



---

Appendix A

The SPS Simulation checklist

---

**Task Management**

- |   |   |   |
|---|---|---|
| 1 | Tool preparation  | <input type="radio"/> Does not prepare the tools before starting the task   |
|   |   | <input type="radio"/> Prepares some of the tools in advance, but then, during the task, has to stop to get some other tools   |
|   |   | <input type="radio"/> Prepares all the necessary tools and materials  |
|   |   |   |
| 2 | Risk Assessment   | <input type="radio"/> Starts the activity before the necessary assessments (e.g., check of the metal parts, check of the integrity of the devices, check of all the items present in the scene) |
|   |   | <input type="radio"/> Starts the activity after checking only some of the items   |
|   |   | <input type="radio"/> Starts the activity after all the necessary checks (e.g. checks the metal parts, checks the integrity of the devices, checks all the items present in the scene)          |
|   |   |   |
| 3 | Personal Protective Equipment (PPE)                             | <input type="radio"/> Not all the necessary items of the PPE are used   |
|   |   | <input type="radio"/> Uses some of the PPE incorrectly (e.g., helmet visor up) or some of the PPE items are not necessary   |
|   |   | <input type="radio"/> All the necessary items of the PPE are used   |
|   |   |   |
| 4 | Work documentation (e.g., work planning, legal documents, etc.) | <input type="radio"/> Is not read   |
|   |   | <input type="radio"/> Is read only after having started the activity  |
|   |   | <input type="radio"/> Is read before starting the activity and, if necessary, even after  |
|   |   |   |
| 5 | Tools organization  | <input type="radio"/> Materials and tools are haphazardly stored, he does not find them because they are left around or hinder the activity   |
|   |   | <input type="radio"/> Materials and tools are in place, but sometimes they are not at hand  |
|   |   | <input type="radio"/> Materials and tools are stored orderly, effectively and at hand   |
|   |   |   |
| 6 | Unexpected events management                                    | <input type="radio"/> Acts like there was no unexpected or anomalous situation (e.g., mismatching data, damages, tampering or particular characteristics of the environment)                    |
-

- 
- Changes the activity in order to manage the unexpected or anomalous situation
  - Stops the activity and looks for further information (e.g., talks about it with the colleague or the operation centre, seeks for further details, etc.)
- 

### Relationship with the client

(to fill only in case the client is present in the scenario)

- |   |                           |   |
|---|---------------------------|---|
| 7 | Information to the client | <input type="radio"/> Does not provide the client any information about the activity<br><hr/> <input type="radio"/> Gives the client information about the activity only if requested or after having started the activity<br><hr/> <input type="radio"/> The client is informed about the activity in advance  |
| 8 | Client management         | <input type="radio"/> Is not able to manage the client (e.g., has a conflict, the client doesn't follow his instructions, is distracted by client's behaviour)<br><hr/> <input type="radio"/> Is able to manage the client, but only after he hindered the activity or had an argument with him<br><hr/> <input type="radio"/> Makes sure that the client does not interfere during the activity (does not disturb, keeps him calm) |
- 

### Teamwork

(to fill only in case two or more operators are present in the scenario)

- |    |                      |  |
|----|----------------------|--|
| 9  | Coordination         | <input type="radio"/> Works without talking with the colleague about what to do<br><hr/> <input type="radio"/> Talks with the colleague only after having started the activity<br><hr/> <input type="radio"/> Starts the activity only after talking with the colleague about what to do |
| 10 | Situation assessment | <input type="radio"/> Rarely talks with the colleague and the subject is not related to the current activity<br><hr/> <input type="radio"/> Discussing about the activity does not brings proposals, says "yes" to everything or does not share his opinions                             |
-

