COGITO

CONSTRUCTION PHASE DIGITAL TWIN MODEL

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D9.6 Living Lab Activities Evaluation Report v1

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Executive Summary

This report is a summary of the main Living Lab activities performed in the COGITO project between the very beginning and M12. This document presents course and results of the workshops with project's stakeholders who are direct users of COGITO's solutions in pilot sites located in Denmark and Spain. Not only the organizational issues are covered, but more importantly - the outcomes of the organised meetings.

In the first part of the report, the description of workshops' organisational aspects is provided – dates, places, hosts, and participants. Moreover, the recruitment process and recruitment tools (e.g. e-mail invitations and leaflets) are mentioned.

The report recalls the main objective of the Living Lab workshops – to collect requirements, raise awareness, engagement, and acceptance of pilot site occupants and stakeholders. The document also lists the elements that were briefly presented to the gathered audience: COGITO goals and solutions to be delivered, project partners, pilot sites and the Living Lab idea. Means used by the workshops organisers to better illustrate the project scope are also mentioned in this report, e.g. Power Point project general presentation.

The core part of the report is the presentation of workshops outcomes and requirements collected from the participants via questionnaire. In general, workshops were evaluated as well organised by the invited Living Lab representatives.

Finally, all activities and results of the workshops are reported in the document. The first round of workshops took place in April and May 2021. The second round is planned in June 2022.

Table of contents

List of Figures

List of Tables

COnstruction phase
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List of Acronyms

Term	Description
BUILDUP	The European Portal for Energy Efficiency in Buildings
CIRIA	Construction Industry Research and Information Association
COGITO	Construction Phase diGItal Twin mOdel
D	Deliverable
D&C	Dissemination & Communication
DCP	Dissemination and Communication Plan
DEM	Dissemination and Exploitation Manager
ECTP	The European Construction, built environment and energy efficient building Technology Platform
GDPR	General Data Protection Regulation
HS	Health & Safety
ICT	Information and Communication Technologies
KPI	Key Performance Indicators
LL	Living Labs
M	Month
QA	Quality Assurance
SR	Stakeholders Requirements
T	Task
WP	Work Package

1   Introduction

1.1   Scope and objectives of the deliverable

The hereby report is the first of three Living Lab activities Evaluation Reports, where the overall framework of the COGITO Living Lab implementation will be described.

For clarification purposes, it is worth reminding that the whole idea of Living Labs introduction into the project is about co-creation approach. The aim is to involve the Living Lab communities (end-users and targeted beneficiaries) into the project activities in order to make all developments optimised according to their needs and requirements. A variety of tools is available for the project team in order to obtain constant feedback, e.g. stakeholder workshops, quick online surveys, etc.

The COGITO Living Lab activities are planned to be performed in the 2 pilot sites:

- Metro Network Extension (Copenhagen-Denmark) managed by RSRG,
- High Speed Railway Station (Murcia-Spain) managed by FERROVIAL.

ASM being the leader of WP9 is in charge of Living Labs activities coordination and dissemination of these activities.

This report presents the summary of the main Living Lab activities performed in the first round of the COGITO workshops and will be updated in M24 and M36.

1.2   Relation to other tasks and deliverables

The D9.6 report is being prepared in relation to D9.2 "COGITO dissemination and communication plan and associated material v1", D9.3 "COGITO dissemination and communication plan and associated material v2" and D2.1 "Stakeholder requirements for the COGITO system". COGITO dissemination and communication plan and associated material report has now two versions delivered: D9.2 (first version) and D9.3 (updated version) in which the Living Lab workshops are presented as part of the dissemination activities. The aim is to raise awareness and engagement of particular target groups (e.g. Construction Project/H&S/QA Managers and construction companies, construction site labour, technological platforms, professional associations and initiatives, and general public) into COGITO solutions development. In COGITO, these stakeholders are being effectively reached through a variety of communication channels and the utilisation of a wide range of dissemination instruments from the beginning of the project upon the end of its life cycle and beyond. D2.1 describes also the outcomes of the first round of workshops which were focused on collecting user requirements. Furthermore, the first round of workshops was also a demo exercise to check if the adopted methodology and organisational criteria were correctly implemented.

