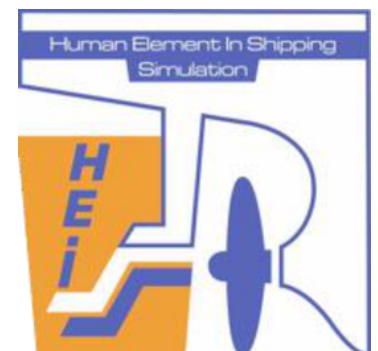


## WHITEPAPER



# DEVELOPMENT AND DESIGN OF THE FIRST MARITIME MANAGEMENT SIMULATION



*Cooperate Learning: From Push to Pull*

## The story behind TOPSIM-HEISS

We as shipping company have developed a structured commitment to learning and development, including an in-house created Leadership & Management programme. The first version was conducted 25 times between 2008 and 2012 mainly in Russia and the Philippines, followed by MCRM courses conducted between 2012 and 2016. Due to the strong need to address company specific values, a new in-house version has since 2013 been designed, and the first batch was successfully conducted in Manila in the summer of 2014.

Learning from the very positive feedback we received, we continued working on our vision for the future and identified the need to be able to simulate real-world leadership and management challenges in much the same way a bridge simulator can afford navigational staff the ability to develop specific technical competencies and to experience possible results of operational decisions.

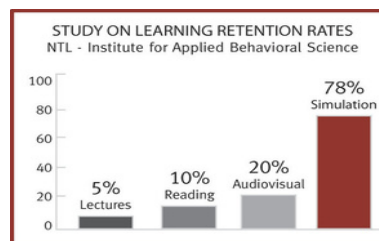
We all know about the power of simulators, nowadays it is common practice in safety critical industries like the military, aviation and also shipping, to simulate possible scenarios in a risk free learning environment. Unfortunately, for leadership development there are no simulators. Role play is the closest thing to this, that's at least what we thought in 2014....

Then we learnt about TOPSIM, a company with over 30 years' experience of creating management simulations, located in the beautiful German town of Tübingen. Their management simulations are in use in more than 300 universities, high schools, other institutions and companies and are built to the general motto:

*"Learning business by doing business"*

After an initial meeting, we came to the conclusion that this approach had a huge potential for our leadership development program. While management simulations have been used at universities for many years, they are also more and more integrated in training portfolios of businesses to enhance business acumen and leadership development.

The effects of management simulations have been impressively pointed out by Sarah Boehle in the research 'Simulations: The Next Generation of E-learning (Fissure, 2015)'.



"The experts generally agree that simulations boost learning retention rates dramatically. An often-cited study conducted by the National Training Laboratory Institute for Applied Behavioral Sciences in Alexandria, Va., found that on average, students retain 5 percent of what they hear in lectures, 10 percent of what they read, and 20 percent of what they see and hear in audiovisual presentations. But add "practice by doing" and "teach others/immediate use" to the mix—two learning techniques that computerized simulations possess in spades—and retention rates shoot up to a jaw-dropping 75 and 80 percent, respectively."

## The first test run with a 'business' management simulation

However, there was no existing maritime management simulation. Consequently, we invited captains, deck officers, marine superintendents, technical superintendents, fleet managers, operators and even crewing agents from various backgrounds and nationalities, and organized a workshop in summer 2015 to do a test run with the simulation idea.



As starting point, the simulation "TOPSIM - People Management" was used. In this simulation, the participants' team-task is to advise a (simulated) newly appointed manager on how she can guide her department through a period of change. Approximately 35 different leadership interventions or communication measures can be simulated, with different time scales, scopes and implications. The virtual manager's goal is to inform and motivate the employees as well as to guide them to a level of self-commitment which enables them to improve their performance and anchor the change sustainably. How do I accompany the employees through the different stages of a change process? How do I manage different personalities? During the simulation it is necessary to ascertain the personal requirements, resentments and relationships of the simulated employees and to incorporate them in the decision making.

