CENTRE OF EXCELLENCE IN MARITIME SAFETY

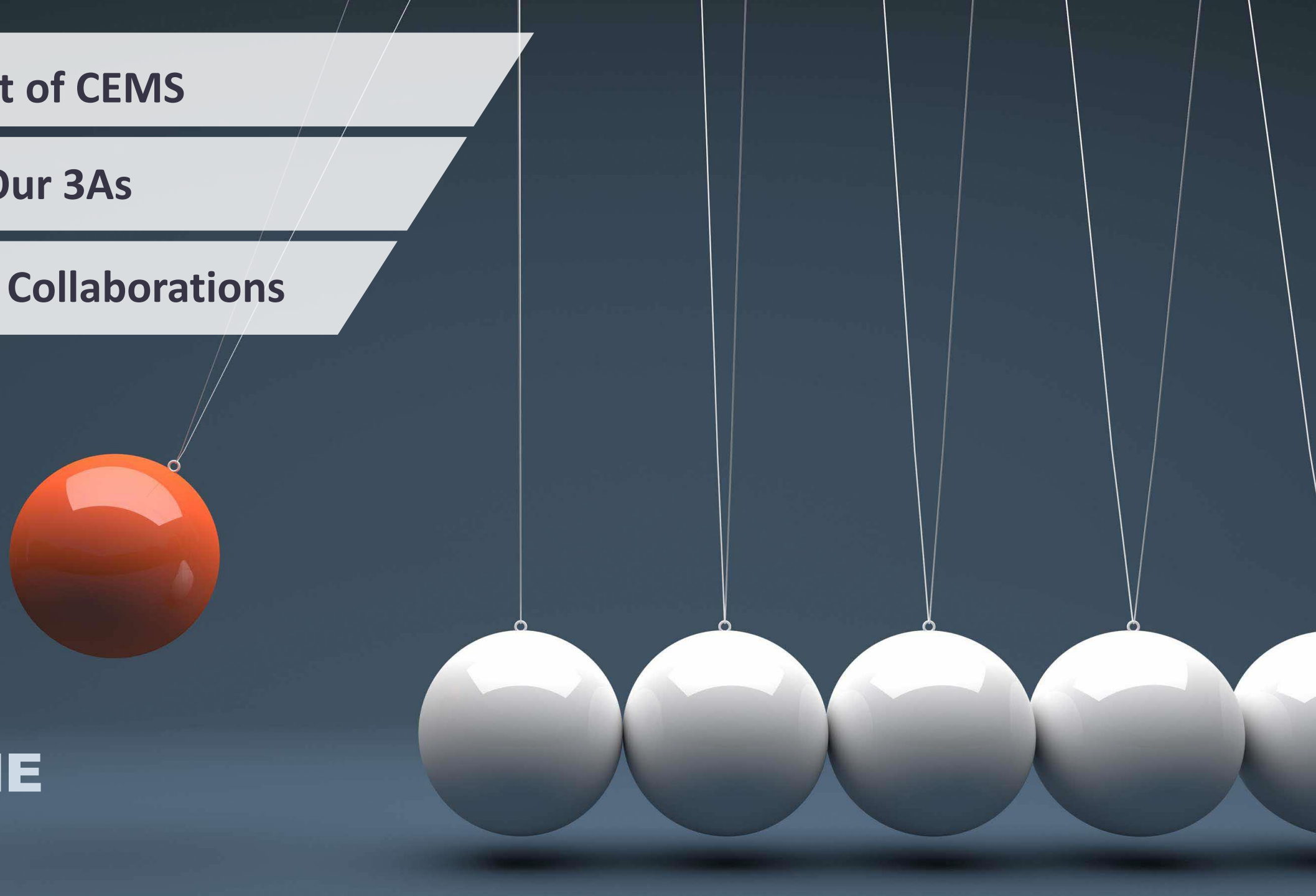
CEMS

Safety 4.0- AI Based Competency Assessment

SP Centre of Excellence in Maritime Safety

OUTLINE

- Establishment of CEMS
- Safety 4.0 – Our 3As
- International Collaborations



Establishment of CEMS

SP'S MARITIME HERITAGE

1950s

Establishment of Singapore Polytechnic
1954

1990s

Nautical Studies & Marine Engineering
1957/1959

2000s

Singapore Maritime Academy (SMA) - SP
2000

Integrated Simulation Centre - SP/MPA
2002

2010s

Formation of MI@SP
2012

2020s

CoE in Maritime Safety
1 Sep 2018

Vision

Global Leader for Research & Innovation in Maritime Safety

OUR MISSION

Improving maritime safety through:
World class applied research & novel innovations for technology transfer to the industry

