The buildingSMART International
Annual Report
2023

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buildingSMART®
International

Contents

Chair's Welcome

Dear buildingSMART colleagues and friends,

I am writing to you for the first time as the new Chair after Patrick MacLeamy (now Chair Emeritus) stepped down from 25+ years of service on the Board with our huge thanks for his incredible dedication and many contributions to our buildingSMART community.

2023 was a year of key milestones, which culminated in IFC 4.3 being approved and published as an ISO standard. This major accomplishment, bringing horizontal infrastructure into IFC, is the result of a multi-year effort by many contributors from across the global buildingSMART community. Thank you to each individual and company that supported this effort.

This was also the first year of leadership by Clive Billiald as the new CEO. Clive has challenged the status quo and helped us reach renewed clarity on our mission, purpose and vision, as well as update our Strategic Roadmap. Clive has also identified necessary organizational changes to streamline operations, executed governance changes to diversify our Board and set business priorities that transition our primary focus from developing the IFC 4.3 standard to providing the technical services and best practices needed to support the adoption of openBIM® by industry stakeholders.

Clive will articulate business goals later in this annual report, which concentrates our efforts toward driving the adoption of openBIM workflows to help owner/operators and cross-discipline project delivery teams realize the substantial benefits of using IFC-based open standards. In summary, they include: introducing new services including IFC Validation and Global Certification to assure high quality implementations by our many software partners who are developing commercial applications to support IFC 4.3; enhancing existing services including UCM (Use Case Management and bSDD (the buildingSMART Data Dictionary service); innovations for machine-readable user exchange requirements using IDS (Information Delivery Specification); researching emerging technologies that will support IFC 5 as a next-generation platform for information sharing.

In a year when we have added new Chapters in Brazil, India and Serbia (plus Iceland and Kazakhstan in the early part of 2024) we see terrific market demand for buildingSMART's standards and services globally. Combined with owner mandates from many national transportation agencies and new regulatory requirements for building permitting in Finland, Dubai and Singapore, the importance of our work is definitely being validated. However, all of this exciting momentum also poses new challenges for both the leadership team and our Chapters on how best to scale and mobilize our buildingSMART community to support the increasing adoption of our open standards and services.

Best regards to all.

Ian Howell

Chair

buildingSMART International

we see terrific market demand for buildingSMART's standards and services globally

Chief Executive's Statement

The built environment shapes both our daily lives and the legacy we leave for future generations. This can be enormously positive, with new buildings and infrastructure underpinning advancements in quality of life around the world. But we also have to acknowledge the associated costs, both environmentally and economically. When it comes to the built environment, across our societies, we need to find better ways of doing more with less.

This is the context within which buildingSMART exists. Our role is to make data open, interoperable and trusted across the built environment, generating better information that enables better decision-making and delivering information in machine-interpretable formats that allow for more efficient, automated digital processing. Through this, we unlock advances in the productivity and sustainability of the global built environment.

The past year has seen us take huge steps forward in this regard, as we have provided for the first time an integrated suite of standards and services that support the full openBIM workflow, from requirements definition, through communication and collaboration, to certification and publication. The impact of these advances is evidenced by the acceleration we see in the adoption of openBIM, the increasing take-up of our training and certification programs, and the growth in government and client mandates for open digital workflows.

However, there remains more to do. Some services need strengthening to operate at the scale needed by the global community. User guidance and best practices are needed to support local adoption of the workflow. And there is work to be done to develop the next generation of standards, to underpin the technology advances of the future. These are our priorities for the year ahead.

The past year's successes are thanks to the leadership, commitment, generosity and support of the members, sponsors, Chapters, partners and individuals who make up the buildingSMART community. Likewise, our ability to continue our work, strengthen our standards and services, solve the interoperability challenges facing our industry, and create a better future for our sector, depends on the same. Thank you all for your support and I look forward to working with you over the next equally impactful year.

Clive Billiald

CEO

buildingSMART International

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The Strategic Roadmap

Last year, buildingSMART International published its highly anticipated "Strategic Roadmap", setting out the development path for the openBIM ecosystem.

The Strategic Roadmap describes the work of buildingSMART in three key time horizons, each representing a different focus:

Foundations:
The industry already has excellent open standards and services available, and buildingSMART has an important, enduring responsibility for supporting their continued adoption and use. By doing so, bSI is contributing to industry-wide collaboration and interoperability.

Improvements:
The usability and effectiveness of openBIM can be enhanced with the addition of complementary and improved standards and services. Through this, bSI strives to empower stakeholders with increasingly efficient and robust tools for delivering data interoperability across the built environment.

Reinventions:
Looking further ahead, bSI is focused on developing and deploying the next generation of standards and services, which will harness and unlock the potential of future technology trends, and further enhance productivity and sustainability across the built environment.

The latest iteration of this roadmap was published at the end of 2023 and highlights the key developments in standards and services within each of these time horizons. Developing these standards and services, which support all sectors within the industry, is conducted through a series of Strategic Projects managed centrally by bSI on behalf of all members and Domains.

Against this roadmap, and thanks to valuable contributions from across the buildingSMART community, the past year has seen strong progress including:

- Publication of the new Information Delivery Specification (IDS) as a Final Standard;

- Approval and publication by ISO of the new flagship Industry Foundations Classes (IFC) 4.3 Standard;

- Publication of the new Documents API Final Standard;

- Roll out of the beta-test version of the new Validation Service;

- Significant expansion of the buildingSMART Data Dictionary (bSDD) service; and

- Launch of the new Professional Certification Entry-level and piloting of the new Practitioner-level syllabuses.

However, further work remains to be done to scale up key enabling services and prepare the next generation of communications standards. The continued partnership and support from the community will remain essential in the successful delivery of these important Strategic Projects.

The contents of this roadmap is significantly influenced by a series of Strategic Groups within buildingSMART, including on the following key topics:

Sustainability:
Inherent to the purpose of buildingSMART is the creation of a more sustainable and productive built environment. Sustainability is a direct consequence of the delivery of the roadmap. However, there is also the opportunity to develop more targeted tools for sustainability calculations and optimisation. Associated planning is guided by the Sustainability Strategic Group prior to being incorporated into the relevant project in the roadmap.

Strategic Roadmap

	FOUNDATIONS	IMPROVEMENTS	REINVENTIONS
Benefits	① Consistent data communication standards	② Automated connectivity between applications	③ Ecosystem with seamless integrated decision support
bSI Role	① Drive Adoption of current standards	② Deliver & Drive Adoption of enhancements to current standards	③ Design, Deliver & Drive Adoption of next generation standards

Deployed bSI Standards & Services

- Automated Simulations; Self-adaptive Performance
- Next generation Data Standards, with built-in modularity, extendibility & connectivity (IFC 5); Certification Ecosystem
- Interface Standards (APIs); Global Software Certification
- Linking and Extendibility of Data Standards (IDS, bSDD, Validation Service)
- Current Data Standards (IFC, UCM, IDM); Professional Certification

Digital Twins: Evolving Industry Digital Twins, enable by bSI Standards & Services

| **Year** | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 |

- ⊘ Complete
- ▦ Initial capability complete; further work needed
- ▦ Initial capability complete; further work needed

BIM-GIS alignment:
Data interoperability goes beyond BIM and requires collaboration with adjacent communities such as Geospatial. Building on the partnership between bSI and the Open Geospatial Consortium (OGC), work is underway to identify near-term improvements to BIM and GIS interoperability, as well as to ensure next-generation standards and services have interoperability that connects to other industries.

Digital Twins:
One of the key decision-optimisation tools that can harness the benefits of data interoperability are Digital Twins. The role of buildingSMART is to provide the foundations for such tools through open, structured, interoperable, trusted data. The Digital Twins Strategic Group is publishing a series of papers to help guide and prepare industry to optimise the value of such tools when applied to open digital workflows.

The Strategic Roadmap describes the work of buildingSMART in three key time horizons, each representing a different focus:
Foundations
Improvements
Reinventions

Strategic Projects

Delivery of the core elements of the Strategic Roadmap is conducted through a series of Strategic Projects, managed centrally by bSI on behalf of all members and Domains.

These projects rely heavily on the generous contributions from the buildingSMART community, which provides the sponsorship funding needed for this crucial work and direct support to projects.

Current and planned Strategic Projects include the following:

Technical Services

Validation Service: Expanding the service that allows users to validate IFC files to check their validity against the IFC standard.

Global Software Certification Service: To allow software vendors to test and certify their products against the IFC standard.

buildingSMART Data Dictionary Service: To enhance the data dictionary service that allows users to access definitions and properties, materials and relations through a single portal.

Standards

IFC 4.4: To further extend the existing IFC schema to include new use cases such as Tunnelling and other infrastructure requirements.

IFC 5: To develop the next generation of IFC based on data-centric architectures.

Education & Compliance Services

Professional Certification: To expand the levels of available staff training and certification in openBIM standards and services.

Project & Enterprise Certification: To develop a means of certifying the openBIM capabilities of your organisation, giving confidence to you, your clients and your partners.

openBIM Game: To develop an immersive group training tool involving practical exercises in the latest official openBIM workflows.

Business Value Capture: To create a platform to capture and showcase the business value benefits of openBIM.

Further information on these Projects and the benefits of Sponsorship can be found here: www.buildingsmart.org/about/strategic-projects/.

Projects rely heavily on the generous contributions from the buildingSMART community, which provides the sponsorship funding needed for this crucial work and direct support to projects.

How buildingSMART Works

Organisation and Structure

buildingSMART exists to serve the needs of the global built environment industry. Organisations become members of buildingSMART to support the vision of "the seamless exchange of trusted information across the built environment". Members provide insight into business requirements and shape the strategy for delivering against these requirements, as well as supporting this work with subject matter expertise and funding.

As well as engaging directly with buildingSMART, members can participate in buildingSMART Domains, which bring together representatives from specific industry sectors to focus on the unique challenges and solutions needed for their area of industry.

buildingSMART also establishes national Chapters, to represent bSI in individual countries and support the local adoption of openBIM. Members of bSI can opt to also join national Chapters and engage with their work, alongside industry members from the relevant country.

buildingSMART recognises the value of collaboration with aligned international organisations, and has established formal partnerships with other standards bodies and industry associations.

The partnerships contribute to the alignment and delivery of digital transformation efforts across the built environment.

