# 5-SCOPE MANAGEMENT

## Resit Gulec

# Agenda

- Overview of Scope Management
- Scope Management Processes
- Product & Project Scope
- Plan Scope Management Process
- Collect Requirements Process
- Define Scope Process

# Agenda

- Create Work Breakdown Structure Process
- Validate Scope Process
- Control Scope Process

# Scope Management

**Definition:** Process of defining what work is required and then making sure all of that work and only that work is done.

# Scope Management (Important Points)

- Scope must be clear and formally approved before work starts.

- Requirements are gathered from all stakeholders

- Requirements gathering can take a long time

- While project is completed, only the work in PM plan should be done

# Scope Management (Important Points)

- <u>Gold plating:</u> delivering more than what is required in scope

- E.g. Your customer wants the software to work only in Chrome, but you also manage the work to work also in Internet Explorer.

- Gold plating a project is not allowed.

- Any change to scope must be evaluated. (time, cost, risk, quality...etc.)

# Scope Management (Important Points)

- <span style="color:red">Changes are not allowed without an approved change request.</span>

- Continuously determine  what is and is not in scope of project.

# Scope Management Processes

- Plan Scope Management (Planning)
- Collect Requirements (Planning)
- Define Scope (Planning)
- Create WBS (Planning)
- Validate Scope (Monitoring & Controlling )
- Control Scope (Monitoring & Controlling)

# Product & Project Scope

- **<span style="color:red">Product Scope:</span>** Requirements that relate to the product of project.

  Answer of "what end result is wanted?"

- **<span style="color:red">Project Scope:</span>** Work the project will do to deliver product scope or product of the project.

# Product & Project Scope

- <u>Project:</u> Building a new train station

- <u>Product Scope:</u> Deliver a new train station with 4 rail lanes, 3000 passengers/day, 2 waiting lounges...etc.

- <u>Project Scope:</u> Works to be done to build new station (planning, coordination, and management activities).

# Plan Scope Management Process

# Plan Scope Management Process

- Process of creating a scope management plan that documents how the project scope will be defined, validated, and controlled.

- <span style="color:red">Output of the process:</span> Scope Management Plan & Requirements Management Plan

- Scope Management Plan describes how the scope will be defined, developed, monitored, controlled and verified.

- Scope Management Plan is part of project management plan

# Plan Scope Management Process

- Scope management plan is a major input to Develop Project Management Plan (Integration Management)

Scope Management Plan Includes processes:

- For preparing a detailed project scope statement

- That enables the creation of WBS

- That establishes how the WBS will be maintained and approved.

- That specifies how formal acceptance of the completed project deliverables will be obtained.

- To control how requests for changes to the detailed project scope statement will be processed.

# Plan Scope Management Process

- Requirements Management Plan describes how requirements will be analyzed, documented and managed.

Requirements Management Plan Includes

- How requirements activities will be planned, tracked and reported

- Configuration management activities

- Requirements prioritization process

- Product metrics

- Traceability structure

# Collect Requirements Process

# Collect Requirements Process

- Requirements are what stakeholders need from a project or product.
  - "System should take backup at 2.00-2.15 am"
  - "1000 concurrent users should be able to operate"
  - "Entry screen should be loaded in 2 seconds".
- High-level requirements are defined in project charter.
- Collect Requirements process involves more specific inputs.

# Collect Requirements Process

## Tools & Techniques for Collecting Requirements:

1. **Interviewing** (meeting, mail, phone call)
   – Project Manager interviews the stakeholder to get requirements

2. **Focus Groups**
   – Used to get a specific set of stakeholders' requirements

# Collect Requirements Process

Tools & Techniques for Collecting Requirements:

3. Facilitated Workshops

   – Brings stakeholders with different perspectives (e.g. designers and end-users)

4. Brainstorming

   – "Group think"

   – Produces ideas that were generated from each other

# Collect Requirements Process

## Tools & Techniques for Collecting Requirements:

5. Nominal Group Technique
   - Meeting participants rank the most successful ideas
   - Usually used in Brainstorming meetings.
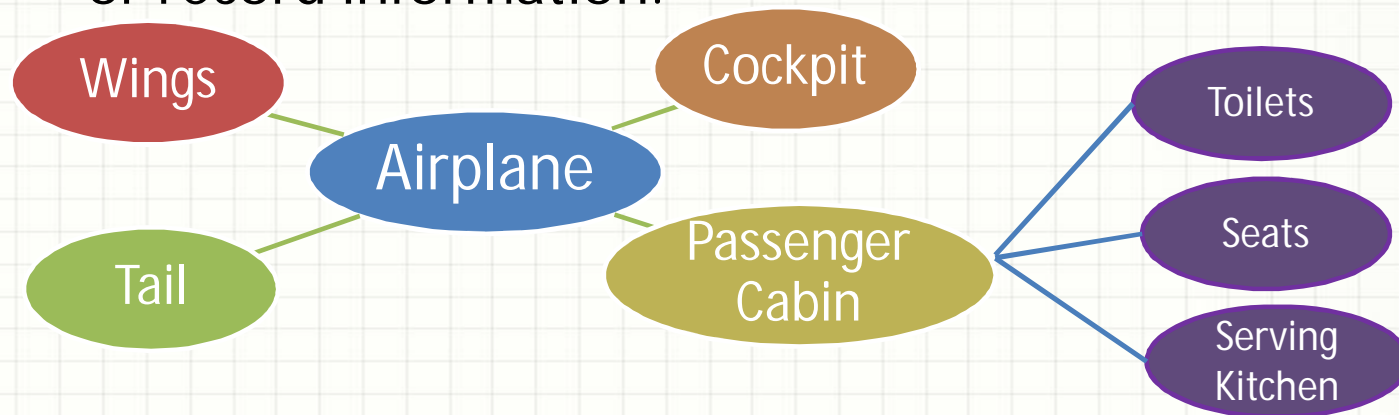
6. Delphi Technique
   - A request for information is sent to participants anonymously, results are compiled and sent back to participants. This goes on until consensus is reached.

