

1. Software project management is the art and science of planning and leading software projects. It is a sub-discipline of project management in which software projects are planned, implemented, monitored and controlled.

2. Software quality metrics are subset of software metrics that focus on the quality aspects of the product process and project. In general software quality metrics are closely associated with process and product metrics than project metrics.

3. Scrum is an efficient framework within which you can develop software with teamwork. It is based on agile principles. Scrum supports continuous collaboration among the customer, team members, and relevant stakeholders.

4. Answering the question

'What do we have to do to have a success?'

Need for a project authority

* Sets the project scope

- * Allocates/approves costs
- * Could be one person - or a group
- * Project Board
- * Project Management Board
- * Steering committee.

Objectives Informally, the objective of a project can be defined by completing the

statement: The project will be regarded as a success if ... Rather like

post-conditions for the project Focus on what will be put in place, rather than how activities will be carried out.

5. Monitoring is the systematic process of collecting, analyzing and using information to track a programme's progress toward reaching its objectives and to guide management decisions. Monitoring usually focuses on processes, such as when and where activities occur, who delivers them and how many people or entities they reach.

6. The Monte Carlo method is a numerical method for statistical simulation which utilizes sequences of random numbers to perform the simulation.

7. Once data has been collected about project progress, a manager needs some way of presenting that data to greatest effect. Some of these methods such as Gantt charts provide a static picture, a single snapshot, whereas others such as time line charts try to show how the project has progressed and changed over time.

8. Earned Value Analysis (EVA) is an industry standard method of measuring a project's progress at any given point in time, forecasting its completion date and final cost, and analyzing variances in the schedule and budget as the project proceeds.

9. A virtual team (also known as a geographically dispersed team, distributed team, or remote team) is a group of individuals who work across time, space and

organizational boundaries with links strengthened by webs of communication technology

10. Project software management is a collection of techniques used to develop and deliver various

Types of software products

*Project management is all about getting things done in the most efficient manner possible.)

*It's important to the company's success to invest time into the project

11. a. The dictionary definitions put a clear emphasis on the project being a planned activity. The other definitions include
_ A Specific plan or design _ A planned undertaking _ A large undertaking

Characteristics:

_ Non-routine tasks are involved _ Planning is required
_ Specific objectives are to be met

The project has a predetermined time span

– Work is carried out for someone other than yourself –

Work involves several

specialism

– People are formed into temporary work group

– Work is carried out in several phases

– Resources available are constrained

– The project is large and complex.

12. a.

Extreme Programming technique is very helpful when there is constantly changing demands or requirements from the customers or when they are not sure about the functionality of the system. It advocates frequent "releases" of the product in short development cycles, which inherently improves the productivity of the system and also introduces a checkpoint where any customer requirements can be easily implemented. The XP develops software keeping customer in the target. Phases of extreme programming: There are 6 phases available in Agile XP method, and those are explained as follows:

Planning

- _ Identification of stakeholders and sponsors
- _ Infrastructure Requirements
- _ Security related information and gathering
- _ Service Level Agreements and its conditions Analysis
- _ Capturing of Stories in Parking lot Prioritize stories in Parking lot _

Scrubbing of stories for estimation _ Define Iteration

SPAN(Time) _

Resource planning for both Development and QA teams Design

_ Break down of

tasks _ Test Scenario preparation for each task

_ Regression Automation Framework Execution _ Coding

_ Unit Testing

_ Execution of Manual test scenarios

_ Defect Report generation

_ Conversion of Manual to Automation regression test cases

_ Mid Iteration

review

_ End of Iteration review Wrapping

- _ Small Releases
- _ Regression Testing
- _ Demos and reviews
- _ Develop new stories based on the need.

Advantages and disadvantages:

The main advantage of Extreme Programming is that this methodology allows software development companies to save costs and time required for project realization. Time savings are available because of the fact that XP focuses on the timely delivery of final products. Extreme Programming teams save lots of money because they don't use too much documentation. They usually solve problems through discussions inside of the team.

* Simplicity is one more advantage of Extreme Programming projects. The developers who prefer to use this methodology create extremely simple code

that can be improved at any moment.

- * The whole process in XP is visible and accountable.

Developers commit

what they will accomplish and show progress.

- * Constant feedback is also the strong side. It is necessary to listen and

make any changes needed in time.

