Project Evaluation and Project Planning

Lecture 2 by Professor Vladimir Geroimenko

Module “Software Project Management“

11 October 2023 - Teaching Week 3

Textbook reference: Chapter 2 and 3

Part 1 – Project Evaluation and Programme Management

Lecture Outline

- A business case for a project
- Project evaluation
- Programme management
- Project planning

A Business Case

A business case is an argument, usually documented, that **is intended to convince a decision maker** to approve some kind of action. The document itself is sometimes referred to as a business case.

A Business Case – 1 of 4

- Feasibility studies can also act as a ‘business case’
- Provides a justification for starting the project
- Should show that the benefits of the project will exceed development, implementation and operational costs
- Needs to take account of business risks

Contents of a Business Case – 2 of 4

1. Introduction/ background
2. The proposed project
3. The market
4. Organizational and operational infrastructure
5. The benefits
6. Outline implementation plan
7. Costs
8. The financial case
9. Risks
10. Management plan

Contents of a Business Case - 3 of 4

- **Introduction/background:** describes a problem to be solved or an opportunity to be exploited
- **The proposed project:** a brief outline of the project scope
- **The market:** the project could be to develop a new product (e.g. a new computer game). The likely demand for the product would need to be assessed.

Contents of a Business Case - 4 of 4

- **Outline implementation plan:** how the project is going to be implemented. This should consider the disruption to an organization that a project might cause.
- **Costs:** the implementation plan will supply information to establish these
- **Financial analysis:** combines costs and benefit data to establish value of project

Evaluation of Individual Projects

How the feasibility of an individual project can be evaluated.

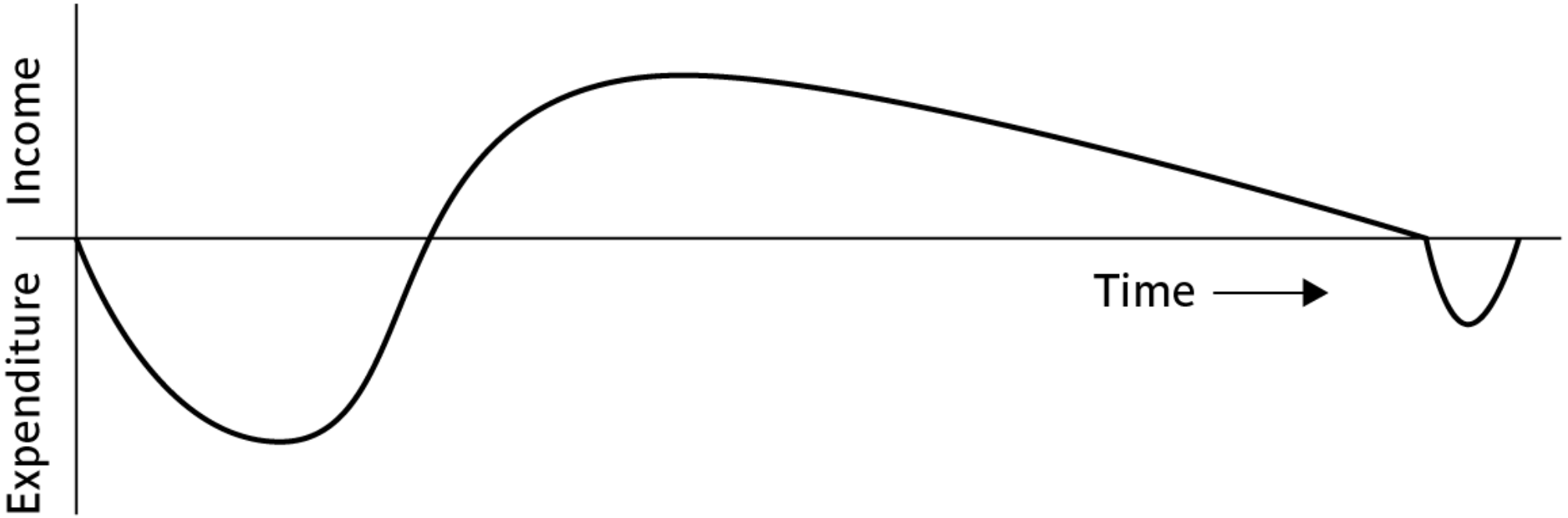
Cost Benefit Analysis (CBA)

This relates to an individual project.

