Framework for C2 Concept Development: Exploring Design Logic and Systems Engineering

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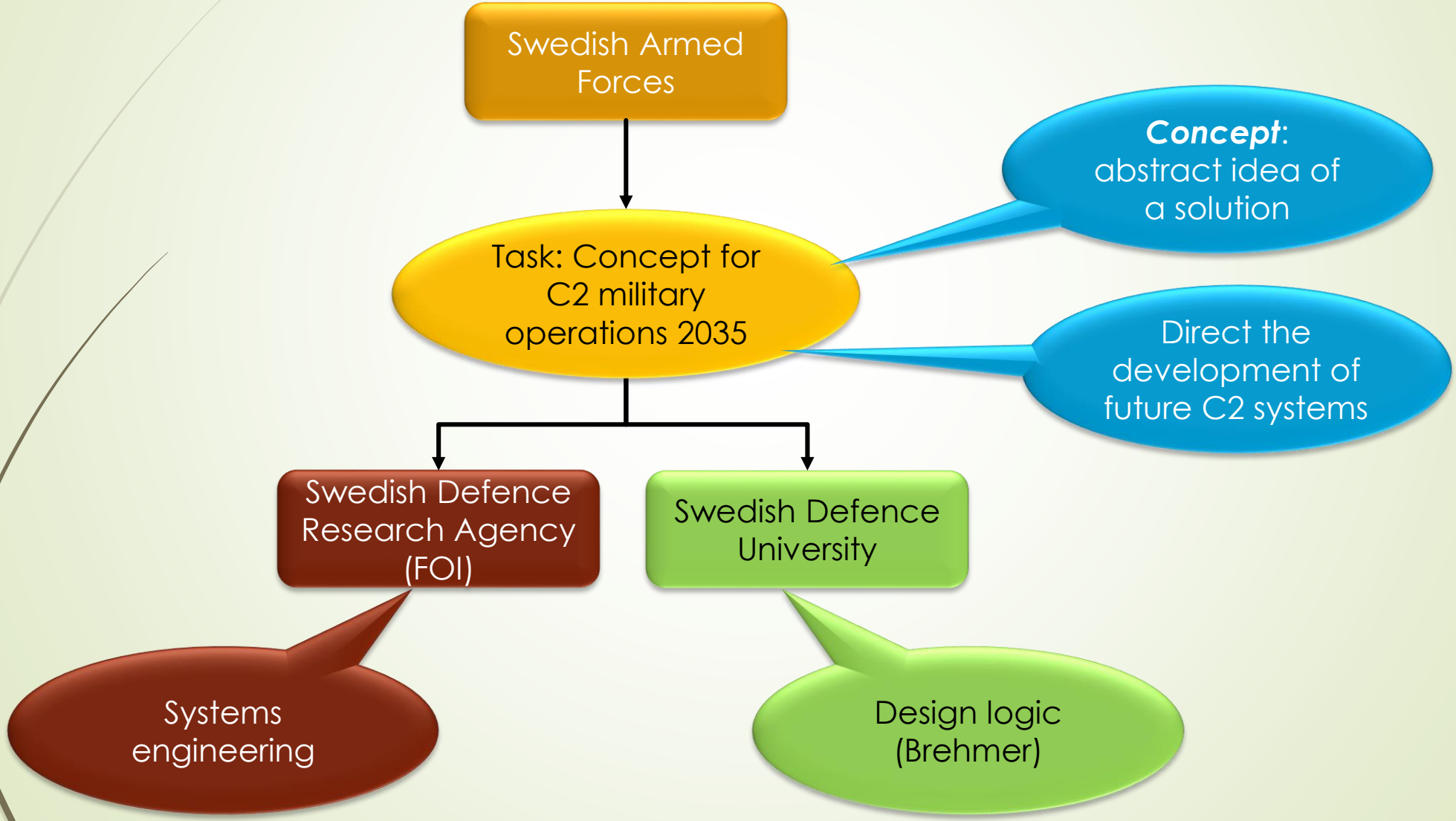
Background


Swedish Armed Forces
Task: Concept for C2 military operations 2035
Concept: abstract idea of a solution
Direct the development of future C2 systems
Swedish Defence Research Agency (FOI)
Swedish Defence University
Systems engineering
Design logic (Brehmer)

