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MEDRAS Presents at Health IT Summit on 3D Printing Innovations

On 10 November 2020, Mr. Nathan Fisher presented as a panelist at the Department of Defense & Government Health Information Technology Summit held in Alexandria, VA sponsored by the Defense Strategies Institute (DSI). The panel topic was titled, "'Leveraging 3D Printing Innovations to Facilitate Medical Breakthroughs for Veterans & Active Duty Service Members." Mr. Fisher, Chief of TATRC's Medical Robotics and Autonomous System (MedRAS) Division, presented the potential benefits of 3D printing to future medical missions and associated barriers to implementation, based on recent personal experience leveraging 3D printing to address PPE shortages during the early COVID-19 response.

In fact, each member of the panel had direct experience in applying 3D printing during the COVID-19 response. Panelists included Mr. Edward Brown, member of the U.S. Army Medical Research & Development Command's "Additive Manufacturing Working Group" led by the U.S. Army Medical Materiel Development Activity (USAMMDA). The panel was moderated by Dr. Beth Ripley, Director of the Veterans Health Administration (VHA) 3D Printing Network. There were also two panelists from the National Institutes of Health (NIH) that led the effort to establish the "NIH 3D Print Exchange" (3dprint.nih.gov) as a response to supply chain issues caused by COVID-19.

TATRC's 3D printing of PPE started in late March 2020, when the Walter Reed National Military Medical Center reached out to TATRC about a face shield shortage for its healthcare workers. After identifying a suitable 3D printing design, it was clear that a single 3D printer was inadequate to meet the urgent demand. During off-duty hours, Mr. Fisher mobilized a large group of local community volunteers to concurrently print and assemble face shields, resulting in over 100 units in less than 48 hours. Over the course of the next few weeks, over 250 units were produced by the community and delivered to Walter Reed and other local care facilities to meet the immediate shortages while the traditional supply chain issues were resolved.

During the panel discussion, it was observed that 3D printing has many potential drawbacks compared to traditional manufacturing, such as cost and the range of products able to be produced using additive manufacturing techniques. However, because of the increased availability and growing use of 3D printing, these capabilities are now located closer to the point of need and can be used as stopgap measures when supply chains from traditional manufacturers are disrupted. An analogy was made between the observed benefits of 3D printing in helping to alleviate supply chain shortcomings during the COVID response and potential benefits to future forward-care scenarios when traditional supply lines are challenged. The future operating environment is likely to challenge traditional lines of supply and innovative ways of producing and distributing certain supplies closer to the point of need may be required.

With help from the local community, Mr. Nate Fisher 3D-printed and delivered over 250 face shields to WRNMMC and local healthcare facilities.

"Beyond the potential to address future supply chain issues, there are medical applications that take advantage of the unique capabilities of 3D printing," stated Mr. Fisher, "for example, medical devices or models that are designed to match the anatomy of specific patients." The panel also discussed additional innovative medical uses for 3D printing, including the rapid scanning and printing of patient-matched models, e.g. for surgical rehearsal, and the ability to rapidly create and iterate physical simulators / models in support research, development, testing and evaluation, and training purposes.

For more information on this presentation and topic, please contact Mr. Nathan Fisher, nathan.t.fisher3.civ@mail.mil.