You need to:

- Identify all the costs which could be:
  - Development costs
  - Set-up
  - Operational costs
- Identify the value of benefits
- Check that benefits are greater than costs

Product/System Life Cycle **Cash Flows**



- The timing of costs and income for a product of system needs to be estimated.
- The development of the project will incur costs.
- When the system or product is released it will generate income that gradually pays off costs.

Net Profit

Year	Cash Flow
0	-100,000
1	10,000
2	10,000
3	10,000
4	20,000
5	100,000
Net profit	*50,000*

- ‘Year 0’ represents all the costs before system is operational
- ‘Cash-flow’ is value of income less outgoing
- Net profit value of all the cash-flows for the lifetime of the application

Pay Back Period

Year	Cash Flow	Accumulated
0	-100,000	-100,000
1	10,000	-90,000
2	10,000	-80,000
3	10,000	-70,000
4	20,000	-50,000
5	100,000	50,000

This is the time it takes to start generating a surplus of income over outgoings.

Return On Investment (ROI)

$$ROI = \frac{\text{Average annual profit}}{\text{Total investment}} \times 100$$

In the previous example:

Average annual profit = 50,000/5 (years) = **10,000**

ROI = 10,000/100,000 X 100 = **10%**

Programme Management

Programme management is the process of managing several related projects, often with the intention of improving an organization's performance.

Programme Management

A definition:

‘a group of projects that are managed in a co-ordinated way to gain benefits that would not be possible were the projects to be managed independently’

Ferns, the *International Journal of Project Management,* August 1991

Possible Types of Programmes

- **Strategic:** Several projects together implement a single strategy.
- **Business cycle programmes:** A portfolio of projects that are to take place within a certain time frame e.g. the next financial year.
- **Infrastructure programmes:** In an organization there may be many different applications which share the same hardware/software infrastructure.
- **Research and development programmes:** In a very innovative environment where new products are being developed.
- **Innovative partnerships:** e.g. pre-competitive co-operation to develop new technologies that could be exploited by a whole range of companies.

Programme Managers vs Project Managers

Programme manager

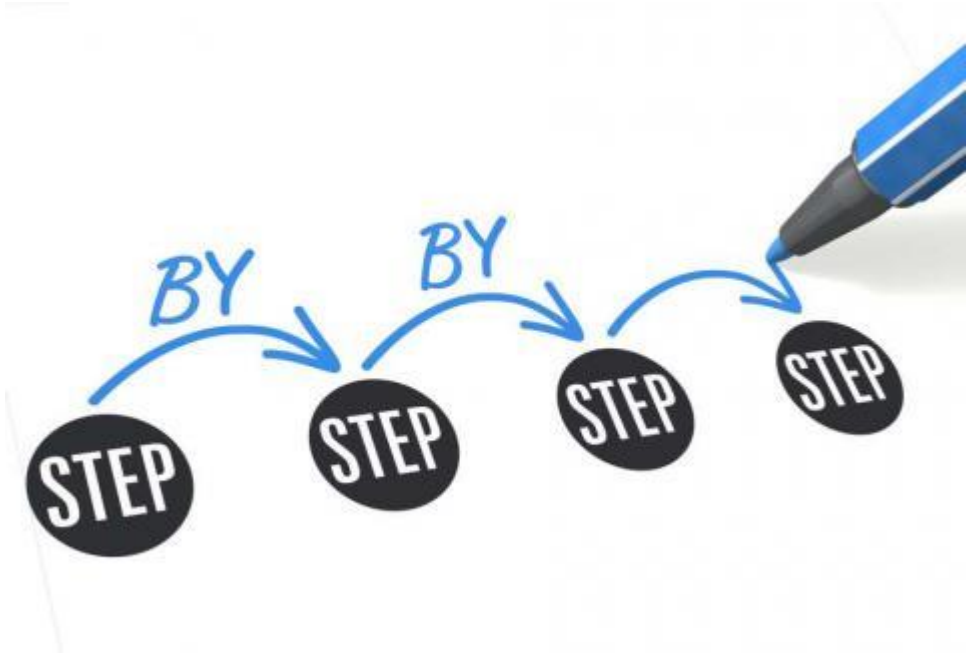
- Many simultaneous projects
- Impersonal relationship with resources
- Optimization of resource use
- Projects tend to be seen as similar

Project manager

- One project at a time
- Personal relationship with skilled resources
- Minimization of demand for resources
- Projects tend to be seen as unique

Final Thoughts

- A project may fail not through poor management but because it should never have been started
- A project may make a profit, but it may be possible to do something else that makes even more profit
- A real problem is that it is often not possible to express benefits in accurate financial terms
- Projects with the highest potential returns are often the most risky



Part 2: Project Planning

Introduction to **Step Wise** Project Planning

‘Step Wise’:
An approach to planning software projects

This lecture provides an overview of the basic steps needed to produce a project plan, including:

Practicality

- tries to answer the question ‘what do I do now?’