1.3   Structure of the deliverable

This deliverable presents Living Lab methodology, action plan, and results elaborated in the first year of the project. It also provides an overview of the strategy and specific tools implemented to reach the expected outcomes in the reporting period and the plan scheduled for the following months. The first part of the document presents the objectives and the strategy followed during the reporting period. The second, and last, section focuses on the workshop description, results, and further steps to improve already undertaken actions.

2   Living Lab Action Plan

Living Lab Action Plan was established at the beginning of the project to schedule particular activities like collecting mailing lists, set up the database, preparing dissemination materials, planning follow-up activities, etc. COGITO has planned exact dates for each activity, responsibilities, measurements and measurable targets. Living Lab Action Plan as a solid document was distributed to Living Lab representatives from the two pilot sites and discussed during the meetings. The detailed schedule is presented below in Table 1.

Table 1: Living Lab Action Plan

Action	Deadline	Responsible	Measurement	Target
CONTACT LIST ESTABLISHMENT				
Collecting contact details of all target groups (or cooperation with the construction managers and other parties managing personal data) for distribution of the materials. Each Pilot Site will be responsible of the management of gathered contact details according to GDPR. All target groups must be informed that their contact details will be stored and used for Living Lab activities and they have to provide consent.	23/02/2021	• ASM – template • Ferrovial, RSRG – data collection	Number of records in a database	Construction Project/H&S/QA Managers and Construction companies, Construction site labour, Technological Platforms and Professional Associations and Initiatives
Database of contacts of Construction Project / H&S / QA Managers and Construction companies, Construction site labour, Technological Platforms and Professional Associations and Initiatives in Denmark, Spain.	25/02/2021	• ASM – template + contacts' data in other EU countries • Ferrovial, RSRG – data collection in pilot sites	Number of records in a database	Construction Project/H&S/QA Managers and Construction companies, Construction site labour, Technological Platforms and Professional Associations and Initiatives
Action	**Deadline**	**Responsible**	**Measurement**	**Target**
MATERIALS DEVELOPMENT				
E-mail invitation to join the Living Lab + short invitation leaflet – English version	2/03/2021	• ASM	Document	All target groups – workshop participants
E-mail invitation to join the Living Lab and short leaflet – English/ national languages and distribution among target group	3/03/2021	• Ferrovial, RSRG	Number of e-mails sent to all target groups	All target groups – workshop participants
Invitation to join the Living Lab – announcement in social media and project website	Start 1 month before the event	• ASM – general project channels • Ferrovial, RSRG – organisation's website and social media	Number of posts, tweets, news	All target groups – workshop participants
E-mails with project news to maintain the interest of LL members, to ensure a continuous contact with the stakeholders informing them about the project progress, news of the project and	Every 1 month	• ASM – English version • Ferrovial, RSRG – translation and distribution	Number of e-mails sent to all target groups	Construction Project/ H&S/ QA Managers and Construction companies, Construction site labour, Technological Platforms and Professional

