TD 608
Project Management and Analysis

Part I
Project Conception and Execution

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Lecture 5

The Project Plan and Appendix III

Recall that Appenix III has now been achieved:

Appendix III

- Obtaining design parameters
- Building Consensus

and with it:

- consensus and commitments
- key technical modalities and parameters
- an indication of the social structures required.

The next task is:

Chapter 4 The Project Plan

- The detailed technical plan
- The detailed social arrangements
- The mobilization plan
- The schedule
- The refined analysis

We will split this into four parts (in addition to a preamble and a conclusion:

- Technical Asset building
- Social and Organizational Asset building
- Schedules
- Viability analysis

The Technical Assets

This section typically has the following **TWO** parts:

Tasks, Schedules and Monitoring

- **List of tasks**
- Their durations and dependency between tasks
- Schedules-Procurement to Construction
- Landmarks in the schedule
- System of monitoring progress
- Quality control system
- Critical paths

Design, Materials and Costs

- Detailed Design of each component of the project.
- A list of material and resources required for the construction of the technical asset.
- Manpower requirements and skills
- list of possible sources where purchases may be made
- list of contractible sub-tasks and briefs for each task
- An estimate of the costs

Social and Organization Assets

Schedules and Tasks

- Key events and arrangements
- Their inter-dependence and dependence with key technical landmarks

Clearance and Agreements

- Land records and permissions
- Agreements with beneficiaries

Design

- Design of social structures
- Design and procurement of training material

Overall monitoring

- long term monitoring of the project
- methodology for defining success

Capacity building and education

- Training programs
- Setting up of community organizations
- NGOs, trusted parties and their details

Financial Data

- Expenses for CBE
- Financial agreements with other agencies
- Monitoring costs

Kitchen Garden-Main Tasks

A Formation of Village Committee
- "owner" of the project
- will liaison during project and smoothen transition
- 4 men and 4 women, cross section of village

B Legal document on land
- an absolute must
- Marking out and survey

C Formation of 4 sub-groups
- VC should help
- Marking out sub-plots
- see that bullock-cart in each?

D Implementation of water system
- Design and Implementation

E Agreements within the VC
- Division of labour and produce (if any)
- Usage of water
- mode of working with *bakri*-owners

F Design of first planting
- Selection of first crop and *wafa*
- Plan of utilization

G Erection of fence
- Design and Implementation

H Training program

I Procurement of tools and hardware

Designs and Activities

Caution

- Each task here is something which must be achieved before the end of the project, and not an activity when the project has ended.
- Thus, e.g., we are merely proposing a plan to construct the water system. Its usage will be after the project has ended.
- Thus the plan is of creating the infrastructure or asset to deliver water.

Each asset building task typically has a

- A design component
  This is a detailed description of the asset and its technical analysis.
- An activity component
  This lists the various activities to build the asset
- A cost report
  This outlines the costs incurred in the building of the asset.

The Grand Picture of the Project Plan

Task list	Description	Design	Activities	Costs
Tech. Task 1	TN1	TD1	TA1	TC1
⋮	⋮	⋮	⋮	⋮
Techn. Task n	TNn	TDn	TAn	TCn
Social Task 1	SN1	SD1	SA1	SC1
⋮	⋮	⋮	⋮	⋮
Social Task m	SNm	SDm	SAm	SCm
Project Summary	Description of Project	Design Doc.	Execution Plan	Cost of Project
Analysis	Global	Assump.	Monitoring	Economic

The last row and last column of the above table is the all-important Cost-Benefit analysis of the project, a separate chapter outside the project plan.

