Project Acronym:	**BIMERR**
Project Full Title:	**BIM-based holistic tools for Energy-driven Renovation of existing Residences**
Grant Agreement:	**820621**
Project Duration:	**45 months**

DELIVERABLE D10.4
BIMERR DISSEMINATION AND COMMUNICATION PLAN AND ASSOCIATED MATERIAL 3

Deliverable Status:	**FINAL**
File Name:	**BIMERR_D10.4-v1.00**
Due Date:	**30/06/2021 (M30)**
Submission Date:	**30/06/2021(M30)**
Task Leader:	**MERIT CONSULTING HOUSE PC (T10.1)**

Dissemination level	
Public	X
Confidential, only for members of the Consortium (including the Commission Services)	

This project has received funding from the European Union's Horizon 2020 Research and innovation programme under Grant Agreement n°820621

The BIMERR project consortium is composed of:		
FIT	Fraunhofer Gesellschaft Zur Foerderung Der Angewandten Forschung E.V.	Germany
CERTH	Ethniko Kentro Erevnas Kai Technologikis Anaptyxis	Greece
UPM	Universidad Politecnica De Madrid	Spain
UBITECH	Ubitech Limited	Cyprus
SUITE5	Suite5 Data Intelligence Solutions Limited	Cyprus
HYPERTECH	Hypertech (Chaipertek) Anonymos Viomichaniki Emporiki Etaireia Pliroforikis Kai Neon Technologion	Greece
XYLEM	Xylem Science and Technology Management Gmbh	Austria
CONKAT	Anonymos Etaireia Kataskevon Technikon Ergon, Emporikon Viomichanikonkai Nautiliakon Epicheiriseon Kon'kat	Greece
BOC	Boc Asset Management Gmbh	Austria
BX	Budimex Sa	Poland
UOP	University Of Peloponnese	Greece
UEDIN	University of Edinburgh	United Kingdom
NT	Novitech As	Slovakia
FER	Ferrovial Agroman S.A	Spain
UCL	University College London	United Kingdom
MERITCH	Merit Consulting House - Olokriromenes Symvouleftikes Ipiresies Epixeiriseon Idiotiki Kefalaiouxiki Etaireia	Greece

Disclaimer

BIMERR project has received funding from the European Union's Horizon 2020 Research and innovation programme under Grant Agreement n°820621. The sole responsibility for the content of this publication lies with the authors. It does not necessarily reflect the opinion of the European Commission (EC). EC is not liable for any use that may be made of the information contained therein.

AUTHORS LIST

Leading Author (Editor)			
Surname	**First Name**	**Beneficiary**	**Contact email**
Kakardakos	Theodoros	MERIT	th.kakardakos@meritconsultinghouse.eu

Co-authors (in alphabetical order)				
#	**Surname**	**First Name**	**Beneficiary**	**Contact email**
1	Amplianitis	Aris	MERIT	a.amplianitis@meritconsultinghouse.eu
2	Baritantonaki	Angeliki	MERIT	a.baritantonaki@merirtconsultinghouse.eu
3	Delistathi	Despoina	MERIT	d.delistathi@meritconsultinghouse.eu
4	Iroidis	Vasilis	MERIT	v.iroidis@meritconsulitnghouse.eu
5	Kakardakos	Nikos	MERIT	n.kakardakos@meritconsultinghouse.eu
6	Mourkousis	Giorgos	MERIT	g.mourkousis@meritoconsultinghouse.eu

REVIEWERS LIST

List of Reviewers (in alphabetic order)				
#	**Surname**	**First Name**	**Beneficiary**	**Contact email**
1	Werner-Kytölä	Otilia	FIT	otilia.werner-kytoelae@fit.fraunhofer.de
2	Bosché	Frédéric	UEDIN	f.bosche@ed.ac.uk

REVISION CONTROL

Version	Author	Date	Status
0.1	MERIT	24/03/2021	Table of content
0.5	MERIT	16/06/2021	First Draft
0.6	MERIT	25/06/2021	Restructuring of deliverable sections to contain only updates from the previous version of the document that pertain to the relevant reporting period (M19-M30)
0.7	MERIT	30/06/2021	Final comments and corrections by reviewers addressed.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

EXECUTIVE SUMMARY

The main aim of the present report is to (1) update the dissemination and communication plan with all changes since month 18 of the project (previously reported in deliverable D10.3 “BIMERR Dissemination and Communication Plan and Associated Material 2”) and to (2) describe the dissemination and communication activities that took place up to month 30 of the project.

Furthermore, this report aims to specify the updated Key Performance Indicators (KPIs) and their quantified targets, which will constitute the means for evaluating and assessing the activities to be performed in the next period of the project.

1. INTRODUCTION

1.1 PURPOSE, CONTEXT AND SCOPE OF THIS DELIVERABLE

The main purpose of this deliverable is to:

- Describe all the Dissemination and Communication (D&C) activities that took place during the third period of the project extending from month 19 and up to month 30 of the project.
- Evaluate the executed activities towards the specified quantified targets of the Key Performance Indicators;
- Update the D&C plan for the future activities that should be implemented in the remaining time of the project.

1.2 STRUCTURE AND CONTENT OF THIS DELIVERABLE

Chapter 2 presents a summary of the D&C methodology that has been developed and extensively reported in D10.3. The set of KPIs for the evaluation of the D&C performance are also presented.

In chapter 3, the actual D&C actions and results are presented covering the period between month 19 up to month 30 of the project. These results are then assessed and evaluated using the relevant KPIs.

The updated D&C plan is introduced in chapter 4. It will act as a guide for the D&C actions to follow for the remaining time of the project. In the same section an overview of the anticipated D&C actions is also available.

Finally in Chapter 5, an updated version of the risk analysis first developed in D10.2 is presented. This includes risk assessment as well as the appropriate mitigation steps.

2. DISSEMINATION AND COMMUNICATION METHODOLOGY

2.1 METHODOLOGY OVERVIEW

The detailed Dissemination and Communication (D&C) methodology for the BIMERR project was presented initially in D10.2 (M06) and then in was updated in D10.3 by month 18 of the project. Following this methodology, the D&C objectives were defined based on the overall scope of the BIMERR project, the appropriate D&C action audiences were identified and the necessary planning of the said actions was developed. Finally, adequate KPIs were established for the performance of the D&C task to be monitored and evaluated during the entire project duration. These steps are summarized in Figure 1.

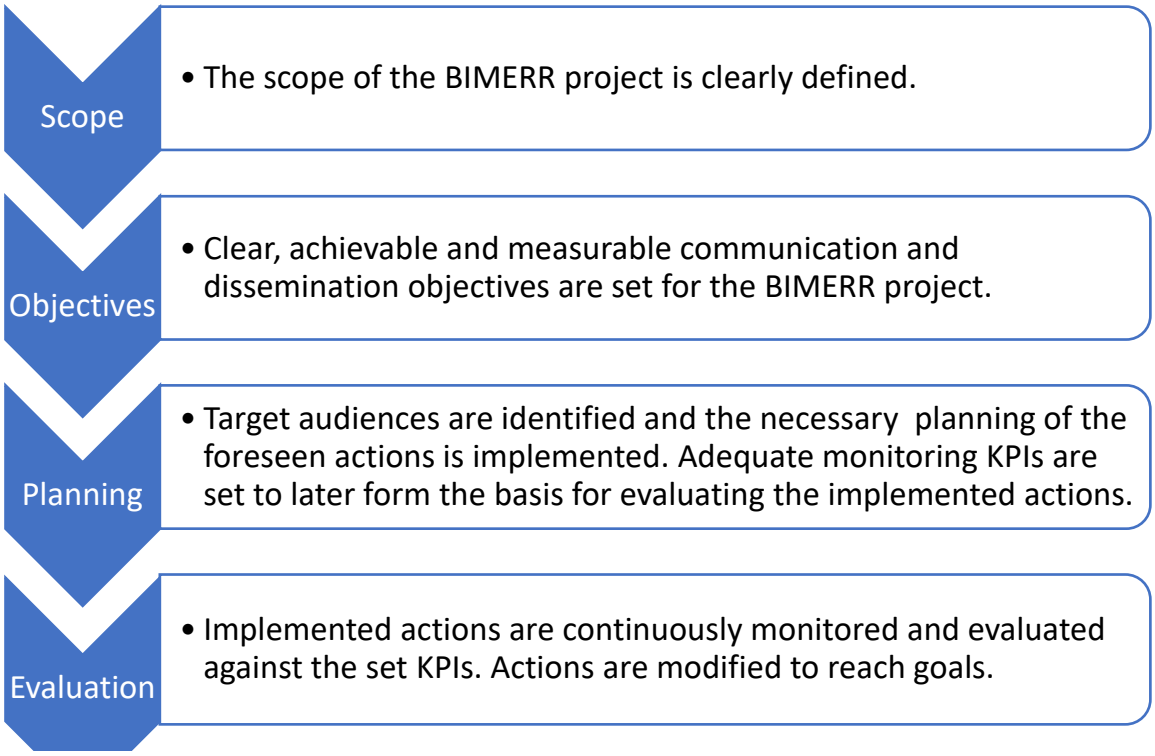


Figure 1 Overview of D&C Methodology

Various D&C actions have already taken place in accordance with the initial planning which foresaw 4 distinct phases during the entire project duration. These phases along with the expected D&C actions are summarized in Table 1. The first year of the project, constitutes the first phase during which the D&C methodology was developed, and the first D&C actions were implemented. Following the developed methodology, three phases were to follow. In each of these phases the progress of the D&C would be monitored, the D&C plan to be followed for the next phase updated and the already implemented actions evaluated using the previously mentioned KPIs. In this framework, the present report targets at presenting and evaluating the D&C actions that were implemented during the third phase of the project (M19-M30) and update the D&C plan to be followed for the coming forth phase (M31-45).

To ensure achievement of the D&C objectives that were set in D10.3, the BIMERR Consortium has continued implementing the foreseen D&C activities and instruments in the period under review (M19-M30).

These included:

- Living Lab, to raise awareness and achieve wide engagement of demo stakeholders;
- Project website and social media presence;
- Scientific publications and presentations;
- Participation in fora & thematic events;
- Participation and presentation of the project in other networks and groups;
- In-house presentations to existing clients / collaborators and brainstorming for further extending the BIMERR solutions to other applications and markets;
- Contributions to standards;
- Active cooperation with other projects in relevant fields;
- Liaison with professional communities and networks;
- Promotional content and D&C material (promotional videos, newsletters, press releases, brochures, posters, slides, and leaflets presenting the project concept and achievements)

Detailed status and achievements for these activities is given in chapter 3 of the present document. Furthermore, they have been implemented targeting the foreseen audiences of interest that have already been identified and documented in D3.1 and linked with the detailed D&C objectives as defined in D10.3. These audiences can be seen in Figure 2 and are also relevant to the exploitation strategy of BIMERR that is currently under development. These groups are:

- **Architects, Engineers and Construction Industry (AEC Industry)**
- **Building Residents / Energy Consumers**
- **Technological Platforms and Professional Association and Initiatives**
- **Scientific Community**

Their connection to specific D&C actions and activities is part of the methodology to be followed and are explicitly described in D10.3.

Figure 2 Communication and Dissemination Target Groups

2.2 EVALUATION METHODOLOGY

One of the most important factors for the success of the communication and dissemination strategy & action plan of BIMERR has been the establishment of clear and evidence-based monitoring, evaluation, and follow-up framework. This framework is based on specific KPIs that were developed from the beginning of the project and are constantly being used as the monitoring tool during reviewing of the performance of BIMERR's dissemination plan. Each individual activity is linked to a dedicated KPI to ensure the progress of the activity and evaluate whether further action is required to guarantee success.

This monitoring process is continuously fed by the BIMERR target groups, whose role is essential for receiving feedback on qualitative and quantitative aspects of the informative content and the communicated message during each phase of the project. Through this procedure, any necessary improvement action is being communicated on time to all partners by the Dissemination and Communication Manager to discuss, design, update and include them to the upcoming BIMERR dissemination and communication activities.

