

The Naval Postgraduate School

**The Design and
Development of a
Virtual Environment
for Asynchronous
Collaboration
(VEAC)**

**DOMONIQUE HITTNER
PH.D. CANDIDATE**

**MOVES INSTITUTE
DOMONIQUE.HITTNER@NPS.EDU**

Introduction

Problem

There are no theoretical frameworks to guide research on virtual environments for asynchronous collaboration (VEAC) in human activity.

Research Question

In a virtual environment (VE), what are the novel analytical approaches and Modeling and Simulation (M&S) tools that could be introduced to support the tasks and collaboration of multiple communities of practice?

Methodology

Developmental Design Approach:

- Step 1 Aggregate Task Analysis Study Data
- Step 2 Aggregate Theoretical Framework for Asynchronous Collaboration (TFRAC) Studies Data points
- Step 3 Integrate into the design of the Target System User Interface
- Step 4 Select a subset of data to integrate into VEAC

Desired VEAC: Current System

From Task analysis: Input 1

- 1a. Steps, tools, and standards of performance as reported by subjects in task analysis user study, currently supported in the workforce
- 1b. Desired and missing capabilities as reported by subjects, reviewed and subset approved for further consideration
- 1c. Current suboptimal solutions as reported by subjects, reviewed and subset approved for further consideration
- 1d. Task characteristics reported in TFRAC-VE (Acq) study

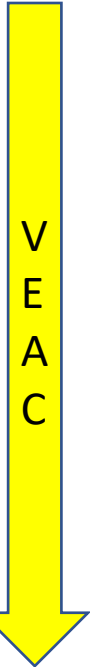
From TFRAC Study: Input 2

- 2a. Resources, tools, and processes needed to support effective and efficient optimal asynchronous collaboration

Design of targeted New System -> VE

- 3a. Subset of 1a. Support the elements of 1a that make a good match with the VE capabilities
- 3b. Subset of 1b. Support the elements of 1b that make a good match with the VE capabilities
- 3c. Subset of 1c. Support the elements of 1c that make a good match with the VE capabilities
- 3d. Subset of 1d. Support the elements of 1d that make a good match with the VE capabilities
- 3e. Subset of 2a, Support the elements of 2a that make a good match with the VE capabilities

Implementation of VEAC in concrete VE system-> Persistent Virtual Environment



VEAC View



DATA AND DOCUMENT RESOURCES (REPOSITORY)

TOOLS AVAILABLE

INPUT FROM OTHER TEAM MEMBER(S)

Two Tasks waiting
1. Select a torpedo & a vehicle that fits the unit's specifications
2. Type "Generate RFP" into the nearby chat line when ready

Summary of unit specifications
Torpedo:
\$4300, min range 9 nm, heat rating compliant, length 7.8 ft.
Vehicle:
\$290K
30-40 gallon fuel tank, Ground clearance: 18-24"

Compatible systems are ready for viewing
Select the weapon that supports three data points provided:
1. **Weapon 1T:** Range 10nm, heat rating compliant (within 2 degrees), Cost (\$4100), EPD (10 days)
2. **Weapon 2T:** Range 9nm, heat rating compliant (within 3 degrees), Cost (\$4280), EPD (10 days)
3. **Weapon 3T:** Range 8nm, heat rating compliant (within 5 degrees), Cost (\$5K), EPD (7 days)

Compatible systems are ready for viewing
Select the vehicle that supports three data points provided:
1. **Vehicle 1V:** Range 28-gal, all handles are heat rating compliant, Cost (\$270K), Ground Clearance "18-20", EPD (8 weeks)
2. **Vehicle 2V:** Range 36-40-gal, all handles are heat rating compliant, Cost (\$290K), Ground Clearance "18-20", EPD (8 weeks)
3. **Vehicle 3V:** Range 32-40-gal, all handles are heat rating compliant, Cost (\$289K), Ground Clearance "18-20", EPD (7 weeks)

SYSTEM LOGS AND DATA SETS

OUTPUT FOR OTHER TEAM MEMBER(S)

Type "Generate RFP" into chat line when ready

PM
DASC: MAJ Jones
ASAAL TPOC: Mr. Smith
OSD: Ms. Newberry

Logistics Manager
Legal
Test and Evaluation OIC