Project Management Guide

What is in this guide?

All development workers, and community organisations may at times work with development projects. This may bring you into contact with consultants, project teams and project managers. Whilst you may not manage specific projects is important that you understand both the technical and managerial aspects of project management. This will ensure that you and your organisation can make an informed contribution to the projects and can monitor implementation and outcomes.

This guide has the following sections:

Chapter 1:   Technical aspects to project management

- What is a project?
- What is project management?
- Project stakeholders
- The project life cycle
- Defining the project
    o Defining the project scope
    o Creating the work breakdown structure
    o Estimating cost and developing budget
- Constructing a project network plan
    o Project schedule

Chapter 2.   Managerial aspects of project management

- Project manager
- Project risk management
- Project communication management
- Project quality management

Chapter 1.   Technical aspects to project management

What is a project?

A project is an assignment/task/job that has to be undertaken and completed within a set time, budget, resources and performance specifications designed to meet the needs of stakeholder and beneficiaries

For example

The Canadian International Donor Agency (CIDA) has donated R7.5 million to provide RDP homes to 50 families living in the Joe Slovo informal settlement. On 6 February 2004, the agency signed a contract with the Department of Housing to implement the project The following requirements, amongst others were set in the contract:

1. *The RDP houses must meet specifications in line with government policy.*

2. *In order to ensure sustainability and affordability for the 50 families, the head of each of the 50 families must be given skills development training in small business development and small business start-up. This is to ensure that the families will be able to afford rentals, maintenance of the homes and to expand their homes to accommodate the growth of the families in the future.*

3. *The project must be completed within three years and the handover of the homes to the 50 families must be a high profile public event.*

From the example we see:

- a clear task - build RDP homes for 50 families;

- a set time – within 3 years;

- a budget – R7.5 million;

- performance specifications to meet the stakeholder needs – houses that meet the specifications in line with government policy, training for the head of each family;

- beneficiaries – 50 families;

- stakeholders – donor agency, Department of Housing

What is project management?

Project Management is the use of knowledge, skills, tools, and techniques to plan and implement activities to meet or exceed stakeholder needs and expectations from a project.

Project stakeholders

Project stakeholders are individuals and organisations who are actively involved in the project, or whose interests may be positively or negatively affected by the project.

Key stakeholders in the example above include:

- Project Manager - the individual responsible for managing the project;

- Project beneficiaries – 50 families who are going to receive the houses;

- Performing organisation – the Department of Housing whose employees are most directly involved in doing the work of the project;

- Sponsor – Canadian International Development Agency.

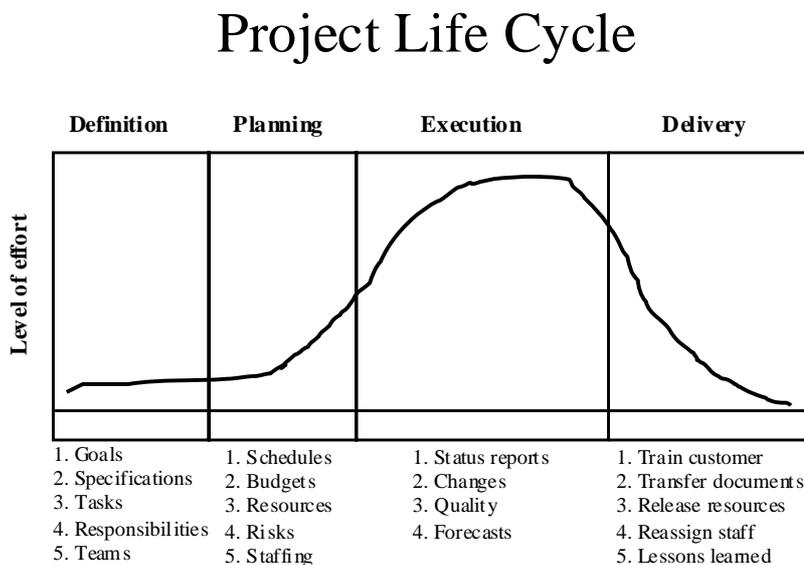In addition to these there are many different typical stakeholders:

- Suppliers and contractors – e.g. Construction companies, Skills development and education and training organisations, legal firms, events management company;

- Project team members and their families;

- Government agencies – e.g. local municipality.

- Community representatives and organisations

The project life cycle

Projects are usually divided into project stages (i.e., definition, planning, execution and delivery stages) to provide better management and control. Collectively these project stages are known as the project life cycle.