# Collect Requirements Process

## Tools & Techniques for Collecting Requirements:

### 7. Idea/Mind Mapping:

– Diagram of ideas or notes to help generate, classify or record information.



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# Collect Requirements Process

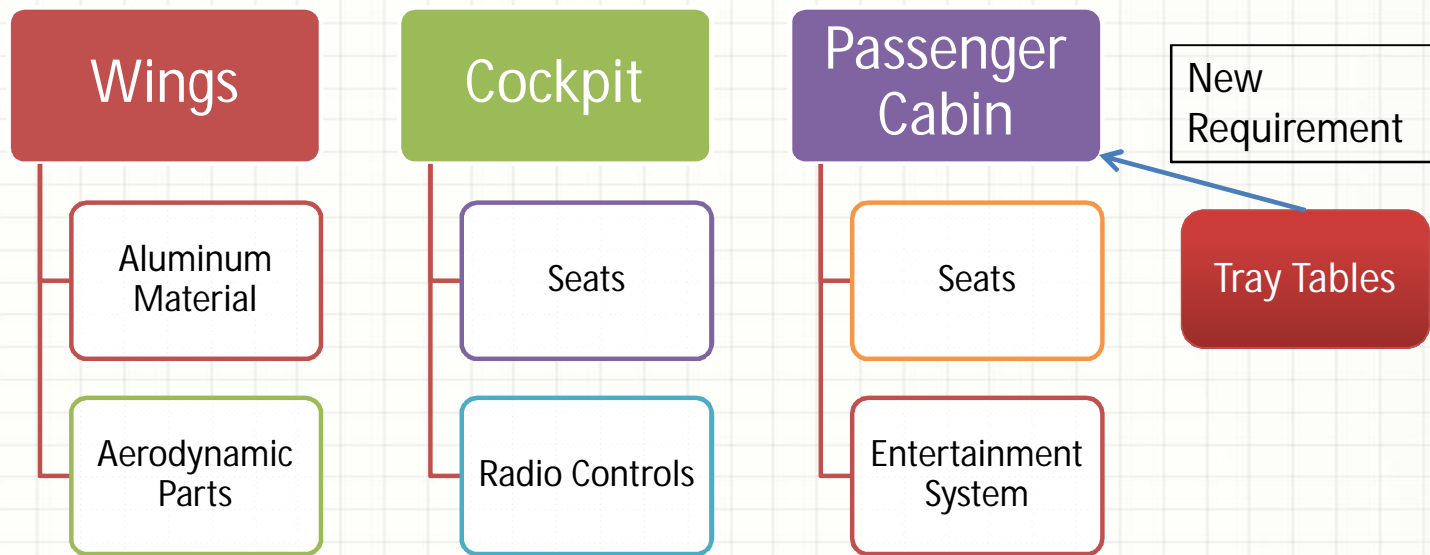## Tools & Techniques for Collecting Requirements:

### 8. Affinity Diagrams:

– Ideas generated from any other requirements gathering techniques are sorted into groups by similarities

– Helps to see additional scope or risks

# Collect Requirements Process
## Tools & Techniques for Collecting Requirements:

8. **Affinity Diagrams:**

| Wings | Cockpit | Passenger Cabin | New Requirement |
|---|---|---|---|
| Aluminum Material | Seats | Seats | Tray Tables |
| Aerodynamic Parts | Radio Controls | Entertainment System | |

# Collect Requirements Process

## Tools & Techniques for Collecting Requirements:

9. **Questionnaires and Surveys:**
   - Used for large groups

10. **Observation**
    - A potential user of the product is watched to identify requirements.

11. **Prototypes**
    - Model of the proposed product is developed.
    - Prototype is presented to stakeholders for feedback.

# Collect Requirements Process

## Tools & Techniques for Collecting Requirements:

### 12. Group Decision Making:

– Several opinions are evaluated in a group.

❖Unanimity: Everyone agrees

❖Majority: More than 50% of the group agrees

❖Plurality: Largest block in a group decides.

❖Dictatorship: One individual makes the decision for the group.

# Collect Requirements Process

<u>Tools & Techniques for Collecting Requirements:</u>
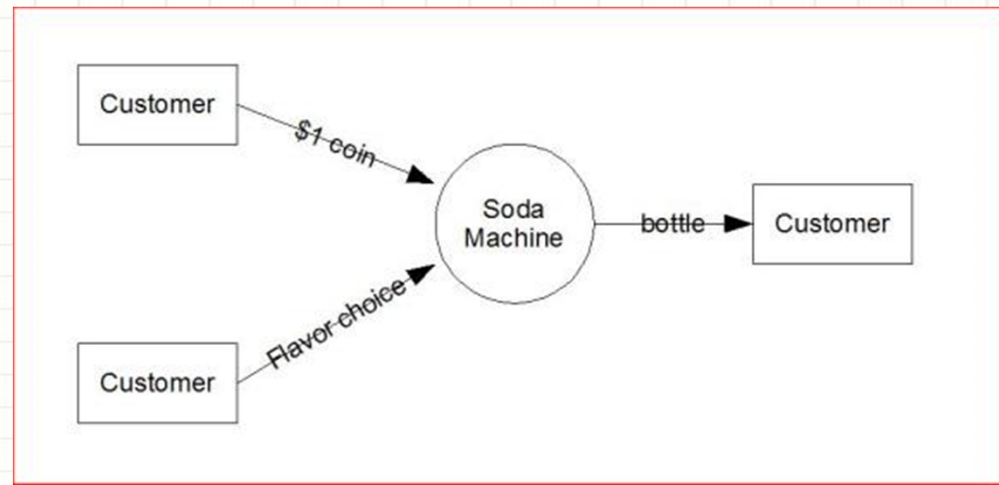
<span style="color:red">13.Benchmarking:</span>

- Comparing actual or planned practices, to those of comparable organizations to identify best practices.

- E.g. Samsung benchmarks its test processes with the Apple's.

