

**INFORMATION SYSTEMS PROJECT**  
**MANAGEMENT**  
**KASNEB CICT PAPER NO. 17**

## **INFORMATION SYSTEMS PROJECT MANAGEMENT**

### **GENERAL OBJECTIVE**

This paper is intended to equip the candidate with the knowledge, skills and attitude that will enable him/her to manage information systems projects

### **17.0 LEARNING OUTCOMES**

A candidate who passes this paper should be able to:

- Manage project scope using various techniques
- Use information system project management software
- Implement information systems projects
- Monitor and control project risk
- Prepare project schedules using project management software tools
- Manage information systems project procurement process

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## Topic 1

### 17.1 Overview of an Information systems project

#### Personal notes:

**Project management** is the discipline of carefully projecting or planning, organizing, motivating and controlling resources to achieve specific goals and meet specific success criteria. A project is a temporary endeavor designed to produce a unique product, service or result with a defined beginning and end (usually time-constrained, and often constrained by funding or deliverables) undertaken to meet unique goals and objectives, typically to bring about beneficial change or added value. The temporary nature of projects stands in contrast with business as usual (or operations), which are repetitive, permanent, or semi-permanent functional activities to produce products or services. In practice, the management of these two systems is often quite different, and as such requires the development of distinct technical skills and management strategies.

The primary challenge of project management is to achieve all of the project goals and objectives while honoring the preconceived constraints. The primary constraints are scope, time, quality and budget. The secondary — and more ambitious — challenge is to optimize the allocation of necessary inputs and integrate them to meet pre-defined objectives.

#### **Approaches**

There are a number of approaches for managing project activities including lean, iterative, incremental, and phased approaches.

Regardless of the methodology employed, careful consideration must be given to the overall project objectives, timeline, and cost, as well as the roles and responsibilities of all participants and stakeholders.

#### **The traditional approach**

A traditional phased approach identifies a sequence of steps to be completed. In the "traditional approach" five developmental components of a project can be distinguished (four stages plus control):



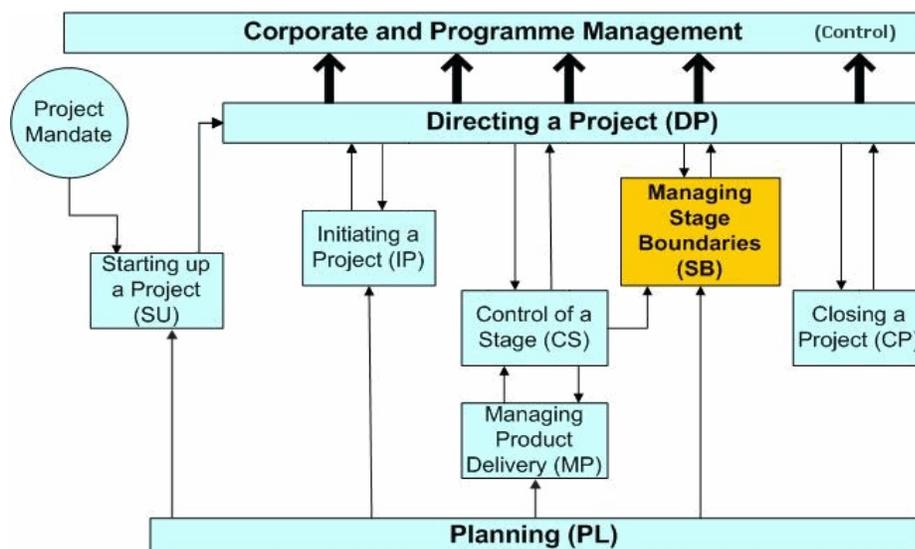
Typical development phases of an engineering project

1. initiation
2. planning and design
3. execution and construction
4. monitoring and controlling systems
5. completion and finish point

Not all projects will have every stage, as projects can be terminated before they reach completion. Some projects do not follow a structured planning and/or monitoring process. And some projects will go through steps 2, 3 and 4 multiple times.

Many industries use variations of these project stages. For example, when working on a brick-and-mortar design and construction, projects will typically progress through stages like pre-planning, conceptual design, schematic design, design development, construction drawings (or contract documents), and construction administration. In software development, this approach is often known as the waterfall model, i.e., one series of tasks after another in linear sequence. In software development many organizations have adapted the Rational Unified Process (RUP) to fit this methodology, although RUP does not require or explicitly recommend this practice. Waterfall development works well for small, well defined projects, but often fails in larger projects of undefined and ambiguous nature. The Cone of Uncertainty explains some of this as the planning made on the initial phase of the project suffers from a high degree of uncertainty. This becomes especially true as software development is often the realization of a new or novel product. In projects where requirements have not been finalized and can change, requirements management is used to develop an accurate and complete definition of the behavior of software that can serve as the basis for software development. While the terms may differ from industry to industry, the actual stages typically follow common steps to problem solving— "defining the problem, weighing options, choosing a path, implementation and evaluation."

## PRINCE2



The PRINCE2 process model

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PRINCE2 is a structured approach to project management released in 1996 as a generic project management method. It combines the original PROMPT methodology (which evolved into the PRINCE methodology) with IBM's MITP (managing the implementation of the total project) methodology. PRINCE2 provides a method for managing projects within a clearly defined framework.

PRINCE2 focuses on the definition and delivery of products, in particular their quality requirements. As such, it defines a successful project as being output-oriented (not activity- or task-oriented) through creating an agreed set of products that define the scope of the project and provides the basis for planning and control, that is, how then to coordinate people and activities, how to design and supervise product delivery, and what to do if products and therefore the scope of the project has to be adjusted if it does not develop as planned.

In the method, each process is specified with its key inputs and outputs and with specific goals and activities to be carried out to deliver a project's outcomes as defined by its Business Case. This allows for continuous assessment and adjustment when deviation from the Business Case is required.

PRINCE2 provides a common language for all participants in the project. The governance framework of PRINCE2 – its roles and responsibilities – are fully described and require tailoring to suit the complexity of the project and skills of the organisation.

