

# 3.1 Fire research and protection of built heritage - report on recent projects and their possible impact concerning "integrated design"

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**Partner identity :**

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4 Departements :  
Architecture / Interior Architecture / Townplanning /  
Conservation Built Heritage

**Former research :** participation in Cost C17  
5th FP project 'Fire Tech'

Ongoing research

Expectations from Cost IFER

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European Science Foundation: COST Action C17  
**Built Heritage: Fire Loss to Historic Buildings**


**ALADIN Action**  
The purpose of the Action is to address the significant threat to cultural heritage in Europe's built heritage to fire and related risks.

**Participating Countries:** Belgium, Denmark, France, Hungary, Italy, Netherlands, Norway, Slovenia, Spain, Switzerland, United Kingdom

Former Research : Cost C17 'Built Heritage – fire loss to historic buildings (Chair : Ingvál MAXWELL )

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**Former research : FIRE TECH**  
Fire Risk Evaluation to European Cultural Heritage  
(chair : prof. Paul VANDELDE)



**Flowchart:**

```

    graph TD
      S1[STEP 1: AGREE THE OBJECTIVES] --> S2[STEP 2: ANALYSE THE PRESENT SITUATION]
      S2 --> D1{Does the present situation meet the objectives?}
      D1 -- NO --> S1
      D1 -- YES --> S3[STEP 3: LIST & REVIEW THE FIRE SAFETY MEASURES]
      S3 --> S4[STEP 4: OPTIMIZE THE CHOICE OF FIRE SAFETY MEASURES]
      S4 --> S5[STEP 5: ANALYSE THE RESULTS CRITICALLY]
      S5 --> D2{Do the results meet the objectives?}
      D2 -- NO --> S3
      D2 -- YES --> S6[STEP 6: FORMULATE CONCLUSIONS]
  
```

**DATA** - building info, regulations, fire safety measures  
**ASSESSMENT TOOLS** - checklist, risk analysis, fire predictive modelling  
**ALADIN**  
**IST COST/EFFECTIVENESS METHOD**

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**Fire Risk Calculation**

- 1. OBJECTIVES
  - Protect occupants / firemen / building / content / environment
- 2. STRATEGIES
  - Reduce probability of fire start
  - facilitate fire fighting
  - facilitate egress
  - limit fire propagation
  - ....
- 3. MEASURES
  - M1 -> M19
  - reaction to fire
  - RT of structure
  - RT of partitions
  - Access
  - smoke control
  - ...
  - salvage management
  - education
  - periodic inspection

**5.1. General example of runs with ALADIN**

Figure 5 shows the hierarchy structure for an "academic" fire safety/protection study. The thickness of the arrows is proportional to the given input weights (from 1 to 9). The weights are just given as an example and are not absolute.

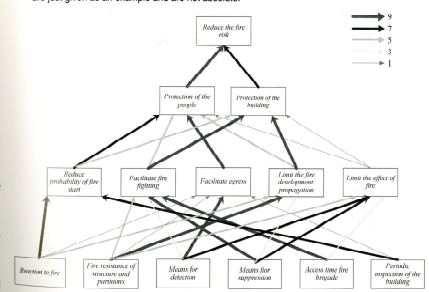



Figure 5: Structure of the network on Fire Safety/Protection – imaginary case.

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- Ongoing project(s) / Expectations COST IFER
- WG 3 : Integrated design
- Dr.thesis : "Assessing daylight and fire safety in the integrated architectural design of Atria"
- Handbook for improvement of fire safety in heritage buildings. Design Manual of architectural and structural detailing (materials / form / design) (based on case-studies and good practices )



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