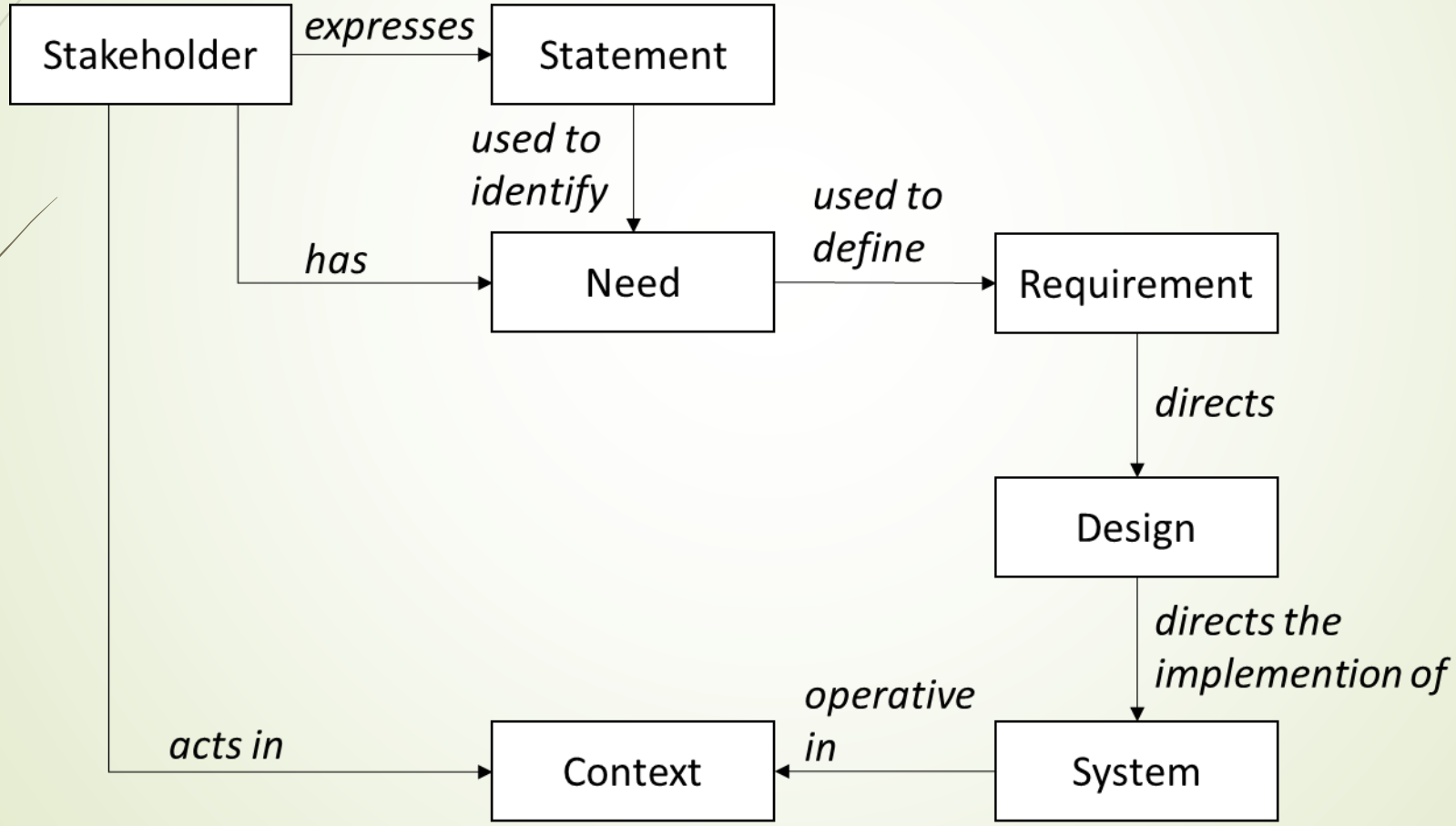
Background - Challenges

Objective

A framework for the development of C2 concepts that enhance the collaboration between people from different research and development traditions.

Terminology

Systems engineering - terminology



Design logic – terminology

Purpose (*Why*?)

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Design Criteria (*In what way*?)

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Function (*What*?)

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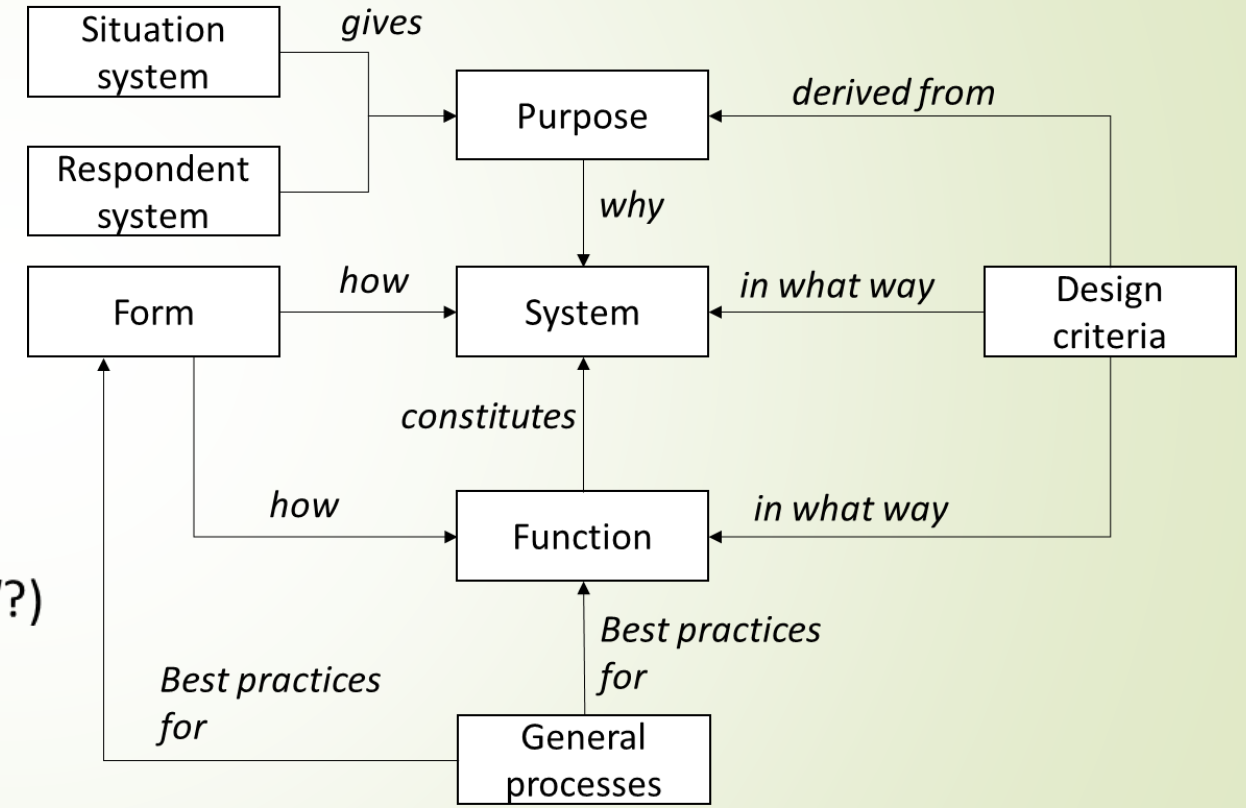
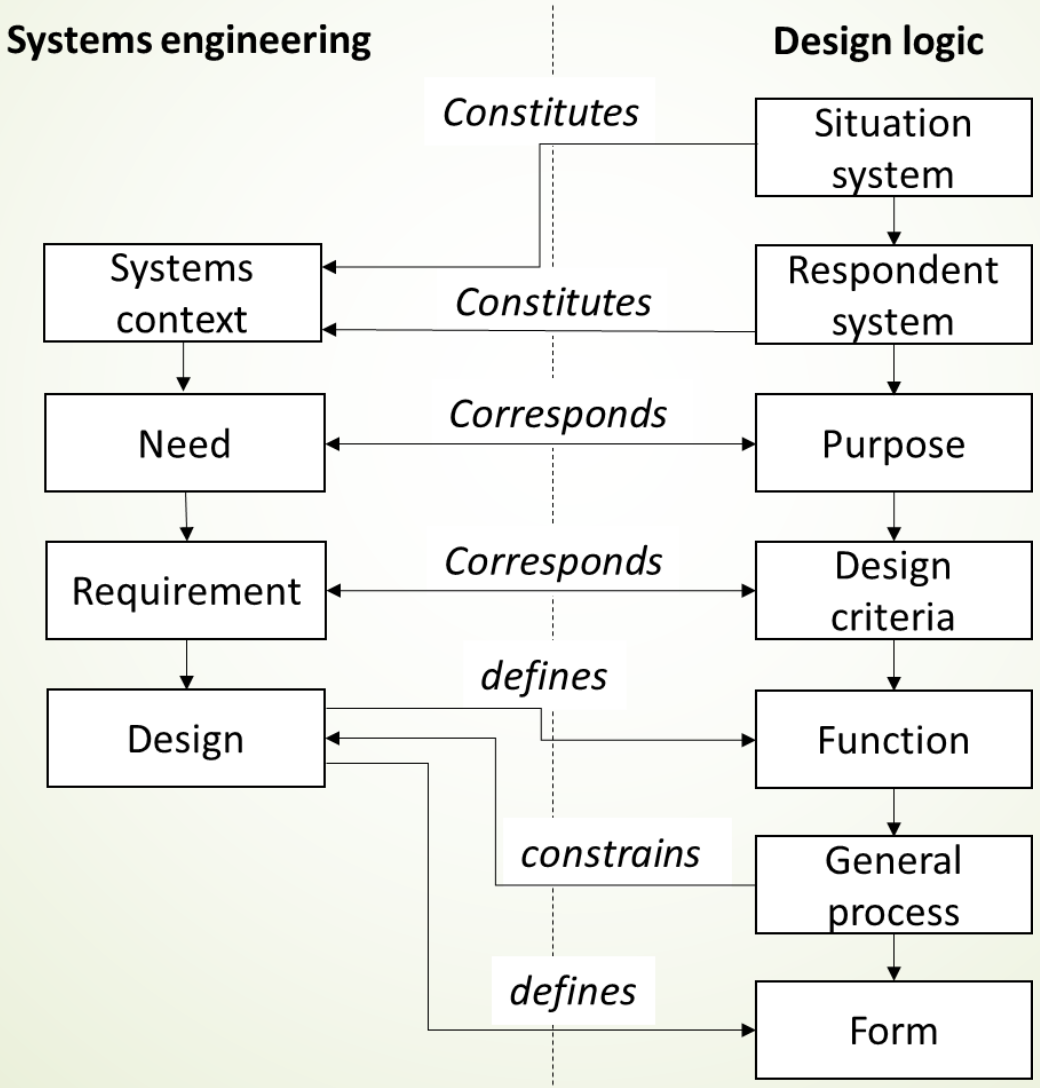
General Processes (*What can be used*?)

