**LEARNER GUIDE**

**Develop, implement and evaluate a project plan**

Unit Standard 252022

Level 5 Credits 8

# TABLE OF CONTENTS

[TABLE OF CONTENTS i](#_Toc377700211)

[PERSONAL INFORMATION 1](#_Toc377700212)

[INTRODUCTION 2](#_Toc377700213)

[Programme methodology 3](#_Toc377700214)

[What Learning Material you should have 4](#_Toc377700215)

[Different types of activities you can expect 5](#_Toc377700216)

[Learner Administration 6](#_Toc377700217)

[Assessments 6](#_Toc377700218)

[Learner Support 7](#_Toc377700219)

[Learner Expectations 8](#_Toc377700220)

[UNIT STANDARD 252022 9](#_Toc377700221)

[1. SELECT A WORK-BASED PROJECT FOR A UNIT 13](#_Toc377700222)

[Selecting a Work-Based Project for a Unit 13](#_Toc377700223)

[Consider Project Alternatives 14](#_Toc377700224)

[Motivate the Decision on the Preferred Alternative 21](#_Toc377700225)

[Formative Assessment 1 SO1 21](#_Toc377700226)

[2. SCOPE A WORK-BASED PROJECT FOR A UNIT 23](#_Toc377700227)

[Scoping a Work-Based Project for a Unit 23](#_Toc377700228)

[Define the Scope of Work and Deliverables 27](#_Toc377700229)

[Determine the Principal Work Activities 29](#_Toc377700230)

[Identify and Analyse the Potential Risks 31](#_Toc377700231)

[Describe the Change Processes essential to the Project Success 32](#_Toc377700232)

[Formative Assessment 2 SO2 33](#_Toc377700233)

[3. DEVELOP A PROJECT PLAN 34](#_Toc377700234)

[Developing a Project Plan 34](#_Toc377700235)

[Describe the Overall Objectives of the Plan 34](#_Toc377700236)

[Describe the Project Stakeholders 36](#_Toc377700237)

[Develop a Work Breakdown Structure 37](#_Toc377700238)

[Stipulate and Communicate the Project Activities, Performance Levels and Quality Criteria 42](#_Toc377700239)

[Check the Project Plan 46](#_Toc377700240)

[Formative Assessment 3 SO3 46](#_Toc377700241)

[4. DEVELOP TOOLS TO MEASURE KEY PERFORMANCE PARAMETERS 47](#_Toc377700242)

[Developing Tools to Measure Key Performance Parameters 47](#_Toc377700243)

[Develop a Gantt Chart 48](#_Toc377700244)

[Develop a Budget 50](#_Toc377700245)

[Develop Quality Parameters 56](#_Toc377700246)

[Communicate the Measurement Tools 60](#_Toc377700247)

[Formative Assessment 4 SO4 60](#_Toc377700248)

[5. IMPLEMENT THE PLAN AND EVALUATE PROJECT PROGRESS 61](#_Toc377700249)

[Implementing the Plan and Evaluating Project Progress 61](#_Toc377700250)

[Monitor and Evaluate Project Implementation 66](#_Toc377700251)

[Monitor Project Results 67](#_Toc377700252)

[Identify and Analyse Deviations from the Project Plan 73](#_Toc377700253)

[Implement Corrective Actions 75](#_Toc377700254)

[Evaluate Results against the Scope and Objectives of the Project 76](#_Toc377700255)

[Formative Assessment 5 SO5 76](#_Toc377700256)

[FORMATIVE ASSESSMENTS WORKBOOK 77](#_Toc377700257)

[Formative Assessment 1 SO1 77](#_Toc377700258)

[Formative Assessment 2 SO2 84](#_Toc377700259)

[Formative Assessment 3 SO3 90](#_Toc377700260)

[Formative Assessment 4 SO4 97](#_Toc377700261)

[Formative Assessment 5 SO5 100](#_Toc377700262)

[References and Further Reading 102](#_Toc377700263)

# PERSONAL INFORMATION

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| --- | --- |
| **NAME** |  |
| **CONTACT ADDRESS** |  |
|  |
| **Code** |  |
| **Telephone (H)** |  |
| **Telephone (W)** |  |
| **Cellular** |  |
| **Learner Number** |  |
| **Identity Number** |  |
|  |
| **EMPLOYER** |  |
| **EMPLOYER CONTACT ADDRESS** |  |
|  |
| **Code** |  |
| **Supervisor Name** |  |
| **Supervisor Contact Address** |  |
|  |
| **Code** |  |
| **Telephone (H)** |  |
| **Telephone (W)** |  |
| **Cellular** |  |

# **INTRODUCTION**

#### Welcome to the learning programme

Follow along in the guide as the training practitioner takes you through the material. Make notes and sketches that will help you to understand and remember what you have learnt. Take notes and share information with your colleagues. Important and relevant information and skills are transferred by sharing!

This learning programme is divided into sections. Each section is preceded by a description of the required outcomes and assessment criteria as contained in the unit standards specified by the South African Qualifications Authority. These descriptions will define what you have to know and be able to do in order to be awarded the credits attached to this learning programme. These credits are regarded as building blocks towards achieving a National Qualification upon successful assessment and can never be taken away from you!

### Programme methodology

The programme methodology includes facilitator presentations, readings, individual activities, group discussions and skill application exercises.

Know what you want to get out of the programme from the beginning and start applying your new skills immediately. Participate as much as possible so that the learning will be interactive and stimulating.

The following principles were applied in designing the course:

* Because the course is designed to maximise interactive learning, you are encouraged and required to participate fully during the group exercises
* As a learner you will be presented with numerous problems and will be required to fully apply your mind to finding solutions to problems before being presented with the course presenter’s solutions to the problems
* Through participation and interaction the learners can learn as much from each other as they do from the course presenter
* Although learners attending the course may have varied degrees of experience in the subject matter, the course is designed to ensure that all delegates complete the course with the same level of understanding
* Because reflection forms an important component of adult learning, some learning resources will be followed by a self-assessment which is designed so that the learner will reflect on the material just completed.

This approach to course construction will ensure that learners first apply their minds to finding solutions to problems before the answers are provided, which will then maximise the learning process which is further strengthened by reflecting on the material covered by means of the self-assessments.

#### Different role players in delivery process

* Learner
* Facilitator
* Assessor
* Moderator

### What Learning Material you should have

This learning material has also been designed to provide the learner with a comprehensive reference guide.

It is important that you take responsibility for your own learning process; this includes taking care of your learner material. You should at all times have the following material with you:

|  |  |
| --- | --- |
| **Learner Guide** | **This learner guide is your valuable possession:**This is your textbook and reference material, which provides you with all the information you will require to meet the exit level outcomes. During contact sessions, your facilitator will use this guide and will facilitate the learning process. During contact sessions a variety of activities will assist you to gain knowledge and skills. Follow along in the guide as the training practitioner takes you through the material. Make notes and sketches that will help you to understand and remember what you have learnt. Take and share information with your colleagues. Important and relevant information and skills are transferred by sharing!This learning programme is divided into sections. Each section is preceded by a description of the required outcomes and assessment criteria as contained in the unit standards specified by the South African Qualifications Authority. These descriptions will define what you have to know and be able to do in order to be awarded the credits attached to this learning programme. These credits are regarded as building blocks towards achieving a National Qualification upon successful assessment and can never be taken away from you! |
| **Formative Assessment Workbook** | The Formative Assessment Workbook supports the Learner Guide and assists you in applying what you have learnt. The formative assessment workbook contains classroom activities that you have to complete in the classroom, during contact sessions either in groups or individually.You are required to complete all activities in the Formative Assessment Workbook. The facilitator will assist, lead and coach you through the process.These activities ensure that you understand the content of the material and that you get an opportunity to test your understanding.  |

### Different types of activities you can expect

To accommodate your learning preferences, a variety of different types of activities are included in the formative and summative assessments. They will assist you to achieve the outcomes (correct results) and should guide you through the learning process, making learning a positive and pleasant experience.

The table below provides you with more information related to the types of activities.

| **Types of Activities** | **Description** | **Purpose** |
| --- | --- | --- |
| **Knowledge Activities** | You are required to complete these activities on your own.  | These activities normally test your understanding and ability to apply the information. |
| **Skills Application Activities** | You need to complete these activities in the workplace  | These activities require you to apply the knowledge and skills gained in the workplace |
| **Natural Occurring Evidence** | You need to collect information and samples of documents from the workplace. | These activities ensure you get the opportunity to learn from experts in the industry.Collecting examples demonstrates how to implement knowledge and skills in a practical way |

### Learner Administration


#### Attendance Register

You are required to sign the Attendance Register every day you attend training sessions facilitated by a facilitator.

#### Programme Evaluation Form

On completion you will be supplied with a “Learning programme Evaluation Form”. You are required to evaluate your experience in attending the programme.

Please complete the form at the end of the programme, as this will assist us in improving our service and programme material. Your assistance is highly appreciated.

### Assessments

The only way to establish whether a learner is competent and has accomplished the specific outcomes is through the assessment process. Assessment involves collecting and interpreting evidence about the learners’ ability to perform a task.

To qualify and receive credits towards your qualification, a registered Assessor will conduct an evaluation and assessment of your portfolio of evidence and competency.

This programme has been aligned to registered unit standards. You will be assessed against the outcomes as stipulated in the unit standard by completing assessments and by compiling a portfolio of evidence that provides proof of your ability to apply the learning to your work situation.

**How will Assessments commence?**

#### Formative Assessments

The assessment process is easy to follow. You will be guided by the Facilitator. Your responsibility is to complete all the activities in the Formative Assessment Workbook and submit it to your facilitator.

#### Summative Assessments

You will be required to complete a series of summative assessments. The Summative Assessment Guide will assist you in identifying the evidence required for final assessment purposes. You will be required to complete these activities on your own time, using real life projects in your workplace or business environment in preparing evidence for your Portfolio of Evidence. Your Facilitator will provide more details in this regard.

To qualify and receive credits towards your qualification, a registered Assessor will conduct an evaluation and assessment of your portfolio of evidence and competency.

### Learner Support

The responsibility of learning rests with you, so be proactive and ask questions and seek assistance and help from your facilitator, if required.

Please remember that this Skills Programme is based on outcomes based education principles which implies the following:

* You are responsible for your own learning – make sure you manage your study, research and workplace time effectively.
* Learning activities are learner driven – make sure you use the Learner Guide and Formative Assessment Workbook in the manner intended, and are familiar with the workplace requirements.
* The Facilitator is there to reasonably assist you during contact, practical and workplace time for this programme – make sure that you have his/her contact details.
* You are responsible for the safekeeping of your completed Formative Assessment Workbook and Workplace Guide
* If you need assistance please contact your facilitator who will gladly assist you.
* If you have any special needs please inform the facilitator

### Learner Expectations

Please prepare the following information. You will then be asked to introduce yourself to the instructor as well as your fellow learners



|  |
| --- |
| Your name:  |
|  |
|  |
| The organisation you represent:  |
|  |
|  |
| Your position in organisation:  |
|  |
|  |
| What do you hope to achieve by attending this course / what are your course expectations? |
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# UNIT STANDARD 252022

***Title***

Develop, implement and evaluate a project plan

#### NQF Level

5

#### Credits

8

#### Purpose Of The Unit Standard

This Unit Standard is intended for managers in all economic sectors. These managers would typically be second level managers such as heads of department, section heads or divisional heads, who may have more than one team reporting to them.

The qualifying learner is capable of:

* Selecting a work-based project for a unit.
* Scoping a work-based project for a unit.
* Developing a project plan.
* Developing tools to measure key performance parameters.
* Implementing the plan and evaluate project progress.

#### Learning Assumed To Be In Place And Recognition Of Prior Learning

It is assumed that learners are competent in:

* Communication at NQF Level 4.
* Mathematical Literacy at NQF Level 4.
* Computer Literacy at NQF Level 4.

#### Unit Standard Range

* The learner is required to apply the learning in respect of his/her own area of responsibility.
* This Unit Standard relates to once-off projects and events that have to be planned and implemented in a unit.
* Unit refers to the division, department or business unit in which the learner is responsible for managing and leading staff.
* Entity includes, but is not limited to, a company, business unit, public institution, small business, Non-Profit Organisation or Non-Governmental Organisation.

#### Specific Outcomes And Assessment Criteria:

**Specific Outcome 1**

Select a work-based project for a unit.

**Assessment Criteria**

* Project alternatives are considered in relation to their viability in achieving unit objectives.
* The decision on the preferred alternative is motivated in terms of viability, cost and results.

**Specific Outcome 2**

Scope a work-based project for a unit.

**Assessment Criteria**

* The scope of work and deliverables are defined in relation to the unit objectives.
* The principal work activities are determined that will be required to achieve the unit objectives.
* The potential risks are identified and analysed in relation to the likelihood of risks materialising.
* Change processes that are essential to project success are described in terms of their contribution to the project results.

**Specific Outcome 3**

Develop a project plan.

**Assessment Criteria**

* The overall objectives of the plan are described with reference to the achievement of unit objectives.
* The sponsor, project team and other stakeholders are described with their contributions to the project.
* A work breakdown structure (WBS) is developed to describe the main activities of the project and the interrelationship between them.
* The project activities, required performance levels and quality criteria are stipulated and communicated to team members and other stakeholders to promote quality and effectiveness.
* The project plan is checked for accuracy, completeness and compliance to internal and external requirements.

**Specific Outcome 4**

Develop tools to measure key performance parameters.

**Assessment Criteria**

* A Gantt chart is developed for managing and evaluating the time dimension.
* A budget is developed for managing and evaluating the cost dimension.
* Quality parameters are developed for managing and evaluating quality.
* The measurement tools are communicated to team members to promote a common understanding of requirements.

**Specific Outcome 5**

Implement the plan and evaluate project progress.

**Assessment Criteria**

* Project implementation is monitored and evaluated against the plan, the stipulated performance criteria and quality requirements.
* Project results are monitored to establish progress and effectiveness.
* Deviations from the project plan are identified and analysed in order to take corrective action.
* Corrective actions are implemented to ensure the achievement of project objectives.
* Results are evaluated against the scope and objectives of the project.

#### Unit Standard Accreditation And Moderation Options

* Anyone assessing a candidate against this Unit Standard must be registered as an assessor with the relevant ETQA or an ETQA that has a Memorandum of Understanding with the relevant ETQA.
* Any institution offering learning that will enable achievement of this Unit Standard must be accredited as a provider through the relevant ETQA or an ETQA that has a Memorandum of Understanding with the relevant ETQA.
* Moderation of assessment will be overseen by the relevant ETQA according to the moderation guidelines and the agreed ETQA procedures.

#### Unit Standard Essential Embedded Knowledge

* Methods and techniques for the planning and implementation of projects.
* Budgeting.
* Delegation of authority, responsibility and accountability.

#### Critical Cross-field Outcomes (CCFO):

**Unit Standard CCFO Identifying**

Identify and solve problems in considering project alternatives and selecting the preferred option.

**Unit Standard CCFO Working**

Work effectively with others when managing the implementation of a project plan.

**Unit Standard CCFO Organising**

Organise and manage oneself and one's activities in managing the members of the project team.

**Unit Standard CCFO Collecting**

Collect, evaluate, organise and critically evaluate information to develop a clear and workable project plan.

**Unit Standard CCFO Communicating**

Communicate effectively with individuals and teams when delegating tasks and responsibilities.

# 1. SELECT A WORK-BASED PROJECT FOR A UNIT

#### Specific Outcome

Select a work-based project for a unit.

#### Assessment Criteria

* Project alternatives are considered in relation to their viability in achieving unit objectives.
* The decision on the preferred alternative is motivated in terms of viability, cost and results.

