

# **Work Breakdown Structures And Linear Responsibility Charts**

**(Session 2 in the Project Planning And Management Module)**

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# Review of Session 1

- **Concept of a project**
  - Importance of project planning & management in modern industry
- **Planning and monitoring the 3 S's**
  - Scope (goals and performance)
  - Spending (budget and resources)
  - Scheduling (project and task time constraints)
- **Tools for planning and monitoring**
  - Work breakdown structure
  - Linear responsibility chart
  - Activity networks
  - Gantt charts
  - Budgets
  - Percent completion matrix

# **Learning Objectives Session 2**

- **Students should be able to define, describe, and use**
  - **Work breakdown structure**
  - **Linear responsibility chart**

# **Work Breakdown Structure**

# Work Breakdown Structure (WBS)

- **Primary tool for determining scope of work**
- **Identify a set of top-level tasks**
  - **These are broken down into subtasks**
  - **Continue in a hierarchical manner**
- **Decompose complicated task into “manageable tasks”**
  - **“Manageable task” – estimate its time and resource requirements**

# WBS Requirements

- **A WBS must**
  - **Account for all activities that consume time or resources**
  - **Contain enough detail to accurately estimate**
    - **Completion time of each task**
    - **Resources needed for each task**

# What a WBS Is Not

- **WBS is not**
  - **An org-chart**
    - **Does not show roles people play**
  - **A schedule**
    - **Does not show task start and completion dates**
  - **A flow chart**
    - **Does not show the temporal or dependent relationships among tasks**
  - **A listing of the skills needed to complete the task**

# WBS Heuristics

- **If you can not estimate the time or resources (including manpower) required to compete a task, break it down further**



# WBS Formats

- **Tabular format -- resembles an outline with major tasks at first level and subtask listed under each in hierarchical fashion**
- **Graphical format -- hierarchical block diagram with major task blocks at top level and subtask blocks for each connected to them**

# WBS Example – Preparing A Meal

- **You want to prepare a special dinner consisting of a special soup and a baked chicken entrée. You have only two pots and one frying pan. The soup must boil for 35 minutes, and you should allow 15 minutes to serve and consume it. The chicken dish requires a fair amount of preparation: you have to boil the rice for 30 minutes, brown the chicken in a frying pan for 15 minutes, and place the rice and chicken with its sauce in the oven 15 minutes. It takes 5 minutes to make the sauce in the frying pan and 15 minutes to boil the peas. You have to allow 5 minutes to uncork the wine and 30 minutes to let it breath before serving. You plan to allow 25 minutes to serve and consume the meal. How long will it take to prepare and eat the meal?**

# WBS Example – Preparing A Meal – 1<sup>st</sup> Step

- Prepare meal
- Eat entrée

# **WBS Example – Preparing A Meal – 2nd Step**

## **1.0 Prepare meal**

### **1.1 Cook Soup**

### **1.2 Cook chicken, rice, and sauce**

### **1.3 Boil peas**

### **1.4 Open wine and let it breathe**

## **2.0 Eat meal**

### **2.1 Eat Soup**

### **2.2 Eat Entrée**

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**Frequently task are numbered using hierarchical decimal format**

