this field: a brand new webpage and a project video.

After laying out the plans for the new webpage in last year - as described in D7.4 – the consortium finished with creation of a **brand new webpage this year**. The page was operational in the first months of 2017 and is being filled-up with content. The new webpage has a much more expressed focus on FACTS4WORKERS solutions on each IPs' UC and a clear gearing towards social media.

In June the FACTS4WORKERS project also got its first **general presentation video**. The video is accessible from the project's webpage and has been uploaded on the YouTube media site. With the video the FACTS4WORKERS project employs one of the most effective modern media tools on hand to bring the project out to the public.

In the national level, the project's communication outreach oriented towards specific **industrial communities relevant at the national level**. This was achieved through project promotion at specific websites (such as the Automotive Cluster of Slovenia ACS website), events & fairs (CEPAUTO 2017 in Spain).

Entering the project's fourth and final year, communication outlook is slated for being focused towards exploiting the interest for the developed solutions that are now being rolled out at IPs pilot sites. This means focusing orientation in two directions.

The first direction is oriented towards **intensifying internal communication**. Fourth year efforts will therefore on one hand see outreach to **company's employees, company employees' representatives (trade unions).** On the other hand the consortium plans to strengthen intra partner communication. This will be especially true on deliberate encouragement of **cooperation among IPs**: the consortium plans to strongly encourage and support re-usability of a specific FACTS4WORKERS solution in other UCs. You can find description of the first ideas in this deliverable.

3 Dissemination process management in the third year

3.1 Updated Webpage

3.1.1 Basic public webpage

After long deliberations and preparations, the FACTS4WORKERS consortium completed the overhaul of the webpage. The overhaul, which was already described in the D7.4 deliverable begun in the second half of 2016. The main dissemination partners – SIA and VIF – prepared the new structure outlines (see the scheme on the following page) which were already agreed upon in the D7.4. The page was full operational in the first months of 2017.

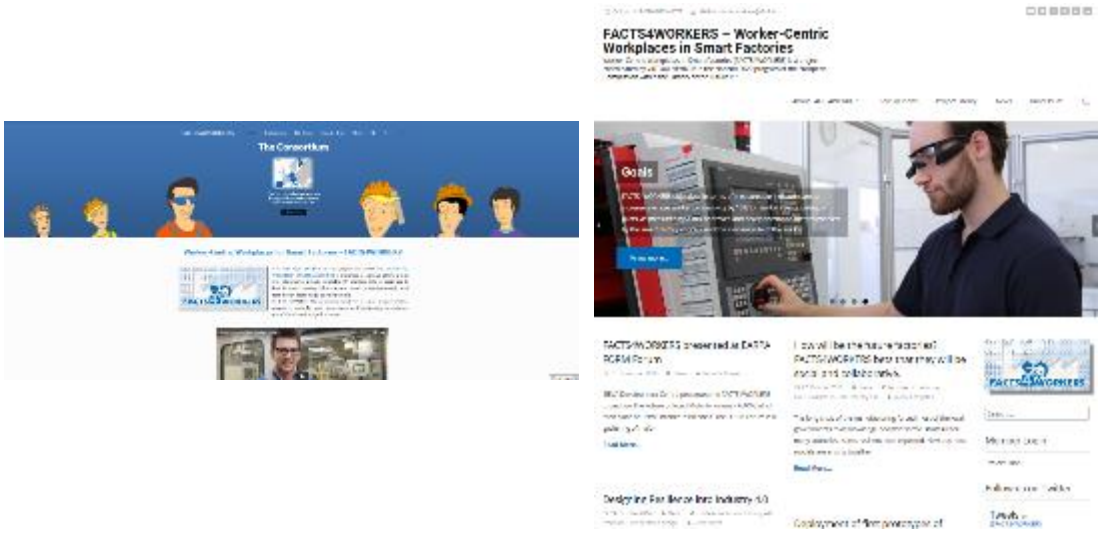


Figure 2: Comparison of the new and original website homepage layout at www.facts4workers.eu

3.1.2 Online content of the webpage

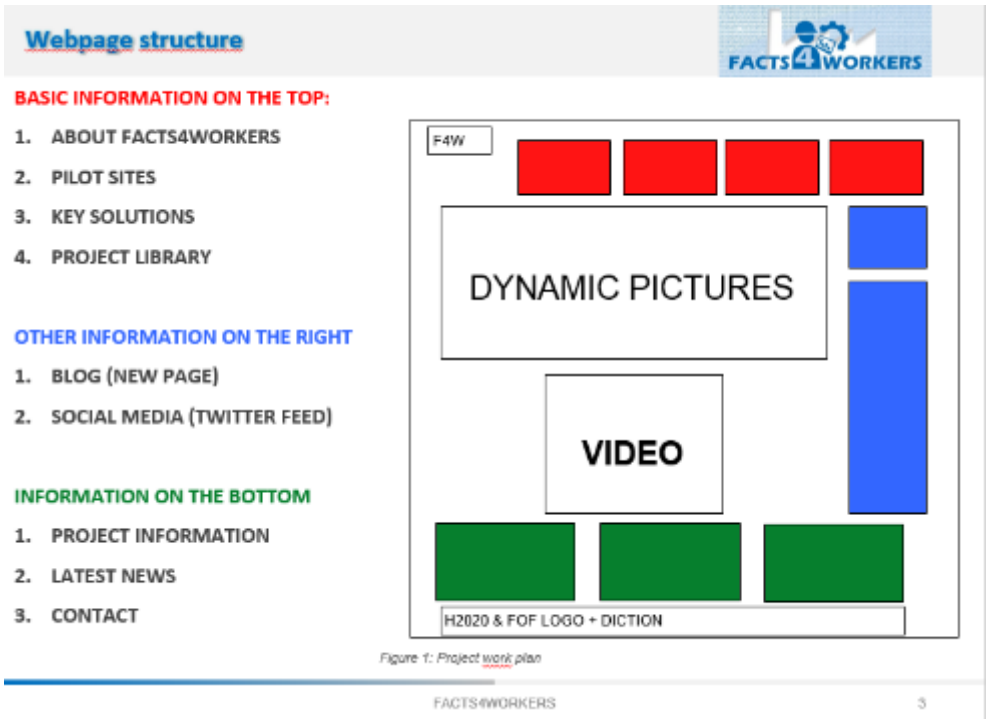
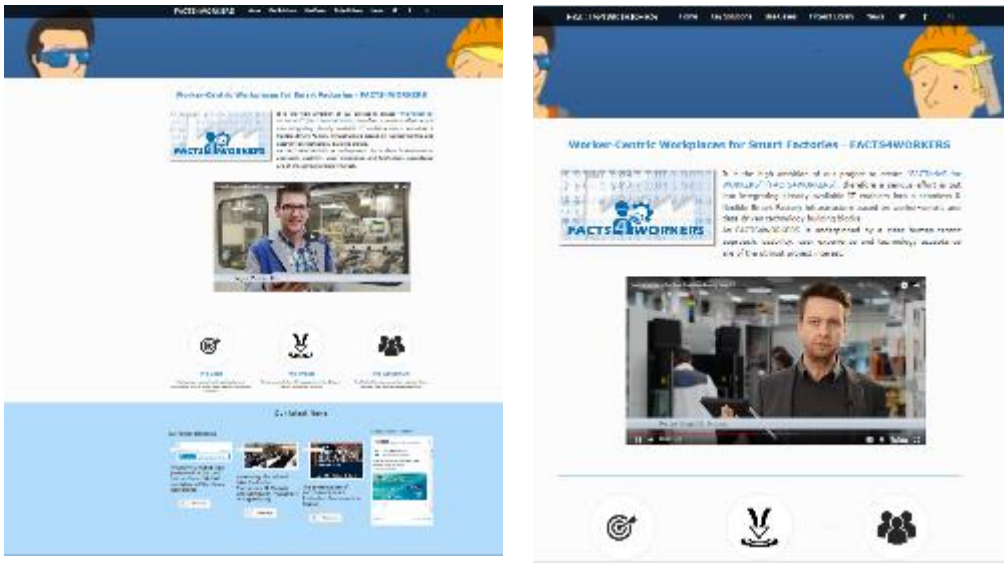


Figure 3: Proposed design for the new Webpage as presented in the D7.4.



Figures 4: Homepage (opening) section of the webpage complete with the project introductory video (see point 3.2. for more info on the video)

The new webpage reflects the proposed structure with more austere look of the opening page and info concentrated in the subsections that are all logically presented at the top and bottom information bars of the webpage.

Let's see how the webpage functions according to the **three main sections** which are again each divided into **new subsections** *(as envisaged in the D7.4.)*:

- **BASIC INFORMATION SECTION**

  This section is concentrated on the webpage s uppermost part and is dedicated to present the project's basic info; key solutions, use cases, project library, news and the social media channels. The subsections have therefore been slightly modified from the first inceptions presented in D7.4.

  Subsections:

  - **About FACTS4WORKERS**

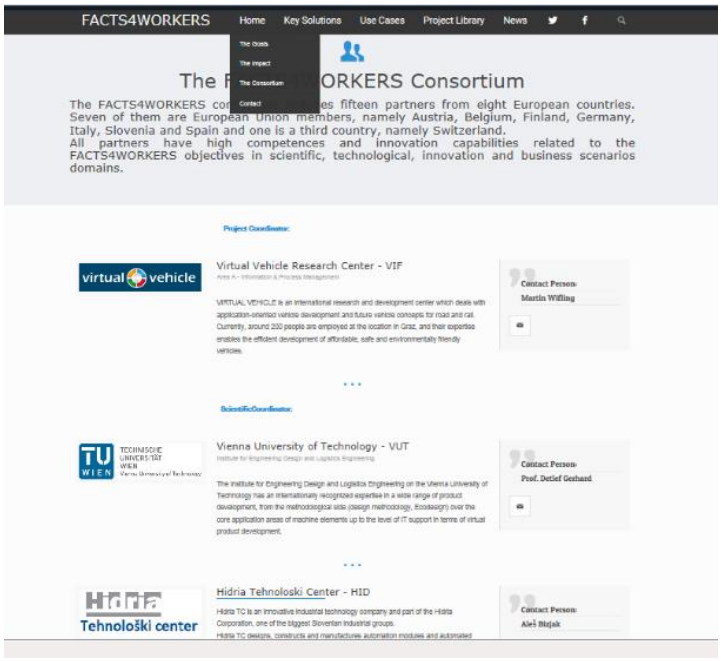
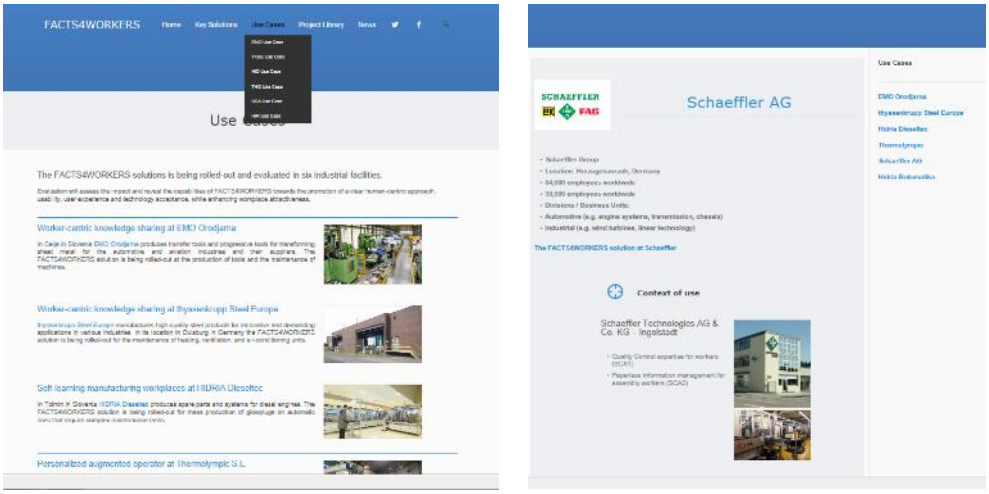


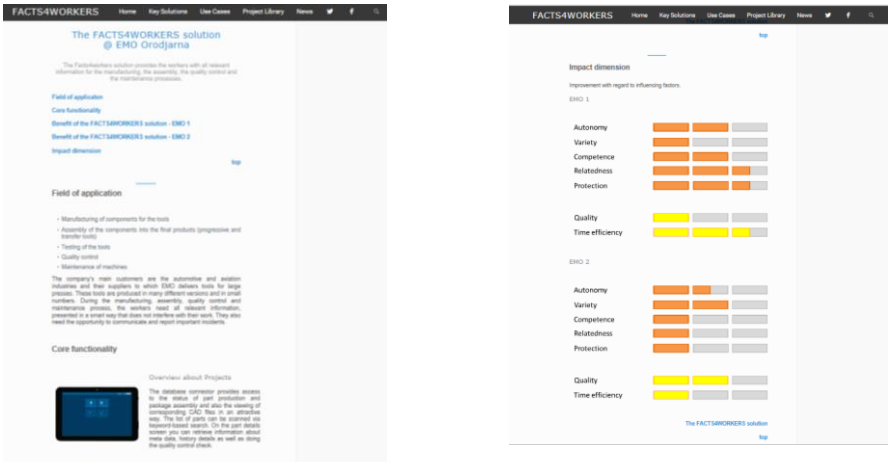
Figure 5: The homepage section of the webpage containing information about the consortium has been put under the 'home' tab

- **Pilot sites** *(Description of project's key sites with photo and video materials)*



Figures 6: The use cases subsection presents all of the FACTS4WORKERS' 6 industrial use cases.

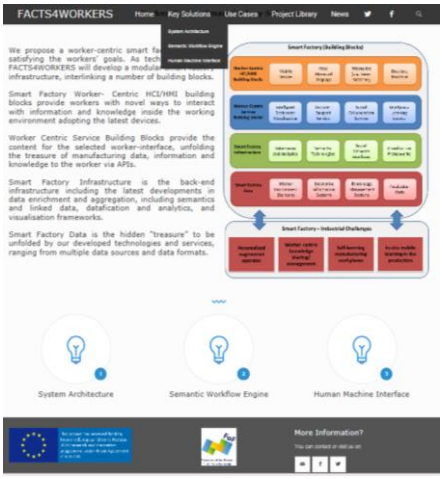
The UC subsection presents the pilot UCs. It offers a rich description of the UC, company, problem/issue, context, challenges, and room for improvement and potential benefits for the workers.

