Review on Project Management Tools

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Abstract—Project management involves with effective plans and systematically organization of work. It includes defining the project objectives, making schedules and assigning tasks, in order to accomplish a successful goal. There are many tools that make project management more effective and efficient. The development of software for an improved business process, the construction of a building or bridge, the relief effort after a natural disaster, the expansion of sales into a new geographic market — all are projects. **Project management**, is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements.

Keywords: Project Management, WBS, HOQ

I. INTRODUCTION

A **project** is temporary in that it has a defined beginning and end in time, and therefore defined scope and resources.

And a project is unique in that it is not a routine operation, but a specific set of operations designed to accomplish a singular goal. So a project team often includes people who don't usually work together – sometimes from different organizations and across multiple geographies.

Project management is the application of processes, methods, skills, knowledge and experience to achieve specific project objectives according to the project acceptance criteria within agreed parameters. Project management has final deliverables that are constrained to a finite timescale and budget.

A key factor that distinguishes project management from just 'management' is that it has this final deliverable and a finite time span, unlike management which is an ongoing process. Because of this a project professional needs a wide range of skills; often technical skills, and certainly people management skills and good business awareness.

Project management tools are aids to assist an individual or team to effectively organize work and manage projects and tasks.

Despite its name, project management tools are not just for project managers. Project management tools are made to be completely customizable so they can fit the needs of teams of different sizes and with different goals.

II. FEATURES OF PROJECT MANAGEMENT

Project management tools are usually defined by the different features offered. They include, but are not limited to:

- **Planning/scheduling -** Project management tools allow you to plan and delegate work all in one place with tasks, subtasks, folders, templates, workflows, and calendars.

- **Collaboration -** Email is no longer the only form of communication. Use project management tools to assign tasks, add comments, organize dashboards, and for proofing & approvals.

- **Documentation -** Avoid missing files with file management features: editing, versioning, & storage of all files.

- **Evaluation -** Track and assess productivity and growth through resource management & reporting.

III. TOOLS OF PROJECT MANAGEMENT

The commonly used ones are Gantt chart, PERT chart, mind map, calendar, timeline, WBS chart, status table, and fishbone diagram. These tools are all incredibly useful for visualizing the scope of a project. You can choose one best fit your own situation.
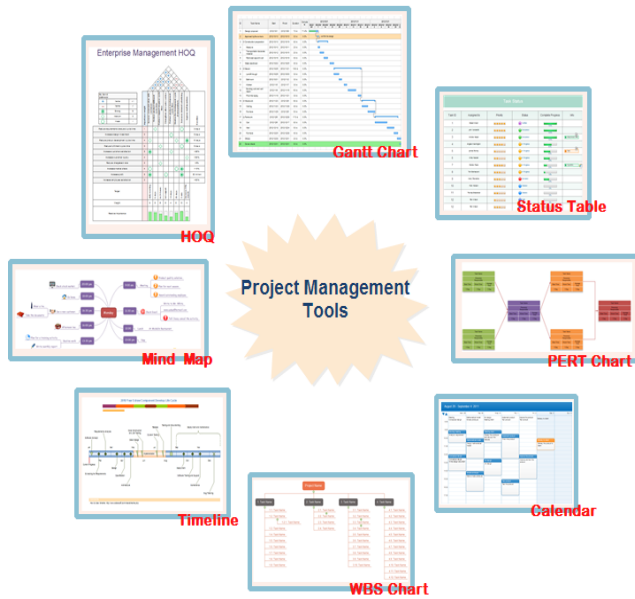
Figure 1. Project Management Tools

1. Gantt Chart

Gantt chart can help in planning and managing projects by breaking a large project into a series of smaller tasks in an organized way. Each task has an expected time duration which is presented by a horizontal bar whose left end indicates the beginning date of the task and whose right end indicates the completion date of the task. Tasks may run sequentially, in parallel or overlapping. During the process, important events can be highlighted as "Milestone" which is marked by a small diamond shape.

From a Gantt chart, you can clearly recognize what the sub tasks are and when each task begins and ends. Presenting a visual overview of the project, you can easily track the progress by seeing what should be happening at any stage in the project.

