



EMBEDDED SYSTEM DESIGN PROCESS

Design goals

- Performance.
 - Overall speed, deadlines.
- Functionality and user interface.
- Manufacturing cost.
- Power consumption.
- Other requirements (physical size, etc.)





SNS COLLEGE OF ENGINEERING

(Autonomous)

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING



LEVELS OF ABSTRACTION

requirements

specification

architecture

component
design

system
integration





TOP-DOWN VS. BOTTOM-UP

- Top-down design:
 - start from most abstract description;
 - work to most detailed.
- Bottom-up design:
 - work from small components to big system.
- Real design uses both techniques.





STEPWISE REFINEMENT

- At each level of abstraction, we must:
 - **analyze** the design to determine characteristics of the current state of the design;
 - **refine** the design to add detail.





REQUIREMENTS

- Plain language description of what the user wants and expects to get.
- May be developed in several ways:
 - talking directly to customers;
 - talking to marketing representatives;
 - providing prototypes to users for comment.





FUNCTIONAL VS NON-FUNCTIONAL REQUIREMENTS

- Functional requirements:
 - output as a function of input.
- Non-functional requirements:
 - time required to compute output;
 - size, weight, etc.;
 - power consumption;
 - reliability;
 - Performance -Speed
 - Cost – Manufacturing Cost and Nonrecurring Engineering cost





OUR REQUIREMENTS FORM

- name
- purpose
- inputs
- outputs
- functions
- performance
- manufacturing cost
- power
- physical size/weight