To help develop strategies on key topics, strategic groups are established to bring together experts from across the industry and produce guidance papers.
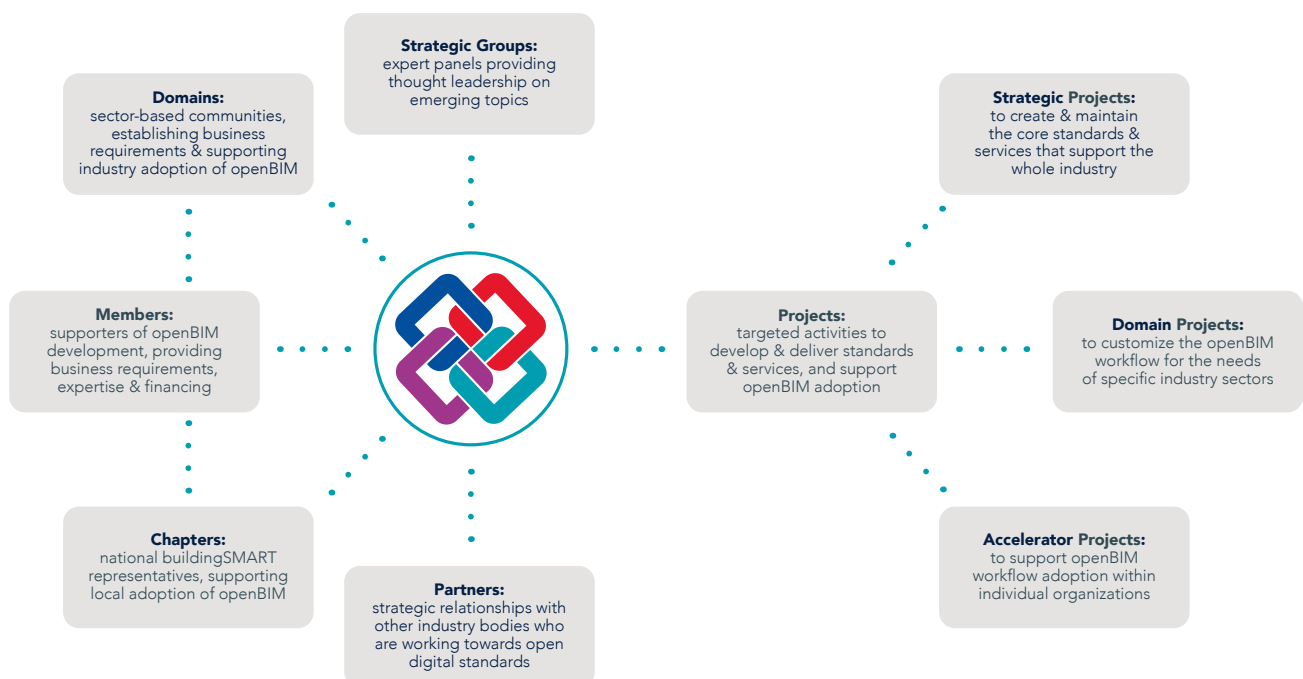
buildingSMART also convenes an Implementors' Forum to facilitate support for software vendors in their adoption of the latest openBIM standards and services.

The work of delivering standards and services and enabling their successful global adoption is delivered through a series of projects. There are three types of projects, as follows:

Strategic Projects provide the foundational standards and services that support all sectors of the industry.

Domain Projects focus on the application of the openBIM workflow in a specific sector of the industry, developing any necessary customisation and best practise guidance for openBIM adoption.

Accelerator Projects provide direct support to individual organisations in the adoption of the openBIM workflow and associated optimisation of company processes and procedures.

Strategic Groups: expert panels providing thought leadership on emerging topics

Domains: sector-based communities, establishing business requirements & supporting industry adoption of openBIM

Strategic Projects: to create & maintain the core standards & services that support the whole industry

Members: supporters of openBIM development, providing business requirements, expertise & financing

Projects: targeted activities to develop & deliver standards & services, and support openBIM adoption

Domain Projects: to customize the openBIM workflow for the needs of specific industry sectors

Chapters: national buildingSMART representatives, supporting local adoption of openBIM

Partners: strategic relationships with other industry bodies who are working towards open digital standards

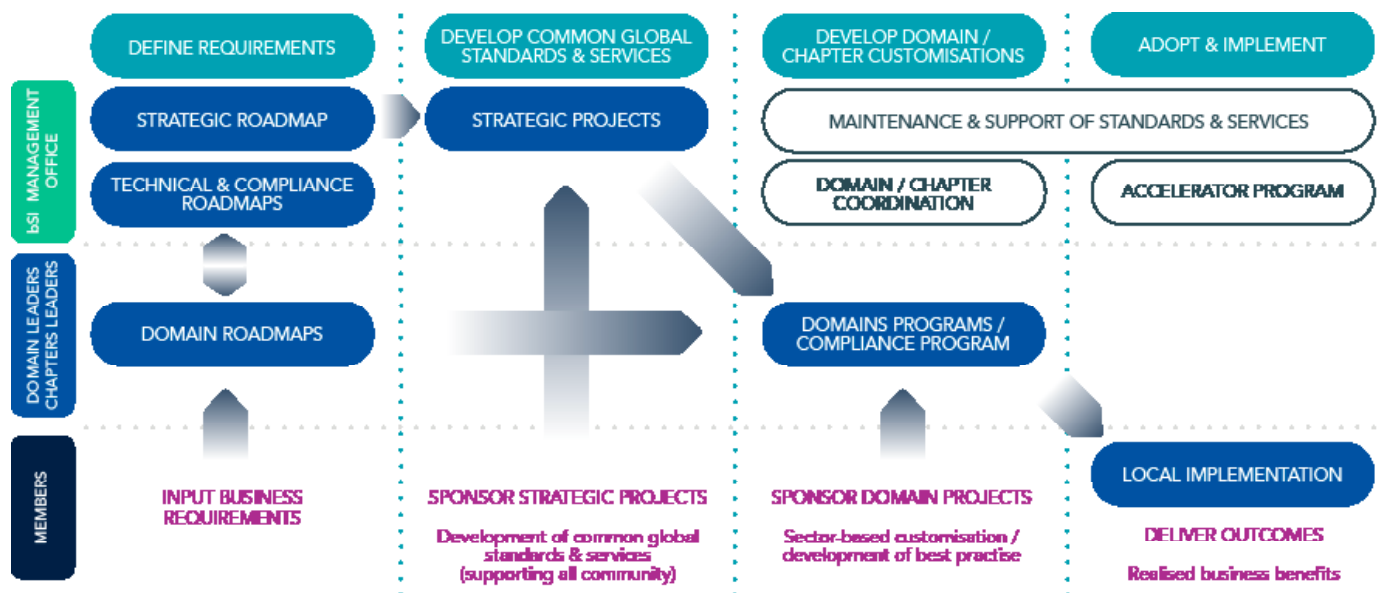**Accelerator Projects:** to support openBIM workflow adoption within individual organizations

Organisations become members of buildingSMART to support the vision of "the seamless exchange of trusted information across the built environment"

How Projects Work

Project Lifecycle & Delivery

Development and adoption of a typical buildingSMART standard or service follows a four-stage process:

Stage 1 – Define Requirements.

Members provide input on business needs, which are used to establish and continually amend the roadmaps that set out the buildingSMART program of work.

Domain roadmaps collate business needs and plans on a sector-by-sector basis, while the strategic, technical and compliance roadmaps amalgamate the common elements of these into programs to support the whole industry.

Stage 2 – Develop Common Global Standards & Services.

The foundational standards and services, which support all sectors of industry, are delivered through Strategic Projects, managed by the bSI Management Office on behalf of Domains and members, with expert support and funding contributed from sponsoring members on a voluntary basis. This includes the process for ISO and CEN publication of standards, where appropriate.

Stage 3 – Develop Domain & Chapter Customisation.

To enhance the value of openBIM standards and services for specific sectors and countries, Domains and Chapters may choose to develop additional, targeted content and guidance, such as entries in the buildingSMART Data Dictionary (bSDD) service that contain specific sector or national property-sets, or additional national content for Professional Certification training programs. Domain projects, overseen by Domain Steering Committees, deliver sector-based customisation.

Stage 4 – Adoption & Implementation.

This final stage is where value is derived from the openBIM workflow, through individual organizations implementing the core standards and services, along with any relevant sector and national customisations. The buildingSMART Accelerator Program provides targeted support and best practice for organizations at this stage.

Services Overview

The buildingSMART Services aim to increase the efficiency and effectiveness of open standards. The services are (mostly online) tools that can be accessed by everyone.

Currently, the list of services includes:

• buildingSMART Data Dictionary (bSDD)

• Use Case Management (UCM)

• IFC Validation Service (new in 2023!)

• IDS Audit tool

• IFC Software Certification and scorecard generation

• IFC management and maintenance system
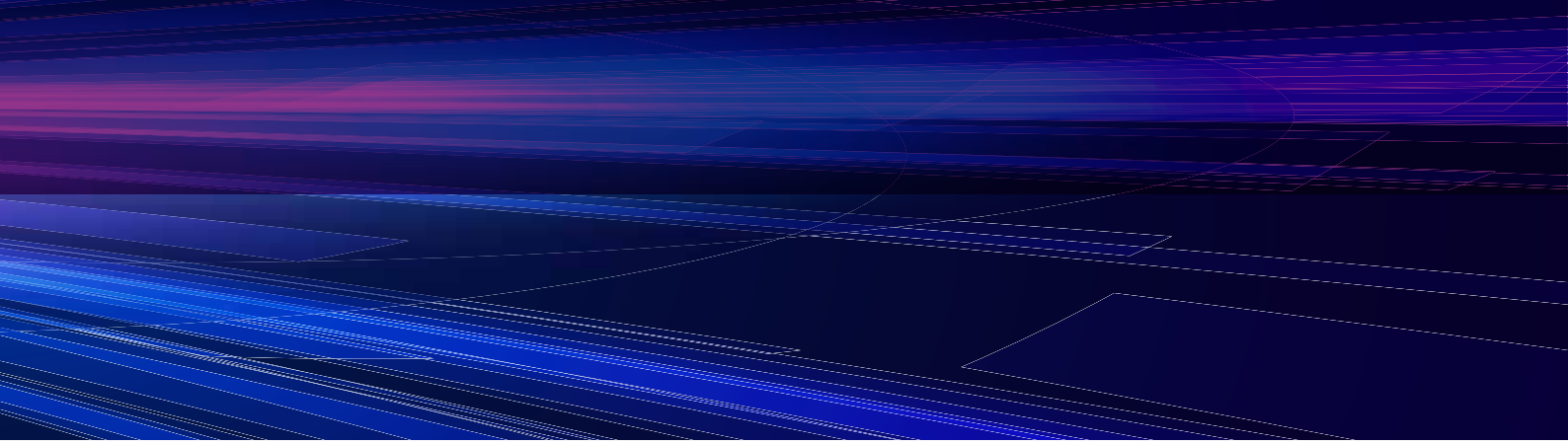
• IFC Translation Framework

In the future, additional services will be developed to support industry needs further. buildingSMART International only develops and runs services that have added value to the industry and are not being developed by the market itself.

