Connections UK

Deep dive: Technology to support wargaming

Introduction

Technology is advancing at a speed and scale not previously experienced. Commercial game companies are considering how best to capitalise on these technological innovations, be it in the manufacturing of components, the enhancement of analogue games or the development of digital versions of games. Are wargaming professionals doing the same?

The aim of the 'technology to support wargaming' deep dive was to develop our understanding of how technology could be better used to support wargaming professionals with the design and development, execution and analysis of a wargame. The deep dive comprised a number of stands that covered a broad range of different technologies and approaches. The stands were interactive and we encouraged participates to get hands-on. Some of the technologies were experimental or in-development. This provided an opportunity for participates to engage at the embryonic stages, helping to steer future development. The UK MOD's Dstl Searchlight team were also present and were able to advise on how to go about getting a technology-related idea developed.

This year's stands:

1. **Defence Science & Technology Laboratory: Unity and COTS games in support of wargaming.**
    - A demonstration of the Unity games engine and COTS technology in support of wargaming and analysis.
        i. Pegasus Bridge is a concept-demonstration wargame exploring the art-of-the-possible with touch input and existing Unity turn-based strategy game assets (picture below).
        ii. Tabletop Simulator is a COTS physics sandbox, designed to replicate manual table-top gaming. Demonstration of Volko Ruhnke's A Distant Plain and/or Labyrinth: The War on Terror games in Virtual Reality.

2. **Defence Science & Technology Laboratory: SME Searchlight initiative on wargaming**

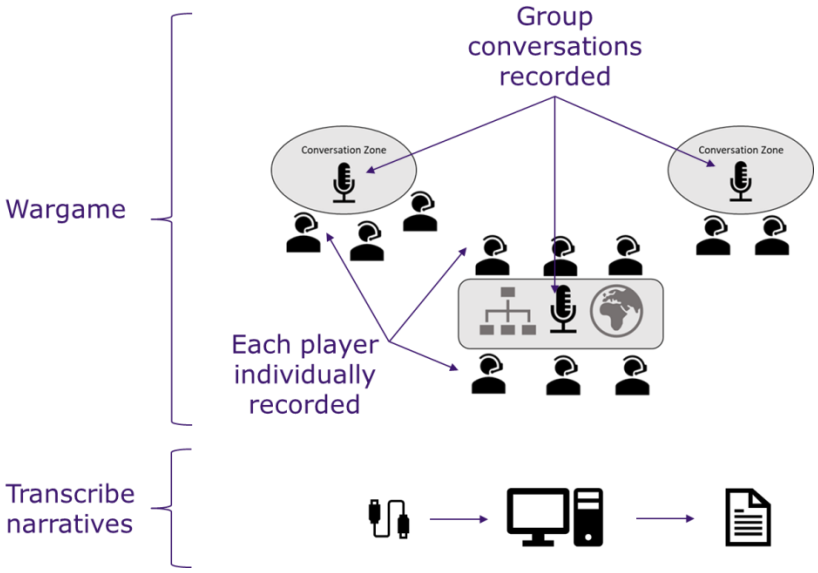
- The Defence Science and Technology Laboratory (Dstl) is seeking potential new suppliers to help influence future wargame development. A free "Show and Tell" event is planned on 7th November with our partners at The Manufacturing Technology Centre in Coventry.
    i. Further details here: https://www.gov.uk/government/news/dstl-seeks-industry-wargame-partners
    ii. To secure a place at the event register online at: https://www.teamdefence.info/event.php?event=1000695
    iii. For more information on the SME Searchlight contact: searchlight@dstl.gov.uk
- Under its Searchlight initiative, Dstl is looking for industry partners, especially Small and Medium Enterprises (SMEs) to help develop innovative wargaming tools, techniques, technologies and analysis. Companies need not have any experience in the defence sector. Opportunities exist across all aspects of wargame design and analysis, especially in the field of data capture, analysis and visualisation.

3. **NSC: Augmented Reality to support manual wargaming**

- A technology demonstrator to showcase the potential use of Augmented Reality to support manual wargaming activities. The demonstration was used as a mechanism for discussion on the practical application, functionality, limitations and future direction for such a tool. Developed as a way of investigating user centred collaborative planning, 'CARPE' could have practical application in the manual wargaming world to support umpires, player decision making or recording moves and then offering playback of a manual game at a later date (picture below).

4. **DIEM: Wargamers' Automatically Recorded Decision Engine (WARDEn)**

- WARDEn is designed to capture the narratives of players in the wargaming environment before providing automated insights into the decisions that have been made. Research completed to date by DIEM has shown that they can use AI and NLP techniques to extract information from the narratives such as the decision drivers, whom players have held conversations with, therefore what information their decisions are based on, and the wider context behind the decisions that were made.