- * XP assists to create software faster thanks to the regular testing at the development stage.

- * Extreme Programming contributes increasing employee satisfaction and retention.

Disadvantages

- Some specialists say that Extreme Programming is focused on the code

rather than on design. That may be a problem because good design is extremely important for software applications. It helps sell them in the

software market. Additionally, in XP projects the defect documentation is not always good. Lack of defect documentation may lead to the occurrence of similar bugs in the future.

— One more disadvantage of XP is that this methodology does not measure code quality assurance. It may cause defects in the initial code.

— XP is not the best option if programmers are separated geographically.

13. b. Formulating a network model

The first stage in creating a network model is to represent the activities

and their relationships as a graph. In activity-on-node we do this by

representing activities as nodes in the graph—the lines between nodes

represent dependencies.

Constructing precedence networks

A project network should have only one start node. A project network

should have only one end node. A node has duration.

Links normally have no duration.

Precedents are the immediate preceding activities.

Time moves from left to right

A network may not contain loops

Representing lagged activities We might come across situations where we

wished to undertake two activities in parallel so long as there is a lag

between the two. We might wish to document amendments to a program as

it was being tested - particularly if evaluating a prototype.

Where

activities can occur in parallel with a time lag between them we represent

the lag with duration on the linking arrow as shown in

Figure 6.13. This

indicates that documenting amendments can start one day after the start

of prototype testing and will be completed two days after prototype testing

is completed. Hammock activities A hammock activity (also hammock task)

is a schedule or project planning term for a grouping of tasks that "hang"

between two end dates it is tied to. A hammock

activity can group tasks which are not related in the hierarchical sense of

a Work Breakdown Structure, or are not related in a logical sense of a

task dependency where one task must wait for another.

14. a. A project manager is a person who is responsible for leading the

project. In other words, project managers are the spearheads of a project.

They ensure that the project is completed within the specified deadline and

gets delivered to the client without any flaws.

Here are three simple steps to help you start monitoring your schedule.

Create a baseline for your project. Click the Project tab, and then click Set

Baseline.

Communicate, communicate, communicate. It is not easy for people to send

you work status.

Use Team Planner.

15. b. Ethics relates to the moral obligation to respect the rights and

interests of others – goes beyond strictly legal responsibilities

Three groups of responsibilities:

- * Responsibilities that everyone has
- * Responsibilities that people in organizations have
- * Responsibilities relating to your profession or calling

Organizational

ethics

There are some who argue that ethical organizational ethics are limited:

- * Stockholder theory (e.g. Milton Friedman). An employee's duty is to the

owners of the business (which often means the stakeholders) above all

others – although legal requirements must be met.

- * Competitive relationships between businesses.

Uniform Treatment

One example of organizational ethics is the uniform treatment of all

employees. Small business owners should treat all employees with the same

respect, regardless of their race, religion, cultures or lifestyles.

Everyone

should also have equal chances for promotions. One way to promote uniform

treatment in organizations is through sensitivity training.

Some companies

hold one-day seminars on various discrimination issues. They then invite

outside experts in to discuss these topics. Similarly, small company

managers must also avoid favoring one employee over others.

This practice

may also lead to lawsuits from disgruntled employees. It is also counter

productive Social Responsibility

Small companies also have an obligation to protect the community. For

example, the owner of a small chemical company needs to communicate

certain dangers to the community when explosions or other disasters

occur. The owner must also maintain certain safety standards for

protecting nearby residents from leaks that affect the water or air quality.

There are state and federal laws that protect people from unethical environmental practices. Business owners who violate these laws may face stiff penalties. They may also be shut down.

Financial Ethics

Business owners must run clean operations with respect to finances, investing and expanding their companies. For example, organizations must not bribe state legislators for tax credits or special privileges.

Insider trading is also prohibited. Insider trading is when managers or executives illegally apprise investors or outside parties of privileged information affecting publicly traded stocks, according to the Securities and Exchange Commission. The information helps some investors achieve

greater returns on their investments at the expense of others.

Executives

in small companies must strive to help all shareholders earn better returns

on their money. They must also avoid collusive arrangements with other

companies to deliberately harm other competitors.

