Module No. 3

PROJECT PLANNING & SCHEDULING

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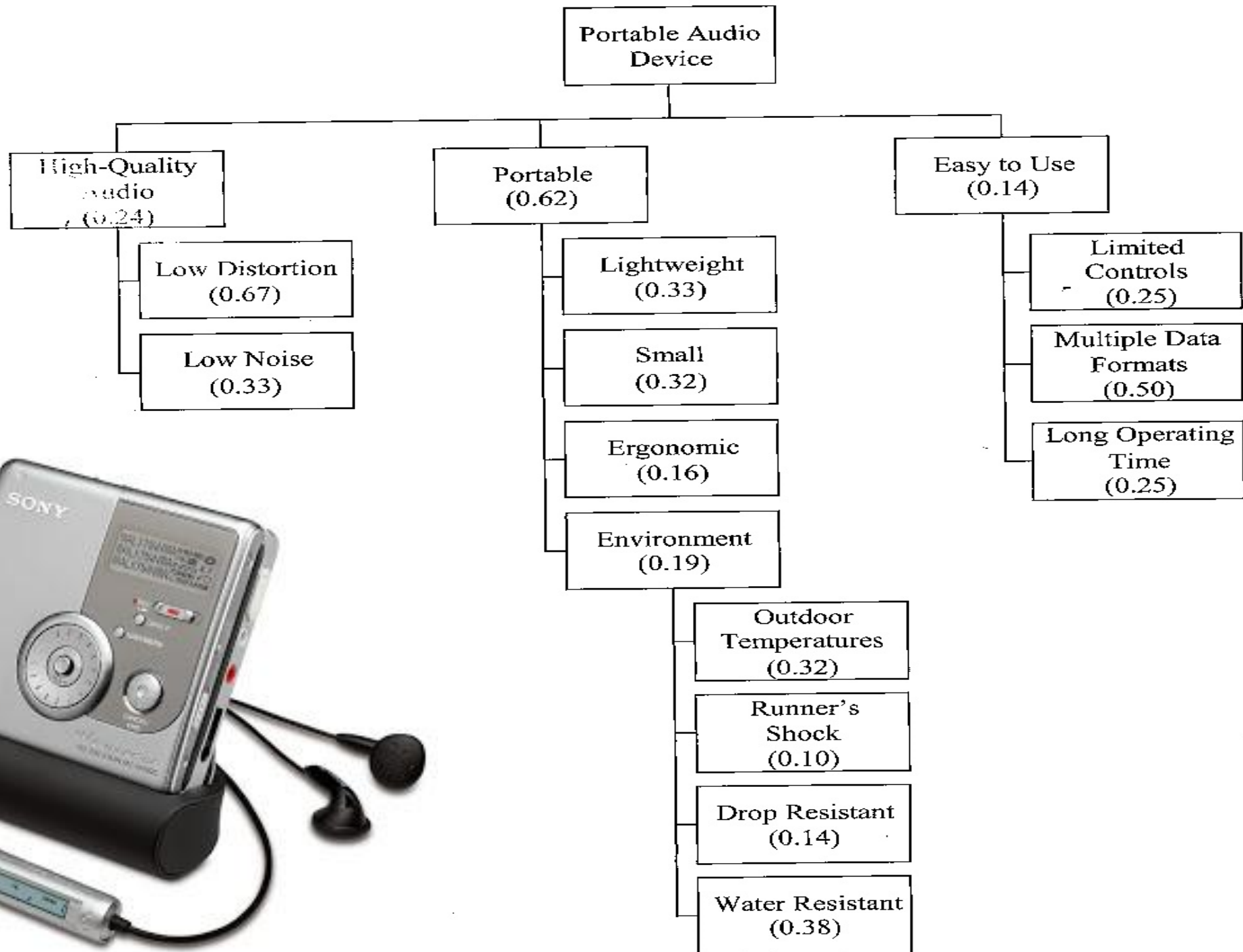
Work Breakdown Structure (WBS)

- The procedure for subdividing the overall project into smaller elements is called the **work breakdown structure** or WBS.

- Its purpose is to define the total project into 'pieces of work' called **work packages**.

- Dividing the project into work packages makes it easier to prepare project **schedules & cost estimates** & to assign management & task responsibilities.

- The first step in creating a WBS is to divide the total project into **major categories**.

