

The CXI Complexity Index questionnaire

The following pages are extracted from the
Licentiate Thesis of Sandra Mattsson, 2013.
(Appendix B)

What is perceived as complex in final assembly?
To define, measure and manage production complexity

SANDRA MATTSSON

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Department of Product and Production Development
Chalmers University of Technology
SE-412 96 Gothenburg
Sweden
Telephone +46 (0)31- 772 1000

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APPENDIX B – THE COMPLEXITY INDEX QUESTIONNAIRE

(translated from Swedish)

This questionnaire has been designed to find solutions that can simplify and improve your work. The survey is anonymous. When you are filling in the questionnaire it is important that you consider one chosen station.

Chosen station: _____

Number of years assembling: _____ years

Number of years on actual station: _____ years

The questionnaire regards: product variants, work content, layout, tools and support tools and work instructions.

Thank you for participating!

Consider how well the following statements fit with the work you have performed during the last month at the chosen station. The scale is 1-5 where 1 is I agree completely and 5 is I don't agree at all.

A. Product variants

1. There are many different variants on this station

1	2	3	4	5	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Agree				Do not	Don't know
Completely				agree at all	/not relevant

2. Many variants are similar to one another regarding function and/or external surface at this station

1	2	3	4	5	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Agree				Do not	Don't know
Completely				agree at all	/not relevant

3. There are many variants that are seldom assembled at this station

1	2	3	4	5	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Agree				Do not	Don't know
Completely				agree at all	/not relevant

4. The variants at this station require different strategies to assemble (for instance order, difficulty, different amount of operations)

1	2	3	4	5	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Agree				Do not	Don't know
Completely				agree at all	/not relevant
(exactly the same				(completely different	
assembly strategy)				assembly strategy)	

5. The components that belong to the different variants are very similar at this station

1	2	3	4	5	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Agree				Do not	Don't know
Completely				agree at all	/not relevant

B. Work content

6. When I work on this station I know what to do

1	2	3	4	5	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Agree				Do not	Don't know
Completely				agree at all	/not relevant

7. I often feel that I have time to perform the work at this station

1	2	3	4	5		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Agree					Do not	Don't know
Completely					agree at all	/not relevant

8. I have many other work tasks, except for the assembly work at this station (for instance material handling, 5S, documentation etcetera)

1	2	3	4	5		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Agree					Do not	Don't know
Completely					agree at all	/not relevant

9. My work at this station is often affected by unplanned changes/uncertainties (for instance change of plans, new instructions/variants, or machine disturbances)

1	2	3	4	5		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Agree					Do not	Don't know
Completely					agree at all	/not relevant

10. I am part of the planning for the changes on this station

1	2	3	4	5		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Agree					Do not	Don't know
Completely					agree at all	/not relevant

C. Layout

11. This station is well designed regarding reachability

1	2	3	4	5		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Agree				Do not	Don't know	
Completely				agree at all	/not relevant	

12. This station is well designed regarding heavy lifts in the assembly work

1	2	3	4	5		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Agree				Do not	Don't know	
Completely				agree at all	/not relevant	

13. This station is well defined regarding ergonomics in the assembly work (for instance stretching, bending down)

1	2	3	4	5		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Agree				Do not	Don't know	
Completely				agree at all	/not relevant	

14. This station is well designed regarding the material façade (for example type of packaging, placement, simple to pick and sequence material)

1	2	3	4	5		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Agree				Do not	Don't know	
Completely				agree at all	/not relevant	

15. The placement of tools, fixtures and components on this station is generally good

1	2	3	4	5		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Agree				Do not	Don't know	
Completely				agree at all	/not relevant	

D. Tools and support tools

16. The tools/fixtures that are used on this station are well adjusted for the tasks performed there

1	2	3	4	5	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Agree				Do not	Don't know
Completely				agree at all	/not relevant

17. Different tools are used for the assembly of different variants at this station

1	2	3	4	5	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Agree				Do not	Don't know
Completely				agree at all	/not relevant

18. Which support tools are found at this station?

- Pick-by-light (lights are lid for a specific part)
- Barcodes and scanners
- RFID system
- Feedback from screens
- Feedback from tools (for example the correct force and correct bit)
- Checkpoints (feedback in the assembly work)
- Other _____

19. The above mentioned support tools helps me to carry out my work on this station

1	2	3	4	5	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Agree				Do not	Don't know
Completely				agree at all	/not relevant

E. Work Instructions

20. I often read (every day) the work instructions that are placed at this station

1	2	3	4	5		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Agree				Do not	Don't know	
Completely				agree at all	/not relevant	

21. The work instructions are easy to understand

1	2	3	4	5		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Agree				Do not	Don't know	
Completely				agree at all	/not relevant	

22. The work instructions at this station simplify my work

1	2	3	4	5		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Agree				Do not	Don't know	
Completely				agree at all	/not relevant	

23. It takes a long time to learn the work on this station (compared to other stations in my team area)

1	2	3	4	5		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Agree				Do not	Don't know	
Completely				agree at all	/not relevant	

F. General view

24. At this station a feeling (tacit knowledge) for the work is needed

1	2	3	4	5		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Agree				Do not	Don't know	
Completely				agree at all	/not relevant	

25. In general I think this station is well designed

1	2	3	4	5	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Agree				Do not	Don't know
Completely				agree at all	/not relevant

26. Comment (for example a possible improvement, change of the station, work content, support or other)
