SPRINCE

SAF€RA project no. 22

Smart PRocess INdustry CranEs

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Smart PRocess INdustry CranEs

(project acronym SPRINCE)

Development human factors indicators

Questionnaire activity WP2.2

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University of Messina

University of Belgrade

University of Defence

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QUESTIONNAIRE ON HUMAN FACTORS

Category	Sub-category (metric)	Complexity factor	Group of questions
1. Overall reactions to the interface			
Perception	Numeric size	Display size (monitor's characteristics)	1a – Is the display large enough to allow a comfortable viewing?
2. Screen			
Perception	Numeric size	Number of visual elements of the interface	2a – Can you capture at a glance the most important parts shown on the screen? 2b – Can you clearly distinguish the elements shown on the screen?
3. Variety of elements			
Perception	Variety	Text size	3a – Are the elements of the interface readable with respect to the text size?
Perception	Variety	Main window size	3b – Are the elements of the interface readable with respect to the main window size?
Perception	Variety	Brightness and contrast	3c – Are the elements of the interface readable with respect to the brightness and contrast?
Perception	Variety	Colours of groups	3d –Are the elements of the interface readable with respect to their colours?
Perception	Variety	Workplace's lightening	3e – Are the elements of the interface readable with respect to the workplace lightening?

4. Clarity of the information perception			
Perception	Relations	Masking effects	4a – In the case of complex environments, is the view of the working-area through the main window clear?
Perception	Relations	Visual clarity	4b – Do the elements, provided on the display, appear distinct (that means there is no perception of masking effects)?
Perception	Relations	Comfort	4c – Are all the windows of the interface always in the foreground?
Perception	Relations	Degree of confusion	4d – Is each window clearly displayed on the screen?
Perception	Relations	Degree of clutter	4e – Does the overall information, provided by means of the screen, appear comfortable? 4f – Does the overall information, provided by means of the screen, appear confused? 4g – Does the overall information, provided by means of the screen, appear cluttered?
Perception	Relations	Signal/noise ratio	4h – How would you rate the signal/noise ratio during the execution of the application?
Perception	Relations	Physical and psychological stress during the use of the system	4i – In your opinion, how much physical stress does the use of the system cause? 4l – In your opinion, how much psychological stress does the use of the system cause?
5. Dynamics of the perception			
Perception	Temporal variability	Rate of acquisition of the overall view	5a – In your opinion, is the identification (perception) of the most important parts of the interface rapid?
Perception	Temporal variability	Change of workplace's lightning	5b – How much does the change of illumination of the working area affect (over the time) the perception of the information through the interface?
Perception	Temporal variability	Uniformity and heterogeneity of the working space	5c – Depending on if the working area is uniform or heterogeneous, how much does the area's complexity affect the perception of the information through the interface?

6. Understanding of the information provided by the interface			
Cognition	Numeric size	Load navigation by the use of the GUI	6a – Are the interface tools sufficient for the execution of the operation (load navigation)?
Cognition	Numeric size	Acquisition of the reality by the real-time video	6b – Does the information acquired at the screen allow the understanding of reality?
Cognition	Numeric size	Terminology used by the interface	6c – Is the interface's terminology appropriate (that is it does not create misunderstandings)?
Cognition	Numeric size	Amount of information to be memorized during the work (short-term memory)	6d – In your opinion, how much is the amount of information that must be memorized to perform the work?
Cognition	Numeric size	Amount of information from the existing knowledge to be used during the work (long-term memory)	6e – In your opinion, how much is the amount of from the existing knowledge to be used during the work?
7. Understanding of the alarm			
Cognition	Variety	Response to the alarm through the main window	7a – How much would you rate the effectiveness of alarm through the main window?
Cognition	Variety	Response to the alarm through the red blinking of the GUI	7b – How much would you rate the effectiveness of alarm through the red blinking of the GUI?
8. Comprehension of the interface's elements and goal			
Cognition	Relations	Organisation of elements	8a – Are the interface's elements well-grouped?
Cognition	Relations	Level of comprehension of how to prevent the collision	8b - If a potential collision is occurring, are there enough elements that permit its prevention? 8c – In your opinion, what is the level of difficulty associated with the management of potential collisions?
Cognition	Relations	Level of comprehension of how to recovery from crashes of the application	8d – If a problem occurs during the running of the application (e.g. crashes), are there enough elements that permit its recover? 8e – In your opinion, what is the level of difficulty associated with the reset of the system?
Cognition	Relations	Learning process to operate the system	8e – How easy was to learn operating the system?

9. Dynamics of the comprehension of the alarm			
Cognition	Temporal variability	Time for the information update with respect to the prevention of the collision	9a – Is the information returned on the screen updated in an appropriate manner that is in real time or at least in a time acceptable for the prevention of undesirable events?
Cognition	Temporal variability	Disturb when receiving the alarm due to the update of information on the main window	9b – How much disturb is given by the information updating over the time in the main window (that is disturb when receiving the alarm by the red blinking of the GUI)?
10. Complexity of tasks in terms of number of actions			
Action	Numeric size	Number of mouse movement per action (task)	10a – How many mouse's movements do you need to configure the application before to press the button "Start application"? 10b – How many mouse's movements do you need to start the application? 10c – How many mouse's movements do you need to stop the application? 10d – How many mouse's movements do you need to reset the application?
Action	Numeric size	Number of preliminary steps before the execution of the operation (task)	10e. Are there preliminary actions to execute before using the application?
Action	Numeric size	Number of steps per operation	10f – How many actions do you need to start the application? 10g – How many actions do you need to stop the application? 10h – How many actions do you need to reset the application? 10i – In case of warning from the interface, how many operations must be undertaken to safely restore the situation?
11. Complexity of tasks in terms of variety of actions			
Action	Variety	Variety of actions amongst tasks	11a – Is there a clear distinction between the actions to execute when configuring, starting, stopping and resetting the application?

12. Hierarchy and relations amongst actions			
Action	Relations	Hierarchy of actions	12a – In your opinion, are the steps to perform an operation hierarchically organized?
Action	Relations	Criterion adopted for the setting of the area to be monitored	12b – Based on the experience gained with the use of the application, which extension for the area to be monitored would you select? (that means do you feel safe in using the application?)
Action	Relations	Complexity of the selection of the area to be monitored	12c – Is the operation (task) for the selection of the area to be monitored complex?
Action	Relations	Task uncertainty	12d – Which are the elements, operations, etc. that make, in your opinion, uncertain the interaction with the interface?
13. Dynamics of actions			
Action	Temporal variability	Time for the area setting	13a – Is the task for setting the area time-demanding?
Action	Temporal variability	Rate of response of the application	13b – In your opinion, does the system quickly respond to the commands (with mouse)?
14. System capabilities			
Impressions on system capabilities			14a – Which score would you give to the whole system? 14 b – In your opinion, can the system provide benefit to the crane-operator when he/she is lifting loads? 14c – Which suggestion would you give to the developer based on your experience?