2.2.1 KEY PERFORMANCE INDICATORS (KPIS) DEFINITION

The BIMERR D&C key performance indicators in BIMERR are based on the European Commission's requirements. They concern the following actions:

- Organization of a conference
- Organization of a workshop
- Press release
- Non-scientific, non-peer reviewed publication
- Exhibition
- Flyer
- Training
- Social media
- Website
- Communication campaign (radio, TV)
- Participation to a conference
- Participation to a workshop
- Participation to an event other than a conference or a workshop
- video/film
- Brokerage event
- Pitch event
- Trade fair
- Participation in activities organized jointly with other H2020 projects
- Other

Figure 3 Indicative EC required D&C actions

2.2.2 MEASUREMENT KPIS

In this section, the detailed D&C KPIs are presented in Table 1. These metrics have been updated from their initial version presented in D10.2 "BIMERR dissemination and communication plan and associated material 1", which was submitted in month 6 of the project. These KPIs have guided the D&C actions ever since and will continue to do so until the end of the project.

Table 1 Dissemination and communication Key Performance Indicators per project phase

DISSEMINATION AND COMMUNICATION SCOREBOARD							
	Key Performance Indicators						
Dissemination Activity	**Description**	**Target Value for Phase I** (M1 - M12)	**Target Value for Phase II** (M12 - M18)	**Target Value for Phase III** (M18 - M30)	**Target Value for Phase IV** (M30 - M45)	**Total target value**	**Means of Verification**
Living labs	Nr of events	3	3	3	3	12	Archives on organized events
Project website	Nr of unique visitors	700	800	1200	1300	4000	Google analytics
	Average duration of visits	2 min	3 min	3 min	>3 min	2.5 min	
	Nr of page views	3000	2000	2500	3500	11000	
Social Media (Twitter, Facebook, LinkedIn)	Nr of followers	100	100	250	300	750	Social Networks' built-in analytics
	Nr of posts	20	30	40	50	140	
	Nr of retweets/reposts/comments	20	30	60	60	170	
Scientific publications	Nr of unique publications	1	2	5	6	14	Enumeration of all published articles

Participation in fora and thematic events	Nr of events	4	6	8	10	28	Nr of attendances in events
Contributions to standards	Nr of events/workshops/presences	0	0	2	3	5	attendance to events
Liaison with Professional communities and networks	Nr of events/workshops/telos/presentations	0	1	3	3	7	attendance to events
Presentations in other networks and groups	Nr of presentations	1	2	5	7	15	Archives of presentations participation
In-house presentations to existing clients and brainstorming for extending BIMERR solutions to other applications and markets	Nr of organized events	2	2	3	4	11	Archives of in-house events
Promotional Content and Dissemination Material	Brochure	1	0	1	0	2	Enumeration of published material
	Newsletter	2	1	3	4	10	
	Press release	2	2	3	3	10	
	Poster	0	1	1	1	3	
	Roll-up	1	0	1	0	2	
	Leaflet	0	0	1	1	2	

3. PROGRESS OF COMMUNICATION AND DISSEMINATION ACTIVITIES

3.1 IMPLEMENTED DISSEMINATION AND COMMUNICATION ACTIONS M19-M30

All the D&C actions and activities up to month 18 of the project have been reported in detail in D10.3. In this section all the activities and actions that were implemented from month 19 up until month 30 are reported.

The period in review continued to be adversely impacted by the ongoing COVID-19 pandemic, restricting physical presence to all dissemination and communication events. The foreseen dissemination and communication actions were still implemented according to the dissemination and communication plan with deviations mainly pertaining to the execution of the BIMERR Living Lab Workshops that were postponed from their initial execution timeframe by six months. After virtual presence in events has gradually become the new norm during the pandemics, the BIMERR Living Labs were also organized online. More details for these are given in section 3.1.5.

3.1.1 PROJECT WEBSITE

The project website (https://bimerr.eu) was updated. As can be seen in Figure 4 this involved the new section of Results & Downloads under which three subsections are being nested. The Deliverables subsections give access to the public project deliverables that can be downloaded. Similarly, the section Articles & Papers as well as the Communication Material section give access to relevant material.

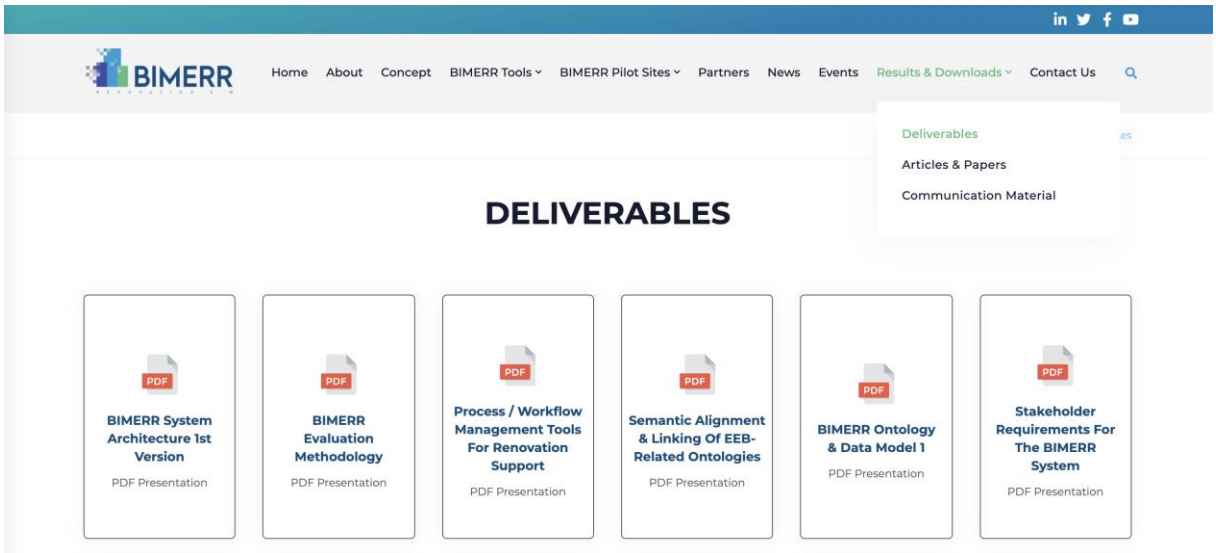


Figure 4: Results & Downloads section of the website

The website traffic as well as key performance metrics continued to be monitored using the available google analytics tools. Google analytics data for the period in review (M19-M30) as well as their interpretation is given in section 3.3.2

3.1.2 SOCIAL MEDIA

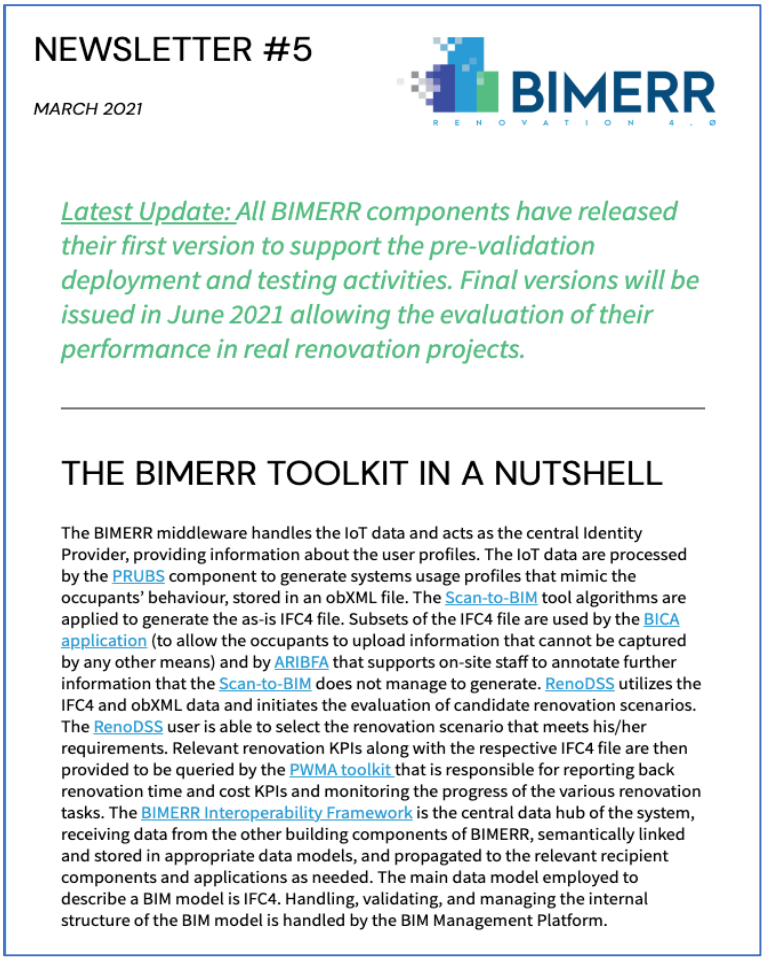
The social media channels of the project continued to get updated content from all partners in accordance with the predefined and agreed social media posts timeline. As a result, there is at least one update in the social media channels of the project each week.

3.1.3 LIVING LABS

By this point if the project (M30), it was anticipated that 6 living lab events should have taken place in total. Three have already taken place in the first six months of the project while three more (one per pilot site in Spain and Poland and one in the Greek pre-pilot site) were initially scheduled to take place by month 18 of the project. However, due to the restrictions applied all over Europe because of the health crisis, the second round of living lab workshops was initially postponed for M26 of the project in hope that restrictions on traveling would have been lifted by then. As this did not occur, it was decided that the consortium should proceed to implement the workshops using an online format. At this stage, the scope was to present as extensively as possible the functionalities of the BIMERR tools under development to building renovation stakeholders as dissemination activity as well as an opportunity for the consortium technology developers to ask and receive feedback for improving their tools. Two of these workshops have already taken place (for AEC audience in Spain and Poland) and a third one is currently being organized to take place by the end of month 30 for a Greek audience.

3.1.4 NEWSLETTERS

During this period three more newsletters were scheduled to be issued by the project. One in month 23 of the project (November 2020), one in month 26 (February 2021) and one in month 30 (June 2021). Newsletter #4 contained the latest news from the project tool development, pre-validation activities and pilot site development. The fifth edition of the newsletter was due around the time where the first versions of all BIMERR tools begun rolling out towards their first fully operational releases. This was communicated together with an overall overview of the interaction between all the available BIMERR tools. The format and the layout of the newsletters was common with the general project layout and colour picking. A screencast of the newsletter #5 is available in Figure 5 while the full newsletter can be seen in ANNEX I: BIMERR NEWSLETTERS



NEWSLETTER #5

MARCH 2021

Latest Update: All BIMERR components have released their first version to support the pre-validation deployment and testing activities. Final versions will be issued in June 2021 allowing the evaluation of their performance in real renovation projects.

THE BIMERR TOOLKIT IN A NUTSHELL

The BIMERR middleware handles the IoT data and acts as the central Identity Provider, providing information about the user profiles. The IoT data are processed by the PRUBS component to generate systems usage profiles that mimic the occupants' behaviour, stored in an obXML file. The Scan-to-BIM tool algorithms are applied to generate the as-is IFC4 file. Subsets of the IFC4 file are used by the BICA application (to allow the occupants to upload information that cannot be captured by any other means) and by ARIBFA that supports on-site staff to annotate further information that the Scan-to-BIM does not manage to generate. RenoDSS utilizes the IFC4 and obXML data and initiates the evaluation of candidate renovation scenarios. The RenoDSS user is able to select the renovation scenario that meets his/her requirements. Relevant renovation KPIs along with the respective IFC4 file are then provided to be queried by the PWMA toolkit that is responsible for reporting back renovation time and cost KPIs and monitoring the progress of the various renovation tasks. The BIMERR Interoperability Framework is the central data hub of the system, receiving data from the other building components of BIMERR, semantically linked and stored in appropriate data models, and propagated to the relevant recipient components and applications as needed. The main data model employed to describe a BIM model is IFC4. Handling, validating, and managing the internal structure of the BIM model is handled by the BIM Management Platform.

Figure 5: Newsletter#5 excerpt

The sixth newsletter for this period is currently under development will focus on the latest developments from the pilot renovation sites. Scope is to gather and report progress as the first renovation interventions in the pilot are beginning to be implemented. The respective newsletter will be issued in the coming months once enough publishable content is gathered and compiled.

