



# FIT FOR 4.0

Training Teachers and Trainers  
for the 4.0 Paradigm

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## FIT for 4.0 project presented the first results during the EfVET Roundtables

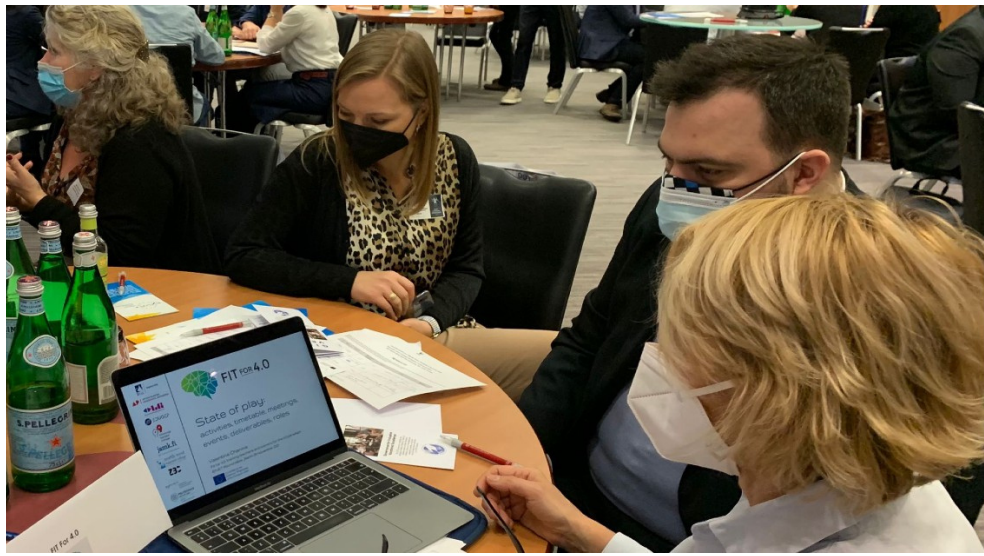
BY VALENTINA CHANINA, EfVET

With an audience of teachers, trainers, and principals of FIT for 4.0 project presented the first results during the EfVET roundtables in Berlin. The project intends to address the challenges the technological developments on the industry are creating to VET educational systems by describing a set of competences useful to VET teachers and by developing and testing a set of training modules fit for 4.0 in strict co-operation with industry. We presented the first output of Fit for 4.0 project - The first project output, presenting the list and description of competences teachers and trainers should process to adequately facilitate learners in the development of their 4.0 skills.

The aim of this output is to identify and describe competences the teachers and trainers should process to adequately facilitate learners in the development of their 4.0 skills. The subsequent train-the trainers programme, to be developed at a further stage in the project, was target such competences. Next step is MOOC, mainly targeted to trainers, but also to anybody interest in those topics.

The MOOC will be delivered by alternating self and collaborative learning giving trainees an active role, with peer learning opportunities, solution of real problems making use of IT tools and





content, company visits, interviews with experts, contexts. Valentina Chanina showed the website and said that the platform is expected to be fully functional by December. Each partner will choose a sample of 2/3 trainers among its staff or among associated partners. These will take an entry self-assessment and will improve their understanding of specific topics thanks to the MOOC.

## Fit for 4.0 project meeting in Gothenburg, Sweden

BY VALENTINA CHANINA, EfVET

Fit for 4.0 project partners met in Gothenburg on 30 November and 1 December 2021.

The Fit 4.0 project intends to address the challenges the technological developments on the industry (both production and maintenance levels) are creating to VET educational systems by describing a set of competences useful to VET teachers and by developing and testing a set of training modules fit for “4.0”, in strict co-operation with Industry.

Vocational education training can become the “first choice” to live this transformation, but at present only few training centres in Europe have the necessary equipment and, above all, teachers are not always fully aware of the dimensions of the change or have the tools to face the 4.0 paradigm, which is not only “Industry 4.0” and technology.

