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## 2026 Request for Proposals

# Development of a BIM-Based Case File to Identify Fire Protection Data Exchange Needs Across the Building Lifecycle

### Description

In their [2023 white paper](#), the Digitalization, Artificial Intelligence (AI), & Cybersecurity Working Group of the [Grand Challenges Initiative](#) (GCI) identified several research priorities that will need to be addressed to prepare the fire engineering field for emerging technologies such as Building Information Modeling (BIM), Smart Firefighting, Smart Modeling, and more. The working group envisions a digitalized future for fire protection that, through the management of fire data, would enable Digitalized Detection, Inspection, Operation, and Maintenance (DIOM) and Digitalized Firefighting and Evacuation. Through continued working group conversations and with the input of attendees at the 2025 AI in Fire Engineering Summit, it has become clear that a major hurdle to successful development and use of these emerging technologies is a lack of high-quality, standardized, openly available data.

The working group has identified BIM as a gateway to digitalized fire protection. For example, the integration of BIM with machine learning and artificial intelligence can help in predictive analytics for fire risk assessment, anomaly detection in fire protection systems, and optimization of fire safety strategies (See [The Integration of BIM with FE](#) report, 2024). However, as BIM becomes increasingly central to the design, construction, and operations of facilities, the integration of fire protection systems and compliance information into digital workflows remains limited and inconsistent. To advance safety, regulatory compliance, and lifecycle efficiency, there is a need to identify, document, and test the fire protection-related data exchange requirements in a structured and reusable BIM framework.

Standardized data framework(s) and tools for fire protection in BIM will improve collaboration, efficiency, and data integrity during the design phase by defining a clear method for how data is captured, exchanged, and validated between stakeholders such as designers, contractors, code officials, and facility managers. In the long term, this foundational work will enable the future development and adoption of digitalized fire protection, firefighting, and building operation and maintenance, most likely through the use of digital twins that include fire protection information. Standardized frameworks will also ensure that cybersecurity and secure data exchange are core components of this digital transformation.

To that end, we invite proposals that address key topics related to producing a **BIM-based case file and a structured data exchange framework** that will (1) assist industry participants in adopting Building Information Modeling (BIM) for fire protection, (2) in the long-term, enable the



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development and adoption of digitalized operations and maintenance, fire protection and firefighting, (3) identify stakeholders (e.g., designers, contractors, code officials, owners, and facility managers), and (4) align fire protection data requirements, all at **the design stage** of the building lifecycle from the fire protection engineering perspective. The outcomes of this project are intended to inform the next step of incorporating these data requirements into openBIM standards.

## Project Goals & Objectives

Proposals should clearly indicate what the outputs and outcomes of the research project will be. Strong proposals will draw clear linkages between the proposed research and the needs identified in the GCI Digitalization/Cybersecurity (DAIC) Working Group white paper. Successful applicants will be able to articulate the potential impact of the research on the field of fire safety science and fire protection engineering, as well as demonstrate how their approach will complement existing work in this area.

The overarching goal of this project is to enhance the interoperability and accessibility of fire protection data in BIM-enabled environments. Specific objectives include, but are not limited to:

1. Identify and document the “bare minimum” fire protection data needs across planning, design, construction, commissioning, operation, inspection, and renovation phases. Proposals should focus on fire protection data specifically and how it is being used through the lifecycle, and not on other BIM data like architectural, MEP, etc.
2. Develop a BIM-based case file that illustrates how such data should be captured, exchanged, and validated between stakeholders. The case file will ideally serve as a “digital sandbox” that anyone can use to analyze fire protection data in a controlled environment. It should include at least one specific use case/scenario focused on design that shows how the data requirements will work in that example. The design stage may include schematic design, design development, and technical design.
3. Discuss various options for available tools and data exchange frameworks that support data capture, exchange, collaboration, and cybersecurity. Consider both proprietary and open source platforms.
4. Define an information delivery roadmap that addresses data ownership, regulatory compliance checkpoints, cybersecurity, and verification requirements.
5. Align findings with existing standards and initiatives (e.g., openBIM, ISO 19650 series, IFC schema development, NBIMS-US, BS 8644, and NFPA guidelines), while identifying and addressing gaps where these standards do not fully cover fire safety workflows and data



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requirements. Where gaps exist, propose or develop best-practice approaches to foster industry-wide adoption.

6. Establish a framework built on open, non-proprietary standards to ensure the findings are broadly accessible and not tied to a single software platform.
7. Provide recommendations for implementation to improve future BIM workflows, code compliance automation, and building lifecycle management.