# **WBS Example – Preparing A Meal – 3rd Step**

## **1.0 Prepare meal**

### **1.1 Cook soup**

### **1.2 Cook chicken, rice, and sauce**

#### **1.2.1 Boil rice**

#### **1.2.2 Brown chicken**

#### **1.2.3 Prepare sauce**

#### **1.2.4 Bake chicken, rice, and sauce**

### **1.3 Boil peas**

### **1.4 Open wine and let it breathe**

#### **1.4.1 Open wine**

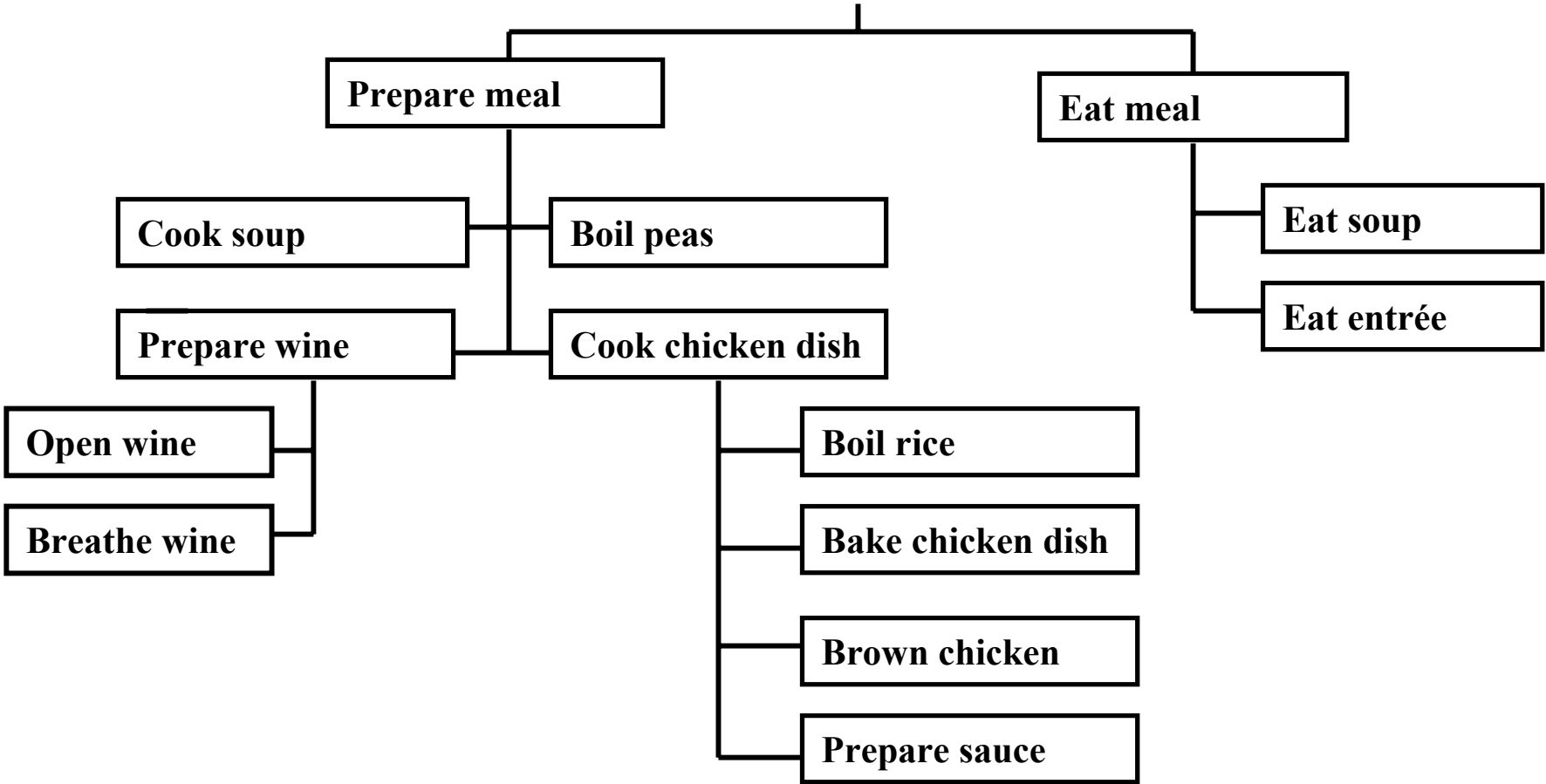
#### **1.4.2 Wine breathe**

## **2.0 Eat meal**

### **2.1 Eat soup**

### **2.2 Eat entrée**

# WBS Example – Preparing A Meal – Graphical Representation



# **Team Exercise**

## **Work Breakdown Structure (WBS)**

- **Task** -- Construct a WBS for an assigned problem
  - Recall
    - Planning the project not completing it
    - Hierarchical structure of WBS
- **Process** -- Work as a team
  - Individual brainstorming (2 minutes)
  - Building consensus (5 minutes)
  - Reporting results (2 minutes)
    - Randomly selected individuals report team's WBS

# **Linear Responsibility Chart**



# Linear Responsibility Chart (LRC)

- **Structure**
  - Row for each task
  - Column for each participant
- **Indicates type of responsibility (primary, consulting, reviewing, etc.) for each task**
  - Who is responsible
  - Who is involved

# Use Of LRC

- **Provides structure for identifying and sharing responsibility**
- **Allows team to reach consensus on who is doing what**
- **Let's all stakeholders understand their responsibilities**
- **Translate the “what” of the WBS into the “who” of responsibility**

# Questionable LRC Forms

- **Every team member involved in every task**
- **Team leader responsible for every task**

# Team Exercise

## Linear Responsibility Chart

- **Task** -- Construct a LRC for an assigned problem  
Use the WBS developed earlier
- **Process** -- Work as a team
  - Individual brainstorming (2 minutes)
  - Building consensus (5 minutes)
  - Reporting results (2 minutes)
    - Randomly selected individuals report team's WBS