Discussions evolved around setting the agenda for testing the MOOC (Massive Online Open Courses), which is being developed by Politecnico di Milano. Indeed, the meeting started with an introduction of what the 4.0 skills self-assessment tool for teachers is and with examples of teaching



## The partnership



Göteborgs  
Tekniska College



jamk.fi

Jyväskylän ammattikorkeakoulu



Derry-Londonderry • Limavady • Strabane



METID  
LEARNING INNOVATION



European Forum  
of Technical and Vocational  
Education and Training



materials, learning assessment strategies, and innovative tools for training and teaching.

They are practical tools proposed by transnational groups of training teachers and company experts, using collaborative on-line platforms. The kit will be tested by a sample group of trainers, who will co-design with companies training modules or courses in the 4.0 format. The courses development will be made freely accessible to everyone online. Further development will continue in the following months.

Next meeting will take place in Brussels in May 2022.

## Fit for 4.0 project meeting and digital dissemination conference

BY ANNA CATO MOE, GOTHENBURG TECHNICAL COLLEGE

At the end of November, we hosted a digital dissemination conference at Gothenburg Technical College in the framework of the Erasmus+ project Fit for 4.0. The conference also provided an opportunity for the project team and representatives from our partners across Europe to meet for two days in Gothenburg.



The project equips upper secondary schools and polytechnics for Industry 4.0.

Digitalisation is rapidly changing the manufacturing industry. Digital tools such as collaborative robots, additive manufacturing and digital twins are now commonplace in the industrial workplace. But are schools and training providers ready to support the transition to Industry 4.0? Do vocational teachers and technology educators have the skills needed to, in turn, train the employees of the future? In many cases, the answer is no.

In the Erasmus+ project Fit for 4.0, we are trying to help solve this challenge by providing self-assessment tests and online training to equip secondary schools and vocational schools for Industry 4.0.

### Project meeting in the second day in Gothenburg

We are extremely pleased to have had the opportunity to welcome representatives from our nine partners across Europe to a winter wonderland in Gothenburg. During the visit, they worked on the Massive Open Online Course (MOOC) that will become a final product of the project, among other things, but they also had the opportunity to visit and participate in workshops at Production for Future at Lindholmen.

*Industry 4.0 is all about digitisation, but to finally meet the rest of the project organisation for real feels really good. - Anna Cato Moe, representative from Gothenburg Technical College*

### Digital dissemination conference

The Digital Dissemination Conference brought together headteachers and decision-makers from the education sector, people from HR and supervisors of trainees in the manufacturing industry, as well as technology teachers and project members to discuss how education providers can enable students to be Industry 4.0 ready.

### Parts of the programme included:

Why are horizontal and soft skills important for the future manufacturing industry?; New educational methods after the pandemic; A sneak peek at the project's training programme.



Fit for 4.0 will run between 2019 - 2022.



## MOOC 0: Structure

BY THOMAS MÜHLEHNER, BFI

MOOC 0 will give you an idea of our training programme. How to work with the platform and how it is structured. As a guideline six personas are introduced. All of them teach and all of them have different backgrounds and situations to master. They should give you an idea of the challenges they have to cope with, and skills needed in an industry 4.0 environment from a teacher's perspective. Furthermore, as part of MOOC 0 you will get basics in the key enabling technologies of I4.0, information, learning theories, project management and how to gather information independently.

## Massive online open courses: their success until 2020, their role during and after the pandemic

BY FRANCESCA CONCIA, POLITECNICO DI MILANO

With the arrival of COVID-19, and the quick responses to reduce the spread of the virus, **universities and schools closed across the world and transitioned to on-line learning**. The speed in which universities **closed left many students dealing with uncertainty, confusion, and concern about their future**.

The COVID-19 pandemic has created a “**perfect storm**”, both **introducing new and exacerbating a range of existing stressors** for students including (but not limited to) **academic uncertainties, economic and financial concerns, social isolation and a loss of social supports, constant media information and misinformation about the pandemic**.