In practice, buildingSMART only runs services that no other organization can or will facilitate.

The buildingSMART Services team also organizes the IFC Implementers Forum and General Assembly of Implementer meetings, in addition to the online tools.

bSDD

UCM

Validation

IDS

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Software Certification

The buildingSMART Services aim to increase the efficiency and effectiveness of open standards

Throughout 2023, each service has grown to a higher quality level and has increased usage.

buildingSMART Data Dictionary service (bSDD)

Product Manager Artur Tomczak is leading the development of the buildingSMART Data Dictionary service (bSDD). The bSDD received a major update in 2023, increasing its performance and support for Linked Data.

In 2024, more 'private dictionaries' with restricted access to only a defined set of users will be published. This allows using the bSDD in more private situations or linking to standards that require a paid license. In the future, this might lead to an additional revenue stream for buildingSMART, while the publicly available information will still be free to publish and use.

The bSDD is an 'API first' service that users can utilize through any software tool which supports the connection. A rudimentary search site is available at https://search.bsdd.buildingsmart.org/. An updated graphical user interface is scheduled to be deployed in 2024.

Major software vendors were exploring an API connection in 2023, and the best team is prioritizing support in their efforts.

IFC Validation Service

The IFC Validation Service allows any user to upload an IFC file, and the service checks if the file is valid against the IFC standard. Checks happen on the syntax of the file, compliance with the schema, and multiple normative rules that have been defined as part of the full IFC specification. Evandro Alfieri is leading the IFC Validation service as a product manager. The Validation Service has proven to be instrumental for software developers in their efforts to implement IFC 4.3.x. in 2023 and is expected to continue development in 2024.

The Validation Service is available at:
http://validate.buildingsmart.org

IDS Audit tool

In 2023, a new software product was added to the service portfolio. The IDS Audit tool is the equivalent of the IFC Validation service but for IDS. The tool checks an IDS file against the schema and normative rules of the IDS standard. The IDS Audit tool is focused on the use of software vendors that implement IDS. Its aim is to get consistent IDS files exported by IDS Audit tools to increase IDS interoperability in the workflows.

This is also the reason why the IDS Audit tool is published under the MIT license. Already in 2023, we have seen multiple software vendors using the buildingSMART IDS Audit tool to produce consistent and valid IDS files.

The IDS Audit tool is available at
https://github.com/buildingSMART/IDS-Audit-tool

IFC Implementers forum

The IFC Implementers forum is a bi-weekly online meeting between software vendors that implement IFC. In 2023, the focus of the implementers forum was implementation of the official ISO submitted IFC 4.3.2.0. The engagement of vendors in the implementation of IFC 4.3 has been unprecedented. Software vendors large and small, from all kinds of domains, have been further refining implementation agreements and additional fine-tuning of the new version of the IFC standard.

IFC Software Certification and Score Card generation

In 2023, the new direction for IFC Software Certification was continued. Metrics from the Validation Service provide insights into how consistently software tools produce valid and compliant IFC files. In 2023, software vendors provided unanimous input on the algorithm for defining quality and presenting resulting scorecards. The first batches of scorecards have been generated to provide implementers insights into the performance of their IFC exports by users. These insights have led to improved IFC implementations of IFC in software tools.

Services Overview

General Assembly of Implementers

Within the buildingSMART community there are many standard developments going on at the same time. Several IFC developments (IFC 4.x and IFC 5) are running in parallel with new developments on BIM Collaboration Format (BCF) and multiple (other) API standardizations.

It is quite common for these development teams to progress at their own pace with different priorities. Twice a year the teams come together to share updates and learn from each other. This is done during the 'General Assembly of Implementers'. These meetings typically take place a few weeks before a buildingSMART Summit and are hosted by alternating software vendors.

In February 2023, the meeting was hosted by Procore in Carpinteria, USA. The August 2023 meeting was hosted by Dassault Systèmes in Vélizy-Villacoublay, France.

The characteristics of the implementer meetings require in-person attendance.

Some sessions were recorded and are publicly available on the buildingSMART YouTube channel.

The meetings are hosted under a safe harbour statement and strict code of conduct to allow free exploration of future developments. The implementer meetings are crucial for the reliability of buildingSMART standards in practice. Implementer input into new buildingSMART developments is a crucial factor in turning new ideas into actual usable and useful standards.

All information about past and upcoming meetings is available at:
https://www.buildingsmart.org/general-assembly-of-implementers/

IFC Translations framework

In 2023, there has been a major quality improvement in the IFC Translations framework. Anyone can suggest translations of IFC terms and definitions at https://translations.buildingsmart.org/. After submission, a buildingSMART Chapter representative native speaker proofreads the submission and approves (or denies) it. After approval, the translated string is published. In 2023, improvements have been made to the publication and automated connection to the bSDD.

Implementer input into new buildingSMART developments is a crucial factor in turning new ideas into actual usable and useful standards

Professional Certification

buildingSMART Professional Certification

The Professional Certification Program has grown significantly through organic means. The Program has been accelerated through the Chapter Network which has provided the world with a common international framework to support the use of openBIM solutions and services.

In 2023, buildingSMART has continued to develop the Program, including by:

- Developing the Entry level to aid Chapters in promoting openBIM concepts in their local markets.

- Providing assistance to Chapters in deploying Foundation and Management - COBie training and certification.

- Offering support to selected Chapters for the deployment of Practitioner training and certification courseware, including examination materials.

bSI Program initiation:	November 2015
First Chapter launch:	September 2018 (Germany)
Number of participating Chapters:	26
Number of active Chapters:	20
Number of Training Providers worldwide:	178
Number of Qualified Individuals:	18,305
Number of active development workgroups:	2 (Foundation / Management and Practitioner subcommittees)
Number of volunteers at an international level:	15 (Steering committee, subcommittees)
Number of external paid individuals at international Level:	4 (Entry/ Foundation/ Management / Practitioner content review & development)
Sponsorship gained in 2023:	€ 12,000
Other 2023 revenue:	€ 452,805
Total 2023 revenue:	€ 464,805
Total 2023 development & operational costs:	€ 118,846
Total Program contribution in 2023:	€ 345,959

The Program has been accelerated through the Chapter Network which has provided the world with a common international framework to support the use of openBIM solutions and services.

buildingSMART®
Accelerator Program

What is the Accelerator Program?

The Accelerator Program from buildingSMART International is designed to support organizations in accelerating the adoption of openBIM. Clients that do an accelerator project with bSI or with a Chapter can get a diagnostic of their business processes, a plan for implementing an openBIM operating procedure, and technical support to ensure workflows fit their needs. An accelerator project is designed to add immediate value and deliver excellence in openBIM knowledge, learning, and development to solve real-world use cases.

The Three Steps to an Accelerator Project

The first step for any accelerator project is a discovery workshop. All accelerator projects require an initial workshop to better understand business needs, technical capabilities, resource requirements, and openBIM opportunities to develop the detailed scope of work for the remainder of the project.

The bulk of the work is done through an agreed set of work packages that are developed and delivered following the discovery workshop. Each item is designed to support the business requirements and desired outcomes for the client. Resources are allocated to these packages, and the Chapter is typically engaged to help deliver the work items, which both provides local insight and strengthens local capabilities.

Finally, a learning and development plan is devised to provide education and training opportunities for staff, consistent with the buildingSMART Professional Certification program, and user guides and manuals are developed to support ongoing work.

The Accelerator Program ensures the industry follows the right openBIM standards, gives clients a solid openBIM foundation with tangible benefits for real-world use cases, and offers learning, upskilling, and technical support.

Current Projects

bSI completed their first accelerator project with Mott MacDonald, defining a series of workflows to take advantage of various services to improve the quality of IFC models they receive. A workflow to define their information requirements with the Information Delivery Specification (IDS) standard, extend IFC with the bSDD and validate models with the Validation Service provided Mott MacDonald with more clarity about how to work with IFC, and the processes to implement to ensure better quality and accuracy of information.

In partnership with buldingSMART Denmark, bSI began the second accelerateor project with Sund & Bælt and the iconic Femern A/S project who want IFC and openBIM to feature at the core of their work. This comprehensive scope of work included providing guidance to the project team on how to better structure their data, how to work with various openBIM standards and services, and how to streamline their approach with their suppliers and software vendors. This project began in late 2023 and is expected to last all of 2024, with technical support from the local Chapter.

In late 2023, bSI also started an accelerator project with HDR and Pennsylvania Department of Transportation to review their internal processes and better define their openBIM workflows. This will consider existing workflows and software dependencies, and define milestones for future work in the broader context of their pooled funds. bSI is working alongside HDR, engineering consultants based in the US and various technical resources in country.

bSI has also delivered accelerator project discovery workshops for China Communications Construction Company and Petrobras, with the delivery of subsequent phases of work expected for both in 2024 and beyond.

An accelerator project is designed to add immediate value and **deliver excellence in openBIM knowledge, learning, and development to solve real-world use cases**

Domains Program Overview

Domains represent specific sectors of the built asset industry, and they have one major thing in common. They exist to transform the way we plan, design, build, maintain and operate the world's buildings and infrastructure. The transformation includes improving productivity and quality, assessing requirements and criticality, decision making and reducing the impact on the environment.

Each Domain is led by representatives from the buildingSMART membership community who provide their time pro-bono because, importantly, they are all employed within the industry, and therefore, they know what the industry needs.

As buildingSMART International moves into a new level of maturity, one that is focused on implementing openBIM processes into industry, the scope of the Domains' plans has shifted subtly and in accordance with the wider bSI strategy.

During bSI's establishment and integration phases, the emphasis of the Domains was on understanding the governance processes and extending the core openBIM standards, including IFC. The delivery of IFC 4.3, which extends the schema to include infrastructure aspects, was completed through a program of projects in the Infrastructure and Railway Domains in 2021 as a bSI Production Standard.

This has now been through the ISO process, supported by bSI Technical Leadership team, and was recently republished as ISO 16739-1:2024.

