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*Semantic Web for Information Modelling in Energy Efficient Buildings*

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Cluster and Community portal – Phase I**

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## Executive Summary

SWIMing will constitute a Cluster composed of existing EeB projects that will ensure a close collaboration with all members to successfully fulfil the project objectives. Potential candidates by means of already existing industrial communities and fora such as the VoCamp initiative and buildingSMART will be approached. The community building along with SWIMing dissemination activities will help to establish a foundational network of stakeholders that is essential to ensure that the project vision is fulfilled and that its outcomes remain relevant after the termination of the project.

This report documents the initial stages of the SWIMing clustering effort. It highlights the different potential members of the community and aligns those members with specific areas of the Building Life Cycle. It also provides an overview of the initial set up of the swimming community portal, which has been implemented as a W3C Community Group called Linked Building Data. Moreover, it also documents some initial dissemination activities made at this point.

## Document Information

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<b>Abstract (for dissemination)</b>	This deliverable documents the initial stages of the clustering effort. It highlights the different potential members of the SWIMing community and aligns those members with specific areas of the Building Life Cycle. It also provides an overview of the initial set up of the SWIMing community portal, which has been implemented as a W3C Community Group called Linked Building Data. Finally, it also documents some initial dissemination activities made at this point.
<b>Keywords</b>	SWIMing Cluster and Community portal, Linked Building Data Community Group

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## List of Abbreviations

<b>Abbreviation</b>	<b>Definition</b>
BIM	Building Information Modelling
BIM-LD	Building Information Modelling – Linked Data
LD	Linked Data
SME	Small or Medium Enterprise
LBD	Linked Building Data
BLC	Building Life Cycle
BLCEM	Building Life Cycle Energy Management
E2B (OR EEB)	Energy Efficient Buildings
GIS	Geographic Information System
LDAC	Linked Data for Architecture and Construction

## 1 Objectives

This deliverable documents the initial stages of the clustering effort. It highlights the different potential members of the SWIMing community and aligns those members with specific areas of the Building Life Cycle. Moreover, the present deliverable documents the initial set up of the SWIMing community portal. This includes the setting up of the W3C Linked Building Data Community Group, the OpenWiki and the use of the BuildingSmart community to promote use cases.

The Objective of the SWIMing community portal is to provide an online infrastructure to support the external clusters that SWIMing assembles to engage on requirements and use cases for developing guidelines and best practice for BIM-LD data. The SWIMing cluster includes also the Industrial Board, to indicate the intention that it should also be made up of industrial representatives, and in particular SMEs.

## 2 Context: SWIMing Public Facing Infrastructure

The SWIMing Cluster Portal sits within a broader infrastructure for public engagement which additionally consists of:

- The SWIMing project portal<sup>1</sup> hosted by TCD at BlackNight. This integrates the project's public announcement mailing list and social media feeds.
- The W3C Linked Building Data Community Group<sup>2</sup>
- The ECTP-E2BA e-News Portal<sup>3</sup> operated by the E2B for making announcements and publishing material
- The buildingSMART Web Portal<sup>4</sup> for promoting use cases and buildingSMART-tech<sup>5</sup> for promoting technical documents.
- The SWIMing Facebook page<sup>6</sup> to give updates about SWIMing activities targeting the casual social media users.
- The SWIMing Twitter<sup>7</sup> account through which interested parties will get real-time updates regarding SWIMing activities.
- Short description of SWIMing project on the KIT<sup>8</sup>, TCD<sup>9</sup> and CERTH-ITI<sup>10</sup> portal with a link to the SWIMing project portal

## 3 SWIMing Community Members

SWIMing will constitute a Cluster composed of existing EeB projects that will ensure a close collaboration with all members to successfully fulfil the project objectives. An initial research has been already conducted for the identification of the most relevant EeB projects and their clustering based on the corresponding BLCM areas where each project falls. The data models used by each project and a set of indicative use cases have been analyzed mainly based on the corresponding public deliverables of each

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<sup>1</sup> <http://swiming-project.eu/>

<sup>2</sup> <https://www.w3.org/community/lbd/>

<sup>3</sup> <http://www.ectp.org/enewsportal/>

<sup>4</sup> <http://www.buildingsmart.org/>

<sup>5</sup> <http://www.buildingsmart-tech.org/>

<sup>6</sup> <https://www.facebook.com/SWIMingProject>

<sup>7</sup> [https://twitter.com/SWIMing\\_Project](https://twitter.com/SWIMing_Project)

<sup>8</sup> [http://www.imi.kit.edu/46\\_2589.php](http://www.imi.kit.edu/46_2589.php)

<sup>9</sup> <http://kdeg.cs.tcd.ie/swiming>

<sup>10</sup> <http://iti.gr/iti/projects/SWIMing.html>



project. The aforementioned on-going analysis is presented on an online document<sup>11</sup>. This document will be updated during the lifetime of the project and, in particular, after the main contact letter and a questionnaire (presented in Appendix II) is distributed to the projects. After each achievement, e.g. call for participation, the consortium partners will make an outreach effort.

Table 1 presents a first example set of relative EeB projects identified along with the corresponding involved BLC stages and some contact information. For more information about these tables and how they are being extended with active projects, please consult Deliverable 3.1.

