

# Modelling in Design

## Software Systems – Design – L2T2

Dr. Vadim Zaytsev aka @grammarware, November 2020

## Core Lifecycle Elements

- Requirements ←
- Design
- Construction
- Maintenance
- Testing
- Operation

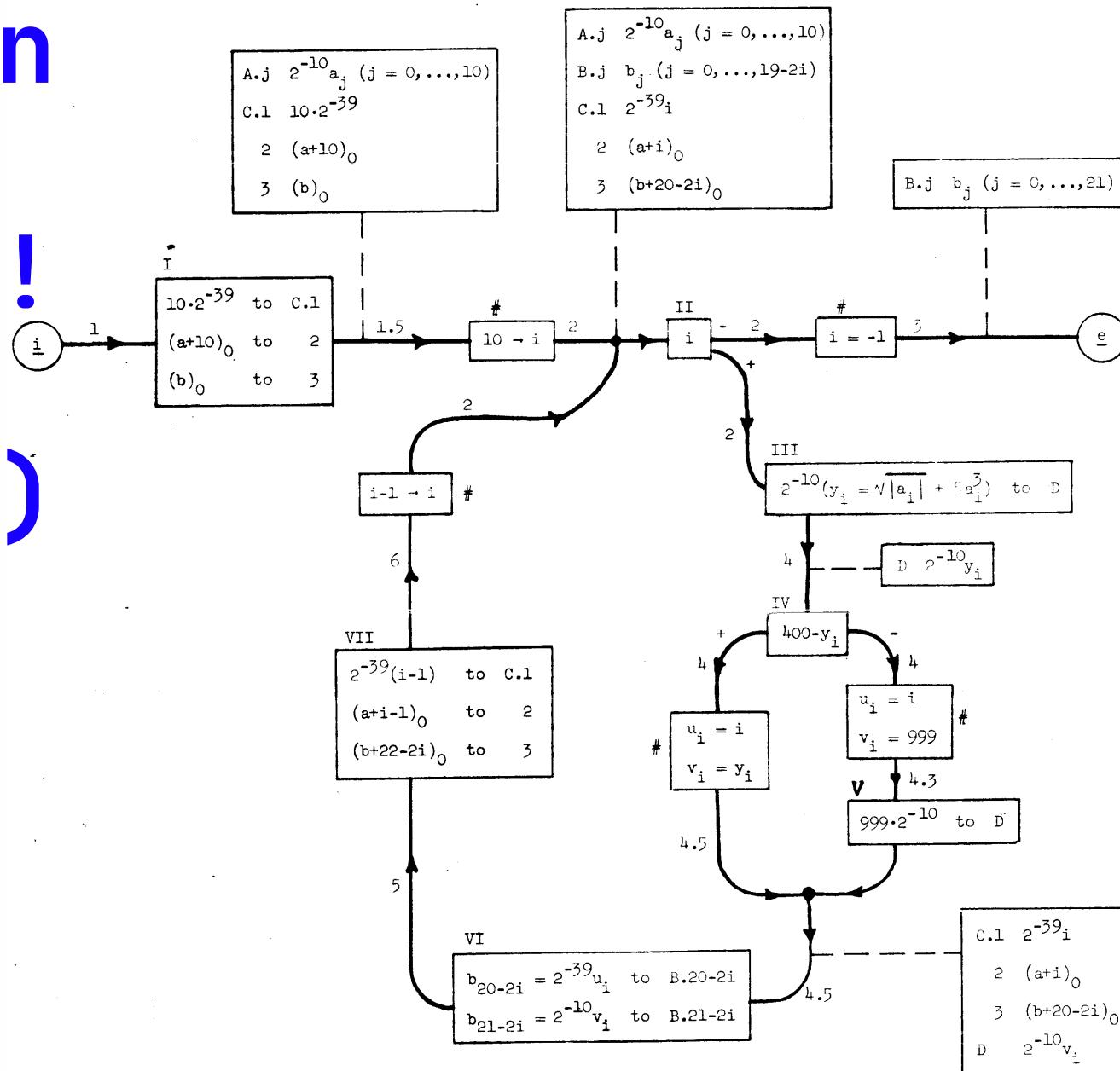


# Design

was

first!

(1947)



Flow Diagrams (John von Neumann, Herman Goldstine, Adele Goldstine)