UNESCO estimated that 1.5 billion learners were affected by school closures, more than 200 million in higher education. Several educational institutions moved to remote teaching in a few days and with emergency plans: teachers faced entire days of online lectures and research, they managed online tests with the support of proctoring softwares and systems, they even held several graduation ceremonies in a remote format. The result is that they have **quickly and strongly acquired digital skills** to adapt to the unexpected situation and, in several cases, they reached the objective of going ahead and accomplishing their institutional tasks, being quite **capable to adapt to a fully online learning and teaching scenario** despite being rather unprepared. The unexpected scenario highlighted the **resiliency of several educational institutions** and the **urgent need to invest more on digital and interactive solutions**, to complement the rich and unique in-person experience.

The Covid-19 pandemic has raised **significant challenges for the education community worldwide**. A particular challenge has been the urgent and unexpected request for previously face-to-face university courses to be taught online. The urgent imperative to ‘move online’ has added to the **stresses and workloads experienced by teachers who were already struggling to balance teaching, research and service obligations, not to mention the work-life balance** (Houston, Meyer and Paewai 2006; Houlden and Veletsianos 2020). Teaching staff of all backgrounds and ages have **had to prepare and deliver their classes from home, with all the practical and technical challenges this entails, and often without proper technical support** (Hodges et al. 2020). Online teaching and learning imply a **certain pedagogical content knowledge**, mainly **related to designing and organising** for better learning experiences and creating distinctive learning environments, with the help of digital technologies.

Particularly, Massive Open Online Courses (MOOCs) proved to be **an important vehicle of flexibility and adaptation** in a general context characterised by several constraints. According to Class central<sup>2</sup> analysis, the top three MOOC providers (Coursera, edX, and FutureLearn) registered as many new users in April 2020 as in the whole of 2019. As we all know, there was a lot of hype surrounding MOOCs in 2012, “the year of MOOCs”, with an explosion of providers, new courses and users enrolment, but after a while the registration trend normalised and, since then, the numbers have grown constantly but relatively slowly. The pandemic broke this trend. According to Class central around 25-30% of the total registered users on these platforms came after the pandemic. Coursera<sup>3</sup> added 15 million new learners in the period from March to June 2020, receiving 35 million enrolments between mid-March and the end of July<sup>4</sup>. Coursera declares that governments and universities using Coursera’s Campus Response Initiative<sup>5</sup> have equipped more than one million people with free access to job-relevant online learning.

Through the **synergies** between Massive Open Online Courses (MOOCs), and the meaningful on-campus learning and teaching experiences, educational institution are capable to integrate their strategies in three main directions:

1. to **support teachers' and instructors' development** - improving pedagogical, instructional design and digital skills - to equip them with tools, processes and strategies useful in evolving educational systems;
2. to **scale up access to innovative and continuously upgraded knowledge and research**, fostering the development of job focused relevant skills;
3. to **support the development of soft skills**, for an effective participation in the actual complex work scenario.

FIT for 4.0 project "fits" into this line developing a MOOC to train trainers and teachers in the specific for the 4.0 Paradigm.