Typical Technical Task: Water System

Parts

- The tanks, filters and the drip.
  - anti-clog and sufficient head
  - ease in filling water
- The depth of the lines and outflows
  - choice of plants
- Plumbing for inter-connectibility and group-wise and family-wise distribution

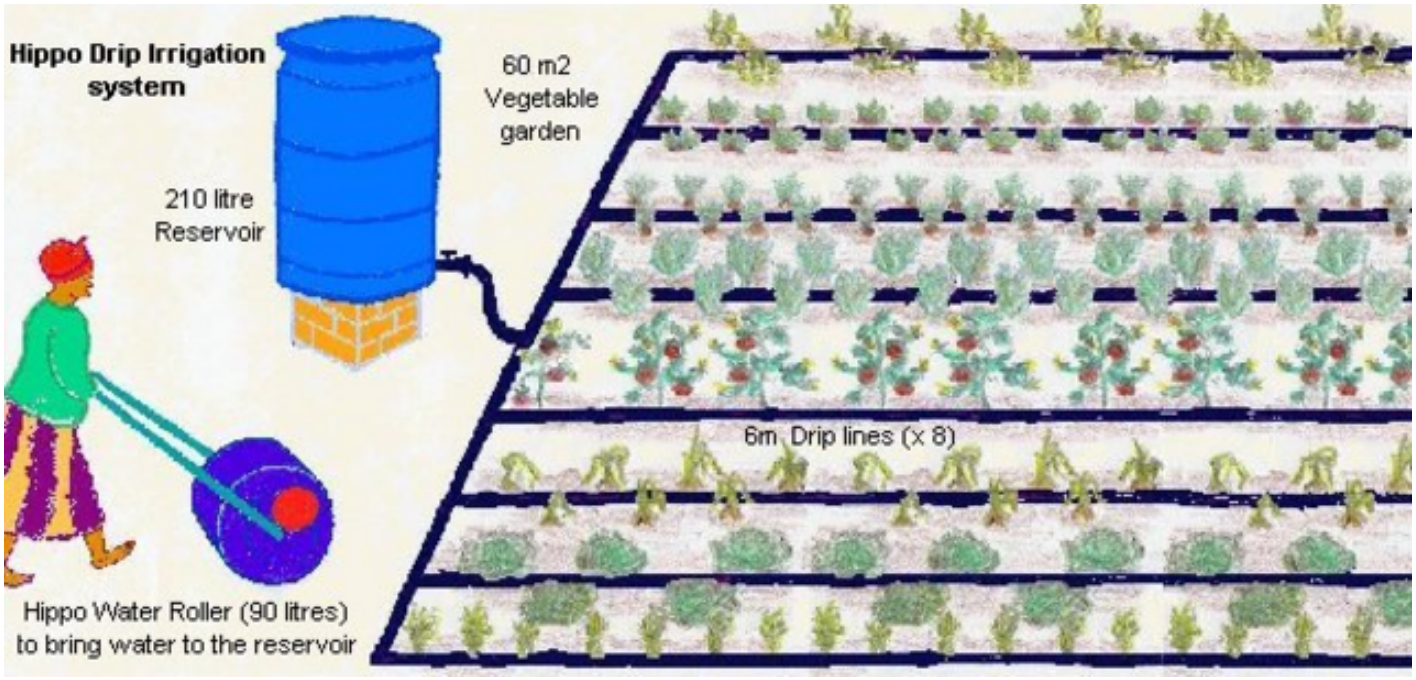
Training on use of drip system is required!