The stages of the capability are as follows:

Key technical challenges

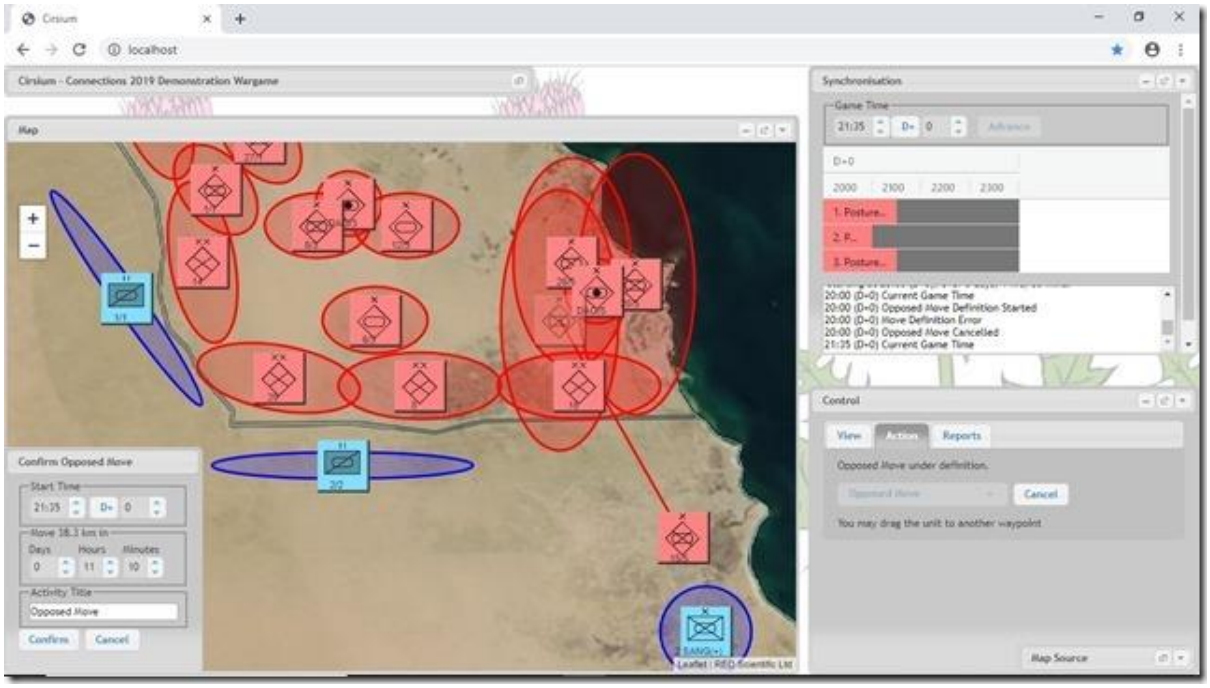
- Recording voices in a crowded environment
- Pairing individual narratives to form a conversation
- Identifying, from a full narrative when a player is describing a decision and the drivers which have led to that decision
- Identifying if enough of the right type of information has been collected to be able to construct a Pattern Of Decision Drivers grid.

5. **Slitherine: rCOTS Modelling & Simulation**
    - Slitherine showcased a range of their professional wargames and simulations adapted from commercial games.
        i. Command: Modern Air Naval Operations is a commercial wargame that simulates detailed modern air and naval engagements in a physics based battlespace. The professional edition includes data editing, import/export, logging, DIS, and a range of other features to support training and analysis. It also includes an enormous database of almost all air, sensor, ship, sub surface, weapon and mount data for all nations worldwide from 1946 to near future. Pictured below is Command being used in combination with a map and counter wargame 'RCAT Full-Spectrum Adjudication' which was demonstrated on the first day of the Connections UK 2019 event under the 'Diverse Game Formats and Adjudication Methods' session.