After two very interactive and intense days, the test run was finalized with a vision-workshop about the further application of management simulations, and it became very clear that this approach perfectly matched the needs of our environment, enabling us to increase people management skills in times of a continuously changing environment. The workshop ended with collecting initial feedback and input for the maritime management simulation, which clearly needed to be developed.

We realized that, if we were going to make this work we would need to involve the people for whom the program is intended already in the simulation development process, both ship and shore crew. We involved in total around 70 maritime professionals from all parts of our organization, and step-by-step further developed the simulation content, software and course setup. A shared mental model has been developed amongst the involved experts, clarifying for example:

- Which maritime real life challenges need to be integrated?
- What are effective hands-on leadership interventions on board our vessels?
  - How can we combine scientific evidence and hands on experience of best-practices?



## Turning learning into action

Having drafted the maritime themed scenario and interventions based on the initial input, all experts gave constructive detailed feedback and further specified parts of the material based on their professional background and experience. For this process, the Turning Learning Into Action (TLA) methodology has been used, facilitating the leap to effective learning transfer. TLA is an enhanced coaching methodology to improve what a person has learned from a training course/event. In our case being used as a reflection and applied research methodology, it has delivered the foundation of the maritime simulation. Based on the TLA results and using anonymized real crew data, the work continued to finally produce the first maritime management simulation. Keeping the German roots of the software in mind we finally decided to name it HEISS, standing for Human Element In Shipping Simulation, a HOT topic and one part of the STCW Manila amendments!

Although management and leadership competencies are required by the STCW 2010 Manila amendments, contemporary accident analysis published for example in the MAIB Safety Digest 02/2016 still point out failures in situation awareness, alerting others, communication, complacency and safety culture onboard accounting for 75% of the causal factors in maritime incidents. So it was worth the journey!

## Testing and fine-tuning the maritime version

In close cooperation with the HR Manager of Seatrade Reefer Chartering, the HR Manager Seatrade Groningen/Triton and the Crew Resource Manager Seatrade/Triton, participants and location were selected for testing the maritime prototype. The location was the beautiful "Heerlijckyt van Elsmeren", a castle including new built training facilities in the Belgian countryside approximately 45 minute's drive from Antwerp. Part of the location was renamed to "The HEISS Village" for the 3.5-day duration of our seminar.



The composition of the participants was again unique: operations and legal department from Seatrade Reefer Chartering and GreenSea, two captains, two chief engineers, a third officer, two technical superintendents, HR, CRM and the Operations Manager of Geest Line. Five different nationalities, a total of 15 participants, four of which were female. We were amazed by the management and leadership interactions of all participants, the very specific discussions and the rapid internal team development process within a group across all functions, nationalities and locations of our organization.

Now applying the TLA process as structured coaching follow-up, based on self-determined development targets, the observed learning transfer into the respective real-life work environments of the participants was very remarkable. Further incremental improvements were made over several courses conducted in 2016 in the Philippines and Russia, taking cultural differences in the simulation as well as in the course design into account, all making TOPSIM-HEISS the mature learning & development instrument it is today.

## Results of several HEISS-courses delivered



Despite the very diverse makeup of the participants, the internal group development processes were always very positive and all groups directly developed their own “team spirit”.

Although the courses were really intense, almost everybody participated pro-actively throughout, which led to rapid and significant improvements of team and individual learning performance.

Observing the team dynamics and individual behaviours as well as gathering informal and formal feedback, the following criteria were identified as key factors for the very positive results:

- Courses were problem-oriented, not content-oriented;
- Participants took actions and got direct feedback from simulation, other teams and facilitators;
- Good balance between team assignments, simulation, theory and reflection;
- Content of the courses were directly related to ‘real-life’ situations of the participants;
- Structured learning exercises included team-building activities, in which the participants really experienced themselves in their given role and actively demonstrating the Human Element In Shipping;
- “Special Event Feeling” (different learning methods, in-house delivery, ashore management present).

