CSE4708: Software Project Management

Unit III : Activity Planning & Risk Management

Topic:

Objectives of activity planning, project schedule, projects and activities, sequencing and scheduling activities,

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Schedule in Project Plan

- Ensure that the appropriate resources will be available precisely when required
- Avoid different activities competing for the same resources at the same time
- Produce a detailed schedule showing which staff carry out each activity
- Produce a detailed plan against which actual achievement may be measured
- Produce a timed cash flow forecast
- Replan the project during its life to correct drift from the target

Objectives of Activity Planning

- The objective of software project planning is to provide a framework that enables the manager to make reasonable estimates of **resources, cost, and schedule.**

Objectives of Activity Planning

- Feasibility assessment:- Is the project possible within required timescales and resource constraints?
- Resource Allocation:- What are the most effective ways of allocating resources to the project. When should the resources be available.
- Detailed Costing:- How much will the project cost and when is that expenditure likely to take place?

Objectives of Activity Planning

- Motivation:- Providing targets and being seen to monitor achievement against targets is an effective way of motivating staff.
- Co-ordination:- When do the staff in different departments need to be available to work on a particular project.

Activity Planning and Scheduling Techniques

- The techniques place an emphasis on
  - completing the project in a minimum time at an acceptable cost
  - meeting a set target dates at minimum cost
- One effective way of shortening project duration is to carry out activities in parallel
  - Not all activities can be carried out in parallel

Project Schedule

- A project schedule is a detailed project plan showing dates when each activity should start and finish and when and how much of each resource will be required

- Creating a project schedule comprises four main stages

Four stages in Project Plan

- **Constructing an ideal activity plan**
  - What activities need to be carried out and in what order
- **Risk analysis**
  - Identifying potential problems
- **Resource allocation**
  - The expected availability of resources might place constraints on when certain activities can be carried out
- **Schedule production**

Project and Activities

- **Defining Project and Activities**
- A project is composed of a number of interrelated activities
- A project may start when at least one of its activities is ready to start
- A project will be completed when all of the activities it encompasses have been completed
- An activity must have a clearly defined start and a clearly defined end-point
- If an activity requires a resource then that resource requirement must be forecastable
- The duration of an activity must be forecastable
- Some activities might require that others are completed before they can begin

Identifying Activities

- Activity-based approach
- The product-based approach
- Hybrid approach

Activity Based Approach

- Consists of creating a list of all the activities
  - A brainstorming session involving the whole project team
  - An analysis of past projects
- When listing activities, it might be helpful to sub-divide the project into the main life-style stages and consider each of these separately

Work Breakdown Structure (WBS)

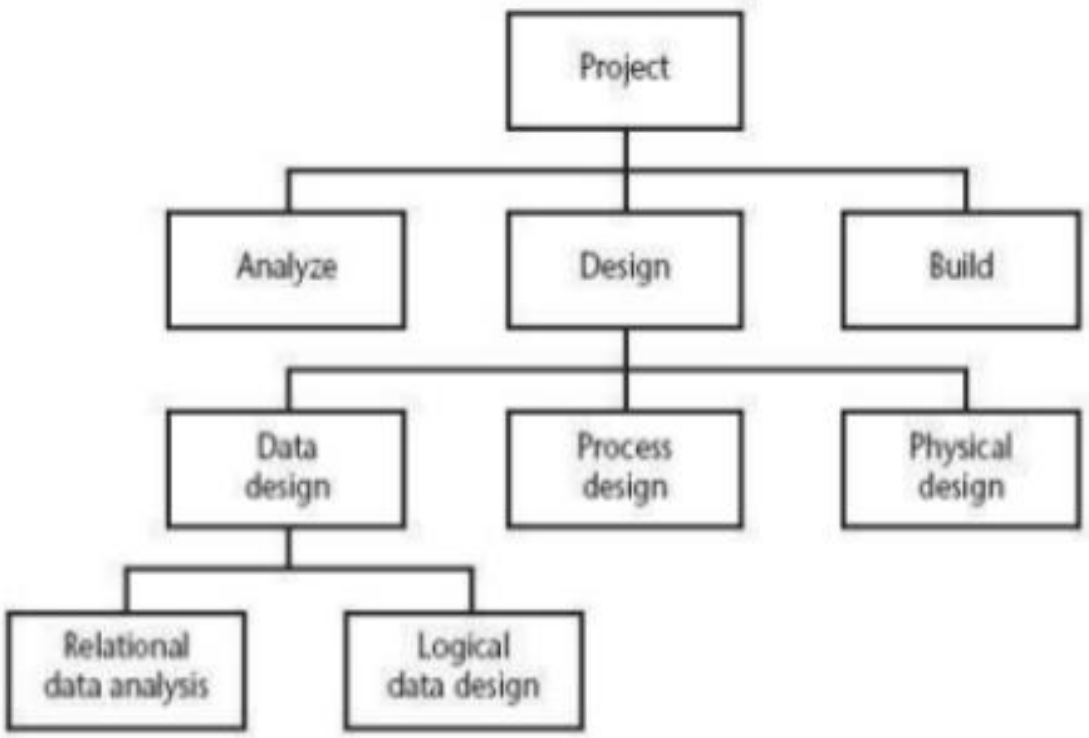
- Creating a WBS is a much favored way of generating a task list

