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# Probabilistic Framework for Onboard Fire Safety

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# Presentation layout

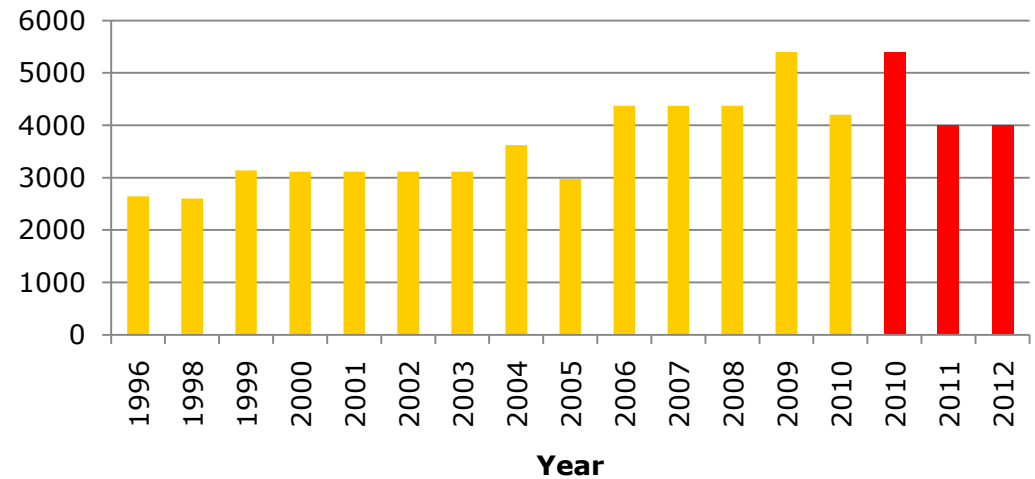
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- Background
- Project objectives
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- Methodology
- Implementation
- Expected impact

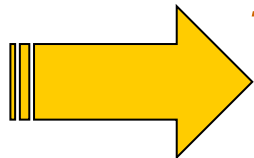
# Background



## No. of Passengers



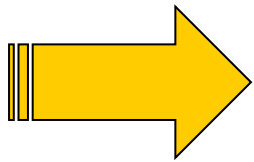
...



*The age of very large passenger ships has dawned!*

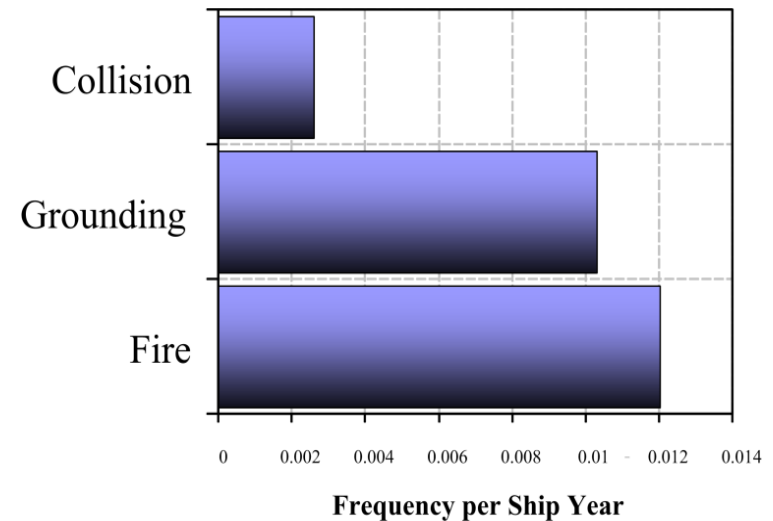
# Background

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*Unprecedented challenges to designers, operators and regulators*

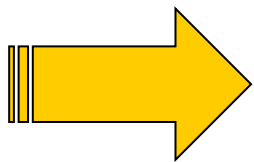
According to accident statistics, fire is the most frequent hazard onboard (albeit the less catastrophic)



# Background

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The innovative character of ships of high complexity makes fire regulations potentially insufficient as they impose constraints on novel designs, which although not inherently unsafe, they still face difficulties in satisfying the existing rules.



*In the course of SAFEDOR ([www.safedor.org](http://www.safedor.org)) the idea emerged that a project on the development of a framework for fire safety should be pursued.*

# Project objectives

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1. Development of a universally applicable regulatory framework for maritime fire safety (similar in principle to the damage stability framework), with main emphasis on passenger ships.
2. Submission to IMO Maritime Safety Committee (MSC) in 2012 for consideration and potential future enforcement.