Specifically

- Experiencing a shared mental model operationalizing the company standard,
  - TOPSIM-HEISS as activity itself,
  - Personal development in the area of ‘Communication’, and
  - The behavioral analysis ‘Predictive Index’ conducted for coaching purposes
- have been rated by the participants as most impactful experiences during the HEISS-courses.

To sum up, the instructional design of the learning activity – TOPSIM-HEISS as strong driving force, combined with assignments, theory and structured learning exercises – was the overall decisive success factor.

# Success factor instructional design

Obviously, personal learning and development depends on more than one single activity. In the following, the principles of designing a behaviour-oriented learning activity for adults are pointed out. Since the individual's 'learning aptitude' cannot be influenced by either the participant or the facilitator, participant motivation and the chosen learning methodology are highlighted as important focus areas for the design of adult learning and development activities.

## Part 1: Motivation to learn

Motivation plays a major role in the amount people learn and the transfer into the workplace after a behavior-oriented learning activity. However, it is certainly not about pushing someone to learn something. Motivation for professionals to learn requires us to create an environment, in which professionals are treated as 'community of practice' and not as 'students to be told what to do'.

So what motivates us to learn?



We should bear in mind that professionals don't participate in a learning activity just to acquire new knowledge, which is a major difference compared with children in school or students at university. Companies conduct learning & development programs in order to achieve business improvements, and professionals participate in learning activities to be empowered to further develop crucial behavioural competences to help meet their specific work challenges.

Many learning activities fail due to five factors: no ownership, wrong objectives, obsession with content, obsession with evaluation and because they are focused on acquiring knowledge instead of behavioural change.

In order to avoid these pitfalls, TOPSIM-HEISS offers the possibility to design activities which take the main characteristics of adult learners as defined by Malcom Knowles into account, a tremendously influential expert of the last century in the field of adult education, successfully combining the science of pedagogy and andragogy:

### **1st characteristic: Adults learn self-directed**

Adults want to be involved in the whole learning process, and make choices themselves regarding relevance of the learning objectives.

Facilitating a TOPSIM-HEISS course means exposing participants to a learning process integrating the complexity of leadership and the Human Element, and encouraging each participant to decide for himself in which area he would like to continue further development at the workplace.

## **2<sup>nd</sup> characteristic: Learning activities should be problem-centered instead of content-centered**

Instead of focusing on theoretical models and as much learning content as possible, adult learning needs to focus on the problem at hand. Thereby participants can bring in already gained knowledge and relevant experience, share this with other participants and newly provided knowledge is directly transferred in a practice-oriented context.

Courses applying TOPSIM-HEISS are designed around the dynamic 'real-life' situation of the coverstory, where participants need to approach an on board leadership challenge with a virtual crew through the eyes of the Captain.

## **3<sup>rd</sup> characteristic: Learning activities should be related to participants' work challenges**

If it's clear that the learning activity supports the participants in solving real life challenges and further develops their career-relevant competencies, they are likely to be engaged and inspired to turn learning experiences into actions at work.

TOPSIM-HEISS is designed based on realistic events and situations, and it offers a wide range of crucial maritime leadership and management competencies to be developed, such as communication, intercultural competencies or the creation of shared mental models.

## **4<sup>th</sup> characteristic: Learning activities should allow to gather direct experience**



Simulation is a means to transfer acquired knowledge allowing experimentation with new knowledge in a safe learning environment in order to gain directly first hand experience. However, training regarding the Human Element usually stops with discussing a case and 'I would do...' statements. This allows for sharing best-practices and having value-adding discussions, but it doesn't provide participants with a direct learning experience and peer-feedback enhancing the learning transfer into real life.

TOPSIM-HEISS does. When the participants enact leadership interventions on behalf of the virtual HEISS-Captain, the virtual crew members' reactions are simulated and become tangible for the participants.

