

# Resilience – A must in Maritime Resource Training

Aat Hoorn

Simwave, The Netherlands

<https://simwave.nl>  
[ahorn@simwave.nl](mailto:ahorn@simwave.nl)

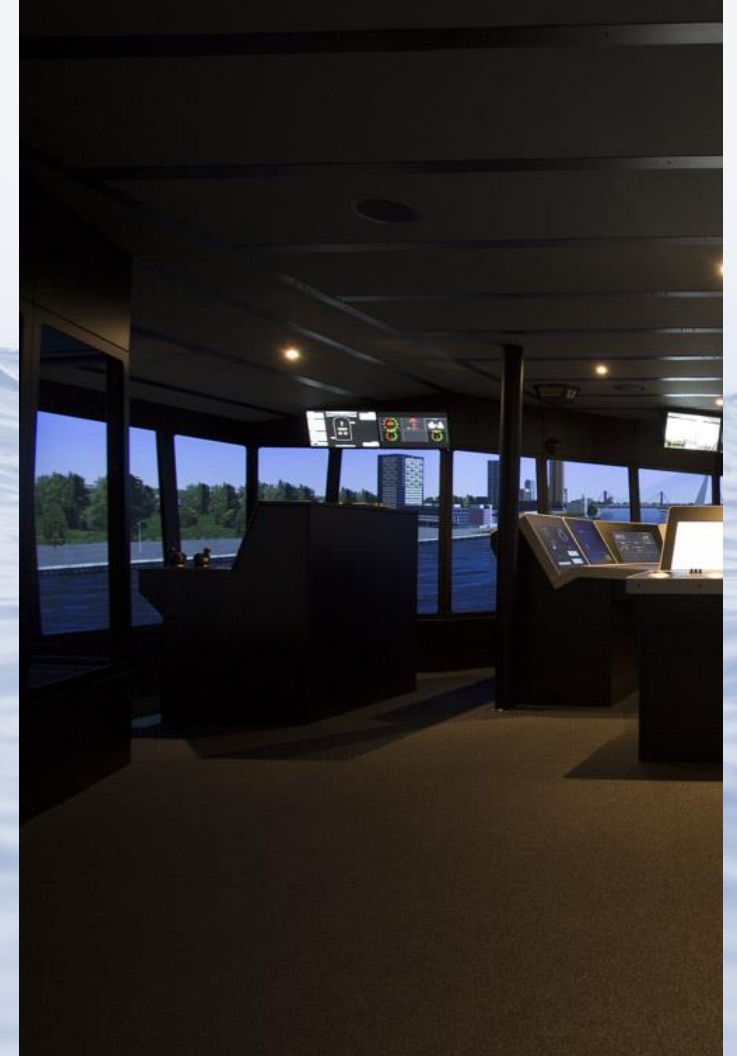
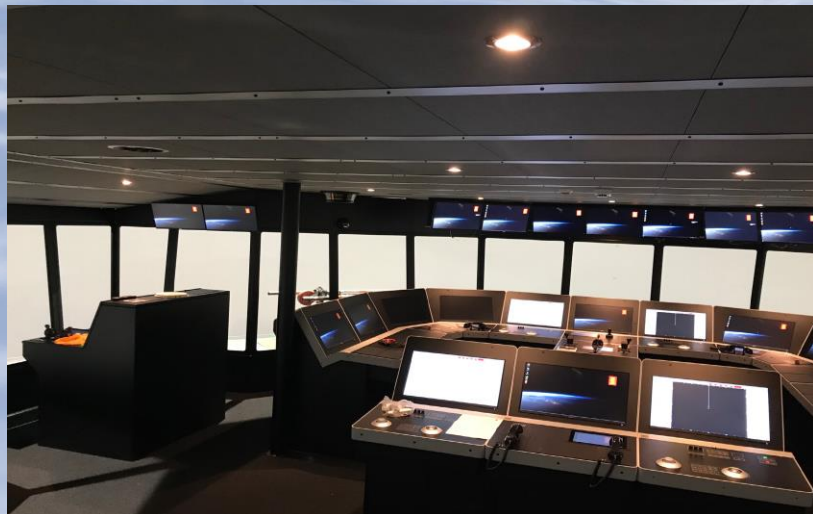


Welcome!

