Project: Improving Academic and Professional Education Capacity in Serbia in the area of Safety & Security (ImprESS)

IMPRESS - WP 3 (incl. elements of WP6)
Setting up the education infrastructure:
Teaching materials, eLearning platform and the implementation of the training

Courses provided by Steinbeis:
R01 INTRO INTRODUCTION TO RISK MANAGEMENT
R06 HSSE HEALTH, SAFETY, SECURITY AND ENVIRONMENTAL (HSSE) RISKS
R19 BC&M BUSINESS COMMUNICATION & MANAGEMENT OF INTERCULTURAL DIFFERENCES

Author(s):	Mai Thi Nguyen, L. Ramalho, S. Macika, M. Jelić, V. Pfau, S. Djurović, A. Jovanović			
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Executive Summary

This report contains the description of the main outputs/results obtained in WP3 of the ImprESS project (WP3 - Setting up the infrastructure for applying the model report, ImprESS project - Improving Academic and Professional Education Capacity in Serbia in the area of Safety & Security). The focus of this report is on tasks:

Task 3.1.   Teaching materials development
Task 3.2.   E-learning modules/materials development
Task 3.3.   Training of the Serbian lecturers on Program countries HEI

In addition, the report contains elements of WP6 - Quality Plan, as these were essential for the practical implementation on the system developed by Steinbeis and FSS.

Due to the difficulties experienced during the execution of the project, the main activities were done by the University of Belgrade (Faculty for Security Studies, Belgrade, Serbia (hereinafter referred to as "FSS") and Steinbeis Transfer Institute Advanced Risk Technologies, Stuttgart, Germany, together with Steinbeis University, Germany (hereinafter referred to as "Steinbeis"). The above collaboration was covered by:

1. Interuniversity Agreement between FSS and Steinbeis ①
2. Annex to the above agreement covering use of the materials

For each of the courses the report covers:

1. <u>Course syllabus</u>
2. <u>Course materials</u> (over **300 pages of text** in the lecture notes and **over 650 slides**), consisting of ②
   a. Handouts (lecturer's notes)
   b. Slides
   c. Sample exam questions
   d. Marking scheme
   e. Optionally (for internal use only): video-records
3. <u>Courses performed</u> ③
   a. 1 course in the form of direct lecturing at Steinbeis Premises in Stuttgart, Germany
   b. 2 courses in the form of e-lectures performed online
   c. Participants' lists
4. <u>Students' evaluation/feedback</u>
   a. Evaluation forms
   b. Testimonial feedback with suggestions
5. <u>E-Learning platform of Steinbeis</u>, where the materials are available to the eligible persons ④

The report below and the respective Annexes provide details to each of the items.

Despite the difficulties experienced in the project execution, the project is still expected to have profound and having impact not only onto the educational infrastructure in Serbia, but also onto the overall safety/ security situation and infrastructures ensuring it. It will was in achieved (WP5) primarily by:

- alignment with the EU practices and
- including the most advanced state-of-the-art case studies from the EU practices.

1   Introduction

Basic idea of the ImprESS project is that the academic education capacity in the countries in the process of joining the EU should be improved in order to meet new needs and challenges in Europe. The project has been supposed to contribute to this by means of enhancing the capacity building in the field of academic and professional education in the area of Safety & Security.

The area is currently of a great interest and importance for Europe. The countries on the way of accession, such as Serbia, are playing a crucial role in this case, as the possible safety & security threats for the EU can easily have their ''weak point'' and/or ''gateway'' exactly in these countries (e.g. the terrorists misusing the ''Balkan refugee route''). On the other hand, the organizational and infrastructural capacity of these countries is often not well aligned with the one in the EU and one of the main reasons for this lack of alignment is often the suboptimal academic and professional educational capacity of these countries, in the area of safety & security.

The ImprESS project intends to improve exactly this in the following way:

a) By means of strategic partnership (a ''knowledge alliance'') it will set up the model (WP1) for improving the educational capacity in the area of ''sector skill alliance'' for Safety & Security (SSASS).

b) Based on this model a sample educational infrastructure (curriculum, modules, courses, academic and para-academic educational activities) will be established and implemented in Serbia (WP2).

c) Once established, the infrastructure will be used to improve the current educational capacity of the 3 participating universities in Serbia (WP3).

d) The improved capacities at the 3 Serbian universities, together with those at the supporting EU academic education institutes will be integrated into Regional Center for Training & Education in area of Safety & Security (TESS)* (WP4). This WP has been abandoned during the work on the project.

e) The experiences and the results of the project will be published as a model for possible improvement in other countries (e.g. the other non-EU counties, strongly linked to the Safety & Security issues in the EU). The consortium will include 3 Serbian universities and the leading universities in the area in the Europe (Germany, Italy, Poland).

f) Despite the difficulties experienced in the project execution, the project is still expected to have profound and having impact not only onto the educational infrastructure in Serbia, but also onto the overall safety/ security situation and infrastructures ensuring it. It will was in achieved (WP5) primarily by:

- alignment with the EU practices and
- including the most advanced state-of-the-art studies.

On the other hand the project will have an impact on the ''EU side'', too: the participating European Institutions have had the opportunity to have the first-hand experience with safety & security education-related issues in the countries beyond the EU-borders, in this particular case in Serbia.

According to the project Workplan in the project proposal, approved and accepted by the EU Annex 1, the planned activities in WP3 (Setting up the infrastructure for applying the model) were:

Task 3.1.   Courses and modules selection for implementation

Task 3.2.   Courses and modules detail comparison and determination of the gap that should be closed

Task 3.3.   Teaching materials development

Task 3.4.   E-learning modules/materials development

Task 3.5.   Training of the Serbian lecturers on Program countries HEI

Task 3.6.   Accreditation process start

Task 3.7.   Education materials dissemination

In this report, tasks

Task 3.3.   Teaching materials development

Task 3.4.   E-learning modules/materials development

are covered. Due to the difficulties experienced during the execution of the project, the main activities were done by the University Of Belgrade (Faculty for Security Studies, Belgrade, Serbia (hereinafter referred to as "FSS") and Steinbeis Transfer Institute Advanced Risk Technologies, Stuttgart, Germany, together with Steinbeis University, Berlin, Germany (hereinafter referred to as "Steinbeis").

The above collaboration was covered by:

3.   Interuniversity Agreement between FSS and Steinbeis

4.   Annex to the above agreement covering use of the materials

For each of the courses the report covers:

6.   <u>Course syllabus</u>

7.   <u>Course material</u> preparation, consisting of

    a.   Handouts (lecturer's notes)

    b.   Slides

    c.   Sample exam questions

    d.   Marking scheme

    e.   Optionally (for internal use only): video-records

8.   <u>Courses performed</u>

    a.   1 course in the form of direct lecturing at Steinbeis Premises in Stuttgart, Germany

    b.   2 courses in the form of e-lectures performed online

    c.   Participants' lists

9.   <u>Students' evaluation/feedback</u>

    a.   Evaluation forms

    b.   Testimonial feedback with suggestions

10. <u>E-Learning platform of Steinbeis</u>, where the materials are available to the eligible persons

The report below and the respective Annexes provide details to each of the items.

Detailed description of the WPs and Tasks reported here, as per the contract signed with the Commission (EACEA) is given in Annex 1.

2   Course R01 INTRO – Introduction to Risk Management

2.1   Course syllabus

(the syllabus is following the suggested Impress format)

2.1.1   Topics / Short Description:

The course covers the main topics of industrial safety, starting with different aspects of risks and terminology used in the field. The main part of the course is dedicated to the related EU directives and their application in industry. The course outlines goals, scope and required measures / obligations considering acute (e.g. accidents-related) and chronic (e.g. pollution-related) risks. Special attention is devoted to major accident prevention and related process safety risk assessment methodologies.

2.1.2   Purpose of Qualification (Objectives):

At the end of the course students are expected to have basic knowledge about:

- general terms used in the area of risk, safety, hazard, risk and risk assessment...
- respective EU regulation/directives such as REACH, Seveso II, ATEX, and the obligations resulting from them
- main elements of the process safety assessment (input data, hazards identification methods and tools, scenario elaboration and assessment of related risks...), including major accidents prevention policy
- safety measures, based on regulatory requirements, as implemented in the different EU member states.

As an option, the course covers the issues of risk perception and risk communication and tackles the method of stakeholder involvement in technical risk management.

2.1.3   Content

The course will cover the following units:

Unit 1.   Introduction to industrial safety issues (process safety, occupational safety, environmental protection, consumer safety):

- explanation on different aspects of the term safety
- topics of REACH, Occupational safety and health, including ATEX, ADR and Seveso

Unit 2.   Historical overview and introduction to safety in industry

- overview of infamous industrial accidents with hazardous substances
- lessons learn from the experience
- major accident hazards
- response of the society, legislation introduced (explanation of obligations

Unit 3.   Introduction to obligations within Seveso III directive

- lower & upper tier establishment
- MAPP, SMS - on all 7 demands
- Safety report - its operational use
- emergency planning (internal/external)
- land use planning requirements

- information to the public
- roles of the competent authorities (CAs)4

Unit 4.   Introduction to the process safety risk assessment -overview of the main steps

- understanding of the process under analysis
- required site and surroundings data, relevant properties of the hazardous substances (including R and S phrases)
- hazard identification methods and tools
- hazard classification approaches
- scenarios elaboration
- assessment of consequences (source term conditions elaboration, modeling, domino potential evaluation)
- assessment of scenario's likelihood (introduction to probabilities, how to consider branching of events and safety measures ...)

Unit 5.   Review of main course issues and preparation for the final exam

Unit 6.   Final exam

2.1.4   Optional units

Unit 1A   Risk Governance: Analysis, perception and communication

- Introduction to Risk Governance
    - a.   The IRGC risk governance model: Purpose and structure
- Risk Perception and Concern Assessment
    - a.   Why is risk perception important?
    - b.   How do people respond to threats?
    - c.   How can we deal with risk perceptions
- Risk communication
    - a.   How to be effective in risk communication?
    - b.   How to respond to different types of audiences?
    - c.   What are the main problems in communicating risk and uncertainty
- Stakeholder involvement and participation
    - a.   What are the best strategies to involve stakeholders and the public?
    - b.   What methods for stakeholder participation are effective for regulating technical risks?

Unit 4A   Corporate responsibility and industrial risks: Mandatory requirements, common practice and trends

2.1.5   Teaching- and Learning-Methods

The course is illustrated by number of examples, presents commonly used methods and tools, and provides exercises and preparation for the final exam.

NOTE: The course materials are all available on the e-learning platform (120 pages of text and over 400 slides)

2.1.6   Literature

1.   Textbook: Introduction to Risk and Safety Management in Industry

2.   Slides:

Unit 1: Introduction to industrial chemical safety issues

Unit 2: Historical overview and Introduction to process safety in industry

Unit 3: Introduction to obligations within Seveso II directive

Unit 4: Introduction to the process safety risk assessment -overview of the main steps

3.	Additional material:

DIRECTIVE 2008/1/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 15 January 2008 concerning integrated pollution prevention and control (IPPC)

REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 December 2006 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)

COUNCIL DIRECTIVE 2012/18/EC of 9 December 1996 on the control of major-accident hazards involving dangerous substances (Seveso-III-Directive (2012/18/EU))

### 2.1.7	Further information

Target attendees / participants:

Course is dedicated to the wide range of participants, such as:

- professionals dealing with risk issues on management or operation level
- individuals with no previous experience in the field of risk management, but willing to extend their knowledge and take up new roles in risk management in their companies
- students of Steinbeis Master of Risk Engineering and Management program and similar programs.

### 2.1.8	Previous knowledge needed

Management skills could be an advantage for participants.

### 2.1.9	Material, equipment and logistics needed

Classroom:	for 20 - 25 participants
Video projector:	one (and backup one if possible)
Working place for lecturers and supporting staff:	Internet connection for at least for one laptop
Working places for participants	none
Software needed? If yes, which?	none
Other technical equipment? If yes, which?	Flip-chart and pens or whiteboard/blackboard

## 2.2	Course materials

The Course material prepared for the course instance consisted of

- a.	Handouts (lecturer's notes): 120 pages
- b.	Slides: over 400
- c.	Sample exam questions
- d.	Marking scheme

Optionally (for internal use only): video-records

## 2.3	The course instance (January 21-24, 2020)

The training course lasted 5 days (January 21-24, 2020), according to the detailed agenda given in A.3.1. The course covers the main topics of industrial safety, starting with different aspects of risks and terminology used in the field. The main part of the course is dedicated to the related EU directives and their application in industry. The course outlines goals, scope and required measures / obligations considering acute (e.g. accidents-related) and chronic (e.g. pollution-related) risks. Special attention is devoted to major accident prevention and related process safety risk assessment methodologies. Further details are provided in Annex 5.

To support the training course, specific training material has been developed by Steinbeis, which consists of presentations, lecture notes, software (Moodle Platform), exercises and exam questions. The course slides, lectures notes and announcement were compiled in a folder and provided for the trainers as a "Trainer's Kit" (Figure 1). Furthermore, the course was supported by three books[1]. The first day a brief introduction about the course Introduction to Risk Management was presented. Part of the training course was dedicated to introduce the Moodle platform for the participants.
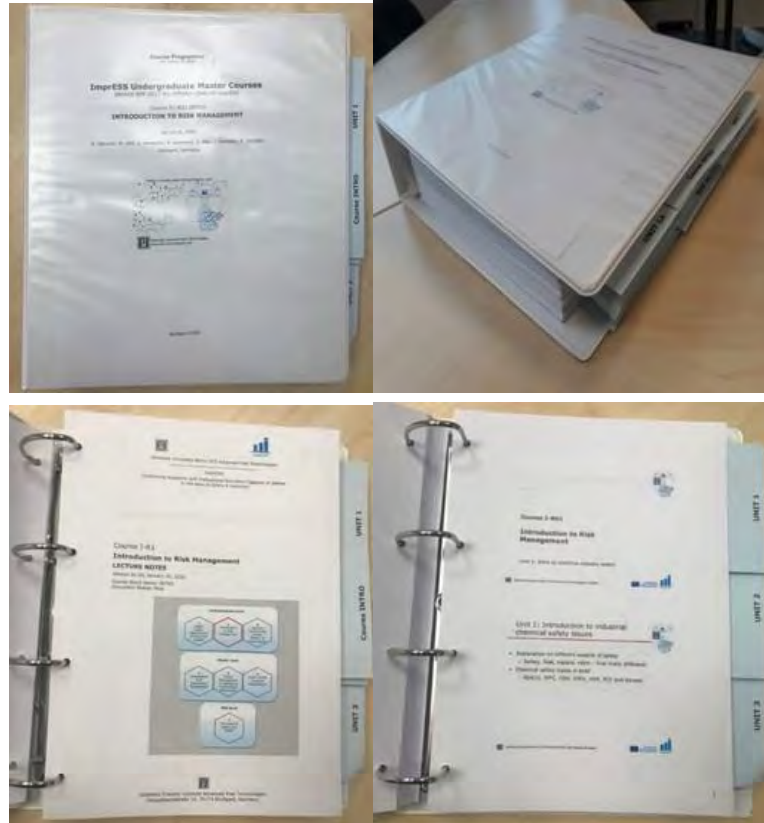
Figure 1. Folder with the slides and lecture notes provided for the trainers

Videos temporarily available at:

Test lecture 1 (Ms. Kirin):
https://www.youtube.com/watch?v=11IfcvSjUUw

Test lecture 2 (Mr. Sedmak):
https://www.youtube.com/watch?v=cIZ5xn5jPA8

(consent of the person on the photo provided)

Figure 2. Test lecture conducted by Prof. Sedmak[2]

The materials from the course were uploaded in the Moodle, as well as its lectures notes which can be accessed through the web site (http://moodle.risk-technologies.com/moodle/course/view.php?id=45). Furthermore, the test lectures conducted by the participants were recorded and uploaded in Moodle.

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[1] Slovic, P. (Ed.). (2000). *Risk, society, and policy series. The perception of risk.* Earthscan Publications; Paul Slovic (2016) Understanding Perceived Risk: 1978–2015, Environment: Science and Policy for Sustainable Development, 58:1, 25-29, DOI: 10.1080/00139157.2016.1112169 ; Renn, O. (2008). Risk Governance. London: Routledge, https://doi.org/10.4324/9781849772440

[2] All photos in the reports are used with the consent of the persons concerned

2.4 Students' evaluation/feedback of the course

2.4.1 Organization of the feedback

The following questions have been asked to the participants:

1. **Organization:** How would you characterize the overall course organization?
2. **Course material:** How would you characterize the course material handed over to you?
3. **Course presentation:** How would you characterize presentation done by the lecturer?
4. **General impression:** Please express your general impression about the course and provide comments for improvement if needed.

2.4.2 Summary of the evaluation results

The summary of the evaluation results is given in Table 1

Table 1: Summary of evaluation results

Criterion	1. Organization	2. Material	3. Presentation	4. Impression
Marks	Excellent	Excellent	Excellent	Excellent
Percentage	100%	100%	100%	100%
			Average	100% of 100%

2.4.3 Comments from the participants

An example of the students' qualitative feedback:

"The lecturer was persuasive as a result of his knowledge and experience".

2.5 Availability of the full course materials

NOTE:
All the materials of the courses are fully available at the Steinbeis e-Learning Platform (Moodle, http://moodle.risk-technologies.com/moodle/). The access to the platform is managed by Steinbeis and for the registered participants of the ImprESS project courses, the access is provided on the individual basis.
Possible further use of materials (e.g. for accreditation purposes in Serbia) is covered by the stipulations of the Agreement between FSS and Steinbeis (see Annex 6).
All future users or interested parties need to register with Steinbeis in order to get the (free) access to the project results for learning purposes.
All registered e-students have received credentials for the access to the course materials until June 30, 2021 and can the access can be prolonged, upon request.

2.6 Sample of the course materials

Sample of Lecture notes from Unit 1 and 1a is available in A.7.1

2.6.1 Lecture notes

Sample of Lecture notes from Unit 3 is available in A.7.1.1

2.6.2 Slides

Sample of Slides from Unit 4a is available in A.7.1.2

3 Course R06 HSSE - Health, Safety, Security and Environmental (HSSE) Risks

3.1 Course syllabus

3.1.1 Topics / Short Description

The course covers the topic of current European HSSE issues for industry with an aim for participants to get familiar with risk aspects and with the methods for hazard identification; to learn about the probability and consequence analysis in risk assessment; to discuss the health, safety and environment issues and related to his/her own experience. Special attentions are the IED Directive regarding to integrated pollution prevention and control of industrial emissions and the Seveso Directive regarding to prevention and control of major accidents involving dangerous substances.

3.1.2 Purpose of Qualification (Objectives)

At the end of the course students are expected to have basic knowledge:

- about European legislation regarding health, safety, security and environment and surveillance.
- how risks are managed during regular operation and in the case of critical events.
- methods for hazard identification.
- basics of probability and consequences analysis and risk assessment

3.1.3 Content

The course will cover the following units:

Unit 1. Introduction to IED

- What does IED mean?
- Objectives of the Directive
- Philosophy and principles
- Review of the main articles
- Licensing procedure
- Monitoring: EPER
- The Seville process: BAT–BREF
- European IPPC bureau
- Impact of the Industrial Emission Directive (2010/75/EU)

Unit 2. Prevention and control of major accidents involving dangerous substances: Seveso Directive

- Concepts of major accident prevention
- The contents of the Safety Report
- Major Accident Prevention Policy (MAPP), Safety Management System (SMS), Land-Use Planning (LUP)...
- Risk assessment in the safety report
- Implementation and examples

- From Seveso 2 directive to Seveso 3

Unit 3.   Health and safety at work and human factors analysis

- Health and Safety at work in the EU
- Safety climate and safety culture
- Follow-up of accidents and incidents in Swedish chemical industry (2006)
- Workers' representation in Sweden
- Reporting, investigation and follow-up of accidents and incidents Chemical Plant 1
- Obstacles for workers' representation in the investigation process
- Successful models for involving workers
- Dealing with complexity
- Organizational learning
- Organization contribution to accidents
- The improvement loop
- The document system
- Training
- Operational control
- Management of change
- Emergency planning and response
- Feedback

Unit 4.   Prevention against internal and external threats - Security aspects

- Security concept
- Hazard and threat analysis
- Good security practice
- Security management

Unit 5.   Safety (Key) performance indicators in the HSSE area

- Example of how to develop, implement and apply performance indicators

3.1.4   Optional units

None

3.1.5   Teaching- and Learning-Methods

The course is illustrated by number of examples, presents commonly used methods and tools, and provides exercises and preparation for the final exam.

NOTE: The course materials are all available on the e-learning platform (45 pages of text and over 100 slides)

3.1.6   Literature

1.   Textbook: Health, Safety, Security and Environment

2.   Slides:

Unit 1: Introduction to IED

Unit 2: Prevention and control of major accidents involving dangerous substances: Seveso Directive

Unit 3: Health and safety at work and human factors analysis

Unit 4: Prevention against internal and external threats - Security aspects

Unit 5: Safety (Key) performance indicators in the HSSE area

3.   Additional material

DIRECTIVE 2010/75/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 24 November 2010 on industrial emissions (integrated pollution prevention and control)

Integrated Pollution Prevention and Control (IPPC) - Reference Document on Best Available Techniques for Mineral Oil and Gas Refineries

Additional material related to ISO 45001 – The international standard for occupational health and safety

3.1.7   Further information

Target attendees / participants:

Course is dedicated to the wide range of participants, such as:

- Future teachers of the respective topics in Impress project at Serbian Universities
- Professionals dealing with risk issues and/or management of international and EU projects
- Individuals with no previous experience in the field of risk management, but willing to extend their knowledge and take up new roles in risk management in their companies

3.1.8   Previous knowledge needed

Previous experience in the field of risk management could be an advantage for participants.

3.1.9   Material, equipment and logistics needed

Classroom:	None
Video projector:	None
Working place for lecturers and supporting staff:	Remote
Working places for participants	None
Software needed? If yes, which?	Microsoft Teams Application, Office365
Other technical equipment? If yes, which?	Yes, Internet connection

3.2   Course materials

The Course material prepared for the course instance consisted of:

a.   Handouts (lecturer's notes): 45pages

b.   Slides: over 100 pages

Optionally (for internal use only): MS Teams Meeting-Records

3.3   The course instance (September 14-15, 2020)

The training course was organized online for 2 days (September 14-15, 2020), according to the detailed agenda given in A.3.1.

In the first day, Prof. Dr. A. Jovanović (the lecturer) started by introducing general framework, Moodle platform, the training plan and engaging all participants to introduce each other. The training went on with in depth discussion on the IED Directive (2010/75/EU), Seville process BAT – BREF and E- PRTR tool and principles of applying Directives. Especially some questions were made from participants related to the precautionary principle and taking examples from nanotechnology. Further details are provided in Annex 5.

3.4 Students' evaluation/feedback of the course

3.4.1 Organization of the feedback

The following questions have been asked to the participants:

1. **Organization:** How would you characterize the overall course organization?
2. **Course material:** How would you characterize the course material handed over to you?
3. **Course presentation:** How would you characterize presentation done by the lecturer?
4. **General impression:** Please express your general impression about the course and provide comments for improvement if needed.

3.4.2 Summary of the evaluation results

The summary of the evaluation results is given in Table 2

Table 2: Summary of evaluation results

Criterion	1. Organization	2. Material	3. Presentation	4. Impression
Marks	Excellent	Excellent	Excellent	Excellent
Percentage	100%	100%	100%	100%
			Average	100% of 100%

3.4.3 Comments from the participants

Examples of the students' qualitative feedback:

"Bearing in mind the limited time available for this course, I am really satisfied with the knowledge I gained about such a complex topic!"

"Since the topic is less familiar to me, I expected a misunderstanding, but the lecturer very successfully and easily approached certain segments of the topic, so that the lecture could be easily followed."

"The only objection is that it may have been possible to organize several hours of lectures, because some parts were taught very quickly, and additional clarifications may have been needed. For that reason it was very useful the last day, when the lecturer gave additional explanations and comments on our questions and presentations."

3.5 Availability of the full course materials

NOTE: All the materials of the courses are fully available at the Steinbeis e-Learning Platform (Moodle, http://moodle.risk-technologies.com/moodle/). The access to the platform is managed by Steinbeis and for the registered participants of the ImprESS project courses, the access is provided on the individual basis. Possible further use of materials (e.g. for accreditation purposes in Serbia) is covered by the stipulations of the Agreement between FSS and Steinbeis (see Annex 6).
All future users or interested parties need to register with Steinbeis in order to get the (free) access to the project results for learning purposes.
All registered e-students have received credentials for the access to the course materials until June 30, 2021 and can the access can be prolonged, upon request.

3.6 Sample of the course materials

Sample of Lecture notes from Unit 1 and 2 is available in A.7.2

3.6.1 Lecture notes

Sample of Lecture notes from Unit 5 is available in A.7.2.1

3.6.1 Slides

Sample of Lecture notes from Unit 4 is available in A.7.2.2

4 Course R19 BC&M - Business Communication & Management of Intercultural Differences

4.1 Course syllabus

4.1.1 Topics / Short Description

The course covers the topic of intercultural communication and basic guidelines to succeed it. Prof. Dr. A. Jovanović (the lecturer) started with cultural communication definition and gave an analysis of "Monochronic and Polychronic Cultures", then compared the cultural values among different countries such as the U.S, Japan, Arabic countries. Afterwards, he exemplified some European projects which involve partners from many countries in Europe within a consortium and the way of its operation where requires a high level of complex intercultural communication.

The goal of the course was to let the participants' share his/her own experiences through previous projects and get advice from the lecturer.

4.1.2 Purpose of Qualification (Objectives)

At the end of the course, students expect to have basic knowledge about:

- Intercultural value systems
- Differences in cultural practices
- Cross-cultural project management
- Individualism vs. Teamwork
- Successful management of cultural differences as a factor of success in international projects
- What one should know, do or not do in an EU project
- Case studies: US, Japan, India, China

4.1.3 Content

The course will cover the following units:

Unit 1. Successful management of cultural differences as factor of success of IT and other projects
- Cultural Diversity
- Context Diversity
- Comparison of Cultural Values
- Identity
  – Plurality of Identity
  – Properties of Cultural Identity
  – Social and Cultural Identity

Unit 2. Multicultural contexts – what you should know, what you should do, what you should not do…
- Intercultural Communication
  – Overview
  – Scope

- R&D in Intercultural Communication
- Basic Guidelines for Successful Cross cultural Communication
- Communication Process: Traps & Rationalization
- Cross Cultural Communication: How to improve it

Unit 3. Multilingual environments in international projects

- Communication Process
  - Basics-Barriers and Noise
  - Theory vs Practice
  - Possible Intercultural Problems in the EU Projects
  - Language and Culture
- Verbal and non-verbal Communication
  - Verbal Communication
  - Nonverbal Communication
- Inter Cultural Competence
  - Overview
  - Definition of an interculturally-competent person

Unit 4. Essentials of Business communication & Elements of Human Resources Management in multinational projects

- Communication Styles
  - Direct and Indirect
  - Personal, person centered/contextual style
  - Instrumental/affective style
- Business Communication
- Speaking vs Writing
  - Minimizing Oral Miscommunication
  - Minimizing Written Miscommunication

4.1.4   Optional units

None

4.1.5   Teaching- and Learning-Methods

The course is illustrated by number of examples, presents commonly used methods and tools, and provides exercises.

NOTE: The course materials are all available on the e-learning platform (36 pages of text and over 160 slides)

4.1.6   Literature

1. Textbook: Business Communication & Management of Intercultural Differences
2. Slides:

Unit 1. Successful management of cultural differences as factor of success of IT and other projects

Unit 2. Multicultural contexts – what you should know, what you should do, what you should not do…

Unit 3. Multilingual environments in international projects

Unit 4. Essentials of Business communication & Elements of Human Resources Management in multinational projects

3. Additional material

None

4.1.7 Further information

Target attendees / participants:

Course is dedicated to the wide range of participants, such as:

- Future teachers of the respective topics in Impress project at Serbian Universities
- Professionals engaging international communication context/or management of international and EU projects

4.1.8 Previous knowledge needed

Management skills could be an advantage for participants.

4.1.9 Material, equipment and logistics needed

Classroom:	None
Video projector:	None
Working place for lecturers and supporting staff:	Remote
Working places for participants	None
Software needed? If yes, which?	Microsoft Teams Application, Office365
Other technical equipment? If yes, which?	Yes, Internet connection

4.2 Course materials

The Course material prepared for the course instance consisted of:

a. Handouts (lectures notes): 36 pages

b. Slides: over 160 pages

Optionally (for internal use only): MS Teams Meeting-Records

4.3 The course instance (September 16, 2020)

The Course R19 – Business Communication & Management of Intercultural Differences was taken place on September 16, 2020 according to the set agenda (see in A.3.1) through Microsoft Teams Meeting platform.

4.4 Students' evaluation/feedback of the course

4.4.1 Organization of the feedback

The following questions have been asked to the participants:

1. **Organization:** How would you characterize the overall course organization?
2. **Course material:** How would you characterize the course material handed over to you?
3. **Course presentation:** How would you characterize presentation done by the lecturer?
4. **General impression:** Please express your general impression about the course and provide comments for improvement if needed.

4.4.2 Summary of the evaluation results

The summary of the evaluation results is given in Table 3

Table 3: Summary of evaluation results

Criterion	1. Organization	2. Material	3. Presentation	4. Impression
Marks	Excellent	Excellent	Excellent	Excellent
Percentage	66.67%	66.67%	66.67%	66.67%
Marks	Very good	Very good	Very good	Very good
Percentage	33.33%	33.33%	33.33%	33.33%
			Average	100% of 100%

4.4.3   Comments from the participants

Examples of the students' qualitative feedback:

"Interesting topic, of course more fluid than the HSSE course. That was totally expected due to the nature of the subject itself"

"It was organized without any objection. Everything was on time, and there was possibility given to attendees to make comments and discuss without time limits. Technically implemented without problems. E-mail communication was perfect. Very friendly as well."

"The material is detailed, comprehensive, and very useful. Definitely will be helpful as a precise direction for preparation of the curriculum."

"Key points covered, without too much detailing, lecturer respects the previous experience of course attendees, uses familiar and illustrative examples for every topic that are easy to remember, and engaged attendees in discussions perfectly."

"The material for this topic is very useful, interesting, and inspiring because it complements the already acquired knowledge."

"The lectures are clear, concise. English is understandable, lecturers speak slowly and accurately, communicate with listeners, it is possible to ask questions during the presentation and at the end."

"The topics were well chosen, some thematic units were more interesting and some smaller, but that has nothing to do with the way the topic is taught and presented. Two-way communication is enabled. Time was respected."

4.5   Availability of the full course materials

NOTE: All the materials of the courses are fully available at the Steinbeis e-Learning Platform (Moodle, http://moodle.risk-technologies.com/moodle/). The access to the platform managed by Steinbeis and for the registered participants of the ImprESS project courses, the access provided on the individual basis. Possible further use of materials (e.g. for accreditation purposes in Serbia) is covered by the stipulations of the Agreement between FSS and Steinbeis (see Annex 6).
All future users or interested parties need to register with Steinbeis in order to get the (free) access to the project results for learning purposes.

All registered e-students have received credentials for the access to the course materials until June 30, 2021 and can the access can be prolonged, upon request.

4.6   Sample of the course materials

Sample of Lecture notes from Unit 1 is available in A.7.3

4.6.1   Lecture notes

Sample of Lecture notes is available in A.7.3.1.

4.6.2   Slides

Sample of Lecture notes is available in A.7.3.2.

5   Implementing courses on the Moodle learning platform of Steinbeis

5.1   ImprESS course in the Moodle learning platform of Steinbeis

All the courses of Steinbeis are conducted and fully supported by the Moodle learning platform, which is part of overall educational system of Steinbeis Advanced Risk Technologies and Quality Management System (QMS). In addition, different Institutes of Steinbeis University have different learning platforms.

5.1.1   Homepage

From the homepage of Moodle, students can see all the courses allowing different levels of accessibilities depending on which category and status they belong to when registering.
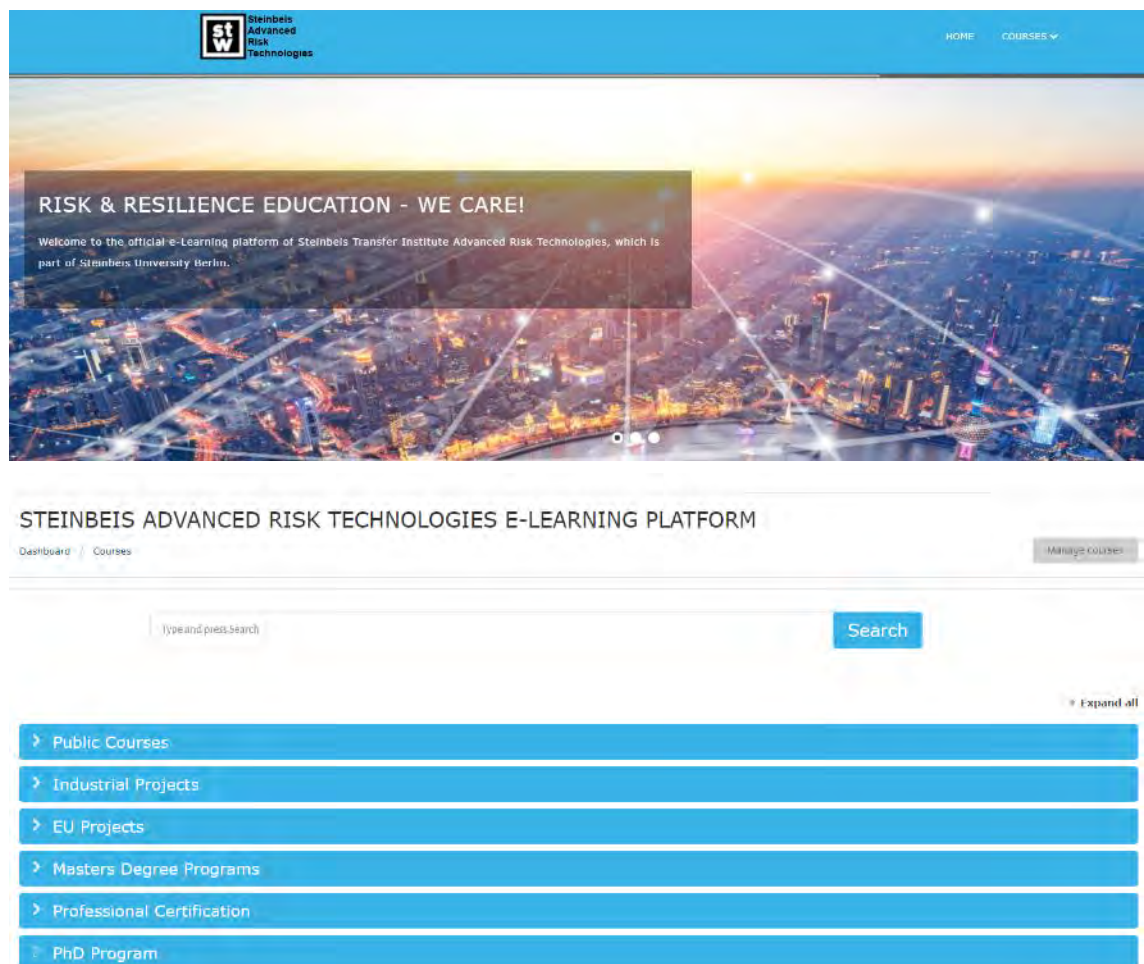
Figure 3: Homepage of Steinbeis Moodle learning platform

5.1.2   EU Projects courses

Courses belong to "EU Projects" category usually have different access rights rather than "Industrial Projects" due to the specific agreement between European Commission and related Parties.

Figure 4: List of EU Projects courses

5.2   ImprESS courses

5.2.1   General organization

ImprESS courses were set up as "European Projects". As an initial project plan, Steinbeis prepared and uploaded a plenty of courses for this category. However, due to the difficulties experienced during the execution of the project, Steinbeis modified and reduced the number of courses down to 3 (three) courses, marked as "done", the other is marked as "considered".
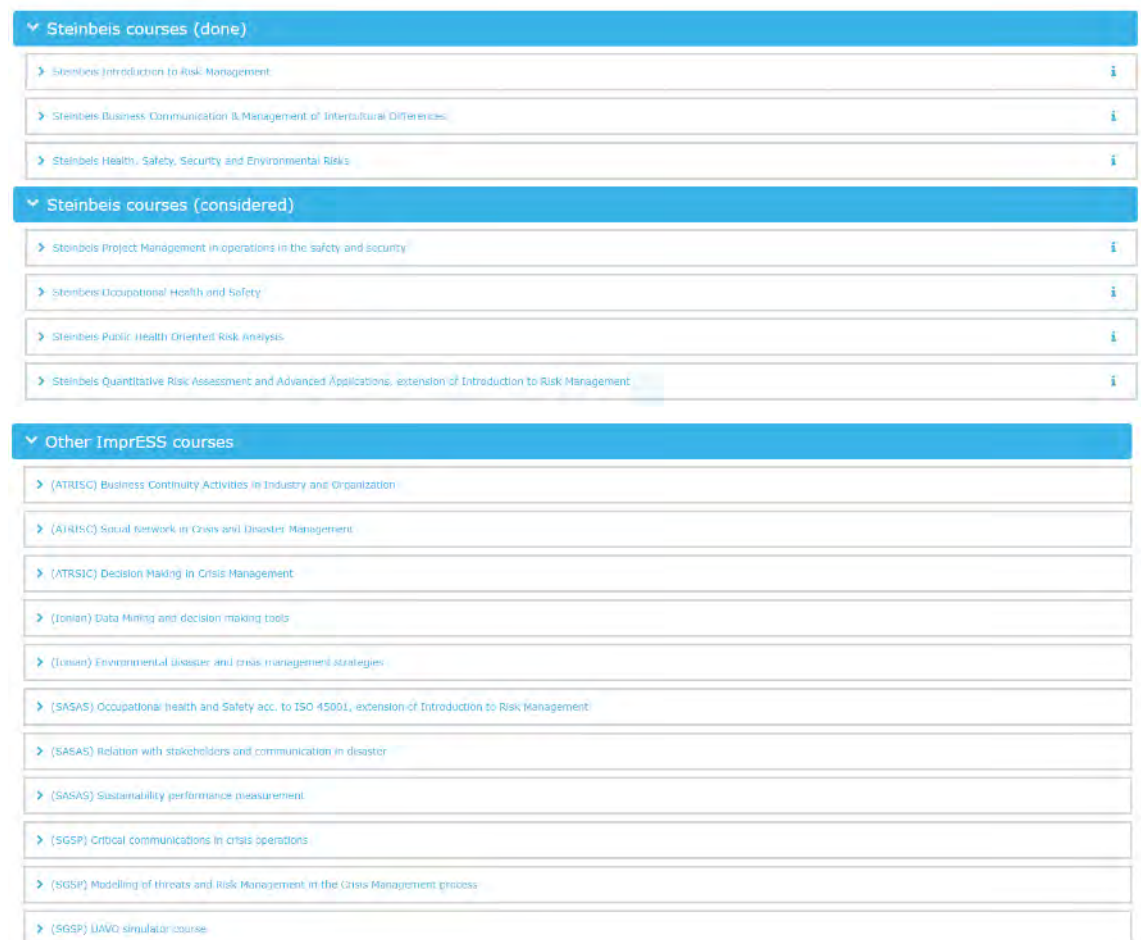
Figure 5: List of ImprESS courses: All ImprESS courses can be stored/hosted on the platform (the place has been foreseen), but at the end of the project only the 3 courses described below are hosted there

5.2.2 Accessing the courses

ImprESS courses are free to use as learning materials. Other-than-teaching use of material is covered by the Annex of the Agreement Steinbeis-FSS Annex 6. The interested student can either get his credentials directly from the administrator, or she/he can self-register (Figure 6). Once registered, the student will get his data stored in under her/his profile in the system. The registration is subdue to the basic check of student's application (previous attempts, IT-security, etc.).
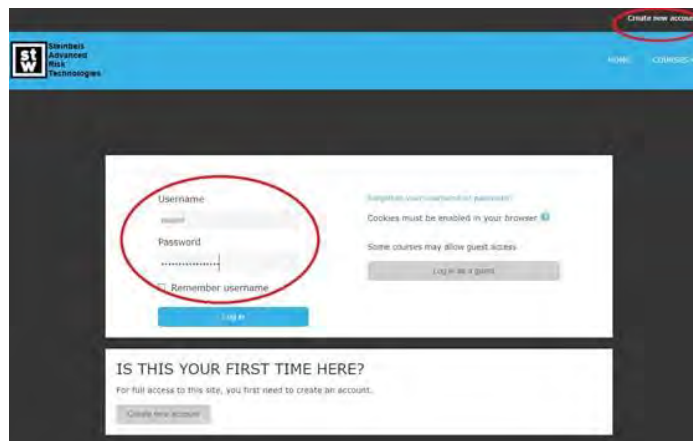
Figure 6: The way of accessing the platform
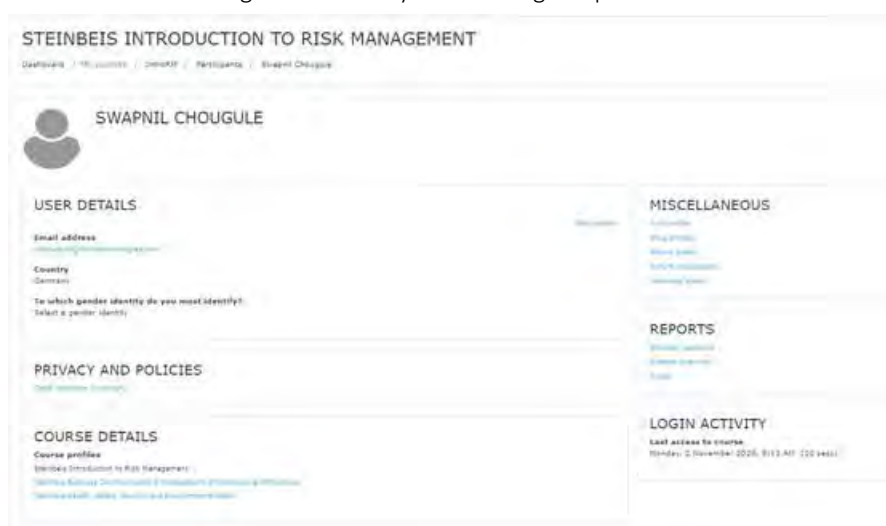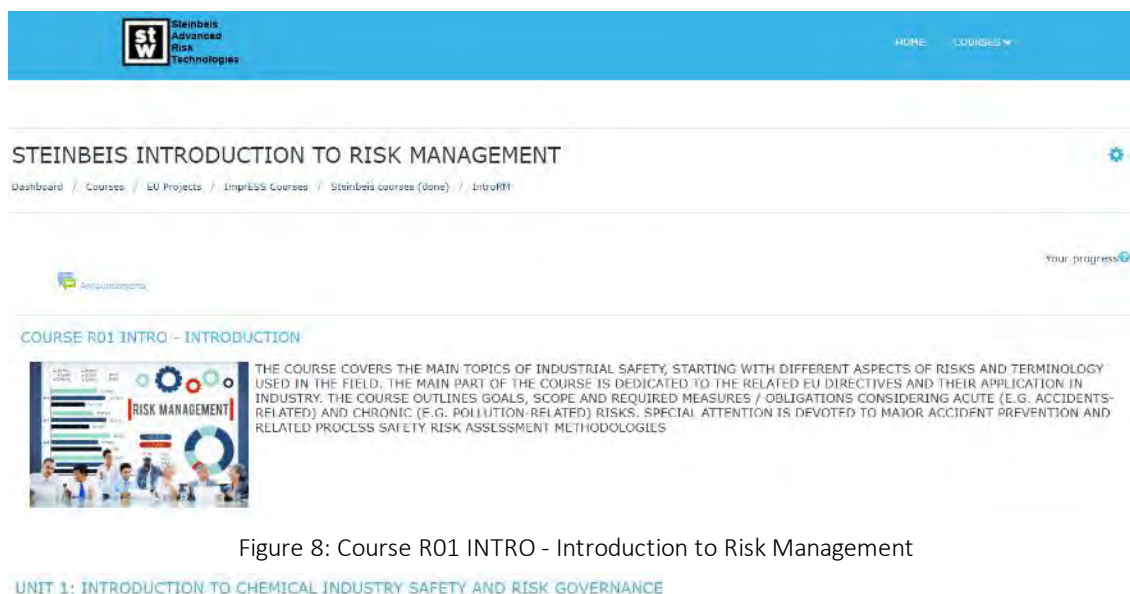
Figure 7: Student's ;profile in the system
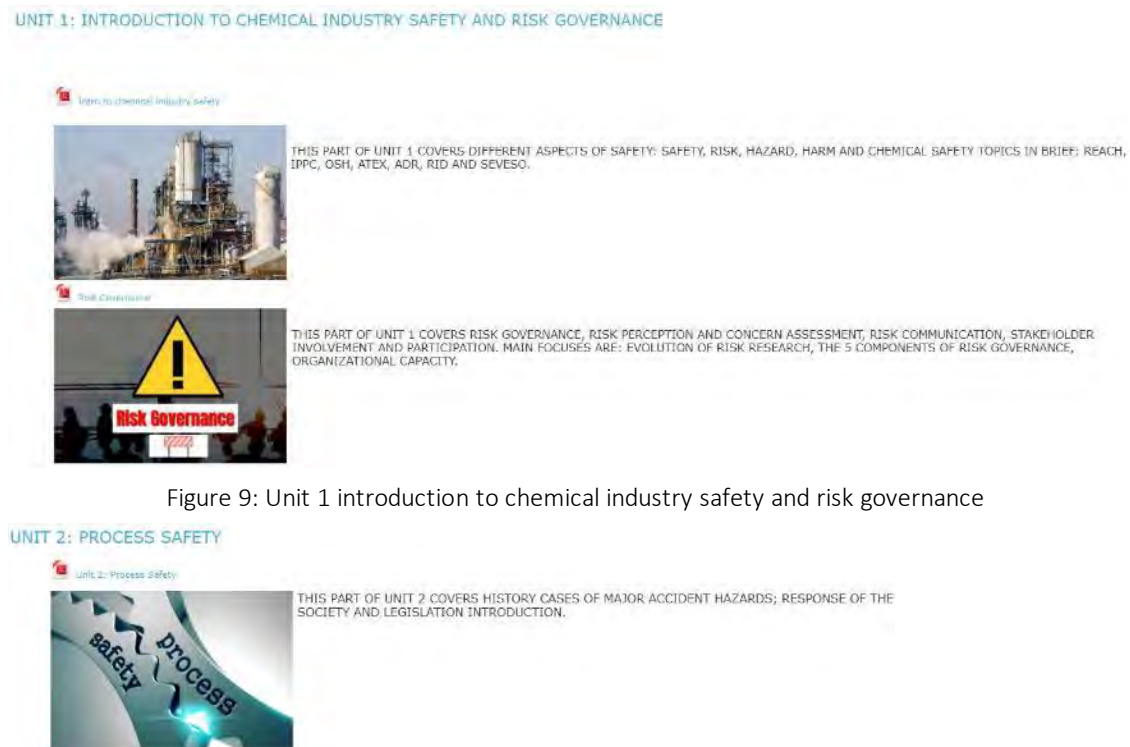
5.3 Course R01 INTRO – Introduction to Risk Management

As described in chapter 2, this course was supported by the Moodle learning platform of Steinbeis.