To say it with the words of one participant: "You can even do wrong interventions, just to see how the reaction on the people will be. You would never do that in real life!"

## Part 2: Action-oriented learning including 'gamification' elements

Designing the course around TOPSIM-HEISS taking the characteristics of adult learners into account, participants take actions and get direct feedback from simulation, other participants and facilitators. By balancing assignments, simulation, theory and reflection, participants experience a highly interactive and participant-driven course instead of a teacher driven "class-room-seminar".

Together with our partners from TOPSIM we have pointed out the benefits of action-oriented learning applying a management simulation, and herewith share the main-principles with you.

### **THE POTENTIAL OF ACTION-ORIENTED LEARNING**

Action-oriented learning can be seen as a highly interactive learning environment, where participants apply and combine practical work tools directly in the learning environment. By facilitating behavioural changes, action-oriented learning fosters more sustainable and more effective learning outcomes in the targeted areas of behavioural change as it turns learning from 'push to pull', so participants want to learn and develop because they find it meaningful and not just because the company requires them to adapt their behavior.

Many companies are using action-oriented elements especially in the area of on-the-job training in order to achieve more impactful learning experiences for employees as well as to increase their level of satisfaction, commitment and productivity - during the learning process and beyond. The success of action-oriented learning is based on the natural interest humans have in solving challenging tasks, and to do that in a competitive environment.

Hereby, a user-friendly and consistent implementation of key action-oriented elements is one of the most important factors of success. Due to its positive behavioural impacts, action-oriented learning has an enormous potential to especially enrich corporate culture oriented development programs.

### **TOPSIM-HEISS AS AN ENABLER FOR ACTION-ORIENTED LEARNING**

A real-life, complex on board scenario with virtual crew provides a risk-free learning environment in which leadership challenges can be overcome. HEISS makes sure that complex interdependencies between topics like culture, personality, team composition, team development and leadership style become transparent during the learning process. Predefined rules determine which decisions a team of participants can make and how those will affect the virtual HEISS-crew based on their current situation.

The level of difficulty can be adjusted according to the participants individual needs. The real power of this learning & development concept is that behaviours are directly tackled, and knowledge is applied immediately in a memorable and emotion-triggering situation.

## KEY ELEMENTS OF ACTION-ORIENTED LEARNING AND THEIR IMPLEMENTATION IN TOPSIM- HEISS

The powerful effects of action-oriented learning can be summed up using five different element categories. All of these independently provide an “intrinsic drive” for the learning individual which results in the voluntary desire to improve the own performance. Therefore, the participants will repeat the action-oriented learning process over and over again.



“Each element by itself enriches the learning process and fascinates the participant - it creates attention and motivation to continue learning.”

Action-oriented elements contain an immense potential for improving the learning process. Indeed, the listed elements all have a positive effect on the motivation, endurance and passion of the participants and thus on the sustainability of learning. Besides the focus of the aimed learning goals, elements of action-orientation are fostering enthusiasm, communication and collaboration within the learning process. By that, a great variety of training needs can be satisfied. Furthermore, not only the traditional theoretical learning objectives are promoted, but also hands-on activities and best-practice sharing processes will be successfully supported and achieved.

The experience of TOPSIM, as a supplier with 30 years' experience in management simulation development and training, with over one million participants, shows that action-oriented elements combine well in management simulations to guarantee a successful and longer lasting learning.

## Part 2: Action-oriented learning including 'gamification' elements

Designing the course around TOPSIM-HEISS taking the characteristics of adult learners into account, participants take actions and get direct feedback from simulation, other participants and facilitators. By balancing assignments, simulation, theory and reflection, participants experience a highly interactive and participant-driven course instead of a teacher driven "class-room-seminar".

Together with our partners from TOPSIM we have pointed out the benefits of action-oriented learning applying a management simulation, and herewith share the main-principles with you.

