# Pre-hospitalisation enhancement and Continuous Triage enablers components catalogue and ruggedisation

## D3.1

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NIGHTINGALE

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## DOCUMENT SUMMARY INFORMATION

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| Lead Beneficiary | INOV | | |
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| Reviewers | Review1: Alain Soulier (DW)<br>Review2: Francisco Pérez (UPV) | | |
| Security Assessment | Passed | Rejected | ☒ Not Required |
| Status | Draft | ☒ Peer Reviewed | ☒ Coordinator Accepted |

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## HISTORY OF CHANGES

| Version | Date | Changes |
|---|---|---|
| 0.01 | 02/03/2022 | Initial version with TOC contents |
| 0.02 | 18/07/2022 | Updated tools name & *TODO* list |
| 0.03 | 23/07/2022 | INOV, PARTICLE contribution to section 3 and 4 (SWAPP and ECHO tools) added |
| 0.04 | 25/07/2022 | INOV, EXUS and CERTH contribution to section 3 (Early Warning and Risk tool) added |
| 0.05 | 26/07/2022 | INOV, CERTH' contribution to section 3 (Decision Support tool) |
| 0.06 | 29/07/2022 | INOV, DW' contribution to section 3 (NG-PSAP tool) added |
| 0.07 | 29/07/2022 | INOV, INTRA request remove reference to Interoperable Data Lake tool (this tool will be analysed in D2.1). |
| 0.08 | 1/09/2022 | INOV, TREE contribution to section 3 |
| 0.09 | 8/09/2022 | INOV, PARTICLE integrate PARTICLE updates. |
| | 13/09/2022 | INOV, revise document |
| 0.10 | 15/09/2022 | INOV, update section 4 / CERTH contribution to sections 2.1 & 3.1 (Dike). |
| 0.11 | 20/09/2022 | INOV, EXUS contribution update (Scenario Builder tool) |
| 0.12 | 21/09/2022 | INOV, CERTH contribution update (Early warning and risk assessment and Decision Support Service) |
| 0.13 | 23/09/2022 | INOV, UPV contribution (Data Layer) |
| 0.14 | 18/10/2022 | INOV, ASTRAIL contribution. |
| 0.15 | 21/10/2022 | INOV, review document and prepare for internal review |
| 0.16 | 07/11/2022 | INOV, update document according peer review |
| 0.17 | 07/11/2022 | INOV, preparing document to submission |
| 1.0 | 08/11/2022 | Final version |

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## PROJECT PARTNERS

| No. | Logo | Partner | Short name | Country |
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| 1 | | INSTITUTE OF COMMUNICATION AND COMPUTER SYSTEMS | ICCS | Greece |
| 2 | | TOTALFORSVARETS FORSKNINGSINSTITUT | FOI | Sweden |
| 3 | | LEONARDO – SOCIETA PER AZIONI | LDO | Italy |
| 4 | | C4CONTROLS LTD *[TERMINATED]* | C4C *[TERMINATED]* | UK *[TERMINATED]* |
| 5 | | NETCOMPANY-INTRASOFT | INTRA | Luxembourg |
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## LIST OF ABBREVIATIONS

| Abbreviation | Definition |
|---|---|
| **AI** | Artificial Intelligence |
| **AP** | Answering Point |
| **API** | Application Programming Interface |
| **C3/IMS, C3&IMS** | Command, Control, Coordination and Intelligence & Incident Management System |
| **CC** | Control Centre |
| **DB** | Database |
| **Dike** | Discrete-event simulator and execution engine |
| **DSS** | Decision Support Service |
| **ED** | Emergency Department |
| **EDS** | Emergency Response System |
| **EMS** | Emergency Medical Services |
| **EU** | European Union |
| **FR** | First Responder |
| **GB** | Giga Byte |
| **GPS** | Global Positioning System |
| **GPU** | Graphics Processing Unit |
| **IaC** | Infrastructure as a Code |
| **ICU** | Intensive Care Unit |
| **IMS** | Incident Management System |
| **IP** | Internet Protocol |
| **JSON** | JavaScript Object Notation |
| **KB** | Knowledge Base |
| **LAN** | Local Area Network |
| **MCI** | Mass Casualty Incident |
| **MEWS** | Decision Support Service |
| **ML** | Machine Learning |
| **NG** | Next Generation |
| **NG112** | Next Generation 112 |

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| | |
|---|---|
| **NIT-MR** | Novel Integrated Toolkit for Emergency Medical Response |
| **OWL2** | Web Ontology Language 2 |
| **PEMEA** | Pan-European Mobile Emergency Application |
| **PSAP** | Public Safety Answering Point |
| **PSTN** | Public Switched Telephone Network |
| **REST** | REpresentational State Transfer |
| **RDF** | Resource Description Framework |
| **SHACL** | Shapes Constraint Language |
| **SLA** | Service-Level Agreement |
| **SPARQL** | SPARQL Protocol and RDF Query Language |
| **SPE** | Semantic Populator Engine |
| **SRE** | Semantic Reasoning Engine |
| **SSD** | Solid State Drive |
| **SWAPP** | SoftWare mobile APPlication |
| **UI** | User Interface |
| **VPN** | Virtual Private Network |
| **W3C** | World Wide Web Consortium |

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# Executive Summary

The NIGHTINGALE project aims to develop, integrate, test, deploy, demonstrate, and validate a Novel Integrated Toolkit for Emergency Medical Response (NIT-MR) comprising a multitude of tools and applications at the service of all First Responders (FRs), emergency medical services and non-medical civil protection agencies, which will ensure an upgrade to Pre-hospital life support and Triage during Mass Casualty Incidents (MCIs).

This document, D3.1, summarizes the work done in Task T3.1 “Component definition/application sheet, deployment specifics and ruggedization” of Work Package (WP) 3 “Pre-hospitalisation enhancement and Continuous Triage enablers”. D3.1 feeds from WP1 "Practitioners Needs & Toolkit Architecture and Design", tasks T1.3 “Technology watch”, T1.4 “scenarios, use cases” and T1.5 “overall requirements”, and more specifically from their resulting deliverables:

- D1.5 Technology Handbook for Emergency Medical Response;
- D1.6 Scenario and Use Cases;
- D1.8 Definition of functional and non-functional user requirements.

And also based in information from:

- WP2 "Upgrading Triage", task T2.4 "Development & Prototyping of Volunteers based participatory, inclusive and rapid Triage";
- WP3 "Pre-hospitalisation enhancement and Continuous Triage enablers", task T3.3 "Semi-autonomous tasking and optional routing ML-based algorithms";
- WP4 "Multi-agency collaboration and Information Management, Augmenting the Common Operational Picture and Training Engine", tasks T4.1 "Multi-source Information Fusion and Expert Reasoning (Interoperable Data Lake)", T4.3 "Scenario Digitalisation and Execution / Triage Digital Scenario Engine (TRIDEN)", T4.4 "Multi-agency Incident Management and Command and Control", T4.5 "Citizen to EMS interaction - PSAP to IMS".

The main objective of the deliverable is to present Pre-hospitalisation enhancement and Continuous Triage enablers components, sub-components which will be incorporated into NIT-MR, along with their conceptual design, sub-components specifications, and ruggedization. The result related with Triage tools are presented in D2.1 “NIGHTINGALE upgrading triage components catalogue and ruggedization [M12] (including tools development under T3.2 "Field data analysis and preparation for AI training (Assets, Resources and Vitals continuous monitoring, track and tracing ML-based algorithms)").

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