Action	Deadline	Responsible	Measurement	Target
activities involving Living Lab members. Raising awareness, educate, interesting facts.				Associations and Initiatives
General project presentation	10/03/2021	• ASM – design • Ferrovial, RSRG - providing input, translation and distribution	Number of distributed presentations /Number of participants who will take part in presentation during the workshop	Construction Project/ H&S/ QA Managers and Construction companies, Construction site labour, Technological Platforms and Professional Associations and Initiatives
General project presentation – dissemination through social media and project website (presentation is already available on the project website)	12/03/2021	• ASM	Number of posts, tweets, news	Construction Project/H&S/QA Managers and Construction companies, Construction site labour, Technological Platforms and Professional Associations and Initiatives
Living Lab poster development	1/01/2022	• ASM – template/edit • Ferrovial, RSRG – providing input, translation and distribution	Document	Construction Project/ H&S/ QA Managers and Construction companies, Construction site labour, Technological Platforms and Professional Associations and Initiatives
Second LL leaflet - executive summary of project results (business scenarios, use cases)	9/2023	• ASM – English version • Ferrovial, RSRG – translation and distribution	Number of leaflets distributed	Construction Project/ H&S/ QA Managers and Construction companies, Construction site labour, Technological Platforms and Professional Associations and Initiatives
Second LL leaflet - dissemination through social media and project website	9/2023	• ASM – general project channels • Ferrovial, RSRG – organisation's website and social media	Number of posts, tweets, news	Construction Project/ H&S/ QA Managers and Construction companies, Construction site labour, Technological Platforms and Professional Associations and Initiatives
COGITO's promotional video production and distribution	10/2023	• ASM – English version • Ferrovial, RSRG – subtitles and distribution	Number of video downloads	Construction Project/ H&S /QA Managers and Construction companies, Construction site labour, Technological Platforms and Professional Associations and Initiatives

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Action	Deadline	Responsible	Measurement	Target
BEFORE THE WORKSHOP				
Workshop announcement through publications, articles, press releases in national, local press and magazines, participation in national events.	Start 1 month before the event	• ASM – English version • FERROVIAL, RSRG – translation	Number of posts, tweets, news	All target groups – workshop participants
Sending e-mails to building/site managers	Start 1 month before the event	• FERROVIAL, RSRG	Number of e-mails sent to owners of dwellings	All target groups – workshop participants
Distribution of paper leaflets to building/site managers	Start 1 month before the event	• FERROVIAL, RSRG	Number of leaflets distributed to dwellings	Construction Project/H&S/QA Managers and Construction companies, Construction site labour, Technological Platforms and Professional Associations and Initiatives
Posting posters in each stairway	Start 1 month before the event	• FERROVIAL, RSRG	Number of posters posted	Construction Project/H&S/QA Managers and Construction companies, Construction site labour, Technological Platforms and Professional Associations and Initiatives
Workshop evaluation questionnaire development	15/03/2021	• ASM	Document	All target groups – workshop participants
Workshop organisation – according to the guidelines	Accordingly	• FERROVIAL, RSRG	Number of workshops organised, number of workshop participants	All target groups – workshop participants
Action	**Deadline**	**Responsible**	**Measurement**	**Target**
DURING THE WORKSHOP				
Project presentation (available on the project website) used during the workshops to explain the most important assumptions and goals of the project, particular stage and status.	n/a	• FERROVIAL, RSRG	Action	All target groups – workshop participants
Workshop performance	n/a	• FERROVIAL, RSRG	Number of attendees in the workshops, opinions on the proposed solutions collected during the workshops	All target groups – workshop participants

Action	Deadline	Responsible	Measurement	Target
AFTER THE WORKSHOP				
Workshop summary development and distribution to the workshop participants as well as other Living Lab members – to inform all about project activities, discussions that took place or even decisions that were made.	Up to 1 week after the workshop	• FERROVIAL, RSRG	Document	All target groups – workshop participants
Workshop summary promotion via different communication channels – COGITO project website, social media and national/local press.	As soon as available	• ASM, FERROVIAL, RSRG	Number of posts, tweets, news	Construction Project/ H&S /QA Managers and Construction companies, Construction site labour, Technological Platforms and Professional Associations and Initiatives
Post-workshop teleconference (ASM and workshops' organisers) – to get feedback, impressions, tips for next rounds of workshops.	Up to 1 week after the workshop	• ASM, FERROVIAL, RSRG	Action	n/a

Dissemination activities towards Living Labs were also planned and included in D9.2 and the updated version – D9.3. These include:

- Information publication in social media and project website (publication of materials, recruitment, workshops announcement and feedback, etc.)
- Publication of articles, press releases in EU press and magazines, participation to EU events.
- Information exchange through newsletters of other EU projects and initiatives

3   COGITO Living Lab Activities Plan

The Living Labs workshops are dedicated to potential stakeholders who are asked for their feedback and requirements on the COGITO's tools during performed activities.