Figure 8: Course R01 INTRO - Introduction to Risk Management

Figure 9: Unit 1 introduction to chemical industry safety and risk governance

Figure 10: Unit 2 process safety

Figure 11: Unit 3 safety management

UNIT 4: CORPORATE RESPONSIBILITY & INDUSTRIAL RISKS

THIS PART OF UNIT 4 COVERS CORPORATE RESPONSIBILITY AND INDUSTRIAL RISKS; CSR FRAMEWORK; ICSR AND RISK; GLOBAL REPORTING INITIATIVE (GRI); GRI 3 CONCEPT, STRUCTURE; GR REPORT CONTENT; GR REPORT FORM & QUALITY.

THIS PART OF UNIT 4 COVERS THE PROCESS UNDER ANALYSIS; REQUIRED SITE AND SURROUNDINGS DATA; RELEVANT PROPERTIES OF THE HAZARDOUS SUBSTANCES, HAZARD IDENTIFICATION METHODS AND TOOLS; HAZARD CLASSIFICATION APPROACHES; SCENARIOS ELABORATION; ASSESSMENT OF CONSEQUENCES; ASSESSMENT OF DOMINO POTENTIAL; ASSESSMENT OF SCENARIO'S LIKELIHOOD.

Figure 12: Unit 4 corporate responsibility & industrial risks

EXAM

Figure 13: Exam

LECTURE TEXT

Figure 14: Lecture text

VIDEOS (TRAIN-THE-TRAINER COURSE)

Figure 15: Course videos

EVALUATION

PARTICIPANTS LIST

First name ▲ / Surname	Email address	Roles	Groups
Aleksandar Sedmak		Student ✎	No groups
Snezana Kirin		Student ✎	No groups
Vanessa Pfau		Student ✎	No groups
Lais G.Ramalho		Student ✎	No groups
Stela Djurovic		Student ✎	No groups
Aleksandar Jovanovic		Manager ✎	No groups
Parva Chhantyal		Student ✎	No groups
Somik Chakravarty		Student ✎	No groups
Neca Jovanovic		Student ✎	No groups
Marjan Jelic		Student ✎	No groups

Figure 16: Participants list

NOTE: All registered e-students have received credentials for the access to the course materials until June 30, 2021 and can be prolonged, upon request.

5.4 Course R06 HSSE - Health, Safety, Security and Environmental (HSSE) Risks

As described in chapter 3, this course was supported by the Moodle learning platform of Steinbeis.

Figure 17: Course R06 HSSE – Health, Safety, Security and Environmental Risks

Figure 18: Unit 1 integrated pollution prevention and control of industrial emission: The IED directive

Figure 19: Unit 2 prevention and control of major accidents involving dangerous substances: The Seveso directive

Figure 20: Unit 3 health and safety at work and human factors analysis

UNIT 4: PREVENTION AGAINST INTERNAL AND EXTERNAL THREATS: SECURITY ASPECTS

UNIT 4: PREVENTION AGAINST INTERNAL AND EXTERNAL THREATS: SECURITY ASPECTS

THIS PART OF UNIT 4 COVERS SECURITY CONCEPT; THREAT SITUATION; THREAT CATEGORIES (ASSUMPTIONS, PROBABILITIES); THREAT CATEGORIES; SECURITY RELEVANT PARTS; HAZARD ASSESSMENT; SECURITY OBJECTIVES; SECURITY MEASURES / CONCEPTS.

Figure 21: Unit 4 prevention against internal and external threats: Security aspects

UNIT 5: SAFETY (KEY) PERFORMANCE INDICATORS IN THE HSSE AREA

UNIT 5: SAFETY (KEY) PERFORMANCE INDICATORS IN THE HSSE AREA

THIS PART OF UNIT 5 COVERS EXAMPLE OF HOW TO DEVELOP (3 WAYS PROCESS), IMPLEMENT (COLLECTION OF THE INFORMATION, DATABASES, MANAGEMENT INFORMATION SYSTEM, THE INDICATOR'S INDEX) AND APPLY PERFORMANCE INDICATORS (TYPICAL HSSE KPI'S), INCIDENT ICEBERG.

Figure 22: Safety (key) performance indicators in the HSSE area

LECTURE TEXT

Course R06 HSSE - Lecture text

VIDEOS (TRAIN-THE-TRAINER COURSE)

Course R06 HSSE Health, Safety, Security and Environmental Risks (Part 1)

Course R06 HSSE Health, Safety, Security and Environmental Risks (Part 2)

Course R06 HSSE Health, Safety, Security and Environmental Risks (Part 3)

Course R06 HSSE Health, Safety, Security and Environmental Risks (part 4)

Course R06 HSSE Health, Safety, Security and Environmental Risks (Part 5)

Figure 23: Lecture text and course videos

EVALUATION

Course R06 HSSE - Course evaluation - participant 1

Course R06 HSSE - Course evaluation - Participant 2

PARTICIPANTS LIST

First name ▲ / Surname	Email address	Roles	Groups
Petar Stanojevic		Student ✏	No groups
Nenad Filipovic		Student ✏	No groups
Svetalana Stanarevic		Student ✏	No groups
Dejana Jovanovic		Student ✏	No groups
Ivan Dimitrijevic		Student ✏	No groups
Milica Kaplarevic		Student ✏	No groups
Marija Gacic		Student ✏	No groups
Aleksandar Jovanovic		Manager ✏	No groups
Stela Djurovic		Student ✏	No groups
Vanessa Pfau		Student ✏	No groups
Mai Thi Nguyen		Student ✏	No groups
Marjan Jelic		Student ✏	No groups
Swapnil Chougule		Student ✏	No groups

Figure 24: Participants list

NOTE: All registered e-students have received credentials for the access to the course materials until June 30, 2021 and can be prolonged, upon request.

5.5 Course R19 BC&M - Business Communication & Management of Intercultural Differences

As described in chapter 4, this course was supported by the Moodle learning platform of Steinbeis.

Figure 25: Course R19 BC&M – Business Communication & Management of Intercultural Differences

LECTURE TEXT

Figure 26: Lecture text

VIDEOS

Course R19 BC&M Business Communication and Management of Intercultural Differences (Part 1)
Course R19 BC&M Business Communication and Management of Intercultural Differences (Part 2)

Figure 27: Course videos

EVALUATION

Course R19 BC&M - Course evaluation - Participant 1
Course R19 BC&M - Course evaluation - Participant 2
Course R19 BC&M - Course evaluation - Participant 3

PARTICIPANTS LIST

First name / Surname	Email address	Roles	Groups
Petar Stanojevic		Student	No groups
Nenad Filipovic		Student	No groups
Svetalana Stanarevic		Student	No groups
Dejana Jovanovic		Student	No groups
Ivan Dimitrijevic		Student	No groups
Milica Kaplarevic		Student	No groups
Marija Gacic		Student	No groups
Aleksandar Jovanovic		Manager	No groups
Stela Djurovic		Student	No groups
Vanessa Pfau		Student	No groups
Mai Thi Nguyen		Student	No groups
Marjan Jelic		Student	No groups
Swapnil Chougule		Student	No groups

Figure 28: Participants list

NOTE: All registered e-students have received credentials for the access to the course materials until June 30, 2021 and can be prolonged, upon request.

6 Quality Management, Project Management, Marking scheme

6.1 General

In its work in this project, Steinbeis has applied the certified Quality Management System (Figure 29) and the tool (). Steinbeis has proposed that a similar tool is applied in the ImprESS project, too, but due to the difficulties in the project management and coordination, it was not possible for the project as a whole. The details on the proposed implementation of GOPP are given in Annex 8 (including the template and its application in WP3).

(a) (b) (c)
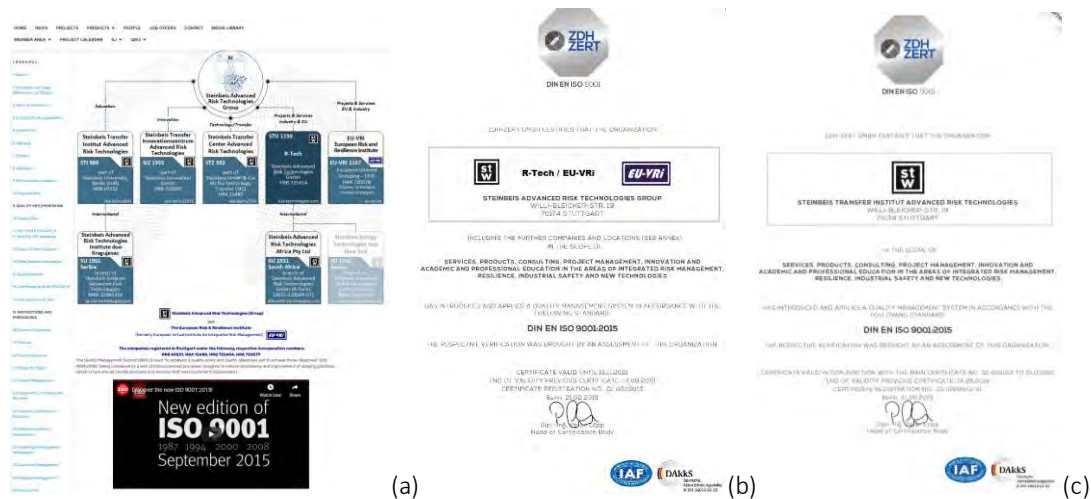
Figure 29: QMS system of Steinbeis: Web System for the whole Group (a), certificate of the Group (b) and the certificate of the Institute participating in the project (c)
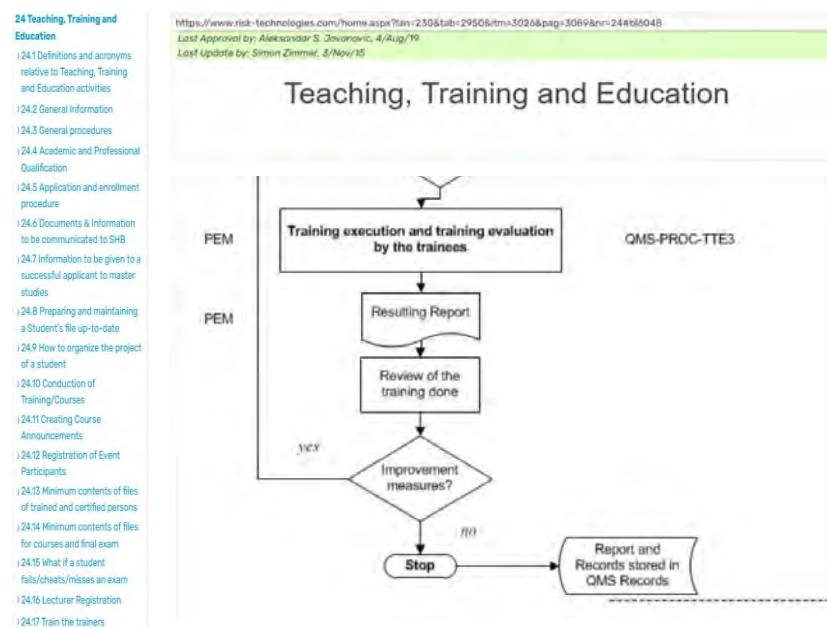
Figure 30: QMS system of Steinbeis: Part of the procedures related to "Teaching, Training, Education"

6.2 *Example of the quality procedure "24.4 Academic and Professional Qualification"*

6.2.1 *Purpose*

This procedure describes educational scheme for the area of Advanced Risk Technologies (Risk Engineering and Management) leading to possible:

- professional certification (i.e. training of professionals already possessing an academic degree, generally a university diploma, and serving as further specialization)
- academic education

Both lines are supported by the hands-on training through participation in industrial projects, both for students on the academic line and for professionals on the certification line.

6.2.2 *Responsible Persons*

- STI Leiter (see CEO) is responsible to monitor the compliance with this procedure. He is also responsible to transfer requirements to any subcontractor for teaching, training and education activities, and if applicable, to monitor the sub contractor's (see SUBC) performance and to undertake necessary measures in case of non-compliance.
- Any person involved in teaching, training and education, EMP or SUBC, is responsible to apply this procedure in the measure corresponding to the duties and tasks assigned to him.
- Project manager (see PM) is responsible for records collection and filling.

6.2.3 *Process Indicators (Measured / Monitored)*

Efficiency of teaching, training, education in fulfilling expectations and needs of trainees is measured using training evaluation forms.

6.2.4 *Related Documents / References / Related ISO 9001:2015 Requirements*

- ISO 9001:2015 § 8.3. Design and development of products and services, 8.5 Production and service provision
- SPO SHB (Master & Certification): STUDY & EXAMINATION REGULATIONs for the curricula of STEINBEIS UNIVERSITY BERLIN (Steinbeis-Hochschule Berlin, SHB)
- GO SHB: Grundordnung (GO) der SHB
- RSO SHB: Rahmenstudienordnung (RSO) der SHB
- RPO SHB: Rahmenprüfungsordnung (RPO) der SHB
- RZO SHB: Rahmenzertifizierungsordnung (RZO) der SHB

6.2.5 *Requirements and Prerequisites*

Approved curriculum for Master of Risk Engineering, incl. PhD certification for Risk Professionals, Risk Examiners and Senior Risk Assessors.

Compliance with the European Credit Transfer System (ECTS).

ECTS is a student centered system based on the student workload required to achieve the objectives of a program, objectives specified in terms of learning outcomes and competences to be acquired.

6.2.6 *Procedure specific definitions*

n/a

6.2.7 *Records*

Following records related to the teaching, training and education are available in

- electronic form on the fileserver of STI 889
- e-form on corresponding web site of each project dealing with teaching, training and education
- paper form in corresponding project/course folders

Table 4: Records of the courses

Course curriculum check list	
Textbook checklist	
Certification material checklist	
Presentation checklist	
Certification exams results	\\RTECHSERVER2\STI_889_A-Tech\Projects\14012_SHB-Courses\Outputs\Module ...*instance*\Exam\EvaluatedResults
Certificates	\\RTECHSERVER2\STI_889_A-Tech\Projects\14012_SHB-Courses\Outputs\Module ...*course**instance*\Exam\Certificates
Training evaluation forms	paper form in the respective folder
Training evaluation results	\\RTECHSERVER2\STI_889_A-Tech\Projects\14012_SHB-Courses\Outputs\Module ...*course**instance*\Records\Evaluation

6.2.8   Steps of The Procedure

The Master program lasts two academic years (120 ECTS) and includes the Master Thesis as well as practical training in an industrial or applied research environment. The program includes five comprehensive thematic modules with compulsory and optional compulsory courses worth 60 Credit Points (CPs). These courses are combined with a sixth major module including a project work (42 CPs) and Master Thesis (18 CPs), to be performed in the second year. Besides a Project Paper to be written, the Thesis will be the final and tangible product of the project work. Each student, after the admission to the program, receives a personalized study schedule. It defines the optional courses by choice, and the project and thesis work in alignment with the student's academic and company supervisor.

The professional specialization titles are envisaged as the specialization in the "tracks" of

- Risk professional,
- Plant/Asset/Equipment oriented risk engineering and management (in industry) and
- HSSE oriented risk engineering and management (in industry).

The certification, in generally follows the pattern of

- One certification exam (written; oral examination only in exceptional cases) at the end of the respective course
- One additional certification oral exam for the respective specialists' titles at the end of a group of single courses, namely (s. Figure 1)
    - o   Risk Professionals
    - o   Risk Examiners and
    - o   Senior Risk Assessors.

Full description is given in the Master & Certification SPOs.

6.3   Project Management

The project management tool is a part of Steinbeis QMS. In ImprESS project, the tool has been used to manage the project and all project tasks to ensure the achievement of the project goal. As the whole QMS tool, the project management too (otherwise fully compliant with the EU GOOP) was offered to be used in the project, but the offer was rejected. As shown following figures and subchapters, the project management tools includes:

- All data relevant for the project - Figure 31 (contractual documents, amendments, time plan, work-packages, tasks, calendar, events…)
- All relevant QMS elements (procedures, management of records, etc.)
- Direct project management tools (surveys, voting, reporting) and
- Links to the dissemination activities

The tools has been verified by the EU Research in several audits in the period 2009-2020.

Figure 31: ImprESS Project: Quality Plan CRM Tool Structure

6.3.1 Calendar:

The Calendar feature aims to keep track and monitor events and activities according to set time plan.

Figure 32: Calendar feature

Calendar feature
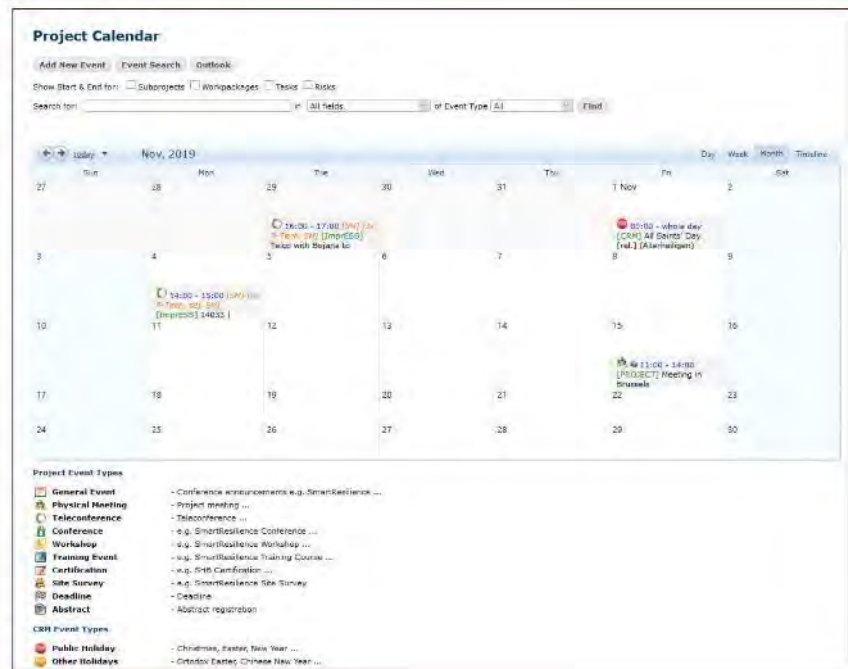
Figure 33: Calendar feature of Steinbeis CRM tool used in ImprESS project

6.3.2 Work Packages:

The Work Packages feature is used to keep track on lists of Work Packages in ImprESS project by Time Plan Monitoring

Work Packages (WPs) feature

Figure 34: Work packages (WPS) feature

Work Packages (WPs) feature

Figure 35: Work Packages feature of Steinbeis CRM tool used in ImprESS project

6.3.3   File Explorer:

The File Explorer feature helps to view files with events or in other folders by topic, provide easy method for file management and to establish management of change.

File Explorer feature

File Explorer feature
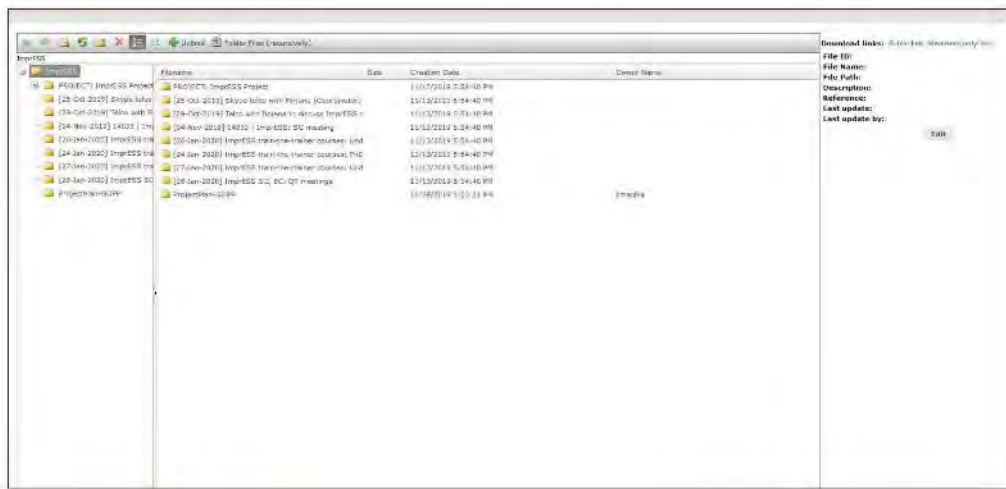
Figure 36: File Explorer feature of Steinbeis CRM tool used in ImprESS project

6.3.4   Time Plan

The Time Plan feature aims to have a visual overview of WP, tasks, activities and events within a WP to check how the project is processing according to established timelines.

Time Plan feature: WP3 example
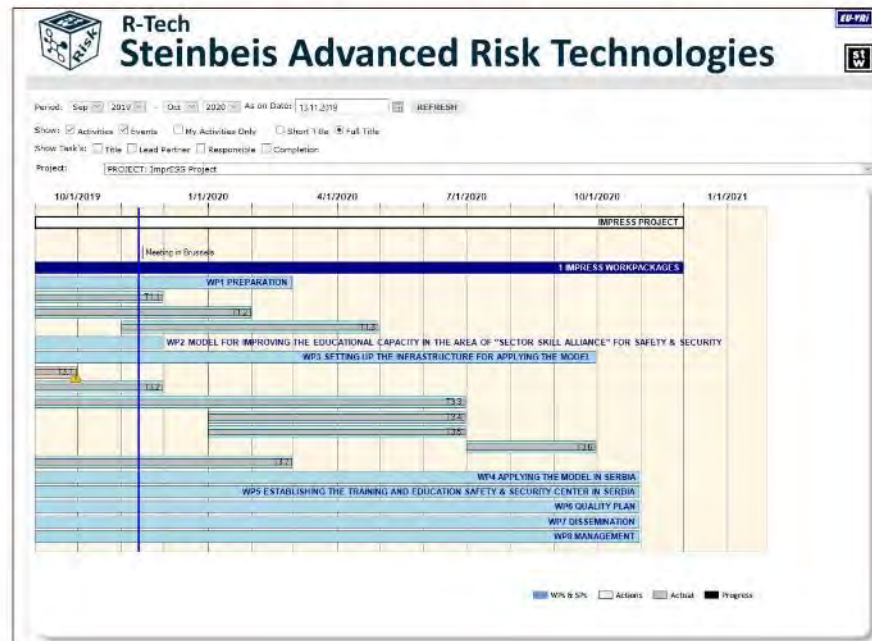
Figure 37: Time Plan feature of Steinbeis CRM tool used in ImprESS project

6.3.5 Quality Management System (QMS) Feature

The QMS features aims to control the documentation process by its "Templates", "Procedures and Instructions" and "Relevant Links and Support from EC". Most important part is "Change Request" which records all feedbacks and recommendations from related parties to continuously improve the outcome of task deliverables.

Overview of QMS (Quality Management System) Features
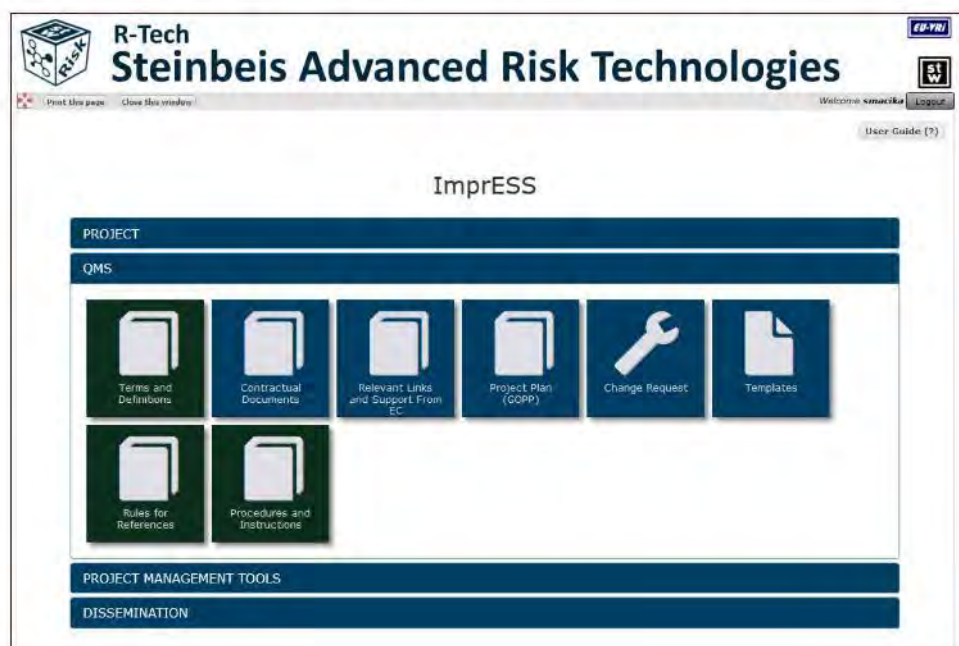
Figure 38: QMS feature of Steinbeis CRM tool used in ImprESS project

6.3.6   Project Management Tools Feature

The Project Management Tools feature enables to conduct survey, for example, about the courses or to vote and to make the Reporting tasks more efficiently.

Figure 39: Project Management Tools feature of Steinbeis CRM tool used in ImprESS project

6.3.7   Dissemination Tools Feature

The Dissemination Tools feature allows users to write and spread latest news of projects too interest parties, possibly reach more audiences beyond project participants.

Figure 40: Dissemination Tools feature of Steinbeis CRM tool used in ImprESS project

6.4 Marking scheme

The typical exam consists of 18 questions of four different types:

1. **False/True** where you have to check answer as Yes or No
   (5 questions x 2 points = 10 points)

2. **Single and Multiple Choice** only one question is Multiple choice) where you have to select one or more answers out of offered
   (6 questions x 4 points = 24 points)

3. **Short answer** where you have to answer by writing two/three sentences
   (5 question x 1 to 5 point = max. 25 points)

4. **Essay** where a comprehensive answer is expected
   (2 question x 1 to 10 points = max. 20 points)

Total score for the complete solution of the final exam is typically 79 points.

To pass the exam **61% of total score** is required.

The student has typically 90 minutes time for the exam.

7   Conclusion

In WP3 (and related activities of WP6) Steinbeis has achieved its goals as specified in the initial contract with the EU. Achieving these goals was hampered by the difficulties described in the correspondence with the Coordinator and the EU (an excerpt of which is given in Annex 9 Excerpt from the project correspondence related to the issues in the project). The report covers mainly the activities done by the University of Belgrade (Faculty for Security Studies, Belgrade, Serbia (FSS) and Steinbeis. This collaboration was covered by the interuniversity Agreement between FSS and Steinbeis and it ensures full and regulated use of the project materials both within and after the project.

In particular, the project has

- Make the necessary agreements between Steinbeis and a Serbian university (Annex 6)
- Developed Teaching materials (see chapter 2 to 4, excerpts of the materials in Annex 7)
- Prepared and implemented E-learning modules/materials (chapter 5)
- Performed training of the Serbian lecturer (Annex 6)s.

For each of the courses the report Steinbeis has delivered:

1. Course materials preparation, consisting of
    a. Handouts (lecturer's notes)
    b. Slides
    c. Sample exam questions
    d. Marking scheme
    e. Optionally (for internal use only): video-records

    NOTE: The course materials, all available on the e-learning platform, contain over 300 pages of text in the lecture notes and over 650 slides.

2. Courses performed
    a. 1 course in the form of direct lecturing at Steinbeis Premises in Stuttgart, Germany
    b. 2 courses in the form of e-lectures performed online
    c. Participants' lists
3. Students' evaluation/feedback
    a. Evaluation forms
    b. Testimonial feedback with suggestions
4. E-Learning platform of Steinbeis, where the materials are available to the eligible persons.

5. **NOTE: All registered e-students have received credentials for the access to the course materials until June 30, 2021 and can the access can be prolonged, upon request.**

Despite the difficulties experienced in the project execution, the project is still expected to have profound and having impact not only onto the educational infrastructure in Serbia, but also onto the overall safety/ security situation and infrastructures ensuring it. It will was in achieved (WP5) primarily by alignment of Serbian practices with the EU practices and by including the most advanced state-of-the-art case studies from the EU practices into Serbian practice.

Annex 1   Excerpt from the Work Plan as in the Contract with the EU (EACEA)

Work package type and ref.nr	DEVELOPMENT	3
Title	Setting up the infrastructure for applying the Model	
Related assumptions and risks	Assumptions: At least 15 separate courses, 3 complete undergraduate study modules, 2 master study modules and 1 PhD study module can be designed and implemented in the curricula of Serbian Universities It is possible to allocate adequate resources from both programme and partner countries for successful competition of this task There is a "market" need for such kind of new educational course Risks: Lack of resources advanced in English on the Serbian side Lack of motivation for needed change on Serbian side	
Description	Pessimistically can be expected to select at least 15 separate courses, 3 complete undergraduate study modules, 2 master study modules and 1 PhD study module to be implemented in the curricula of Serbian Universities. More realistically 25 separate courses, 5 undergraduate study modules, 3 master study modules and 3 PhD study modules are implementable in the curricula of Serbian universities. Aforementioned would be selected based on the following criteria: lack in present educational content in Serbia, "market" need, easiness of implementation, status of learning materials development, existence of available lecturer's resources, etc. Our partners already offered many of them and the detailed list can be found under activity 3.1. If selected courses and study modules does not exist in present days' educational system in Serbia, content and teaching materials will be co-opt 1:1 (in full) with adaptations in regards to Serbian legislative and other specific. If similar courses and study modules already exist, effort will be made to determine the needed improvement of content, lecturing materials and presentation of such. The teaching, learning and training materials will be developed in order to close identified gaps and elevate them to the level of similar materials in programme countries. Materials will be produced in English and Serbian. Questionnaires, tests and marking schemes development is a part of this activity. Steinbeis Risk Advanced Technology Centre will work on use of e-learning and technology (multimedia, internet, virtual reality etc.) and multi-sensory learning (videos, presentations….) which can improve teaching abilities. At least 50% of the subjects/courses should be adopted for e-learning. Serbian lecturers should attain study visits to the HEIs in programme countries, do job shadowing, attend courses and do lecturing. At least one "one day" lecturing should be performed by each of the involved Serbian lecturers on programme country HEIs in English. Teaching and material preparedness will be assessed by lecturing staff from programme countries HEIs. Serbian lecturers will attain necessary methodological and	

	pedagogical trainings and workshops. If necessary dedicated methodological and pedagogical workshop will be organized. Accreditation process will start as soon as possible in order to start with undergraduate, masters and PhD modules in the academic year 2019/2020. Risk that some of the programs will not pass accreditation procedure on time is very real in Serbian circumstances, because of the slowness of bureaucratic procedures. In case of accreditation delay, competition of the study programme in programme HEI will be offered to students. Separate courses or group of courses or any form of professionals' education does not require accreditation and can be run without foreseeable obstacles. If content change is less than 30% such subject can be taught without accreditation as well. E-library will be established under project site. All teaching materials will be made publicly available. Public media will be used for advertising usage of the materials.
Tasks	Courses and modules selection for implementation Courses and modules detail comparison and determination of the gap that should be closed Teaching materials development E-learning modules/materials development Training of the Serbian lecturers on Program countries HEI Accreditation process start Education materials dissemination

Estimated Start Date (dd-mm-yyyy)	15 April 2018	Estimated End Date (dd-mm-yyyy)	15 June 2019

Lead Organisation	The Main School of Fire Service (SGSP), Poland

Participating Organisation	All participants

Deliverables/results/outcomes

	Work Package and Outcome ref.nr		3.1.
	Title	Courses and modules selection for implementation	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☒ Report ☐ Service/Product
Expected Deliverable/Results/ Outcomes	Description	Goal is to select at least 15 separate courses, 3 complete undergraduate study modules, 2 master study modules and 1 PhD study module to be implemented in the curricula of Serbian Universities. Courses in ISO 18000 and ISO 27000 will be prepared with the help of EU partners. These would be selected based on the following criteria: lack in present educational content in Serbia, "market" need, easiness of implementation, status of learning materials development, existence of available lecturers resources etc. Our partners already offered many of them like: ATRISC: From Human Factor to Human Processes: Relational Resources for a VUCA World, Crisis communication - #SMEM – Social exact needs	

		media in emergency management – e-reputation
		- VOST, Crisis Management, Leadership – Organizing, High Reliability Organizing, Learning from incidents, EU civil protection, International civil protection, Security training, CBRN – EID & Incident, Innovation and new tools in crisis management.
		SHB: Introduction to Risk Management, Business Communication and Management of Intercultural differences, Principles and Methods of ISO 31000, Quality Management, Project Management, Health, Safety, Security and Environmental Risks, Occupational Saftey and Health, Public Health Oriented Risk Analysis, Risk Governance Concepts and Practices, Integrated Corporate Responsibility and Sustainability, Risk Perception and Risk Communication, Innovation Risk Management, Decision Aid Approaches for Risk Management, Concepts and Applications of Key Performance Indicators for New Technologies, Principles and Methods of ISO 31010, Fire Protection, Explosion Protection, Risk Analysis of Chemicals, Transport of Dangerous Materials, Accident and Consequences Modeling, Life Cycle Analysis and Assessment, API RBI Concepts in Industry, Probability and Consequence of Failure of Equipment, Consequence Analysis in an API RBI Assessment, CWA 15740 RIMAP and the new EN standard, RBI Probability of Failure - Damage Factors, Quantitative Risk Assessment and Advanced Applications, Transportation Risk Assessment, Emerging Risks, Safety and Reliability Analysis, Risk Analysis in Petrochemical Industries, Risk Based Inspection – Petro, Reliability Centered Maintenance and Root Cause Failure Analysis, Practical Example: Workshop Petro, Risk Analysis in Power Industries, Risk Based Inspection – Power, Reliability Centered Maintenance and Root Cause Failure Analysis, Practical Example: Workshop Power, Business Continuity Risks & Insurance, Principles of Actuarial Theory, Measurement and Management of Credit Risk, Risk Management Strategies, Practical Example: Workshop Business and Financial Risks, Complex Systems Theory, Managing Risks in Complex Systems, Risk Management Strategies, Business Continuity Risks & Insurance, Practical Example: Workshop Business and Project Risks.
		University of Stuttgart will provide courses in Risk analysis, risk management and risk communication, Communication and Risk Governance.
		Sant' Anna School of Advanced Studies offers study modules for undergraduate, masters, PhD and for professionals. The school has a strong experience in all the educational level in: Disaster management and recovery: principles and practice, Management and leadership theory: in private and in public sector, Relation with stakeholders and communication in disaster: intern communication and towards mass media, Recovery in post-disaster: methods and scheduling of post-disaster activities, Business continuity management: how to organize a BCM plan and how to manage it in a crisis for private and public companies, Management in safety organizations: human resources management and organizational models, stress management, leadership methods.
	Due date	30 September 2018
	Languages	English and Serbian

Target groups	☒ Teaching staff
	☐ Students
	☐ Trainees
	☒ Administrative staff
	☐ Technical staff
	☐ Librarians
	☐ Other
	If you selected 'Other', please identify these target groups. (Max. 250 characters)

| Dissemination level | ☒ Department / Faculty ☒ Institution | ☐ Local | ☒ National |
| | | ☐ Regional | ☒ International |

Expected Deliverable/Results/ Outcomes	Work Package and Outcome ref.nr		3.2.
	Title	Courses and modules detail comparison and determination of the gap that should be closed	
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☒ Report ☐ Service/Product
	Description	If selected courses and study modules does not exist in present days' educational system in Serbia, content and teaching materials will be co-opt 1:1 (in full) with adaptations in regards to Serbian legislative and other specific. If similar courses and study modules already exist, effort will be made to determine needed improvement of content, lecturing materials and presentation of such.	
	Due date	30 November 2018	
	Languages	English and Serbian	
Target groups	☐ Teaching staff ☐ Students ☐ Trainees ☒ Administrative staff ☐ Technical staff ☐ Librarians ☐ Other		
	If you selected 'Other', please identify these target groups. (Max. 250 characters)		
Dissemination level	☒ Department / Faculty ☒ Institution	☐ Local ☐ Regional	☒ National ☒ International

	Work Package and Outcome ref.nr			3.3.
Expected Deliverable/Results/ Outcomes	Title	Teaching materials development		
	Type	☒ Teaching material ☒ Learning material ☒ Training material	☐ Event ☐ Report ☐ Service/Product	
	Description	Teaching, learning and training materials will be developed in order to close identified gaps and elevate them to the level of similar materials in programme countries. Materials will be produced in English and Serbian. Questionnaires, tests and marking schemes development is a part of this activity.		
	Due date	28 February 2019		
	Languages	English and Serbian		
Target groups	☐ Teaching staff ☐ Students ☐ Trainees ☒ Administrative staff ☐ Technical staff ☐ Librarians ☐ Other			
	If you selected 'Other', please identify these target groups. (Max. 250 characters)			
Dissemination level	☒ Department / Faculty ☒ Institution	☐ Local ☐ Regional	☒ National ☒ International	

	Work Package and Outcome ref.nr			3.4.
Expected Deliverable/Results/ Outcomes	Title	E-learning modules/materials development		
	Type	☒ Teaching material ☒ Learning material ☒ Training material	☐ Event ☐ Report ☐ Service/Product	
	Description	Steinbeis Risk Advanced Technology Centre will work on use of e-learning and technology (multimedia, internet, virtual reality etc.) and multi-sensory learning (videos, presentations….) which can improve teaching abilities. At least 50% of the subjects should be adopted for e-learning.		
	Due date	31 July 2019		
	Languages	English and Serbian		
Target groups	☒ Teaching staff			

☐ Students	
☐ Trainees	
☒ Administrative staff	
☐ Technical staff	
☐ Librarians	
☐ Other	

If you selected 'Other', please identify these target groups.
(Max. 250 characters)

Dissemination level	☒ Department / Faculty ☒ Institution	☐ Local ☐ Regional	☒ National ☒ International

	Work Package and Outcome ref.nr			3.5.
Expected Deliverable/Results/ Outcomes	Title	Training of the Serbian lecturers on Program countries HEI		
	Type	☐ Teaching material ☐ Learning material ☐ Training material	☐ Event ☒ Report ☐ Service/Product	
	Description	Serbian lecturers should attain study visits to the HEIs in programme countries, do job shadowing, attend courses and do lecturing. At least one "one day" lecturing should be performed by each of the involved Serbian lecturers on programme country HEIs in English. Teaching and material preparedness will be assessed by lecturing staff from programme countries HEIs. Serbian lecturers will attain necessary methodological and pedagogical trainings ad workshops. If necessary dedicated methodological and pedagogical workshop will be organized.		
	Due date	31 July 2019		
	Languages	English		
Target groups	☐ Teaching staff ☐ Students ☐ Trainees ☒ Administrative staff ☐ Technical staff ☐ Librarians ☐ Other			
	If you selected 'Other', please identify these target groups. (Max. 250 characters)			
Dissemination level	☒ Department / Faculty ☒ Institution	☐ Local ☐ Regional	☒ National ☒ International	

Annex 2   The Steinbeis courses: the ones offered and those realized

A.2.1   The courses initially offered to the project

stW **Steinbeis Transfer Institute**
Advanced Risk Technologies (R-Tech)

Steinbeis Transfer Institute Advanced Risk Technologies
Fangelsbachstr. 14, 70178 Stuttgart, Germany

Prof. M. Radovanović
EDUCONS
Serbia

Director: Prof. Dr. A. Jovanovic
Haus der Wirtschaft, Willi-Bleicher-Straße 19
70174 Stuttgart, Germany
Phone: +49 711 410041 29
           +49 711 410041 28
           +49 711 1839 5
Fax: +49 711 410041 24
E-Mail: sti889@risk-technologies.com
www: www.sti.risk-technologies.com
Deutsche Bank, Germany, Branch 240
BIC/SWIFT-Code: DEUTDESSXXX
Account-Nr. 1336684
IBAN: DE83 6007 0070 0133 6684 00
USt.-Ident-Nr. DE812610170
VAT Nr: 9710600540

Project: 14033 ImprESS   Your Ref.:   Our Ref.: aj/AJ   Stuttgart, Feb. 14, 2019

Ref.:   1st DRAFT of the possible proposal for T3.5 Training of Serbian lecturers in Germany –SHB

Dear Prof. Radovanović,

Please find below the summary of our proposal as discussed on Feb. 11, 2019.