# Consortium

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1. The Ship Stability Research Centre, University of Strathclyde (Coordinator)
  2. BMT Group
  3. Fire Safety Engineering Group, University of Greenwich
  4. National Technical University of Athens
  5. Centre for Maritime Technology
  6. University College London
  7. Bureau Veritas
  8. Indian Register of Shipping
  9. Colorline Marine AS
  10. Carnival plc
  11. Instituto de Soldadura e Qualidade
  12. American Bureau of Shipping
  13. Maritime and Coastguard Agency
- + US Coast Guard  
(subcontracted)

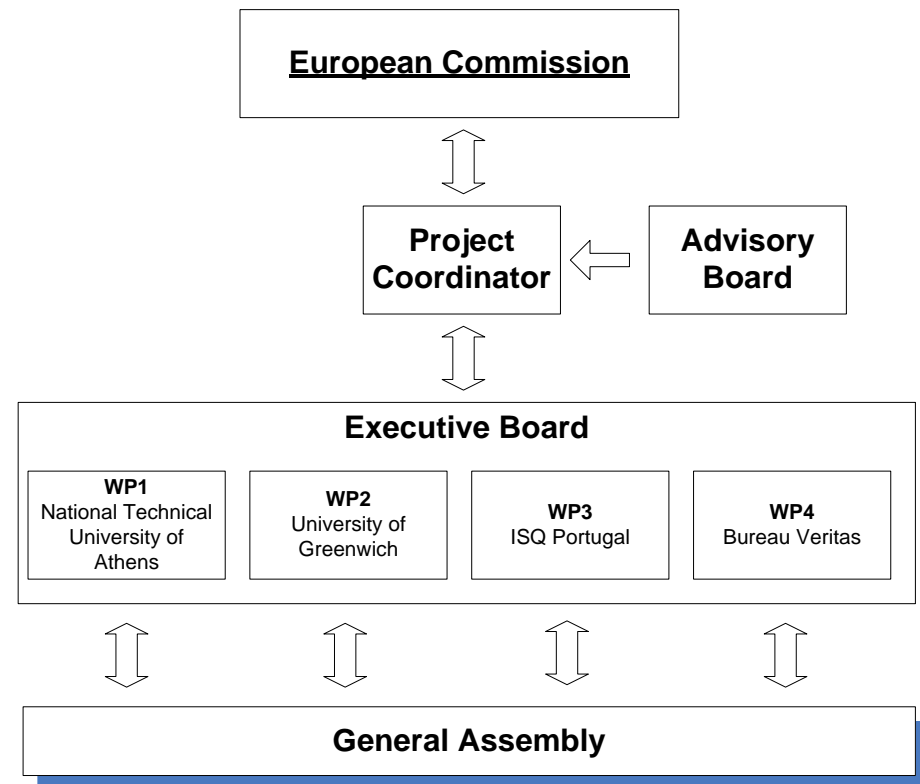
# Project information

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- Starting date: June 2009
- Duration: 3 years
- Budget: € 4,200,000 co-funded by the 7<sup>th</sup> Framework Programme
- Web site: [www.fireproof-project.eu](http://www.fireproof-project.eu)

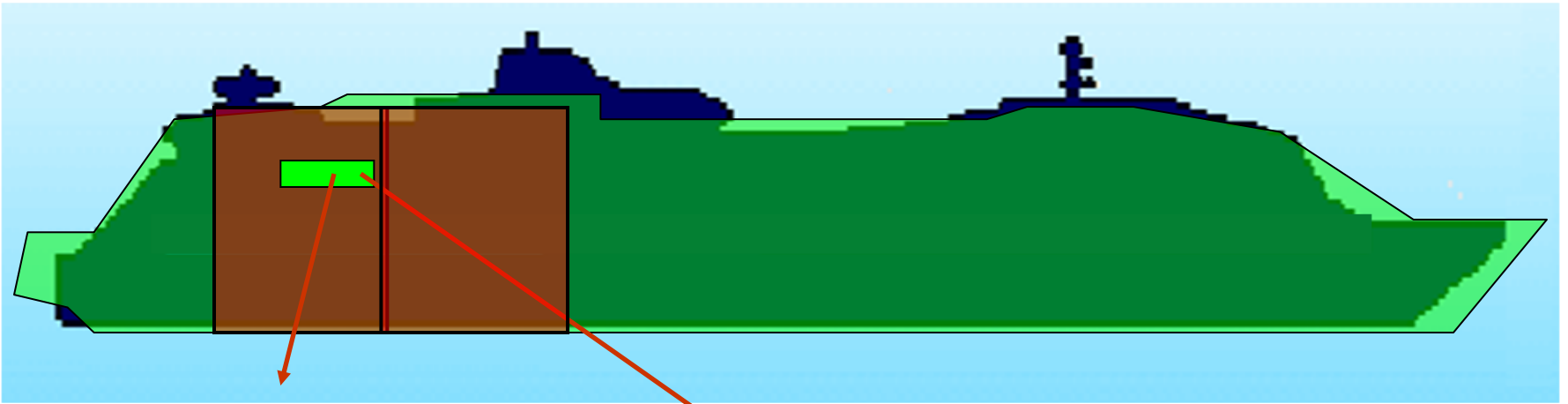
# Project structure

- **WP0**: Project management
- **WP1**: Scenario Generation
- **WP2**: Consequence Assessment
- **WP3**: Implementation and Benchmarking
- **WP4**: Probabilistic Fire Safety Regulation



