

# ERMIDT – the Emergency Response Models and Computational Tools Inventory Database

Developed in the frame of COST Action ES1006

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# Outline

- **Context and objectives**
- **Emergency Response Modelling Tools  
Inventory Database Tool (ERMIDT)**
- **Briefing of information compiled**
- **Final remarks**



# Context and Objectives

# Context

A variety of **Emergency Response Computational Tools and Models (ERT)** is available and used by emergency management services and authorities for incidents and disaster events emergency **preparedness**, pre-event **planning**, **training**, **response**, **guidance** or post-incident recovery and restoration actions...

**However...**

... it is not always clear what the **advantages** and **limitations** of such tools and individual models approaches are...

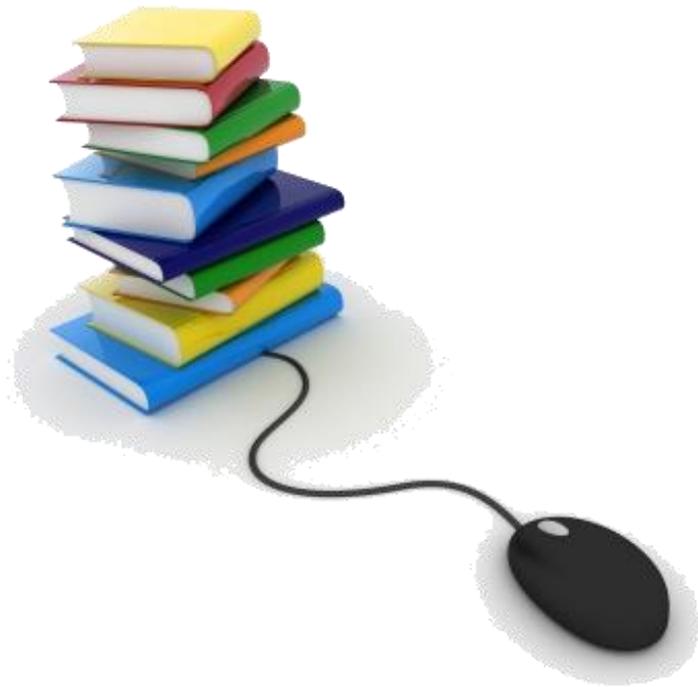
# Main goals

In the framework of COST Action ES1006 (WG1) ...

Development of the *Emergency Response Models and Computational Tools Inventory Database Tool (ERMIDT)*

... to compile a detailed and updated **Inventory** for surveying **ERT** and **Computational Approaches** currently in use for assessing individual aspects or the overall of local-scale airborne hazards and incidents scenarios performance and limitations

