

## **Solutions for Mass Casualty Incidents and Disasters**

PhD student: **Adrian Corneliu Stănescu**

Scientific supervisor: **Sanda Maria Copotoiu**

The topic of the current thesis is among the most up-to-date and futuristic areas of research in mass casualty incidents and disasters, and is in line with the global current trend.

The use of information technology in order to improve daily life is a very wide domain that gives rise not only to individual products but also to integrated solutions to achieving this goal.

The contribution of the current research effort to the scientific community is the concept of a largely comprehensive solution that integrates a wide variety of individually studied elements. Each of these represent distinct areas of scientific interest and are the subject of numerous projects, but very few initiatives have sought their integration. Generally speaking, current strategies aim to develop intermediary systems like overall triage systems or audio and video communications systems with the integration of data streams and different medical parameters.

Although very important and significantly easier to test and optimize, all of these are based on their integration with the current general setting or they simply ignore any objective strategy of integration.

The solution developed herein is in real terms exhaustive and specifically outlines its integration with the current procedural and technical settings, including education and simulation.

Along with the current project, several studies inquiring upon medical and paramedical personnel have been carried out – unique at national and international scale regarding their practitioner-centered approach in mass casualty incidents and disasters. This opens the door to similar research in Romania as well as in other countries in order to properly develop sustainable projects.

Another important aim is the development of an upgraded model of the patient field chart to be used in Romania. Starting from an officially issued model with a poor popularity and without a clear strategy for its integration with current and future solutions, a new model emerged. It not only offers certain benefits for the current every day practice but it also enables new characteristics that may be used for future projects.

The adoption of this model is likely to relieve the staff from repeated adjustments. Certainly, the upgraded variant of the patient field chart is not limited to national use, being compatible with any other programs and technical solutions.

The diversity of challenges during the development of these projects has been significant, varying from programming using several software solutions to static image processing, data and media streams integration, geolocation implementation and integration, the development of algorithms for real-time and predictive navigation as well as physical elements crafting using specific industry materials. Structural design, graphical optimization including chromatic optimization as well as the overall testing are added. The unification of all of these accomplishments outlines the projects originality beyond the obvious interdisciplinary nature.

In conclusion, the development of such a wide and modern solution at the same time with such an avant-garde approach invites the scientific community to the future development of mass casualty and disasters management solutions with definite interdisciplinary and evidence-based touches.