**Table 1** Relative EeB projects and corresponding BLC stages

EeB Project	Involved Stages in BLC (applied)	Resulting Energy Savings	Main Contact	Project Role	Organisation	E-Mail	Website
ICT for Energy-efficient Buildings and Spaces of Public Use							
EnRiMa	Retrofitting, Operation (Decision Support)	Operation	Afzal Siddiqui	Coordinator	Department of Computer and Systems Sciences	afzal@stats.ucl.ac.uk	<a href="http://www.enri-ma-project.eu/">http://www.enri-ma-project.eu/</a>
Sporte2	Retrofitting Operation (Sports Facilities)	Operation	Yacine Rezgui	Partner	Cardiff University	RezguiY@cardiff.ac.uk	<a href="http://www.sporte2.eu/">http://www.sporte2.eu/</a>
REVISITE	All lifecycle phases (CSA)	All lifecycle phases	Prof. Tarek Hassan	Coordinator	Loughborough University	T.Hassan@lboro.ac.uk	<a href="http://www.revisite.eu/">http://www.revisite.eu/</a>
TIBUCON	Retrofitting, Operation (wireless building monitoring system)	Operation	Piotr Dymarskin	Coordinator	unknown	info@tibucon.eu	<a href="http://www.tibucon.eu/">http://www.tibucon.eu/</a>
SEEMPubs	Retrofitting, Operation; Smart Energy Efficient Middleware for Public Spaces	Operation	unknown	Coordinator	unknown	seempubs@polito.it	<a href="http://seempubs.polito.it/">http://seempubs.polito.it/</a>
HESMOS	Design, Retrofitting, Operation (Simulation)	Operation	Prof. Raimar Scherer	Coordinator	AEC3	coordinator@hesmos.eu	<a href="http://hesmos.eu/">http://hesmos.eu/</a>
BEAMS	Retrofit, Operation	Operation	Antonio Marqués	Coordinator	ETRA INVESTIGACION Y DESARROLLO SA (ETRA)	info@ict-beams.eu	<a href="http://ict-beams.eu/">http://ict-beams.eu/</a>
CAMPUS21	Retrofit, Operation	Operation	Karsten Menzel	Coordinator	UCC-IRUSE	k.menzel@ucc.ie	<a href="http://www.campus21-project.eu/">http://www.campus21-project.eu/</a>
Cascade	Retrofit, Operation (airports)	Operation		Coordinator	Fraunhofer ISE, Freiburg,	info@cascade-eu.org	<a href="http://www.cascade-eu.org/cms/">http://www.cascade-eu.org/cms/</a>
IREEN	Roadmap for E Neighbourhoods	All lifecycle phases	Martine Tommis, Manchester City Council	Coordinator	AEC3	info@ireenproject.eu	<a href="http://www.ireenproject.eu/">http://www.ireenproject.eu/</a>
S4EeB/S4ECoB	Retrofit, Operation	Operation	Andrea Cavallaro	Coordinator	Dappolonia	andrea.cavallaro@dappolonia.it	<a href="http://www.s4ecob.eu/">http://www.s4ecob.eu/</a>
SEEDS	Retrofit, Operation	Operation	Dr. Noemi Jimenez-Redondo	Coordinator	CEMOSA	noemi.jimenez@cemosa.es	<a href="http://www.seed-sfp7.com/">http://www.seed-sfp7.com/</a>
KnoHoEM	Retrofit, Operation	Operation	Hendro Wicaksono	Coordinator	KIT-IMI	hendro.wicaksono@kit.edu	<a href="http://www.knoholem.eu">www.knoholem.eu</a>

<sup>11</sup>

<https://docs.google.com/spreadsheets/d/1KkKDbb9zOjcdJl7g1cCbueFCxS8x4zo-O8JpO1ZNYE/edit#gid=0>

