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Project Planning

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Abstract

In the race for IT and business success, reaching the finish matters most. So it`s no surprise an important IT career path is project management also. If you demonstrate an ability to lead teams, you`re on you way to being an IT project manager. And good IT project manager can write their own ticket at a lot of companies.So why does path to glory run by the Gantt chart? A number of factors make project make project management important to IT professionals even for hard-core technical specialist:

- The increasing complexity of IT projects.
- The emphasis placed on team work and communication skills.
- A heightened need to meet budgets and deadlines.
- The pressure on top executives to deliver results.

Techies who lack project management may not able to complete their work on time leading to embarrassing snafus if not outright disasters. And today`s unforgiving environment, the business and career consequences can be severe Project management is a temporary group activity designed to produce a unique product, service or result. It is process an activity of planning, organizing, motivating, and controlling resources, procedures and protocols to achieve specific goals in scientific or daily problems. The primary challenge of project managements to achieve all the project goal and objectives while honouring 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 predefined objectives.

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Introduction

Projects have become the new way of accomplishing and managing business activities. Projects are the temporary assemblage of key personnel designed to accomplish specific business objectives with identifiable customers in mind.

Figure[1]: Project Management

A project has a beginning and an end. The project team dissolves once the objectives are met. It is fluid and driven by the specific needs of that business. The project approach to managing business activities embraces change and complexity. Projects can be defined in many different ways. However, there are some traits that all projects have in common. Typically, these traits are used to identify what a project is. The most distinguishing feature is a specific time frame. All projects have a beginning and an end. Many efforts are called “projects” but actually become programs as they extend indefinitely and cover broader, less specific business objectives. Projects must have a clear, definitive goal or objective. The objective is specific, identifiable, and can be accomplished. A project usually involves varied activities, which produce quantifiable and qualifiable deliverables that when added together, accomplish the overall objective.

Factors leading to the increased use of project management
The number and scope of projects being carried out is on the rise. This is due to:

- Compression of the product life cycle

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- Global competition
- Knowledge explosion
- Corporate downsizing
- Increased customer focus
- Rapid development of Third World and closed economies
- Small projects that represent big problems

I. Key Characteristics of Projects

- A project has boundaries, so its extent is defined.
- A project is a one-time effort, usually requiring finite resources.
- There are distinct start and end dates for projects.
- You know when you have reached the end of the project

Successful project management is the art of bringing together the tasks, resources and people necessary to accomplish the business goals and objectives within the specified time constraints and within the monetary allowance. Projects and Programs are linked directly to the strategic goals and initiatives of the organization supported.I put it in inverted commas, as often it is more of “working things out as we go” and “every man for himself”, then what the actual project management is about. Proper project management is sometimes perceived as no value add bureaucracy, creating road-blocks to delivering a quick result (but is result what the client/user wanted?), and unnecessary cost outlay. I particularly like the last one, because it is usually when the costs blow out that we realise things should have been managed in a more disciplined manner.Dividing a project into phases makes it possible to lead it in the best possible direction. Through this organisation into phases, the total work load of a project is divided into smallercomponents, thus making it easier to monitor. The following paragraphs describe a phasing model that has been useful in practice. It includes six phases

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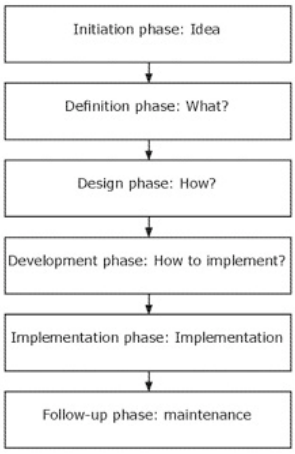

Figure [2]: Phase models of Project Management

Initiation Phase

The initiation phase is the beginning of the project. In this phase, the idea for the project is explored and elaborated. The goal of this phase is to examine the feasibility of the project. In the addition, decisions are made concerning who is carry out the project, which party (or parties) will be involved and whether the project has an adequate base of support among those who are involved.

In this phase, the current or prospective project leader writes a proposal, which contains a description of the above-mention matters. Examples of this type of project proposal include business plans and grant applications. The prospective sponsors of the project evaluate the proposal and, upon approval, provide the necessary financing. The project officially begins at the time of approval.

In the initiation phase, the project partners enter a (temporary) relationship with each other. To prevent the development of false expectations concerning the results of the project, it makes sense to explicitly agree on the type of project that is being started:

- a research and development project;
- a project that will deliver a prototype or 'proof of concept';
- a project that will deliver a working product.