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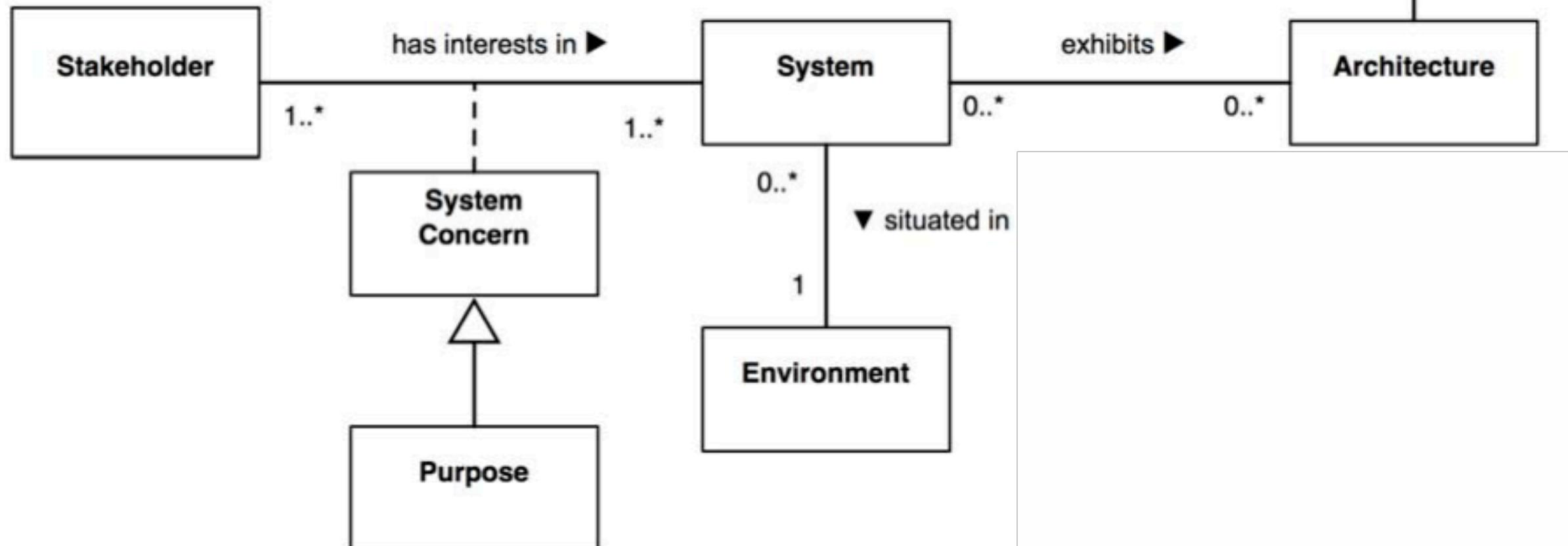
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# Kinds of Design

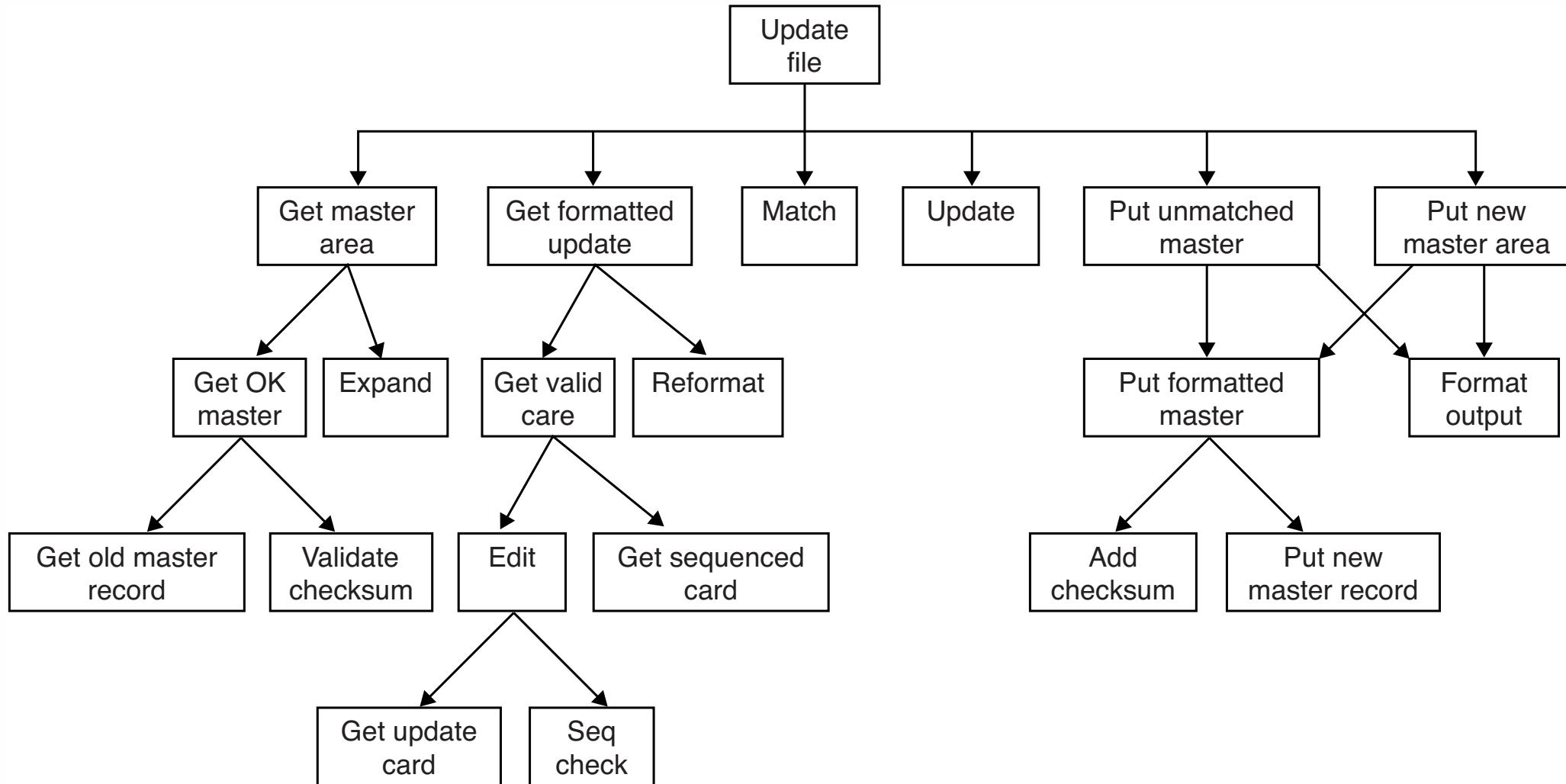
- Architectural design
- Object-oriented design
- Algorithmic design
- Top-down structured design
- Data-driven design
- . . .