3.1.5 COMPLETED DISSEMINATION ACTIVITIES

From month 19 until month 30 of the project, BIMERR partners continued participating in events and completed a series of activities. However, as the ongoing COVID-19 pandemic persisted, all physical meetings were prohibited and as a result all relevant events continued being held online. Table 2 provides all the information regarding participation of BIMERR partners in events and completed dissemination activities.

Table 2:Completed dissemination activities

Date of activity/ Responsible partner	Type of activity	Place of event/ number of participants	Description of activity	Material (photos, slides, leaflets, etc.)
7,9 and 13 July 2020, Agnieszka Chojecka (BX)	Internal Press release	Budimex, Poland	Internal Press Release and external publications based on BX Press Release. Press release related to the participation of Budimex in the BIMERR project and the BIMERR Consortium	Link1 , Link 2, Link 3 , Link 4
9 July 2021, Tobias Hanel (FER)	Internal Press release	Ferrovial, Spain	Press release related to the participation of FER in the BIMERR project. The aim of this press release was to present the work that has been made regarding the selection of the pilot site and the efforts related to the establishment of a good relationship the with building owners and residents (via participation to a web radio program). This press release was also published in FERROVIAL's blog and external Webpage Language: Spanish	Link 1, Link2
25 Sept 2020/ BOC	Booth	Vienna Austria/ 30	10:15 - 11:00: The Industrial OMILAB Innovation Corner in Vienna: Modelling of Intelligent Behavior	Link
25 Sept 2020/ CERTH	Webinar	online	The IsZEB Cluster, in collaboration with CERTH/ITI, is hosting on Friday the 25th of September 2020 a webinar entitled «A new Digital Era for the Construction Sector in Greece through BIM Technologies» The event, with special focus on the Building Information Modelling (BIM) technology, aims to inform companies and individual experts of the wider construction industry about the BIM technology itself as well as the	Link

			advantages and benefits of using it through real-case applications. Representatives from the European Commission and the Technical Chamber of Greece (TEE) presented at both European and National level the legislations, aspirations and incentives provided, regarding actions and initiatives for the digitization of the construction Industry. The second part of the event was dedicated to the distinguished companies of the AEC industry, which presented practical applications and examples of projects that successfully integrated BIM solutions, whereas at the final part, the audience had the opportunity to get informed about new tools and practices emerged from research activities, aiming to further develop BIM technologies. Presentation by Thanos Tsakiris: BIM & AR: New Refurbishment Services – The BIMMER project	
01 Oct. 2020/UEDIN	Conference	online	Invited Talk presenting BIMERR SICSA conference	
27-30 Oct 2020	Workshop	Online	In the context of the 2020 edition of the Sustainable Places event, BIMERR participated in a joint workshop in collaboration with other Horizon 2020 projects dedicated to research in the field of digital construction and buildings renovation. In addition to BIMERR, the other participating projects were: BIM4REN, SPHERE, BIM4EEB, BIM-SPEED, DIGIPLACE, BIMERR, BIMzeED, ENCORE and RenoZEB. Under the title "Digitalization tools for an energy efficient renovation", this selection of EU-funded projects gathered to discuss a common strategy to share	Link

			findings on research for construction, moreover, to discuss the major technical and non- technical challenges faced, especially when dealing with the existing building stock and a segmented construction sector. The workshop was divided into two sections; in the first section, each project pitched their progress and intermediate achievements. In the second section, a selection of innovative tools was presented and demonstrated in a real application. To conclude, the projects representatives agreed that strengthening the synergy among their different but complementary projects would be a benefit for all. A post-workshop report is available on the MDPI website or you can download here from our website.	
28 Oct. 2020/UEDIN	Conference-Symposium	Online	ISARC 2020 (37th International Symposium for Automation and Robotics in Construction) Full paper accepted and presented in October 2020 in an online event	
03 Nov. 2020/ Stefan Fenz (XYLEM)	Webinar	Online/ Faculty of Engineering, Pancasila University	ICT Application in Building Construction and Renovation. BIMERR RenoDSS presentation and live demo	
05 Nov. 2020/ Stefan Fenz (XYLEM)	Digital findet Stadt Challenge	Online	BIMERR RenoDSS presentation and live demo	Link
04 Dec 2020/ Frédéric			Invited Speaker SUS BIM Course	

Bosché (UEDIN)				
10 Jan 2021/ Dibya Mohanti (UEDIN)	Conference / Workshop	Online/ 15 participants	ICPR 2020 - PRAConeBE Workshop Automatic MEP Component Detection with Deep Learning	
21 Jan 2021/ Frédéric Bosché (UEDIN)	University of Edinburgh, Civil Engineering Seminar Series	Online	University of Edinburgh, Civil Engineering Seminar Series Presentation Technical Overview and Challenges of BIMERR Project	
22 Apr 2021/ Frédéric Bosché (UEDIN)	Symposium/ 70+ participants	Online	GNI International Symposium on Artificial Intelligence for the Built World Symposium for the launch of the TU München new TUM Georg Nemetschek Institute Artificial Intelligence for the Built World (GNI), Presentation: Synergies of AI and Digital Twinning in Construction Reference to the work done by UEDIN in BIMERR	Link
06 Jun 2021/ Raúl Garccia (UPM)	Workshop	Online	Organization of the International Workshop on Semantic Digital Twins (SeDiT 2020)	Link
08 June 2021/ Serge Chávez (UPM)	Conference / 10 participants	Online	Participation at the Poster & Demo session of the European Semantic Web Conference (ESWC) 2021 Presentation of Chowlk for the conceptualization of ontologies, and demonstration of its application in the BIMERR use cases.	
10 June 2021/ Frédéric Bosché (UEDIN) + Maria	12 participants	Online	Presentation in event Foresight Works of the Ontology / data model in 2 EU projects to promote BIMERR expertise and use of ontology in construction digitisation.	

Poveda (UPM)				
11 June 2021/ María Poveda (UPM)	Workshop /10-20 participants	Online	EEB sister projects ontologies workshop Scope: Present ontology developments in EEB sister projects and find synergies. Promote BIMERR results ontologies, mappings and Chowlk	
20 June 2021/ Frédéric Bosché (UEDIN)	Symposium/ tpc	Online	Keynote speaker in: CVPR Workshop and Challenge on Computer Vision in the Built Environment for the Design, Construction, and Operation of Buildings. Presentation: Scan-to-BIM for Energy Efficiency Renovation of Buildings Scope: Promote the Scan-to-BIM + BIM-MP + RenoDSS pipeline	Link
29 June 2021/ Frédéric Bosché (UEDIN)	Symposium/130 + participants	online	Keynote speaker in: Heriot-Watt University Malaysia - SIG Research Network Symposium #2 Presentation: Recent Advances in Automation in Construction Scope: Promote Scan-to-BIM work done as part of BIMERR	Link

3.1.6 PUBLICATIONS

The submitted and accepted publications of the project for months 19-30 are presented in Table 3. Furthermore, work related to the methodology applied in BIMERR was submitted by UPM under the title "LOT An industrial oriented ontology engineering framework" at the journal "Engineering Applications of Artificial Intelligence". This submission still awaits review. Suite5 has compiled a paper with the title "The BIMERR Interoperability Framework: Towards BIM Enabled Interoperability in the Construction Sector". This work will be submitted on July 30 to be part of the Proceedings of the 38th ISARC, Dubai, UAE. Once accepted, more details about the above-mentioned submissions from UPM and Suite 5 they will be reported accordingly.

Table 3: BIMERR Publications

Authoring Partner and Date	Publication Title	Publisher/conference presented	Repository Link
Serge Chavez-Feria, **Giorgos Giannakis,** Raul Garcia-Castro, **Maria Poveda-Villalon** 17 Jun 2020	From obXML to the OP Ontology: Developing a Semantic Model for Occupancy Profile.	8th Linked Data in Architecture and Construction Workshop - LDAC2020	Link
Enrique Valero, Dibya D. Mohanty and **Frédéric Bosché** 28 Oct 2020	Development of an open-source Scan+BIM Platform	37th International Symposium on Automation and Robotics in Construction (ISARC 2020)	Link
John Kufuor, Dibya Debadarsini Mohanty, **Frédéric Bosché** and Enrique Valero, 10 Jan 2021	Automatic MEP Component Detection with Deep Learning	ICPR2020 The 25th International Conference on Pattern Recognition, Milan, Italy, January 10, 2021.	Link
Farshid Tavakolizadeh, Shreekantha Devasya 14 Apr 2021	Thing Directory: Simple and lightweight registry of IoT device metadata	Journal of Open-Source Software	Link
Serge Chávez Feria , Raúl García-Castro, **María Poveda-Villalón**	Converting UML-based ontology conceptualizations to OWL with Chowlk	European Semantic Web Conference ESWC	Link
Dimitrios E. Kontaxis, **George V. Tsoulos,** Georgia Athanasiadou 5-7 July	Wireless Sensor Network Topology Design for Building Information Modelling	MOCAST 2021	Not yet available

3.2 PARTNERS ROLES – PROCEDURES

3.2.1 EVENTS PARTICIPATION PROCEDURE

During the project implementation it was observed that concise directions about participation in dissemination activities should be provided to partners and a clear internal procedure should be created for events participation.
Thus, it was decided that the procedure that every partner should follow for publications and participation in future events should be:

- Partners who want to participate in a dissemination event, send an email with a short description/argumentation to the PC and to MERIT.
- If MERIT does not object, the request is deemed granted.
- If MERIT objects, then the PC has the final decision (if necessary, after consulting the Technical Manager and the Scientific Manager)

3.2.2 SOCIAL MEDIA POSTS TIMELINE

Based on the set KPIs, the BIMERR social media channels should be updated in a weekly basis, to reach the relevant targets. To this end, all partners continued to be triggered to participate in this task and thus, the initial list for the "post of the week", continued to be used as a guide. Through this mechanism, every Friday one partner has been responsible to send a social media post to the dissemination and communication manager of the project, which was then posted in the relevant channel by Monday. This increases the reach and impact of the post as Monday mornings are always more busy slots regarding social media engagement and interaction. All partners participated according to the plan, contributing periodically. It is foreseen that until the end of the project, each partner will have contributed seven times in total.

Some examples of inputs that were provided are:

- A post/tweet with updates/news on the progress of the partner's work.
- A link to a video related to the progress of the BIMERR project
- A link to a relevant article/studies or news for the BIMERR project (1-2 sentences)
- Participation in event or conference (also including photos and basic info of the event)

Three such posts from Facebook, LinkedIn and Twitter can be seen in Figure 6, Figure 7, and Figure 8 respectively.