### **THE POTENTIAL OF ACTION-ORIENTED LEARNING**

Action-oriented learning can be seen as a highly interactive learning environment, where participants apply and combine practical work tools directly in the learning environment. By facilitating behavioural changes, action-oriented learning fosters more sustainable and more effective learning outcomes in the targeted areas of behavioural change as it turns learning from 'push to pull', so participants want to learn and develop because they find it meaningful and not just because the company requires them to adapt their behavior.

Many companies are using action-oriented elements especially in the area of on-the-job training in order to achieve more impactful learning experiences for employees as well as to increase their level of satisfaction, commitment and productivity - during the learning process and beyond. The success of action-oriented learning is based on the natural interest humans have in solving challenging tasks, and to do that in a competitive environment.

Hereby, a user-friendly and consistent implementation of key action-oriented elements is one of the most important factors of success. Due to its positive behavioural impacts, action-oriented learning has an enormous potential to especially enrich corporate culture oriented development programs.

### **TOPSIM-HEISS AS AN ENABLER FOR ACTION-ORIENTED LEARNING**

A real-life, complex on board scenario with virtual crew provides a risk-free learning environment in which leadership challenges can be overcome. HEISS makes sure that complex interdependencies between topics like culture, personality, team composition, team development and leadership style become transparent during the learning process. Predefined rules determine which decisions a team of participants can make and how those will affect the virtual HEISS-crew based on their current situation.

The level of difficulty can be adjusted according to the participants individual needs. The real power of this learning & development concept is that behaviours are directly tackled, and knowledge is applied immediately in a memorable and emotion-triggering situation.

## How do management simulations tackle the elements and sub-elements of action-orientation?

### THRILLING CHALLENGE



### NARRATIVE STORY

A frame story is given but participants continue developing it.

### VARIOUS CHALLENGES

Through increasing complexity new problems have to be solved each decision phase, which is triggering motivation.



### CURIOSITY TRIGGER

By receiving just enough information to understand the circumstances, participants have to discover the key clues themselves.

### INSPIRING SUB-TASKS



### COMPLEXITY OF TASKS

Learners experience on board leadership challenges, and therefore need to take personality, group dynamics, informal networks and culture into account.

### DIVISIBILITY OF REQUIREMENTS

Within groups, different roles with various responsibilities can be assigned.



### PROACTIVE RISK MANAGEMENT

While acting in the simulation, the impact of behavior on operational costs. in terms of pro-active risk management can be pointed out using multiple scenarios of the simulation.

### PRECISE DECISION PATHWAYS



### PURPOSE

By explaining the cause-and-effect relationships, learners understand the scope of their decisions.

### BRANCHING CHOICES

Despite precise decision pathways, participants have to develop their own strategy.



### LIMITED RESSOURCES

By setting time limits, participants learn to manage their tasks with resource efficiency and reach decisions under pressure.

### CONTINUOUS SUCCESS TRACKING



**MULTIPLE FEEDBACKS**  
Due to multiple feedback rounds, participants understand the results of their actions and learning effects are guaranteed.



### DIFFERENT FEEDBACK CRITERIA

Through multidimensional target systems learners are made aware of different viewing perspectives of management success.

### COMPETITION

Quantitative and qualitative feedback on performance show participants their current status compared to other participants, motivating them to improve their results.



### COLLABORATION SYNERGIES



**TEAM DYNAMICS**  
Due to small groups, effective team dynamics can be created, thereby really experience the "Human Element" themselves.



### DIVERSIFICATION

Through the cooperation of interdisciplinary teams exploratory solutions are promoted and risky decisions reduced.

### SHARING KNOWLEDGE

While acting in the simulation, participants get the chance to contribute positively to the team performance by bringing in their personal strengths.