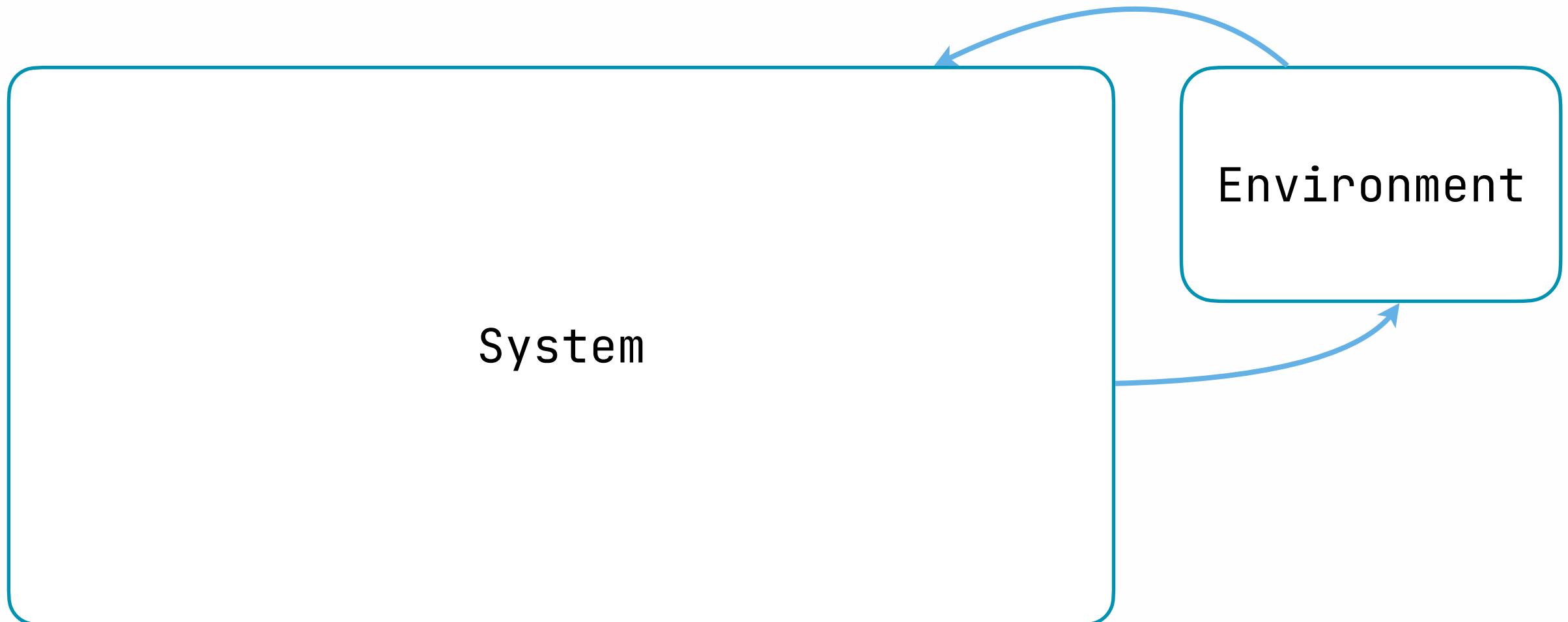
# Architecture Design



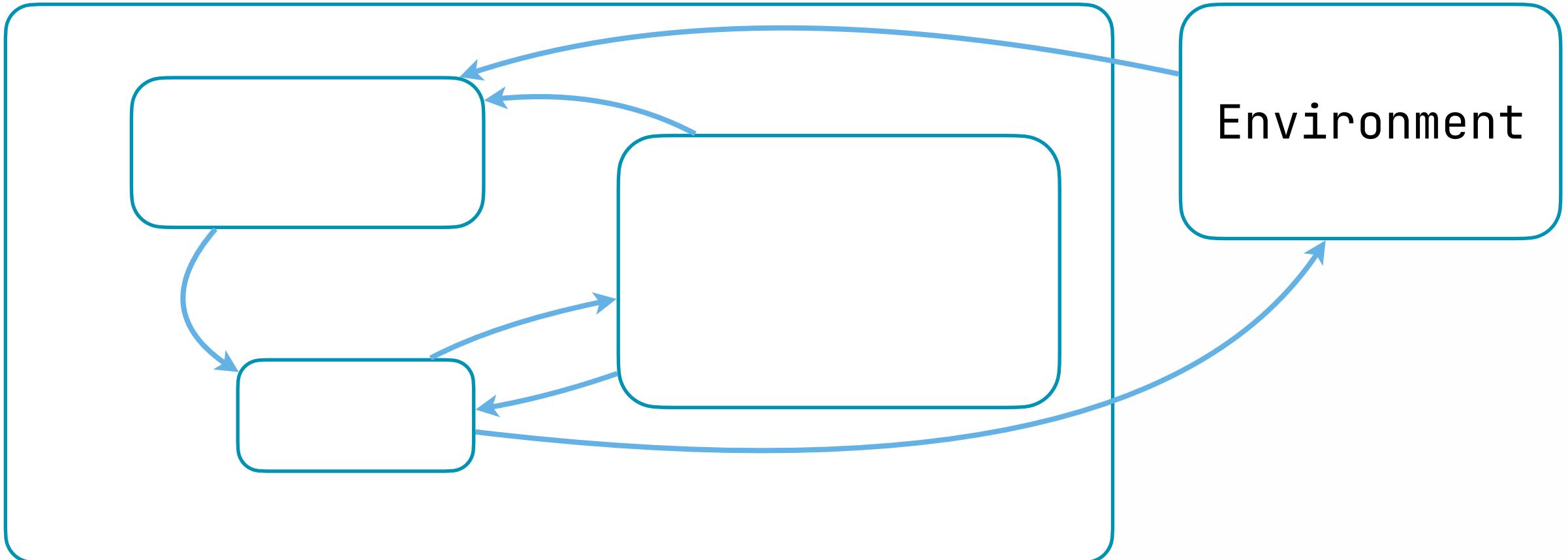