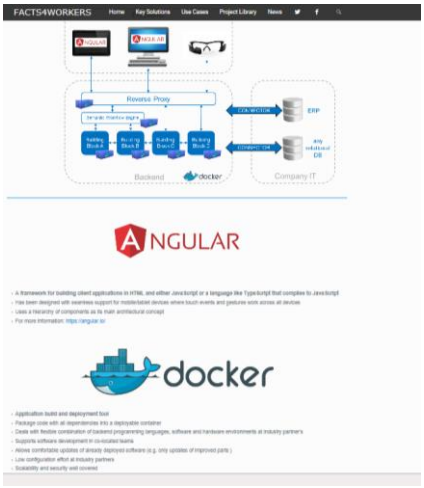


Figures 7: Presentation of a FACTS4WORKERS solution in the UC of EMO Orodjarna.

On clicking on a use-case one receives detailed information about the use case such as: company's basic info, context of use, challenges, room for improvement, potential benefits, and the info of the FACTS4WORKERS solution of a UC.

- **Key solutions**

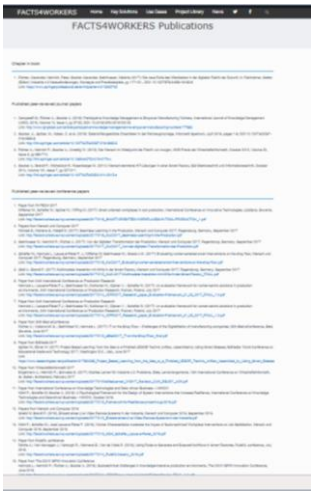




Figures 8: Presentation of a FACTS4WORKERS' key solutions.

Project's key solutions and – more importantly - the overall technological structure concept behind the FACTS4WORKERS project is presented under the 'Key solutions' tab, which is further divided into the following subsections: system architecture, semantic workflow engine and human machine interface.

- **Project library** *(Publications | Photo Gallery | Template |Deliverables| Dissemination material)*



Figures 9: Project library and project publications' page

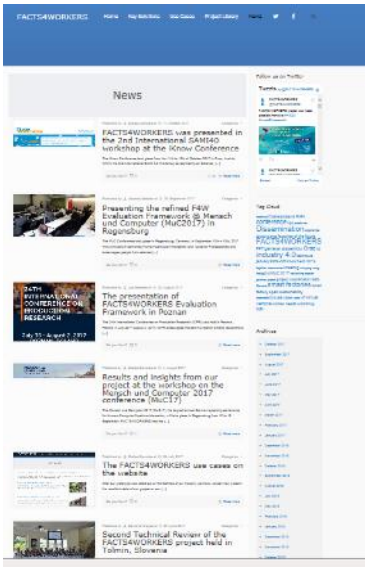
The project library sections of the new webpage presents the main dissemination material of the project. Available are the pdf versions of the FACTS4WORKERS logo, brochure and poster, as well as public deliverables and titles of scientific publications that were created as a part of the project's activities.

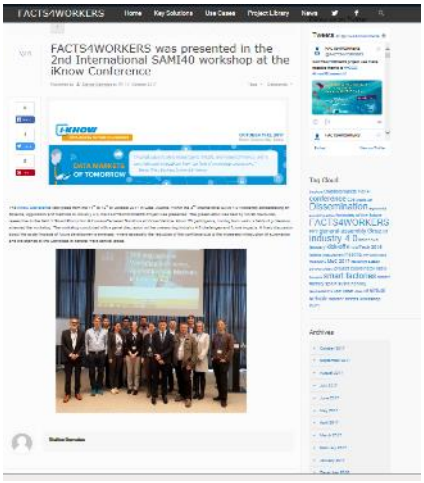
SOCIAL MEDIA INFORMATION SECTION

This section encompasses the project blog, Twitter, Facebook and other social media. As usual on similar project websites, the information is presented on the right side of the webpage.

Subsections:

- Project blog *(as a separate page)*
- Twitter feed





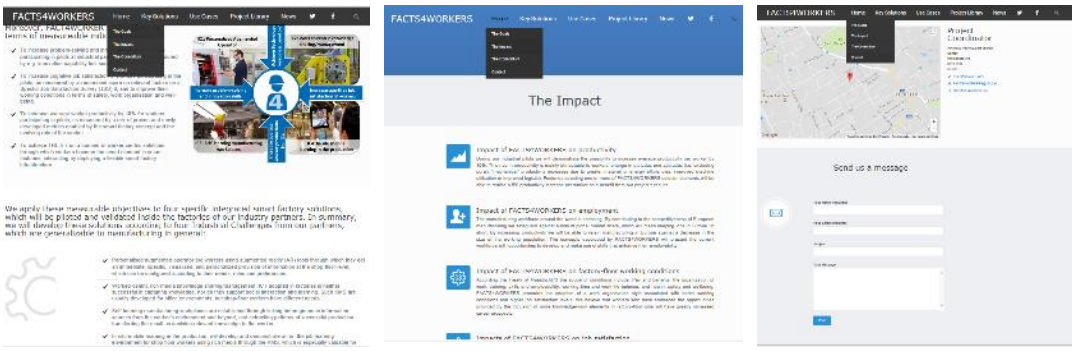
Figures 10: Project news section with the social media section (left) and a case of a news article (right)

The social media info on the new webpage is presented under the news tab. In encompasses a Twitter feed, a news section in form of a blog and also Facebook and Twitter links in the upper right corner of the webpage.

USEFUL INFORMATION SECTION

This section was intended to give a general and most crucial info on the project that is sought after by interested visitors after visiting the page (project consortium, contacts). It is included under the home section and includes the following subsections:

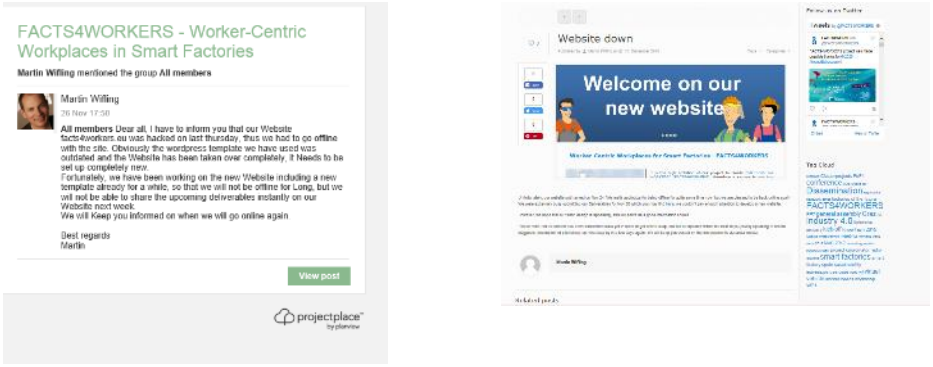
- The goals *(general project impressum & basic info)*
- The impact *(impact of the project expressed in many points of view)*
- Contact *(main project contact data)*



Figures 11: Project goals (left) project impact (centre) and project contact (right)

Website hacked

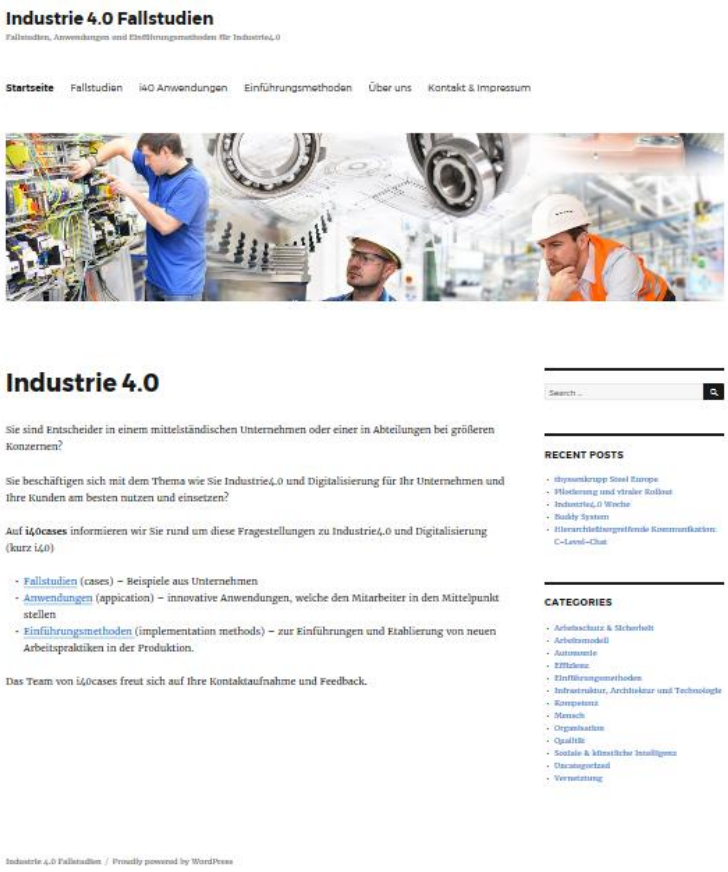
On 17th November 2016 the old FACTS4WORKERS website got hacked and was subsequently completely taken down. The consortium does not know the reason for the hacking attack but the software used for the old website was outdated and therefore made the site an easy target. Fortunately at the time of the hacking the work on the new website was well underway and the consortium was able to put up the new website with the first basic new webpage design templates in just a matter of days.



Figures 12: Project coordinator explaining the background of the hacking incident on the old FACTS4WORKERS website in November (left) and news article informing visitors to our webpage that the website is down due to a hacking attack (right)

Due to the website being hacked, we unfortunately also lost Google Analytics data that have been used until now (in the previous deliverable). The new data shall be acquired for the project's fourth year.

3.1.3 Project publication on the “Industrie 4.0 Fallstudien“ Webpage



Figures 13: Project presentation on the “Industrie 4.0 Fallstudien“ Webpage

An important highlight was the publication of the FACTS4WORKERS project in the “Industrie 4.0 Fallstudien “Webpage[2]. This is an individual webpage that is open to all partners.

3.2 Project video

The FACTS4WORKERS project video is a major dissemination milestone. It was planned and seriously contemplated for at least a year and was in detail first described already at the time of the previous deliverable D7.4.

The partner responsible for organizing the video shoot was SIA. SIA prepared the shooting plan draft, chose the filmmaker, organized the shooting venue and helped with post-production until the final product was unveiled on 3rd May 2017. At the date of this document the FACTS4WORKERS YouTube video has 758 views.

[2] Source: http://i40cases.34i.de/

LINES	SPEAKER	EQUIPMENT PICTURE	LOCATIONS	SEGMENT DURATION
„FACTS4WORKERS is a worker-centric European project aiming to improve working conditions for manufacturing workers in the European industry"	Martin Wilfing	F4W logo & Horizon 2020 logo **Text: Matin Wilfing, Virtual Vehicle, project coordinator**	Shopfloor (Dieseltec) + Another location	10s
„FACTS4WORKERS is bringing together 15 partners from 8 different countries"	**Tobija Kovač**	Partners' logos (+ map optional)	/	7s
„The main aim of the project is to use state of the art information technologies for improvement of conditions for workers on the factory shop floor."	Martin Wilfing		Shopfloor (Dieseltec)	7s
„FACTS4WORKERS deploys mass data algorithms and interactive human-machine-interface solutions to help the worker solve the problems more efficiently and achieve greater product quality."	Gianni Campatelli	(IT tool pictures – Google Glass etc.) **Text: Prof. Giovanni Campatelli, University of Firenze**	Zoom-in tablet etc.	10s
„We put the worker in the centre. The final results will create better working conditions, improve well-being and motivation for the workers and create a more interactive workplace."	**Tobija Kovač**	(photos & video-clip & pilot info)		13s
„We will use the latest IT technologies – smart tablets, watches and smart glasses – and combine them with data gathering solutions. This will create a user-friendly and interactive workplace. "	Peter Brandl	(IT tool pictures – Google Glass etc.) **Text: Peter Brand, Evolaris**	IT solution zoom-in	13s
„FACTS4WORKERS has 8 pilot use cases that include problem solutions for the automotive, industrial appliance, tooling, plastics and steel industries.	Martin Wilfing	(photos & video-clip & pilot info)	Rotomatika shopfloor	9s
"With the solutions made in FACTS4WORKERS, our workers will now work in a friendly-use, interesting workplace."	Martin Wilfing	F4W logo & Horizon 2020 logo	Webpage info social media info	6s
		TOTAL TIME		**75s (1:15)**

VIDEO SHOOT INFO:

Proposed date: 11th April (9:00 – 11:00)

Proposed location: Hidria Dieseltec (Poljubinj 89a, Tolmin)

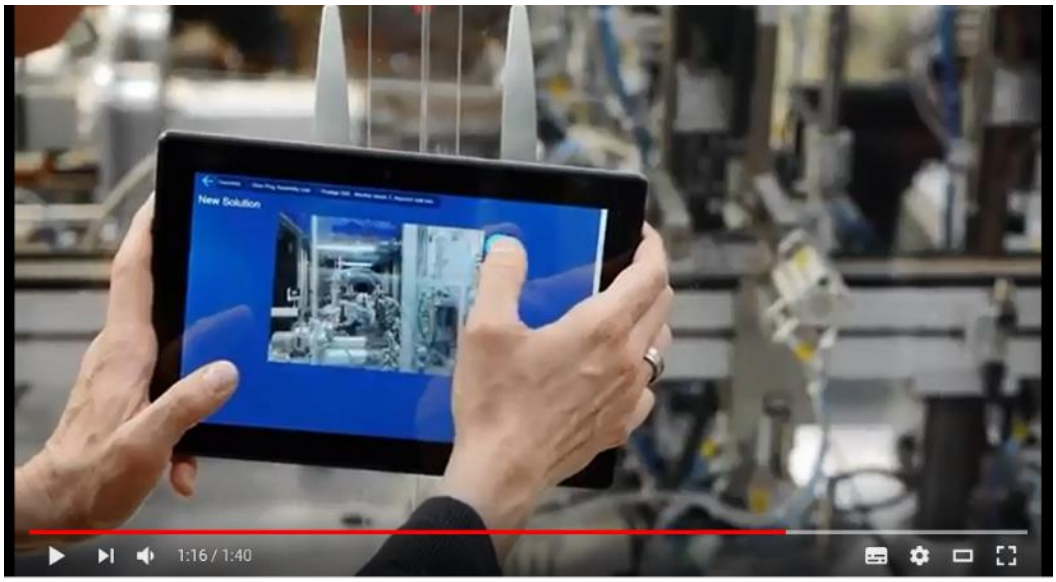
Figure 14: FACTS4WORKERS video shooting plan