### **Critical chain project management**

Critical chain project management (CCPM) is a method of planning and managing project execution designed to deal with uncertainties inherent in managing projects, while taking into consideration limited availability of resources (physical, human skills, as well as management & support capacity) needed to execute projects.

CCPM is an application of the theory of constraints (TOC) to projects. The goal is to increase the flow of projects in an organization (throughput). Applying the first three of the five focusing steps of TOC, the system constraint for all projects is identified as are the resources. To exploit the constraint, tasks on the critical chain are given priority over all other activities. Finally, projects are planned and managed to ensure that the resources are ready when the critical chain tasks must start, subordinating all other resources to the critical chain.

The project plan should typically undergo resource leveling, and the longest sequence of resource-constrained tasks should be identified as the critical chain. In some cases, such as managing contracted sub-projects, it is advisable to use a simplified approach without resource leveling.

In multi-project environments, resource leveling should be performed across projects. However, it is often enough to identify (or simply select) a single "drum". The drum can be a

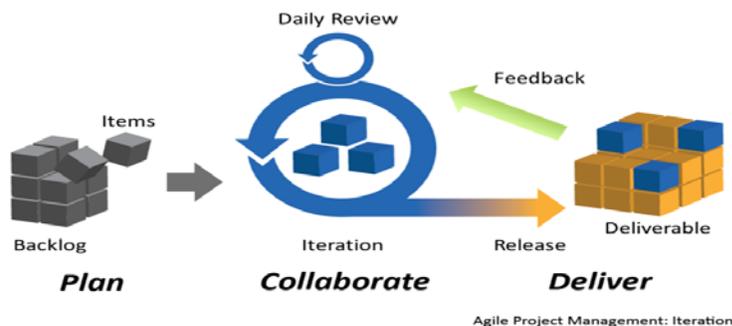
resource that acts as a constraint across projects, which are staggered based on the availability of that single resource.

One can also use a "virtual drum" by selecting a task or group of tasks (typically integration points) and limiting the number of projects in execution at that stage.

### Process-based management

The incorporation of process-based management has been driven by the use of Maturity models such as the CMMI (capability maturity model integration; see this example of a predecessor) and ISO/IEC15504 (SPICE – software process improvement and capability estimation).

### Agile project management



The iteration cycle in agile project management

Agile project management encompasses several iterative approaches, based on the principles of human interaction management and founded on a process view of human collaboration. Agile-based methodologies are "most typically" employed in software development as well as the "website, technology, creative, and marketing industries." This sharply contrasts with traditional approaches such as the Waterfall method. In agile software development or flexible product development, the project is seen as a series of relatively small tasks conceived and executed to conclusion as the situation demands in an adaptive manner, rather than as a completely pre-planned process.

Advocates of this technique claim that:

- It is the most consistent project management technique since it involves frequent testing of the project under development.
- It is the only technique in which the client will be actively involved in the project development.
- The only disadvantage with this technique is that it should be used only if the client has enough time to be actively involved in the project.

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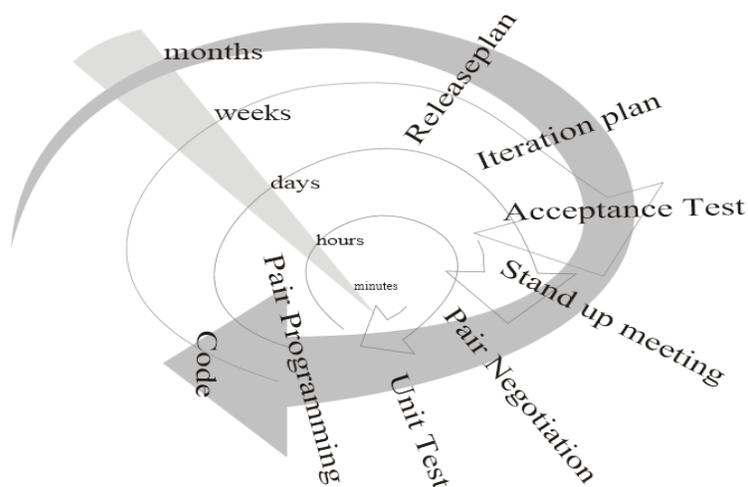
Agile is an umbrella term for multiple project management methodologies, including:

- Scrum - A holistic approach to development that focuses on iterative goals set by the Product Owner through a backlog, which is developed by the Delivery Team through the facilitation of the Scrum Master.
- Extreme Programming (XP) - A set of practices based on a set of principles and values, with a goal to develop that provides real value by implementing tight feedback loops at all levels of the development process and using them to steer development. XP popularized Test Driven Development (TDD) and Pair Programming.
- eXtreme Manufacturing (XM) - An agile methodology based on Scrum, Kanban and Kaizen that facilitates rapid engineering and prototyping.
- Crystal Clear - An agile or lightweight methodology that focuses on colocation and osmotic communication.
- Kanban (かんばん(看板)<sup>?</sup>) - A lean framework for process improvement that is frequently used to manage work in progress (WIP) within agile projects. Kanban has been specifically applied in software development.
- Scrum ban a mixed scrum and kanban approach to project management. It focuses on taking the flexibility of kanban and adding the structure of scrum to create a new way to manage projects.

### Lean project management

Lean project management uses the principles from lean manufacturing to focus on delivering value with less waste and reduced time.

### Extreme project management



Planning and feedback loops in Extreme programming (XP) with the time frames of the multiple loops.

In critical studies of project management it has been noted that several PERT based models are not well suited for the multi-project company environment of today. Most of them are aimed at very large-scale, one-time, non-routine projects, and currently all kinds of management are expressed in terms of projects.

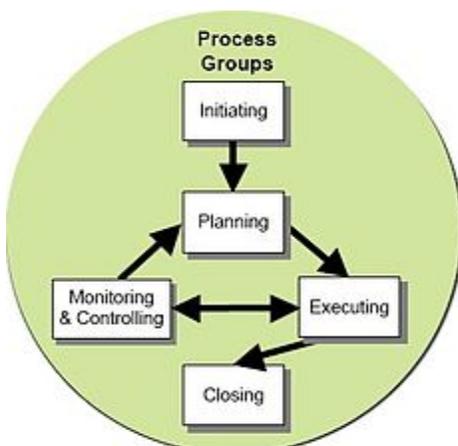
Using complex models for "projects" (or rather "tasks") spanning a few weeks has been proven to cause unnecessary costs and low maneuverability in several cases. The generalization of Extreme Programming to other kinds of projects is extreme project management, which may be used in combination with the process modeling and management principles of human interaction management.

