

Description of the current situation as at June 2023 and the need to update the original terms of reference

ISDSBIMS status

1.1 History behind the preparation of the ISDSDIMS terms of reference

On 25 September 2017, the Czech Government approved, under Resolution No 682, the Concept for the Implementation of BIM in the Czech Republic.

The client subsequently agreed that a system for managing the digital building model data standard ("ISDSDIMS") would be requested.

The basic draft of the request was prepared in 2018–2019 by a group consisting of external and internal personnel of the client.

In 2021, the client conducted tendering procedure in which the provider's bid was selected as the most advantageous. A contract was subsequently concluded with the supplier on 12 January 2022. In the tendering procedure, the client used the terms of reference from 2018–2019.

Key parts of the terms of reference were based on standards that, at the time, were still under preparation and that, in many cases, underwent changes after their completion (i.e. after the tendering procedure). This is clear from the tender dossier itself.

1.2 Definition of technical specifications in the tender dossier, in the context of the tendering procedure

The following is stipulated in the contract and its schedules:

Schedule 02CZ System specifications,

1.2 Description of the situation

"...The overall DSDIMS architecture conforms to the pending European Level of Information Need standard (prEN 17412:2019), which is being prepared by CEN/TC 442 WG2. This forthcoming standard defines basic concepts for the creation of data standards and their linkages..."

2.1 General requirements for the ISDSDIMS system and DSDIMS management module

"Requirement for a property in the requirements template, mapped to a property of an IFC-format data entity: requirements for properties in each requirements template must enable them to be mapped to the corresponding IFC-format properties or, if these do not exist, to add them to the IFC schema in the System in line with its definition under ČSN ISO 16 379." – this standard was not approved until the end of 2020, by which time the tender dossier already existed. In addition, its use in BIM is regulated by the as-yet unpublished standard prEN 17549, which is also referenced in the tender dossier.

"The system must meet the requirements of EN ISO 23386:2020 and EN ISO 23387:2020." – standards approved between 2020 and 2021. The final version could not be included in the terms of reference.

“The System must be interoperable with data and services as per EN ISO 12006-3.” – this standard was not released until 1 January 2023.

“In order to guarantee interoperability and the capability of linking to European and international standards and expertise, the System must allow the use of data from data dictionaries as per ČSN EN ISO 12006-3 for presentation to users and for the creation of any structured reports that may be required. As at the date on which the Contract is signed, the Agency requires the use of the buildingSMART Data Dictionary (bSDD), including interactive referencing from relevant data entities. The Agency accepts the possibility that there may be a change of data dictionary during the operation of the System.” – the terms of reference again refer to a standard that had yet to be issued at the time and therefore its final wording could not be known.

2.2 Creating and managing property requirements

“The Agency reserves the right to define the structure of all the aforesaid exports on the basis of the data structure of the selected ISDSDIMS. The Provider acknowledges that there is a standard under preparation with the English title ‘Building Information Modelling - Exchange structure for product data templates and product data based on ifcXML’, drafted by CEN/TC 442 WG 2, which is not yet published and will define the format and structure for the transfer of data templates.” – this standard, still not ready, governs the application of CSN ISO 16379, which is copiously cited in the dossier.

The foregoing makes it abundantly clear that the tender dossier was written at a time when the final wording of many of the standards referred to in the tender dossier as key standards was not yet available.

1.3 Milestone 1 deficiencies – impact of the obsolescence of the terms of reference

The technical terms of reference began to degrade over time in the light of legislative developments. This was evident when the first ISDSBIMS project milestone was delivered. At the handover of Milestone 1, it was found that the initially identified deficiencies often stemmed from outdated terms of reference. This also led to the need for the contracting parties to update the terms of reference. Specifically, updates were required from the perspective of ČSN, EN, and ISO standards, and new EU energy efficiency and environmental requirements such as the Green Deal, Fit for 55 and related standards.

As far as Milestone 1 in particular is concerned, the parts affected were “Representation of the building in question within the given stage of the project. Different views or variously detailed views of the building may be required for different stages of the project” and “Classification-linked requirement for a property in a requirements template: the requirements for properties in each requirements template must allow them to be linked to items of one or more classifications that will be applied in the system, at any level of the hierarchy.”

Point 6. (justification) STD_Repres - Representation of the building in question within the given stage of the project. Different views or variously detailed views of the building may be required for different stages of the project.

