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Abstract. The amount of information involved in any construction project and the necessity of control of time, cost and waste, has established Building Information Modelling (BIM) as an integral part of construction sector towards achieving adequate communication of information among various parties involved in construction projects. Moreover, it can be considered as a valuable tool for the optimum selection of materials, systems and design decisions, regarding not only the improve of a structure's performance, but also in terms of reducing its carbon footprint during its life cycle. The study attempts to present the integration of BIM into the national legislation of European Member States, with a special focus on the energy related aspects of BIM analysis. This study performs an overview of the introduction of BIM into different aspects and requirements of the EU Member States building practices, through a comprehensive literature and legislation review of relative legislative documents of the construction sector. According to the findings of this overview study, the concept of BIM has already been incorporated in many aspects of the Acquis of EU Member States, which is recognized as a valuable tool to be exploited by the construction sector, however there is still room for development in this area. The study has revealed that especially in the energy assessment of the built environment, BIM applications are still lacking from the European Legislation. Examples and good practices of employing BIM for the implementation of the European Energy targets in the building sector are also presented and discussed. The findings of this study aim to shed light on the needs and requirements in the field of BIM development for the construction sector, as well as to indicate gaps and weaknesses of the European Member States Acquis towards harmonizing with BIM practices.

1. Introduction

The necessity of reducing the global energy consumption led the European Union to the introduction of several relative policies and directives, with the objective of a gradual improvement of the energy performance of buildings and the reduction of energy consumption. Since the adoption of the Energy Performance of Buildings Directive (EPBD) several developments had been implemented towards the European Union member States, applying significant energy saving measures on new and existing buildings but with lower intensity and magnitude in south Europe. Furthermore, the implementation of the EPBD and its effectiveness is still under discussion in some cases, one such being the buildings occupied by social housing recipients.

During conventional design, using two-dimensional software, a lack of interconnection and integration of multi-discipline designers could possibly exist, requiring careful collaboration between the team members. Computational models such as Building Information Modelling is capable to minimize

possible issues during information exchange, since it supports data collaboration, but it can also form a key aspect in the analysis and approximation of the energy consumption of new or existing dwellings. A BIM tool can be employed not only for the estimation of accurate building information and estimate quantities of materials and elements but is also capable in projecting the energy performance of buildings and the comparison of improvements. [1]

Following the rapid shifts of the construction industry from traditional design approach towards digitalisation, the need for development and definition of standards for BIM is emerging. The lack of standardized procedures and common methodologies has aroused a common misunderstanding of how BIM related procedures in the implementation of a project are defined. Standardization bodies aim to build a common framework that should be consistently fulfilled on a project for it to be considered as a ‘’BIM project’’. [2]

This study aims to Overview of BIM integration into the Construction Sector in European Member States and European Union Acquis. The study discussed on the recent advancements in the field of BIM standardisation. The level of integration of BIM in the individual policies of 11 EU member states and Norway are presented The study delivers concentrated tabulated information which is anticipated to support the understanding of the scientific community and the BIM experts with regard to the gaps and needs in the development of the technique, as well as legal framework that needs to be developed and drafted.

2. Recent advancements in BIM Standardization

The leading standardization bodies regarding BIM is the "International Organization for Standardization" (committee ISO/TC 59/SC) [3], and at European level the "European Committee for Standardization" (committee CEN/TC 442) [4]. To transpose the already published International Standards (ISO/TC 59/SC) into European Level, the European Standardization body CEN, formed a technical committee 442 which aims to develop a structured set of standards, specifications and reports which specify methodologies to define, describe, exchange, monitor, record and securely handle asset data, semantics and processes with links to geospatial and other external data. In Table *1* the published standards under the direct responsibility of ISO/TC 59/SC and CEN/TC 442 committees are summarized.