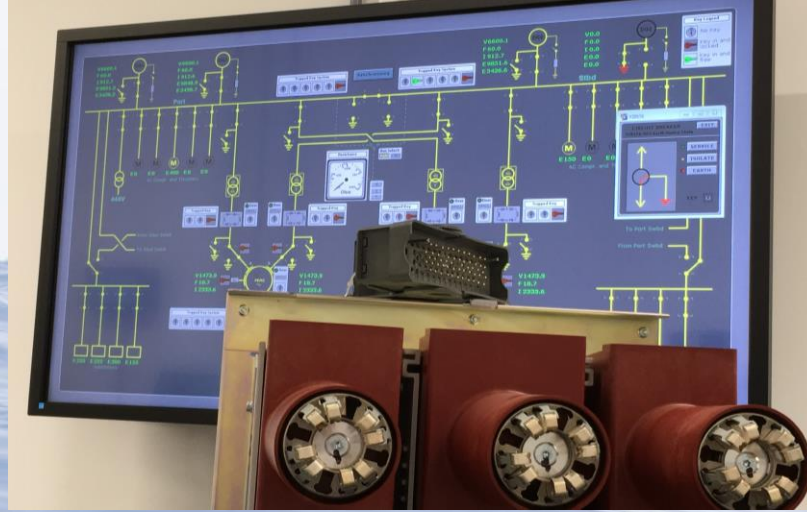


MARITIME

**STARS** | Simulation and  
Training for  
Resilience and Safety



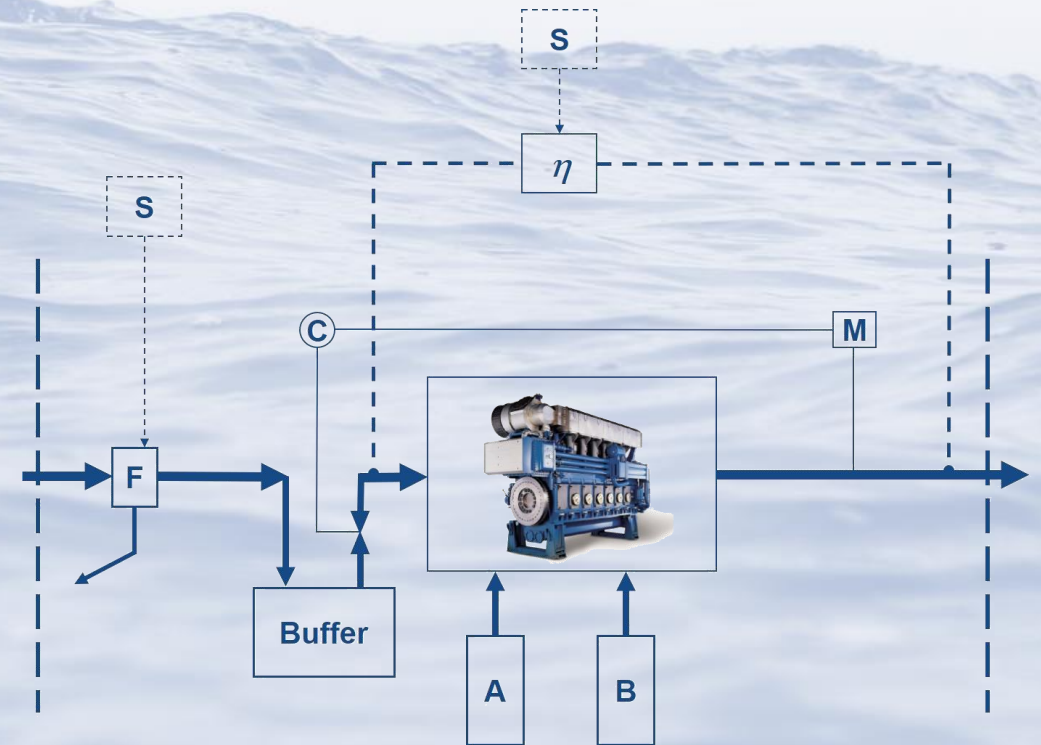








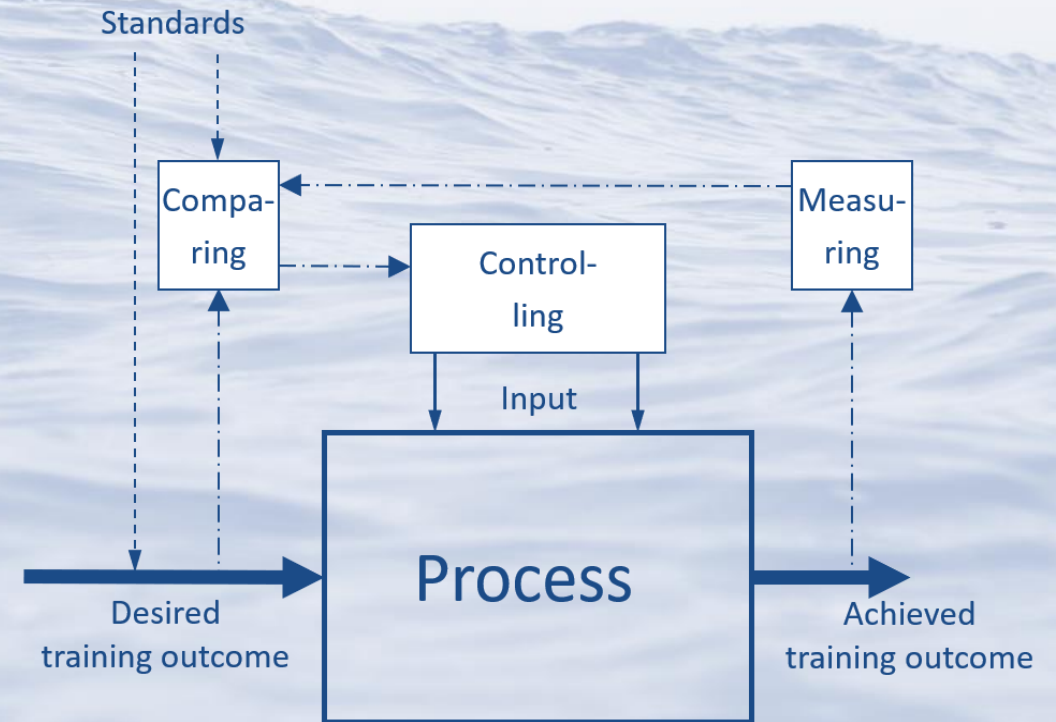
A system is a set of **related components** that work together in a particular environment to perform whatever functions are required to achieve the system's objective (D. H. Meadows).



Source: Donella H. Meadows. (Book about systems thinking: Meadows, D. H. 2009. Thinking in Systems. London: Earthscan.)



A system can also be a **group of related people** that work together in a particular environment to perform whatever functions are required to achieve the system's objective.





Systems thinking



Framework of regulations and policies on various levels,  
that systems in the maritime sector have to comply with.

Level	Description	Reference
Supra	International	<ul style="list-style-type: none"> <li>• IMO</li> <li>• ILO</li> <li>• STCW convention</li> <li>• MARPOL convention</li> <li>• ISM Code</li> </ul>
Macro	System, National	<ul style="list-style-type: none"> <li>• Flag state, Maritime Authority</li> <li>• Class</li> </ul>
Meso	Company	<ul style="list-style-type: none"> <li>• Mission</li> <li>• Overall company standards and procedures</li> <li>• Ship Engine policy and procedures</li> <li>• Working arrangements &amp; agreements</li> </ul>
Micro	Ship	<ul style="list-style-type: none"> <li>• Ship policies and procedures</li> <li>• Working arrangements &amp; agreements</li> <li>• Manufacturer manuals</li> <li>• Relevant logbooks</li> <li>• Check lists</li> </ul>