Technologies for ensuring, monitoring and/or controlling a high quality indoor environments							
CETIEB	Retrofit, Operation	Operation	Juergen Frick	Coordinator	MPA University Stuttgart	Juergen.Frick@mpa.uni-stuttgart.de	<a href="http://www.cetieb.eu/SitePages/Home.aspx">http://www.cetieb.eu/SitePages/Home.aspx</a>
INTASENSE	Retrofit, Operation (Air pollution monitoring)	Operation	Rob Bell	Coordinator	Ctech Innovation	rob.bell@ctechinnovation.com	<a href="http://www.intasense.eu/">http://www.intasense.eu/</a>
Operational Guidance's for Life Cycle Assessment studies of the Energy Efficient Buildings Initiative							
FC-District	Design, Construction, Retrofitting, Energy storage district level	Operation	Juliusz	Coordinator	Mostostal	j.zach@mostostal.waw.pl	<a href="http://www.fc-district.eu/">http://www.fc-district.eu/</a>
e-hub	Retrofitting, Energy management/storage district level	Operation		Coordinator		nfo@e-hub.com	<a href="http://www.e-hub.org/">http://www.e-hub.org/</a>
Energy saving technologies for building envelope retrofitting							
EASEE	Retrofit (façade)	Retrofitting (planner), Operation	Alessandra Monero	Coordinator	Dappolonia	alessandra.monero@dappolonia.it	<a href="http://www.easee-project.eu/">http://www.easee-project.eu/</a>
MEEFS	Retrofit (façade)	Operation	Magdalena Rozanska	Coordinator	Aciona	magdalena.rozanska@acciona.com	<a href="http://www.meefs-retrofitting.eu/">http://www.meefs-retrofitting.eu/</a>
New Technologies for Energy Efficiency at District Level							
EeBGuide	Whole BLC Assessment (comparative evaluation)	Whole BLC	n/a	n/a	n/a	Through web portal	<a href="http://www.eebguide.eu/">http://www.eebguide.eu/</a>
SEAM4US	Retrofitting (Integration of IT systems for underground)	Operation	Giovanni Pescatori	Coordinator	Cofely Italia SpA	giovanni.pescatori@cofely-gdfsuez.com	<a href="http://seam4us.eu/">http://seam4us.eu/</a>
Demonstration of Very Low Energy New Buildings							
BioBuild	Refurbishment, (building facade)	Operation	n/a	n/a	n/a	Through web portal	<a href="http://biobuildproject.eu/">http://biobuildproject.eu/</a>
BUILDSMART	Design, Retrofitting	Operation	Roland Zinkernagel	Coordinator	Lund University	roland.zinkernagel@malmo.se	<a href="http://www.buildsmart-energy.eu/case.html">http://www.buildsmart-energy.eu/case.html</a>
DIRECTION	Retrofitting	Operation	Sergio Sanz	Coordinator	Cartif	sersan@cartif.es	<a href="http://www.direction-fp7.eu/">http://www.direction-fp7.eu/</a>
NEED4B	Design, Construction, Operation	Construction, Operation	Elena	Coordinator	Fcirce	ecalvo@fcirce.es	<a href="http://www.need4b.eu/">http://www.need4b.eu/</a>
NEXT-buildings	Design	Operation	n/a	n/a	n/a	Through web portal	<a href="http://www.next-buildings.com/">http://www.next-buildings.com/</a>
Improving the Energy Efficiency of Historic Buildings in Urban Areas							
3ENCULT	Retrofit, Operation	Operation	Alexandra Troi	Coordinator	Monika Mutschlecher	alexandra.troi@eurac.edu	<a href="http://www.3encult.eu/">http://www.3encult.eu/</a>
Demonstration of Energy Efficiency in Buildings							
BEEM-UP	Retrofitting	Operation		Coordinator	Juan Ramón de las Cuevas	Through web portal	<a href="http://www.beem-up.eu/">http://www.beem-up.eu/</a>
E2ReBuild	Retrofitting	Operation	Christina Claesson	Coordinator	NCC	christina.claesson@ncc.se	<a href="http://www.e2rebuild.eu/">http://www.e2rebuild.eu/</a>
School of Future	Retrofitting (+Design)	Operation	n/a	n/a	n/a	Through web portal	<a href="http://www.school-of-the-future.eu/">http://www.school-of-the-future.eu/</a>
New efficient solutions for energy generation, storage and use related to space heating and domestic hot water in existing buildings							
EINSTEIN	Retrofit (Seasonal Thermal Storage)	Operation	Sergio Saiz	Coordinator	Azpeitia Gipuzkoa	Through web portal	<a href="http://www.einstein-project.eu/">http://www.einstein-project.eu/</a>
HEAT4U	Retrofit (heat pump res)	Operation		Coordinator	Robur SPA	Not given	<a href="http://www.heat4u.eu/en/">http://www.heat4u.eu/en/</a>
New Nanotechnology-based High Performance Insulation Systems							

NanoInsulate	Retrofitting (Vacuum Insulate Panels)	Operation	Malcolm Rochefort	Coordinator	Insulation Kingspan	malcolm.rochefort@insulation.kingspan.com	<a href="http://www.nanoinsulate.eu/">http://www.nanoinsulate.eu/</a>
AEROCOINS	Retrofitting (insulating aerogel)	Operation		Coordinator		aerocoins@tecnalia.com	<a href="http://aerocoins.eu/">http://aerocoins.eu/</a>
NANOFOAM	Retrofitting	Operation	Mr. Van-Chau Vo	Coordinator	Dow Building Solutions	vcvo@dow.com	<a href="http://www.nanofoam.eu/">http://www.nanofoam.eu/</a>
Materials for new energy efficient building components with reduced embodied energy							
SUSCON	Construction (integrate waste into concrete production)	Construction	Paolo Corvaglia	Coordinator	CETMA	paolo.corvaglia@cetma.it	<a href="http://www.suscon.eu/">http://www.suscon.eu/</a>
Geo-clusters approach to support European energy efficiency goals							
GE2O	Clustering project		Dominique Caccavelli	Coordinator	CSTB	dominique.caccavelli@cstb.fr	<a href="http://www.geoclusters.eu/">http://www.geoclusters.eu/</a>

After the questionnaire presented in Appendix II will be completed by the various EeB projects, these projects will be categorized according to their needs and to the degree of awareness and adoption of BIM-LD and Table 1 will be refined and further extended. For example, there are organizations that:

- Are explicitly using/experimenting with BIM and/or LD: they can provide useful feedback explaining what works and what are the major issues;
- Are not explicitly using of BIM or LD but have experience with BIM and/or LD and Semantic Web techniques. They could give useful feedback on the current limitations of the LD cloud that could be alleviated by the introduction of BIM resources on it;
- Are not aware of BIM or LD technologies but for part of the BLCEM. They could identify the issues related to proprietary formats and APIs, isolated datasets, lack of interoperability, their limitations in BIM contexts, etc. From these organizations we will understand how BIM and LD Data could be considered as an appealing framework.