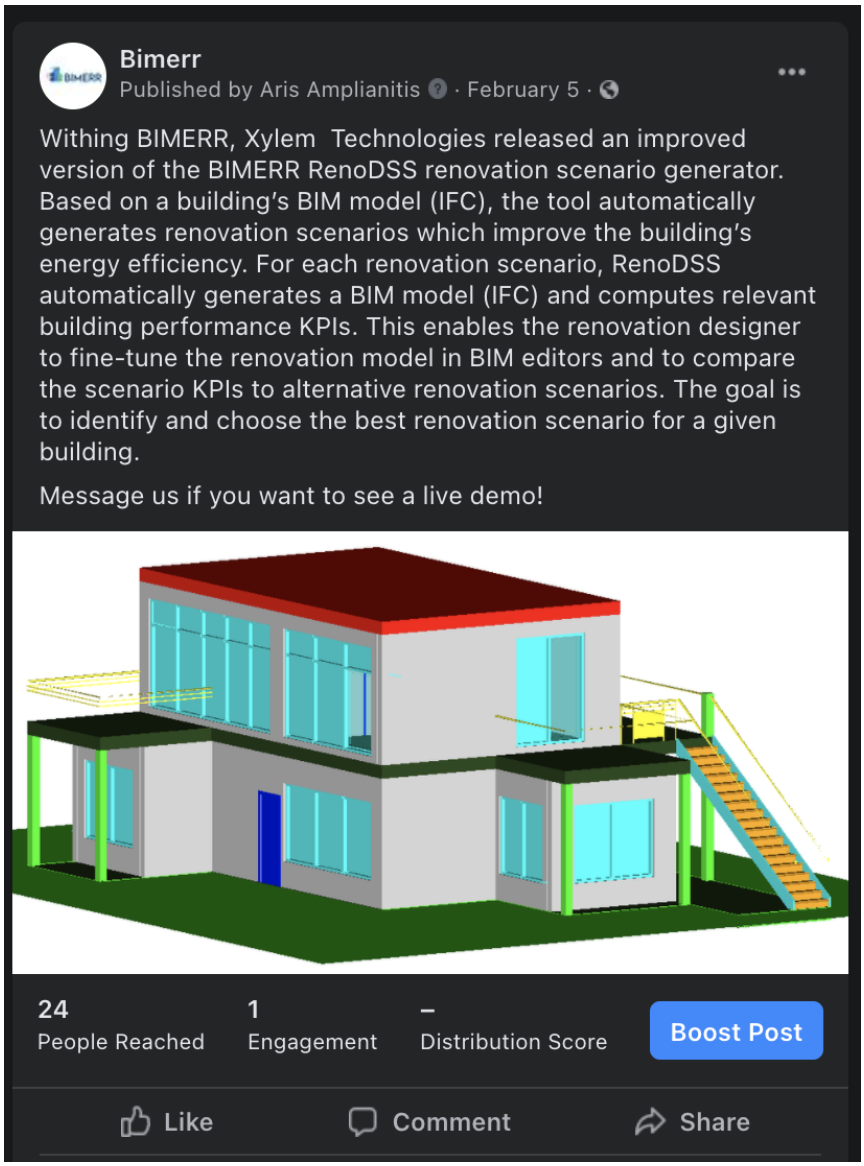


Figure 6 Facebook post with content from Xylem Technologies

BIMERR
159 followers
1mo •

UBITECH will have released the final version of Building Information Secure Provisioning (BISP) tool by the end of June 2021. BISP empowers the BIMERR Platform with an out-of-the-box Attribute Based Access Control (ABAC) mechanism, which will supply the data consumers with the requested data to the supported format. Additionally, BISP will apply the relevant access policies based on the predefined strategies for the data that will have been stored into the BIMERR Interoperability Framework (BIF).
More specifically, as soon as a dataset has been created in BIF, the data provider will be able to define the data consumers that will be able to access and retrieve the specific dataset. The definition of the access policies is performed through a set of rules that are provided through the relevant User Interface. In the final version, the attributes of access policies will be further enhanced, so that the data providers will be able to extend the level of accessibility of their data.

#bimservices #bimmodeling #bimmanagement #h2020energy #eufunding #bimerr_tools #researchproject #innovation

8

Figure 7 LinkedIn post with content provided by UBITECH

BIMERR @EUBIMERR · 22/6/21

Pre-validation sensors installation has been completed for the Greek pilot by Conkat. This provides the opportunity to verify the data flow and several @EUBIMERR tools, before the main installations in the pilot sites, that will follow in the next months.
Stay tuned!
#H2020 #BIM

2 2

Figure 8 Twitter post with content provided by Conkat

3.3 EVALUATION OF IMPLEMENTED ACTIONS M19-M30

As presented in Chapter 2, there exist specific D&C KPIs for monitoring the D&C performance. Table 4 compares these quantified targets of the project with the current performance at month 30 of the project. The targets refer to cumulative numbers covering all three previous periods extending up to month 30.

Table 4: Dissemination and communication targets vs current status

Dissemination Mechanism	**Description**	**Cumulative Target for Phase I & II & III** (M01 – M30)	**Status in month 30**
Living labs	Nr of events	6	**5**
Project website	Nr of unique visitors	2700	**5143**
	Average duration of visits	3 min	**01:51**
	Nr of page views	7500	**15213**
Social Media (Twitter, Facebook, LinkedIn)	Nr of followers	450	**380**
	Nr of posts	90	**95**
	Nr of retweets/reposts/comments	110	**>150**
Scientific publications	Nr of unique publications	8	**7**
Participation in fora and thematic events	number of events	18	**16**
Contributions to standards	nr of events/workshops/presences	2	**7**
Liaison with Professional communities and networks	Nr of events/workshops/TelCo/presentations	4	**4**

Presentations in other networks and groups	Nr of presentations	8	**8**
In-house presentations to existing clients and brainstorming for extending BIMERR solutions to other applications and markets	Nr of organized events	7	**5**
Promotional Content and Dissemination Material	brochure	2	**1**
	newsletter	6	**6**
	Press release	7	**7**
	poster	2	**1**
	roll-up	2	**1**
	leaflet	1	**0**

According to the evaluated status of the implemented dissemination and communication activities up to month 30 of the project, the following conclusion can be inferred per distinct activity.

3.3.1 LIVING LABS

From the 3 Living Labs scheduled to take place during the period in review (M19-M30, two have already taken place (for AEC audience in Spain and Poland) and a third one is currently being organized to take place by the end of month 30 for a Greek audience. The workshops were held online and had a duration of approximately 2 hours. During this time, technology developing partners presented live demonstrations of their tools showcasing basic capabilities and functionalities. The partners that participated were UEDIN showcasing the Scan-to-BIM tools, Xylem Technologies with RenoDSS, CERTH with ARIBFA and Novitech with PWMA for project managers. After the workshop, feedback questionnaires developed by the technology developing partners presenting their tools were sent to the participants. The workshop is Spain attracted 44 participants in total. Similar format was followed for the workshop in Poland. The participant number, however, was unsatisfactory since only 3 participants had remained towards the end of the session. To mitigate this, it has been decided to invite again stakeholders from Poland to attend the third workshop to be organized by CERTH in July. More details about the living lab activities will be available in deliverable D10.7 which will be submitted by month 32 of the project.

3.3.2 PROJECT WEBSITE

Regarding the project website data, as extracted from the analytics, the results are generally satisfactory since for most of the set KPIs, values reached are within the foreseen margins. As can be seen in Figure 9, a key metric that is below the targeted value, however, is the average duration of the website visits which at this point remains at 1 minute and 51 seconds while the target value was set to at least 3 minutes at this point of the project. To tackle that, more relevant content needs to be available, with more engaging material such as videos, animations, interesting results, and project outcomes. This is strategically set as a target to be achieved during the coming project period and it is foreseen to be facilitated by the project evolution that will soon make available material and news from tool implementation in the pilot sites. Internal tool development has up to this point been the main focus of the project. These activities are inherently much more introvert compared to the pilot site activities where the developed tools will be put to practise and will engage with industry stakeholders.

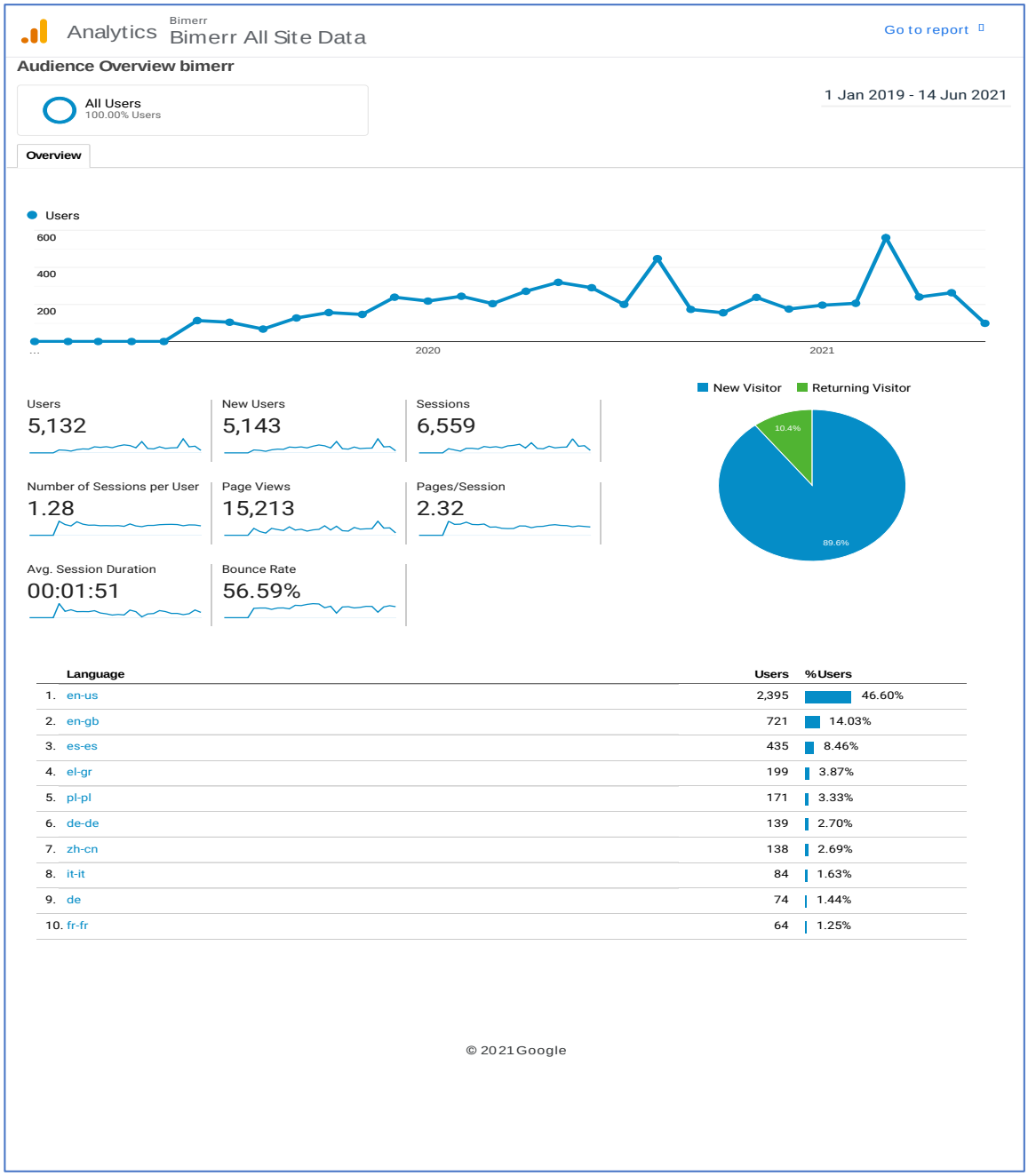


Figure 9 BIMERR website cumulative analytics up to M30

3.3.3 SOCIAL MEDIA (TWITTER, FACEBOOK, LINKEDIN)

About the social media accounts, the actual number of followers is slightly below the intermediate target we have set in the Dissemination and Communication Plan (DCP) for this period. Nevertheless, this number will very likely rise, when the first results from the pilot renovations are published and more concrete results of the BIMERR tool development become available. Scope is to use more impactful and engaging content that will attract followers. Pilot demos are by default project stages with more material to be

shared and showcased. The rest of the quantified results of social media are above the targets, indicating that the impact of the BIMERR activity in this channel remains higher than predicted.

3.3.4 SCIENTIFIC PUBLICATIONS

Regarding scientific publications, until month 30 of the project six publications have already been approved while two more are under evaluation. Once accepted the total number of publications (8) will have reached the relevant KPI which is set at 8 publications by month 30 of the project. In case the two submission that are currently waiting evaluation are eventually rejected, the necessary measures will be taken to make sure the publication target is reached by the end of the project.

3.3.5 PARTICIPATION IN FORA AND THEMATIC EVENTS

During this first period, it was anticipated that the consortium will have participated in 18 external thematic events or fora. This target has indeed been achieved despite the ongoing pandemic which although initially resulted in constant cancelations of all events requiring physical presence, it eventually spurred an increasingly intensive use of online formats for these events. Presenters and audiences are gradually becoming more accustomed to the new reality that the pandemic established and participation to workshops remains active. Many of the events that the partners have already participated in, are recurring events with a yearly occurrence. Partners have already indicated these events as target events, which means that a certain level of participation is already on schedule and can be safely anticipated for the coming period.

3.3.6 CONTRIBUTIONS TO STANDARDS

Task 10.5 begun in month 18 and has been running during the entire period currently under evaluation in the present document (M19-M30). One of the objectives of WP10 has been to promote BIMERR outcomes to the appropriate standardization bodies and committees. Work towards that is being reported in detail in D10.12. The following steps have been implemented so far:

1) survey of the current participation of partners in standardization initiatives.
2) mapping the BIMERR components to the standards being used.
3) identification of potential outcomes of the project that could be promoted or used as input within standardization activities.

