

## INTERLINK D.1 Library list of relevant literature for WPA and WPB

Document name	INTERLINK D.1 - Literature Library List.docx
Version	4.0
Date	24-3-2017
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### Approval for main versions

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Reviewed	2.0	Daan Alsem	WPB Leader	28/11/2016
Authorised	3.0	Bart Luiten	Proj. Coord.	30/11/2016
Accepted	4.0	Benno Koehorst	Proj. Manager	24/03/2017

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### *Acknowledgement*

This document is a deliverable of the INTERLINK project, which has received funding from the CEDR Transnational Research Programme.

## 1 Project information

<b>Project title</b>	Information management for European Roads using LINKed data		
<b>Acronym - Logo</b>	<b>Interlink</b>		
<b>CEDR Topics addressed</b>	<p><u>CEDR Call 2015: Asset Information using BIM:</u></p> <p>A. Exploration of procuring asset information</p> <p>B. Exploration of BIM data structures</p> <p>C. Design for common principles for object-type library</p> <p>D. Design and test a basic object-type library and open BIM standards</p>		
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<b>Partners</b>	TNO	<b>Country</b>	NL
	Roughan & O'Donovan Consulting Engineers (ROD)		IRL
	Royal Haskoning DHV (RHDHV)		NL
	AEC3		DE
	Vianova Systems (VNS)		NO
	interactive instruments (ii)		DE
	Semtech		NL
	planen-bauen 4.0 (pb4.0)		DE
<b>Start date</b>	01/09/2016	<b>Duration (in months)</b>	24
<b>End date</b>	31/08/2018		
<b>Project Website</b>	<a href="http://www.RoadOTL.eu/">http://www.RoadOTL.eu/</a>		

## 2 Document Scope

As part of WPA and WPB, Deliverable D.1 is a dynamic web-based library of relevant pre-existing literature reviews and recently developed literature. This document describes the methodology for collating the literature and provides the literature list current at the time of this report.

## 3 Abbreviations

Abbreviation	Explanation [optional context]
AI	Asset Information
AM	Asset Management
BIM	Building Information Management/Modelling
CEDR	Conference of European Directors of Road
D.x	Deliverable x [INTERLINK]
EU	Europe, European
IM	Information Management
INTERLINK	INformation management for European Roads using LINKed data
LD	Linked Data concept [W3C]
M.x	Month x [INTERLINK]
NRA	National Road Authority
OTL	Object Type Library
WP	Work Package [INTERLINK]
WPL	Work Package Leader [INTERLINK]
Y1, Y2	Year 1, Year2 [INTERLINK]

## 4 Methodology

Various sources have been and are being used to identify and gather suitable reference literature for this research project, as follows:

- INTERLINK consortium members
  - These organisations operate in various countries and areas of expertise. Extensive literature was made available by the members.
- National Roads Authorities (NRAs), especially the CEDR members
  - Literature is being sought from NRAs by both email contact and during the ongoing research interviews.
  - Various standards and guidance documents are published on NRA websites, many of which have been collated for this research.
- Industry contractors, consultants and academics
  - Literature is being sought from parties by both email contact and during the ongoing research interviews.
- National standardisation bodies
  - These bodies publish various relevant national, European and international standards.
- Associated research projects
  - Relevant literature reviews have been carried out for other associated research projects, e.g. Virtual Construction for Roads (V-Von).
  - Associated research projects have produced and continue
- National and international development programmes
  - Various parallel development programmes are continuing during this project. Output from these programmes is collected by INTERLINK consortium members through strategic links.
- Academic journals
  - Various papers have been gathered from academic journals, with a focus on quality publications.

## 5 Literature Library List

The list of literature collated to date is provided in Appendix A. The list provides the title, publisher/author, publication year, literature type and a web link where available. Where possible, the web link is directly to the literature. However, in cases a document is protected by copyright the link is to a resource where the document can be purchased, such as a national standardisation body.

The types of literature included are:

- Research papers;
- Reports;
- Presentations;
- Websites;
- Journal articles;
- Standards;
- Specifications;
- Books;
- Guidance documents; and
- Leaflets.

Although the INTERLINK consortium has sought to identify all relevant literature, the field of BIM for road infrastructure assets is broad and interfaces with many associated fields of research and practice. Also, some relevant literature is already listed and reviewed in associated research reports. As such, some relevant literature may not be listed at this time. Further, rapid developments are ongoing in parallel research projects and in the industry application of BIM for the management of road infrastructure assets. As such, this list should not be considered exhaustive.