# Collect Requirements Process

## Tools & Techniques for Collecting Requirements:

### 14.Context Diagrams:

– Example of a scope model.

– Defines how other users and systems interact with it.

# Collect Requirements Process

**Tools & Techniques for Collecting Requirements:**

**15.Document Analysis:**

– Used to elicit requirements by analyzing existing documentation and identifying relevant information to the requirements.

– E.g. business plans, agreements, requests for proposals, application software documentation, use cases...etc.

# Collect Requirements Process

Requirements Documentation

- After requirements have been collected and finalized, they are documented.

Includes:

- Business requirements
- Stakeholder requirements
- Solution requirements
- Project requirements
- Transition requirements
- Requirements assumptions, dependencies, and constraints.

# Collect Requirements Process

## Balance Stakeholder Requirements

- Making sure that the requirements can be met in objectives.

- Prioritization of requirements

- Resolving conflicts between requirements.

- If there is any conflict with those of customer, the customer's needs normally take precedence.

- If a conflict cannot be resolved, management support is asked.

# Collect Requirements Process

## Resolve Competing Requirements

- Project manager should resolve competing requirements by accepting those which most match to:
  1. Project Charter
  2. Project Scope Statement
  3. Constraints
  4. Business need

# Collect Requirements Process

## Requirements Traceability Matrix:

- Helps to track the requirements over the life of project to ensure they are accomplished.

- Usually in a form of table with ids per requirement, source of requirement, responsible of requirement, status...etc.

# Collect Requirements Process

## Requirements Traceability Matrix:

| Requirements Traceability Matrix | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Project Name:** | | | | | | | | |
| **Cost Center:** | | | | | | | | |
| **Project Description:** | | | | | | | | |
| **ID** | **Associate ID** | **Requirements Description** | **Business Needs, Opportunities, Goals, Objectives** | **Project Objectives** | **WBS Deliverables** | **Product Design** | **Product Development** | **Test Cases** |
| 001 | 1.0 | | | | | | | |
| | 1.1 | | | | | | | |
| | 1.2 | | | | | | | |
| | 1.2.1 | | | | | | | |
| 002 | 2.0 | | | | | | | |
| | 2.1 | | | | | | | |
| | 2.1.1 | | | | | | | |
| 003 | 3.0 | | | | | | | |
| | 3.1 | | | | | | | |
| | 3.2 | | | | | | | |
| 004 | 4.0 | | | | | | | |
| 005 | 5.0 | | | | | | | |

# Define Scope Process

# Define Scope Process

- Primarily concerns what is and is not included in project and its deliverables.

- Uses the following to define project and product scope.
  - requirements documentation created in Collect Requirements process
  - project charter
  - any information about risks, assumptions and constraints

# Define Scope Process

## Product Analysis:

- To analyze the objectives and description of product stated by customer or sponsor and turn them to tangible deliverables.

# Define Scope Process

## Project Scope Statement:

- Primary output of Define Scope process.
- Tells what will be done in the project.

Scope Baseline **+** WBS **+** WBS Dictionary **=** SCOPE BASELINE

- Scope Baseline is part of Project Management plan.

# Define Scope Process

## Project Scope Statement Includes:

- Product Scope
- Deliverables
- Product Acceptance Criteria
- What is not part of project
- Additional risks
- Constraints and assumptions

# Define Scope Process

### Constraints:

- Factors that limit the team's options.
  - "project must be completed in 6 months"
  - "existing system must not be interrupted from 12 am to 6 am."

### Assumptions:

- Things that are assumed to be true, but may not be true.
  - "A dedicated personnel from marketing will support the team."
  - "Bugfix effort for each screen will not exceed 20% of the development effort for same screen."

# Create Work Breakdown Structure (WBS) Process

# Create WBS Process

- Process of subdividing project deliverables and project work into smaller, more manageable components.

- WBS provides a structured vision of what has to be delivered.

- WBS helps to better understand the project.

- WBS shows hierarchy of deliverables.

- WBS can be organized by phases or major deliverables.