## Selecting a Work-Based Project for a Unit

The word *project* [[1]](#footnote-1)comes from the Latin word *projectum*, "*to throw something forwards*", which is made up of the prefix *pro-*, which denotes something that precedes the action of the next part of the word in time and *jacere*, "to throw". Thus the original meaning of “project” is something that has, in a figurative sense, been thrown forward, i.e. a proposal.

The meaning has gradually been extended to include the *process of realising or actualising the proposal*, as well as the *people* who perform the realisation.

We can therefore see that the concept of *people working together* or “organisation” forms an integral part of the definition of a project. The *kind of tasks* solved by the organisation of people working together distinguishes a project from other organisational units.

We can say that a project is an **organisational unit that solves a unique and complex task**.

**APM[[2]](#footnote-2) define a project as follows:**

“…a unique set of co-ordinated activities, with definite starting and finishing points, undertaken by an individual or organisation to meet specific objectives within defined time, cost and performance parameters….human, material and financial resources are organised in a novel way to deliver a unique scope of work of given specification, often within constraints of cost and time, and to achieve beneficial change defined by quantitative and qualitative objectives.”

Based on the definitions above, we can see that we need to consider the following when selecting a project:

* Is there a problem that is affecting you/your workplace/your team or is there an opportunity to make an improvement?
* Is it one that you are motivated to complete?
* Is it critical or of strategic importance?
* Consider feasibility. What are the time constraints, risk issues and politics involved?

Finding a problem to solve should not be too difficult as there is not a single workplace that is not plagued by problems- both big and small. The challenge lies in finding the “right” problem to solve:

* How do you know it is a problem (what are the data or indicators)?
* Define the problem in terms of causes not solutions. What are the causal factors?
* Deal with the problem and not the symptoms.

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| **Case Study[[3]](#footnote-3): Alan Sharples, Managing Director for both Dexter Paints Ltd., and Dexter Biofuels Ltd.** Alan's work-based project was aimed at improving the efficiency of his manufacturing unit by implementing action research techniques within the department.Alan says "In doing so we developed a totally new Action Research based system for a number of projects that led to significant cost savings. However possibly of greater value was the cultural change brought about by the inclusive and democratic nature of the methodology. Although less easy to quantify I feel that this cultural change may prove to outlast and be of greater benefit than shorter term cost savings". |

###  Consider Project Alternatives

Projects are started because a problem creates a need. In order to solve the problem or fulfil the need, you need to formulate a measurable goal. Once a goal is set, you can develop a strategy to meet it. A project is the strategy to meet this goal.

**Therefore, we can say that a project is a temporary endeavour undertaken to achieve a particular aim.**

Projects can range from a relatively simple relocation to another section of the building to a complete overhaul of processes and procedures:

|  |  |
| --- | --- |
| **Type of Project** | **Product of Project (Examples)** |
| 1. | Administrative | Installing a new accounting system |
| 2. | Construction | A building or road |
| 3. | Computer Software Development | A new computer program |
| 4. | Design of Plans | Architectural or engineering plans |
| 5. | Equipment or System Installation | A telephone system or IT system |
| 6. | Event or Relocation | Soccer World Cup or a move into a new building |
| 7. | Maintenance of Process Industries | Petro-chemical plant or electricity generating station |
| 8. | New Product Development | A new drug or defence product |
| 9. | Research | A feasibility study or investigating a chemical |

When considering project alternatives, you and your team need to firstly decide which of the work unit’s problems is both urgent and important and requires an innovative solution.

Variables that you will have to take into account are:

* Size of the intended project
* Duration (Length of project time)
* Number of workers that will be involved
* Cost (do you have the budget, or will you be able to motivate the expenditure?)
* Complexity of the implementation

The collective activities associated with building the project deliverables are referred to as the project life cycle.

The project life cycle can be defined as “the complete set of time periods through which a project passes sequentially in a logical and orderly manner”.

While there are many different versions of the project life cycle, all essentially contain the steps of:

* Germination of the idea
* Proposal and initiation
* Design and appraisal
* Mobilisation of the team
* Execution and control
* Integration of the team and their work
* Testing
* Handover of the project's product
* Closeout of the work.

In its simplest form the life cycle consists of four major periods or phases:

* Concept (the project concept as a need solution is selected and defined)
* Development/ Definition (the concept is verified and developed into a workable plan for implementation)
* Implementation (the implementation plan is carried out)
* Closeout (the project process is completed and documented, and the finished product is transferred to the care, custody and control of the owner)

This model provides a basic outline that can be used on any project. You start off understanding the requirement of the solution, designing a solution, building and testing a solution and then implementing the solution. Each of these major areas of focus is called a phase.

**The figure below[[4]](#footnote-4) shows a typical project life cycle separated into its generally accepted four fundamental phases. The figure also lists the activities to be expected in each phase.**

**The phase separations correspond to key decision points for purposes of executive level control.**

Not all projects, of course, conform rigorously to the stages shown and the activities within each may vary somewhat. However, less than satisfactory project performance and lack of control can frequently be traced to significant departures from the division of activities as shown.

The simple model described above can be applied to all projects. Even if you have a small project, you still have to go through these basic steps, although some of them may only be a mental exercise.

When you receive some type of service request, it describes the work required (analysis and requirements), which you take and mentally map into the work to be performed (design). You then make the changes required, test them (test) and implement them (construct, test, implement).

This approach is the life cycle model you would probably end up with even if you knew nothing about methodology and just had to build a project work plan from scratch.

The important point is that a common, scalable project management process can be used effectively on all your projects. The detailed work to build your deliverables is referred to as the “project life cycle”.

Based on our model above, you can see that you and your team now need to do a proper needs analysis, gathering data to determine what the root causes are that will need to be addressed.

Steps in the problem solving process include:

Identify the problem

Clearly define the problem

Define the options

Identify possible solutions

Implement and evaluate the results

1. **Identify the Problem**

The first step in the problem solving process is to identify or acknowledge that there is a problem. This may be a problem such as missing stock, poor turn around times in service delivery, continuous errors, not getting things right the first time, bad behaviour, problems with technology etc. Once the problem has been identified, the next step is to clearly define the problem.

1. **Clearly Define the Problem**

In order to clearly define a problem you need to gather information and evidence. Ask questions to determine the true source of the problem. For example, if a customer phones in to say that his calls are not being returned by a staff member, the immediate response is to attribute the problem to the staff member. However, upon investigation, you may establish that the call answer facility on the PABX is faulty and does not save messages.

You can use one or a combination of the many problem-solving techniques available, e.g.:

* Root cause analysis
* Ishikawa or fishbone diagram.

#### Root cause analysis

A technique that can be used to identify the root cause of a problem is to use the 5 Why’s. When you use this technique you look at a situation, or at a person’s behaviour and you ask why a situation or behaviour has occurred. You continue to ask the question why, until you get to the root cause of the problem.

The following example [[5]](#footnote-5)demonstrates the basic process:

* My car will not start. (the problem)
1. *Why?* - The battery is dead. (first why)
2. *Why?* - The alternator is not functioning. (second why)
3. *Why?* - The alternator belt has broken. (third why)
4. *Why?* - The alternator belt was well beyond its useful service life and has never been replaced. (fourth why)
5. *Why?* - I have not been maintaining my car according to the recommended service schedule. (fifth why, a root cause)
6. *Why?* - Replacement parts are not available because of the extreme age of my vehicle.(sixth why, optional footnote)
* I will start maintaining my car according to the recommended service schedule. (solution)

#### Ishikawa or fishbone diagram

Ishikawa diagrams (also called fishbone diagrams or cause-and-effect diagrams) are diagrams that show the causes of a certain event. Common uses of the Ishikawa diagram are product design and quality defect prevention, to identify potential factors causing an overall effect. Each cause or reason for imperfection is a source of variation. Causes are usually grouped into major categories to identify these sources of variation. The categories typically include:

* People: Anyone involved with the process
* Methods: How the process is performed and the specific requirements for doing it, such as policies, procedures, rules, regulations and laws
* Machines: Any equipment, computers, tools etc. required to accomplish the job
* Materials: Raw materials, parts, pens, paper, etc. used to produce the final product
* Measurements: Data generated from the process that are used to evaluate its quality
* Environment: The conditions, such as location, time, temperature, and culture in which the process operates

Information and diagram retrieved from: <http://en.wikipedia.org/wiki/Ishikawa_diagram>

1. **Define the Options**

Once you’ve determined the root causes of the problem, you need to come up with solutions to each cause, to determine which solutions will be do-able and sustainable.

#### Brainstorming

Brainstorming[[6]](#footnote-6) can be an effective way to generate lots of ideas on a specific issue and then determine which idea is the best solution. Brainstorming is most effective with groups of 8-12 people from various departments across the organisation, who have different backgrounds and expertise. Even in specialist areas, outsiders can bring fresh ideas that can inspire the experts.

Define your problem or issue as a creative challenge. A well designed creative challenge generates the best ideas to solve your problem. Creative challenges typically start with: "In what ways might we...?" or "How could we...?" Your creative challenge should be concise, to the point and exclude any information other than the challenge itself. For example: "In what ways might we improve product X?"

Once your brainstorming session is concluded, select the five ideas which you like best. Make sure everyone involved in the brainstorming session is in agreement.

Write down about five criteria for judging which ideas best solve your problem. Criteria should start with the word "should", for example, "it should be cost effective", "it should be legal", "it should be possible to finish before July 15", etc.

Give each idea a score of 0 to 5 points depending on how well it meets each criterion. Once all of the ideas have been scored for each criterion, add up the scores.

The idea with the highest score will best solve your problem. But you should keep a record of all of your best ideas and their scores in case your first-choice best idea turns out not to be workable.

Once you have narrowed all the possible solutions down into one preferred solution, you need to determine how to *achieve* that solution. Which activities will lead to the achievement of your objective in the most cost-effective and efficient manner?

Several important considerations should be made when developing the range of alternative actions:

* **Number of alternatives:** A limited number of alternatives (e.g., 10) should be analysed and presented to the decision-maker. These alternatives should span as wide a range of management scenarios as possible. (If decision-makers are interested in an alternative that is intermediate between two or more of those presented, they can request it as they narrow their preference of alternatives.)
* **Uncertainty and alternatives:** An alternative should not be rejected from consideration because its effects on some objectives are uncertain, as shall be discussed later.
* **Standard alternatives:** In addition to a creative range of alternatives, several standard alternatives can be presented and analysed. These alternatives help "bound" the extremes of management alternatives. Examples include:
* a "no action" alternative, in which no active management occurs;
* a "continue previous action" alternative, in which the previous management plan (formal or informal) is continued;
* alternatives which maximise single objectives of concerned, single-issue stakeholders.
* **Naming alternatives:** Value-neutral names (e.g., Alternative A, Alternative B) should be used. This will help decision-makers and stakeholders focus on the consequences of the alternatives.

|  |
| --- |
| **Example: California Department of Transportation**The following alternatives are currently under consideration: **Alternative A** proposes to **construct a new freeway** west of the State Route 58/99 interchange. The alignment would travel in a westerly direction for approximately one mile on the south side of Stockdale Highway, at which point it would turn in a northwesterly direction and span the Carrier Canal, Truxtun Avenue, and the Kern River. The proposed route would then connect to the Westside Parkway alignment between Mohawk Street and Coffee Road. The total length of the project from the existing State Route 99/State Route 58 interchange to Interstate 5 utilizing Alternative A would be approximately **16.31 miles**.**Alternative B** proposes to **construct a new freeway** west of the State Route 58/99 interchange. The alignment would travel in a westerly direction for approximately one-half mile on the south side of Stockdale Highway, at which point it would turn to the northwest, span the Carrier Canal, Truxtun Avenue, and the Kern River. Alternative B would connect to the Westside Parkway alignment at the Mohawk Street interchange. The total length of the project from the existing State Route 99/State Route 58 interchange to Interstate 5 utilizing Alternative B is approximately **16.61 miles**.**Alternative C** proposes to connect existing State Route 58 to the Westside Parkway by means of **routing new lanes adjacent and parallel to existing State Route 99**. These additional lanes would run parallel to and independent of State Route 99. Movements between State Route 58, State Route 99 and the Westside Parkway would likely be facilitated by braided ramps and freeway-to-freeway connector ramps. The total length of the project from State Route 99 to Interstate 5 utilizing Alternative C is approximately **18.51 miles**.**Alternative D** proposes to **construct a new freeway** in the vicinity of Union Avenue (State Route 204). The roadway would extend north from State Route 58 for approximately one mile, where it would turn to the west and run parallel to the Burlington Northern Santa Fe railroad tracks. Alternative D would connect to the Westside Parkway alignment at the new interchange at Mohawk Street. The total length of the project from State Route 58 at Union Avenue to Interstate 5 is approximately **18.98 miles**.**Alternative M** would evaluate Transit and Transportation Systems Management (TSM) improvements. TSM focuses on low capital, environmentally-responsive improvements that **maximize efficiency of existing facilities**. An example of TSM improvements would be providing signal interconnects to facilitate the flow of traffic or providing bus turn-out bays to minimize the interruption of buses along a specific route. Specific transit and TSM measures have not been developed at this point. Preliminary traffic data is required to determine the most effective transit and TSM measures. Once the traffic data is available it would be determined if transit and TSM improvements would be separate alternatives or if it is more effective to evaluate a single alternative that includes both transit and TSM improvements.**The “No Build” alternative**, would **not construct any improvements**. State Route 58 - East would continue to end at State Route 99 where it would jog to the north to tie into State Route 58 – West (Rosedale Highway). The Westside Parkway would be constructed as a local facility, but would not connect to State Route 58, State Route 99, or Interstate 5.Retrieved from: <http://www.dot.ca.gov/dist6/environmental/projects/centennial/project_alternatives.html> |

###  Motivate the Decision on the Preferred Alternative

#### Determine how well each alternative meets each objective

A matrix showing the relation of each alternative to each objective with the summary values listed where the question marks are shown is a useful tool for evaluating the alternatives and making a decision as to the most suitable alternative:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   |  Alternative |  Alternative |  Alternative |  Alternative |
|  Objectives | A | B | C | D |
| Quality | ? | ? | ? | ? |
| Duration | ? | ? | ? | ? |
| Viability | ? | ? | ? | ? |
| Cost | ? | ? | ? | ? |
| Wind Safety | ? | ? | ? | ? |
| Fire Safety | ? | ? | ? | ? |
| Net Present Value | ? | ? | ? | ? |
| Cash Flow Stability | ? | ? | ? | ? |
| Total Employment | ? | ? | ? | ? |
| Stable Employment | ? | ? | ? | ? |

Retrieved from: <http://silvae.cfr.washington.edu/ecosystem-management/Decisionmaking.html>

* The interpretation of how well each alternative meets each objective is judged by specialists- people who are learned in various subsystems and have a clear conception of how the subsystems will react when treated with various, alternative inputs.
* Specialists use tools, such as computer models and decision keys, and their expert opinion ("mental models") in providing their assessment of the relation of each action to meeting a given objective.
* The necessary qualifications of the experts depend on the significance of the decision being made. For a relatively non-contentious decision, a unit manager may serve as the expert on all objectives- from economics to processes.
* For more potentially contentious decisions, experts from a range of disciplines may be required. Since all analysis tools are imperfect, the expert is responsible for interpretation of the results and, thus, should know the relative strengths and weaknesses of different analysis tools and is responsible for appropriately addressing uncertainty in the consequences of each alternative.

The best analysis occurs if the experts maintain their objectivity regarding the eventual choice of alternatives: the driving force should be which alternative is best for achieving the unit’s goals and not “which is *my* preferred alternative?”