The German Institute for Standardization (DIN) founded a committee (NA 005-01-39 AA) [5] "Building Information Modelling", to represent Germany in European and international standardization. The DIN Standards Committee and its working groups are in line with ISO activities and CEN level with subordinate working groups, with national experts working on strategy, data exchange, BIM information management and data structures for BIM catalogues. In addition, a VDI (VDI 2552) [6] coordination group BIM was founded in 2014 at the Association of German Engineers, responsible to coordinate the contents in order to enable a consistent set of standards for the committees working in parallel.

buildingSMART is the founder of Industry Foundation Classes (IFC) [7], a platform neutral, open file format specification which enables the exchange and sharing of data among various BIM software. Their role is to facilitate interoperability of data in the construction industry by using a common collaborating format in the BIM based projects. The IFC was taken a valuable role in BIM standardization. Industry. Foundation Classes (IFC2x) Platform Specification became ISO standard since 2005 and IFC4x release concerning data sharing in the construction and facility management industries since 2013 [8].

Netherlands already has experience with open standards, as seen with the Dutch Information Exchange Standards (VISI) in the Netherlands and the new BIM Loket [9]. The Building Information Counsel (BIR) ensures national standards and alignments within the Dutch construction industry while VISI is used internationally as it is included as Part 2 (Interaction Framework) of the ISO standard, Building Information Models — Information Delivery Manual [10].

The Standardization Committee AEN / CTN 41 / SC13 was established by the Spanish Association for Standardization and Certification, AENOR which is responsible for the organization of information models relating to construction and civil engineering [11].

The Austrian Standards Institute has already developed standards for the technical implementation of BIM. The ÖNORMs of the A 6241 series has been valid since 2015 [12]. The ÖNORM A 6241-1 (BIM

Level 2) [13], which replaced the ÖNORM A 6240-4 [14], has been extended in the detailed and executive design stages, and corrected in the lack of definitions. The ÖNORM A 6241-2 (BIM Level 3) includes all the requirements for the BIM Level 3 (iBIM) [15]. These standards take into account all aspects of BIM technology and provide them dynamically to the project stakeholders for the software products they use, using novel digital building components.

The British Standards Institution (BSI) held various BIM activities and published series of standards towards achieving Level 2 BIM implementation. The PAS 1192 series of standards, established a collaborative framework for achieving BIM Level 2, which is currently used in UK [16]. However, these standards will be replaced by the new international standards EN ISO 19650 series by 2020 [17] The COBie standard has also been picked up by the UK BIM task group and one of the key deliveries for level 2 BIM. There is a British Standard specifically dedicated to COBie (BS 1192-4:2014 Collaborative production of information Part 4: Fulfilling employer's information exchange requirements using COBie - Code of practice) [18].

In Czech Republic, a technical standardization committee called TNK 152 – Organization of Information on Buildings and Information Modelling of Buildings (BIM) started work in 2016 to elaborate upon BIM methodology standards, and is responsible of creating, publishing, issuing and distribution of standards [19].

3. Overview of BIM integration into EU member states legislation

The EU BIM Task Group was founded in January 2016 by the European commission, as a respond to the growing challenges of the wider introduction of BIM. This pan-European collaboration rapidly grew to include 23 countries in Europe. The objective is to bring together national efforts into a common and aligned European approach to develop a world-class digital construction sector [20]. Under this framework, the EU BIM Task Group has released a handbook that aims to drive the public sector adoption of BIM across Europe. The book has collated public sector expertise from infrastructure and public estate owners, public clients and policy makers from different nations across the continent. This initiative expected to encourage a wider introduction of BIM in response to the growing challenges faced by governments across Europe and public clients to stimulate economic growth and competitiveness whilst delivering value for public money. It also demonstrates the importance for coordinated public sector action across both European and national levels to drive towards this vision forward [21].

The down to country level integration of BIM into the national legislation of European Member States, is presented in this section. As shown, some countries are more advanced in BIM adoption in national legislation, such as: UK, Finland, Sweden, Netherlands, and Norway. The countries with limited BIM adoption have already set their national roadmap and/or are actively working in BIM standardization procedures. These countries are: France, Italy, Germany, Spain, Austria and Denmark. Similarly, the countries with the lowest or premature adoption are considered to be: Czech Republic, Lithuania, Cyprus and Greece.