# Create WBS Process



Major Deliverables

Project Title
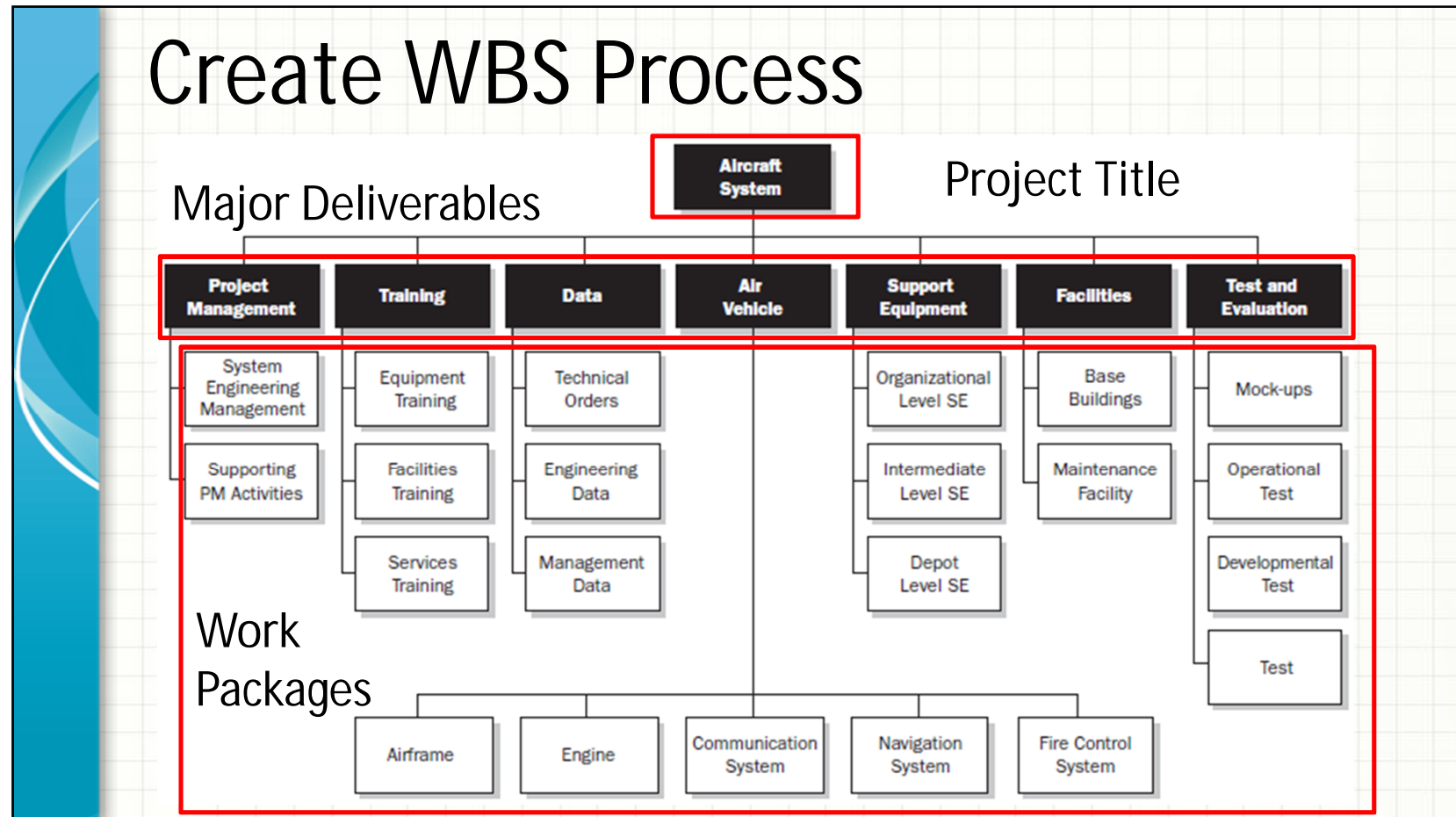
Work Packages

# Create WBS Process

- Work packages consists of "nouns" instead of actions.

Rules for Creating WBS:

- WBS is created with the help of the team.

- Each level of the WBS is smaller piece of the level above.

- Some levels will be broken down to further than others.

- WBS includes only deliverables that are really needed.

# Create WBS Process

- Work packages are reached when their deliverables

  – Can be realistically and confidently estimated

  – Can be completed quickly

  – Can be completed without interruption

  – May be outsourced or contracted out

- After completion, WBS is entered to project scheduling software (e.g. Microsoft Project).

# Create WBS Process

- Work packages in WBS are divided further into schedule activities with the help of WBS dictionary.
- After creation of WBS, levels are numbered for ease of location.
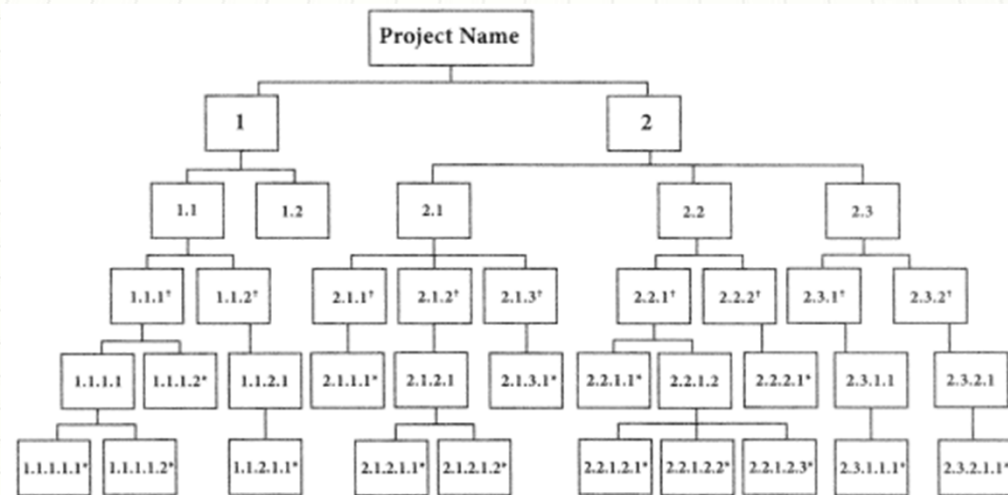
# Create WBS Process

- If your organization works on similar projects, WBS from one project may be used on another.

- PMO should collect WBS examples.

# Create WBS Process

Benefits of using WBS:

- Helps prevent work from slipping through cracks

- Provides the project team members with an understanding of where their pieces fit into the overall project management plan and gives them an indication of the impact of their work on the project as a whole.
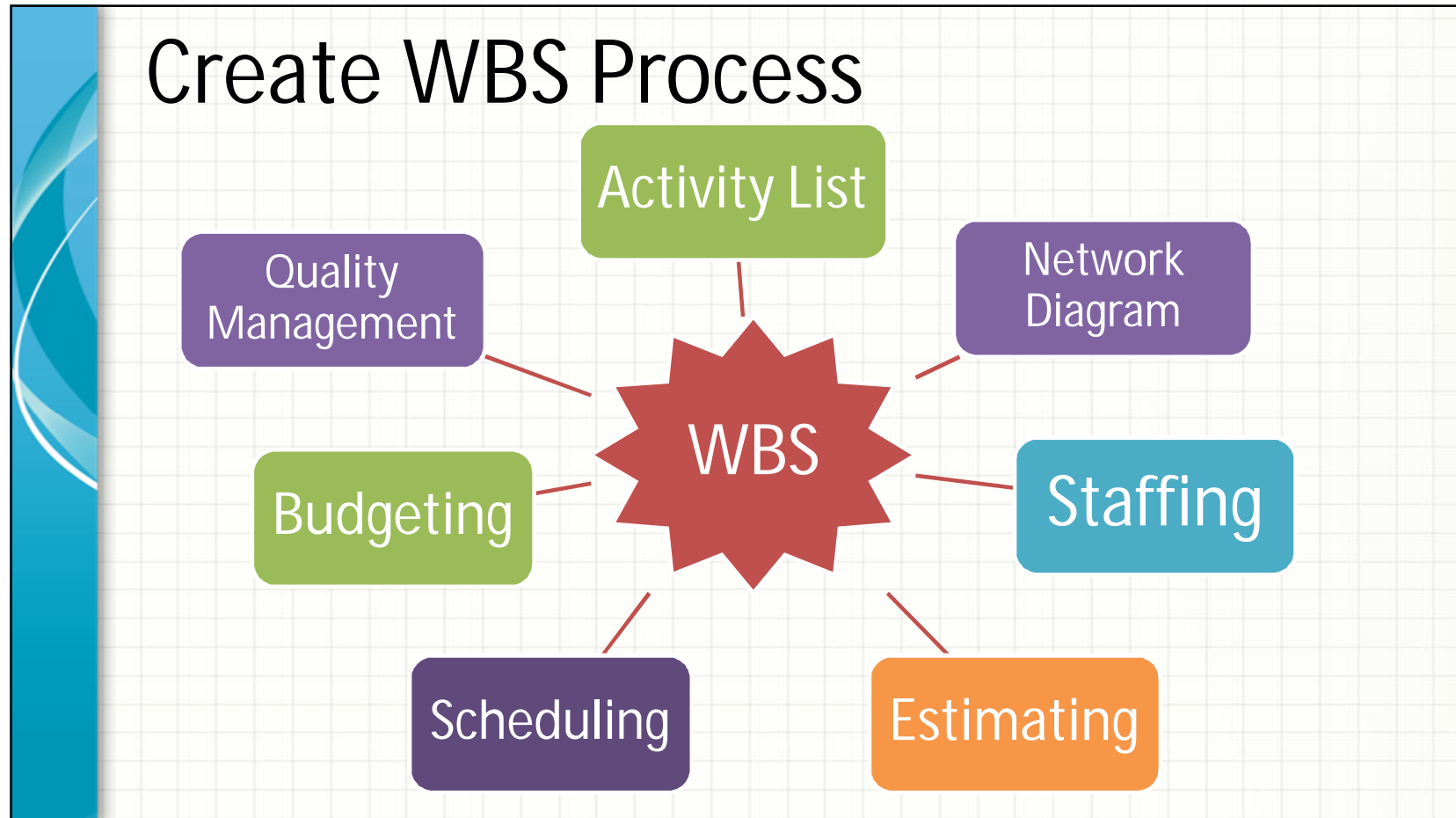
# Create WBS Process

Benefits of using WBS:

- Facilitates communication and cooperation between and among the project team and other stakeholders

- Helps prevent changes

- Provides a basis for estimating staff, cost and time.

# Create WBS Process

- WBS is the foundation of the project. Almost everything that occurs in planning after creation of WBS is directly related to WBS.

  – Project costs are estimated at work package level.

  – Risks are identified by work package

  – Work Packages are assigned to individuals or parts of organization.
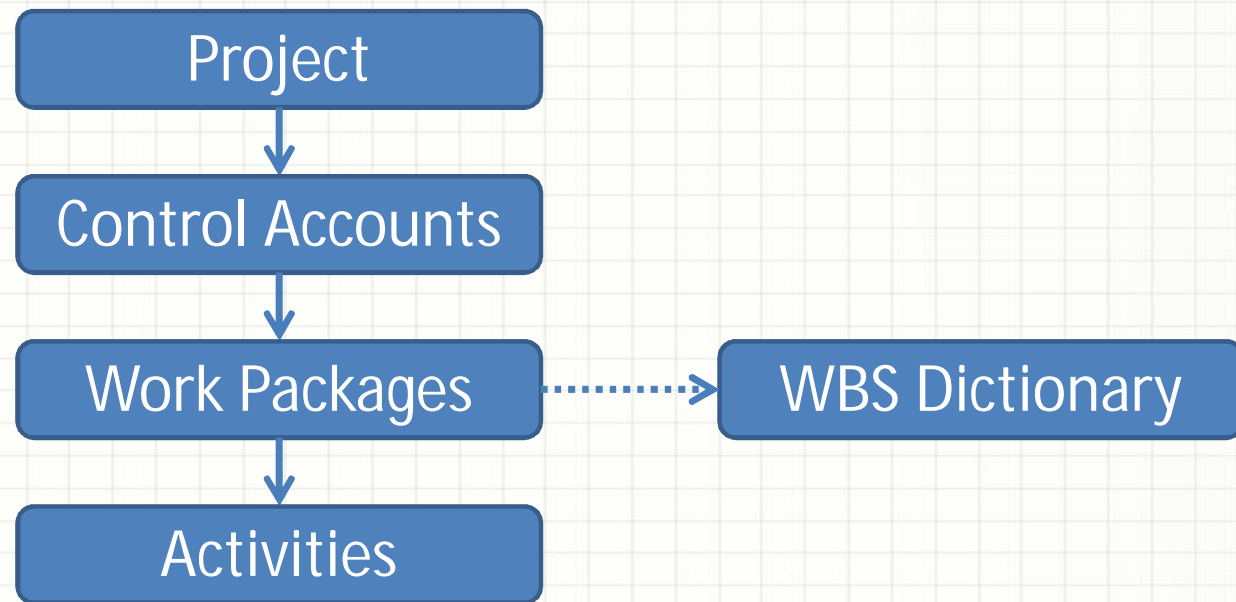
# Create WBS Process

# Create WBS Process

<u>WBS can be used to:</u>

- See if the new scope is within the planned scope of the project when there is a scope change to the project.

- Evaluate the impacts of changes on scope

- Control scope creep by reminding everyone what work needs to be done.

- As a communications tool

- Help new team members see their roles

# Create WBS Process
## Relationship of Levels in WBS

Project

↓

Control Accounts

↓

Work Packages  ┈┈┈▶  WBS Dictionary

↓

Activities

# Create WBS Process

## WBS Dictionary:

- Provides a description of the work to be done for each WBS work package.