Development of next-generation training systems & solutions for a future-ready workforce

FUTURE OPERATIONS

- Remote & Mix Environment Operations

Our Vision

FUTURE COMPETENCIES

- Navigating Navigator to Shore Based Navigator
- Emerging Fuel Handling

FUTURE SYSTEMS

- Complex Visualization and Data Analytics
- Cyber-connected Systems

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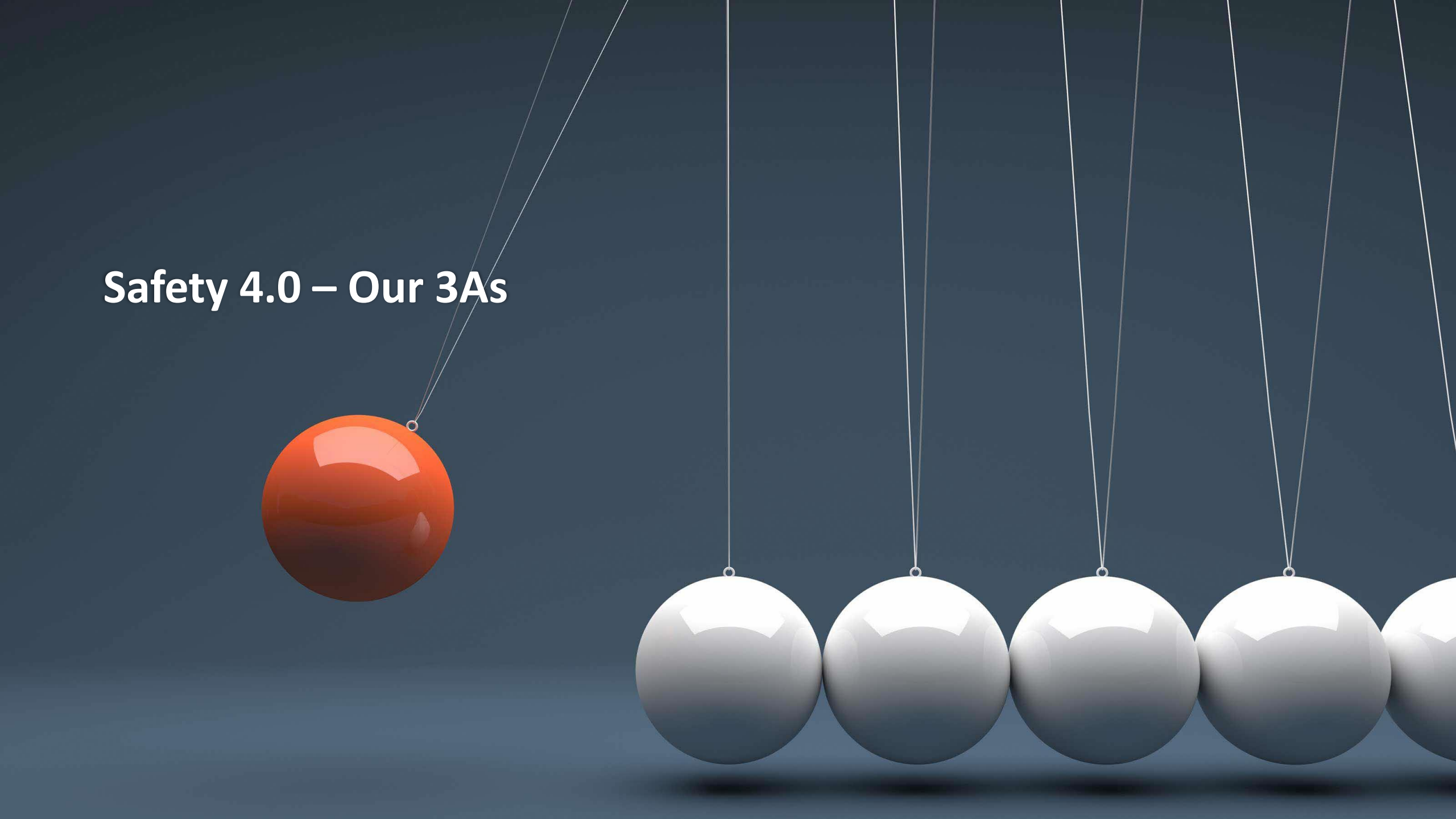
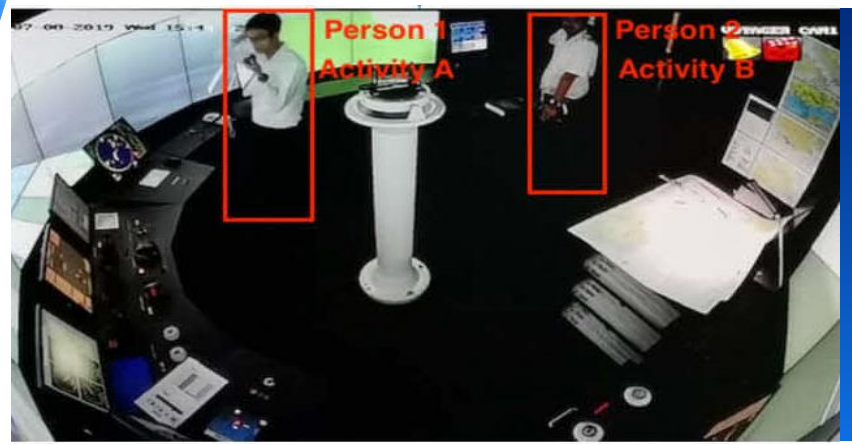
Safety 4.0 – Our 3As