Figure 1-1

Project Life Cycle

Definition	Planning	Execution	Delivery
1. Goals	1. Schedules	1. Status reports	1. Train customer
2. Specifications	2. Budgets	2. Changes	2. Transfer documents
3. Tasks	3. Resources	3. Quality	3. Release resources
4. Responsibilities	4. Risks	4. Forecasts	4. Reassign staff
5. Teams	5. Staffing		5. Lessons learned

Level of effort (y-axis)

The project life cycle typically passes through four stages, i.e. definition, planning, execution, and delivery. The starting point begins the moment the project is given the go-ahead (when a contract agreement is signed). Project effort starts slowly, builds to a peak, and then declines to delivery of the project to the customer.

- **Definition stage** – specifications of the project are defined, project objectives are established, project teams are formed and major responsibilities are assigned.

- **Planning stage** – plans are developed to determine the project steps, beneficiaries, timeframes, quality standards and budget.

- **Execution stage** – the major portion of the project work takes place – both physical and mental. Time, cost and specification measures are used for control. The project managers have to ensure that the project is on schedule within the budget and meeting specifications. They have to also check if any changes are required

- **Delivery stage** – delivering the project product to the customer, may involve customer training and transferring documents.

STAGE 1: Defining the project

The three steps described below provide a planned approach for collecting the project information necessary for planning, scheduling and controlling the project. These are:

- Defining the project scope;
- Creating the work breakdown structure;
- Estimating costs and developing budgets.

Defining the project scope

The project scope sets the stage for developing a project plan. It clearly states the project's objectives and deliverables. Scope definition provides an administrative plan that is used to develop your operational plan, i.e. the plan for how you are going to run the project. Scope definition should be as brief as possible, but complete. Poorly defined scope leads to project failure. The development of the scope must involve the project manager, sponsors, performing organisations and beneficiaries.

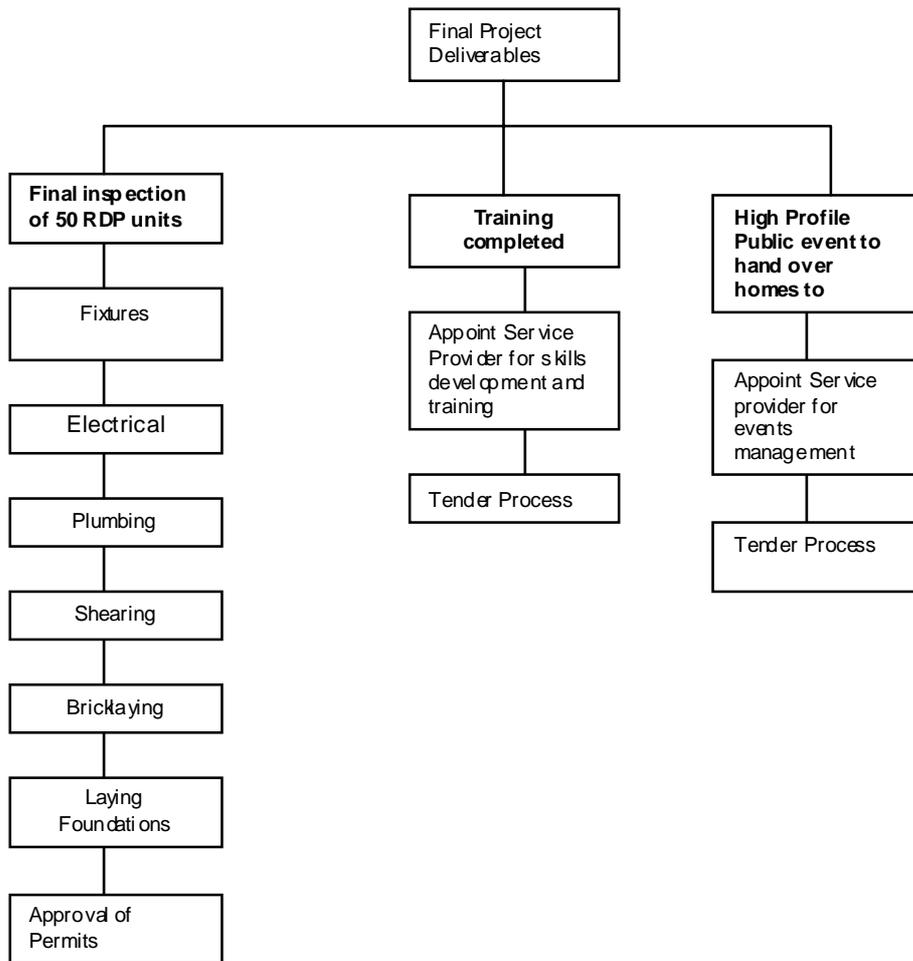| SCOPE STATEMENT	DEFINITIONS
Project Objective To construct RDP homes for 50 families in the Joe Slovo informal settlement within 36 months at a cost not exceeding R 7,5 million.	**Project objectives** To define the major objectives of the project
Deliverables • 50 finished RDP homes as per specifications laid down by the Department of Housing • Skills development and training for the head of each of the 50 families • Hand over the finished homes to the 50 families at a high profile public event	**Deliverables** The expected outcomes over the life of the project – what is it that is going to be delivered
Milestones 1. Permits approved – 5 March 2004 2. Foundations poured – 28 January 2005 3. Bricklaying, shearing, plumbing, electrical and mechanical inspections passed – 4 July 2006 4. Final inspection of houses – 15 March 2007 5. 50 trainees receive training certificates – 15 December 2006 6. Handover to 50 families - 21 March 2007	**Milestones** A milestone is a significant event in a project that occurs at a point in time. The milestone schedule shows only major segments of work; it represents first, estimates of time, cost, and resources for the project. Milestones are important control points in the project. They should be easy for all project participants to identify.
Technical Requirements 1. RDP homes must meet government specifications and local building codes 2. 50 trainees must receive recognised certificates after completion of training.	**Technical Requirements** A product or a service will have technical requirements to ensure proper performance
Limits and exclusions	**Limits and Exclusions**