# Algorithmic Design



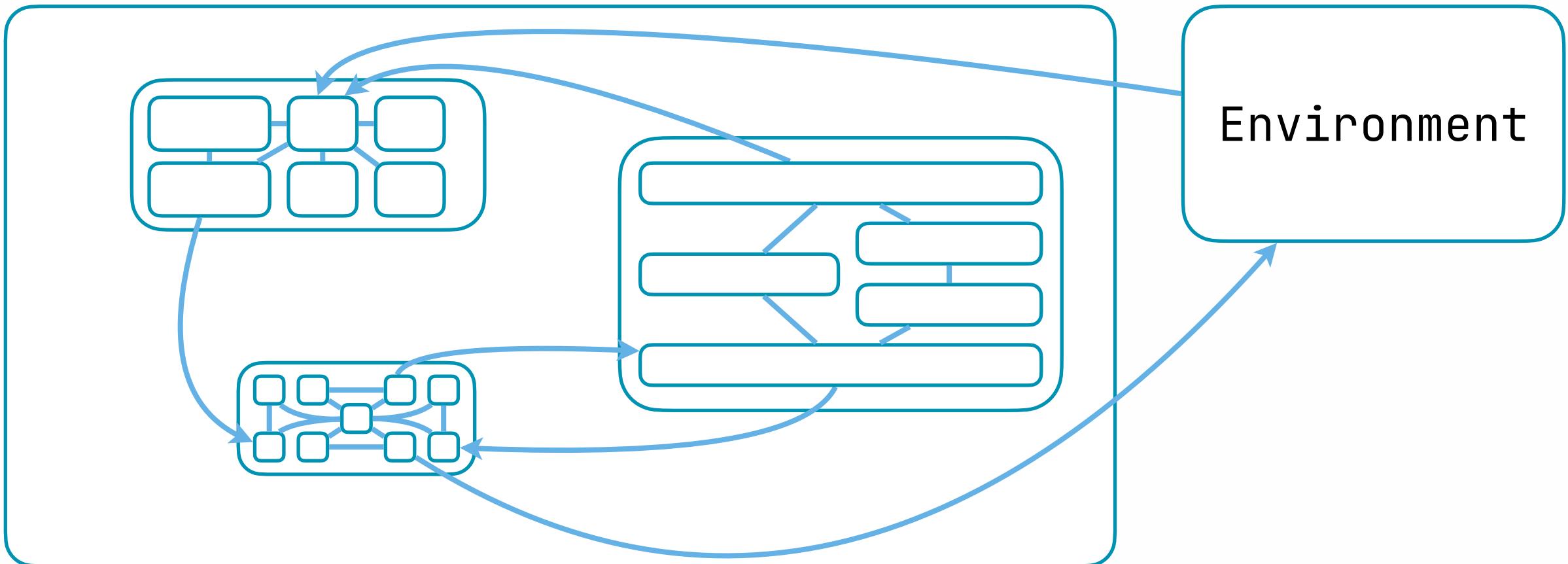
# Structured Design



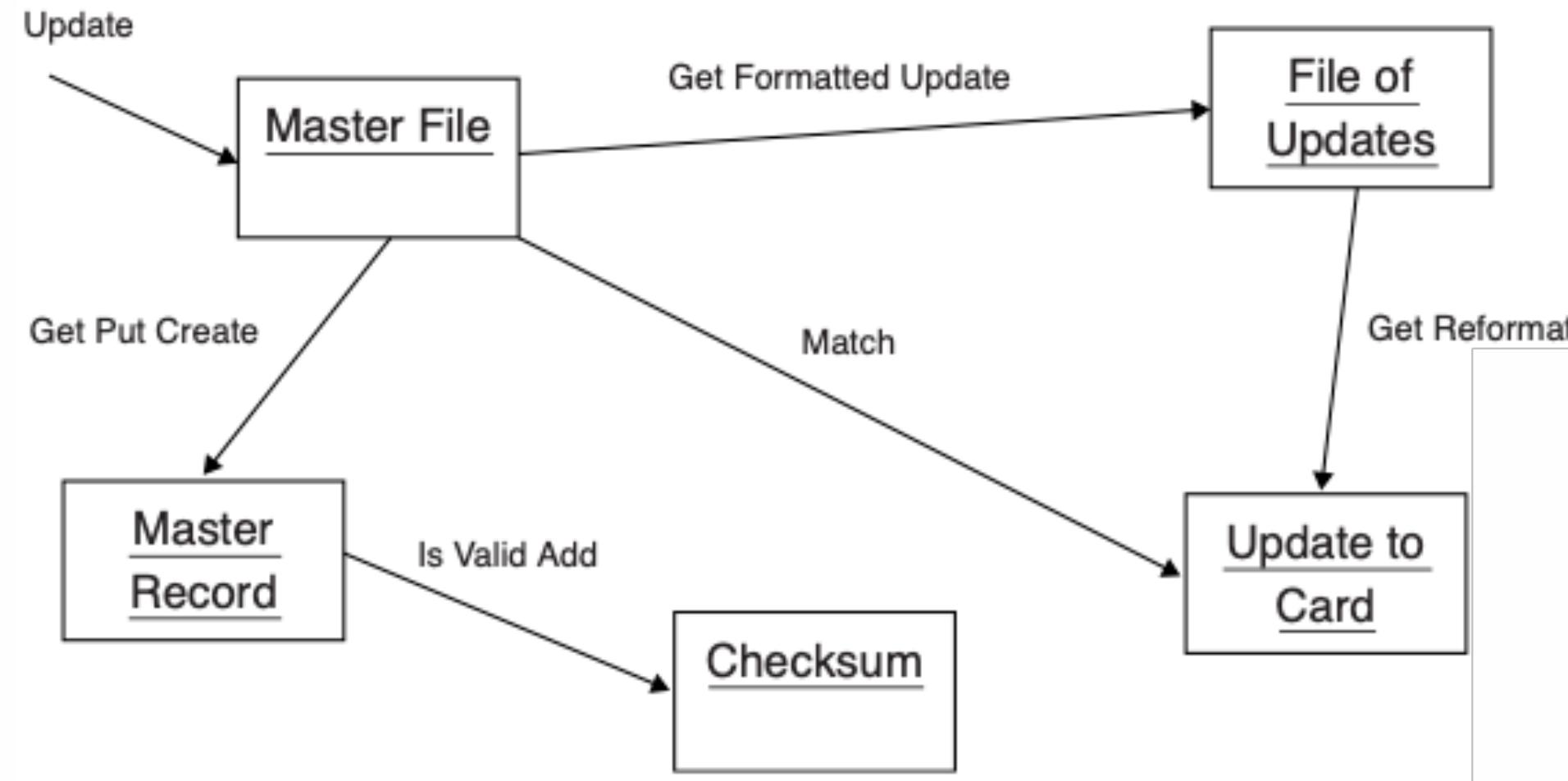