Formative Assessment 1 SO1

**Note**: The following steps in the problem solving process are covered later in this manual:

Identify possible solutions

Implement and evaluate the results

# 2. SCOPE A WORK-BASED PROJECT FOR A UNIT

#### Specific Outcome 2

Scope a work-based project for a unit.

#### Assessment Criteria

* The scope of work and deliverables are defined in relation to the unit objectives.
* The principal work activities are determined that will be required to achieve the unit objectives.
* The potential risks are identified and analysed in relation to the likelihood of risks materialising.
* Change processes that are essential to project success are described in terms of their contribution to the project results.

## Scoping a Work-Based Project for a Unit

* Projects deliver outputs/ deliverables/ products.  These outputs blend together over time to deliver outcomes. For a project to be effectively planned and controlled, i.e. managed, it needs to be broken down (decomposed) into a detailed and measurable plan of the management and control processes involved in the completion of the project.
* Running a project without a plan is foolish. It is like trying to find your way in a strange city without a map. Working without knowing where you are going and how you are going to get there is likely to lead to problems and possible failure: "If you fail to plan, you are planning to fail."

#### Methods and Techniques for the Planning of Projects

* Clear and accurate definition of a project is one of the most important actions you can take to ensure the project’s success. The clearer the target, the more likely you are to hit it. Defining a project is a process of selection and reduction of the ideas and perspectives of those involved into a set of clearly defined objectives, key success criteria and evaluated risks.
* This definition process should culminate in the production of a Project Definition document, sometimes called a Project Charter.
* The Project Definition document should be approved and issued by a manager with the authority to apply organisational resources to the project activities. Therefore, the seniority of the manager or the management team will be commensurate with the size, cost and business value of the project.
* As a minimum, the Project Definition should include a statement of the business need that the project seeks to address and the description of the product, service or deliverable business objectives that will be its output.
* The way to define a project is to ask a standard set of questions of yourself (as project leader) the project team, colleagues with particular expertise and senior managers. The questions fall into the categories given below:

#### The Purpose (or Mission)

**This is the reason for doing the project**

* What is the project about in broad terms?
* Who wants it done and why?
* What is its title?

#### The Goals

**These are the targets we want to meet**

* What is it we want to achieve?
* When do we want to achieve it?
* What are our specific aims?
* Why are these goals essential to the project?

**Goals are high-level statements that provide the overall context for what the project is trying to accomplish. For example one of the goals of a project might be to “*increase the overall satisfaction levels for clients calling the company helpdesk with support needs”.***

A goal may take more than one project to achieve. In the above example, for instance, there may be a technology component to increasing client satisfaction. There may also be new procedures, new training classes, reorganisation of the helpdesk department and modification of the company rewards system. It may take many projects over a long period of time to achieve the goal.

The goal should reference the business benefit in terms of cost, speed and / or quality. In this example, the focus is on quality of service.

Even if the project is not directly in support of the business, there should be an indirect tie. For instance, an IT infrastructure project to install new web servers may ultimately allow faster client response, better performance or some other business benefit. If there is no business value to the project, the project should not be started.

**The Beneficial Gains or Scope**

**This is how our business unit will gain. Here we define our performance criteria and set our quality standards for the project.**

* How will things be different if the project is successfully completed?
* Is there a clear need and can it be quantified?
* Who will benefit, how will they benefit and what will they gain?
* Do the beneficiaries agree about the need and the proposed solution?
* Is the project to identify that need and/or that solution?
* How will they react to that solution?
* What are the alternatives?
* Are those alternatives more or less acceptable (satisfactory)?
* Is how we are going to achieve the goals an important part of the beneficial gain?
* What is it worth to you or to others to have the need satisfied?

#### Objectives

Objectives are concrete statements that describe the things the project is trying to achieve. An objective should be written at a lower level, so that it can be evaluated at the conclusion of a project to see whether it was achieved.

Goal statements are generally rather vague. A well-worded objective will be **Specific, Measurable, Attainable/Achievable, Realistic and Time-bound (SMART).**

(Remember, SMART is a technique for wording the objective. An objective does not absolutely have to be SMART to be valid.)

An example of an objective statement might be to “*upgrade the helpdesk telephone system by December 31 to achieve average client wait times of no more than two minutes*”.

* The objective is **measurable** in terms of the average client wait times the new phone system is trying to achieve.
* You can assume that the objective is **achievable** and **realistic.**
* The objective is **time-bound**, and should be completed by December 31.

Objectives should refer to the deliverables of the project. In this case, the objective refers to the upgrade of the telephone system.

If you cannot determine the deliverables that are created to achieve the objective, the objective may be written at too high a level.

On the other hand, if an objective describes the characteristics of the deliverables, it is written at too low a level. If the statements describe the features and functions, they are requirements, not objectives.

* If the project is a part of a larger program, the objectives of all the underlying projects should be in alignment with the program objectives.

The project objectives and the business goals they support should be defined and agreed upon before the project starts. The deliverables of the project are created based on the objectives – not the other way around. That is, you don’t agree on the deliverables first and then establish objectives to match. You must understand the objectives of a project and then determine what deliverables are needed to achieve them.

* From our list of specific goals for the project we must develop a set of measurable objectives that will confirm that we have reached certain project milestones (or way points) including the final one of project completion.
* The measurable objectives (when achieved) demonstrate the extent to which the beneficial gains have been achieved, the goals have been met and the purpose of the project has been achieved.

#### Key Success Criteria (KSC)

These are the objectives that, if all else fails, we must meet and/or those that we must meet for the project to be deemed successful even if other objectives are met and achieved.

From the list of objectives, select those that are critical or key to the success of the project. These are the items that are critical to those who will benefit from the project and those with the responsibilities for judging success criteria (Managers, Customers, Members, Shareholders, Stakeholders, etc.).

The purpose of this is twofold. Firstly, to clarify in the minds of the project team and managers what the essential benefits that the project will deliver are.

Secondly, if circumstances change within the life of the project, then it is often extremely useful to see what the agreed success criteria were at the start of the project.

The project may then be replanned to ensure the KSC are met, or the KSC may be formally changed (by Senior Managers in the light of changed circumstances) and the project redefined and replanned to ensure they are met.

###  Define the Scope of Work and Deliverables

Defining scope is perhaps the most important part of the upfront definition and planning process. If you don’t know for sure what you are delivering and what the boundaries of the project are, you have no chance for success. If you have not done a good job of defining scope, managing scope will be almost impossible.

The purpose of defining scope is to clearly describe and gain agreement on the logical boundaries of your project.

Scope statements are used to define what is within the boundaries of the project and what is outside those boundaries. The more aspects of scope you can identify, the better off your project will be.

In the project context, the term **scope** refers to:

* **Product scope:** The features and functions that characterise a product, service, or result
* **Project scope:** The work that needs to be accomplished to deliver a product, service, or result with the specified features and functions.

Scope is used to define what the project will deliver and what it will not deliver. For larger projects, it can include the affected organisations, the transactions impacted, the data types included, etc.

**Project Scope Management**[[7]](#footnote-7) includes the processes required to ensure that the project includes **all the work required, and only the work required**, to complete the project successfully. Project scope management is primarily concerned with defining and controlling what is and is not included in the project.

Defining and managing the project scope influences the project’s overall success. Each project requires a careful balance of tools, data sources, methodologies, processes and procedures, and other factors to ensure that the effort expended on scoping activities is commensurate with the project’s size, complexity, and importance. For example, a critical project could merit formal, thorough, and time-intensive scoping activities, while a routine project could require substantially less documentation and scrutiny.

The project management team documents these scope management decisions in the project scope management plan.

The **project scope management plan** is a planning tool describing how the team will:

* Define the project scope
* Develop the detailed project scope statement
* Define and develop the work breakdown structure (WBS)
* Verify the project scope, and
* Control the project scope.

The project scope management plan provides guidance on how project scope will be defined, documented, verified, managed, and controlled by the project management team.

The components of a project scope management plan include:

* A process to prepare a detailed project scope statement based upon the preliminary project scope statement
* A process that enables the creation of the WBS from the detailed project scope statement, and establishes how the WBS will be maintained and approved
* A process that specifies how formal verification and acceptance of the completed project deliverables will be obtained
* A process to control how requests for changes to the detailed project scope statement will be processed. A project scope management plan is contained in, or is a subsidiary of, the project management plan. The project scope management plan can be informal and broadly framed, or formal and highly detailed, based on the needs of the project.

The preparation of a detailed project scope statement is critical to project success and builds upon the major deliverables, assumptions, and constraints that are documented during **project initiation** in the preliminary project scope statement.

During planning, the project scope is defined and described with greater specificity because more information about the project is known. **Stakeholder needs, wants, and expectations are analysed and converted into requirements**. The assumptions and constraints are analysed for completeness, with additional assumptions and constraints added as necessary.

* All projects should spend time up-front in a definition step. There is not a lot of information required to define a small project and therefore this work is usually pretty short. However, as the project becomes bigger and bigger, the need to fully understand what is being requested is more important, and gaining agreement on what is to be delivered is more difficult. Therefore, more time needs to be spent planning the work.

It should make sense that small projects need a shorter planning cycle and larger projects need a longer planning cycle. The effort required to plan the project depends on the amount of information, and the level of detail, that needs to be understood and documented. The duration required to define the work depends on the length of time necessary to discover and document the information, as well as the time required to gain agreement and approval from the client. At times, the project manager can get frustrated because of the difficulty in gaining agreement with the client on scope, timeline and cost. But that is exactly the reason this work is done ahead of time. Think of the problems you will encounter trying to gain agreement with the client on scope, schedule or cost when the work has started and the deliverables are actually being produced.

Before the project lifecycle begins (analysis, design, construct, etc.), a number of items need to be in place. For smaller projects, many of these conditions are met informally or implicitly. However, the larger a project gets, the more important it is that these criteria be met formally and explicitly.

* **Client gives approval to begin planning.** Normally, implicit approval is assumed to have occurred for the project to even get this far to begin with. However, if the project did not have a business case prepared and if it did not go through an authorisation process, then explicit approval should be sought before project planning begins.
* **Project is formally defined**. This is documented in the Project Definition, which contains objectives, scope, assumptions, deliverables, budget, etc. (For medium or small projects, this might be the Abbreviated Project Definition or a Service Request.)
* **Project work plan (schedule) is created.** A work plan must be prepared and used to manage the effort. This includes checkpoints, or milestones, when the project can be evaluated to ensure that it is appropriate to continue.
* **Client gives approval to begin project.** This is signified through an approved Project Definition. The Sponsor should sign the document to ensure agreement.
* **Project Management Procedures are defined and approved.** Procedures must be in place to describe how the project manager will manage issues, communication, risks, quality, scope, etc. This is especially true for large projects and less important as a project gets smaller.
* **Project team resources are assigned.** You must have the right people to staff and execute the project. Sometimes valid, approved projects must be delayed because people with the right skills are not available.

The project scope statement describes, in detail, the **project’s deliverables and the work required to create those deliverables**. The project scope statement also provides a common understanding of the project scope among all project stakeholders and describes the project’s **major objectives**.

#### Deliverables

**The fundamental objective of a project is to deliver something new.**

It is not always easy to distinguish between aims (goals), objectives and deliverables. If the project is to create new products or modify existing ones, then the list of deliverable items may be as simple as a set of part or product numbers. It may be 3 sets: new parts or products, obsolete parts or products and products or parts not affected by the project. These deliverables are easily distinguishable from the **goal;** which may be to increase market share by 7%, and the **objectives;** to have the product shipping by the 3rd quarter of the year, at a works cost price of R300, with shipments reaching or exceeding 5000 per month by end of the year.

However, the deliverable items may be less easy to distinguish in some projects. A project to deliver the implementation of a new integrated housing management computer system will deliver parameter set-up, data transfer, staff training, etc. But these look very little different from the objectives; parameter set-up by 30th March, data conversion by 15th June, and staff training by the end of July.

* In the first example, a new product will have a specification (or a set of specifications) which defines its essential elements, its functions, its quality standards, its marketing requirements, etc. These will form part of the project’s deliverables, or they may have been deliverables of a previous research project. Thus the deliverables may be reduced to a simple set of inventory numbers.
* The deliverables of the second project should concentrate on the qualitative and quantitative aspect of the project. In effect, the deliverables list becomes a set of specified outputs (a quantity and quality specification) for each milestone or way point of the project.

### Determine the Principal Work Activities

An **activity** is any subdivision of project tasks. The set of activities defined for a project should be **comprehensive** or completely **exhaustive** so that all necessary work tasks are included in one or more activities. Typically, each design element in the planned project will have one or more associated project activities. Execution of an activity requires time and resources, including manpower and equipment.

Each phase of a project is composed of a number of major activities that will lead to achieving one or more deliverables. Activities are composed of a series of tasks that are the lowest level of detail that can comfortably be managed. Team members who will be performing the tasks should be involved in the activity/task planning process.

The time required to perform an activity is called the duration of the activity. The beginning and the end of activities are signposts or milestones*,* indicating the progress of the project.

Occasionally, it is useful to define activities which have no duration to mark important events. For example, receipt of equipment on site may be defined as an activity since other activities would depend upon the equipment availability and the project manager might appreciate formal notice of the arrival. Similarly, receipt of regulatory approvals would also be specially marked in the project plan.

Estimates of time to complete each task should be based on typical work effort required and then may be adjusted to reflect "real world" conditions.

#### How much detail is enough?

The ultimate goal in breaking the work tasks down is to ensure that all of the work that is needed to meet the project’s objectives is recognised and planned for accurately from the beginning

The following are guidelines to establish how much detail is required:

* **One owner per task:** The tasks must be defined such that they can be assigned to one person who will be doing that work.
* **Clear measurable deliverable with measurement specified:** The tasks must be defined such that the task owner can be given completion criteria that are clear and measurable.
* **Small enough task duration for tracking:** Task duration at lowest level should be less than 5% of total project time, to ensure visibility into task progress, at a small enough resolution to recognise quickly if the project is off track (e.g. 2 weeks if 1 year; 2 days if 2 months).

Greater levels of detail are generally required for projects which are:

* Larger
* More risky
* Dissimilar to past projects
* Difficult to define (susceptible to change)
* Performed by internal work groups
* Planned for the near future
* The extent of work involved in any one activity can vary tremendously in project plans. Indeed, it is common to begin with fairly coarse definitions of activities and then to further sub-divide tasks as the plan becomes better defined.

As a result, the definition of activities evolves during the preparation of the plan. A result of this process is a natural **hierarchy** of activities with large, abstract functional activities repeatedly sub-divided into more and more **specific sub-tasks**.

**For example**, in the construction industry the problem of placing concrete on site would have sub-activities associated with placing forms, installing reinforcing steel, pouring concrete, finishing the concrete, removing forms and others.

* Even more specifically, sub-tasks such as removal and cleaning of forms after concrete placement can be defined. Even further, the sub-task "clean concrete forms" could be subdivided into the various operations, as follows:
* Transport forms from on-site storage and unload onto the cleaning station.
* Position forms on the cleaning station.
* Wash forms with water.
* Clean concrete debris from the form's surface.
* Coat the form surface with an oil release agent for the next use.
* Unload the form from the cleaning station and transport to the storage location.

This detailed task breakdown of the activity "clean concrete forms" would not generally be done in standard construction planning, but it is essential in the process of programming or designing a **robot** **or computerised machine** to undertake this activity, since the various specific tasks must be well defined for robot implementation; it would also be necessary with an inexperienced, new team on a new project.

The number and detail of the activities in a project plan is a matter of judgment or convention. Project plans can easily range between less than a hundred to many thousand defined tasks, depending on the planner's decisions and the scope of the project.

**It is useful to define separate work tasks for:**

* Those activities which involve different resources, or
* Those activities which do not require continuous performance.