This work and the experience of standardization activities lead to propose action points for promoting BIMERR outcomes to organizations such as W3C WoT Working Group, W3C Linked Building Data Community Group, and ETSI.

In more detail, the list of target standardization initiatives is:

- W3C **Web of Things** WG (**FIT** leading, UPM):
  - To propose BIMERR Use case
  - To contribute to the WoT directory description. Origin: BIMERR Middleware
  - To develop the Reference for WoT Thing Directory. Origin: BIMERR Middleware
- W3C **Linked Building Data** CG (**UPM**):
  - To propose BIMERR Use case
  - To promote BIMERR models
- **ETSI ontologies** (**UPM**):
  - SAREF4BLDG review based on BIMERR experience

Actions of the consortium that have already been implemented to address standardization initiatives are:

- BIMERR Use case has been published[1] within the W3C WoT Interest Group.
- Contributions as co-editors of the Web of Things (WoT) Discovery[2].
- Contributions to development of tooling for WoT Discovery implementation reports
- Reference for WoT Thing Directory[3]
- WoT base ontology extension for discovery[4]
- BIMERR use cases proposed to LBD CG[5]

Other actions taken in relation with standardization efforts include:

- FIT and UPM participating as Program Committee of the W3C Smart Cities workshop organized by the W3C6.

[1] https://www.w3.org/TR/2021/NOTE-wot-usecases-20210518/#connected-building-energy-efficiency
[2] https://www.w3.org/TR/wot-discovery/
[3] https://github.com/linksmart/thing-directory
[4] https://github.com/w3c/wot-discovery/tree/main/context
[5] https://github.com/w3c-lbd-cg/lbd/pull/20

- UPM participation in EEB sister projects meeting to promote a joint effort to propose common models to LBDCG and ETSI ontologies.
- UPM participation in LBDCG calls to support the creation of working groups to develop models for energy efficiency use cases.
- Identified potential liaison with IFC 5.
- HYP initiated contacts with the StandICT project[7] for joining efforts towards standardization.
- Attend CEN-CENELEC webinar about BIM and CEN/TC 442.
- Participation in the European Commission survey on H2020 projects in the context of the upcoming codes of practice "Code of Practice for researchers on standardization"

3.3.7 LIAISON WITH PROFESSIONAL COMMUNITIES AND NETWORKS

Up to month 30 of the project, it was predicted that four events should have taken place for liaison with professional communities and networks. Up to month 18 no such actions were implemented. The four actions that took place in the period in review are:

- Webinar: "A new Digital Era for the Construction Sector in Greece through BIM Technologies" organized by The IsZEB Cluster, in collaboration with CERTH/ITI. Experts, industry professionals, academics and representatives of legislative and institutional bodies provided valuable insights to the audience in order to strengthen and digitize the construction industry. Ultimately, the goal of the event was for companies and industry professionals to gain a better understanding of the technology that is already shaping a new future. In this framework, BIMERR project and its goals was presented by Thanos Tsakiris in his presentation: BIM & AR: New Refurbishment Services – The BIMMER project.
- Live demo of BIMERR RenoDSS tool by Xylem Technologies in the Digital findet Stadt Challenge, a Business Innovation Management Cluster.
- Promotion of BIMERR expertise and use of ontology in construction digitisation in online workshop organized by Foresight Works.
- Presentation of BIMERR Project during The OMILAB Day in Vienna, Austria. OMILAB Day is considered a forum of exchange between nodes, interested stakeholders, developers, and users to discuss ideas on modelling approaches and how they support novel business models, provide means for evaluation and assessment, and enable creativity.

[7] https://www.standict.eu/

Furthermore, this target is foreseen to be partially fulfilled with the 3rd round of the Living Lab workshops that will be targeting AEC stakeholders via the professional networks of the pilot partners which are both key players of the construction industry in their respective countries but also internationally.

3.3.8 PRESENTATIONS IN OTHER NETWORKS AND GROUPS

Regarding the presentations in other networks and groups, this target was achieved with 8 activities in total achieving the relevant target. These events included participation in online workshops, webinars, and university lectures. More details can be found in Table 2.

3.3.9 IN-HOUSE PRESENTATIONS

Up to month 18 of the project, 5 such activities were implemented and reported in D10.3. In the period under review and mostly due to the COVID situation, no such dedicated presentations were organized while the cumulative target was 7 such events by month 30. This means that this metric was not achieved, and relevant actions need to be implemented to remedy the deviation.
At this point it should me mentioned that following relevant suggestions by the project monitor, the BIMERR project technical manager and project manager met stakeholders from pilot partners (Ferrovial Agroman and Budimex) to present RenoDSS in an effort to investigate potential commercial interest for this BIMERR result. While at this point there is no direct outcome to be reported, it is foreseen that in the coming period, under the BIMERR exploitation plan development, such initiatives will be intensified and become more targeted to achieve the necessary impact. To this end, the Exploitation Strategy Seminar Service offered by EC under the HORIZON RESULTS BOOSTER Initiative will bring all partners together to discuss and analyse potential exploitation routes for different BIMERR tool bundles. Furthermore, the third round of Living Lab workshops will be an opportunity to present the entire BIMERR tool suite to relevant stakeholders within the partner companies.

3.3.10 PROMOTIONAL CONTENT AND DISSEMINATION MATERIAL

Finally, regarding production of promotional content and dissemination material for this period there were some delays regarding the production of the second brochure and leaflet of the project. According to the initial targets, these should have been produced by M30 of the project. The material is currently under development and will be made available in the coming months. The cause of this slight delay has been the fact that the content of these material was planned to focus on the pilot site demos to promote the

initiation of the BIMERR tool roll-out. Due to the ongoing pandemic, tool roll-out has been delayed which in turn has affected the publication of the relevant material.

4. UPDATED D&C PLAN AND ANTICIPATED ACTIONS FOR THE NEXT PERIOD

4.1 UPDATED COMMUNICATION PLAN

The communication objectives that were developed in the previous version of the D&C plan (D10.3) are being reviewed and updated in this section in order to best guide the relevant D&C actions of the fourth (and last) D&C phase (M31-45). Sections in Table 5 present the BIMERR communication objectives and their correspondence with the relevant target groups. The sections in bold are updated input. Furthermore, certain details of the D&C Plan that were no longer relevant were removed.

Table 5 BIMERR Communication Objectives –Target Groups Correspondence

Communication Objectives / BIMERR Target Groups	COMM. OBJECTIVE 1	COMM. OBJECTIVE 2	COMM. OBJECTIVE 3	COMM. OBJECTIVE 4	COMM. OBJECTIVE 5	COMM. OBJECTIVE 6
Architects	■	■	■		■	■
Engineers	■	■	■		■	■
Construction Companies	■	■	■		■	■
Building Residents / Energy Consumers	■	■	■	■	■	■
Technological Platforms	■	■	■		■	■
Professional Association & Initiatives	■		■		■	■
Scientific Community	■					■

In the following tables, the communication objectives are presented along with an analysis and a detailed description of actions:

Communication Objective 1	Increase the **visibility of BIMERR**
Sub-Objective 1.1	Provide universally comprehensible information to the public about the project goals.
Sub-Objective 1.2	Provide universally comprehensible information to the public about the project results.
Responsible Partner	MERIT
Engaged Partners	All partners

Communication Objective 1	Increase the **visibility of BIMERR**		
Start Month	M01	End Month	45
Action	Increase constantly the visibility of BIMERR by using all the relevant communication means.		
Targeted Group	AEC Industry, Building Residents/Energy Consumers, Scientific, Technological and Business Communities		

Description of action: To communicate the goals and results of the BIMERR project effectively and widely, several communication means are set in place. As described in the relevant section of D10.3, the communication means to increase the visibility of the BIMERR goals and results are:

- Project website
- Social media
- BIMERR partners' social media
- Press releases, newsletters, videos.
- Participation and presentation of the project in other networks and groups
- In-house presentations to existing clients / collaborators and brainstorming for further extending the BIMERR solutions to other applications and markets
- Appropriate material (e.g., brochure, case studies, stories, documents)

Increasing the visibility of BIMERR project has become more challenging due to the ongoing pandemic which resulted in all physical meetings and events to be cancelled. Although online alternatives to these events soon become available, the potency and the reach these online formats can offer is somewhat diminished since the traditional networking sessions of physical meetings were no longer available. As the pandemic is still very much present and no safe judgement regarding the future of physical meetings in the course of the project can be made, efforts will focus on online tools such as the project website and social media. Scope is to increase the engagement of the relevant groups by more engaging and interesting multimedia content that will clearly demonstrate the achievements and results of the project.

Expected Outcome: As described, the communication of the BIMERR project will be carried out through various tools in order to constantly increase the visibility of BIMERR. The expected outcome of this process will be the continuous promotion of BIMERR goals and results with the eventual engagement of all target groups.

Communication Objective 2	Create a **user's community that will provide insights and detailed feedback** during the development of the project.		
Responsible Partner	MERIT		
Engaged Partners	MERIT, CERTH, UPM, Hypertech, Xylem, CONCAT, BX, FER.		
Start Month	M01	End Month	M45
Action	Living Lab Activities		

Communication Objective 2	Create a **user's community that will provide insights and detailed feedback** during the development of the project.
Targeted Group	AEC Industry, Building Residents/Energy Consumers, Scientific, Technological and Business Communities
Description of action: One of the main innovations of BIMERR is the use of Living Lab workshops. With these actions BIMERR aims to establish an open innovation and value co-creation framework by involving the end-users and stakeholders during the development of the BIMERR project. To guarantee the success of the events and to attract more attendees, there is a need for active and targeted communication with users that are possibly interested to participate. **Scope is to use the social media platforms as well as the newsletter list subscribers of the project in an effort to attract more participants. Due to the ongoing pandemic, the online format of the Living Labs is anticipated to be used again for the third round of these workshops towards the end of the project. With the online version of these workshops, it has been rather difficult to secure the actual participation of the enrolled individuals which resulted in lower-than-expected participant number. To tackle this, intense promotion of the workshops via the social media accounts will be triggered and the content of the workshops must be more visually pleasing and explanatory for the online viewer to be able to pleasantly participate and give meaningful and constructive feedback.**	
Expected Outcome: Technology providers will receive valuable and constructive feedback about the developed tools which will act as a guide for the exploitation activities of the project.	

Communication Objective 3	Communicate **tangible results and success stories** coming from the projects validation activities.		
Responsible Partner	MERIT		
Engaged Partners	All partners		
Start Month	M20	End Month	M45
Action	Effective communication of the produced tangible results and success stories of BIMERR.		
Targeted Group	AEC Industry, Building Residents/Energy Consumers, Scientific, Technological and Business Communities		
Description of action: The effective and coherent communication of tangible results and success stories of BIMERR is essential. With this action, **BIMERR partners will continue creating strong and simple messages/success stories to reproduce about the success of BIMERR project. In this framework, Task 10.3 "Analysis & Documentation of Best Practice Examples of Renovation Support Activities using BIMERR Tools" will provide useful input**. Once tangible results of BIMERR are produced, the BIMERR consortium will produce informative material (photos, videos) from the demo sites presenting the final product and explaining to the possible users why the BIMERR solution fits their needs. The promotion of success stories through this material is crucial in order to circulate the messages with greater impact. The diffusion			

Communication Objective 3	Communicate **tangible results and success stories** coming from the projects validation activities.
of messages presenting success stories and tangible results will take place through the project's social media channels, website, and various events. A possible action will be the communication with relevant journalists or media in related field, to circulate and promote the BIMERR success stories.	
Expected Outcome: The expected outcome of this action is to create a simple message for the success of BIMERR project. By having a tangible result and success stories about the impact of BIMERR, the success of the communication strategy will be increased.	