Scalability

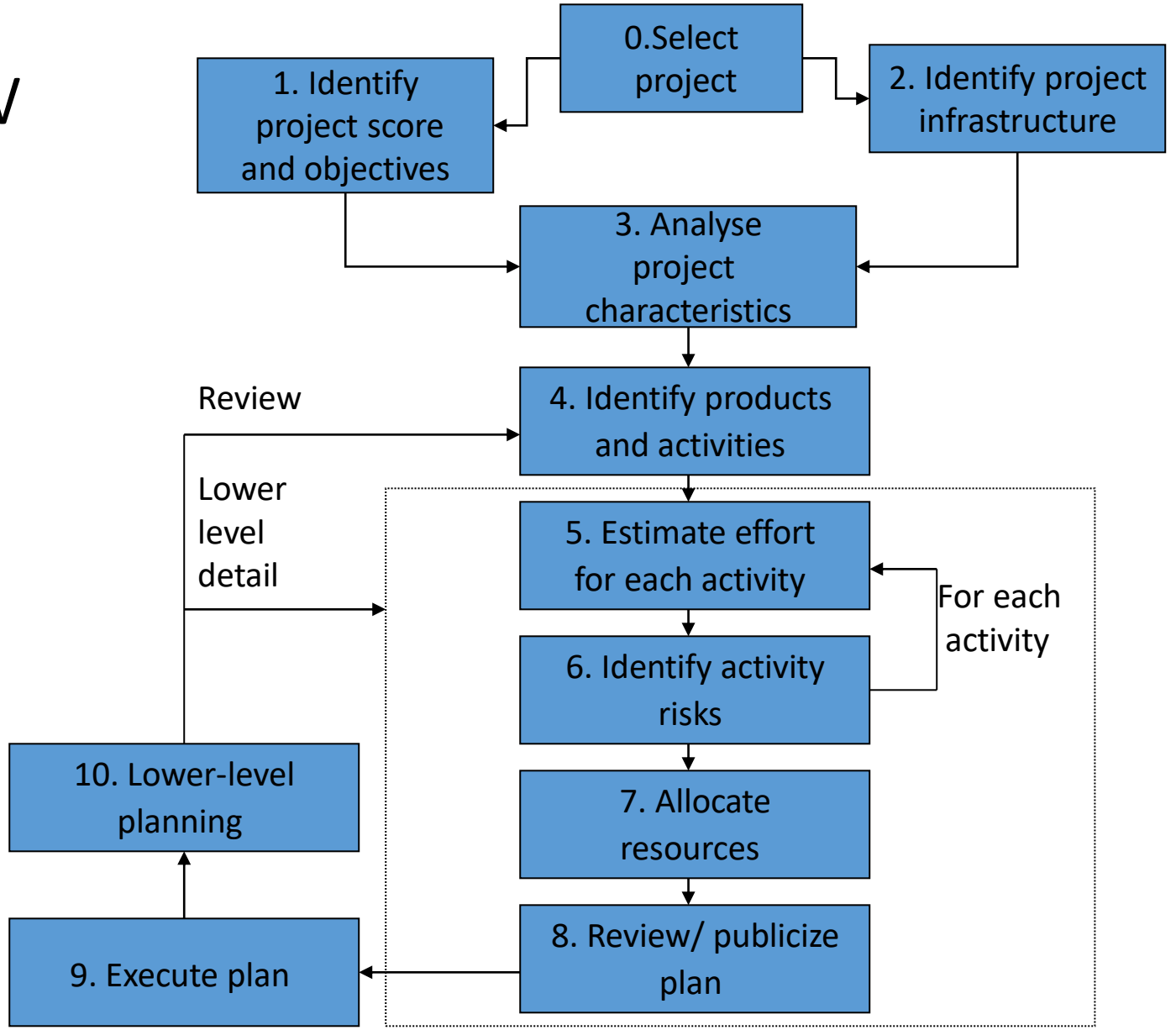
- useful for small project as well as large