ISO made only 11 observations related to the IFC 4.3 development during their review, which is testament to the robustness of the bSI governance process which enables many people, from different organisations and countries to deliver credible standards.

Improvements in governance regimes and the quality of the standards will always be needed, but the Domains will now leave the development of the core standards to the Strategic Projects (which are delivered by Technical Leadership) and focus instead on supporting the adoption of openBIM workflows into the built asset lifecycle.

Domains are programs, which means they each contain a group of related projects that together deliver strategic change, mostly in accordance with their own roadmap of identified requirements, but also with a strong link to the bSI strategic plan.

The projects deliver outputs, some of which are subsequently incorporated into software, and due to the interoperable nature of the ecosystem that then evolves, the outcomes are the realised business benefits as identified in the original requirements, including productivity, quality and sustainability.

Domains exist to transform the way we plan, design, build, maintain and operate the world's buildings and infrastructure.

The buildingSMART Domains

Airport Domain

The mission of the Airport Domain is to develop and deploy open digital standards for the airport environment. The unification of digital airport standards will enable more efficient working from the common supply chain and create a uniform approach for the industry.

The Airport Domain continues to develop and now has representatives from airports in Asia, Europe and the United States on its Steering Committee.

Some of the key objectives/challenges for the Domain include:

- Creating a work plan for managing airport-specific assets

- Usage of rules for IFC models at airports

- Linked data/ontology regarding library exchange specifications

- Development of GIS-IFC interoperability

- Missing IFC entities

- Identification of the functional requirements of a digital twin

- Enabling economies of scale within the supply chain and with maintenance suppliers

- Completing the existing standards with airport-specific objects, data and processes

- Integrating these standards to align with the building, infrastructure and airport processes

- Enabling asset management decisions based on cost, risk and performance derived from openBIM for the entire lifecycle of airport facilities

- Innovative solution decisions designed to reduce disruption at airports

- Collaboration with the other buildingSMART Domains

The primary activity of the Domain currently is to uniquely define critical airport entities to create clear digital workflows for the whole airport community.

A series of surveys have been completed (i.e.: baggage handling products, terminal, etc) in multiple languages to harmonize terminology as part of this initiative.

Building Domain

The core mission of the Building Domain is to drive the use of open digital standards and solutions by enabling intelligent data that either contributes to the planning, design and construction of buildings or the ongoing operations and maintenance of buildings. This will enable process and data integration for buildings for their entire lifecycle.

The Building Domain is led by a Steering Committee comprised of representatives from international members and buildingSMART Chapters. The Building Domain has a dual role – outward looking to the industry to identify issues relating to the use of digital ways of working in the building sector and bringing use cases and implementations to the attention of a larger audience; and coordinating with other bSI initiatives to support the development and implementation of new openBIM processes.

Some of the key objectives of the Building Domain are:

- The Handover to FM for building equipment maintenance project, drafting a specification based on IFC 4.3

- The Occupant Movement Analysis project which published its first phase process maps into the Use Case Management service

- A Final Technical Report on BIM Building Energy Management workflows

- IFC Spatialzone standards and guidelines

- Updates to the standards for Steel Construction

- Quantity Take Off standards

The wider challenges that the Domain remains focused on resolving relate to whole life asset management for the building sector and improving future living spaces.

Construction **Domain**

The Construction Domain is focused on helping the digital transformation for the construction phase, aiming to make site practices more efficient, safe and sustainable through the better flow of information, enabling innovative methods of construction and the incorporation of modern technologies.

Its remit is to enable the application of openBIM® standards to construction sites and communicate the benefits of openBIM to industry players in order to promote its further use.The Construction Domain is concerned with use cases where the application of openBIM will result in greater productivity, right first-time assembly, reduction in waste of materials and resources and improved safety.

Some of the key objectives of the Construction Domain are:

- Advance the digitalization of construction
- Develop site environment best practices based on openBIM
- Integration of design, schedule and cost
- Capturing of use cases to make 4D and 5D (cost and scheduling) more commonly used
- Provide openBIM education to the construction industry
- Logistics, material management and barcoding/RFID integration
- Incorporate forward-looking Information and Communication technologies into the development of open construction solutions and standards

- Easier and streamlined flow of information through the supply chain, with appropriate levels of definition, final design sign-off
- Opportunities for modern designs combining materials and components through Design for Manufacturing and Assembly (DfMA) analysis and off-site modular solutions, enabling efficient assembly flow
- Visual simulations of defined methods such as the placement of temporary works, assembly of components and modules
- Data linkage with non-BIM software and other standards

With a strong focus on new technologies, the Construction Domain intends to focus efforts on new and emerging trends that will enhance on-site performance. Proposed initiatives include Construction Information Management, Integrated BIM Project Management, 4D/5D modelling, material passport, openBIM and the Internet of Things (IoT), the design of autonomous vehicle control and the writing of a white paper.

Electrical **Domain**

The Electrical Domain's mission is to ensure a more sustainable future for the built asset industry focussed on electrical networks in buildings. It aims to develop and increase the use of open digital BIM standards for the optimum management of building energy requirements to address energy management, waste, and, to create innovation opportunities.

Some of the key objectives of the Electrical Domain are:

- Enabling energy consumption, understanding carbon footprint and evaluating circular economy aspects in the design of innovative solutions

- Enabling users to make informed decisions in design, build and operation based on a comprehensive connected data model of their buildings incorporating a full electrical network, control network and the energy forecasted behaviour

- To anticipate and specify digital ways of working at the earliest stage of an assets life whether it be new build or refurbishment

- Complementing the existing buildingSMART Industry Foundation Class (IFC) open standard, by integration of the Normalised Electrical Model (NEM) to enable more efficient working in the electrical design domain

- Linking the electrical network and building management system to the building and mechanical and plumbing system model

Proposed initiatives include openBIM for Electrical Engineering (Normalised Electrical Model), electrical energy efficiency modelling, and assess the electrical power network sustainability impact.

Infrastructure **Domain**

The Infrastructure Domain aims to combine, enhance and develop open standards for intelligent data, and enable process and data integration for infrastructure projects and assets. The Infrastructure Domain has been leading buildingSMART's efforts in several areas, including roads, bridges, tunnels, ports and waterways and alignment work.

Some of the key objectives of the Infrastructure Domain are:

- Enable data exchange based on open standards for the planning, realization and maintenance of infrastructure works and, ultimately all aspects of the built environment

- Improve the exchange of information and open data access between asset management databases

- Promote enduring archives of asset information based on open standards

- Enable lifecycle information management for infrastructure based on open standards

- Enable the merging of project-related information, e.g. requirements and risks, with asset information

The Infrastructure IFC Extensions program, which was the collection of infrastructure projects and the Rail project, delivered the requirements for the schema update to IFC4.3 . Further work on IFC Bridge is taking place to determine test instructions. The IFC Tunnel project continues to develop IFC extensions.

IFC 4.3 was published as a bSI Production Standard in 2021 and has now also been formally approved by ISO as a revision to ISO16739.

The collaboration between bSI and the Open Geospatial Consortium (OGC) continues following the publication of the 2021 report and is now being led through a multi-domain Strategic Group. A further report on the practicalities of BIM GIS coordination, illustrated with specific use cases, is in authorship.

Following completion of the IFC4.3 schema publication, the Domain Steering Committee has updated its roadmap to focus on the future needs of the infrastructure industry.

This was achieved by holding a series of Chapter Roadmap workshops to establish the international user requirements. Aspects of the updated Roadmap are being implemented through a series of working groups with bSI members.

Maritime Domain

The Maritime Domain was established in 2023 and its mission is to align marine engineering for the improvement of the blue economy through the appropriate and effective delivery and operation of new resources.

The blue economy can be described as the "sustainable use of ocean resources to benefit economies, livelihoods and ocean ecosystem health".

The Maritime Domain is focused on ensuring trusted and seamless data flows are available for the investment in a large range of asset types that operate in a marine environment, from immersed tunnels to offshore windfarms and much more.

There are many opportunities to use our ocean resources effectively and through international collaboration the Domain aims to ensure that the best decisions are made with productivity and sustainability as a key focus.

Some of the key objectives of the Maritime Domain are:

- Digitalization - Promote the digital transformation of the Blue Economy

- Global consensus - Establish an international consensus on Maritime engineering digitization

- Collaboration - Full-cycle collaboration in the design, construction and operation

- Quality - Reduce costs, improve quality and effectiveness, promote a green development

- Digital asset - Design-build-operate whole-life asset information availability based on openBIM Archive

Steering Committee

The Maritime Domain is led by a Steering Committee comprised of representatives from international members.

The Steering Committee establishes the roadmap that responds to industry domain requirements, facilitates the project and activities of the domain, leads the Domain sessions at buildingSMART summits, interacts with the Standards Committee and ensures the buildingSMART Process is followed.

The Maritime Steering Committee still has opportunities for new members to participate. New members will be identified and then appointed by the Standards Committee Executive.
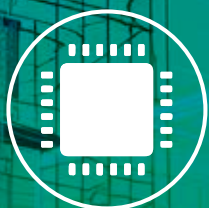
Product **Domain**

The Product Domain's core mission is to manage the development and provision of processes, templates, tools and functionality to enable the robust and efficient use of product data. This includes relevant third-party standards, classification systems and other forms of structured content for openBIM.

The Steering Committee are developing strategies that will bridge the information divide between those operating in the supply chain, where there are no international open standards, and the design and build domains, who are using IFC-based standards.

Some of the key objectives of the Product Domain are:

- Enable the efficient use of product data in projects and subsequent asset management, including advances in digital supply chains

- Support the other Domains to define the product data requirements needed as outcomes of their standards

- Develop and execute projects for product support to advance the development of openBIM

- Facilitate the translation and localization of IFC

The Domain is also continuing its liaison with the consortium working group to advance the supply chain needs in a proposal to connect bSI and GS1 standards, which will ultimately develop new standards for product manufacturers.

The Product Domain has held a series of workshops to address the Domain Roadmap and identify projects that respond to immediate demands. They were joined by representatives from manufacturers of construction products who laid out their openBIM requirements which are being incorporated into the Domain Roadmap.

Initiatives in development include Information Lifecycle Management, openBIM Guidelines for Product Manufacturers, Governance of Domain Data and IFC for Products.

