
International standard of competency and capacity building strategy for polytechnics



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Content

Polytechnics – growth and social values

International standard – STCW and limitations

Capacity building:

- Use of digital simulation
- Investing in Lecturing Staff

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Polytechnics importance

Instrumental in upskilling; Partner with industry; Identifying opportunities; and influencing government decisions; transfer of technology into production

Germany: an enviable system of industry-led education

Singapore: Polytechnic education 5% in 1980 – 40% in 2006

India: 3239 Polytechnics; ~12k ITIs; 350k diploma; 500k degree

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International standard

- Functionalism and not territorial authority
- For consistency, industries have gone after ISO
- The shipping industry
 - Inherently global
 - Rules of the Road
 - Supply Chain
 - STCW – standardisation

International standard of competency and **capacity** **building** strategy for polytechnics



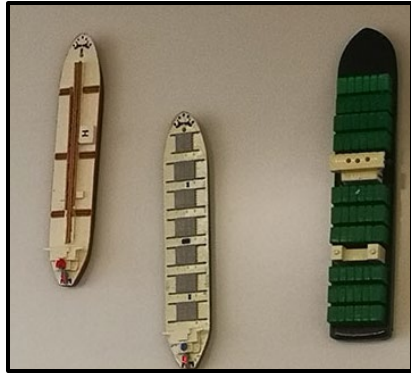
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Global pioneer in the use of simulators for maritime education



Before

Wooden models on a desk



1975

First bridgesimulator:

- Nocturnal, lights only
- 2 ships
- Huge global success



1989

2nd gen bridge simulators:

- Day/Night
- First visuals



2011

3rd gen bridgesimulators:

- Improved visuals



2018

4th gen simulation center:

- 9 full mission bridges
- 54 part-task bridges
- 450+ ship models
- Linked with engine room
- 35,000m data cables



2020

Cloud simulation

- Brought forward through pandemic



1980s

Significant KE activity
(46 weeks p.a.)

1991

Bridge Resource
Management
Course becomes
global standard
(IMO)

2005

Simulation
becomes
Integral part of
maritime
education

2012

Simulation used
to research
impact of fatigue

2015-18

13 EU simulation centers
connected to create huge
artificial sea for 115
officers simultaneously

2022

“e-tutor”
The simulation will feed
back automatically to
student

Use of research supported by the University benefiting teaching & learning



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Advantages of using simulation

Provides an
immersive learning
environment

Allows to make
errors without
consequences

Rewind, replay and
debrief

Powerful peer
learning

Allows exposure to
tricky situations

Standardisation
across cohorts

Objective
assessments

Prepares students
for the real world

Expose students to
future technologies

Allows students to
participate in
research

Case study 1

CONNECT WITH AI DECISION MAKING (WITH ROLLS-ROYCE)



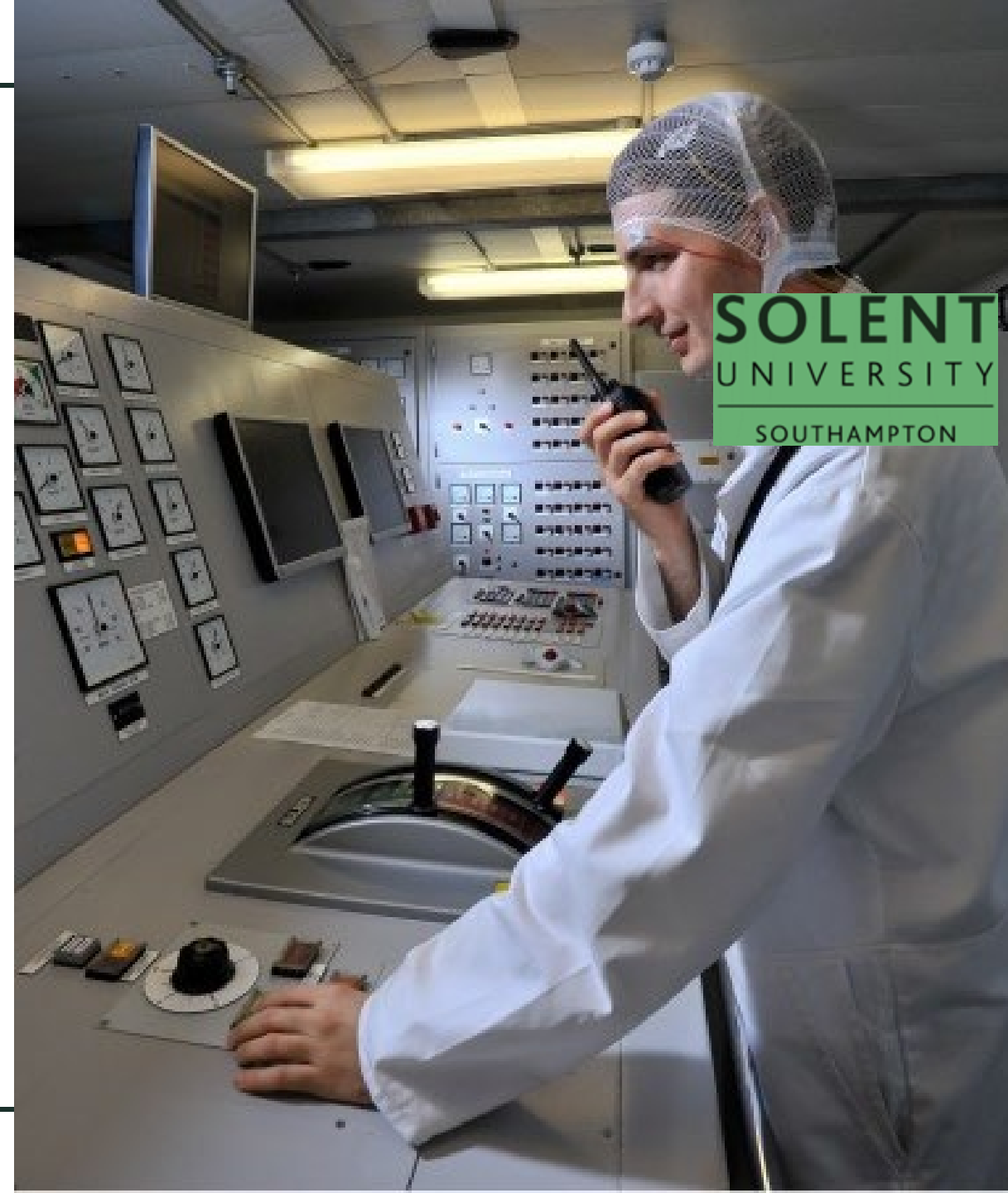
Connected proposed ship collision avoidance algorithms with simulators



Validate and test the safety of the machine execution of the algorithms and human interaction



Students get an early insight into the future transition period at sea where autonomous vessels meet with manned ships



Case study 2

CONNECTING OTHER SIMULATORS (WITH KONGSBERG & WARTSILA)



Connected with 13 simulation centers across Europe to create huge artificial sea



Validate Sea Traffic Management (STM), automatic information exchange between ships/ports and traffic optimisation



Students get to test and influence future ground-breaking technology



Huge environmental impact, **offers energy savings of 20-24%** and will play key role in decarbonising maritime shipping



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Case study 3

CONNECTING WITH REAL WORLD (WITH WARTSILA)



Connected simulators with a remotely operated/ autonomous model to create a test bed for remote operation (in progress)



Establish the skills requirements for remote ship operations and propose the required education on international stage (IMO)



Students will be able to experience key Industry 4.0 advancements



Findings will help to inform and future-proof the student's education



International train the trainers programme

- IMO Model Courses – education
- Educating the educators – a place where sector-based knowledge meets educationalists
- Solent University's partnerships
 - Erasmus+ Capacity Building in Maritime Education (za)
 - IMEC and Solent partnership (ph)
 - ILO-UK Skills for Prosperity project (id)
- Newer form of training to move to digital learning/online delivery



The logo features a large white semi-circle at the top and a dark green semi-circle at the bottom, both centered on a medium green background.

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