The shooting plan brings together a general FACTS4WORKERS project presentation with clips from a specific FACTS4WORKERS solution – the **HID UC at the Hidria Dieseltec site in Tolmin, Slovenia.**

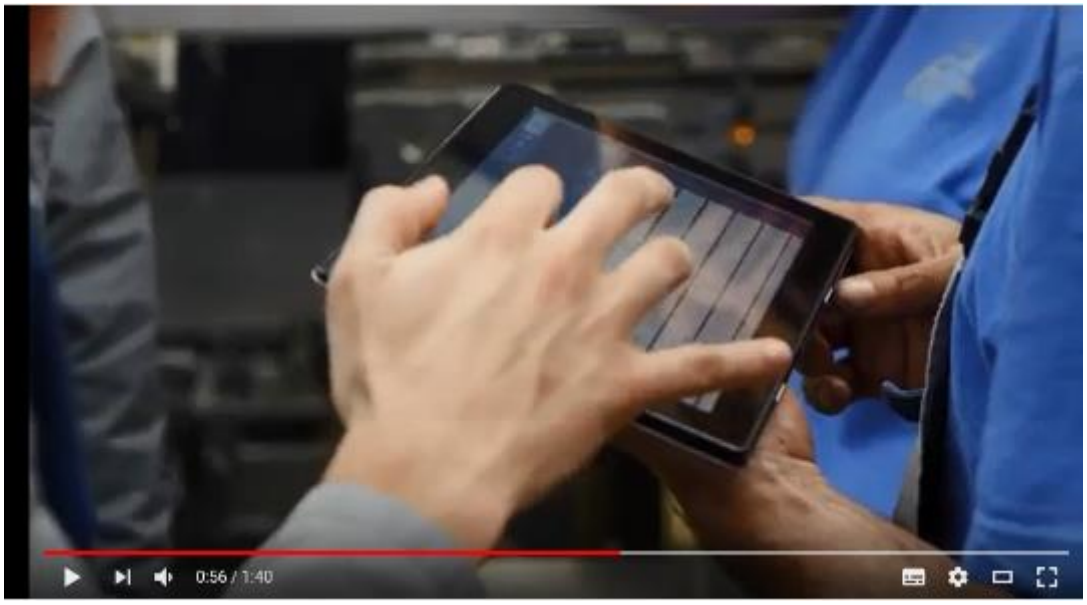
The main information of the project is presented to the audience by Martin Wifling of VIF who is shown as the project's coordinator.

R&D partners are featured in the project: UNIFI, EVO and SIA.

The video shows an IT handheld device and its context of use on the project shop floor bringing attention towards the **role of the shop floor worker and use of modern IT technologies to improve the workspace and empower the decision-making abilities of the workers.**



Pictures of **workers interacting with the device** are shown as well as **team work context** that features strongly in all of the FACTS4WORKERS solutions.



To further strengthen the **worker-centric focus of the FACTS4WORKERS solution**, a **worker's testimonial** is included at the end of the video. This efficiently underlines the whole message of the video that the focus is not on IT-technologies *per-se* but the **innovative use of modern technologies to improve satisfaction and decision-making** processes of the workers on the shop floor.

FigFigure 15: Worker testimonial

3.3 Social media

Since its inception, the project has been very active in the most relevant social media platforms in order to promote the findings of the project and to foster the creation of a bi-directional collaborative community of interested stakeholders. Social media is a very dynamic environment and one of the most popular and fastest ways to talk about our project and to enhance its visibility.

Research Gate

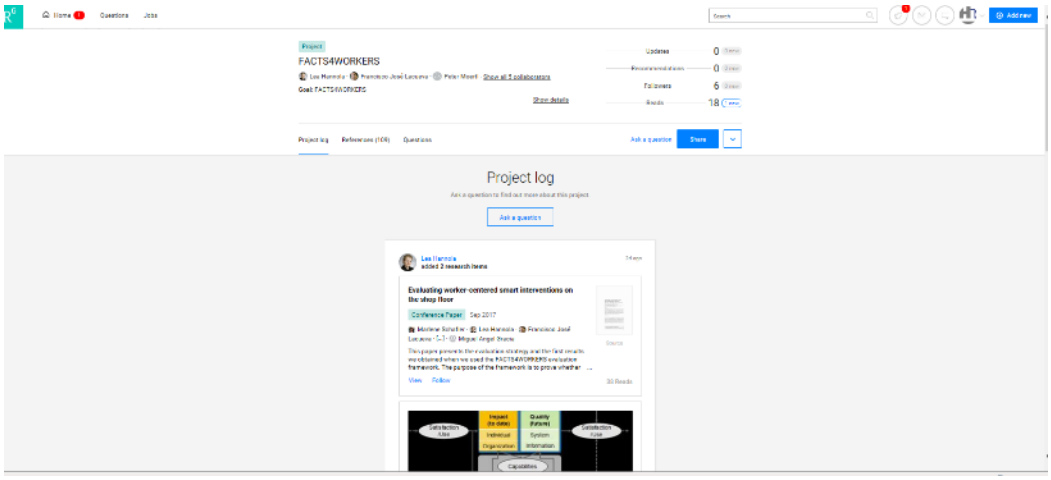


Figure 16: FACTS4WORKERS Researchgate presentation

ResearchGate is an important focus point for researchers and rsearch projects and topics from not just all over Europe, but also beyond. The FACTS4WORKES project got its project log in December 2016. As of December 2017 it has 6 followers and 18 reads. Most importantly it has **109 references** – pieces and topics of research referenced to the FACTS4WORKERS project.

YouTube

As was already mentioned the FACTS4WORKERS received its project video. The video is now featured on the YouTube channel. To accomplish this a special YouTube channel was created. As of November 2017 the FACTS4WORKERS video has 758 views. We plan to use the channel for further videos focused on separate UCs.

Twitter[3]

Twitter analytic first project year	
Tweets	160
Followers	70
Likes	20
Followings	101

Twitter analytic second project year	
Tweets	358
Followers	187
Likes	52
Followings	305

Twitter analytic third project year	
Tweets	432
Followers	241
Likes	92
Followings	311

Figure 17: Twitter analytic

*The data were obtained for the third project year on the 15.11.2017.

Blog (Tumblr, website blog)

We operate two blogs, a Tumblr and a WordPress Blog (WordPress is the content management system of our project website). Tumblr is a microblogging platform and social networking website. The service allows users to post multimedia and other content to a short-form blog.[4]

Website blog post analytic	
Posts	13

Tumblr blog post analytic	
Posts	8

*The data were obtained for the third project year on the 15.11.2017.

[3] More info about Twitter: https://en.wikipedia.org/wiki/Twitter

[4] More info about Tumblr: https://en.wikipedia.org/wiki/Tumblr

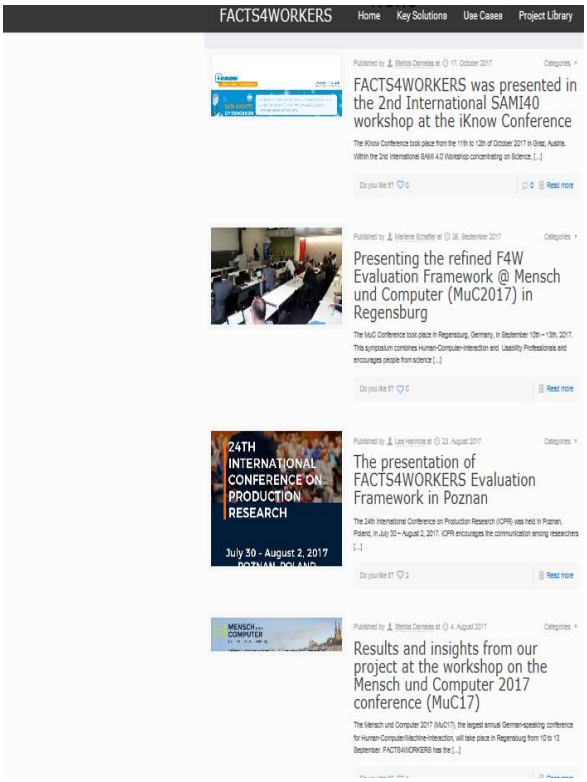


Figure 18: Website and Tumblr blog post analytics in third project year

Facebook

Facebook is an online social networking service. After registering to use the site, users can create a user profile, add other users as "friends", exchange messages, post status updates and photos, share videos and receive notifications when others update their profiles. Additionally, users may join common-interest user groups, organized by workplace, school or college, or other characteristics.[5]

The data were obtained on the 15.11.2017.

Facebook analytic	
Posts	66
Number of likes	50
Number of follows	52

Figure 19: Facebook analytic

[5] More info about Facebook: https://en.wikipedia.org/wiki/Facebook

LinkedIn

LinkedIn is a business-oriented social networking service. It is mainly used for professional networking[6].

LinkedIn analytic	
Connections *(dated 15.11.2017)*	142

Figure 20: LinkedIn analytic

Playing an active role in social media is a far more effective way of engaging in conversation than merely posting something on the project website. The good thing about taking part in the social web is that it does not require us to share only full formed ideas or complete pieces of research. We can share work in progress and immediately get feedback that will improve our results.

3.4 Press release

Two types of press release:

It was decided that the FACTS4WORKERS consortium will reach out to general and specialized public via two press releases. **Internal press release** was prepared for publication of project news in partners' companies and to inform the employees about the project. **External press release** was prepared in order to enable partners to reach out to their local and national environments. Drafts were prepared in English and translations were made by partners themselves into corresponding languages.

[6] https://en.wikipedia.org/wiki/LinkedIn

Internal press release

FACTS4WORKERS PROJECT PRESS RELEASE

PROMISING PROGRESS ACHIEVED IN FIRST HALF OF THE PROJECT

1. Introduction

FACTS4WORKERS is a 4-year project financed under the European Horizon 2020 Research and Innovation programme – Factories of the Future Public Private Partnership. The goal of FACTS4WORKERS is to increase problem-solving and innovation skills of workers participating in pilots at industrial partners' factories. Represented are industrial cases from automotive, plastics, steel, and tooling industry. In the end the project consortium aims to introduce advanced IT-based solutions that would increase average worker productivity by 10% for workers participating in pilots. Solutions targeted by the FACTS4WORKERS project include: Personalised augmented operator, Worked-centric rich-media knowledge sharing/management, Self-learning manufacturing workplaces, In-situ mobile learning in the production. The FACTS4WORKERS project aims to spur similar innovations and projects within the targeted European industries, increasing the industrial potential of Europe. Such worker-centric solutions would enable workers become the smart element in smart factories, by interacting with a flexible smart factory infrastructure. The FACTS4WORKERS consortium comprises of 15 partners from 8 different European countries. The consortium led by Austrian research institute Virtual Vehicle, comprises of large enterprises, SMEs research centres and universities.

2. Activities done in the first half of the project

Work done in the first half of the project can be divided into 8 work packages:

Work Package 1 (WP 1) – Worker needs, organizational requirements, and Industrial Challenges: work in this WP started with interviews with shop floor workers at each industrial partner pilot site thus capturing workers' and organisations' needs. The industrial partners are: Schaeffler (automotive), Thyssen Krupp (steel), Hidria Rotomatika (automotive), Hidria TC (automotive), EMO Orodjarna (tooling) and Thermolympic

»This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement n° 636778.«

Figure 21: Internal and External press release

External press release

FACTS4WORKERS PROJECT LAUNCHING ITS BREAKTHROUGH SOLUTIONS FOR FACTORY WORKERS

PROJECT PRESS RELEASE

The FACTS4WORKERS project is a 4-year project financed under the European Horizon 2020 Research and Innovation programme – Factories of the Future Public Private Partnership. The goal of the project is to increase problem-solving and innovation skills of workers in manufacturing sector in Europe.

Since the global economic crisis hit in 2008 and during the post-recovery period the European manufacturing sector has been battling numerous challenges. Share of Europe's manufacturing relative to the other emerging markets has dropped, ageing workforce and lack of knowledge among the younger workers is a challenge for many countries, huge leaps in robotisation and internet-of-things in the last decade alone have all had a profound effect on the manufacturing sector.

In order to help European companies, cope with these challenges, the FACTS4WORKERS is one of the projects, chosen by the European Commission under the Horizon 2020 Research and Innovation programme, to serve as a testing pilot model for advanced technological solution that would meet the new challenges.

In order to ensure a wide representability of the project, the FACTS4WORKERS consortium covers a variety of industries from different countries. Automotive, steel, tooling and plastics sectors are represented with companies coming from Germany, Slovenia and Spain. Such variety of pilot sites covers the diverse landscape of European industry, taking into account strong national and even regional factors that shape European industry from country to country, from region to region, from city to city.

»This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement n° 636778.«

Page:1

Figure 22 : Internal and External press release

- **Press release published on the Science2Society webpage**[7]

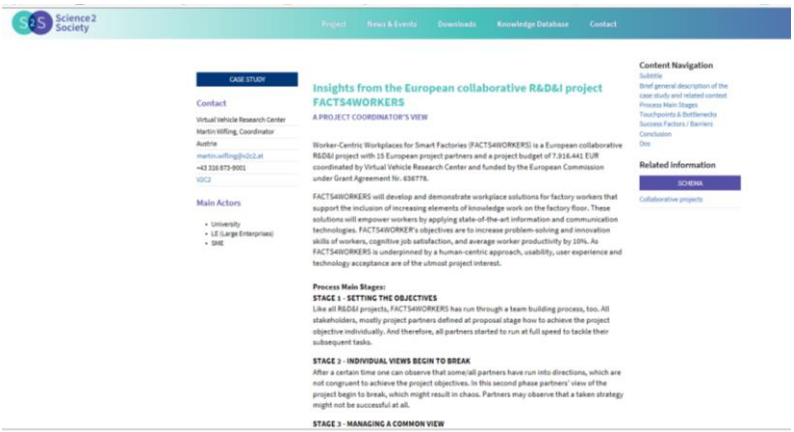


Figure 23: Science2Society webpage press release

We also published a special press release version on the **Science2Society webpage** in order to improve visibility of the project in the European scientific community.