1.   Extension of number of courses

The initial plan was foreseeing 3 course for SHB and 3 courses for USTUTT. With the withdrawal of USTUTT and takeover of the USTUTT courses by SHB, the new nominal number of courses should be 6.

However, in the recent communication, the number of courses foreseen for SHB has been increased to 11, as per Table 1 below.

Table 1: Proposed table with 11 courses for SHB

No.	Title of course	HEI in Serbia	HEI in EU
Undergraduate level			
1.	Health, Safety, Security and Environmental Risks	FACULTY OF SECURITY STUDIES	Steinbeis University Berlin
2.	Introduction to Risk Management	FACULTY OF SECURITY STUDIES	Steinbeis University Berlin
3.	Business Communication and Management of Intercultural Differences	FACULTY OF SECURITY STUDIES	Steinbeis University Berlin
Master level			
4.	Risk Governance Concepts and Practices	EDUCONS UNIVERSITY	Steinbeis University Berlin
5.	Quantitative Risk Assessment and Advanced Applications	EDUCONS UNIVERSITY	Steinbeis University Berlin

Steinbeis-Hochschule-Berlin GmbH
Gürtelstr. 29A/30 | 10247 Berlin
Fon: +49 30 293309-0
Fax: +49 30 293309-20

CEO: Prof. Dr. Jürgen Abendschein
Court registration: AG Charlottenburg HRB 69231
A member of Steinbeis-Verbund
www.steinbeis-hochschule.de

No.	Title of course	HEI in Serbia		HEI in EU
6.	Project Management in operations in the safety and security	UNID		Steinbeis University Berlin
7.	Occupational Safety and Health	UCIPS		Steinbeis University Berlin
8.	Public Health Oriented Risk Analysis	UCIPS	1 professor	Steinbeis University Berlin
9.	Quality Management	UCIPS		University of Stuttgart (SHB)
PhD level				
10.	Complex Systems Theory, Managing Risks in Complex Systems	EDUCONS UNIVERSITY		Steinbeis University Berlin
11.	Decision Aid Approaches for Risk Management, (Decision-making in risk management)	EDUCONS UNIVERSITY		Steinbeis University Berlin

In order to cope with this request and, at the same time, do not recur to changing the budgets, SHB proposes the following solution, meeting the wish and Serbian HEIs and ensuring the viability of work under unchanged budgets:

a. SHB accepts to prepare the course materials for 11 instead of 6 courses, with the same budget as in the contract (for SHB and USTUTT);

b. The course materials will be prepared as per template elaborated with EDUCONS, current draft template would contain:
- Syllabus
- Short text with overview and main issues, incl. reference to text-books and other literature used/useful for the course
- Presentation materials (pptx) for 40 lectures, with min. 200 slides per course

c. SHB will organize the train-the-trainer courses for all 11 courses;

d. The materials for the undergraduate level will be subsets of the materials for the Master level, as per Table 2;

e. The courses at the PhD level will be prepared without translation and will be customized to the PhD topics of the currently enrolled PhD students, jointly within the "Joint PhD mentoring team of SHB and EDUCONS";

f. The respective partnering organizations (HEI) in Serbia will translate the course materials for the 6 courses as in Table 2 with support and in collaboration with SHB (explanations, clarifications, final check).

Table 2: Linking the undergraduate and Master courses

No.	Title of course	HEI in Serbia	HEI in EU
1.	Risk Governance Concepts and Practices (will include: Introduction to Risk Management)	EDUCONS UNIVERSITY	Steinbeis University Berlin
2.	Quantitative Risk Assessment and Advanced Applications	EDUCONS UNIVERSITY	Steinbeis University Berlin

No.	Title of course	HEI in Serbia		HEI in EU
3.	Project Management in operations in the safety and security (will include Business Communication and Management of Intercultural Differences)	UNID		Steinbeis University Berlin
4.	Occupational Safety and Health (will include Health, Safety, Security and Environmental Risks)	UCIPS		Steinbeis University Berlin
5.	Public Health Oriented Risk Analysis	UCIPS	1 professor	Steinbeis University Berlin
6.	Quality Management	UCIPS		University of Stuttgart (SHB)

2. Organization of the T3.5 Training of Serbian lecturers in Germany

2.1. Participants

Approx. 15 (max. 20) participants from Serbia. All participants bearing their own travel and accommodation costs. SHB will provide the accommodation links and provide the agreed block of pre-reserved rooms; the participants will be responsible for their own bookings.

2.2. Proposed time & Venue

June 24 – 28, 2019, for all, **July 1-2, 2019** for PhD courses

For June 24 – 28, 2019: Steinbeis premises in Stuttgart (alternatively: Conference hotel in Stuttgart, all participants in the same hotel, as well as the course rooms)

2.3. Proposed Agenda

   2.3.1. MASTER (and undergraduate) COURSES

     Day 1.   Monday (all participants)

       1.1. Introduction to SHB

       1.2. Study project concept

       1.3. Organization of materials and lectures

       1.4. IPR issues and conventions

       1.5. General introduction to Risk, Resilience and Safety management

       1.6. General train-the-trainer principles of Steinbeis

     Day 2.   Tuesday

       2.1. Track A lectures

         (3 lecturers foreseen)

         2.1.1. Risk Governance Concepts and Practices

           (will include: Introduction to Risk Management) (Selke/Renn/Jovanovic)

         2.1.2. Quantitative Risk Assessment and Advanced Applications (Bareiß/Uguccioni)

         2.1.3. Project Management in operations in the safety and security

           (will include Business Communication and Management of Intercultural Differences) (Jovanović/Uguccioni)

       2.2. Track B lectures

         (3 lecturers foreseen)

         2.2.1. Public Health Oriented Risk Analysis (NN)

         2.2.2. Occupational Safety and Health

           (will include Health, Safety, Security and Environmental Risks) (Weis)

         2.2.3. Quality Management (Bareiß)

     Day 3.   Wednesday (same agenda as for Tuesday ctd.)

Day 4.   Thursday - Trial lecturing
    4.1.   Track A: Approx. 8 Serbian trainers passing through a 45min mentored test lecture each
    4.2.   Track B: Approx. 8 Serbian trainers passing through a 45min mentored test lecture each
Day 5.   Friday – Plenary
    5.1.   Individual feedback from day to Serbian trainers (approx. 15 mins each)
    5.2.   Feedback and Q&A session: Serbian trainers to SHB
    5.3.   Elaborating plans of continued support SHB2SerbiaPartners
    5.4.   Final discussion

(week-end)

2.3.2. PhD COURSES ("Joint PhD mentoring team of SHB and EDUCONS")

Day 1.   Monday (EDUCONS) – the PhD day 1
Complex Systems Theory, Managing Risks in Complex Systems
    1.1.   Introductory course/lecture
    1.2.   EU and other projects of interest for PhD studies
    1.3.   Possible projects vs. candidates – matrix
    1.4.   Possible single PhD topics: preliminary list
Day 2.   Tuesday (EDUCONS) – the PhD day 2
Decision Aid Approaches for Risk Management, (Decision-making in risk management)
    2.1.   Introductory course/lecture
    2.2.   EU and other projects of interest for PhD studies
    2.3.   Possible projects vs. candidates – matrix
    2.4.   Possible single PhD topics: preliminary list

Please confirm the proposed above.

If you have any questions, please do not hesitate to contact us.

Kind regards

(A. Jovanovic)

Annex: Example of a syllabus and prerequisites

Annex: Example of a SYLLABUS (SHB) and prerequisites

Course Name: Public Health Oriented Risk Analysis	

ECTS Credits: Course belongs to the "Health and Safety" study module which has 6 CPs

Course Requirements: §10 and §11 BerlHG in relation to §3 RSO and §3 SPO (SER)

Course Aims:

To learn the principles and practice of public health-oriented risk analysis as applied to leading global health problems.

Course Outcome:

At the end of the course students are expected to have basic knowledge about:

1) general terms used in the area of risk, risk management and risk assessment;

2) respective methods used in this field of analysis

Course Overview:

The course covers the main topics of health oriented risk analysis with different aspects of risks and terminology used in the field. The main part of the course is dedicated to the related actions used in overall analysis (assessment, perception, communication etc.). Furthermore, the course is illustrated by a number of examples, presents commonly used methods, in particular the issues like (1) Basics of Risk: Analysis, Assessment and Management, (2) Risk Analysis in Perspective (Measures of Risk), (3) Dose-Response Functions, (4) Risk Perception and Communication, (5) Variability and Uncertainty, (6) Cumulative Risk Assessment, (7) Risk Assessment, Management and Law and (8) Application to Public Health - WHO Methodology for assessing the environmental burden of disease (EBD) based on calculation of DALYs (Disability Adjusted Life Year).

Textbooks and Mandatory Reading:

- Night noise guidelines for Europe. Copenhagen, WHO Regional Office for Europe, 2009 (http://www.euro.who.int/__data/assets/pdf_file/0017/43316/E92845.pdf, accessed 7 October 2010)

- Babisch W. The noise/stress concept, risk assessment and research needs. Noise & Health, 2002, 4(16): 1–11.

- Noise Observation and Information Service for Europe (NOISE) [web site]. Copenhagen, European Environment Agency, 2009 (http://noise.eionet.europa.eu/index.html, accessed 15 February 2011).

- Kephalopoulos S et al., eds. Proceedings of the International Workshop on "Combined Environmental Exposure: Noise, Air Pollution, Chemicals", Ispra, Italy, 15–16 January 2007. Luxembourg, Office for Official Publications of the European Communities, 2007.

- Prüss-Üstün A et al. Introduction and methods: assessing the environmental burden of disease at national and local levels. Geneva, World Health Organization, 2003.

- Prüss-Üstün A, Kay D, Fewtrell L, Bartram J (2003) Water, sanitation and hygiene. In: Ezzati M, Lopez AD, Rodgers A, Murray CJL, eds. Comparative quantification of health risks: global and regional burden of disease due to selected major risk factors. Geneva, World Health Organization (in press).

- Parma Declaration on Environment and Health, the Fifth Ministerial Conference on Environment and Health, Parma, Italy, 10–12 March 2010 (http://www.euro.who. int/__data/assets/pdf_file/0011/78608/E93618.pdf, accessed 7 October 2010)

Course Structure:

The course includes:

- introductory note explaining aim and structure of the course, and used methodology as well
- ex cathedra lecturing illustrated by number of examples
- review of main topics in the end of each lecturing unit

Number of active teaching hours: 60	Theoretical teaching: self-learning: 30	Practical teaching: seminar (18), transfer (12)

Assessment of knowledge (max. number of points 100)

Total score for the complete solution of the final exam is 50 points. To pass the exam 61% of the total score is required.

Grading System: Knowledge testing methods may be different: written exam, oral exam, project presentation, seminars, etc.

The exam consists of 10 questions.

These are of the following types:

1. True/False (4), where you have to evaluate if the given statement is correct or not;

2. Single/multiple choice (3), where you have to select the right answer(s) out of the options given;

3. Short answers (2), where you have to complete statements and formulate answers in 3-5 sentences.

4. Essay (1), elaborate on the problem in 1/2 to 1 page.

*max. length 1 page A4 format

Admission requirements

- Bachelor's Degree (180 ECTS) in the area of Engineering, Business Administration, Science or Industrial Engineering.
- Above average grade in previous studies (≥2.4 in the German grading system)
- Good knowledge of English certified (B2 level or equivalent)
- Successfully passing the aptitude test

A.2.2 Syllabi of the courses prepared as candidates for ImprESS project and offered to the project

(1) Complex Systems Theory, Managing Risks in Complex Systems

(2) Quantitative Risk Assessment and Advanced Applications, extension of Introduction to Risk Management

(3) Public Health Oriented Risk Analysis

(4) Occupational Health and Safety

(5) Project Management in operations in the safety and security

(6) Principles and Methods of ISO 31000 (together with USTUTT)

(7) Decision aid approaches for risk management (together with USTUTT)

(8) Health, Safety, Security and Environmental Risks

PhD COURSES:

Study programme: Big Data

A.2.2.1   Course title: Complex Systems Theory, Managing Risks in Complex Systems
Lecturer: Peter Klimek
Course status: Elective
ECTS:
Requirement: /
Course aims This course provides theoretical, computational, and algorithmic frameworks that are often summarized under the term "Complex System Theory". The course will outline several different approaches to make complex and high-dimensional datasets accessible and amenable for visualization and further analysis, including network theory, statistics of strongly correlated systems, and the analysis of complex dynamical processes. With this equipped, we will understand why complex systems often introduce a new type of risk that is called "systemic risk", namely the risk that an entire system will break down or cease functioning as a result of an initially relatively minor default or error.
Course outcomes At the end of the course the students are expected to have basic knowledge about: analytical and computational tools for dimensionality reduction of large and complex datasets; how to use networks and other theoretical, computational, or algorithmic concepts (such as clustering of data) to represent, visualize, analyze, and understand big data; and how to understand and quantify systemic risk in complex systems.
Course content *Theory classes* 1. What are complex systems? 2. What makes complex systems complex? 3. Tools for dimensionality reduction of large and complex datasets 4. Introduction to network theory 5. Measures for networks: how to quantify critical elements and interconnections 6. Small world networks 7. Scale-free networks 8. Visualizations and clustering 9. Introduction to cascades and ripple effects 10. Diffusion and spreading of diseases, ideas, innovations, and other processes 11. Statistics of complex dynamical processes 12. Financial complex systems 13. Introduction to systemic risk in complex systems 14. Quantifying systemic risk in complex systems 15. Final exam *Practice classes* 1. Famous examples of complex systems: from sandpile to epidemics 2. The computer as a gamechanger 3. Application of tools for dimensionality reduction of large and complex datasets 4. How to represent large and unstructured data as networks 5. Examples of measures for networks 6. Examples of small world networks 7. Examples of scale-free networks 8. Visualizations and clustering: practical example 9. Basic concepts for assessing dynamic processes 10. Diffusion and spreading of diseases, ideas, innovations, and other processes – case study 11. Statistics of complex dynamical processes: Practical example 12. Hallmark examples of complex systems in economics and finance. 13. System risk in complex systems – case study 1 14. System risk in complex systems – case study 2 15. Preparation for final exam
Literature 1. Text list including, but not limited to: Thurner, Hanel, Klimek, Introduction to the Theory of Complex Systems, Oxford University Press (2018). M. E. J. Newman, Networks - An Introduction, Oxford University Press (2010) 2. Transparencies to accompany each course unit. 3. Additional material, e.g. certification material and other relevant directives and documents.

Number of active teaching classes: 7	Theory classes: 4		Practice classes: 3	
Teaching methods				
The course is illustrated by number of examples, presents commonly used methods and tools, and provides exercises and preparation for the final exam.				
Knowledge assessment (max 100 points)				
Pre-exam tasks	Points	Final exam		Points
In-class activity		written exam		100
Practice classes		oral exam		
Mid-term tests				
Seminar papers				
Participants must also attend over 50% of the lecturing time to be eligible for course credit.				

MASTER COURSES:

Study programme: Quantitative Risk Assessment	

Course title: Quantitative Risk Assessment and Advanced Applications, extension of Introduction to Risk Management

Lecturer: Jörg Bareiss, Giovanni Uguccioni

Course status: Elective

ECTS:

Requirement: /

Course aims

The course presents an introduction to Quantitative Risk Analysis, thus illustrating the necessary steps for the calculation of risk indexes. A practical approach to frequency calculation and consequence assessment, including vulnerability models, will be discussed. A specific focus on domino effect and accidents triggered by Natural-Technological (Na-Tech) events will be presented.

Course outcomes

The goal of the course is to give an introduction to Quantitative Risk Assessment and to introduce the participants to the analysis of risks originated outside the process boundary, i.e. due to external events, or more specifically: domino effects and Na-Tech accidents due to earthquakes, flooding, lightning. The participants will be introduced to the more accepted methodologies for chemical process risk analysis, with particular emphasis to the recent advancement on consequence analysis. A focus on the methods for the evaluation of domino effects will be presented, exemplifying the assessment of complex industrial layouts.

Course content

Theory classes

1. Basic definitions 2. Risk indexes 3. Risk tolerability 4. Acceptability criteria 5. Selecting scenarios for risk calculation 6. Frequency and consequence assessment 7. Overview of risk calculation 8. Introduction to vulnerability models 9. Quantitative assessment of domino effect: introduction 10. Methods for evaluation of domino effects 11. Analysis of domino effect in complex industrial layouts 12. Assessment of industrial risk induced by natural events (Na-Tech) 13. Quantitative assessment in varying industrial contexts 14. Use of quantitative risk assessment results 15. Final exam

Practice classes

1. Examples of basic definitions in use 2. Risk index examples 3. Applying concepts of risk tolerability 4. Scenario assessment and analysis 5. Frequency calculation 6. Simplified examples of risk calculation 7. Examples of assessing domino effect in quantitative assessment 8. Simplified examples of risk calculation as related to domino effect 9. Example of Na-Tech accident assessment: Earthquake 10. Example of Na-Tech accident assessment: Flooding 11. Example of Na-Tech accident assessment: Lightning 12. Example of Na-Tech analysis methodologies for the EU project iNTeg-Risk 13. Case study: Simplified assessment of an Oil&Gas installation 14. Example of domino effect and Na-Tech implementation in risk assessment 15. Preparation for final exam

Literature

1. Textbook: CCPS AIChe series on risk assessment (QRA, Consequence Analysis)

2. Transparencies to accompany each course unit.

3. Council Directive 96/82/EC on the control of major-accident hazards

4. Directive 2003/105/EC of the European Parliament and of the Council of 16 December 2003 amending Council Directive 96/82/EC.

Number of active teaching classes: 13	**Theory classes:** 7	**Practice classes:** 6

Teaching methods			
Teaching methods including lecturing, use of a case study for practical demonstration, and use of software tools for numerical calculations and mapping.			

Knowledge assessment (max 100 points)			
Pre-exam tasks	Points	Final exam	Points
In-class activity		written exam	**100**
Practice classes		oral exam	
Mid-term tests			
Seminar papers			

Participants must also attend over 50% of the lecturing time to be eligible for course credit.

Study programme: Health and Safety

A.2.2.2   Course title: Public Health Oriented Risk Analysis

Lecturer: NN

Course status: Elective

ECTS:

Requirement: /

Course aims

The course covers the main topics of health oriented risk analysis with different aspects of risks and terminology used in the field. The main part of the course is dedicated to the related actions used in overall analysis (assessment, perception, communication etc.), and illustration by multiple examples is provided.

Course outcomes

At the end of the course students are expected to have basic knowledge about general terms used in the area of risk, risk management and risk assessment; and respective methods used in this field of analysis.

Course content

Theory classes

1. Basics of Risk Analysis for Public Health 2. Basics of Risk Assessment for Public Health 3. Basics of Risk Management for Public Health 4. Risk Analysis in Perspective 5. Measures of Risk 6. Dose-Response Functions 7. Risk Perception and Communication 8. Variability and Uncertainty 9. Cumulative Risk Assessment 10. Relevant Public Health Law 11. Introduction to DALYs (Disability Adjusted Life Year) 12. How to calculate DALYs 13. Environmental Burden of Disease (EBD) 14. WHO Methodology for assessing EBD 15. Final exam

Practice classes

1. Risk Analysis in Public Health – Case study 2. Risk Assessment in Public Health – Case study 3. Risk Management in Public Health – Case study 4. Measures of Risk – Case study 1 5. Measures of Risk – Case study 2 6. Dose-Response Functions – Case study 1 7. Dose-Response Functions – Case study 2 8. Dose-Response Functions – Case study 3 9. Variability and Uncertainty – Case study 10. Cumulative Risk Assessment – Practical example 11. Calculating DALYs – Practical example 12. Application of DALYs in real-life scenarios 13. WHO Methodology for assessing EBD – Case study 1 14. WHO Methodology for assessing EBD – Case study 2 15. Preparation for final exam

Literature

1. List of literature including, but not limited to:

Night noise guidelines for Europe. Copenhagen, WHO Regional Office for Europe, 2009.

Kephalopoulos S et al., eds. Proceedings of the International Workshop on "Combined Environmental Exposure: Noise, Air Pollution, Chemicals", Ispra, Italy, 15–16 January 2007.

Prüss-Üstün A et al. Introduction and methods: assessing the environmental burden of disease at national and local levels. Geneva, World Health Organization, 2003.

Prüss-Üstün A, Kay D, Fewtrell L, Bartram J (2003) Water, sanitation and hygiene. In: Ezzati M, Lopez AD, Rodgers A, Murray CJL, eds. Comparative quantification of health risks: global and regional burden of disease due to selected major risk factors. Geneva, World Health Organization.

2. Transparencies to accompany each course unit.

3. Additional material, e.g. certification material and other relevant directives and documents.

Number of active teaching classes: 13	Theory classes: 7	Practice classes: 6

Teaching methods

The course includes an introductory note explaining aim and structure of the course and used methodology; lecturing illustrated by a number of examples; and review of main topics at the end of each lecturing unit.

Knowledge assessment (max 100 points)

Pre-exam tasks	Points	Final exam	Points
In-class activity		written exam	100
Practice classes		oral exam	
Mid-term tests			
Seminar papers			

Participants must also attend over 50% of the lecturing time to be eligible for course credit.

Study programme: Health and Safety

A.2.2.3   Course title: Occupational Health and Safety

Lecturer: Giovanni Uguccioni

Course status: Elective

ECTS:

Requirement: /

Course aims

The course aims to explain the EU regulations in the field of safety and health of workers at work. The course also discusses the training of workers and their representatives.

Course outcomes

At the end of the course the participants are expected to know: which EU regulations are relevant for occupational safety and health, objectives, scope and requirements of the overall directive; requirements for special personnel assigned to deal with occupational safety and health, how to prevent occupational risks; and how to implement guidelines and principles in companies.

Course content

Theory classes

1. Introduction to occupational safety and health 2. General principles for preventing occupational risks 3. Protection of safety and health 4. Eliminating risk and accident factors 5. General guidelines for implementing occupational safety and health principles 6. Informing, consultation and balanced participation in accordance with national laws and/or practices 7. Objective and scope of Directive 89/391/EC: Overall directive "occupational safety" 8. Employer obligations under Directive 89/391/EC 9. General obligations under Directive 89/391/EC 10. Employee obligations under Directive 89/391/EC 11. Overview of separate directive for occupational safety and health terms of article 16 of directive 89/391/EC 12. Carcinogens, chemical and biological working materials 13. Safety and health signs at work 14. Special personnel for occupational safety 15. Final exam

Practice classes

1. Separate directive: Index 2. Separate directive: Workplace 3. Separate directive: Use of work equipment 4. Separate directive: Use of personal protective equipment 5. Separate directive: Working with visual display units 6. Separate directive: Manual handling of loads 7. Separate directive: Endangerment by physical agency 8. Example for implementation of the work equipment directives into national legislation: Ordinance of safety and health (Germany) 9. Example for the implementation from the directives on personal protective equipment: Personal protective equipment usage ordinance (PSA-Germany) 10. Example for implementation of European Council Directives:" Handling of loads" in the Germany Labour Protection Laws 11. Carcinogens, chemical and biological working materials – Case study 12. Safety and health signs at work – Case study 13. Special personnel for occupational safety: Example Germany 14. Specialists for occupational safety: work doctor, safety representative, occupational medics, and first-aid-helpers 15. Preparation for final exam

Literature
1. Textbook: OSHA Occupational Safety and Health, version 2, January 2010
2. Transparencies to accompany each course unit.
3. Additional material, e.g. certification material and other relevant directives and documents.

Number of active teaching classes: 13	Theory classes: 7	Practice classes: 6

Teaching methods
The course includes an introductory note explaining aim and structure of the course, as well as the used methodology; lecturing illustrated by a number of examples; and several collective group exercises.

Knowledge assessment (max 100 points)			
Pre-exam tasks	Points	Final exam	Points
In-class activity		written exam	**100**
Practice classes		oral exam	
Mid-term tests			
Seminar papers			

Participants must also attend over 50% of the lecturing time to be eligible for course credit.

Study programme: Project and Quality Management

A.2.2.4   Course title: Project Management in operations in the safety and security
Lecturer: Aleksandar Jovanović, Giovanni Uguccioni
Course status: Elective
ECTS:

Requirement: /

Course aims

This course aims to prepare attendees to the special environment of project work. Whether as project stakeholders or managers, they will learn the frameworks, tools and techniques allowing them to adapt to every situation and to work effectively. They will learn from experienced training how to avoid common mistakes and be able to understand both the technical and human aspects of a project.

Course outcomes

By the end of this course, students are able to: cope with uncertainties within the different project's phases, understand and use project management terminology, understand and apply project management frameworks, be familiar with the different aspects and scope of project management, understand and avoid the common mistakes made while managing projects, and have an overview of the existing tools.

Course content

Theory classes

1. Definition of project 2. Definition of project management 3. Project management process in safety and security organizations 4. Project deliverables 5. Project management activities 6. Project planning 7. Project organizing 8. Project leading 9. Project controlling 10. Project diagrams 11. Project activities 12. Project risk management in safety and security organizations 13. Project risks assessment 14. Risk response 15. Final exam

Practice classes

1. Project management process in safety and security organizations - case study 1 2. Project management process in safety and security organizations - case study 2 3. Project management process in safety and security organizations - case study 3 4. Project initiation and planning – case study 1 5. Project initiation and planning – case study 2 6. Project initiation and planning – case study 3 7. Project execution and control – case study 1 8. Project execution and control – case study 2 9. Project execution and control – case study 3 10. Project communication and HR management – case study 1 11. Project communication and HR management – case study 2 12. Project risk response in safety and security organizations - case study 1 13. Project risk response in safety and security organizations - case study 2 14. Project risk response in safety and security organizations - case study 3 15. Preparation for final exam

Literature

1. Texts including, but not limited to:

Chris Chapman, Stephen Ward (2003). Project Risk Management: Processes, Techniques and Insights, Wiley.

Christoph Schwindt (2005). Resource Allocation in Project Management (GOR-Publications), Springer.

Project Management Institute (2006). The Standard for Program Management, Project Management Institute.

Alan D. Orr (2004). Advanced Project Management, Kogan Page.

2. Transparencies to accompany each course unit.

3. Additional material, e.g. certification material and other relevant directives and documents.

Number of active teaching classes: 12	Theory classes: 7	Practice classes: 5

Teaching methods

Practice case studies and exercises are proposed in class, and students are requested to undertake a mock analysis using the methodology described in the module. The learning experience is deepened by practical examples, with the use of knowledge and skills and the implementation of adequate assignments.

Knowledge assessment (max 100 points)			
Pre-exam tasks	Points	Final exam	Points
In-class activity		written exam	100
Practice classes		oral exam	
Mid-term tests			
Seminar papers			

Participants must also attend over 50% of the lecturing time to be eligible for course credit.

A.2.2.5   Course Name: Decision aid approaches for risk management

ECTS Credits: Course belongs to the "Risk Management and Innovation" study module which has 10CPs

Course Requirements: §10 and §11 BerlHG in relation to §3 RSO and §3 SPO (SER),

Minimum mathematical background with a clear openness on psychological and behavioral approaches for decision making

Course Aims:

To allow a better understanding of the decision context, stakes and possible consequences and elaborate a formal description of the problem to be resolved and the stakeholders to involve

Course Outcome:

At the end of the course, attendees are expected to have basic knowledge about:

- Main descriptive and prescriptive concepts related to decision making in risk management
- A vision of the key decision making moments of risk management frameworks
- A global vision of the tools available to improve the way managers are dealing with decision making.

Course Overview:

Decision making is a process where multiple factors interact to shape the final outcome. Those factors can be technical, informational, emotional/psychological, cultural… Nevertheless, the limited rationality of economic operators makes the decision exercise more and more difficult in a more and more complex world. Safety management requires short, mid and long term decisions that may highly influence the ability of the organization to cope with its risks.

Textbooks and Mandatory Reading:

- BOUYSSOU, D. at all (2000) Evaluation and decision models. A critical perspective. Kluwer Publishers.
- BOUYSSOU, D. at all. (2006); Evaluation and decision models with multiple criteria. Stepping stones for the analyst. Springer
- Norese, M. F. (1996). A process perspective and multicriteria approach in decision-aiding contexts. Journal of Multi-Criteria Decision Analysis, 5:133–144.
- Roy, B. (1998). A missing link in operational research decision aiding: Robustness analysis. Foundations of Computing and Decision Science, 3(23):141–160.
- Simon, H. A. (1957). A behavioral model of rational choice. In: H. A. Simon (Ed.) Models of man: Social and rational. Mathematical essays on rational human behavior in a social setting, pp. 241–260. Wiley, New York.
- Saaty, T.L. (1980). The analytic hierarchy process. New York: McGraw Hill.
- Macharis, C., Springael, J., de Brucker, K. and Verbeke, A. (2004). PROMETHEE and AHP:

The design of operational synergies in multicriteria analysis: Strengthening PROMETHEE with ideas of AHP, European Journal of Operational Research, vol. 153, no. 2, pp. 307–317

Course Structure:

The course:

- is illustrated by number of examples;
- presents commonly used methods and tools and
- Provides exercises and preparation for the final exam.

Number of active teaching hours: 60	Theoretical teaching: self-learning: 30	Practical teaching: seminar (18), transfer (12)

Assessment of knowledge (max. number of points 100)

Total score for fully correct complete answers of the final exam is 57 points. To pass the exam, 61% of this total score is required.

Grading System: Knowledge testing methods may be different: written exam, oral exam, project presentation, seminars, etc.

The exam consists of 30 questions of four different types:

1. Yes/no questions (15) that you should answer by either Yes or No

2. Single/multiple choice questions (9), where you should select correct answer or answers (there may be more than one) out of the offered ones

3. Short questions (3) that you should answer in 2 - 5 sentences

4. Open questions (3) that should give a comprehensive answer (max. one page).

*max. length 1 page A4 format

A.2.2.6   Course Name: Principles and Methods of ISO 31000

ECTS Credits: Course belongs to the "Introduction – Risk Management in Industry" study module which has 7 CPs

Course Requirements: §10 and §11 BerlHG in relation to §3 RSO and §3 SPO (SER)
This module requires some reading of the ISO 31000 risk management standard before the course, especially the vocabulary, the principles, the framework and the process proposed in the ISO 31000 standard.

Course Aims:

To provide the knowledge and skills essentials to operate and improve risk management framework

Course Outcome:

At the end of the course, attendees are expected to have basic knowledge about:

- main principles of the ISO 31000 standard
- ISO 31000 framework for managing risk
- implementation principles of the ISO 31000 standard
- related standards
- open issues in ISO 31000
- further development of ISO 31000 (ISO 31004, new revisions)

Course Overview:

The course covers the International Standard of ISO 31000:2009 highlighting the relationship between the risk management principles, framework and process as described in this International Standard.

The course also highlights issues related to the applicability of the standard in industry and in general.

Textbooks and Mandatory Reading:

- ISO 31000:2009 Risk management — Principles and guidelines on implementation.
- Jovanovic, A. et al. (2012). iNTeg-Risk D2.1.2.1: iNTeg-Risk ERMF - The Emerging Risk Management Framework, EU project iNTeg-Risk, Project Nr. CP-IP 213345-2, Contact: EU-VRi, Stuttgart, Germany.
- ISO 14001:2004 Environmental management systems - Requirements with guidance for use.
- ISO 14044:2006 Environmental management - Life cycle assessment - Requirements and guidelines.
- ISO 26000:2010 Guidance for social responsibility.
- ISO 27000: 2009 Information technology - Security techniques - Information security management systems - Overview and vocabulary.
- ISO/IEC 31010:2009 Risk management - Risk assessment techniques.
- ISO Guide 73:2009 Risk management – Vocabulary.
- ISO/IEC Guide 51:1999 Safety aspects -- Guidelines for their inclusion in standards
- Aven, T., Renn, O. (2010). Risk Management and Governance: Concepts, Guidelines and Applications (Risk, Governance and Society), Springer.
- BS 31100:2011 Risk management. Code of practice and guidance for the implementation of BS ISO 31000
- ISO/AWI 31004 Risk management -- Guidance for the implementation of ISO 31000

Course Structure:

The course includes:

- introductory note explaining aim and structure of the course, and used methodology as well
- ex cathedra lecturing illustrated by number of examples
- review of main topics in the end of each lecturing unit

Number of active teaching hours: 60	Theoretical teaching: self-learning: 30	Practical teaching: seminar (18), transfer (12)

Assessment of knowledge (max. number of points 100)

Total score for fully correct complete answers of the final exam is 100 points. To pass the exam, 61% of this total score is required. One has 90 minutes to answer the questions.

Grading System: Knowledge testing methods may be different: written exam, oral exam, project presentation, seminars, etc.

The exam consists of 23 questions of four different types:

1. Yes/no questions (5) that you should answer by either Yes or No

2. Single/multiple choice questions (10), where you should select correct answer or answers (there may be more than one) out of the offered ones

3. Short answer questions (6) that you should answer in 2 - 5 sentences

4. Essays (2) that should give a comprehensive answer (max. one page).

*max. length 1 page A4 format

UNDERGRADUATE COURSES:

Study programme: Health and Safety

A.2.2.7   Course title: Health, Safety, Security and Environmental Risks

Lecturer: Udo Weis, Giovanni Uguccioni

Course status: Elective

ECTS:

Requirement: /

Course aims

The course gives an overview of EU regulation in the field of HSSE (Health, Safety, Security and Environment), explains the objectives and requirements, as well as the state-of-the art in the implementation including constraints and advantages. Special focus is on the Integrated Pollution Prevention and Control (IPPC) and Industrial Emission Directive (IED) and on the prevention of major accidents (Seveso).

Course outcomes

At the end of the course a participant will: understand what is IPPC and IED and be familiar with the European Union regulatory framework for environmental management; know in details the concept and implementation of the Seveso Directive (Seveso II and III); the safety report, the major accident prevention policy (MAPP), the Safety Management System (SMS), Land-Use Planning (LUP) and Emergency Plans; understand the importance of human and security aspects when dealing with HSSE issues in industry; and know what are Safety (Key) Performance Indicators (SPIs or KPIs) and their use and interpretation.

Course content

Theory classes

1. Mandatory environmental conditions for IPPC (Integrated pollution prevention and control) 2. Permit requirements and applications 3. BREF on Economics and Cross-Media 4. IPPC in relation to other instruments 5. Introduction to Life Cycle Assessment (LCA) 6. Concepts of major accident prevention 7. Risk assessment and safety report 8. Concepts of human and organizational factors 9. Control system and human performance 10. Security concept 11. Hazard analysis 12. Threat analysis 13. The concept of key performance indicators in the HSSE area 14. Leading and lagging indicators 15. Final exam

Practice classes

1. The Seville Process to elaborate the BREFs (reference documents on Best Available Techniques) 2. Recent evolution: from IPPC Directive 2008/1/EC to Industrial Emission Directive 2010/75/EU 3. The role of LCA in the context of IPPC 4. Major Accident Prevention Policy (MAPP) 5. Safety Management System (SMS) 6. Land-Use Planning (LUP) 7. Implementation and further examples of accident prevention policy 8. Human factor analysis – Learning from experience 9. Integration in SMS 10. Good security practice 11. Security management 12. Definition, selection, aggregation, and calculation of indicators 13. Use of indicators and interpretation of the results 14. Case studies 15. Preparation for final exam

Literature

1. Textbook: HSE / HSSE: Health, Safety, Security and Environment, ver. 3, March 2009

2. Transparencies to accompany each course unit.

3. Additional material, e.g. certification material and other relevant directives and documents.

Number of active teaching classes: 13	Theory classes: 7	Practice classes: 6

Teaching methods

The course includes: an introductory note explaining aim and structure of the course, and used

methodology as well; lecturing illustrated by number of examples; and a review of main topics in the end of each lecturing unit.

Knowledge assessment (max 100 points)

Pre-exam tasks	Points	Final exam	Points
In-class activity		written exam	**100**
Practice classes		oral exam	
Mid-term tests			
Seminar papers			

Participants must also attend over 50% of the lecturing time to be eligible for course credit.

A.2.2.8   Course title: Introduction to Risk Management

Lecturer: Piet Sellke

Course status: Elective

ECTS:

Requirement: /

Course aims

The course covers the main topics of industrial safety, starting with different aspects of risks and terminology used in the field. The main part of the course is dedicated to the related EU directives and their application in industry. The course outlines goals, scope and required measures / obligations considering acute (e.g. accidents-related) and chronic (e.g. pollution-related) risks. Special attention is devoted to major accident prevention and related process safety risk assessment methodologies.

Course outcomes

At the end of the course students are expected to have basic knowledge about: general terms used in the area of risk, safety, hazard, risk and risk assessment…; respective EU regulation/directives such as REACH, Seveso II, ATEX, and the obligations resulting from them; main elements of the process safety assessment (input data, hazards identification methods and tools, scenario elaboration and assessment of related risks…), including major accidents prevention policy; and safety measures, based on regulatory requirements, as implemented in the different EU member states.

Course content

Theory classes

1. Different aspects of the term safety 2. Introduction to industrial safety issues 3. Historical overview of industrial accidents with hazardous substances 4. Major accident hazards 5. Societal response to major accidents 6. Seveso lower and upper tier establishment 7. Major Accident Prevention Policy (MAPP) - on all 7 demands 8. Safety Management System (SMS) – on all 7 demands 9. Emergency planning (internal/external) 10. Land use planning requirements 11. Roles of competent authorities (CAs) under Seveso II directive 12. Overview of the main steps for process safety risk assessment 13. Required site and surrounding data for process safety risk assessment 14. Relevant properties of the hazardous substances (including R and S phrases) 15. Final exam

Practice classes

1. Understanding the EU REACH regulation 2. Occupational safety and health (including Atex, ADR and Seveso) 3. Lessons learned from infamous industrial accidents 4. Legislation introduced as a result of industrial accidents 5. Operational use of safety reports 6. Seveso II directive obligations on providing information to the public 7. Hazard identification methods and tools 8. Hazard classification approaches 9. Process safety risk assessment scenarios 10. Assessment of consequences in risk assessment 11.

Applying modeling and evaluation approaches to assess consequences 12. Assessment of scenario likelihood 13. How to consider branching of events and safety measures 14. Case studies 15. Preparation for final exam

Literature
1. Textbook: Introduction to Risk and Safety Management in Industry, Version 2, September, 2009
2. Transparencies to accompany each course unit.
3. Additional material, e.g. certification material and other relevant directives and documents.

Number of active teaching classes: 13	Theory classes: 7	Practice classes: 6

Teaching methods
The course is illustrated by number of examples, presents commonly used methods and tools, and provides exercises and preparation for the final exam.

Knowledge assessment (max 100 points)

Pre-exam tasks	Points	Final exam	Points
In-class activity		written exam	100
Practice classes		oral exam	
Mid-term tests			
Seminar papers			

Participants must also attend over 50% of the lecturing time to be eligible for course credit.

Study programme: Introduction - Risk Management in Industry
A.2.2.9   Course title: Business Communication and Management of Intercultural Differences
Lecturer: Aleksandar Jovanović
Course status: Elective
ECTS:
Requirement: /

Course aims
In the times of ever increasing globalization, cultural differences and multilingual issues play an important role in the area of business communication which can easily fail on apparently banal issues. This could be of particular importance also in collaborative international projects. A cognitive approach toward cultural and national differences will be used throughout the training.

Course outcomes
The purpose of this course is to ensure that engineers, managers and IT experts can understand the importance of these aspects for the success of their collaboration with partners from other cultural background.

Course content
Theory classes
1. Intercultural value systems 2. Differences in cultural practices 3. Managing cultural differences 4. Cross-cultural project management 5. Individualism 6. Teamwork 7. Working in an international atmosphere 8. Essentials of business communication 9. Elements of business ethics 10. Human Resources Management 11. Background on EU projects 12. EU project collaboration and management

13. Multicultural business etiquette techniques 14. Navigating multilingual environments 15. Final exam

Practice classes

1. Multicultural contexts – what you should know, what you should do, what you should not do 2. Applying management of cultural differences toward ensuring successful projects 3. Applying business etiquette techniques across cultures 4. Multilingual environments: preventing miscommunication 5. Managing cultural differences in risk engineering projects 6. Managing cultural differences in risk management projects 7. Managing cultural differences in IT projects 8. Managing cultural differences in other projects 9. What one should know, do or not do in an EU projects 10. Case study: United States 11. Case study: Japan 12. Case study: India 13. Case study: China 14. Case study: Other international contexts 15. Preparation for final exam

Literature

1. Texts including:

Hall, Edward, T. (1959). The silent language. 1st edn, Anchor Books, New York, USA. ISBN: 0385055498

Hall, Edward, T. (1976). Beyond culture. 1st edn, Anchor Books, New York, USA. ISBN: 9780385124744

Hofstede, Geert & Hofstede, Gert, J. (2005). Cultures and organizations: software of the mind. 2nd edn, McGraw Hill, USA. ISBN: 9780071439596

House, Robert, J. [et al]. (2004). Culture, leadership, and organizations: The GLOBE study of 62 societies. 1st edn, Sage Publications, California, USA. ISBN: 9780761924012

Morrosion, Terry & Conaway, Wayne, A. (2006). Kiss, bow or shake hands. 2nd edn, Adams Media, Avon, Massachusetts, USA. ISBN: 1593373686

2. Transparencies to accompany each course unit.

3. Additional material, e.g. certification material and other relevant directives and documents.

Number of active teaching classes: 7	Theory classes: 4	Practice classes: 3

Teaching methods

This course will focus on interaction with attendees and require their active participation. It will incorporate lectures, review and discussion of the daily material. Lectures notes and transparencies will be provided.

Knowledge assessment (max 100 points)

Pre-exam tasks	Points	Final exam	Points
In-class activity		written exam	100
Practice classes		oral exam	
Mid-term tests			
Seminar papers			

Participants must also attend over 50% of the lecturing time to be eligible for course credit.