# Structured Design



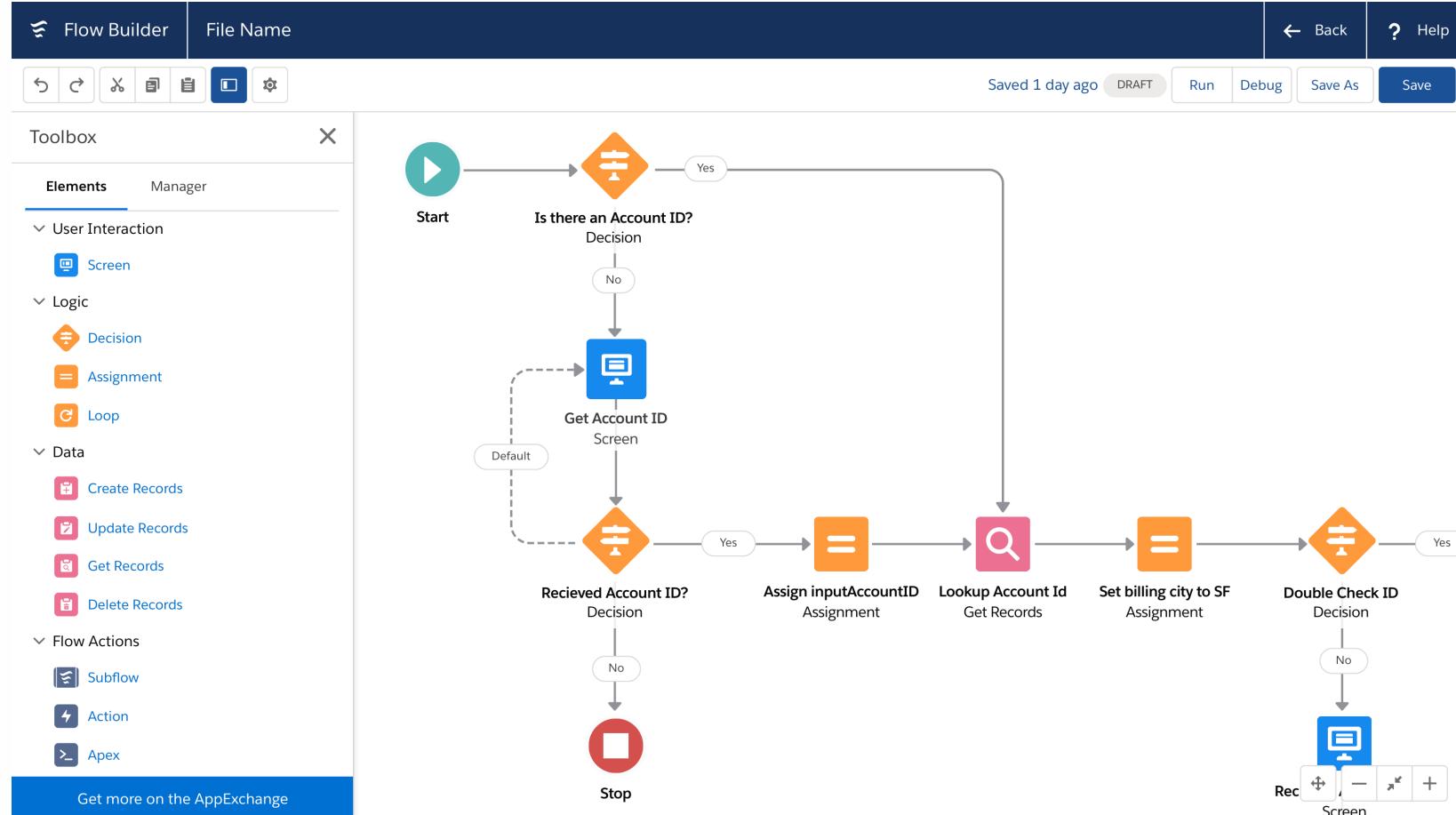
# Structured Design



# Object-Oriented Design

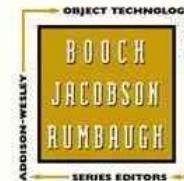
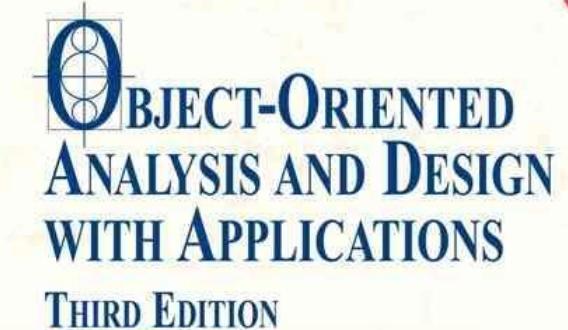


