MEng Innovation by Design
2019/2020 Ideate-Prototype-Realize


SINGAPORE UNIVERSITY OF TECHNOLOGY AND DESIGN

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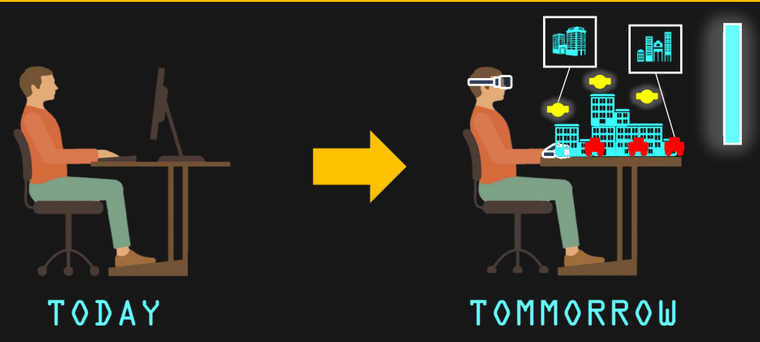
VIRTUAL REALITY ROBOTIC COMMAND & CONTROL SYSTEM

DSO

There is an increasing demand for robotic platforms to replace manpower due to aging population and declining birth rates. Humans control multiple robots through a Robotic Command and Control (RC2) System. As the number of robots increase, controlling the robots becomes harder and more complicated.

AIM & GOAL



AIM My aim is to enhance RC2 operator's performance

GOAL My goal is to enhance operator's performance through interaction design using Virtual Reality technology

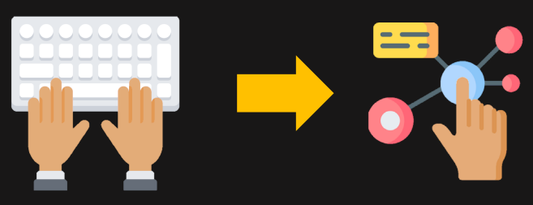
RESEARCH QUESTIONS & HYPOTHESES

RQ1 Does 3D representations of spatial information improve clarity of the information?

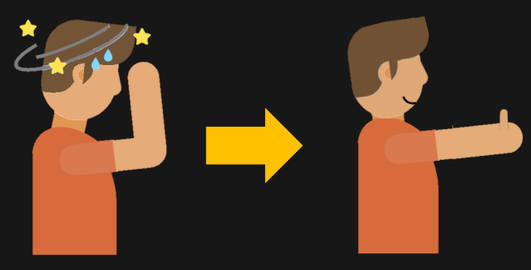
H1 Spatial information represented in 3D space will improve C2 Operator's situation awareness.

RQ2 Does 3D gesture inputs improve control of the RC2 system?

H2 3D gesture inputs will improve operator's level of control for spatial tasks.



RQ3 How can we minimise cybersickness?



METHODOLOGY & APPROACH

Research Clarification
- Use-cases Research
- Concept of Operation
- User Interview
- Designer Interview