Annex 3   Syllabi of the courses finally realized

A.3.1   Intro

See Syllabus A.2.2.8 Course title: Introduction to Risk Management.

A.3.2   HSSE

See Syllabus A.2.2.7 Course title: Health, Safety, Security and Environmental Risks.

A.3.3   BC&M

See Syllabus A.2.2.9 Course title: Business Communication and Management of Intercultural Differences.

Annex 4 Agenda of the training courses, as realized

A.4.1 Course R01 INTRO – Introduction to Risk Management

January 20, 2020

Day 1			
11:00 – 12:30	Introduction to SHB Study project concept Project templates	AJ/LGR/SJ/SBD /MJ	AJ – Not available in the office noon
12:30 – 13:30	Lunch break		
13:30 – 15:30	Introduction of Moodle platform	AJ/LGR/SJ/SBD/MJ	Moodle: 1:30PM
15:30 – 16:30	Organization of materials and lectures	AJ/LGR/SJ/SBD/MJ	
16:30 – 17:00	Attendance	AJ/LGR/SJ/SBD/MJ	

January 21, 2020

Day 2	MASTER (and undergraduate) COURSES – Part 1 (in-person)	WHO lead	Comment
09:30 – 10:30	Training material	AJ/LGR/SBD	AJ – Not available in the office noon
10:30 – 10:45	Coffee break		
10:45 – 12:30	Training material	AJ/LGR/SBD	
12:30 – 13:30	Lunch break		
13:30 – 16:30	Preparation of the test exam	AJ/LGR/SBD	Lecture Notes (INT) & Slides

January 22, 2020

Day 3	MASTER (and undergraduate) COURSES – Part 1 (in-person)	WHO lead	Comment
09:00 – 10:30	Test lecture • 1h/person • The unit of the course (Program of the day/videos/photos)	AJ/**VP**/LGR/SBD	
10:30 – 10:45	Coffee break		
10:45 – 12:30	Discussion of Test lecture	AJ/**VP**/LGR/SBD	
12:30 – 13:30	Lunch break		
13:30 – 16:30	Lecture notes	AJ/**VP**/LGR/SBD	

January 23, 2020

Day 4			
	MASTER (and undergraduate) COURSES – Part 1 (in-person)	**WHO lead**	**Comment**
09:00 – 10:30	Exam preparation	**AJ**/LGR/ SBD/ SJ	
10:30 – 10:45	**Coffee break**		
10:45 – 12:30	Exam preparation	**AJ**/LGR/ SBD/ SJ	
12:30 – 13:30	**Lunch break**		
13:30 – 16:30	Exam preparation	**AJ**/LGR/ SBD/ SJ	

January 24, 2020

Day			
9:00 – 10:30	Individual feedback from day	**VP**/LGR/SBD	
10:30 – 10:45	**Coffee break**		
10:45 – 12:30	Discussion of Test lecture	**VP**/LGR/SBD	
12:30 – 13:30	**Lunch break**		
13:30 – 14:30	Feedback and Q&A session	**VP**/LGR/SBD	
14:00 – 16:00	Conclusion of the day	**VP**/LGR/SBD	

NOTE:

AJ – Aleksandar Jovanović
LGR – Lais G. Ramalho
SBD – Stela B. Djurovic
SJ – Snežana Jovanovic
VP – Vanessa Pfau
MJ – Marjan Jelic

A.4.2 Course R06 HSSE - Health, Safety, Security and Environmental (HSSE) Risks and Course R19 BC&M - Business Communication & Management of Intercultural Differences

Agenda

September 14, 2020

Day 1			
Time	**Health, Safety, and Security Environmental Risks – Part 1**	**WHO leads**	**Study platform**
10:00 – 12:00	Telephone conference and self-study afterwards	AJ	Moodle

September 15, 2020

Day 2			
Time	**Health, Safety, and Security Environmental Risks – Part 2**	**WHO leads**	**Study platform**
10:00 – 12:00	Telephone conference and self-study afterwards	AJ	Moodle

September 16, 2020

Day 3			
Time	**Business Communication & Management of Intercultural Differences**	**WHO lead**	**Study platform**
10:00 – 12:00	Telephone conference and self-study afterwards	VP, AJ, MTN	Moodle

September 17, 2020

Day 4			
Time	**Review**	**WHO lead**	**Study platform**
10:00 – 12:00	Telephone Conference and self-study afterwards	VP, MTN, AJ	Moodle

September 18, 2020

Day 5	
10:00 – 12:00	Final recapitulation, feedback and telephone conference

NOTE:

AJ – Aleksandar Jovanović
SBD – Stela B. Djurović
VP – Vanessa Pfau
MJ – Marjan Jelić
MTN – Mai Thi Nguyen

Annex 5   Announcement of the training courses

Steinbeis Hochschule Berlin SHB
Steinbeis Advanced Risk Technologies Institute (R-Tech)
Fangelsbachstr. 14, 70178 Stuttgart, Germany

ImprESS Courses – Steinbeis University

Project: Improving Academic and Professional Education Capacity in Serbia in the area of Safety & Security (ImprESS)

Project number 586410-EPP-1-2017-1-RS-EPPKA2-CBHE-JP;

WP3 - SETTING UP THE INFRASTRUCTURE FOR APPLYING THE MODEL – Tasks 3.3 and 3.4

January 21 – 24, 2020
Venue address: *Fangelsbachstrasse 14*
70178 Stuttgart, Germany

Course R01 INTRO

INTRODUCTION TO RISK MANAGEMENT

The course covers the main topics of industrial safety, starting with different aspects of risks and terminology used in the field. The main part of the course is dedicated to the related EU Directives and their application in industry. The course introduces goals, scope and required measures / obligations considering acute (e.g. accidents-related) and chronic (e.g. pollution-related) risks. Special attention focuses on major accident prevention and related process safety risk assessment methodologies.

At the end of the course students are expected to have basic knowledge about:

- general terms used in the area of risk, safety, hazard, risk and risk assessment...
- respective EU regulation/directives such as REACH, Seveso II, ATEX, and the obligations resulting from them
- main elements of the process safety assessment (input data, hazards identification methods and tools, scenario elaboration and assessment of related risks...), including major accidents prevention policy
- safety measures, based on regulatory requirements, as implemented in the different EU Member States

As an option, the course covers the issues of risk perception and risk communication and tackles the method of stakeholder involvement in technical risk management.

As introductory, the course is dedicated to the wide range of participants, such as:

- Professionals dealing with risk issues on management or operation level
- Individuals with no previous experience in the field of risk management, but willing to extend their knowledge and take up new roles in risk management in their companies
- Students of Steinbeis Master of Risk Engineering and Management program and similar programs.

For more info about ImprESS project go to http://impress.kpu.edu.rs/
In order to register send an email to sti889@risk-technologies.com or call +49 711 410041 28
Info about the SHB European Master and Certification Program in Risk Engineering and Management see http://sti.risk-technologies.com/

Steinbeis Hochschule Berlin SHB
Steinbeis Advanced Risk Technologies Institute (R-Tech)
Fangelsbachstr. 14, 70178 Stuttgart, Germany

ImprESS Courses – Steinbeis University

Project: Improving Academic and Professional Education Capacity in Serbia in the area of Safety & Security (ImprESS)

Project number 586410-EPP-1-2017-1-RS-EPPKA2-CBHE-JP;

WP3 - SETTING UP THE INFRASTRUCTURE FOR APPLYING THE MODEL – Tasks 3.3 and 3.4

September 14 – 18, 2020
Stuttgart, Germany

| **Course R06 HSSE** | **Course R19 BC&M** |
| HEALTH, SAFETY, SECURITY AND ENVIRONMENTAL (HSSE) RISKS | BUSINESS COMMUNICATION & MANAGEMENT OF INTERCULTURAL DIFFERENCES |

This course will present current European HSSE (Health, Safety, Security & Environmental) issues for industry. The goal of the course is to help the participants:

- to get familiar with risk aspects and with the methods for hazard identification
- to learn about probability and consequence analysis in risk assessment
- to discuss the health, safety and environment issues and relate them to his/her own experience.

At the end of the course attendees are expected to have basic knowledge about:

- European legislation regarding health, safety, security and environment and surveillance
- how risks are managed during regular operation and in the case of critical events
- methods for hazard identification
- basics of probability and consequences analysis and risk assessment

In the times of ever-increasing globalization, cultural differences and multilingual issues play an important role in the area of business communication that can easily fail on apparently banal issues. The goal of the course is to help the participants to understand the importance of these aspects for the success of their collaboration with partners from other cultural background. This course will address issues such as:

- Intercultural value systems;
- Differences in cultural practices;
- Cross-cultural project management;
- Individualism vs. Teamwork;
- Successful management of cultural differences as a factor of success in international projects;
- What one should know, do or not do in an EU project;
- Case studies: US, Japan, India, China, South Africa ...

In order to recognize, apprehend and manage cultural and international differences, especially in the EU projects.

NOTE: *Course **R01 INTRODUCTION TO RISK MANAGEMENT** was delivered in January 20-24, 2020 in Stuttgart, Germany*

The course is dedicated to the wide range of participants, such as:

- Future teachers of the respective topics in Impress project at Serbian Universities
- professionals dealing with risk issues and/or management of international and EU projects
- individuals with no previous experience in the field of risk management, but willing to extend their knowledge and take up new roles in risk management in their companies

For more info about ImprESS project go to http://impress.kpu.edu.rs/

In order to register send an email to Ms. Mai Thi Nguyen mtnguyen@risk-technologies.com

Info about the SHB European Master and Certification Program in Risk Engineering and Management see http://sti.risk-technologies.com/

Annex 6   Agreement between FSS and Steinbeis

Improving Academic and Professional Education Capacity in Serbia in the area of Safety & Security ImprESS (586410-EPP-1-2017-1-RS-EPPKA2-CBHE-JP)

Co-funded by the Erasmus+ Programme of the European Union

COLLABORATION AGREEMENT

(hereinafter "Agreement")

between
University Of Belgrade: Faculty for Security Studies
Belgrade, Serbia
and
Research Center (Forschungszentrum) „Advanced Risk Technologies"
Stuttgart, Germany,
together with
Steinbeis University
Berlin, Germany,
regarding

EDUCATIONAL AND RESEARCH COOPERATION IN THE FRAMEWORK OF THE EU ERASMUS+ PROJECT IMPRESS (PROJECT REFERENCE 586410-EPP-1-2017-1-RS-EPPKA2-CBHE-JP)

(Version of August 14, 2020)

The University Of Belgrade: Faculty for Security Studies, Belgrade, Serbia (hereinafter referred to as "FSS") and Research Center "Advanced Risk Technologies", Stuttgart, Germany, together with Steinbeis University, Berlin, Germany, (hereinafter referred to as "Steinbeis"), jointly hereinafter referred to as the "Parties", seeking to enhance capacity building in the field of academic and professional education in the area of Safety & Security (S&S) and create the International Knowledge Alliance, have agreed to the following:

1.   GENERAL

1.1   Steinbeis and FSS agree on the usefulness and importance of establishing cultural, educational collaboration relationships, in order to establish and consolidate the bond of friendship between the two academic institutions and between the two countries; the exchange of students, teachers and researchers.

1.2   The Parties are members of the project Erasmus + KA 2 "Capacity Building in Higher Education" – Improving Academic and Professional Educational Capacity in Serbia in the Area of Security", No. 586410-EPP1-2017-1-RS-EPPKA2-CBHE-JP, approved by the European Commission, which aims to consolidate and strengthen the academic and professional capacities of higher education institutions accredited for the implementation of security studies in the Republic of Serbia (hereinafter: the Project).

1.3   The key objective of the Project and this Agreement is to build a model for improving the educational capacities of Serbia in the field of security studies by the establishment of a knowledge alliance and strategic cooperation with the European Union through the mechanisms of the European Higher Education Area.

1.4   The relations of the Parties regarding the participation in the Project are regulated by the contractual documents, agreements and other documents governing the project.

1.5   In the implementation of this Agreement, the Parties should act in the spirit of mutual cooperation and understanding, in good faith and with due care, in order to achieve the objectives and principles of the above project documents.

1.6   The terms used in this Agreement should be interpreted in accordance with the definitions under Article 2 of this Agreement.

Improving Academic and Professional Education Capacity in Serbia in the area of Safety & Security ImprESS (586410-EPP-1-2017-1-RS-EPPKA2-CBHE-JP)

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2. DEFINITIONS

The Parties agree to adopt the following definitions for the purposes of this Agreement:

- "SYLLABUS" means the identification of details of a specific course (e.g. course agenda, literature) and the required competences. It must include the teaching methods and evaluation criteria;
- "EUROPEAN TRANSFER AND ACCUMULATION SYSTEM" (ECTS) means the European student credit accumulation and transfer system, based on the workload (in hours) required to achieve the objectives of the course, to be expressed in terms of learning outcomes and of skills to be acquired;
- "PROCESS OF BOLOGNA" means the process of harmonization of the European higher education systems, with the aim of creating a European area of higher education and of promoting it on a global scale to increase its international competitiveness;
- "INTERNATIONAL KNOWLEDGE ALLIANCE" – The Knowledge Alliance is a voluntary strategic partnership of the Parties established by this Agreement on the basis of the Consortium Agreement, Partnership Agreement, the Project and other written agreements that are or shall be concluded between all Project members with this purpose, and which is manifested through the organization and implementation of joint activities aimed at strengthening the academic and professional educational capacities in Serbia in the field of security. The Knowledge Alliance established by this Agreement is an integral part of the International Knowledge Alliance established in the accordance with the Project and special agreements that shall be concluded among all members of the Consortium (hereinafter: special agreements on the International Knowledge Alliance);
- "JOINT ACTIVITIES" – Joint activities aimed at strengthening academic and professional educational capacities in Serbia in the field of security and strengthening the organisational, research, educational and technological resources of the Parties, including (but not limited to) to the following: organization of periodic conferences, seminars and round tables; strengthening the knowledge alliance through mutual cooperation, understanding and exchange of information; respect and preservation of mutual achievements in the field of education and research; joint research in order to analyse the needs of the domestic and foreign labour market; the establishment of business and research consortiums aimed at conducting joint projects; providing joint commercial services to third parties, other joint activities in the field of education, innovation and research; and resource sharing between the Parties, e.g. engaging persons from one Party in a project of the other Party;
- "FORCE MAJERURE" – If any Party has been prevented from fulfilling any of its obligations arising out of this Agreement by circumstances that are not within its reasonable control, that Party shall be released from the fulfilling of that obligation for the duration of the relevant event (war, flood , severe accident, earthquake, etc.).

3. SUBJECT OF THE AGREEMENT – ESTABLISHING AN INTERNATIONAL KNOWLEDGE ALLIANCE AND LAUNCHING OF EDUCATIONAL AND RESEARCH COOPERATION

3.1 The subject of this Agreement is the defining of mutual rights and obligations and the principles of cooperation between the Parties in the field of education and research, with the aim of strengthening the alliance of knowledge and strategic cooperation with the European Union through the mechanisms of the European Higher Education Area. This Agreement will serve as a platform for broad research, educational, technological and commercial cooperation between the Parties.

3.2 The Parties agree to establish a mutual knowledge alliance, as part of an International Knowledge Alliance defined by the Project and special agreements, through undertaking joint activities in accordance with Article 2 of this Agreement.

4. RIGHTS AND OBLIGATIONS OF THE PARTIES

4.1 The Parties have the right to freely use the results of the Project in accordance with the rules of the Project and special agreements, meeting the educational needs of their students and improving their own academic, research, commercial and professional capacities.

4.2 The Parties have the right to engage in bilateral or multilateral relations for the purpose of creating new study programs, establishing joint study programs or other forms of partnership in higher education, in accordance with the regulations in the field of higher education, for the purpose of full realization of the objectives of the Project.

4.3 The Parties have the right to engage in Joint Activities as defined in Article 2: DEFINITIONS.

4.4 The Parties undertake to keep as confidential all information which is explicitly designated by the Parties as such, including personal data, trade secrets and classified information.

4.5 The Parties agree that any information of a general, business and technological character obtained from the other party will be treated as confidential and that, as such, they will not be made available to the public without the written consent of the other party.

Improving Academic and Professional Education Capacity in Serbia in the area of Safety & Security ImprESS (586410-EPP-1-2017-1-RS-EPPKA2-CBHE-JP)

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5. DURATION

5.1 Cooperation under this Collaboration Agreement is to commence upon signature and continue for 3 (three) years with the option to be prolonged by a consecutive Agreement.

6. TERMINATION OF THE AGREEMENT

6.1 Termination of the Agreement shall be made in writing.

6.2 This Collaboration Agreement may be discontinued at any time in writing by the mutual consent of the Parties.

6.3 Each Party may unilaterally terminate this Agreement, without specifying the reason.

6.4 Before giving a statement on the unilateral termination of the Agreement, as referred to in paragraph 6.3 of this Article, the Party initiating the termination shall warn the other Party in writing that it intends to terminate the Agreement with a notice period of 30 days.

7. MANAGEMENT & COORDINATION

7.1 Each Party will nominate one Cooperation Manager as the main contact and person in charge of the Agreement.

7.2 Specific agreements detailing terms and conditions applicable to the particular activities may be concluded by the Parties, prior to commencing an activity and on a case-by-case basis.

8. GOVERNING LAW AND SETTLEMENT OF DISPUTES

8.1 The Agreement, as exclusively applied to the activities executed in each Party's country, shall be interpreted under the laws within that respective country. Any controversy, dispute or claim arising under or relating to the provisions of this Agreement, or the breach thereof, shall be determined by arbitration of the Court of Justice in the country of the Party alleged to have committed the breach. The decision of the Court shall be binding and final on the Parties.

8.2 The language of the proceedings (including documents) will be English.

8.3 All issues not regulated by this Agreement shall be subject to the provisions of the laws regulating higher education and obligations, as well as other relevant regulations in the country of the accused Party.

8.4 The Parties agree that all disputes arising from this Agreement shall be resolved by mutual consent, and if this is not possible, the court in the country of the accused will have jurisdiction.

9. AMENDMENTS TO THE AGREEMENT

9.1 All amendments to this Agreement shall be made in writing and signed by the authorized representatives of the Parties.

9.2 No Party may delegate or transfer to a third party this Agreement or the rights and obligations arising therefrom, without the prior consent of the other Party, in writing.

10. TRANSITIONAL AND FINAL PROVISIONS

10.1 All issues not regulated by this Agreement shall be subject to the provisions of the respective national law governing the subject matter.

10.2 If one or more of the provisions of this Agreement are invalid or become invalid, this will not affect the validity of other provisions.

11. ENTRY INTO FORCE AND DURATION

11.1 This Agreement shall enter into force on the date of its signing by the authorized representatives of the Parties and shall remain in force until the completion of the Project, unless it has been previously terminated in accordance with this Agreement.

11.2 This Agreement may at any time be modified in writing by mutual consent of the Parties.

12. DRAFTING AND SIGNATURE

12.1 This Agreement is prepared in two equivalent copies for each Party in the Agreement.

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13. SEVERABILITY

13.1 Should any provision of this Agreement be wholly or partially invalid, this does not affect the validity of any remaining provisions. In such cases, the Parties of the Agreement undertake to replace invalid provisions with alternative provisions that are as close as possible to the meaning and purpose of the Agreement.

Improving Academic and Professional Education Capacity in Serbia in the area of Safety & Security ImprESS (586410-EPP-1-2017-1-RS-EPPKA2-CBHE-JP)

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SIGNED

For Steinbeis University:
Name: Prof. Dr. Giorgi Khubua
Function: President for Research
Signature:

Forschungszentrum "Advanced Risk Technologies:
Name: Prof. Dr. A. Jovanović
Function: Director
Signature:

Place: Stuttgart, Germany
Date: 14.08.2020

For University of Belgrade: Faculty for Security Studies (FSS):
Name: _____
Function: _____
Signature: _____
Place: _____
Date: _____

Improving Academic and Professional Education Capacity in Serbia in the area of Safety & Security ImprESS (586410-EPP-1-2017-1-RS-EPPKA2-CBHE-JP)

Co-funded by the Erasmus+ Programme of the European Union

ANNEX I
TO COLLABORATION AGREEMENT
(hereinafter "Agreement")

between

University Of Belgrade: Faculty for Security Studies
Belgrade, Serbia

and

Research Center (Forschungszentrum) „Advanced Risk Technologies"
Stuttgart, Germany,

together with
Steinbeis University
Berlin, Germany

USE OF TRAINING MATERIALS FOR IMPRESS PROJECT BY FSS

For training materials for the courses (a) Introduction to Risk Management (INTRO), (b) Health, Safety, Security and Environmental Risks, (c) Business Communication and Management of Intercultural Differences, provided by Steinbeis, the following shall apply:

1. The Intellectual Property Rights (IPRs) of the English version remains with Steinbeis

2. If for the needs of FSS in Serbian version of the materials is to be prepared (e.g. books, presentation, handouts and similar), the authorship will include Steinbeis authors of the English version as co-authors.

3. If the original English materials of Steinbeis are to be used by FSS, the original authorship will be clearly indicated and labelled as "used with and under permission of Steinbeis Advanced Risk Technologies ©R-Tech, Stuttgart, Germany"

SIGNED

For Steinbeis Advanced Risk Technologies:
Name: Prof. Dr. A. Jovanović
Function: Director
Signature:

Place: Stuttgart, Germany
Date: 11.09.2020

For University of Belgrade: Faculty for Security Studies (FSS):
Name: PROF. DR VLADIMIR N. CVETKOVIĆ
Function: DEAN
Signature:
Place: BELGRADE, SERBIA
Date: 01. 10. 2020.

Annex 7   Sample course materials

List of materials:

A.7.1   Course R01 (INTRO) – Unit 1 and Unit 1A

(NOTE: This is an excerpt from the course Unit 1 and Unit 1A)

Unit 1: Introduction to industrial chemical safety issues

About this Unit

This unit gives short overview of different aspects of the term safety and its close relationship with the terms of hazard, harm, damage and the concept of the risk.

At the end of the Unit 1, the student should be able to answer the following questions:

- What is the practical meaning of the terms safety, hazard and risk?
- What is risk?
- How many kinds of safety can we find in our lives?
- What is the difference between acute and chronic risks?
- What is a major accident involving hazardous substances?
- How a modern society does manage different chemical risks - any legislation?
- What do the terms REACH, IPPC, OSH, ATEX, ADR, RID and Seveso stand for?

Explanation on different aspects of safety

Let us first try to explain what does the words safety, hazard, harm and risk mean. An interested reader could also consult internet resources, such as Wikipedia (http://en.wikipedia.org) for explanations and would easily come to the following descriptions:

- Being safe means simply absence from a potential (possible) unfavorable condition such as being injured, ill, even killed or some other kind of loss, or perceived loss (loss). Safety as a condition thus means to be safe, or to say in another way, the unfavorable loss can not occur and that is subject of full certainty. Jump note: on the other side, being safe from something also means that related risk does not exist (qualitatively), or that the risk is actually equal to zero (quantitatively).
- Hazard means a potential relevant condition, state, or property that can in certain situation or circumstances lead to actual loss. Definition that is more specific can be: "A hazard is a situation which poses a level of threat to life, health, property or environment. Most hazards are dormant or potential, with only a theoretical risk of harm".
- Harm is just another word for damage or some kind of a loss, or unfavorable outcome of the event or situation.
- Risk is a concept (a mental construct) meaning a probability of a specific undesired outcome or loss. A certain hazard present can under specific circumstances (related to a probability) lead to a certain outcome with a certain loss. There are many definitions of risk that vary by specific application and situational context. Definition is also a subject of variability in scientific disciplines.

Qualitatively, risk is proportional to both the expected losses which may be caused by an event and to the probability of this event. Greater loss and greater event likelihood result in a greater overall risk. Mathematically, the risk can be in a general terms be defined as a product of a probability of event occurring and impact of event occurring. For our purpose, it is also worth to note that without a hazard present, there is no risk, also meaning safety related to that specific hazard.

Let us now shift to another subject.

The title of the unit announces chemistry (chemicals, usually to a certain extent hazardous substances), chemical industry (industrial facilities usually involve large/huge equipment and large amounts of materials being processed, stored, transported, etc.) and concerns of humans involved (owners, managers, workers, public, authorities) about safety issues - "are we somehow endangered?"

The safety aspects can be categorized to at least four large groups as outlined below:

- System safety: examples are process, aircraft, train, radiological/nuclear. It is about safety at the certain specific system level. Accidental events are generally speaking rare, however they usually lead to multiple fatalities or large damage.

- Occupational safety: e.g. occupational driving, working at height, slips, trips, falls; consider also long term exposure of a worker to chemicals at the workplace. Disturbing events (occupational accidents) are considered frequent, generally leading to fatality or minor/major injury (acute risks). Also consider that for example, long term exposure at workplace can (but not necessarily) lead to negative health effects, incapacities or fatalities even after many years after exposure ceased to exist (chronicle risks).

- Product safety: e.g. drugs, food, fito-sanitary (pesticides), appliances, fuel. Rare events can in a long term exposure affect many people using product directly or indirectly. E.g., products (chemicals) can accumulate and persist in the environment.

- Third-party safety: e.g. customers, patients, visitors, contractors could be exposed to a certain risk due to some specific hazardous condition, property or deficiency (e.g. incompetent medical personnel can actually kill a patient).

The reason for necessary safety aspects categorization is in the nature of inherent hazards that can lead to a specific risk or actual damage, meaning that usually preventive (safety) measures in order to avoid damage differ between categories. Examples: faulty design of an airplane can be a cause of the plane crash, however also due to pilot error, or bad weather, or technical failure during flight. Each of this potential causes must be managed in its own way. [3]

Continuing with the chemicals used by the industry (and consumed by the society), the following general characteristic steps (issues) are usually observed and managed:

- Research and development of a new product/preparation/chemical (previously not on the market). A new product might have an unrevealed hazardous property, rendering damage at some later time.

- Design, construction, regular operation and cease of operation in a chemical plant. This includes also pollution from the plant and generation of the waste(s) in addition to the product/chemical produced.

- Workers at the plant are usually to a certain extent exposed to the plant specific hazards, posing a threat to their safety (occupational) and health (e.g., occupational diseases).

- Chemical products need to be transported to and from the plant - outside its boundaries. As products are usually with hazardous properties (can provide harm to humans, environment, buildings, infrastructure ...) some general society wide management provisions for safety and security of the road, rail and sea based transports are in place.

- Inside industrial plants accidents involving hazardous chemicals occur (system safety issue). The accidental events are rare, but resulting fires, explosions and toxic releases (air, soil, water) usually lead to devastated plants/facilities/equipment, huge economic losses, fatalities among workers and contractors, offsite environmental damage and even offsite (neighborhood) damage and fatalities among settlements and population. Such events usually attract huge media attention.

The graphical presentation of the relationships among industry (industrial plant), workers and society (humans, settlements, infrastructure, environment (perceived values) and above-mentioned issues is presented on Figure 1.

Now it is time to write down how are above-mentioned and graphically demonstrated issues managed at the strategic level considering related European Union (EU) legislation and other international treaties:

- Introduction of new chemicals at the EU market is regulated by REACH regulation EC No. 1997/2006 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals.

- Considering classification of properties, packaging and labeling of chemical substances the directive 67/548/EEC (Dangerous Substances Directive) set up rules. It is "supported" also by directive 1999/45/EC (Dangerous Preparations Directive) and its amendments. Note: this system is currently being replaced by Global Harmonized System (GHS).

- Considering safety and health of workers the directive 89/391/EEC (on introduction of measures to encourage improvements in the safety and health of workers at work) provides a wide framework, exceeding only hazards due to chemicals.

- Related to the framework of directive 89/391/EEC, considering the specific hazard of explosive atmospheres (vapors and dusts) the directive 1999/92/EC on minimum requirements for improving the safety and health protection of workers potentially at risk from explosive atmospheres. Concerning related equipment and protective systems for use in potentially explosive atmospheres, it is "supported" by directive 94/9/EC - also known as ATEX directive.

- Considering industrial pollution (air, soil, water, waste, noise, ...) from regular operations the directive 2008/1/EC concerning integrated pollution prevention and control – IPPC in short - provides EU legal framework (it recently replaced the directive 96/61/EC).

- Related to the transport of hazardous/dangerous goods (chemicals) by road or rail in Europe, two international treaties apply:

  - road: The European Agreement concerning the International Carriage of Dangerous Goods by Road (**ADR**) was done at Geneva on 30 September 1957 under the auspices of the United Nations Economic Commission for Europe, and it entered into force on 29 January 1968. Usually it is amended annually (last update from 1.1.2009). ADR stands for (in French): L'Accord européen relatif au transport international des marchandises dangereuses par route. Available at: http://www.unece.org/trans/danger/publi/adr/adr_e.html

  - rail: Reglement concernant le transport international ferroviare des merchandes Dangereuses (**RID**), Intergovernmental Organisation for International Carriage by Rail. Available at: http://www.otif.org/en/dangerous-goods/notification-texts/2009.html

- Related to the prevention of major accidents involving hazardous substances in industry, directive 96/82/EC applies, also named Seveso II. It was amended with directive 2003/105/EC. This topic/directive is of a key importance for Course I-R1.

All above mentioned directives, acts and treaties are available through EU legislation web site (http://eur-lex.europa.eu/en/index.htm) or web links given in text.

All seven topics listed above will be further explained. Brief explanation of the scope, contents and organization of related directive or treaty will be given, more details (depth) are to be available in corresponding courses.

In addition, approach to implementation in Slovenian legislation and related competent authorities will be briefly presented.
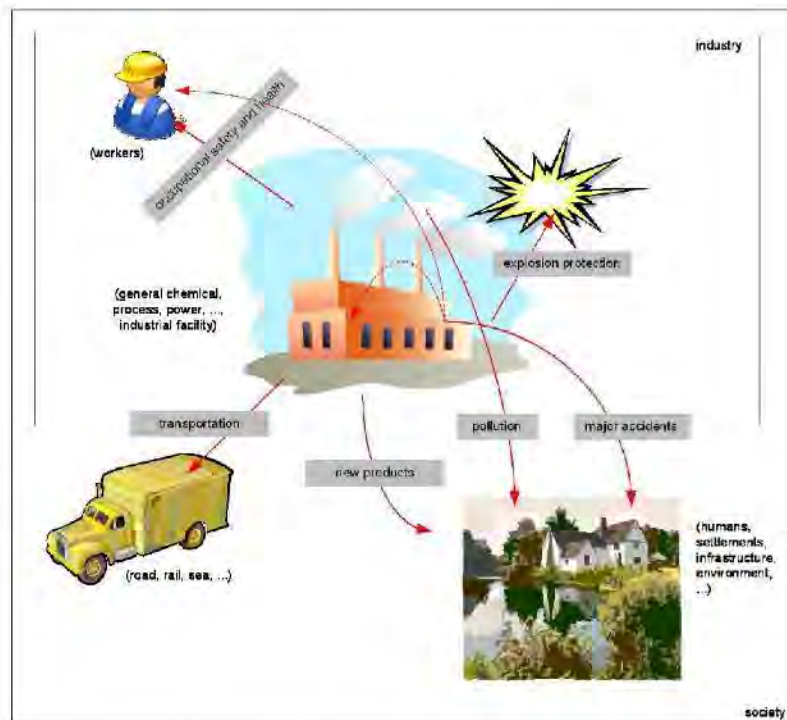
Figure 1: Graphical presentation of different safety aspects considering chemicals,
industry, workers and society/environment.

Chemical safety topics in brief

Introduction of new chemicals (REACH regulation)

REACH regulation EC No. 1907/2006 (followed by the corrigendum 2006/121/EC and further amendments) concerning the Registration, Evaluation, Authorization and Restriction of Chemicals became effective 1st June 2007, superseding previous legislation. The main aim of the REACH is to manage the risk from new chemicals entering the EU market, remembering, for example, the painful lesson learnt about 50 years ago with the wide use of DDT substance against malaria (refer, e.g., to the book Silent Spring, by Rachel Carson, 1962; or: http://en.wikipedia.org/wiki/Silent_Spring).

REACH regulation aims to assess and manage the risk of potential chemicals with unrevealed toxicological or eco-toxicological properties based on common EU wide registration of new products exceeding annual marketed quantities in excess of certain criteria by weight. Main approach is:

- Registration. Producer/importer must register with technical dossier for substances in quantities of 1 tonne or more, and with chemical safety report (related to toxicological properties) if quantities of 10 tonnes or more. For larger quantities, additional requirements apply, subject to deadlines.

- Evaluation of received registration documentation. This should consist of draft evaluation of completeness of dossier/report.

- Authorization. This is required for substances considered potentially carcinogenic, mutagenic or toxic for reproduction (CMR 1&2) or very persistent and very bio-accumulative, or potentially dangerous to health or the environment and to be dispersed to environment.

- Restrictions. They play as a safety measure/net to restrict the use of substance or preparation if it is demonstrated that related risks of use must be EC wide addressed.

The European Chemicals Agency (ECHA) was started and is located in Helsinki. Its role is to manage the registration process, carry out dossier evaluation and co-ordinate substance evaluation process.

In Slovenia, REACH regulation was implemented in national legislation in the scope of Chemicals Act, Official Gazette (OG) RS, No. 110/2003, 47/03, 61/06, 16/08 and 9/2011, through Decree on Implementing European Parliament and Council Regulation (EC) on Registration, Evaluation and Authorization of Chemicals (REACH), OG RS No. 23/2008. The competent authority (CA) is Ministry of Health, Chemicals Office of the Republic of Slovenia. [4]

Classification of properties, packaging and labeling of chemical substances

The main directive for classification of properties, packaging and labeling of chemical substances is 67/548/EEC. This over 40 years old directive is still operational, however with huge number of amendments reflecting introduction new chemicals and their classifications. As chemical substances are widely used also as mixtures, preparations, etc. related rules for them are handled by Dangerous Preparations Directive, 1999/45/EC and amendments 2001/60/EC and 2006/8/EC.

In addition, currently there is an on-going process of a transition to the Global Harmonized System (GHS; available at the http://www.unece.org/trans/danger/publi/ghs/ghs_rev03/03files_e.html) with wider approach, but slightly different implementation of the requirements for classification, packaging and labeling, however GHS will not be further mentioned here.

The directives prescribe criteria and classification results for chemicals and preparations, carrying out practical work of specifying corresponding risk phrases and safety sentences based on their properties, followed by general guidance for packaging and labeling. This is widely used on all products we use on daily basis, and are also a starting base for all further chemical risk management activities.

In Slovenia, both directives and amendments were implemented in national legislation in the scope of Chemicals Act, Official Gazette (OG) RS, No. 110/2003, 47/03, 61/06 and 16/08, through Rules on Classification, Packaging and Labeling of Dangerous Substances, OG RS No. 35/05, 54/07 and 88/08, and Rules on Classification, Packaging and Labeling Hazardous Substances, OG RS No. 67/05, 137/06 and 88/08. The competent authority (CA) is Ministry of Health, Chemicals Office of the Republic of Slovenia.

Safety and health of workers (directive 89/391/EEC)

The directive on measures to encourage improvements in the safety and health of workers at work is a framework directive covering a number of dangers that are generally speaking present at the workplace (one example is risk of explosive atmospheres).

The directive sets general obligations for employer and worker setting rights and obligations for safety. The contents are quite general, however, it is recognized that a general tool for starting health and safety management is the risk assessment process. It should be a no surprise that one cannot expect to use correct and effective safety measures in order to avoid accidents (injuries) and ill health (diseases) if the hazards and risks are not recognized and understood in full.

In Slovenia, directive is implemented in national legislation in Law on Health and Safety at Work, OG RS No. 64/1999 and 64/2001. The competent authority (CA) is Ministry of Labor, Family and Social Affairs, Health and Safety at Work Division.

Explosion protection of workers (1999/92/EC)

The directive 1999/92/EC on minimum requirements for improving the safety and health protection of workers potentially at risk from explosive atmospheres implements one of the aspects of above mentioned framework directive. The directive supports protection of workers from potential explosions through a number of safety measures, ranging from measures to avoid presence of explosive atmospheres (from vapors and dusts), manage potential ignition sources through suitable properties (safe) of equipment, safety devices and components. The quality (properties) of the equipment is subject to classification rules, thus supporting easy selection of suitable equipment for specific level of explosion risk.

Concerning related equipment and protective systems for use in potentially explosive atmospheres, it is "supported" by directive 94/9/EC - also known as ATEX directive. The directive provides for example, classification rules for hazardous places (zones) where qualitatively described likelihood of explosive atmosphere can be present. Any equipment considered to be used in potentially explosive atmospheres must be certified (tested) by accredited institution.

In Slovenia, directives 1999/92/EC and 94/9/EC are implemented in national legislation based on Technical Requirements for Products and Conformity Assessment Act, OG RS No. 59/1999 and 31/2000 within Order on anti-explosive protection, OG RS No. 102/2000, 91/2002 and 16/2008. The competent authorities are Ministry of Labor, Family and Social Affairs and Ministry of the Economy and related inspectorates.

Integrated pollution prevention and control (IPPC)

The IPPC directive (2008/1/EC, replacing 96/61/EC) imposes a requirement for industrial and agricultural activities with a high pollution potential to have a permit which can only be issued if certain environmental conditions are met. Thus companies bear responsibility for preventing and reducing any pollution they may cause. IPPC concerns highly polluting new or existing industrial and agricultural activities (as defined in Annex 1): energy industry, production and agricultural activities, mineral industry, chemical industry, waste management, livestock farming, etc.

Strategically, this is one of the most important directives for large scale industrial activities and is worth to mention more about specific obligations. Installations/operators must:

- Use all appropriate pollution-prevention measures, namely the best available techniques (BATs; which produce the least waste, use less hazardous substances, enable the recovery and recycling of substances generated, etc.).
- Prevent large scale pollution.
- Prevent, recycle or dispose of waste in the least polluting way possible.
- Use energy efficiently.
- Ensure accident prevention and damage limitation (note: might be obliged also through Seveso II directive)
- Return sites to their original state when the activity is over.

Installations must apply to obtain an Environmental Permit in order to be allowed to operate. The Permit specifies the requirements under which operation is allowed, usually allowed level of pollution (polluting substances), protective measures and other.

The Permit is to be issued based on the application submitted, where the following points must be included:

- Description of the installation, nature and scale of the activities and site conditions
- The materials, substances and energy used or generated
- Sources of emissions from the installation, nature and quantities of foreseeable emissions to each medium (air, water, soil, waste), as well as effects on the environment
- Proposed technology and other techniques for preventing or reducing emissions from the installation
- Measures for the prevention and recovery of waste

- Measures planned to monitor emissions
- Possible alternative solutions.

The directive also requires that application information must be available also to the public, containing also info on licensing procedure and details of the authority responsible for authorization or rejection of the application for the permit. Public must also be allowed to take part in the procedure. In a case of likely cross-border effects of the installation, other EU member states must receive the mentioned information that can give their opinion.

The key point of the IPPC directive is the idea of assessment whether the installation has technology that can be considered "one of best available technologies" (in terms of low pollution levels and resources utilization). The operational tool in that respect are lists of BAT examples for certain industrial activities described in BREF documents (BatREFerence) managed by EIPPCB (European IPPC Bureau) located in Seville, Spain.

In Slovenia, IPPC directive is implemented in national legislation by Environmental Protection Act, OG RS No. 39/2006 and 70/2008, and a number of its related Decrees/Regulations about environmental protection permitting. The competent authority is Ministry of the Environment and Spatial Planning, and its Environmental Agency.

Transport of dangerous goods

Transport of dangerous goods by road or rail is in Europe (geographically speaking) managed by international treaties (ADR and RID): European Agreement concerning the International Carriage of Dangerous Goods by Road (**ADR**), Règlement concernant le transport International ferroviaire des marchandes dangereuses (**RID**). Both treaties in general terms prescribe preventive measures such as classification, labeling, procedures and obligations for all the stakeholders in the transportation process. Narrowing down to ADR treaty, authorities and obligations for consignee, transporter and receiver of the goods are prescribed in a detail on operational level considering general safety and security issues.

At the EU level, as a tool for adoption of ADR treaty, there is a directive on Approximation of the laws of the Member States with regard to the transport of dangerous goods by road 94/55/EC and its amendments 2000/61/EC, 2001/7/EC and 2003/28/EC.

In Slovenia, both treaties are implemented in legislation under principle "as is", meaning that applicable law actually just adopts the whole treaty as mandatory for enforcement. Thus, also consignees, transporters and receivers follow the ADR treaty obligations and rules directly, as the treaty and its frequent amendments are translated and published in the Official Gazette. The ADR treaty is implemented into national legislation by The Dangerous Goods Transportation Act, OG RS No. 33/2006; in relation to the publication of ADR treaty, it's changes and amendments are published in OG RS No. 66/2003, 9/2005, 9/2008 and 125/2008.

Competent authority is Ministry of the Interior, however other Ministries (related to transport, environmental protection and health) and related inspectorates have roles.

Major accident hazards

The top legislative instrument at the EU level for the aspect of major accident hazards is directive 96/82/EC (Seveso II). Details will be given in full in units 2 and 3 of this course. [5], [6] [7]

Unit 1A: Risk Governance: Analysis, perception and communication

About this Unit

This unit gives an overview of the Risk Governance, including IRGC risk governance model, Risk Perception and Concern Assessment, as well as Risk communication and Stakeholder Involvement and participation.

At the end of the Unit 1A, the student should be able to answer the following questions:

- Why is risk perception important?
- How do people respond to threats? How can we deal with risk perceptions
- How to be effective in risk communication?
- How to respond to different types of audiences?
- What are the main problems in communicating risk and uncertainty
- What are the best strategies to involve stakeholders and the public?
- What methods for stakeholder participation are effective for regulating technical risks?

Introduction to Risk Governance

Please see Appendix 1.

Exercises

Exercise 1:

Facing the problems of global climate change and coping with an emerging shortage of fossil energy carriers such as oil and natural gas, the use of biomass for combustion or conversion into biogas or biofuels has become a popular suggestion for meeting the energy demands of the world. Traditionally, biomass has long been used for energy generation such as heating and cooking. Basically, biomass is "a stored source of solar energy initially collected by plants during the process of photosynthesis whereby carbon dioxide is captured and converted to plant materials mainly in the form of cellulose, hemi-cellulose and lignin. The term biomass therefore covers a range of organic materials recently produced from plants, and animals that feed on the plants. The biomass can be collected and converted into useful bioenergy.

The framing of bioenergy can be undertaken along two lines of debate: First with respect to the debate on policy issues and second to stated and latent interests of industry and other stakeholders. Three policy issues regarding bioenergy can be identified: energy policy with emphasis on national independence, environmental policies with emphasis on renewable energy sources and transition to a low-carbon society, and developmental policies with emphasis on additional income for developing countries and new opportunities for rural community development. Each of these frames have positive as well as negative implications:

- Securing energy independence on the basis of massive inclusion of bioenergy in the national energy portfolio may compromise availability of affordable food and/or reduce biodiversity.

- Facilitating a transition to a low-carbon society requires to be effective massive amounts of biomass since the overall carbon balance is much less efficient than originally assumed (taking to account the direct and indirect energy input during the entire lifecycle) This implies similar to frame 1 an aggravating competition between energy and food production, a reduction of biodiversity and other environmental problems related to intensive agriculture.

