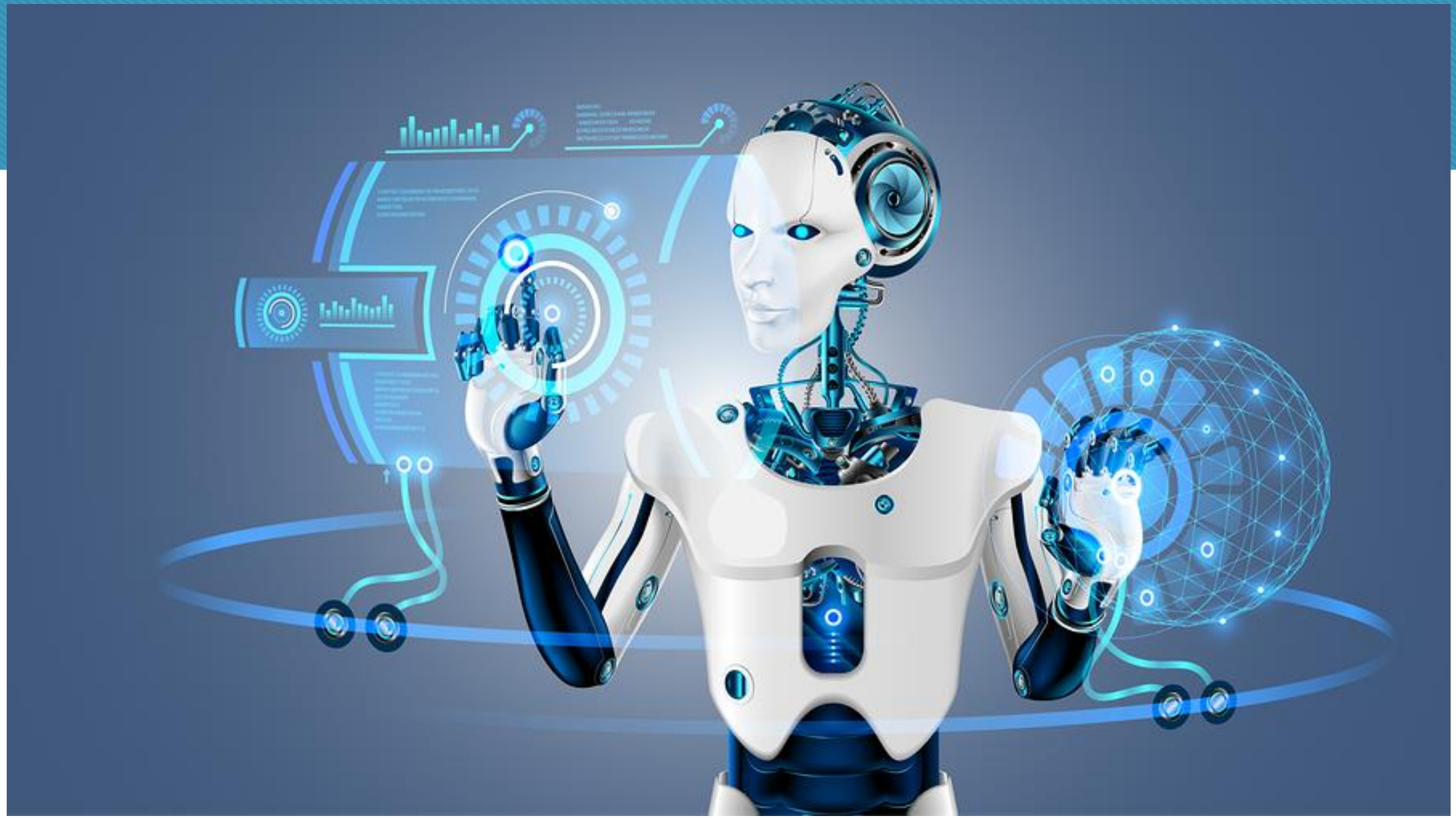

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CENTRE OF EXCELLENCE IN MARITIME SIMULATOR TRAINING AND ASSESSMENT

University of South-Eastern Norway

NTNU

UiT The Arctic University of Norway

Western Norway University of Applied Sciences

Direktoratet for høyere utdanning og kompetanse

Egypt lost $12–14 million per day due to the closure.

