

K-Force training visit at Lund University – April 23 - May 05 2018 and June 04-15 2018

A training visit was arranged at Lund University as part of the Special Mobility Strand (SMS) program of the K-FORCE project for staff members. The visit took place in the period April 23 - May 05 2018 (1 staff member) and 04-15th of June 2018 (3 staff members). The goal of the visit aimed at providing the trainees involved in the mobility with international experience on the education system and teaching methods at LU. The mobility was split among two divisions at Lund University, the division of risk management and societal safety (trainee 1 and 2) and the division of fire safety engineering (trainee 3 and 4).

The trainees and institutions involved in this mobility were:

1. Elona Pojani from University of Tirana, Albania (trainee 1)
2. Mirjana Laban from University of Novi Sad, Serbia (trainee 2)
3. Slobodan Supic from University of Novi Sad, Serbia (trainee 3)
4. Artemis Hasa from Epoka University, Albania (trainee 4)

The training visit were arranged by the K-force WP2 responsible Enrico Ronchi for the Division of Fire Safety Engineering (trainee 3 and 4). The trainees 1 and 2 were also welcomed by Dr Henrik Hassel from the Division of Risk management and societal. An introduction was given to the trainees to explain general information about the divisions, and the explanation on the formalities required for getting registered as visitors at the department, get access card to the office, internet access, etc. Following this introduction, the trainees were guided to take the pictures needed for their guest access card to the campus. Trainees had different training programmes, which related to their current and future interests and research and teaching activities.

The content of the training was then presented and discussed with the trainees. A summary of the training programmes for each trainees is presented here.

- **Division of Risk Management and Societal Safety (trainee 1):**

Contingency planning and simulation exercise

Contingency planning is a key part of the course Preparedness and planning given by the Division of risk management and societal safety. In the course module both teachers at Lund University and external guest lecturer from the World Food Programme. First, a contingency plan is developed through group work where literature and lectures are used as a source of inspiration. The developed contingency plan is then presented and critically discussed. Based on the developed contingency plan a simulation exercise is then initiated where the plan is tested, evaluated and discussed. Again, the setup of the simulation exercise is based on literature and lectures

Uncertainty and sensitivity analysis, and decision making

The course Risk Assessment given by the Division of risk management and societal safety includes two course modules on Uncertainty and sensitivity analysis and risk evaluation, respectively. The module of Uncertainty and sensitivity analysis introduces the key concepts of uncertainty, types of uncertainties and tools to treat and propagate uncertainties. Key is the understanding of how presentation of uncertainties adds to the understanding of a risk problem and how it may affect decisions. The module on Risk evaluation concerns how risk assessments are used as inputs to decision making and how tools for decision making can be used for risk related problems. Especially, the use of cost-benefit analysis is introduced and the key features, techniques and challenges of using cost-benefit analyses are discussed. Finally, in a seminar the topic of Sustainable uncertainty management is discussed.

Other activities

In addition to the above, the trainee was involved in several meetings with lecturers to discuss and exchange ideas of both research and teaching.

- **Division of Risk Management and Societal Safety (trainee 2):**

The ethics of safety

Content of the training:

In this learning laboratory we do not hesitate to ask the really tricky questions of how organizations do (or could, or perhaps even should) respond to adverse and often traumatic events. In a highly interactive manner learning lab participants from a great variety of domains get to delve into discussions and exchange of experiences regarding how to stimulate honest disclosure, what it means to treat someone justly, whether the recent emphasis on the need for organizational resilience is nothing but an innovative way to increase risk exposure and how we can care for the sharp-end staff who often are the most exposed for high-risk processes in our organisations. Two central concepts in this learning lab will be justice and second victimhood.