ASM, as task leader, elaborated the COGITO Living Labs Activities document where the basic information, methodology, targets and goals were established.

COGITO Living Labs Activities

Key facts on Living Labs:

1. Aim: co-creation and exploitation of project results maximising the project's impact.
2. Tool for developing COGITO services demonstrated under real-life conditions according to stakeholders' needs.
3. Tool for dissemination, training and exploitation, through stakeholder awareness and engagement.

Objectives:

- Widely disseminate the project outcomes towards target groups to generate a broad awareness and engagement/involvement in the various project activities.
- Create opportunities for further exploitation and replication of the project's results after its official completion.
- Obtain feedback from the targeted beneficiaries throughout the project duration to optimise all project developments, such as address critical needs of stakeholders involved in the operation of the COGITO framework.

Living Lab schedule:

- Introduction to Living Lab workshops (presentation of the project and topic with the use of promotional materials)
- Workshops – testing particular project's solutions connected with tasks
- Q&A session
- Evaluation questionnaire

Responsibilities:

1. ASM – Living Labs activities coordination, dissemination of Living Lab activities
2. FERROVIAL, RSRG - Living Lab organisation, activities performance

Target audience:

- Main (<650): Construction Project/H&S/QA Managers and Construction companies, Construction site labour, Technological Platforms and Professional Associations and Initiatives
- Other (15): standardisation stakeholders, regulators, policy makers

Indicators:

Table 2: Living Labs indicators

KPI	Target
Number of organised workshops/trainings/meetings	8 (2x4)
Number of participants to the workshops	50 (400 in total)
Number of follow-up activities resulting from the workshops	4
Number of direct participant (stakeholders) targeted:	120 (15x8):
Danish workshop	60
Spanish workshop	60

Number of indirect participants (consumers) targeted:	**280 (35x8):**
Danish workshop	140
Spanish workshop	140

Methodology:

- 8 workshops, 4 in each Living Lab
- 1st round of workshop: raise awareness, engagement and informing about benefits, collecting user requirements
- 2nd round workshop: involve end users and prepare the pre-validation phase of the project
- 3rd round of workshop: train users and contribute to the adoption of the COGITO concept and operation in the pilot sites of the project
- 4th round of workshop: involve all stakeholders in the evaluation of COGITO results

Workshops schedule:

- 1st round (prior T2.1):
  - Denmark – March 2021
  - Spain – April 2021
- 2nd round (prior to the pre-validation phase in T8.2):
  - Denmark – June 2022
  - Spain – June 2022
- 3rd round (after WP3 ends):
  - Denmark – December 2022
  - Spain – December 2022
- 4th round (after T8.4 and before the impact assessment task ends (Oct 2023)):
  - Denmark – September 2023
  - Spain – September 2023

Consortium Partners decided to organise the first event to collect user requirements for the COGITO system. After the first round of workshops, some improvements were considered to be implemented, like evaluation questionnaire, and a set of promotional materials provided to the participants.

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4   Target groups

At the beginning of the project, the COGITO Consortium verified the list of target groups to whom the overall strategy, including Living Lab activities, should be tailored. The Living Lab Action Plan activities were planned to engage particular target groups, which definitions are placed in the Table 3 as following:

Table 3: COGITO Target Groups

Type of target	Description
Construction Project/H&S/QA Managers and Construction companies (AEC Industry)	This is the main target group of the COGITO Dissemination and Exploitation Strategy, since they are the key stakeholders involved in the design, planning and implementation of construction projects and, subsequently, the primary end-users of the COGITO results.
Construction site labour	People directly involved in the construction site constitute a key target group of the COGITO project, since they may be directly involved in project activities for the demonstration and validation of the project outcomes.
Technological Platforms and Professional Associations and Initiatives	Relevant technology platforms and industrial associations are essential for the establishment of standardised BIM-based practices and solutions with view to the successful exploitation of COGITO results, e.g. building SMART Alliance and its Linked Data Working Group, European Construction, Technology Platform, IAARC, EC3, Open Reference Models Initiative, Construction Technology Platform/ ECTP, ETSI Working Groups for Standardization of the SAREF for Buildings Ontology, W3C and its Linked Building Data Community Group, European Platforms Initiative on IoT, European Association on Product and Process Modelling.
Scientific Community	This target group corresponds to research and academic organisations, scientific journals, committees, internet fora, and other working groups in research fields related to the COGITO work.

