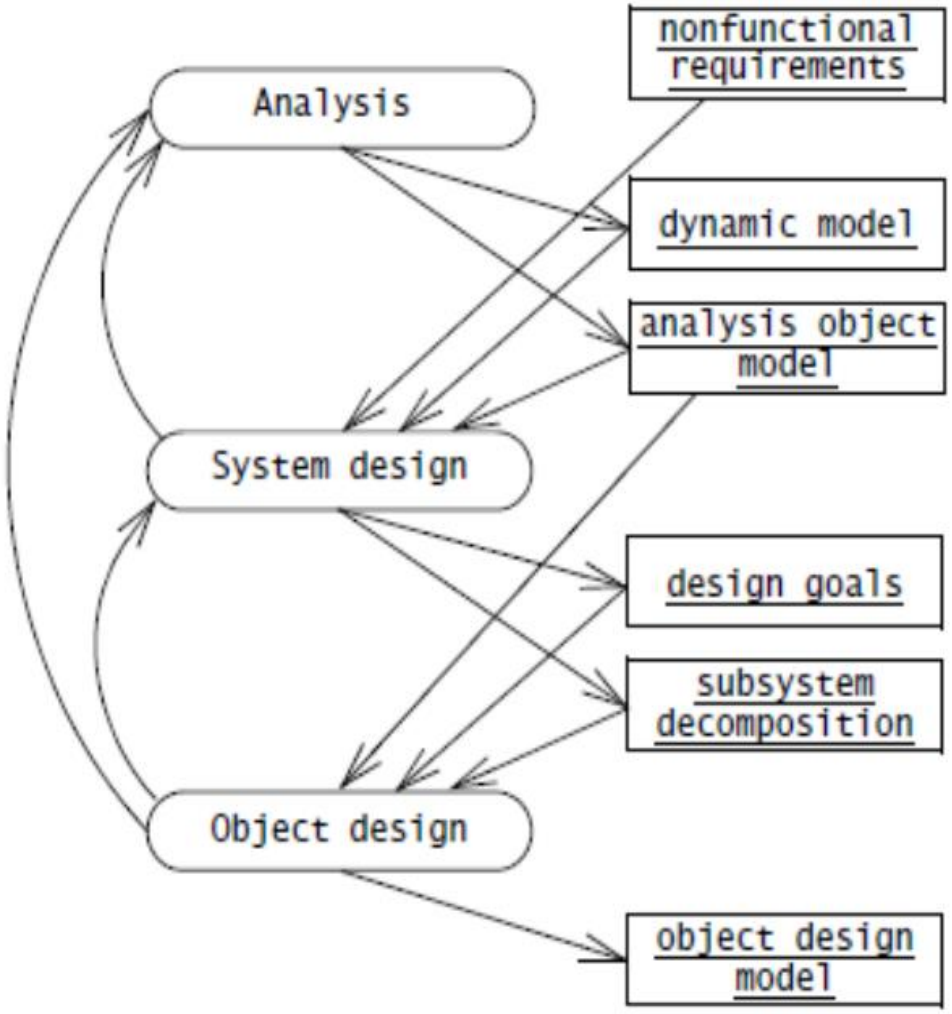
System and Object Design

Design: Focuses on the solution domain



Nonfunctional Requirements => Definition **of Design Goals** (ex: Maintainability, Reusability, Portability, Cost-effectiveness, High-performance)

Functional model => **Subsystem Decomposition** (Layers vs Partitions, Coherence/Coupling *Minimize coupling and maximize cohesion*). A subsystem is a *replaceable* part of the system with well-defined interfaces that encapsulates the state and behavior of its contained components.
=> **Boundary conditions** (Initialization, Termination, Failure)

Analysis object model => Hardware/Software Mapping
=> Persistent Data Management

Dynamic model => Identification of Concurrency
=> Global Resource Handling
=> Software Control

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TASK

Define the **design goals** of the project (minimum 7)
Decompose the system into smaller **subsystems**
Define system architecture (UML component diagram)

- identify layers and partitions and choose type: Opaque Layering (Closed), Transparent Layering (Open)
- choose one architectural style according to design goal (client-server, model-view-controller, 3-Tier, 4-Tier), present at least 3 arguments why this fulfills the chosen design goals.

Choose 3 interdependent subsystems

- specify the flow of information from and to subsystem boundaries (UML component diagram, ball-and-socket notation)
- define subsystems interfaces (Object design) - attributes and operations, type signatures and visibility