↓

Form (*How*?)

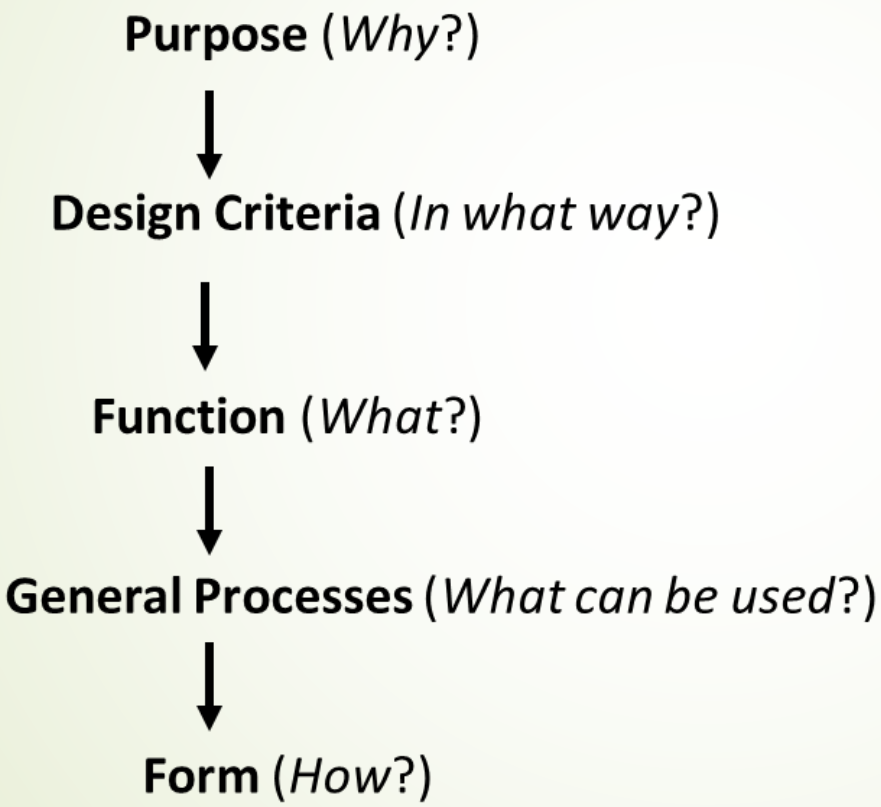


Terminology – the bridge

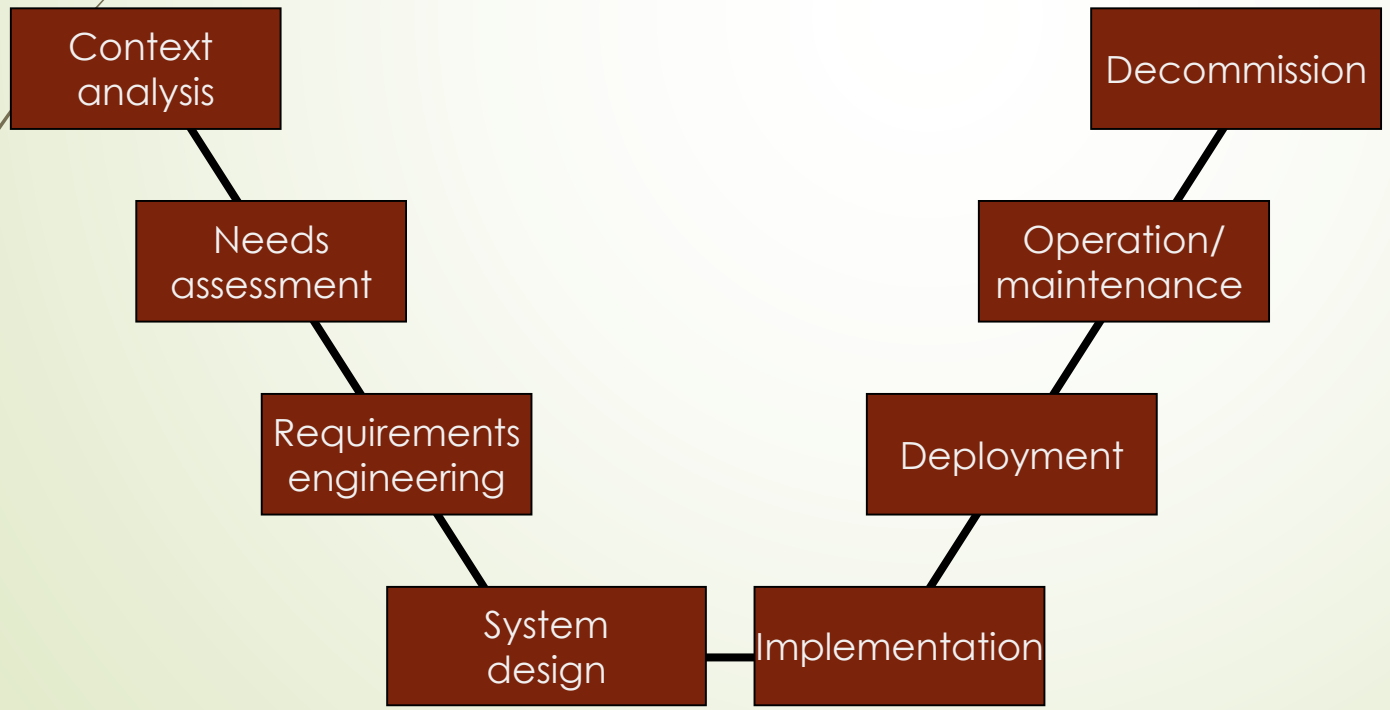


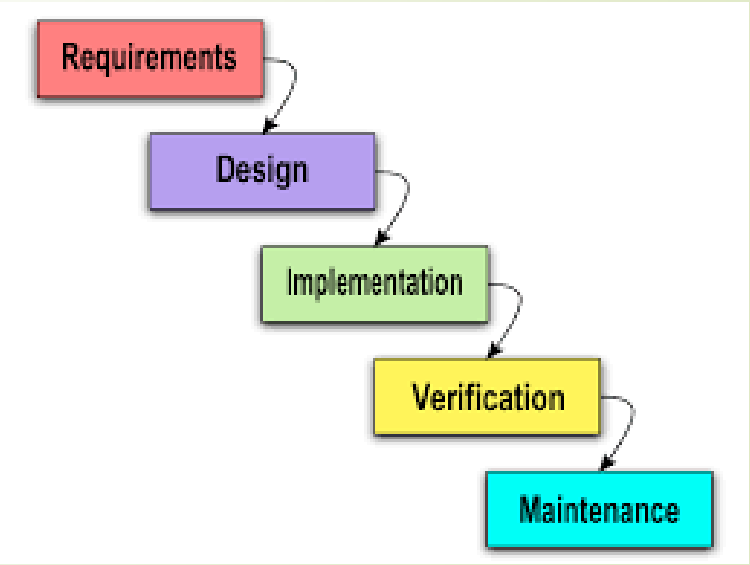
Development process

Design logic - process