### Benefits realization management (BRM)

Benefits realization management (BRM) enhances normal project management techniques through a focus on outcomes (the benefits) of a project rather than products or outputs, and then measuring the degree to which that is happening to keep a project on track. This can help to reduce the risk of a completed project being a failure by delivering agreed upon requirements/outputs but failing to deliver the *benefits* of those requirements.

In addition, BRM practices aim to ensure the alignment between project outcomes and business strategies. The effectiveness of these practices is supported by recent research evidencing BRM practices influencing project success from a strategic perspective across different countries and industries. An example of delivering a project to requirements might be agreeing to deliver a computer system that will process staff data and manage payroll, holiday and staff personnel records. Under BRM the agreement might be to achieve a specified reduction in staff hours required to process and maintain staff data.

### Processes



The project development stages

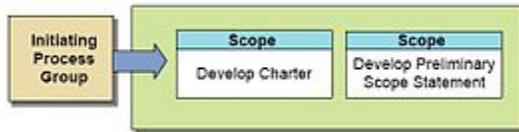
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Traditionally, project management includes a number of elements: four to five process groups, and a control system. Regardless of the methodology or terminology used, the same basic project management processes will be used. Major process groups generally include:

- Initiation
- Planning
- Production or execution
- Monitoring and controlling
- Closing

In project environments with a significant exploratory element (e.g., research and development), these stages may be supplemented with decision points (go/no go decisions) at which the project's continuation is debated and decided. An example is the Phase-gate model.

### Initiating



Initiating process group processes

The initiating processes determine the nature and scope of the project. If this stage is not performed well, it is unlikely that the project will be successful in meeting the business' needs. The key project controls needed here are an understanding of the business environment and making sure that all necessary controls are incorporated into the project. Any deficiencies should be reported and a recommendation should be made to fix them.

The initiating stage should include a plan that encompasses the following areas:

- analyzing the business needs/requirements in measurable goals
- reviewing of the current operations
- financial analysis of the costs and benefits including a budget
- stakeholder analysis, including users, and support personnel for the project
- project charter including costs, tasks, deliverables, and schedules

### Planning

After the initiation stage, the project is planned to an appropriate level of detail (see example of a flow chart). The main purpose is to plan time, cost and resources adequately to estimate the work needed and to effectively manage risk during project execution. As with the Initiation process group, a failure to adequately plan greatly reduces the project's chances of successfully accomplishing its goals.

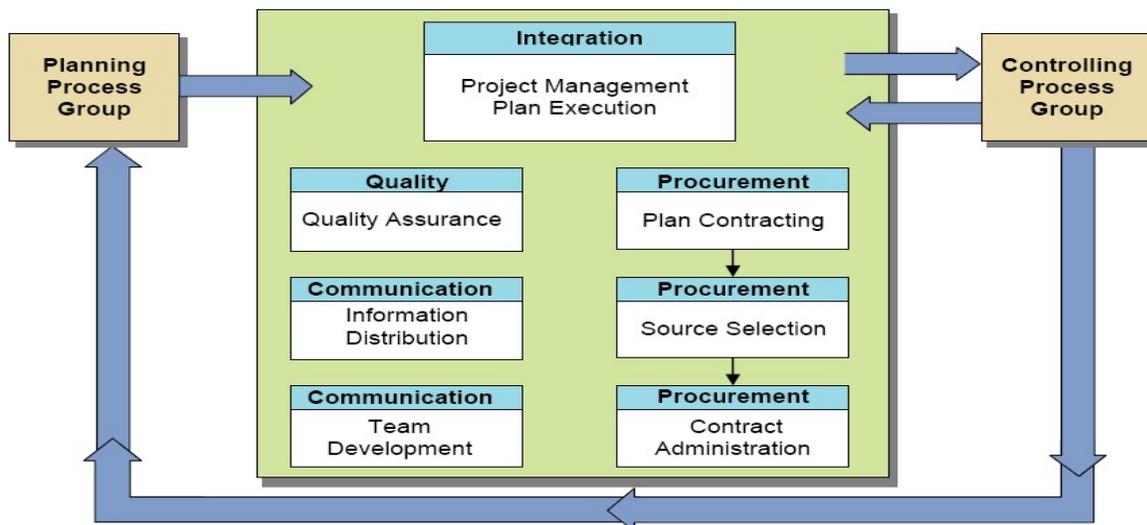
Project planning generally consists of

- determining how to plan (e.g. by level of detail or Rolling Wave planning);
- developing the scope statement;
- selecting the planning team;
- identifying deliverables and creating the work breakdown structure;
- identifying the activities needed to complete those deliverables and networking the activities in their logical sequence;
- estimating the resource requirements for the activities;
- estimating time and cost for activities;
- developing the schedule;
- developing the budget;
- risk planning;
- Gaining formal approval to begin work.

Additional processes, such as planning for communications and for scope management, identifying roles and responsibilities, determining what to purchase for the project and holding a kick-off meeting are also generally advisable.

For new product development projects, conceptual design of the operation of the final product may be performed concurrent with the project planning activities, and may help to inform the planning team when identifying deliverables and planning activities.