All of these groups are closely related to the construction sector and have a direct or indirect influence on what tools are used in the construction site to improve working conditions. Consortium members have already collected e-mail addresses of potential stakeholders connected with their professional network. RSRG and Ferrovial invited firstly described target groups from the established mailing list to attend Living Lab workshops in March and April 2021. International network consisted of Technological Platforms, Professional Associations and Initiatives, Scientific Community, and Construction Companies is established by COGITO's Partners to expand the list of contacts.

5   Organisation of COGITO Living Labs

5.1   Roles and responsibilities

ASM as a Dissemination and Exploitation Manager (DEM) is responsible for the Living Labs activities planning and coordination, while its execution responsibility belongs to the Living Lab Representatives: FERROVIAL and RSRG.

All activities are discussed with Hypertech – Project Coordinator and Partners involved in each round of workshops.

5.2   Living Lab activities schedule

Table 4 below presents the overview of Living Lab activities that are planned to be implemented within the project. It is also supported by dissemination activities presented in Living Lab Action Plan and planned in the overall dissemination and communication strategy included in D9.3.

Table 4: Living Lab activities schedule

Channel	Objective of the dissemination	Type of audience	Measurement	Schedule/frequency/update
Workshops	To raise awareness, engagement and acceptance of pilot site stakeholders; to involve end users in the requirements definition; to train users and contribute to the adoption of the COGITO concept and operation in the pilot sites; to involve all stakeholders in the evaluation of COGITO results	Construction Project/H&S/QA managers Stakeholders Construction site labour	8 workshops organised within Living Labs activities	2 workshops by M12, 4 workshops by M24, 2 workshops by M36

5.3   Key Performance Indicators

A set of Key Performance Indicators (KPIs) has been defined to measure the efficiency and effectiveness of the Living Lab activities. The table below summarises desired targets of KPI achievement at the end of the project's duration, and the current status in M12:

Table 5: Key Performance Indicators

Activity name	KPI	Target number in total	Status in M12
Living Lab activities	Number of organised workshops/trainings/meetings	8	2
	Number of participants to the workshops	400	68
	Number of follow-up activities resulting from the workshops	4	1
	Number of direct participants targeted: • Spanish workshop • Danish workshop	120: 60 60	68 33 35
	Number of indirect participants targeted • Spanish workshop • Danish workshop	280: 140 140	-

The KPI evaluation is an ongoing activity, monitored constantly before and after every workshop. Effectiveness and progresses are assessed, and, if needed, relevant changes are implemented in order to achieve the planned results. Every 6 months, during the GA meetings, all partners are informed about current status of KPI's performance and about the planned actions to fulfil the initial commitment in terms of expected goals.

Actual status of KPIs shows where we need to focus to reach all target goals. The dissemination action plan developed for the next 6 months according to these data is the following:

- increase the number of indirect participants;
- disseminate information and promotional materials regarding the 2nd round of workshops;
- include the results of the first round of workshops into the 1st issue of COGITO Newsletter planned to be sent in M14;
- promote the idea of Living Lab workshops among sister-projects;
- include information about Living Labs into the 1st promotional video planned to be produced in M14;
- include information about the Living Labs into the 1st leaflet;
- promote Living Lab activities via press releases.

5.4 Risk and COVID impact

Regarding the risks and COVD-19 impact, there is a challenge to conduct workshops only via telco, as some of the topics must be presented on site. Preparing the relevant material to present COGITO tools and train participants online requires a larger amount of effort. It can affect the clear understanding of COGITO's expected outcomes, and cause less interest in the developed tools.