Value of the goods delayed each hour at US$400 million

Every day it takes to clear the obstruction would disrupt an additional US$9 billion worth of goods.

COAST

COAST Overview

COAST
Centre of Excellence in Maritime Simulator Training and Assessment

Direktoratet for høyere utdanning og kompetanse

94M NOK

2020-2025

- ❑ To promote student-centred learning by innovative simulator-based education
- ❑ To be leading provider of simulator training and assessment methods for maritime education

USN University of South-Eastern Norway

NTNU

UiT The Arctic University of Norway

Western Norway University of Applied Sciences

CENTRE FOR EXCELLENCE IN EDUCATION

Consortium Partners

University of South-Eastern Norway

- Bachelor, Master's and PhD programs in **Maritime** Education
- Established maritime research and innovation hub
- 10 full mission and 42 desktop **simulators**

NTNU

- World class **Maritime** education provider
- Extensive stakeholder connections with strong alumni base
- 6 full mission and 31 desktop **simulators**

UiT The Arctic University of Norway

- **Maritime** education provider in Bachelor and Master's level
- Specialized in simulator training for aviation, health and maritime
- 3 full mission and 9 desktop **simulators**

Western Norway University of Applied Sciences

- Provides industry and career focused **maritime** education.
- Research projects on autonomous ships, arctic navigation, simulated manoeuvring
- 19 bridge simulators, 12 cargo handling **simulators**, 1 communications lab

COAST Journey

2017 — SFU Pre-project

2019 — SFU Application

DIKU Evaluators visit at USN

COAST announcement day

2020 — COAST kick-off

2021 — COAST Annual report 2020

COAST Consortium meet at USN

COAST

International Partners

UCF UNIVERSITY OF CENTRAL FLORIDA

LIVERPOOL JOHN MOORES UNIVERSITY

CHALMERS UNIVERSITY OF TECHNOLOGY

UNIVERSITY OF GOTHENBURG




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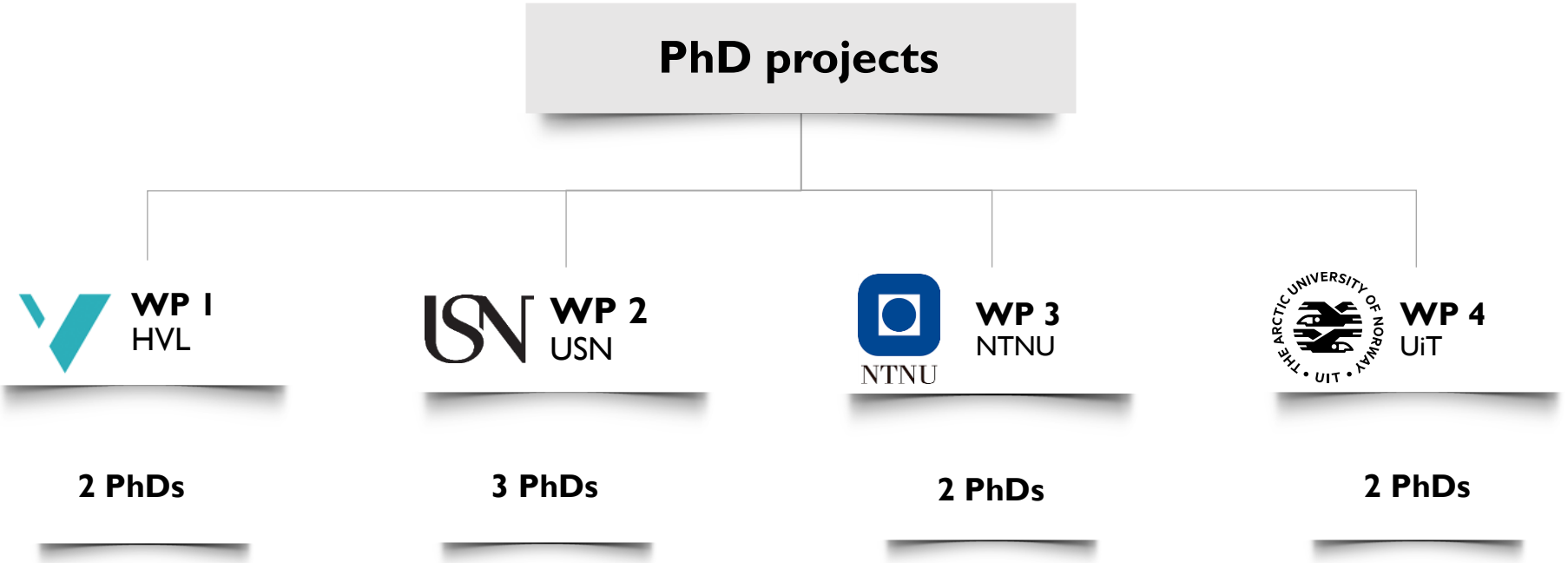
COAST PhDs