Range of application

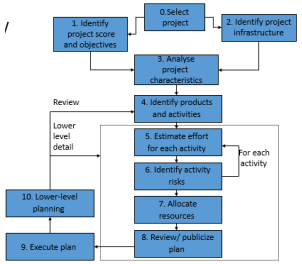
Accepted techniques

- e.g. borrowed from PRINCE etc

‘Step Wise’: An Overview



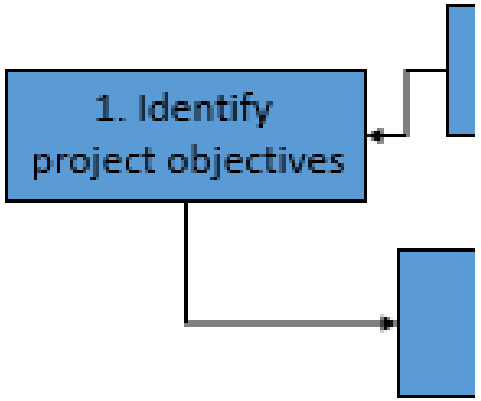
10 Steps



0. **Select project**
1. **Identify project scope and objectives**
2. **Identify project infrastructure**
3. **Analyse project characteristics**
4. **Identify the products and activities**
5. **Estimate effort for each activity**
6. **Identify activity risks**
7. **Allocate resources**
8. **Review / publicize plan**
9. **Execute plan**
10. **Lower-level planning**

Step 1: Establish project scope and objectives

- 1.1 Identify objectives and measures of effectiveness
  - ‘how do we know if we have succeeded?’
- 1.2 Establish a project authority
  - ‘who is the boss?’
- 1.3 Identify all stakeholders in the project and their interests
  - ‘who will be affected/involved in the project?’

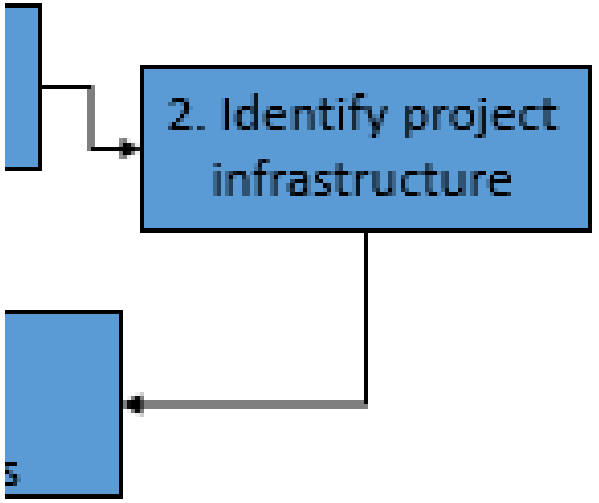


Step 1: Establish project scope and objectives

- 1.4 Modify objectives in the light of stakeholder analysis
  - ‘do we need to do things to win over stakeholders?’
- 1.5 Establish methods of communication with all parties
  - ‘how do we keep in contact?’

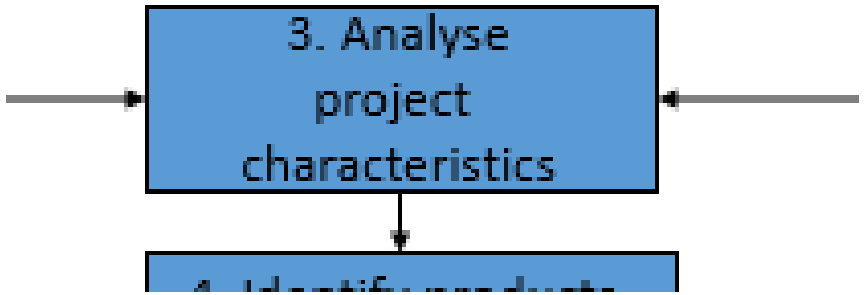
Step 2: Establish project infrastructure

- 2.1 Establish link between project and any strategic plan
  - ‘why did they want the project?’
- 2.2 Identify installation standards and procedures
  - ‘what standards do we have to follow?’
- 2.3. Identify project team organization
  - ‘where do I fit in?’



Step 3: Analysis of project characteristics

- 3.1 Distinguish the project as either objective or product-based.
  - Is there more than one way of achieving success?
- 3.2 Analyse other project characteristics (including quality based ones)
  - what is different about this project?



Step 3: Analysis of project characteristics

- 3.3 Identify high level project risks
  - ‘what could go wrong?’
  - ‘what can we do to stop it?’
- 3.4 Take into account user requirements concerning implementation
- 3.5 Select general life cycle approach
  - waterfall? Increments? Prototypes?
- 3.6 Review overall resource estimates
  - ‘does all this increase the cost?’