Communication Objective 4	Increase **awareness and enhance societal perception** on how Research and Innovation can tackle emerging challenges and positively impact the society, while increasing visibility and information flow on the vital role of Horizon 2020 and EU funded research.		
Responsible Partner	MERIT		
Engaged Partners	All partners		
Start Month	M01	End Month	M45
Action	Communicate the importance and the impact of the Horizon 2020 project.		
Targeted Group	General public		
Description of action: Through several communication channels, as well as through domain-related events, the importance of Horizon 2020 projects will continue to be highlighted. During the participation in various events, synergies with other projects will be established to maximize the communication impact on society while increasing the visibility and the information flow. Tweets and posts on Facebook will constantly underline the importance of Horizon 2020 EU funding in the implementation of the project as well as in cooperation and synergies with other relevant projects.			
Expected Outcome: From the presentation of BIMERR in various events, it will be attempted to highlight the importance of EU funded research and of Horizon 2020 projects. The importance and positive impact of Horizon 2020 EU funded research on the society, will be promoted through the BIMERR website and the social media channels. Finally, in every action of BIMERR a disclaimer about the Horizon 2020 EU research funding and the EU support in this particular project will be incorporated, in order to achieve this communication objective.			
Communication Objective 5	Promoting and demonstrating the **societal and economic benefits** generated by the BIMERR project to a wide range of audiences outside the core project target groups.		
Responsible Partner	MERIT		
Engaged Partners	All partners		
Start Month	M20	End Month	M45
Action	Creation of a simple and comprehensive message for the societal and economic benefits of BIMERR solution.		
Targeted Group	General public		

Description of action: As mentioned in the Communication Objective 3, a comprehensive and simple message will be prepared. The aim is to construct a message that is capable to demonstrate the societal and economic benefits of BIMERR in a wide range of audiences. To succeed, various social media channels will be used with a combination of a video presenting the tangible results of the BIMERR solution. For the successful communication of this objective similar Actions with the other objectives will take place. Promotion of the economic benefits for the users is an essential part of the BIMERR's successful communication. A BIMERR Video is foreseen to be developed towards the end of the project where the entire renovation pipeline using the BIMERR tools will be showcased.
Expected outcome: After the creation and presentation of the relevant video in social media, which will highlight the societal and economic benefits of BIMERR, the reach in audiences outside the core project target groups will be achieved. Once a concrete and effective message is created, it will be communicated also with other means such as press-releases, leaflets, posters etc.

Communication Objective 6	**Complement the dissemination activities** of the BIMERR project.		
Responsible Partner	MERIT		
Engaged Partners	All partners		
Start Month	M01	End Month	M45
Action	Any communication action will complement and reinforce the dissemination activities of the BIMERR project.		
Targeted Group	AEC Industry, Building Residents/Energy Consumers, Scientific, Technological and Business Communities		
Description of action: As described above, communication actions will complement and assist all the dissemination activities of the project. Through the communication channels of BIMERR, every dissemination action will be promoted. The promotion of scientific publications will be done by LinkedIn and Twitter making available links to the available repositories. Every dissemination result can have greater impact to users outside of the target groups, if the message is well explained, simplified, and promoted through the broader communication channels.			
Expected Outcome: With the support of the communication actions, the outreach and impact of dissemination activities will be higher and will eventually increase the overall promotion of the BIMERR results.			

4.2 Updated Dissemination Plan

Similarly, to the previous section, the dissemination objectives that were developed in the previous version of the D&C plan (D10.3) are being reviewed and updated in this section in order to best guide the relevant D&C actions of the fourth (and last) period of the

BIMERR project (M31-45). Updated information in this section can be seen in bold. Furthermore, certain details of the D&C Plan that were no longer relevant were removed. Table 6 presents the BIMERR dissemination objectives and their correspondence with the relevant target groups.

Table 6: BIMERR Dissemination Objectives –Target Groups Correspondence

Dissemination Objectives / BIMERR Target Groups	DISS. OBJECTIVE 1	DISS. OBJECTIVE 2	DISS. OBJECTIVE 3	DISS. OBJECTIVE 4	DISS. OBJECTIVE 5
Architects	■	■	■	■	■
Engineers	■	■	■	■	■
Construction Companies	■	■	■	■	■
Building Residents / Energy Consumers	■	■		■	
Technological Platforms	■	■	■	■	■
Professional Association & Initiatives	■	■	■	■	■
Scientific Community	■	■	■		■

Dissemination Objective 1	Raise **awareness and social engagement** for the BIMERR project goals and activities in target communities via appropriate methods.		
Responsible Partner	MERIT		
Engaged Partners	All partners		
Start Month	M01	End Month	M45
Action	Attract relevant target communities towards the BIMERR project by raising awareness with relevant tools and appropriate dissemination actions.		
Targeted Group	AEC Industry, Building Residents/Energy Consumers, Scientific, Technological and Business Communities		
Description of action: The main goal of this action is to engage the appropriate target groups by using the proper dissemination tools and methods. Such tools, as described in previous sections, can be the participation in relevant events & conferences, publications, and other dissemination activities. In order to attract visitors in these activities, a database with the contact details of targeted users will be created in order to support the co-creation methodology of Living Lab. **For this 4th phase of the D&C task, the foreseen activities will focus more on the demo site outcomes of the**			

project. Achievements and success stories of renovation processes in the pilot sites will be intensely promoted since they are inherently more engaging than tool development activities.
Expected Outcome: The expected outcome of these actions is the active dissemination of the BIMERR results and outcomes through various activities. With targeted actions the dissemination objective of raising awareness and increasing the social engagement will be achieved.
Constrains & important milestones: The Dissemination Objective 1 is directly linked with the Milestone 7 "Public Awareness, Dissemination and Engagement Planning" in M06 and Milestone 11" Project Website Launch" in M03.

Dissemination Objective 2	Encourage the **involvement of end-users and stakeholders**, through the utilization of Living Lab Workshop, in all phases of the project implementation by using a "User-Centric Design Approach" of dissemination. In this objective is very important to establish and maintain adequate channel with all type of users involved in the living lab workshops or with the completion of questionnaires.		
Responsible Partner	MERIT		
Engaged Partners	MERIT, CERTH, UPM, Hypertech, Xylem, CONCAT, BX, FER.		
Start Month	M01	End Month	M45
Action	Involvement of end-users and stakeholders through the use of Living Lab Methodology.		
Targeted Group	AEC Industry, Building Residents/Energy Consumers, Scientific, Technological and Business Communities		
Description of action: The third round of Living Lab workshops will take place in order to validate the capacity of the developed tools to meet the initially set user requirements and to widely disseminate and promote the entire BIMERR toolkit.			
Expected Outcome: The entire renovation pipeline using the BIMERR tools will be showcased to relevant stakeholders in an effort to boost exploitation activities and maximise dissemination of project results.			

Dissemination Objective 3	Ensure **the diffusion of all the scientific and technological results** generated in BIMERR project within and beyond the project's consortium.		
Responsible Partner	FIT/HYPERTECH		
Engaged Partners	All technical partners		
Start Month	M01	End Month	M45
Action	Diffusion of scientific and technological results		
Targeted Group	AEC Industry, Building Residents/Energy Consumers, Scientific, Technological and Business Communities		

Description of action: Publications in scientific journals and conferences relevant to the research and innovation activities will attract the scientific communities directly or indirectly in the scope of BIMERR. Until the end of the project, at least 8 publications need to be realized to be on track with the set targets.
Expected Outcome: The dissemination actions will reinforce the diffusion of the scientific and technological results in the scientific community, foster cross-project cooperation and provide a fundamental verification of soundness of project results.

Dissemination Objective 4	Effective BIMERR Dissemination activities implicitly and explicitly contribute to the timely support of the **exploitation strategy** of the BIMERR project.		
Responsible Partner	MERIT		
Engaged Partners	MERIT, Ubitech, Suite5, Hypertech, Xylem, GU, ConKAT, BOC, BX, EXE, NT, FER		
Start Month	M06	End Month	M45
Action	Dissemination Planning as a parallel support strategy to Exploitation Plan.		
Targeted Group	AEC Industry, Building Residents/Energy Consumers, Scientific, Technological and Business Communities		
Description of action: All the dissemination actions will be closely related to the objectives and scope of the Exploitation Strategy of the project. All the dissemination actions will aim to increase the visibility of the BIMERR solution in the market and to support the Exploitation plan of the BIMERR project.			
Expected Outcome: The dissemination activities through the development of the project, as well as the post-project dissemination activities will assist the effective and successful Exploitation Strategy of the BIMERR project.			

Dissemination Objective 5	**Cooperation with other projects** in the domain of Energy Efficiency Buildings and Building Information Modelling.		
Responsible Partner	FIT/MERIT		
Engaged Partners	All partners		
Start Month	M01	End Month	M45
Action	Synergies and cooperation with other projects in the relevant fields.		
Targeted Group	AEC Industry, Building Residents/Energy Consumers, Scientific, Technological and Business Communities		
Description of action: For BIMERR partners, previous industrial and scientific experiences are essential for the development of the project. Moreover, partners participating in relevant projects will be engaged to establish synergies and links with other projects. Common dissemination actions will be co-organized to increase the outreach of the project's results.			

Expected Outcome: The aim of synergies and cooperation with other projects in the domain of Energy Efficiency building and Building Information Modelling is to encourage the smooth knowledge transfer and experience sharing between BIMERR and other projects.

4.3 ANTICIPATED ACTIONS FOR NEXT PERIOD (M31-45)

The last 15 months of the BIMERR project are increasingly important for the dissemination and communication actions and activities. Rolling out of the BIMERR tools will conclude and focus will be on the validation of the developed tools at the pilot sites of the project. During the validation phase, the capabilities and potential of the developed technologies will be demonstrated creating significant opportunities for the dissemination and communication of achievements and best practice examples as well as for showcasing and promoting quantifiable and relatable improvements in the renovation processes to all relevant stakeholders. This constitutes a very dynamic period for the dissemination and communication task where the project outcomes will need to be increasingly promoted and showcased. Regarding the ongoing COVID-19 pandemic that so far has altered the way dissemination & communication activities have traditionally been held (and their impact quantified), it seems that thanks to Europe-wide vaccination programs it may soon be possible to freely travel again at least within EU borders. Reinstated participation in physical events will boost the capacity of partners to network and promote the BIMERR results in a more effective and efficient way. Regarding the rest of foreseen actions, over this next period of the project, various actions will continue to be implemented according to the dissemination and communication plan.

- The content of the **BIMERR website** will continue to be regularly updated. It is foreseen that through the BIMERR tool validation process in the pilot renovation sites, more content will become available to be broadly communicated via the website.

- Project information and progress will continue to be uploaded on the **social media**, by all partners, according to the social media posts timeline.

- In the next period, four more **newsletters** are foreseen to be published, describing the progress of the project, and sharing the updates in technology validation and pilot sites implementation. Those newsletters will be issued by the end of months 33, 36, 39 and 42 of the projects, and will be posted on the project website, distributed to all project partners, and communicated to the relevant mailing list. This list was created by voluntary registration of individuals, through the newsletter registration form of the project website.

- In addition, during the above-mentioned period, the third version of the **project poster**, and the 2nd version of the **project leaflet** will be issued. In those versions, updated information about the development of project technologies and the pilot sites will be included**. Press releases** will be published at regular intervals, by all partners, for every important milestone or project achievement.

- Regarding the **Living Lab workshops**, the third round of workshops is foreseen to take place during this period. These workshops are crucial for dissemination purposes as well as for the overall exploitation of the project results. It is an opportunity to showcase all project achievement to very targeted audiences and therefore maximize the dissemination impact. If these workshops manage to be implemented with physical presence of the participants instead of an online format, their results will be event more impactful.

- Finally, the **participation in external events**, will depend on the restrictions applied due to the health crisis. Due to the COVID-19 outbreak, all the planed events of the next months which include physical presence, are cancelled, or postponed. As a result, no specific planning for participation in such events could be done for the next period, while only participation in online events can be planned. As a result, a risk has arisen regarding the specified KPI for events participation. This risk, along with the mitigation measures, will be analysed in Section 5 (Risk Assessment). Those mitigation measures include participation in online events, which almost in all cases have replaced events with physical presence, and more intense effort from the consortium when the restrictive measures are eased, in order to reach the relevant KPI. Thus, to fulfil this target, partners continued using the specific table seen in Table 7 where relevant target events are proposed to be followed.