Railway **Domain**

The core mission of the Railway Domain is to accelerate and exploit new digital opportunities for railway systems and create a comprehensive and applicable digital representation of the entire railway ecosystem that will support all phases of the lifecycle. This provides the basis for interoperable support systems, reduced complexity, secure and safe solutions, and reduced costs for all stakeholders.

The Railway Domain Steering Committee is led by representatives from; BANE Denmark, ÖBB-Infrastruktur, SBB, Trafikverket, CRBIM, MINnD, SNCF, Finnish Transport Infrastructure Agency, Deutsche Bahn, Bane NOR and RFI. The Steering Committee oversees the largest international project at bSI.

Following the successful completion of the IFC 4.3 standard with the Infrastructure Domain, the Applying IFC 4.3 for Rail was launched to deploy the standard for use in real applications in capital projects and operational management.

This project aims to expedite the availability of IFC 4.3 in software solutions. It expects to

- Continue the established cooperation and collaboration with software vendors

- Enable business-case-driven implementation and validation processes to:

  - formally deliver requirements about IFC 4.3 usage from appointing parties that can be used in contracts;

  - formally deliver requirements for software capabilities from appointed parties to software vendors for implementation;

  - check the IFC data quality that can be produced from software;

  - validate the requirements by railway experts (including requirements from appointing parties and requirements from appointed parties to software).

- Execute prioritized business cases following the implementation and validation process.

The Railway Domain published a Manifesto outlining the vision to create a modern, efficient and sustainable rail infrastructure that meets the needs of customers and society, based on open data standards (such as IFC) and Building Information Modelling (BIM).

Regulatory **Domain**

The core mission of the Regulatory Domain is to help project owners and regulators benefit from using openBIM®. The vision is to create an automated regulatory process by gradually transitioning from manual to automated workflows, ensuring regulatory compliance. The Regulatory Domain's mission is to ensure that the ability to electronically represent facilities, both buildings and infrastructure, on the supply side of the industry is complemented by the ability to represent the regulations, requirements, and recommendations that comprise the demand side.

The outcomes of the projects and studies conducted by the Regulatory Domain include reports on the business case for automated compliance checking, the technical challenges of obtaining regulations in machine-readable forms, and the information required through application forms and guidelines to support the transition of building ecosystems to digitally regulated processes. The Regulatory Domain continues to improve in the development and procedures needed to support activities across the community. The Regulatory Roadmap was updated in 2022, while the objectives of the roadmap have remained unchanged.

Some of the key objectives of the Regulatory Domain are

- Standardizing processes, workflows, and procedures for applicants and regulators based on openBIM and supporting them with tools, guidelines, and manuals

- Supporting interoperability between Regulatory, Requirements, and Recommendatory (RRR) content

- Providing an open discussion forum for each government's building regulators, researchers, and implementers to promote openBIM-based processes and collaborative issues

- Creating an arena for government regulatory bodies to share information, inspire, and implement automated code checking using openBIM standards, including ISO 16739, in real-life situations

- Leading and managing projects and initiatives to facilitate and influence adoption by stakeholders

With growing interest worldwide in improving and automating regulatory compliance processes, the Regulatory Information Requirements project will ensure that the regulatory information requirements common across many jurisdictions have appropriate representation in IFC, while allowing jurisdictions to add local information requirements and implement their own checklists and rules.

The Domain is developing a document entitled "Guidance for Regulators on Using openBIM." The purpose of this guide is to explore, from a global perspective, why and how adopting Open Building Information Modeling (openBIM) standards in digital building permitting would accelerate all regulatory processes while enhancing their quality, veracity, and accuracy.

The Regulatory Domain hosted two "Open House" webinar sessions: "Towards Automated Regulatory Compliance in the EU" in January and "Use of openBIM in Latin America and its Impact on Building Permitting" in June.

Technical **Domain**

The Technical Domain actively collaborates with the global buildingSMART community to drive advancements in core data architecture, tools, and applications of open data standards. Its primary objective is to enhance interoperability within the built asset industry. The Technical Domain is conducting technical explorations and experiments to achieve the long term goals.

The Technical Domain engages in the following activities:

- **Tutorials and experiments on generative AI:** hosting workshops on summits and conducting experiments with Large Language Models applied to openBIM.

- **Conducting User Surveys:** The Technical Domain conducts surveys to explore information technology, data architecture, and data science advancements in the broader technology industry. This helps determine their relevance to buildingSMART initiatives and identifying potential areas for improvement.

- **Connecting with Academia:** The Technical Domain fosters connections between innovators from industry and academia, encouraging their active participation in buildingSMART technical programs and projects.

- **Supporting Workflow-Enabling Technologies:** The Technical Domain supports the development, promotion, and utilization of workflow-enabling toolkits, tools, and technologies. By encouraging the adoption of these solutions, it aims to improve efficiency and effectiveness in the industry.

In 2023, the Technical Domain continued its efforts from the previous year and achieved significant progress on IFC5. Additionally, it has reached important milestones in various projects, some of which have passed the voting stage and are close to being standardized. These projects include:

- The final release of the openCDE Documents API.

- Continued development of Information Delivery Specification (IDS).

Furthermore, the Technical Domain is working on these long-term initiatives:

1. **IFCDelta Project:** This project focuses on facilitating the delivery of specific portions of a model that have changed rather than sending the entire dataset every time a model is published to IFC. The project involves collaboration with multiple vendors and primarily concentrates on IFC 2x3 and IFC 4x, with implications for IFC 5.

2. **IFC 5:** This ambitious project continued to be fostered by the Technical Domain. Its overarching goal is to address historical challenges and provide support for future and unforeseen use cases. Feedback, requirements, and necessary components are gathered through Summits and Implementer Assembly meetings to ensure an effective solution. Several experiments have been developed, and in 2023, there was a strong focus on the confirmation of use cases and workflows.

Chapter Network

Chapters serve as one of the fundamental building blocks of the work carried out by buildingSMART. 2023 was another year of progression for Chapters, not only in the addition of new Chapters to our network but also in terms of maturity around the openBIM standards and service development, which has been ably supported by the Chapter network.

Notably, 2023 was another significant year – both Brazil and India marked new regions added to the growing chapter network, showing that emerging economies are now finding real value in openBIM. Iceland were also added, along with Kazakhstan and Serbia, to further open standards in their regions.

"Chapters are a vital part of the buildingSMART ecosystem, not only because they help build the community but also because they advance our shared mission. We share the same core values as Chapters, and this helps us become truly international and collaborative. We've seen the Chapter network grow to 34, which is an incredible feat and a testament the interest in openBIM".

Aidan Mercer, Marketing Director, buildingSMART International

Chapters are a vital part of the buildingSMART ecosystem, not only because they help build the community but also because they advance our shared mission

Full Chapters

Benelux	Japan
Canada	Norway
China	South Korea
Denmark	Spain
Finland	Sweden
France	Switzerland
Germany	UK & Ireland
Hong Kong, China	USA
Italy	

Developing Chapters

Australasia	Poland
Austria	Portugal
Croatia	Romania
Czech Republic	Serbia
Iceland	Singapore
India	Slovenia
Kazakhstan	Turkey
Morocco	UAE

Chapters in-formation

Brazil

Membership

Membership remains the main source of financial income that supports the operation of buildingSMART International. There has been development in technical services, Professional Certification and Accelerator Projects that will provide income in the coming years. The trend for membership growth has been steady, with new members joining in 2023 who support the core of bSI. bSI continues to have new membership growth targets, and 2024 is no different.

bSI has introduced a multi-Chapter offering to members, allowing members to add additional Chapters of their choosing. This is in reasponse to some requests from members that wanted to increase their engagement with bSI and the Chapters alike.

As of early 2024, there are ten strategic members: Arup, Autodesk, China Communications Construction Company Ltd. (CCCC), China Railway BIM Alliance (CRBIM), LeapThought, Nemetschek, Oracle Construction and Engineering, Schneider Electric, Siemens AG and Trimble. There are two principal members, seventeen multinational members and forty-seven standard members. Members sit on the Standards Committee, which endorses the creation of standards, and can work in Domain Committees and on projects. Members benefit from the collective local and international activities of buildingSMART Chapters. They play an active role, not only in identifying issues, but also in developing solutions.

New members during the year were: LeapThought at the strategic level, Schindler as multinational members, and CERTI, Clayco Inc, Federal Highway Administration, HaulHub Technologies, MBIM, ORBITS Engineering Firm, PERI, SierraSoft all as standard members.

10 STRATEGIC MEMBERS

47 STANDARD MEMBERS

2 PRINCIPAL MEMBERS

10 NEW MEMBERS

17 MULTINATIONAL MEMBERS

Fellows

The buildingSMART Fellowship program was established in 2017 to honour long serving professional contributors who have been the organisation's lifeblood over many years. These individuals have made significant contributions to the work of buildingSMART and the advancement of openBIM. buildingSMART Fellows have contributed substantial leadership or technical input at an international level, working on international programs or standards or with more than one chapter.

In 2023 the Fellowship Committee determined that the following individuals should be recognised as buildingSMART Fellows, and they were presented at the Valencia Summit in March 2024.

Lars Fredenlund
Norway

Sergio Muñoz
Spain

Greg Schleusner
USA

Bjørn Stangeland
Norway

Lai Wei
China

Angel Velez
USA

Anna Moreno
Italy

Rob Roef
Netherlands

Juha Hyvärinen
Finland

Tarmo Savolainen
Finland

Charles Eastman
(Posthumous)
USA

The Richard Petrie Award for 2023

Mark Baldwin
Thomas Liebich

The full list of existing Fellows (which is also published annually on the website https://www. buildingsmart.org/community/fellows/) is as follows:

Yoshinobu Adachi
Kjell Ivar Bakkmoen
Christophe Castaing
Birgitta Foster
Francois Grobler
Frédéric Grand
Leif Granholm
Roger Grant
Chris Groome
Reijo Hänninen
Tomi Henttinen
Ian Howell
Rudolf Juli
Jan Karlshøj,
Susan Keenliside
Inhan Kim
Arto Kiviniemi
Thomas Liebich
Alain Maury
Patrick MacLeamy
John Mitchell
Nick Nisbet,
Tiina Perttula
Richard Petrie
Jim Plume
Øivind Rooth
Birgitta Schock
Mikio Shoji
Jøns Sjøgren
Dana Smith
Rasso Steinmann
Cheng Tai Fatt
Väino Tarandi
Jeff Wix
Karin Anderson
Mark Baldwin
Calvin Kam
Jeffrey Ouellette
Bill Moore
Pasi Paasiala
Steen Sunesen
Masaki Muto
David Watson
Håvard Bell

Marketing

Overview

As outlined by Clive Billiald in the CEO Statement, buildingSMART has been developing standards and services to strengthen the opportunities for openBIM workflows. Marketing's role is twofold: strengthening the brand to encourage adoption and demonstrating the value for end-users through projects and use cases. Improving the brand and showcasing the benefits of openBIM benefits the whole community and beyond because it helps to demonstrate the value of open data standards and, broadly speaking, interoperability.