3.1 France

As of 2017, BIM is mandated in France, after the government declared a development project that would build 500,000 houses using BIM and allocated a 20-million-euro budget for this digital transition. The initiative was a part of the French government's national strategy for digitising the construction industry called 'Plan for the digital transition in the building industry' or PTNB [22]. In April 2017, the official French standardization roadmap published also as part of the National plan, aimed to improve information exchange processes and build the principle framework for facilitating reliable data exchanges throughout the life cycle of built asset [23]. On January 2019 the Minister of Territorial Cohesion and Relations with Local Authorities, agreed with the construction sector the initiative *Plan BIM 2022*, which aims to accelerate digital transformation in construction by providing professionals with new methods to facilitate and improve the construction of buildings. The State is anticipated to immobilize € 10 million under this plan [24][25].

3.2 Finland

Finland is considered to be a pioneer in the integration of BIM technologies into its constructions sector. The scale of the construction industry in Finland is well trusted by the stakeholders, and standard system is open. All these parameters result to a perfect environment for BIM applications. As of 2007, Finland's state property services agency and Senate Properties, mandated that any design software needed to pass Industry Foundation Class (IFC) Certification [26]. In addition, Senate Properties published a series of project requirements, detailing guidelines for modelling requirements. This series of requirements is called Common *BIM Requirement (COBIM)* [27]. There have been 13 releases to date covering targets for new construction and renovation, as well as the use and facility management of buildings [28]. Similarly, *the InfraBIM requirements* were published on May 2015 by buildingSMART Finland, aiming to speed up the digitalisation of the infrastructure sector [29]. *Talo 2000* the national classification system, which was created in collaboration with various construction industry players, forms the foundation for the exchange of construction information for all parties [30].

3.3 Sweden

In Sweden, the level of BIM adoption is so high that best practices have emerged even in the absence of governmental guidelines. Sweden reached the leading status of using BIM to design and build large complex infrastructure projects. The initiative was taken by Public organizations like the Swedish Transport Administration (STA) which announced the use of BIM for all investment projects since 2015. STA lunched the BIM implementation project, in which they used BIM in some big and complex infrastructure projects, such as the Stockholm Bypass and the Röfors Bridge, for demonstration and educational purposes [31][32]. The BIM Alliance was formed in 2014 and has approximately 180 companies and organizations responsible for promoting implementation, management and development of common open standards, processes, methods and tools [33]. Moreover, *CoClass* classification has been lunched in order to improve the communication and information throughout the building life cycle. The new classification will eventually replace the previous BSAB 96 which does not support the entire project lifecycle and is not in compliance with the latest standards of the construction sector [34].

3.4 Netherlands

In the Netherlands, even though no official legislation is in place, BIM is required in many projects by clients. BIM in the country is both public and private sector driven. It is already frequently used by major players in the construction sector, such as infra managers (e.g. ProRail), the Directorate-General for Public Works and Water Management (Rijkswaterstaat) and the Central Government Real Estate Agency (Rijksvastgoedbedrijf) [32]. A number of open protocols (or standards) are currently in use, to support the concept of BIM exchange and shared data [46]. The Dutch Ministry of Infrastructure and the Environment set a 2012-2014 BIM-program with a budget of 12 million euro to involve research institute and stakeholders in developing BIM for the Netherlands. Similarly, a two-year study was launched in May 2014 by the University of Twente, to research on the level of maturity of organisations using BIM and to identify the best collaboration and BIM practices in Dutch construction and engineering [47].