Organizational justice — You want people to tell you about safety and other problems they have in their work, about incidents that happen, certainly if there's other way for you to find out. But for people to do that, they have to feel that their reports will be treated fairly, that there's no negative or disproportionate consequences if they report. The dilemma, of course, is that there'll be cases where you feel you have to demand accountability, even if it may dampen people's willingness to share similar stories. This is where a just culture comes in: to balance accountability and learning. And to change the way we think about accountability so it becomes compatible with learning. Now you're wrong if you think you can have a just culture by saying: we'll treat your reporting fairly unless there's gross negligence, willful violations, or other bad behavior. This still leaves people in uncertainty, because we don't have clear definitions for any of these categories. Whether something is seen as negligence—which, by the way, is a legal term, not a human factors one—depends on standards of good practice, definitions of skill, prudence, reasonable care, foreseeability of harm. And somebody needs to interpret all that. These are all judgment calls that somebody will have to make. So the real question is: who makes that judgment? Whom do you give the power to make that judgment, to draw the line?

Second victim— What if you are doing your job and you injure or kill someone? Chances are, you will become the second victim of your incident or accident. In some sense, the second victim is like surviving first victims: there can be trauma, shock, loss, anger, possibly injury. But then there is guilt. The guilt that comes from violating duty, violating trust, violating responsibility, and for causing the thing that should have been prevented. And there is blame - self-blame and blame by others. This can turn into lawsuits, and increasingly into criminal prosecution. Together, these after-effects form a potent destructive package, which many individuals and organizations are ill-equipped to handle. Some second victims decide life is no longer worth living, and commit suicide. What are the psychological and emotional experiences of the second victim? What can an organization do to help? What are the links between the resilience of the organization's resilience (in how it acknowledges vulnerabilities and errors, and tries to learn from them) and that of the second victim?

Division of Fire safety Engineering (trainee 3 and 4):

- Part 1: Key concepts of human behaviour in fire: The trainees are given a selection of readings on selected subjects in the area of fire evacuation safety and this is followed by a focus group discussion with their supervisor on their content. Trainees are then asked to jointly prepare teaching material to be reviewed and discussed with their supervisor.
- Part 2: Evacuation simulations, the example of route choice. This includes training on the use of evacuation models. This included a computer tutorial given by the supervisor Dr Enrico Ronchi, followed by a discussion with the trainees. Trainees are then asked to prepare new tutorials on specific areas and to discuss this along with their supervisor.

Part 1 – Key concepts of human behaviour in fire

1) Mass Psychology on disasters / Panic misconception

Readings for the trainees are the following:

Fahy, R. F., Proulx, G., & Aiman, L. (2012). Panic or not in fire: Clarifying the misconception. *Fire and Materials*, 36(5–6), 328–338. <https://doi.org/10.1002/fam.1083>

Sime, J. D. (1980). The concept of panic. *Fires and Human Behaviour*, 1, 5.

Drury, J., & Cocking, C. (2007). The mass psychology of disasters and emergency evacuations: A research report and implications for practice. University of Sussex, UK.

2) Cognitive biases in fire evacuation / behavioural statements

Readings for the trainees are the following:

Kinsey, M. J., Gwynne, S. M. V., Kuligowski, E. D., & Kinatader, M. (2018). Cognitive Biases Within Decision Making During Fire Evacuations. *Fire Technology*.

<https://doi.org/10.1007/s10694-018-0708-0>

Kuligowski, E. D., Gwynne, S. M., Kinsey, M. J., & Hulse, L. (2017). Guidance for the model user on representing human behavior in egress models. *Fire Technology*, 53(2), 649–672.

3) Models for toxicity assessment from smoke products. Fractional effective Dose model, Irritants from smoke

Reading for the trainees is the following:

Purser, D. A. (2008). Assessment of Hazards to Occupants from smoke, toxic gases and heat. In *SFPE Handbook of Fire Protection Engineering (4th Edition)* (pp. 2-96-2–193).

Quincy, MA (USA): Di Nenno P. J.

Part 2 – Evacuation simulations, the example of route choice

Route choice in evacuation models

Read material relevant to route choice in evacuation modelling

Bladström, K. (2017). Route choice modelling in fire evacuation simulators. *LUTVDG/TVBB*.

- Run general tutorial on evacuation modelling (instructions given)
- Run tests on route choice in the computer labs with the evacuation model Pathfinder (given by supervisor)
- Develop your own case study. Set up a labyrinth-type scenario in a CAD environment and observe pathfinding. Record and discuss results with supervisor. From this example, you can understand how to design computer lab tutorial with the scope of teaching the assumptions and limitations of evacuation models.