Step 4.1: Identify project products and activities

- Identify and describe project products - ‘what do we have to produce?’

4.2: Produce ideal activity network

- The activity network is the basis of the data that is input to planning software tools like MS Project.
- Identify the activities needed to create each product
- More than one activity might be needed to create a single product
- Hint: Identify activities by verb + noun but avoid ‘produce…’ (too vague)
- Draw up activity network (see next slide…)

4.2 An ‘ideal’ activity network

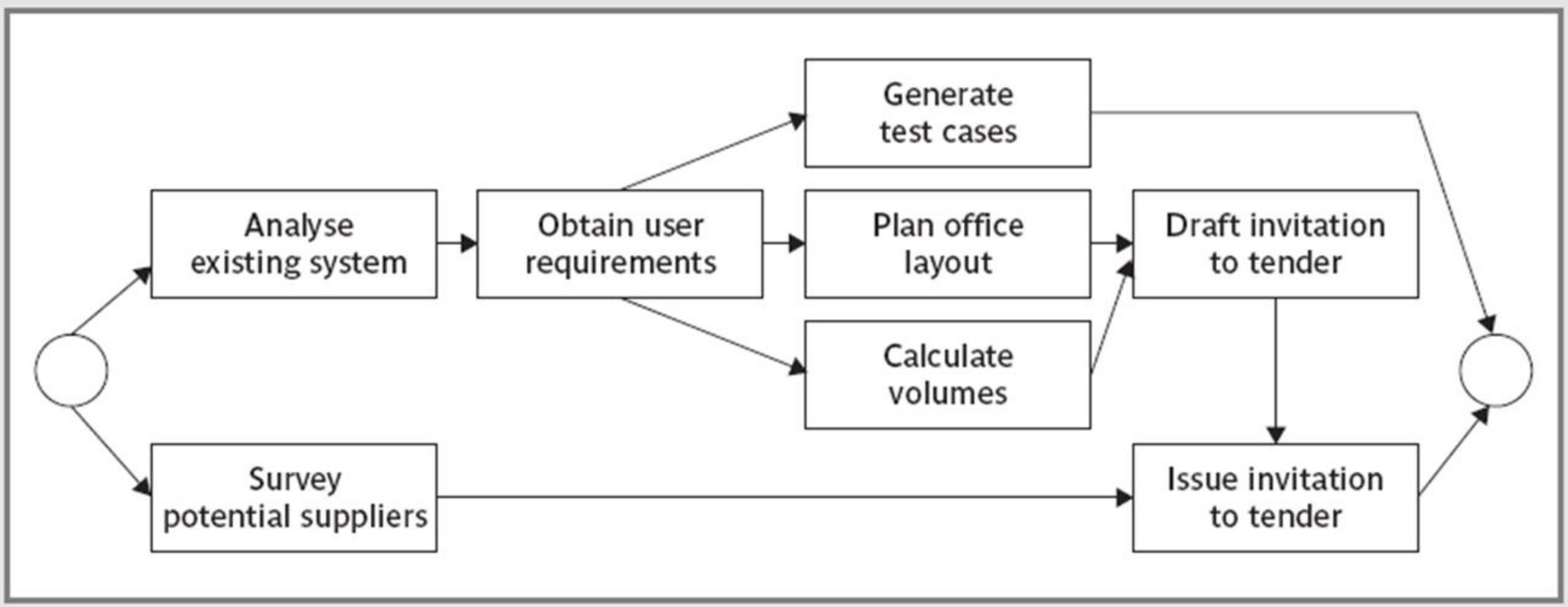
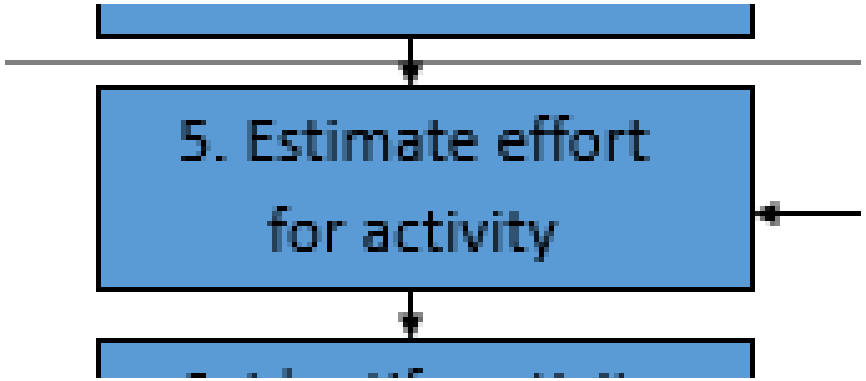


FIGURE B.2 Brightmouth College payroll project activity network fragment

Step 5: Estimate effort for each activity

- 5.1 Carry out bottom-up estimates
  - distinguish carefully between *effort* and *elapsed* time
- 5.2. Revise plan to create controllable activities
  - break up very long activities into a series of smaller ones
  - bundle up very short activities (create check lists?)

