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Paper Title: EXE Studio Global's Great Idea Abstract EXE's Intelligent Remote Maintenance System (IRMS)

Author:
Brenda Dorne
EXE Studios

California
(949)293 1625
bdorne@exestudioglobal.com

Abstract: The challenge: Rapid response to the repair needs of our Navy ships is critical to our fleet readiness capabilities, especially when they are at sea. The travel costs associated to current responder protocols are high and time to remedy is too long. This creates an opportunity for technology development that supports remote, rapid response, subject matter expert [SME] or engineering support.

The Solution: EXE's Intelligent Remote Maintenance System (IRMS) This fully integrated, organic maintenance system supports next generation, onboard maintenance personnel with just-in-time, SME communication. It also helps them perform tasks independently and respond more quickly with on-board, real-time visual data and procedural animations to augment the paper driven manuals available today.

The EXE IRMS consists of a Land Based System [LBS], encrypted transport protocols for secure, low bit rate communication, space segment SATCOM, and a Vessel Based System [VBS] including a tablet based remote maintenance unit [RMU]. EXE's information architecture for the IRMS centers on a robust, all-inclusive database architecture that provides unprecedented interoperability with DoD and military industrial data repositories. These capabilities extend just-in-time IETM [Interactive Electronic Technical Manuals] to the next level by getting the right information in the right hands, right now.

EXE repurposed a Massive Multiplayer On-Line Role Playing Game Engine [MMORPG] to created a collaboration metaverse that allows any number of subject matter experts and stakeholders to actively participate or monitor specific activities. Add chat, file sharing, screen sharing, remote desktop, video, audio, ultra high-resolution imagery, augmented reality and 3D models in the collaboration architecture and you have the Advanced EXE IRMS. An IRMS session supervisor can be empowered to coordinate a single chat session or bring in a large group. The system is dynamically scalable to provide what is required, when it is required.

EXE IRMS Successful Test and Measure
Conducted at Navy Base San Diego
Land to On-board Vessel Remote Communication

EXE established an IP [Internet Protocol] connection between the Land-Com Station [LCS] and the ship based RMU by integrating a Hughes 9201 INMARSAT BGAN [Broadband Global Area Network] terminal to the EXE WiFi mesh network. The WiFi mesh drop modules were temporarily configured to receive the IP packets from the LCS through the Hughes 9201over a CAT 5 UTP [Unshielded Twisted Pair] cable. We configured the vessel based RMU to send and receive video teleconferencing [VTC]. We delivered high quality standard definition (640 x 480) low data rate (<256 kbps) VTC capability over a commercial INMARSAT BGAN connection to specific zones of the vessel. The EXE team demonstrated a real world scenario of with the WSN-7. 3D instructional models were displayed on the RMU providing the maintenance personnel with instructions and repair procedures for the WSN-7. The models were delivered to the vessel based RMU over the INMARSAT BGAN connection from the EXE IRMS Media Asset Management [MAM] server and successfully distributed to the RMU locations throughout the ship through the EXE WiFi mesh network.