## Executing



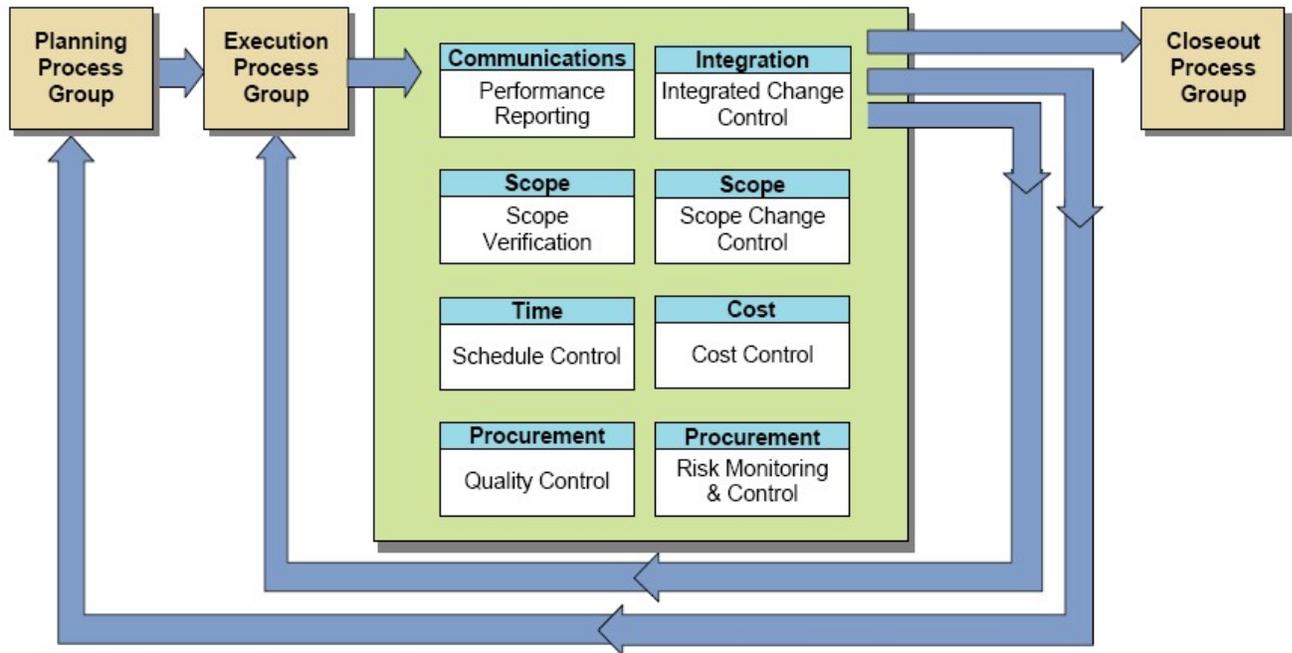
Executing process group processes

The execution/implementation phase ensures that the project management plan's deliverables are executed accordingly. This phase involves proper allocation, co-ordination and

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management of human resources and any other resources such as material and budgets. The output of this phase is the project deliverables.

### Monitoring and controlling



#### Monitoring and controlling process group processes

Monitoring and controlling consists of those processes performed to observe project execution so that potential problems can be identified in a timely manner and corrective action can be taken, when necessary, to control the execution of the project. The key benefit is that project performance is observed and measured regularly to identify variances from the project management plan.

Monitoring and controlling includes:

- Measuring the ongoing project activities ('where we are');
- Monitoring the project variables (cost, effort, scope, etc.) against the project management plan and the project performance baseline (*where we should be*);
- Identify corrective actions to address issues and risks properly (*How can we get on track again*);
- Influencing the factors that could circumvent integrated change control so only approved changes are implemented.

In multi-phase projects, the monitoring and control process also provides feedback between project phases, in order to implement corrective or preventive actions to bring the project into compliance with the project management plan.

Project maintenance is an ongoing process, and it includes:

- 1 Continuing support of end-users
- 2 Correction of errors
- 3 Updates of the software over time



Monitoring and controlling cycle

In this stage, auditors should pay attention to how effectively and quickly user problems are resolved.

Over the course of any construction project, the work scope may change. Change is a normal and expected part of the construction process. Changes can be the result of necessary design modifications, differing site conditions, material availability, contractor-requested changes, value engineering and impacts from third parties, to name a few. Beyond executing the change in the field, the change normally needs to be documented to show what was actually constructed. This is referred to as change management. Hence, the owner usually requires a final record to show all changes or, more specifically, any change that modifies the tangible portions of the finished work. The record is made on the contract documents – usually, but not necessarily limited to, the design drawings. The end product of this effort is what the industry terms as-built drawings, or more simply, “as built.” The requirement for providing them is a norm in construction contracts. Construction document management is a highly important task undertaken with the aid an online or desktop software system, or maintained through physical documentation. The increasing legality pertaining to the construction industries maintenance of correct documentation has caused the increase in the need for document management systems.

When changes are introduced to the project, the viability of the project has to be re-assessed. It is important not to lose sight of the initial goals and targets of the projects. When the changes accumulate, the forecasted result may not justify the original proposed investment in the project. Successful project management identifies these components, and tracks and monitors progress so as to stay within time and budget frames already outlined at the commencement of the project.

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## Closing



Closing process group processes.

Closing includes the formal acceptance of the project and the ending thereof. Administrative activities include the archiving of the files and documenting lessons learned.

This phase consists of:

- **Contract closure:** Complete and settle each contract (including the resolution of any open items) and close each contract applicable to the project or project phase.
- **Project close:** Finalize all activities across all of the process groups to formally close the project or a project phase

Also included in this phase is the Post Implementation Review. This is a vital phase of the project for the project team to learn from experiences and apply to future projects. Normally a Post Implementation Review consists of looking at things that went well and analysing things that went badly on the project to come up with lessons learned.

### Project controlling and project control systems

Project controlling should be established as an independent function in project management. It implements verification and controlling function during the processing of a project in order to reinforce the defined performance and formal goals. The tasks of project controlling are also:

- The creation of infrastructure for the supply of the right information and its update.
- The establishment of a way to communicate disparities of project parameters.
- The development of project information technology based on an intranet or the determination of a project key performance indicator system (KPI)
- Divergence analyses and generation of proposals for potential project regulations.
- The establishment of methods to accomplish an appropriate project structure, project workflow organization, project control and governance.
- Creation of transparency among the project parameters.