The SWIMing partners and the Cluster will be a representative and virtual laboratory where the project can identify industrial requirements and test the industrial value of their ideas. These stakeholders will support and facilitate migration requirements analysis and problem identification in current BLCEM tasks. In particular, the modelling requirements of those projects that can clearly benefit from using BIM-LOD will be identified and an activity plan suited to them will be defined.

SWIMing will leverage existing networks and communities that have been built up in the last years in various projects, such as the VoCamp and eeSemantics series (originally organized in the auspices of Adapt4EE project coordinated by CERTH, now transferred to the Ready4SmartCities FP7 funded projects still under CERTH's management) that have strong attendance among EeB projects as well as other more focused interest groups such as the BuildingSmart/AEC3 community, the OpenWiki community and appropriate W3C Community and Working Groups.

SWIMing dissemination material has been already shared to the participants of the VoCamp<sup>12</sup> event held at April 22-23, 2015 in Vienna towards introducing SWIMing objectives and putting the basis for collaboration between the various EeB projects.

## 4 W3C Cluster Group Infrastructure

The SWIMing Cluster Portal is implemented technically and organizationally as a W3C Community Group. These groups are supported by the W3C to enable community discussion about technical issues that could potentially contribute to standardization on the Web<sup>13</sup>. Members require a freely available W3C member account. Community members are free to structure their groups as they see fit amongst themselves, selecting group chairs, discussion/meeting frequency, setting objectives and work timetables and are not subject to control or supervision by the W3C.

The technical infrastructure available for W3C Community Groups consists of:

- Wiki
- Event calendar
- Online chat
- Blog
- RSS feed
- Mailing list
- Programmable survey/questionnaire infrastructure
- Online group and membership administrative interface

## 5 Linked Data for Building Life Cycle Energy Management Cluster Group

SWIMing has therefore established a Community Group called Linked Building Data, LBD for short. The name was chosen to provide widespread recognition of the goals of the community, as opposed to being an adjunct to the SWIMing project. This group brings together experts in the area of building information modelling (BIM) and Web of Data technologies to define existing and future use cases and requirements for Building Linked Data based applications in support of Building Life Cycle (BLC) processes.

The envisioned target beneficiaries of this group are both industrial and governmental organizations who use data from building information modelling applications and other data related to the building life cycle (sensor data, GIS data, material data, geographical data, and so forth) to achieve their business processes and whom will benefit from greater integration of data and interoperability between their data sets and the wider linked data communities. For example, benefit may be obtained by publishing and combining localized data on new cheaper building materials, energy efficient building devices and systems, along with real time data on weather patterns, energy prices and geodata.

By making this data available to applications, they will be better able to support decision makers during the whole of the building life cycle, which includes design, construction, commissioning, operation, retrofitting/refurbishment/reconfiguration, demolition, and

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<sup>12</sup> <http://smartcity.linkeddata.es/LD4SC/VoCamp/>

<sup>13</sup> <http://www.w3.org/community/about/#cg>

recycling of buildings. The LBD group will engage with these beneficiaries through surveys and events organized in conjunction with the affiliated workshop series on Linked Data for Architecture and Construction (LDAC).

## 6 Community Engagement Plan via Portal

The SWIMing community portal will form a hub for the engagement with the SWIMing Industry Board, and in particular will provide the medium via which requirements and use cases will be presented, discussed and refined. The operation of the portal will therefore consist of close collaboration between SWIMing WP1, which is implementing the capturing of business use cases, and SWIMing WP3, which is concerned with cluster and community engagement. For the latter, the LBD community will provide a focus for community engagement in the development of the workshops.

The plan for engagement via the LBD portal is documented in SWIMing deliverable D3.1: “Cluster building and dissemination plan”.

## Appendix I: Activities planned for 2015 (current state)

The following list provides activities that are already confirmed to take place in the first year of the project. For the cluster workshops, the project will use the shared budget to invite speakers.

- Month 2 2015: 1<sup>st</sup> SWIMing Industrial Workshop
  - Organized alongside the buildingSMART conference Watford, London,
  - March 23<sup>rd</sup>-25<sup>th</sup>
- Month 3 2015: press release, based on the fact sheet. The press release about the start of the SWIMing project has been created and translated into each partner's language.
- Month 6 2015: The 1<sup>st</sup> SWIMing Clustering Workshop
  - Aligned with EG-ICE workshop, Eindhoven University of Technology, The Netherlands
  - July 15<sup>th</sup> – 17<sup>th</sup>
- Month 8 2015: The 2nd SWIMing Clustering Workshop
  - Aligned with Sustainable Places 2015 International event, Savona, Italy, 16-18 September 2015
  - Event website: <http://sustainable-places.eu/sp-2015/>
- Month 11 2015 The 3rd SWIMing Clustering Workshop
  - Event and location to be decided

Some indicative conferences where SWIMing plans to have a presence are presented in Table 2.