- Involves identifying the main (or high level) tasks required to complete a project and then breaking each of these down into a set of lower-level tasks

Work Breakdown Structure (WBS)

Work Breakdown Structure (WBS)

- A fragment of an activity-based Work Breakdown Structure



Work Breakdown Structure (WBS)

- Need to consider the final level of detail or depth of the structure
  - Too great of depth will result in a large number of small tasks
  - Too shallow structure will provide insufficient detail for project control
- Each branch should be broken down at least to a leaf where each leaf may be assigned to an individual or responsible team

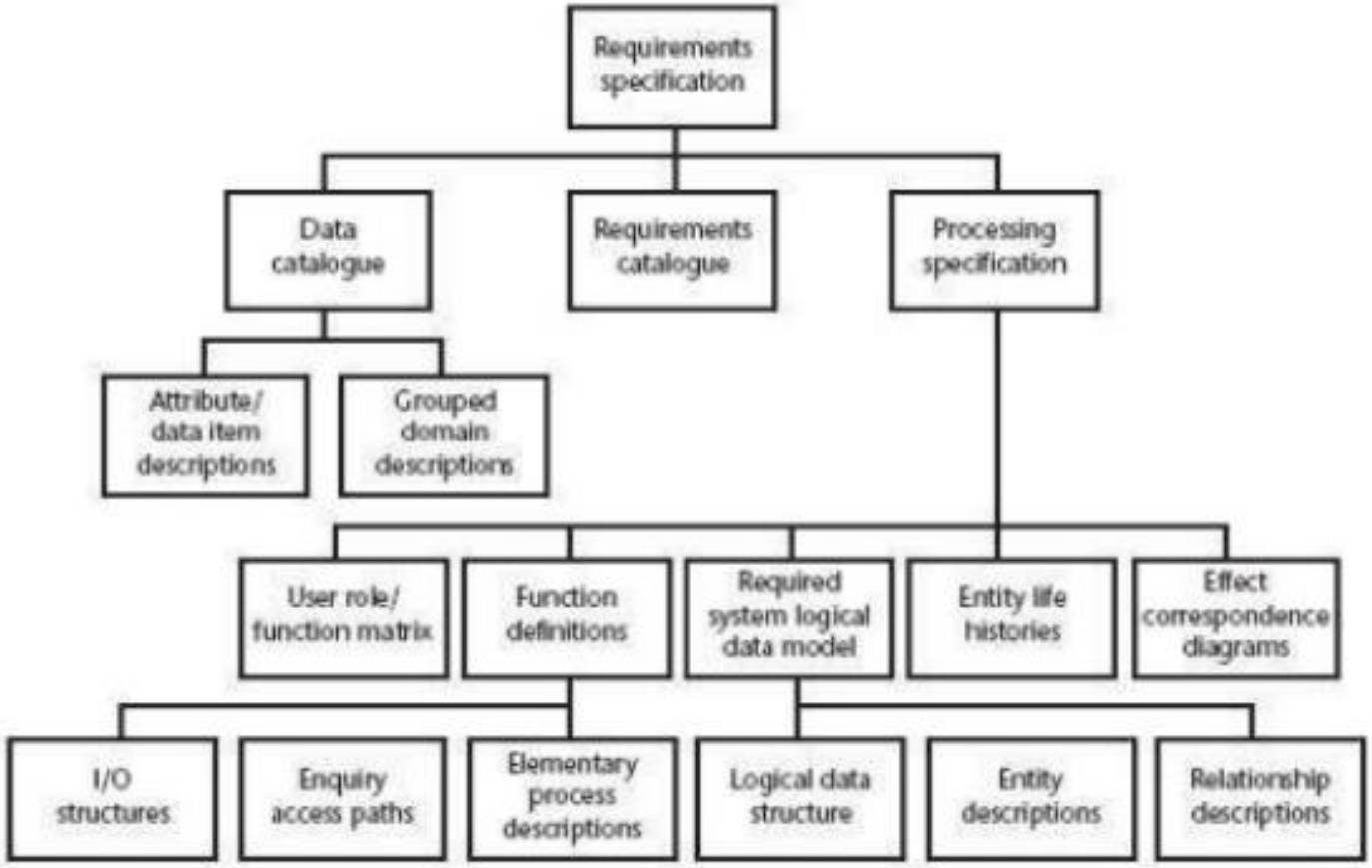
Product Based Approach

- Consists of producing a Product Breakdown Structure (PBS) and a Product Flow Diagram (PFD)
- The PFD indicates, for each product, which other products are required as inputs
  - Easily transformed into an ordered list of activities