1. The homes will be built to the specifications and design of the original blueprints provided by the Department of Housing; 2. Contractors responsible for work done by subcontractors 3. Site work limited to Monday through Friday, 8:00am to 6:00pm	The limits of scope should be defined as they point to what can or cannot be done during the course of the project. Failure to do so can lead to unreasonable expectations and the wastage of resources and money.
Customer Review Representative: Canadian International Development Agency Signature:	**Reviews with Customer** Completion of the scope checklist ends with a review with your customer.

In summary, close liaison with your customer is necessary to develop a project definition that meets all requirements of the customer. Clear scope definition ensures you will know when a change in scope occurs. A clear project scope definition is the most important requirement for development of your Work Breakdown Structure (WBS).

Creating the work breakdown structure (WBS)

Once the scope and deliverables have been identified, the work of the project can be subdivided into smaller work elements. The outcome of this process is called the work breakdown structure.

An example

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                    ┌─────────────────┐
                    │ Final Project   │
                    │ Deliverables    │
                    └────────┬────────┘
          ┌──────────────────┼──────────────────┐
 ┌─────────────────┐ ┌─────────────────┐ ┌─────────────────┐
 │ Final inspection│ │    Training     │ │  High Profile   │
 │ of 50 RDP units │ │   completed     │ │ Public event to │
 └────────┬────────┘ └────────┬────────┘ │ hand over       │
          │                   │          │ homes to        │
 ┌─────────────────┐ ┌─────────────────┐ └────────┬────────┘
 │    Fixtures     │ │ Appoint Service │ ┌─────────────────┐
 └────────┬────────┘ │ Provider for    │ │ Appoint Service │
          │          │ skills          │ │ provider for    │
 ┌─────────────────┐ │ development and │ │ events          │
 │   Electrical    │ │ training        │ │ management      │
 └────────┬────────┘ └────────┬────────┘ └────────┬────────┘
          │                   │                   │
 ┌─────────────────┐ ┌─────────────────┐ ┌─────────────────┐
 │    Plumbing     │ │ Tender Process  │ │ Tender Process  │
 └────────┬────────┘ └─────────────────┘ └─────────────────┘
          │
 ┌─────────────────┐
 │    Shearing     │
 └────────┬────────┘
          │
 ┌─────────────────┐
 │   Bricklaying   │
 └────────┬────────┘
          │
 ┌─────────────────┐
 │    Laying       │
 │  Foundations    │
 └────────┬────────┘
          │
 ┌─────────────────┐
 │   Approval of   │
 │    Permits      │
 └─────────────────┘
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Work Breakdown Structure Figure 1-3

All the elements/steps that make up WBS are called work packages. It is very useful as the structure clearly points to what has to be done and in what sequence (order). It divides the work and responsibility into individual work packages which makes it easy for the project manager to manage and monitor the implementation for the project by:

- making it possible to plan, schedule and budget;

- providing a framework for tracking and monitoring cost and work performance;

- defining communication channels;

- assisting in understanding and coordinating many parts of the project;

- pointing to problems and ensuring they are quickly addressed

Estimating cost and developing budgets

Project status reports to stakeholders depend on reliable cost estimates and budgets. The accuracy of the cost estimates are good when work packages are clearly defined, as in the WBS example above. At the work package level, estimates should be made by the people most familiar with the task. They will give an estimate based on their experience and best judgment.
Here are typical kinds of costs found in a project:

- **Direct costs** – These costs are chargeable to individual work package in the WBS.

    o Labour
    o Materials
    o Equipment
    o Other

- **Project Overhead Costs** – represents project costs that cannot be tied to specific deliverable but serve the entire project. For example, a temporary shed may be set up that will be used to store tools and equipment of various contractors, host the training and the handing over function.