6   COGITO's 1st round of workshops

In order to ensure the smooth creation and management of the Living Labs, ASM, as the responsible partner of the dissemination and coordination of the Living Labs, developed a detailed action plan of all relevant activities. The mentioned action plan defines the most important issues of LL – the objectives, roles of responsible partners, the target audience as well as the concept and methodology. Additionally, a list of proposed actions before, during and after workshops was proposed.

Moreover, the project partners preparing and conducting the workshops were asked to remember to use COGITO dissemination materials available on the project website and follow the project branding outlines defined in report *D9.3 COGITO dissemination and communication plan and associated material.*

To effectively manage the deployment of Living Lab activities, a set of monitoring indicators to be measured during the project duration was defined in the project proposal and included in the LL action Plan. Table 5 presents the targeted parameters as well as numbers that have been achieved.

6.1   Online workshops by RSRG and FER

In COGITO, the establishment of the Living Labs took place in January 2021. The aim of this activity is to collect important feedback from COGITO's stakeholders closely related to the pilot sites (Denmark and Spain). In this way, COGITO aims to improve the design and development of the project's toolbox, promote the outcomes, and engage target groups into the process. Consortium Partners have built a methodology and action plan to set particular workshops within the project duration and invite selected participants to join the Living Labs' activities.

Consortium Partners decided to organise the first event to collect user requirements for the COGITO system. The first workshop was organised on March 29th, 2021 by the industry partner Rhomberg Sersa Rail Group (RSRG). The second one was held on April 14th, 2021 by the industry partner Ferrovial (FER). Both workshops were attended by construction staff and COGITO technical partners.

6.2   Workshops workflow

After a short introduction of the project, workshop goals and structure, attendants were divided into 3 working groups to facilitate fluent brainstorming and discussion. The groups were focused on: *Workflows and Planning*, *Quality Control*, and *Health and Safety*, reflecting the three main areas of application, but also the three Business Scenarios focused on by the consortium about: Workflow, Quality and Safety.

For the **Rhomberg Sersa Rail Group (RSRG) Workshop**, the product and innovation department of RSRG organised an online call with several professionals from the railway construction industry. In total, 15 people with different roles (Site Manager, BIM Manager, Health and Safety Manager as well as Quality Manager) joined the meeting and discussed the topics and worked out the canvas. Together with participants of the COGITO consortium, 33 people attended the workshop.

For the **Ferrovial (FER) Workshop**, the Innovation department from Ferrovial Construction engaged various AEC professionals from the company for their participation in the Living Labs activities in general, but for the requirements workshop in particular.

Overall, 35 attendees (including Project Managers, BIM designers, Site coordinators) participated in Ferrovial's workshops having fruitful discussions and providing valuable feedback.

The MIRO boards from the two workshops were shared for analysis with the technical partners, and more specifically the Use Cases leaders. This analysis enabled the team to:

- confirm and refine the stakeholders' needs and expectations (i.e. limitations of current practice),
- assess the value of the proposed COGITO Use Cases/Tools and set their priorities,
- extract meaningful User Requirements.

6.3   Important results

The workshops' groups identified an extended list of stakeholders, broadly aligned with the initial list of stakeholders defined by COGITO industrial partners. Main stakeholders were identified with regards to the COGITO Use Cases. As deduced from participants' discussions, the main challenges are faced when planning and executing workflows and they include quality and flow-related problems information, project management difficulties, quality of input information, and technology-related problems.

All identified problems usually lead to project delays, lower overall quality, unsatisfied customers and working crew, increased number of accidents, loss of company prestige or reputation, and corresponding loss of new contracts or business opportunities.

Regarding the Business Scenarios and Use Cases defined in COGITO, all were found highly valuable.

The different groups also discussed a list of potential KPIs that could be measured to assess the impact of the COGITO solution.