- These major categories then are divided into **subcategories** that, in turn, are subdivided, & so on.

- This level-by-level breakdown continues so that the **scope & complexity** of work elements is reduced with each level of breakdown.

- Each descending level represents an increasingly detailed definition of the project work.

- The WBS is decomposed into **work packages**.

- The deliverable orientation of hierarchy includes both **internal & external deliverables**.

Work Breakdown Structure (WBS)

Outline the work breakdown structure (WBS) implemented by your project team when it is tasked to design & develop a portable music player based on following attributes as specified by the company :-

(a) High quality audio
(b) Portability
(c) Easy to use

Portable Audio Device

High-Quality Audio (0.24)
- Low Distortion (0.67)
- Low Noise (0.33)

Portable (0.62)
- Lightweight (0.33)
- Small (0.32)
- Ergonomic (0.16)
- Environment (0.19)
  - Outdoor Temperatures (0.32)
  - Runner's Shock (0.10)
  - Drop Resistant (0.14)
  - Water Resistant (0.38)

Easy to Use (0.14)
- Limited Controls (0.25)
- Multiple Data Formats (0.50)
- Long Operating Time (0.25)

WBS (contd..)

- A typical WBS might consist of the following four levels (the number of levels varies, as does the name of the element description at each level; different project methodologies use different terms):
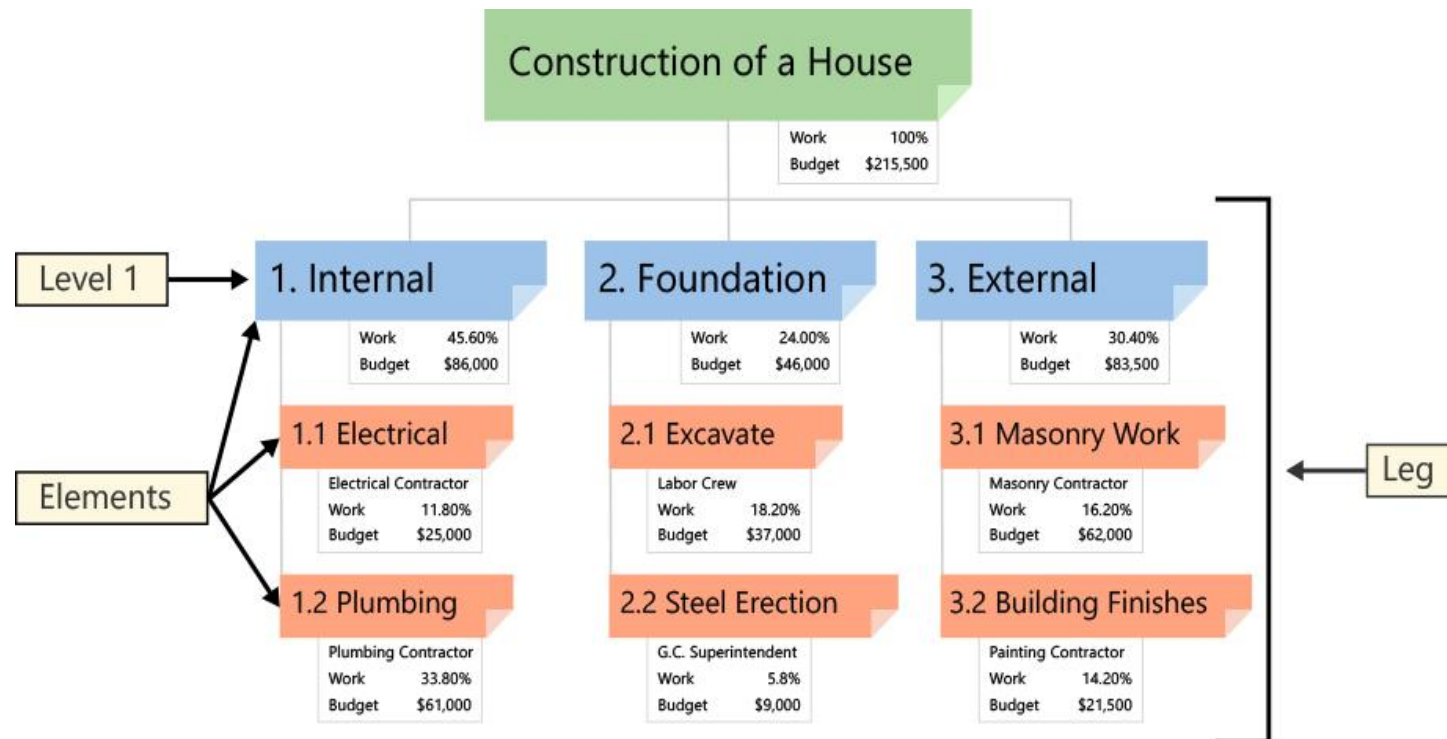
LEVEL	ELEMENT DESCRIPTION
1	Project
2	Subproject
3	Activity
4	Work Package