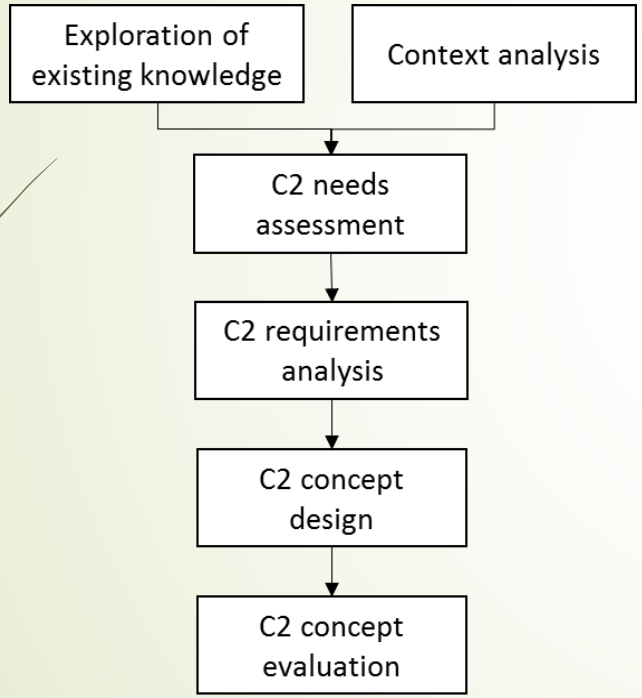


Systems engineering - process

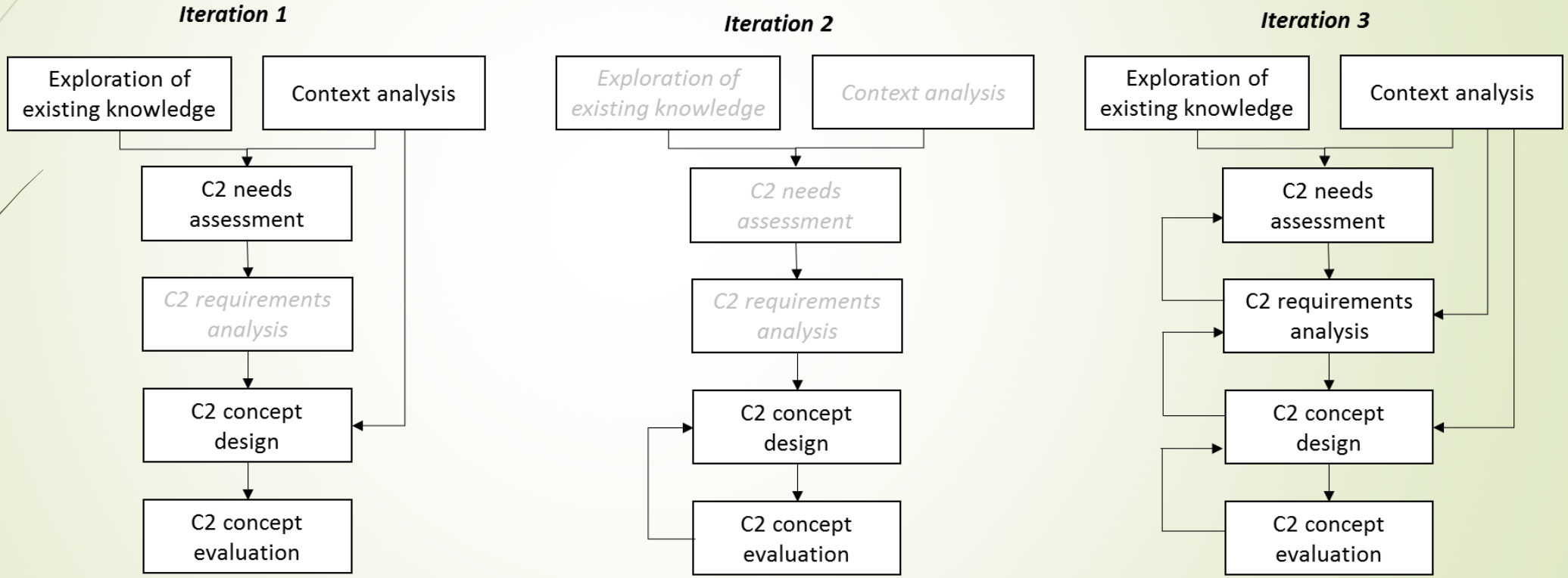




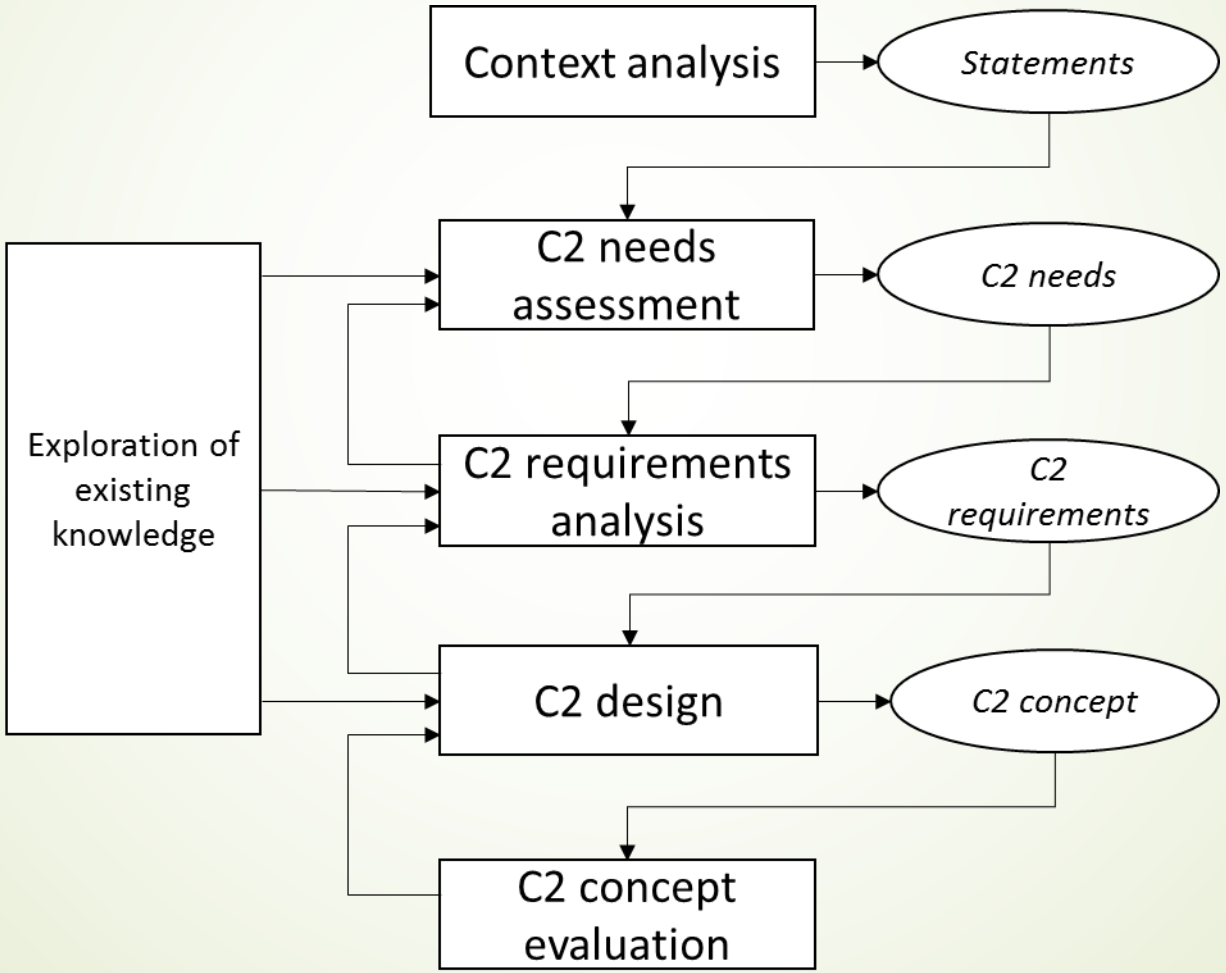
Concept development



