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Paper Title: Real-time Collaboration for Remote Maintenance and Inspection
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Abstract: Collaborative mobile video platforms are just becoming accepted in the DoD as a way to perform remote inspections and maintenance. As concerns over skill shortages continue to grow, the ability to bring remote experts into the field virtually is becoming an important way to leverage the shrinking pool of experts across teams in the field. This kind of live mentorship and guidance can deliver important benefits such as avoiding costly downtime and decision delays as well as improving safety.

Technical skill shortages are happening across military and commercial operations. Earlier this year, DefenseNews reported there was a 30% loss of senior scientists in the last two years. In the article, the US Air Force Chief Scientist described a gap in the middle between senior people – over 50 - leaving due to early retirement and the less experienced group under the age of 35. In commercial business, the skill shortage for engineers and Non-Destructive Testing (NDT) specialists is similarly alarming. Frost & Sullivan reported that the NDT skills shortage is growing rapidly in North America, especially due to the high demand for these skills in the shale oil and gas industry.

Mobile video technologies have been used by the commercial sector for many years to perform remote maintenance and inspection. For example, the aviation industry uses mobile video to collaborate on maintenance issues with specialists within their own organization as well as vendors.

In one case, an aircraft was grounded due to a bird strike on landing. To determine whether it could be flown, the local airline maintenance crew needed input from their colleague in another city as well as the original OEM manufacturer given the unusual nature of the damage. Together, the team watched live video from the aircraft and heard the sound of the problem remotely. They were also able to draw, talk together, and remotely control the camera in the field. After two hours of collaboration, they determined the plane could be flown, leading to an estimated 60% improvement in turnaround time.

In the DoD, there are core requirements for this kind of remote collaboration that can make it more challenging than in commercial operations. These critical requirements include topics like high security over content, the ability to operate in very low bandwidth network environments and rugged settings, and the need to bring in very specific visuals from Non-Destructive Testing (NDT) equipment. These requirements have been met by recent mobile collaboration advancements, allowing the DoD to share remote expertise through virtual presence technology and bridge the gap in critical skill shortages.