- There are two types of WBS:

1) Deliverable-Based and

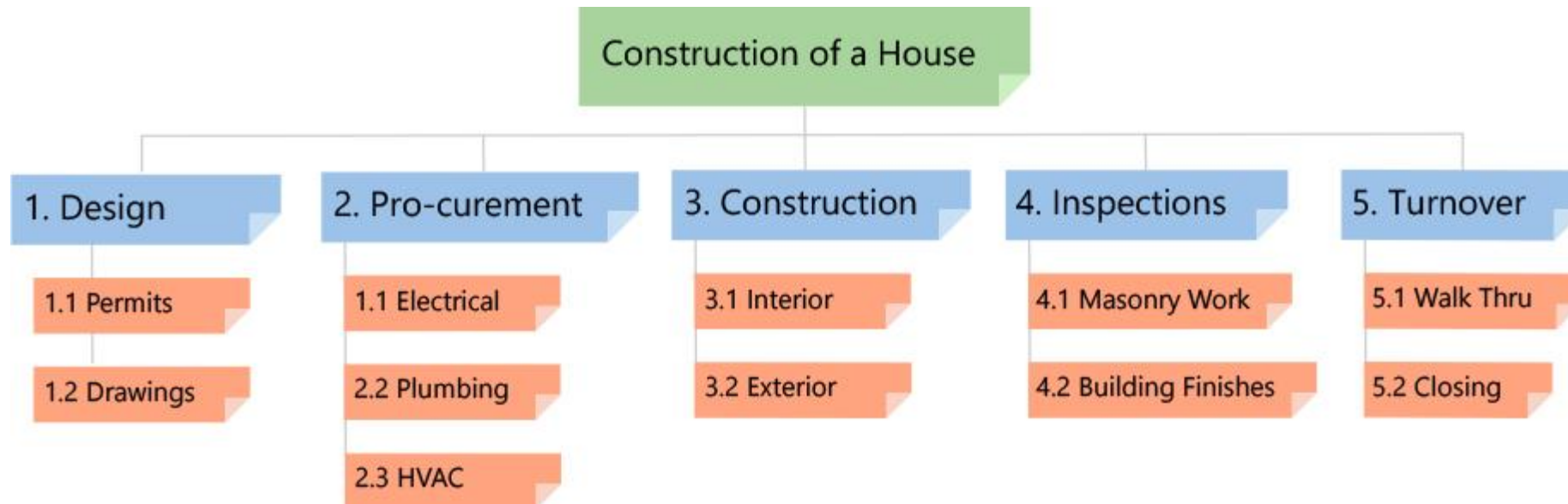2) Phase-Based
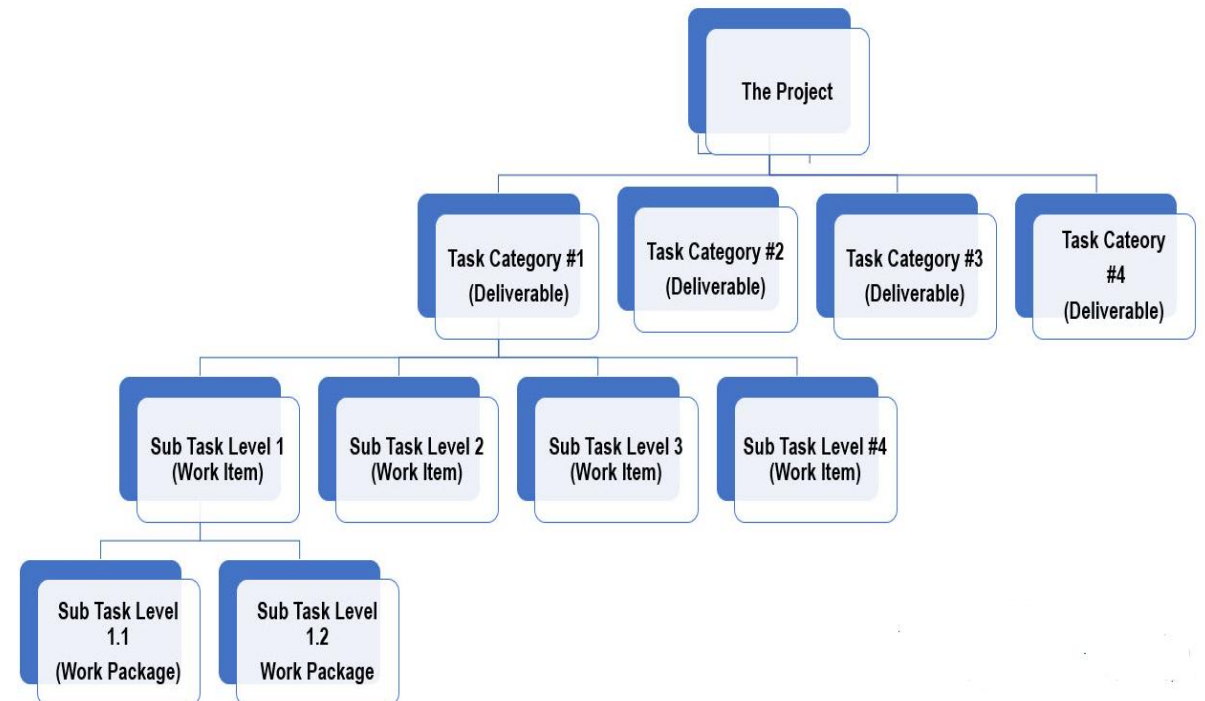
Deliverable-Based Work Breakdown Structure