Table 7: Proposed thematic events list

Name of event	Location	Date(s)	Website	Proposed activities
9th Linked Data in Architecture and Construction Workshop	Luxemburg or online tbd	11-13 Oct 2021	Link	Project presentation, paper submission, publication
EU sustainable energy week	Online	25-29 Oct 2021	Link	Participation in forums, presentation of the project, paper submission, publication
International Conference on Smart Design,	Online	Postponed until further notice	Link	Project presentation, participation in forums,

Construction IT and BIM (ICDCB)				paper submission, publication
International Conference on Embedded Computer Systems: Architectures, Modelling and Simulation	online	July 5-7 2021	Link	Project presentation and stand/poster, participation in forums, leaflet distribution, paper submission, publication
ISARC 2020	Online	2-4 Nov 2021	Link	Project presentation, participation in forums, paper submission, publication
EU sustainable places	Hybrid event with online and in person meetings to be held in Rome, Italy	29 Sept-1Oct 2021	Link	Project presentation and stand/poster, participation in forums or workshops, leaflet distribution, paper submission, publication
BIM in Infrastructure Construction	Cologne, Germany	1-2 Dec 2021	Link	Project presentation and stand/poster, participation in forums, leaflet distribution,
5th BIM World	International Congress Centre Munich	23 - 24 Nov 2021	Link	Project presentation and stand/poster, paper submission, publication
European, Mediterranean and Middle Eastern Conference on Information Systems (EMCIS)	tbd	tbd	Link	Project presentation and stand/poster, paper submission, publication
Digital construction week	London, UK	24-25 Nov 2021	Link	Project presentation and stand/poster, participation in forums, leaflet distribution, paper submission, publication

2021 European Conference on Computing in Construction	Online	19-28 July 2021	Link	

5. RISK ASSESSMENT

5.1 RISK ASSESSMENT METHODOLOGY

Based on the methodology compiled in D10.3 the updated risk assessment analysis presented here has been performed according to the Risk Matrix reported in Table 8. Risks that were no longer considered relevant were removed and for ongoing risks, the provided mitigation measures were updated accordingly. More in detail, various combinations of likelihood and severity are collected and from those the associated "judgement" of risk tolerability is extracted. The risks identified are ranked according to the expected frequency of event occurrence (likelihood) from A (practically not credible) to F (frequent) and also according to the potential associated consequences (severity) from 1 (minimum effect) to 5 (major effect), using the Risk Assessment Matrix in Table 8.

Table 8: RISK Methodology - MATRIX

Frequency / Consequence	A Practically not credible	B Rare	C Unlikely	D Credible	E Probable	F Likely/Frequent
1 - Minimum						
2 - Slight		Tolerable				
3 - Medium			ALARP			
4 - Severe				Intolerable		
5 - Major						

As a result, risks are classified as being low, medium, or high, in order to identify the need for further mitigation measures and to classify the effectiveness of the proposed solutions.
The different classifications of the risks are:

- Low Risk (Green area): The level of risk is generally acceptable, and it only requires standard monitoring to prevent any future deterioration.
- Medium Risk (Yellow Region): The level of risk is generally acceptable provided that implementation of additional measures is disproportionate to the benefit gained (As Low as Reasonably Practicable principle - ALARP).
- High risk (Red Region): The level of risk in this region is not acceptable "as is" and risk control-mitigation measures are necessary to reduce risk.

5.2 Risk Register and Classification

According to the methodology presented above, the risks for the dissemination and communication of the project are presented and classified in .

Table **9**.

Table 9: Risk Register and Classification

Risk Identification	Actor / WHO	Frequency	Consequence	Classification
Limited acceptance of project results by the end-users	Consortium – End users	D -Credible	3- Medium	ALARP
Limited participation of end-users and stakeholders in the User-Centric Design approach (living labs, workshops, etc.)	Consortium – End users	E - Probable	4 - Severe	Intolerable
Low participation of audience in dissemination events	Consortium - Audience	C - Unlikely	3- Medium	ALARP
Consortium partners not participating in the dissemination activities	Consortium	C - Unlikely	2- Slight	Tolerable
Technology partners not familiar with dissemination / unable to follow dissemination due to lack of expertise	Consortium	C - Unlikely	2- Slight	Tolerable
Low quality of dissemination material	Dissemination leader	B - Rare	3- Medium	Tolerable
Lower than expected website and social media traffic	Consortium	E - Probable	2- Slight	ALARP
Project dissemination KPI's not reached	Consortium	D -Credible	3- Medium	ALARP
Incorrect main message identification per target audience and/or per dissemination channel	Dissemination leader	D -Credible	3- Medium	ALARP

Risk Identification	Actor / WHO	Frequency	Consequence	Classification
A significant number of dissemination events will have to be cancelled due to restrictions applied in Europe because of health crisis or other force majeure causes	Consortium	F - Likely	3- Medium	Intolerable

5.3 RISK MITIGATION

For the risks classified as ALARP and intolerable, mitigation actions need be taken to control the risks. Those actions per risk are presented in the following

Table **10**.

Table 10: Risk Mitigation

Risk	Risk Mitigation / HOW	Responsible for risk mitigation / WHO	Timeline / WHEN
Limited acceptance of project results by the end-users	Well defined user requirements definition and baseline, along with cost-benefit validation of the solution. The Technical Manager and Dissemination and Exploitation Manager will follow up and monitor the user requirements accomplishment to ensure methodological vigilance.	Technical Manager, Dissemination and Exploitation Manager, consortium	During project duration
Limited participation of end-users and stakeholders in the User-Centric Design approach (living labs, workshops, etc.)	To mitigate that risk, the living lab activities of the project will begin early enough in the project, to create enough space for end-user's engagement. Moreover, the workshops will be organized by the pilot partners to maximize attendance using their already existing channels and the key construction stakeholders they already have as contacts. If this procedure still needs support to assure minimum participation numbers, social media as well as newsletter audience will be engaged to increase participation.	Dissemination and Exploitation Manager, coordinator	During living lab activities

Risk	Risk Mitigation / HOW	Responsible for risk mitigation / WHO	Timeline / WHEN
Low participation of audience in dissemination events	In view of the disruptions that the pandemic has imposed on live meetings and events, the online alternatives that are being organized will be adequately promoted and advertised to reach greater audiences and secure satisfactory participation.	Dissemination and Exploitation Manager, coordinator	During project duration
Lower than expected website and social media traffic	Traffic of the website and social media is already constantly being monitored (through Google analytics and other tools). In case of a lower that required traffic is observed, actions will be taken on time. These include implementing specialized social media platform tools that boost targeted engagement of selected audiences. Any remedies will start being implemented way in advance to have sufficient time for appropriate mitigation actions.	Dissemination and Exploitation Manager	During project duration
Project dissemination KPI's not reached	The performance towards the KPIs is constantly being monitored and appropriate measures will be taken to reach the cumulative D&C KPIs by the end of the project. In this report, the KPIs that have fallen short of the required values have already been identified and the appropriate measures will be put through.	Dissemination and Exploitation Manager	During project duration
Incorrect main message identification per target audience and/or per dissemination channel	The performance of the main dissemination message per audience and per channel will be constantly monitored and will be adjusted accordingly to maximize its efficiency.	Dissemination and Exploitation Manager	During project duration
A significant number of dissemination events will have to be cancelled due to restrictions applied in Europe because of health crisis or other force majeure causes	The consortium will constantly monitor the updates due to health or any other crisis. If an important number of events is cancelled, the consortium will find alternative channels to disseminate and communicate the project. Moreover, double effort will be put when restrictions are lifted, to reach the relevant KPIs.	Consortium	During project duration

6. CONCLUSIONS

The main aim of this document was to provide an update of the specific dissemination and communication action plan and to report on the D&C activities that took place from month 19 and up to month 30 of the project. These activities were also assessed using the predefined D&C KPIs providing recommended future actions and activities to improve the dissemination and communication results of the project.

During the period M19-M30, major activities that were anticipated were indeed implemented according to the plan. Certain deviations were caused by the various restrictions imposed due to the health crisis and mainly affected the execution of live events. These events were eventually implemented using online formats. To reduce the risk of not achieving some quantified targets, mitigation actions were presented in this report. Those include among others, participation in online events and double effort in the next period when the restrictive measures will have eased, and the events will start again.

This report will be updated in month 45 of the project (September 2022) with the submission of deliverable 10.5 "BIMERR dissemination and communication plan and associated material 4", which will provide the description and evaluation of actions from month 31 to month 45 of the project and an overall assessment of the D&C task of the project.

7. ANNEX I: BIMERR NEWSLETTERS

7.1 NEWSLETTER #3

BIMERR
Newsletter #3
June 2020

BIMERR
www.bimerr.eu

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 820621

Call identifier: LC-EEB-02-2018

BIMERR
RENOVATION 4.0

THE BIMERR TOOLS

BIMERR is designing and developing a Renovation 4.0 toolkit which compromises tools to support renovation stakeholders throughout the renovation process of existing buildings, from project conception to delivery. It includes tools for the automated creation of enhanced building information models, a renovation decision support system to aid the designer in exploring available renovation options through an the accurate estimation of renovation impact on building performance as well as a process management tool that will optimize the design and on-site construction process towards optimal coordination and minimization of renovation time and cost.

INTEROPERABILITY FRAMEWORK (BIF)

The main scope of the BIMERR Interoperability Framework (BIF) is to ensure seamless and secure data exchange among the individual BIMERR tools and applications, in order to supply them with all the up-to-date building information they need for their operation and for which they are authorized. BIF utilizes mechanisms that enable semantic and syntactic interoperability, while enforcing access control policies to prevent any illegitimate building data exchange.

RENOVATION DECISION SUPPORT SYSTEM (RENODSS)

RenoDSS provides an accurate estimation of the energy, cost, and environmental impact trade-offs of alternative renovation scenarios. The estimation of post-renovation energy consumption is based on energy data models, structural and geometrical properties of the building, materials, HVAC systems, residents' usage profile, as well as weather data. RenoDSS also takes the environmental impact of the renovation and the interaction with surrounding buildings into account. All KPIs and details of possible renovation scenarios are shown in an intuitive user interface which enables the renovation designer to select the optimal renovation scenario in terms of costs, energy consumption, and environmental impact.

Fraunhofer · UBITECH · KONKAT A.T.E. · budimex · Suite5 · HYPERTECH energy labs · XYLEM · University of Peloponnese · Novitech · ferrovial

BIMERR

www.bimerr.eu

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 820621

Call identifier: LC-EEB-02-2018

PROCESS & WORKFLOW MODELLING & AUTOMATION TOOLKIT (PWMA)

PWMA provides a set of tools to design, verify, simulate, execute, monitor and analyze the reconstruction process. It orchestrates the tasks of the reconstruction process and provides UI for all the key stakeholders of the process to cover all phases of the reconstruction.

SCAN-TO-BIM

The Scan-to-BIM Tool is a software solution for the (semi-)automated generation of as-is Building Information Models of existing buildings from reality capture data (mainly 3D point clouds and pictures). The tool deploys innovate data processing techniques, including machine learning, to deliver IFC models that can be meaningfully used for assessing building energy performance assessment and planning refurbishment. The tool is developed using open-source technology and manipulates data in open formats (e.g. E57 and IFC).

AUGMENTED REALITY ENABLED IN-SITU BUILDING FEATURE ANNOTATION (ARIBFA)

The ARIBFA tool will be responsible for presenting BIM 3D visualisations and spatially annotated information on site during the renovation process to architects, contractors and building managers through an Augmented Reality (AR) interface. The main functionalities covered by ARIBFA involve the localization of the user in an indoor environment, based on which will be overlaid on top of the physical location of the building. Using object recognition methodologies, elements to be changed or worked upon during the renovation will be highlighted in the AR visualization, as well as Health and Safety annotations and designated work areas as defined in the daily work schedule.

PROFILING RESIDENT USAGE OF BUILDING SYSTEM (PRUBS)

The accuracy of a 3D zonal-type simulations based on widely used simulation engines (e.g EnergyPlus) is highly affected by the level of detail of its input data, where recent studies have shown that the occupant behavior data consist the major cause of uncertainty in the building energy performance estimation results. Hence, having a deeper understanding and properly modelling the occupant behavior have been of paramount importance within IEA EBC Annex 66, where data, methods and models have been developed and applied to understand and reduce the gap between simulated and measured building energy performance by representing occupant behavior in a standardized XML schema (obXML). PRUBS leverage the outcomes of Annex 66, adopting obXML as its populated data model, and applying Machine Learning algorithms on IoT data streams provided by a sensor network that will be designed and installed to the pilot sites, generates occupant behaviour profiles that mimic the inhabitants' actions. These profiles are subsequently used to project the building system (e.g. heating/cooling) utilization boundaries that lie within the comfort zone of the residents.