For example, the activity "prepare and check drawings" should be divided into a task for preparation and a task for checking since different individuals are involved in the two tasks and there may be a time lag between preparation and checking.

It is important to keep in mind that task definition will serve as the basis for scheduling, for communicating the project plan and for project monitoring. Completion of tasks will also often serve as a basis for progress payments from the client. Thus, more detailed task definitions can be quite useful. But more detailed task breakdowns are only valuable to the extent that the resources required, durations and activity relationships are realistically estimated for each activity.

Providing detailed work task breakdowns is not helpful without a commensurate effort to provide realistic resource requirement estimates.

###  Identify and Analyse the Potential Risks

**We need to identify, quantify and make contingency plans to deal with project risks.**

The **constraints** on a project are one form of risk. The project may well have specific constraints that lead to identifiable risks.

What do we mean by project risk? A risk is anything that will have a negative impact on any one or all of the primary project constraints, namely **time, resources and Performance Criteria.**

Some examples might be:

* A key person with specialist skills is required for several projects. If one of those projects over runs then that person will be required to work on several projects at the same time. If this is not practical, then the other projects will be delayed.
* A person selected to do work on a project may not have the skills to do the work. If this risk is identified then the project plan can allow for training time and learning curve time. Alternatively, another resource may be identified.
* A vital machine may be scheduled for maintenance during the time it is required for the project. The maintenance schedule must be known and the effect of early or late maintenance or even machine substitution must be assessed and built into the project plan.
* Let’s take the example of a new computer system implementation and look at what is often one of the most time-consuming tasks (one that is so often prone to increased duration) and see how we might reduce the associated risks:

When implementing a new computer system the quantity and difficulty of data transfer (extracting data from the existing system, reformatting it and importing it into the new system) is often grossly under estimated.

The time the work will take has a great sensitivity to:

* IT staff programming skills, their technical knowledge of both systems as well as their knowledge about how the old and new systems will be operated
* The similarity of previous transfers by the supplier for other customers (even similar ones will not be exactly the same)
* The similarity between the data in the old and new systems
* The quality of the data to be transferred
* The knowledge and skill of the staff who must validate the transferred data.
* The importance of historic data to the satisfactory operation of the new system or the service level provision to customers.

All of these will almost certainly be untried to some extent. The greater the quantity and type of data transferred, the greater the work in constructing the data transfer programs and in validating the take-on data.

#### What are the risks?

* That the cost of data transfer will increase.
* That the ‘live’ date will be delayed.
* That the system may not operate correctly.
* That the customers will be dissatisfied.
* That, in consequence, the organisation will lose income or market share.

Risk can be reduced by analysing what is essential data, what is accurate data and what is merely nice to have.

* Risk is minimised by transferring only essential data that is also accurate. Re-enter essential but inaccurate data and store the rest on CD-ROM when the data transfer part of the project is complete. You may never use this data but you will feel more secure for having done it.
* Obviously, putting only your best people on the project will also substantially reduce the risk of delay and the consequences of having inaccurate data.

###  Describe the Change Processes essential to the Project Success

If you look at the reasons that projects fail, it is usually the result of two problems. Either the team did not spend enough time defining the work and/or there was a lack of scope management. Even if the project manager did a good job of defining scope, the hard part comes in having to manage the project to that agreed-upon scope.

The purpose of scope change management is to protect the viability of the approved Project Definition and the approved business requirements.

In other words, the Project Definition defines the overall scope of the project, and the business requirements define the deliverables in detail.

The project team committed to a deadline and budget based on this high-level and detailed scope definition. If the deliverables change during the project (and usually this means that the client wants additional items), the estimates for cost, effort and duration may no longer be valid.

If the sponsor agrees to include the new work into the project scope, the project manager has the right to expect that the current budget and deadline will be modified (usually increased) to reflect this additional work. This new estimated cost, effort and duration now become the approved target.

Sometimes the project manager thinks that scope management means having to tell the client ‘no’. That makes the project manager nervous and uncomfortable. However, the good news is that managing scope is all about getting the sponsor to make the decisions that will result in changes to project scope.

* This is very important. Few clients can see and express every requirement up-front. Therefore, there are usually changes that need to be introduced during the project. These changes may be very necessary for the solution and there may be valid business reasons why they should be included.
* The project manager and project team must recognise when these changes are requested. Then they must follow a predefined scope change process.
* This process ultimately brings the appropriate information to the project sponsor and allows the sponsor to decide if the modification should be approved based on the business value and the impact to the project in terms of cost and schedule.

Formative Assessment 2 SO2

# 3. DEVELOP A PROJECT PLAN

#### Specific Outcome

Develop a project plan.

#### Assessment Criteria

* The overall objectives of the plan are described with reference to the achievement of unit objectives.
* The sponsor, project team and other stakeholders are described with their contributions to the project.
* A work breakdown structure (WBS) is developed to describe the main activities of the project and the interrelationship between them.
* The project activities, required performance levels and quality criteria are stipulated and communicated to team members and other stakeholders to promote quality and effectiveness.
* The project plan is checked for accuracy, completeness and compliance to internal and external requirements.

## Developing a Project Plan

The Project Planning Phase is the most important phase in project management. The effort spent in planning can save countless hours of confusion and rework in the subsequent phases.

The second phase should include a detailed identification and assignment of each task until the end of the project. It should also include a risk analysis and a definition of criteria for the successful completion of each deliverable. The governance process is defined, stake holders identified and reporting frequency and channels agreed.

The main purpose of project planning is to guide execution.

###  Describe the Overall Objectives of the Plan

You need to plan how you are going to manage the project, by planning to:

* Assign people, explain tasks and allocate responsibilities for deliverables: In the planning phase you already plan the human resources required. You will see that the phases do overlap, because in this phase you need to be sure that your team are aware of what it is each one needs to accomplish to achieve their part of the project.
* It is important to encourage questions and concerns from team members until everyone is comfortable that their roles and expectations are feasible and appropriate
* Define how the team will perform together: Develop procedures that you and your team will use to support your day-to-day work. These procedures allow people to effectively and efficiently perform their tasks, as well as contribute to a positive team atmosphere. At a minimum develop procedures for the following:
* Communication:
* When and how to use email to share project information
* Which types of information should be in writing
* When and how to document informal discussions
* How to set up regular scheduled reports and meetings to record and review progress
* How to address special issues that arise
* Conflict Resolution
* Standard approaches that you would encourage people to develop a mutually agreeable solution
* Escalation procedures (steps you take if the people involved can’t readily resolve their differences.
* Decision-making:
* How will team decisions be made according to the situation? Majority rule, consensus, Nominal Group Technique, decision by technical expert, etc.
* **Set up tracking systems:** Effective project control means having accurate and timely information to help you identify problems promptly to take corrective action. Throughout the project you need to track the following information:
* Schedule achievement: How well you are meeting established dates?
* Personnel resource use: The level of effort people are spending on their assignments
* Financial expenditure: Funds you’re spending of project resources.

Furthermore you need to satisfy your information needs and those of your project audience. To this end schedules of reports and meetings will be helpful:

* Reports that will be issued
* Meetings that will be held and their specific purposes
* When reports will be issued and meetings will be held
* Who will receive the reports and attend the meetings
* The formats and content of the reports and meetings
* **Plan to communicate the start and progress of the project:** Notify the key project audience (team members, drivers and supporters) that the project has been approved and when it will start. Announce it to others who may be interested – Stakeholders. Consider one or more of the following approaches:
* Email selected individuals or departments
* Announcement in organisation’s newsletter
* A flyer on a prominent bulletin board
* A formal kick-off meeting
* Tell them the purpose and scope, intended outcomes and results and key dates. Invite them to contact you if they have questions or require detailed information
* **Plan to do** **a phase review at the end of major phases / milestones in the project:** At the end of every phase of a project it is important to have a record of progress and issues as well and how they have or will be dealt with. The End Stage Report will assist you achieve this purpose. Summarise progress to date, the overall project situation and sufficient information to; for example, ask for a Project Board decision on what to do next with the project.

|  |
| --- |
| **Topic** |
| **Current Stage Plan:** Actual performance against agreed results |
| **Project Outlook:** Plan review. Business case review, risk review etc |
| **Statistics:** Project issues, situation, stats |
| **Other Events:** Any events that affect stage performance |

The key outputs of the planning phase include:

* A team contract
* A finalised scope statement
* A work breakdown structure (WBS)- see below
* A project schedule, in the form of a Gantt chart with all dependencies and resources entered- see Module 4
* A list of prioritised risks

### Describe the Project Stakeholders

Projects are strongly stakeholder-driven. It’s their wishes, fears, dreams, their “stakes” that determine and drive the course of projects. For successful projects, it’s not enough to deliver on the customer’s demand; projects have to meet all stakeholder expectations.

Identifying stakeholders is a primary task because all the important decisions during the initiation, planning and execution stages of the project are made by these stakeholders.

Project stakeholders are individuals and organisations that are actively involved in the project, or whose interests may be affected as a result of project execution or project completion. Stakeholders may also exert influence over the project’s objectives and outcomes.

A stakeholder can be a project team member, an employee of the user organisation, or a senior manager; *anyone* who has an interest in the project.

The following are **examples of project stakeholders[[8]](#footnote-8)** :

* **Project leader** (or project manager) – The person responsible for managing the project; the head of the project; defines, plans, controls, and leads the project
* **Project team members** – The group that is performing the work of the project; they produce the outputs (deliverables) for the project; participate in the project management process; contribute their skills and effort to perform tasks
* **Sponsor** (or upper manager) – The person or group that provides the financial resources, in cash or in kind, for the project; the person with formal authority who is ultimately responsible for the project; oversees the project; acts as a liaison between the upper management team and the project leader; provides authority, guidance, and maintains project priority
* **Project customer** – The person or organisation that will use the project’s product; the person or group whose needs and requirements drive the project; receives the final output(s) that the project produces; provides product requirements and funding. There may be multiple layers of customers. For example, the customers for a new pharmaceutical product can include the doctors who prescribe it, the patients who take it and the insurers who pay for it. In some application areas, customer and user are synonymous, while in others, customer refers to the entity acquiring the project’s product and users are those who will directly utilise the project’s product.
* **Functional managers** (also known as resource managers or line managers) – provide company policy an resources, particularly people who are involved in the project
* **Performing Organisation.** The enterprise whose employees are most directly involved in doing the work of the project.
* **Project Management Team.** The members of the project team who are directly involved in project management activities.
* **Influencers.** People or groups that are not directly related to the acquisition or use of the project’s product, but due to an individual’s position in the customer organisation or performing organisation, can influence, positively or negatively, the course of the project.

In addition to these key stakeholders, there are many different names and categories of project stakeholders, including internal and external, owners and investors, sellers and contractors, team members and their families, government agencies and media outlets, individual citizens, temporary or permanent lobbying organisations, and society-at-large. The naming or grouping of stakeholders is primarily an aid to identifying which individuals and organisations view themselves as stakeholders. Stakeholder roles and responsibilities can overlap, such as when an engineering firm provides financing for a plant that it is designing.

Stakeholders have varying levels of responsibility and authority when participating on a project and these can change over the course of the project’s life cycle. Their responsibility and authority range from occasional contributions in surveys and focus groups to full project sponsorship, which includes providing financial and political support. Stakeholders who ignore this responsibility can have a damaging impact on the project objectives. Likewise, project managers who ignore stakeholders can expect a damaging impact on project outcomes.

The **stakes** are the wants or needs of the holders. They stick to them; they defend them; they are married to them. The stakeholders will take all actions necessary to defend their stakes, or to get as near to their realisation as possible.

Stakes can be two-fold: they can either relate to stakeholder **fears or wishes**. With the former, there is something to lose; with the latter, there is something to gain. Either way, stakes are important to the stakeholders and no-one, not even the project manager, should ignore or underestimate them.

Therefore, the project management team must identify the stakeholders, determine their requirements and expectations, and, as far as possible, manage their influence in relation to the requirements to ensure a successful project.

###  Develop a Work Breakdown Structure

The WBS is a deliverable-oriented hierarchical decomposition of the work to be executed by the project team, to accomplish the project objectives and create the required deliverables.

* The WBS organises and defines the total scope of the project.
* The WBS subdivides the project work into smaller, more manageable pieces of work, with each descending level of the WBS representing an increasingly detailed definition of the project work.

The planned work contained within the lowest-level WBS components, which are called **work packages**, can be scheduled, cost estimated, monitored, and controlled.

The WBS represents the work specified in the current approved project scope statement. Components comprising the WBS assist the stakeholders in viewing the deliverables of the project.

Although each project is unique, a WBS from a previous project can often be used as a template for a new project, since some projects will resemble another prior project to some extent. For example, most projects within a given organisation will have the same or similar project life cycles and, therefore, have the same or similar deliverables required from each phase. Many application areas or performing organisations have standard WBS templates.

The *Project Management Institute Practice Standard for Work Breakdown Structures* provides guidance for the generation, development, and application of work breakdown structures. This publication contains industry-specific examples of WBS templates that can be tailored to specific projects in a particular application area.

#### Decomposition

Decomposition is the subdivision of project deliverables into smaller, more manageable components until the work and deliverables are defined to the work package level. The work package level is the lowest level in the WBS, and is the point at which the cost and schedule for the work can be reliably estimated. The level of detail for work packages will vary with the size and complexity of the project.

Decomposition may not be possible for a deliverable or subproject that will be accomplished far into the future. The project management team usually waits until the deliverable or subproject is clarified so the details of the WBS can be developed. This technique is sometimes referred to as rolling wave planning.

Different deliverables can have different levels of decomposition. To arrive at a manageable work effort (i.e., a work package), the work for some deliverables needs to be decomposed only to the next level, while others need more levels of decomposition. As the work is decomposed to lower levels of detail, the ability to plan, manage, and control the work is enhanced. However, **excessive decomposition** can lead to non-productive management effort, inefficient use of resources, and decreased efficiency in performing the work. The project team needs to seek a balance between too little and too much in the level of WBS planning detail.

Decomposition of the total project work generally involves the following activities:

* Identifying the deliverables and related work
* Structuring and organising the WBS
* Decomposing the upper WBS levels into lower level detailed components
* Developing and assigning identification codes to the WBS components
* Verifying that the degree of decomposition of the work is necessary and sufficient.

Identifying the major deliverables of the project and the work needed to produce those deliverables requires analysing the detailed project scope statement. This analysis requires a degree of expert judgment to identify all the work including project management deliverables and those deliverables required by contract.

Structuring and organising the deliverables and associated project work into a WBS that can meet the control and management requirements of the project management team is an analytical technique that may be done with the use of a **WBS template** or even using **Post-Its**:

It might surprise you to know the number of people that use yellow sticky pads and a blank wall to create the first draft of the Work Breakdown Structure. This technique is very easy. You first get the appropriate people into the same room. These are the project team members and clients who have the expertise to build the WBS. Typically you start off by writing the names of the major deliverables on Post-it notes – one deliverable per note. Make sure the attendees agree on the major deliverables to begin with. If any of the deliverables are very large, you can create new Post-it notes that describe the deliverables at a lower level, or individual work products. These are arranged under the higher-level deliverable. The deliverable needs to be identified at a level low enough that you understand what it takes to build it. In general two levels should be enough. One level is typical.

Next, for each deliverable, describe the activities that must take place to complete it. Each activity goes on a separate Post-it note, Again, these are arranged under the specific deliverable they refer to. If you have a sense for the order that the activities need to be completed, you can arrange the Post-it notes sequentially. However, this is not important at this point. The important thing is to identify all the work.