# Methodology

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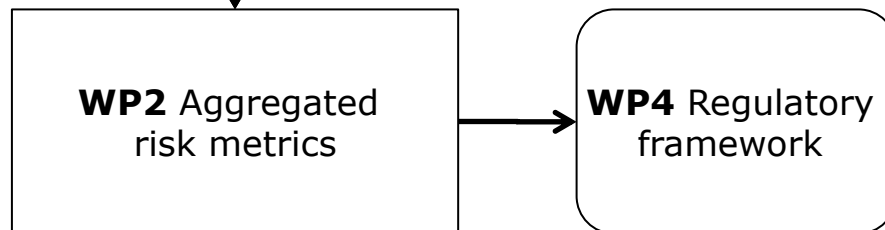
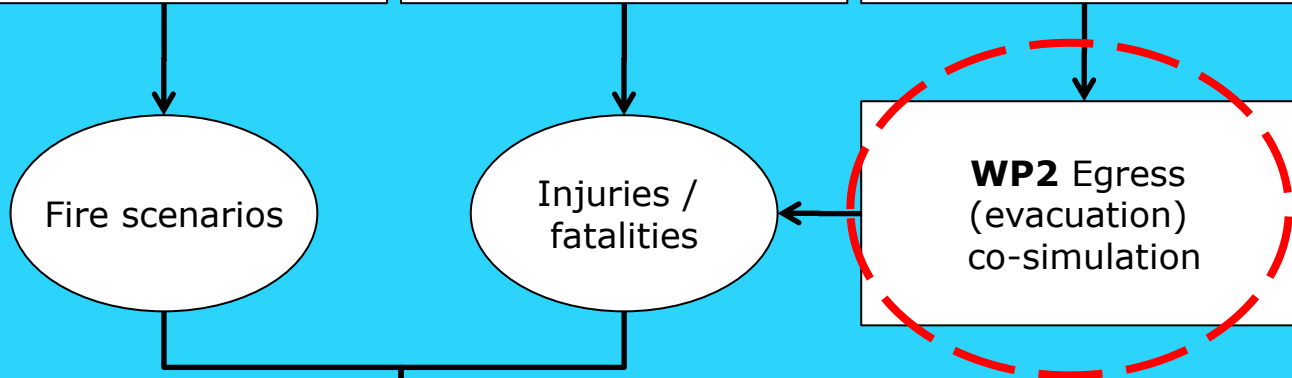
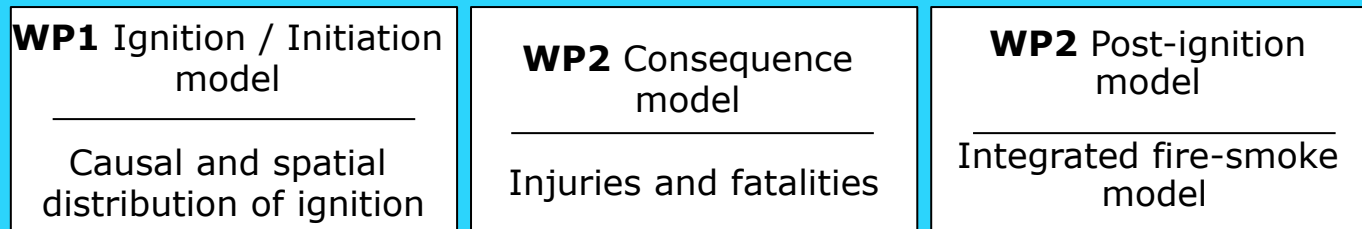
*Probability of fire  
ignition in space  $i$ , ( $p_i$ )*

*Probability of fire safety protection  
due to fire ignition in space  $i$ , ( $s_i$ )*

$$A_{\text{fire protection}} = \sum_i p_i \times s_i \geq R$$

# Implementation

## WP3 Implementation & benchmarking



**SAFEGUARD**  
[www.safeguardproject.info](http://www.safeguardproject.info)

# Expected impact

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- ❑ Improvement of knowledge of fire engineering in the shipboard environment & enhancement of existing fire safety
- ❑ Relaxation of prescriptive regulatory constraints for cost-effective treatment of conventional and innovative designs
- ❑ The above in combination to progress in training / procedures, materials, fire detection / suppression, etc., will assist the industry to sustain low risk levels

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# FIREPROOF

[www.fireproof-project.eu](http://www.fireproof-project.eu)