The choice for a particular type of project largely determines its results. For example, a research and development project delivers a report that examines the technological

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feasibility of an application. A project in which a prototype is developed delivers allof the functionalities of an application, but they need not besuitable for use in a particular context (e.g. by hundreds of users). A project that delivers a working product must also consider matters of maintenance, instructions and the operational management of the application.Many misunderstandings and conflicts arise because the parties that are involved in a project are not clear on these matters. Customers may expect a working product, while the members of the project team think they are developing a prototype. A sponsor may think that the project will produce a working piece of software, while the members of the project team must first examine whether the idea itself is technically feasible

Definition Phase

After the project plan (which was developed in the initiation phase) has been approved, the project enters the second phase:the definition phase. In this phase, the requirements that are associated with a project result are associated with a project result are specified as clearly as possible. This involves identifying the expectations that all of the involved parties. After the project plan (which was developed in the initiation phase) has been approved, the project enters the second phase: the definition phase. In this phase, the requirements that are associated with a project result are specified as clearly as possible. Thisinvolves identifying the expectations that all of the involved parties have with regard to the project result. How many files are to be archived? Should the metadata conform to the Data Documentation Initiative format, or will the Dublin Core (DC) format suffice? May files be deposited in their original format, or will only those that conform to the Preferred Standardsbe accepted? Must the depositor of a dataset ensure that it has been processed adequately in the archive, or is this the responsibility of the archivist? Which

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guarantees will be made on the results of the project? The list of questions goes on and on.

Figure [3]:Brainstorming Session

After the brain storming session all the members of the “new archive” were in agreement of the desired outcome.

A project plan, project charter and/or project scope may be put in writing, outlining the work to beperformed,during this phase a team should prioritize the project,calculate the budget and schedule and determine word resources are needed.

It is important to identify the requirements as early in the process as possible. Wijnen (2004) distinguishes several categories of project requirements that can serve as a memory aid:

- Preconditions
- Functional requirements
- Operational requirements
- Design limitations

Preconditions form the context within which the project must be conducted. Examples include legislation, working-condition regulations and approval requirements. These requirements cannot be influenced from within the project.

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Functional requirements are requirements that have to do with the quality of the project result (e.g. how energy-efficient must an automobile be or how many rooms must a new building have?).

Operational requirements involve the use of the project result. For example, after a software project has been realised, the number of malfunctions that occur must be reduced by ninety per cent.

Finally, design limitations are requirements that involve the actual realisation of the project. For example, the project cannot involve the use of toxic materials or international partners for whom it is unclear whether they use child labour.

The result of the definition phase is a list of requirements from the various parties who are involved in the project. Every requirement obviously has a reverse side. The more elaborate the project becomes, the more time and money it will cost. In addition, some requirements may conflict with others. New copy machines are supposed to have less environmental impact; they must also meet requirements for fire safety. The fire-safety regulations require the use of flame-retardant materials, which are less environmentally friendly. As this illustration shows, some requirements must be negotiated.

Design Phase

After the initiation stage, the project is planned to an appropriate level of detail. 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.

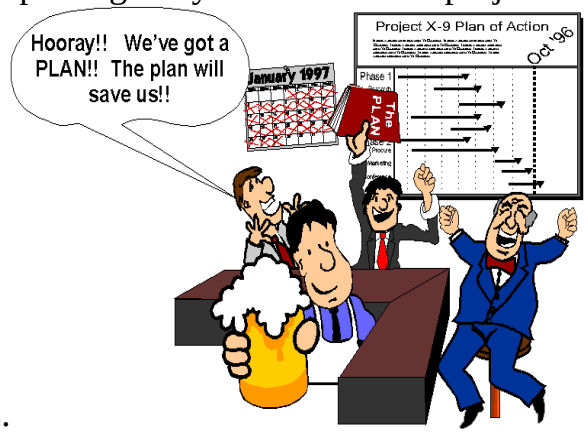

Figure [4]: Project Planning Activity

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Project planning generally consists of:

- determining how to plan (e.g. by level of detail or rolling wave);
- 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.
  In the design phase, one or more designs are developed, with which the project result can apparently be achieved.

  Depending on the subject of the project, the products of the design phase can include dioramas, sketches, flow charts, site trees, HTML screen designs, prototypes, photo impressions and UML schemas. The project supervisors use these designs to choose the definitive design that will be produced in the project. This is followed by the development phase. As in the definition phase, once the design has been chosen, it cannot be changed in a later stage of the project.