Look at the activities that are required to build each deliverable (or work product) and estimate the work associated with each activity. If the effort associated with an activity is larger than your estimating threshold, identify the more detailed activities that make up the higher-level one. Each of these activities is represented by new Post-it notes under the higher-level activity (which now becomes a summary activity). Continue with this process until the work required to complete all of the deliverables is defined, as best you know today. The levels of activities will not be the same for each deliverable. Some simple deliverables may meet the threshold criteria in one or two levels. Others may take three or four, or more.

The advantage of this approach is that your team can visually see the work and they can help ensure all the work is identified to complete the project. The Post-it sheets also give you the ability to easily move things around. If you add an activity and then decide to remove it, you just pick up the Post-it sheet. Likewise, if a deliverable or group of activities is in the wrong place, you just move the Post-it notes to where they need to be.

When you are all done, you can enter the summary and detailed work activities into your work plan management tool.

The resulting structure can take a number of forms, such as:

* Using the major deliverables and subprojects as the first level of decomposition
* Using subprojects, where the subprojects may be developed by organisations outside the project team. For example, in some application areas, the project WBS can be defined and developed in multiple parts, such as a project summary WBS with multiple subprojects within the WBS that can be contracted out. The seller then develops the supporting contract work breakdown structure as part of the contracted work.
* Using the phases of the project life cycle as the first level of decomposition, with the project deliverables inserted at the second level.
* Using different approaches within each branch of the WBS, where test and evaluation is a phase, the air vehicle is a product, and training is a supporting service.

Decomposition of the upper level WBS components requires subdividing the work for each of the deliverables or subprojects into its fundamental components, where the WBS components represent verifiable products, services, or results.

Each component should be clearly and completely defined and assigned to a specific performing organisational unit that accepts responsibility for the WBS component’s completion.

The components are defined in terms of how the work of the project will actually be executed and controlled. For example, the status reporting component of project management could include weekly status reports, while a product to be manufactured might include several individual physical components plus the final assembly.

Verifying the correctness of the decomposition requires determining that the lower-level WBS components are those that are necessary and sufficient for completion of the corresponding higher-level deliverables.

**Note**: There are a number of ways to create the Work Breakdown Structure (WBS). Remember that the WBS is the first step toward creating the project work plan. It is not the work plan itself. It is important to use the WBS to identify all the major work to be done. It is not important to break the work down into levels or patterns that provide a sense for the timing and sequencing. This will all be done later.

Here are some examples of how the WBS can be structured.

* **Generic (classic) WBS:**

This example shows a generic example of breaking down a deliverable into work packages, and then breaking work components into activities, and then breaking activities down into tasks. Remember that you can break the work into deliverables first or into other categories first. However, regardless of how you start the top level WBS, you will have to transition to deliverables and then to activities. The activities of the project are usually for the purpose of building deliverables, so at some point this deliverable activity breakdown needs to occur. Notice that the Work Package level and the Task level are both optional. Your WBS may go from deliverable to activities and stop there.


#### WBS by major project phase or stage

This example shows the major phases required for a project. They do not have to be in the correct time-sequence. Just determine what the major pieces of work are and break each one down further. (Many of these boxes will be broken down much further into the activities required to execute the work.)

* **WBS by timeline**

In this example, the team has built a WBS-based on the order in which the major work components should be performed. This may be easier to think through in some projects where there is some experience in knowing how the timeline will lay out.


#### WBS by deliverable

First determine all the deliverables that the project will produce, and then break them down into the work required. Again, this does not imply sequencing. Many of these activities may end up being executed in parallel.


###  Stipulate and Communicate the Project Activities, Performance Levels and Quality Criteria

Communicating regularly and effectively is a key to successful projects. This entails sharing the **right** information with the **right** people in a **timely** manner. Informative communication supports the following:

* Continued buy-in and support from key audiences and team members
* Prompt problem identification and decision-making
* A clear project focus
* Ongoing recognition of project achievements
* Productive working relationships among team members

Design a communication plan by asking the following questions:

* Who needs to receive information?
* What kind of information is required?
* When is the information needed?
* How should the information be presented?
* How is the team going to work together?
* How are status meetings going to run?

The following is an example of planning for communication:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Deliverable / Description** | **Type(Man / Mktg / Info)** | **Target Audience** | **Delivery Method** | **Delivery Frequency** | **Who Responsible?** |
| **Status Reports** | Mandatory | SponsorManagersSteering committee | Project Status Report template e-mailed to audience. | Monthly | Project manager |
| **Local Awareness-Building Sessions**Inform people of the project and the deliverables that will impact them. | Info | Local user community | Stand-up presentations. | Schedule twice weekly until all users covered | Lead analyst |
| **Project Pins**Pins will be given out to all people attending the awareness presentations to build enthusiasm and brand image. | Marketing | All users, customers and stakeholders | Hand out to those that attend the awareness presentations.Send pin in inter-company mail to those that attend Webcasts. | Same frequency as awareness sessions | Terry Allen—Project administrator |

#### Choosing the appropriate medium

Project communication comes in two forms:

* **Formal combinations** are pre-planned, conducted in a standard format in accordance with an established schedule. Examples include weekly team meeting and monthly progress reports.
* **Informal meetings** occur as people think of information that needs to be shared. These forms of communication occur during the normal course of business and include brief conversations in the corridor, emails, and chats over lunch. Take note of the following guidelines:
	+ Confirm in writing any important information shared in informal discussions.
	+ Avoid informal discussions with only some of the people who are involved in the topic.

#### Manage Quality

Quality is ultimately defined by the customer and represents how close the project and deliverables came to meeting the customer's requirements and expectations*.* Our goal is to meet the customer's requirements and expectations. This is a critical point. Sometimes there is a tendency to think that 'quality' means the best material, the best equipment and absolutely zero defects. However, in most cases, the customer does not expect and cannot afford a perfect solution.

* The purpose of the quality management step is to first understand the actual expectations of the customer in terms of quality and then put a proactive plan and process in place to meet those expectations. A faulty process cannot produce a consistently high quality product.
* There needs to be a repetitive cycle of measuring quality, updating processes, measuring, updating processes, etc. To make the quality management process work, collecting metrics is vital.
* One of the purposes of quality management is to find errors and defects as early in the project as possible. Therefore, a good quality management process will end up taking more effort hours and cost up-front in the project. However, there will be a large payback as the project progresses.
* Small projects do not require much more than basic quality control, but for medium and large projects, a Quality Plan should be constructed to make sure that the project is being completed to standards.

#### Choosing the appropriate format

|  |  |
| --- | --- |
| **Key Roles in Project** | **Names of People In the Roles** |
|  |  |
|  |  |
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|  |  |
|  |  |

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| --- |
| **Project Objectives and Performance Criteria** |
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| --- |
| **Customer Objectives and Quality Criteria** |
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| --- |
| **Provider Objectives** |
|  |
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| --- | --- | --- |
| **Deliverables to be Provided** | **Review Process**  | **Completion Date** |
|  |  |  |
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| --- | --- | --- | --- | --- |
| **Milestones** | **Baseline Target Date** | **Actual Result Date** | **Estimated Effort**  | **Actual Effort** |
|  |  |  |  |  |
|  |  |  |  |  |
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|  |  |  |  |  |

[List any special practices or processes used by this project. Include new types of risk management, project estimating, progress review, management review, customer interactions, or other practices not used on projects in the past. Describe an item in additional text, if needed to explain the item.]

|  |  |
| --- | --- |
| **Special Processes or Practices Used in This Project** | **Value (if already used)**  |
|  |  |
|  |  |
|  |  |
|  |  |

Adapted from: www.dir.state.tx.us/eod/qa/download.htm

###  Check the Project Plan

Once the Project Plan has been drawn up, it must be checked for accuracy, completeness and compliance to internal and external requirements.

Formative Assessment 3 SO3

# 4. DEVELOP TOOLS TO MEASURE KEY PERFORMANCE PARAMETERS

#### Specific Outcome

Develop tools to measure key performance parameters.

#### Assessment Criteria

* A Gantt chart is developed for managing and evaluating the time dimension.
* A budget is developed for managing and evaluating the cost dimension.
* Quality parameters are developed for managing and evaluating quality.
* The measurement tools are communicated to team members to promote a common understanding of requirements.

## Developing Tools to Measure Key Performance Parameters

**Performance measurement** is the process whereby a project team establishes the parameters within which they can measure if the project is achieving the desired results.

The purpose behind measuring is to improve performance.

Behn (2003)[[9]](#footnote-9) gives the following reasons for adopting performance measurements:

1. **To evaluate how well the initiative is performing**. In order for the project team to evaluate its performance it requires standards to compare its actual performance against past performance/ / industry standards/client expectations.
2. **To Control:** Managers need to ensure that their subordinates are doing the right thing.
3. **To Budget:** Budgets can be tools in improving performance. Sometimes budget increases could be the answer to improving performance; for example, purchasing better technology because the current technology is outdated and affects operational processes negatively.
4. **To Motivate:** Giving people significant goals to achieve and then use performance measures- including interim targets- to focus people’s thinking and work, and to provide a periodic sense of accomplishment. Performance targets may also encourage creativity in developing better ways to achieve the goal.
5. **To Celebrate:** People need to commemorate their accomplishments- such rituals bind people together, and give them a sense of their individual and collective relevance.
6. **To Learn:** By analysing information, the project team is able to understand the reasons behind its poor or good performance.
7. **To Improve:** What exactly should the team do differently to improve performance?

###  Develop a Gantt Chart

The Gantt chart is a graphic planning and control method in which a project is broken down into separate tasks. Estimates are then made of how much time each task requires, as well as the total time needed to complete the whole project. The planner also indicates the start and end dates of the tasks on this chart.

The basic Gantt chart is an easy way to document schedules. It is shows activity start, duration, and completion. It shows the connection between events and the calendar, and provides a graphical analogue of the activity duration.

The Gantt schedule can illustrate the relationship between work activities having duration, events without duration that indicate a significant completion, and milestones that represent major achievements or decision points. Various annotations can be used to communicate the progress of the project effort compared to the baseline plan, as well to depict in a graphical way areas where there are modified expectations from the baseline plan.

Once a Gantt schedule has been established for a project, progress should be periodically plotted against the baseline schedule. If different functional areas are involved in a project, each area may need its own detailed schedules to support the project master schedule. In such cases it is important that working schedules be linked to a common master schedule in a way that they can be easily updated. Each activity or event on the schedule should have a responsible individual assigned, so there is clear ownership and so schedule status can be updated without a lot of fuss.

During World War 1 Henry Laurence Gantt, an industrial engineer developed the first production control chart. To this day, most organisations use some or other form of it to plan and chart output performance.

#### Example:

The planning for a training session was broken up into the essential activities.

These are depicted on the vertical axis in the figure that follows:

* Writing
* Proofreading and editing
* Printing and binding
* Marketing and selling the course
* Sourcing trainers
* Arranging the facility
* Training

It is clear from the chart that some of the activities require the completion of other activities before they can begin (for example, the course must be written before it can be edited and proofread).

Once the basic activities have been determined, a **target completion date** must be set. This is depicted on the **horizontal axis**.

The next step is to determine the **duration** of each activity. If the training is scheduled for 29 June, the venue must be booked at least a month in advance. Therefore 29 May is the latest date for booking the venue.

Once the activities, activity duration, completion time and latest starting time have been determined, the Gantt chart can be drawn. You can monitor the progress of a project by comparing **actual progress**  with **planned progress** .

**1. Write course**

**2. Proofread and**

 **edit**

**3. Print and bind**

 **Manuals**

**4. Market and sell**

 **course**

**5. Source trainers**

**6. Arrange facility**

**7. Training**

  **15 Mar 18Apr 3 May 10 May 30 May 15 June 29June**

**Now you can see at a glance:**

* Where the activities are ahead of schedule
* Where the activities are behind schedule
* Where the activities are exactly on schedule

**To construct a Gantt chart:**

* Identify the list of tasks to be completed
* Determine the duration of each task and when it must start and end
* Determine which tasks overlap and which are dependent on one another
* Number and list the tasks down the left (vertical) axis
* Write the time period in days, weeks, or months under the horizontal axis
* For each task draw a white horizontal bar to show when each task starts and ends
* When an activity is completed, fill in a black bar. One will be able to see at a glance how the project is progressing.

###  Develop a Budget

For a project to be successful it is important that the four basic elements of a project, namely resources, time, money and scope are managed correctly, because all these elements are interrelated. For this, you need to remember that:

* Resources include people, equipment and material.
* Time includes task durations.
* Money refers to costs, contingencies and profit.
* Scope refers to the project definition, the size of the project, goals and the requirements needed to accomplish the project within a budget.

The key issues that must be considered with regard to project finances are:

* **Resource Planning**: determining what resources (people, equipment, materials) and what quantities of each should be used to perform project activities.
* **Cost Estimating**: developing an approximation (estimate) of the costs of the resources needed to complete project activities.
* **Cost Budgeting**: allocating the overall cost estimate to individual work items.
* **Cost Control**: controlling changes to the project budget.

Project cost management requires an understanding of basic principles of revenues and expenses. It includes the processes required to ensure that the project is completed within an approved budget.

There are several types of costs to understand in project cost management.

#### Direct Costs

Direct costs are costs that can be traced back to specific project activities. Examples of direct costs are costs for materials used on the project and costs for labour expended in project-related activities. Direct costs are:

* Labour (the cost of people that are working on the project)
* Materials (cost of items purchased for use in carrying out the project)
* Supplies and equipment (cost of items consumed by the project)
* Training (specifically in relation to the project – to ensure the project is successful)
* Travel and miscellaneous costs

#### Indirect Costs

Indirect costs are costs that cannot be traced back to specific project activities. These costs are often called the "cost of doing business". Examples of indirect costs are the costs associated with lighting and heating (or cooling) the workplace. Another indirect cost is the everyday cost of doing all the administrative tasks associated with running a business (e.g., paperwork related to human resources management or filing taxes).

It is natural to tend to focus on direct costs, but the allocation of indirect costs to projects can determine which projects are initiated. There are many ways to allocate a company's indirect costs, so the total "cost" of a project can vary depending on the accounting method employed. Indirect costs include the following:

* Fringe benefits (this is the non-payroll portion of the workers’ salaries for the project, e.g. medical aid, pension, etc.)
* General and Administrative (costs of management and support services, e.g. secretarial services, purchasing department, legal services, human resources, etc.

#### Fixed Costs

A fixed cost does not vary with quantity. In making a new product, there are large costs in setting up the project and especially if there are not many units. For example, if it costs R500,000.00 for a manufacturing machine, and one only build three units, the fixed cost is still R500,000.00 to set-up, whereas if one build 1,000,000 units, the fixed cost is still R500,000.00 but it is worthwhile because the cost is counted against all the units manufactured. Obviously it is important when deciding on what project to undertake to consider the fix costs that will have to be incurred.

#### Variable Costs

Variable costs are those costs that vary with the number of units that are produced because there are some costs associated with material for each item, the production time for each unit as well as the cost of assembling an item.

A **budget checklist** provides a list of possible costs chargeable to a sponsored project. In order to avoid costly omissions when preparing application/proposal budgets, be sure to consider the following:

* Salaries
* Fringe benefits
* Equipment (non-expendable equipment, accessories, freight, installation)
* Consultants (fees, travel)
* Supplies and expendable equipment (questionnaires, chemicals, glassware, electronic components, brochures and announcements, audio and video tapes, film and film processing supplies, etc.)
* Travel (domestic and foreign, field work, conferences, subsistence costs, transportation)
* Publications
* Sub-contracts
* Other direct costs (space or equipment rental, alterations or renovations, human subjects or informant fees, service contracts, communications, stipends for participants, vehicle lease or purchase)
* Facilities and Administrative costs (on-site and off-site)

Let’s look at some of these costs in more detail:

#### Resource rates

* The cost of a work resource based on the amount of time that the resource spends working.
* The budget should include all direct costs, including personnel, equipment, supplies, travel and other costs for activities required for the project.
* Most costs may be adjusted for inflation in future project years.
* In most instances, equipment purchases are made toward the beginning of the project.