Fulfillment and implementation of these tasks can be achieved by applying specific methods and instruments of project controlling. The following methods of project controlling can be applied:

- investment analysis
- cost–benefit analysis
- value benefit analysis
- expert surveys
- simulation calculations
- risk-profile analysis
- surcharge calculations
- milestone trend analysis
- cost trend analysis
- target/actual-comparison

Project control is that element of a project that keeps it on-track, on-time and within budget. Project control begins early in the project with planning and ends late in the project with post-implementation review, having a thorough involvement of each step in the process. Projects may be audited or reviewed while the project is in progress. Formal audits are generally risk or compliance-based and management will direct the objectives of the audit. An examination may include a comparison of approved project management processes with how the project is actually being managed. Each project should be assessed for the appropriate level of control needed: too much control is time consuming, too little control is very risky. If project control is not implemented correctly, the cost to the business should be clarified in terms of errors and fixes.

Control systems are needed for cost, risk, quality, communication, time, change, procurement, and human resources. In addition, auditors should consider how important the projects are to the financial statements, how reliant the stakeholders are on controls, and how many controls exist. Auditors should review the development process and procedures for how they are implemented. The process of development and the quality of the final product may also be assessed if needed or requested. A business may want the auditing firm to be involved throughout the process to catch problems earlier on so that they can be fixed more easily. An auditor can serve as a controls consultant as part of the development team or as an independent auditor as part of an audit.

Businesses sometimes use formal systems development processes. These help assure that systems are developed successfully. A formal process is more effective in creating strong controls, and auditors should review this process to confirm that it is well designed and is followed in practice. A good formal systems development plan outlines:

- A strategy to align development with the organization's broader objectives
- Standards for new systems
- Project management policies for timing and budgeting
- Procedures describing the process
- Evaluation of quality of change

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- **Definition of a project**

What is a Project? A project is ***a sequence of unique, complex, and connected activities having one goal or purpose and that must be completed by a specific time, within budget, and according to specification.***

- **Project management principles**

- **Principle 1: Vision & Mission**

In order to be successfully executed, every project or initiative should begin with the end in mind. This is effectively accomplished by articulating the Vision and Mission of the project so it is crystal-clear to everyone. Creating a vision and mission for the project helps clarify the expected outcome or desired state, and how it will be accomplished.

- **Principle 2: Business Objectives**

The next step is to establish 2-3 goals or objectives for the project. Is it being implemented to increase sales and profit, customer loyalty, employee productivity and morale, or product/service quality? Also, it's important to specifically quantify the amount of improvement that is expected, instead of being vague.

- **Principle 3: Standards of Engagement**

Simply put, this means establishing who will be part of the project team? What will be the frequency of meetings? What are the meeting ground rules? Who is the project owner? Who is designated to take notes, and distribute project meeting minutes and action steps? This goes along with any other meeting protocol that needs to be clarified.

- **Principle 4: Intervention & Execution Strategy**

This is the meat of the project and includes using a gap analysis process to determine the most suited intervention (solution) to resolve the issue you are working on. There are many quality management concepts that can be applied ranging from a comprehensive "root cause analysis" to simply "asking why five times." Once the best possible intervention has been identified to resolve the issue, then we must map out our execution strategy for implementing the intervention. This includes identifying who will do what, when, how, and why?

- **Principle 5: Organizational Alignment**

To ensure the success and sustainability of the new initiative or process brought on by this project, everyone it will directly impact must be onboard. To achieve organisational alignment (or buy-in), ongoing communication must be employed in-person during team meetings, electronically via email and e-learning (if applicable), and through training. The message must include the WIIFM "*what's in it for me*" at every level;

otherwise most stakeholders will not be interested or engaged around the new initiative.

- **Principle 6: Measurement & Accountability**

And last, how will we determine success? Well, a simple project scorecard that is visually interesting is a great way to keep everyone updated and engaged. A scorecard is an excellent resource for holding employees, teams, and leaders accountable for the implementation, refinement, and sustainability of the new initiative or project.

Accountability means that consistently, top performers will be rewarded and recognized; while those needing improvement will be coached with specific expectations and consequences clearly outlined.

While my six principles of project management may not be all inclusive, my hope is that it has ignited creative juices as you think about how you will approach your next project - whether implementing a new system/process or refining one that is already in place to enhance its effectiveness.

- ***Purpose of project management***

Project Management has developed in order to plan, co-ordinate and control the complex and diverse activities of modern industrial and commercial projects. All projects share one common characteristic i.e. the projection of ideas and activities into new endeavors.

The purpose of project management ***is to foresee or predict as many dangers and problems as possible; and to plan, organize and control activities so that the project is completed as successfully as possible in spite of all the risks.*** The ever-present element of risk and uncertainty means that events and tasks leading to completion can never be foretold with absolute accuracy. For some complex or advanced projects, even the possibility of successful completion might be of serious doubt.

Project management can involve the following activities:

- Planning - deciding what is to be done;
- Organizing - making arrangements;
- Staffing - selecting the right people for the job;
- Directing - giving instructions;
- Monitoring - checking on progress;
- Controlling - taking action to remedy hold ups;
- Innovation - coming up with new solutions;
- Representing - liaising with users.

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- ***Project roles and responsibilities***

### **Project Manager**

The person responsible for developing, in conjunction with the Project Sponsor, a definition of the project. The Project Manager then ensures that the project is delivered on time, to budget and to the required quality standard (within agreed specifications).

He/she ensures the project is effectively resourced and manages relationships with a wide range of groups (including all project contributors).

### **Responsibilities**

- Managing and leading the project team.
- Recruiting project staff and consultants.
- Managing co-ordination of the partners and working groups engaged in project work.

Detailed project planning and control including:

- Developing and maintaining a detailed project plan.
- Managing project deliverables in line with the project plan.
- Recording and managing project issues and escalating where necessary.
- Resolving cross-functional issues at project level.
- Managing project scope and change control and escalating issues where necessary.
- Monitoring project progress and performance.
- Providing status reports to the project sponsor.
- Managing project training within the defined budget.
- Liaises with, and updates progress to, project board/senior management.
- Managing project evaluation and dissemination activities.
- Managing consultancy input within the defined budget.