The INTERLINK consortium proposes to publish the list on the INTERLINK website (<http://www.RoadOTL.eu/>), once launched. In the course of the INTERLINK project, the INTERLINK partners will add new items to the list. Also the visitors of the website are encouraged to provide additional input to the literature list. The list will be reviewed monthly during the remaining time of the two-year project and will be revised where necessary.

## 6 Appendix A

Author /Publisher/Source	Literature Title	Type	Year	Link
Abanda et al.	Exploring the Relationship Between Linked Open Data and Building Information Modelling		2013	
Ahuja et al.	IT-enhanced communication protocols for building project management	Journal Article	2010	<a href="#">Link</a>
Amann, Borrmann	Creating a 3D-BIM-compliant road design based on IFC alignment	Report	2015	<a href="#">Link</a>
Anumba et al.	Collaborative project information management in a semantic web environment	Journal Article	2008	<a href="#">Link</a>
Anweisung Straßeninformationsbank - ASB	Anweisung Straßeninformationsbank Segment Bauwerksdaten	Report	2013	
Austroroads	Data Standard for Road Management and Investment in Australia and New Zealand: Version 1	Standard	2016	<a href="#">Link</a>
BAST (Bundesanstalt für Straßenwesen), Germany	ASB-Ing		2014	<a href="#">Link</a>
BAST	BISStra, Traffic Statistics (in German)	Webpage	NA	<a href="#">Link</a>
BAST	Bauwerk-Management-System (BMS) (in German)	Webpage	NA	<a href="#">Link</a>
BAST	Intelligent Road Transport Infrastructure through 3D Models and RFID tags (in German)	Report	2013	<a href="#">Link</a>
BAST	OKSTRA (in German)	Website	2016	<a href="#">Website</a>
BAST	Overview of Relevant Regulation for (tunnels, Bridge, noise protection walls) (in German)	Webpage	NA	<a href="#">Link</a>
BAST	Overview of Road Maintenance Planning (in German)	Webpage	NA	<a href="#">Link</a>
BAST	Maintenance management of the federal trunk roads	Leaflet	2014	<a href="#">Link</a>
BAST	Pavement Management Systems	Webpage	NA	<a href="#">Link</a>
BAST	SIB-Bauwerke (Tender Documents)	Report	2016	<a href="#">Link</a>

Author /Publisher/Source	Literature Title	Type	Year	Link
BASt	SIB-Bauwerke	Webpage	NA	<a href="#">Link</a>
BASt	Smart Bridge	Report		<a href="#">Link</a>
BASt	UML – Diadram for discussion on 27-28/07/2016	Diagrams	2016	
BIM Alliance Sweden	BIM Alliance Sweden	Website	2016	<a href="#">Website</a>
BIM Locket	Atlas van Open BIM Standaarden 1.1	Presentation	2016	<a href="#">Link</a>
BMVI	Stufenplan Digitales Planen und Bauen (in German)	Report	2015	<a href="#">Link</a>
Bohms et al.	Linked Data Vision for bSI (presented at buildingSmart Summit, South Korea, 2016)	Presentation	2016	
Bohms et al.	LD Approach V-Con by TNO and RWS (presented at buildingSmart Summit, South Korea, 2016)	Presentation	2016	
Borrmann et al.	IFC Infra Overall Architecture (presented at buildingSmart Summit, South Korea, 2016)	Presentation	2016	
Borrmann et al.	IFC Infra Overall Architecture - Progress Update Expert Panel Meeting (presented at buildingSmart Summit, South Korea, 2016)	Presentation	2016	
Borst et al.	An Application of Ontology Construction	Journal Article	1996	
Bosch	Beheren van bouwwerken met BIM: Een onderzoek van bouwwerken met BIM	Report	2014	<a href="#">Link</a>
Bosch et al.	BIM in the operations stage: bottlenecks and implications for owners	Report		<a href="#">Link</a>
British Standards Institute	BS 1192:2007 + A1:2015 Collaborative production of architectural, engineering and construction information – Code of practice;	Standard	2015	<a href="#">Link</a>
British Standards Institute	PAS 1192-2:2013 Specification for information management for the capital/delivery phase of construction projects using building information modelling;	Specification	2016	<a href="#">Link</a>
British Standards Institute	PAS 1192-3:2014 Specification for information management for the operational phase of assets using building information modelling (BIM)	Specification	2014	<a href="#">Link</a>
British Standards Institute	BS 1192-4:2014 Collaborative production of information. Fulfilling employer's information exchange requirements using COBie. Code of practice	Standard	2014	<a href="#">Link</a>
British Standards Institute	PAS 1192-5:2015 Specification for security-minded building information modelling, digital built environments and smart asset management	Specification	2015	<a href="#">Link</a>