- Boosting the development of low income countries may negatively affect economic and social equity and, in many cases, be done at the expense of biodiversity.

Equally important is the analysis of stakeholder perspectives. The usual stakeholders with respect to any governance issue consist of government, industry, science and representatives of civil society. In the case of bioenergy, though, these "usual suspects" need to be further differentiated. Especially the stance taken by governments depends on their socio-economic situation. Thus, two levels of stakeholders can be identified with respect to the risk governance of bioenergy: first the level of development, i.e. a distinction in developing countries, transitional countries and highly industrialized countries, and second the level of actors in each type of country, i.e. governments, agencies, different industrial sectors (energy, farming, food processing, etc.), different scientific disciplines (economics, ecology, agricultural science, social sciences, and others) as well as representatives of civil society mostly in the form of NGOs. These levels have been called vertical and horizontal risk governance levels.

Assignment:

Your task is to develop an ideal risk governance protocol starting with pre-assessment and ending with risk management (stage of monitoring). The protocol should state:

- How you would deal with the diversity of frames?

- What type of risks and benefits would in your judgment need a thorough assessment?

- How would you include the concern assessment?

- How should the evaluation process be organized? What elements for the trade-off analysis should be included? Who should be involved in this exercise?

- What management options would you recommend? Please specify the management options that apply to the private sector (farmers, energy producers, energy users, etc.) and to the public sector.
- What is your recommended design for stakeholder and public involvement?
- What is your design for an effective and targeted risk and benefit communication program?

It would be best if you address these issues by developing your arguments along the stages of the risk governance process.

Exercise 2:

We expect that, with the advent of global climate change, the quantity and intensity of natural disaster will increase. However, this increase will be occurring slowly and steadily so that it is not obvious that more severe events can be associated with global change. In addition, the skeptics of global change will argue that fluctuations in the intensity and quantity of hazardous events have always been observed over the history of Earth and that human interventions into the atmosphere are not related to this fluctuation.

Imagine a community that would like to promote an adaptation plan to protect itself against low-probability, high-consequence floods. The city council is worried that, due to climate change, the severity of floods will increase and that the existing levies and technical barriers are not strong enough to withstand a flood that has been calculated to take place once in 200 years. The legal requirements are based on a one in a 100 year flood but the scientific consultants hired by the city council recommend a higher protection level since global warming is likely to increase the probability of serious floods.

There is much opposition in the community against this plan to invest heavily in higher flood protection. Many people fear that the money is not wisely spent and that other community concerns need more attention such as building a new school. Other groups favor the plan of the city council and argue that a serious flood could destroy much of the community and investing in resilience is the best investment towards a sustainable future.

Assignment:

You are hired by the City Council to develop a communication program that could help the Council to pursue its plan and to get more support from the community. This communication plan should be directed towards addressing risk perceptions and public associations. The Council is convinced that the scientific arguments are not enough to make a convincing case. What would you recommend?

Tutorial on Risk Governance

Role Play: TV Talk Show on Climate Change

Introduction to the Case Study "Climate Change"

Ice is not melting

A research team at the University of Michigan has found that the ice layers around the Antarctic are actually increasing rather than melting. However, all other signs of global climate change remain the same. The ice layers around the Arctic region are diminishing as well as the glaciers in most parts of the world.

This insight has spurred a heated debate about the reality and myth of climate change in the US.

A TV talk show is scheduled for the afternoon of December 4, 2011. The invited guests are:

- EPA climate specialist Dr. Michael Hotweather
- IPCC spokesperson Dr. Sandra Allwarm
- The head of an NGO that is skeptical about climate change Brian Nochange
- The head of Greenpeace, California, Gail Angryman
- The head of the Michigan research team, Prof. Peter Watchdog
- The CEO of the Coal Company, PROKO in Pennsylvania, Herbert Black

- The representative of the Climatewatch, Larry Outrage
- The moderator: Phil Easygoing from the TV network WWMS

Role Play Instructions for the Participants:

1. Make sure you can identify with the role that has been assigned to you

2. Always play YOUSELF: You have the job and you want to make the best of it. Do not try to be a good actor or to overplay the role. This only leads to stereotypes. Be yourself and imagine that this job is jour personal job that you would like to perform as best as you can.

3. Always reflect the consequences of your words and statements. But avoid bureaucratic or impersonal language! If you come across as the typical untouched bureaucrat you have already lost your case

4. Try to be short and poignant in your responses. Don't use phases such as "in other words" or "This means" etc. Get it right the first time and do not repeat yourself several times during a statement

5. The first and the last sentence of your statements are the most important. They should be said with care and emphasis.

6. Relate your statement to what has been said before even if you want to make another point. This creates bonds with the other participants

7. Avoid empty phrases such as: "this was a good question" or "we will do everything to assure the safety of our citizens". People are sick of such phrases and shut off if they hear them.

8. Don't avoid conflicts if there are clear differences between your positions and the position of other participants but always indicate that you are willing to help resolve the conflict

9. Refer to values, norms or visions that relate to the majority of the listeners. Try to make them accept you as one of their own.

10. Most important: Even if you use strategic arguments, you need to believe in what you are saying. People have excellent senses to feel if communicators lie to them or try to deceive them. In addition, this is not an acceptable ethical behavior.

Exercise for Self-Study and Evaluation

Questions on Risk Governance:

1. In which way does the term "risk governance" differ from conventional terms such as risk analysis or risk management?
    a. What do we mean when we refer to "governance" rather than government?
    b. What is the added value of using governance rather than other descriptions of handling risk?
    c. What are the new elements of risk governance that are not included in the older terms "risk analysis" or "risk management"?
    d. Who are the main actors in risk governance?

2. What are the specifically unique features of the risk governance framework?
    a. In terms of phases (risk governance cycle)?
    b. In terms of inclusiveness?
    c. In terms of new tasks during the appraisal stage?
    d. In terms of knowledge characterization?
    e. In terms of communication and participation?

3. What is included in the pre-assessment phase und why is framing so important?
    a. What does the term framing mean?
    b. Could you give an example for multiple frames for a specific risk issue?

   c. What are typical deficits or problems in the framing stage of the governance process?

   d. What does the IRGC framework suggest of how to deal with framing problems or conflicts?

   e. What are the other stages in the pre-assessment phase and what function do they serve?

4. What is included in risk assessment?

   a. What are the three stages of risk assessment?

   b. What is the difference between hazard and risk?

   c. How are hazards being assessed or characterized? Provide an example.

   d. What do we mean with exposure assessment? How does that differ from hazard assessment? Provide an example.

   e. What is the difference between risk agent and risk absorption system? What do these two terms mean and how can they be assessed? Provide an example.

   f. What is risk assessment? How does it differ from hazard and vulnerability assessment? Provide an example.

   g. What is meant when we refer to vulnerability? How does this fit into the risk assessment framework?

5. What do we mean when we refer to concern assessment?

   a. What are concerns? Provide several examples.

   b. How can one investigate people's concerns? What methods are available?

   c. Is concern assessment a scientific exercise or a part of stakeholder participation or both?

   d. How are concerns associated with risk perceptions?

   e. What is the value of knowing the concerns of individuals and social groups for improving risk evaluation and management?

6. The risk governance framework distinguishes between complexity, uncertainty and ambiguity

   a. Could you define these three terms and explain how they differ?

   b. Give an example for a highly complex, highly uncertain and highly ambiguous risk.

   c. How can the distinction in complexity, uncertainty and ambiguity assist professionals in risk assessment, evaluation, management, communication and stakeholder involvement?

7. What do the two main components of the third stage in the risk governance framework entail?

   a. What distinguishes risk characterization from risk evaluation?

   b. Which major questions are addressed in risk characterization, and which in risk evaluation?

   c. Who should be involved in risk characterization and evaluation?

   d. Could you describe the three stages of the traffic model of risk evaluation? What do the colors stand for?

   e. What needs to be addressed when making trade-offs between benefits and risks?

   f. What are the main deficits and challenges in the phase of evaluation?

8. How does the risk governance framework envision the risk management phase?

   a. What are the steps of decision making in risk management?

   b. What criteria does the framework suggest for evaluating risk management options?

    c. How does the distinction in complexity, uncertainty and ambiguity assist risk mangers in designing the appropriate risk management strategy?

    d. Provide a list of management procedures or instruments particularly suited for linear, risk-based, precaution-based and discourse-based risk approaches.

    e. What does the term "precaution" mean in the context of the risk governance framework?

    f. Which distinct regulatory styles do we distinguish in the risk governance framework and how do these styles impact the risk management process?

    g. What are the main deficits and challenges in the phase of risk management?

9. Explain the stakeholder involvement concept of the risk governance framework.

    a. Why is stakeholder involvement so essential for risk governance?

    b. What do we mean when we refer to stakeholders or the public?

    c. What types of discourse can we distinguish depending on the composition of complexity, uncertainty and ambiguity?

    d. What are the specific requirements for stakeholder involvement in each phase of the governance cycle?

    e. What function does the design discourse meet?

    f. What are the main deficits in organizing stakeholder involvement? Provide examples for these deficits.

10. Explain the risk communication concept of the risk governance framework.

    a. Why is risk communication an integral part of all phases of the risk governance model?

    b. What are the four functions of risk communication?

    c. How can risk perception studies assist risk assessors and managers to be better communicators?

    d. What type of risk communication is best suited for each of the for phases of the risk governance cycle?

    e. What topics should be primarily addressed by risk communication to the general public?

    f. What are the main deficits in communicating risks to internal or external audiences? How can one deal with these deficits?

Answers to Exercise Questions on Risk Governance

1. In which way does the term "risk governance" differ from conventional terms such as risk analysis or risk management?

    a. What do we mean when we refer to "governance" rather than government?

    The term "Governance" embodies a horizontally organized structure of functional self-regulation encompassing state and non-state actors bringing about collectively binding decisions without superior authority. In this perspective, non-state actors play an increasingly relevant role and become more important since they have decisive advantages of information and resources compared to single states. 'Risk governance' involves the 'translation' of the substance and core principles of governance to the context of risk and risk-related decision-making. It includes, but also extends beyond, the three conventionally recognized elements of risk analysis (risk assessment, risk management, and risk communication). It requires consideration of the legal, institutional, social and economic contexts in which a risk is evaluated, and involvement of the actors and stakeholders who represent them.

    b. What is the added value of using governance rather than other descriptions of handling risk?

    In a complex and highly coupled world the term risk governance signals that many actors influence the risk assessment and management process and that

the various risks and their targets interact. Risk governance looks at the complex web of actors, rules, conventions, processes, and mechanisms concerned with how relevant risk information is collected, analyzed and communicated, and how management decisions are taken. Encompassing the combined risk-relevant decisions and actions of both governmental and private actors, risk governance is of particular importance in, but not restricted to, situations where there is no single authority to take a binding risk management decision, but where, instead, the nature of the risk requires the collaboration of, and co-ordination between, a range of different stakeholders. Risk governance not only includes a multifaceted, multi-actor risk process but also calls for the consideration of contextual factors such as institutional arrangements (e.g. the regulatory and legal framework that determines the relationship, roles and responsibilities of the actors and co-ordination mechanisms such as markets, incentives or self-imposed norms) and political culture, including different perceptions of risk.

c. What are the new elements of risk governance that are not included in the older terms "risk analysis" or "risk management"

There are two innovative phases in which knowledge and values are closely intertwined: pre-assessment and characterization/evaluation. During the phase of pre-assessment, the problem is framed and defined, and the terms of reference are specified. This task needs to be governed by societal values (stating the goals, objectives and contextual conditions) and inspired by what we already know about the hazard (suspected impacts, exposure, persistence and others. Similarly, when looking at all of the evidence collected and condensed in the phase of characterization/tolerability judgement, a good understanding of this evidence, as well as a prudent judgement competence for making the necessary trade-offs between risk, benefits and other important impact categories, are essential for an effective governance process. This design of the four phases not only avoids separating values from facts in a naïve and decisionistic way, but also escapes the relativism of post-modern philosophy by honouring the analytical distinctions between the factual and the normative world, even if they clearly interact.

d. Who are the main actors in risk governance?

Governments, agencies, expert communities, industrial and commercial actors, representatives of civil society such as environmental groups, consumer groups, trade associations, and other non-governmental organizations (NGOs)

2. What are the specifically unique features of the new risk governance framework?

a. In terms of phases (risk governance cycle)?

The framework builds upon the logical structure of four consecutive phases called reassessment, appraisal, characterization/evaluation and management. In addition, risk communication accompanies all four phases. Within each of the boxes, specific activities are listed that are deemed essential for meeting the requirements of good governance.

b. In terms of inclusiveness?

Inclusive governance is based on the assumption that all stakeholders have something to contribute to the process of risk governance and that mutual communication and exchange of ideas, assessments and evaluations improve the final decisions, rather than impede the decision-making process or compromise the quality of scientific input and the legitimacy of legal requirements. As the term governance implies, analysing and managing risk cannot be confined to private companies and regulatory agencies. It rather involves the four central actors in modern plural societies: governments, economic players, scientists and civil society organizations.

c. In terms of new tasks during the appraisal stage?

The appraisal stage is not only designed to elicit knowledge about the physical impacts of technologies, natural events or human activities, but also knowledge about the concerns that people associate with this cause of risks. This concern

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assessment should not be confused with eliciting stakeholder feedback or providing platforms for participatory processes. It is, rather, a social science activity aimed at providing sound insights and a comprehensive diagnosis of concerns, expectations and worries that individuals, groups or different cultures may associate with the hazard or the cause of the hazard. This social science analysis should be submitted to the same kind of methodological scrutiny and peer review as any other natural science activity.

d.   In terms of knowledge characterization?

The risk governance framework includes a structuring tool that is designed to assist all risk professionals in selecting the proper risk and concern assessment tools, to inform on trade-offs when evaluating risks, and to design the most appropriate measures when deliberating about risk management options. This structuring tool is the distinction between complexity (linear to highly complex), uncertainty (low to high) and ambiguity (low to high).

e.   In terms of communication and participation?

Risk communication is needed throughout the whole risk-handling chain, from the framing of the issue to the monitoring of risk management impacts. The precise form of communication needs to reflect the nature of the risks under consideration, their context and whether they arouse, or could arouse, societal concern. In addition, the risk governance framework provides input on all governance levels from stakeholders either by contributing additional knowledge or by inserting their values, interests and preferences into the evaluation of the risk itself and the selection of the most effective, efficient and fair set of management options.

3.   What is included in the pre-assessment phase and why is framing so important?

a.   What does the term framing mean?

Framing encompasses the selection, shaping and interpretation of phenomena as relevant risk topics. A systematic review of risk-related actions needs to start with an analysis of what major societal actors, such as governments, companies, the scientific community and the general public, select as risks and what types of problems they label as risk problems (rather than opportunities or innovation potentials, etc.).

b.   Could you give an example for multiple frames for a specific risk issue?

A possible example is novel food. Consumers may feel that all artificial food additives pose a risk, whereas industry may be concerned about pathogens that develop their negative potential due to the lack of consumer knowledge about food storage and preparation. Environmental groups may be concerned with the risks of industrial food versus organic food.

c.   What are typical deficits or problems in the framing stage of the governance process?

In this phase, deficits can be perceived at various levels:

- Lack of Awareness: "I was not aware that there was a risk there". The knowledge or perception is insufficient.
- Missing warning signals: the signals have not been detected or recognised.
- Too narrow scope: a risk which is perceived as having only local consequences may in fact be much broader.
- Too narrow framing: different stakeholders may have conflicting views on the issue
- Insufficient information: lack of information about possible frames and their implications

d.   What does the framework suggest of how to deal with framing problems or conflicts?

The goal is to reach a consensus on the frames and the implications that need to be further considered. Reaching such a consensus rests on two conditions: first,

all actors need to agree with the underlying goal (often legally prescribed, such as prevention of health detriments or guarantee of an undisturbed environmental quality – for example, purity laws for drinking water); second, they need to agree with the implications derived from the present state of knowledge (whether, and to what degree, the identified hazard affects the desired goal). Even within this preliminary analysis, dissent can result from conflicting values, as well as conflicting evidence, and, in particular, from the inadequate blending of the two. Values and evidence can be viewed as the two sides of a coin: the values govern the selection of the goal, whereas the evidence governs the selection of cause-effect claims. Both need to be properly investigated when analyzing risk governance; but it is of particular importance to understand the values shaping the interests, perceptions and concerns of the different stakeholders, as well as to identify methods for capturing how these concerns are likely to influence, or impact upon, the debate about a particular risk

e. What are the other stages in the pre-assessment phase and what function do they serve?

The second component of the pre-assessment phase concerns the institutional means of early warning and monitoring. This task refers to institutions of government, business or civil society identifying unusual events or phenomena (e.g. disease registries, biodiversity indices, climate indices, environmental quality monitoring) in order to detect new emerging risks and to provide some initial insight into the extent or severity of these risks.

The third component of pre-assessment is risk screening. This refers to establishing a procedure for pre-judging the seriousness of hazards and risks, and determining the most appropriate assessment and management route.

The fourth and last component of pre-assessment is the selection of conventions and procedural rules needed for a comprehensive appraisal of the risk (i.e. for assessing the risk and the concerns related to it). Such conventions cover existing scientific, legal, policy, social, or economic conventions. Any such assessment is based on prior informed, yet subjective, judgments or conventions articulated by the scientific, legal or user community, or other policy-related bodies.

4. What is included in risk assessment?

a. What are the three stages of risk assessment?

Hazard identification and estimation	Recognizing the potential for adverse effects and assessing the strength of cause–effect relationships
Exposure/vulnerability assessment	Modelling diffusion, exposure and effects on risk targets
Risk estimation	*Quantitative*: probability distribution of adverse effects *Qualitative*: combination of hazard, exposure and qualitative factors (scenario construction)

b. What is the difference between hazard and risk?

Hazard denotes the potential for harm (for example the energy content of an explosive), risk denotes the probability that this potential has a negative impact on something that humans value.

c. How are hazards being assessed or characterized? Provide an example.

Hazards are first identified (energy, substance, biological agents, information) and then assessed in terms of their potential for harm to different targets. For chemical risks the method is to investigate dose-response relationships. This includes epidemiological or experimental studies that are aimed at finding statistically significant correlations between an exposure of a hazardous agent and an adverse effect in a defined population sample

d.   What do we mean with exposure assessment? How does that differ from hazard assessment? Provide an example.

Exposure refers to the contact of the hazardous agent with the target (individuals, ecosystems, buildings, etc.). For example, if people inhale a toxic vapor then they are exposed to this specific hazard.

e.   What is the difference between risk agent and risk absorption system? What do these two terms mean and how can they be assessed? Provide an example.

A risk agent is the driver for the potential to cause harm. This could be a release of energy, a chemical substance, biological organisms or information with the potential to cause damage. The risk-absorbing system is the target to which the risk agent is exposed. This could be an organism, a building or an ecosystem. For example, the risk agent could be the energy of an earthquake and risk-absorbing system a bridge.

f.   What is risk assessment? How does it differ from hazard and vulnerability assessment? Provide an example.

Risk assessment consists of hazard assessment, exposure assessment and their application to a specific target. Its mathematical expression is a probability function over different degrees of damage or harm. Risk assessment provides knowledge about cause–effect relationships, it estimate the strength of these relationships, characterizes remaining uncertainties and ambiguities, and describes, in quantitative or qualitative form, other risk- or hazard-related properties that are important for risk management. For example, one can state that the risk of being killed in a car accident is one over 800,000 km covered.

g.   What is meant when we refer to vulnerability? How does this fit into the risk assessment framework?

Vulnerability refers to the quality of the risk-absorbing system to withstand or tolerate different degrees or compositions of the agent to which it may be exposed. For example, a building may be constructed in such a way that it can withstand seismic pressures up to an intensity of X or an organism can be vaccinated so that the outbreak of a specific virus will not harm its health. Vulnerabilities can increase risk, either by influencing the likelihood of some event or the severity of the consequences, should it occur, or both.

5.   What do we mean when we refer to concern assessment?

a.   What are concerns? Provide several examples.

Concerns refer to perceptions that people associate with risks. These perceptions give rise to special expectations, worries or requests for further actions. For example, people may be worried about the athermal effects of electromagnetic fields. Many believe that they may harm human health in the long run.

b.   How can one investigate peoples concerns? What methods are available?

Concerns can be investigated by using established methods of the social sciences. These include surveys, focus groups, systematic observations, qualitative interviews, and others.

c.   Is concern assessment a scientific exercise or a part of stakeholder participation or both?

Concern assessment should not be confused with eliciting stakeholder feedback or providing platforms for participatory processes. It is, rather, a social science activity aimed at providing sound insights and a comprehensive diagnosis of concerns, expectations and worries that individuals, groups or different cultures may associate with the hazard or the cause of the hazard. This social science analysis should be submitted to the same kind of methodological scrutiny and peer review as any other scientific activity.

d.   How are concerns associated with risk perceptions?

Within the social sciences, people's judgements about events, situations or activities that could lead to negative consequences are usually labelled as risk

perceptions. They cause people to develop concerns in forms of special worries, expectations or requests for further actions.

e. What is the value of knowing the concerns of individuals and social groups for improving risk evaluation and management?

All groups in society have the same right to raise concerns and to bring them to the negotiation table. However, the question of the degree to which these concerns are met or violated by risk-bearing activities or events should primarily be answered by those who have the knowledge, skills and/or the experience to measure or estimate the strength of relationships between cause (or dose) and effect. It seems wrong to give equal standing to those who intuitively estimate risks and those who assess risks on the basis of systematic observation, empirical data collection and rigorous modelling, just as it seems wrong to dismiss non-factual perceptions purely because they appear irrational to those with expert knowledge. This position has major impacts on risk policy-making and communication. Policy-making needs to, inter alia, organize systematic feedback from society and, equally, include risk perceptions as an important input to deciding whether something should be done about a certain risk – and, in the affirmative, what should be done.

6. The risk governance framework distinguishes between complexity, uncertainty and ambiguity

a. Could you define these three terms and explain how they differ?

- Complexity refers to the difficulty of identifying and quantifying causal links between a multitude of potential causal agents and specific observed effects. The nature of this difficulty may be traced back to interactive effects among these agents (synergism and antagonisms), long delay periods between cause and effect, inter-individual variation, intervening variables, and others.

- Uncertainty is different from complexity, but most often results from an incomplete or inadequate reduction of complexity in modelling cause–effect chains. Although there is no consensus in the literature on the best means of disaggregating uncertainties, the following categories appear to be an appropriate means of distinguishing between the key components of uncertainty:

  - target variability (based on different vulnerability of targets);

  - systematic and random error in modelling (based on extrapolations from animals to humans, or from large doses to small doses, statistical inferential applications, etc.);

  - indeterminacy or genuine stochastic effects (variation of effects due to random events – in special cases, congruent with statistical handling of random errors);

  - system boundaries (uncertainties stemming from restricted models and the need for focusing on a limited amount of variables and parameters);

  - ignorance or non-knowledge (uncertainties derived from lack or absence of knowledge).

- Interpretative and normative ambiguity: Whereas uncertainty refers to a lack of clarity over the scientific or technical basis for decision-making, interpretative and normative ambiguity arises when differences exist in how individual actors or stakeholders value some input or outcome of the system as a result of divergent or contested perspectives on the justification, severity or wider 'meanings' associated with a given threat. It can be divided into interpretative ambiguity (different interpretations of an identical assessment result – for example, as an adverse or non-adverse effect) and normative ambiguity (different concepts of what can be regarded as tolerable, referring, for example, to ethics, quality-of-life parameters, and distribution of risks and benefits).

b. Give an example for a highly complex, highly uncertain and highly ambiguous risk.

- Highly complex: River irrigation system;
- Highly uncertain: new infectious disease;
- Highly ambiguous: therapeutic cloning

c. How can the distinction in complexity, uncertainty and ambiguity assist professionals in risk assessment, evaluation, management, communication and stakeholder involvement?

The distinction between linear, complex, uncertain and ambiguous risk problems is useful for designing the appropriate route for assessing, evaluating and managing the respective risks; for selecting the corresponding assessment tools and processes; for employing the adequate decision-making aids and procedures when evaluating risks or risk management strategies; and for designing the most suitable management options serving these strategies

7. What do the two main components of the third stage in the risk governance framework entail?

a. What distinguishes risk characterization from risk evaluation?

Risk characterization includes collecting and summarizing all relevant evidence necessary for making an informed choice on tolerability or acceptability of the risk in question and suggesting potential options for dealing with the risk from a scientific perspective. It is based on a prudent expert judgment about the lessons to draw from all sources of evidence. Risk characterization includes tasks, such as point estimates of risks, descriptions of remaining uncertainties (as undertaken, for instance, in climate change models or risk studies on endocrine disruptors) and potential outcome scenarios, including social and economic implications; suggestions for safety factors to include inter-target variation; assurance of compatibility with legal prescriptions; risk–risk comparisons; risk–risk trade-offs; identification of discrepancies between risk assessment and risk perceptions, as well as of potential equity violations; and suggestions for reasonable standards to meet legal requirements.

Risk evaluation applies societal values and norms to the judgement on tolerability and acceptability and, consequently, determining the need for risk reduction measures. It is based on normative and moral arguments about what is a desirable state of affairs. Risk evaluation broadens the picture to include pre-risk aspects such as choice of technology, social need for the specific risk agent (substitution possible?), risk-benefit balances, political priorities, potential for conflict resolution and social mobilization potential. The main objective here is to arrive at a judgement on tolerability and acceptability based on balancing pros and cons, testing potential impacts on quality of life, discussing different development options for the economy and society, and weighing the competing arguments and evidence claims in a balanced manner.

b. Which major questions are addressed in risk characterization, and which in risk evaluation

Major questions raised during "risk characterisation" are:

- What are the societal benefits and risks?
- Are there impacts on individual quality of life?
- On ethical issues?
- Is there a possibility of substitution?
- Does the choice of technology impact on the risk? How?
- What are possible options for risk compensation, or reduction?

Major questions raised during "evaluation" are:

- What are the societal values and norms for making judgement about tolerability and acceptability?

- How can tradeoffs be assigned to competing safety, health, economic, social and individual goals?
- Do any stakeholder, government, business or other, have commitment or other reasons for desiring a particular outcome of the risk governance process?
- Is the risk acceptable, needing no reduction or mitigation measures, or is it "unacceptable"?
- Is the risk tolerable, requiring measures to prevent, reduce or mitigate the potential negative consequences?

c. Who should be involved in risk characterization and evaluation?

The risk governance framework anticipates the need for deliberation during this phase of evaluation. This is the point at which risk acceptability and tolerability are addressed, and the likely benefits to society – whether in whole or in part – must be included in the balancing procedure. The delicate nature of balancing benefits and risks is also the reason why, in the process of risk evaluation, risk managers, risk assessors, and representatives of major stakeholder groups need to convene for making the often painful but necessary trade-offs between conflicting objectives and values.

d. Could you describe the three stages of the traffic model of risk evaluation? What do the colors stand for?

The red zone signifies intolerable risk, the yellow one indicates tolerable risk in need of further management actions (in accordance with the 'as low as reasonably practicable' – ALARP – principle), and the green zone shows acceptable or even negligible risk.

e. What needs to be addressed when making trade-offs between benefits and risks?

- The results of risk characterization in consideration of wider social and economic factors (e.g. benefits, societal needs, quality-of-life factors, sustainability, distribution of risks and benefits, social mobilization and conflict potential), legal requirements and policy imperatives;
- Weighing of pros and cons and trading-off of different (sometimes competing or even conflicting) preferences, interests and values;
- Taking into account the individual and social benefits associated with the risk-bearing technology or activity.

f. What are the main deficits and challenges in the phase of evaluation?

At this level, governance deficits can be found:

- When some stakeholders are accidentally or deliberately excluded from the evaluation process;
- When there is indecision or lack of responsiveness, whether voluntarily (act of authority) or involuntarily (overly inclusive process with stakeholders leads to inertia);
- When tradeoffs are not made explicit and hidden agendas seem to determine the outcome of the evaluation process;
- When the timing issue is not properly addressed.

8. How does the risk governance framework envision the risk management phase?

a. What are the steps of decision making in risk management?

Management Components	Definition	Indicators
Option generation	Identification of potential risk handling options, in particular risk reduction, i.e. prevention, adaptation and	– standards – performance rules – restrictions on exposure or vulnerability

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Management Components	Definition	Indicators
	mitigation, as well as risk avoidance, transfer and retention	– economic incentives – compensation – insurance and liability – voluntary agreements – labels – information/education
Option assessment	Investigations of impacts of each option (economic, technical, social, political, cultural)	– effectiveness – efficiency – minimisation of side effects – sustainability – fairness – legal and political imple-mentability – ethical acceptability – public acceptance
Option evaluation and selection	Evaluation of options (multi-criteria analysis)	– assignment of trade-offs – incorporation of stakehold-ers and the public
Option implementation	Realization of the most preferred option	– accountability – consistency – effectiveness
Monitoring and feed-back	– Observation of effects of implementation (link to early warning) – Ex-post evaluation	– intended impacts – non-intended impacts – policy impacts

b. What criteria does the framework suggest for evaluating risk management options?

- Effectiveness: Does the option achieve the desired effect?

- Efficiency: Does the option achieve the desired effect with the least resource consumption?

- Minimisation of external side effects: Does the option infringe on other valuable goods, benefits or services such as competitiveness, public health, environmental quality, social cohesion, etc.? Does it impair the efficiency and acceptance of the governance system itself?

- Sustainability: Does the option contribute to the overall goal of sustainability? Does it assist in sustaining vital ecological functions, economic prosperity and social cohesion?

- Fairness: Does the option burden the subjects of regulation in a fair and equitable manner?

- Political and legal implementability: Is the option compatible with legal requirements and political programmes?

- Ethical acceptability: Is the option morally acceptable?

- Public acceptance: Will the option be accepted by those individuals who are affected by it? Are there cultural preferences or symbolic connotations that have a strong influence on how the risks are perceived?

c. How does the distinction in complexity, uncertainty and ambiguity assist risk managers in designing the appropriate risk management strategy?

Knowledge Characterisation	Management Strategy	Appropriate Instruments	Stakeholder Participation
1 'Linear' risk problems	*Routine-based:* (tolerability/ac-ceptability judgement- (risk reduction)	→ Applying 'traditional' decision-making - Risk-benefit analysis - Risk-risk trade-offs - Trial and error - Technical standards - Economic incentives - Education, labelling, information - Voluntary agreements	Instrumental discourse

2 Complexity-induced risk problems	Risk-informed: (risk agent and causal chain)	→ Characterising the available evidence
		- Expert consensus seeking tools:
		  - Delphi or consensus conferencing
		  - Meta analysis
		  - Scenario construction, etc.
		- Results fed into routine operation
			Epistemic discourse

	Robustness-focussed: (risk absorbing system)	→ Improving buffer capacity of risk target through: - Additional safety factors - Redundancy and diversity in designing safety devices - Improving coping capacity - Establishing high reliability organisations	
3 Uncertainty-induced risk problems	*Precaution-based:* (risk agent)	→ Using hazard characteristics such as persistence, ubiquity etc. as proxies for risk estimates Tools include: - Containment - ALARA (as low as reasonably achievable) and ALARP (as low as reasonably possible) - BACT (best available control technology)	Reflective discourse
	Resilience-focussed: (risk absorbing system)	→ Improving capability to cope with surprises - Diversity of means to accomplish desired benefits - Avoiding high vulnerability - Allowing for flexible responses - Preparedness for adaptation	
4 Ambiguity-induced risk problems	*Discourse-based:*	→ Application of conflict resolution methods for reaching consensus or tolerance for risk evaluation results and management option selection - Integration of stakeholder involvement in reaching closure - Emphasis on communication and social discourse	Participatory discourse

d. Provide a list of management procedures or instruments particularly suited for linear, risk-based, precaution-based and discourse-based risk approaches

- Linear risk management: cost-benefit analysis, risk-risk comparison, cost-effectiveness

- Risk-based management (high complexity): focused on epistemic clarity (using meta-analysis, Delphi methods or scientific consensus conferences), then procedures are similar to simple risk management with additional safety margins
- Precaution-based management (high uncertainty): focused on improving resilience: BACT (best available control technology), diversification and redundancy of safety devices in technical systems, containment methods, substitution where possible, ALARA (as low as reasonably achievable) for potentially hazardous materials or organisms, capacity enhancement for risk absorbing systems such as issuing stricter building codes or strengthening the immune system of humans.
- Discourse-based management (high ambiguity): focused on societal consensus: emphasis on risk communication, conflict resolution, mediation and other participatory procedures

e. What does the term "precaution" mean in the context of the risk governance framework?

Since high unresolved uncertainty implies that the (true) dimensions of the risks are not (yet) known, one should pursue a cautious strategy that allows learning by restricted errors. The main management philosophy for this risk class is to allow small steps in implementation (containment approach) that enable risk managers to stop or even reverse the process as new knowledge is produced or the negative side effects become visible. The primary goal of precaution is avoiding irreversibility.

f. Which distinct regulatory styles do we distinguish in the risk governance framework and how do these styles impact the risk management process?

Style	Characteristics	Risk Management
1 Adversarial approach	➢ open to professional and public scrutiny ➢ need for scientific justification of policy selection ➢ precise procedural rules ➢ oriented towards producing informed decisions by plural actors	➢ main emphasis on mutual agreements on scientific evidence and pragmatic knowledge ➢ integration of adversarial positions through formal rules (due process) ➢ little emphasis on personal judgement and reflection on the side of the risk managers
2 Fiduciary approach (patronage)	➢ closed circle of 'patrons' ➢ no public control, but public input ➢ hardly any procedural rules ➢ oriented towards producing faith in the system	➢ main emphasis on enlightenment and background knowledge through experts ➢ strong reliance on institutional in-house 'expertise' and demonstration of trustworthiness ➢ communication focused on institutional performance and 'good record'
3 Consensual approach	➢ open to members of the 'club' ➢ negotiations behind closed doors ➢ flexible procedural rules ➢ oriented towards producing solidarity with the club	➢ reputation most important attribute ➢ strong reliance on key social actors (also non-scientific experts)and on demonstrating social consensus ➢ communication focused on support by key actors
4 Corporatist approach	➢ open to interest groups and experts ➢ limited public control, but high visibility	➢ main emphasis on expert judgement and demonstrating political prudence

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Style	Characteristics	Risk Management
	➢ strict procedural rules outside of negotiating table ➢ oriented towards sustaining trust to the decision making body	➢ strong reliance on impartiality of risk information and evaluation ➢ integration by bargaining within scientifically determined limits ➢ communication focused on fair representation of major societal interests

9. Explain the stakeholder involvement concept of the governance framework

    a. Why is stakeholder involvement so essential for risk governance?

Stakeholder and public involvement is essential for good risk governance because all stakeholders have something to contribute to the process of risk governance and that mutual communication and exchange of ideas, assessments, and evaluations improve the final decisions rather than impede the decision-making process or compromise the quality of scientific input and the legitimacy of legal requirements. As the term governance implies, analysing and managing risk cannot be confined to private companies and regulatory agencies. Rather is involves the four central actors in modern plural societies: governments, economic players, scientists, and civil society organisations.

    b. What do we mean when we refer to stakeholders or the public?

- Stakeholders: socially organized groups who are or will be either affected by or have a strong interest in the outcome of the event or the activity from which the risk originates and/or by the risk management options taken to counter the risk.

- Directly affected public: individuals and non-organized groups who will experience positive or negative impacts from the outcome of the event or the activity from which the risk originates and/or by the risk management options taken to counter the risk.

- Observing public: the media, cultural elites and opinion leaders who may or may not comment on the risk issue or influence public opinion.

- General public: all individuals who are not directly affected by the risk or risk management and are part of the emerging public opinion on the issue.

    c. What types of discourse can we distinguish depending on the composition of complexity, uncertainty and ambiguity?.

- Linear (routine) risk problems. When making judgements about linear risk problems, a sophisticated approach to involve all potentially affected parties is not necessary. Most actors would not even try to participate since the expected results are more or less obvious. In terms of cooperative strategies, 'instrumental discourse' among agency staff, directly affected groups (such as product or activity providers and immediately exposed individuals) and as enforcement personnel is advisable.

- Complex risk problems. The proper handling of complexity in risk appraisal and risk management requires transparency over the subjective judgements and the inclusion of knowledge elements that have shaped the parameters on both sides of the cost-benefit equation. Resolving complexity necessitates a discursive procedure that already begins in pre-assessment phase and continues via the appraisal phase and the phase of tolerability and acceptability judgement to the risk management phase. Input for handling complexity could be provided by an 'epistemic discourse', aimed at finding the best estimates for characterizing the risks under consideration. This discourse should be inspired by different science camps and the participation of experts and knowledge carriers.

- Risk problems due to high unresolved uncertainty. Characterizing risks, evaluating risks and designing options for risk reduction pose special challenges in situations of high uncertainty about the risk estimates. How

can one judge the severity of a situation when the potential damage and its probability are unknown or highly uncertain? In this dilemma, risk managers are well advised to include the main stakeholders in the evaluation process and to ask them to find a consensus on the extra margin of safety in which they would be willing to invest in exchange, in order to avoid potentially catastrophic consequences. This type of deliberation, called 'reflective discourse', relies on a collective reflection about balancing the possibilities for overprotection and underprotection. If too much protection is sought, innovations may be prevented or stalled; if we go for too little protection, society may experience unpleasant surprises.

- Risk problems due to high ambiguity. If major ambiguities are associated with a risk problem, it is not enough to demonstrate that risk regulators are open to public concerns and to address the issues that many people wish them to take care of. In these cases, the process of risk evaluation needs to be open to public input and new forms of deliberation. This starts with revisiting the question of proper framing. Is the issue really a risk problem or is it, in fact, an issue of lifestyle and future vision? The aim is to find consensus on the dimensions of ambiguity that need to be addressed in comparing risks and benefits and balancing the pros and cons. High ambiguities require the most inclusive strategy for participation since not only directly affected groups, but also those indirectly affected have something to contribute to this debate. Resolving ambiguities in risk debates requires a 'participatory discourse': a platform where competing arguments, beliefs and values are openly discussed.

d. What are the specific requirements for stakeholder involvement in each phase of the governance cycle?

- Stakeholder engagement during pre-assessment: In keeping with the purpose of the pre-assessment phase, the goal of stakeholder engagement here focuses on the initial framing of the problem: defining boundary conditions, as well as the applicable scientific, political and social conventions, and making a preliminary assessment of the nature of the complexities, uncertainties and normative ambiguities that assessors and decision-makers are likely to face. The main function in this phase is selection (of frames, of information, of process steps, etc.) and priority-setting (what comes first, and what needs to be addressed in what sequence).

- Stakeholder and public engagement during appraisal: During risk appraisal stage, the focus of discussions and debate is on the contribution of knowledge or understanding about the limits of knowledge and about the risk(s) being evaluated. Depending upon the issue at hand, both technical experts (e.g. senior risk assessors, scientists, engineers, economists and other specialists) and stakeholders (e.g. affected communities, industries and governments) can offer valuable input into assessing risks and their related uncertainties, and possible approaches to evaluating their impacts on different targets.

- Stakeholder and public engagement during risk characterization and evaluation: In this phase of the framework, discourse depends upon the nature of the risk characteristics. For linear and complex risks without major uncertainties and ambiguities, a discourse among staff members (instrumental discourse) is sufficient. In this case, existing guidelines or legal prescription are probably available to judge the tolerability or acceptability of the risk under consideration. This changes dramatically if the risks are highly uncertain or even ambiguous. Under these circumstances, existing laws, existing standards and guidelines will not be sufficient to make tolerability and acceptability judgements since the impacts are uncertain and contested. More advanced forms of discourse are required here. A reflective discourse seems appropriate for highly uncertain and low to medium ambiguous risks, while a more participatory discourse is needed if the degree of ambiguity and controversy is very high. The purpose of stakeholder and public engagement in both discourse types is to

ensure that all values and preferences are made clear to the decision-makers ultimately responsible for deciding what to do about a risk.

- Stakeholder and public engagement in management: Stakeholders and the public have frequently asked to help identify, assess and select different management measures for reducing and managing risks that are not acceptable. The purpose of the discourse here is to look at the variety of possible interventions, to address the pros and cons for each measure or package of measures, and to suggest a set of measures that appear to be effective, efficient and fair. Both relevant knowledge and different preferences need to be considered when selecting one or more management measures. The function in this phase is to provide input for a regulatory impact assessment since regulatory measures normally affect other aspects (which people value), in addition to risk reduction. It may be costly to society to implement risk reduction measures; it may add unnecessary bureaucracy; it may cause more inequities; and it may lead to non-sustainable practices and so on. These impacts need assessing in order to balance the goal of risk reduction with the costs of accomplishing this reduction. For identifying and weighing these impacts, it is important to understand how different stakeholders experience these impacts. Normally, a reflective discourse, as described above, would be sufficient to cope with this task. The reflection here is on both the likely consequences of a regulatory option and the desirability of these consequences with regard to other highly esteemed objectives or values. If the different regulatory options cause serious societal concerns (e.g. if a regulatory option on reducing risk from terrorism is associated with a strong infringement on privacy rights or mobility), a participatory discourse might be necessary. Such a broad discourse could develop some major guidelines on how to resolve the difficult value conflict between security and personal freedom.

e. What function does the design discourse meet?

Categorizing risks according to the quality and nature of available information on risk may, of course, be contested among the stakeholders. Who decides whether a risk issue can be categorized as linear, complex uncertain or ambiguous? It is possible that no consensus may be reached as to where to locate a specific risk. In these cases, a detailed (worst case) analysis of monitoring and surveillance may constitute the only achievable compromise (reversible removal of risk sources, etc.; timely detection of adverse effects; strength of surveillance systems). The best means, however, of dealing with this conflict is to provide for stakeholder involvement when allocating the different risks into these four categories. This task can be located in the phase of screening as the third component of pre-assessment. Allocating risks to the four categories must be done before the assessment procedures start. Over the course of further analysis of risks and concerns, the categorization may change since new data and information are being collected that may necessitate a reordering of the risk. Yet, the risk governance system that is proposed in this document builds upon the need to classify risks at the beginning and to allocate them to different routes of appraisal, characterization, evaluation, and management. It seems prudent to have a screening board perform this challenging task. This board should consist of members of the risk and concern assessment team, of risk managers and key stakeholders (such as industry, NGOs and representatives of related regulatory, or governmental agencies). The type of discourse required for this task is called design discourse. It is aimed at selecting the appropriate risk and concern assessment policy, defining priorities in handling risks, organizing the appropriate involvement procedures and specifying the conditions under which the further steps of the risk-handling process will be conducted.

f. What are the main deficits in organizing stakeholder involvement? Provide examples and for these deficits.

Governance deficits can be perceived in the case of:

- Exclusion: accidental or deliberate exclusion of stakeholders and/or their views. For example, ignoring an important NGO or an affected industry

could lead to substantial problems when the management options are taken that violate the interests or values of the neglected groups.

- Indecisive closure: public consultation process without any clear ideas of how to integrate public input into the decision making process. For example, collecting many different vies in a public hearing and then making a decision that does not reflect any of the input that was given to the decision makers.