3.5 Dissemination material

Dissemination material used for informing interested stakeholders at specialized industry- and research-related events was designed as reported already in the first project year. In the second and third project year we continued to make use of the prepared dissemination materials. As stated in the previous deliverable D7.4., in addition to the general roll-up we acquired a special TKES UC specific roll up.

The already established dissemination tools include:

- **Project brochure and**
- **Project roll-up**
  - *basic/generic*
  - *TKSE UC specific*
- **Video** *(already described)*

[7] Source:http://science2society.eu/content/insights-european-collaborative-rdi-project-facts4workers

In the final project year the focus towards raising awareness on developed FACTS4WORKERS solution will be even more apparent. First deployments of the first solution building blocks as well tests are underway. The fourth year will see close collaboration with the shop floor workers so we plan to use different dissemination tools to give them information about the project (UC-specifit posters, roll-ups, brochures etc.).

At the same time we plan to use the already prepared and new dissemination material for IPs' presentations at different events at had been done in TKSE (workshops) and HID(customer outreach).

3.6 Project publications

Blog posts, external releases and papers are key dissemination tools. All of these activities will ensure the long lasting impact beyond project duration, particularly in relation to academic discourse in the area.

3.6.1 Published Blog posts

NUMBER	TITLLE	PARTNER	TUMBLR	WEBSITE BLOG
1	Thyssenkrupp Steel Europe presents their FACTS4WORKERS use case at "Horizont 2020 – Erfolge im Blick - See more at	SIA, TKSE		X
2	To what extent can state of the art HCI technologies support the requirements of workers?	ITA	X	X
3	President of the Styrian Chamber of Labour visits Facts4Workers	VIF	X	X
4	FACTS4WORKERS 4th General Assembly meeting	SIA		X
5	FACTS4WORKERS PRESS RELEASE	SIA		X
6	Participative Knowledge Management to Empower Manufacturing Workers	VIF		X
7	FACTS4WORKERS introductory video release	SIA	X	X
8	Second Technical Review of the FACTS4WORKERS project held in Tolmin, Slovenia	SIA	X	X
9	The FACTS4WORKERS use cases on the website	VIF	X	X
10	Results and insights from our project at the workshop on the Mensch und Com-	VIF		X

	puter 2017 conference (MuC17)			
11	The presentation of FACTS4WORKERS Evaluation Framework in Poznan	LUT,SIA	X	X
12	Presenting the refined F4W Evaluation Framework @ Mensch und Computer (MuC2017) in Regensburg	VIF	X	X
13	FACTS4WORKERS was presented in the 2nd International SAMI40 workshop at the iKnow Conference	VIF	X	X

Figure 24: Published blog posts –second project year

3.6.2 Publications and mentions

It should be specifically mentioned that the **FACTS4WORKERS project consortium has already reached the goals that were set in the project's application** – 21 publications during the project's duration. In the project's final year we shall continue in our strong push for an even more strong presence in the scientific field.

1.) Master Thesis by TUW

A highlight of the project is the **Master Thesis prepared at TUW** by student Oliver Willem under the leadership of Prof. Gerhard Detlef. The master thesis describes a proposed creation of a system that helps to accomplish a creation of a data management system that allows the user to implement such an individual data acquisition system with little information from field of IT technology. Solutions and aspects such as simple and clear design, a web service, more precisely a Representational State Transfer (REST) Application, a Programming Interface (API), were created and described in the document. The first part of the thesis deals with the basic theory and the processes of decision-making in favor of using certain components over others. The second part explains the structure of the API. The handling of the application itself is shown. A concept for a fast, inexpensive and simple application can be presented at the end.


TECHNISCHE UNIVERSITÄT WIEN
Vienna University of Technology

Diplomarbeit

Gestaltung einer API zur Datenerfassung und -verwaltung mittels Eve

Forschungsbereich Maschinenbauinformatik und Virtuelle Produktentwicklung
Univ.-Prof. Dr.-Ing. Detlef Gerhard

von

Oliver Willem
0826532
Hintzenstraße 5/9
1030 Wien

Wien, am 10.06.2017

Figure 25: Master Thesis prepared on the basis of work done in FACTS4WORKERS at the TUW

2.) Conference papers

In the third year of the project we have achieved **10 conference papers**. All papers are published on the website and are free for download:

1. Paper from IN-TECH 2017
   Milfelner M.; Schafler M.; Spitzer M.; Wifling M. (2017): Smart oriented workplaces in tool production, International Conference on Innovative Technologies, Ljubljana, Slovenia, September 2017
   Link: http://facts4workers.eu/wp-content/uploads/2017/01/9_SMART-ORIENTED-WORKPLACES-IN-TOOL-PRODUCTIOn_1.pdf

2. Papers from Mensch und Computer 2017
   Michael S.; Marlene S.; Matjaž M. (2017): Seamless Learning in the Production, Mensch und Computer 2017, Regensburg, Germany, September 2017
   Link: http://facts4workers.eu/wp-content/uploads/2017/01/8_MuC2017_Seamless-Learning-in-the-Production.pdf

3. Steinhueser M.; Heinrich P.; Richter A. (2017): Von der digitalen Transformation der Produktion, Mensch und Computer 2017, Regensburg, Germany, September 2017
   Link: http://facts4workers.eu/wp-content/uploads/2017/01/7_MuC2017_Von-der-digitalen-Transformation-der-Produktion.pdf

4. Schafler M.; Hannola L.; Lacueva-Pérez F. J.; Milfelner M; Steinhueser M.; Gracia A.M. (2017): Evaluating worker-centered smart interventions on the shop floor, Mensch und Computer 2017, Regensburg, Germany, September 2017
   Link: http://facts4workers.eu/wp-

content/uploads/2017/01/6_MuC2017_Evaluating-worker-centered-smart-interventions-on-the-shop-floor.pdf

5. Gödl A.; Brandl P. (2017): Multimodale Interaktion mit HMIs in der Smart Factory, Mensch und Computer 2017, Regensburg, Germany, September 2017
   Link: http://facts4workers.eu/wp-content/uploads/2017/01/5_MuC-2017-Multimodale-Interaktion-mit-HMIs-in-der-Smart-Factory_FINAL.pdf

6. Paper from 24th International Conference on Production Research
   Hannola L.; Lacuera-Pérez F.J.; Steinhueser M.; Kokkonen K.; Ojanen V. ; Schafler M. (2017): An evaluation framework for worker-centric solutions in production environments, 24th International Conference on Production Research, Poznan, Poland, July 2017
   Link: http://facts4workers.eu/wp-content/uploads/2017/01/4_ICPR2017_Research_paper_Evaluation-Framework_31_05_2017_FINAL_1.0.pdf

7. Paper from 30th Bled eConference
   Richter A.; Vodanovich S..; Steinhüser M.; Hannola L. (2017): IT on the Shop Floor - Challenges of the Digitalization of manufacturing companies; 30th Bled eConference, Bled, Slovenia, June 2017
   Link: http://facts4workers.eu/wp-content/uploads/2017/01/3_eBled2017_IT-on-the-Shop-Floor_final.pdf

8. Paper from EdMedia 2017
   Spitzer M.; Ebner M. (2017): Project Based Learning: from the Idea to a Finished LEGO® Technic Artifact, Assembled by Using Smart Glasses; EdMedia: World Conference on Educational Media and Technology 2017, Washington D.C., USA, June 2017
   Link:
   https://www.researchgate.net/publication/317664086_Project_Based_Learning_from_the_Idea_to_a_Finished_LEGOR_Technic_Artifact_Assembled_by_Using_Smart_Glasses

9. Paper from Wirtschaftsinformatik 2017
   Engelmann A.; Heinrich P.; Schwabe G. (2017): Mobiles Lernen für Industrie 4.0: Probleme, Ziele, Lernarrangements; 13th International Conference on Wirtschaftsinformatik, St. Gallen, Switzerland, February 2017
   Link:
   http://facts4workers.eu/wpcontent/uploads/2017/01/MobilesLernen_WI2017_Revision_CAM_READY_ACK.pdf

3.) Other published peer-reviewed journal papers

We also published **1 peer-reviewed journal paper.**

1. International Journal of Knowledge Management (IJKM)
   Campatelli G.; Richter A.; Stocker A. (2016): Participative Knowledge Management to Empower Manufacturing Workers, International Journal of

Knowledge Management (IJKM), 2016, Volume 12, Issue 4, pp 37-50, DOI: 10.4018/IJKM.2016100103
Link:http://www.igi-global.com/article/participative-knowledge-management-to-empower-manufacturing-workers/177892

4.) Chapter in book

Richter, Alexander; Heinrich, Peter; Stocker Alexander; Steinhueser, Melanie (2017): Die neue Rolle des Mitarbeiters in der digitalen Fabrik der Zukunft, In: Reinheimer, Stefan (Editor): Industrie 4.0 Herausforderungen, Konzepte und Praxisbeispiele, pp 117-131., DOI: 10.1007/978-3-658-18165-9

In accordance with our target we should achieve more than 20 papers. We have already published in:

1.) First project year:
8 papers (2 peer-reviewed journals and 6 reviewed conference papers).
2.) Second project year:
6 papers (1 peer-reviewed journal and 5 reviewed conference papers).
3.) Third project year:
10 papers (1 peer-reviewed journal and 9 reviewed conference papers).

Project target is already achieved

5.) Others publication

1. Etelä-Saimaa: Virtuaalitodellisuudesta kehitetään teollisuuden voimavaraa

Link:http://www.esaimaa.fi/Online/2017/03/21/Lappeenrannassa%20tutkitaan%20virtuaalitodellisuuden%20hy%C3%B6dynt%C3%A4mist%C3%A4%20teollisuudessa/2017122026977/4

2. LUT website: Virtuaalitodellisuudesta kehitetään teollisuuden voimavaraa

Link:http://www.lut.fi/uutiset/-/asset_publisher/h33vOeufOQWn/content/virtuaalitodellisuudesta-kehitetaan-teollisuuden-voimavaraa

3. Promaint magazine: Virtuaalitodellisuudesta kehitetään teollisuuden voimavaraa

Link:http://promaintlehti.fi/Tuotantotehokkuuden-kehittaminen/Virtuaalitodellisuudesta-kehitetaan-teollisuuden-voimavaraa

4. Lappeenrannan uutiset: Virtuaalitodellisuudesta kehitetään teollisuuden voimavaraa Lappeenrannassa – Tehdastyöstä tulee houkuttelevampaa

Link:http://www.lappeenrannanuutiset.fi/artikkeli/510195-virtuaalitodellisuudesta-kehitetaan-teollisuuden-voimavaraa-lappeenrannassa

5. BASEPYME: FACTS4WORKERS, un proyecto para plantear el futuro de nuestro sector manufacturer

Link:https://www.basepyme.es/analisis/facts4workers-un-proyecto-para-plantear-el-futuro-de-nuestro-sector-manufacturero/

6. EXPASION: ITAINNOVA y Thermolympic colaboran en un proyecto europeo de impulso industrial

Link:http://www.expansion.com/aragon/2017/03/01/58b6b14c468aeb2d158b45e9.html?cid=SMBOSO22801&s_kw=twitter

7. Aragón_hoy: El proyecto FACTS4WORKERS avanza para conseguir soluciones que impulsen la industria en Europa

Link:http://www.aragonhoy.net/index.php/mod.noticias/mem.detalle/area.1020/id.194702#.WLb8MZTsYtA.twitter

8. SiEVA website: FACTS4WORKERS 4th General Assembly meeting

Link: http://www.sieva.si/en/news/#news-61

9. SiEVA website: PROJEKT FACTS4WORKERS - Četrto zasedanje skupščine projekta

Link: http://www.sieva.si/aktualno/#aktualno-60

10. SiEVA website: SiEVA's European project FACTS4WORKERS receives its own video

Link: http://www.sieva.si/en/news/#news-65

11. Automotive Cluster og Slovenia: FACTS4WORKERS PROJECT

Link: http://www.acs-giz.si/novice/2017-05-09-Projekt-FACTS4WORKERS

12. Itainova intranet: FACTS4WORKERS PRESS RELEASE - FACTS4WORKERS entra en la fase de despliegue de los primeros prototipos basados en soluciones TIC

13. Foro ADR: IAF.El proyecto FACTS4WORKERS avanza para conseguir soluciones que impulsen la industria en Europa

Link:http://www.foroadr.es/noticias/7919-iaf-el-proyecto-facts4workers-avanza-para-conseguir-soluciones-que-impulsen-la-industria-en-europa

14. Heraldo: El trabajador es el centro de las factorías del future

Link:http://www.heraldo.es/noticias/suplementos/tercer-milenio/itainnova/2017/03/22/el-trabajador-centro-las-factorias-del-futuro-1165618-2121031.html

15. El periódico de Aragon: Itainnova y thermolympic, en un proyecto europeo

Link:http://www.elperiodicodearagon.com/noticias/economia/itainnova-thermolympic-proyecto-europeo_1184709.html

16. Interempresas.net: Itainnova y Thermolympic, socios españoles en el proyecto Facts4workers

Link: http://www.interempresas.net/MetalMecanica/Articulos/180422-Itainnova-y-Thermolympic-socios-espanoles-en-el-proyecto-Facts4workers.html

17. Itainnova website: El proyecto FACTS4WORKERS avanza para conseguir soluciones que impulsen la industria en Europa

Link: http://www.itainnova.es/noticias/el-proyecto-facts4workers-avanza-para-conseguir-soluciones-que-impulsen-la-industria-en-europa

18. Technology shapes reality", the local newspaper of South-Eastern Finland: Etelä-Saimaa, 21.03.2017

19. Hidria magazine: Revija korporacije Hidria, Zima 2016. Title: Utrjujemo kompetence na področju vodenja evropskih projektov, page 32-33.