There are encouraging signs that openBIM continues to grow and that the benefits of what the community creates add value throughout the entire lifecycle of projects and, indeed, for asset management. From the success of two Summits in Rome and Lillestrøm, 2023 was a year that reinforced the commitment from the existing community and welcomed newcomers.

We have continued to advance our overall communications and messaging in support of our mission to share the benefits of openBIM, recruiting a web operations manager in Andrey Rimskiy-Korsakov, and investing in resources to help us improve the website and the overall brand. Last year, we developed the community portal to help Chapters and the community share best practice activities. Chapters continue to provide local support to openBIM, and they are strong advocates for open standards. The brand is better as a collective, and we have worked to ensure that our mutual goals are aligned.

This is most evident with the buildingSMART Awards Program which is benefited by individuals and chapters alike. 2023 was the last led by Susan Keenliside, and it was again delivered with real quality and substance. Susan has led this program since 2017 and we are hugely indebted by her leadership and commitment. Dan Little will lead the program in 2024 and beyond and we look forward to the next phase of the program.

News

The Digital Newsletter continues to be the main source of news and information sharing. The newsletter runs once a month and is archived on the bSI website.

In 2023, bSI published a variety of important news stories for the community. Full stories can be found on the website. Some important news items from the year included:

- Revised strategic roadmap, purpose, vision, and mission
- Strategic Projects launched
- buildingSMART International completing its first project under the Accelerator Program
- India, Serbia, Iceland, and Kazakhstan joining buildingSMART International as Developing Chapters, and Brazil joining as a Chapter-In-Formation
- The retirement of Patrick MacLeamy and appointment of Ian Howell as new Chairman
- New Maritime Domain launched
- Documents API receiving final standard approval
- buildingSMART International and Geospatial World signing an MoU to advance BIM and GIS workflows
- National Institute of Building Sciences and buildingSMART International signing an agreement to support open standards
- IFC 4.3 approved as a final standard

Platforms

The CRM platform from **HubSpot** continues to be the main method for sharing news and information with the community. There was a drop in the deliverability of emails, with spam filters changing on many email servers and new methods for sharing information sought after. There was overall a higher frequency of emails from bSI and a better use of preferences for recipients.

Zoom continued to be the webinar/meeting platform of choice, with **Ringcentral** (formerly Hopin) continuing to be the platform for the virtual summits and hybrid environment for the in-person events. The feedback for Hopin was good, with most attendees finding it a good balance of user friendly and interactive.

Videos are mainly managed on the **YouTube** account, with some legacy videos still residing on Vimeo.

The team is now enabled with **Camtasia** accounts and a lot of video production is being done in-house to support the growing demand for online content. Some video production is outsourced.

Award Force continues to be the platform for supporting the Awards Program. It is versatile and has enough functionality to manage the program.

GitHub helps to manage open-source code and documentation related to the standards and solutions. The buildingSMART page can be found at github.com/buildingSMART.

Monday.com is predominantly used for managing the solutions and standards program and is a tool for project managing the Domains and the output from the working groups. We are also using this for the Accelerator Program to track and manage the projects with the clients.

Miro is a tool used by bSI and it helps teams to collaborate and brainstorm for strategic or working meetings by capturing notes and ideas.

Buzzsprout is the platform for the buildingSMART Podcast and this houses all of the interviews and discussions for wider public consumption.

The buildingSMART **Forum** provides users a variety of ways of getting involved and engaging with the community.

The **User** website is for knowledge-based learning that is designed to house user guides and tutorials.

Social Media

Social media platforms are fast becoming a critical function for buildingSMART's outbound communications.

Of all buildingSMART's social media accounts, LinkedIn still sees the highest amount of engagement and fastest growth. A break-down of buildingSMART's channels and their respective growth can be seen below:

- LinkedIn grew **from 39,240 to 48,326 followers**.
- YouTube grew **from 2,650 to 3,710 subscribers**.
- X (Twitter) grew **from 7,934 to 8,243 followers**.
- Facebook grew **from 2,950 to 3,200 followers**.

48,326
LINKEDIN

8,243
X (TWITTER)

3,710
YOUTUBE

3,200
FACEBOOK

Awards Program

The final presentations for the openBIM Awards 2023 took place in a hybrid format during the buildingSMART International Standards Summit Lillestrøm 2023, on Wednesday 20th September. An elite jury was put in place for each category, who watched and deliberated live in Norway. The winners were announced on the same evening at an Awards Ceremony and dinner.

In 2023 the program received 137 submissions, continuing the trend for in excess of 100 submissions per year. Of those, 69 passed reviews by the technical triage team spread over 10 categories. An extensive international jury further narrowed the candidates down to 22 finalists spread over 9 categories. And of those finalists, 10 were crowned as category Winners with 5 Special Mentions also awarded.

A short introductory video and the full submission for each of the winners, finalists and special mentions can be found on the bSI website.

Award Winners

Category of Asset Management

Winner: HOCHTIEF ViCon and HOCHTIEF PPP Solutions, Germany

Project Name: Digital Twin for the maintenance and operation of motorways – Data driven information management along the project life cycle

Category of Construction for Buildings

Winner: Tecklenburg GmbH, Germany

Project Name: Sustainable interdisciplinary planning and construction of a district police authority in Germany (Bergheim)

Category of Construction for Infrastructure

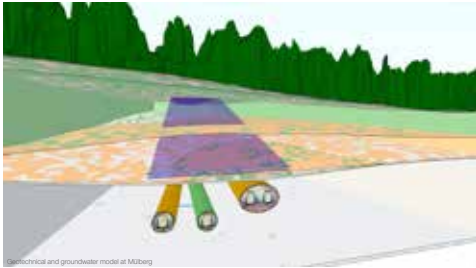Winner: China Academy of Railway Sciences Corporation Limited, China

Project Name: The Applications of openBIM in Hangzhou West Railway Station

Category of Design for Buildings

Winner: Finavia Corporation, Finland

Project Name: Helsinki Airport Development Programme Projects 2013–2023

Category of Design for Infrastructure

Winner: ILF Zurich, Switzerland

Project Name: Rail Tunnel: MehrSpur Zürich - Winterthur

Category of Handover

Winner: China Railway First Survey and Design Institute Group Co Ltd and China Academy of Railway Sciences Corporation Ltd, China
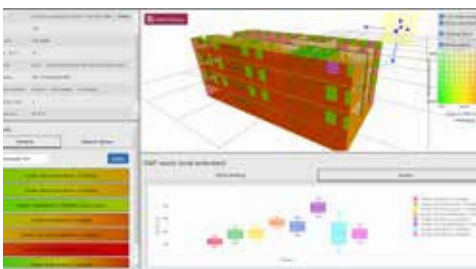
Project Name: Multi-domain openBIM Digital Engineering Certification and Handover for JiuQuan-Ejina Railway

Category of Professional Research

Winner: Tsinghua University, China

Project Name: Knowledge-informed rule interpretation and automated design checking based on openBIM

Category of Student Research

Winner: Technical University of Munich, Germany

Project Name: BIM4EarlyLCA: Automated LCA for design decision support in early design stages using openBIM and NLP-based semantic model healing

Category of Technology

Winner: Tsinghua University, China

Project Name: CBIMS: an openBIM+ Solution for Customizable BIM Checking based on buildingSMART & China National Standards

Category of Sustainability

Winner: Technical University of Munich, Germany

Project Name: BIM4EarlyLCA: Automated LCA for design decision support in early design stages using openBIM and NLP-based semantic model healing

Governance and Finance

buildingSMART International is incorporated in the UK as a company limited by guarantee, while the self-governing Chapters are set up according to the legal framework in their country. The International Council (IC) consists of representatives from the Chapters in their governance capacity and holds an annual general meeting. Each Chapter sends two representatives to the IC meetings. A Board is elected at the annual International Council meeting.

The Board met on five occasions in 2023, two of which were online meetings. Its work includes setting key priorities, reviewing and signing off the accounts, receiving and deciding upon new Chapter applications, setting and updating Company Byelaws and oversight of key strategies.

The Strategic Advisory Council (SAC) also advises bSI, and during the year, Strategic members met with the Board on two occasions.

Seven full-time and three part-time officers were employed by bSI in 2023: a CEO, an Operations Director, a Marketing Director, a Compliance Director, a Finance Manager, a bookkeeper, a Business Administrator, an Events Manager and two International Program Coordinators.

Other services procured on a fee basis include a Technical Director and Technical Coordinator, a bSDD Manager, technical support for solutions & standards development, an International Program Coordinator, US representation and support, HR support, communications support and website management.

The financial focus for 2023 was investing in new programs and income streams whilst controlling core costs to maintain overall financial health. Whilst the result was a deficit of EUR 108,000 against the budgeted surplus of EUR 36,000, equity still remains above the target EUR 0.5m and new income streams from the Accelerator Program are already materializing in the early part of 2024.

Chapter and organizational membership subscriptions remain the principal source of income for buildingSMART International and despite new organizational membership being below budget, this still increased by 11% from 2022 to 2023.

The 2023 service income figures largely reflect the focus on developing existing and new income streams.

Professional Certification Income at EUR 465,000 makes up the majority of service income. This is mainly from Foundation program income, but includes EUR 44,000 of income from the newly developed Practitioner program.

Service income also includes EUR 104,000 from the Accelerator Program. This is EUR 150,000 below the budget estimate due to a variety of uncertainties around this new income stream when the budget was set.

As we work towards the transition to a new software certification/validation service in 2024, 2023 income from the then current service was around EUR 150,000 below budget.

The lower than budgeted cost of providing these services largely reflects these income levels and the majority of services expenditure in 2023 is investment in the Professional Certification program.

Project income is matched by costs with funding being used to progress specific projects in the various domains. The projects representing the majority of funding in 2023 were IFC Rail and Tunnel.

Lower ticket income from the two in person summits in 2023 was compensated for with lower running costs of these events.

Other income is predominantly funding from the UK government for buildingSMART's participation in two Horizon 2020 projects concerning digital building permits.

bSI core management office costs have risen over the year as we continue to expand and diversify. Despite this and inflationary pressures, both core management and program support costs were contained under budget in 2023 to offset the lower than budgeted income.