---

	<input type="radio"/> Discussing about the activity brings suggestions on how to operate, if he does not agree with the colleague, he explicitly shares his opinion
11 Listening to the colleague	<input type="radio"/> When his colleague is speaking, he does not reply, nods, or he even talks over him
	<input type="radio"/> When his colleague is speaking, sometimes he does not reply or even talks over him
	<input type="radio"/> When his colleague is speaking, he gives him a feedback (explicitly confirms what he has just done or heard what the colleague said)
12 Requests to the colleague	<input type="radio"/> He does not make requests to the colleague
	<input type="radio"/> The requests are generic or ambiguous (e.g., "give me that thing")
	<input type="radio"/> The requests are detailed and complete (e.g., "could you fetch me the screwdriver, which is in the toolbox, on that table?")
13 Updating the colleague	<input type="radio"/> He does not update his colleague about what he's doing (which step of the activity)
	<input type="radio"/> Updates his colleague only if explicitly requested
	<input type="radio"/> Updates his colleague even if not explicitly requested
14 Management of risky behaviour and violations	<input type="radio"/> His colleague does not have risky behaviours and violations
	<input type="radio"/> Does not point out to his colleague his violations and risky behaviour
	<input type="radio"/> He points out to his colleague his violations and risky behaviour
	<input type="radio"/> Stops his colleague and points out his violations and risky behaviour

---

## APPENDIX B

## The five scenarios outline

Scenario	Title	N° of workers	Task	Overall Learning Objective(s)	Physical Risk Type
1C	The Real Electricity Meter	1	Electricity Meter substitution	Potential risks management	Electric, Low-Dexterity Injuries
2C	The Construction Site	2	Temporary supply installation	Securing the work environment	Electric, Fall, Low-Dexterity Injuries
3C	Demolition	1	Supply cessation and Electricity Meter removal	Fraud identification	Electric, Low-Dexterity Injuries
4C	End Of Works	2	Temporary supply removal	SWP application	Electric, Fall, Low-Dexterity Injuries
5C	The New Three-phase	1(+1)	Three-phase Electricity Meter with three-phase Electricity Meter substitution	SWP application	Electric, Low-Dexterity Injuries

## Appendix C

### COMPLETE DEVICE LIST

#### Training ground –

- 3 Manfrotto Trepied Befree MKBFRA4-BH
- 1 Zoom H6 portable Numeric recorder
- 1 YI 4K Action Camera Full HD 12MP WIFI 155° wide angle 4K/30 – black
- 1 Toshiba Exceria M302 microSDXC U3 (64Go, Class 10)
- 1 smartphone connected with the app Vysor
- 1 USB-B cable (20cm)
- 1 LIFE system 75.1HD4104 – 4/9CH containing 4 LIFE camera, the HUB system, and the corresponding cables
- 1 Switching power supply KD2054/12 (12Vdc – 5A)
- 1 Monitor
- 1 Laptop
- 3 ZEPHYR belts with the corresponding ZEPHYR sensors
- 1 SubZero SZW-50 Microphone system with 2 wireless microphone headsets
- 1 Behringer Micromix MX400 Line Mixer
- 1 jack cable 3.5mm
- 2 HDMI cable (20m)

#### Remote control room –

- 2 big screens (1 television, 1 projected)
- 1 beamer
- 1 sound system linked to the beamer

## Appendix D

Here is an outline of the activities to be done before and after the simulation, in the simulation room and in the debriefing room.

SIMULATION ROOM	DEBRIEFING ROOM
<ul style="list-style-type: none"> <li><input type="checkbox"/> Set the chest-band sensor</li> <li><input type="checkbox"/> Sit the participant on a chair (for 2min)</li> <li><input type="checkbox"/> Set the microphones</li> <li><input type="checkbox"/> Set the helmet with the action-cam</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Read the description of the scenario</li> <li><input type="checkbox"/> Choose the participant(s)</li> <li><input type="checkbox"/> Give the Job Request Module to the participant(s)</li> <li><input type="checkbox"/> Bring the participant(s) in the sim room</li> <li><input type="checkbox"/> Assign observation task to every observer (who to observe)</li> <li><input type="checkbox"/> Provide checklist</li> </ul>
<b>SIMULATION</b>	
<ul style="list-style-type: none"> <li><input type="checkbox"/> Sit the participant on a chair</li> <li><input type="checkbox"/> Remove the microphone</li> <li><input type="checkbox"/> Charge the microphone</li> <li><input type="checkbox"/> Remove the helmet</li> <li><input type="checkbox"/> Charge the action-cam</li> <li><input type="checkbox"/> Remove the chest-bend sensor</li> <li><input type="checkbox"/> Charge the chest-bend sensor</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Fill in the checklist</li> </ul>
Set the simulation room for the next scenario	<b>DEBRIEFING</b>