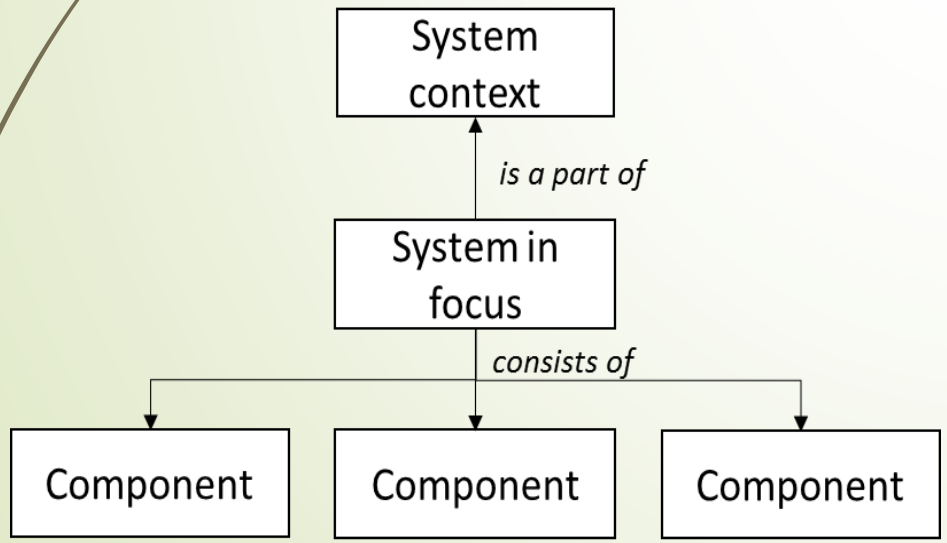
Concept development process



Development process



System representations



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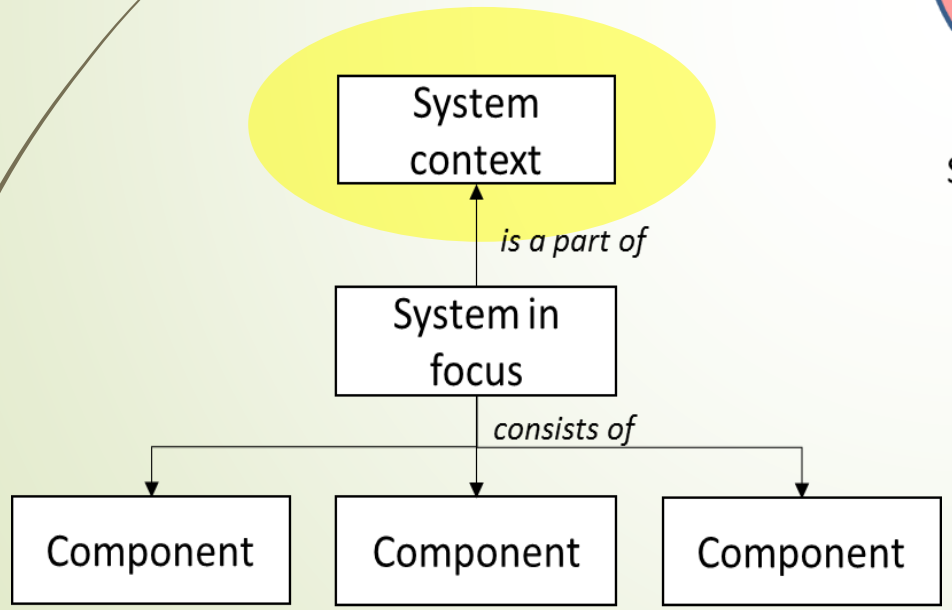