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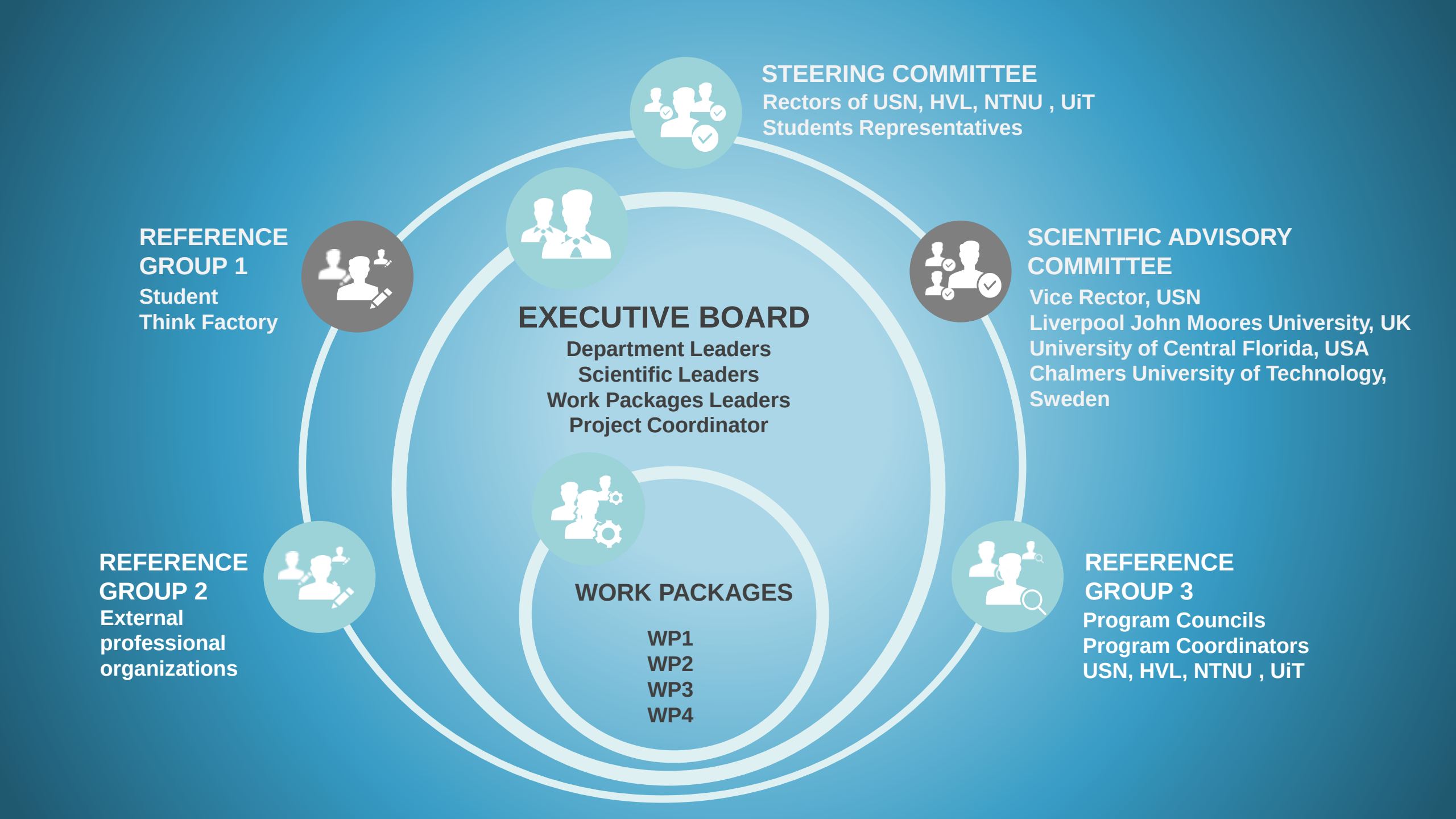

