



# FireBIM

## The first European harmonisation of fire safety regulations

The ITEA project FireBIM (Accounting for Fire Safety Engineering using Building Information Modelling) will embed mechanisms for fire safety assessment in a web-based, open-source building information modelling (BIM) platform to support building designers with fire regulations across borders.

### Addressing the challenge

Despite being an ongoing requirement in all building design projects, fire safety compliance is often considered too late. The field is also dispersed, making multidisciplinary and cross-border collaboration challenging. Fire safety measures are typically descriptive codes that differ between countries, regions and local administrations, usually lacking a centralised or well-established field of knowledge exchange. These codes result from historical work by many stakeholders and may contain inaccuracies and inconsistencies, while their interpretation and use vary. Overall, this leads to costly design changes, budget overruns, delays and health hazards.

### Proposed solutions

To improve and facilitate international fire safety, FireBIM will develop a web-based, open-source BIM platform for fire safety assessment that supports various stakeholders during all building design stages. This will rely on a modular, extensible FireBIM Ontology to transfer country-specific fire codes into machine-readable representations that can be accessed via the FireBIM API, which serves as the interface between FireBIM's core services and custom applications. The latter will consist of a series of industrial applications built atop the platform, such as product configurators that integrate compliance checks. Such an approach will enable many alternative applications and end-user experiences, including third-party applications

running FireBIM within conventional BIM tools. This purposeful distinction between the FireBIM Platform and the FireBIM Applications also creates more avenues for both standardisation and commercialisation, particularly for SMEs.

participants: (1) building owners are expected to reduce costs by 3% via increased efficiency, reduced errors and less time spent on projects; (2) fire consultants can increase clients, sales and participation in relevant R&D projects by 50% while saving 5% on design costs; and (3) contractors and manufacturers can facilitate a 7-10% reduction in delays and a 5% reduction in corresponding penalty costs. With the open-source nature of the FireBIM Platform, these benefits can easily spread to countries



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### Projected results and impact

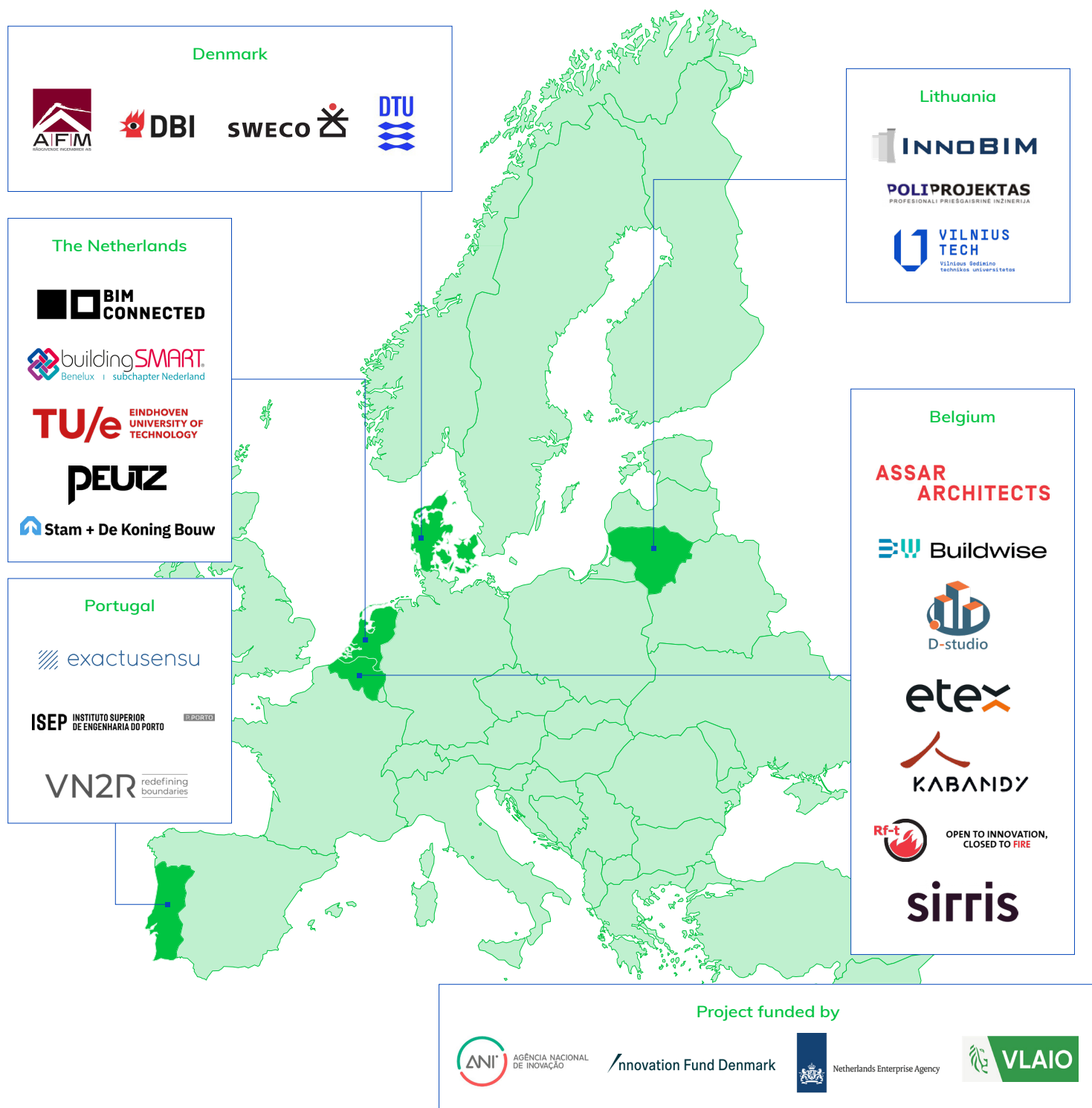
The project is unique as no competitors aim to standardise fire safety regulations using open-source technology. Ultimately, FireBIM will resemble an interpreter, inspector and validator of fire documentation, thereby assisting authorities in efficiently regulating fire safety and design teams in cost-effectively creating better and safer buildings. The results of FireBIM Applications are expected to be significant across the range of

and applications beyond the consortium, through which existing markets for fire safety software can expand to include more advanced analytics for projects with lower fire analysis budgets. In the longer term, FireBIM can therefore make a strong impact on the environmental and economic damage of building fires – currently accounting for 1% of lost GDP in most advanced countries – and, above all, provide the most effective measures for minimising human risk as early as the building design process.

# Project partners

FireBIM

22003



**Project start**  
November 2023

**Project leader**  
Anne Dederichs, Technical University of Denmark

**Project website**  
<https://itea4.org/project/firebim.html>

**Project end**  
December 2026

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<https://itea4.org>