3.5 Italy

In Italy, the level of the overall BIM proficiency is considered to be still basic. The Italian Ministry of Infrastructure issued a multi-year plan decree, stating that all public projects have to be realized with BIM from 2022 onwards. For large projects with a price over €100 million, BIM will be required starting from 2019. For 2019-2021, the mandate will be extended to other projects, following a criterion of complexity of works rather than value. It will apply to public buildings such as police, fire stations, hospitals and other highly exploited buildings that have to comply with special safety standards. From 2022 the use of BIM will be mandatory for all public projects, except for those who don't require high safety measures [48][49]. Additionally, an Italian norm is being developed: the UNI 11337 (Normativa UNI 11337). Different parts of this standard have already been published, providing guidelines and a framework for managing digital information processes.

3.6 Germany

The BIM adoption progress in Germany is moderate, compared to other European countries. The Ministry of transport and Digital infrastructure collaboratively with the private sector, developed the action plan 2015/2020 with the objective to implement and disseminate BIM in Germany in 3 phases. Following a preparatory phase until 2017 and a pilot phase until 2020, BIM will be applied to all new projects of the Federal Ministry of Transport and Digital Infrastructure from 2020 onwards [50].

3.7 Spain

Spain recently mandated the use of BIM, however there were some pioneering experiences of implementation of BIM by institutions and public administrations since 2009. buildingSMART Spain was founded in 2012 by a group of organizations, responsible to promote the use of BIM and the creation of a standardized framework. As such, in 2014 buildingSMART Spain published the first BIM guidelines in Spanish called the UBIM guidelines. In 2015, a roadmap was introduced by *esBIM Spanish Commission*, by the Ministry of Infrastructures [51]. From 2018, BIM is mandatory in public infrastructure facilities over €2 million, in the design and the construction phases. For 2020, an innovation plan for infrastructure and Transport (2018-2020) was also launched, which analyses the use of BIM in airports, train stations, harbours and linear infrastructures, including some pilot projects. In Catalonia the *Build the Future Commission*, composed of public and private entities, has been working for a collaborative implantation of BIM since 2015. In 2017 this commission adopted IFC standards for spreading BIM processes in all phases of the construction process. [52][53].

3.8 Czech Republic

Although the level of BIM adoption in the Czech Republic is still premature, on September 2017, the Decree no. 682 was approved concerning the *Concept of Implementation* of the BIM Method in the Czech Republic [54]. The Ministry of Industry and Trade took the initiative as the guarantor for the implementation of BIM in the Czech Republic in cooperation with the BIM Expert Board and the State Transport Infrastructure Fund. The concept contains a BIM Schedule for the phasing-in of BIM in the years 2018-2027, including recommended measures so as to use this method in a routine and efficient manner. In 2022, it is planned to impose the obligation of BIM for public procurement over-capacity public works contracts [55].

3.9 United Kingdom

The United Kingdom is one of the leading countries in BIM. The *Government Construction Strategy (GCS 2016-20*) which was published in May 2011, demanded the goal of Level 2 BIM for all public sector projects by 2016 [56]. The UK Government BIM Task Group has been leading the UK national process of change by developing BIM standards and promoting their use in the UK construction industry. The bridge to clients and the ongoing operational maintenance of assets was set up as the Government *Soft Landing program* [57]. In addition, many non-profit organizations in the United Kingdom such as the British Standards Institution (BSI) and the AEC-UK Committee released BIM standards. AEC-UK published several BIM protocols for different software platforms to guide architects, engineers and construction professionals in the UK. *Uniclass 2015*, the classification system for all sectors of the UK construction industry has been restructured and redeveloped by the National Building Specification, (a UK-based system of construction specification) in accordance with ISO 12006-2 to provide a comprehensive system suitable for use by the entire industry, including the infrastructure, landscape, and engineering services as well as the building sector, and for all stages in a project life cycle. Uniclass 2015 provides a means of structuring project information essential for the adoption of BIM Level 2 [58].