**Table 2** Conferences where SWIMing plans to have a presence

Date	Year	Name	Location	Acronym	Website
Apr 13-17	2015	Hannover Fair	Hannover, Germany	HMI 2015	<a href="http://www.hannovermesse.de/">http://www.hannovermesse.de/</a>
May 11-13	2015	5th International Conference on Power Engineering, Energy and Electrical Drives	Riga, Latvia	POWERENG 2015	<a href="http://www.powereing2015.org/">http://www.powereing2015.org/</a>
May 13	2015	International Energy Research Centre 2015 Conference	Cork, Ireland	IERC 2015	<a href="http://www.ierc.ie/ierc-conference-2015-agile-energy-future-expanding-horizons-energy-innovation/">http://www.ierc.ie/ierc-conference-2015-agile-energy-future-expanding-horizons-energy-innovation/</a>
May 20-22	2015	4 <sup>th</sup> International Conference on Smart Cities and Green ICT Systems	Lisbon, Portugal	Smart Greens	<a href="http://www.smartgr">http://www.smartgr</a>

				2015	<a href="http://eens.org/EuropeanProjectSpace.aspx">eens.org/EuropeanProjectSpace.aspx</a>
Jun 3-5	2015	10th International Conference on Ecosystems and Sustainable Development	València, Spain	ECOSUD 2015	<a href="http://www.wessex.ac.uk/15-conferences/ecosud-2015.html">http://www.wessex.ac.uk/15-conferences/ecosud-2015.html</a>
Jun 5-19	2015	EU Sustainable Energy week		EUSEW	<a href="http://www.eusew.eu/home">http://www.eusew.eu/home</a>
Jun 24-25	2015	2015 Smart Cities Symposium Prague	Prague, Czech Republic	SCSP	<a href="http://akce.fd.cvut.cz/en/scsp2015">http://akce.fd.cvut.cz/en/scsp2015</a>
July 1-3	2015	International Conference on Sustainability in Energy and Buildings 2015, Altis Grand Hotel	Altis Grand Hotel, Lisbon, Portugal	SEB-15	<a href="http://seb15.sustainableenergy.org/deadlines.php">http://seb15.sustainableenergy.org/deadlines.php</a>
July 12	2015	The European Conference on Energy, Sustainability and the Environment. Conference Theme: "Power & Sustainability".	Thistle Brighton, Brighton, East Sussex, United Kingdom	ECSEE2015	<a href="http://iafor.org/ecsee2015-call-for-papers/">http://iafor.org/ecsee2015-call-for-papers/</a>
July 21-23	2015	International Conference on Connected Smart Cities (multi conference on computer science and information systems)	Las Palmas de Gran Canaria, Spain	MCCSIS 2015	<a href="http://smartcities-conf.org/">http://smartcities-conf.org/</a>
Sep 27th – Oct 3rd	2015	10th Conference on Sustainable Development of Energy, Water and Environment Systems	Dubrovnik, Croatia	SDEWES	<a href="http://www.dubrovnik2015.sdeswes.org/">http://www.dubrovnik2015.sdeswes.org/</a>
Oct 27-29	2015	CIB-W78 conference	Eindhoven, NL		<a href="http://cib-w78-2015.bwk.tue.nl/">http://cib-w78-2015.bwk.tue.nl/</a>
Nov 2-5	2015	European Utility Week	Vienna, Austria		<a href="http://www.european-utility-week.com/">http://www.european-utility-week.com/</a>
Nov 12-14	2015	7th International Joint Conference on Knowledge Discovery, Knowledge Engineering and Knowledge Management	Lisbon, Portugal	IC3K	<a href="http://www.ic3k.org">http://www.ic3k.org</a>

Dec 7 <sup>th</sup> - 9 <sup>th</sup>	2015	14th International Conference of the International Building Performance Simulation Association	Hyderabad . India	IBPSA	<a href="http://bs2015.in/">http://bs2015.in/</a>
	2016	ECPPM			<a href="http://cyprusconferences.org/ecppm2016/">http://cyprusconferences.org/ecppm2016/</a>
	2016	ICCCBE			<a href="http://www.see.eng.osaka-u.ac.jp/seeit/icccbe2016/pages/conference3.html">http://www.see.eng.osaka-u.ac.jp/seeit/icccbe2016/pages/conference3.html</a>



## Appendix II: Questionnaire sent to various EeB projects by E2BA (identifying potential SWIMing cluster members)

### PROJECT KEY FACTS

#### 1. Project Identification

<b>Project acronym</b>	
<b>Project name</b>	
<b>Start date (e.g. May 2013)</b>	
<b>Duration (months)</b>	
<b>Total budget (M€)</b>	
<b>Project website</b>	