Costs to a large degree outside of management's control were exchange and bad debts. The rising value of Sterling against the Euro in 2023 led to an exchange loss in the year. The increase in bad debts can be largely attributed to changes in structure and personnel within several of our member organizations leading to these members not paying their renewal fees.

The Financial Statements are published at the end of this report.

2023 Full Year (€000's)
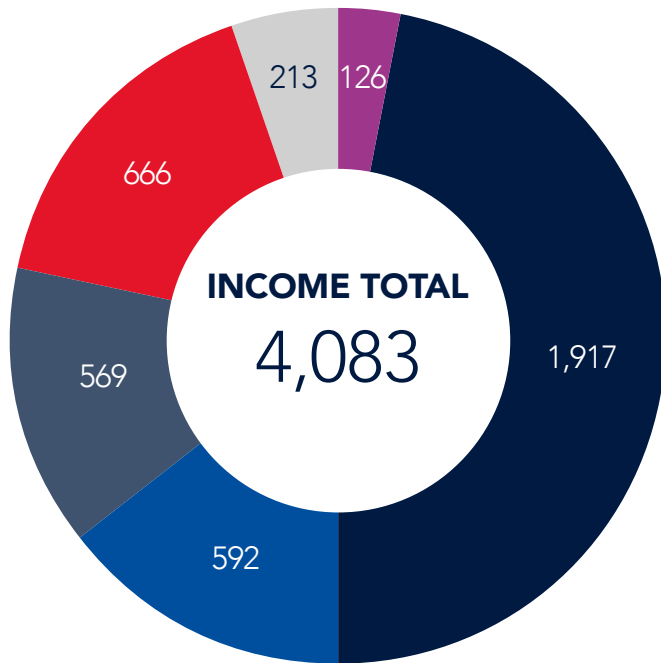
INCOME TOTAL 4,083

Income	2022 Actual	2023 Budget	2023 Actual
● Chapters less rebates	114	36	126
● Membership	1,725	2,193	1,917
● Services	576	969	592
● Projects	896	447	569
● Summits	304	725	666
● Other Income	83	198	213
Income Total	**3.698**	**4,567**	**4,083**

EXPENSES TOTAL 4,191
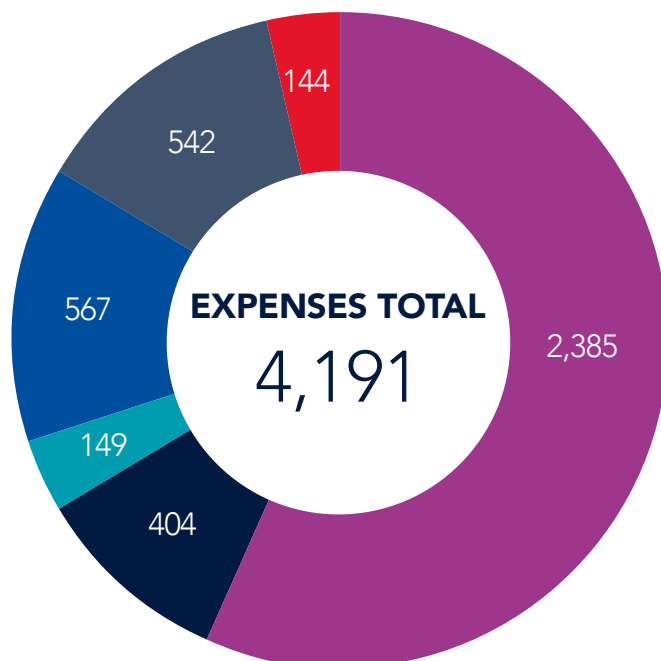
Expenses	2022 Actual	2023 Budget	2023 Actual
● bSI Core	1,950	2,464	2,385
● Programs	357	571	404
● Services	191	318	149
● Projects	896	447	567
● Summits	308	700	542
● Exchange & bad debts	-138	30	144
Expenses Total	**3.564**	**4,531**	**4,191**

Surplus	134	36	-108
GBP to Euro rates	1.13	1.20	1.13
(€000's)			

Annual Report Priorities for 2024

Work in 2023 saw the establishment of buildingSMART International's Strategic Roadmap and the launch of new cross-domain Strategic Projects to deliver the priority developments needed to achieve this Roadmap. The priorities for 2024 are to use this new delivery model to focus industry support and efforts on the delivery of these core projects, to optimise how our Domains and Chapters work in light of this new Strategic Projects model, and to expand our communications and outreach to further support the global adoption of openBIM. Details on each of these is provided below.

The priorities for 2024 are to use this new delivery model to focus industry support and efforts on the delivery of these core projects, to optimise how our Domains and Chapters work in light of this new Strategic Projects model, and to expand our communications and outreach to further support the global adoption of openBIM

1. Deliver on the buildingSMART Strategic Projects

- Secure sponsorship funding from industry (as a non-profit organization, delivery of projects is dependent upon funding from sponsors)

- Develop the Validation Service from beta-test maturity into production-standard

- Deploy the new Global Software Certification service

- Launch the international syllabus for the Practitioner-level Professional Certification program

- Establish and communicate the strategy for the development of the next-generation IFC 5 standard

2. Optimise the operation of buildingSMART Domains and Chapters

- Revise the role of Domains to take advantage of the introduction of cross-Domain Strategic Projects

- Standardize Domain project types & processes

- Evolve the role of Chapters to best contribute to global openBIM adoption and development

- Enhance the capturing and sharing of global best practice through the Chapter network

3. Strengthen Communications and Outreach

- Enhance the content and accessibility of information through the bSI website

- Publish updated user and vendor guidance on the adoption of buildingSMART standards and services

- Publish details of global best practice in government and client openBIM mandates

- Deliver a program of International and Regional Summits to support openBIM education and development

buildingSMART International Ltd
Unaudited Financial Statements
for the year ended 31 December 2023

Statement of Financial Position

	Notes	2023 £	£	2022 £	£
Non-current assets					
Intangible assets	4		86,086		103,303
Property, plant and equipment	5		11,327		10,578
			97,413		113,881
Current assets					
Inventories		341		3,750	
Trade and other receivables	6	466,174		660,333	
Cash and cash equivalents		1,531,800		1,852,343	
		1,998,315		2,516,426	
Current liabilities	7	(1,644,864)		(2,043,809)	
Net current assets			353,451		472,617
Total assets less current liabilities			450,864		586,498
Non-current liabilities	8		-		(42,219)
Net assets			450,864		544,279
Reserves					
Capital contribution reserve			52,431		52,431
Income and expenditure account			398,433		491,848
Members' funds			450,864		544,279

The directors of the company have elected not to include a copy of the income and expenditure account within the financial statements.

For the financial year ended 31 December 2023 the company was entitled to exemption from audit under section 477 of the Companies Act 2006 relating to small companies.

The directors acknowledge their responsibilities for complying with the requirements of the Companies Act 2006 with respect to accounting records and the preparation of financial statements.

The members have not required the company to obtain an audit of its financial statements for the year in question in accordance with section 476.

These financial statements have been prepared and delivered in accordance with the provisions applicable to companies subject to the small companies regime.

The financial statements were approved by the board of directors and authorised for issue on 22 February 2024 and are signed on its behalf by:

Jaan Saar
Director

Company Registration No. 05024694

1 Accounting policies

Company information

buildingSMART International Limited is a private company limited by guarantee incorporated in England and Wales. The registered office is 9 Quy Court, Colliers Lane, Stow-cum-Quy, Cambridge, CB25 9AU.

1.1 Accounting convention

These financial statements have been prepared in accordance with FRS 102 "The Financial Reporting Standard applicable in the UK and Republic of Ireland" ("FRS 102") and the requirements of the Companies Act 2006 as applicable to companies subject to the small companies regime. The disclosure requirements of section 1A of FRS 102 have been applied other than where additional disclosure is required to show a true and fair view.

The financial statements are prepared in sterling, which is the functional currency of the company. Monetary amounts in these financial statements are rounded to the nearest £.

The financial statements have been prepared under the historical cost convention. The principal accounting policies adopted are set out below.

1.2 Income and expenditure

Turnover comprises the fair value of the consideration received or receivable for the provision of services in the ordinary course of the company's activities and membership subscription income. Turnover is shown net of sales/value added tax, returns, rebates and discounts.

The company recognises revenue when:
The amount of revenue can be reliably measured;
it is probable that future economic benefits will flow to the entity; and specific criteria have been met for each of the company's activities.

Income is recognised over the period to which it relates and any amounts received during the year that relate to future periods are carried forward at the balance sheet date as deferred income.

1.3 Intangible fixed assets other than goodwill

Intangible assets acquired separately from a business are recognised at cost and are subsequently measured at cost less accumulated amortisation and accumulated impairment losses.

Intangible assets acquired on business combinations are recognised separately from goodwill at the acquisition date where it is probable that the expected future economic benefits that are attributable to the asset will flow to the entity and the fair value of the asset can be measured reliably; the intangible asset arises from contractual or other legal rights; and the intangible asset is separable from the entity.

Amortisation is recognised so as to write off the cost or valuation of assets less their residual values over their useful lives on the following bases:

bSI DD   Straight line over 10 years

1.4 Property, plant and equipment

Property, plant and equipment are initially measured at cost and subsequently measured at cost or valuation, net of depreciation and any impairment losses.

Depreciation is recognised so as to write off the cost or valuation of assets less their residual values over their useful lives on the following bases:

Office equipment   25% straight line basis

The gain or loss arising on the disposal of an asset is determined as the difference between the sale proceeds and the carrying value of the asset, and is credited or charged to surplus or deficit.

1.5 Impairment of non-current assets

At each reporting period end date, the company reviews the carrying amounts of its tangible and intangible assets to determine whether there is any indication that those assets have suffered an impairment loss. If any such indication exists, the recoverable amount of the asset is estimated in order to determine the extent of the impairment loss (if any). Where it is not possible to estimate the recoverable amount of an individual asset, the company estimates the recoverable amount of the cash-generating unit to which the asset belongs.

Recoverable amount is the higher of fair value less costs to sell and value in use. In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset for which the estimates of future cash flows have not been adjusted.

If the recoverable amount of an asset (or cash-generating unit) is estimated to be less than its carrying amount, the carrying amount of the asset (or cash-generating unit) is reduced to its recoverable amount. An impairment loss is recognised immediately in surplus or deficit, unless the relevant asset is carried at a revalued amount, in which case the impairment loss is treated as a revaluation decrease.

