Request for Information

Request for Information (RFI) title:	Dispersion modelling in urban or indoor environments
DMTC Program:	CBR Modelling and Simulation
Issue Date:	February 2021

Contents

1. DISCLAIMER

The response to this Request for Information (RFI) will be reviewed by the CBR Modelling and Simulation Technical Advisory Group, and if your area of expertise, research or technology is deemed to have merit in contributing to the aims of this program, we may seek further information, including proposals to conduct funded project work in this area (as part of a broader, public, call for proposals). However, having your RFI response reviewed by the Technical Advisory Group is <u>NOT</u> a guarantee that you will be granted funding.

DMTC is releasing this RFI to understand capabilities and identify potential partners from industrial and academic organisations to collaborate in the development and enhancement of Defence relevant capabilities in the chemical, biological or radiological (CBR) Modelling and Simulation domain. The area of interest is *"Development of fast-running, high resolution dispersion models for predicting CBR dispersion in complex urban and indoor environments"* and the program aims to advance CBR-related hazard predictions. This will be done by developing high-resolution, fast-running hazard prediction models to predict the effects of CBR releases in indoor and outdoor urban environments, to support Australia Defence Force operations, national interests, and the at-risk population.

Priority shall be given to those ideas and technologies that identify and explore innovative computational techniques that improve performance and mitigate failure modes.

2. INTRODUCTION

2.1. BACKGROUND

DMTC Limited is an independent, not-for-profit company that creates, manages, directs and delivers successful industry-research collaborations involving multiple partners to enhance sovereign defence and national security capabilities, consistent with Government policy. Over more than a decade DMTC has been leading collaborative projects to advance technologies, as well as pursuing best practice governance and maintenance of ISO accredited quality systems.

With a historical focus on materials and manufacturing process improvements in the land, sea and air domains, DMTC has developed know-how in how to deliver innovation into Defence projects and has recently hosted programs in new technology areas such as Medical Countermeasures and High Altitude Sensing Systems on behalf of partner organisations wishing to utilise DMTC's proven project management and collaborative research expertise.

Recently, the Defence Science and Technology Group (DSTG) approached DMTC to lead and manage a collaborative program of work to understand the transport and dispersion of chemical, biological, and radiological (CBR) material in outdoor urban and indoor environment, and to collaboratively develop high-resolution, fast-running hazard prediction models. DMTC aims to identify industrial and academic partners who could support this endeavour.

High-resolution, fast-running hazard prediction models are required to enhance Defence Force capability to accurately characterise the contaminated hazard area in urban environments. Accurate and rapid characterisation of the contaminated hazard area will enable near real-time situational awareness of the CBR threat; optimal development and employment of CBR Defence capability; and guide precision operations in a contaminated environment.

The program of work is important as DSTG uses hazard prediction models to estimate the effects of CBR releases and provide time-critical information to support:

- Australian Defence Force operations
- Defence capability and acquisition programs
- Inform threat and risk assessments for Australian defence and national security
- Inform policy advice for national security

2.2. PURPOSE

This RFI will enable DMTC to identify capability and capacity within industrial and academic organisations that are capable of developing relevant computational models. DMTC is also keen to understand whether organisations have developed similar types of technology (alone or in collaboration with other partners). Responses provided to the RFI will inform the selection of organisations that are specifically invited to submit a project proposal to the Technical Advisory Group for consideration.

2.3. AN OPPORTUNITY TO CONTRIBUTE AND SHAPE

DMTC views this RFI as an opportunity for organisations within the modelling and simulation community to highlight their knowledge and experience in the sector.

DMTC encourages participation, acknowledging that participation is completely voluntary. Your organisation may choose to answer some or all the questions. Please note this process is independent from any subsequent call for proposals process and your participation or otherwise will have no bearing on any future proposal processes.

After the RFI process, if your organisation is invited to submit a proposal for consideration, you may be encouraged to collaborate with other partner organisations.

2.4. ELIGIBILTY

To be eligible you must:
- have an Australian business number (ABN)
- be registered for the Goods and Services Tax (GST)

and be one of the following entities:
- an entity incorporated in Australia
- an incorporated association
- an incorporated not for profit organisation

Whilst not applicable to this RFI, respondents should be aware that in any future call for proposals, DMTC will seek collaborative applications with a lead organisation, who is the main driver of the project and is eligible to apply, and at least one other project partner.