Table 1: Published Standards under the direct responsibility of ISO/TC 59/SC and CEN/TC 442 committees

Standardization Body/ Number	Standard Name	Brief Description
ISO 22263 [35]	Organization of information about construction works -- Framework for management of project information	Specifies a framework for the organization of project information (process-related as well as product-related) in construction projects. Its purpose is to facilitate control, exchange, retrieval and use of relevant information about the project and the construction entity
ISO/TS 12911 [36]	Framework for building information modelling (BIM) guidance	Establishes a framework for providing specifications for the commissioning of building information modelling (BIM).
ISO 16354 [37]	Guidelines for knowledge libraries and object libraries	Distinguishes categories of knowledge libraries and lays the foundation for uniform structures and content of such knowledge libraries and for commonality in their usage
ISO 16757-1 [38]	Data structures for electronic product catalogues for building services -- Part 1: Concepts, architecture and model	Provides data structures for electronic product catalogues to transmit building services product data automatically into models of building services software applications.
ISO 12006-2 [39]	Building construction -Organization of information about construction works -- Part 2: Framework for classification	Defines a framework for the development of built environment classification systems. It identifies a set of recommended classification table titles for a range of information object classes according to particular views, e.g. by form or function, supported by definitions. It shows how the object classes classified in each table are related, as a series of systems and sub-systems, e.g. in a building information model.
ISO 16757-2 [40]	Data structures for electronic product catalogues for building services -- Part 2: Geometry	Describes the modelling of building services product geometry.
ISO 16739-1 [8]	Industry Foundation Classes (IFC) for data sharing in the construction and facility management industries -- Part 1: Data schema	The standard includes definitions that cover data required for buildings over their life cycle. This release, and upcoming releases, extend the scope to include data definitions for infrastructure assets over their life cycle as well.
EN ISO 12006-3 [41]	Building construction -Organization of information about construction works - Part 3: Framework for object-oriented information	Specifies a language-independent information model which can be used for the development of dictionaries used to store or provide information about construction works. It enables classification systems, information models, object models and process models to be referenced from within a common framework.
EN ISO 29481-2 [42]	Building information models - Information delivery manual - Part 2: Interaction framework	Specifies a methodology and format for describing coordination acts between actors in a building construction project during all life cycle stages.
EN ISO 29481-1 [43]	Building information models -- Information delivery manual -- Part 1: Methodology and format	Intended to facilitate interoperability between software applications used during all stages of the life cycle of construction works. It promotes digital collaboration between actors in the construction process and provides a basis for accurate, reliable, repeatable and high-quality information exchange.
EN ISO 19650-1 [44]	Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) – Information management using building information modelling -- Part 1: Concepts and principles	The document outlines the concepts and principles for information management at a stage of maturity described as "building information modelling (BIM) according to the ISO 19650 series. It also provides recommendations for a framework to manage information including exchanging, recording, versioning and organizing for all actors.
EN ISO 19650-2 [45]	Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) -- Information management using building information modelling -- Part 2: Delivery phase of the assets	This document specifies requirements for information management, in the form of a management process, within the context of the delivery phase of assets and the exchanges of information within it, using building information modelling.

3.10 Denmark

Denmark is seen as an early adopter in BIM, Virtual Design and Construction (VDC) and prefabrication. As of 2007, the Ministry of Climate, Energy and Buildings mandated that its Danish state clients such as Palaces and Properties Agency, the Danish University Property Agency and the Defence Construction Service required to employ BIM for their major projects. In 2013, the parliament established open BIM as mandatory in state, regional, municipality, and social housing projects with a price of over 2.7 million euro. In 2014, cuneco developed and implement one of the most advanced construction classification systems CCS (cuneco classification system) which replaced the current Danish construction classification (Dansk Bygge Klassifikation, DBK) [32][59].