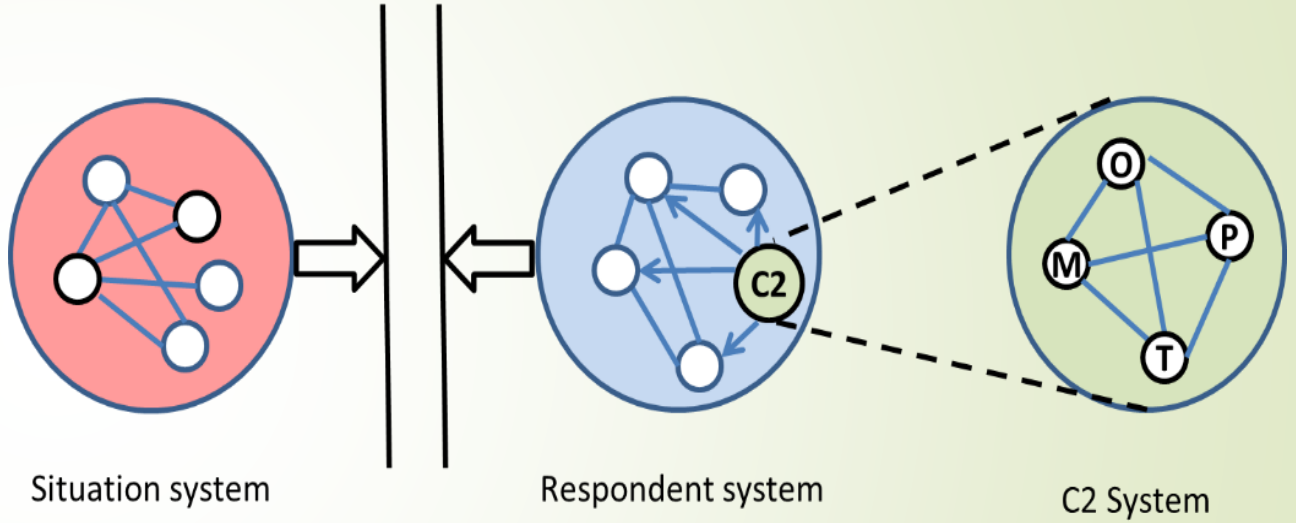

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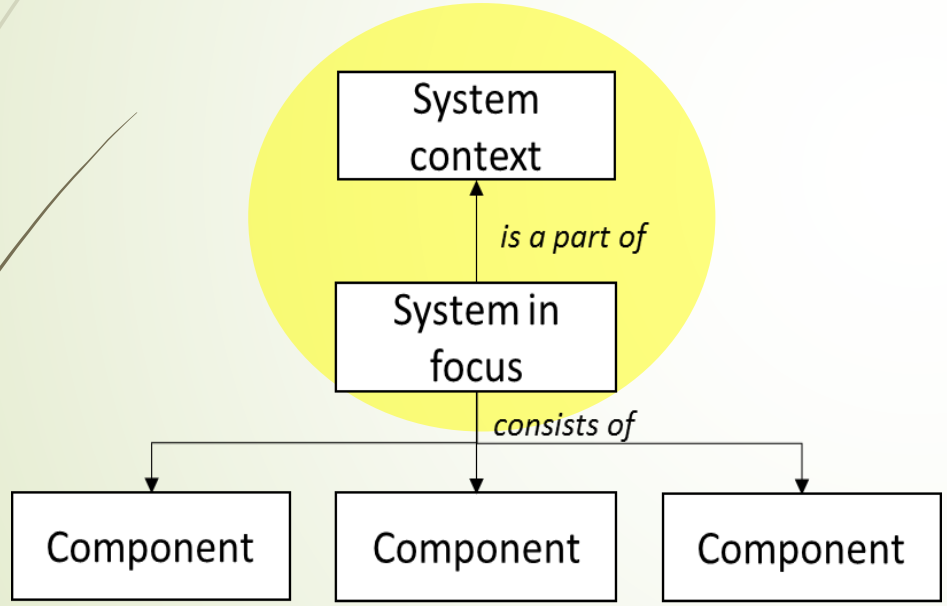

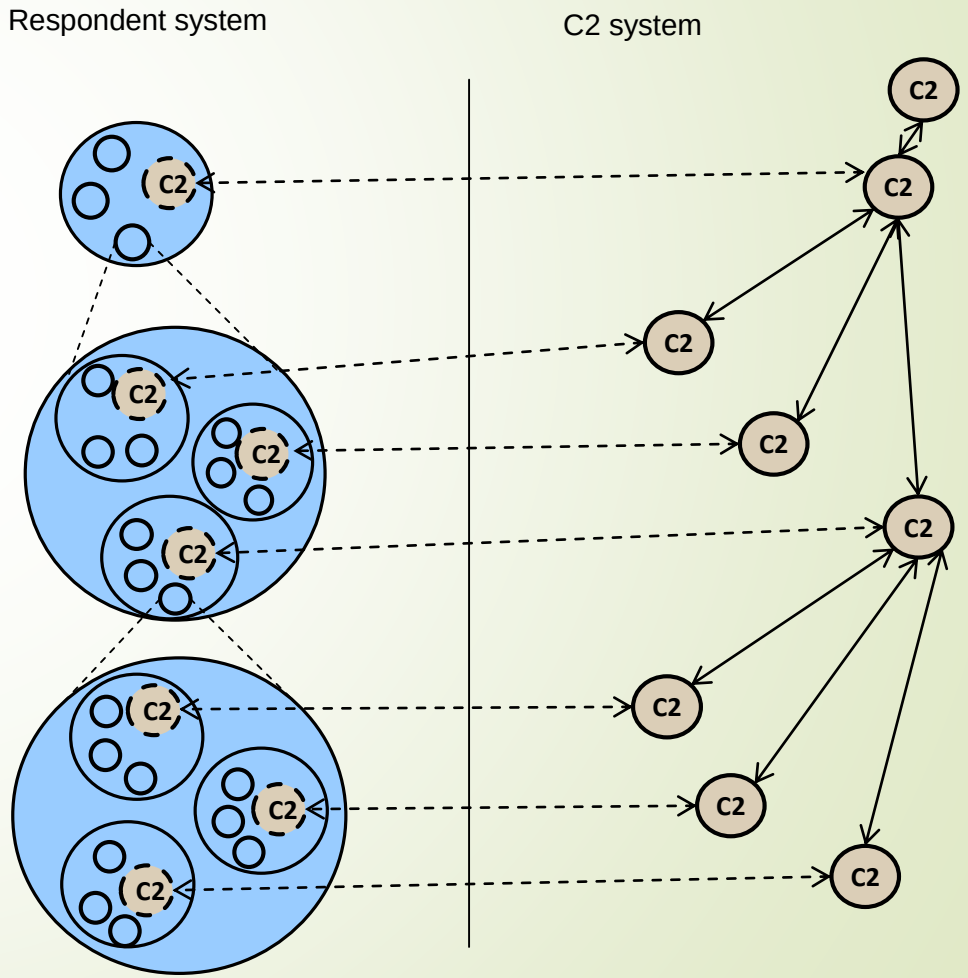

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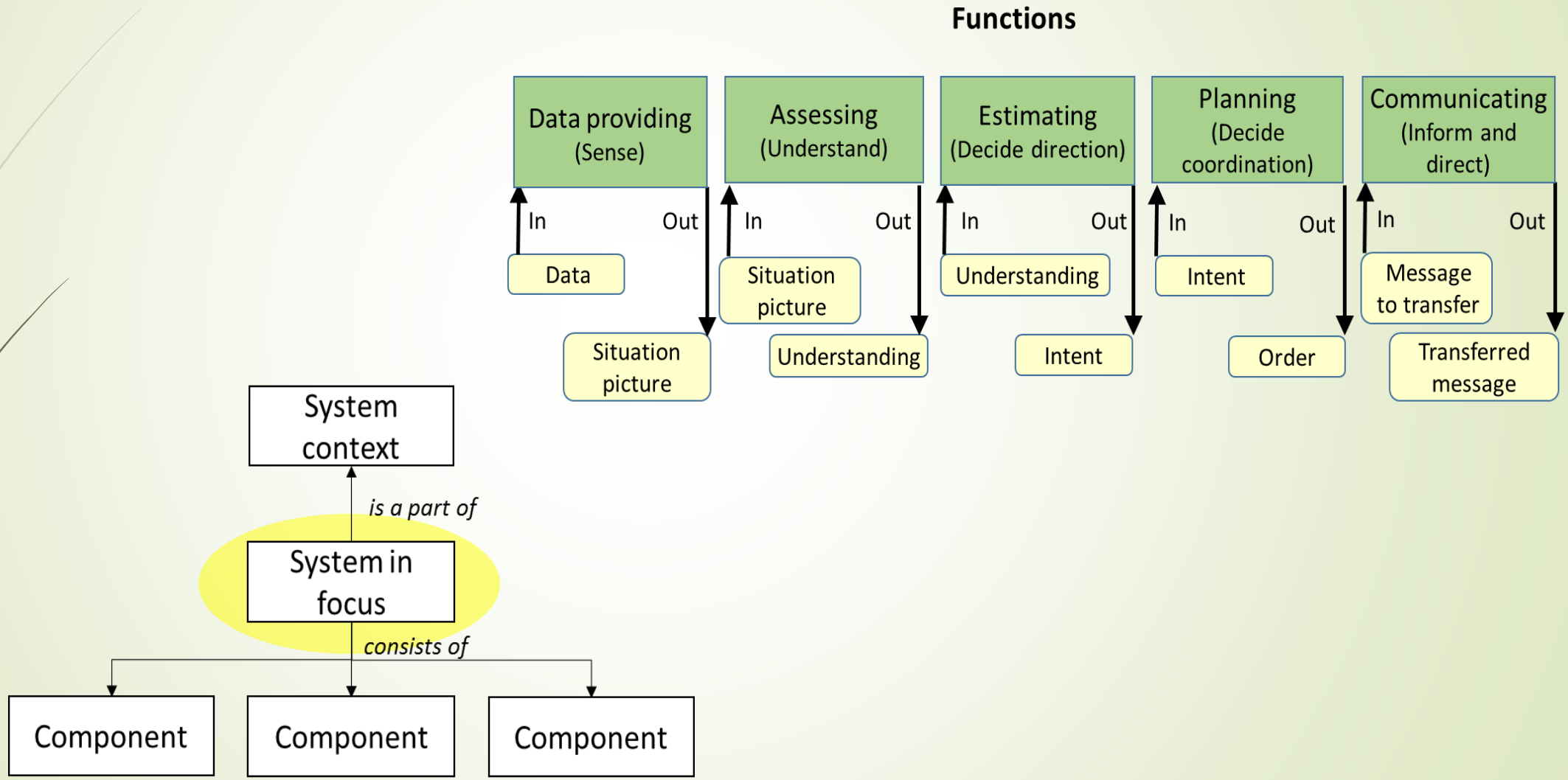

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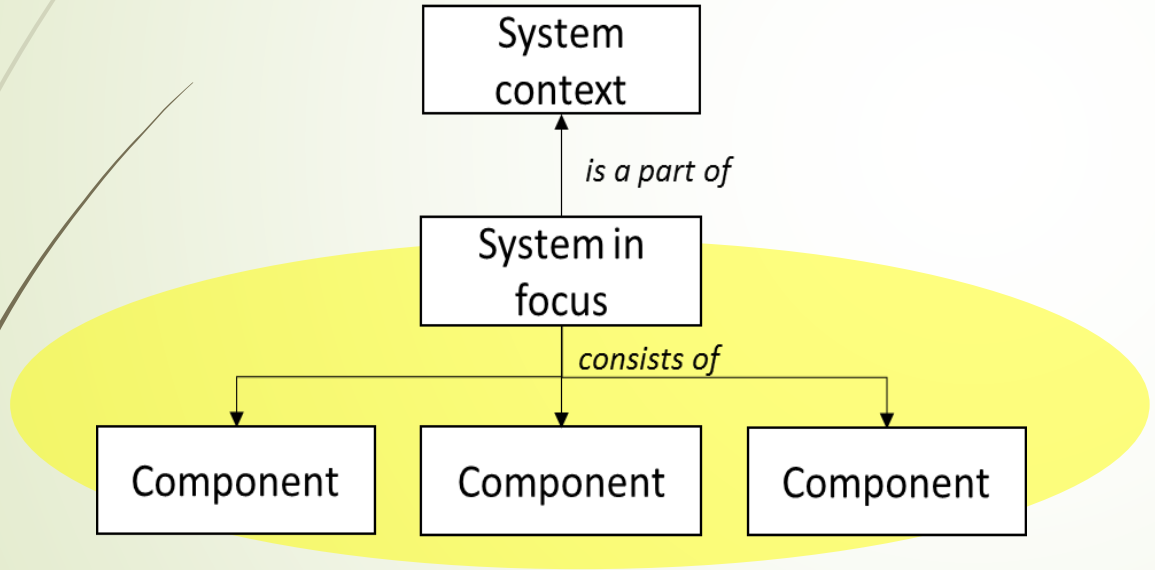
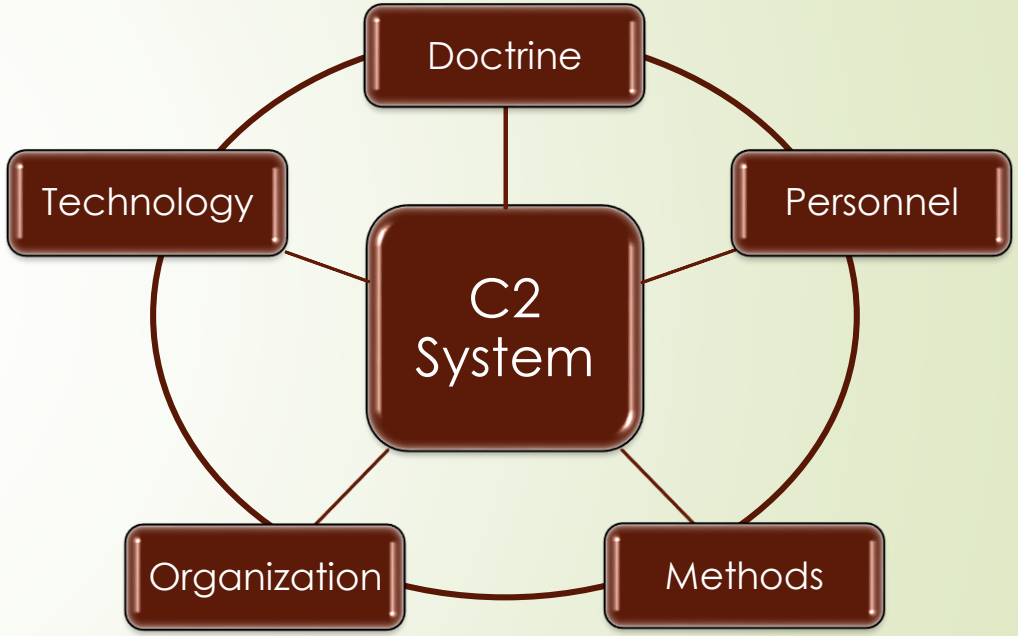
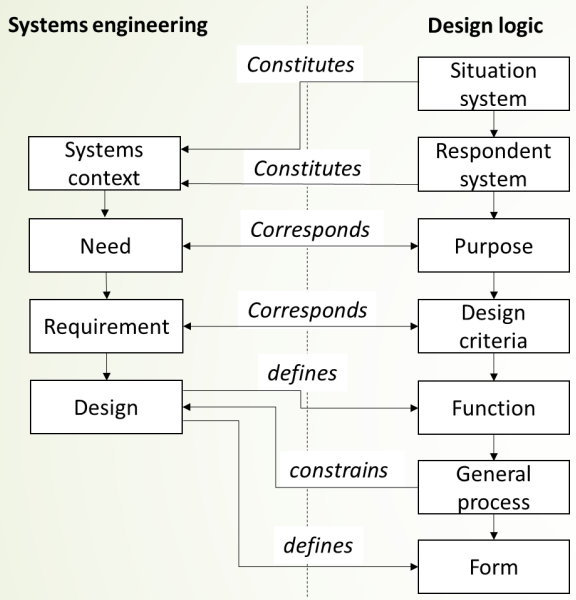
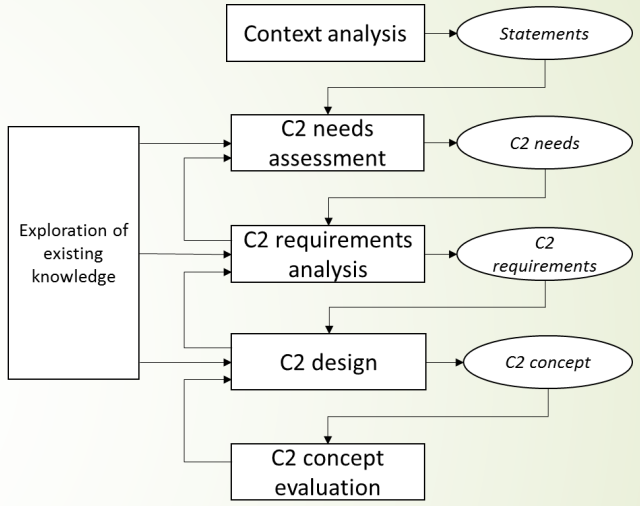
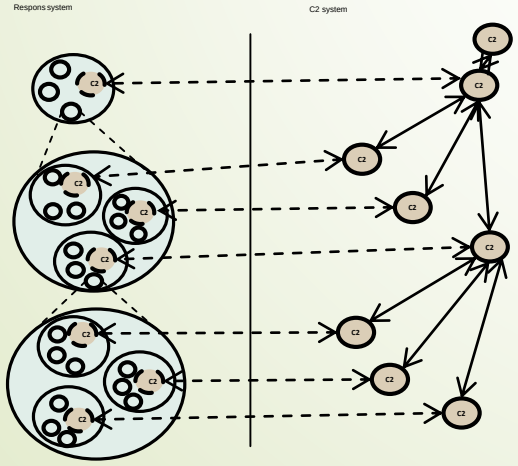


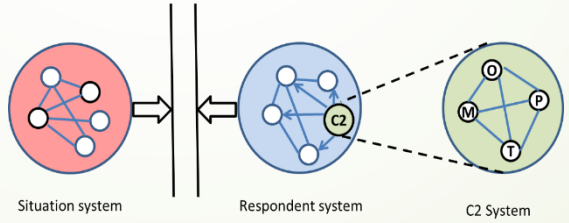


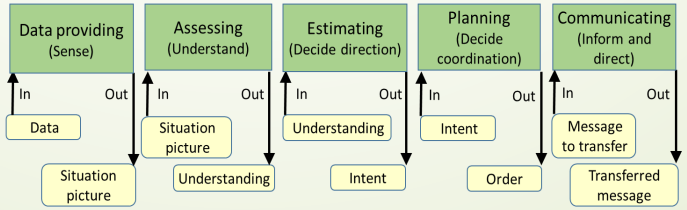
The Framework

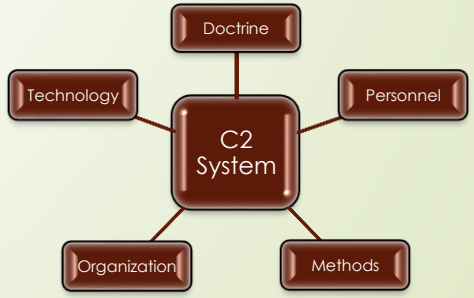












Conclusion

- The development of the framework facilitated the collaborative work
- Scrutinizing the terminology revealed a similar logic in systems engineering and design logic
- Both traditions' terminologies are used
- Systems engineering contributed to define the development process
- Design logic and systems theory contributed to define appropriate C2 representations