2.5. CONFIDENTIAL

DMTC will treat all responses confidentially. DMTC will share responses to this RFI with Australian Government stakeholders including DSTG and the members of the Technical Advisory Group.

2.6. CONTACT PERSON

The Contact Person for this Request for Information is:

Name:	Dr Matthew Byrnes
Title:	Program Leader – CBR Modelling and Simulation
Address:	DMTC Ltd Level 2 24 Wakefield Street Hawthorn Vic 3122
Telephone:	03 9214 4447
Email:	matthew.byrnes@dmtc.com.au

2.7. LODGEMENT

Please return completed responses by March 15, 2021 at the latest. Earlier responses are welcomed.

Please submit responses to: matthew.byrnes@dmtc.com.au

When responding to the RFI by email, please ensure:

- "***RFI: Dispersion modelling in urban or indoor environments***" appears in the subject line of the email; and that
- Your submission is in a ***PDF format*** prior to submission.

3. SCOPE

DMTC is keen to understand your organisation's modelling and simulation areas capability and capacity in the following areas:

- High-resolution transport and dispersion models for urban environments
- Characterisation of the building envelope and the infiltration and exfiltration of material between the indoor and outdoor urban environments
- Effects of urban morphology on urban microclimate
- Near-field source-term models for various release-types
- Reduced order methods for complex flow-fields
- Multi-scale meteorological and/or hazard prediction models
- Related verification trials/studies for model validation

Your organisation's RFI response will be assessed by the Technical Advisory Group which consists of government stakeholders. Some respondents may later be invited to submit a collaborative project proposal.

4. RESPONSE SECTION

DMTC has developed a response template (Section 5 onwards) for your completion.

Your answers may include as much or as little detail as you feel is necessary within the word limits stipulated.

Please provide your responses in the text boxes provided wherever possible.

5. RESPONDENT DETAILS

Organisation Name:	
Address of Registered Office:	
Australian Business Number:	
Telephone:	
Email:	
Web:	
Contact Person:	
Phone:	
Email:	
Business Type: (select all that apply)	SME / Sole Trader / Private Company / Public Company / University / PFRA / Other (specify)

6.   RESPONSE SCHEDULE/SPECIFIC INFORMATION REQUESTED

Research Themes

Please indicate to which Research Themes you believe your organisation can contribute:

High-resolution transport and dispersion models for urban environments	Y/N
Characterisation of the building envelope and the infiltration and exfiltration of material between the indoor and outdoor urban environments	Y/N
Effects of urban morphology on urban microclimates	Y/N
Near-field source-term models for various release-types	Y/N
Reduced order methods for complex flow-fields	Y/N
Multi-scale meteorological and/or hazard prediction models	Y/N
Related verification trials/studies for model validation	Y/N

Description of area of expertise, research and/or technology

Give a brief description of your organisational capability and capacity to undertake R&D relevant to the Research Themes above. Please provide exemplars of tangible outcomes from previous work. *(1000 words max or 2 pages including pictures, illustrations or diagrams)*

Description…

Description…

Description of current research programs

Please indicate current research programs being undertaken that are relevant to the research themes and brief description of these. (***400 words max***)

Description…

Description of current or potential collaborations

Please indicate whether your organisation has previously engaged with DSTG or Defence on other research and development projects in modelling & simulation, in CBR or related fields. (***200 words max***)

Description…

Is your organisation collaborating with other groups in this technology space on similar or relevant projects that may be able to compliment the Research Themes above? If so, who are these groups/organisations? (please feel free to share this RFI with them) (*200 words max*)

Description…

Please provide any relevant project outcomes, publications, products or services which demonstrate your capability to address the Research Themes? (*10 items max*)

Description…

7. NEXT STEPS

Once we receive your completed RFI response, we will collate, review and utilise the information provided from all responses to influence and refine the program priority areas ahead of seeking program partners.

Completing this form will help us in determining which organisations we specifically target in any future calls for proposals.

Please note, an invitation to submit this RFI response does not mean that your organisations is automatically eligible to participate in a research proposal submission.

Sign below once you are satisfied that you have completed the form correctly.

I declare that the information given in this Request for Information form is true and accurate to the best of my knowledge and belief.

I declare that I have permission from my organisation and any other partner organisation(s) noted to discuss their capabilities and to sign the Request for Information form on their behalf.

Organisation of Respondent	Name
Print Name of Contact Person	
Signature of Contact Person	Signature
Date (dd/mm/yyyy)	DD/MM/YYYY