- Helps preventing the scope to creep by defining the details of work package.

- Output of Create WBS Process

# Create WBS Process (WBS Dictionary Sample)

**WBS Dictionary**

| Control Account ID # | Work Package # | Date of Update | Responsible Organization/ Individual |
|---|---|---|---|

Work Package Description

Acceptance Criteria (How to know if the work is acceptable)

Deliverables for This Work

Assumptions

Resources Assigned

Duration

Schedule Milestones

Cost

Due Date

Interdependencies
Before this work package _____
After this work package _____

Approved By: Project Manager _____ Date: _____

# Validate Scope Process

# Validate Scope Process

- Process of formalizing acceptance of the completed project deliverables.

- <span style="color:red">Frequent, planned-in meetings with customer or sponsor to gain formal acceptance of deliverables during Monitoring & Controlling process group.</span>

# Validate Scope Process

Inputs:

- Work must be completed and there should be "validated deliverables".

- Approved scope (scope baseline)

- Requirements traceability matrix to show that requirements were achieved with the validated deliverable.
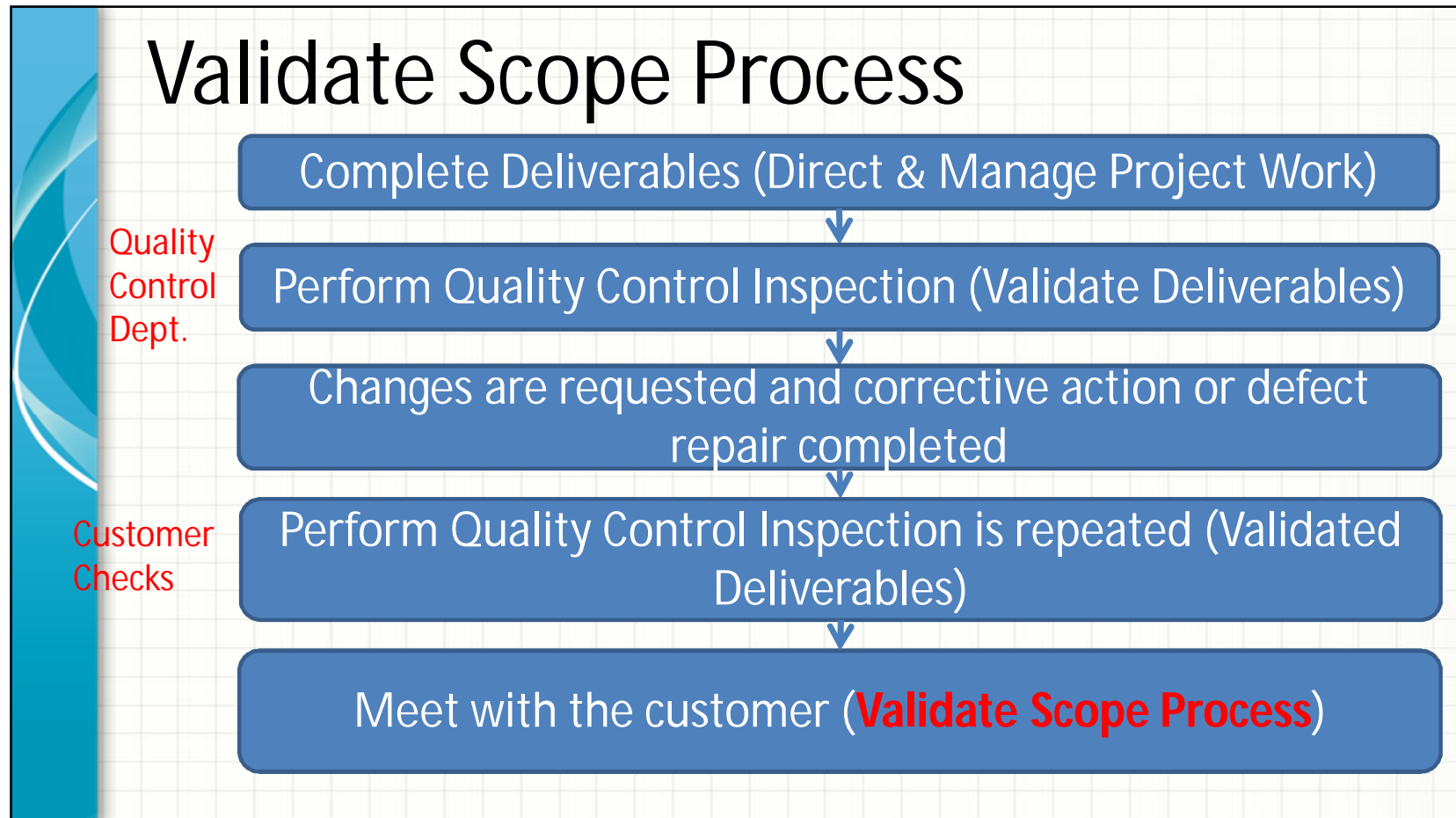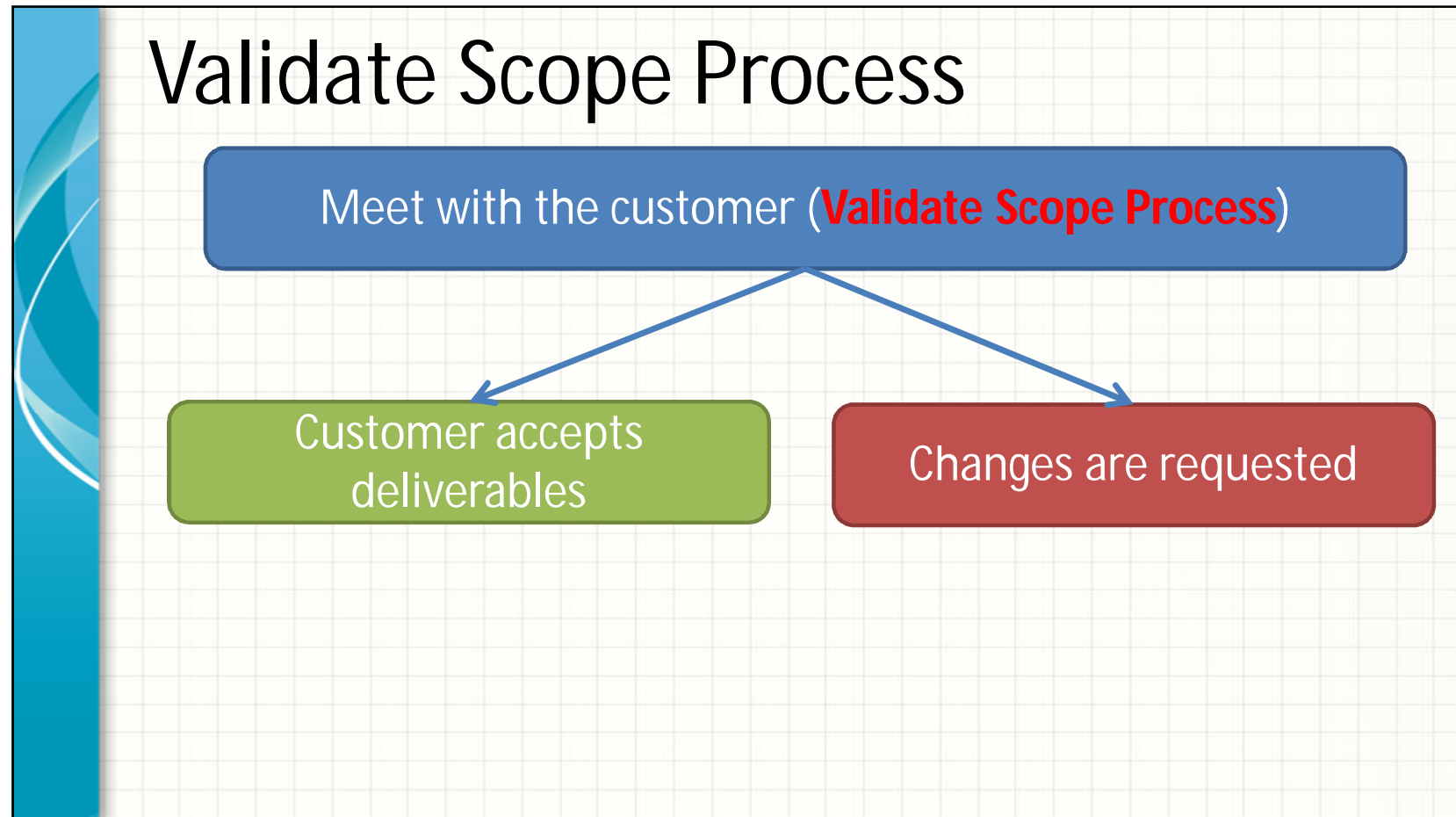
# Validate Scope Process