STEERING COMMITTEE
Rectors of USN, HVL, NTNU , UiT
Students Representatives
REFERENCE GROUP 1
Student
Think Factory
SCIENTIFIC ADVISORY COMMITTEE
Vice Rector, USN
Liverpool John Moores University, UK
University of Central Florida, USA
Chalmers University of Technology, Sweden
EXECUTIVE BOARD
Department Leaders
Scientific Leaders
Work Packages Leaders
Project Coordinator
WORK PACKAGES
WP1
WP2
WP3
WP4
REFERENCE GROUP 2
External professional organizations
REFERENCE GROUP 3
Program Councils
Program Coordinators
USN, HVL, NTNU , UiT

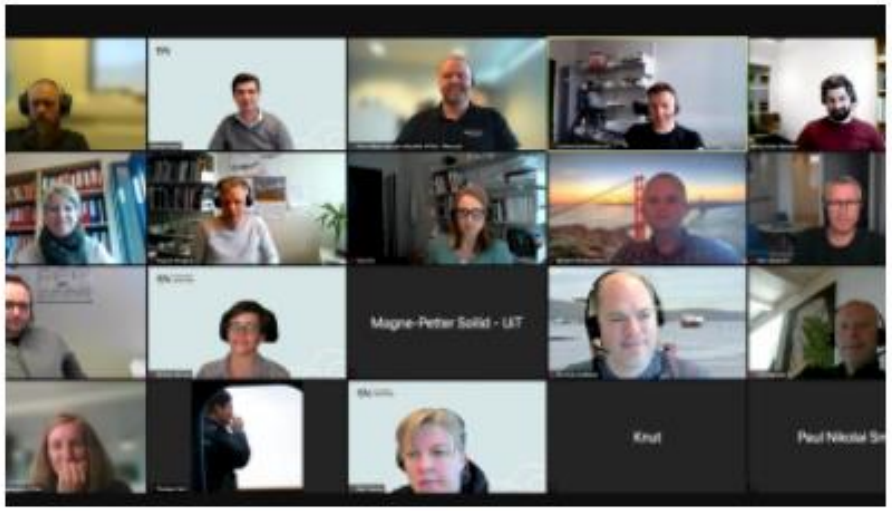
COAST Activities

PhD-positions in COAST announced autumn 2020

Read more

Exchanging state-of-the-art practices with the maritime industry

COAST Activities



Innovative maritime teaching during the pandemic: a COAST discussion forum with the instructors

COAST pitched in at the IAMU Webinar on “Future competencies for seafarer”