20. Hidria intranet: Hiidrin evropski project FACTS4WORKERS sedaj tudi na videu. Published 10.05.2017

21. Thyssenkrupp website: In einer Pilotphase testet thyssenkrupp intuitiv nutzbare mobile Endgeräte, deren Einsatz gemeinsam von Mitarbeitern aus der Instandhaltung und Wissensmanagern geplant wird

Link:https://www.thyssenkrupp-steel.com/de/newsroom/pressemitteilungen/pressemitteilung-68996.html

22. Materials and Corrosion, Volume 68, Issue1: Neues aus Verbänden und Firmen: Forschungsprojekt "facts4workers": thyssenkrupp untersucht mobile Wissensmanagementlösungen für die Mitarbeiter einer digitalisierten Fabrik von Morgen

Link: http://onlinelibrary.wiley.com/doi/10.1002/maco.201770015/pdf

23. Industrie anziger: Mobiler Abruf von Informationen

Link: http://industrieanzeiger.industrie.de/technik/fertigung/mobiler-abruf-von-informationen/

24. El proyecto FACTS4WORKERS celebró su segunda revisión técnica en Eslovenia, Itainnova website

Link:https://www.itainnova.es/noticias/el-proyecto-facts4workers-celebro-su-segunda-revision-tecnica-en-eslovenia

3.7 Highlighted events in in the third project year

In the third year the project's outreach was much more diversified as in the second when it was focused towards academic and IT semantic scientific community. In t the third project year in addition to continuing the outreach in scientific field (through scientific papers and conferences) focus was among others also on regional/national clusters, regional organizations, fairs.

Below we highlight the main dissemination efforts in the third project year.

- **MENSCH UND COMPUTER 2017**[8]

Figures 26 and 27: FACTS4WORKERS solutions presented on the Mensch und Computer 2017 conference

The FACTS4WORKERS was again presented on the 2017 Mensch und Computer conference in Regensburg, Germany. In cooperation with the EU-funded project Semi40 – Power Conductor and Electronics Manufacturing 4.0 – we organized a workshop themed "Smart Factory: Informationssysteme für die Zusammenarbeit der Zukunft". The FACTS4WORKERS partners submitted a research paper "Evaluating worker-centered smart interventions on the shop floor" (written by Marlene Schafler, Lea Hannola, Francisco José Lacueva-Pérez, Matjaž Milfelner, Melanie Steinhüser, Miguel Angel Gracia) and a presentation was held in the second workshop slot by Marlene Schafler, senior researcher in the field of Smart Production & Human-Centered Solutions at Virtual Vehicle. 27 participants were involved while demonstrating the refined evaluation strategy and first results that were obtained by using it in a use case of the project. Together with Dr. Peter Heinrich, who presented the digital transformation in manufacturing – considering the industrial challenges of the FACTS4WORKERS software solution – there was a lively discussion. The participants concluded that by providing the necessary information in the right place, at the right time there should be a focus not only on blue collar workers but also on white collar workers in order to optimize work preparation.

[8] Source:http://facts4workers.eu/index.php/presenting-the-refined-f4w-evaluation-framework-mensch-und-computer-muc2017-in-regensburg/

- **CEPAUTO**[9]:

Figure 28 : AVR device demonstration at the FACTS4WORKERS fair stand at CEPAUTO 2017

CEPAUTO is a biannual event which was organized by CEP – Centro Español de Plásticos-, the Spanish Cluster of Plastics and Composited Materials. This year's event took place in Barcelona as a parallel event of Automobile 2017 fair. The event had around 200 attendees representing different fields, from raw material providers, machine producers, to automotive and automotive tier-1 providers or research centers. The CEP members are mostly focused on materials sphere, therefore most of the dissertations dealt with the presentation of new materials, the analysis of the obtained products both from its ageing point of view but also from the perception of the users. However, this time some presentations dealt with Industry 4.0 adoption within the "plastic" sector were included in the agenda. Different H2020 projects were presented i.e. Stream 0D , aiming to support the production of Zero defects products by simulating the injection processes to support the decision of the workers and FACTS4WORKERS . The first was presented by Leticia Gracia, the coordinator of the projects, and FACTS4WORKERS was presented by Jorge Millan, CEO of THO. After the presentations within the ITA stand many contacts with companies interested in the approaches for Industry 4.0 solutions were established.

[9] Source: http://facts4workers.eu/index.php/facts4workers-was-presented-in-cepauto-2017-by-thermolympic-and-itainnova/

- **STYRIAN CHAMBER OF COMMERCE**[10]

Figure 29 and Figure 30: FACTS4WORKERS coordinator's premises in Graz at VID hold a visit by the Styrian Chamber of Labor

In February 2017 FACTS4WORKERS coordinator, Virtual Vehicle Research Centre (VIF) received a visit by Mr. Josef Pesserl, president of the Styrian Chamber of Labor. The Austrian Chamber of Labor represents the interests of 3,4 million employees and consumers and is very interested in the future development of the labor market in Europe. Mr. Pesserl as a representative of a regional branch could find out how FACTS4WORKERS aims to make workplaces in the factory of the future more attractive and intelligent, and strengthen Europe as a production location. He could hear more about the project's worker-centric approach to increase problem-solving and innovation skills, cognitive job satisfaction and productivity, and make the worker a smart element in a smart factory. Mr. Pesserl was also given a presentation of the latest cutting edge technology which might be used in future factories (the Microsoft Hololens), so he could get an insight of a personalized augmented operator in a smart factory. This visit is very important for the FACTS4WORKERS project to reach out to representatives of one of Austria's strongest industrial regions.

- **Knowledge Transfer with Semi40**

In November 2017 FACTS4WORKERS was invited to the Semi40 WP5 meeting in order to communicate insights of the evaluation strategy. Semi40 as an EXCEL Joint

[10] Source:http://facts4workers.eu/index.php/president-of-the-styrian-chamber-of-labour-visits-facts4workers/

Undertaking under agreement No. 692466 is also funded by H2020. Martin Wifling and Marlene Schafler held a guest talk highlighting the human factors of Industry 4.0 innovations and how to assess the impact of smart factory interventions on workers. This networking resulted in a fruitful discussion and knowledge transfer on both sides of the H2020 projects. FACTS4WORKERS also gathered valuable insights of the evaluation strategy of Semi40. In contrast to our project Semi40 is evaluating developed Industry 4.0 technologies regarding their sociological, economic and technical impact.

- **ProGE visit**

In August 2017 Mrs. Kerstin Schiefer, MA and Mr. Gerald Kreuzer visited Virtual Vehicle in order to get insights of the FACTS4WORKERS project. ProGE (production union) focuses on digital change because of Industry 4.0 evolution and created in collaboration with the Austrian Chamber of Labor a platform targeting the transfer of heuristics to countries and industries. Together with politics, economy and research this initiative elaborates the comprehension and the design of resulting changes. FACTS4WORKERS demonstrated some insights how changes in digitalization can be assessed and which impact they have on the worker and its organization.

3.7.1 Done activities

The table below presents conducted dissemination activities in third project year:

No	Type of dissemination activity	Name of event / title	Period / Location	Author / Responsible person
1	Workshop TCS	Presentation at workshop	December 2016, Slovenia	EMO
2	Conference	European Steel Technology Platform (ESTEP)	January 2017 Brussels	TKSE
3	Conference and paper	13th International Conference on Wirtschaftsinformatik	February 2017 St. Gallen, Switzerland,	UZH
4	Conference	T.A. Cook Berlin / Maindays2017 - Wissensmanagement für die lernende Organisation - Know-how-Sicherung in der Technik	March 2017, Berlin, Germany	TKSE
5	Conference	2. VDI Fachkonferenz: Virtuelle Techniken in der Fahrzeugentwicklung (DIY Assembly & Maintenance Instructions)	March 2017, Stuttgart , Germany	VIF
6	Trade fair	Forma Tool Fair - FACTS4WORKERS project presentation	April 2017, Slovenia	EMO
7	Future of Production Seminar	Seminar about digital assistance systems and augmented reality	April 2017, Amstetten, Austria	EVO
8	Project presentation	Presentation of FACTS4WORKERS Use Cases - Instandhaltungstage	April 2017, Klagenfurt, Austria	EVO

9	Industrial Workshop	CEPAUTO 2017. XV Jornada Internacional De Plásticos En Automoción	May 2017, Barcelona, Spain	ITA
10	Alignment Meetings	Corporate Project Organization	(Every quarter) Herzogenaurach, Germany	SCA
11	Conference	AC Styria Business Lounge (Der Mensch in der Fabrik der Zukunft)	June 2017 Graz, Austria	VIF
12	Conference: paper and talk	EdMedia 2017	June 2017 Washington DC, USA	VIF
13	Conference	AC Styria Business Lounge (Der Mensch in der Fabrik der Zukunft)	June 2017 (Graz, Austria)	VIF
14	Conference and paper	30th Bled eConference	June 2017 Bled, Slovenia,	UZH
15	Bachelor thesis	Bachelor Thesis at Graz University of Technology, Institute of General Management and Organization (Market and Competition Analysis for Smart Factory Solutions)	June 2017 Graz, Austria	VIF
16	Conference: paper and talk	International Conference on Production Research (ICPR) 2017	August 2017 Poznan, Poland,	LUT
17	Conference and papers **(4X)**	Mensch und Computer 2017	September 2017 Regensburg, Germany,	VIF, UZH, LUT,EVO
18	Conference paper and talk	IN-Tech2017: International Conference on Innovative Technologies	September 2017 Ljubljana, Slovenia,	VIF, EMO
19	Exhibition	NETSYNO booth with i40cases at practitioner conference: Industrie 4.0 – Startups meet Hidden Champi-	October 2017 Heilbronn, Germany	UZH

		ons		
20	Conference	i-Know 2017	October 2017 Graz, Austria,	VIF
21	Talk	Spark Summit Europe 2017 - Hiding apache spark complexity for fast prototyping of big data applications—industry 4.0 and logistics success examples.	October 2017 Dublin, Ireland	ITA
22	Master Thesis	Master Thesis - Gestaltung einer API zur Datenerfassung und -verwaltung mittels Eve (Oliver Willem (lecturer: Detlef Gerhard))	Vienna, Austria	VUT
23	Project presentation	NETSYNO booth with i40cases at practitioner conference: Creative Collaboration Culture Day	October 2017 Karlsruhe, Germany	UZH
24	Exhibition	NETSYNO booth with i40cases at practitioner conference: Startup the Future - Allianz Industrie4.0 Baden-Württemberg	November 2017 Stuttgart, Germany	UZH
25	Talk in event	NETSYNO talk with i40cases at practitioner event: Chancen der digitalen Transformation im Unternehmen nutzen	November 2017 Stuttgart, Germany	UZH
26	Conference	European Steel Technology Platform (ESTEP) Project was presented at a meeting with ESTEP Working Group 5 “People” to give an example of relevant HR activities and the influence of industry 4.0.	November 2017	TKSE

Figure 31: Done activities in third project year

3.7.2 Summary of done dissemination activities in third project year

Channel	Metric (Plan)	Achieved results in the first year of the project	Achieved results in the second year of the project	Achieved results in the third year of the project
Project website	# visitors > 300/month # subscribers > 1,000	From April 2015 – October 2015, we have on an average value not only achieved the target, but have exceeded it by 169%	From November 2015 – October 2016, we have on an average value not only achieved the target, but have exceeded it by 131%.	Due to the website being hacked, we unfortunately also lost Google Analytics data that have been used until now (in the previous deliverable). The new data shall be acquired for the project's fourth year
Blogs and social media	# blog posts > 10/month #conversations > 3/month	On an average value, we have not only achieved the target, but we have exceeded it.	On an average value, we have not only achieved the target, but we have exceeded it.	We achieved the target.
Private conversations	# conversations	We have conducted numerous conversations via Projectplace, Webex meetings, and telephone conferences.	We have conducted numerous conversations via Project place, Webex meetings, and telephone conferences.	We have conducted numerous conversations via Project place, Webex meetings, telephone conferences, face to face meeting.
Scientific publications	# papers > 20 # citations	In the first year of the project we have intensively contributed to the scientific community. • Peer-reviewed journals: 2 • Conference papers: 6	In the second year of the project we have intensively contributed to the scientific community. • Peer-reviewed journals: 1 • Conference papers: 5	In the third year of the project we have very intensively contributed to the scientific community. • Peer-reviewed journals: 1 • Conference papers: 9 Target is already achieved.

Other publications	# articles > 16 Audience > 100,000	In the first year of the project we have intensively contributed to the public/industrial communities: • Non reviewed journals: 4 • Other publications: 26	In the second year of the project we have contributed to the public/industrial communities: • Other publications: 7	In the third year of the project we have intensively contributed to the public/industrial communities. We achieved: • Other publications: 24 • Chapter in book: 1
Conferences	# presentations > 15 Audience > 1,000	In the first year of the project we have presented project at 12 conferences.	In the second year of the project we have presented project at 10 conferences.	In the third year of the project we presented project at 13
Trade shows	# interacting visitors visitor profile # mentions in press	In the first year of the project we have presented project in three Trade shows.	In the second year of the project we have presented project in 4 Trade shows and in 3 exhibitions.	In the third year of the project we presented project in 1 trade fair and 2 exhibitions.
Research-through communications	Reach - through audience	We have conducted networking with the coordinators of the two human-centered manufacturing projects Satisfactory and SO-PC-PRO.	We have conducted networking with the coordinators of the three human-centered manufacturing projects Satisfactory, SO-PC-PRO and AMBIWISE.	We have conducted networking with Satisfactory project and different industrial associations (Automotive Cluster of Slovenia, CEPAUTO event in Spain, Styrian Chamber of Commerce).

Figure 32: Summary of done activities

4 Dissemination: Project activities for the final year

4.1 Introduction and assessment of the current situation

The FACTS4WORKERS project is entering its final phase. This will be characterized with implementation of the developed FACTS4WORKERS solutions at the IPs' pilot sites: first by implementing a test setup specified of each partner and then by searching multiplication possibilities in using different FACTS4WORKERS building blocks for multiple IPs' UCs.

To support the first roll-out phases (some have already begun in the second half of 2017) and then the subsequent multiplication efforts (through modular FACTS4WORKERS building block use) in order to maximize reach-out to as many workers on the shop floor as possible, the efforts in the final year will have a strong focus on the UC and FACTS4WORKERS presentation.

4.2 Planned dissemination materials

To the outline presented above, the planned dissemination activities represented below hold the following focus:

- **SECOND PROJECT BROCHURE**

Second brochure Coinciding with the roll-out of the first versions of FACTS4WORKERS solutions, the consortium is planning to publish **the second brochure/flyer**. For this flyer we plan to have specific focus on the developed FACTS4WORKERS solutions on each UC, and presentation of the building blocks. We plan to publish the flyer in the second half of 2018.

If any of the partners expresses their wish to prepare an IP UC-specific brochure presenting only their use-case – i.e. for customer outreach purposes – a special UC target brochure can be prepared as well.

