

Software Design

Overall Design Process: Context Modeling and Architecture Design

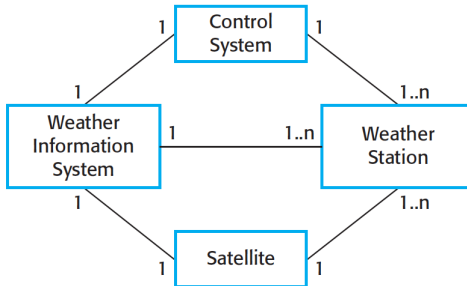
Indranil Saha

Department of Computer Science and Engineering
Indian Institute of Technology Kanpur



- A structural model that demonstrates the other systems in the environment of the system being developed
- Documents the environment of the system using a simple block diagram, showing the entities in the system and their associations

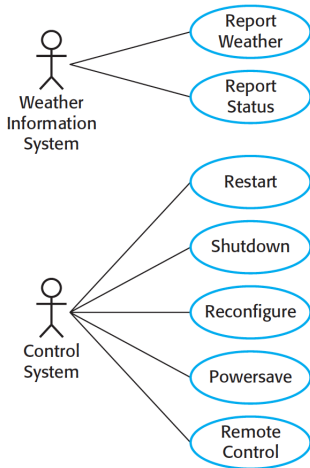
Example: System Context of the Weather Station



Interaction Model

- A dynamic model that shows how the system interacts with its environment as it is used
- Uses a use case model representing an interaction with the system
- Each possible interaction is named in an ellipse and the external entity involved in the interaction is represented by a stick figure

Example: System Context of the Weather Station



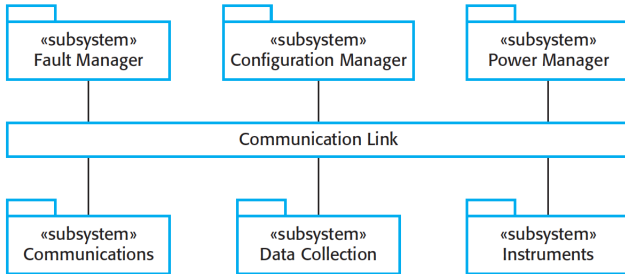
Example: System Context of the Weather Station

System	Weather station
Use case	Report weather
Actors	Weather information system, Weather station
Dat	The weather station sends a summary of the weather data that has been collected from the instruments in the collection period to the weather information system. The data sent are the maximum, minimum, and average ground and air temperatures; the maximum, minimum, and average air pressures; the maximum, minimum, and average wind speeds; the total rainfall; and the wind direction as sampled at five-minute intervals.
Stimulus	The weather information system establishes a satellite communication link with the weather station and requests transmission of the data.
Response	The summarized data are sent to the weather information system.
Comments	Weather stations are usually asked to report once per hour but this frequency may differ from one station to another and may be modified in the future.

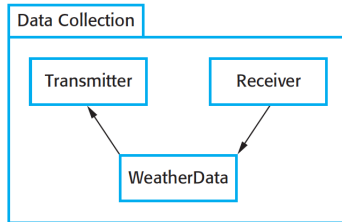
Architecture Design

- Identify the major components that make up the system and their interactions
- organize the components using an architectural pattern such as a layered or client-server model

Example: High-Level Architecture of the Weather Station



Example: Architecture of the Data Collection System



Software Design

Overall Design Process: Context Modeling and Architecture Design

Indranil Saha

Department of Computer Science and Engineering
Indian Institute of Technology Kanpur