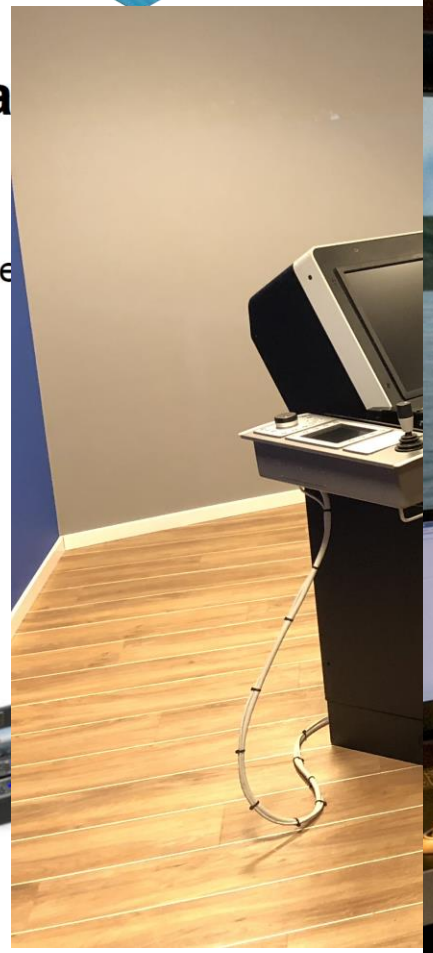
COAST Activities

Courses for Simulator Student Assistants (SSAs)

COAST's main focus – Simulator training and Assessment

K-Sim Na

Scalable



Simulator training

Full-Mission Simulator

Current era

Source: Kongsberg; Boeing.

Simulator training

Modern HMD VR Simulator

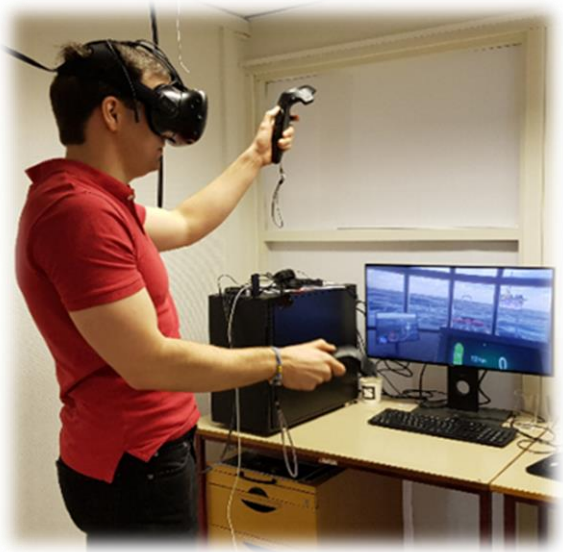
Current era

Source: Kongsberg; HTC.

Experiment in VR

Effectiveness of VR and desktop-based simulators

We know: Motivation ∝ Learning (Garris et. al., 2002)
RQ: Does Virtual Reality increase affect learners' Motivation?