## Conclusion

Katrijn Dehaen, HR officer and payroll specialist at Seatrade Reefer Chartering, provided the perfect summary some weeks after participating herself in a TOPSIM-HEISS course, together with mainly seagoing staff:



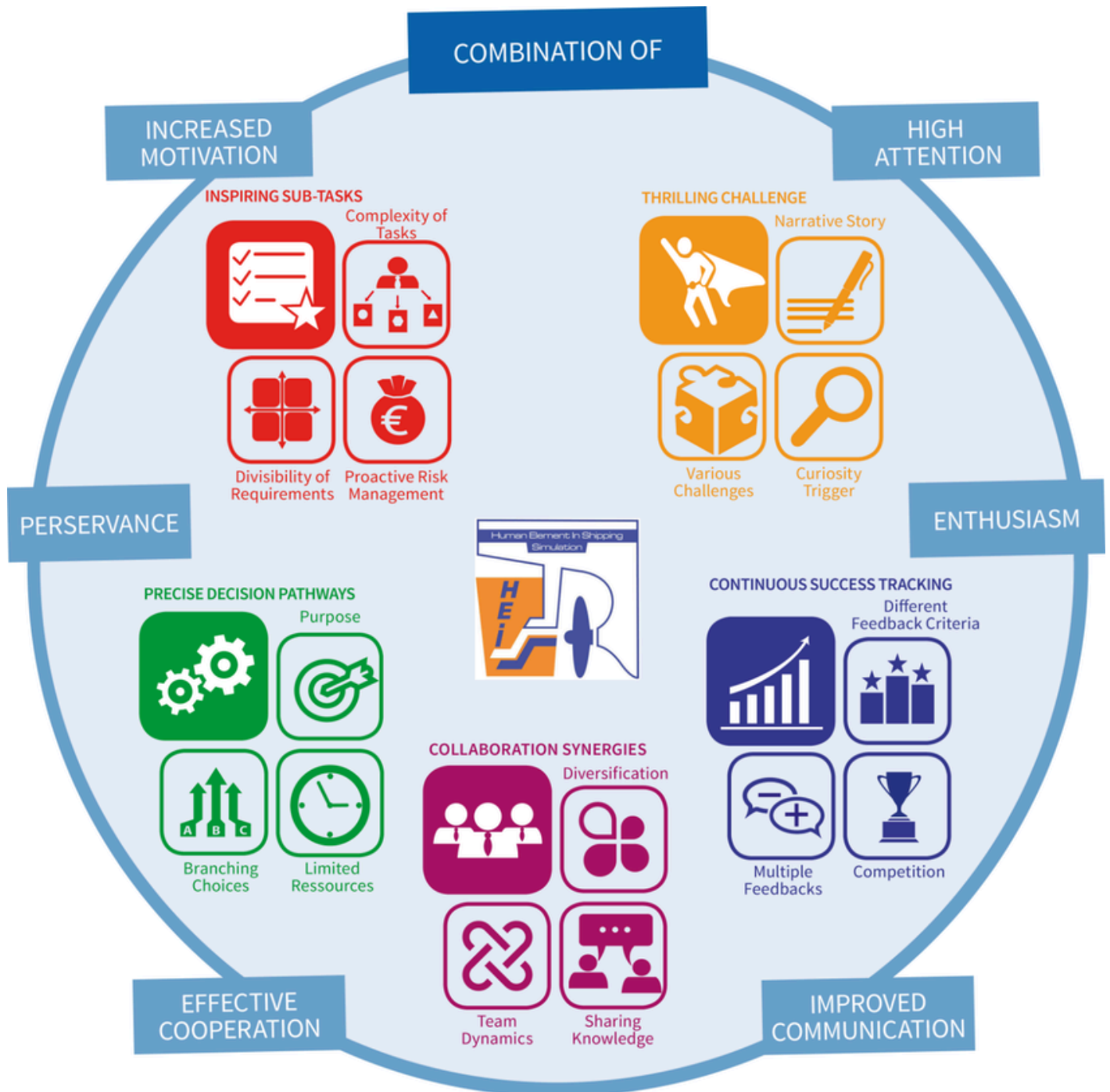
End of August 2016 I was signed up to participate at the MLDP 2.0- HEISS in Manila. In my 23 year career with Seatrade this was the most impressive training I ever participated in, and I did quite a few.