BIMERR

www.bimerr.eu

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 820621

Call identifier: LC-EEB-02-2018

BUILDING INFORMATION COLLECTION APPLICATION (BICA)

The Building Information Collection Application (BICA) is a smartphone application enabling building residents to provide complementary information (such as notes and photos) to the already recorded building information in the BIM, thus accelerating the overall collection of data required for the initial renovation scenario modelling process. Through BICA's UI, residents' can provide their input spontaneously on their home indoor/outdoor areas, or at the request of the building surveyors/engineers, in order to enrich the pre-designed as-is BIM model with energy related equipment, their characteristics, building's weak points, and other related hidden components within the building (pipes, cables, etc.) that they might be aware. In addition, through BICA, residents and owners can view health and safety (H&S) instructions related to the ongoing renovation processes within the building issued by the H&S managers, while they can also create new H&S issues, when they spot a possible H&S issue/hazard in the on-building-site.

BIMERR ONTOLOGY NETWORK

The BIMERR ontology network represents the semantic models that describe the different aspects of building renovation processes (e.g. energy efficiency, occupancy, building information models, etc.). Such models are defined following a modular approach, that is in the shape of a network, in which each domain (KPI, materials, building, etc.) could be reuse independently. The ontology network is implemented in OWL (Web Ontology Language) and available in different formats at bimerr.iot.linkeddata.es.

BUILDING ENERGY PERFORMANCE ESTIMATION MODULE (BEPE)

The utilization of Building Energy Performance Estimation (BEPE) simulation has gained significant attention recently that stems from its capability to accurately predict the energy performance of building sector under specific conditions. Among a wide range of calculation methodologies, the 3D zonal-type simulation approximation (e.g. EnergyPlus) is frequently used in many envisaged and practical use scenarios, as it manages to strike a balance between accuracy and computational complexity. However, 3D zonal-type BEPE models' preparation suffers from two major drawbacks: (1) the models' preparation is a very time-consuming process due to the difficulty to collect relevant information, often requiring more time than is available due to project's deadlines, and (2) it is a non-standardized process that produces BEP simulation models whose results can significantly vary from one modeler to another according to their experience. Within BIMERR, Industry Foundation Classes (IFC) files are used to streamline and expedite the collection of such information, while our BEPE approach introduce a methodology to automatically translate IFC to EnergyPlus input data, making the BEPE simulation modelling process much more expedient and less vulnerable to modelling errors. BEPE module, as a component of the RenoDSS, is responsible for estimating the building energy performance before and after the renovation interventions under examination. It enables the RenoDSS user to explore various what-if scenarios, quickly run energy models (or simulations) to estimate the energy performance and fine-tune the interventions to explore the trade-offs.

Contact Us

BIMERR

www.bimerr.eu

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 820621

Call identifier: LC-EEB-02-2018

Contact us to share your feedbacks and ideas on this page.

BUILDING INFORMATION SECURE PROVISIONING TOOL (BISP)

The Building Information Secure Provisioning Tool aims to provide data protection, confidentiality and integrity for every dataset that is requested through the BIF. In this context, the following requirements of the BIMERR system must be taken under consideration: a) the potential users (data providers and data consumers) of the BIMERR framework, as well as their datasets, can be registered to (or removed from) to the BIMERR platform any time, requiring a dynamic mechanism of controlling data access and being agnostic to the underlying datasets respecting the relevant access policies of each party, b) the BIMERR platform must handle the access policies applied by each party and respond to any level of complexity they might by defined, c) address the need of interoperability of the BIF and provide the requested data to the format that is supported by the relevant data consumer.

The mission of the BIMERR project is to design and develop an ICT-enabled Renovation 4.0 toolkit comprising tools for Architecture, Engineering & Construction (AEC) stakeholder support throughout the energy efficiency renovation process of existing buildings.

7.2 NEWSLETTER #4

BIMERR
Newsletter #4
November 2020

BIMERR

www.bimerr.eu

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 820621

Call identifier: LC-EEB-02-2018

BIMERR
RENOVATION 4.0

BIMERR TOOL DEVELOPMENT NEWS

Great potential has been shown in early results from the BIMERR project's **ARIBFA** solution, developed by **CERTH**, where AR visualization of BIM models is provided directly on top of the actual building using the Hololens AR HMD. Using a combination of image-based initial registration and Hololens' spatial mapping capabilities renovation elements like new windows, wall coverings, heating elements etc. are being mapped directly on top of the existing ones so the responsible Architect or Renovation Manager can preview the impact and modifications before construction. Furthermore, visualization of IFC BIM models through the Unity3D engine and mapping of building components to 3D visual representations progresses at a quick pace. Next steps involve real-time object recognition and annotation in AR!

UBITECH has recently released the **Secure Provisioning Tool** and the **Query Builder**. Both components offer fundamental functionalities in terms of the **BIMERR Interoperability Framework,** such as access control mechanism and advanced retrieval capabilities to building-related data.

The 1st version of the BIMERR **Building Energy Performance Estimation (BEPE)** module, developed by **HYPERTECH** has recently released. Utilizing IFC and obXML data, the module generates simulation input data files automatically, invokes the EnergyPlus engine and post-processes its results to calculate the BIMERR Energy KPIs

The first version of the BIMERR **RenoDSS (Renovation Decision Support System)** urban planning module has been completed. This first release provides the geographical perspective of the building under renovation, its surrounding buildings, detailed information about district-wide energy production/consumption patterns and how the building interacts with utility networks in its vicinity.

Fraunhofer IBI · POLITRONICA · UBITECH · UCL · KONKAT A.T.E. · budimex · Suite5 · HYPERTECH energy labs · MERIT CONSULTING HOUSE · XYLEM · University of Peloponnese · Novitech · ferrovial

BIMERR

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 820621

Call identifier: LC-EEB-02-2018

NEWS FROM THE PRE-VALIDATION SITES

Based on the BIMERR Wireless Sensor Network topology design for the pre-validation site in Greece developed by University of Peloponnese, the first phase installation of the Wireless Sensors Network for the pre-validation site of Conkat in Athens, has been completed. This network will provide the opportunity to verify the data flow and start validating several BIMERR tools, before the main installation that will take place in the pilot sites of Poland and Spain.

NEWS FROM THE PILOTS

Laser scanning of the BIMERR Pilot Buildings in Poland and Spain has begun and the first complete BIM models have been developed. These models constitute key-elements of the project as they are essential for the validation of many BIMERR features.

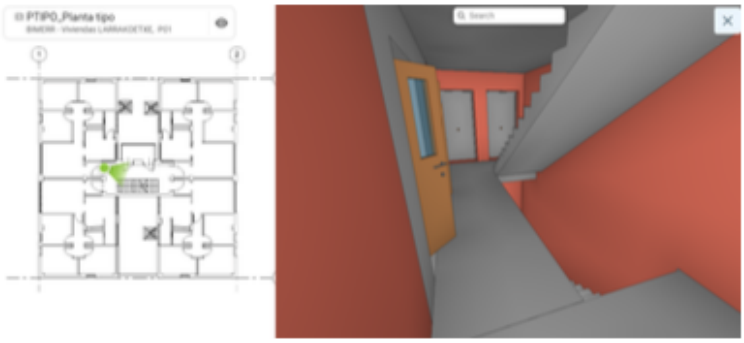
Laser scan of Pilot building in Warsaw, Poland

BIMERR

www.bimerr.eu

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 820621

Call identifier: LC-EEB-02-2018



BIM Model of the pilot site in Spain

OTHER NEWS

Last October, in the context of the 2020 edition of the Sustainable Places event, BIMERR participated in a collaborative workshop with other Horizon 2020 projects dedicated to research in the field of digital construction and buildings renovation. In addition to BIMERR, the participating projects were:
SPHERE, BIM4EEB, BIMSPEED, DIGIPLACE, BIMzeED, ENCORE and RenoZEB.

Under the title "**Digitalization tools for an energy efficient renovation**", this selection of EU-funded projects gathered to discuss a common strategy to share findings on research for construction, moreover, to discuss the major technical and non-technical challenges faced, especially when dealing with the existing building stock and a segmented construction sector. The workshop was divided into two sections; in the first section, each project pitched their progress and intermediate achievements. In the second section, a selection of innovative tools was presented and demonstrated in a real application. To conclude, the projects representatives agreed that strengthening the synergy among their different but complementary projects would be a benefit for all. A post-workshop report is available on the MDPI website or you can download it here.

4

Contact Us

BIMERR

www.bimerr.eu

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 820621

Call identifier: LC-EEB-02-2018

Contact us to share your feedbacks and ideas on this page.

The mission of the BIMERR project is to design and develop an ICT-enabled Renovation 4.0 toolkit comprising tools for Architecture, Engineering & Construction (AEC) stakeholder support throughout the energy efficiency renovation process of existing buildings.

7.3 NEWSLETTER #5

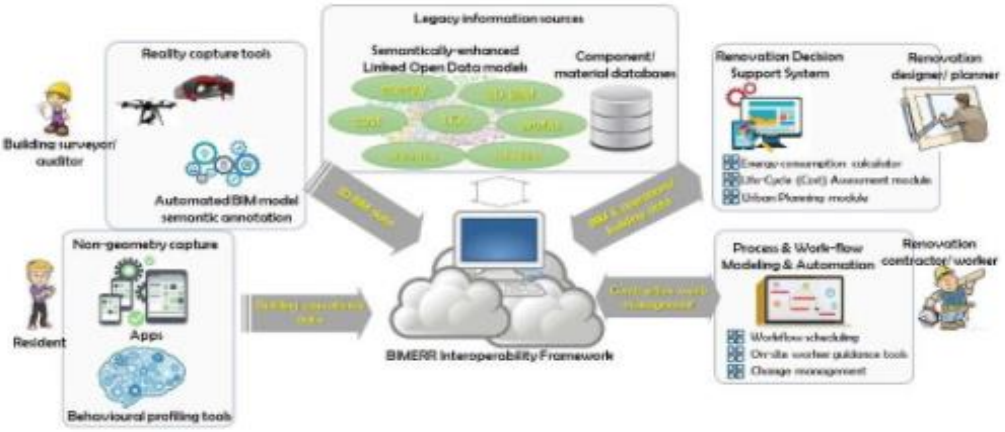
NEWSLETTER #5

MARCH 2021

Latest Update: All BIMERR components have released their first version to support the pre-validation deployment and testing activities. Final versions will be issued in June 2021 allowing the evaluation of their performance in real renovation projects.

THE BIMERR TOOLKIT IN A NUTSHELL

The BIMERR middleware handles the IoT data and acts as the central Identity Provider, providing information about the user profiles. The IoT data are processed by the PRUBS component to generate systems usage profiles that mimic the occupants' behaviour, stored in an obXML file. The Scan-to-BIM tool algorithms are applied to generate the as-is IFC4 file. Subsets of the IFC4 file are used by the BICA application (to allow the occupants to upload information that cannot be captured by any other means) and by ARIBFA that supports on-site staff to annotate further information that the Scan-to-BIM does not manage to generate. RenoDSS utilizes the IFC4 and obXML data and initiates the evaluation of candidate renovation scenarios. The RenoDSS user is able to select the renovation scenario that meets his/her requirements. Relevant renovation KPIs along with the respective IFC4 file are then provided to be queried by the PWMA toolkit that is responsible for reporting back renovation time and cost KPIs and monitoring the progress of the various renovation tasks. The BIMERR Interoperability Framework is the central data hub of the system, receiving data from the other building components of BIMERR, semantically linked and stored in appropriate data models, and propagated to the relevant recipient components and applications as needed. The main data model employed to describe a BIM model is IFC4. Handling, validating, and managing the internal structure of the BIM model is handled by the BIM Management Platform.



The mission of the BIMERR project is to design and develop an ICT-enabled Renovation 4.0 toolkit comprising tools for Architecture, Engineering & Construction stakeholder support throughout the energy efficiency renovation process of existing buildings.

Follow our social media accounts for weekly updates!

BIMERR project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 820621

Call identifier: LC-EEB-02-20