ERMITD – 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
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)
- 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
Excel Workbook with 7 ‘data-sheets’

- **Info – General Information**
- **DS – Database Summary information on ERT and related models**
- **ERTD – Emergency Response Tools Database**
- **MMD – Meteorological Models Database**
- **STMD – Source Term Models Database**
- **ADMD – Atmospheric Dispersion Models Database**
- **CRMD – Consequences & Risks Models Database**

**Technical & detailed information on individual & integrated aspects and/or overall response modelling process**

**Introduction & support / assistance**
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 (ERMITD)

<table>
<thead>
<tr>
<th>ID</th>
<th>Emergency Response Modelling Tool</th>
<th>Meteorological Model/Module Tool (MMT)</th>
<th>Source Term Model/Module Tool (STMT)</th>
<th>Dispersion Model/Module Tool (ADMT)</th>
<th>Consequences &amp; Risks Models/Modules &amp; Tools (CRMT)</th>
<th>COMMENTS</th>
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*Details depend on actual modelled accident scenarios and selected models, e.g., for consequences.*

**ERMITD’s DS page**
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
  2. Modelling properties
  3. Initialization & run options
  4. Solution techniques
  5. Model validation and application.

- Common to all
- Individually prepared to account specific purposes, modelling approaches and techniques
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
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
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
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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