Figure: from RADA, Jamaica

Schematic

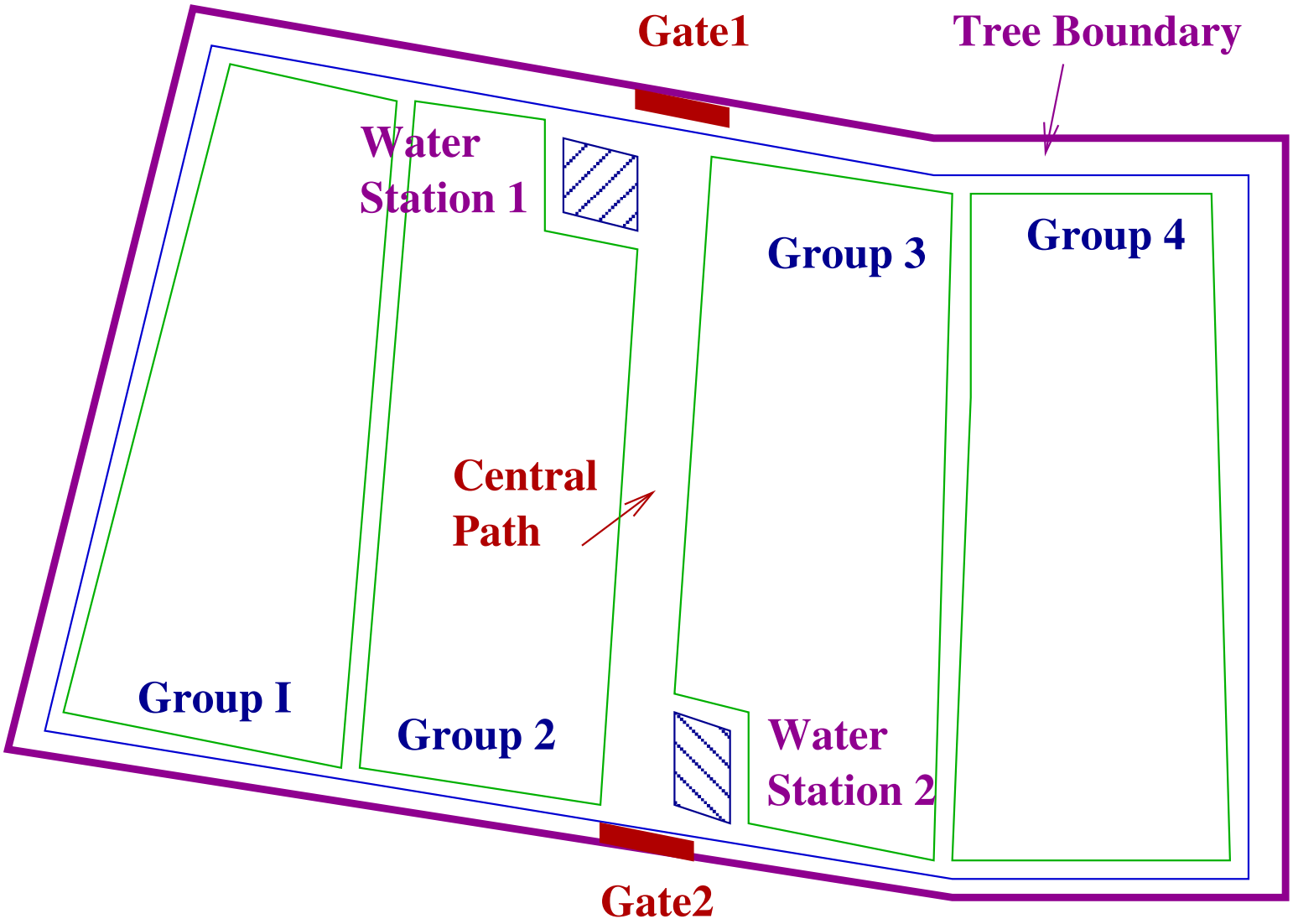
- tanks, main-lines and feeder-lines and terminals.
- height of tank at least 1.1m

A curious option: www.hipporoller.org



- A scheme for drip irrigation with a curious water transport system (from south africa).
- *Hippo-roller* is a 90-liter drum which may be rolled and pulled.

The Drawing


Gate1
Tree Boundary
Water
Station 1
Group 3
Group 4
Central
Path
Group I
Group 2
Water
Station 2
Gate2

More ...

Design of the water station

- Storage Tank
  - 2 tanks each of 1000L
  - wide removable lids
- Platform
  - height 1.5m
  - *pukka*, with steps
- And so on ..

Design of the drip

- and so on ...