#### Project Personnel:

Personnel costs are usually the largest component of a budget, so this section warrants the most attention. Once you have a specific idea of what you hope to accomplish, determine what types and levels of personnel you will need to accomplish your goals.

**Benefit Rates:**

Benefit rates include:

* Unemployment taxes
* Workers' compensation insurance

#### Equipment

Equipment is defined as tangible assets with a useful life of more than one year. Shipping and transportation costs associated with the equipment are treated as part of the total equipment cost. Examples: chairs, desks, computers, filing cabinets, fax machines, printers, refrigerators, microscopes, incubators, projectors, computer software; office furnishings; scientific or medical equipment; alarm/monitoring system hardware, etc.

#### Materials and Supplies

Supplies should be subdivided into major categories: state the type, the number to be used, their unit purchase cost, etc.

#### Travel

An individual on the project might have to travel to present data or to attend a conference or class.

Properly preparing your budget will show how cash flows in and out of your project. Also, it may then be used in planning your short-term credit needs. In today's financial world, you are required by most financial institutions to prepare budgets before making capital expenditures for new assets, as well as for expenditures associated with any planned expansion.

The budget determines your future ability to pay debts as well as expenses. For example, preliminary budget estimates may reveal that your disbursements are lumped together and that, with more careful planning, you can spread your payments to creditors more evenly throughout the course of the project. As a result, less bank credit will be needed and interest costs will be lower. Banks and other credit-granting institutions are more inclined to grant loans under favourable terms if the loan request is supported by a methodical cash plan.

Similarly, a project that is run on a casual day-to-day basis is more likely to borrow funds at inopportune times and in excessive amounts. Without planning, there is no certainty that you will be able to repay your loans on schedule. However, once you've carefully mapped out a budget, you will be able to compare it to the actual cash inflows and outflows of your project. You will also find that this comparison will go a long way in assisting you during future budget preparation. Also, a monthly budget helps pinpoint estimated cash balances at the end of each month which may foresee short-term cash shortfalls.

**To draw up your project budget you can use the WBS to:**

* Partition the major project deliverables into smaller components to improve the accuracy of cost estimates
* Provide a mechanism for collecting and organising actual costs
* Provide a mechanism for performance measurement and control

The following is an example of a simple cash budget for the first 90 days of a 6-month project:

|  |
| --- |
| **CASH BUDGET FOR 90 DAYS** |
| Beginning cash balance | **R1 520 000** |
| **Deduct:** |
| Estimated payments to suppliers | R 700 000 |
| Estimated cash expenses | R 150 000 |
|  | **R850 000** |
| **Estimated ending cash balance** | **R 670 000** |

Frequently, the demand for cash is not spread evenly throughout the duration of the project. Several large payments may become due in one particular month, particularly in the execution phase of the project life cycle. It is unlikely that disbursements will be made in every instance when costs are incurred or when materials and services are used. Insurance and rent, for example, are often paid in advance with the cost being absorbed against future operations. A debt of cash disbursements is made by scheduling payments required for materials, labour, other operating costs, debt service, and so forth.

Budgeted cash receipts and disbursements are brought together to form a total cash budget. From this summary of estimated cash flow, it is possible to anticipate future cash balances. In some months, receipts may not be large enough to cover disbursements. If this happens, the cash balance will have to be reduced. If the outflow of cash is too great, plans will have to be made to borrow funds. In other months, when receipts are greater than disbursements, loans can be repaid and cash balances can be built up.

It must be remembered that if you have done several projects, the estimation of each cost element is easier, but if the project is new and so are the tasks, cost estimation is more difficult. For any estimate to be correct for a project, it is important to know these critical points:

1. The work elements need to be identified and extracted from verifiable data.
2. Cost elements need to be identified and agreed with either the financial or project management authorities.
3. Unit costs to be used for cost estimating need to be agreed with all relevant authorities before the project commences.
4. The resource requirements for work elements need to be determined in terms of type, quantity and unit cost, and documented in an agreed format.

Before working on the budget, it is important to compile all the estimates into one table, which is basically a summary table of all the figures gathered from different sources. Below is an example:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **WBS** | **Labour** | **Material** | **Machinery** | **Transport** | **Budget** |
| 1.1 |  |  |  |  |  |
| 1.2 |  |  |  |  |  |
| 1.3 |  |  |  |  |  |
| 1.4 |  |  |  |  |  |
| 1.5 |  |  |  |  |  |
| Project Office |  |  |  |  |  |
| **Sub-total** |  |  |  |  |  |
| Profit |  |  |  |  |  |
| **TOTAL** |  |  |  |  |  |

Source: Burke, R. 2006, *Project Management Planning and Control Techniques,* p88

An example of a proposed project expenditure or cost budget is provided here (remember to include an explanation of how you calculated the cost for each budget item). In the example below, the project manager has to justify each amount s/he intends spending and will request more than the budgeted amount to make provision for contingencies:

|  |  |  |
| --- | --- | --- |
| **Budget Item** | **Budgeted Cost (R)** | **Amount Requested (R)** |
| **Travel** |   |   |
| 1 trip to X @ R0.00 | R00.00 | R00.00 |
| 2 trips to Y @ R0.00 | R00.00 | R00.00 |
| **Publicity:** |  |  |
| poster printing @ R0.00 per thousand  | R00.00 | R00.00 |
| poster distribution @ R0.00 per hour | R00.00 | R00.00 |
| **Salaries:** |  |  |
| 2 staff members @ R0.00 per month for duration of the project | R00.00 | R00.00 |
| **Facilities:** |  |  |
| rental on storefront @ R0.00 per month for the duration of the project | R00.00 | R00.00 |
| maintenance and operations @ R0.00 per | R00.00 | R00.00 |
| **Materials:** |  |  |
| Boxes of printed stationery @ R0.00 per box  | R00.00 | R00.00 |
| Printing @R0.00 per thousand | R00.00 | R00.00 |
| **Other (specify):** | R00.00 | R00.00 |
| **TOTAL:**  | R00.00 | R00.00 |

In the following budget (see below), the quantities and cost per unit have been calculated in great detail:

**Cost budget for Summer 2010: TBD**

**Upcoming Purchases: 2 Flight Transmitters, 2 Flight Receivers**

| **Cost Budget as of 15 December 2010** |
| --- |
| **Item** | **quantity** | **unit cost** | **total cost** |
|  |  | **R** | **R** |
| TL-5930-T Lithium Primary Cells | 180 | 13 | 2340 |
| TA-51 Exciter | 6 | 169 | 1014 |
| Crystal (145.82 MHz) | 6 | 14 | 84 |
| A 28 Coil Alignment Tool | 1 | 2.5 | 2.5 |
| A 2 Capacity Alignment Tool | 1 | 3 | 3 |
| R100 | 6 | 189 | 1134 |
| Crystal (145.825 MHz) | 6 | 14 | 84 |
| DVR-1 | 6 | 99 | 594 |
| LNP Preselector | 6 | 39 | 234 |
| TD-2 Module, wire & tested | 6 | 129 | 774 |
|  |  | **TOTAL:** | **6263.5** |
|  |  |  |  |
| TL-5930-T Lithium Primary Cells | 180 | 13 | 2340 |
| TA-51 Exciter | 3 | 169 | 507 |
| Crystal (145.82 MHz) | 3 | 14 | 42 |
| A 28 Coil Alignment Tool | 1 | 2.5 | 2.5 |
| A 2 Capacity Alignment Tool | 1 | 3 | 3 |
| R100 | 3 | 189 | 567 |
| Crystal (145.825 MHz) | 3 | 14 | 42 |
| DVR-1 | 3 | 99 | 297 |
| LNP Preselector | 3 | 39 | 117 |
| TD-2 Module, wire & tested | 3 | 129 | 387 |
|  |  | **TOTAL:** | **4304.5** |
|  |  |  |  |
| TA-51 Exciter | 3 | 169 | 507 |
| Crystal (145.82 MHz) | 3 | 14 | 42 |
| R100 | 3 | 189 | 567 |
| Crystal (145.825 MHz) | 3 | 14 | 42 |
| DVR-1 | 3 | 99 | 297 |
| LNP Pre-selector | 3 | 39 | 117 |
| TD-2 Module, wire & tested | 3 | 129 | 387 |
|  |  | **TOTAL:** | **1959** |

Remember, the budget is not an invoice, so when you have determined the figures involved, leave it up to the organisation’s executive board to make adjustments for profits. The budget is only an estimate until it is approved, and then finalised.

###  Develop Quality Parameters

Quality and project management are inter-related because there must be a relationship between the supplier and client with regards to project deliverables. The aim should be to:

* Establish processes and procedures that will focus on efficiency and effectiveness.
* Utilise the art of inspection to ensure quality.
* Focus on continually improving processes as opposed to accepting that products are lacking in quality as a normal practice.
* Establish close relationships with suppliers that involve trust and an attitude of “can do”.

The aim of quality in project management should be to strive to deliver higher quality, more reliable products and services even when the resources may become scarce. Quality should also be the framework utilised to enhance the development of good negotiations between the client and the suppliers.

Quality in project management is frequently considered to be "conformance to stated requirements." This necessitates that **requirements are adequately stated in the scope of work in project documents, together with a means of demonstrating compliance with requirements.**

A Project Quality Plan can be defined as a set of activities planned at the beginning of the project that helps achieve quality in the project being executed.

The purpose of the Project Quality Plan is to define these activities / tasks that are intended to deliver products while focusing on achieving the customer's quality expectations. These activities / tasks are defined on the basis of the quality standards set by the organisation delivering the product.

A Project Quality Plan identifies which quality standards are relevant to the project and determines how they can be satisfied. It includes the implementation of Quality Events (such as peer reviews, checklist execution) by using various Quality Materials (such as templates, standards and checklists) available within the organisation.

The holding of the Quality Event is referred to as Quality Control. As an output of the various activities, Quality Metrics or Measurements are captured which assist in continuous improvement of quality thus adding to the inventory of Lessons Learned. Quality Assurance, on the other hand, deals with the preparation of the Quality Plan and formulation of organisation-wide standards.

**The following definitions will help us understand the different components of the Project Quality Plan**:

|  |  |
| --- | --- |
| **Term** | **Definition** |
| **Quality Materials** | The artefacts used within an organisation to assist a Project Manager improve quality in the project e.g. Templates, Standards, Checklists. These materials are used in "Quality Events" |
| **Quality Events** | How the "Quality Materials" are applied to a project. They are the activities undertaken using "Quality Materials" to validate the quality of the project. |
| **Quality Plan** | A plan as to how and when "Quality Events" and "Quality Materials" are applied to a project. |
| **Quality Control** | The implementation of the "Quality Events" in the "Quality Plan" |
| **Quality Assurance** | QA is an umbrella term. It refers to the processes used within an organisation, to verify that deliverables are of acceptable quality and that they meet the completeness and correctness criteria established. QA does not refer to specific deliverables.* The preparation of a "Quality Plan" for a project is part of QA
* The development of standards is part of QA
* The holding of a "Quality Event" is part of QA
 |
| **Quality Metrics** | Statistics captured during the various activities undertaken as part of "Quality Assurance". Metrics are captured to:* Identify areas where quality improvements can be made
* Measure the effectiveness of quality improvement activities
 |
| **Continuous Quality Improvement** | Use of captured metrics, and lessons learnt to continually improve quality. They are the main reason for capturing statistics around quality.  |
| **“Well-Engineered” Versus “Correct”** | The purpose of quality assurance is to ensure outputs of an organisation are both well engineered and correct.* Well engineered means the construction is sound and reliable. It does not necessarily mean it is correct.
* Correct means the end results are an accurate reflection of the requirements. It does not necessarily mean it is well engineered.

Many systems are well engineered but fail to meet the business need. On the other hand, there are also systems that meet the business need, but are unstable and expensive to run. Similarly a document can be well constructed, but the content could be deficient. Alternatively, the information can be there, but it is difficult to interpret. |

#### Quality Materials

**The following are examples of "Quality Materials" that might be used in a quality plan:**

| **Quality Materials** | **Description** |
| --- | --- |
| **Standards** | "Standards" are instruction documents that detail how a particular aspect of the project must be undertaken. There can be no deviation from "Standards" unless a formal variation process is undertaken, and approval granted. |
| **Guidelines** | Unlike "Standards", "Guidelines" are not compulsory. They are intended to guide a project rather than dictate how it must be undertaken. Variations do not require formal approval. |
| **Checklists** | "Checklists" are lists that can be used as a prompt when undertaking a particular activity. They tend to be accumulated wisdom from many projects. |
| **Templates** | "Templates" are blank documents to be used in particular stages of a project. They will usually contain some examples and instructions. |
| **Procedures** | "Procedures" outline the steps that should be undertaken in a particular area of a project such as managing risks, or managing time. |
| **Process** | A description of how something works. It is different to a "Procedure" in that a "Procedure" is a list of steps - the what and when. A "Process" contains explanations of why and how. |
| **User Guides** | "User Guides" provide the theory, principles and detailed instructions as to how to apply the procedures to the project. They contain such information as definitions, reasons for undertaking the steps in the procedure, and roles and responsibilities. They also have example templates. |
| **Example Documents** | These are examples from prior projects that are good indicators of the type of information, and level of detail that is required in the completed document. |
| **Methodology** | A methodology is a collection of processes, procedures, templates and tools to guide a team through the project in a manner suitable for the organisation. |

#### Example Quality Plan

A typical quality plan for a simple project may look something like this:

|  |  |  |  |
| --- | --- | --- | --- |
| **Deliverable** | **Quality Event** | **Quality Materials** | **Purpose** |
| **Preliminary Business Case** | Expert Review | Template for Business CaseApproved Business Case for Project ABC | Ensure the information is accurate and well-constructed prior to submission to Steering Committee |
| **Final Business Case** | Formal Inspection by Sponsor | Template for Business Case | Ensure the Business Case is in a fit state to be submitted to the Finance Review Committee |
| **Project Definition** | Walk-through of early draft | Template for Project Definition | Review early draft for completeness |
|  | Peer Review of final draft |   | Review final draft for completeness and construction |
| **Database Design** | Expert Review of physical model | Standard for Database Design | Compliance with standardGeneral accuracy |
| **Etc** |   |   |   |

For quality assurance to be effective, two things must be ensured:

* The Project Quality plan must be sufficient to achieve the required quality standards expected of the organisation. In this regard the plan must not only be **specific and detailed,** listing all **quality requirements and standards**, but also include all the **steps** taken to ensure that those requirements and standards are met.
* Quality assurance (i.e. final product testing) should be **independent** of the project itself (as well as the project manager). This comes down from the project management guidelines for effective quality assurance, and builds on a broad-based, organisational approach to standards-based product testing.

###  Communicate the Measurement Tools

Once the measurement tools have been determined, they must be communicated to team members to promote a common understanding of the requirements. Ideally, of course, team members have been involved in drawing up the parameters from the outset and have thus committed to them already.

Formative Assessment 4 SO4

# 5. IMPLEMENT THE PLAN AND EVALUATE PROJECT PROGRESS

#### Specific Outcome

Implement the plan and evaluate project progress.

#### Assessment Criteria

* Project implementation is monitored and evaluated against the plan, the stipulated performance criteria and quality requirements.
* Project results are monitored to establish progress and effectiveness.
* Deviations from the project plan are identified and analysed in order to take corrective action.
* Corrective actions are implemented to ensure the achievement of project objectives.
* Results are evaluated against the scope and objectives of the project.