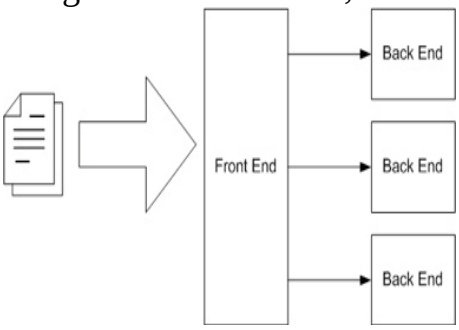

Figure [5]: Design Phase

Development phase

During the development phase, everything that will be needed to implement the project is arranged. Potential suppliers or subcontractors are brought in, a schedule is made,

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materials and tools are ordered, and instructions are given to the personnel and so forth. The development phase is complete when implementation is ready to start. All matters must be clear for the parties that will carry out the implementation. In some projects, particularly smaller ones, a formal development phase is probably not necessary. The important point is that it must be clear what must be done in the implementation phase, by whom and when.

Implementation phase

The project takes shape during the implementation phase. This phase involves the construction of the actual project result. Programmers are occupied with encoding, designers are involved in developing graphic material, contractors are building, the actual reorganisation takes place. It is during this phase that the project becomes visible to outsiders, to whom it may appear that the project has just begun. At the end of the implementation phase, the result is evaluated according to the list of requirements that was created in the definition phase. It is also evaluated according to the designs. This phase is complete when all of the requirements have been met and when the result corresponds to the design.Those who are involved in a project should keep in mind that it is hardly ever possible to achieve a project result that precisely meets all of the requirements that were originally specified in the definition phase. Unexpected events or advancing insight sometimes require a project team to deviate from the original list of requirements or other design documents during the implementation of the project. This is a potential source of conflict, particularly if an external customer has ordered the project result. In such cases, the customer can appeal to the agreements that were made during the definition phase.As a rule, the requirements cannot be changed after the end of the definition phase.This also applies to designs: the design may not be changed after the design phase has been completed. Should this nonetheless be necessary (which does sometimes occur), the project leader should ensure that the changes are discussed with those involved (particularly the decision-makers or customers) as soon as possible. It is also important that the changes that have been chosen are well documented, in order to prevent later misunderstandings. More information about the documentation of the project follows later in this handbook.

Follow-up-Phase

Although it is extremely important, the follow-up phase is often neglected. During this phase, everything is arranged that is necessary to bring the project to a successful completion. Examples of activities in the follow-up phase include writing handbooks,

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providing instruction and training for users, setting up a help desk, maintaining the result, evaluating the project itself, writing the project report, holding a party to celebrate the result that has been achieved, transferring to the directors and dismantling the project team.The central question in the follow-up phase concerns when and where the project ends. Project leaders often joke among themselves that the first ninety per cent of a project proceeds quickly and that the final ten per cent can take years. The boundaries of the project should be considered in the beginning of a project, so that the project can be closed in the follow-up phase, once it has reached these boundaries. It is sometimes unclear for those concerned whether the project result is to be a prototype or a working product. This is particularly common in innovative projects in which the outcome is not certain. Customers may expect to receive a product, while the project team assumes that it is building a prototype. Such situations are particularly likely to manifest themselves in the follow-up phase was installed on the computers of fifty employees, the prototype began to have problems, and it was sometimes instable.Closing a project is not the most exciting part of the project lifecycle, but, if you don't do it properly, you may obstruct the ongoing delivery of benefits to the organization. Make sure you do the following:

- Complete and store documentation.
- Carry out a Post-Implementation Review, so that you and your colleagues can use the experience you've gained in future projects.
- Use your business connections to reassign project team members to appropriate roles in the organization.
- You don't want to lose the experience and knowledge that they've gained from working on the project.

Why does a Project fail?

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Figure [6]: Causes of project fail

There are many causes of project failure and every failed project will have its own set ofissues. Sometimes it is a single trigger eventthat leads to failure, but more often than not, it is a complex entwined set of problems that combine and cumulatively result in failure. Generally these issues fall into two categories. Things the team did do (but did poorly) or things the team failed to do.