## FIT for 4.0 MOOC's structure: six micro-MOOCs

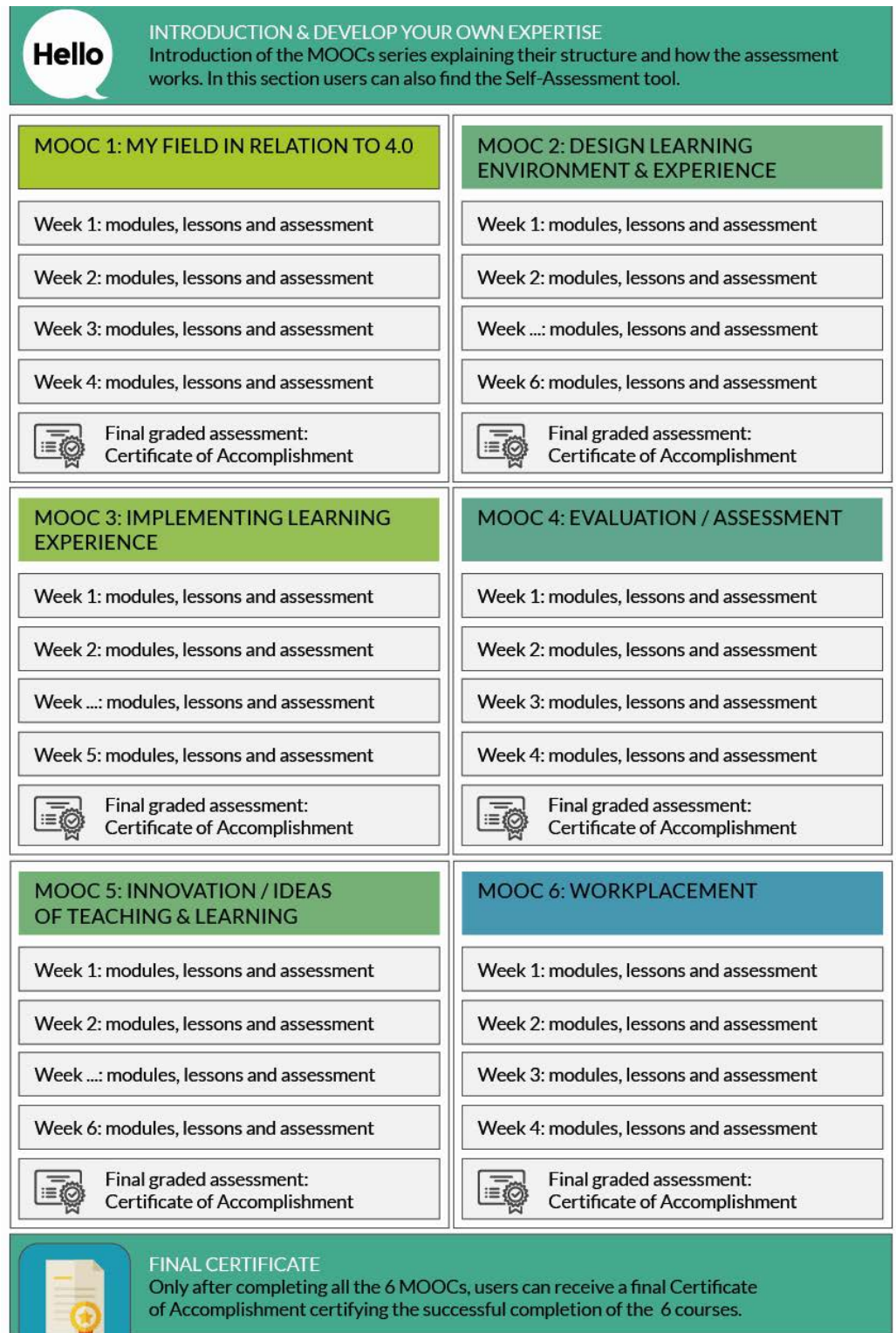
BY FRANCESCA CONCIA, POLITECNICO DI MILANO

As part of the "FIT for 4.0" project, one of the most significant and challenging activities is represented by the creation of a Massive Online Open Course aimed at offering an opportunity for in-depth reflection on the skills of the "4.0 teacher". The definition of key competencies, the creation of the Content Tree, the division of activities, the drafting of content by several hands is a challenge in many international collaborations: the pandemic made even more challenging the goal.

The final structure of the MOOC is represented in the picture: six micro-MOOCs organised in WEEKS - MODULES - LESSONS, where WEEK is the macro-theme to be completed in seven days (e.g. "The Assessment"), divided into MODULES that represent the sub-themes (e.g. "The Formative Assessment", "The Summative Assessment").

Each MODULE contains a different number of LESSONS, that are the knowledge pills. LESSONS address specific assets (e.g. "Why to choose the formative assessment" "When to choose the formative assessment") and answer to one or more specific learning outcomes: a lecture, an exercise, an example, an assessed activity in one of the following formats: video, text, picture, external resource, downloadable file, infographic are LESSONS.

The analysis of our target-group needs, let us know that they are all experienced teachers and cannot devote too many hours to study and to complete a long MOOC. Probably they are looking for short, well-focused training opportunities, on the basis of their perceived needs.



Hence the idea to develop six short, self-paced courses. For those who complete the entire course, a full certificate will be issued.