Author /Publisher/Source	Literature Title	Type	Year	Link
British Standards Institute	BS 8536-2:2016 Design and construction: Code of practice for asset management (Linear and geographical infrastructure)	Standard	2016	<a href="#">Link</a>
buildingSmart International	bSI Technical Room Results and Conclusions (presented at buildingSmart Summit, South Korea, 2016)	Presentation	2016	
buildingSmart International	IFC-Infra Common Definitions (presented at buildingSmart Summit, South Korea, 2016)	Leaflet	2016	
buildingSmart International	Proof the value of LD for Infra (presented at buildingSmart Summit, South Korea, 2016)	Leaflet	2016	
buildingSmart International	IFC Alignment (presented at buildingSmart Summit, South Korea, 2016)	Presentation	2016	<a href="#">Link</a>
buildingSmart International	IFC Alignment (Project Web Page)	Project		<a href="#">Website</a>
Byggtjänst, Sweden	BSAB / CoClass System	Website	2016	<a href="#">Website</a>
Castaing	IFC Bridge Project	Presentation	2016	
Castaing	Resolutions – IFC Roads and Railways (presented at buildingSmart Summit, South Korea, 2016)	Presentation	2016	
Castaing & Benning	IFC Bridge / Data Dictionary (presented at buildingSmart Summit, South Korea, 2016)	Presentation	2016	
Castaing and Grand	XP P07-150 Standard Experimentation (presented at buildingSmart Summit, South Korea, 2016)	Presentation	2016	
CEDR	S3 Information Interim Report	Report	2015	<a href="#">Link</a>
CEN	CEN/TC 442 BIM (OGC & CEN Subcommission) Web Page	Website	2016	<a href="#">Website</a>
CEN	CEN/TC 442 (2015) Business Plan	Report	2015	<a href="#">Link</a>
COINS Project Group	COINS Building Information System	Website	2016	<a href="#">Link</a>
Cox and Ireland	Managing Construction Supply Chains: The Common Sense Approach	Report	2002	<a href="#">Link</a>
Dave et al.	Opportunities for enhanced lean construction management using Internet of Things standards	Journal Article	2016	<a href="#">Link</a>
Danish OpenBIM Study	Danish OpenBIM Study - Seminar Programme Leaflet	Leaflet	2013	<a href="#">Link</a>
Das et al	An ontology-based web service framework for construction supply chain collaboration and management	Journal Article	2015	<a href="#">Link</a>

Author /Publisher/Source	Literature Title	Type	Year	Link
Dutch Building Information Council	CB-NL Dutch concept library for the built environment	Website	2016	<a href="#">Link</a>
Eadie et al.	A survey of current status of and perceived changes required for BIM adoption in the UK	Journal Article	2015	<a href="#">Link</a>
Eadie et al.	BIM implementation throughout the UK construction project lifecycle: An analysis	Journal Article	2016	<a href="#">Link</a>
Edrum-Fotwe et al.	Reconciling construction innovation and standardisation on major projects	Report	2015	<a href="#">Link</a>
El-Diraby	Validating Ontologies in Informatics Systems: Approaches and lessons learned for AFC	Report	2014	<a href="#">Link</a>
EURODICTI	Mobility Growth 8.1	Abstract and Call text	2014	
EURODICTI	Abstract EU Proposal EURODICTI	Abstract	2014	
EURODICTI	Proposal Submission Form	Proposal	2014	
European Commission	BIM Communication	Report	2013	
European Commission	Commission Staff Working Document - Guide for the procurement of standards-based ICT	Report	2013	<a href="#">Link</a>
European Commission	Open Standards	Web Page	N/A	<a href="#">Website</a>
Flanagan and Marsh	Measuring the costs and benefits of information technology in construction	Report	2000	<a href="#">Link</a>
Gibb and Isack	Client Drivers for Construction Projects: Implications for Standardization	Leaflet	2013	<a href="#">Link</a>
Highways England	Interim Advice Note 182/14 - Major Schemes: Enabling Handover into Operation and Maintenance	Guidance	2014	<a href="#">Link</a>
Highways England	Interim Advice Note 184/16 - Highways England Data & CAD Standard Instructions on naming conventions, file types and data structures for the delivery and transfer of CAD / BIM files to Highways England and its supply chain.	Guidance	2016	<a href="#">Link</a>
Hooper	BIM Standardisation efforts - The case of Sweden	Report	2015	<a href="#">Link</a>
InfraBIM	Infra FINBIM Boosted the Breakthrough of Infrastructure Modelling	Article	2015	<a href="#">Link</a>