- Lack of responsiveness: a deliberate failure to act or a refusal to accept input from stakeholders ("Authority knows best"). For example, rejecting a position of an NGO on the premise that they have no expertise may cause the NGO to mobilize against the decision maker.

- Too many good intentions: selection of an overly inclusive process leads to inertia or indecision (analysis by paralysis). For example, combining all discourse types (instrumental, reflective, participatory and design) although the risk problem is linear or only complex but not uncertain or ambiguous.

10. Explain the risk communication concept of the risk governance framework

a. Why is risk communication an integral part of all phases of the risk governance model?

Communication is of crucial importance in all phases of addressing and handling risk. It should enable stakeholders and civil society to understand the risk itself and the rationale of the results and decisions from the risk appraisal and risk management phase. It enables them as well to understand their role in the process, to make informed choices about the risk, balancing factual knowledge about it with their personal interests, concerns, beliefs and resources. Effective communication is the key to creating trust in risk governance.

b. What are the four functions of risk communication?

- Education and enlightenment: inform the audience about risks and the handling of these risks, including risk and concern assessment and management;

- Risk training and inducement of behavioural changes: help people cope with risks and potential disasters;

- Creation of confidence in institutions responsible for the assessment and management of risk: give people the assurance that the existing risk governance structures are capable of handling risks in an effective, efficient, fair and acceptable manner (such credibility is crucial in situations in which there is a lack of personal experience and people depend on neutral and disinterested information).

- Involvement in risk-related decisions and conflict resolution: give stakeholders and representatives of the public the opportunity to participate in the risk appraisal and management efforts and/or be included in the resolution of conflicts about risks and appropriate risk management options.

c. How can risk perception studies assist risk assessors and managers to be better communicators?

Risk perception studies can enrich and inform risk communicators in the following manner:

- identify public concerns and communicate them to risk assessors and risk managers;

- identify different information needs and design the communication programs in line with the needs and requirements of the different audiences

- identify cultural meanings and associations held by special groups or subcultures and design communication programs that refer to these cultural beliefs

- explore the context of risk-taking situations and use this background information for tailoring the needed information to the targeted audience

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- help to articulate and communicate the objectives of risk policies in addition to risk reduction or mitigation, such as enhancing fairness and institutional trust, and reducing inequities and vulnerability;

d. What type of risk communication is best suited for each of the for phases of the risk governance cycle?

- Pre-assessment: Media briefing about process to start, if stakeholder participation (design discourse) is planned, press conference about this involvement procedure, press releases after the design discourse has come to a conclusion.

- Appraisal: Media briefing and announcement to stakeholders that assessment process is on its way; if necessary hearing with stakeholders on issues that need to be included; establishment of an internet forum where concerned groups and stakeholders can communicate with the risk and concern assessment team; at the end of appraisal press briefing about the results of the risk and concern assessments.

- Characterization and evaluation: Joint press conferences of risk assessors and managers reporting on evaluation results and recommendations (allocation in traffic light model); in the case of highly uncertain and ambiguous risks: public dialogue processes (for example via internet) with possibility for giving feedback to regulators.

- Risk Management: Public information and communication program on management measures and their impacts, in the case of highly uncertain and ambiguous risks: public dialogue processes with possibility for giving feedback to regulators on implications of regulatory measures; constant feedback to the press media about implementation and monitoring results.

e. What topics should be primarily addressed by risk communication to the general public?

Risk communication needs to address the following topics:

- explain the concept of probability and stochastic effects;

- explain the difference between risk and hazard;

- deal with stigmatised risk agents or highly dreadful consequences (such as nuclear waste or cancer);

- explain how to cope with long-term effects;

- provide an understanding of synergistic effects with other lifestyle factors;

- address the problem of remaining uncertainties and ambiguities;

- explain of how to cope with the diversity of stakeholders and parties in the risk appraisal and management phase;

- explain of how to cope with inter-cultural differences within pluralist societies and between different nations and cultures.

f. What are the main deficits in communicating risks to internal or external audiences? How can one deal with these deficits?

The most important governance deficits that are found in the communication phase are:

- One-way information instead of two-way communication prevents building dialogue. Often information is given that nobody had asked for and questions remain unanswered because risk communicators are not aware of them. Effective exchange of information and concerns can be facilitated by a dialogue process.

- The communication is not adapted to the category of risks and the stakeholders involved. It is recommended to use the distinction in linear, complex, uncertain and ambiguous risks to design the risk communication program. The more uncertain and ambiguous risks are the more risk communication efforts are needed.

- Concerns are treated as irrational fears and thus stigmatised (which may result in a high degree of social mobilisation against the risk management institution). Risk perception studies are crucial for understanding the concerns of the targeted audiences. These concerns are legitimate even if their underlying factual claims are not supported by scientific evidence. Risk communication programs should address these concerns and document how risk managers are dealing with these concerns. This may also include the message that some concerns are dismissed due to the evidence that science has produced (however stressing remaining uncertainties). This implies, however, transparent risk management procedures, clear documentation of evidence and explanation why the specific concern is not warranted.

- Low level of confidence or trust in the information given and in the decision-making process weakens the whole process. Trust cannot be produced by an agency or risk management institution. It needs to be deserved. The best way to gain and sustain trust is to demonstrate excellent performance, take the expectations of stakeholders and the public seriously and be open and transparent about decision making procedures

Recommended literature on the IRGC Risk Governance Framework

EDITED VOLUMES and MONOGRAPHS

Bischof, H.-J. (ed): Risks in Modern Society. Dordrecht and Heidelberg (Springer 2008)

Boulder, F.; Slavin, D. and R. Löfstedt, (eds): The Tolerability of Risk. A New Framework for Risk Management. London (Earthscan: 2007)

IRGC (International Risk Governance Council): Nanotechnology – Risk Governance. White Paper No. 2, written by Ortwin Renn and Mike Roco with Annexes by Mike Roco and Emily Litten. Geneva (IRGC: 2006)

IRGC (International Risk Governance Council): Risk Governance: Towards an Integrative Approach. White Paper No. 1, written by Ortwin Renn with an Annex by Peter Graham. Geneva (IRGC: 2005)

Renn, O.: Risk Governance. Coping with Unceratinty in a Global World. London (Earthscan 2008)

Renn, O. and Walker, K. (Eds.): Global Risk Governance. Concept and Practice Using the IRGC Framework. International Risk Governance Council Bookseries 1. Berlin and Heidelberg (Springer 2008)

Renn, O.; Schweizer, P.-J., Dreyer, M. und Klinke, A.: Risiko. Eine interdisziplinäre und integrative Sichtweise des gesellschaftlichen Umgangs mit Risiko. München (ÖKOM Verlag: Juni 2007)

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Bunting, C.; Renn, O. and Florin, M.-V.: The IRGC Risk Governance Framework. The John Liner Review. The Quarterly Review of Advanced Risk Management Strategies, Vol. 21, No. 2 (2007), 7-26

Dreyer, M.; Renn, O.; Borkhart, K. und Ortleb, J.: Institutional Re-arrangements in European Food Safety Governance: A Comparative Perspective. In: E. Vos & F. Wendler (eds.): Food Safety Regulation in Europe: A Comparative Institutional Analysis. Maastricht (Intersentia Publishing: 2007)

Renn, O.: White Paper on Risk Governance. Toward an Integrative Framework. In: Renn, O. and Walker, K. (Eds.): Global Risk Governance. Concept and Practice Using the IRGC Framework. International Risk Governance Council Bookseries 1. Berlin and Heidelberg (Springer 2008), pp. 3-73

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Practice Using the IRGC Framework. International Risk Governance Council Bookseries 1, Berlin and Heidelberg (Springer 2008), pp. 331-360

Renn, O. und Roco, M.: Nanotechnology and the Need for Risk Governance. Journal of Nanoparticle Research, Vol. 8, Nos. 2-3 (April 2006), 23-45

A.7.1.1   Lecture notes

(NOTE: This is an excerpt from the course Unit 3)

Unit 3: Introduction to obligations within Seveso II directive

About this Unit

This unit gives overview of requirements for operators of the industrial establishments with obligations according to provisions of Seveso II directive. General overview was given in previous unit; however, here we will go deeper in order to understand the aspect of compliance of operator management system and documents with MAPP, SMS, SR, Emergency preparedness and other. A role of CA in that respect will also be mentioned.

At the end of the Unit 3, the student should be able to answer the following questions:

- Why do we (company) need a safety policy paper (MAPP document)?
- Which are seven main topics of the Safety Management System?
- Why is Safety Report so lengthy and why do we need it?
- Why Emergency planning comes after the preparation of the Safety Report?
- Why do we need to inform the pubic about our safety measures?
- Is there any benefit of imposing exclusion zones for use of the land around establishments?
- How should the CAs practically carry out the control of the safe operation of industrial plants?

Before you begin

- Read the previous two units in order to be familiar with terminology and contents of the directive Seveso II.

Lower & upper tier establishments

Annex 1 of the directive provides legal criteria for the purpose of classification of industrial installation with hazardous substances into two categories with obligations: lower tier and upper tier establishments in terms of technically and organizationally maximum amounts of hazardous substances. The annex consists of:

- Table 1 with named chemical and commercial substances and usually their CAS identification numbers.
- Table 2 with specified certain hazardous properties of substances/preparations in terms of general properties and corresponding Risk phrases.
- Explanatory text for both tables and related rules.

The following rules and explanations are suitable here:

- Prepare an inventory of all hazardous substances at the establishment. Consider related hazardous substances & properties mentioned in Annex 1, check related SDS/MSDS data at storage or process conditions. In inventory, consider even mixtures, preparation, and many smaller amounts. Example: 1000 pieces of tanks with 10 kg of "something" is equivalent to 10,000 kg = 10 tons ...).
- If certain substance is listed in Table 1, then consider table 1 given criteria (lower and upper tier threshold quantities) and NOT those in Table 2.
- If certain substance is found only in Table 2, then use its criteria. If substance has more than one listed property/risk phrase, consider the one with lowest threshold quantity.
- If at least one threshold criteria is reached, or exceeded, you already got the answer!
- If quantities for more than one substance are lower than threshold criteria, consider adding the relative quantities (max. present ÷ threshold) for all substances with same type of hazard (flammable, toxic...). If any of the sums is equal or larger than

one, the criteria are reached. If certain relative quantity is below 0.02 (<2%), it can be omitted in further calculations.

Note: term establishment here relates to the legal form (property, unit) present on certain area or location, usually physically separated from the neighbors by fence, wall, etc. See text of directive for clarifications.

MAPP, SMS - on all 7 demands

MAPP

Major Accident Prevention Policy document is requested according to article 7 of the Directive. The operator (management) must prepare a formal duly signed statement on setting up major accident prevention policy and ensure it is properly implemented. The contents of the statement shall follow principles set for specification of SMS as defined in Annex III of the Directive.

In practical preparation of the policy, it is wise to follow similar approach as for voluntary certification schemes (examples) for quality management, environmental management and occupational health and safety management such as ISO 9000:2000, ISO 14000:2004, EMAS and OHSAS 18001:1999, respectively. They all start with a policy statement of the top management on their determination to establish and follow certain principles to reach certain specific goals. The point is that EC promotes strongly such certification (especially EMAS) and Seveso II directive in principle follows the approach setting a goal oriented legislation for goal oriented management system. It is up to specific company's management system to set its process safety goals on strategic and operational levels. As companies usually have their management system in compliance (certified) for mentioned voluntary schemes, here, they have to establish also additional compliance in terms of process safety management. This also requires clear distinction of terms among quality management (assurance), environmental protection, occupational safety, occupational health and process safety.

To conclude, the MAPP document shall in practical terms be organized as:

- Statement of the top manager (CEO) responsible for process safety aspects about their
- determination for high level of protection for man and environment by appropriate means
- Statement with outlining main topics of implementation of the policy as safety management system for the process safety aspect for their operations involving large quantities of hazardous substances. The details of the safety management system should be listed and supported by brief explanation how will this topic be implemented on the strategic and tactical level
- Date, name, position, signature (seal).

SMS

Safety Management System (SMS) shall be outlined and implemented according to provisions set in Annex III of the Seveso II directive. In addition, generally speaking, various national CAs guidelines apply for MAPP, SMS and SR drawing up, implementation and description (in SR, for example). This means that in reality various interpretations of the details considered apply, thus various criteria for SMS specifications can be present, related to certain national CA considerations as being sufficient to reach compliance.

As mentioned, SMS shall be part of overall management system, meaning that in principle, only one set of management documentation is present and used for all aspects covered, but that is not necessary followed. The SMS implemented must cover the following topics/aspects:

- Starting part of SMS is MAPP adopted - SMS implements MAPP.
- On how general management system will provide organizational structure, responsibilities, practices, procedures, processes and resources for determining and implementing the major-accident prevention policy.
- Description how the following seven issues are managed by the management system (note: description means text in SR):

1. Roles and responsibilities of the personnel on all levels in terms of management of major accident hazards. This includes training (identification, provisions) for personnel and where applicable also for contractors.

2. Provisions for selection of suitable methods and tools for identification and evaluation of major accident hazards. This means that suitable methods and tools are to be selected on the strategical level (= input for risk assessment within SR) to be considered for all operations (regular, start-up/down, maintenance, etc.) and to clearly differentiate e.g., from occupational safety aspect.

3. Operational control. How the operators are providing safe operations at their facilities in terms of procedures and instructions for safe operation, including maintenance, of plant, processes, equipment and temporary stoppages; the point is to demonstrate that control of regular operations considers adequately also major accident hazards, in terms of identifying and responding to potential process deviations (e.g., in work procedures). In some instances, a detailed "procedure for writing work procedures" is suitable/needed.

4. Management of change. A suitable procedures and provisions for all process safety related process, procedure, materials, conditions, personnel organization and other changes is needed. All suggested proposals for such changes shall be subject of a rigorous procedure for their processing by appointed competent authorized person. This shall include proposal collection/write down, evaluation, approval/rejection, implementation protocol and permanent documentation on the changes carried out. This shall apply for all changes small or large, new investments should be also carried out as projects.

5. Planning for emergencies. Procedure shall be in place in order to prepare for foreseeable emergencies due to internal or external causes. Based on risk assessment results within SR, a list of relevant major accident scenarios should be used for internal emergency planning. Emergency plans should be prepared by analysis of scenarios, subject of testing (drills) and review for suitability for response in such a case.

6. Monitoring performance. Any management system needs some kind of measurement as navigational tool for steering the performance of something. In process safety terms, the suitability and performance of all safety measures, about all previous SMS topics 1- 5 (listed above) should be done. This should in principle be done regularly, according to predetermined plan, structured, auditable, and to provide quantifiable results. Related to actual occurrences of accidents, or even on process safety related incidents two topics are to be considered:

    - Prior to the accidental event(s): the performances (even intensities) of all actual recognized process safety related measures is to be determined and possibly quantified. This should be done topic by topic, detail by detail and then aggregated, e.g. on annual level. The trends and lessons learnt shall be considered in management actions.

    - After the accidental event(s): provisions shall be set and carried out related to the reporting, analyzing, corrective actions, including review of successfulness for the actual accidents, near misses, process deviations (minor and major) experienced in relation to the technical (e.g., quality of protective measures), human and organizational aspects observed. The idea is to demonstrate a closed learning loop on organizational level ("lessons are learnt").

7. Audit and review. Procedures shall be in place and implemented for periodic systematic assessment and review of MAPP and SMS effectiveness and suitability, followed by potential updating of both by company management. This topic is analogous to audit and review as considered in voluntary certification schemes, however for the aspect of process safety.

Safety report - its operational use

Safety Report (SR) should be key operational tool regarding the safety management system, description of the establishment, risk analysis and its results, accidental scenarios and related preventive measures, emergency planning, information to the public and some conclusions regarding the risks present in the context of risk management. Detailed requirements, approaches and methodologies are subject of significant differences among EU member states, however, the main topics as requested by Annex II of the directive and already briefly explained in Unit 2 should be common. [1]

Related to the requirement of *Identification and accidental risks analysis and prevention methods*, this is the key point:

- Identification of all major accident hazards in connection with safety measures in order to prevent them (=risk analysis) is main tool in the risk management loop, namely enabling assessment of the risk level - or - how safe it is?

- Answer to that question directly relates management's decision about potentially required further safety measures (if the risk level is too high), or to say in another way, about the level of confidence into the existing ones.

- Detailed knowledge of all major accident hazards enables careful planning for a potential case that preventive measures all fail, and incidental events leading to accidental outcome start to occur. Such knowledge supports (= input information) preparation of emergency plan.

- SR prepared enables elaboration of information to be communicated to the public, namely on safety measures that are considered in a case of declared emergency and are of importance to the general public.

- Detailed knowledge of all major accident hazards enables estimation of potential impact distances related to related major accident scenarios with potential for damage outside the establishment (land use planning aspect, see next parts).

Explanation of risk assessment procedure, general methods, tools, etc. is subject of Unit 4.

Emergency planning (internal/external)

Main issues related to emergency planning are outlined in Annex IV of the directive and were already briefly explained in Unit 2.

Main issue related to the purpose of internal emergency planning relates to full use of the combined resources of the establishment and the outside community services:

- Reduce the risks to the health and safety of man, the environment and of all those affected by an emergency, including members of the public and emergency services personnel.

- Identify those measures needed to contain the effects of the emergency.

- Ensure a robust process is in place for the management of the emergency response following an accident, which clearly identifies the responsibilities of the operator of the establishment, the emergency services and the local authority.

- Address in detail the communication requirements between the emergency services and operator of the establishment.

- Manage the emergency to minimize the effects on the activities of those not directly affected, for example, control on-site traffic to keep people out of the area where the accident has occurred and to prevent people congregating at the scene thereby putting themselves at risk.

- Recognize that a major accident may occur at any time. The plan should be flexible enough to provide emergency response at any time and at any location within the facility.

Detailed methodology for elaboration of emergency plans, contents and provisions can be subject of applicable legislation. Related to the review of the SR by Slovenian CA [8], the following topics from the Emergency plan should be summarized in the Safety report:

- Title of the applicable emergency plan, with date of this approval and the name of person with authority for approval
- Summary of the emergency plan:
  - scenarios of major accidents being considered for preparedness for major accidents,
  - equipment of the establishment considered for reduction/limitation of the consequences of the major accidents
  - organization of informing, alarming and response at the occurrence of major accidents,
  - resources inside and outside the establishment that can be used for response at the occurrence of major accident.

Similar to all above mentioned explanations, the applicable Slovenian legislation (Decree on the contents and drawing up of protection and rescue plans, OG RS No. 3/2002, 17/2002, 17/2006 and 76/2008) among other provisions requests the following mandatory contents of the emergency plan (EP):

- Description of the potential accident in relation to which the EP is prepared. Expected development and properties of the accident should be described here. This should include also assessment of domino potential (escalation of the accidental events). All data should be used from applicable SR prepared.
- Extent of planning. The extent and level of planning is to be defined (state, local community, establishment levels), potential other emergency planners and the geographical (area) expected extent of the accident in terms of impact distances due to expected hazardous phenomena (available from SR).
- Implementation and use of the plan. The concept of response to the accidental development should be outlined here. The point is to elaborate what should be done in practical terms inside establishment in order to stop or at least limit the extent of the damage due to major accident scenario in progress.
- Resources. Necessary personnel, equipment, facilities and available funding should be outlined. Related decrees define necessary resources and training for emergency forces. Also a time plan for fulfillment of currently missing resources shall be considered if applicable.
- Monitoring, notification and warning. The means of monitoring for major accidents shall be outlined. It is of utmost importance to agree on the criteria how the accidental development will be recognized in practical terns by line operators, line managers and on who is in power to declare emergency. Next, notification and warning of site personnel, members of the public (potentially affected) and external services (related to external EP) must be specified.
- Mobilization of resources. The procedures for mobilization of required resources must be elaborated in sufficient details.
- Management and administration. The structure for EP response in terms of management and administration must be outlined, including roles/tasks and responsibilities.
- Protection, rescue and relief. Foreseeable developments, conditions, events of accidental events shall be provided with description of actions aiming to limit the consequences (protective measures).
- Personal and mutual protection. Outline measures and actions aiming to reduce risk to employees, including evacuation, personal protection equipment, process equipment/buildings protective measures, etc.
- List of terms and abbreviations used
- Annexes:
  - Action plans for teams/bodies/services considered to implement plan (Emergency Response team with: Main Control Team, Forward Control Team;

First Medical Aid Team, Civil Protection, Security Services, external services, ...).

- List of all personnel, roles, deputies, names, positions, phones, faxes, ... (applied to above teams).
- Site drawings, maps, locations, ...
- Copies of relevant establishment/site procedures, incident reporting forms, Investigation Procedures
- Samples of media statements for appointed persons (managers)
- Training and drill program for staff (team members)
- Instructions and provisions for maintenance and distribution of the plan

Land use planning requirements

Main issues related to emergency planning were already briefly explained in Unit 2. The national approaches in implementation of this obligation are subject of large differences.

The main point in land use planning issue is that from risk assessment results, relevant (serious enough) major accident scenarios should be considered in terms of their risk level (probabilistic approach considering only scenarios with risk level above certain threshold level) or only impact distances for credible scenarios (deterministic approach: all credible (possible) scenarios are considered. Next, considered scenarios are usually screened for the worst possible ones, usually being "the catastrophic ones" with significant impact distances also outside the boundaries of the establishment. Next, with information on the impact level in relation to the distance, the damage of a concern must be assessed and criteria used. Usually this means that vulnerability of the environment (humans, housings/objects, environment, civil and public buildings, ...) are considered against applicable impact levels from fire, explosion, toxic release, projectiles. For example, the applicable threshold values for three levels of damage according to applicable Slovenian Decree are:

- Class 1 zone (inner impact area): fire thermal radiation $>= 5$ kW/m^2, or explosion overpressure peak at $>= 140$ mbar, or toxic cloud dose above corresponding to the ERPG-3 concentration in ambient air.
- Class 2 zone (wider impact area): fire thermal radiation $3 - 5$ kW/m^2, or explosion overpressure peak at $50 - 140$ mbar, or toxic cloud dose ERPG-2 to ERPG-3 concentration in ambient air.
- Class 3 zone (widest impact area): fire thermal radiation $1.8 - 3$ kW/m^2, or explosion overpressure peak at $20 - 50$ mbar, or toxic cloud dose above ERPG-1 to ERPG-2 concentration in ambient air.

With impact zones set and vulnerability of the environment (objects) known of present, the decision matrix can be set in order to provide decisions in terms whether the threat is unacceptable, clearly acceptable, or some other intermediate measures or decisions are suitable.

It is clear that actual figures used here can subject of different interpretations/use, however the main question usually is whether the right scenarios (and all of them) are considered. However, the zones (impact distances) derived shall lead to clearly defined buffer zones for "greenfield investment" situations (if enough data is available for risk assessment phase at the plant concept phase). For assessing the status for existing establishments with developments in the immediate proximity the topic can became a serious issue (what to do?).

Information to the public

The population in the proximity to the hazardous installation has the right to be informed about the risks exposed at, or to put it in another way, about the safety measure and legal status of the industrial plant in question. In principle, when informed by the operator on their status, they have the right to see the contents of the applicable SR, subject of confidentiality and security provisions.

The following detailed information to the public in terms of safety measures in a case of major accident event at the establishment, carried out by internal and external emergency teams for protection and relief of neighboring population is mandatory to be prepared and to be published and sent by the operator (contents of the Annex V of the Seveso II directive):

1. Name of operator and address of the establishment.

2. Identification, by position held, of the person giving the information.

3. Confirmation that the establishment is subject to the regulations and/or administrative provisions implementing this Directive and that the notification referred to in Article 6 (3) or the safety report referred to in Article 9 (1) has been submitted to the competent authority.

4. An explanation in simple terms of the activity or activities undertaken at the establishment.

5. The common names or, in the case of dangerous substances covered by Part 2 of Annex 1, the generic names or the general danger classification of the substances and preparations involved at the establishment which could give rise to a major accident, with an indication of their principal dangerous characteristics.

6. General information relating to the nature of the major-accident hazards, including their potential effects on the population and the environment.

7. Adequate information on how the population concerned will be warned and kept informed in the event of a major accident.

8. Adequate information on the actions the population concerned should take, and on the behavior they should adopt, in the event of a major accident.

9. Confirmation that the operator is required to make adequate arrangements on site, in particular liaison with the emergency services, to deal with major accidents and to minimize their effects.

10. A reference to the external emergency plan drawn up to cope with any off-site effects from an accident. This should include advice to cooperate with any instructions or requests from the emergency services at the time of an accident.

11. Details of where further relevant information can be obtained, subject to the requirements of confidentiality laid down in national legislation.

Roles of the competent authorities (CAs)

The national competent authorities shall be involved in following general activities and roles (lecturer's view):

- Represent the interest of the public for the aspect of major accidents prevention through legal system, government administration and applicable legislation.

- Involvement in drawing up, negotiations and preparations for development of EU level legislation.

- To prepare, implement, enforce and review of the applicable national legislation implementing EU legislation (directives, regulations).

- Collect data for reporting purposes to the EC on execution of the legislation.

- Prepare applicable guidelines for implementation of national legislation (to be used by industry, consultants, NGOs, local authorities, inspectorates, etc.).

- Perform evaluation (review) of the documentation received in terms of compliance checking, performance is to be verified through inspections.

- Organize investigations of major accidents and related events of interest (reporting, analysis, corrective actions, dissemination of lesson learnt).

- Perform a role in open discussions with representatives of the industry on wider process safety issues and on applicable legislation (procedures, criteria, review, administrative issues).

- Commission studies and opinions from researchers and consultants on the issues of interest.

For example, in Slovenia competent authorities in the process of building capacities, drawing up legislation, soft laws and carrying out their obligations, commissioned or took role in some activities, such as:

- Technical opinion on the transposition of Annex I of the directive 96/82/EC into the Slovenian legal system was commissioned by Ministry of Defense – Administration of RS for protection and rescue in 2000.

- Ministry of Defense, Slovenia and Ministry of Environment and Spatial Planning took role as beneficiaries in the PHARE REAP Project: Planning for Emergencies Involving Dangerous Substances for Slovenia, involving development of guidelines for risk assessment and emergency planning (2001).

- Ministry of Environment and Spatial Planning commissioned in 2002-2003 a Target Research Project on comparative exploration of results of the three risk assessment methods/tools (SPIRS, IAEA's RRA and common QRA) at three Slovenian industrial establishments. The purpose was to support decisions on suitable risk assessment methods.

- Ministry of Environment and Spatial Planning commissioned in 2006 a questionnaire survey among representatives of related Slovenian establishments about status of the compliance with legislation, approaches used in order to reach it, and opinion on the process safety benefits reached and on difficulties encountered or percepted. Publication: GERBEC, Marko, KONTIĆ, Branko. Implementation of the Seveso II directive in Slovenia : survey of implementation and opinions of operators regarding its safety benefits, Safety Science, doi:10.1016/j.ssci.2008.07.010 .

- Related to expected cross-border environmental impacts of proposed LNG terminal in the Gulf of Trieste, Italy, the Ministry of Environment and Spatial Planning commissioned in 2006 commissioned a series of expert reviews, including aspect of process safety- being done by JSI. The expert reviews provided Slovenia a formal status in the licensing procedure. The experts reviews were subject of update in 2008.

- The representatives of CA (Ministry of Environment and Spatial Planning) participated in EC JRC Benchmark exercise in quantitative area risk assessment in Central and Eastern European Countries (BEQUAR) in 2007. The aim of the exercise was to review the uncertainties and differences by various CAs in the process of review of safety report prepared for a case industrial establishment. Relevant publication: L. Fabri, S. Contini, Benchmarking on the evaluation of major accident-related risk assessment, Journal of Hazardous Materials, 162 (2009) 1465-1476 and Benchmark exercise in quantitative area risk assessment in Central and Eastern European Countries (BEQUAR), Final Report, EC JRC IPSC, 2007, EUR 22619 EN.

A.7.1.2   Slides

(NOTE: This is an excerpt from the course Unit 4a)

Course I-R1

Introduction to Risk Management

Unit 4A:
Corporate responsibility and industrial risks

A. Jovanovic, Steinbeis Advanced Risk Technologies Group, Germany

Steinbeis University Berlin, STI Advanced Risk Technologies, Stuttgart

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Corporate responsibility and industrial risks: requirements

- Main part of the course:
  Mandatory requirements (e.g. EU, Seveso)
- Supplement (Unit 1A):
  Risk perception – will people accept that formal satisfaction of mandatory/legal criteria means "acceptable risk"?
- Do we have formal/mandatory/legal criteria for everything? What is with "new technologies"?
- "Grey"/transition zone
  Covered by Unit 4A!
- Message:

There is responsibility, even if there is no (formal) legislation! Common sense, ethics, societal development of last 5,000 years impose it clearly... But how does it looks in the practice?

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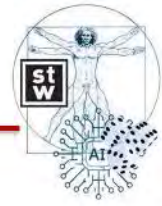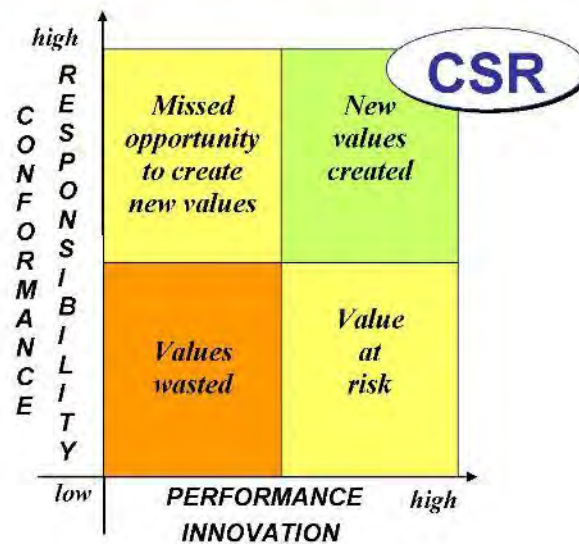
CSR Framework

The overall CSR framework ...

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CSR and innovation >>> Emerging Risks!!

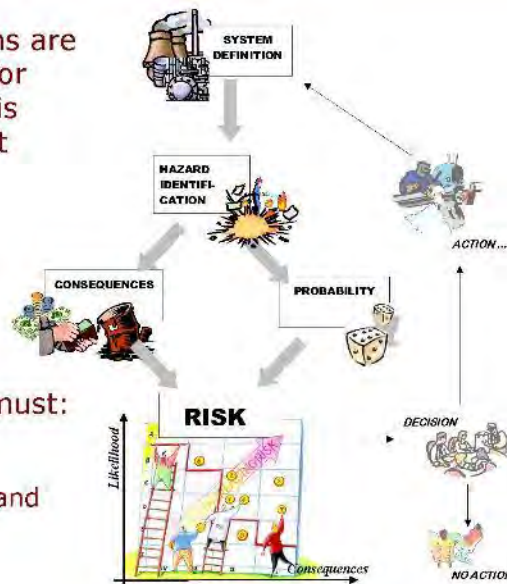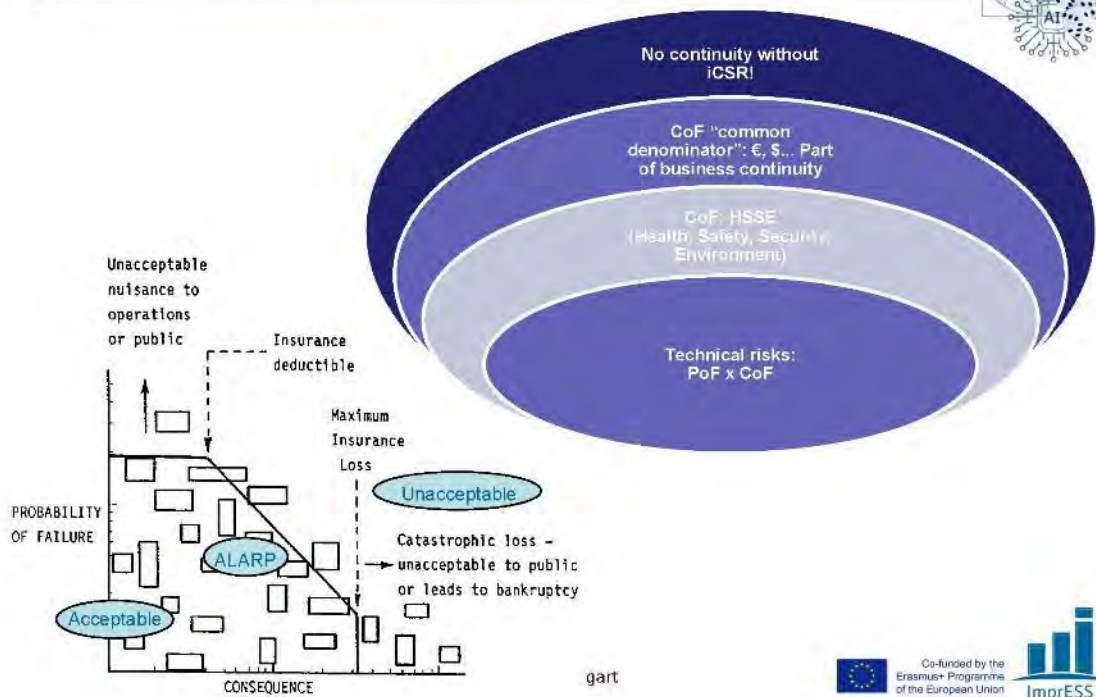Steinbeis University Berlin, STI Advanced Risk Technologies, Stuttgart

iCSR and RISK

Many different definitions are possible/available, but for practical applications it is commonly accepted that

RISK =

probability

$\times$

consequences

to do it practically one must:

- define the system
- define SCENARIOS and
- identify hazards

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Risk and iCSR

No continuity without iCSR!

CoF "common denominator": €, $... Part of business continuity

CoF: HSSE (Health, Safety, Security, Environment)

Technical risks: PoF x CoF

Unacceptable nuisance to operations or public

Insurance deductible

Maximum Insurance Loss

Unacceptable

PROBABILITY OF FAILURE

ALARP

Catastrophic loss – unacceptable to public or leads to bankruptcy

Acceptable

CONSEQUENCE

Global Reporting Initiative (GRI)

- Transparency
- Inclusiveness
- Auditability
- Completeness
- Relevance
- Sustainability
- Accuracy
- Neutrality
- Comparability
- Clarity
- Timeliness

GRI G3 - What are the G3 Guidelines?

- The G3 Guidelines are the cornerstone of the GRI Sustainability Reporting Framework. In line with the GRI vision, it is recommended they be used as the basis for all of an organization's annual reporting.

  The Guidelines outline core content for reporting and are relevant to all organizations regardless of size, sector, or location. They are the foundation upon which all other GRI reporting guidance is based. The G3 Guidelines outline a disclosure framework that organizations can voluntarily, flexibly, and incrementally adopt. The flexibility of the G3 format allows organizations to plot a path for continual improvement of their sustainability reporting practices.

GRI G3 – The contents Part 1/2

Part 1 – Reporting Principles and Guidance

Principles to define report *content*: materiality, stakeholder inclusiveness, sustainability context, and completeness.

Principles to define report *quality*: balance, comparability, accuracy, timeliness, reliability, and clarity.

Guidance on how to set the report *boundary*.

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GRI G3 – The contents Part 2/2

Part 2 – Standard Disclosures

- Strategy and Profile

- Management Approach

- Performance Indicators

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The G3 concept

- In order to ensure a balanced and reasonable presentation of the organization's performance, a determination must be made about what content the report should cover.
- This determination should be made by considering both the *organization's purpose and experience,*

and

the reasonable expectations and interests of the organization's stakeholders.

- Both are important reference points when deciding what to include in the report.

www.globalreporting.org

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The G3 structure

- Report Content
    - Materiality
    - Stakeholder Inclusiveness
    - Sustainability Context
    - Completeness

- Report Form & Quality
    - Reliability
    - Clarity
    - Balance
    - Comparability
    - Accuracy
    - Timeliness

G3 Reporting Framework

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GR Report Content - Materiality

- The information in a report should cover topics and Indicators that reflect the organization's significant economic, environmental, and social impacts, or that would substantively influence the assessments and decisions of stakeholders.

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GR Report Content - Stakeholder Inclusiveness

- The reporting organization should identify its stakeholders and explain in the report how it has responded to their reasonable expectations and interests.
- Stakeholders are defined as entities or individuals that can reasonably be expected to be significantly affected

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GR Report Content - Sustainability Context

- The report should present the organization's performance in the wider context of sustainability.
- Information on performance should be placed in context. The underlying question of sustainability reporting is how an organization contributes, or aims to contribute in the future, to the improvement or deterioration of economic, environmental, and social conditions, developments, and trends at the local, regional, or global level.
- Reporting only on trends in individual performance (or the efficiency of the organization) will fail to respond to this underlying question. Reports should therefore seek to present performance in relation to broader concepts of sustainability.

GR Report Content - Completeness

- Coverage of the material topics and Indicators and definition of the report boundary should be sufficient to reflect significant economic, environmental, and social impacts and enable stakeholders to assess the reporting organization's performance in the reporting period.
- Completeness primarily encompasses the dimensions of scope, boundary, and time. The concept of completeness can also be used to refer to practices in information collection and whether the presentation of information is reasonable and appropriate.

GR Report Form & Quality - Reliability

- Definition:
  Information and processes used in the preparation of a report should be gathered, recorded, compiled, analyzed, and disclosed in a way that could be subject to examination and that establishes the quality and materiality of the information
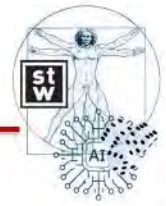
GR Report Form & Quality - Clarity

- Definition:
  Information should be made available in a manner that is understandable and accessible to stakeholders using the report.

- Explanation:
  The report should present information in a way that is understandable, accessible, and usable by the organization
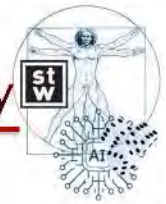
GR Report Form & Quality - Balance

- **Definition**:
  The report should reflect positive and negative aspects of the organization's performance to enable a reasoned assessment of overall performance.

- **Explanation**:
  The overall presentation of the report's content should provide an unbiased picture

GR Report Form & Quality - Comparability

- **Definition**:
  Issues and information should be selected, compiled, and reported consistently. Reported information should be presented in a manner that enables stakeholders to analyze changes in the organization's performance over time, and could support other relative analysis.

GR Report Form & Quality - Accuracy

- Definition:
  The reported information should be sufficiently accurate and detailed for stakeholders to assess the reporting organization's performance.

- Explanation:
  Responses to economic, environmental, and social topics and Indicators can be expressed in many different ways, ranging from qualitative responses to detailed quantitative measurements. The characteristics that determine accuracy vary according to the nature of the information and the user of the information.

GR Report Form & Quality - Timeliness

- Definition:
  Reporting occurs on a regular schedule and information is available in time for stakeholders to make informed decisions.

- Explanation:
  The usefulness of information is closely tied to whether the timing of its disclosure to stakeholders enables them to effectively integrate it into their decision-making. The timing of release refers both to the regularity of reporting as well as its proximity to the actual events described in the report.

GRI

- http://www.globalreporting.org/ReportingFramework/G3Online/

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From "social only" CSR to "integrated" CSR

iCSR

Technology acceptance

Business transparency – governance

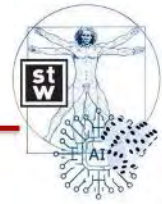Social aspects – business should be "social"

Business continuity

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Example: Swiss Re

- Does it always have to be India?

Swiss Re

2010 Corporate Responsibility Report
Committed to sustainable value creation

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ImprESS

Example: Swiss Re

- Environment
- Compliance
- Employees
- ...

Our core values:
Engagement
Excellence
Sustainability
Integrity

Swiss Re has a long-standing commitment to being a responsible company. A key element in our understanding of what this means is the wish to contribute to sustainable value creation, for the benefit of our clients and society at large. Sustainability constitutes one of our core values, along with engagement, excellence and integrity.

Swiss Re Group Code of Conduct:

"Swiss Re takes pride in being a law-abiding, ethical and socially responsible organisation that deals fairly and professionally with its stakeholders – our employees, shareholders, customers, government regulators and the general public."

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ImprESS

Example: Swiss Re

- Environment
- Compliance
- Employees
- ...

Corporate responsibility goals for 2011

These are our main corporate responsibility goals for 2011. We will report on our progress made against these goals in the next report.

Further build and deepen relationships with public-sector clients through our newly created Global Partnerships business function.

Complete further regional studies to help clients devise cost-effective adaptation strategies to climate change, based on the Economics of Climate Adaptation methodology.

Continue to embed our Sustainability Risk Framework into core business operations and advance the insurance industry's adoption of such risk management practices.

Maintain 50.6% reduction in CO_2 emissions per employee under post-crisis business conditions and increase gains in energy efficiency to 32%, both measured against 2003 baseline.

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ImprESS

Example: Swiss Re

- Emerging risks
- Framework

Extending our risk intelligence

We apply tailor-made tools to extend the scope of our risk management. This helps us identify and appropriately address ethical, sustainability-related and emerging risks.

Swiss Re has comprehensive risk management processes in place to identify, assess and control the Group's risk exposures. The main categories of our risk landscape comprise core risks (insurance, financial market and credit) as well as operational and other risks that arise as a result of doing business (see 2010 Financial Report, pages 39–47).

As part of our integrated approach to risk management, we have also developed formal processes to address specific types of risk that continue to grow in significance:

environmental, social and ethical risks on the one hand, and emerging risks on the other. Having the means and know-how to adequately deal with these risks in our core business forms a key element of Swiss Re's commitment to corporate responsibility. At the same time, it makes good business sense because it helps us prevent potential underwriting losses and damage to our reputation.

Our Sustainability Risk Framework
In 2009, we introduced our Sustainability Risk Framework to formally identify and

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ImprESS

Example: Swiss Re

- Does it always have to be India?

Example: Swiss Re

- Measuring iCSR
- Looking at Emerging risks

GRI content index

with UN Global Compact "Communication on Progress" references

This content index refers to the Global Reporting Initiative (GRI) G3 Guidelines for Sustainability Reporting. The guidelines form a voluntary framework setting out principles and indicators that companies can use to measure and report their economic, environmental and social performance.

We have self-declared our reporting to be Application Level B.

References to the UN Global Compact principles addressed as part of our Communication on Progress (COP) are incorporated into the GRI content index, in line with UN recommendations.

Example: Swiss Re

- Measuring iCSR
- Looking at Emerging risks

Governance, commitments and engagement

		UN Global Compact principle	Page
4.1	Governance structure		55–56, FR 57–71
4.2	Independence of chairman		56, FR 57–59
4.3	Independence of board members		55–56, FR 57–66
4.4	Shareholder and employee representation		56–57, FR 77–78
4.5	Executive compensation		FR 85–107
4.6	Conflicts of interests		55–56, FR 57–66
4.8	Mission statements and Code of Conduct		9, 57
4.9	Governance procedures on CR		10
4.11	Precautionary approach principle	7	9–11, 23–26
4.12	Externally developed charters and principles		2, 35
4.13	Memberships		64–65
4.14	List of stakeholder groups		9
4.15	Stakeholder identification		28
4.16	Approaches to stakeholder engagement		28

Management approach and performance indicators

Product and service impact

Disclosure on management approach:
We provide comprehensive disclosure of our management approach to product and service impact in the two chapters
"Creating sustainability solutions" and "Extending our risk intelligence".