3.11 Lithuania

Currently Lithuania, there are no legislation concerning BIM. As a main driver of the digitalization process in Lithuania, the public body 'Digital Construction' was established in 2014 by 13 construction related associations. Lithuania announced that from July 2020, BIM will become mandatory in public procurements, but at the moment there is nofurther information about the requirements and define criteria. In 2018, by the initiative of Ministry of Environment of the Republic of Lithuania a project BIM-LT has been started in order to develop national standards, classification system, contract templates and rules for public procurements, methodology for monitoring BIM development progress. An international conference "Skaitmeninė statyba" (Digital Construction) has been held annually since 2012 [60].

3.12 Norway

The state of Norway, although not an EU member, is one of the early BIM adopters, with BIM standards and requirements for public sector currently in place. Norway has also been an active partner in the development of the openBIM standards and has worked with the 3D part of BIM on public projects since 2010. At this year, the Norwegian government stated its commitment to BIM adoption. As a consequence, the public sector bodies released their roadmap towards BIM adoption. The Norwegian Directorate of Public Construction and Property Statsbygg mandated the use of BIM for all of their projects, using BIM models based on IFC and IFD [26]. Statsbygg released the "BIM Manual", in order to describe its requirements for IFC-compatible BIM. The manual was initially drafted in 2008 and the current version 1.2.1 (SBM) was released in 2013 [61]. Furthermore, the Norwegian Homebuilders Association issued a BIM Manual, among other industry guidelines [62]. This manual aims to give a practical aid for the use of BIM for project planning for residential dwellings and summarizes a general modelling methodology of various software tools. This manual focuses on four main areas: energy simulations, cost calculation, ventilation, and roof trusses.

4 Conclusions

The purpose of this study was the implementation of an overview of the state of integration of BIM into EU member states legislation. The overview revealed the following.

- The integration of BIM into national legislation of European Member States construction sector has progressed significantly during the past decade. However, integration level differs among the countries and more work of policymakers, construction related associations and research institutions is needed to harmonize BIM practices over European Member States.
- In the majority of European Member States BIM technologies are required in a large-scale public and infrastructure projects with prices significantly higher than a million euros.
- Existing legislation focuses on the improvement of common BIM concepts, classification systems, processes rules, methodologies, information exchange among various stakeholders and information management.
- The lack of BIM and energy assessment of the built environment integration in European legislation requires further research.

Table 2 BIM Standards and Initiatives of EU countries

Country	Organization	Year	Standard/Initiative	Standardization or/and Policy Initiative
France	Minister of Territorial Cohesion	2019 - 2021	Initiative	• Plan BIM 2022: € 10 million until 2021 to accelerate digital transformation in construction sector
	French government	2014- 2017	Initiative	• National strategy 'Plan for the digital transition in the building industry' mandate BIM 2017 onwards. Budget € 20 million to build 500,000 houses using BIM by 2017
	PPBIM standardization committee	2014	Standard	• XP P07-150: Definition and management of construction product properties
Finland	buildingSMART Finland	2015	Standard	• Common InfraBIM Requirements (YIV)
	Senate Properties	2012	Standard	• Common BIM Requirements (COBIM)
		2007	Initiative	• mandated since 2007 for all design software packages to pass Industry Foundation Class (IFC) Certification
	House 2000 Committee		Standard	• Talo 2000, Finnish Building Classification System
Norway	Norwegian Homebuilders Association	2011	Standard	• BIM Manual Version 1.0
	Civil State Client Statbygg	2013	Standard	• "BIM Manual": Building Information Modelling Manual v1.2.1
		2011	Standard	• "BIM Manual": Building Information Modelling Manual v1.2
		2010	Initiative	• BIM mandated for the lifecycle of their buildings. • All Statbygg project using IFC/IFD based BIM
		2009	Standard	• "BIM Manual": Building Information Modelling Manual v1.1
		2008	Standard	• "BIM Manual": Building Information Modelling Manual v1
Sweden	Swedish building Centre	2016 -	Standard	• CoClass Swedish classification system for the built environment.
	Swedish Transport Administration (STA)	2015	Initiative	• Use of BIM from 2015, for all investment projects.
Netherlands	The BIM Loket Foundation	2015	Initiative	• central information portal for open BIM standards
	Dutch Ministry of Infrastructure and the Environment	2012- 2014	Initiative	• BIM-program with a budget of 12 million euro to involve research institute and stakeholders in developing BIM for the Netherlands
	Government Buildings Agency (Rijksgebouwendienst)	2013	Standard	• Rgd BIM Norm v1.1
		2012	Standard	• Rgd BIM Norm v1
		2011	Initiative	• mandated the use of BIM in 2011 for building projects with 7,000,000 square meters
Italy	Ministry of Infrastructure	2019- 2021	Initiative	• BIM mandate for large projects with a price over 100 million from 2019 • From 2022 the use of BIM will be mandatory for all public projects
	Italian National Unification Body (UNI)	2018	Standard	• UNI 11337-7:2018: Building and civil engineering works - Digital management of the informative processes - Part 7: Knowledge, skill and competence requirements of building information modelling profiles
		2017	Standard	• UNI 11337-1:2017 :building and civil engineering works - Digital management of the informative processes - Part 1: Models, documents and informative objects for products and processes
		2009	Standard	• UNI 11337:2009: Building and civil engineering works - Codification criteria for construction products and works, activities and resources - Identification, description and interoperability