Exec. Time: 2 mo.
Lead Time : 15 days

The Cost

Water Station			
Cement	2 *gonis*	410	820
Sand	0.5 brass	800	400
⋮	⋮	⋮	⋮
Total			7600
Drip System			
1-inch pipe	200m	40	800
⋮	⋮	⋮	⋮
Total			11600
⋮	⋮	⋮	⋮
Total			31800

A Social Task-Forming of Village Committee

Sub-Parts

- The composition of the VC
  - 8 total, 4 men and 4 women
  - 4 beneficiaries, 1 from each group
  - 4 non-beneficiaries, 2 live-stock owners
- The process of constitution of the VC
  - through a village meeting
- the rules governing VC
  - tenure, retirement and induction of new members
- The duties of the VC after project
- The duties of the VC during project
  - The approval of the water lifting
  - The agreements between bakri-owners and project beneficiaries
  - The terms for labour required for the project
  - scheduling of various activities

Activities

3 meetings:

- (i) Call for VC, (ii) Selection and (iii) Agreements
- Time taken: 2 months

Some Observations

- A key event at the end of the project is the hand-over
  - This is to formally hand-over the reins of the assets developed to the community.
  - The VC serves as the recipient for this hand-over.
- Water is a key input for the kitchen-garden project
  - The use of water by the beneficiaries should not cause a conflict
  - Enhancing supply and easing drudgery of transporting water will be very important.
- Certain projects may require key participation by the community, e.g., large amounts of labour, stone or soil, land for the project, temporary shelters etc., and the Appendix III interactions go a long way in smoothening this.
- Clear that the Community interaction of Appendix III has a key role in determining the project plan and ensuring the success of the project.

The Project Plan again

Thus, each task:

- has a design factor
- a cost factor, and
- requires activities which must be planned

The design and the cost of each task gets aggregated into the Design Document and the Budget of the project.

Activities may have pre-conditions and lead times. For example, the drip system cannot be installed before the plot is prepared!

A schedule is a allocation of exact dates for the start and finish of each activity of the project.

This must respect:

- A task can begin only after its pre-conditions are met
- The start and finish times for each task matches or exceeds the time stated in the design document.

Construction of a schedule can be a very intricate problem.

The Activity List

The first step is to create a activity list, with

- durations and
- precedences

Also, set a target end-date, if any!

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For the Kitchen Garden

ID	Description	Duration	After
VC1	VC First 2 meeting	1 mo	-
VC2	VC Agreements	1 mo	VC1
AP	Acquiring Plot	0.5 mo	VC1
SG	Sub-group Formation	1 mo	VC1
SP	Preparing sub-plots	1 mo	SG, AP
TP	Tool Proc.	0.5 mo	SP
F	Fencing	2 mo	AP
W	Water System	2 mo	SP
T	Training	0.5 mo	TP, W
FP	First Planting	0.5 mo	TP, VC2, W, F, SP
	Target 15 Sept.		

Next, The Schedule

This is with the start and end times of each activity.

ID	Desc.	Dur.	After	Start	End
VC1	VC1 First 2 meeting	1	-	Mar. 15	Apr. 15
VC2	VC Agreements	1	VC1	Apr. 15	May 15
AP	Acquiring Plot	0.5	VC1	Apr. 15	May 1
SG	Sub-group Formation	1	VC1	Apr. 15	May 15
SP	Preparing sub-plots	1	SG, AP	May 15	Jun. 15
TP	Tool Proc.	0.5	SP	Jun. 15	Jul. 1
F	Fencing	2	AP	Jun. 15	Aug. 15
W	Water System	2	SP	Jun. 15	Aug. 15
T	Training	0.5	TP, W	Aug. 15	Sept 1
FP	First Planting	0.5	TP, VC2 W, F, SP	Sept. 1	Sept 15

Check that every activity is starting after all preceding activities have ended . For example, we see that SP starts on May 15 and AP ends May 1, SG ends May 15.