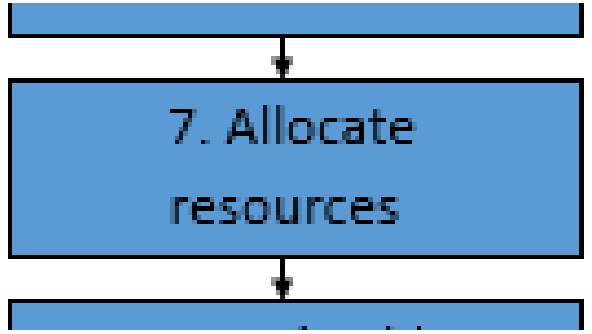


Step 6: Identify activity risks

- 6.1 Identify and quantify risks for activities
  - damage if risk occurs (measure in time lost or money)
  - likelihood if risk occurring
- 6.2 Plan risk reduction and contingency measures
  - risk reduction: activity to stop risk occurring
  - contingency: action if risk does occur
- 6.3 Adjust overall plans and estimates to take account of risks
  - e.g. add new activities which reduce risks associated with other activities e.g. training, pilot trials, information gathering

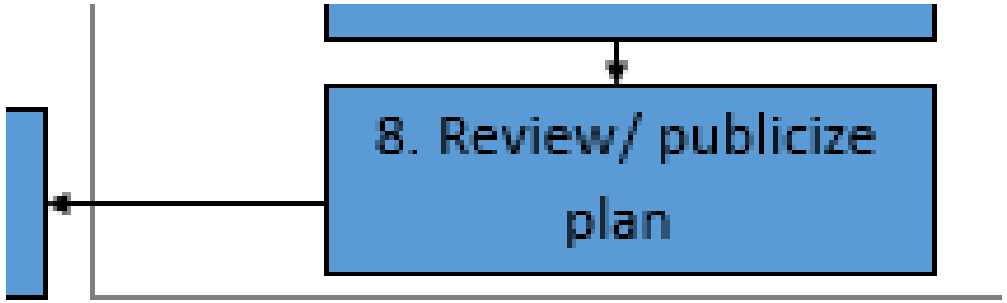
Step 7: Allocate resources

- 7.1 Identify and allocate resources to activities
- 7.2 Revise plans and estimates to take into account resource constraints
  - e.g. staff not being available until a later date
  - non-project activities



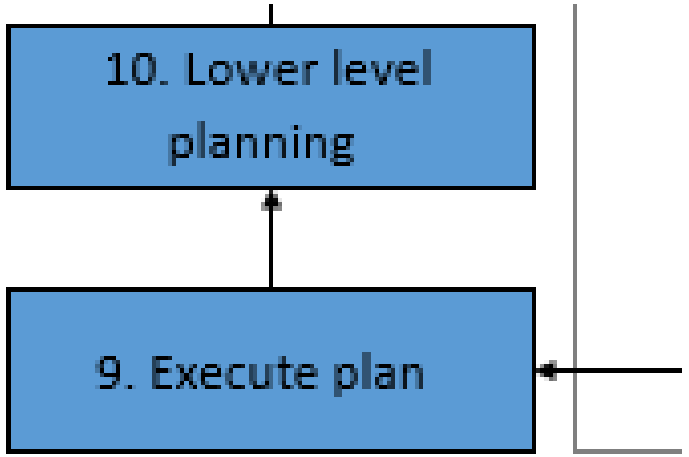
Step 8: Review/Publicise plan

- 8.1 Review quality aspects of project plan
- 8.2 Document plan and obtain agreement



Step 9 and 10

- Execute plan and create lower level plans



Key points

- Establish your objectives
- Think about the characteristics of the project
- Discover/set up the infrastructure to support the project (including standards)
- Identify **products** to be created and the **activities** that will create them
- Allocate resources
- Set up quality processes

Thank you for your attention

Any questions, please?