

Sequencing and Scheduling Activities

- Project and its activities must be clearly defined to achieve the target. An activity plan will contain the following factors:
 - A project is basically, composed of number of interrelated activities.
 - The initiation of a project happens only if atleast one activity is ready to start.
 - An activity is clearly defined with its start and end point that produce good deliverables.
 - Activity requiring resources must be analyzed well in advance and made available during the execution.
 - Some activities would depend on other activities for them to complete.
 - A project can attain its completion only when all activities have been completed.

Approaches to Identify Activities

- The various approaches used in identifying activities are:
 - Activity-based approach
 - Product-based approach
 - Hybrid approach

Activity-based approach

- In the activity-based approach, all the activities are listed and created for the project.
- This is achieved by a brainstorming session where the entire project team analysis the various activities needed at different stages with the help of similar projects.
- This approach usually generates the list of activities using a work breakdown structure (WBS).
- WBS helps in identifying the lowest level of effort i.e. the task required to complete a project by breaking down into lower sets of tasks.

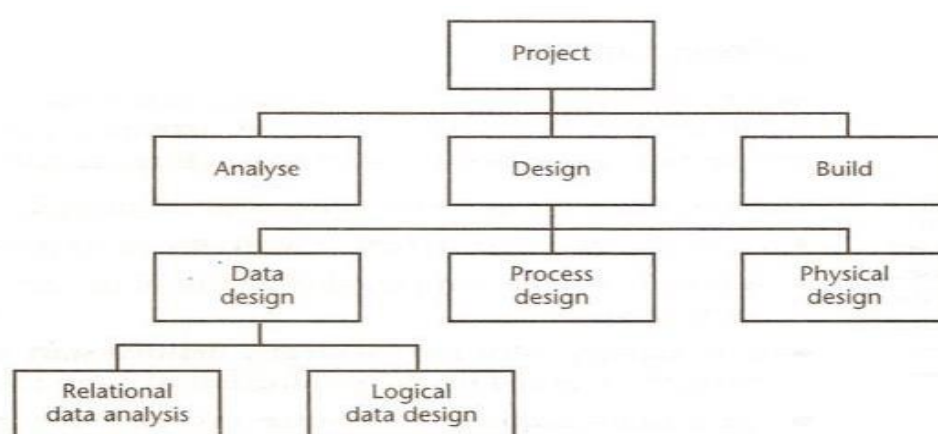


Figure - Activity-based approach Work Breakdown Structure

- Task defined at lower level includes everything that is required to complete the task at the higher level.
- The work breakdown structure provides an in-depth knowledge about the lowest level of activity that has to be completed.
- WBS is a refined structure that clearly defines the milestones that has to be achieved in accomplishing a specific task.
- The ordering of sequence of activities can also be done in this approach by defining those activities that have to be completed for others to start.
- In a purely activity-based approach, activities are identified and defined in five levels:
 - **Level 1** : Project – goals, objectives defined
 - **Level 2**: Deliverables – software, manuals, training
 - **Level 3** : Components – work items, modules, tests
 - **Level 4** : Work-packages – major work items, related tasks
 - **Level 5** : Tasks – responsibility of an individual in accomplishing it

Product-based approach

- The product-based approach produces a product breakdown structure along with a product flow diagram.
- The approach accepts the products as inputs which is transformed into an ordered list of activities.
- Product Flow Diagram do not leave out any activity from its ordered list and adopts a methodology which clearly specifies what are the products required and what are the activities required to produce the product.

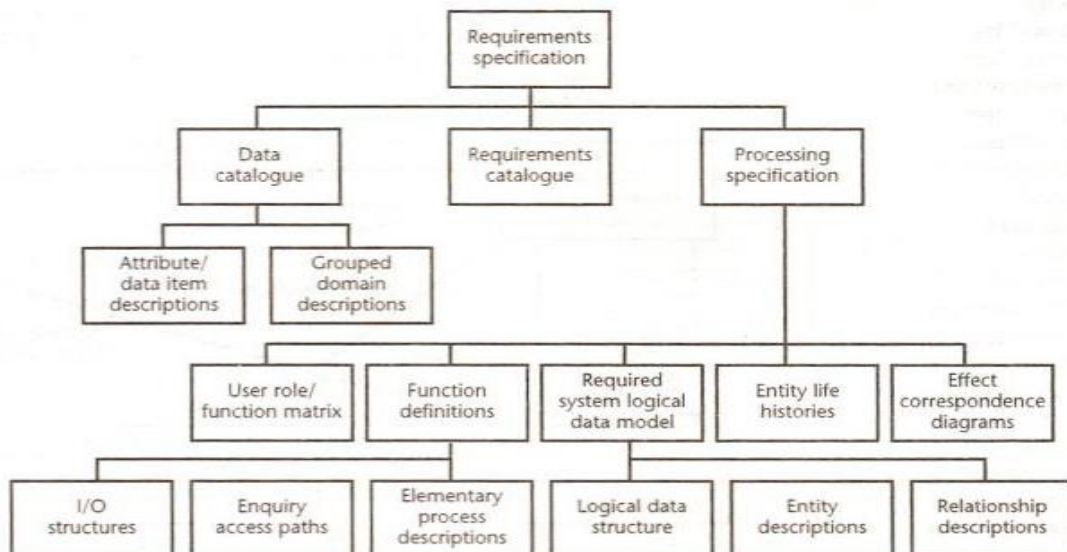


Figure - SSADM Product Breakdown Structure

- Using Structured Systems Analysis and Design Method (SSADM), a generic activity network can be derived for a project-specific product breakdown structure.
- The development of a PFD indicates the sequence of activities of the activity network.