- A Deliverable-Based Work Breakdown Structure clearly demonstrates the relationship between the project deliverables (i.e., products, services or results) and the scope (i.e., work to be executed).
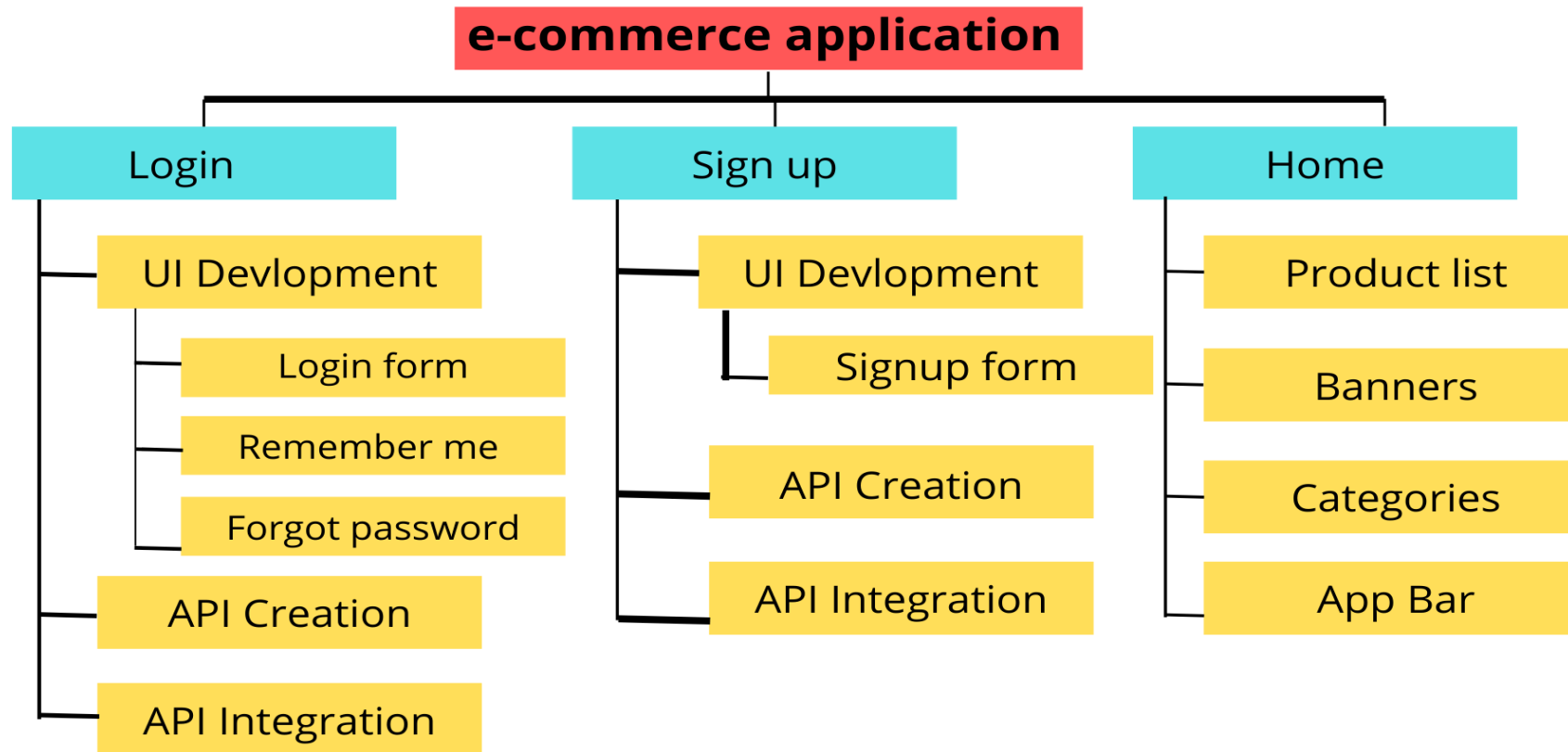