Virtual Reality Group

Desktop Group

COAST

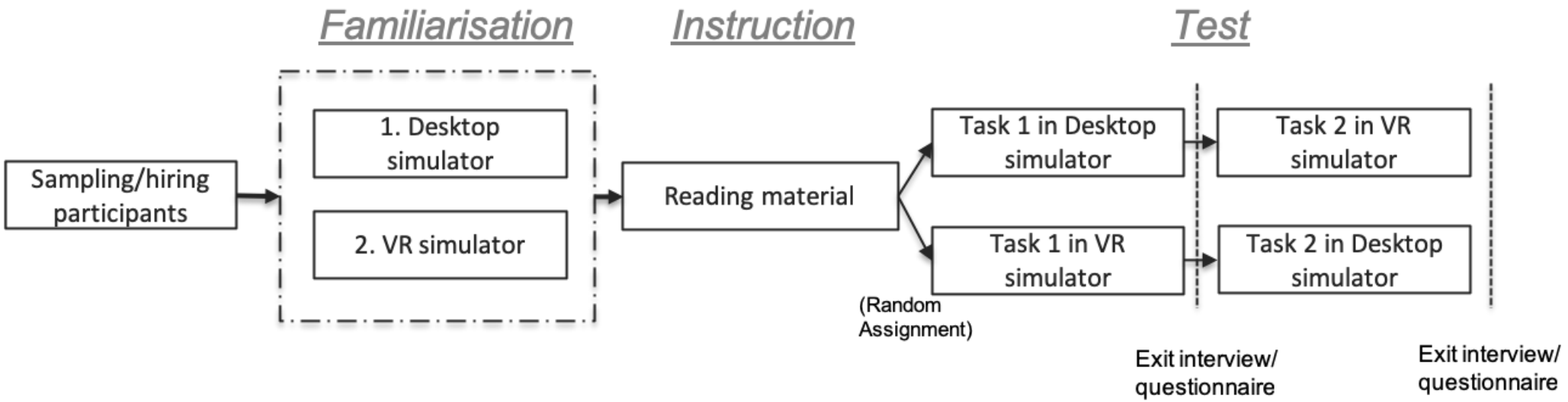
TARG

Effectiveness of VR and desktop-based simulators

Types of training

- Familiarisation
- Procedural knowledge acquisition (Safety, process, maintenance, etc.)
- Skill training

Study design



Effectiveness of VR and desktop-based simulators

Intrinsic motivation questionnaire (Monteiro et al., 2015)

- ❑ Interest / Enjoyment
- ❑ Perceived competence
- ❑ Effort / Importance
- ❑ Pressure or Tension
- ❑ Perceived choice
- ❑ Value / Usefulness

Omitted due to lower reliability measure (Cornbach's alpha)

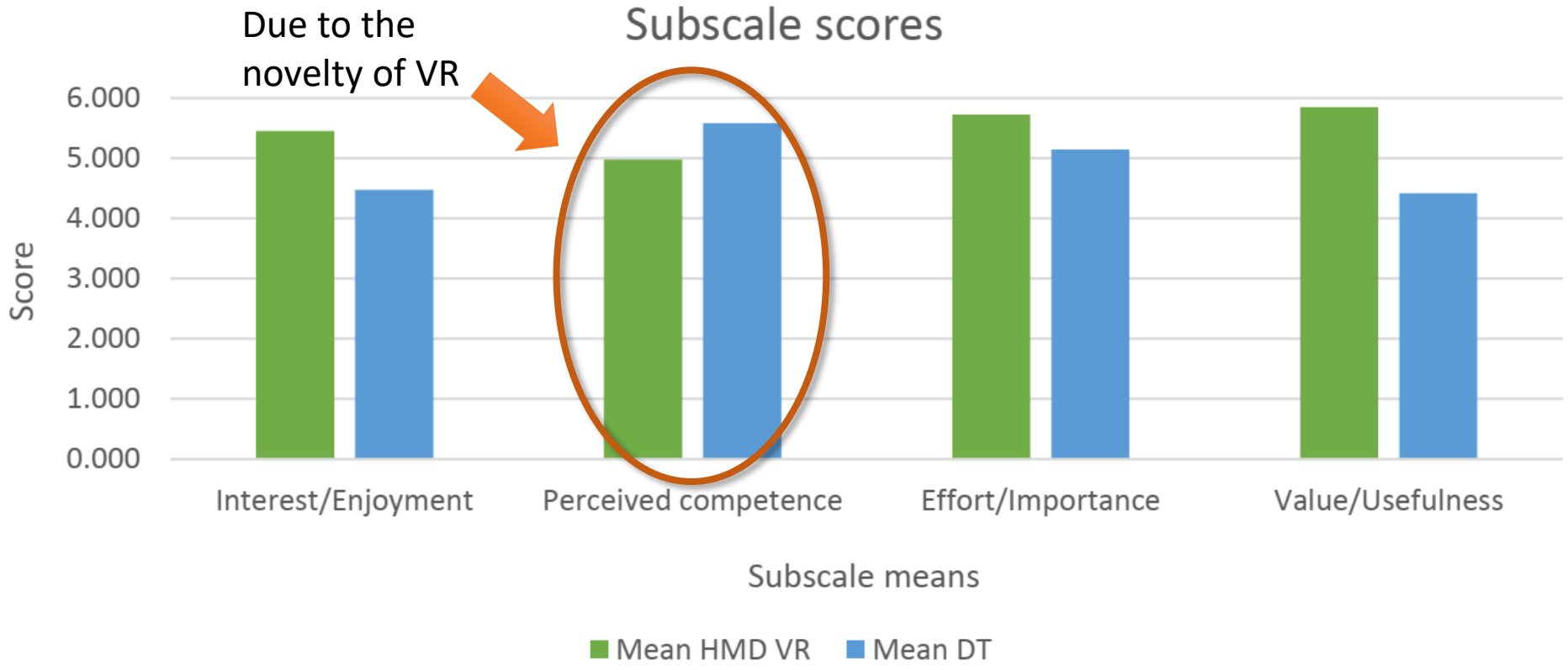
Effectiveness of VR and desktop-based simulators