Finally, the group discussions identified a number of User Requirements which was one of the main purposes of the meeting. User Requirements questionnaire was circulated before the workshops via Newsletter, ECTP and BUILDUP portals, and individual contacts. The integrated questionnaire included 118 questions, and can be found in Annex 2 of *D2.1 Stakeholder requirements for the COGITO system*. While most of the questions were aimed at the collection of SRs, other questions were also aimed at collecting information and confirming the consortium's existing understanding of current practice and challenges associated to it. Detailed analysis of the results was discussed during both workshops and described in D2.1.
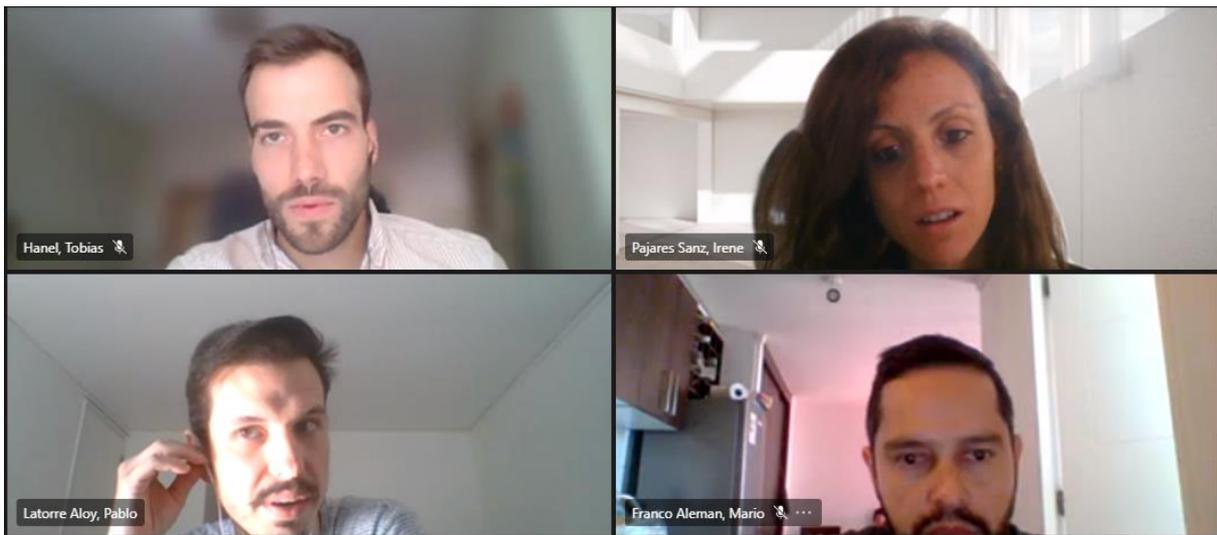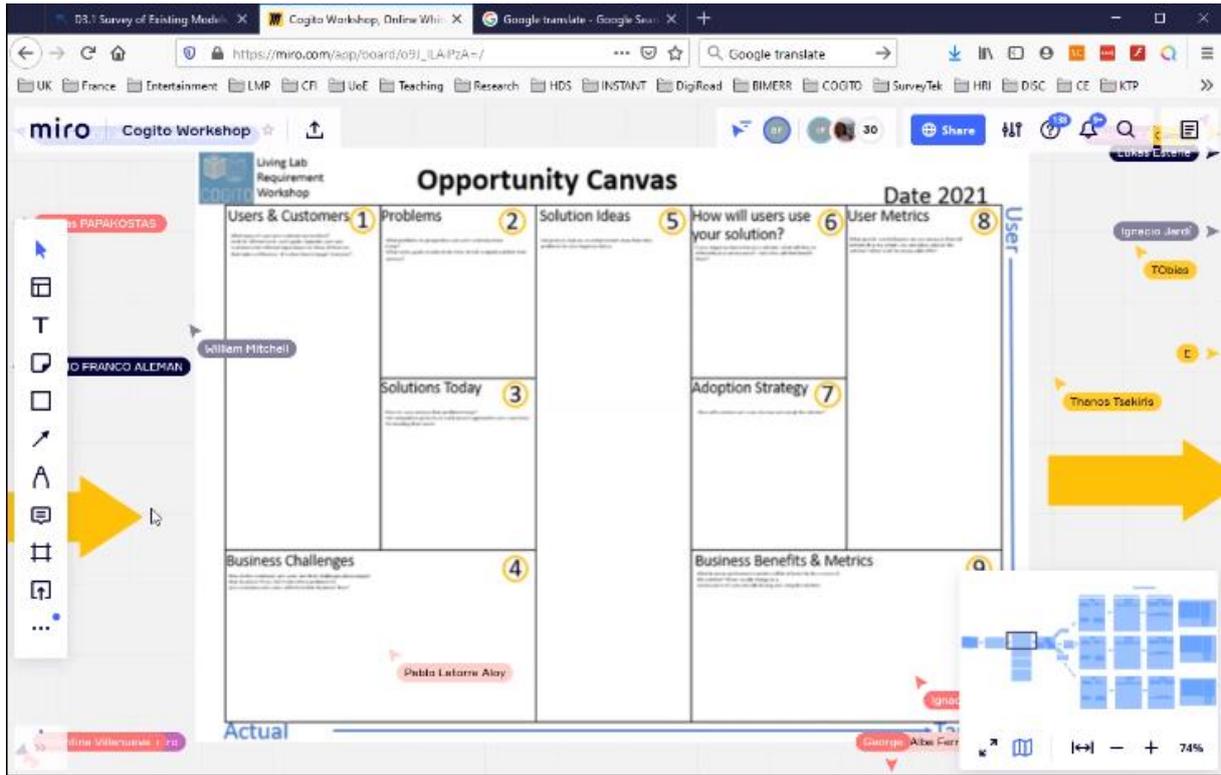

