

# Proposed Headings for the bSI Technical 2020 Roadmap

bSI Technical Advisory Group (TAG)  
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FINAL DRAFT

- **The bSI core technical mission**

*Goal:* Define the boundaries for bSI technical work for the next eight years.

- Develop and support the IFC data model.
- Enhance and support of AECO industry software interoperability.
- Consider involvement in and support of other missions only if and to the extent they do not hinder the bSI core technical mission.
- As other disciplines/parties develop or propose their own core data models, identify such models and collaborate with their authors as necessary to define complementary scope and interfaces between their models and IFC.
- Draw selectively a line between what IFC should and should not support.
- Define boundaries of bSI technical responsibilities.
- Negotiate with other parties how to interact with their models; take the lead in that negotiation.

- **IFC development and staging**

*Goal:* Define the scope of future technical work related to the IFC data model.

- Streamline IFC development and version release pace; develop delivery schedules and stick to them.
- Find areas in IFC where the data model does not yet sufficiently support professional industry software (e.g. acoustics) and extend the data model as necessary to close discovered gaps.
- Develop robust specifications which will enable backward and forward compatibility of IFC releases.
- Generate formal definitions of IFC concepts.
- Consider (again) changing EXPRESS in IFC to Unified Modeling Language (UML) – examine the true feasibility of doing that.
- As modeling language conversion tools are available, ask ISG members what tools they would prefer to use in software development.
- Resolve conflicts from different disciplines' use of BIM in the Coordination View: make the view less general, and allow mapping among different modeling purposes on semantic (not just on syntactic) level.

- **bSI Data Dictionary (bSDD), formerly International Framework for Dictionaries (IFD) development**

*Goal:* Make bSDD usable in IFC software.

- Accelerate the development of libraries by focusing on specific libraries with specific content.
- Develop realistic library delivery schedules and stick to them.
- Review bSDD libraries as they are created and suggest adjustments as/where appropriate.
- Integrate bSDD work and libraries into IFC as quickly as possible. and test the integration

- **Model View Development (MVD)**

*Goals:* Set up technical work that will enable much wider use of IFC; enable IFC implementation in mission critical and other software that is currently not IFC compatible; stimulate development of new IFC software.

- Examine the scope of existing model views and develop a plan to extend the range of model views to cover more aspects of building design, construction, ownership, operation and recycling/re-use.
- Accelerate development, acceptance and release pace of new model views.
- Develop and institute a permanent, self-explanatory and robust naming convention for all model views.
- Accelerate the development of the bSI process and mechanism of model view evaluation.
- Harmonize processes and methods of model view definition.
- Generate formal definitions of MVD concepts and parameters.

- Eliminate overlapping content of emerging and implemented model views and prevent recurrence of overlap.
  - Accommodate the dynamic nature of model views in their setup and approach.
  - Define a model view release strategy that will automatically and sufficiently inform the various IFC domains about release details at the time of each release, ensuring that vendors who do not have to update their work for a given release will know that.
- **Documentation of IFC and MVD concepts and parameters**  
*Goals:* Reuse concepts and parameters; avoid duplication of effort.
    - Identify criteria for defining modularity to enable the definition of boundaries on both sides.
    - Relate and link native data structures to/with IFC and MVD concepts.
    - Make these DLL modules so they can be tested and validated.
    - Generate ample documentation for implementers and users.
- **Software implementation**  
*Goals:* Increase the number of IFC software implementations; increase number of industry disciplines that have IFC implementations; facilitate their development and successful deployment in industry
    - Stimulate the generation of new software development tools and other technical incentives that will result in large numbers of implementation and in different industry domains.
    - Find ways/stimuli to accelerate software implementation of new and future model views of IFC.
- **Testing and validation**  
*Goals:* Confirm what in candidate software works as it is supposed to; confirm that IFC definitions properly represent the real objects/attributes/relationships they define in buildings; verify that data import and export satisfy the corresponding model view specification and its data exchange requirements.
    - Institute wide and rigorous review of IFC and their implementations by using approved and automated testing and test cases.
    - Enable testing and validation of IFC definitions as the corresponding data they define change over the building life cycle.
    - Test and verify the correctness of developed model views per individual model view objective.
    - Enable computer driven, rule based rigorous testing of software implementations.
    - Test and validate software implementation as related to relevant IDM, model views and/or bSDD.
    - Capitalize from the iabi testing effort and enlarge its support.
    - Verify that each model view properly accounts for what is related to it in the IDM which hosts the particular model view implementation
    - Test the Coordination View for multiple use purposes.
    - Rigorously test and validate all model view data exchange requirements.
    - Rigorously test the integration of bSDD and IFC.
    - Verify that each linked/referenced library contains expected data that are needed for proper use of software that is compliant with the given model view.
    - Verify that library entries of the same type are uniformly defined over all bSI libraries (e.g. that IFC definitions are uniform so data can be consistently and unambiguously transformed as necessary).
- **Software certification**  
*Goal:* Assure that certification of software meets expectations that whatever is certified indeed works.
    - Complete the process and methods of model view certification.
    - Involve in testing independent organizations that have no vested interest in accepting or rejecting what is being tested.
    - Certify submitted model views promptly.
    - Certify that applicable model views are properly implemented in software.
    - For each instance of certification, clearly define which performance/function is certified, and which is not.

- Certify only correct and robust data exchange.
  - Keep a current, easily accessible public record of certified software that includes (in non-technical language) information about which model view(s) each listed software is certified for.
  - Facilitate software developers' disclosures of any development/implementation assumption, simplifications and/or approximations and necessary work-arounds end users and others may need to be aware of.
  - Certify instances of bSDD libraries and their integration with IFC.
- **Communication and collaboration**  
*Goal:* Facilitate more productive communication among individuals and parties who participate in bSI-related technical work.
    - Announce technical work and release schedules.
    - Develop web-based tools that will enable the specifications of data exchange requirement for Integrated Project Delivery (IPD).
    - Enable active and effective communication among disciplines (e.g. how architects want to talk to the steel industry, and vice versa).
    - Provide a technical forum to enhance the discussion of integration of IFC libraries into ISO STEP.
    - Expand existing forums, comments and discussion lists, such as those on the iabi web site.
    - Create and facilitate new technical forums as necessary to effectively support bSI technical work.
    - Provide an active and always up-to-date web site that fosters bSI-related disciplinary and interdisciplinary communication and collaboration.
- **Connectivity to other work**  
*Goals:* Relate effectively to developments in other AECOO disciplines; benefit from technical achievements in other fields.
    - Actively and continuously investigate technologies developed in other fields for possible use in bSI technical work.
    - Develop technical mechanisms to reuse information and models already developed.
    - Avoid duplication of what has already been developed elsewhere.
    - Define data and modeling connections and connection points to other/related disciplines in the AECOO industry.
- **Libraries (general)**  
*Goals:* Create and validate libraries that are needed by IFC software; assure that they are seamlessly accessible and usable.
    - Assure that all object libraries are complete; create explicit criteria about completing and validating libraries that can be independently verified by developers and users.
    - Enable and implement library modularization.
    - Harmonize/integrate existing competing library server structures which may or may not have direct relationship to IFC (e.g. SPie, Fiotech, etc.)
- **bSI funding of technical work**  
*Goal:* Secure continuous critical funding of technical work.
    - Firmly define bSI technical development priorities and embed them in bSI project funding plans, regardless of actual funding opportunities available at the time.
    - Develop realistic strategies and schedules how to fund technical work to solve pressing technical needs, beyond MSG funding if/as necessary.
    - Increase the size of the technical bodies that can perform IFC and IFC-related technical work.