## Implementing the Plan and Evaluating Project Progress

The process of evaluation comes in two parts: formative and summative.

Formative evaluation occurs along the developmental path, it helps keep the project on track to a successful completion.

Summative evaluation comes after the implementation of the project and provides the data needed for decision makers to recommend how to improve the product or service delivery in future projects.

Formative evaluation can take many forms, from focus groups to surveys, but all forms have the common goal of testing the end products as they are developed. It is a sort of on-the-fly indicator to revise and improve.

While formative evaluation is ongoing throughout the production stage, it should also continue in the implementation stage.

Summative evaluation is used to gather, analyse, and present data about the effectiveness of the product or service. The results of this evaluation can be used to report to sponsors, and to decision makers who will recommend the adoption of, or the continued use of, the product or service.

Evaluation is definitely the project manager's friend in spite of the fact it is a tremendous amount of work.

#### Methods and Techniques for the Implementation of Projects

The project implementation phase consists of the following steps:

1. Mobilise the team
2. Implement planning and scheduling
3. Specify technical requirements
4. Allocate work packages
5. Procure goods and services
6. Execute the work
7. Test the product or service
8. Resolve issues
9. Monitor progress
10. Forecast outcomes
11. Report progress

In order for the project operations to start up smoothly, you would need to ensure that you have set realistic time frames and allocated sufficient and sufficiently skilled and qualified personnel. If this isn't possible the timeframe will either have to be extended or you will have to add additional resources (if these resources are available), both forcing additional costs for the project.

#### Delegation of Authority, Responsibility and Accountability

We may define delegation as an assignment to another person of formal authority and responsibility for carrying out specific activities. Authority and responsibility can be delegated.

Authority, responsibility and accountability reflect the degree to which people are authorised and encouraged to use their initiative in day-to-day activities as well as assigning the limits to their authority:

* Are policies in place that describe business practices, particularly those in relation to risk and compliance?
* Do job descriptions specify roles, responsibilities and accountabilities?
* Do team members understand their job function and how it contributes to the project objectives?
* Do team members know what they are accountable for?

There is an interrelationship between authority, responsibility, and accountability in a task-oriented environment such as a project:

* Authority - power to do something
* Responsibility - making sure that something gets done
* Accountability - answerable for the consequences of doing it

This raises two questions: Can authority be delegated? Can responsibility and accountability be delegated? There is little doubt concerning the delegation of authority – it can and should be delegated. This forms the basis of the scalar principle, the idea that a clear line of authority run step by step from the highest to the lowest level of the organisation. This clear line of authority, then, is the basis for all delegation.

Responsibility for the successful completion of a task can be delegated, but accountability is not like an object that can be passed from individual to individual. For example a loan manager for a bank decided to delegate to his loan officers the responsibility for ensuring that all loans are processed within the 10-day limit stated by policy. The loan manager can certainly make the loan officers responsible for successfully completing the task, but the loan manager is no less accountable for the outcome to his or her boss. In short we cannot delegate accountability, because accountability always remains with the delegating manager.

#### Obstacles to effective delegation include:

* Personal preferences
* Attitudes towards direct reports
* Personal insecurities

Your ability to delegate effectively is critical to your success. As a leader, you should keep the following in mind:

* Delegation occurs along a continuum
* Delegation involves judgement calls about trust
* Trust involves assessing character, competence and influence

#### Why you need to delegate

Simply put, your job as a project manager is too big to handle alone. If you are not delegating, something probably isn't getting done. In some instances, your direct reports may be more knowledgeable than you are. By delegating you will be developing direct reports in the process. Developing people is a key leadership responsibility.

#### The Delegation Continuum

Delegating is not an all-or-nothing proposition. There is a continuum along which you can delegate assignments and responsibility. To facilitate this process, you should ask your direct reports to:

* Gather information
* Determine alternative courses of action
* Perform one part of a task
* Outline a course of action and get your approval before beginning
* Perform an entire assignment and report only results

**In deciding how much to delegate, consider:**

* The task
* The direct report and his/her experience level

Delegation “involves the assignment of a specific task or project by one person to another and the assignee's commitment to complete the task or project”.

Delegation transfers responsibility to another person along with the responsibility for adhering to and maintaining established standards.

#### Delegating benefits:

* **You -** It improves the level of trust and communication between you and your team, and helps to achieve goals that require co-operative group effort.
* **Your Team -** Delegation enables team members to enhance existing skills and develop new ones, as well as enhancing motivation and providing team members with an important sense of achievement.
* **Your Customer -** Delegation saves money and time by ensuring that tasks are assigned to the right person at the right level, and can increase overall productivity and efficiency by making the best use of resources.

Having identified the benefits of delegating, the following are "warning signs" indicating that your delegating abilities may need improvement:

* You regularly work overtime on tasks that "only you can do"
* You are frequently interrupted for guidance requests and work clarification
* Delegated assignments are incomplete and deadlines are missed
* Team members feel they lack the authority to complete assignments and are ill-prepared
* You "second-guess" staff decisions and personally re-do unsatisfactory staff assignments
* You frequently intervene in tasks or projects assigned to one of your staff
* Your staff are not taking responsibility for tasks or projects you have delegated
* Morale is low and staff turnover is on the rise

To set the right tone and environment, some suggested guidelines for effective delegating are as follows:

* Encourage your staff to be proactive and share with you their special interests and time availability for new projects
* Delegate projects and tasks that spark staff interest and are enjoyable
* Provide possible career opportunities by delegating projects, tasks or functions that involve high visibility with your manager
* Delegate to people you trust
* Delegation is a learning experience; offer training or coaching as needed
* Develop trust in a less skilled staff member by delegating very structured assignments and provide needed support for them so as to develop competence
* Try to delegate an entire project or function to increase motivation and commitment
* Create clear guidelines for follow-up and feedback and keep open lines of communication
* Have clearly defined goals, expected outcomes and success measures

#### Delegation Process:

As we have seen, the first step in delegating is to **identify what should and should not be delegated**:

* The manager should delegate any task that a subordinate performs better.
* Tasks least critical to the performance of the manager's job can be delegated.
* Any task that provides valuable experience for subordinates should be delegated.
* The manager can delegate the tasks that he or she dislikes the most.
* The manager should not delegate any task that would violate a confidence.

**Preparing** includes:

* Establishing the objectives of the delegation
* Specifying the task that needs to be accomplished
* Deciding who should accomplish it.

**Planning consists of:**

* Meeting with the chosen subordinate to describe the task and to ask the subordinate to devise a plan of action. As Andrew Carnegie once said, "The secret of success is not in doing your own work but in recognising the right man to do it."
* Trust between the manager and employee - that both will fulfill the commitment - is most important.

**Discussing** includes:

* Reviewing the objectives of the task
* Reviewing the subordinate's plan of action
* Discussing any potential obstacles, and ways to avoid or deal with these obstacles.

The manager should clarify and solicit feedback as to the employee's understanding.

Clarifications needed for delegation include:

* The desired results (“what”, not “how”)
* Guidelines
* Resources available
* Consequences (good and bad).

Delegation is similar to **contracting** between the manager and employee regarding how and when the work will be completed. The standards and time frames are discussed and agreed upon. The employee should know exactly what is expected and how the task will be evaluated.

**Auditing** is monitoring the progress of the delegation and making adjustments in response to unforeseen problems.

**Appreciating** is accepting the completed task and acknowledging the subordinate's efforts.


###  Monitor and Evaluate Project Implementation

#### Monitor performance

The process for monitoring performance is basically a system for managing resources. The performance contract and development plan assist in managing people resources, and the action plan can assist in securing and managing other resources such as equipment.

#### Labour review

Conduct regular reviews of your manpower plan to ensure that resources are managed effectively and that they are neither under or over allocated on tasks. Revisit your manpower plan on a monthly or quarterly basis or as a new project commences.

#### Service excellence review

One of the best mechanisms for determining service excellence is to conduct a customer satisfaction survey. This can be conducted with both internal and external customers. TQM focuses on the customer experience so the best feedback to obtain on your performance is based on the perception of your customers.

A basic framework for obtaining feedback from customers is the stop, start continue approach. Ask the customer what you should start doing that you did not do, what you should stop doing in future, and what you should continue to do that you did well.

#### Monitor what is working and what isn’t

Regular project team meetings provide the opportunity to voice any new ideas that may emerge during the life cycle of the project. New ideas should be recorded in the meetings and the tips and techniques for creative thinking can be used to further develop the ideas and perhaps, to initiate new projects.

#### Using review findings to increase productivity and service excellence

The data that is gathered from the various reviews that are conducted will assist you in determining what went well and what needs to change. As you evaluate your findings, consider what change is required and how you will effect the change. All of this information can be documented in your progress and lessons learned reports. Making it happen though, is the most important step. Updating performance contracts, development plans, action plans, manpower plans and procuring additional resources are all part of the continuous cycle of improvement.

###  Monitor Project Results

#### Performance Reporting

Performance reporting is the process of collecting all baseline data and distributing performance information to stakeholders. An aspect of this report is to clarify how resources are being used to obtain the objectives of the project. This should be done in conjunction with providing information on scope, schedule, cost, risk, procurement, and quality.

The inputs to performance reporting are:

* **Work performance information** - Work performance information details the work that is being executed, recently completed, and next steps. This information is gathered from the Direct and Manage Project execution process.
* **Performance measurements** – Performance measurements, such as Actual Cost, Cost Variance and Schedule Variance assist in reporting unbiased and quantifiable information – an excellent mechanism for accountability.
* **Forecasted completion** - Forecasted completion is the predictor of completion and the expense to get to that state, as well as potential project roadblocks.
* **Quality control measurements** - Quality control measurements result from activities comparing the results to the quality standards and processes. This is the true check to assure a quality product or service has been provided
* **Project Management Plan** - The Project Management Plan contains the Performance measurement baseline which contains the approved measures for management control.
* **Approved change requests** - Approved change requests are requested changes that have been approved and are ready to be implemented. They are used to determine project changes that have been formally approved and must be communicated to stakeholders through integrated change control.
* **Deliverables** - Deliverables comprise the quantifiable actions, results, products, or capabilities that will be produced in order to complete the project.

The inputs to performance reporting are absolutely necessary to providing an accurate quantifiable performance report.

The tools and techniques for performance reporting are:

* **Information presentation tools** - Information presentation tools enable the project team members to present project performance data. Most organisations have software packages which can be used to paint a picture with a graph or a spreadsheet analysis.
* **Performance information gathering and compilation** - The performance information gathering and compilation technique is the organising of all pertinent project information.
* **Status review meetings** - Status review meetings are regularly scheduled meetings to exchange information about a project. Normally there is a team level status review meeting and then an executive review meeting.
* **Time reporting systems** - Time reporting systems record and provide information about the time spent for activities on a project.
* **Cost reporting systems** - Cost reporting systems record and provide information about the costs expended for the project.

Using these tools and techniques help the project manager implement an efficient reporting process. Imagine if the only way to obtain time spent on a project was to review every team member’s time sheet and then sum up the parts!

The Performance Reporting process provides pertinent and verifiable documentation of project performance. The outputs of the Performance Reporting process are:

* **Performance reports** - Performance reports are presentations and documents that summarise work performance information in the form of bar charts, histograms, and tables.
* **Forecasts** - Forecasts are predictions of what will occur based on the project performance to date. Forecasts are updated and reissued as new work performance information is available during project execution. A project manager might want to conduct a trend analysis of cost and schedule variance to see how on budget and on time the project is likely to be.
* **Requested changes** - Requested changes are project changes affecting scope that are submitted to the Integrated Change Control process. These must be reflected in performance reporting to stakeholders.
* **Recommended corrective actions** - Recommended corrective actions are documented suggestions affecting project execution designed to ensure that expected future project performance will conform to the Project Management Plan. Once a project manager is made aware of a schedule or cost variance, s/he needs to take action to get the project back in line with original objectives. To do so, recommended corrective actions may be offered.
* **Organisational process assets updates** - Organisational process assets updates are changes or updates to formal and informal policies, plans, guidelines, organisational best practices, and lessons learned from project experience.

#### Project progress reports

Preparation, planning and professional evaluation of the threats to a project ought to be a frequent and regular activity for every project team.

Risk management is not a 'once and for all' exercise to be performed during the initiation phase - it is an essential part of everyday activities.

With reasonable and realistic plans, plus regular, weekly (or even daily) review of the threats to success and implementation of effective counter-measures, most projects will reach their targets safely.

One simple and efficient approach that can be used is as follows:

#### Weekly

* Each Team Leader produces a one-page 'SOFT' report (reviewing their team's **successes, opportunities, failures and threats**).
* The Project Manager holds a **checkpoint meeting** with all the Team Leaders, assessing the project's **RAG status** (Red/Amber/Green) and ensuring counter-measures are assigned for those threats that can be handled.
* Any issues beyond the project team's level of authority are identified. If necessary, an **Exception Report** is produced and escalated to the Project Board.

#### Bi-weekly or monthly

* The Project Manager produces a **Highlight Report** and discusses status and any remaining threats with the Project Board.
* The executive sponsor of the project, aided by the senior user and senior supplier management on the board, help clear obstructions and provide the authority to counter any remaining threats.

This approach is certainly not rocket science - but it is efficient and effective at helping a project survive.

#### SOFT report

“Problem-solving” is not “planning”

“Planning” is not the same as “problem-solving”

Effective planning cannot be done without addressing the problems that are critical

Not all problems deserve attention. Some just go away.*[[10]](#footnote-10)*

**“S-O-F-T”** is an acronym which represents “Strengths," "Opportunities," "Failures”/ “Flaws" and "Threats.” To undertake an S-O-F-T analysis, ideally, the first step is to make a long **list of every factor that defines the project’s current situation**.

The next move is to sort this long list into legitimate **“planning issues” (List A)** and true **“problems” (List B)**. Take List B and determine which of the “problems” are likely “to just go away.”

Put the issues that are likely “just to go away” off to the side and focus on List A (true “planning” issues) *plus* the balance of List B (problems that are not likely just to go away). Then assign the issues to the specific categories of the “S-O-F-T analysis” – which ones are “Strengths," which ones are "Opportunities," which ones are "Flaws," and which ones are "Threats?"

Note that a project’s “Strengths” and its “Flaws” (its “weaknesses”) are obviously **internal** considerations. Note that a project’s “Opportunities” and any “Threats” in the operating environment are clearly **external** considerations.

Equally obvious is the fact that “Strengths” and “Opportunities” are both **positive** considerations. “Flaws” and “Threats” are both **negative** considerations. To express these relationships, it can be helpful to think of these factors in a 2 x 2 matrix (see below).

