

# DASA Telexistence Phase 1

## Abingdon, UK



### | The challenge

To develop and demonstrate the components of a telexistence solution to the defence and security community via a Defence and Security Accelerator (DASA) competition funded by the Defence Science and Technology Laboratory (Dstl).

A telexistence capability can be defined as a system which allows a human user to operate in an environment without physically being there. The competition considered three components:

- **Telepresence:** a visual-audio solution which enable a human operator to experience the sensation of self-presence in a remote environment
- **Haptic feedback:** an immersive solution which transmits sensory information from the remote environment to the human operative
- **Robotics:** a manoeuvrable solution which enables a human operator to interact with the remote environment

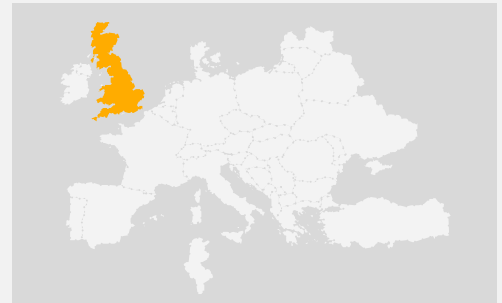
### | Veolia's solution

Veolia Nuclear Solutions (VNS) existing Dexter™ haptic feedback, remotely controlled manipulator was the basis for this project. VNS engaged with project partners to produce a gap analysis to evaluate the capability of Dexter™ for defence and security applications, in particular a Explosive Ordnance Disposal (EOD) use case. This concluded that the core haptic technology offered a **game changing capability** to EOD personnel with the potential to transform the complexity of operations that could be performed remotely. Key technical risks were identified and a roadmap produced for mitigating those risks.



HIGH REACH DEMO

The benefits of the Dexter™ are dexterity and sensitivity, adaptability, extreme environments suitability and ease of adoption (for example the supporting RETIINA software platform which provides a virtual representation of a site and accurately simulates Dexter™ interacting with this environment).



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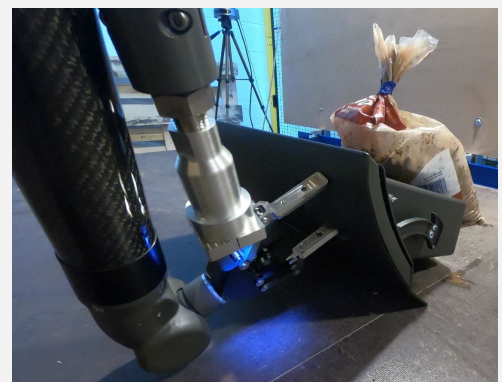
#### Contract Facts:

PROJECT: DASA Telexistence Phase 1  
DURATION: Jan to July 2021  
CLIENT: UK Ministry of Defence  
EXPERTISE: Robotics

Gap Analysis  
for New  
Application

Explosive  
Ordnance  
Disposal Use  
Case

Dexter™ Haptic Feedback  
Manipulator



GLOVE BOX DEMO

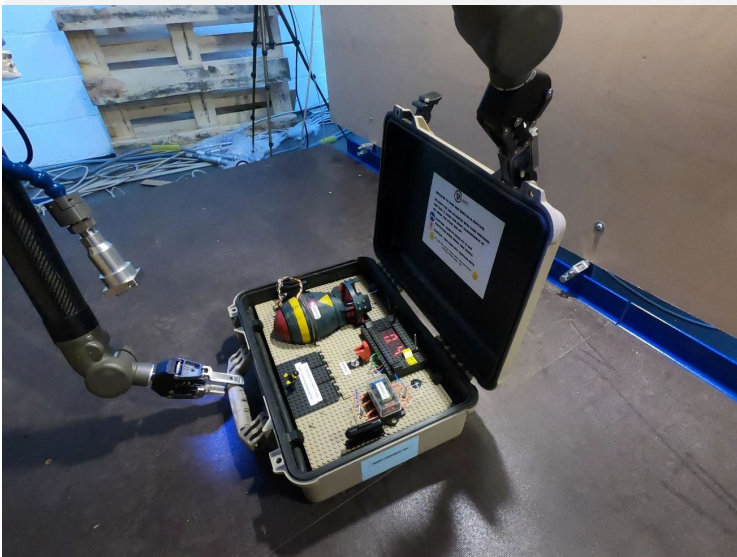
VNS collaborated with project partners to produce five user-led EOD scenarios for demonstrating the haptic feedback capabilities of Dexter™, particularly dexterity, grip and positioning. The five tasks were:

- High Reach (grip a secured tape measure and extend it upwards, see photo to left)
- Delicate (open a Peli case and perform task on circuit board inside, see photos on front page)
- Positioning (manoeuvre a mock munition into place, position an X-ray and X-ray unit to simulate an X-ray of the munition, see photos below)
- Interacting with Complex Objects Task 1 (Open locked door)
- Interacting with Complex Objects Task 2 (Open car glove box, see photo to right)

The project was delivered successfully according to the budget and timeline requested by the client.



RETIINA VIRTUAL REPRESENTATION EXAMPLE



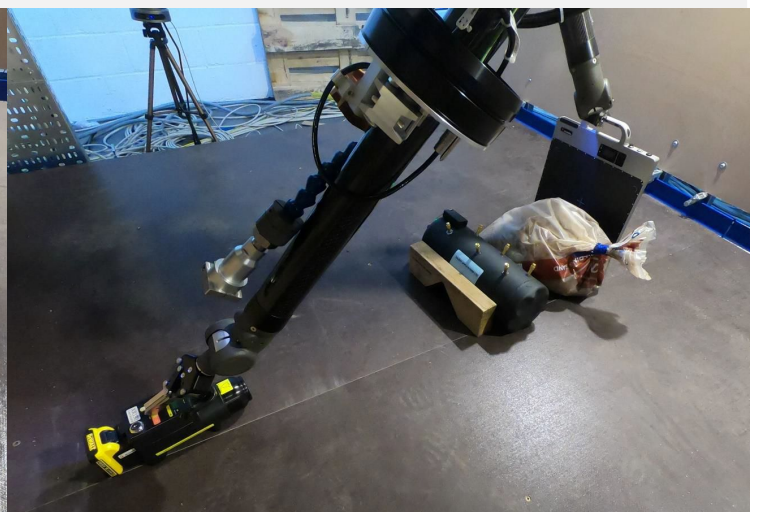
CIRCUIT BOARD DEMO



PELI CASE DEMO



MUNITION AND X-RAY DEMO (PLACING X-RAY UNIT)



MUNITION AND X-RAY DEMO (PLACING X-RAY PLATE)