# FIT for 4.0 MOOC's Pedagogical Framework

BY FRANCESCA CONCIA, POLITECNICO DI MILANO

To meet all the needs and all the ideas, the Scenario Based learning has been chosen as general Framework. **Scenario Based Learning** (SBL) involves, as the name implies, teaching through the use of **simulated scenarios** which use **narratives** to guide learners through certain situations which can be adapted based on the choices and responses of the learners.

These scenarios work best when they mirror **real world situations** that learners are likely to encounter within their subject, i.e. medical students dealing with patients, engineering students dealing with a building project: students are asked to **immerse** themselves in the situation and solve the **dilemma**. Scenarios are designed to engage learners in processes of **problem-solving, decision-making, critical thinking, generating perspectives, and acting creatively** in relation to assumed roles, responsibilities, dilemmas and challenges of the professional culture (Errington, 2010). SBL affords learners a **more active role in their learning** and the opportunity to **develop and practice real life skills** that they will need to operate successfully in the global state.


In teacher education, scenarios permit learners to **safely explore situations they might face in their future classrooms** (Alessi & Trollip in Hunter, 2009; Aitken in Errington, 2010); to **apply theory to practice; and to help develop learners' professional identities** (Errington, 2011).

A scenario is a presentation of a possible future situation in narrative form. As a rule, it also portrays causal relationships, which explain how, from the vantage point of the present, we arrived at that particular future in this particular story ('How might things come to this?'). One important characteristic of the scenario method lies in its **explicit inclusion of uncertainties** and its comparison of **development alternatives** that could shape the course of events.

Scenarios should be **realistic** and **relevant** for learners, interesting and immersive by using: images, characters background, challenges, short videos, direct speech, conversational tone and informal language. Each FIT for 4.0 micro-MOOC has its own leading character: a teacher who introduces herself/himself and gradually talks about some of her/his experiences and ideas related to the specific topic of the micro-MOOC.

Here some examples:

Name: Silvia
Surname: Muller
Age: 36
Nationality: Austrian
Role: trainer
Subject: Welding, Product Engineering
EQF Level: 4
Number of students: 10
Students' age: 20-50 years



Name: Jan
Age: 32
Nationality: Belgian
Role: trainer
Subject: Logistics Management
Subject: Applied Informatics
EQF Level: 6
Number of students: 40
Students' age: 19-28



To discover all the other characters... all that's left to do is enrol the MOOC, which will be online in Spring 2022!

Hello and welcome to explore the Micro-MOOC 2.

This MOOC sheds light on how to design learning experiences that are suitable for Industry 4.0 contexts.

Due to constant changes in working life and society, teachers might feel concerned about:

- How to support the varied individual learning needs of their students;
- How to design engaging learning tasks that develop students' skills they will need in the future;
- Or which pedagogical approaches they should use to support quality learning;
- Or which digital tools or resources they should select to support the pedagogical approach

This Micro-MOOC offers you some thoughts about those questions...