UC FACTS4WORKERS SOLUTION VIDEO

We are at this moment already considering the option of preparing a UC-specific video, presenting the implementation of a FACTS4WORKERS solution at a certain industrial partner's production site. Some interest has been expressed in this regard and we are leaving this option open for discussion.

UC-SPECIFIC ROLL-UP OR POSTER

To enhance FACTS4WORKERS visibility when communicating with the interested stakeholders a roll-up or a poster specifically describing the implemented solution could be very useful. The FACTS4WORKERS consortium thus far has one such roll-up prepared by TKSE but further options for other IPs remain open in the final project year.

4.3 Internal dissemination and communication efforts

Internal press release

An internal press release for the partners to translate it into their national languages is going to be prepared in 2018. Timing is probably going to be targeted for the second half of 2018 when the first results of the FACTS4WORKERS solution roll-out are expected to be clearly seen and maybe already partially evaluated.

Workshops with workers

Workshops with shop-floor workers are planned in 2018 to present to them the developed FACTS4WORKERS solutions, the potential of the solution in case its deployment should be broadened on the pilot site and give them opportunity to give feedback on the solution in order to stimulate improvements from the FACTS4WORKERS development partners. It is expected that the collaboration in this regard will be between VIF and SIA who will coordinate the efforts, IPs and research partners such as TUV, LUT and ITA – in a similar way that already happened in 2016 with first preliminary assessment questionnaires. Most importantly, we are considering options to **present the solutions to representatives of workers' unions**[11] and enhance the potential of the developed solutions. Number of workshops, needed participation of consortium partners will be decided upon on the following partnership meetings.

[11] Preliminary discussions in this regard have already been held in 2016 with some IPs, and there has already been expressed interest in this regard.

4.4 External dissemination and communication efforts

Our dissemination effort in the final project year shall follow the recommendations made by our PO after his visit to the consortium on 21st and 22nd June:

> To plan a dissemination activity involving worker's professional organizations. Further, it is recommended to publish the scientific output of the project to international refereed journal publications. Finally, it is recommended to indicate the dissemination activities per partner.

In order to follow the **PO's recommendations** the consortium plans to focus its external or outward dissemination efforts in the following key areas:

- **Maintain a strong focus on the scientific sector**

As already shown in this document, the project is running well ahead of the goals that were set in the project's application. The consortium will continue to prepare output material for relevant international scientific journals throughout 2018. In 2017 we noticed that the scientific sector in Europe can be most effectively reached (in addition to published articles in journals) via different social media channels. ResearchGate tool (and other similar sites if they are identified), LinkedIn, Twitter and Facebook will all be used in this regard.

- **Outreach to the industry**

Established links at the national level (Slovenia - Automotive cluster, tooling cluster, Spain – Plastics manufacturers association, Germany – steel sector) will help improve industrial outreach in 2018. We plan an intensive outreach in this regard in 2018 to coincide with FACTS4WORKERS solutions roll-out. Different possibilities of outreach are considered here – from visits from representative organizations to the pilot sites, to workshops for interested representatives, to publications in association magazines or webpages etc.

- **Outreach to the general public**

Links established in the first half of the project will help a vital role in this regard. Journals, newspapers, public webpages, Facebook, different options are being considered here. An external press release is also an option for 2018. Overall, our project partners from each country will have the best grasp of the situation and propose different paths that should be taken in order to enhance the overall effect of the outreach efforts.

4.5 Planned dissemination activities for the scientific community

As already stated, although the consortium has already reached its pre-set project goals, the partners plan a similarly active final project year.

We are proud to stress that plans for the next year are well underway. For example, we currently have 5 B-conference and even an A-conference papers accepted, 3 of their journal papers conditionally accepted for publication in an A-journal. Two of the journals are the "International Journal of Production Research" and the "International Journal of Operations & Production Management" which are both internationally leading journals in the field of the FACTS4WORKERS project.

Scientific partners will continue to orienting their dissemination activities towards already well-proven tools such as scientific conferences and symposiums and publications. In the past three years this approach already generated interest in FACTS4WORKERS applications and forged new links and interest for cooperation. One important effort would be a more coordinated push together with the industrial partners to ensure a smooth roll-out and upgrade of the developed solutions. Discussions for new projects (H2020 or upcoming FP9) can also be expected.

1 High Priority Scientific Dissemination activities

1.1 Planned Scientific publications

1.1.1 Digital Work Design, BISE (A journal).

1.1.2 International Journal of Production Research (A journal), Sociotechnical challenges in knowledge-intensive production environments.

1.1.3 Empowerment on the shop floor, International Journal of Operations & Production Management (A journal).

1.1.4 Social connectedness on the shop floor, International Journal of Production Research (A journal).

1.1.5 Knowledge Management without the Management, I&M (A journal)
Emerging Trends and Related Challenges of Digitalization of the Shop Floor, JMIS (A* journal).

1.1.6 Remote Learning and Assistance Using Smart Glasses, reviewed journal (to be selected).

1.1.7 Evaluation Framework, reviewed journal (to be selected).

1.1.8

1.2 Planned Scientific conferences

1.2.1 HICSS conference, Enabling Workers to Enter Industry 4.0: A Layered Mobile Learning Architecture.

1.2.2 ACIS B conference, Value co-creation in the digital factory.
1.2.3 The role of paper on the Shop floor, Group conference (A conference).
1.2.4 CIRP CMS 2018, Stockholm, Sweden.
1.2.5 ISPIM conference, Stockholm, Sweden.

2 Priority Dissemination Activities

2.1 Planned other scientific activities

2.1.1 20th International Working Seminar on Production Economics, Innsbruck, Austria.

2.2 Social media activities

2.2.1 Internet media - Publications on the partners' web sites.
2.2.2 Bachelor Thesis.
2.2.3 Blog posts (Project website, Tumblr), SIA, VIF, researchers, industry, open public, done with cooperation of all partners.
2.2.4 Video release.

Plan of planned and done activities will be regularly monitored and updated

4.6 Planned dissemination activities for the industrial partners

The industrial partners had an active third year regarding dissemination activities. The activities were focused on industrial conferences (some of which are for partners now annual – Mensch und Computer), trade fairs and workshops. The push in the final year is similar with an aim – as stated in the previous chapter – of strengthening the outreach to national industrial associations and clusters as well as internally towards workers from each of the project's industrial partners. After the industrial solutions' planned roll-out this will improve the chances for a wider application of the solution in the years following the project.

1. High Priority Dissemination Activities

1.1 Planned Industrial conferences

1.1.1 Mensch und Computer 2018 conference.

1.2 Planned workshops

1.2.1 Hidria Rotomatika production workshop, Hidria Lamtec BU, Spodnja Idrija, Slovenia.
1.2.2 Hidria TC workshop for production workers of Hidria Dieseltec BU, Tolmin, Slovenia.

2. Priority Dissemination Activities

2.3 Planned publications - Other

2.3.1 Hidria Corporation Webpage, 2018.
2.3.2 Hidria Corporation Magazine, one of 2018 issues.

2.4 Social media activities

2.4.1 Company Webpage.
2.4.2 Video release, VIF, SIA, open public, cooperation of all partners.
2.4.3 Blog posts (Project website, Tumblr), SIA, VIF, researchers, industry, open public, done with cooperation of all partners.

Plan of planned and done activities will be regularly monitored and updated.

5 Exploitation

5.1 Introduction and a re-cap of the work done thus far

In 2017 exploitation efforts within the FACTS4WORKERS project received a significant boost. After the exploitation model has already been prepared in the updated D7.2 deliverable, the 2017 brought extensive work on the business model for the solutions to be exploited. This was accomplished in form of a business plan (D7.7), prepared by VIF (with help of outside partner TU Graz). The FACTS4WORKERS project is therefore now in shape to push for effective solution exploitation in the project's final year.

The done and planned exploitation activities on the FACTS4WORES project can be summed up as is described further below.

5.2 Business plan

The previous D7.4 established the general proposed outline for the business plan. The document is supposed to answer some key questions:

- What problem does the product or service solve?
- Who are the customers?
- What is the size of the market for this solution?
- What is the business model?
- Who are the competitors?
- What are the risks and threats confronting the business and what can be done to mitigate them?
- What are the company's capital and resource requirements?

Work was done according to the guidelines set in the D7.4 as specified below:

Topic	Date	Responsible
Define structure / content of the business plan	Nov 2016	ViF
Review of the BP-concept	Dec 2017	SiEVA, ViF
Define workshop agenda and partic-ipants	Jan 2017	ViF
Involve Industrial Partners, define exploitation pilot and elaborate po-tential risks	Feb 2017	ViF
Workshop BPD (Business Plan De-velopment)	Mar 2017	tbd
Business Plan Draft	Mar 2017	ViF
Review Business Plan	Apr 2017	FACTS4WORKERS consortium
Finalization	May 2017	ViF

Figure 33: Timeline for the Business plan

As envisaged, the document was prepared by VIF with close cooperation with TU Graz as external partner. The final version of the document was published in March 2017.

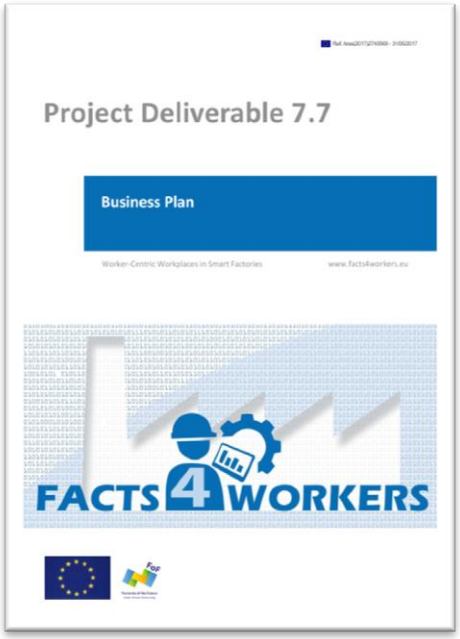
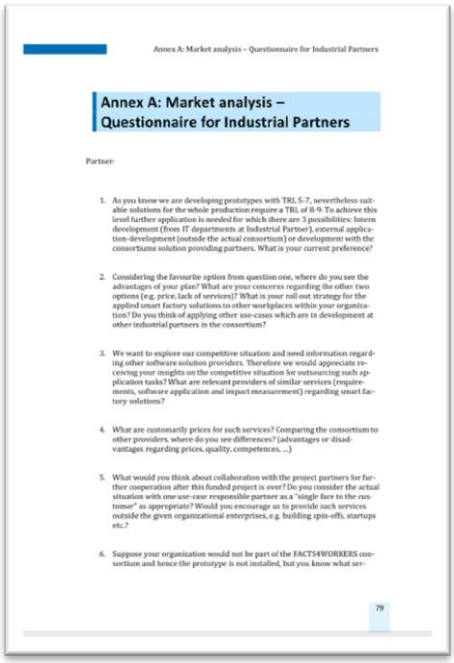


Figure 34 : D7.7 Business plan

The document data was obtained with help of **two target questionnaires**: 1) Indus-trial Partner Questionnaire and b) Questionnaire for Engineering Partners



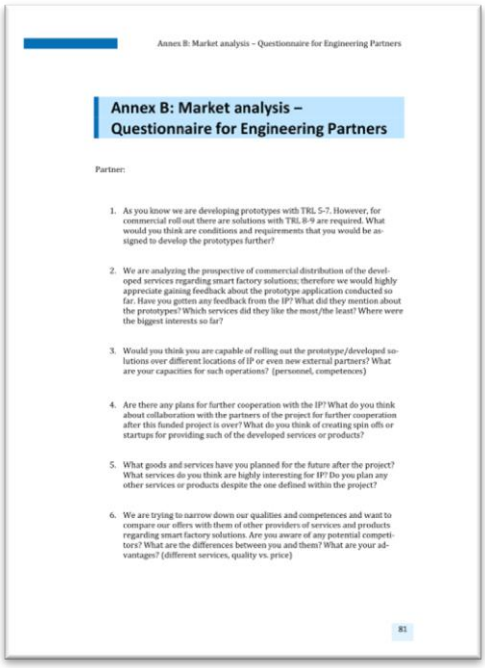
Annex A: Market analysis – Questionnaire for Industrial Partners

Annex A: Market analysis – Questionnaire for Industrial Partners

Partner:

1. As you know we are developing prototypes with TRL 5-7, nevertheless suitable solutions for the whole production require a TRL of 8-9. To achieve this level further application is needed for which there are 3 possibilities: Intern development (from IT departments at Industrial Partner), external application-development (outside the actual consortium) or development with the consortiums solution providing partners. What is your current preference?
2. Considering the favourite option from question one, where do you see the advantages of your plan? What are your concerns regarding the other two options (e.g. price, lack of services)? What is your roll out strategy for the applied smart factory solutions to other workplaces within your organization? Do you think of applying other use-cases which are in development at other industrial partners in the consortium?
3. We want to explore our competitive situation and need information regarding other software solution providers. Therefore we would appreciate receiving your insights on the competitive situation for outsourcing such application tasks? What are relevant providers of similar services (requirements, software application and impact measurement) regarding smart factory solutions?
4. What are customarily prices for such services? Comparing the consortium to other providers, where do you see differences? (advantages or disadvantages regarding prices, quality, competences, ...)
5. What would you think about collaboration with the project partners for further cooperation after this funded project is over? Do you consider the actual situation with one use-case responsible partner as a "single face to the customer" as appropriate? Would you encourage us to provide such services outside the given organizational enterprises, e.g. building spin-offs, startups etc.?
6. Suppose your organization would not be part of the FACTS4WORKERS consortium and hence the prototype is not installed, but you know what ser-

79



Annex B: Market analysis – Questionnaire for Engineering Partners

Annex B: Market analysis – Questionnaire for Engineering Partners

Partner:

1. As you know we are developing prototypes with TRL 5-7. However, for commercial roll out there are solutions with TRL 8-9 are required. What would you think are conditions and requirements that you would be assigned to develop the prototypes further?
2. We are analyzing the prospective of commercial distribution of the developed services regarding smart factory solutions; therefore we would highly appreciate gaining feedback about the prototype application conducted so far. Have you gotten any feedback from the IP? What did they mention about the prototypes? Which services did they like the most/the least? Where were the biggest interests so far?
3. Would you think you are capable of rolling out the prototype/developed solutions over different locations of IP or even new external partners? What are your capacities for such operations? (personnel, competences)
4. Are there any plans for further cooperation with the IP? What do you think about collaboration with the partners of the project for further cooperation after this funded project is over? What do you think of creating spin offs or startups for providing such of the developed services or products?
5. What goods and services have you planned for the future after the project? What services do you think are highly interesting for IP? Do you plan any other services or products despite the one defined within the project?
6. We are trying to narrow down our qualities and competences and want to compare our offers with them of other providers of services and products regarding smart factory solutions. Are you aware of any potential competitors? What are the differences between you and them? What are your advantages? (different services, quality vs. price)

81

Figures 35 and 36 : Partner Questionnaire and Questionnaire for Engineering Partners

The final document consists of the **following parts:**

1. Introduction.

2. Results in the F4W project *(presented per each UC)* and KER – Key Exploitable Results.

3. IPR strategy within F4W.

4. Business model.

5. Market and Competitive Analysis.

6. Summary – Route to market.

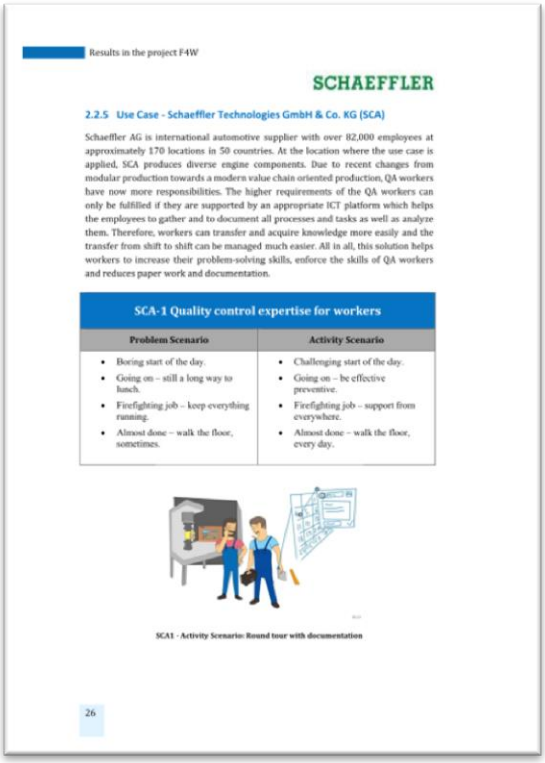
Introduction

The introduction section gives an overview of the project's goals, project's industrial challenges, and the prep work that needed to be done on the way to compiling the document.

Results in the F4W project and KERs

The second chapter of the business plan gives a detailed overview of proposed FACTS4WORKERS solution for each of the 6 industrial UCs: HID, THK, THO EMO,

SCA and HIR. The solution is presented in a form of a table that addresses the front-end of the approach – Problem scenario and the back-end – the Activity Scenario.


Results in the project F4W

SCHAEFFLER

2.2.5 Use Case - Schaeffler Technologies GmbH & Co. KG (SCA)

Schaeffler AG is international automotive supplier with over 82,000 employees at approximately 170 locations in 50 countries. At the location where the use case is applied, SCA produces diverse engine components. Due to recent changes from modular production towards a modern value chain oriented production, QA workers have now more responsibilities. The higher requirements of the QA workers can only be fulfilled if they are supported by an appropriate ICT platform which helps the employees to gather and to document all processes and tasks as well as analyze them. Therefore, workers can transfer and acquire knowledge more easily and the transfer from shift to shift can be managed much easier. All in all, this solution helps workers to increase their problem-solving skills, enforce the skills of QA workers and reduces paper work and documentation.

SCA-1 Quality control expertise for workers	
Problem Scenario	**Activity Scenario**
• Boring start of the day. • Going on – still a long way to lunch. • Firefighting job – keep everything running. • Almost done – walk the floor, sometimes.	• Challenging start of the day. • Going on – be effective preventive. • Firefighting job – support from everywhere. • Almost done – walk the floor, every day.

SCA1 - Activity Scenario: Round tour with documentation

26

Figure 37 : Final expected UC result presentation (example of Schaeffler)

According to the data received from each industrial partners **research focus and exploitation** strategy are to be directed into **three focus areas:**

1. Worker centric approach on requirements analysis.

2. Software Infrastructure and Process management approach.

3. Software Application for factory use.

Based on the technological progress and first results of the installed prototypes in 2017 the following KERs were identified:

Worker centric approach	Software Infrastructure and Process management approach	Software Applications for factory use
1. Framework on worker centric approach on requirements analysis including related artefacts	4. Software solution to easily connect available (brown field) services based on open source software	7. HMI/HCI applications to display various data provided by existing data sources in factories
2. Framework to quantify job satisfaction and its increase due to process innovations based on KPI´s	5. Software solution to autonomously process complex manufacturing processes based on open source software	8. Software applications for standard factory processes (e.g. quality processes to manage defects)
3. Framework to quantify innovation skills increase due to process innovations based on KPI	6. Semantic designed connectors to existing proprietary ICT systems (e.g. SAP)	9. Software applications to manage and connect external software services (e.g. big data analysis)

Figure 38: KERs as identified in the Business plan

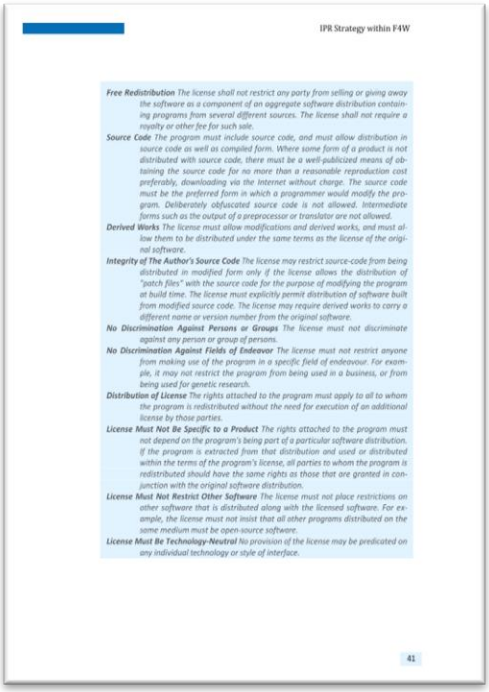
IPR strategy within F4W

This part of the business plan addresses the **following relevant issues:**

1. Regulation of IPR in the Consortium Agreement

2. Open Source Software (OSS) within F4W

3. Patents



Figures 39 and 40 : OSS definition (left) and License models which are applied to F4W software modules (right)

Business model

The fourth chapter of the Business plan describes the business model for the exploitation effort in the FACTS4WORKERS project. The development of the business model was based on a technique called "Business Model Canvas" as proposed by A. Osterwalder and Y. Pigneur which covers and defines different important building blocks. The investigated dimensions in this case are:

1. **Expansion Stages**
2. **Consortium**
3. **Value Proposition**
4. **Customer Segments**
5. **Distribution Channels**
6. **Key Resources**
7. **Key Activities**
8. **Key Partners and Suppliers**
9. **Revenues and Expenses**

It should be noted that at the beginning 4 business models, each model with 3 expansion stages were considered. It turned out that complexity is too high to handle. Therefore we decided to **focus on the most likely scenario "Support and Consulting"** by integrating the relevant parts of the remaining three models.

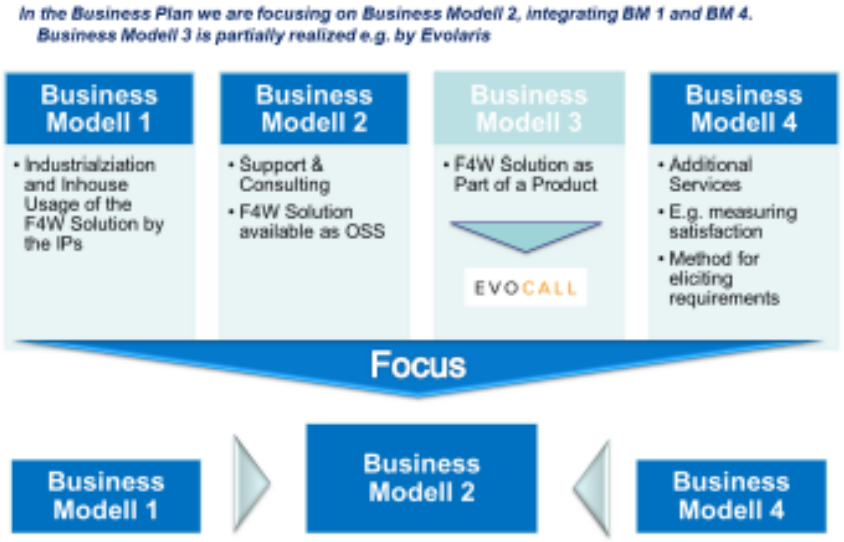


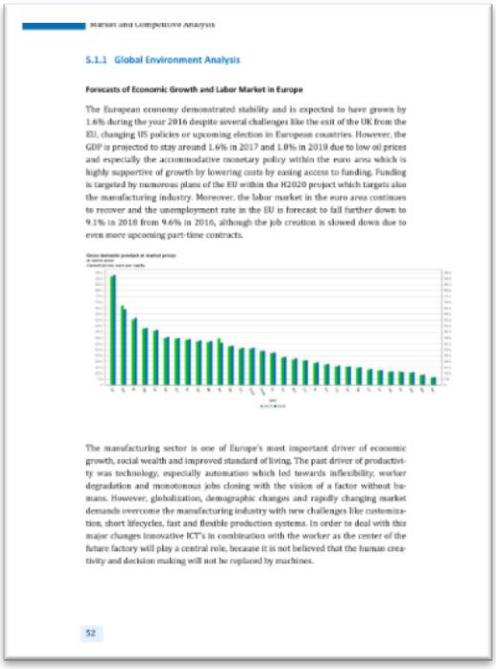
Figure 41: Business model development presentation in the business plan

Market and competitive analysis

This chapter is composed of **two parts:**

1. External Analysis: This part includes the global environment analysis (forecasts of economic Growth and labor market in Europe, megatrends in digitalization, workers' perspectives and a PEST analysis), branch analysis (markets, customers, externa examples of smart factory solutions).

2. Internal Analysis: This part includes internal data provided by the project's development partners via the Questionnaire for Engineering Partners. The information covers possibilities for further cooperation with IPs, potential customers, goods and services for the future etc.



Platforms enhancing the digitalization in Europe [according to the European Commission]

Figure 42: External market analysis. Labor data (left), industry 4.0. initiatives in EU (right)

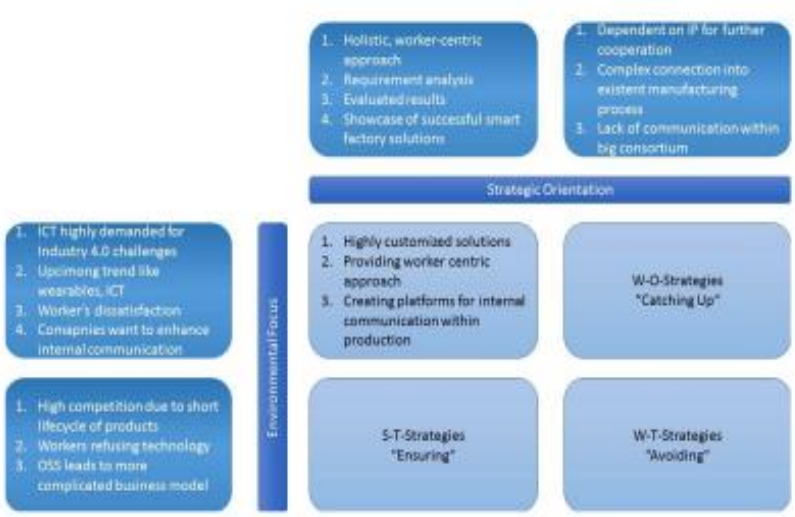


Figure 43: Internal market analysis. SWOT analysis

Route to market

This part of the business plan presents in concrete steps how the partners plan to bring their developed solutions to the market. The following viewpoints and possibilities are described:

1. Preferred way for further development

2. Key enablers for a successful marketing

3. Consortium capabilities to roll out F4W-solutions

4. Goods and services planned in the future

5. Outlook

The outlook section of the Route to market chapter presents post-project business and research opportunities and plans that project partners have regarding entry on the market. A special mention should be given to the **EVOCALL[12] and EVOASSIST digital apps** planned by Evolaris (EVO). EVO as a research partner gives a good case of how information and experience gathered during the FACTS4WORKERS project presents an opportunity for the company to enter the market with new solutions.

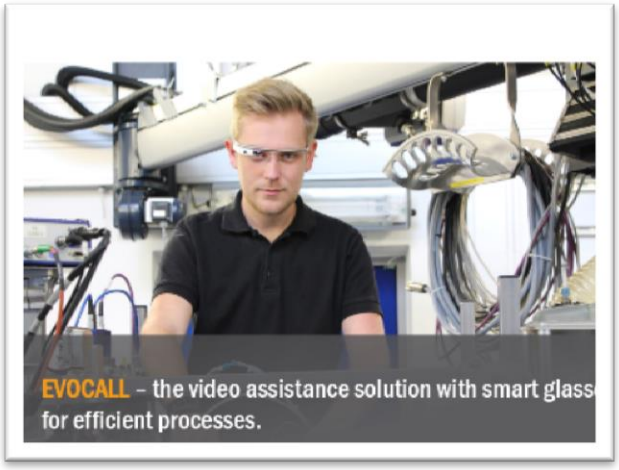


Figure 44: EVOCALL and EVOASSIST solutions presentation (source: EVOLARIS internal documents)

[12] More information about the EVOCALL solution available at: https://evocall.evolaris.net/

A very important part of the Outlook part is also the **exploitation timeline.** The timeline gives an idea how the implementation and application of the FACTS4WORKERS solutions is going to be undertaken in the years after the end of the project.