## Project Deliverables

1. Detailed work plan (including proposed approach and timeline to completion) that accounts for all proposed objectives and tasks. This should include: an initial project launch meeting, one mid-term presentation, four brief check-in meetings with the Foundation program manager, and a post-project debrief meeting with Foundation staff.
2. This project is expected to involve input and feedback from an External Advisory Panel of 5-10 individuals outside of the SFPE Foundation Board of Governors (selected with input from the Foundation's Technical Committee, SFPE and SFPE Foundation staff, and other stakeholders) with expertise in the subject area under study. For this project, we will be soliciting additional funding support from industry partners, each of whom will be invited to have one representative serve on the External Advisory Panel. The project team is expected to be in contact with this group as needed for input and feedback on the study, including during the midterm and final reporting phases.
3. Draft final report and internal presentation for SFPE Foundation and External Advisory Panel review and input.
4. Final revised report incorporating SFPE Foundation and External Advisory Panel feedback and properly formatted for public dissemination. SFPE Foundation staff will provide a template and guidance on formatting.
5. Access to any tools or research materials produced as part of the project.
6. Evidence of student engagement in the research process.
7. Proposed method(s) for packaging and communicating the information produced throughout the research process to best meet the needs of relevant stakeholders.
8. Presentation on research findings (to be recorded) at a future SFPE or SFPE Foundation conference, webinar, or other event.
9. Completed "Grant Report" (due to SFPE Foundation staff no more than 30 days after project completion). A template will be provided to the grantee covering topics such as budgetary expenditures, ease of implementation, and an opportunity to provide feedback to the SFPE Foundation.



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## Intellectual Property

The SFPE Foundation will retain the rights to the final report and any tools developed in conjunction with the scope of this research project. We may make the final deliverables publicly available via the SFPE Foundation website and/or affiliated online platforms, and research products may be used, shared, or referenced at future SFPE Foundation-affiliated events.

## Cost and Duration

The proposed research project should be completed no more than twelve months after initiation. The Technical Committee may consider projects of a longer duration, though this needs to be explicitly named and justified in the proposal. Applicants may request up to \$40,000 USD.

## How to Respond

All responses must be submitted via the SFPE Foundation's online portal. **Note:** We are using a new application system that requires you to make an account. If you do not already have a Blackbaud account, click the link to create an account.

Late applications will not be accepted under any circumstances. Plan ahead to allow sufficient time to set up your account in our system and complete all required components. Incomplete applications will not be reviewed.

**Required Elements:** All applicants will be prompted to answer a series of questions in the online application and to upload a PDF file containing their proposal.

The PDF containing the proposal should not exceed 7 pages single-spaced (not including the cover page, bibliographic references, Conflict of Interest Disclosure Form, or Research Integrity Agreement). Any proposals that exceed the 7-page limit will not be considered.

The proposal document should include the following elements:

1. Cover Page (does NOT count towards the page limit), including:
  - Full names, titles, affiliations, and contact information (email, phone, mailing address) for all research team members named in the proposal.
  - Title of the proposal.
  - Total amount requested (up to \$40,000 USD).
  - Description of any prior financial support germane to the research project being proposed.
2. Scientific Merit (counts toward the page limit)
  - Proposed project and approach.



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3. Achievability (counts toward the page limit)
  - Proposed timeline for project completion.
  - This should include an initial project launch meeting with SFPE Foundation staff; one midterm check-in presentation to the External Advisory Panel, SFPE Foundation staff, and the Technical Committee; a draft final presentation to the External Advisory Panel, SFPE Foundation staff, and the Technical Committee; and any other relevant project milestones.
4. Project Impact (counts toward the page limit)
  - How does the proposed work align with SFPE Foundation’s mission to “enhance the scientific understanding of fire and its interaction with the social, natural, and built environments?”
  - If executed as planned, how will this project help the SFPE Foundation deliver on its Strategic Goals (including, but not limited to, student engagement; innovation; and global reach)? (Please refer to the [2022-2025 SFPE Foundation Strategic Plan](#).)
  - What kind of impact (e.g., on the fire engineering community, on fire engineering practice, on fire safety, on the world as whole, etc.) do you expect the proposed project to have?
5. Project Value (counts toward the page limit)
  - Total amount requested and budget justification.
  - This must include a description (i.e., “Budget Justification”) accounting for each expenditure in the proposed budget and any other funding sources (including amounts) that will be used to support the work (including in-kind support).
  - If in-kind contributions are included as part of the budget, then the proposal needs to clearly outline where those contributions are coming from, how they are funded, and explain how the research team would be able to verify and/or document those in-kind contributions, if selected for funding.
  - Note: The SFPE Foundation does not have a specific policy regarding overhead or other indirect costs.
6. Team Qualifications (1 page maximum) (counts toward the page limit)
  - Qualifications and experience for all relevant team members.

Applicants will also be required to complete the following elements in the online submission portal (does not count toward the page limit):

- Conflicts of Interest Disclosure (**required**, complete the COI Form available here and upload in the submission portal). All members of the research project team named in the proposal must download, complete, and sign a copy of this form.
- Research Integrity Agreement (**required**, complete the form available here and upload in the submission portal)



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Applicants are permitted to submit multiple proposals. Proposals will be reviewed based on the following criteria: *Scientific Merit (30%), Achievability (25%), Project Impact (20%), Project Value (15%), and Team Qualifications (10%)*.

**Deadline for Submittals: TBD, 11:59 pm Eastern Time**

Direct inquiries to Dr. Leslie Marshall, SFPE Foundation Interim Executive Director, at [foundation@sfpe.org](mailto:foundation@sfpe.org). No phone calls, please.

## Contractor Selection

Proposals will be evaluated by the SFPE Foundation Technical Committee and GCI Digitalization, Artificial Intelligence, & Cybersecurity Working Group representatives based on the proposal elements listed above. *The project will proceed only upon receipt of a proposal deemed acceptable to the Foundation's Board of Governors.*