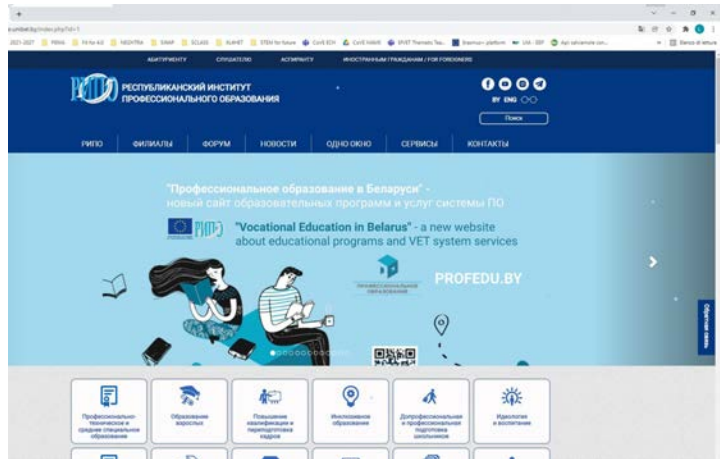


# FIT for 4.0 goes East

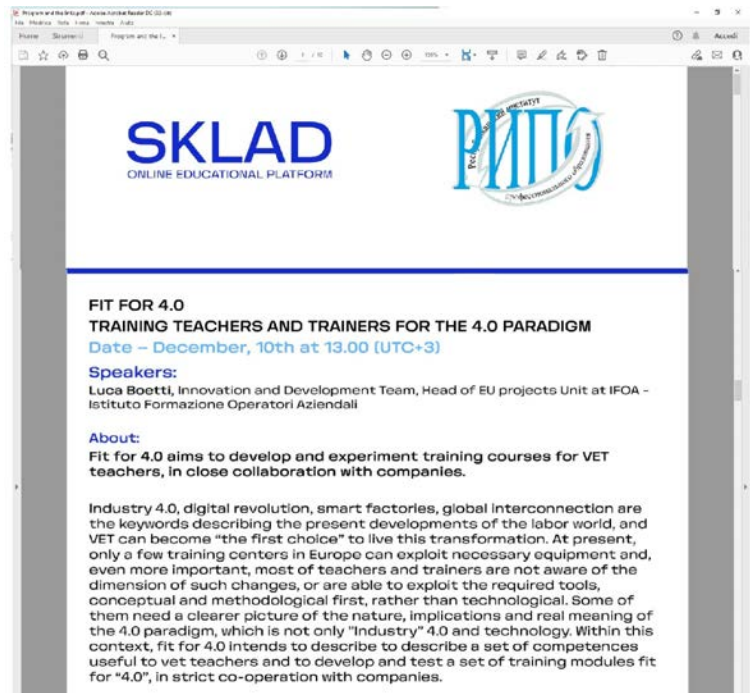
BY LUCA BOETTI, I.F.O.A.

Fit for 4.0 was selected for presentation during the important cycle of international webinars "innovation and digitalization in VET: trends and best practices", organized by RIPO, the Republican Institute for Professional Education of Belarus, last December.

Since 1998 the RIPO has been a permanent partner of the European Training Foundation in Belarus, with the implementation of several EU projects and initiatives in the field of VET and labour market. Since 1999, the RIPO has been included in the worldwide network of UNEVOC members, being the official representative office of UNEVOC in Belarus.



Stretching over two full weeks, the event gathered outstanding speakers and participants from several EU and non-EU countries (including Russia), covering different perspectives of VET innovation in the digital transformation age, from the impact of technology (VR, AR, machine technology, AI, etc.) on VET to the social implications of the new ways of training, from national policies and lessons learnt in EU countries like Germany Finland Portugal and Greece, to the new training needs of trainers.



FIT for 4.0 was selected exactly as a best practice in this last field, acknowledged as the cutting edge in providing the new training skills required to teachers and trainers, in order to face the digital transition in the COVID-19 era.

During the interactive seminar delivered by Luca Boetti (I.F.O.A.) on December 10, over 200 international participants received information about the project and had the opportunity to try and test the self-assessment tool for teachers. They also had the chance to then discuss in groups their results, comment on the training needs of teachers and reason on the co-design of training modules and programs together with enterprises, with a 4.0 approach at the time of COVID-19. Participants could also understand the goals and state of play of the MOOC for the training of trainers under construction by the partners of FIT for 4.0, and how a modern, digital learning tool should be conceived and structured for maximum effectiveness and efficiency.

Stay tuned with the latest developments of the Fit for 4.0 MOOC on the project website: [www.fitfor4-0.eu](http://www.fitfor4-0.eu) !



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Project website: [www.fitfor4-0.eu](http://www.fitfor4-0.eu)

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The project (2019-1-IT01-KA202-007766) run from 01/09/2019 to 31/08/2022.

The kick-off meeting took place in Reggio Emilia (Italy) on 08-09/10/2019.

The 2nd project meeting was held online from 29/09/2020 to 02/10/2020.

The 3rd project meeting was held online on 08-10/03/2021.

The 4th project meeting took place in Gothenburg (Sweden) from 30/11/2021 to 01/12/2021

**FIT for 4.0**