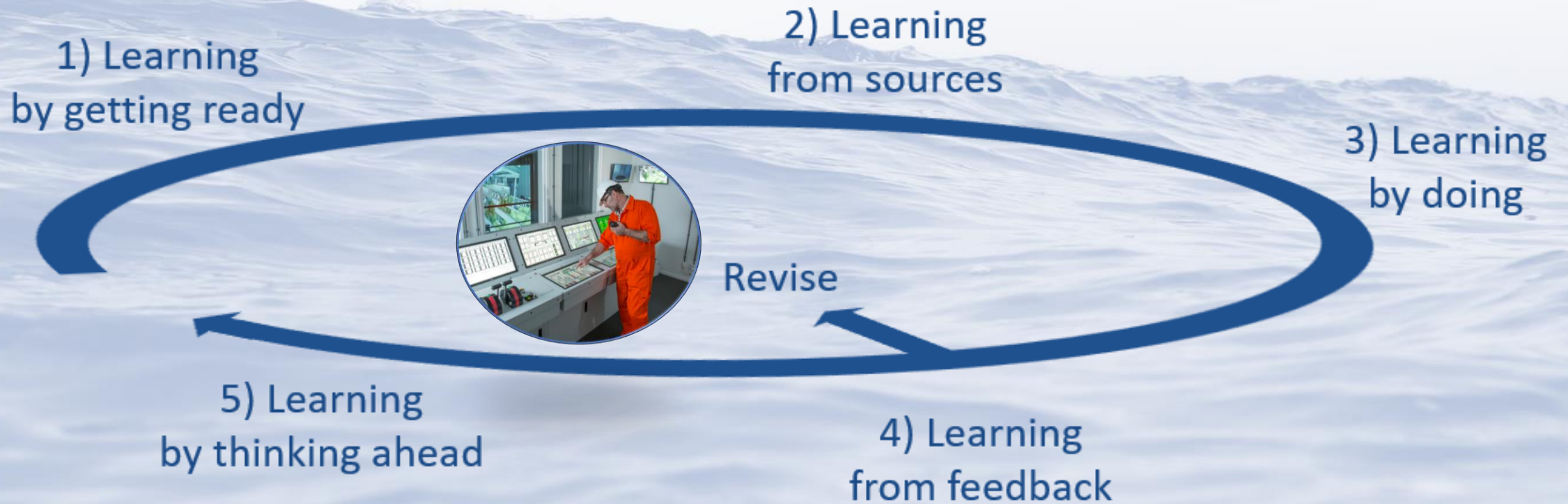
Source: IMO



## Analysis of CHIRP near-miss reports (2003-2015)

- |                                |                         |
|--------------------------------|-------------------------|
| 1. Situation Awareness – 22.5% | 7. Teamwork – 6.8%      |
| 2. Alerting – 15.3%            | 8. Capability – 4.9%    |
| 3. Communication – 13.4%       | 9. Pressure – 1.9%      |
| 4. Complacency – 12.6%         | 10. Distractions – 1.8% |
| 5. Culture – 11.4%             | 11. Fatigue – 1.2%      |
| 6. Local practices – 7.4%      | 12. Fit for duty – 0.8% |

The aim of maritime resource management courses is **inward change**.



Source: Jerome S. Bruner (1915 – 2016), psychologist who introduced the spiral curriculum.