FS1	Environmental and social policies in business lines	1, 2, 7–9	10, 14, 21
FS2	Screening of environmental and social risks	1, 2 and 8	21–22
FS4	Environmental and social training for staff	1, 2 and 8	22
FS5	Interactions with clients/investees/ business partners	1 and 2	14, 22
FS7	Products with specific social benefit		14–19
FS8	Products with specific environmental benefit	7 and 8	14–19
FS11	Environmental and social screening in asset management		25

Economic dimension

Disclosure of management approach:
Our management approach to the economic dimension is primarily disclosed in the 2010 Business Report.
Specific aspects are disclosed in chapters of this report: "Our approach to corporate responsibility" (on climate change) and
"Creating sustainability solutions" (on indirect economic impacts).

EC1	Direct economic value generated		7, FR 111–117, 156
EC2	Implications of climate change	7	11, 14–17
EC3	Benefit plan obligations		FR 160–167
EC9	Indirect economic impacts		6, 14–19

Environmental dimension

Disclosure on management approach:
We provide comprehensive disclosure of our management approach to the environmental dimension in the chapter
"Reducing our environmental footprint".

EN1	Materials used by weight or volume	8	39
EN2	Recycled materials used	8 and 9	39
EN4	Indirect energy consumption	8	36–37
EN5	Energy conservation and efficiency	8 and 9	37
EN6	Initiatives to use renewable energy	8 and 9	36–37
EN7	Initiatives to reduce indirect energy consumption	8 and 9	37
EN8	Total water withdrawal	8	39
EN16	Greenhouse gas emissions	8	36
EN17	Indirect greenhouse gas emissions	8	36

		UN Global Compact principle	Page
EN18	Initiatives to reduce greenhouse gas emissions	7, 8 and 9	35–40
EN22	Total weight of waste	8	39
EN29	Environmental impact of transport	8	36, 38

Labour practices and decent work

Disclosure of management approach:
Our management approach to labour practices and decent work is disclosed in the chapter "Being an employer of choice".

LA1	Breakdown of workforce		48–49
LA2	Employee turnover	6	48
LA8	Training on serious diseases	1	53
LA12	Performance review		53
LA13	Workforce diversity	1 and 6	48–50

Human rights

Disclosure of management approach:
We address human rights aspects relevant to our business through our Sustainability Risk Framework and our procurement guidelines.
The corresponding management approaches are disclosed in the chapters "Extending our risk intelligence" and "Reducing our
environmental footprint", respectively.

HR2	Supplier screening on human rights	1–6	39
HR6	Child labour	1, 2 and 5	39
HR7	Forced or compulsory labour	1, 2 and 4	39

Society

Disclosure of management approach:
We address society aspects relevant to our business through our business solutions, Group Code of Conduct and
risk dialogue. The corresponding management approaches are disclosed in the chapters "Creating business solutions", "Ensuring good
governance" and "Exploring and shaping the risk landscape", respectively.

FS14	Access to financial services for disadvantaged people		14–19
SO3	Anti-corruption training	10	57
SO5	Public policy positions		28

Product responsibility

We consider the definition of product responsibility in the GRI guidelines to be of little relevance for a company providing
business-to-business services in the financial industry and hence provide no information in this area.

Co-funded by the
Erasmus+ Programme
of the European Union

Conclusions ....

SO FAR:

A business could be "socially-conscious" (or not!) and a technology could be "socially-conscious" (or not!), but

FROM NOW ON:

they MUST be "socially-conscious" if they want to "overcome poverty, disease, environmental degradation, food crisis, depletion of non-renewable resources, etc. ..."

The real, practical, down-to-earth way is putting together i.e. INTEGRATING

- *Social aspects*
- *Financial aspects and*
- *Technical aspects*
- *AND RISKS!*

... and educating people how to do it practically!

Steinbeis University Berlin, STI Advanced Risk Technologies, Stuttgart

A.7.1.3 Sample questions

1. Situations where certain risk and safety exist simultaneously are possible.

☐ Yes

☐ No

---

2. A hazard is a usually dormant / potential situation which poses a level of threat to life, health, property or environment relates to actual physical and chemical property of certain substance.

☐ Yes

☐ No

---

3. Typically, aircraft accidents belong to the occupational safety issue.

☐ Yes

☐ No

---

4. The term risk as a concept means probability of a specific undesired outcome or a loss.

☐ Yes

☐ No

---

5. Strictly speaking, the term "safe" simply means a complete absence of hazard or risk from some specific cause, related to some specific unwanted consequence.

☐ Yes

☐ No

---

6. Considering classification of safety aspects, typically food poisoning belongs to product safety.

☐ Yes

☐ No

---

7. Introduction of the new chemicals to the EU market is generally covered by the regulation No. 1907/2006 (REACH).

☐ Yes

☐ No

---

8. The safety aspects can be categorized to at least four large groups. Quote them, please, and give an example for each of them.

---

9. Give a short explanation what is System safety.

10. Historical overview of major accidents leads to the conclusion that they were all caused by inadequate (failed) safety management system in terms of operator error, design flaw or procedural deficiency/violation.

□ Yes

□ No

11. Within risk assessment, the hazard identification step is usually done with HAZOP study, which is in principle focused on the potential logical deviations of the relevant process parameters.

□ Yes

□ No

12. Typically, flammable substances can lead to accidents resulting in phenomena like flash fire, jet fire, pool fire, fire ball and vapor cloud explosion.

□ Yes

□ No

13. For an explosion of the solid phase explosive material to occur, presence of both air (oxygen) and ignition source is necessary.

□ Yes

□ No

14. Classification of an hazardous substance with only as "O, oxidizing" relates only to a potential hazard for health effects due to damage to biological cell if exposed/in contact.

□ Yes

□ No

A.7.2   Course R06 (HSSE) – Unit 1 and Unit 2

(NOTE: This is an excerpt from the course Unit 1 and 2)

Steinbeis Transfer Institute
Advanced Risk Technologies (R-Tech)

Course III-R06 HSSE:
Health, Safety, Security and
Environment

EU-YRi

Unit 1: Presentation and discussion of the homework

Presentation of the participant(s) about HSSE in their home country.

Q1 Describe the most important laws in your country for regulating

a) release of environmental emissions during regular production of your plant(s).

b) prevention of major accidents involving the release of hazardous chemical substances to the environment.

c) general regulations of health and safety at work.

Cite relevant links to authorities and regulations!

Q2 How does your company implement these regulations?

In case of security issues just describe the way procedures are set and communicated and sum up their content.

Q3 Give examples for industrial hazards and external hazards for your plant(s).

Steinbeis Transfer Institute
Advanced Risk Technologies (R-Tech)

Course III-R06 HSSE:
Health, Safety, Security and
Environment

EU-YRi

Unit 2:

About This Chapter

Chapter 2 gives a synthetic overview of the implementation of the IED Directive

2.1 Lesson 1: The Industrial Emission Directive

The European Union (EU) defines the obligations to be met by industrial activities with a major pollution potential. It establishes a permit procedure and lays down requirements, in particular with regard to discharges. The objective is to avoid or minimize polluting emissions in the atmosphere, water and soil, as well as waste from industrial and agricultural installations, with the aim of achieving a high level of environmental and health protection. It is the purpose of the Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control).

This Directive brings together Directive 2008/1/EC (the 'IPPC Directive') and six other directives in a single directive on industrial emissions.

Sectors of activity

This Directive shall cover industrial activities with a major pollution potential, defined in Appendix I to the Directive (energy industries, production and processing of metals, mineral industry, chemical industry, waste management, rearing of animals, etc.).

The Directive shall contain special provisions for the following installations:

- combustion plants (≥ 50 MW);
- waste incineration or co-incineration plants;
- certain installations and activities using organic solvents;
- installations producing titanium dioxide.

This Directive shall not apply to research activities, development activities or the testing of new products and processes.

Environmental requirements

Any industrial installation which carries out the activities listed in Appendix I to the Directive must meet certain basic obligations:

- preventive measures are taken against pollution;
- the best available techniques (BAT) are applied;
- no significant pollution is caused;
- waste is reduced, recycled or disposed of in the manner which creates least pollution;
- energy efficiency is maximized;
- accidents are prevented and their impact limited;
- sites are remediated when the activities come to an end.

Application of best available techniques

Steinbeis Transfer Institute
Advanced Risk Technologies (R-Tech)

Course III-R06 HSSE:
Health, Safety, Security and
Environment

EU-YRi

Industrial installations must use the best available techniques to achieve a high general level of protection of the environment as a whole, which are developed on a scale which allows implementation in the relevant industrial sector, under economically and technically viable conditions. The European Commission must adopt BAT conclusions containing the emission levels associated with the BAT. These conclusions shall serve as a reference for the drawing up of permit conditions.

Permit conditions

The permit must provide for the necessary measures to ensure compliance with the operator's basic obligations and environmental quality standards. These measures shall comprise at least:

- emission limit values for polluting substances;
- rules guaranteeing protection of soil, water and air;
- waste monitoring and management measures;
- requirements concerning emission measurement methodology, frequency and evaluation procedure;
- an obligation to inform the competent authority of the results of monitoring, at least annually;
- requirements concerning the maintenance and surveillance of soil and groundwater;
- measures relating to exceptional circumstances (leaks, malfunctions, momentary or definitive stoppages, etc.);
- provisions on the minimization of long-distance or transboundary pollution;
- conditions for assessing compliance with the emission limit values.

Special provisions

Special provisions shall apply to combustion plants, waste incineration and co-incineration plants, installations using organic solvents and installations producing titanium dioxide.

The emission limit values for large combustion plants laid down in Appendix V to the Directive are generally more stringent than those in Directive 2001/80/EC. A degree of flexibility (Transitional National Plan, limited life time derogation) shall be introduced for existing installations.

For other activities subject to special provisions, the provisions of the current directives have been largely maintained.

Environmental inspections

Member States shall set up a system of environmental inspections of the installations concerned. All installations shall be covered by an environmental inspection plan. The plan shall be regularly reviewed and updated.

Based on the inspection plans, the competent authority shall regularly draw up programmes for routine environmental inspections, including the frequency of site visits for different types of installations. The period between two site visits shall be based on a systematic appraisal of the environmental risks of the installations concerned. It shall not exceed one year for installations posing the highest risks and three years for installations posing the lowest risks.

Repeal

Directive 2010/75/EU replaces definitively,

- with effect from 7 January 2014:
    1. Directive 78/176/EEC on titanium dioxide industrial waste;
    2. Directive 82/883/EEC on the surveillance and monitoring of titanium dioxide waste;
    3. Directive 92/112/EEC on the reduction of titanium dioxide industrial waste;
    4. Directive 1999/13/EC on reducing emissions of volatile organic compounds (VOCs);
    5. Directive 2000/76/EC on waste incineration;
    6. Directive 2008/1/EC concerning integrated pollution prevention and control;
- with effect from 1er January 2016:
    1. Directive 2001/80/EC on the limitation of emissions of certain pollutants from large combustion plants.

A.7.2.1   Lecture notes

(NOTE: This is an excerpt from the course Unit 5)

Steinbeis Transfer Institute Advanced Risk Technologies (R-Tech)	Course III-R06 HSSE: Health, Safety, Security and Environment	EU-VRi

Unit 5: Prevention against internal and external threats: Security aspects

About this Chapter

Refineries, chemical and petrochemical plants are potential terrorism targets. This new reality has given momentum to industry and government initiatives aimed at enhancing the security of industrial facilities in ways that meet non-traditional threat scenarios.

This chapter presents the concept of security in particular for the protection of industrial facilities.

5.1 Lesson 1: Concept and general definitions

In Europe, the CEN BT/WG 161 on Protection and Security of the Citizen provided the definition of "security":

Security is a condition (perceived or confirmed) on an individual, a community, an organization, a societal institution, a state, and their assets (such as goods, infrastructures), to be protected against danger or threats such as criminal activity, terrorism or other deliberate or hostile acts, disasters (natural and man-made.

The Appendix 5-A provides background, general definitions and the model for security.

Figure 4: Model for security

The Appendix 5-B provides further definitions and a methodology of the operators of critical infrastructures.

5.2 Lesson 2: Security for Chemical / oil sites

This part of the courses presents the approach and method implemented on chemical and oil sites (Seveso sites) to deal with security issues.

The Appendix 5-C describes the vision from the German Commission for the Safety of Hazardous Installations, based on the experience of the industry.

Steinbeis Transfer Institute
Advanced Risk Technologies (R-Tech)

Course III-R06 HSSE:
Health, Safety, Security and
Environment

EU-YRi

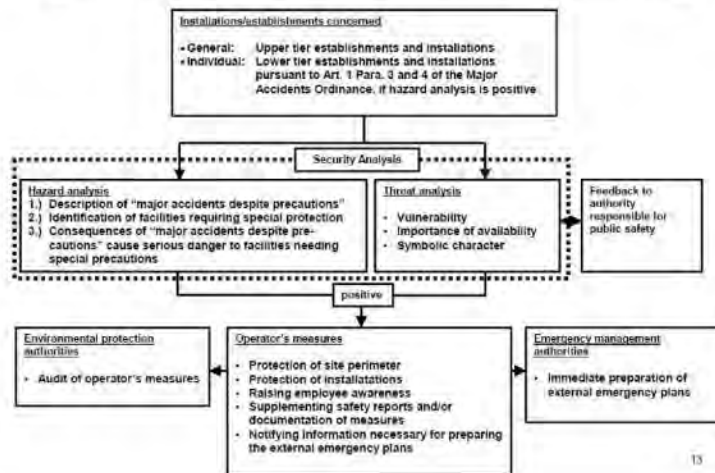## Protecting establishments/installations from interference by unauthorised persons

Figure 5: Approach to protect establishments from interference with unauthorized persons

The good security practices are described in a simple manner in this document.

The paper presented in Appendix 5-D gives the general approach of the ARAMIS method that can be also adapted for security issues as presented in the slides. This enables to develop an integrated approach for industrial safety and security.

A.7.2.2   Slides

(NOTE: This is an excerpt from the course Unit 4)

Definition
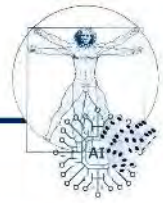
CEN BT/WG 161 on Protection and Security of the Citizen:

Security is a condition (perceived or confirmed) on an individual, a community, an organisation, a societal institution, a state, and their assets (such as goods, infrastructures), to be protected against danger or threats such as criminal activity, terrorism or other deliberate or hostile acts, disasters (natural and man-made.

Definition
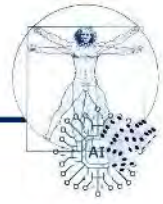
➢ Facilities requiring special protection
➢ Security relevant installations
➢ Unauthorised persons
➢ Security
➢ Security analysis

Security concept
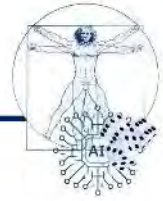
➢ Hazard analysis
➢ Threat analysis
➢ Protecting security relevant installations
➢ Measures to minimise the consequences of major accidents

Threat situation

➢ The general security situation
➢ The establishment´s membership of other companies
➢ The local situation of the establishment
➢ The type of production and storage of substances
➢ The importance of the establishment for downstream production and services

Threat situation

➢ The size and composition of work force

➢ The quality of security organisation

➢ The social position of members of company management

➢ The nature of sales contacts and international activities

Threat categories - assumptions
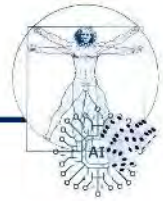
➢ Possible circumstances surrounding the offence

➢ Possible motives and typical modes of offence

➢ Instruments likely to be used

➢ Expected criminal energy

Threat categories - probabilities

➢ 1 = must be assumed

➢ 2 = likely

➢ 3 = hardly likely

➢ 4 = can be ruled out

Threat categories
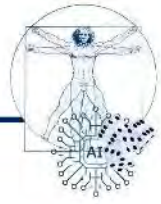
➢ Attendant circumstances

➢ Motives

➢ Preparatory activities

➢ Instruments

➢ Criminal energy

➢ Group of persons

➢ Remarks / Examples

Security relevant parts

➢ Division into sectors
➢ Consulting safety report
➢ Table of security relevant parts

Example

No	Possible act	Security relevant part 1: Tank storage	2: Control centre
1	Deliberate misoperation	Yes	No
2	Manipulation	No	Yes
3	Vehicle traffic	Yes	No
4	Interference using simple tools	No	No
5	Interference using heavy tools	Yes	No

Example

| No	Possible act	Security relevant part 1: Tank storage	2: Control centre
6	Arson using simple means	Yes (in explosion hazards sector)	No
7	Arson using incendiary devices	Yes	No
8	Use of explosives	Yes	No
9	Shooting	Yes	No
10	Incidents outside the installation itself	Yes (fire in building X)	No
11	Theft of hazardous substances	No	No

Hazard assessment

Reduced table of security-relevant plants.

e.g.

- Massive terrorism (Threat category 3)
- Deliberate misoperations, vehicle traffic (After working hours)
- Deliberate misoperation, Arson using simple means,
- Arson using incendiary devices,
- Incidents outside the installation itself

Security objectives
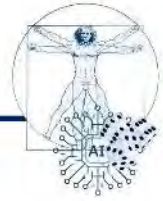
➢ Group together several security-relevant parts, e.g. building with severala security relevant rooms.

➢ Objective: Steps must be taken to prevent external personnel entering building XY

➢ Reasonable input of resources, e.g. .. except when accompanied by members of the department.

Security measures / concept
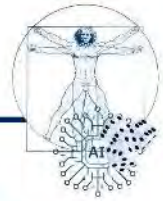
1. Location and position (Described in the safety report)
- Perimeter / enclosure. Type and nature
- Position of gates and access points
- Surroundings. Terrain, buildings
- Transport routes (to and within)
- Car parks
- Security-relevant areas
- Routing of security-relevant cables and pipes

Security measures / concept
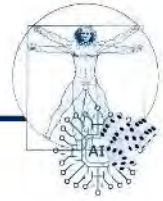
2. External enclosure

- Description
- Details of type and construction
- Details of quality (height, climbing, crawling)
- Details of pedestrian and vehicle access points

Security measures / concept

3. Site access controls

3.1. Control measures

3.2. Gatehouses

3.3. Site

Security measures / concept
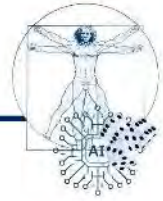
4. Protecting security relevant areas

- Constructional/mechanical measures to separate areas + constructional design of buildings/rooms
- Electronic surveillance of doors …
- Handling of access controls during and after working hours
- Protection of individual operating elemensts
- Patrols of objectives

Security measures / concept
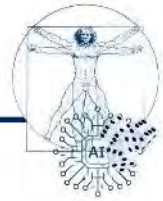
5. Organisational measures

- Site ID badges
- Appointment and monitoring procedures
- Training and instruction
- Rules for supervision
- Individual key arrangements
- Cleaning of security relevant areas
- List of instruction sheets
- Alarm plans

Security measures / concept
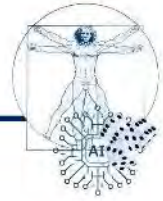
6. Security organisation
- Hierarchical relationships
- Shifts and numbers
- Use of personnel
- Supervision
- Education and equipment, training
- Instruction sheets

Security measures / concept
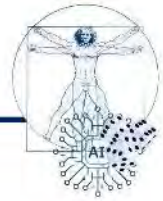
7. Alarm surveillance and communication systems
- Function and use
- Local arrangement
- Location and security of central facilities
- Routing and security of cables

1st layer of risk knowledge: the Major Hazards Control Approach (accidental risks)
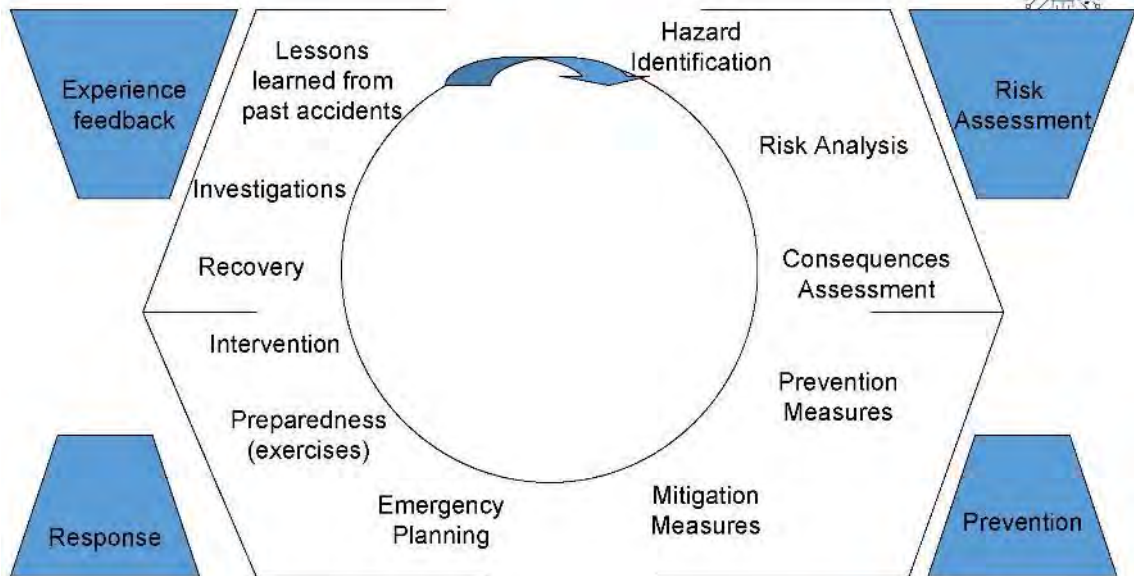
2nd layer of risk knowledge (security) to develop a global approach including risks and threats

Defence in depth

Emergency planning and public information

Land Use Planning

Emergency planning and confidentiality

Prevention and mitigation measures
Countermeasures

On site Risk Decreasing
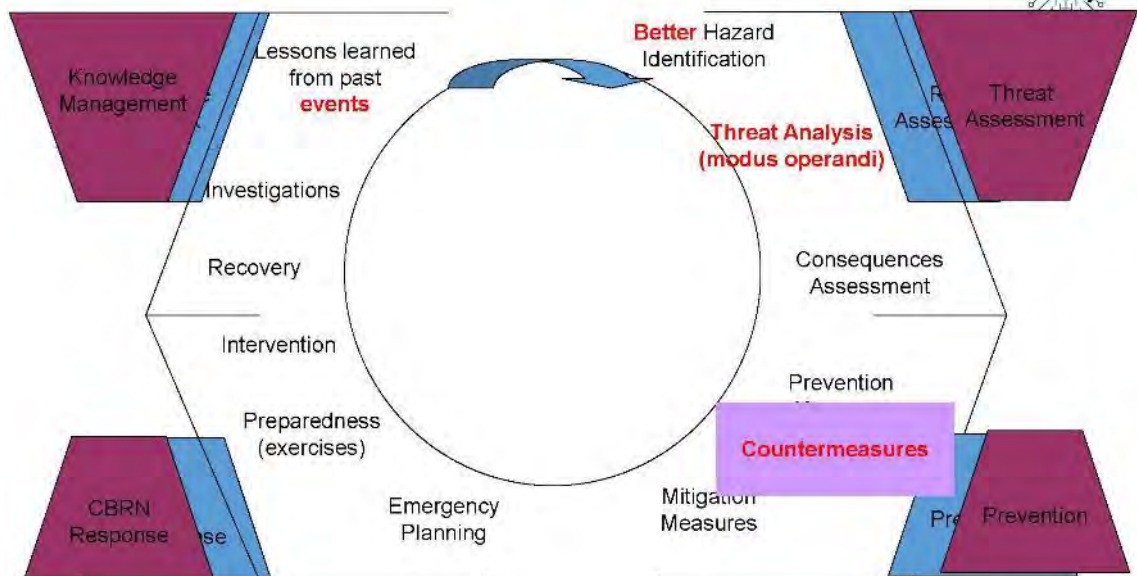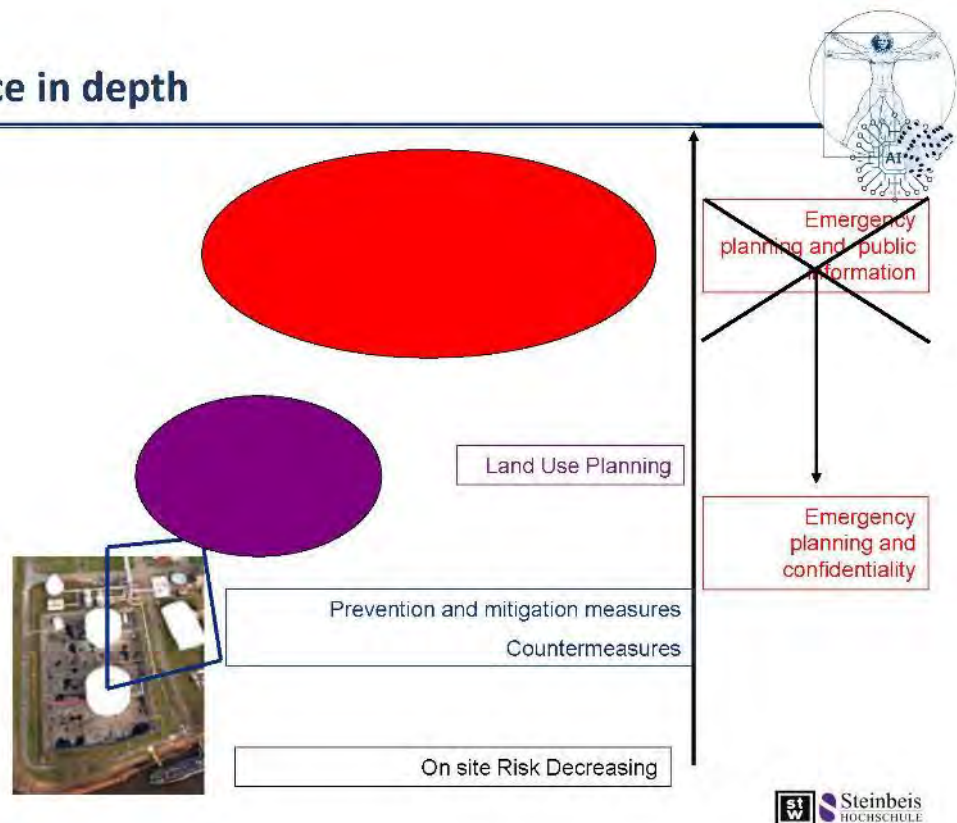
How ? - Existing Dedicated methodologies:

⇒ American Chemistry Council, ACC (2001). Site security guidelines for the US chemical industry

⇒ CCPS, (2002) Guidelines for Analysing and Managing the security vulnerabilities of fixed chemical sites

⇒ American Petroleum Institute, API (2003). Security guidelines for the petroleum industry

⇒ European Initiatives (Germany, Austria, The Netherlands)

⇒ ARAMIS methodology

STEINBEIS ADVANCED RISK TECHNOLOGIES Institute

Contact

Steinbeis University Berlin
Steinbeis Advanced Risk Technologies (R-Tech)
Fangelsbachstr. 14, 70178 Stuttgart, Germany

Tel: +49 711 410041 29
E-Mail: info@risk-technologies.com
www.sti.risk-technologies.com and
www.steinbeis.de

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A.7.2.3 Sample questions

I: True/False
4 questions x 2 points = 8 points
Identify whether the following statements are true or false.

1. BAT means Best available technology.

☐ Yes

☐ No

2. The Seveso directive is aimed at the prevention of major accidents involving dangerous substances.

☐ Yes

☐ No

3. The Seveso directive aims at reducing the industrial emissions during normal operating.

☐ Yes

☐ No

4. For upper tier Seveso establishments, the safety report has to be updated at least every five years.

☐ Yes

☐ No

Section II – Single/multiple choice
3 questions x 2 points = 6 points
Select a correct answer - between offered answers only one is correct.

5. HSSE stands for:

☐ Human, Safety, Social, Environment

☐ Human, Security, Social, Ethical

☐ Hazard, Security, Safety, Ethical

☐ Health, Safety, Security, Environment

☐ None of the above

6. What is a BREV?

☐ Interprets IPPC directive

☐ Contains limit values

☐ Technically based and accurate information for the guidance of those who set ELVs and write permits based on BAT

☐ The result of an information exchange organized under Article 17(2) of the IPPC Directive

7. Which of the following indicators is NOT a lagging indicator?

☐ Number of safety walk by the management

☐ Number of release involving hazardous substances

☐ Number of failures of safety barriers

☐ Amount of VOC released per year

A.7.3 Course R19 (BC&M) – Unit 1

(NOTE: This is an excerpt from the course Unit 1)

Unit 1 Successful management of cultural differences as factor of success of IT and other projects

Introduction

In the times of ever increasing globalization and outsourcing cultural and related differences among the people working on the same tasks, projects or in the same company, become more and more important.

Successful management of these differences becomes the key factor of success: globalized companies know that the success of the global presence is assured only through "success of thousand local presences" (cf., e.g., HSBC, "The world's local bank", www.hsbc.com).

In particular, cultural differences play an important role in the area of business communication which can easily fail on apparently banal issues. This is of particular importance also in EU collaborative projects

1.1 Cultural Diversity

A society is comprised of highly diverse groups of

- people
- ideas
- attitudes
- Backgrounds

Having these many variables in place, it becomes increasingly difficult to have a good and equivocal response of a group of people to a query or problem. Although this may initially slow down the process, it also helps to create new ways to approach the same problem which can be instrumental in the future.

These cultural differences can be broadly classified into either monochromic culture or polychromic culture.

Table 1: Monochronic and Polychronic Culture [1]

Table I.: Monochronic and Polychronic Cultures

	Monochronic Culture	Polychronic Culture
Interpersonal Relations	Interpersonal relations are subordinate to present schedule	Present schedule is subordinate to Interpersonal relations
Activity Co-ordination	Schedule co-ordinates activity; appointment time is rigid.	Interpersonal relations co-ordinate activity; appointment time is flexible
Task Handling	One task at a time	Many tasks are handled simultaneously
Breaks and Personal Time	Breaks and personal time are sacrosanct regardless of personal ties.	Breaks and personal time are subordinate to personal ties.
Temporal Structure	Time is inflexible; time is tangible	Time is flexible; time is fluid
Work/personal time separability	Work time is clearly separable from personal time	Work time is not clearly separable from personal time
Organisational Perception	Activities are isolated from organisation as a whole; tasks are measured by output in time (activity per hour or minute)	Activities are integrated into organisation as a whole; tasks are measured as part of overall organisational goal

1.2 Context Diversity

Low Context	High Context
Tends to prefer direct verbal interaction	Tends to prefer indirect verbal interaction
Tends to understand meaning at one level only	Tends to understand meanings embedded at many sociocultural levels
Is generally less proficient in reading nonverbal cues	Is generally more proficient in reading nonverbal cues
Values individualism	Values group membership
Relies more on logic	Relies more on context and feeling
Employs linear logic	Employs spiral logic
Says *no* directly	Talks around point; avoids saying *no*
Communicates in highly structured (contexted) messages, provides details, stresses literal meanings, gives authority to written information	Communicates in simple, ambiguous, noncontexted messages; understands visual messages readily

Low-Context Cultures ← German   North American   French   Spanish   Greek   Chinese → High-Context Cultures

German-Swiss   Scandinavian   English   Italian   Mexican   Arab   Japanese

Figure 1: Low context Vs High Context

1.3 Comparison of Cultural Values

Table 2: Comparison of Cultural Values

U.S. Americans	Japanese	Arabs
1. Freedom	1. Belonging	1. Family security
2. Independence	2. Group harmony	2. Family harmony
3. Self-reliance	3. Collectiveness	3. Parental guidance
4. Equality	4. Age/Seniority	4. Age
5. Individualism	5. Group consensus	5. Authority
6. Competition	6. Cooperation	6. Compromise
7. Efficiency	7. Quality	7. Devotion
8. Time	8. Patience	8. Patience
9. Directness	9. Indirectness	9. Indirectness
10. Openness	10. Go-between	10. Hospitality

1.4 Identity

People are distinguished from one another by their identity. These can be of various types. More commonly are:

- Ethnic
- Racial
- Geographic
- Cultural
- Political sense

With the advent of social networking as a backbone of our cultural intermixing more classes like Facebook Groups, Linkedin groups come out as new identities which classify/group people according to their choices.

In the present scenario, globalization has raised more awareness of cultural diversity by putting most of the people on a single platform. This in turn makes cultural identities and ethnicities more relational and contextual, as well as makes them evolve continuously They have become more complex, ambiguous and multifaceted.

Individuals undergo self- and cultural identity transformation in order to achieve understanding, harmony and balance within themselves and their environment, and in their connection with others. Cultures also change in this process, because social, political, economic and historical influences affect cultural and intercultural interactions. Cultural groups reflect, re-create, unify, and maintain their ethnic and cultural identities.

1.4.1 Plurality of Identity

In communication and daily interactions we define who we are. We negotiate our identities with people who are similar to us and different from us. Our identities are developed in social interactions. Our identity must be distinguished from what, traditionally, has been called roles and role-sets.

The essential question is how, from what, by whom, and for what identities are constructed. Building materials are to be found in history, biology, institutions, collective memory, personal fantasies and power apparatus. Individuals, social groups and societies process these materials. The social construction of identity always takes place in a particular context where power relationships rule.

Sometimes identities may start as resistance and they gradually become dominant in the process. The building of identity may lead to a different life, from an oppressed identity to the transformation of society.

1.4.2 Properties of Cultural Identity

Individual identity

This refers to the individual's interpretation of his or her cultural identity, which is based on his or her own experiences. It includes understanding multiple degrees of differences and similarities among group members.

Relational identity

This refers to relationships between persons. There are norms for appropriate behavior in relational contacts, which occur for example between friends, colleagues, coworkers or neighbors. Expectations for behavior vary according to types of interactions, situations and topics.

Communal identity

This is identified by observing a group's communal activities, rituals, rites and holiday celebrations. Group members use cultural membership to maintain community with one another.

Cultural identities may change due to several types of factors that influence a group of people. These factors may be social, political, economic or contextual. Our identities are strongly being reshaped by globalization and information technology revolution. People are influenced by pervasive, interconnected and diversified media systems. Work has become

flexible and unstable, labor is being individualized. Globalization and the restructuring of capitalism are part of the process that is reforming societies and people's identities.

1.4.3 Social and Cultural Identity

Gender identities
This is influenced by the way we are treated by our parents, other relatives, neighbors and friends. Boys and girls are dressed in different colors and they are introduced to different types of toys. In every culture there are communications and interactions which are considered feminine, masculine or androgynous. Nowadays the media influences our identity, in what is considered feminine, masculine or androgynous.

Age identities
Cultures view and treat people of different ages in different ways. For example, in Asian cultures, getting old is seen as positive. Elderly people are respected and they are cared for by their children. In some European cultures, however, not all elderly people are highly respected. In many cases they may live separated from the younger generation and feel lonely.

Spiritual identity
Depending of the culture and context spiritual identity can be more or less apparent. In some countries people might even be ready to die for their beliefs. People's spiritual identity may even lead to conflicts or, in worst cases, war.

Class identity
Our social class identity influences how we behave and communicate towards other people. A person's class identity is not necessarily noticed until he or she encounters another person representing another social class.

National identity
A person's citizenship of a nation is referred to as national identity. Depending on the person, his or her national identity may be stronger than his or her ethnic or cultural identity, and vice versa.

Regional identity
In every country there are regions with which people identify themselves. In some countries regional identities are stronger than the national identity. Regional identities may also carry positive, negative, real or not real generalizations about people living there.

A.7.3.1 Lecture notes

(NOTE: This is an excerpt from the course Unit 2)

2.2 Basic Guidelines for Successful Cross cultural Communication

Guideline 1: Review the Foundations and Principles of Business Communication

In any cross-cultural communication situation, the basic business communication knowledge you have already gained will apply. A review of that knowledge should be your first step in preparing to communicate in the international business environment.

Finally, application of the KISS principle of business communication (Keep It Short and Simple) will enhance your effectiveness in international and cross-cultural business communication.

Guideline 2: Analyze Your Own Culture

A starting point in relating effectively to others is to know your own culture. Then, understanding how others view your culture is vital for success in cross-cultural communication. People throughout the world use comparisons, evaluations, and categories to assimilate and understand the messages they receive. This process, which helps give meaning to our understanding of the world around us, is called perception. Understanding perception is crucial to understanding other cultures and coping with them.

Guideline 3: Understand what is going on "down there"!

Guideline 4: Improve the communication skills

Guideline 5: Avoid stereotypes

People use stereotypes to help them understand the messages the individuals are sending. Stereotypes should be used with extreme caution, however, since psychologists teach that stereotypes are perceptions and "perceptions are reality" it is essential to keep an open mind and learn as much as possible about one's own country, culture, and customs as well as the other country, culture, and customs. Although individuals within one culture may vary considerably, many have similar tastes in food and clothing. Go beyond stereotypes and learn about the individuals with whom we are communicating and their cultures.

2.3 Communication Process: Traps & Rationalization

Communication process is a process which can be influenced(negatively) by many factors [Figure 2]and pose traps such as those listed below.

Trap #1:
The False Necessity

Rationalization:
People act from the belief that they're doing what they must do. They convince themselves that they have no other choice, when in fact it's generally a matter of convenience or comfort. When people fall into the false necessity trap, they overestimate the cost of doing the right thing and underestimate the cost of failing to do so. Example: drinking and driving. "I have to have the car home by midnight" or "I need my vehicle in the morning"? Making the wrong decision often lies with accepting the false necessity logic.

Trap #2:
The others are worse

Rationalization:
Unethical actions sometimes look good when compared with the worse behavior of others. What's a little fudging on an expense account compared with the pleasure cruise the boss took and charged as a business trip? Or how about using your PC at work to send a little personal e-mail (just a few quick notes) and perhaps do some much-needed research on an SUV you are considering buying? After all, the fellows in Engineering told you that they spend hours on their PCs checking sports scores, playing games, and conducting recreational Web surfing. Your minor infraction is insignificant compared with that...

Trap #3:
Finding a "good reason"

Rationalization:
In falling into the rationalization trap, people try to explain away unethical actions by justifying them with excuses. Consider employees who "steal" time from their employers by

taking long lunch and coffee breaks, claiming sick leave when not ill, and completing their own tasks on company time. It's easy to rationalize such actions: "I deserve an extra-long lunch break because I can't get all my shopping done on such a short lunch hour" or "I'll just write my class report at the office because the computer printer is much better than mine, and they aren't paying me what I'm worth anyway."

Trap #4:
I'm the superman (woman!)

Rationalization:
Applicants for jobs often fall into the self-deception trap. They may be all too willing to inflate grade-point averages or exaggerate past accomplishments to impress prospective employers. One applicant, for example, claimed that in his summer job he was "responsible for cross-corporate transferal of multidimensional client receivables." In other words, he moved boxes from sales to shipping. Self-deception can lead to unethical and possibly illegal behavior.

Trap #5:
The Ends-Justify-the-Means Trap

Rationalization:
Taking unethical actions to accomplish a desirable goal is a common trap. Consider a manager in the claims division of a large health insurance company who coerced clerical staff into working overtime without pay. The goal was the reduction of a backlog of unprocessed claims. Despite the worthy goal, the means of reaching it was unethical.

Figure 2: Communication Process: Problems

2.4 Cross Cultural Communication: How to improve it

One can improve cross-cultural communication by using simple English, speaking slowly, enunciating clearly, and encouraging feedback, observing eye messages, accepting blame, and listening without interruption.

Improve knowledge about:

- EU (every aspect)
- Backgrounds (history, culture, current situation...)
- Your Company profile

A.7.3.2   Slides

(NOTE: This is an excerpt from the course Unit 1)

Unit 1: Successful management of
cultural differences as factor of
success of IT and other projects

Introduction

➢ In the times of ever increasing globalization and
outsourcing cultural and related differences among the
people working on the same tasks, projects or in the
same company, become more and more important.

➢ Successful management of these differences becomes
the key factor of success: globalized companies know
that the success of the global presence is assured only
through "success of thousand local presences" (cf., e.g.,
HSBC, "The world's local bank", www.hsbc.com).

➢ In particular, cultural differences play an important role
in the area of business communication which can easily
fail on apparently banal issues.

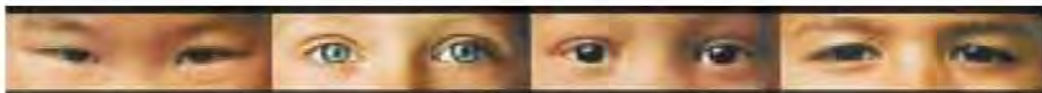➢ This is of particular importance also in EU collaborative
projects

Example
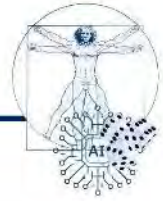
➢ Any experience of your own?

➢ Examples from projects?

➢ Follow the instructions Ply the paper (with your eyes closed!)
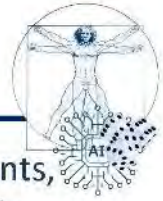
Cultural diversity
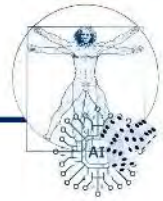
A society is comprised of a highly diverse groups of

➢ people

➢ ideas

➢ attitudes

➢ backgrounds

➢ ...

McCultural diversity – easy as a joke...

With 25,000 restaurants in 116 countries on six continents, McDonald's has developed menus that reflect specific regional tastes. Examples:

Mexico. McMuffin a la Mexicana: With cheese, peppers, and frijoles (beans), variation McNifica: Burger with bacon, cheese, lettuce, mayo, and hotsauce.

New Zealand. Kiwi Burger: Burger with a fried egg and a slice of beet.

Japan. Chicken Tatsuta: Fried chicken sandwich spiced with ginger and soy sauce.

... NEW TRENDS!

Mexican Macs in Germany, Japanese in France, ...

Culture and Communication ?

Cultural communication: a system of symbols, meanings and norms that are shared by group members and passed down to the following generations
Various Definitions of Culture - what would be "yours":

- "Culture is **communication**"
(Edward T. Hall)

- "Culture is the **collective programming of the mind**" (Geert Hofstede)

- "Culture is **how things are done** here"
(John Mole)

- "**All communication is more or less cross-cultural**" (Deborah Tannen)

- "Culture is **a kind of storehouse** or library of possible meanings and symbols"
(Ron Scollon)

Culture in the Field of IC?