Considerations

A small company's organizational ethics can also include taking care of

employees with mental illnesses or substance abuse problems, such as drug

and alcohol dependency. Ethical business owners help their employees

overcome these types of problems when possible. They often put them

through employee advisor programs, which involves getting them the

treatment they need. Employees may have issues that lead to these types of

problems. Therefore, they deserve a chance to explain their situations and

get the help they need

Professional ethics

Professionals have knowledge about the technical domain that the general

public does not. Ethical duty of the expert to warn lay people of the risks

involved in a particular course of action. Many professions, or would be

professions, have codes of conduct for their members.

16. a. It's a well-known fact that an organization (company, business or non-profit) is a complex system which is primarily designed to add value to all stakeholders: employers, legal owners, staff, customers, business partners, authorities, etc.

Any organization uses a management system to determine the needs of each stakeholder, to transform these needs into internal requirements, to provide the resources needed to

meet all the requirements and to review the performances.

(See picture below

There are many definitions for the Management System of an organization. Here are two examples:

"A management system is the framework of processes and procedures used to ensure that an organization can fulfill all tasks required to achieve its objectives." / [wikipedia.org](https://en.wikipedia.org/wiki/Management_system)

"A management system describes the set of procedures an organization needs to follow in order to meet its objectives."
/ [iso.org](https://www.iso.org/standard/54569.html)

What is important here? Regardless of the size of the organization, regardless of its field of activity, any organization needs to manage internal processes in order to obtain the product or service requested by clients and to

fulfill the established objectives. Each organization is unique and has its own identity and structure, so each organization must develop its own Management System so that it can be used and continuously improved.

Therefore, to have a management system, each organization should clearly define its own activities and internal processes, and these internal processes must be continuously improved, based on the analysis of the results.

What is "Quality"?

We can define the term "quality" in many ways, but the ISO family of standards gives a very concise definition: "quality - the degree to which a set of inherent characteristics fulfils requirements." (ISO 9000:2005 - 3.1.1).

Note: At this time, the ISO 9000 and ISO 9001 standards are under revision.

This definition gives a general sense of "quality", but we can watch at The Chartered Quality Institute (thecqi.org) which gives the following definition: "an outcome – a characteristic of a product or service provided to a customer, and the hallmark of an organization which has satisfied all of its stakeholders."

So, we must consider the customer and the degree to which the product or service meets the needs of all stakeholders. We can say about the quality of a product or service that this is "poor", or "good" or "excellent", but this must be in accordance with something, we must have a reference to give such a description.

Nowadays, all organizations have to face some challenges in their business environment: the economic crisis, globalization,

as well as the competition in its market. Moreover, the increase in technology and especially in IT, requires new actions. For example, it is well known that the e-commerce has opened new doors in business, which means an increased competitive environment. And if we consider the area of social media, we realize that organizations that do not meet the "quality" of products or services have no chance to stay on the market. The conclusion is that "Quality" is very important for every business!

What might or could a company do to provide quality products or services?

This is such a great subject! We could talk days and days about it! But in this article I will touch only a part of it, namely the one that relates to the Quality Management System.

What is a Quality Management System?

Returning to ISO 9000:2005, we can find this definition:
"management system to direct and control an organization with regard to quality".

In other words, a Quality Management System is "a set of interrelated or interacting processes used to guide and lead an organization so that its products or services meet the established requirements".

Specifically, the Quality Management System focuses on the processes of the organization, customer and continuous improvement.

Any Management System (whether it is quality, environment, energy, etc.) is developed based on PDCA cycle model, which is known as "process-based model system". So, if an organization wants to fulfill the requirements for a quality management system, it must develop its management system on a process approach. This is a very important principle of

quality management, and the new revision of the standard (expected in September 2015) makes an emphasis on "the process approach". From this point of view, we can say that the internal processes of an organization are very important for delivering quality products or services. But it is not the single one ... there are actually, eight quality management principles and any organization must take these into account:

Customer focus

Leadership

Involvement of people

Process approach

System approach to management

Continual improvement

Factual approach to decision making

Mutually beneficial supplier relationships

Every principle from the above list has its own importance. But, in this article I will focus on only the first of them.

The first principle "customer focus" is very important. Everyone will agree that an organization depends on its customers, and that the organization cannot exist unless there are clients who buy its products and services. For this reason, the organization must understand the requirements of its customers and should focus to exceed those expectations and understand their requirements even further.