The first part – representation of the building within the given stage of the project – was based on the assumption, contained in the terms of reference, that the technical standards prEN 17549-1 and prEN 17549-2 Building Information Modelling (prEN means “standard in preparation”), which at the time of the tendering process were still being prepared, would be applied. This requirement is also included in

the Contract requirements. Following the publication of the completed standards EN 17549-1 and EN 17549-2 and the evaluation of the approved content, it became clear that their application does not cover the necessary functionality and that they would not be relevant to the ČAS Cobuilder project. Consequently, the Contract requirements specified in Schedule 2 cannot be met.

Point 5. (justification) Classification-linked requirement for a property in a requirements template: the requirements for properties in each requirements template must allow them to be linked to items of one or more classifications that will be applied in the system, at any level of the hierarchy.

The second part – the classification-linked requirement for properties in a template – changed over time. The original focus was on templates, but now the emphasis will be on the individual properties in the template and on working with them. Accordingly, it is not practical to insist on the original requirement. Instead, it is preferable to wait for new specifications and modify the requirement according to them.

1.4 The need to update the terms of reference in line with EU directives and initiatives

It is evident from the above that sets of EU initiatives – such as the Green Deal and Fit for 55, plus the new EU directives associated with them, namely the Environmental Delegated Act , Corporate Sustainability Due Diligence, Review of the Construction Products Regulation, Energy Performance of Buildings Directive, Ecodesign for Sustainable Products, and Carbon Border Adjustment Mechanism – are another important source of forced updates to the terms of reference. As far as the ISDSBIMS is concerned, the following are examples of important EU initiatives:

Level(s) – providing a common language for the assessment of, and reporting on, the sustainability of buildings.

Digital logbook – The availability of consistent and reliable data can contribute to the better design, construction and management of buildings, improved information on the market and transparency, and the creation of innovative services and business models.

New European Bauhaus – The New European Bauhaus initiative interconnects the European Green Deal with our everyday lives and living spaces.

These directives and initiatives are then translated into new standards that also affect our ISDSBIMS. At issue here are standards that have been approved, are in the process of being approved, or are under preparation. Specifically, in our case, the ISDSBIMS is based on Cobuilder's Define, and that software is built around the following standards.

Define is based on: ISO 23386 Building information modelling and other digital processes used in construction – Methodology to describe, author and maintain properties in interconnected data dictionaries.

This document establishes the rules for defining properties used in construction and a methodology for authoring and maintaining them, for a confident and seamless digital share among stakeholders following a BIM process.

ISO 23387:2020 Building information modelling (BIM) – Data templates for construction objects used in the life cycle of built assets – Concepts and principles.

This document sets out the principles and structure for data templates for construction objects. It is developed to support digital processes using machine-readable formats using a standard data structure

to exchange information about any type of construction object, e.g. product, system, assembly, space, building etc.

ISO/DIS 7817 (under preparation) Building information modelling – Level of information need – Concepts and principles.

This document specifies concepts and principles to establish a methodology for specifying level of information need and information deliveries in a consistent way when using building information modelling (BIM).

ISO 22057:2022 Sustainability in buildings and civil engineering works – Data templates for the use of environmental product declarations (EPDs) for construction products in building information modelling (BIM).

This document provides the principles and requirements to enable environmental and technical data provided in EPDs for construction products and services, construction elements and integrated technical systems to be used in BIM.

It is clear from the above that our information system is interlinked with EU initiatives and directives and the standards that derive from them.

1.5 The need for the terms of reference to be updated

In the light of these findings, it was decided that the original terms of reference required amendment and that a document describing the necessary changes needed to be drawn up. Since the final quarter of 2022, a comprehensive update of the data standard structure has been under way. This has involved working groups and expert field teams (OTOs) under the guidance of the Agency's BIM Concept Department.

Data content is currently being updated in and added to DSS within the working groups and expert field teams (OTOs) of the client's BIM Concept Department.

One of the main objectives of the DSS update is to define the DSS architecture and to refine the methodology for the creation and use of DSS, including interlinking with the CCI classification system (as per the principles laid down in ISO 12006-2, implemented in the form of the ISO 81346 series under the name CCI).

The drawing-up of the details of DSS architecture, and discussions on and the approval of DSS architecture with industry professionals involved in the BIM construction processes in the Czech construction environment, are essential to the process of updating the DSS. A majority consensus on DSS architecture needs to be found for the data update within the framework of the DSS database, in parallel to the addition of OTOs' proposals to DSS.

The original expectation that everything would be resolved within the timeframe set by the original Contract (Milestone 2 – 31 March 2023) proved to be unrealistic, especially in view of developments in EU initiatives aimed at energy savings and increasing the environmental friendliness of the construction industry, in particular Fit for 55. The EU Council did not adopt this package until 25 April 2023.