### **Project Sponsor**

The person who commissions others to deliver the project and champions the cause throughout the project. They will normally be a senior member of staff with a relevant area of responsibility that will be affected by the outcome of the project. They are involved from the start of the project, including defining the project in conjunction with the Project Manager.

Once the project has been launched they should ensure that it is actively reviewed.

- Acts as champion of the project.
- Is accountable for the delivery of planned benefits associated with the project.
- Ensures resolution of issues escalated by the Project Manager or the Project Board.
- Sponsors the communications programme; communicates the programme's goals to the organization as a whole.
- Makes key organisation/commercial decisions for the project.
- Assures availability of essential project resources.

- Approves the budget and decides tolerances.
- Leads the Project Board.
- Ultimate authority and responsibility for the project

### **Project Board**

This group, normally containing management grade personnel, is responsible for overseeing the progress of the project and reacting to any strategic problems. The group is optional, as the Sponsor-Manager relationship may be seen as the best means of control, but is usually required in large projects that cross-functional boundaries.

Responsibilities

- Championing the project and raising awareness at senior level.
- Approving strategies, implementation plan, project scope and milestones.
- Resolving strategic and policy issues.
- Driving and managing change through the organization.
- Prioritizing project goals with other ongoing projects.
- Communicating with other key organizational representatives.

### **Senior Consultant or Supplier side**

**Project Manager** The person responsible for managing supplier-side input to the project. Ensures that mandatory supplier requirements are met.

- Manages the production and approval of the supplier side of the budget.
- Makes effective use of supplier resources within the approved budget.
- Tracks performance of consultants and takes appropriate action.
- Proactively develops a collaborative relationship with the organisation to Project steering Board level.
- Ensures that there are clear communication paths within the project team and the organisation and supplier.
- Acts as main point of contact between the supplier and the organisation.
- Produces and monitors financial reports including entry and maintenance of all actual time and expense against the master plan.
- Day to day management of supplier staff assigned to the project.
- Quality Assures the work of supplier staff assigned to the project.
- Encourages the transfer of product knowledge and skills to the appropriate staff within the organisation.

### **Project Team Members**

The staff who actively work on the project, at some stage, during the lifetime of the project. Some may have a specific role – for example, the Team might include a Project Administrator.

Responsibilities

Team member roles will vary depending on the type of project. Typically they might be to:

- Provide functional expertise in an administrative process
- Work with users to ensure the project meets business needs
- Documentation and analysis of current and future processes/systems

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- Identification and mapping of information needs
- Defining requirements for reporting and interfacing
- User training

### **System Administrator**

Management and support of the IT system environments

Responsibilities

- Management and support of the various environments.
- Network operating systems management and support.
- Database management and support.
- Back-up and disaster recovery measures.
- Contributing to technical strategy, policy and procedure.
- Development and operation of technical testing programmes.
- Production of technical documentation to agreed quality standards.

- ***Information system project environment***

Knowing what you're getting into can sometimes be half the battle. What is the climate in the customer organization? Who is cooperative and who isn't. What's happening in your organization that may affect this project or may inhibit your ability to be successful on it? Perception is key i.e. a project manager and his team must always be aware because there are so many factors – aside from the ones that you will encounter daily on your project – that can have positive and negative effects on your project. You can't control all of them – or even most of them – and you certainly can't prepare for everything, but you can work hard at being aware and keeping your team aware.

Virtually all projects are planned and implemented in a social, economic, and environmental context, and have intended and unintended positive and/or negative impacts. The project team – starting at the top with the project manager - should always consider the project in its cultural, social, international, political, and physical environmental contexts. Perception of the project from these standpoints will help the team prepare for issues, plan for risks, and better understand that factors at work around, and possible even against, your project.

### **Cultural and social environment**

The team needs to understand how the project affects people and how people affect the project. This may require an understanding of aspects of the economic, demographic, educational, ethical, ethnic, religious, and other characteristics of the people whom the project affects or who may have an interest in the project. The project manager should also examine the organizational culture and determine whether project management is recognized as a valid role with accountability and authority for managing the project.

### **International and political environment**

Some team members may need to be familiar with applicable international, national, regional, and local laws and customs, as well as the political climate that could affect the project. Other international factors to consider are time-zone differences, national and regional holidays, travel requirements for face-to-face meetings, and the logistics of teleconferencing. This certainly comes into a bigger view for remote project managers working with virtual teams stretched across a country or around the world. This wasn't nearly the common occurrence 20 years ago that it is today with our ability to use technology to collaborate with our team at a moment's notice from just about any location.

- **Characteristics of project**

### Five Characteristics of a Project

Projects differ, but they have some commonalities. Table 1.1 presents some characteristics of a project.

**Table 1.1 Project Characteristics**

<b>Change</b>	Projects are a way to introduce change.  <i>Example: A new sales website will change how clients purchase items.</i>
<b>Temporary</b>	There is always a specific start and end to a project, and it should cease once the mandatory products are created. Ongoing maintenance of a product occurs after the project and is not considered part of the project.  <i>Example: The production of software to manage sales.</i>
<b>Cross-Functional</b>	A project engages people from different seniority and business departments that work together for the period of the project.  <i>Example: To develop sales software, people from marketing and sales departments should work closely with the IT department.</i>
<b>Unique</b>	Every project is unique.  <i>Example: Building a fiftieth school is different from building the forty-ninth one. The location is different, the design is different, and there are different categories of students.</i>
<b>Uncertainty</b>	Parts of the project are unique, which brings uncertainty. The project manager is not 100% sure how this is going to work out.  <i>Example: The owners might keep changing their minds about the components and functionalities of the sales software.</i>

### 5 Characteristics of a clearly defined project

In order for a project to be useful, effective and achieving its full objective, it must be clearly defined. Clearly defined projects share the following 5 criteria:-

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**i. Specific.**

The project must be specific. Being specific includes detailing out the project's structure, goals, benefits, milestones and costs. All these requires careful planning and inputs from the project team members involved and if necessary the external consultants or experts. Detailed reporting and planning including command structure, personnel list, communication avenues, gantt chart and the project's costing should be drawn up to detail out the project's responsibilities, timeline, costs and work to be performed by the respective parties. Periodic project meetings should also be scheduled to discuss relevant matters pertaining to the project and any issues arising therefrom.