Author /Publisher/Source	Literature Title	Type	Year	Link
InfraBIM	InfraBIM Common Requirements and Classification System	Website	2016	<a href="#">Website</a>
InfraGML	InfraGML - Linking pin between Geo and BIM	Presentation	2014	<a href="#">Link</a>
ISO	ISO 55000 Asset Management - Overview, Principles and Terminology	Standard	2014	<a href="#">Link</a>
ISO	ISO 55001 Asset Management - Management Systems - Requirements	Standard	2014	<a href="#">Link</a>
ISO	ISO 55002 Asset Management - Management Systems - Guidelines for the Application of ISO 55001	Standard	2014	<a href="#">Link</a>
Jackson	InfraRoom (Update)	Presentation	2015	<a href="#">Link</a>
Jackson	Asset Managers BIM Requirements - An Interim Report on Progress & Engaging in Next Stage (presented at buildingSmart Summit, South Korea, 2016)	Presentation	2016	
Jetlund	GML Application Schemas	Presentation	2015	<a href="#">Link</a>
Kellermann	OKSTRA German Data Exchange for Road and Bridge (presented at buildingSmart Summit, South Korea, 2016)	Presentation	2016	
Kellermann	German Commitment to Bridge Standardisation (presented at buildingSmart Summit, South Korea, 2016)	Presentation	2016	
Krause	Systematische Straßenerhaltung und Pavement-Management-System (in German)	Report	2001	<a href="#">Link</a>
Leea et al.	Validations for ensuring the interoperability of data exchange of a building information model	Journal Article	2015	<a href="#">Link</a>
Liebich	Common Approach to IFC (presented at buildingSmart Summit, South Korea, 2016)	Presentation	2016	
Liebich	German IFC Road and Rail Review Project (presented at buildingSmart Summit, South Korea, 2016)	Presentation	2016	
Love et al.	A Model for Supporting Inter-Organizational Relations in the Supply Chain	Report		
Luiten et al.	Linked Data Vision for the BSI InfraRoom by TNO & RWS (presented at buildingSmart Summit, South Korea, 2016)	Presentation	2016	
McGraw Hill	SmartMarket Report - Business Value of BIM for Construction in Major Global Markets	Report	2014	<a href="#">Link</a>

Author /Publisher/Source	Literature Title	Type	Year	Link
McGraw Hill	SmartMarket Report - The Business Value of BIM for Owners	Report	2014	<a href="#">Link</a>
McGraw Hill	SmartMarket Report - Measuring the Impact of BIM on Complex Buildings	Report	2015	<a href="#">Link</a>
MINnD	Diagram of BIM Projects Interaction	Diagram		
MINnD	National Research Project MINnD – Interoperable Information Model for Sustainable Infrastructure	Leaflet		<a href="#">Link</a>
MINnD	MINnD Project Website	Website	N/A	<a href="#">Website</a>
National Institute of Building Sciences, USA	National BIM Standard - United States	Leaflet	2015	<a href="#">Link</a>
National Institute of Building Sciences, USA	National BIM Standard - United States (NBIMS-US V3)	Website	2016	<a href="#">Website</a>
NBS, UK	International BIM Report	Report	2013	<a href="#">Link</a>
NBS, UK	National BIM Report	Report	2013	<a href="#">Link</a>
Oha et al.	Integrated system for BIM-based collaborative design	Journal Article	2015	<a href="#">Link</a>
Open Geospatial Consortium	OGC® Land and Infrastructure Conceptual Model Standard (LandInfra)	Report	2016	
Otter and Brouwers	ANZ15-IN02 BIM, The Dutch Approach	Presentation	2015	<a href="#">Link</a>
Papandonikolaki et al.	Supply chain integration with BIM: a graph-based model	Journal Article	2015	<a href="#">Link</a>
Pauwel	Linked Data Session (presented at buildingSmart Summit, South Korea, 2016)	Presentation	2016	
Pazlar, Turk	Interoperability in practice: Geometric data exchange using the IFC standard	Journal Article	2008	<a href="#">Link</a>
Porwal and Hewage	Building Information Modeling (BIM) partnering framework for public construction projects	Presentation	2016	<a href="#">Link</a>
RI-EBW-PRUEF	Regulation for Assessment of Structures Regarding Defects	Report	2013	
Schaap & Beetz	Linked Data Approach (presented at buildingSmart Summit, South Korea, 2016)	Presentation	2016	
Schaap and Plume	InfraRoom Work Plan 2017 Development (presented at buildingSmart Summit, South Korea, 2016)	Presentation	2016	
SOSI	Fagomrade - Ledningsnett 4.5 (Wiring Standard) (in Swedish)	Standard	2016	<a href="#">Link</a>
Statens Vegvesen, Norway	BIM in Asset Management	Presentation	2016	