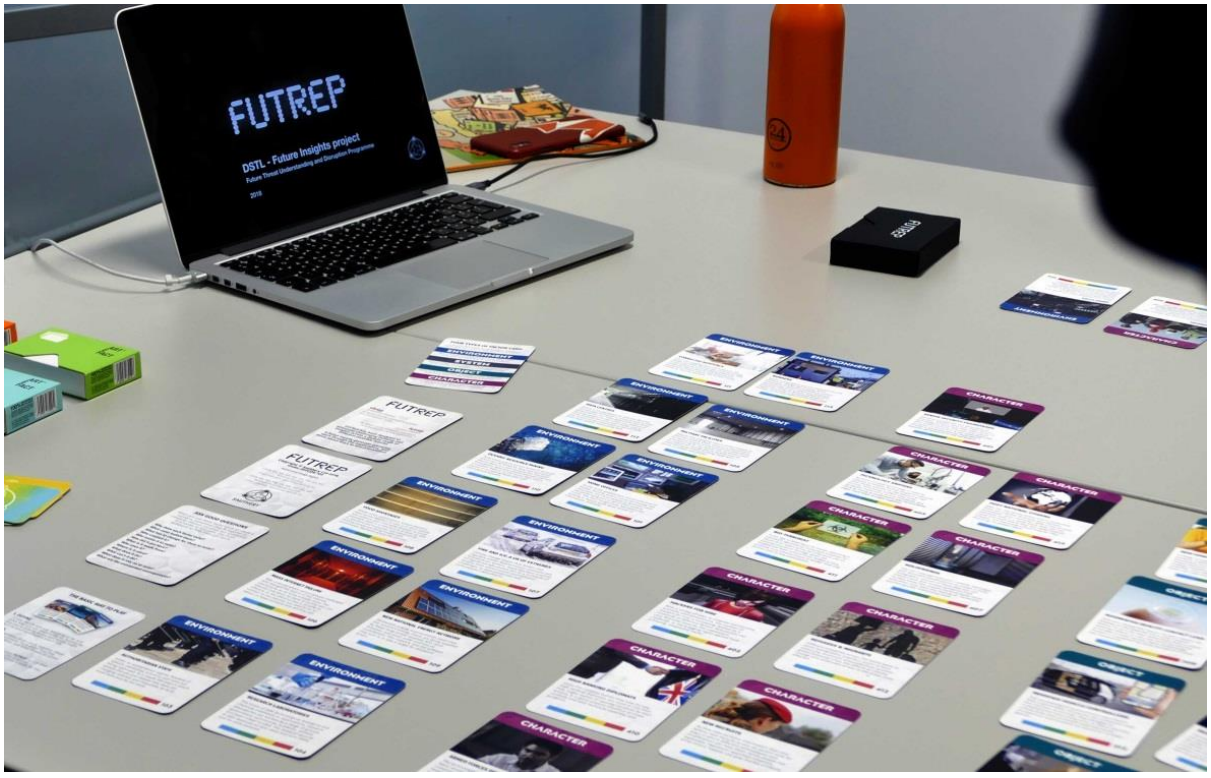
        ii. Flashpoint Campaigns: Red Storm is an operation scale cold war hex based wargame with an innovative C2 and OODA loop, being updated to a modern setting for the US army as part of the ATHENA project.
        iii. Combat Mission: Black Sea is a tactical modern wargame in full 3D space, using a WEGO model.
    - Slitherine has recently started work on bespoke modifications to all 3 simulations for Dstl under a multi-year contract and delivered the initial upgrades in July 2019. Slitherine supplies simulation software to all branches of the US DOD, the UK, Australia, Germany, Finland, Singapore and contractors such as Boeing, Raytheon, Lockheed Martin & BAE.

6. **HQ ARRC & Red Scientific: Cirsium Wargame – Supporting OA**

- Red Scientific demonstrated Cirsium an analytical wargame that is under development. Once finished Cirsium will upgrade the UK Army Land Warfare Centre's in-house capability to support military planning at corps and divisional headquarters with analytical wargaming. The current capability is focused around a legacy system and is based on a computer-assisted manual wargame, THISTLE FASTHEX, developed in the mid 1990's. Following a review of the capability conducted it was agreed that the development of an enhanced capability, that would draw on the experience of using THISTLE FASTHEX but incorporate improved algorithms based on the best available understanding of land combat operations, in particular historical analysis.



Smithery: FUTREP - An emergent, recombinant futures card game to generate scenarios.



7. **UK Maritime Warfare Centre/DeepBlueC: SERGE wargaming software**

- Serious Gaming Evolved (SERGE) is bespoke analytical wargaming support software developed by DeepBlueC for the UK Maritime Warfare Centre. It currently supports configurable chatroom functionality, with plans to integrate mapping over the next 12 months.

    i. SERGE has been developed based on the requirement to reduce the administrative burden of running multi-table wargames and improve data capture/analysis. It is designed to be simple and intuitive, allowing communication structures to be quickly defined and updated by the game designer/controller through a graphical user interface. Players are presented a familiar feeling chat system, with additional options incorporated for submitting information in pre-defined forms and functions to support game control and administration.

    ii. SERGE has been developed as open source and is available to download for free at https://github.com/serge-web/serge/tree/master

    iii. A version of the software is also hosted online and is available to access at https://serge-web.herokuapp.com/client