**ii. Measurable**

A clearly defined project must be measurable in terms of its benefits and achievements. This should not only be in terms of monetary benefits but also other tangible and intangible benefits derived from the project's execution. A clear and precise plan devised during the project's planning stage will enable objective measurements be executed to analyse the project's achievements and if any shortcomings.

**iii. Achievable**

A project will only be meaningful if it is achievable. Being too ambitious in planning for the project will not be helpful and may result in the project being unachievable. This may also lead to the project team morale being affected. All these unhealthy things may lead to the project's costs being overrun and timing of the deliverables being significantly affected.

**iv. Relevant**

The project needs to bring relevant benefits to the entity concerned. This may be in the form of reducing its overall production costs, increasing its operational efficiency or other specific purposes relevant to the entity. If it fails to address this, the project will not be beneficial to the entity and will ultimately result in a waste of resources to the entity and its stakeholders.

**v. Time bound**

The final ingredient to ensure that becomes clearly defined is that it should be time bound. It means that the project should come with a time frame for its completion including its planning, development, execution, fine tuning before its full run instead of taking forever to be completed. Any adjustments to this time table should be clearly justified by the parties involved bearing in mind the costs involved in the project's execution, opportunity costs and finance costs related to the project

- ***Examples of information system projects***

## Topic 2

### **17.2 Information systems project lifecycle**

#### **The Project Life Cycle (Phases)**

The project manager and project team have one shared goal: to carry out the work of the project for the purpose of meeting the project's objectives. Every project has a beginning, a middle period during which activities move the project toward completion, and an ending (either successful or unsuccessful). A standard project typically has the following four major phases (each with its own agenda of tasks and issues): initiation, planning, implementation, and closure. Taken together, these phases represent the path a project takes from the beginning to its end and are generally referred to as the project "life cycle."

#### **Initiation Phase**

During the first of these phases, the initiation phase, the project objective or need is identified; this can be a business problem or opportunity. An appropriate response to the need is documented in a business case with recommended solution options. A feasibility study is conducted to investigate whether each option addresses the project objective and a final

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recommended solution is determined. Issues of feasibility (“can we do the project?”) and justification (“should we do the project?”) are addressed.

Once the recommended solution is approved, a project is initiated to deliver the approved solution and a project manager is appointed. The major deliverables and the participating work groups are identified, and the project team begins to take shape. Approval is then sought by the project manager to move onto the detailed planning phase.

### **Planning Phase**

The next phase, the planning phase, is where the project solution is further developed in as much detail as possible and the steps necessary to meet the project’s objective are planned. In this step, the team identifies all of the work to be done. The project’s tasks and resource requirements are identified, along with the strategy for producing them. This is also referred to as “scope management.” A project plan is created outlining the activities, tasks, dependencies, and timeframes. The project manager coordinates the preparation of a project budget by providing cost estimates for the labor, equipment, and materials costs. The budget is used to monitor and control cost expenditures during project implementation.

Once the project team has identified the work, prepared the schedule, and estimated the costs, the three fundamental components of the planning process are complete. This is an excellent time to identify and try to deal with anything that might pose a threat to the successful completion of the project. This is called risk management. In risk management, “high-threat” potential problems are identified along with the action that is to be taken on each high-threat potential problem, either to reduce the probability that the problem will occur or to reduce the impact on the project if it does occur. This is also a good time to identify all project stakeholders and establish a communication plan describing the information needed and the delivery method to be used to keep the stakeholders informed.

Finally, you will want to document a quality plan, providing quality targets, assurance, and control measures, along with an acceptance plan, listing the criteria to be met to gain customer acceptance. At this point, the project would have been planned in detail and is ready to be executed.

### **Implementation (Execution) Phase**

During the third phase, the implementation phase, the project plan is put into motion and the work of the project is performed. It is important to maintain control and communicate as needed during implementation. Progress is continuously monitored and appropriate adjustments are made and recorded as variances from the original plan. In any project, a project manager spends most of the time in this step. During project implementation, people are carrying out the tasks, and progress information is being reported through regular team meetings. The project manager uses this information to maintain control over the direction of the project by comparing the progress reports with the project plan to measure the performance of the project activities and take corrective action as needed. The first course of action should always be to bring the project back on course (i.e., to return it to the original plan). If that cannot happen, the team should record variations from the original plan and record and publish modifications to the plan. Throughout this step, project sponsors and other key stakeholders should be kept informed of the project’s status according to the agreed-on

frequency and format of communication. The plan should be updated and published on a regular basis.

Status reports should always emphasize the anticipated end point in terms of cost, schedule, and quality of deliverables. Each project deliverable produced should be reviewed for quality and measured against the acceptance criteria. Once all of the deliverables have been produced and the customer has accepted the final solution, the project is ready for closure.

### **Closing Phase**

During the final closure, or completion phase, the emphasis is on releasing the final deliverables to the customer, handing over project documentation to the business, terminating supplier contracts, releasing project resources, and communicating the closure of the project to all stakeholders. The last remaining step is to conduct lessons-learned studies to examine what went well and what didn't. Through this type of analysis, the wisdom of experience is transferred back to the project organization, which will help future project teams

- ***Project identification***

Project ideas may be due to:

- Prevailing problems in a given area.
- availability of resources in a given location

Clear project identification allows you to answer questions like:

- a) How do the projects come about?
- b) Where do projects come from?
- c) Why are projects where they are?

### **Approaches to project identification**

There are two major approaches to project identification

- (a) Top-down approach
- (b) Bottom-up approach

#### **A. Top-Down Approach**

- Projects are identified based on demands from beyond the community.
- This may include directives from:
  - ✓ International conventions (such as Kyoto Protocol/climate change).
  - ✓ International institutions or NGOs that have determined particular priorities and thus projects.
  - ✓ National policy makers identifying projects that pertain to party manifestos and/or national plans.

#### **Advantages of Top-Down Approach**

- It may be a rapid response to disasters like floods, war outbreak because there is limited time and chance to consult the beneficiaries.
- It can be effective in providing important services like education, health, water, roads etc.