To which type you belong? Your counterpart? (from Dahl, 2005):

Table I.: **Monochronic and Polychronic Cultures**

	Monochronic Culture	Polychronic Culture
Interpersonal Relations	Interpersonal relations are subordinate to present schedule	Present schedule is subordinate to Interpersonal relations
Activity Co-ordination	Schedule co-ordinates activity; appointment time is rigid.	Interpersonal relations co-ordinate activity; appointment time is flexible
Task Handling	One task at a time	Many tasks are handled simultaneously
Breaks and Personal Time	Breaks and personal time are sacrosanct regardless of personal ties.	Breaks and personal time are subordinate to personal ties.
Temporal Structure	Time is inflexible; time is tangible	Time is flexible; time is fluid
Work/personal time separability	Work time is clearly separable from personal time	Work time is not clearly separable from personal time
Organisational Perception	Activities are isolated from organisation as a whole; tasks are measured by output in time (activity per hour or minute)	Activities are integrated into organisation as a whole; tasks are measured as part of overall organisational goal

Context diversity

Low Context	High Context
Tends to prefer direct verbal interaction	Tends to prefer indirect verbal interaction
Tends to understand meaning at one level only	Tends to understand meanings embedded at many sociocultural levels
Is generally less proficient in reading nonverbal cues	Is generally more proficient in reading nonverbal cues
Values individualism	Values group membership
Relies more on logic	Relies more on context and feeling
Employs linear logic	Employs spiral logic
Says no directly	Talks around point; avoids saying no
Communicates in highly structured (contexted) messages, provides details, stresses literal meanings, gives authority to written information	Communicates in simple, ambiguous, noncontexted messages; understands visual messages readily

Low-Context Cultures ← → High-Context Cultures

German   North American   French   Spanish   Greek   Chinese

German-Swiss   Scandinavian   English   Italian   Mexican   Arab   Japanese

Sample videos

➢ General problem of communication in international projects...
http://www.youtube.com/watch?feature=player_detailpage&v=BrJTf97Ev8o&list=PLF498297812C3683F

➢ What is "normal"?
http://www.youtube.com/watch?feature=player_embedded&v=9bVCj9Ayxc8

Comparison of Cultural Values

| U.S. Americans	Japanese	Arabs
1. Freedom	1. Belonging	1. Family security
2. Independence	2. Group harmony	2. Family harmony
3. Self-reliance	3. Collectiveness	3. Parental guidance
4. Equality	4. Age/Seniority	4. Age
5. Individualism	5. Group consensus	5. Authority
6. Competition	6. Cooperation	6. Compromise
7. Efficiency	7. Quality	7. Devotion
8. Time	8. Patience	8. Patience
9. Directness	9. Indirectness	9. Indirectness
10. Openness	10. Go-between	10. Hospitality

Comparison of Cultural Values

U.S. Americans	Japanese	Arabs
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5. Individualism	5. Group consensus	5. Authority
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7. Efficiency	7. Quality	7. Devotion
8. Time	8. Patience	8. Patience
9. Directness	9. Indirectness	9. Indirectness
10. Openness	10. Go-between	10. Hospitality

Germany?
1. Punctuality, Efficiency, Quality
2. Money
3. Belonging
4. Family security

South Africa?

Cultural Values Germany
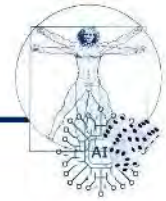
- Punctuality, Efficiency, Quality
- Money
- Belonging
- Family security
- Authority, Titles
- Freedom, Independence, Self-reliance, Individualism, Equality, Collectiveness
- , Parental guidance, Job security
- Group harmony, Family harmony, Group consensus, Compromise, Cooperation, Friends at work
- Age/Seniority, Age, Competition,, Devotion,
- Directness, Openness, Patience, Hospitality
- Free time, Pleasure
- Something else in Germany? What? ....? Written word? TV?

Identity

Different sorts of identity – the obvious ones…

➢ Ethnic

➢ Racial

➢ Geographic

➢ Cultural

➢ Political (parties)

➢ …

Less obvious ones…

➢ Facebook groups

➢ Interest groups

➢ …

Identity

➢ In today's world, increasing globalization raises more awareness of cultural diversity. Cultural identities and ethnicities are becoming more relational and contextual, as well as constantly evolving. They are complex, ambiguous and multifaceted.

➢ Individuals undergo self- and cultural identity transformation in order to achieve understanding, harmony and balance within themselves and their environment, and in their connection with others. Cultures also change in this process, because social, political, economic and historical influences affect cultural and intercultural interactions. Cultural groups reflect, re-create, unify, and maintain their ethnic and cultural identities.

➢ Cultural identities are negotiated, co-created, and reinforced in communication with others. They reflect our unique, personal life histories and experiences. They may also be seen as manifestations of social reality.

Plurality of Identity

➢ Multiple dimensions of identities.
In communication and daily interactions we define who we are. We negotiate our identities with people who are similar to us and different from us. Our identities are developed in social interactions.

➢ Identity must be distinguished from what, traditionally, has been called roles and role-sets.
Roles - for example to be a worker, a father, a neighbor, a basketball player and a smoker at the same time - are defined by norms defined by the institutions and organizations of society. Their influence on people depends on negotiations and arrangements between individuals and these institutions and organizations.

Plurality of Identity

➢ The essential question is how, from what, by whom, and for what identities are constructed. Building materials are to be found in history, biology, institutions, collective memory, personal fantasies and power apparatus. Individuals, social groups and societies process these materials. The social construction of identity always takes place in a particular context where power relationships rule.

➢ Sometimes identities may start as resistance and they gradually become dominant in the process. The building of identity may lead to a different life, from an oppressed identity to the transformation of society.

➢ An example of this is a post-patriarchal society, which liberates women, men and children through the realization of women's identity.

Properties of Cultural Identity

➢ **Avowal and ascription**
How a person perceives himself or herself is called avowal. It means in what way a person demonstrates to others "who I am". Ascription is how others perceive and communicate a person's identity

➢ **Modes of expression**
include core symbols, names and labels, and norms. Core symbols are cultural beliefs and interpretations of people, world and the functioning of society. Names and labels are categories of core symbols. Norms affect our cultural identity. Cultural groups create norms for appropriate conduct and acceptable behavior.

➢ Defining who we are includes what and how we should behave in a particular situation.

Properties of Cultural Identity
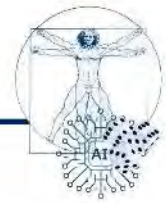
Individual, relational and communal identity

➢ **Individual identity** refers to the individual's interpretation of his or her cultural identity, which is based on his or her own experiences. It includes understanding multiple degrees of differences and similarities among group members.

➢ **Relational identity** refers to relationships between persons. There are norms for appropriate behavior in relational contacts, which occur for example between friends, colleagues, coworkers or neighbors.

Properties of Cultural Identity

> **Expectations**

for behavior vary according to types of interactions, situations and topics. Communal identity is identified by observing a group's communal activities, rituals, rites and holiday celebrations.

Group members use cultural membership to maintain community with one another.

Examples of ceremonies are

- Graduations
- Burials
- Weddings...
- In business: ... informal conventions include such as greetings, leave-taking, compliments, and gift exchanges.

Properties of Cultural Identity

> Enduring and changing aspects of identity
Identity features enduring and changing aspects. Cultural identities may change due to several types of factors that influence a group of people. These factors may be social, political, economic or contextual.

> Our identities, are strongly being reshaped by globalization and information technology revolution.

> People are influenced by pervasive, interconnected and diversified media systems.

> Work has become flexible and unstable, labor is being individualized.

> Globalization and the restructuring of capitalism are part of the process that is reforming societies and people's identities.

Other social and cultural identities

> **Gender identities**
> influenced by the way we are treated by our parents, other relatives, neighbors and friends. Boys and girls are dressed in different colors and they are introduced to different types of toys. In every culture there are communications and interactions which are considered feminine, masculine or androgynous. Nowadays the media influences our identity, in what is considered feminine, masculine or androgynous.

> **Age identities**
> Cultures view and treat people of different ages in different ways. For example, in Asian cultures, getting old is seen as positive. Elderly people are respected and they are cared for by their children. In some European cultures, however, not all elderly people are highly respected. In many cases they may live separated from the younger generation and feel lonely.

Other social and cultural identities

> **Spiritual identity**
> Depending of the culture and context spiritual identity can be more or less apparent. In some countries people might even be ready to die for their beliefs. People's spiritual identity may even lead to conflicts or, in worst cases, war.

> **Class identity**
> Our social class identity influences how we behave and communicate towards other people. A person's class identity is not necessarily noticed until he or she encounters another person representing another social class.

> **National identity**
> A person's citizenship of a nation is referred to as national identity. Depending on the person, his or her national identity may be stronger than his or her ethnic or cultural identity, and vice versa.

Other social and cultural identities
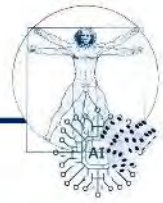
➢ **Regional identity**
In every country there are regions with which people identify themselves. In some countries regional identities are stronger than the national identity. Regional identities may also carry positive, negative, real or not real generalizations about people living there.

- E.g., in EU-projects:
  - Not only 27 "EU cultures" involved, but…
    - Wider Europe: Switzerland, Norway, … Eastern Europe
    - Global playing: Japan, China, US, …
    - Regional specifics
    - Language specifics
    - Religion, ethnicity background related
  - Main language of communication (English) is a "foreign language" for almost all stakeholders!

Each of us is a foreigner – almost everywhere…

Know where you are and to whom you talk locally…

Germany >>> Baden Wurttemberg >>> Stuttgart

… Black Forest (Schwarzwald), Lake of Constance Switzerland, Austria, France

BOSCH

Mercedes-Benz

PORSCHE

Headquarters of
Steinbeis Foundation
(Ferdinand von Steinbeis (1807 - 1893))

Georg Friedrich Wilhelm Hegel
Philosopher; born 1770 in Stuttgart

Friedrich Schiller
studied at the former Hohen Carlsschule (University)

Robert Bosch
developed in 1902 the high-speed, high-tension magneto ignition

Gottlieb Daimler
invented in 1883 the first fast-running petrol engine in his test workshop in Bad Cannstatt

Personal identity

> **Personal identity**
> Our personal identity means how we perceive ourselves. Our personal identity is vital for us and we communicate and negotiate that with other people.

> NOTE: Global threat – identity theft! … be it a bank account or "dissolving of nations" or minority groups…

Identities: Political correctness & diversity
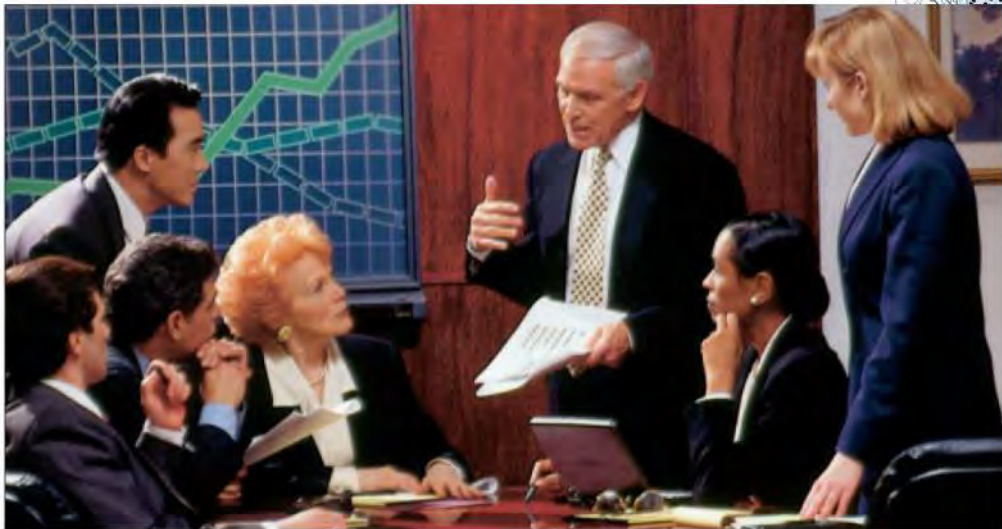
… look at the picture! Each detail counts!
… and, be ready to take YOUR EXPECTED PLACE!

DISCUSSION QUESTIONS

➢ What personal experiences do you have that demonstrate the importance of communication?

➢ What types of communication create the most problems for you?

➢ How often do you think that communicating with people from different cultural backgrounds requires special consideration?

➢ What are personal experiences of cross-cultural communication at work?

➢ Which part of the communication process do you have the most difficulty with?

➢ Do you carefully analyze the context and receiver before developing your message?

➢ What are the greatest sources of noise for you? Do you become more distracted by internal interference or external distortions?

Annex 8 Proposed implementation of GOPP in ImprESS project

(as proposed to the Coordinator in Sept. 2019, preceding versions available from early 2018)

A.8.1 Template

Template for Integrated GOPP[3] Project Document

> **Highlight Color Legend:**
>
> Yellow = Can be taken from the WDT
>
> Blue = Can be taken from the Project Continuation Plan
>
> Gray = Can be taken from the proposal or is a new field to be filled in (i.e. not explicitly defined already in the WDT or Project Continuation Plan)

WP# - *Title of WP*

Work package number	WP#						Start date		M## (DD/MM/YYYY)			
							End Date		M## (DD/MM/YYYY)			
WP Title	Work package title											
WP Leader	Work package leader acronym (also in **bold** in the list of partners below)											
Participant number	1	2	3	4	5	6	7	8	9	10	11	12
Participant short name	EDUCONS	UCIPS	FFS	UNID	UESK	BMU	SKG	SHB	IUSAG	SASAS	SGSP	ATRISC
Person/ months per participant	#	#	#	#	#	#	#	#	#	#	#	#
Objectives	• Objective 1 • Objective 2 • Objective 3											
Outputs of this WP	• Output 1 • Output 2 • Output 3											
Description of work (broken down into tasks), and role of participants												

---

[3] For more information on GOPP (Goal-Oriented Project Planning), refer to
http://www.ccop.or.th/pdf/news/GOPP.pdf and http://web.mit.edu/urbanupgrading/upgrading/issues-tools/tools/ZOPP.html

T#.# Task Name - Leader: Partner Acronym – Start: M## (DD/MM/YYYY) / End: M## (DD/MM/YYYY)

Objective and description of the task

Participant's roles:

Partner Acronym (Task Leader Listed First)*: Description of partner role in the task*

Partner Acronym*: Description of partner role in the task*

Partner Acronym*: Description of partner role in the task*

Partner Acronym*: Description of partner role in the task*

T#.# Task Name - Leader: Partner Acronym – Start: M## (DD/MM/YYYY) / End: M## (DD/MM/YYYY)

Objective and description of the task

Participant's roles:

Partner Acronym (Task Leader Listed First)*: Description of partner role in the task*

Partner Acronym*: Description of partner role in the task*

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T#.# Task Name - Leader: Partner Acronym – Start: M## (DD/MM/YYYY) / End: M## (DD/MM/YYYY)

Objective and description of the task

Participant's roles:

Partner Acronym (Task Leader Listed First)*: Description of partner role in the task*

Partner Acronym*: Description of partner role in the task*

Partner Acronym*: Description of partner role in the task*

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Deliverables/KPIs (brief description and month of delivery)		
D#.#	**M##** **(DD/MM/YYYY)**	**Deliverable Title - Leader: Partner Acronym** Description of deliverable – 1 or 2 sentences, including KPI(s).
D#.#	**M##** **(DD/MM/YYYY)**	**Deliverable Title - Leader: Partner Acronym** Description of deliverable – 1 or 2 sentences, including KPI(s).
D#.#	**M##** **(DD/MM/YYYY)**	**Deliverable Title - Leader: Partner Acronym** Description of deliverable – 1 or 2 sentences, including KPI(s).

Events (brief description and month of event		
E#.#	**M##** **(DD/MM/YYYY)**	**Event Title - Leader: Event Title** Description of event – 1 or 2 sentences.
E#.#	**M##** **(DD/MM/YYYY)**	**Event Title - Leader: Event Title** Description of event – 1 or 2 sentences.
E#.#	**M##** **(DD/MM/YYYY)**	**Event Title - Leader: Event Title** Description of event – 1 or 2 sentences.

A.8.2   Example of Completed Template for Work Package 3

Note: To view hidden text, click the paragraph symbol (¶) in the toolbar!

WP3 - Setting Up The Infrastructure For Applying The Model

Work package number	WP3						Start date		M## (17/04/2018)			
							End date		M## (01/01/2020)			
WP Title	Setting Up The Infrastructure For Applying The Model											
WP Leader	UESK											
Participant number	1	2	3	4	5	6	7	8	9	10	11	12
Participant short name	EDUCONS	UCIPS	FFS	UNID	UESK	BMU	SKG	SHB	IUSAG	SASAS	SGSP	ATRISC
Person/ months per participant	#	#	#	#	#	#	#	#	#	#	#	#
Objectives	• Objective 1 • Objective 2 • Objective 3											
Outputs of this WP	• Output 1 • Output 2 • Output 3											
Description of work (broken down into tasks), and role of participants												

T3.1 Courses and modules selection for implementation - Leader: SASAS – Start: M## (17/04/2018) / End: M## (28/02/2019)

⚠️ *Description of the task was taken from the project proposal.*

Goal is to select at least 15 separate courses, 3 complete undergraduate study modules, 2 master study modules and 1 PhD study module to be implemented in the curricula of Serbian Universities. Courses in ISO 18000 and ISO 27000 will be prepared with the help of EU partners. These would be selected based on the following criteria: lack in present educational content in Serbia, "market" need, easiness of implementation, status of learning materials development, existence of available lecturers resources etc. Our partners already offered many of them like:

ATRISC: From Human Factor to Human Processes:

Relational Resources for a VUCA World, Crisis communication - #SMEM – Social exact needs

media in emergency management – e-reputation

- VOST, Crisis Management, Leadership – Organizing, High Reliability Organizing, Learning from incidents, EU civil protection, International civil protection, Security training, CBRN – EID & Incident, Innovation and new tools in crisis management.

SHB: Introduction to Risk Management, Business Communication and Management of Intercultural differences, Principles and Methods of ISO 31000, Quality Management, Project Management, Health, Safety, Security and Environmental Risks, Occupational Safety and Health, Public Health Oriented Risk Analysis, Risk Governance Concepts and Practices, Integrated Corporate Responsibility and Sustainability, Risk Perception and Risk Communication, Innovation Risk Management, Decision Aid Approaches for Risk Management, Concepts and Applications of Key Performance Indicators for New Technologies, Principles and Methods of ISO 31010, Fire Protection, Explosion Protection, Risk Analysis of Chemicals, Transport of Dangerous Materials, Accident and Consequences Modeling, Life Cycle Analysis and Assessment, API RBI Concepts in Industry, Probability and Consequence of Failure of Equipment, Consequence Analysis in an API RBI Assessment, CWA 15740 RIMAP and the new EN standard, RBI Probability of Failure - Damage Factors, Quantitative Risk Assessment and Advanced Applications, Transportation Risk Assessment, Emerging Risks, Safety and Reliability Analysis, Risk Analysis in Petrochemical Industries, Risk Based Inspection – Petro, Reliability Centered

Maintenance and Root Cause Failure Analysis, Practical Example: Workshop Petro, Risk Analysis in Power Industries, Risk Based Inspection – Power, Reliability Centered Maintenance and Root Cause Failure Analysis, Practical Example: Workshop Power, Business Continuity Risks & Insurance, Principles of Actuarial Theory, Measurement and Management of Credit Risk, Risk Management Strategies, Practical Example: Workshop Business and Financial Risks, Complex Systems Theory, Managing Risks in Complex Systems, Risk Management Strategies, Business Continuity Risks & Insurance, Practical Example: Workshop Business and Project Risks.

University of Stuttgart will provide courses in Risk analysis, risk management and risk communication, Communication and Risk Governance.

Sant' Anna School of Advanced Studies offers study modules for undergraduate, masters, PhD and for professionals. The school has a strong experience in all the educational level in: Disaster management and recovery: principles and practice, Management and leadership theory: in private and in public sector, Relation with stakeholders and communication in disaster: intern communication and towards mass media, Recovery in post-disaster: methods and scheduling of post-disaster activities, Business continuity management: how to organize a BCM plan and how to manage it in a crisis for private and public companies, Management in safety organizations: human resources management and organizational models, stress management, leadership methods.

Participant's roles:

⚠ *Taken from the WDT*

SASAS: Leader of the task. Transposition of 3 subjects/courses. Participation in establishment of 1 study module by (some of): advice on subjects/module content and schedule, adaptation for acceptance for double degree, requirements for lecturers, content, methods, training material etc. Report editing.

UCIPS: Selection of: 4 subjects/courses and one study module for implementation. Report editing.

FFS: Selection of: 6 subjects/courses and two study modules for implementation. Report editing.

UNID: Selection of: 4 subjects/courses and one study module for implementation. Report editing.

UESK: Coordination between partners, Reporting. Selection of: 2 subjects/courses and two study modules for implementation and report editing.

BMU: Selection of: 2 subjects/courses, one study programme innovation and report editing.

SKG: No actions, informed about outcomes.

SHB: Transposition of minimum 5 subjects/courses. Participation in establishment of 2 study modules by (some of): advice on subjects/module content and schedule, adaptation for acceptance for double degree, requirements for lecturers, content, methods, training material etc. Report editing. Above will be organized as per preliminary plan agreed in May 2019.

IUSAG: Transposition of 1 subjects/course. Participation in establishment of 2 study modules by (some of): advice on subjects/module content and schedule, adaptation for acceptance for double degree, requirements for lecturers, content, methods, training material etc. Report editing.

SGSP: Transposition of 4 subjects/courses. Participation in establishment of 1 study module by (some of): advice on subjects/module content and schedule, adaptation for acceptance for double degree, requirements for lecturers, content, methods, training material etc.

ATRISC: Transposition of 3 subjects/courses and report editing.

T3.2 Courses and modules detail comparison and determination of the gap that should be closed - Leader: UESK – Start: M## (01/03/2019) / End: M## (02/05/2019)

⚠ *Description of the task was taken from the project proposal.*

From Project Continuation Plan (#6):

Final list of courses

01.11.2019

Estimated number of Serbian academic staff to go on education is between 15 and 20 (per partner ? or the number is total academic staff from Serbia?) – to be defined according to courses selected. List of courses is defined, but it can be changed in some small part. Currently 20 courses are defined:

Berlin: 8 courses

France: 3 courses

Italy: 3 courses (possible changes in course title)

Poland: 4 courses

Corfu: 2 courses (maybe number will be larger, subject of negotiation)

Deliverable: Final list of courses to be agreed among Partners

Deliverable: Syllabuses prepared according to the template. The syllabuses has been prepared already, using a few different templates. Will there be a new template?

Educons University to be informed by each Serbian Partner up to 01.11.2019.

If selected courses and study modules does not exist in present days' educational system in Serbia, content and teaching materials will be co-opt 1:1 (in full) with adaptations in regards to Serbian legislative and other specific. If similar courses and study modules already exist, effort will be made to determine needed improvement of content, lecturing materials and presentation of such.

Participant's roles:

⚠ *Taken from the WDT*

UESK: Leader of the task. Gap identification for subjects/courses and study modules with the interested partners. Editing of 4 syllabuses for 4 courses agreed with EU HEIs. List of recommendations for improvement of education and training methodology at Serbian partner Universities. Organization up to 3 workshops, MOM.

UCIPS: Gap identification for subjects/courses and study modules with the interested partners, Participation in up to 3 workshops. Editing of 4 syllabuses for 4 courses agreed with EU HEIs. Report editing.

FFS: Gap identification for subjects/courses and study modules with the interested partners. Editing of 6 syllabuses for 6 courses agreed with EU HEIs.

UNID: Gap identification for subjects/courses and study modules with the interested partners, Participation in up to 3 workshops. Editing of 4 syllabuses for 4 courses agreed with EU HEIs. Report editing.

BMU: Gap identification for subjects/courses and study modules with the interested partners.

SKG: No actions, informed about outcomes.

SHB: Gap identification for minimum 5 subjects/courses and study modules with the interested partners. Preparation and distribution of at least 5 syllabuses to interested Serbian partners. Participation in up to 3 workshops,

IUSAG: Gap identification for subjects/courses and study modules with the interested partners. Preparation and distribution of at least 1 syllabus to interested Serbian partners. Participation in up to 1 workshop.

SASAS: Gap identification for subjects/courses and study modules with the interested partners.Preparation and disribution of at least 3 syllabuses to interested Serbian partners. Participation in up to 3 workshops.

SGSP: Gap identification for subjects/courses and study modules with the interested partners.Preparation and disribution of at least 3 syllabuses to interested Serbian partners.

ATRISC: Gap identification for subjects/courses and study modules with the interested partners.Preparation and disribution of at least 3 syllabuses to interested Serbian partners. Participation in up to 3 workshops.

T3.3 Teaching materials development - Leader: UESK – Start: M## (01/03/2019) / End: M## (31/08/2019)

⚠ *Description of the task was taken from the project proposal.*

From Project Continuation Plan (#7):

Plan of education of Serbian professors in the EU:

01.11.2019 – **30.11.2019.**

Teaching, learning and training materials will be developed in order to close identified gaps and elevate them to the level of similar materials in programme countries. Materials will be produced in English and Serbian. Questionnaires, tests and marking schemes development is a part of this activity.

<u>Participant's roles</u>:

UESK: Leader of the task. Editing of training and teaching material prepared by EU HEIs, adjustments for implementation in new established modules in Serbian HEIs. Translation to Serbian.

UCIPS: Editing of training and teaching material prepared by EU HEIs, adjustments for implementation in new established modules in Serbian HEIs; translation to Serbian.

FFS: Editing of training and teaching material prepared by EU HEIs, adjustments for implementation in new established modules in Serbian HEIs. Translation to Serbian. Preparation of the course in ISO 18000.

UNID: Editing of training and teaching material prepared by EU HEIs, adjustments for implementation in new established modules in Serbian HEIs. Translation to Serbian.

BMU: Development of two teaching materials on Serbian.

SKG: No actions, informed about outcomes.

SHB: Preparation of training and teaching materials on English language for the courses selected in the T3.1 (textual material, power point presentations, questionnaire, marking scheme) (minimum 5)

IUSAG: Preparation of training and teaching materials on english language for the courses selected in the T3.1 (textual material, power point presentations, questionaire, marking scheme) (at least 1)

SASAS: Preparation of training and teaching materials on english language for the courses selected in the T3.1 (textual material, power point presentations, questionaire, marking scheme) (at least 3)

SGSP: Preparation of training and teaching materials on english language for the courses selected in the T3.1 (textual material, power point presentations, questionaire, marking scheme) (at least 3)

ATRISC: Preparation of training and teaching materials on english language for the courses selected in the T3.1 (textual material, power point presentations, questionaire, marking scheme) (at least 3)

T3.4 E-learning modules/materials development - Leader: UESK – Start: M## (03/05/2019) / End: M## (01/01/2020)

Steinbeis Risk Advanced Technology Centre will work on use of e-learning and technology (multimedia, internet, virtual reality etc.) and multi-sensory learning (videos, presentations….) which can improve teaching abilities. At least 50% of the subjects should be adopted for e-learning.

<u>Participant's roles</u>:

UESK: Leader of the task. 2 e-learning training materials preparation (from T3.1)

UCIPS: 4 e-learning training materials preparation (from T3.1)

FFS: 4 e-learning training materials preparation (from T3.1)

UNID: 4 e-learning training materials preparation (from T3.1)

BMU: 2 e-learning training materials preparation (from T3.1)

SKG: Uploading the e-learning/distance learning modules, support for other Serbian partners in material development

SHB: Editing of e-training materials for the selected in the T3.1 courses (minimum 5)

IUSAG: Editing of e-training materials for the selected in the T3.1 courses (1)

SASAS: Editing of e-training materials for the selected in the T3.1 courses (3)

SGSP: Editing of e-training materials for the selected in the T3.1 courses (4)

ATRISC: Editing of e-training materials for the selected in the T3.1 courses (3)

T3.5 Training of the Serbian lecturers on Program countries HEI - Leader: UESK – Start: M## (01/06/2020) / End: M## (15/09/2020)

⚠ *Description of the task was taken from the project proposal.*

From Project Continuation Plan (#8):

Serbian Partners are going to EU HEIs on education (one-week education)

01.06.2020 – 15.09.2020.

I assume all partners will get next installment before June 1st 2020, so Serbian partners would have funds for travel, EU partners will have funds for organization of education.

Partners can organize education between themselves, but all educations have to be completed before 15.09.2020. Each arrangement must be submitted to the Coordinator.

Serbian lecturers should attain study visits to the HEIs in programme countries, do job shadowing, attend courses and do lecturing. At least one "one day" lecturing should be performed by each of the involved Serbian lecturers on programme country HEIs in English. Teaching and material preparedness will be assessed by lecturing staff from programme countries HEIs. Serbian lecturers will attain necessary methodological and pedagogical trainings ad workshops. If necessary dedicated methodological and pedagogical workshop will be organized.

Participant's roles:

⚠ *Taken from the WDT*

UESK: Leader of the task. 2 lecturers send for training in Program HEI

UCIPS: 4 lecturers send for training in Program HEI

FFS: 4 lecturers send for training in Program HEI

UNID: 4 lecturers send for training in Program HEI

BMU: 2 lecturers send for training in Program HEI

SKG: No actions, informed about outcomes.

SHB: Conducting the education of lecturers from Serbian HEIs

IUSAG: Conducting the education of lecturers from Serbian HEIs

SASAS: Conducting the education of lecturers from Serbian HEIs

SGSP: Conducting the education of lecturers from Serbian HEIs

ATRISC: Conducting the education of lecturers from Serbian HEIs

T3.6 Education materials dissemination - Leader: UESK – Start: M## (31/10/2019) / End: M## (21/12/2019)

⚠ *Description of the task was taken from the project proposal.*

E-library will be established under project site. All teaching materials will be made publicly available. Public media will be used for advertising usage of the materials.

Participant's roles:

⚠ *Taken from the WDT*

UESK: Leader of the task. Dissemination via own website, public media and other applicable means.

UCIPS: Dissemination via own website, public media and other applicable means.

FFS: Dissemination via own website, public media and other applicable means.

UNID: Dissemination via own website, public media and other applicable means.

BMU: Dissemination via own website, public media and other applicable means.

SKG: Dissemination via project website.

SHB: Dissemination of information about courses and study modules on its own website and by other applicable means.

IUSAG: Dissemination of information about courses and study modules on its own website and by other applicable means.

SASAS: Dissemination of information about courses and study modules on its own website and by other applicable means.

SGSP: Dissemination of information about courses and study modules on its own website and by other applicable means.

ATRISC: Dissemination of information about courses and study modules on its own website and by other applicable means.

T3.7 Accreditation process start - Leader: All Serbian partners – Start: M## (01/04/2019) / End: M## (30/09/2019)

⚠️ *Description of the task was taken from the project proposal.*

Accreditation process will start as soon as possible in order to start with undergraduate, masters and PhD modules in the academic year 2019/2020. Risk that some of the programs will not pass accreditation procedure on time is very real in Serbian circumstances, because of the slowness of bureaucratic procedures. In case of accreditation delay, competition of the study programme in programme HEI will be offered to students. Separate courses or group of courses for or any form of professionals' education does not require accreditation and can be run without foreseeable obstacles. If content change is less than 30% such subject can be taught without accreditation as well.

Participant's roles:

⚠️ *Taken from the WDT*

UCIPS: Co-leader of the task. Accreditation materials preparation.

FFS: Co-leader of the task. Accreditation materials preparation.

UNID: Co-leader of the task. Accreditation materials preparation.

UESK: Co-leader of the task. Accreditation materials preparation.

BMU: Accreditation if needed.

SKG: No actions, informed about outcomes.

SHB: Participation in accreditation materials preparation if required.

IUSAG: Participation in accreditation materials preparation if required.

SASAS: Participation in accreditation materials preparation if required.

SGSP: Participation in accreditation materials preparation if required.

ATRISC: Participation in accreditation materials preparation if required.

Deliverables/KPIs (brief description and month of delivery)

⚠️ *Deliverables taken from the WDT. Descriptions include the KPIs from WDT.*

D3.1	M## (01/11/2019)	**6 courses with structure completed - Leader: SASAS** 5 courses/subjects selected; 3 undergraduate, 2 masters and 1 PhD study model or 6 undergraduate, postgraduate and PhD study modules selected and developed in total.
D3.2	M## (01/12/2019)	**20 course syllabi completed - Leader: UESK** Report: at least 15 syllabi agreed and prepared according to accreditation standard in Serbia. Up to 3 workshops held. List of recommendations for improvement reported.
D3.3	M## (01/06/2019)	**Teaching material for 20 courses in English - Leader: UESK** **From Project Continuation Plan (#10):** Development of teaching materials in English language Deadline **01.06.2019**

Each EU partner who is organizing education has to prepare, in English, teaching materials one per each course EU partner is organizing, which includes:

Textual material on at least 150 A4 pages (In my opinion we shouldn't define here the size of material at all, but to do next step the proposition of SGSP is at least 5 A4 pages per course hour as a reasonable volume. BUT, the ending size of any material should depend only on the authors of the course. It would be good practice to define ending size of material of every chosen course to estimate translation costs [E to S].)

At least 150 Power Point slides; The proposition of SGSP is at least 12 slides per course hour

Marking schemes and

Questionnaires

Deliverable: Teaching materials in English language, delivered to Coordinator no letter than 01.06.2019.

At least 15 teaching materials preparation in English and Serbian (See 3.1). Preparation of the 2 courses in ISO 18000 and 31000 or 27000 for social groups with fewer opportunities. 23 other teaching materials preparation. Teaching material provided for accreditation purpose in Serbia, in accordance with accreditation standards in Serbia: a) Textual material on at least 150 A4 pages; b) at least 150 Power Point slides; c) Marking schemes and d) Questionnaires). Book of syllabuses developed under the project.

D3.4   M## (30/06/2019)   Teaching material for 20 courses in Serbian - Leader: UESK

From Project Continuation Plan (#11):

Translation and editing of teaching material form English to Serbian language

01.06.2020 – **30.06.2020**

Issue of translation from English cost to Serbian is not defined yet. Subcontracting cost are not evenly distributed among Partners. Both of these facts are making this issue not easy for organization.

Since translation from English to Serbian is cheaper in Serbia, and requires engagement of Serbian professors, recommendation is to reallocate these costs to Serbian Partner who is taking responsibility for the outcome.

This issue is yet to be defined.

Deliverable: Teaching material in Serbian language delivered to Coordinator no letter than 30.06.2020

Teaching material for 20 courses – translated to Serbian

D3.5   M## (20/09/2020)   2 e-learning materials online - Leader: UESK
15 e-learning training materials preparation.

D3.6   M## (01/09/2020)   Reports from education - Leader: UESK
At least 15 teachers trained in programme countries and positively evaluated from EU HEIs (20 in total See T. 5.3)

D3.7   M## (20/09/2020)   Teaching material for all 20 courses online - Leader: UESK
40 courses/subjects teaching materials uploaded in total; 100% courses/subjects (See 3.1) covered by e-learning.

D3.8   M## (20/09/2020)   6 study modules accredited - Leader: UESK

From Project Continuation Plan (#14):

Accreditation of 6 study modules in Serbia.

10.10.2019 – **20.09.2020.**

EDUCONS – WP 3 leader.

Serbian HEIs.

Deliverable: Evidence of accreditation of 6 study modules approved by Serbian National Accreditation body.

BMU indicated possibility to contribute with one additional study module.

Deadline for accreditation completed: 20.09.2020.

Start of newly accredited study modules: 01.10.2020

Process of accreditation ongoing

Events (brief description and month of event

E#.#   M## (01.2020)   Joint Steering Committee, Executive Committee, and Quality Team Meetings and SHB train-the-trainer course- Leader: UESK (SC meeting) / SHB (course)

The proposal is to combine the 2-day meeting with delivery of the SHB train-the-trainer courses in January 2020, as per the draft plan initially proposed for July 2019.

This would be in place of organizing the SC meeting proposed for 16.12.2019 in Berlin.

Monday 20.01.20	Tuesday 21.01.20	Wednesday 22.01.20	Thursday 23.01.20	Friday 24.01.20	Saturday 25.01.20	Sunday 26.01.20
SHB course	SHB course	SHB course	SHB course	SHB course	**Weekend**	**Weekend**
Monday 27.01.20	Tuesday 28.01.20	Wednesday 29.01.20	Thursday 30.01.20	Friday 31.01.20	Saturday 01.01.20	Sunday 02.02.20
SHB course	**MEETINGS**	**MEETINGS**	SHB course	No course	**Weekend**	**Weekend**

E#.#   M## (07.10.19)   First workshop on accreditation - Leader: UESK
⚠ *This event is from the Project Continuation Plan (#19)*

Up to 3 workshops on accreditation of study modules in Serbia will be organized in total. Two workshops are going to be organized in first half of 2020. **Deliverable:** Invitation, photos, written report, presentations.

E#.#   M## (07.10.19)   Additional workshop(s) on accreditation - Leader: UESK
⚠ *This event is from the Project Continuation Plan (#19)*

Up to 3 workshops on accreditation of study modules in Serbia will be organized in total. Two workshops are going to be organized in first half of 2020. **Deliverable:** Invitation, photos, written report, presentations.

E#.#   M## (TBD)Courses in ISO 18000 and 27000 - Leader: FSS
⚠ *This event is from the Project Continuation Plan (#15)*

FSS will organize these 2 courses. BMU may organize 1 additional course – it will inform as timely. This third course would be an additional Project deliverable. **Deliverable:** courses material, video, photos, written report.

Annex 9 Excerpt from the project correspondence related to the issues in the project

Steinbeis Transfer Institute
Advanced Risk Technologies (R-Tech)

Steinbeis Transfer Institute Advanced Risk Technologies
Fangelsbachstr. 14, 70178 Stuttgart, Germany

Prof. Ljubinko Jovanović
Educons University
Vojvode Putnika 87

21108 Sremska Kamenica, Serbia

CC: Prof. N. Filipovic, Steinbeis R-Tech, Kragujevac

Director: Prof. Dr. A. Jovanovic
Haus der Wirtschaft, Willi-Bleicher-Straße 19
70174 Stuttgart, Germany
Phone: +49 711 410041 29
               +49 711 410041 28
               +49 711 1839 5
E-Mail: sti889@risk-technologies.com
www: www.sti.risk-technologies.com
Deutsche Bank, Germany, Branch 240
BIC/SWIFT-Code: DEUTDESSXXX
Account-Nr. 1336684
IBAN: DE83 6007 0070 0133 6684 00
USt.-Ident-Nr. DE812610170
VAT Nr: 9710600540

Project: 14033	Your Ref.:	Our Ref.: AJ/aj	Stuttgart, Feb. 9, 2020

Ref.: Project Impress 586410-EPP-1-2017-1-RS-EPPKA2-CBHE-JP;
Conditional readiness to sign the new Partnership Agreement (PA)

Dear Prof. Jovanović,

As explained in the extraordinary direct meeting today, SHB will sign the PA, provided that our requests for redressing the situation in the project, sent to you in several occasion since 2017, and listed below, are

- confirmed (explicitly and in writing before sending our consent to the EU) to be settled by you, and
- are practically met within/before March 15, 2020.

The validity of our agreement will, therefore, be limited to March 15, 2020, expected to be extended to the full remainder of the project after March 15, 2020, if the requirements are met.

The requested improvements are related to the following main issues:

1. **Poor project governance**
   (lack of governance structure and procedures, disrespect of the EU Code of Conduct[1], legally problematic, de facto enforced, partnership agreements, etc.)

2. De facto lack of technical and scientific project leadership management
   (lack of management procedures – in particular agreed and mandatory procedures, disconnected effort-times-budgets, no agreement with the EU GOPP principles – promoted also in Serbia, see http://www.evropa.gov.rs/Evropa/ShowDocument.aspx?Type=Home&Id=525 , permanent changing of work contents/times/budgets in an irregular way)

3. De facto lack of technical and scientific project leadership management
   (no kick-off meetings, no status reports, no leadership on work package and task levels)

4. Faults in financial project management
   (e.g. the faulty redistribution of prepayment)

5. Technical work practically stalled (with just few exception – e.g. the so far only training course at SHB in January 2020)

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[1] https://allea.org/wp-content/uploads/2017/05/ALLEA-European-Code-of-Conduct-for-Research-Integrity-2017.pdf

Generally, as requested by SHB in the mails to the Coordinator since August 2019 (e.g. those of October 12, 2019 9:35 PM, Oct. 26, 2019 11:39 PM and other mails, official letter of Dec. 16, 2019, etc.), our consent to the PA is possible only if the application of the following is ensured:

1. GOPP (Goal-Oriented Project Planning) as the standard Project Management approach is used;
2. The project management procedures developed, agreed and applied
3. DESCA[2]-based approach is used for the new Partnership Agreement
   (some of the essential parts of DESCA are fully omitted in the currently proposed PA)
4. The European Code of Conduct for Research Integrity, duly applied and followed
5. ISO 9001:2015 for the Quality Management approach introduced and the respective audit made
   (just as project management procedures, also the QMS project procedures are still missing, especially those related to voting and Management of Change in the project).

In particular, we want the following issues to be solved, covered by respective decisions of the Steering Committee and accepted by us before March 15, 2020:

1. Executive Committee (foreseen by the currently valid PA), having 3 members (the project manager, one representative of Serbian partners, one representative of the EU partners) formed and operational;
2. An explicit check of consistency between WDT, Grant Agreement and LFM are made
3. Current plan, budgets and deliverables defined and fixed in the PA Annexes (especially WDT) are transposed to the GOPP Project management tool, already provided by SHB;
4. The tool is consequently used for project planning and monitoring, including
   a. WPs
   b. Tasks
   c. efforts/budgets
   d. time plan
   e. deliverables
   f. events/calendar
5. Any change in the WPs, Tasks, efforts/budgets, time plan, deliverables, events, possible project extensions, etc. (duly approved at the corresponding decision level) implemented in the Tool for the remainder of the project;
6. The coordinator to invite the EU to make a "project status check" before making their decision on project continuation
7. The PA amended in, at least, the following points:
   a. There are inconsistencies of the stipulations of the main document and the annexes, as well as within the main document, this has to be redressed (responsibilities, names of bodies, etc.)
   b. The
   c. The following items from the EU standard documents are not specified in or inconsistent with the new proposed PA
      i. Responsibilities and Liabilities (Desca 4 and 5)
      ii. Governance structure (Desca 6)
      iii. Procedure incl. notices (Desca 6.2)
      iv. Severability (Desca 11.1)
      v. Notices (Desca 11.3)
      vi. Language (Desca 11.6)
      vii. Applicable Law (Desca 11.7)

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[2] http://www.desca-2020.eu/about-desca/

       viii.   Settlement of Disputes (Decs 11.8)

       ix.   Signature Procedure (Desca 12)

   d.   The current PA document refers to "specific procedures": these have to be clearly traceable/referenced or attached as Annexes

   e.   Art. 7.5 is unclear – Steinbeis (and other partners?) do not have students participating in the project

   f.   Art. 12 – as in 7.5

   g.   Art. 14.1 – Steinbeis cannot accept any responsibility for any of the project parts created/managed/defined in Serbian; working language has to be defined as per Desca (11.6)

8.   The outstanding pre-payment, illicitly halted by the Coordinator since December 2019, transferred to SHB and Ionian University.

Please confirm your commitment to fulfillment of the above requests explicitly and in writing before sending our consent to the EU.

We count on your understanding, that in the case of disregarding our requests above will leave us with no choice but to recur to the clauses II.27.8 i II.27.9 of the Contract and consider seeking legal action for clarifying responsibilities for the failure of the project and the losses incurred to SHB.

Kind regards

(A. Jovanovic)