

Defence-related Research Action - DEFRA

ACRONYM: B-STORM

Title: Belgian STRATEVAC Tactical Optimisation & Rapid Manoeuvres

Duration of the project: 1/12/2025 - 1/03/2029

Budget: 2.446.000 €

Key words: STRATEVAC; Simulation Modelling;
Decision Support, Crisis respons, Preparedness,
Disaster resilience

of which RHID contribution: 1.949.000 €

PROJECT DESCRIPTION

Context: Contemporary strategic medical evacuation (STRATEVAC) in Belgium, as in most NATO and EU nations, faces significant operational gaps due to fragmented planning tools, lack of multi-modal interoperability, and limited medical-logistical data integration. Current approaches rely heavily on static, manual spreadsheet-based planning, which is insufficient for meeting the demands of high-intensity military or disaster scenarios where mass casualty management is critical. As conflict theatres and civil protection challenges grow increasingly complex, Belgian Defence requires an advanced, adaptable platform to optimise STRATEVAC operations using modern simulation, clinical data integration, and decision support.

General Objectives: B-STORM aims to transform Belgian Defence's STRATEVAC capabilities by introducing a robust, modular, and interoperable planning system supporting both military and potential dual-use (civilian) crisis response. Core objectives are to:

- Develop a science-based, multi-modal STRATEVAC simulation model (building on the RMA's validated SIMEDIS framework) incorporating air, rail, sea, and road transport.
- Integrate dynamic patient profile and clinical data into evacuation scenarios, enabling medically guided prioritisation and treatment-modality matching for improved outcomes.
- Co-design a user-centric, interactive decision-support interface built upon the proven CRIMSON platform, tailored to military planner needs.
- Ensure full compliance with legal, ethical, and cybersecurity requirements, including GDPR, military confidentiality, and Belgian/EU standards, and ensuring interoperability within NATO.
- Validate and demonstrate the complete solution with operational end-users in realistic, multi-stakeholder scenarios.

Methodology: The consortium unites Sopra Steria Belgium (coordination, IT, cybersecurity, platform integration), Royal Military Academy (simulation and modelling), Forward Global (user requirements, defence stakeholder engagement), and Vrije Universiteit Brussel (medical data integration, clinical model validation), bridging academic research, industrial capacity, and operational expertise.

The 36-month work plan features eight interconnected work packages covering:

- Stakeholder mapping and user consultation to establish real-world requirements.
- Enhancement of the SIMEDIS simulator to extend to strategic evacuation and include multi-modal routing with dynamic patient states.
- Secure data management and integration, with strict compliance to GDPR and military confidentiality.
- Co-design and iterative validation of a decision-support user interface.
- Structured prototype demonstration, scenario-based validation with the Belgian Defence and NATO MILMED, and workshops for operational feedback.
- Comprehensive data management, legal, ethical, and security oversight at every stage.

Potential Impact on Defence: B-STORM will provide Belgian Defence with the first data-driven, end-to-end STRATEVAC planning tool able to simulate, visualise, and optimise mass medical evacuations across all transport modes and operational contexts. By enabling faster and clinically informed decision-making, the platform will directly improve operational resilience, resource allocation, and patient outcomes in both military operations and large-scale civil emergencies.

Expected Final Results:

- A validated, interoperable prototype (TRL5–6) for STRATEVAC planning and decision support, demonstrated in operational exercises (e.g., NATO MILMED COE).
- Extended SIMEDIS simulation models and dynamic patient datasets, supporting academic and defence research.
- User-tested graphical interface built on the CRIMSON platform, ready for operational deployment and further commercialisation.
- Scientific publications, workshops, and presentations at national and international fora.
- Structured data and IP management, with potential for patenting, controlled data sharing, and long-term knowledge transfer.

Valorisation perspectives:

- Immediate operational uptake by Belgian Defence and integration in national, European & NATO health logistics frameworks for defence.
- Medium-term: national dual-use applications (e.g., National Crisis Centre, EU HERA), commercial spin-off strategies, and adaptation for civilian crisis response.

CONTACT INFORMATION

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LINK(S)

Not applicable (yet)