Timeline	2015-2018	Current Status	2018-2020	2021-2025	2026-2030
Phase	Project execution	✓	ES1: Commercial solutions development	ES2: Market penetration	ES3: Mainstream adoption
Users	Industrial partners	✓	Industrial partners + few others	Ecosystems, Automotive industry	Smart industry[5]
# User companies	8 pilots	✓	<100 co-developers	1,000's	
# Workers	Approx..100	✓	1,000's	100,000	> 100.000
Technology implementation	Research partners	✓	EEIG, System developers	F4W spin offs, Systems integrators	
# Implementation consultants	Partners only	✓	< 25 FTE	100's FTE	1,000's FTE

Figure 45: Exploitation timeline

5.3 EXPLOITATION IDEAS

In order for the FACTS4WORKERS solutions to have the widest impact possible (regarding their reach in number of plants they can be used in and number of workers that can get acquainted with them and use them) the consortium started exploring possibilities on how to replicate, multiply and modify solutions in a way that they could be used beyond a solution's specific UC.

Therefore, in the third project year, project partners began discussing options and possibilities for cooperation among each other in the field of solution development and achieving solution replicability. These discussions have been held since the beginning of the project first among development partners on their Skype conferences and meetings where they aimed at providing the modularity needed to achieve such goals.

What changed in the third project year is that industrial partners got much more involved in tailoring the solutions to their needs, new data was acquired from their side (evaluating workers' response to preliminary FACTS4WORKERS solutions and further wishes for improvements) and they exchanged information on teleconferences and especially meetings. Very important in this regard was the partners' 4th General Assembly meeting between 13th and 14th February, at Shaeffler Group in Ingolstadt, Germany.

Some exploitation ideas expressed as of December 2017 include:

1. Initiative by HIR to re-use SCA F4W solutions at its own lines

2. Possibility to re-use backbone of EMO F4W solutions at the HIR tool-shop

5.4 Exploitation interests and risks

The D7.2 defined key interests of each project partner in his exploitation efforts. An update was prepared in November 2016 and 2017.

PARTNER	EXPLOITATION ROLE	PRIMARY INTEREST	PRIMARY EXPLOITATION RISK	ACTION PLAN
VIF	Research, consultant, spin-out	VIF's main interests lie in the link between (virtual) product development and the continuous product/process/plant innovation taking place in smart factories. They will exploit the knowledge gained—especially on Big Data analysis, AR and Knowledge Management through their consultancy work for the automotive industry.	Availability of human resources on data scientists currently limited.	
HID	End user	HID will play a direct, active role in the commercial development of project results into industrial practice. They are looking to integrate solutions in the production lines they develop, sell and install within the group and at external clients, contributing to substantial growth in sales.	a) Solutions too specified for the HID FACTS4WORKERS use cases could prevent the general integration and deployment in other production lines HID makes. b) HID's customers would not show interest for the integrated FACTS4WORKERS solution. C) The FACTS4WORKERS solution is not developed to a stage which would permit large industrial deployment.	Close cooperation with partners on the HID UC to ensure maximum possible implementability of the FACTS4WORKERS solution in form of a closed software package by end of 2018.
UFI	Research	UNIFI expects to gain competencies in data analysis and decision support system design that it will use to augment teaching aspects in their engineering curriculum. Through technology transfer activities they will also promote the IC solution concepts to their industrial networks in Tuscany and the rest of Italy region.	/	
VUT	Research	For VUT as research institution, the more generic results predominantly with respect to augmented operator assistance, semantic content/knowledge management on shop floor level, and in-situ mobile self-educating systems contribute to a further extension of research know how and can be exploited within subsequent projects covering similar fields of expertise. Through the scientific lead of this project, VUT expects to advance its research and consultation capabilities for the heavily multi-disciplinary Industry 4.0 related topics towards enterprises, generating additional third-party incomes for the institute.	/	

SCA	End user	Our large industrial partner SCA is a public company and is very careful in issuing forward-looking statements. As is evidenced by their interest in piloting our solutions to the industrial challenges, they see strong application potential throughout their organizations, and expressed willingness to roll out the solutions widely and swiftly provided ROI is as foreseen.	/	
THK	End user	Our large industrial partner THK is a public company and is very careful in issuing forward-looking statements as is evidenced by their interest in piloting our solutions to the industrial challenges, they see strong application potential throughout their organizations, and expressed willingness to use the project results for the development of internal software development and roll-out.	/	The findings from the FACTS4WORKERS project can be used for internal digitalization projects. For this purpose, important results should be collected in a project report in order to introduce mobile solutions under their consideration.
HIR	End user	Our large industrial partner HRO is a public company and is very careful in issuing forward-looking statements As is evidenced by their interest in piloting our solutions to the industrial challenges, they see strong application potential throughout their organizations, and expressed willingness to roll out the solutions widely and swiftly provided ROI is as foreseen.	a) Major month-to-month changes done to HRO UC in 2017 in 2018 that would alter the UC and impede efficient application of software b) HRO aims to spread the FACTS4WORKERS solution from its pilot Hidria Lamtec BU to other Bus and a lack of interest tor usefulness of specified FACTS4WORKERS solution could mean less inclination to spread the FACTS4WORKERS design within the company c) HRO is interested to use FACTS4WORKERS results from other UCs: lack of interest in this regard could impede the application.	Work closely with partners to implement the HRO solution. Partners have already expressed their interest and willingness to perfect the solution and talks and time plan is underway. HRO expects to have a fully operational and useful solution at end of 2018.
IMI	Consultant, spin-out	MI will exploit their advances to the semantic workflow engine components through co-development and consultancy within the field of manufacturing, and will be able to contribute to further standardization of functional workflow descriptions within the W3C standardization committee	Industry & market readiness for SWE. Scaling to massive use cases needs to be investigated. Solutions need to be use-case independent.	Results from the project can be used to further enhance the SWE based on integration experiences
SIA	Consultant	SiEVA will lead the project's dissemination efforts (WP7), responsible for transferring the piloted technology and solutions to industrial and scientific partners on the national and European levels. This will strengthen SiEVA's own R&D capabilities (to the benefit of its member companies in Slovenia) and its R&D networking potential.	a) Lack of interest from SiEVA's stakeholders and potential partners from the industry and R&D sector. B) FACTS4WORKERS results need another project to upgrade and amplify the achieved breakthrough – lack of other project opportunities could be a problem	Try find new project opportunities also with current FACTS4WORKERS partners.
UZH	Research	UZH is looking to gain better understanding of working practices of factory workers and appropriation of IS. They plan to leverage the knowledge gained of measuring success of ICT implementation projects into a commercial service offering.	Facts4Workers is the first industrie4.0 project at the research group so there could be a lack of interest to push the exploitation activities..	We build with partners in the consortium and above the i40cases platform to make the gained knowledge accessible for decision makers in SME to raise the interest for consulting exper-

				tise by the UZH team.
THO	End user	THO manufactures and markets thermally insulating containers. They operate injection moulding and other forming machines and are looking to roll out the Augmented Operator and In-Situ Learning solutions throughout their plant, working closely with ITA. THO will act as a showcase to SMEs who are looking at implementing Smart Factory principles. THO expects to gain both direct productivity and quality improvements, as well as generate additional sales through increased exposure.	/	
EMO	End user	Toolmaker SME EMO is looking to roll out the piloted solutions throughout their factory, and expect to increase quality, decrease production costs, reduce errors and improve their speed of innovation. EMO will furthermore leverage the exposure they will get as an example "Smart SME" in their sales & marketing efforts.	/	
EVO	Consultant, innovation provider	EVO is looking to expand its experience and know-how in the design and implementation of mobile, AR-enhanced decision support systems in industrial environments. EVO serves industrial clients (e.g. Infineon) and is active in EU and national projects, most importantly Assist 4.0. EVO is looking to roll out implementation among its regional network in Styria.	Too specialized solutions for the FACTS4WORKERS use cases could prevent the roll-out at other industrial clients. Coordination of several involved software development partners (UFI, IMI, EVO) could make further usage of software complicated.	Modular concept of software allows to provide functional solutions that are part of the whole F4W framework also as standalone solutions. Feedback from potential interested industrial customers already very positive.
ITA	Consultant, research, spin-out	ITA supports hundreds of industrial SMEs inside its Aragon region as well as outside of it and has the ambition to apply the results of the project into many of these in some way. It has discussed pathways to roll out implementation with industrial consultants in its ecosystem and the creation of a joint venture with one or more of these actors is considered. More tangible plans will be developed in parallel to the project and also inside it (WP7)	/	
LUT	Research	LUT is looking to expand its knowledge on requirements management, collaborative working practices among workers, organizational knowledge processes and production models. LUT is also looking to gain better understanding of technology acceptance models when implementing new ICT solutions. LUT is looking to exploit this knowledge through research- and consultancy contracts with industry.	/	

Figure 46: Partners' primary exploitation interests and risk

6 Balance of efforts and priorities between stakeholder's interests, different results and partners

As already stated in D7.4, the dissemination work package has been conceived in a way that includes all project partners and gives them dissemination responsibilities according to their perceived dissemination and exploitation potential.

In the third project year the consortium made several important breakthroughs in the dissemination field, among them the biggest were a new webpage and project video. Both were created with a joint effort of SIA as the WP leader and VIF as the project coordinator, with the former taking a bigger responsibility for the design, filming and creation of the video and the latter taking over the responsibility for creating the new webpage.

As also stated in this report strong showing in the academic and scientific sphere continued in the third year as well. Academic and scientific partners (UNIFI, UZH, TUW, ITA, LUT) continued with a strong output in this sphere, ensuring that also after surpassing the pre-set goals, the consortium continues to push for even better results in this regard. One significant improvement in this year is also a publication of a master thesis by TUV (and preparation of a bachelor thesis for the final year).

In the field of exploitation, a major breakthrough has to be the Business plan, prepared by the project coordinator VIF and with the help of outside partner TU Graz. The Business model provides a clear blueprint for preparation of future business models and market channels the partners shall use to ensure an effective implementation and marketing of the developed solutions and their breakthrough on the market.

With dissemination effort in the third year pushing in creating new links to the industry and industrial associations and the exploitation groundwork being firmly decided upon, both efforts in the final fourth year can expect concrete results. The consortium's concentrated effort continued with a strong inclusion of industrial partners which is destined to get even more intensive in the project's final year (HRO, HID, EMO, TKSE, SCA, THO) so the allocated PMs represent the effort that was and is going to be invested in this regard. Also, the main WP7 coordinators, SIA and VIF also both have intensive plans for the final year (described in this document) so their PM share is also going to be put to good use.

Regarding cooperation between SIA and VIF, as stated in the D7.4. SIA continued to take over a more independent role in daily communication and coordination efforts, relieving VIF from its daily obligations. SIA also prepared its main inputs (video, press releases, news pieces) independently, giving VIF enough time and space to focus on its main goals (Business plan, first test roll-out coordination, coordination of the EU Review meeting in June). Work was also divided in a way that VIF covered for the costs incurred in preparation of webpage, video design, and business plan, so no major re-balancing of the budget was needed in this regard.

In the end we can offer the same conclusion as in D7.4. - the project partners' fairly balanced PM input structure *(see the table below)* was not jeopardized in the third year and the main efforts were conducted smoothly with no disruptions for work and effort shown by the partners. The PMs allocation is fully expected to be shown as appropriate for the final project year.

PERSON MONTHS PER PARTNERS IN WP 7:

PARTICIPANT NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
SHORT NAME OF PARTICIPANT	VIF	HID	UNIFI	TUW	TKSE	HIR	IMI	SIA	UZH	THO	EMO	EVO	ITA	SCA	LUT
PERSON MONTHS PER PARTICIPANT	23	6	8	10	15	15	7	30	8	12	10	10	12	9	8

Figure 47: Person months per partner

References

1. Grant Agreement Number 636778 - FACTS4WORKERS.
2. Dissemination and Exploitation plan - Deliverable 7.2- updated.
3. Activities report - Deliverable 7.4
4. Business plan- Deliverable 7.7
5. Project website: http://facts4workers.eu/

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About the project

The high ambition of the project FACTS4WORKERS is to create Factories of the Future with a pervasive, networked information and communication technology that collects processes and presents large amounts of data. These smart factories will autonomously keep track of inventory, machine parameters, product quality and workforce activities. But at the same time, the worker will play the central role within the future form of production. The ambition of the project is to create »FACTories for WORKERS« (FACTS4WORKERS), to strengthen human workforce on all levels from shop floor to management since it is the most skilled, flexible, sophisticated and productive asset of any production system and this way ensure a long-term competitiveness of manufacturing industry. Therefore a serious effort will be put into integrating already available IT enablers into a seamless and flexible Smart Factory infrastructure based on work-centric and data-driven technology building blocks.

These solutions will be developed according to the following four industrial challenges which are generalizable to manufacturing in general:

- Personalized augmented operator,
- Worker-centric rich-media knowledge sharing management,
- Self-learning manufacturing workplaces,
- In-situ mobile learning in the production.

PROJECT PARTNERS

The FACTS4WORKERS project is composed of 15 partners from 8 different European countries:

Virtual Vehicle Research Center	Austria
Hidria TC Tehnološki center d.o.o.	Slovenia
Universita degli Studi di Firenze, Department of industrial Engineering	Italy
Technische Universität Wien	Austria
ThyssenKrupp Steel Europe AG	Germany
Hidria Rotomatika d.o.o., Industrija Rotacijskih Sistemov	Slovenia
iMinds VZW	Belgium
Sieva d.o.o.	Slovenia
University of Zurich, Department of Informatics	Switzerland
Thermolympic S.L.	Spain
EMO-Orodjarna d.o.o.	Slovenia
Evolaris Next Level GmbH	Austria
Itainnova - Instituto Technologico de Aragon	Spain
Schaeffler Technologies AG & Co. KG	Germany
Lappeenranta University of Technology	Finland

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SUMMARY

This deliverable (D7.5) describes the achieved results in the third year of the project. The deliverable focuses on the main dissemination activities performed in this timeframe and their effect on the coming fourth and final project year. The document clearly highlights many breakthrough achievements (video, new webpage, scientific publications and the project's first sponsored master thesis etc.) and their importance for the project as a whole. Important space is also given to the exploitation part where important progress has been made in form of a Business plan. The consortium worked here upon previous activities in second year. The Business plan presents a clear picture of exploitation capabilities of the consortium, it takes into acocunt all the different interests of the stakeholders and gives a way forward to the consortium in the project's final year. This part also gives an impression of ideas planned for the final project year how to improve exploitation and FACTS4WORKERS solutions' implementation possibilities level at a large scale. Overall third year's activities represent a strengthening of the project' goals and vision working upon important work done in the second year. The project now has everything in place to begin an intensive exploitation and solution roll-out phase in which as many opportunities as possible must be used to proliferate the FACTS4WORKERS solutions and present them to a wider European audience.