# **Emergency Response Models and Computational Tools Inventory Database Tool (ERMIDT)**

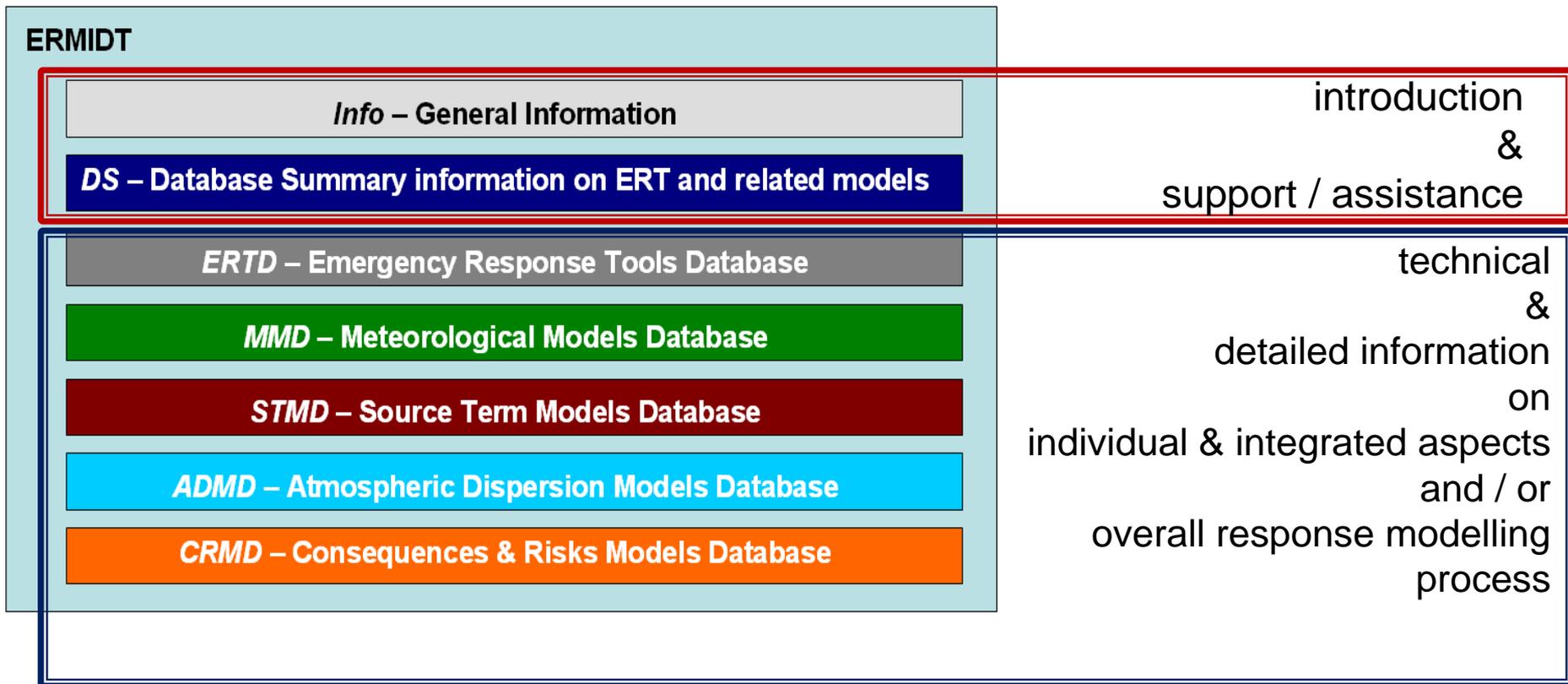


# ERMIDT

- Comprehensive and structured catalogue of ERT used by used and/or developed by:
  - Emergency management services and authorities
  - Researchers
  - Model developers
- Compile detailed information such as:
  - *type of application*
  - *type(s) of computational approaches and models integrated*
  - *aspects of hazards and incident scenarios addressed, physical*
  - *background, input data demands & model outputs*
  - *computational demands*
  - *verification and / or related performance measures*
- Will also support establishing model-specific guidance regarding an efficient and reliable use of different ERT and / or models integrated

# ERMIDT

- Excel Workbook with 7 'data-sheets'



# ERMIDT

## General information (*Info, DS*)

- Brief introduction to the database content
- Assistance and support contact information
- Lists all ERT and related models already compiled

**Emergency Response Modelling Tools Inventory Database Tool (ERMIDT)**  
(long version)

A direct link to the corresponding spread-sheet can be done by clicking the column head-text

ID	Emergency Response Modelling Tool <b>(ERT)</b>	Meteorological Model/Module Tool <b>(MMT)</b>	Source Term Model/Module Tool <b>(STMT)</b>	Dispersion Model/Module Tool <b>(ADMT)</b>	Consequences & Risks Models/Modules & Tools <b>(CRMT)</b>	COMMENTS
1	EFRHA	EFRHA-MM	EFRHA-STM	EFRHA-DM	EFRHA-CM	
2	<a href="#">AERMOD View</a>	<a href="#">AERMET</a>	-	<a href="#">AERMOD View</a>	-	
3	ArRISK	Swift	<a href="#">ATRCOD</a>	MSS-Spray	Embedded	
4	CLMM	CLMM	-	CLMM	-	
5	ESCAPE	ESCAPE-MM	ESCAPE-STM	ESCAPE-DM	-	
6	Openfoam	Openfoam	-	Openfoam	-	
7	PHAST	Stability categories to be considered	Built in integrated models	Built in UDM (Gaussian) model	Built in integrated models, covering fire, explosion and toxic exposure phenomena	Details depend on actual modelled accident scenario and selected models, e.g., for consequences

***ERMIDT's DS page***

# ERMIDT

## Technical information (*ERT, MMT, STMT, ADMT, CRMT*)

- Detailed technical and specific information of ERT and related models & tools
- Main sections of information included

1 – General identification information

*Common to all*

2 – Modelling properties

3 – Initialization & run options

*Individually prepared*

4 – Solution techniques

*to account specific*

5 – Model validation and application.

*purposes, modelling*

*approaches and*

*techniques*

# ERMIDT

## Technical information (*ERT, MMT, STMT, ADMT, CRMT*)

- Some highlights:

### ERT

- includes also information on models/modules/tools integrated.
- general identification information can be directly linked to other technical data-sheets

### MMT

- typically not considered as individual modules when integrated in ERT, but is important to have information of modelling approaches considered
- based on COST 728 Model Inventory Database & the European Model Inventory System

# ERMIDT

## Technical information (*ERT, MMT, STMT, ADMT, CRMT*)

- Some highlights:

### STMT

– considered one of the most important models, particularly in case of transient release scenarios

– dangerous material release scenarios

- 1 – Toxic gas release scenarios
- 2 – Fire scenarios
- 3 – Explosion scenarios
- 4 – Nuclear material release scenarios
- 5 – Biological material release scenarios

# ERMIDT

## Technical information (*ERT, MMT, STMT, ADMT, CRMT*)

- Some highlights:

### **ADMT**

- considered the main core of ERT and thus ERMIDT
- Although account for the different types of modelling approaches, is ideally focused on models able to account the presence of obstacles
- prepared based on model inventory databases already available .

### **CRMT**

- accounts the most relevant types of consequences on Human health and structures and risks

# Briefing on Information compiled so far



# Briefing on compiled information

## At present...

- ✓ Compiles information of 8 **ERT** and 10 **ADM** models used in the framework of COST Action ES1006
- ✓ Some **ERT** & **ADM** models may be linked to **MM**, but is common to refer to integrated **MM**, or just, input meteorological data
- ✓ 6 **ERT** integrate **STM** considering different release conditions
- ✓ Source term conditions are in general assumed as 'direct' inputs
- ✓ Wide variety of **ADM** modelling approaches and types: from Gaussian to CFD
- ✓ 5 **ERT** include **CRM** even limited output information is actually provided



# Final remarks

# Final remarks

- Despite the wide variety of ERTs and ADMs, it is not always clear what the advantages and limitation of such tools approaches are,
- ERMIDT intends enabling an efficient access to desired information (summarized and detailed/specific data) of ERTs and related models and support establishing model-specific guidance,
- Compiled information represents only a very small fraction of the variety of ERTs and ADMs currently used,
- Important tool for emergency management services, model developers and selling entities.

# Thanks for your attention !

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