Scheduling Concepts

ID	Desc.	Dur.	After	Start	End
VC1	VC1	1	-	Mar. 15	Apr. 15
VC2	VC2	1	VC1	Apr. 15	May 15
AP	Acq. Plot	0.5	VC1	Apr. 15	May 1
SG	Sub-group	1	VC1	Apr. 15	May 15
SP	Sub-plots	1	SG, AP	May 15	Jun. 15
TP	Tools	0.5	SP	Jun. 15	Jul. 1
F	Fence	2	AP	Jun. 15	Aug. 15
W	Water	2	SP	Jun. 15	Aug. 15
T	Train.	0.5	TP, W	Aug. 15	Sept 1
FP	Plant.	0.5	W, F, SP, TP, VC2	Sept. 1	Sept 15

- Critical Path, i.e., activities which are crucial to completion of the project in time. VC1-SG-SP-W-T-FP
  - Caution: There may be more than one crticial path.
- Slacks are durations by which an activity may prolong over its alloted time, without delaying the project. F has a slack of 15 days

Scheduling-Resources and Locations

ID	Desc.	Dur.	After	Start	End
VC1	VC1	1	-	Mar. 15	Apr. 15
VC2	VC2	1	VC1	Apr. 15	May 15
AP	Acq. Plot	0.5	VC1	Apr. 15	May 1
SG	Sub-group	1	VC1	Apr. 15	May 15
SP	Sub-plots	1	SG, AP	May 15	Jun. 15
TP	Tools	0.5	SP	Jun. 15	Jul. 1
F	Fence	2	AP	Jun. 15	Aug. 15
W	Water	2	SP	Jun. 15	Aug. 15
T	Train.	0.5	TP, W	Aug. 15	Sept 1
FP	Plant.	0.5	TP, VC2, W, F, SP	Sept. 1	Sept 15

A schedule may still be unacceptable because of:

- Inadequate Resources: Here, from Jun. 15-Aug. 15, F and W are simultaneous. Furthermore, this is also peak farming time. There may be a shortage of labour.
- Location: This happens when two scheduled actions will happen at the same location, which may not be feasible. Here F andW, though close-by do not really conflict on location.

Milestones and Reviews

Another part of the schedule is the notion of milestones .

This are key points during the execution of the project. These may be also points where key monitoring and review procedures may be scheduled.

Milestones are important stages of the project implementation. They can serve as:

- Community review points
- Quality check points
- Reporting to Sponsors

For the kitchen garden :

Formation of the VC	Apr. 15	Community Review
Sub-groups and Sub-plots	Jun. 15	Community Review
Water and Fence	Aug. 15	Quality Check
Planting	Sep. 15	Final

Monitoring

Large Projects have a distinct Monitoring Plan.

This is to ensure that the project performs on

- Delays
- Costs
- Quality

Delays

- Tracking of milestones and sub-milestones
- Allowances: schedule allows slacks to absorb uncertainties

Costs: Most Important!

- Running Accounts: Keep track of cash-flow!
- Approvals: Compulsory but prompt.
- Material and Labour Inventory control.

