**Transform Analysis**

Heuristics and Rules

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**Structured Analysis and Design**

Information Flow Analysis

1. Specify the flow of information in your system
   \[ \Rightarrow \text{DFD} \]
2. Identify typical structural patterns in the DFD
   \[ \Rightarrow \text{analysed & annotated DFD} \]
3. Use a proven heuristic to map DFD into SC
   \[ \Rightarrow \text{first SC} \]
4. Refine and check your Structure Chart
   \[ \Rightarrow \text{final SC} \]

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**Transform Analysis - Step 1**

- The DFD should exist as a result of systems requirements engineering and systems analysis
- Check completeness of the DFD, data dictionary, and process dictionary
- Refine the DFD (decompose, etc.) if that is necessary
Transform Analysis - Step 2

- Step 2a:
  - check the list of properties for transform flow characteristics
  - be aware that this is a guideline only
- Step 2b:
  - find and mark the center of transformation in the DFD

Transform Analysis - Step 2b

- locate the center of transformation
  - follow input-driven flows into the center until the data is in an internal format, correct and complete
  - trace back output-driven flows to the center until the data is complete and ready for presentation, but not yet in external format
  - connect all markings: center of transformation
Transform Analysis - Step 3
IPO mapping heuristic

The IPO Mapping & Design Heuristic
- establish a top level main controller (system)
- always introduce:
  - Input-driven flow controller
  - transform flow controller (Processing)
  - Output-driven flow controller
- translate DFD processes into SC modules and hang them from the correct controller
- allocate subprocesses => submodules

Transform Analysis - Step 4
- add data (and control) flows
- further decompose (factor) were necessary
  - user interface handling modules
  - error-handling modules
  - add initialisation & termination modules
- check quality of design:
  - cohesion
  - coupling
- reconfirm mapping with DFD

See our Structure Chart Example for a complete specification of data and control flows.

End of Section 7b

coming up:
software design quality