Experiment result

	Interest/ Enjoyment		Perceived competence		Effort/ Importance		Value/ Usefulness	
	VR	Desktop	VR	Desktop	VR	Desktop	VR	Desktop
N	24	24	24	23	24	24	24	24
M	5.46	4.48	4.98	5.74	5.73	5.15	5.85	4.42
SD	1.05	1.76	1.02	.81	1.03	1.24	.95	1.69

Effectiveness of VR and desktop-based simulators

Experiment result



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Effectiveness of VR and desktop-based simulators

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Effectiveness of VR and desktop-based simulators

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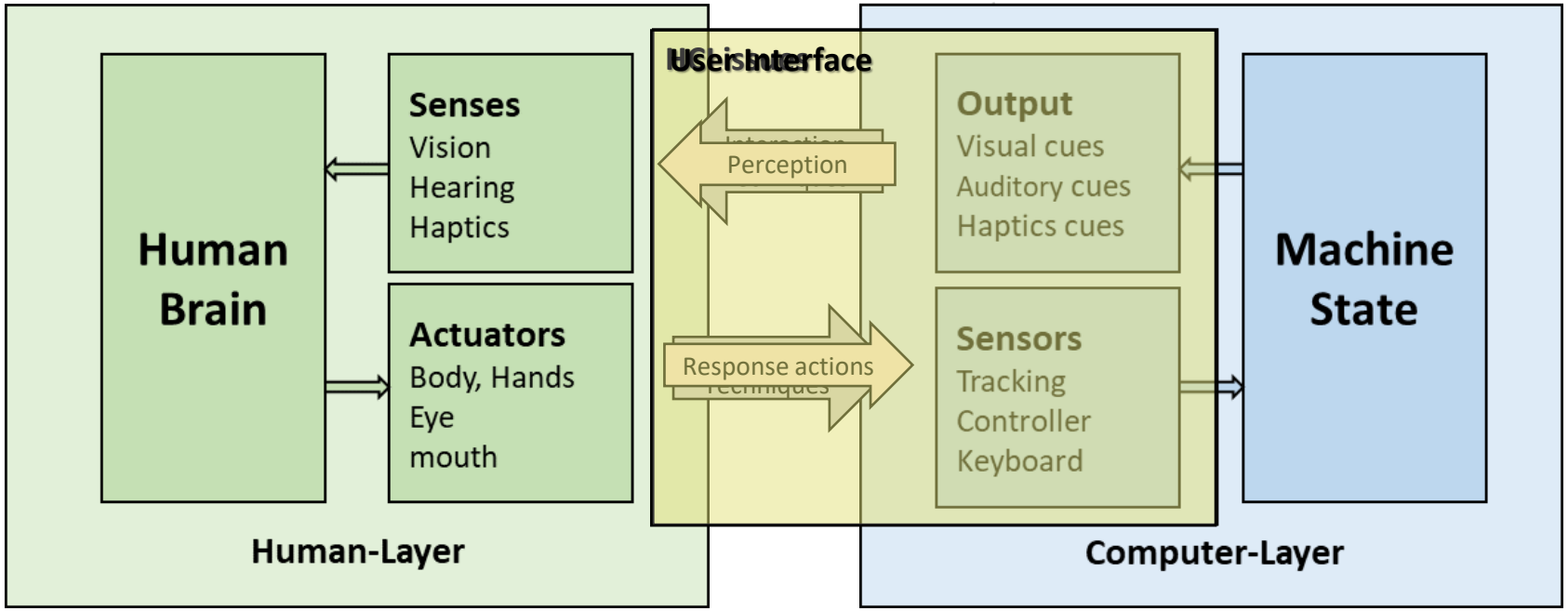
Effectiveness of VR and desktop-based simulators