It is therefore clear that the project team should attempt to:

* Build on the Strengths
* Maximise the response to the Opportunities
* Reverse (or disguise) the Flaws
* Overcome the Threats

#### Example list of every factor that defines the project’s current situation:

* The capability and experience of the project team
* The strong commitment from, and depth of knowledge within, the project team
* Regular review sessions
* The funding and time-line were adequate and supported the project in meeting its goals
* Product quality
* Product superiority
* Price advantage to end user
* Effective Maintenance
* Valid research model
* Timely Procurement/Recruitment
* Relatively small number of labourers
* Large number of contract workers
* Unreliable suppliers
* Inadequate sampling methods
* Technological incompatibility
* Obsolete facilities
* Lack of managerial depth and talent
* Missing key skills
* Inappropriate Technical/Equipment Specifications
* Insufficient Training/Knowledge Transfer
* Inadequate Monitoring and Supervision
* Inadequate coordination at Project Level
* Price increases

#### Example A and B lists

| **A- planning issues** | **B- problems** |
| --- | --- |
| The capability and experience of the project teamThe strong commitment from, and depth of knowledge within, the project teamRegular review sessions The funding and time-line were adequate and supported the project in meeting its goalsProduct qualityProduct superiorityPrice advantage to end userEffective MaintenanceValid research modelTimely Procurement/RecruitmentRelatively small number of labourersLarge number of contract workersInadequate sampling methods Inappropriate Equipment SpecificationsInsufficient Training/Knowledge TransferInadequate Monitoring and SupervisionInadequate Coordination at Project Level | Technological incompatibility Obsolete facilitiesLack of managerial depth and talentMissing key skillsUnreliable suppliersPrice increases |

#### Example SOFT analysis:

|  |  |
| --- | --- |
| **Strengths*** The capability and experience of the project team
* The strong commitment from, and depth of knowledge within, the project team
* Regular review sessions
* The funding and time-line were adequate and supported the project in meeting its goals
* Effective Maintenance
* Valid research model
* Timely Procurement/Recruitment
 | **Flaws/Failures*** Technological incompatibility
* Obsolete facilities
 |
| **Opportunities*** Product quality
* Product superiority
* Price advantage to end user
 | **Threats*** Unreliable suppliers
* Price increases
* Lack of managerial depth and talent
* Missing key skills
 |

###

#### RAG status

Project monitoring depends heavily on accurate RAG status. Red, amber, green (RAG) indicators are often used to portray the status of a project. The criteria can vary from project to project- an individual project may choose to apply its own framework.

|  |  |
| --- | --- |
|  | If the status is in the green in all dimensions of schedule, resources, costs, requirements, etc, then all is well and going according to plan. However, a change of status should result in distinct action and a change in behaviour. |
|  | If the status has changed to amber (over-schedule or budget by pre-set %, but still within accepted tolerances) then corrective actions should be initiated. Put a moratorium on any new Requests For Change, re-prioritise requirements, review the critical path and re-assign resources as necessary to return the project to the planned route. |
|  | If the crisis has continued to deepen, deviating from the plans by certain % and deserving a red status flag, then more drastic action is necessary. Take additional action immediately (it is likely the project has been at status amber for some time). For example: get the team to work early; hold a brief stand-up progress meeting every day at 08:00; cancel leave; call in expert support; re-plan; re-negotiate; report to the Project Board daily. Gain Project Board approval for action or change, but don't expect the problems to just go away! “Unlike traffic controls, simply waiting rarely results in a change to the lights”.[[11]](#footnote-11) |

An inappropriate RAG status can lead to issue avoidance and project failure.  RAG status must not be used to hide problems, but used as a way of seeking support and guidance.

###

#### Project Manager Status Checklist

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| --- |
| **Project Manager Checklist** |
| **General Project status questions** | **Response to status question** | **Action to be taken** | **Person responsible for taking the Action** | **Target Date for completion of Action** |
| 1. (Project Manager) When did you last speak to main sponsor for project? Are they happy with progress and project in general?
 |  |  |  |  |
| 1. Are you confident about all elements of forthcoming activities?
 |  |  |  |  |
| 1. Do you need help with techniques / tools / approaches / resourcing?
 |  |  |  |  |
| 1. Have you allocated your time (calendar or other method)?
 |  |  |  |  |
| 1. Any internal issues affecting the project?
 |  |  |  |  |
| 1. Any ‘problem meetings’ or presentations?
 |  |  |  |  |

###  Identify and Analyse Deviations from the Project Plan

#### Baseline controls

Most project environments are so turbulent that the project manager has to work hard to control the project. S/he needs to manage the scope, cost, and schedule in such a way that s/he understands and can generally **quantify anything that changes** as the project progresses. The primary way to do this is by various forms of **"baseline controls."**

For a project to be under control, it needs to be organised as a closed system (a system whose behaviour is entirely explainable from within, a system without input). This is done by establishing baselines for scope, cost and schedule. Once the project has been contained in these three dimensions, it can be measured, monitored and controlled. **If a project does not have such baseline management, it cannot be managed and measured as a closed system, and must be therefore considered to be out of control.**[[12]](#footnote-12)

No meaningful performance measurements can be made where the scope, cost, and schedule are not defined and under some form of change control discipline.

The project manager needs to be able to measure the work that goes into a project in **rands and work hours** and the productivity that comes out of the project, in **percent completions and tasks accomplished**. Without a stable baseline and measurement of input and output, the project cannot be measurable and controlled.

Considering the project effort to be a process, the plans, specifications, resources, and methods are the **inputs**. The process **outputs** should be continually monitored and compared to the plan. Adjustments in the process should be made to conform the project output to that desired. **Variance** between project results and the plan should be assessed and reported periodically.

If it becomes apparent that the project cannot be managed to its baseline, radical changes may be required. Changes to project scope or the realisation that the project plan is seriously flawed can make the baseline of questionable value for project control.

In such a case, the project may have to be replanned and re-baselined. When a new baseline is established, the same process of monitoring output and controlling the process must be continued.

**Establishing the baseline**

Establishing the baseline is the formal **end of the planning phase** and the **beginning of project execution and control**. Controlling the project baseline is absolutely essential to project success. Other than misunderstood requirements, bad cost and schedule estimates, and technical difficulties, the things that will most likely imperil a project are the changes.

#### It is hard to evaluate what has changed if you don’t know where you were to start with.

Knowing where you started, and documenting it, establishes your baseline. This baseline is your budget, schedule, and project scope. A project without a stable planning baseline is flying blind.

**Project baseline definition** begins with understanding the user or customer requirements. Understanding requirements involves making judgments about what the organisation, technologies, and markets will be like in the time-frame after project completion. Sometimes a requirements analysis will have to penetrate beyond a mere synthesis of what users think they need. The project requirement may be part of a larger need to improve vital business processes.

After the requirements analysis has resulted in **definition of the project’s technical scope**, the **cost and schedule estimates** can be refined.

Project costs and schedules can be estimated with no greater certainty than that inherent in the definition of technical scope. Cost and schedule estimates will require assumptions about labour categories, availabilities, and rates - knowing who will do the work - so assumptions and commitments about organisational involvements are needed. When cost, schedule, and requirements definition are acceptable to the organisation, **a project planning baseline must be established.**

Very often, establishing the project baseline will be an iterative process involving a number of successive approximations before a baseline is established.

The first attempt may result in a project that is too costly and will take too long. This can happen if the requirements analysis is done well. If the requirements analysis is done incompletely, the project plan may look affordable and achievable, but further emerging requirements may drive the project over budget and prolong the schedule.

A rigorous requirements analysis and a realistic cost and schedule estimate are necessary to establish a project baseline plan that provides a practical map for project success.

**Diagram: Planning and Establishing the Project Baseline**



You will never be able to stop changes on a project, but if you don't manage them methodically, your project will go out of control. Establishing and maintaining control of the schedule, cost, and scope baselines is a continual process.

###  Implement Corrective Actions

Research conducted by the Eli Broad Graduate School of Management at Michigan State University found that the factors that critically impact team performance include:

* The availability of certain organisational resources
* The participation and involvement of suppliers when required
* Higher levels of internal and external decision-making authority
* Effective team leadership, including motivation
* Greater effort put forth on team assignments.

Using the insights gained from this research, we can conclude that when your team seems to be flagging, you may have to check the following:

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| The availability of certain resources: do they have the equipment and tools required? Have you assigned enough members to a particular task? Can you redeploy members to ensure a more equitable distribution?  |
| The participation and involvement of suppliers when required: are resources delivered on time? Do suppliers deliver the quantity and quality expected?  |
| Higher levels of internal and external decision-making authority: are team members ham-strung by red tape and lack of decision-making authority? Does it take an inordinately long time for decisions to be made?  |
| Effective team leadership, including motivation- is the leadership seen to be involved, caring? Does the leadership make an effort to motivate and incentivise team members, especially when the going gets tough?.  |
| Greater effort put forth on team assignments- is everyone seen to be pulling his/her weight? Are assignments fair and balanced? Is there team unity and a singular purpose?.  |

###  Evaluate Results against the Scope and Objectives of the Project

#### Determining Effectiveness

The overall assessment of effectiveness refers to doing the right thing, in the right way. An innovative project or procedure will have been put in place to address a problem or an opportunity. This addresses the purpose or the need. Alignment to that purpose or need should be monitored and measured accordingly. This is why it is so important to clearly define the purpose and objectives of a project beforehand. The achievement of the milestones in the project plan should result in addressing the purpose or need.

#### Measuring Effectiveness

Both the effectiveness of the project achieving the purpose and the achievement of the project deliverables should be evaluated. There are short term, medium term and long term measures one can use to measure effectiveness:

|  |  |
| --- | --- |
| Short term measures  | Completion of project tasks |
| Medium term measures  | Completion of deliverables  |
| Long term measures  | Achievement of the end resultAchievement of overall objectives Customer satisfaction  |

#### The Importance of Project Reporting

Team meetings, project progress meetings and reporting provide the conduit for measuring the effectiveness of a project. The project should be evaluated from an internal and an external perspective. 1) Does the project meet the business objectives? 2) Does the project meet the customer’s expectations?

Business needs may change as the economic or socio political climate changes or as business sectors adopt new innovations. Customer expectations may change accordingly. It is therefore important to constantly monitor trends and changes in your sector to ensure alignment of the project to business and customer needs.

Formative Assessment 5 SO5

# FORMATIVE ASSESSMENTS WORKBOOK

Formative Assessment 1 SO1

**Select a Work-Based Project for a Unit**

In small groups or individually as per your facilitator’s instructions, complete the following:

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| * 1. In your group, brainstorm problems that need to be solved in your business unit.
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| 1.2 Select one of the problems you listed above and do a root cause analysis to determine the cause of the problem: |
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| 1.3 Now draw an Ishikawa diagram to show the factors that are contributing to the problem identified in 1.2: |
| 1.4 Brainstorm possible solutions for each of the possible causes under the headings: |
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| 1.5 Draw up a list of 5 criteria by which you will judge each solution: |
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| 1.6 Rate each solution on a scale of 0 to 5, depending on how well it meets each criterion. Once all of the ideas have been scored for each criterion, add up the scores.  |
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| 1.7 Now that you have narrowed all the possible solutions down into one preferred solution, you need to determine how to *achieve* that solution. Which activities will lead to the achievement of your objective in the most cost-effective and efficient manner? Develop a range of 5 alternative actions, as well as a “no action” alternative and a “continue previous action” alternative. |
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| 1.8 Determine how well each alternative meets each objective by rating each alternative from 0 (very poor) to 5 (excellent)

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| Criteria | A | B | C | D | E | No action | Continue as before |
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| 1.9 Decide which alternative you are going to implement in your business unit and write a motivation that you can present to your team members and manager. Remember to refer to objectives and benefits: |
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*Place any extra evidence after this page, clearly marked for easy reference.*

Formative Assessment 2 SO2

**Scope a Work-Based Project for a Unit**

In small groups or individually as per your facilitator’s instructions, complete the following

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| 2.1 Now that you have selected your project, you need to start planning its implementation.Answer the following questions:

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| --- |
| **Purpose** |
| What is the project about in broad terms?  |
| Who wants it done and why?  |
| What is its title?  |
| **Targets** |
| What is it we want to achieve?  |
| When do we want to achieve it?  |
| What are our specific aims?  |
| Why are these goals essential to the project?  |
| **Scope** |
| How will things be different if the project is successfully completed?  |
| Is there a clear need and can it be quantified?  |
| Who will benefit, how will they benefit and what will they gain?  |
| Do the beneficiaries agree about the need and the proposed solution?  |
| Is the project to identify that need and/or that solution?  |
| How will they react to that solution?  |
| What are the alternatives?  |
| Are those alternatives more or less acceptable (satisfactory)? |
| Is how we are going to achieve the goals an important part of the beneficial gain? |
| What is it worth to you or to others to have the need satisfied?  |
| Write your project objectives as a SMART statement: |
| List the deliverables (outputs) of the project: |

 |
| 2.2 For each deliverable, list the principle activities required to deliver the output:

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| --- | --- |
| **Deliverable** | **Activities** |
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| 2.3 List risks that can have a negative impact on your project’s primary constraints, namely time, resources and performance criteria. Rate each risk as high (H), medium (M) or low (L):

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| --- | --- | --- |
| Time | Resources | Performance criteria |
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| 2.4 Describe how you will minimise or eliminate 3 of the risks: |
| 2.5 List possible changes that can take place during the implementation of your project and describe how they can affect the budget, resources required and duration: |
| 2.6 Describe the process you will have to follow if you find you need more resources, budget and time to complete your project: |

*Place any extra evidence after this page, clearly marked for easy reference*

Formative Assessment 3 SO3

**Overall Objectives of the Plan**

In small groups or individually as per your facilitator’s instructions, complete the following

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| 3.1 Describe the overall objective of your plan under the following headings:

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| --- | --- |
| **Human resources** | **Tasks** |
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| **Communication:** |
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| **Conflict resolution:** |
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| **Decision-making:**  |
|  |
| **Tracking systems:** |
|  |
| **Reporting:**  |
|  |

 |
| 3.2 Identify all your project stakeholders and describe their stakes in your project:

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| --- | --- |
| Stakeholder | Stake(s) in the project |
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| 3.3 Develop a Work Breakdown Structure for your project: |
| 3.4 Complete the following form that you can use to communicate the important project information:

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| --- | --- |
| **Key Roles in Project** | **Names of People In the Roles** |
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| **Project Objectives and Performance Criteria** |
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| --- |
| **Customer Objectives and Quality Criteria** |
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| --- |
| **Provider Objectives** |
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| --- | --- | --- |
| **Deliverables to be Provided** | **Review Process**  | **Completion Date** |
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| **Milestones** | **Baseline Target Date** | **Actual Result Date** | **Estimated Effort**  | **Actual Effort** |
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[List any special practices or processes used by this project. Include new types of risk management, project estimating, progress review, management review, customer interactions, or other practices not used on projects in the past. Describe an item in additional text, if needed to explain the item.]

|  |  |
| --- | --- |
| **Special Processes or Practices Used in This Project** | **Value (if already used)**  |
|  |  |
|  |  |
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Adapted from: www.dir.state.tx.us/eod/qa/download.htm |

*Place any extra evidence after this page, clearly marked for easy reference*

Formative Assessment 4 SO4

**Develop Tools to Measure Key Performance Parameters**

In small groups or individually as per your facilitator’s instructions, complete the following:

|  |
| --- |
| 4.1 Develop a Gantt Chart showing the estimated duration and start and end times of your project: |
| 4.2 Draw up a simple budget for your project:

|  |
| --- |
| **Fixed costs** |
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| **Sub-total** |  |
| **Variable costs** |
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| **Sub-total** |  |
| **Total** |  |

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| 4.3 List 10 of the activities/tasks to be performed and describe the standards or requirements to deliver quality work: **Learners’ own answers- depend on type of project**

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| --- | --- |
| **Activities/tasks** | **Standards** |
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*Place any extra evidence after this page, clearly marked for easy reference.*

Formative Assessment 5 SO5

**Implement the Plan and Evaluate Project Progress**

In small groups or individually as per your facilitator’s instructions, complete the following:

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 5.1 Explain how you will monitor the progress of your project during project implementation:

|  |
| --- |
| **Performance**  |
|  |
| **Labour review** |
|  |
| **Service excellence review** |
|  |
| **What is working** |
|  |
| **What isn’t working** |
|  |

 |
| 5.2 What is the purpose of doing a review and evaluation while the project is being implemented? |
| 5.3 What is the purpose of evaluating project results once the project is done and dusted? |

*Place any extra evidence after this page, clearly marked for easy reference.*

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