# A system's ability to adjust its functioning:

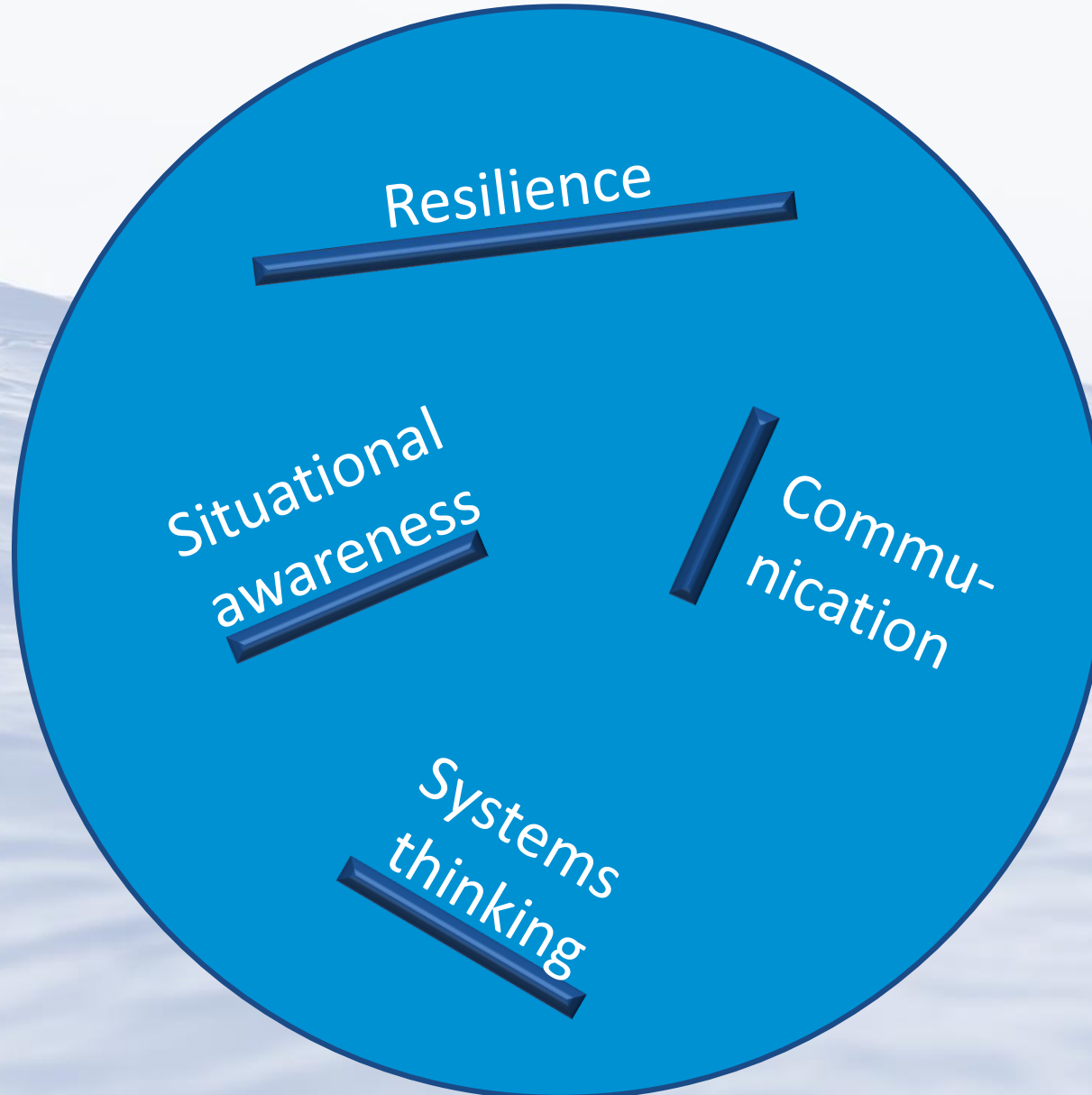
To be resilient, a system needs to be able to **respond** to events, to **monitor** ongoing developments, to **anticipate** future threats and opportunities, and **learn** from past failures and successes alike.

# People, as part of the system ..

should be **adaptive**, meaning to be able to use strategies to:

- detect,
- interpret, or
- respond to variations.





Examples of course topics,  
delivered in a meaningful way





## T<sup>2</sup>EAM model: Individual strategies:

- Recognition.
- Managing uncertainty.
- Anticipation.
- Planning for typical events and contingencies.
- Managing workload.

## T<sup>2</sup>EAM model: team work strategies:

- Team coordination.
- Team communication.
- Error management.
- Change management.



## Effective feedback answers three questions

Where am I going? (the goals) → Feed Up

How am I going? → Feed Back

Where to next? → Feed Forward

## Each feedback question works at four levels:

### Task level

How well tasks are  
understood / performed

### Process level

The main process  
needed to understand/  
perform tasks

### Self-regulation level

Self monitoring,  
directing, and regulating  
of actions

### Self level

Personal evaluations  
and affect (usually  
positive) about the  
learner



**Thank  
you!**