

Methodologies for fire investigation in buildings

Summary

This PhD thesis intends to develop a fire investigation protocol involving connected methodologies, focusing not only on the process of determining origin itself, but also on addressing the global context of promoting fire safety. In the broad concept, fire investigation aims to raise and point out aspects and circumstances related to a fire. While there are fire investigation protocols contributing significantly to evaluating the fire scene, they are usually limited to the fire scene and do not address fire investigation in a comprehensive and holistic way. After an extensive review of existing literature on fire investigation, particularly in Brazil, Portugal, Japan, and England, this PhD thesis seeks to identify gaps and omissions within the field of fire investigation and, consequently, its current protocols and procedures. In the pursuit of introducing novelty to fire investigation, the study endeavors to reassess and enhance the methodologies, culminating in the proposition of 18 strategies for the development and implementation of a modern protocol.

The core output of this PhD thesis is the development of a protocol based on 31 sets of methodologies (steps) designed for the execution of a comprehensive fire investigation. The thesis delineates a logical, didactic, and technically scientific flow and guide for scrutinizing a fire incident. Each step meticulously outlines the procedures and diligences to be adhered to. Ultimately, the protocol aspires to scrutinize the fire on its origin, enumerating a spectrum of causes pertaining to ignition, development/spread, damages/losses, and, conclusively, causes of injuries and fatalities.

To assess and validate the proposed protocol, the study transcends theoretical considerations, applying it to one of Brazil's most devastating fire accident — the Kiss nightclub fire, in Brazil. In conclusion, the suggested protocol elucidates 8 causes for ignition, 13 causes for the development/spread and damages/losses of the fire, besides 14 causes for injuries and fatalities. The dissertation posits that a fire incident does not stem from a singular cause or factor, as it is a multifactorial event.

Keywords

Fire, risk, investigation, protocol, methodology.

PhD student

Rodrigo Almeida Freitas

PhD program

Fire Safety Engineering (FCT, University of Coimbra)

Supervisor

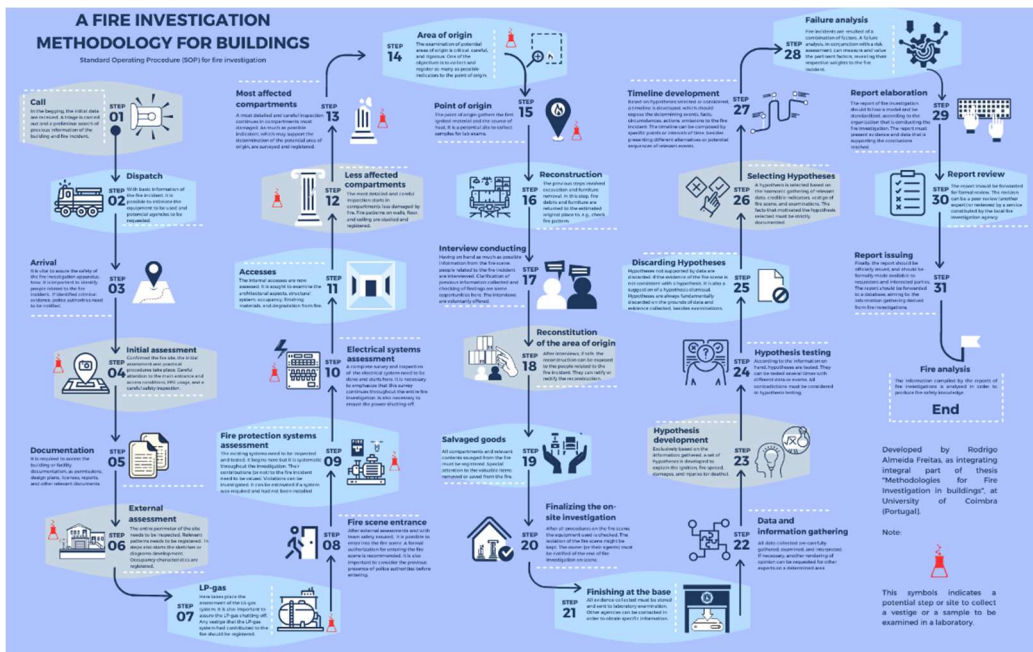
João Paulo Rodrigues (FCT, University of Coimbra; CERIS, IST, University of Lisbon)

Co-supervisor

Period

2019-2024

Funding



Protocol proposed for fire investigations in buildings.