In Figure, the Level 1 Elements are summary deliverable descriptions. The Level 2 Elements in each Leg of the WBS are all the unique deliverables required to create the respective Level 1 deliverable.

Phase-Based Work Breakdown Structure

- A Phase-Based WBS requires work associated with multiple elements be divided into the work unique to each Level 1 Element.

- A WBS Dictionary is created to describe the work in each Element.

Construction of a House

1. Design	2. Pro-curement	3. Construction	4. Inspections	5. Turnover
1.1 Permits	1.1 Electrical	3.1 Interior	4.1 Masonry Work	5.1 Walk Thru
1.2 Drawings	2.2 Plumbing	3.2 Exterior	4.2 Building Finishes	5.2 Closing
	2.3 HVAC			

WBS Example 1

```
                        e-commerce application
                                  |
        +-------------------------+-------------------------+
        |                         |                         |
      Login                    Sign up                    Home

   - UI Devlopment           - UI Devlopment            - Product list
       - Login form              - Signup form          - Banners
       - Remember me                                    - Categories
       - Forgot password     - API Creation             - App Bar
   - API Creation            - API Integration
   - API Integration
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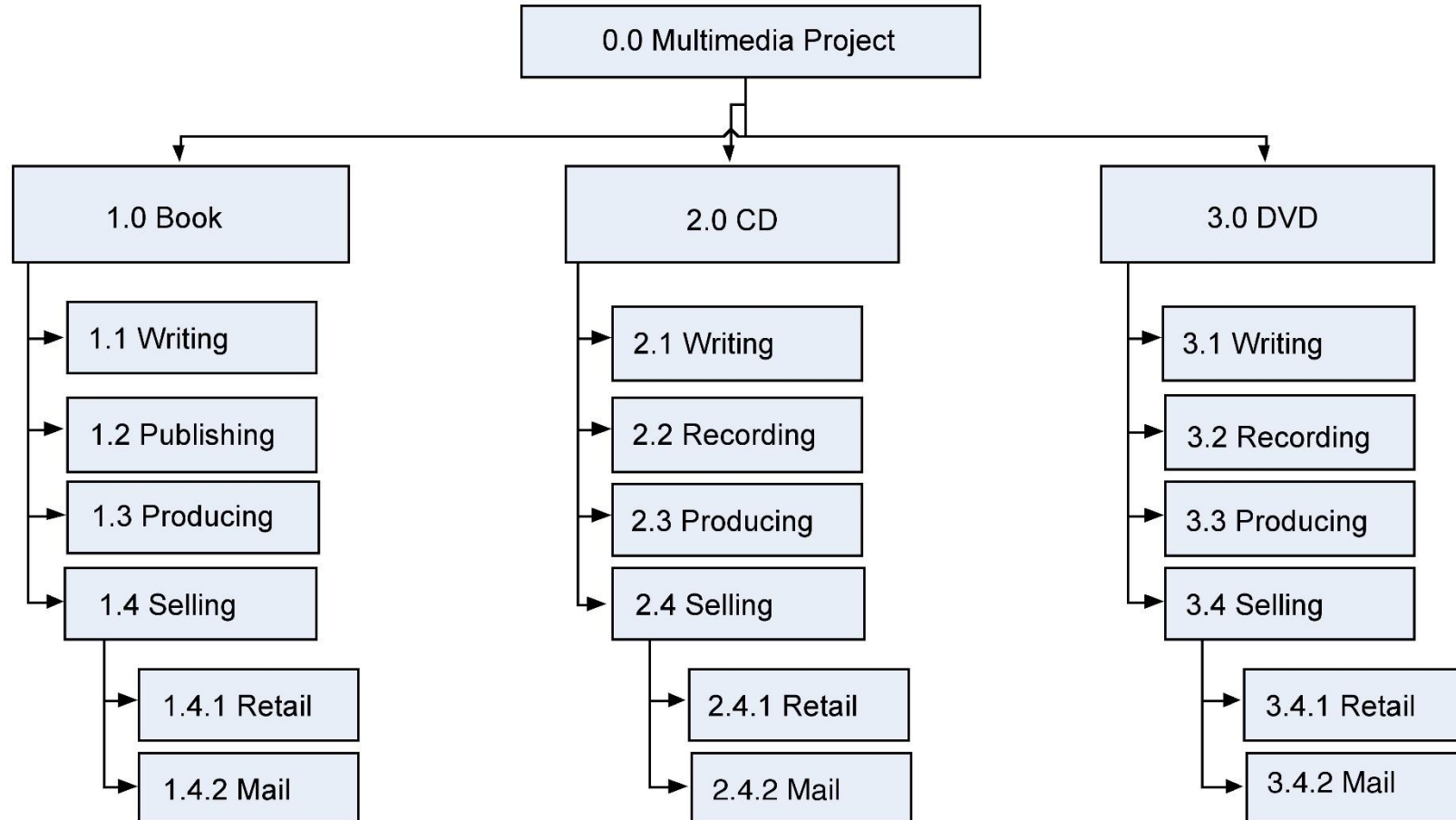
WBS Example 2

Benefits of WBS

- It helps to assign responsibilities to the project team.
- It helps the top-level management to allocate the project budget, based on which departmental budgets can be calculated.
- It helps to estimate the cost, time and risks involved in several activities of the project.
- It indicates the project milestones and control points.
- It can help identify items/ work packages that need to be outsourced to external parties.
- It helps to identify communication points and formulate a communication plan.

Linear Responsibility Chart (LRC)