Virtual Reality (VR) in

- ❑ Skill acquisition & learners' motivation (Veie, 2018)
- ❑ Maritime Training (Hjellvik, 2019)
- ❑ Skill retention
- ❑ Self-efficacy (Renganayagalu, 2019)

Human-computer interaction Loop



(Bachmann et al., 2018)

Case study: HCI issues in a VR bridge simulator

Seven participants performed a training task in the VR bridge simulator

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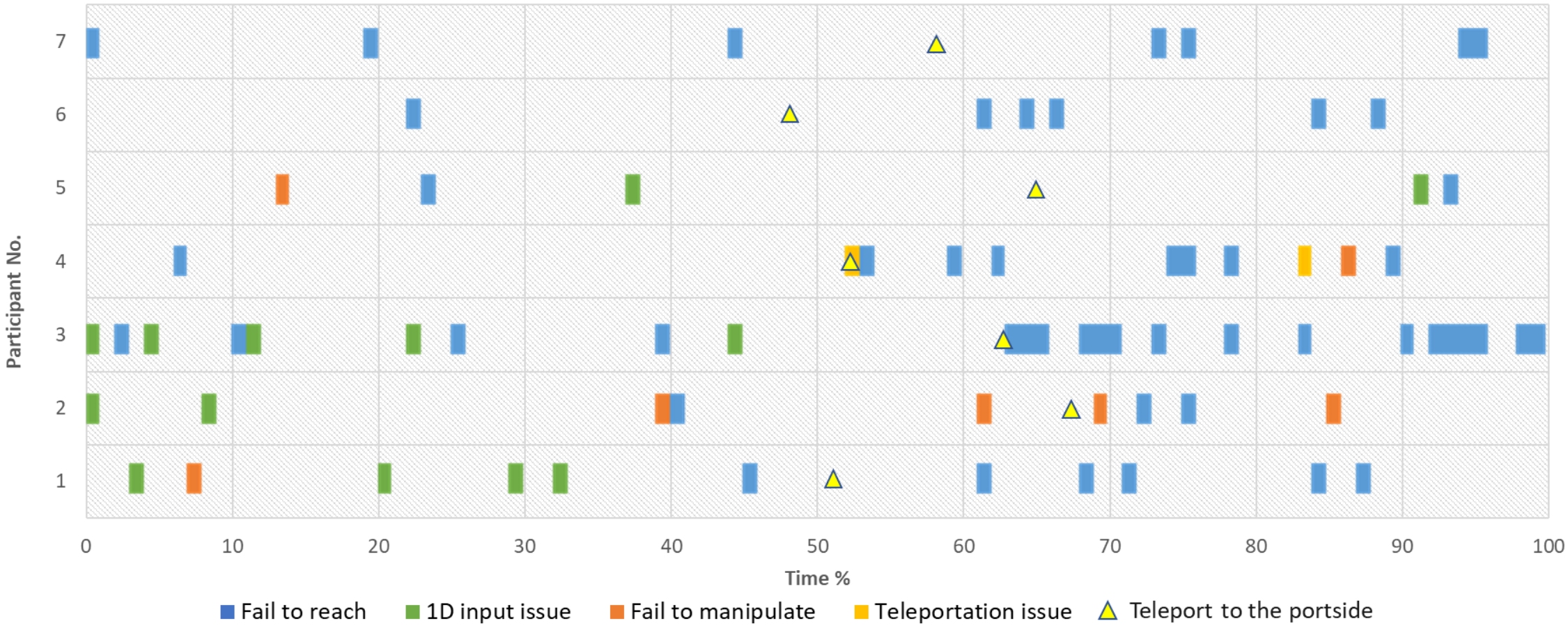
TRAINING AND ASSESSMENT RESEARCH GROUP

Case study: the training task

Case study: HCI issue timeline



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COAST Website

https://norway-coast.no/

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