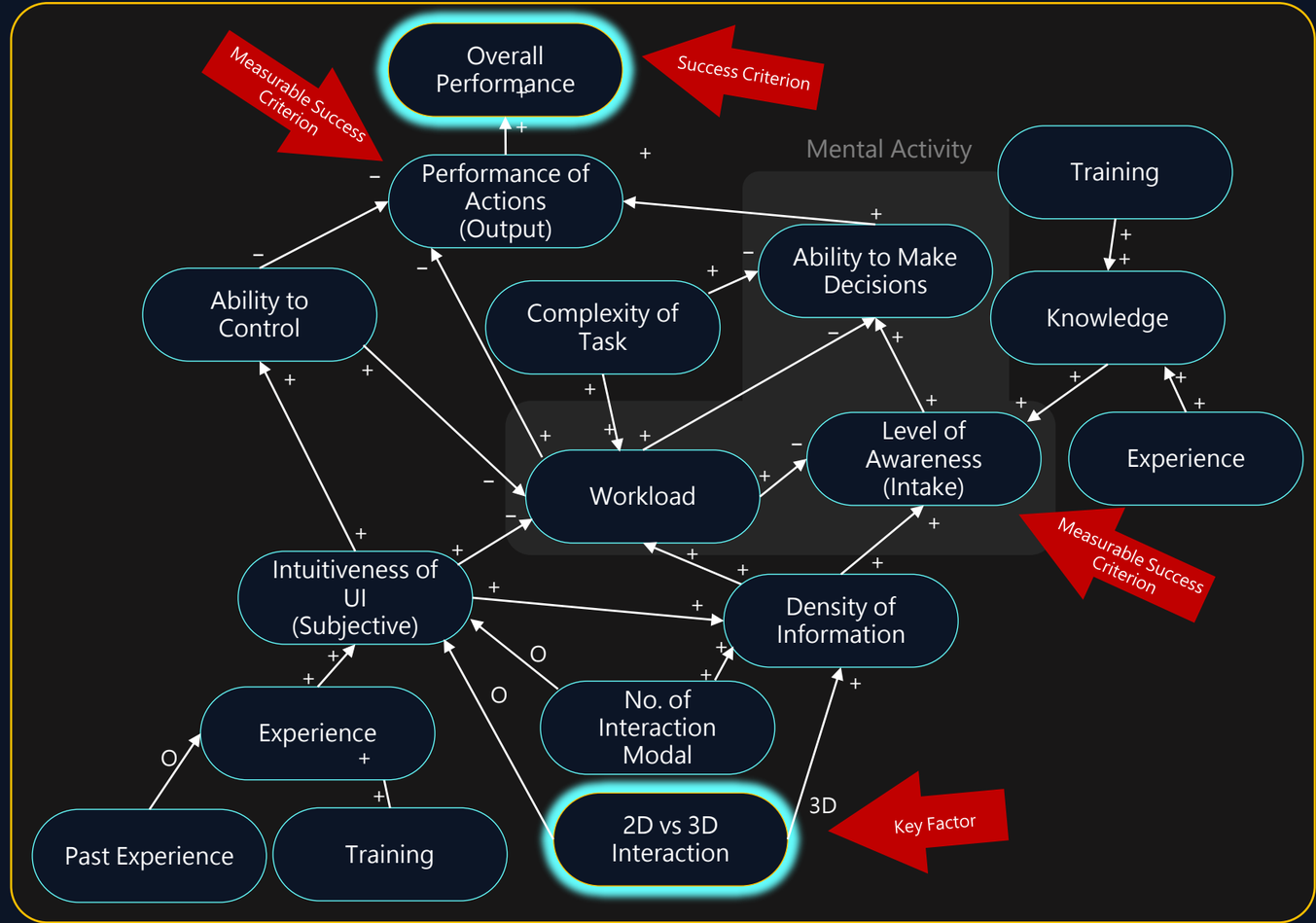
Descriptive Study 1

Literature Review on
- Interaction Design
- Game Design
- Performance Measurement

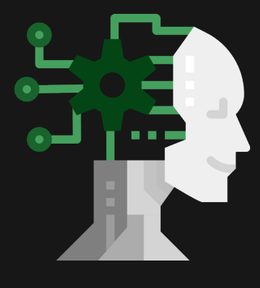
Prescriptive Study
- Conceptualisation
- System Design
- Experiment Planning

Descriptive Study 2
- VR Game Experiment
- Interview
- Score and Data Analysis
- Qualitative and Quantitative Assessment

REFERENCE MODEL



CONTRIBUTION & EXPECTED RESULT



Contribution towards Human-Computer-Interface (HCI) Design and C2 UI Design.

Identify areas to enhance C2 operator's performance in C2 design .

As a Prove of Concept.

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