Recognised impairment losses are reversed if, and only if, the reasons for the impairment loss have ceased to apply. Where an impairment loss subsequently reverses, the carrying amount of the asset (or cash-generating unit) is increased to the revised estimate of its recoverable amount, but so that the increased carrying amount does not exceed the carrying amount that would have been determined had no impairment loss been recognised for the asset (or cash-generating unit) in prior years. A reversal of an impairment loss is recognised immediately in surplus or deficit, unless the relevant asset is carried at a revalued amount, in which case the reversal of the impairment loss is treated as a revaluation increase.

1.6 Inventories

Inventories are stated at the lower of cost and estimated selling price less costs to complete and sell. Cost comprises direct materials and, where applicable, direct labour costs and those overheads that have been incurred in bringing the inventories to their present location and condition.

Notes to the Financial Statements

Inventories held for distribution at no or nominal consideration are measured at the lower of cost and replacement cost, adjusted where applicable for any loss of service potential.

At each reporting date, an assessment is made for impairment. Any excess of the carrying amount of inventories over its estimated selling price less costs to complete and sell is recognised as an impairment loss in profit or loss. Reversals of impairment losses are also recognised in profit or loss.

1.7 Cash and cash equivalents
Cash and cash equivalents are basic financial assets and include cash in hand, deposits held at call with banks, other short-term liquid investments with original maturities of three months or less, and bank overdrafts. Bank overdrafts are shown within borrowings in current liabilities.

1.8 Financial instruments
The company has elected to apply the provisions of Section 11 'Basic Financial Instruments' to all of its financial instruments.

Financial instruments are recognised in the company's statement of financial position when the company becomes party to the contractual provisions of the instrument.

Financial assets and liabilities are offset, with the net amounts presented in the financial statements, when there is a legally enforceable right to set off the recognised amounts and there is an intention to settle on a net basis or to realise the asset and settle the liability simultaneously.

Basic financial assets
Basic financial assets, which include trade and other receivables and cash and bank balances, are initially measured at transaction price including transaction costs and are subsequently carried at amortised cost using the effective interest method unless the arrangement constitutes a financing transaction, where the transaction is measured at the present value of the future receipts discounted at a market rate of interest. Financial assets classified as receivable within one year are not amortised.

Classification of financial liabilities
Financial liabilities and equity instruments are classified according to the substance of the contractual arrangements entered into. An equity instrument is any contract that evidences a residual interest in the assets of the company after deducting all of its liabilities.

Basic financial liabilities
Basic financial liabilities, including trade and other payables, bank loans, loans from fellow group companies and preference shares that are classified as debt, are initially recognised at transaction price unless the arrangement constitutes a financing transaction, where the debt instrument is measured at the present value of the future payments discounted at a market rate of interest. Financial liabilities classified as payable within one year are not amortised.

Debt instruments are subsequently carried at amortised cost, using the effective interest rate method.

Trade payables are obligations to pay for goods or services that have been acquired in the ordinary course of business from suppliers. Amounts payable are classified as current liabilities if payment is due within one year or less. If not, they are presented as non-current liabilities. Trade payables are recognised initially at transaction price and subsequently measured at amortised cost using the effective interest method.

1.9 Taxation
The company is primarily a mutual company and as such is exempt from corporation tax on surpluses generated from mutual activities.

1.10 Employee benefits
The costs of short-term employee benefits are recognised as a liability and an expense, unless those costs are required to be recognised as part of the cost of stock or non-current assets.

The cost of any unused holiday entitlement is recognised in the period in which the employee's services are received.

Termination benefits are recognised immediately as an expense when the company is demonstrably committed to terminate the employment of an employee or to provide termination benefits.

1.11 Leases
Rentals payable under operating leases, including any lease incentives received, are charged to profit or loss on a straight line basis over the term of the relevant lease except where another more systematic basis is more representative of the time pattern in which economic benefits from the leases asset are consumed.

1.12 Foreign exchange
Transactions in currencies other than pounds sterling are recorded at the rates of exchange prevailing at the dates of the transactions. At each reporting end date, monetary assets and liabilities that are denominated in foreign currencies are retranslated at the rates prevailing on the reporting end date. Gains and losses arising on translation in the period are included in profit or loss.

2 Judgements and key sources of estimation uncertainty

In the application of the company's accounting policies, the directors are required to make judgements, estimates and assumptions about the carrying amount of assets and liabilities that are not readily apparent from other sources. The estimates and associated assumptions are based on historical experience and other factors that are considered to be relevant. Actual results may differ from these estimates.

The estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognised in the period in which the estimate is revised where the revision affects only that period, or in the period of the revision and future periods where the revision affects both current and future periods.

3 Employees

The average monthly number of persons (including directors) employed by the company during the year was:

	2023	2022
Total	10	8

4 Intangible fixed assets

	bSI DD
Cost	**£**
At 1 January 2023 and 31 December 2023	172,171
Amortisation and impairment	
At 1 January 2023	68,868
Amortisation charged for the year	17,217
At 31 December 2023	86,085
Carrying amount	
At 31 December 2023	86,086
At 31 December 2022	103,303

5 Property, plant and equipment

Cost	**£**
At 1 January 2023	32,942
Additions	8,662
At 31 December 2023	41,604
Depreciation and impairment	
At 1 January 2023	22,364
Depreciation charged in the year	7,913
At 31 December 2023	30,277
Carrying amount	
At 31 December 2023	11,327
At 31 December 2022	10,578

6 Trade and other receivables

Amounts falling due within one year:	2023 £	2022 £
Trade receivables	406,742	377,597
Other receivables	59,432	282,736
	466,174	660,333

7 Current liabilities

	2023 £	2022 £
Trade payables	146,695	137,000
Taxation and social security	562	-
Other payables	1,497,607	1,906,809
	1,644,864	2,043,809

8 Non-current liabilities

	2023 £	2022 £
Other payables	-	42,219

9 Members' liability

The company is limited by guarantee, not having a share capital and consequently the liability of members is limited, subject to an undertaking by each member to contribute to the net assets or liabilities of the company on winding up such amounts as may be required not exceeding £500.

10 Operating lease commitments

Lessee

At the reporting end date the company had outstanding commitments for future minimum lease payments under non-cancellable operating leases, as follows:

	2023 £	2022 £
	-	4,292

11 Related party transactions

Other member organisations
The directors A Moreno, A Jost, F Hovorka, Professor R T Steinmann, K Yajima, J Makwana, I Howell and C Hvid are connected with member organisations, which each pay annual membership subscriptions to buildingSMART International Limited in the normal course of their business.

In the course of normal business, some member organisations also receive payments for services provided to the company. Such services are provided on an arms length basis.

Officers, Board Members and Leaders

buildingSMART International Management Office

Clive Billiald
CEO

Richard Kelly
Operations Director

Léon van Berlo
Technical Director

Aidan Mercer
Marketing Director

Celine Bent
Compliance Director

Board Members

Ian Howell
Chairman

Rasso Steinmann
Vice Chairman

Jan Saar
Treasurer

Anna Moreno

Alar Jost

Frank Hovorka

Kazumi Yajima

Christina Hvid

Jugal Makwana

Company Secretary

Clive Billiald
Company Secretary

Nominations Committee

Menno de Jonge

Patrick MacLeamy

Jøns Søgren

Birgitta Schock

Certification

Léon van Berlo

Airport Domain

Arisca Droog

Gerard van der Veer

Xuan Dai

Christoph Carl Eichler

Gianluca Genova

Basak Keskin

Fumiaki Kishida

Maya Tryfona

Lewis Watts

Lai Wei

Building Domain

David Ivey

Rob Roef

Kjell Ivar Bakkmoen

Mirbek Bekboliev

Jan-Anders Jönsson

Francis Leung

Geraldine Rayner

Alex Plenty

Jouni Hurskainen

Construction Domain

Jorge Camilo Diaz Garcia

Ken Endo

Veljko Janjic

Konstantinos Kessoudis

Ricardo Alvarez Munguia

Electrical Domain

Bertrand Lack

Oliver Lebherz

Andrea Aiello

Trinidad Chardin-Segui

Christian Frey

Bernd Gmeiner

Patricia Massey

Rolf Schulte

Gregory Sigwalt

Infrastructure Domain

Tiina Perttula
Phil Jackson
Jürgen Litsch
Jim Plume
Marion Schenkwein
Marek Suchocki
Hiromasa Shima
Marc Goldman
Alexa Mitchell
Mike Kennerly
Isabel Gutierrez Lopez

Maritime Domain

Haijiang Li
Ran Tao
Chris Millar

Product Domain

Michel Bohren
Radboud Baayen
Petr Vokoun
Robert Heinze
Hansueli Schmid
Espen Schulze
Lai Wei
Anna Merkler
Justas Lauzikas
Magdalena Pyszkowski

Railway Domain

Eivind Pagander Tysnes
Liming Sheng
Benjamin Stuntner
Candy Friauf
Dashuang Li
Edouard Chabanier

Franz Josef Peer
Giovanni Sorrentino
Joachim Kanis
Konstantinos Kessoudis
Kristian Fevejle Andersen
Lawrence Chapman
Stefan Reiser
Susanne van Raalte
Tarmo Savolainen
Winfried Stix
Xenia Fiorentina

Regulatory Domain

Nick Nisbet
Franco Coin
Tamer El-Diraby
Tomi Henttinen
Rick Klooster
Paulina Magdzicka
Masaki Muto
Wawan Solihin
Adrian Wildenauer

Technical Domain

Greg Schleusner
Dennis Shelden
Jakob Beetz
Christian Frey
Thomas Liebich
Bjørn Stangeland
Angel Velez

Standards Committee Executive (SCE)

Birgitta Foster
Kjell Ivar Bakkmoen
Leif Granholm
Rasso Steinmann
Ian Howell
Clive Billiald
Richard Kelly

Standards Committee Technical Executive (SCTE)

Håvard Bell
Mirbek Bekboliev
André Borrmann
Christophe Castaing
John Dickinson
Benjamin Gonzalez
Leif Granholm
Jan Karlshøj
Philip Jackson
Haijiang Li
Thomas Liebich
Nick Nisbet
Greg Schleusner
Dennis Shelden
Bjørn Stangeland
Rasso Steinmann
Maya Tryfona
Léon van Berlo
Sergey Vishnevetsky
Chi Zhang
Richard Kelly