HEISS is about group dynamics and personal character & attitude within this group, weighed up against a background of culture and company standards, safety and behaviour under pressure.

From day 1 the facilitators slowly immerse you in their program, lifting you up to a higher level through assignments, games, debates, theory and real-life (on board) simulations. In the last stage of the training you transform from an individual to a team member, disregarding rank, cultural background, gender or shore-onboard duty, eager to learn, share expertise, take responsibilities and perform.

I was lucky to be able to participate at the HEISS maritime management simulation and I am convinced that it is of great added value for all; both office personnel and captain & crew; in order to communicate & understand and hence guarantee safety and maximum output of our vessels.

# TOPSIM-HEISS: Approved platform for action-oriented learning



## About the authors:



Roman Heil is Portfolio Manager at Atria Learning and Development, responsible for organizational and personal development initiatives. As TOPSIM-HEISS project manager, he guided the overall development process, integrated the feedback given by maritime experts and designed/delivered different course- setups around the simulation, for the Seatrade Shipmanagement Group as well as for courses provided by a growing network of partners.



Dr. Max Monauni is Corporate Business Consultant at TATA Interactive Systems and an expert for strategy development, gamified learning and tailor-made management trainings. He conducted more than 100 client-specific TOPSIM business simulation seminars and strategy conferences globally.



Marie Guillet is supporting international and innovation activities at Tata Interactive Systems and has a strong expertise in gamification of learning as well as cutting edge learning technologies.



Angela Feigl is Senior Consultant Corporate Learning & International Partnerships at TATA Interactive Systems, and a learning design specialist and expert in high impact organizational development initiatives with a long experience in Europe and overseas, working, amongst others, for institutions such as HEC Paris Executive Education and Harvard Business Publishing.



Dominik Maier is Principal at the German office of TATA Interactive Systems and Head of Corporate Business. He delivered over 250 TOPSIM business-simulation impact workshops, enabling executives and leaders from global organizations in multiple industries to implement high impact strategy changes and initiatives.

If you want to learn more about how TOPSIM-HEISS could add value to your organizational learning and development strategy, please visit [www.atria-learning.com](http://www.atria-learning.com)

## List of References

Abrell et al. (2011). Evaluation of a long-term transformational leadership development program. *Zeitschrift für Personalforschung*, [e-journal] 25 (3). pp. 205-224. Available through: Hanze University Mediatheek website <<http://hanze.worldcat.org>> [18-02-2016]

Barnett et al., (2003). A Research Agenda in Maritime Crew Resource Management [pdf]. Available at:< <http://ssudl.solent.ac.uk/433/1/Embry-20Riddle-202003.pdf>> [23-02-2016]

Bhattacharya, Y., (2015). Employee engagement in the shipping industry: a study of engagement among Indian officers. *WMU Maritime Affairs*, [e-journal] 9. pp. 267-292. Available through: Hanze University Mediatheek website <<http://hanze.worldcat.org>> [25-02-2016]

Bhawuk, D.S., (1998). The Role of Culture Theory in Cross-cultural Training. *Journal of Cross-Cultural Psychology*, [e-journal] 29. pp. 630–655. Available at: <<http://jcc.sagepub.com/content/29/5/630.full.pdf+html> > [19-02-2016]

Bossche et al., (2010). Team Learning: Building Shared Mental Models. Available through: Hanze University Mediatheek website <<http://hanze.worldcat.org>> [05-06-2015]

Collins, D., and Holton, E., (2004). The Effectiveness of Managerial Leadership Development Programs: A Meta-Analysis of Studies from 1982 to 2001. *Human Resource Development Quarterly*, [e-journal] 15(2). Available through: Hanze University Mediatheek website <<http://hanze.worldcat.org>> [22-02-2016]