# Data-Driven Design



# Hall of PHAME

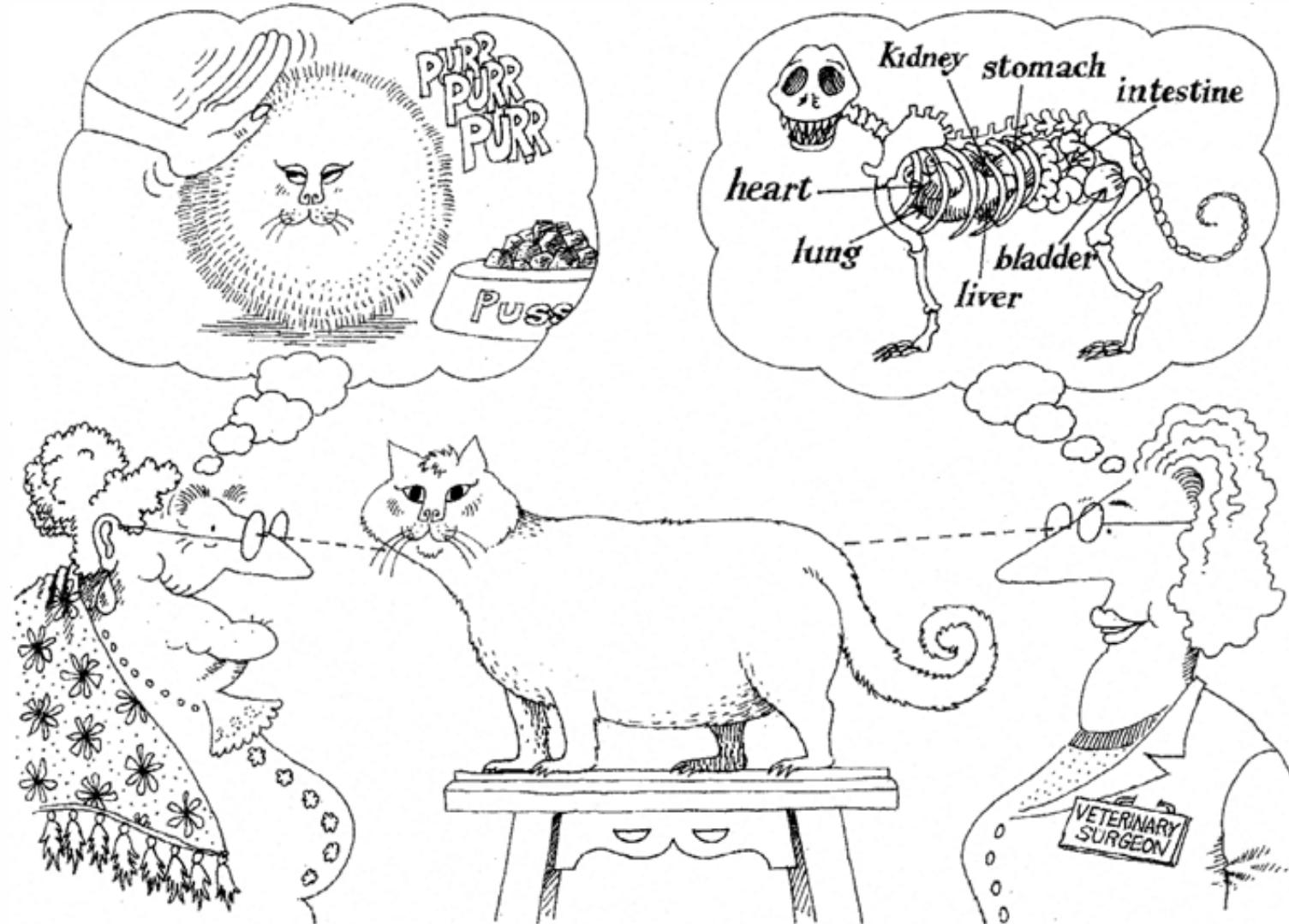
- Hierarchy
- Abstraction
- Modularisation
- Encapsulation