## Appendix E

### The debriefing checklist

#### **SPS checklist**

- the participants to the simulation fill in the checklist about themselves
- the observers fill in the checklist about their colleagues, divided into two groups, facilitated by a trainer in the discussion of what they observed and what they would have done differently
- the participants go back to the debriefing room
  
- **Welcome back to the debriefing room:** the participants are greeted with an applause
- **Defusing:** the facilitator asks the participants “how do you feel?” in order to let them express possible feelings activated during the simulation (e.g., frustration, anger, embarrassment, etc.)
- **Analysis:** every participant describes what he had done. If the participants talk about the behaviour of his colleague, the facilitator will refocus the discussion on his own behaviour. Video recordings are used if necessary.
- **Reflection:** every participant says what he would like to change and what he this was appropriate of his performance. Video recordings are used if necessary.
- **Observers:** the two groups of observers share what they discussed filling in the SPS checklist.
- **Discussion:** The facilitator helps the participants and the observers to reflect on specific items. Video recordings are used if necessary.
- **Take home message:** every participant declares what has learned from this experience.

## Appendix F

The post training evaluation questionnaire.

<b>Thinking about the training course you attended today, we kindly ask you to rate your agreement to the following questions on a scale from 1 (not at all), to 5 (completely).</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Were the trainers able to create an open and non-judgmental environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How much did you feel engaged and stimulated by the course?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How much the scenarios represented situations that are similar to those you face in your everyday work activity?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How much realistic was the simulation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do you think the training course is useful for your job?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Would you like to attend similar training courses in the future?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How satisfied are you for having attended the course?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<b>How useful were the following activities? We kindly ask you to rate your agreement to the following questions on a scale from 1 (not at all), to 5 (completely).</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Usefulness of the first part of the training (introduction)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Usefulness of participating in simulated activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Usefulness of watching simulated activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Usefulness of discussion after simulated activities (debriefing)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please, write here further comments and suggestions:







APPENDIX G

Example of an evaluation sheet performed by a SME watching a simulated activity

Time	Phase	Description	Evaluation	Evaluation Explanation	1° operator	Client action	Notes
0'00	Analysis	Situation assessment	compliant		Job request module analysis		
0'35	Analysis	Situation assessment	compliant		Pushes button on EM		
0'42	Preparation		partially compliant	non-delimited working area	Takes the tools		
1'00	Preparation		partially compliant	shirt out of the pants	Buttons up jacket		
1'36	Preparation		partially compliant		Explains the problem to the client	Starts asking question about the intervention; violates the safety distance	Violation due to the lack of delimitation
1'56	Preparation		partially compliant		Asks the client to stay at a safe distance		
2'00	Deprogrammation		non-compliant		Starts deprogramming using the proper device		
2'14	Deprogrammation		non-compliant	forgot to perform the evaluation	1st isolation glove		He takes off the glove after few seconds
2'16	Deprogrammation		non-compliant		Asks the client to stay at safe distance		
2'56	Deprogrammation		non-compliant	forgot to perform the evaluation	1st isolation glove (again)		
3'24	Deprogrammation		non-compliant	forgot to perform the evaluation	Puts on both isolation gloves		
3'28	Deprogrammation		non-compliant		lowers the visor		
4'10	Work under electric voltage		non-compliant		starts unscrewing the EM		

---

5'38	Work under electric voltage		non-compliant	forgot to check the detector	uses the voltage detector		
13'19	Work under electric voltage		non-compliant		End of scenario		