- Helps to show customer that project is on track
- Helps to find changes/issues during project rather than at the end.
- The customer either accepts the deliverable or makes a change request.

# Validate Scope Process

## Outputs:

- Accepted deliverables
- Change requests
- Project document updates
- Work performance information

# Validate Scope Process

**Complete Deliverables (Direct & Manage Project Work)**

↓

Quality
Control
Dept.

**Perform Quality Control Inspection (Validate Deliverables)**

↓

**Changes are requested and corrective action or defect repair completed**

↓

Customer
Checks

**Perform Quality Control Inspection is repeated (Validated Deliverables)**

↓

**Meet with the customer (Validate Scope Process)**

# Validate Scope Process

**Meet with the customer (Validate Scope Process)**

Customer accepts deliverables

Changes are requested

# Control Scope Process
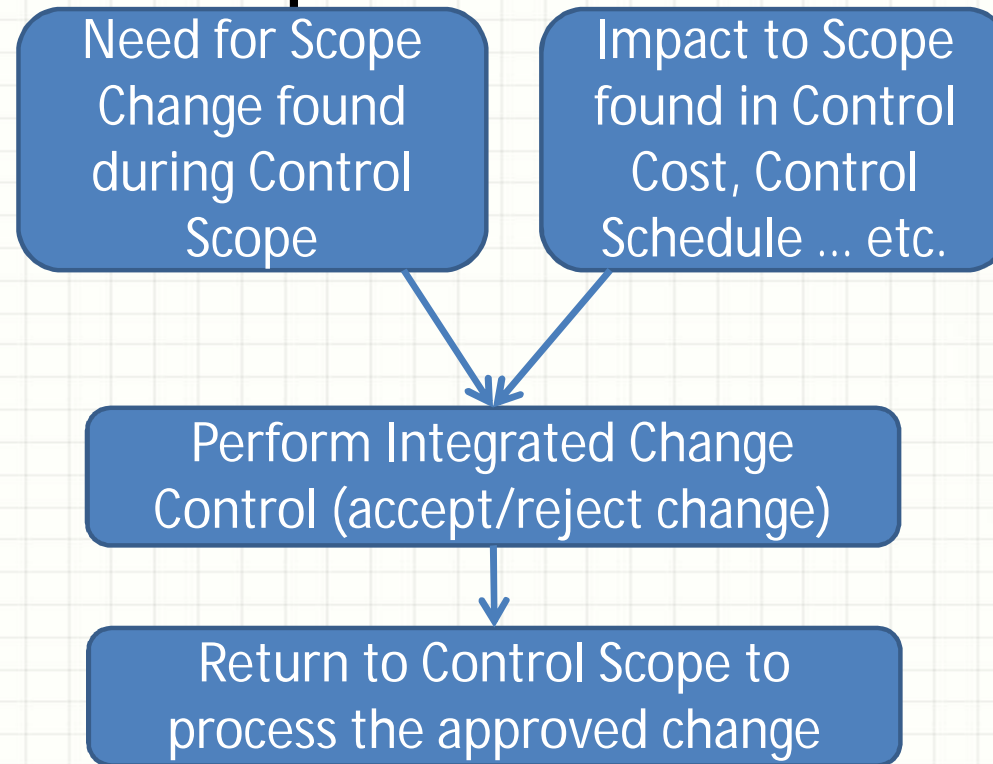
# Control Scope Process

- Process of monitoring the status of the project and product scope and managing changes to the scope baseline.

