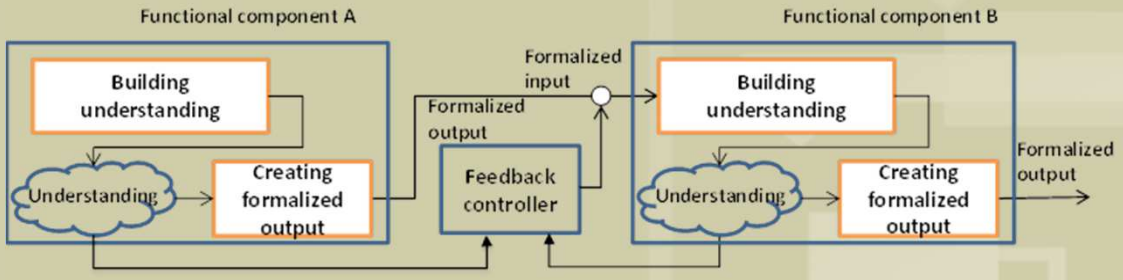
Functional Decomposition of a Socio-Technical System: What is Missing?

1st workshop on Socio-Technical Perspective in IS Development (STPIS'15)



Feedback in Socio-Technical Systems Functional Decomposition

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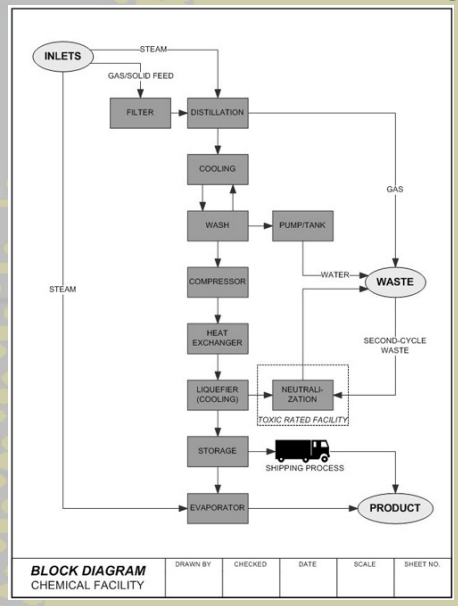
Functional decomposition of socio-technical systems

- A sociotechnical system is a SYSTEM and thus can be decomposed in interacting parts – subsystems
- There are a number of languages and notations to depict a functional decomposition

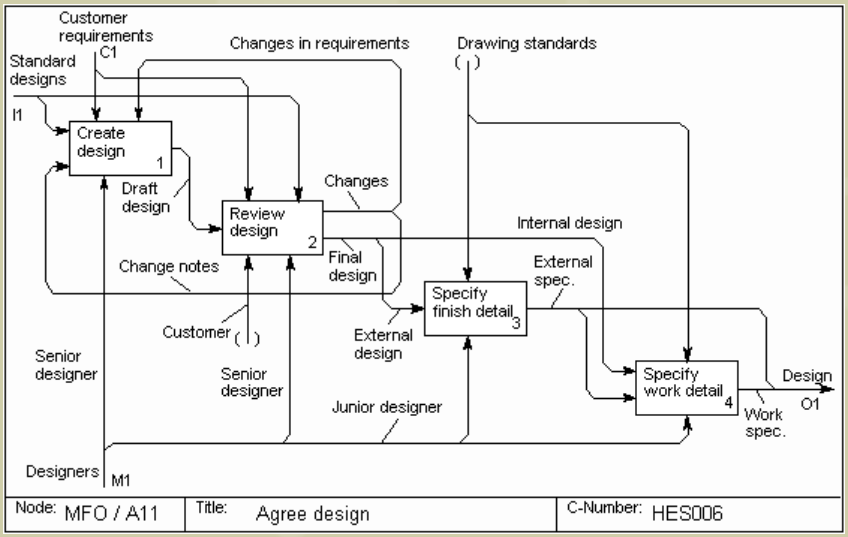
- Are they appropriate for decomposing social-technical system?
- If not, what is missing (give an example)

Notations for functional decomposition

Connecting outputs to inputs: output/input relationships



Block diagrams – the simplest notation



IDEF0 – a most popular notation for functional decomposition

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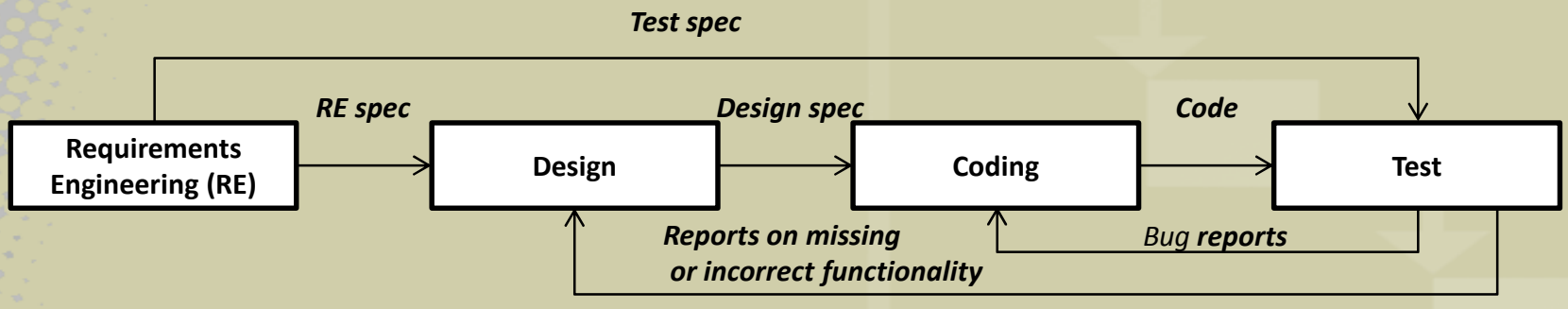
Example to be considered – software development

Using a simple block diagram



What is missing?

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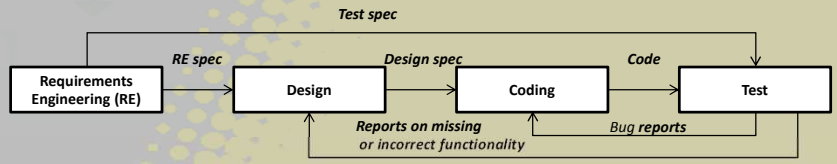
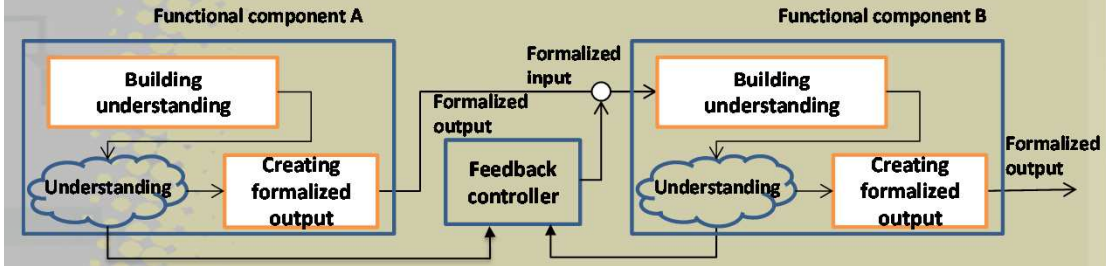
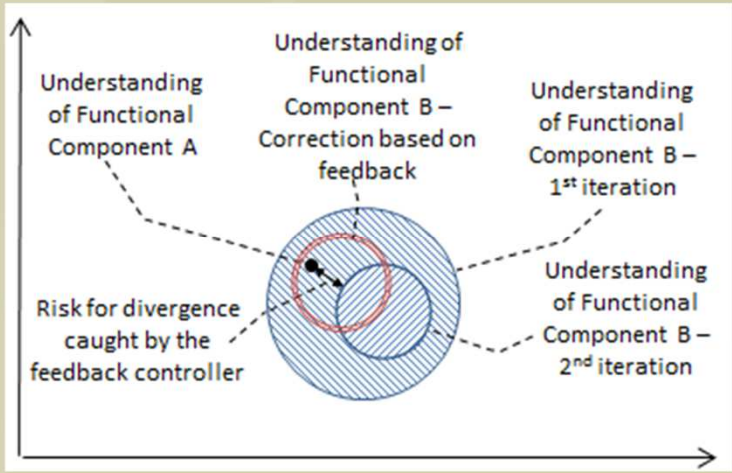
What is missing? Feedback







The work of feedback controller manned by humans

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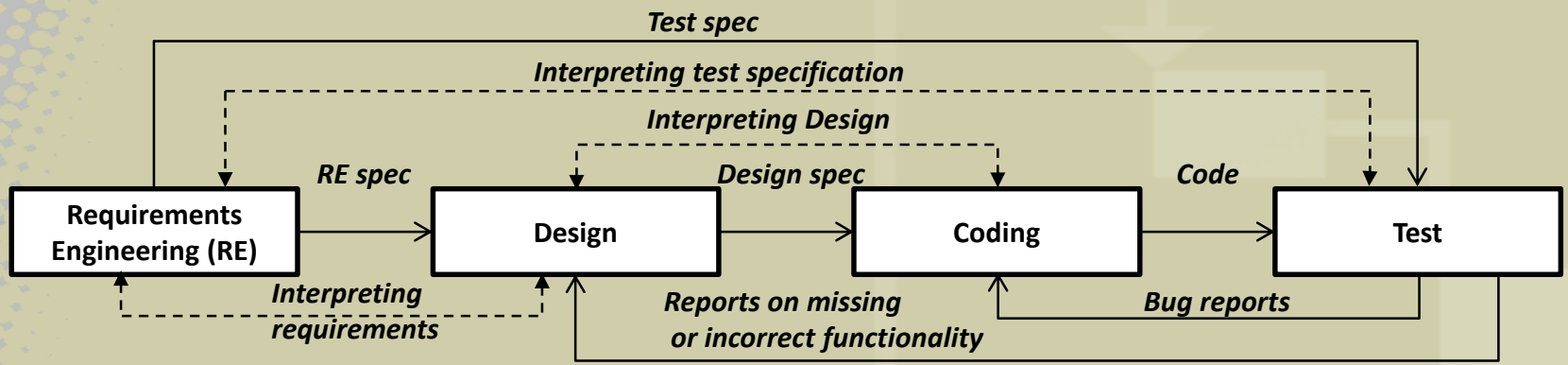
Software development - example corrected

Using a simple block diagram



Now with feedback channels explicated

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When and why represent feedback channels

When
- Analysis of existing problems
- Conducting organizational change

Why
- Not to miss a problem of missing or underperforming feedback channel
- Removing a feedback channel without substituting it with a new one

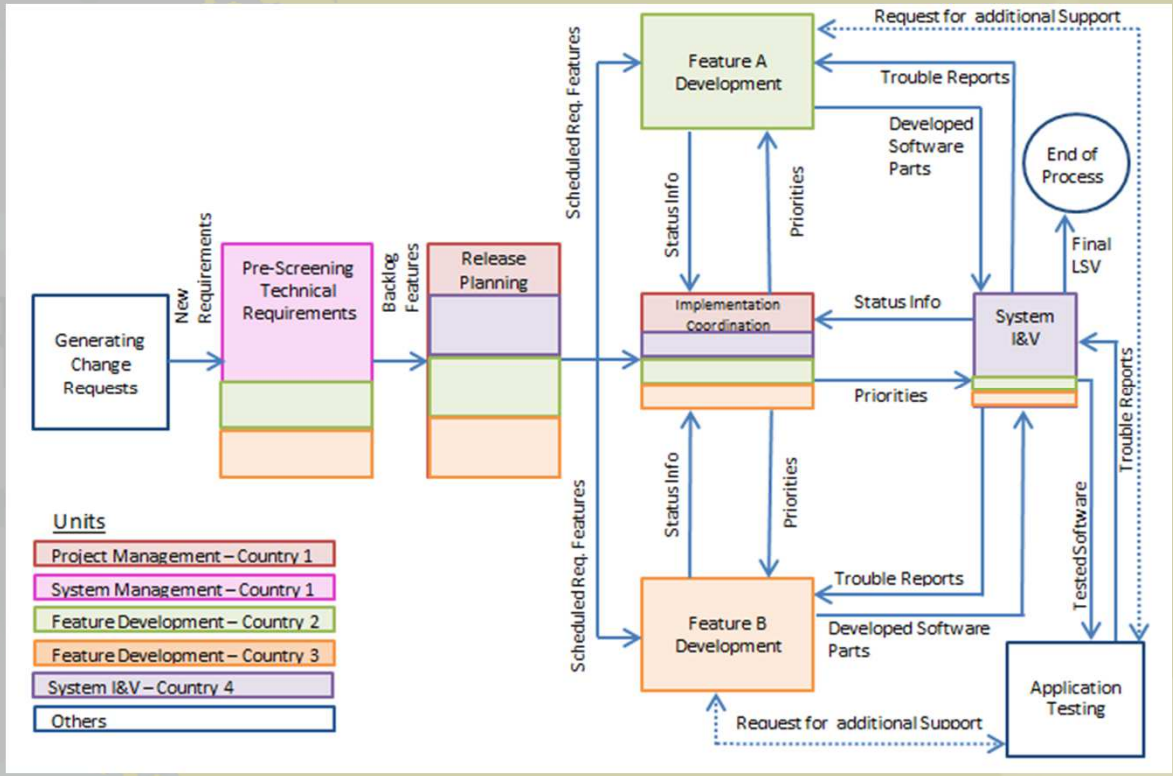
How to implement feedback in socio-technical systems

1. Through social structure (intersecting teams)
2. Through technical infrastructure (system that support teams)
3. Through a combination of both

Representing team intersection - an example

	Requirements	**Design**	**Coding**	**Test**
Requirements				
Design	Interpreting requirements			
Coding		Interpreting design		
Test	Interpreting test specification			

An example of other features



to be represented in functional decomposition of a socio-technical system

From: Bider, I., Otto, H.: Modeling a Global Software Development Project as a Complex Socio-Technical System to Facilitate Risk Management and Improve the Project Structure. In : Proceedings of the 10th IEEE International Conference on Global Software Engineering (ICGSE), forthcoming, Ciudad Real, Spain (2015)

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Q & A

Thank you for your patience

Questions and comments

Please

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