- **General and Administrative (G&A) overhead costs** – these represent organisational costs incurred by the firm managing the project. G&A overhead costs are usually allocated as a percentage of total direct cost and may vary from one project manager to another.

The organisation of the budget into these three categories helps control the process and improve decision making. The following is an example of a budget format:

|		
Direct Costs		*Rxxxxxx*
Obtaining permits	*R xxxxx*	
Tendering Processes	*R xxxxx*	
Building Contractors	*R xxxxx*	
Laying Foundations	*R xxxxx*	
Bricklaying	*R xxxxx*	
Shearing	*R xxxxx*	
Plumbing	*R xxxxx*	
Electrical	*R xxxxx*	
Fixtures	*R xxxxx*	
Skills Development & Training Contractors	*R xxxxx*	
Events Management Contractors	*R xxxxx*	
Contingencies	*R xxxxx*	
Project Overhead Costs		*Rxxxxxx*
Salaries: Project Manager & team	*R xxxxxx*	
Temporary shed	*R xxxxxx*	
Travel	*R xxxxxx*	
General & Administrative Costs		*Rxxxxxx*
40% of Total Direct Cost	*R xxxxx*	
GRAND TOTAL		*Rxxxxxx*

STAGE 2: Planning

Constructing a project network plan

The project network tool is used for planning, scheduling and monitoring project progress. The network is developed from the information collected for the WBS and is a graphic flowchart of the project job plan.

The network shows the project activities that must be completed, the sequences (steps), the interdependencies (how individual steps rely on other steps for completion), and in most cases the times for the activities to start and finish along the longest path through the network – *the critical path*.

The network is the framework that will be used by the project managers to make decisions concerning project time, cost and performance. Once the network is developed, it is very easy to modify or change when unexpected events occur as the project progresses. In summary, the network plan is used to:

- schedule labour and equipment;

- enhance communication that brings together all managers and groups in meeting the time, cost, and performance objectives of the project;

- provide an estimate of the time the project will take (duration);

- give the times when activities can start or finish and when they can be delayed;

- provide the starting point for budgeting the cash flow (when money needs to be received and spent on various elements) of the project.

| Figure 1-4   Project Network Plan |
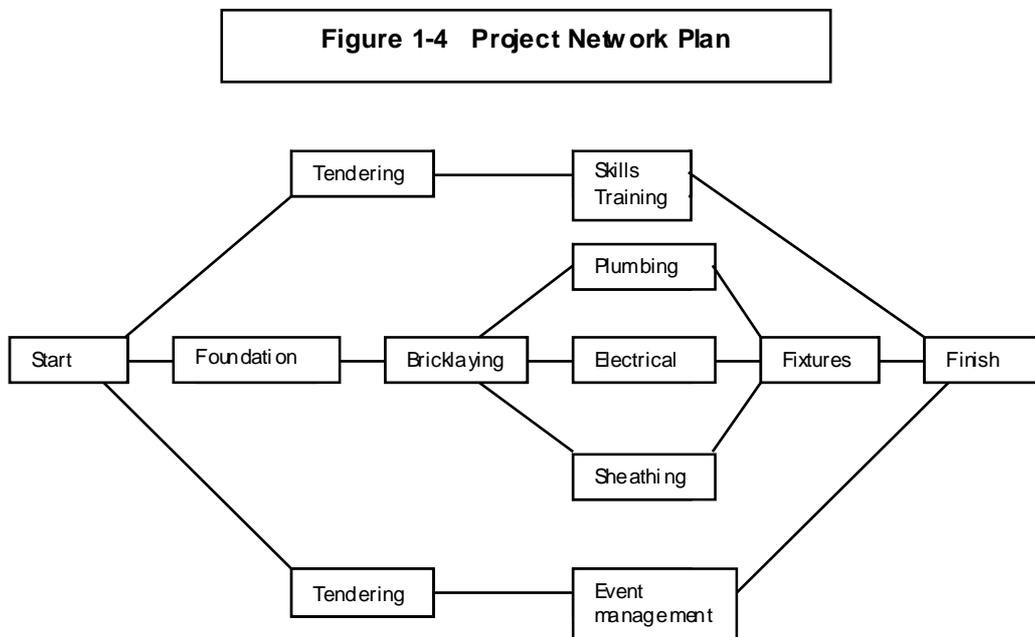
This project network plan clearly illustrates that:

- Plumbing, electrical and sheathing activities can occur at the same time after bricklaying is completed;

- *Start – Foundation – Bricklaying – Electrical – Fixtures - Finish* is the longest path, *(critical path)* – if one of the activities on this path is delayed then the whole project will be delayed by the same amount of time.