Ellington J. and Dierdorff, E., (2014). Individual Learning in Team Training: Self-Regulation and Team Context Effects. *Small Group Research*, [e-journal] 45(1). pp. 37-67. Available through: Hanze University Mediatheek website <<http://hanze.worldcat.org>> [19-02-2016]

Gentry et al. (2014). The Needs of Participants in Leadership Development Programs: A Qualitative and Quantitative Cross-Country Investigation. *Journal of Leadership & Organizational Studies*, [e-journal] 21(1). pp. 83-101. Available through: Hanze University Mediatheek website <<http://hanze.worldcat.org>> [22-02-2016]

Hjelseth et al., (2015). Design and computer simulated user scenarios: Exploring real-time 3D game engines and simulation in the maritime sector. *International Journal of Design*, [e-journal] 9(3). pp. 63-75. Available through: Hanze University Mediatheek website <<http://hanze.worldcat.org>> [23-02-2016]

Johnson et al., (2007). Measuring Sharedness of Team-Related Knowledge: Design and Validation of a Shared Mental Model Instrument. *Human Resource Development International*, [e-journal] 10(4). pp. 437-454. Available through: Hanze University Mediatheek website <<http://hanze.worldcat.org>> [05-06-2015]

Leimbach, M., (2010). Learning Transfer Model: A Research-Driven Approach to Enhancing Learning Effectiveness. *Industrial and Commercial Training*, [e-journal] 42(2). Available through: Hanze University Mediatheek website <<http://hanze.worldcat.org>> [17-02-2016]

Lenartowicz et al., (2014). The application of learning theories to improve cross-cultural training programs in MNC. *The International Journal of Human Resource Management*, [e-journal] 25(12). pp. 1697 – 1719. Available through: Hanze University Mediatheek website <<http://hanze.worldcat.org>> [19-02-2016]

Kolb, D.A., (1984). *Experiential Learning*. New Jersey: Prentice Hall

Nonaka, I., (1994). A Dynamic Theory of Organizational Knowledge Creation. *Organization Science*, [e-journal] 5. Pp. 14-28. Available through: Hanze University Mediatheek website <<http://hanze.worldcat.org>> [19-03-2016]

O'Connor, P., (2010). Assessing the Effectiveness of Bridge Resource Management Training. *The International Journal of Aviation Psychology*, [e-journal] 21(4). pp. 357-374. Available through: Hanze University Mediatheek website <<http://hanze.worldcat.org>> [02-03-2016]

Röttger et al., (2015). Effects of a Classroom-Based Bridge Resource Management Training on Knowledge, Attitudes, Behavior and Performance of Junior Naval Officers. *German Naval Medical Institute*, [e-journal]. Available through: Hanze University Mediatheek website <<http://hanze.worldcat.org>> [23-02-2016]

Sadler-Smith, E., (2006). *Learning and Development for Managers: Perspectives from Research and Practice*. Cornwall: Blackwell Publishing Ltd

Salas et al., (2006). Does CRM training work? An update, extension and some critical needs. *Human Factors*, [e-journal] 14. pp. 392–412. Available at: <<http://www2.anac.gov.br/arquivos/pdf/doesCrewResourceManagement.pdf>> [23-02-2015]

Senge, P., (1990). *The 5<sup>th</sup> Discipline: The art & practice of the learning organization*, USA: Random House Inc.

Sirianni P. and Frey B., (2001). Changing a culture: evaluation of a leadership development program at Mellon Financial Services. *International Journal of Training and Development*, [e-journal] 5(4). pp. 392–412. Available through: Hanze University Mediatheek website <<http://hanze.worldcat.org>> [19-02-2016]

Weber, E., (2014). *Turning Learning into Action: A proven methodology for effective transfer of learning*. Croydon: Kogan Page

Wyss-Flamm, E.D., (2002). *Conversational Learning and Psychological Safety in Multicultural Teams*. Cleveland: Case Western Reserve University