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- It can contribute to wider national or international objectives and goals and therefore potentially be part of a wider benefit (as in the case of trans-boundary resources, such as climate, water or others)

### **Limitations of Top-Down Approach**

- ✓ Does not help in modifying strongly established ideas and beliefs of people.
- ✓ Assumes external individuals know better than the beneficiaries of the service.
- ✓ Communities have little say in planning process rendering approach devoid of human resource development.
- ✓ Community develops dependency syndrome on outside assistance and does not exploit their own potential.
- ✓ The development workers (change agents) become stumbling blocks to people-led development
- ✓ Tendency to impose their own biases, etc. on people.

### **B. Bottom-Up Approach**

- In this approach community/beneficiaries are encouraged to identify and plan the projects themselves with or without outsiders.

### **Advantages of Bottom-Up Approach**

- ✓ Interveners accomplish more with limited resources since people tend to safeguard what they have provided for themselves.
- ✓ Develops people's capacity to identify problems and needs and to seek possible solutions to them.
- ✓ Provides opportunities of educating people.
- ✓ Helps people to work as a team and develop a "WE" attitude - makes project progressive and sustainable.
- ✓ Resources are effectively managed; dependence reduces, there is increased equity, initiative, accountability, financial and economic discipline.

### **Limitations of Bottom-Up Approach**

- ✓ Not always effective for projects that require urgency to implement.
- ✓ Time-consuming and requires patience and tolerance.
- ✓ People sometimes dislike approach because they do not want to take responsibility for action.
- ✓ The agency using this approach is never in control and cannot guarantee the results it would want.
- ✓ The priorities of communities may not fit with national or international priorities that seek to have a broader impact.

### **Top-down approaches to project identification**

#### **1. The household (socio-economic) survey**

- ✓ Studies social and economic situations of a given area

- e.g. climate, geographical set-up, economic activities, political set up, education system, culture, diet, social services, physical infrastructure etc.
- ✓ Method is popular with the UBOS.
- ✓ Uses questionnaires, interviews, documentation, and direct observation.
- ✓ Data is collected, processed and analyzed and projects are then identified
- ✓ Top-down approaches to project identification

## 2. Rapid appraisal

- ✓ Called **Rapid Rural Appraisal (RRA)** when carried out in a rural areas, and **Rapid Urban Appraisal (RUA)** in an urban area.
- ✓ Method collects and assesses data quickly using any data collection techniques.
- ✓ Primary purpose is to acquire the information in the shortest time possible and it lowers the cost.
  - It is rapid because investigation, assessment and identification of projects are done at the same time.
- ✓ Rapid appraisal uses the following data collection techniques:
  - Analysis of secondary data sources
  - Interviews
  - Direct observation at site
  - Visualization of Resources like social organizational maps and time series maps.
- ✓ Top-down approaches to project identification

## 3. Needs Assessment Survey

- ✓ Also referred to as **situation analysis (SITAN)**. It involves:-
  - Fact finding about problems or needs in a given area or community.
  - Finding out what is lacking in a given area or community.
  - Investigating a situation in a given area.

**NAS** is carried out to:

- ✓ Find out the problem in a given community so as to identify the most appropriate solution (s)/project (s) to solve the problem (s) in question.
- ✓ Analyze the causes of the problems and seek likely solutions to the problems leading to project identification.
- ✓ Bottom-up approaches to project identification

## 4. Animation

- ✓ Process of stimulating people to become more aware and conscious of problems they suffer from.
  - To gain confidence in their ability to deal with these problems and take initiatives to improve situation.
- ✓ Animation makes the community better understand and be prepared to overcome its problems and take decisions with full responsibility
- ✓ Carried out by **Animators / Helpers / Change agents**.  
(**Internal Animators** if they come from within the community or **External Animators** if from outside.)

## Bottom-up approaches to project identification

### Facilitation/Community action

- ✓ An attempt to assist people to get over problems by (say) training them in certain skills, providing them with the needed information e.g. market information, linking them up with relevant agencies and organizations to improve access to the needed resources etc.

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### Bottom-up approaches to project identification

#### Participatory Appraisal

- ✓ Project identification should be participatory, and should involve local communities in identifying and prioritizing their needs.
- ✓ The DTTC should consider the views of the communities during the screening and selection of various project proposals and the selection of the preferred proposals for implementation.
- PRA (participatory rural appraisal) when carried out in rural areas; and PLU (participatory urban appraisal) when carried out in urban areas
- PRA/ PUA can be described as a family of approaches, methods and behaviours that enable people to express and analyze the realities of their lives and conditions, to plan for themselves what action to take, and to monitor and evaluate the results.
- The key to PRA/PUA is that the only external involvement is in facilitation. The communities themselves determine the issues, priorities and courses of action.

### The problem statement

- The process of project identification ends with the formulation of a **problem statement**.
- It takes the form of:
  - ✓ Listing **all the problems/needs** in the community/area/ organization.
  - ✓ Prioritizing the problems and selecting 1 – 3 **core (major) problems**.
  - ✓ Finding out the **root causes** of the problems.
  - ✓ Sitting the **likely effects** of the problems on the community.
  - ✓ Suggesting the **probable solutions** to the problems.
  - ✓ Identifying the **(projects)** from the solutions.

- **Feasibility study**

A feasibility study aims to objectively and rationally uncover the strengths and weaknesses of an existing business or proposed venture, opportunities and threats present in the environment, the resources required to carry through, and ultimately the prospects for success. In its simplest terms, the two criteria to judge feasibility are cost required and value to be attained.

A well-designed feasibility study should provide a historical background of the business or project, a description of the product or service, accounting statements, details of the operations and management, marketing research and policies, financial data, legal requirements and tax obligations. Generally, feasibility studies precede technical development and project implementation.

A feasibility study evaluates the project's potential for success; therefore, perceived objectivity is an important factor in the credibility of the study for potential investors and lending institutions. It must therefore be conducted with an objective, unbiased approach to provide information upon which decisions can be based.

### Common factors

**THIS IS A FREE SAMPLE OF THE ACTUAL NOTES**

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