- Goal and vision
- Leadership and governance
- Stakeholder engagement issues
- Team issues
- Requirements Issues
- Estimation
- Planning
- Risk management
- Architecture and design
- Configuration and information management
- Quality
- Project tracking and management
- Decision making problems

The benefits of project management in education

- Project management tools are required in education when implementing large scale
- projects as well as creating a single educational program
- Educational staff are continuously involved in educational projects
- Project management have been recognized as being an effective tool for teaching
- Project based learning might increase students' autonomy, self-directed learning,skills, problem solving ability etc. as well as their interest in learning both in the school and inthe future.
- Project based learning might help to better development of Project management tools,
- Techniques and programs.

Project management aspects in education

- Project management tools are required in Education when implementing large

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scaleprojects as well as creating a single educational program

- Project Management practices must focus concurrently on people processes andtechnology. Students must be provided with an environment in which to learn, apply andevolve their team and project knowledge.
- Since the beginning of 1990's, Project-based learning is a comprehensive approach to
- Classroom teaching and learning that is designed to engage students in investigation authenticproblems.
- *Managing educational projects* - educational projects are the same in nature asprojects in any other field.
- *Development of P.M educational programs* – Developing educational tools andtechniques in P.M are essential and they are the need of the hour.
- *Developing P.M based teaching* – P.M principals and techniques may beimplemented in other teaching programs

Current trend in using project management in education

- Active approach not passive
- Interaction rather then transfer
- Dynamic not static
- New learning paradigm- Knowledge is not delivered But is constructed and created(Wang, 2004)

Advantages of using project management in education

- Increases students' in the subject
- Increases the relevance of the subjects being taught.
- Increases Autonomy, self learning, problem solving skills
- Increases students' motivation in learning and both in the class andafterwards
- Provide the students with practical tool.

Project-based learning (PBL)

Project-based learning is a teaching method where teachers guide students through aproblem-solving process whichincludes identifying a problem, developing a plan, testing theplan against reality, and reflecting on the plan while in the process of designing andcompleting a project. Project-based learning (PBL) is a constructivist pedagogy that intends tobring about deep learning by allowing learners to use an inquiry based approach

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to engage withissues and questions that are rich, real and relevant to the topic being studied. It isdesigned to be used for complex issues that require students to investigate in order tounderstand (Barron, 1998). PBL is more than just a web-quest or internet research task.

Within this type of learning, students are expected to use technology in meaningful ways to help them investigate or present their knowledge. PBL is generally a less structured approachthan traditional, teacher-led classroom learning. However, working in non- or low-structuredenvironment can introduce significant sideeffects. In such an environment it is difficult for students to clearly identify project design-flow phases.

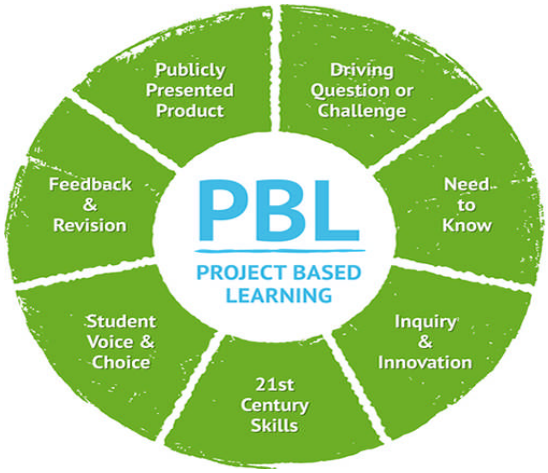

Figure [7]: Project based learning

Educational simulation

Simulation is set of computer- based technique that illustrate the behavior of dynamic complex systems.

Advantages of simulations

- Create dynamic environment
- Iterative
- Individual interaction
- Predictive tool
- Replace expensive and time consuming alternatives
- Reduce cost of risks associated with mistakes
- What if analysis

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- Alternative development.
-

The use of simulations

- Training
- Education
- Testing
- Estimation
- Decision Support System (DSS)
- What if analysis
- Replace heuristics methods
- Games

Simulation and education

Introduction to the use of simulations to aid learning

Electronic Learning (E-Learning) environments and the digital university became increasingly pervasive with the advent and popularity of the Internet and Intranet in the end of 1990 and the beginning of the new millennium. Old and new teaching methods and instructional strategies are being explored and developed. The common thread among all is that the learning process, in most cases, is individual. Simulations are recognized as an efficient and effective way of teaching and learning complex dynamic systems as well as a tool to avoid the cost of risks associated with OJT with new technologies. Simulation- based education products are recognized as an excellent "illustrative tools" – used exceedingly in students centered learning methodologies.Implementation of simulations in education Simulation sometimes recognizes as a third way of doing science, in contrast to bothinduction and deduction. Simulation can be an effective tool for discovering surprising consequences of simple assumptions, it is used to provide experience creation of new knowledge either for its own sake or aid decision maker in a decision process Simulation-based teaching and learning.