Author /Publisher/Source	Literature Title	Type	Year	Link
Stolk et al.	Data Clouds for Product Life-Cycle Management	Conference Paper	2016	
Tawelian & Mickovski	The Implementation of Geotechnical Data Into the BIM Process	Conference Paper	2016	<a href="#">Link</a>
The Institute of Asset Management	Asset Management - An Anatomy - Version 3	Report	2015	<a href="#">Link</a>
TNO	Configuratie van BIM-Standaarden			
Trafikverket, Sweden	Implementation of BIM in the design, procurement and construction of the Stockholm bypass (by Karin Anderson)	Presentation	2016	
Tulke	Stufenplan Digitales Planen und Bauen	Presentation	2015	<a href="#">Link</a>
UK BIM Task Group	BIM Task Group Website	Website	2013	<a href="#">Link</a>
Ugwu et al.	Ontology development for agent-based collaborative design	Journal Article	2001	<a href="#">Link</a>
Underwood, Watson	An XML metadata approach to seamless project information exchange between heterogeneous platforms	Journal Article	2003	<a href="#">Link</a>
Uniclass2015	A Universal Classification System for the Construction Industry	Website	2015	<a href="#">Website</a>
V-Con	A European Project about OpenBIM	Presentation	2013	<a href="#">Link</a>
V-Con	D3.1 Inventory of available information exchange standards	Report	2013	<a href="#">Link</a>
V-Con	D3.2 Definition of Road Information Structure Selection of Information Exchange Standards	Report	2013	
V-Con	T3.3 IFC for Roads & Bridges Slides	Presentation	2013	<a href="#">Link</a>
V-Con	(Consultation leaflet)	Leaflet	2014	<a href="#">Link</a>
V-Con	Business Specification Phase 2	Specification	2015	
V-Con	Industry Day Presentation	Presentation	2015	<a href="#">Link</a>
V-Con	Technical Specification Phase 2	Specification	2015	
V-Con	D3.4.2a International ontologies for V-Con	Specification	2016	
V-Con	D4.3.2b Swedish ontologies for V-Con	Specification	2016	
V-Con	D4.3.2c Dutch ontologies for V-Con	Specification	2016	

Author /Publisher/Source	Literature Title	Type	Year	Link
V-Con	Technical Specification Phase 3	Specification	2016	
V-Con	V-Con Project Website	Website	2016	<a href="#">Website</a>
Statens Vegvesen, Norway	Modellgrunnlag - Kravtil Grunnlagsdata og Modeller (Requirements for basic data and models) (in Norwegian)	Guidance	2015	<a href="#">Link</a>
Vejdirektoratet, Denmark	The Danish Road Directorate	Presentation	2016	
Vestergaard et al.	DTU Byg Rapport SR 12-06 (in Danish)	Report	2012	<a href="#">Link</a>
Volk et al.	Building Information Modelling (BIM) for existing buildings — Literature review and future needs	Report	2014	<a href="#">Link</a>
Weidner	Definition von Konvertierungsverfahren und prototypische Umsetzung einer Konvertierungs-Software zur Erzeugung von OKSTRA-Objekten für die Bestandsdatendokumentation (SIB) aus Datenbeständen des Entwurfsprozesses (in German)	Report	2016	
Xun et al	A Framework for BIM-enabled Life-cycle Information Management of Construction Project	Journal Article	2014	<a href="#">Link</a>