Germany	Ministry of transport and Digital infrastructure	2015-2020	Initiative	• BIM will be applied to all new projects of the Federal Ministry of Transport and Digital Infrastructure from 2020 onwards
	The Association of German Engineers	2014 – to date	Standard	• The VDI 2552 series of guidelines currently includes 9 guidelines, some of which are still being prepared:
Spain	Ministry of Public Works	2018-2020	Initiative	• Transport and Infrastructure Innovation Plan, which analyses the use of BIM in airports, train stations, ports and linear infrastructure and includes a series of pilot projects.
	esBIM Spanish Commission	2015	Initiative	• roadmap for the BIM methodology implementation established • From 2018, BIM is mandatory in public infrastructure facilities over 2M€
	buildingSMART	2014	Standards	• UBIM guidelines: 13 documents that test the use of BIM in different fields
Czech Republic	Ministry of Industry and Trade	2018-2027	Initiative	• BIM Schedule for the phasing in of BIM in the years 2018-2027. In 2022, it is planned to impose the obligation of BIM for public procurement over-capacity public works contracts
United Kingdom	British Standards Institution (BSI)	2013-2015	Standard	• PAS 1192 framework: series of PAS documents set out the requirements for achieving BIM Level 2
		2011-2015	Standards	• BS 8541series of documents provides a range of standards for library objects for architecture, engineering and construction:
	UK Government	2011-2015	Initiative	• first Government Construction Strategy • Model-based BIM (level 2) mandated on all public sector projects since 2016.
	Construction Project Information Committee (CPIC)	2013/2014	Standard	• Uniclass 2015: a unified classification system for all sectors of the UK construction industry
	Cabinet Office	2012	Initiative	• Government Soft Landings (GSL) policy mandated in 2016 alongside Government construction strategy
	CIC	2013	Standard	• Outline Scope of Services for the Role of Information Management v1 • Building Information Model (BIM) Protocol v1 • Best Practice Guide for Professional Indemnity Insurance When Using BIMs v1
	AEC	2013	Standard	• BIM Protocol v2 for Graphisoft ArchiCAD v1
		2012	Standard	• BIM Protocol v2 for Bentley AECOsim Building Designer v2 • BIM Protocol v2 for Autodesk Revit v2 • BIM Protocol v2
		2009	Standard	• BIM Standard v1.0
Denmark	cuneco	2014	Standard	• CCS (cuneco classification system) Danish construction classification
	Danish parliament	2013	Initiative	• established open BIM as mandatory in state, regional, municipality, and social housing projects with a price of over 2.7 million euro
	Ministry of Climate, Energy and Buildings	2007	Initiative	• Danish state clients required to employ BIM for their major projects

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