Safety 4.0 with Digital Innovations in Safety & Training

ANRS/NGNS (Digital Platform for Future Competency)



AI Assessment (Digital Assessment of Human Competency)

AR/VR/Immersive (Digital Delivery of Training)

Advanced Navigation Research Simulator (Digital Delivery of Training)

Auto Assessment of Navigation Training in Simulator (Digital Assessment of Competency)

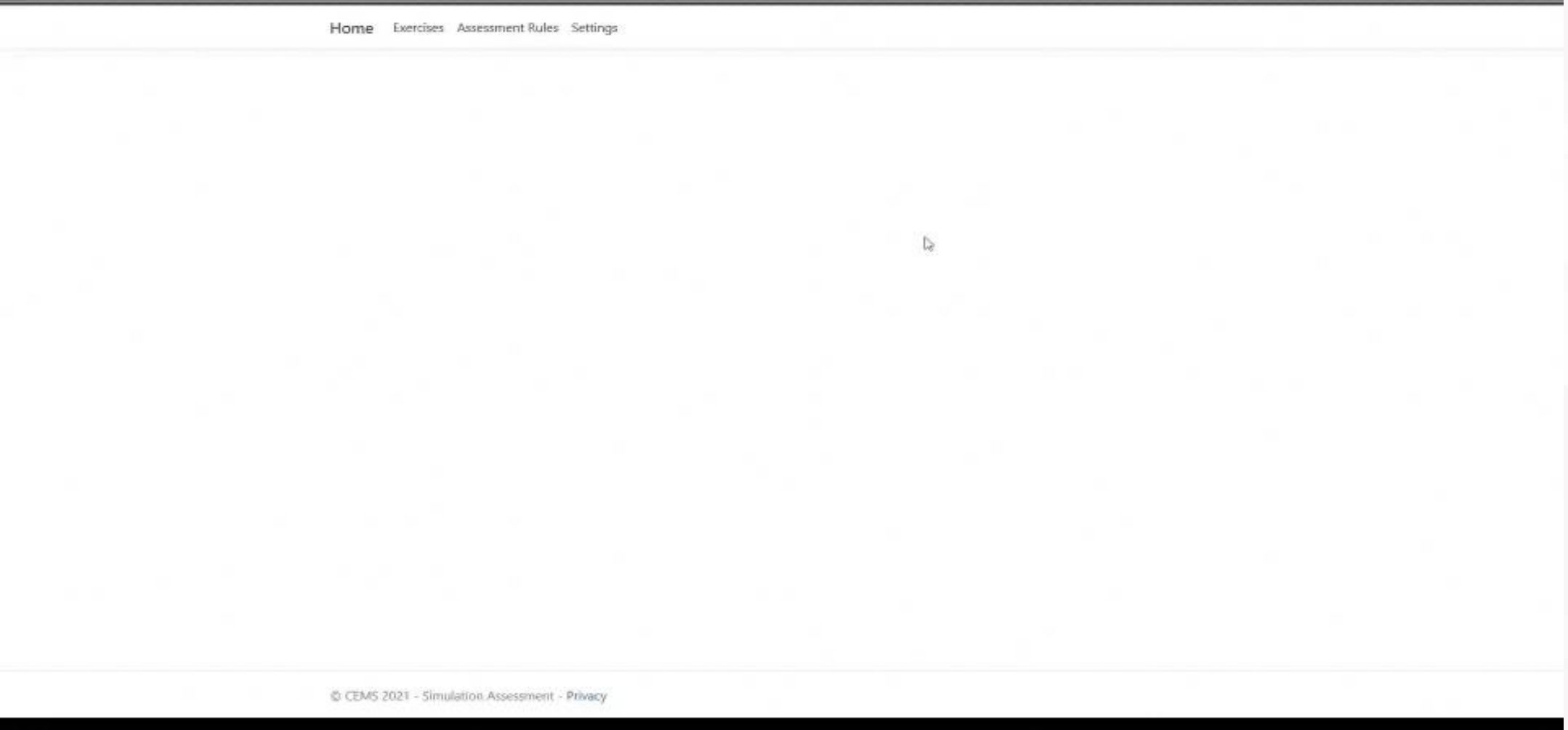
Develop an intelligent training software package that senses changes and update itself with user-defined environment and auto-generate the