#### 2. Coordinator details

<b>Name</b>			
<b>Organisation</b>			
<b>Type of organisation</b>	<input type="radio"/> Large Company	<b>Country</b>	
	<input type="radio"/> SME		
	<input type="radio"/> RTD Institute	<b>Detail, if "other"</b>	
	<input type="radio"/> University		
	<input type="radio"/> Other		
<b>E-Mail:</b>			

#### 3. Details on another contact point of the project (dissemination or exploitation manager...) to be used by CSAs (if you wish it)

<b>Name</b>			
<b>Organisation</b>			
<b>Role in the project</b>			
<b>Type of organisation</b>	<input type="radio"/> Large Company	<b>Country</b>	
	<input type="radio"/> SME		
	<input type="radio"/> RTD Institute	<b>Detail, if "other"</b>	
	<input type="radio"/> University		
	<input type="radio"/> Other		
<b>E-Mail:</b>			

#### 4. Considering the EeB value chain as defined in the [E2BA Roadmap](#), please indicate which domains are the main focuses of the project (by order of priority)

First Domain (1 choice only)	Second Domain (1 choice only)	Other Domains (several possible)
<input type="radio"/> Design	<input type="radio"/> Design	<input type="radio"/> Design
<input type="radio"/> Structure	<input type="radio"/> Structure	<input type="radio"/> Structure
<input type="radio"/> Envelope	<input type="radio"/> Envelope	<input type="radio"/> Envelope

○ Energy equipment	○ Energy equipment	○ Energy equipment
○ Construction Process	○ Construction Process	○ Construction Process
○ Energy performance monitoring & management	○ Energy performance monitoring & management	○ Energy performance monitoring & management
○ End of life	○ End of life	○ End of life
○ Cross-cutting & Integration	○ Cross-cutting & Integration	○ Cross-cutting & Integration
	○ Materials	○ Materials
	○ ICT	○ ICT
	○ Interoperability, Data Models, BIM	○ Interoperability, Data Models, BIM
	○ Other	

### **PROJECT INNOVATIONS**

- 5. Please specify the innovation(s) your project aims or aimed at developing. Consider all kinds of innovation (including the field of ICT and non-technological ones)**

Number of innovations		
(add as many lines as needed)	Short descriptions of the innovations (especially on how the innovation contributes to EeB)	TRL level (see end of document ) planned to be reached by the project
Innovation 1		
Innovation 2		
Innovation 3		
Innovation 4		
Innovation 5		

<b>Innovation 6</b>		
<b>Innovation 7</b>		
<b>Innovation 8</b>		
<b>Innovation 9</b>		
<b>Innovation 10</b>		

**6. Please specify the patents, related to these innovations, you have already applied for or you plan to apply for**

<b>Number of patents</b>	
<b>Innovation numbers related to patents you have already applied for</b>	
<b>Innovation numbers related to patents you plan to apply for</b>	

**7. Please specify the patents, related to these innovations, which have been awarded so far**

<b>Number of patents</b>	
<b>Innovation numbers related to patents which have been already awarded</b>	

**8. Please specify if the project has contributed to any standard, related to these innovations**

<b>How many activities leading to standardisation has the project carried out so far?</b>		
<b>If not, does the project plan to develop such activities?</b>	<input type="radio"/> yes	<input type="radio"/> no
<b>If the project has already contributed or plans to contribute, what is the number of (expected) concerned standardisation documents</b>		
<b>Mention the prEN standards which are concerned?</b>		

**9. Does the project develop new high-skilled profile/jobs and/or new curricula?**

<b>Number of new high-skilled profile/jobs developed</b>	
<b>Number of new curricula developed</b>	
<b>Please detail them briefly</b>	

**10. Does the project develop training courses or dissemination events?**

<b>Number of training courses or dissemination events developed in the project</b>	
<b>Estimated number of people trained during these courses and events</b>	

**11. If the project involves material developments, has it reached the stage of “pilot line production”?**

<input type="radio"/> No	<b>If no, explain briefly the demonstration level reached (e.g. one prototype in lab, demo)</b>	
<input type="radio"/> Yes	<b>If yes, detail below the contact person for the pilot line</b>	
<b>Name</b>		
<b>Organisation</b>		
<b>Role in the project</b>		
<b>Type of organisation</b>	<input type="radio"/> Large Company <input type="radio"/> SME <input type="radio"/> RTD Institute <input type="radio"/> University <input type="radio"/> Other	<b>Country</b>  <b>Detail, if “other”</b>
<b>E-Mail:</b>		

**12. Would you be interested in publishing project use cases related to data management online in a centralised [wiki](#)**

<input type="radio"/> No	<input type="radio"/> Yes
--------------------------	---------------------------

**EXPLOITABLE RESULTS**

The aim of this section is to explore to what extent (initially) expected results have been achieved and translated into commercially exploitable results.