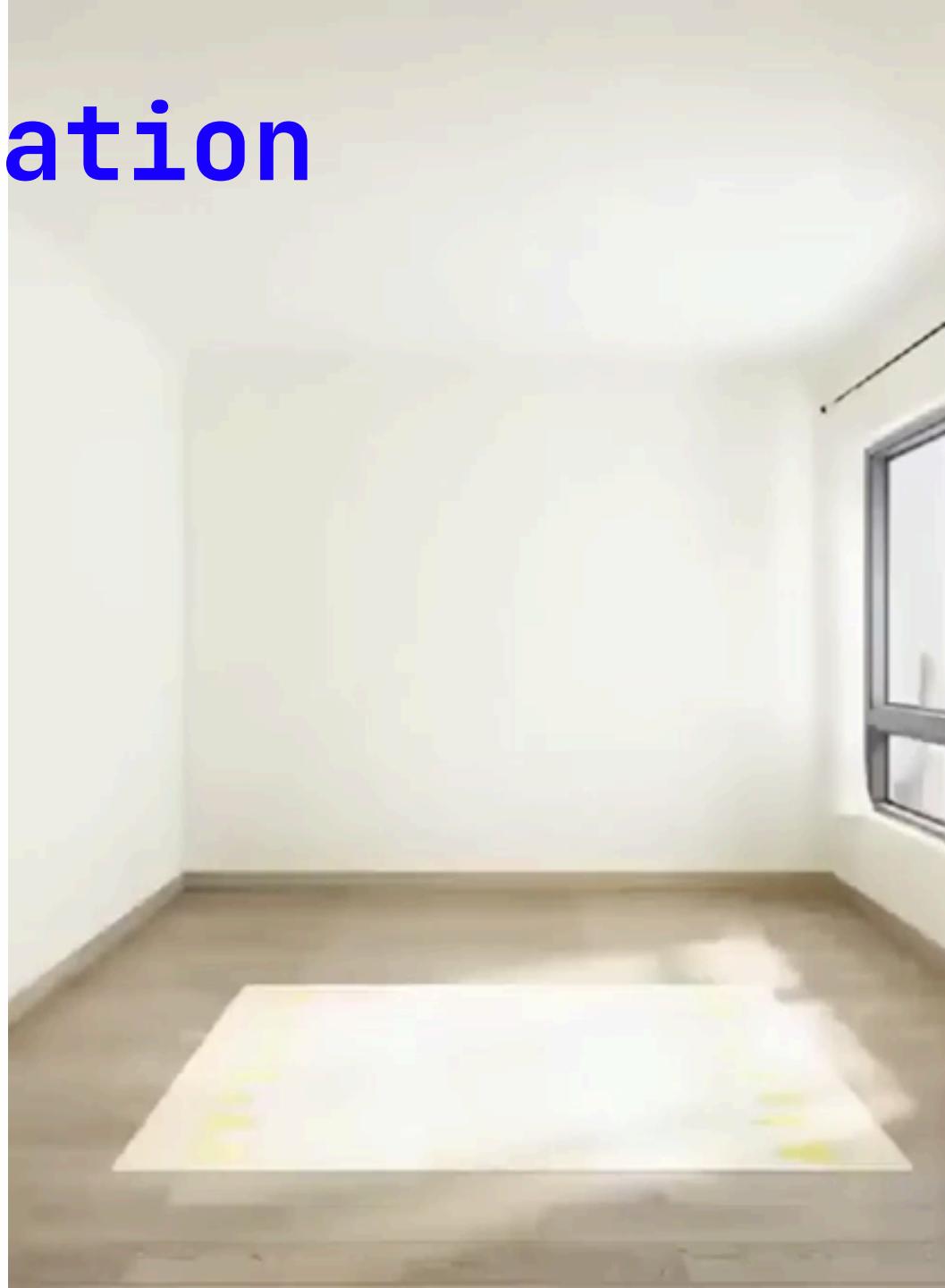
# Hierarchy

- “*The architecture of a complex system is a function of its components as well as the hierarchic relationships among these components.*”
- Focus on **classification**
- Make it **explicit**
- Highlight **common** behaviour

# Abstraction



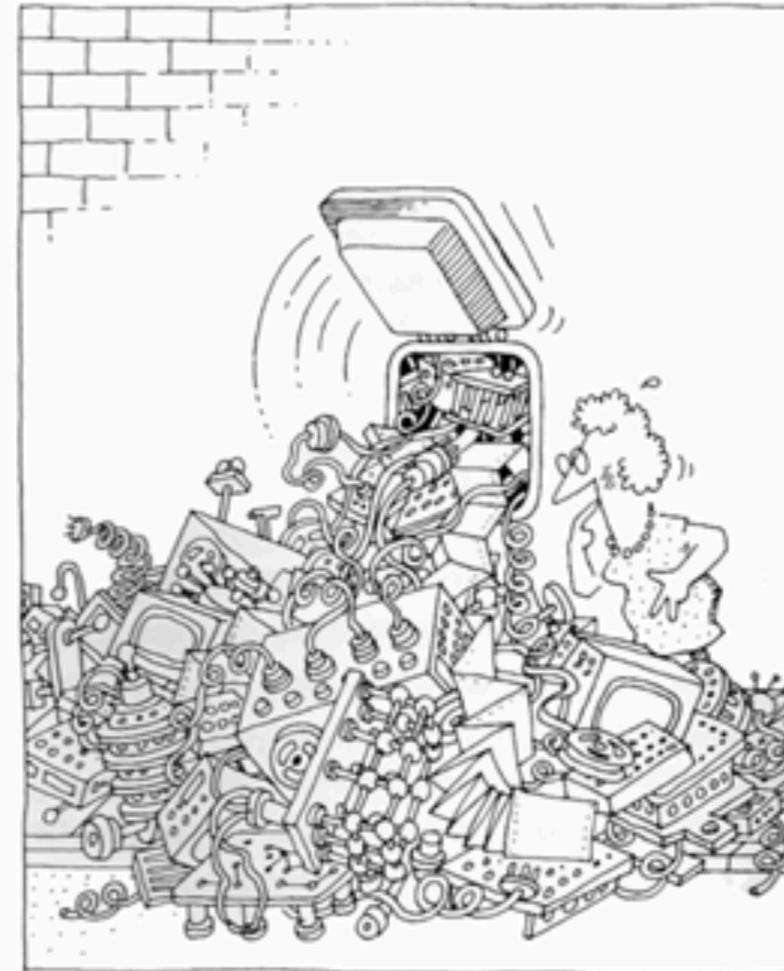
# Modularisation



9gag : amvoPQo

UNIVERSITY  
OF TWENTE.

# Encapsulation



# Conclusion

- Divide and conquer
  - data, data flow, structure, algorithms, ...
- Object-Oriented Design
  - Hierarchy / classification
  - Abstraction / focus
  - Modularisation / packaging
  - Encapsulation / hiding

# Topics/slides Disclaimer

- Good ✓

- watch before Q&A
- embrace reality
- try out at labs
- ask for feedback
- apply to project
- dig deeper
- recall from slides

- Bad ✗

- slides over videos
- assumptions
- blanks
- timing