- Proponents claim that it is less likely that a product will be left out of a PBS than that an activity might be omitted from an unstructured activity list
- Particularly appropriate if using a life cycle methodology such as waterfall
  - Clearly specifies, for each step or task, each of the products required and the activities required to produce it

Product Breakdown Structure (WBS)

The Product-Based Approach

- A set of generic PBS for each stage in SSDAM



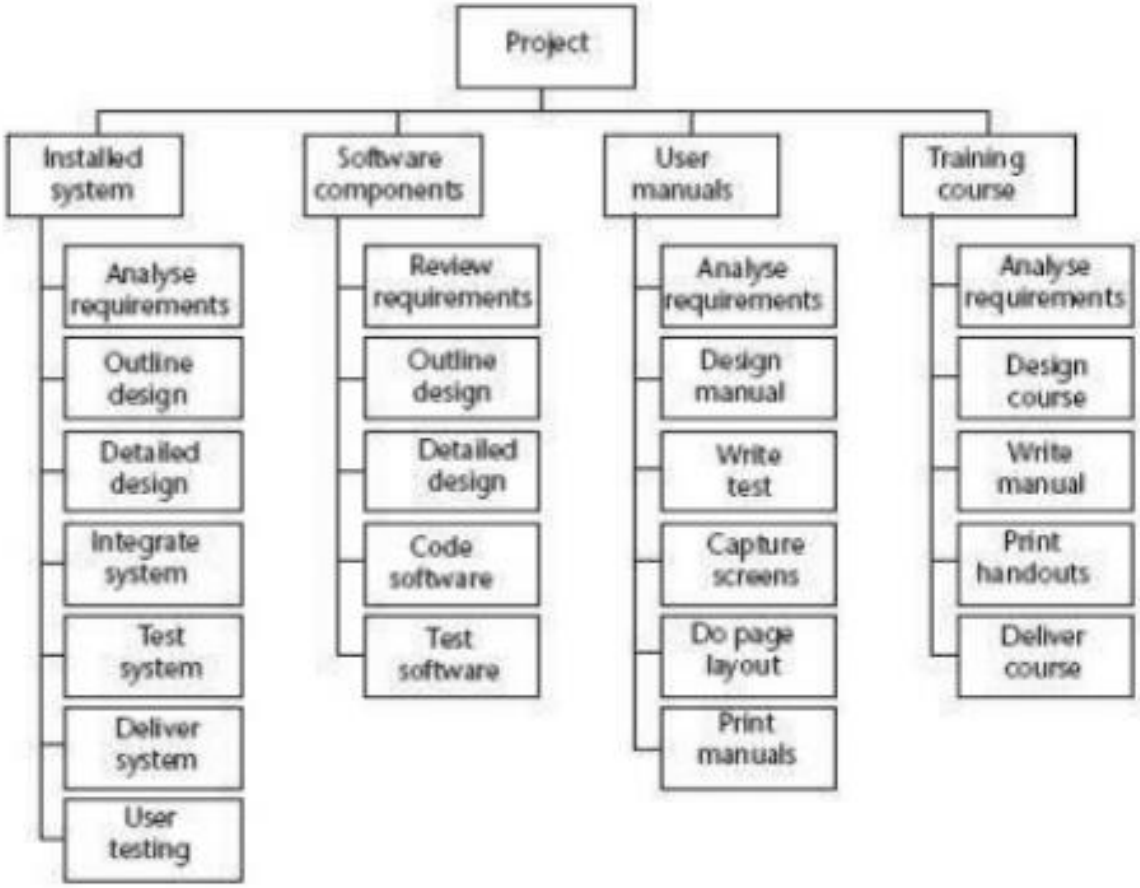
The Hybrid Approach

- An alternative WBS based on
  - A simple list of final deliverables
  - For each deliverable, a set of activities required to produce that product
- As with a purely activity-based WBS, having identified the activities, we are then left with the task of sequencing them

The Hybrid Approach

The Hybrid Approach

- A WBS based on deliverables



The Hybrid Approach

- IBM recommended the following five levels
  - *Level 1: Project*
  - *Level 2: Deliverables*
  - *Level 3: Components*
  - *Level 4: Work-packages*
  - *Level 5: Tasks*