RUNNING AN EXERCISE

The Assessment Rules

The Exercise

The Report



AI Assessment of Navigation Competency (Digital Assessment of Competency)

Training in Bridge Simulator

Simulation System

Camera

Computer Vision

System Files

Recognised Activity Data

Behaviour Learning & Understanding

Text Generation

Text Summary

Situational Awareness Performance Analysis

Situational Awareness Assessment

- **First navigation research simulator in Southeast Asia**
- **One of the first in the world to combine the use of Artificial Intelligence, together with a simulator** for training purposes.

SMA Singapore Maritime Academy SINGAPORE POLYTECHNIC

PSA MARINE

A*STAR IHPC

IMO Presentation in Feb 2023

Remote Simulator Training with Build in AI

An innovative solution to address challenges faced in maritime training

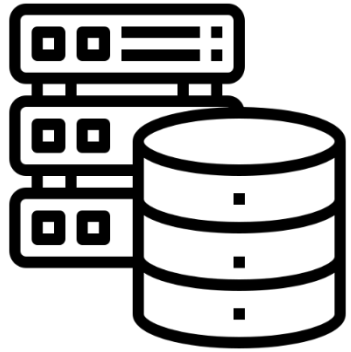
Identify and reconstruct risky scenarios

Develop customized training scenarios for challenging ports

An automated competence assessment tool

Develop a remote training system

Students can access simulator base training remotely



Database to benchmark the students' performance

Enable "Training on the go"

International Collaborations

International Collaborations

Germany - Hosting Deutsches Zentrum für Luft- und Raumfahrt (DLR) research team

Norway - Norwegian Ambassador Visit

Cambodia - Hosting of colleagues from Royal University of Phnom Penh

Philippines - Maritime Academy of Asia and the Pacific (MAAP) Visit

CEMS Value Capture

Infuse leading edge technologies into maritime industry

Prepare maritime industry for future technologies

Navigational Safety (@Next Gen Port)

Leverage AI to develop human centred technologies and competency framework for CONOPs

Enhance existing training methodologies

Ops Safety for New Fuel Handling (Decarbonisation)

Develop immersive training solutions for new fuel handing

Ops Safety for New Concepts of Operations (Future System and Competency)

Ensure human centric design for next generation systems

Pave the path for remote and autonomous

Co-develop cyber resilience framework for training in maritime industry

Support SG to be a maritime talent & innovation hub

THANK YOU

SP Centre of Excellence in Maritime Safety