Hybrid approach

- WBS deals with list of final deliverables whereas PBS deals in producing the products using the product flow diagram.
- Hybrid approach combines both the activity-based and product-based approach to structure both activities and products.
- Structuring of product-based or activity-based approach depend on the nature of the project type.

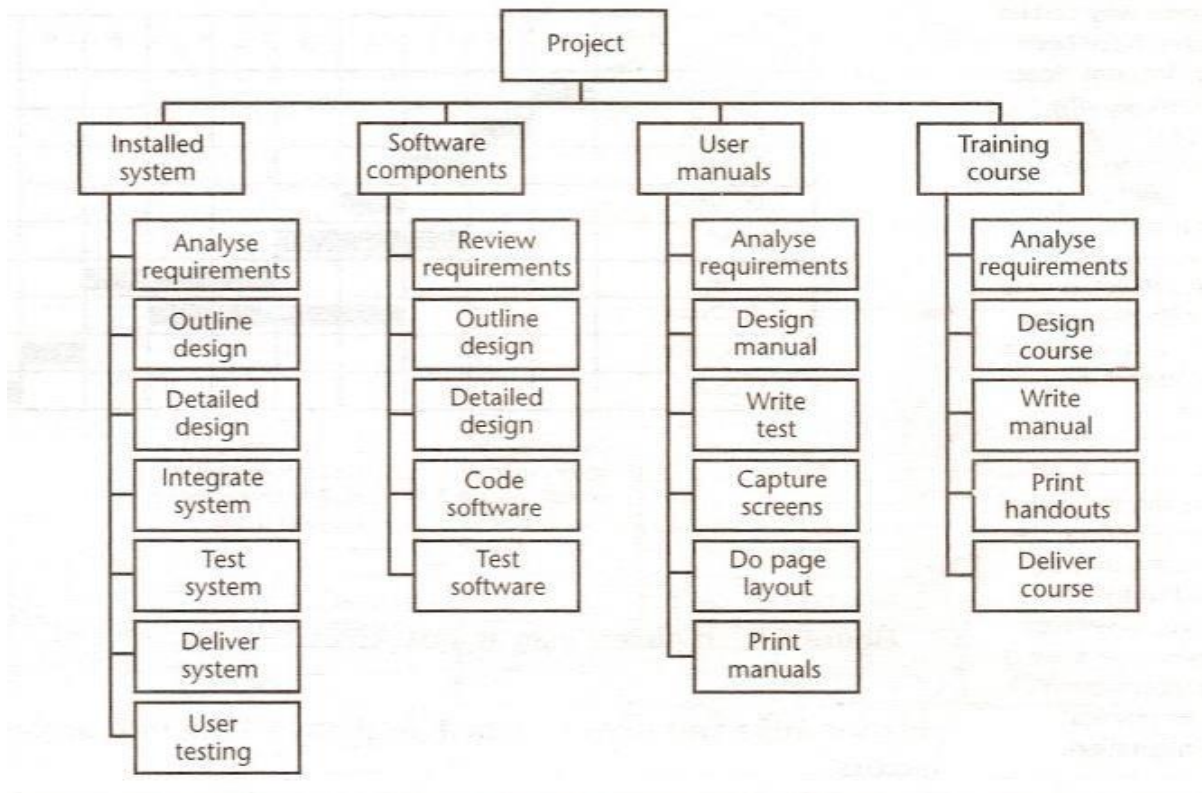


Figure - Hybrid Approach combining Activities and Products

Sequencing and scheduling activities

- Scheduling is required for every activity that is planned along with the resources and can be represented using a bar chart.
- The chart describes the nature of the development process and the resources available for completing the specified activities

Weeks	1	2	3	4	5	6	7	8	9	10	11	12
Person												
Requirements	█											
Design Module1		█										
Design Module2			█									
Design Module 3				█	█							
Code Module1				█	█	█						
Code Module2						█	█	█				
Code Module 3				█	█	█	█					
Integration									█			
System Acceptance										█	█	█

Figure - Bar chart representing Scheduling

- The chart defines two factors: sequencing of tasks and the schedule of the task. Scheduling includes the staff availability and the activities allocated to them.
- Combining sequencing – scheduling approach is suitable only for smaller projects and needs to be separated for complex projects as individual process.
- In case of larger projects, the logical relationship between the activities are grouped together and then scheduled for resources.