**13. Has the project already led to results which have been taken-up for higher TRLs using additional investments? (For example after the end of a project or during a project, additional investment has been dedicated to further exploitation of a project result in view of a future commercial exploitation)**

- Yes
- No, but it is planned later on
- No, the project should not lead to such results

**14. Please list the commercially exploitable results your project has already achieved or is close to achieve**

Short description	Progress beyond state-of-the-art (main innovative aspects)	Technology Readiness Level (1-9) <sup>14</sup>	Already commercially exploited
			<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> I don't know
			<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> I don't know
			<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> I don't know
			<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> I don't know

**15. Has the project produced results (especially on LCA/LCC) that could be shared in the framework of the PPP EeB?**

<input type="radio"/> No	<input type="radio"/> Yes	<b>If yes , give a short description and detail the contact person below</b>	
<b>Short Description</b>			
<b>Name</b>			
<b>Organisation</b>			
<b>Role in the project</b>			
<b>Type of organisation</b>	<input type="radio"/> Large Company <input type="radio"/> SME <input type="radio"/> RTD Institute <input type="radio"/> University <input type="radio"/> Other	<b>Country</b>	
		<b>Detail, if "other"</b>	
<b>E-Mail:</b>			

**PRIVATE INVESTMENTS and SMEs**

The aim of this section is to evaluate the level of private investment related to the project, as well as impacts for SMEs.

Note that the word "private" should be understood as opposite to "public" in the sense of the "Public Private Partnership". Therefore any investment which is not EC funding has to be considered as "private".

<sup>14</sup> TRL classification: For details, see last page of the questionnaire

**16. Assessment of the private investments linked to the project or the EeB PPP domain**

<b>What is the total amount of funding mobilised in the project by the partners? (= the part of the project budget not covered by the EC funding) (M€)</b>		
<b>What is an estimation of the <u>additional</u> private investment mobilised in parallel of or after the project? (for any other activities linked to the project but not included in the project budget, such as the full cost of a demonstration, the cost of further implementation of project results...) (M€)</b>		
<b>Please estimate the amounts of private investments mobilised in <u>other</u> research or innovation activities linked to Energy Efficient Buildings. Please indicate which partner for each amount (add as many lines as needed).</b>		
<b>Partner 1</b>		<b>Amount of investment (M€)</b>
<b>Partner 2</b>		<b>Amount of investment (M€)</b>
<b>Partner 3</b>		<b>Amount of investment (M€)</b>
<b>Partner 4</b>		<b>Amount of investment (M€)</b>
<b>Partner 5</b>		<b>Amount of investment (M€)</b>

**17. Participation and benefits for SMEs**

<b>What is the number of SMEs participating in the project?</b>	
<b>What is an estimated average % of growth of turnover for these SMEs?</b>	
<b>What is an estimated average % of growth of staff for these SMEs?</b>	
<b>Did the project lead to the creation of start-ups or spin-offs exploiting all or part of the outcome of the project?</b>	<input type="checkbox"/> yes <input type="checkbox"/> no

**MISCELLANEOUS**

**18. Contribution to the reduction of energy use and CO2 emissions**

<b>Estimated average reduction of energy use due to the innovations developed in the project (in MWh/year)</b>	
<b>Estimated average reduction of energy use due to the innovations developed in the project (in %)</b>	
<b>Detail the reference you used for your estimate</b>	
<b>Estimated average reduction of CO2 emissions due to the innovations developed in the project (in TOE/year)</b>	
<b>Estimated average reduction of CO2 emissions due to the innovations developed in the project (in %)</b>	
<b>Detail the reference you used for your estimate</b>	
<b>Number of full scale/size demonstrators (if any)</b>	
<b>How many of them are monitored?</b>	
<b>Estimated reduction of energy use through the demonstrators implemented in the project (in MWh/year), if any</b>	
<b>Estimated reduction of energy use through the demonstrators implemented in the project (in %), if any</b>	
<b>Estimated reduction of CO2 emissions due to the demonstrators implemented in the project (in TOE), if any</b>	
<b>Estimated reduction of CO2 emissions due to the demonstrators implemented in the project (in %), if any</b>	
<b>Detail the reference you used for your estimate</b>	

**19. Contribution to the reduction of waste and use of material resources**

<b>Estimated average reduction of waste due to the innovations developed in the project (in T/year)</b>	
<b>Estimated average reduction of waste due to the innovations developed in the project (in %)</b>	
<b>Detail the kind of waste and detail the reference you used for your estimate</b>	
<b>Estimated average reduction of use of material resources due to the innovations developed in the project (in T/year)</b>	
<b>Estimated average reduction of use of material resources due to the innovations developed in the project (in %)</b>	
<b>Detail the kind of material and detail the reference you used for your estimate</b>	
<b>Number of full scale/size demonstrators (if any)</b>	
<b>Estimated reduction of waste through the demonstrators implemented in the project (in T/year and %), if any</b>	
<b>Detail the kind of waste and detail the reference you used for your estimate</b>	

<b>Estimated reduction of use of material resources due to the demonstrators implemented in the project (in T/year and %), if any</b>	
<b>Detail the kind of material and detail the reference you used for your estimate</b>	

**Definition of Technology Readiness Levels**  
**HORIZON 2020 – WORK PROGRAMME 2014-2015 General Annexes**

Extract from Part 19 - Commission Decision C(2014)4995

Where a topic description refers to a TRL, the following definitions apply:

- TRL 1 – basic principles observed
- TRL 2 – technology concept formulated
- TRL 3 – experimental proof of concept
- TRL 4 – technology validated in lab
- TRL 5 – technology validated in relevant environment (industrially relevant environment in the case of key enabling technologies)
- TRL 6 – technology demonstrated in relevant environment (industrially relevant environment in the case of key enabling technologies)
- TRL 7 – system prototype demonstration in operational environment
- TRL 8 – system complete and qualified
- TRL 9 – actual system proven in operational environment (competitive manufacturing in the case of key enabling technologies; or in space)
- manufacturing in the case of key enabling technologies; or in space)



## Appendix III: Questionnaire shared at conferences, workshops, etc. to identify areas for clustering

### **Win a Prize! Complete this Survey**

**To enter draw, complete the survey, write your name and email at end and return it to the SWIMing 'box'**

Thank you for considering this questionnaire. The anonymised results of this survey will be analyzed and published by for the Linked Building Data (LBD) W3C community Group.

It will provide input into a clustering activity for identifying the role of linked data in Building Life Cycle Management. We therefore need your input to understand better the role of Building Data resources in application requirements and use cases.

If you are interested in engaging in more depth we invite you to join the LBD Group via: <http://www.w3.org/community/lbd/>

**Organisation Type:** Indicate the type of organization for which you work.

SME (<250 employees)	
Large Company	
University or Research Organisation	
Public Sector Organisation	
Non-profit	
Other (please specify)	

**Industry Sector:** Please indicate in the below table which domain(s) you are active in and under which stage of the Building Life Cycle (BLC)<sup>15</sup> your products/services and use cases fall.

Domain	Planning and Design	Construction	Commissioning	Operation	Retrofitting/Refurbishment/Reconfiguration*	Demolition/Recycling	Energy Efficiency*
Controls/Automation							
Architecture							
Structural Elements							
Structural Analysis							
HVAC							
Electrical							
Plumbing, Fire Protection							
Management Optimisation							
Communications							
Decision Support							
Facility Management							
Visualization							
Consumption control/optimization							
Simulation							
Other (please specify):							

\*Please also indicate whether your product/service related to the buildings energy efficiency.

<sup>15</sup> The Building Life Cycle covers design, construction, commissioning, operation, refurbishment and demolition.

**Use Case Data Requirements:** Please tick the types of Building Data your particular products/services and use cases require<sup>16</sup>.

<b>Building Data</b>					
<b>Building Geometry</b>	Includes visual representations		<b>Building Digital Data</b>	e.g. data measured by sensors	
	2D Geometry			Measured Data	
	3D Geometry			Set points	
	Visual/Surface Model			Inputted Data (e.g. occupant schedules)	
	Solid Model			Device Data (on/off/idle)	
	Products/Devices			Database Storage***	
	Electrics			Measured Data Model	
	Plumbing				
Other:			Other:		
<b>Building Products/Devices</b>	Models of building products (can include sensors)		<b>Building Behaviour</b>	Inferred data, e.g. building state, occupant activities	
	Materials			State Models	
	Cost			Occupant Activity Models	
	Durability		Other:		
	Energy Consumption		<b>Historical Building Data</b>		
	Communication*			Heritage data	
	Uncertainty**			Original Plans	
Other:			Other:		
<b>Simulated Data</b>			<b>Geolocation</b>		
	Energy			Building Location	
	Thermal			Relation to district	
	Occupant		Other:		
<b>Building Control</b>			<b>Energy Data</b>		
	Activity Schedules			Tariffs	
	A.I. Models		Other:		
Other:			<b>Weather</b>		
<b>Actors</b>				Local weather	
	Users			Predicted Weather	
	Organisations		Other:		
Other (please					

<sup>16</sup> These data types have been categorised under a particular data modelling domain. It may be the case that you do not model your data requirements in this way. Please, if you model a particular data type and it falls into a different category, or none of these categories, indicate this under 'other'.

specify):					

\* How communication is modelled to the device.

\*\*How accurate/precise is the device (for example a sensor), may include data on latency.

\*\*\* Building data may also be stored in a database and may also be used to infer building state (see behaviour model)

**Horizontal Building Data Resource:** If Building Data (BD) and building related data were to be made more available via the web, prioritise the top topics you would like to see addressed (1 being the highest priority):

Material Resources			
Geometric Resources			
Visual Representation Resources			
Actor Resources			
Product/Device Resources			
Cost Resources			
Energy Resources			
Simulation Resources			
Measured/Metered Data Resources			
Weather Data Resources			
Geolocation Resources			
Language Resources			
Other (please specify):			

**BD Resource Location:** Do you use in-house or external BD resources in the above products/services?

In-house	
External BIM resources	
Both above	
Other Resources/Comments:	

**Linked Data Awareness:** *How aware are you of: Linked Data?*

	Linked Data	Linked Building Data
Very aware		
Not so		
Not at all		

**Publishing Use Cases:** *Would you be interested in publishing your use cases on the W3C community group portal? Yes/No*

**Thank you for your cooperation with the survey.**

**If you wish to enter our prize draw please write your name and email address below and return the completed survey to the SWIMing box (these details will not be recorded or used for any other purpose)**

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Name (BLOCK CAPITALS) :

Email: