

**6TH WORKSHOP ON
TRAINING AND ASSESSMENT**

***The Role of Autonomy in Maritime
Education, Training and Operations***

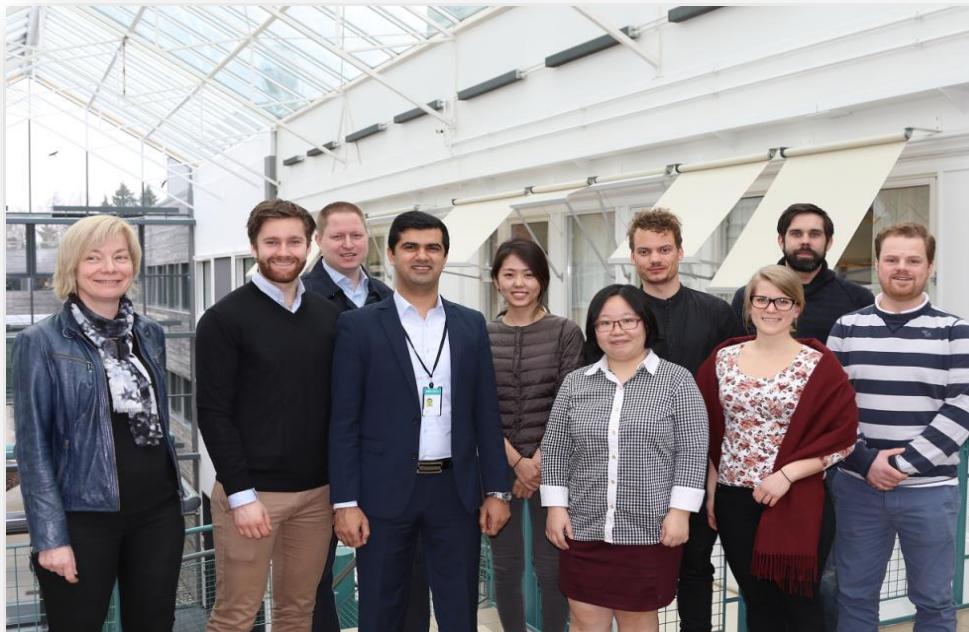
October 23rd & 24th, 2017

Tromsø, Norway



Training and Assessment Research Group (TARG)

"Our aim is to Improve Human Performance within modern complex systems"



www.targlab.com



Performance improvement

Training

Simulator training

Maritime Education

Resource Management

Assessment

Performance indicators

Operator assessment

Assessment method

Safety

Accident analysis

Safety training

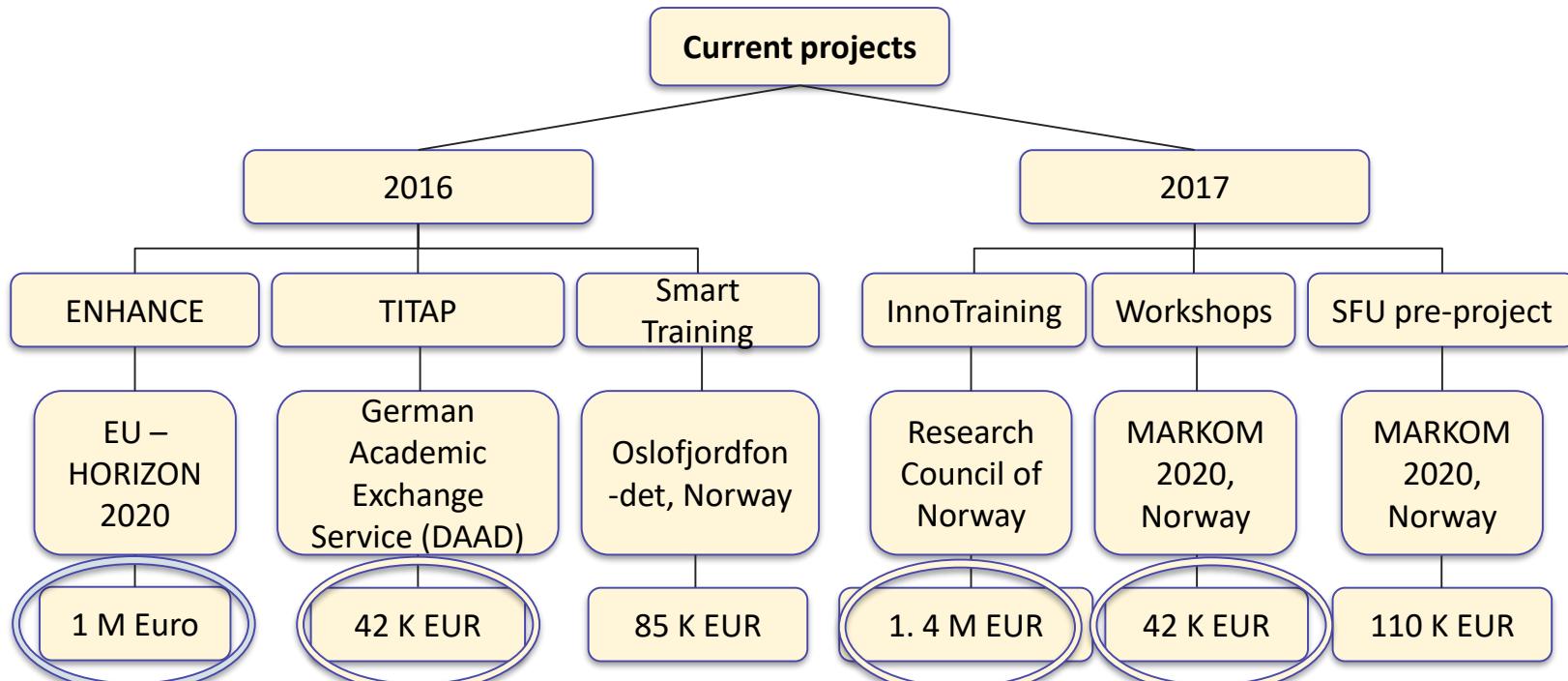
Safety management

Human element

Maritime teamwork

Human error

Human machine interaction





InnoTraining



Institute for Energy Technology



University College
of Southeast Norway



KONGSBERG



POLITECNICO
DI MILANO

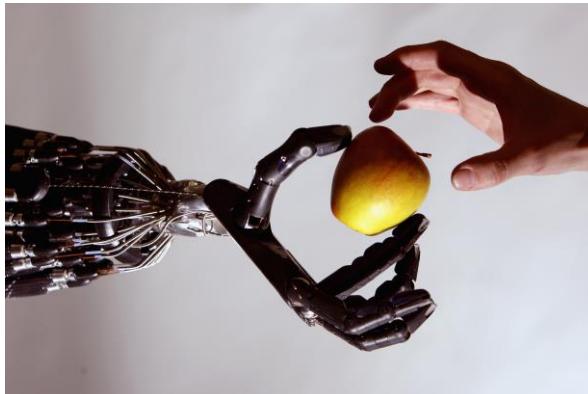


DAAD
Deutscher Akademischer Austausch Dienst
German Academic Exchange Service



MARKOM2020

Let us Embrace and
Optimize the world with
Autonomous systems
Together ☺



Axel Schulte

- Development of a cognitive agent
 - How should it behave?
 - What makes it intelligent?
- Comparing the industry and academic view of autonomy
- The V-model
- Dimensions of autonomy/automation
- Human supervisory control (HSC)
 - Human-machine system
 - Challenges of choice of Best Work Share
 - Cooperation between human and machine is key



Arnfinn Oksavik

- Educating marine officers
- Assessment in maritime education
 - How to measure and optimize education?
- Data collection already conducted
 - Qualitative survey: interviews
- The need for improving competence
- Competence worth having, is worth processing!



Margareta Lutzhof

- Why develop autonomy?
 - Because we can
- Raising the questions of
 - Costs and the possibility of cost savings
 - Higher/lower safety
 - Environmental factors
 - Crew safety suddenly in focus
 - Human factors: Will human error be removed with autonomy?
 - The cost of redundancy
 - How to make risks tangible to the operators



Thomas Porathe

- The Yerkes- Dodson Law
- Process control
- Stress component effects
 - Design solutions
 - Coping with increased workload
- Discussing different maritime accidents, in relation to autonomous solutions
- Can we adapt information systems to cope with needed control levels?
- Workload management



Jørgen Ernstsen

- Assessment
 - Consistency in measurements and assessment
 - Human role within the system
 - Focusing on automated systems
 - Human monitoring
 - Discussing relying on humans' abilities when things go wrong
 - Cognitive task analysis
 - Automated performance assessment



Tareq Ahram

- Complexity of 21st century technology
 - Training and systems complexity
- Crew reduction in autonomy
 - How will the future look?
- Introduction of new technological systems and equipment
- Human error in the maritime industry
 - Humans contribution to accidents
 - Automation has the opportunity to reduce human error (increased control)
- Development of automation through time
- Human performance, training, assessment and decision making



Anette Kluge

- Taskwork, teamwork and organisation
- Key aspects of training
- Needs assessment
 - Human – autonomy
 - Trust and understanding
- Methods and systems
- Predicting human behaviour vs. predicting machine behaviour
- Team task analysis
- Human performance in automotive systems
- Training methods
 - Training in systems is of importance
 - Factors to incorporate into training and evaluation



Karsten Haegg

- Maersk Training today
- Development of systems
- Development of the industry
- What factors are required for further development in this transitioning period?
- How should we act to improve the simulator training?
- Several questions need to be answered in order to develop further, and how Maersk address these



Scott MacKinnon

- How autonomy will affect workload, situation awareness and human error
- Discussion of Reason and Hollnagels work
- Experienced vs. inexperienced people and how they react to situations
- Capability of automation vs. to what extent we trust it
- Technology leads to growing complexity
 - Limited capacity to handle this technology
 - The need for creating solutions that will ease the adaption of this change
- The concept of resiliency
- The differences of generations