- Measuring project and product scope performance and managing scope baseline changes.

- To control scope:
  - Scope definition must be clear
  - Work must be completed

# Control Scope Process

## Steps for Control Scope Process:

1. Measure performance against scope baseline
2. Determine magnitude of variances
3. Decide whether corrective/preventive action is needed
4. Updates to scope baseline, project management plan or project documents
5. Impact of changes should be evaluated

# Control Scope Process

Need for Scope Change found during Control Scope

Impact to Scope found in Control Cost, Control Schedule ... etc.

Perform Integrated Change Control (accept/reject change)

Return to Control Scope to process the approved change

# Question #1

The work breakdown structure can BEST be thought of as an effective aid for _____ communications

A-) Team

B-) Project Manager

C-) Customer

D-) Stakeholder

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The work breakdown structure can BEST be thought of as an effective aid for _____ communications

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B-) Project Manager

C-) Customer

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# Question #2

Which of the following is a KEY output of the Validate Scope process?

A-) A more complete scope management plan

B-) Customer acceptance of project deliverables

C-) Improved schedule estimates

D-) An improved project management information system

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Which of the following is a KEY output of the Validate Scope process?

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# Question #3

During project executing, a team member comes to the project manager because he is not sure of what work he needs to accomplish on the project. Which of the following documents contain detailed descriptions of work packages?

A-) WBS Dictionary

B-) Activity List

C-) Project scope statement

D-) Scope management plan

# Question #3

During project executing, a team member comes to the project manager because he is not sure of what work he needs to accomplish on the project. Which of the following documents contain detailed descriptions of work packages?

**A-) WBS Dictionary**

B-) Activity List

C-) Project scope statement

D-) Scope management plan

# Question #4

During a meeting with some of the project stakeholders, the project manager is asked to add work to the project scope. The project manager had access to correspondence about the project before the project charter was signed and remembers that the project sponsor specifically denied funding for the scope mentioned by these stakeholders. The BEST thing for the project manager to do is to:

A-) Let the sponsor know of the stakeholders' request.

B-) Evaluate the impact of adding the scope.

C-) Tell the stakeholders the scope cannot be added.

D-) Add the work if there is time available in the project schedule

# Question #4

During a meeting with some of the project stakeholders, the project manager is asked to add work to the project scope. The project manager had access to correspondence about the project before the project charter was signed and remembers that the project sponsor specifically denied funding for the scope mentioned by these stakeholders. The BEST thing for the project manager to do is to:

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B-) Evaluate the impact of adding the scope.

**C-) Tell the stakeholders the scope cannot be added.**

D-) Add the work if there is time available in the project schedule

# Question #5

A new project manager has asked you for advice on creating a WBS. After you explain the process to her, she asks you what software she should use to create the WBS and what she should do with it when she is finished creating it. You might respond that it is not the picture that is the most valuable result of creating a WBS. It is:

A-) A bar chart

B-) Team buy-in

C-) Activities

D-) A list of risks

# Question #5

A new project manager has asked you for advice on creating a WBS. After you explain the process to her, she asks you what software she should use to create the WBS and what she should do with it when she is finished creating it. You might respond that it is not the picture that is the most valuable result of creating a WBS. It is:

A-) A bar chart

**B-) Team buy-in**

C-) Activities

D-) A list of risks

# Question #6

A project manager has just been assigned to a new project and has been given the project charter. The FIRST thing the project manager must do is:

A-) Create a project scope statement.

B-) Confirm that all the stakeholders have had input into the scope.

C-) Analyze project risk.

D-) Begin work on a project management plan.

# Question #6

A project manager has just been assigned to a new project and has been given the project charter. The FIRST thing the project manager must do is:

A-) Create a project scope statement.

**B-) Confirm that all the stakeholders have had input into the scope.**

C-) Analyze project risk.

D-) Begin work on a project management plan.

# Question #7

All of the following are parts of the scope baseline EXCEPT:

A-) Scope Management Plan

B-) Project scope statement

C-) Work breakdown structure

D-) WBS dictionary

# Question #7

All of the following are parts of the scope baseline EXCEPT:

**A-) Scope Management Plan**

B-) Project scope statement

C-) Work breakdown structure

D-) WBS dictionary

# Question #8

Which of the following is an output of the Collect Requirements process?

A-) Requirements traceability matrix

B-) Project scope statement

C-) Work breakdown structure

D-) Change requests

# Question #8

Which of the following is an output of the Collect Requirements process?

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D-) Change requests

# Question #9

A scope change has been suggested by one of the stakeholders on the project. After careful consideration and a lot of arguing, the change control board has decided to reject the change. What should the project manager do?

A-) Support the stakeholder by asking the board for the reason for the rejection

B-) Suggest to the stakeholder that the next change they request will be approved

C-) Record the change request and its result

D-) Advise the change control board to make sure they create approval processes before the next change is proposed.

# Question #9

A scope change has been suggested by one of the stakeholders on the project. After careful consideration and a lot of arguing, the change control board has decided to reject the change. What should the project manager do?

A-) Support the stakeholder by asking the board for the reason for the rejection

B-) Suggest to the stakeholder that the next change they request will be approved

**C-) Record the change request and its result**

D-) Advise the change control board to make sure they create approval processes before the next change is proposed.

# Question #10

Validate Scope is closely related to:

A-) Perform Quality Control

B-) Sequence Activities

C-) Perform Quality Assurance

D-) Time Management

# Question #10

Validate Scope is closely related to:

**A-) Perform Quality Control**

B-) Sequence Activities

C-) Perform Quality Assurance

D-) Time Management