- LRC is a tool used to define and depict the responsibility and authority of the project personnel.

- It is sometimes also referred to as Responsible, Accountable, Consulted, and Informed (RACI) chart or Responsibility Assignment Matrix (RAM).

- It aids effective coordination in the project.

- It basically combines the WBS against the types of resources available.

- This is extremely useful for the project manager, as it visually depicts who is responsible for each project task.

LRC (contd..)

- Authority: It refers to the person who has the right to make the required decisions, to aid in the attainment of his/her goals. It could be project sponsor, or some other stake holder, depending upon the situation.
- Responsibility: It refers to the person who has been assigned to complete a certain task or event. This is generally the person performing the activity.
- Accountability: It refers to the acceptance of achievement or failure. A person who takes the ownership of the work is considered as accountable. Generally, he/she is the manager of the person who has been assigned the responsibility.
- Consult: It refers to the person who may be consulted in case of any specific issue.
- Inform: It refers to the person who must be informed in case of any deviations.

LRC Example

Stage	Tasks	Release Manager	Project Manager	Developer	Program Manager
1	Product Planning	I	A	R	C
2	Product Development	I	I	A	R
3	Product Release	R	A	I	I

Merits and Demerits of LRC

- Merits
1. Clearly defines the roles and responsibilities of all the project participants.
2. Facilitates effective communication among the project participants.
3. Acts as a great tool for administering the responsibility and authority of people involved in the project.
4. Facilitates the delegation of authority.

- Demerits
1. Fails to describe the interactions among people working on the project.
2. The customer imposed requirements of the project limit the usefulness of LRC.