Simulation-based teaching is one of the tools in the new developed trend in education – *learning-by-doing.* A simulator is self-paced learning approach which can incorporate special

teaching and learning mechanisms to support the individual learner. In particular, simulationsare becoming an integral part of management and engineering education as students learn by using and building simulations of complex systems and processes. In contrast to the real world, which is being simulated to various degrees of fidelity, the students using a simulatorare able to ‘‘stop the world’’ and ‘‘step outside’’ of the

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simulated process to review and understand it better.

Advantages of Simulation-based teaching:

- Provide controlled environment allowing to demonstrate specific methods and techniques which can be directed by the instructor
- Interaction with subject rather than with teachers.
- Students are provided with an environment in which to learn, apply and evolve their team and knowledge
- Enhance self learning processes
- Enhance individual learning.

Issues with respect to simulation-based teaching and learning:

- Simulations are recognized as an efficient and effective way of teaching and learningcomplex dynamic systems.
- Efficiency is gained by reducing the time it takes to reach a specified level of learning
- Effectiveness is gained by achieving better results in performing the tasks learned.
- In particular, simulations are becoming an integral part of education as students learn

by using and building simulations of complex systems and processes.

The Project Team Builder (PTB)

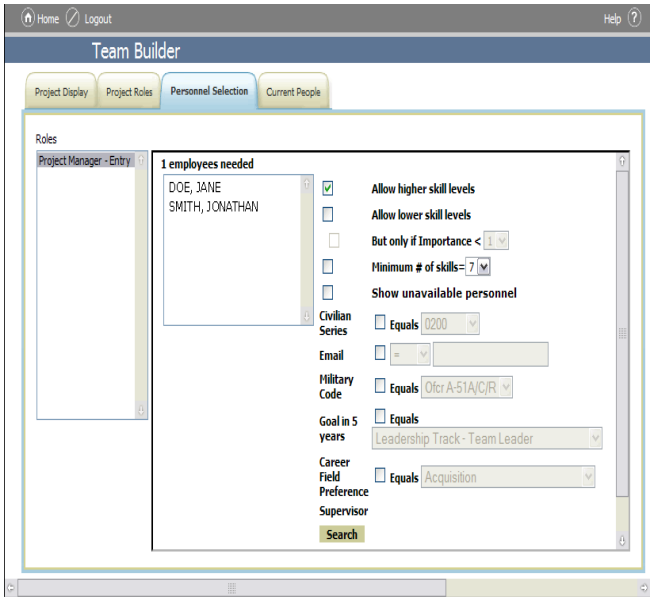

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Figure [8]: Project team builder

The Project Team Builder (PTB) presents a new approach to the teaching and training ofproject management—an approach based on a software tool that combines an interactive,dynamic case study and a simple yet effective Project Management System. The PTB appliesrecent developments in the area of learning histories in simulation-based teaching. The PTB is designed to support individual training in project management and to provide an environmentfor practicing teamwork in managing dynamic stochastic multiple projects. The new conceptof a simulation-based training environment with a built-in learning history recording andinquiry mechanism is employed in the PTB. The PTB can be used as a stand-alone system asit contains models for scheduling, budgeting, resource management, cash management,
Monitoring and control. The PTB can be used with Microsoft Project to plan the project, to monitor and to control it by transferring information from the Project Team Builder (PTB)and analyzing it using Microsoft Project.
The PTB principles:

- The Project Team Builder (PTB) is a training aid designed to facilitate the training ofproject management in a dynamic, stochastic environment
- A simulation approach—the PTB simulates one or more projects. The simulation iscontrolled by a simple user interface and no knowledge of simulation or simulation languagesis required.
- A case study approach—the PTB is based on a simulation of case studies calledscenarios. Each case study is a project or a collection of projects performed under schedule,budget and resource constraints, in a dynamic stochastic environment. The details of thesecase studies are built into the simulation while all the data required for analysis and decision making is easily accessed by the user interface. A user-friendly case study generatorfacilitates thedevelopment of new case studies as required.
- A dynamic approach—the case studies built into the PTB are dynamic in the sensethat the situation changes over time. Arandom effect is introduced to simulate the uncertainty in the environment, and decisions made by the user cause changes in the state of the system simulated.

Conclusion

The paper provides a detailed study of how the project planning activity is performed and provides various methods by which we can avoid our project failure.

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