Project schedule

The project network plan will assist in drawing up a project schedule which clearly defines each task, how long it will take, when it will start and finish. It is an important tool used by the project manager to track and monitor the implementation process. Below is an example of a project schedule.

Task Name	Duration	Start	Finish
Start		6 Feb 2004	21 March 2007
Organize Permits	21 days	6 Feb 2004	5 March 2004
Lay Foundations	233 days	24 March 2004	28 January 2005
Bricklaying	207 days	15 Feb 2005	30 Nov 2005
Plumbing	130 days	4 Jan 2006	4 July 2006
Electrical	130 days	4 Jan 2006	4 July 2006
Sheathing	130 days	4 Jan 2006	4 July 2006
Fixtures	89 days	28 July 2006	29 Nov 2006
Final Inspection	54 days	1 Jan 2007	15 March 2007
Tendering for Training	41 days	3 May 2006	28 June 2006
Skills Training	139 days	3 July 2006	9 Jan 2007
Tendering for events management	38 days	8 Jan 2007	28 Feb 2007
Event Management	21 days	1 March 2007	21 March 2007

Chapter 2.   Managerial aspects of project management

This section looks at some important aspects that are central to the management of projects. For any project to be successful there has to be a good project manager who is able to provide leadership and bring together different teams to work towards a common objective. In addition to being able to manage people and budgets the project manager must be able to:

- Identify potential risks and develop back up plans;

- Effectively communicate with all stakeholders;

- Ensure quality that meets the expectations of stakeholders

Project manager

The project manager performs the same functions as other managers. The project manager is unique because s/he manages temporary activities and is usually an outsider brought into a business or government department to implement a specific project. A project manager is generally expected to be the projects' leader who needs to motivate and inspire people working on the project.

Project managers are expected to organise resources to complete a project on time, on budget and within specification. They provide direction, coordination, and integration to the project team and are responsible for performance.

When things go wrong the project manager's job is to get the project back on track by working out ways to solve problems and serving as peacemaker when tensions arise. Depending on the nature of the project, there are a number of different groups outside the organisation that influence the success of the project. To be effective, a project manager must understand how these groups can affect the project and develop methods for managing the relationship.

Project risk management

Risk identification consists of determining which risks are likely to affect the project and documenting the characteristics of each. For example, the project manager in the RDP homes project has to look at each package within the WBS and work out what is likely to go wrong. Once this is done the project manager has to develop a plan of how each problem will be addressed.

Risk identification is not a one-time event and should be performed on a regular basis throughout the project. Risk identification should address both internal and external risks. Internal risks are things that the project team can control or influence, such as the performance of contractors, material wastage etc. External risks are things beyond the control or influence of the project team, such as changes in the exchange rate, new government legislation, bad weather etc. A risk management plan should document the procedures that will be used to manage risk throughout the project.

Project communication management

Project communication management is about how communication is carried out during the course of the project. Good communication ensures that all stakeholders are regularly kept informed about progress and problems. Project communication management is made up of the following processes:

- **Communications planning** – determining the information and communication needs of the stakeholders: who needs what information, when will they need it, and how will it be given to them;

- **Information distribution** – making needed information available to project stakeholders in an accessible and timely manner;

- **Performance reporting** – collecting and disseminating performance information. This includes status reporting, progress measurement and forecasting;

- **Administrative (Project) Closure** – generating, gathering, and disseminating information to formalise phase or project completion.

Project quality management

It is of no use completing a project within the set time and budget if the final product is of poor quality. The project manager has to ensure that the final product meets the quality expectations of the stakeholders. This is done by good:

- **Quality planning** – identifying what quality standards are relevant to the project and determining how to meet them;

- **Quality Assurance** – evaluating overall project performance on a regular basis to provide confidence that the project will satisfy the relevant quality standards;

- **Quality control** – monitoring specific project results to determine if they comply with relevant quality standards and identifying ways to remove causes of poor performance.