TATRC & NATO Look at Autonomous Tactical Evacuation in Munich

Following an initial meeting in the National Capital Area in April of the NATO Human Factors in Medicine (HFM) Autonomous Tactical Evacuation Exploratory Team (ET) chaired by Dr. Gary Gilbert, TATRC's Lead for the Medical Intelligent Systems Lab, subject matter experts from multinational military departments of France, Germany, Netherlands, Sweden, United Kingdom and the United States came together again for a follow-up in Munich, Germany from 24 - 26 Sep 2019 to conclude the panel's initial work.

HFM-ET-167 was created by the NATO HFM Panel to look at the development of autonomous medical systems for tactical evacuation in future battlefield environments. This exploratory team addressed the following five key objectives:

- 1. Establish common NATO concepts for leveraging emerging general-purpose unmanned system (UMS) platforms for medical missions;
- 2. Establish a common NATO research and development roadmap for robotic, autonomous, and unmanned capabilities in support of combat casualty care and tactical evacuation;
- 3. Develop methods and approaches for implementing safe ride standards on emerging UMS platforms for tactical care evacuation;
- 4. Survey and select interoperability standards; and
- 5. Define mission planning capabilities required to effectively coordinate tactical care and evacuation in unmanned systems.

During the first workshop in April, it was determined that potential use of unmanned platforms could vary in different combat scenarios, so small teams of participants were created to develop combat scenarios evaluating the potential utility of Advanced Medical Technology, Robotics, and Unmanned Vehicles in providing medical support in such scenarios. The four scenarios chosen were: Combat in Dense Urban Terrain; Littoral Combat; Naval Combat; and Search and Rescue. The scenario-based team findings were briefed at the September meeting along



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with an additional exchange of national information related to the topics and pre-established NATO policies. The panel concluded its work by recommending that NATO appoint a NATO Research Technology Group (RTG) to develop the objectives explored by the ET in more depth. Consensus was reached that in future conflicts, unmanned systems and autonomous medical care devices should and will be used to support casualty care and evacuation, and NATO must develop evidence-based guidance to assist commanders in making an informed decision on their use by creating concepts of operations, standards, and mission planning capabilities to effectively coordinate tactical care and evacuation. The group proposed the use of the term 'RASEVAC' (Robotic & Autonomous Evacuation), to limit the scope of its work to casualty evacuation onboard autonomous platforms that maneuver without onboard manned guidance (driver, navigator) across the range of military operations within the air, ground, afloat and submerged domains. This does not exclude the presence of onboard medical personnel providing care to the casualty.

The formal recommendation to establish an RTG will be made by the U.S. representative to the NATO Human Factors in Medicine Panel in April. According to Dr. Gilbert, "the opportunity to lead a NATO-appointed research panel, especially in an area of your own passion, is a true honor as well as a once-in-a-lifetime cherished opportunity, especially when down-the-road outcomes may save the lives of our soldiers, sailors, airmen, and marines and those of our allies."