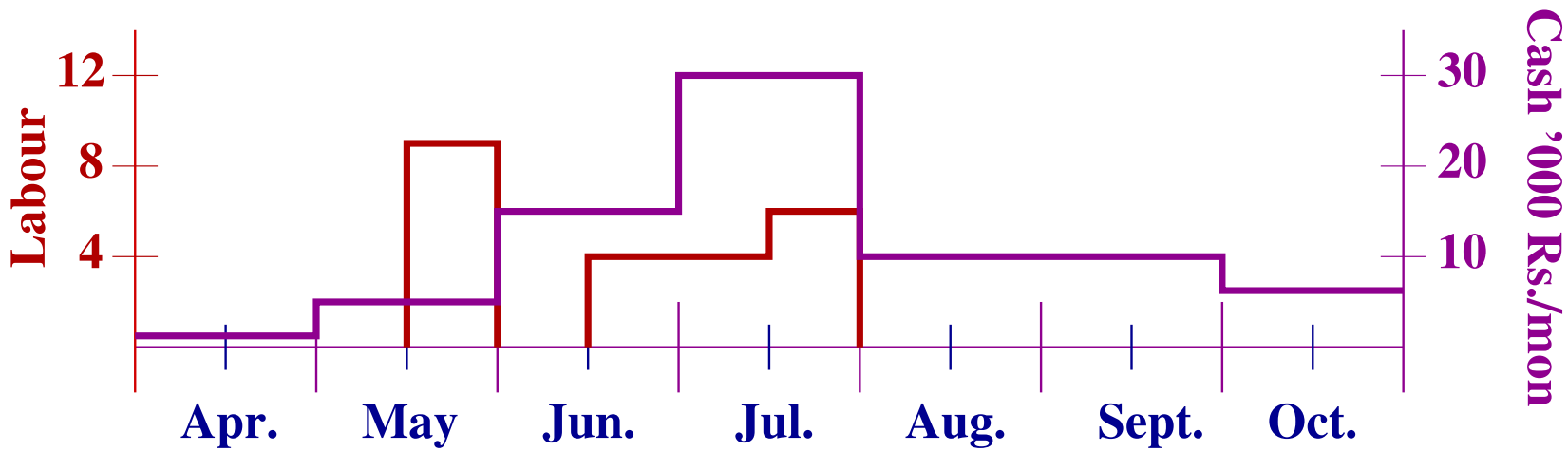
Quality

- Key tests and procedures
- Third-party evaluations
- Expert visits and opinions

Transparency and Participation : Involve community, e.g., VC.

Mobilization Plan

This is a time-line outlining the requirements of key resources such as cash, labour, skilled personnel, officers, machinery.



- Note that for any resource, this aggregates all demand for that resource across all tasks which are going on at that time.
- This brings out potential infeasibilities and peak-demands so that the project manager is better prepared.
- Big machinery may have lead times, so that their mobilization needs to be planned.

Recap: The Project Plan

Chapter 4 The Project Plan

- The detailed technical plan
- The detailed social arrangements
- The mobilization plan
- The schedule
- The refined analysis

The document into three parts (in addition to a preamble and a conclusion:

- Technical Asset building
- Social and Organizational Asset building
- Schedules
- Viability analysis

Everything covered except Analysis. This is covered separately.

- The project plan is one of the most intricate documents and must be carefully constructed.
- As we have seen, it needs multi-disciplinary inputs and skills all of which must be done with rigour.

Assignments

Assignment 1:Individual

Prepare a report and a presentation of the K-East project which should have the following parts:

- A description of the objectives of the project
  - as stated by the TOR
  - as stated in the project report
- The methodology followed and the key observations
- The recommendations
- Your critique of the report in terms of objectives, methodology and recommendations.
- Your critique in terms of your perception of the problem.

Submission Date: 7th Feb., 2008. Best 2 reports will present their work in class.

Assignments: contd.

Assignment 2: Team of 5

Prepare a project plan for the reduction of the fallow periods in Gudwanwadi. This should include

- the unit plan and its analysis,
- its specialization to Gudwanwadi,
- main tasks and a schedule

Submission Date: 3rd of April., 2008. Presentations in following week.

Assignment 3: Team of 3

Prepare a research report on a topic of your choice. Possible examples:

- A survey of city budgets, revenues and expenditure, vis-a-vis allocations for water.
- A report on urban vegetable markets and their organization.
- A survey of the budgets of a typical irrigation network.

Submission Date: 3rd of April., 2008. Presentations in following week.

Discussion

1. Compare the design and analysis approach for projects with that for a typical engineering product.
2. What would correspond to legal issues in a corporate project? How would a corporate project be different?
3. Notice how we have migrated from loosely defined objectives to clearly defined tasks. Is this migration always feasible?