Figure 1: COGITO's Living Lab workshops-FER

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Figure 2: COGITO's Living Lab workshops canvas-FER

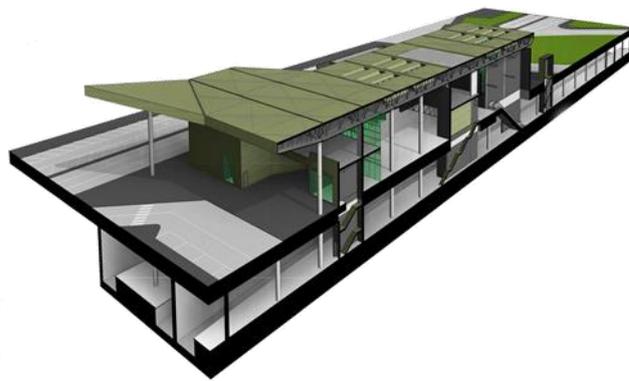**Figure 3: COGITO's Living Lab workshop canvas – overall view**

7   Conclusions

Living Lab activities in the first 12 months mainly consisted in building up the Living Lab community and engaging with it for eliciting meaningful user requirements (reported in *D2.1 "Stakeholder requirements for the COGITO system"*).

Building a Living Lab community is always challenging at the outset, mainly due to professionals are more interested in commenting on and testing solutions once they have developed them, rather than contribute to user requirement elicitation. Nonetheless, the industry partners (FER, RSRG and OLOD) were able to motivate the engagement of many people with relevant experience from across their organisations.

The COVID-19 pandemic situation required that the workshops to be conducted virtually. While this can create logistical and communication challenges during the workshops, it also enabled more people to join without the potential cost of losing an extra day of work (travel, etc.). Regarding the communication and engagement challenges of holding user requirement workshops online, RSRG and FER made effective use of Miro and separated rooms organised around the three main areas of impact of COGITO (workflow, quality and safety). An important learned lesson from those workshops might be that communication about the project goals and the workshops itself could be shared ahead of the activity, so that the attendees have more time to absorb the content and start thinking about their contributions ahead of the workshops.

The questionnaires issued at the end of the workshop were useful but received limited feedback, partially because they may have been a little too long. A lesson learned from this is that the questionnaires could be issued to capture information relevant to requirement elicitation in two stages: first before the workshop to capture information about current practice; and then after the workshop to capture additional information or consolidate information collected during the workshop.

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