Figure 2.Gantt Chart

2. Status Table

Status table is an effective tool which is used track project progress. It doesn't contain too much detail of the project duration and task relations, but with more focus on the status and complete progress. A great function of the status table is that it can also include people who take charge of the task, so that project leaders can better evaluate employee performance and know who to reach when there is a problem.

Figure 3. Status Table

3. PERT Chart

PERT is shorted for project evaluation and review technique. It's a primary project management tool used for planning and scheduling entire projects and tracking the implementation phase. PERT chart can also show task division, time allocation, and starting and ending dates. Unlike Gantt chart who uses bars to represent tasks, PERT chart displays information as a network model that uses boxes to represent tasks and arrows to present dependencies between tasks.
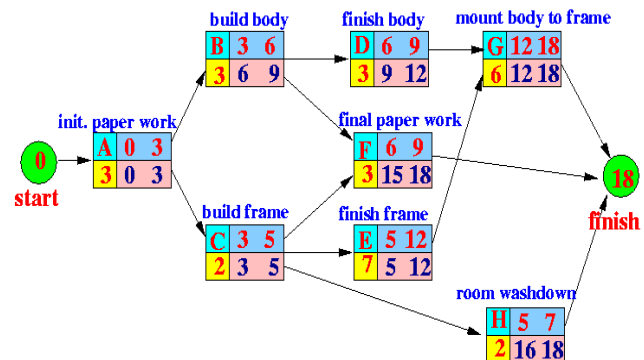

Figure 4. PERT Chart

4. Calendar

Calendar is the date or time based project management tool which is the easiest to understand. It is more suitable for

personal time management, to help better manage your daily, weekly or monthly time schedule. The outstanding part of this tool is that it has more space for adding to do lists. It will remind you what to do on each day and make sure things can be finished before deadline.
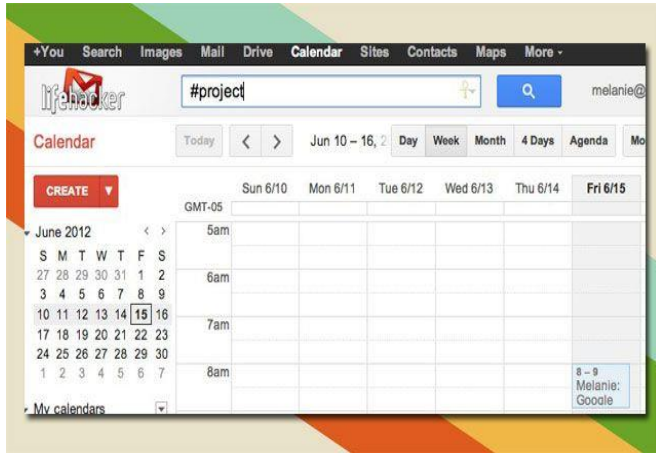

Figure 5. Calendar

5. Work Breakdown Structure (WBS)

The United States Department of Defense (DOD) created the Work Breakdown Structure concept as part of the Polaris mobile submarine-launched ballistic missile project.

A Work Breakdown Structure is a hierarchical decomposition of the deliverables needed to complete a project. It breaks the deliverables down into manageable work packages that can be scheduled, costed and have people assigned to them. A Work Breakdown Structure is a standard project management tool and the basis for much project planning.
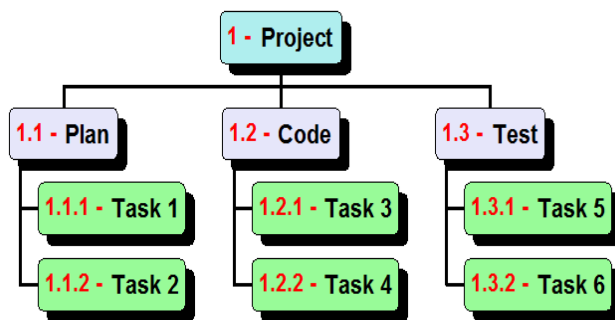

Figure 6.WBS Chart

6. Timeline

Timelines are like a summarized Gantt chart, with on the most important dates, events and milestones shown. The power in creating a timeline for your report is that you have more control over the data and can display only what you deem most important. It's not so easy to filter your Gantt chart in the same way.
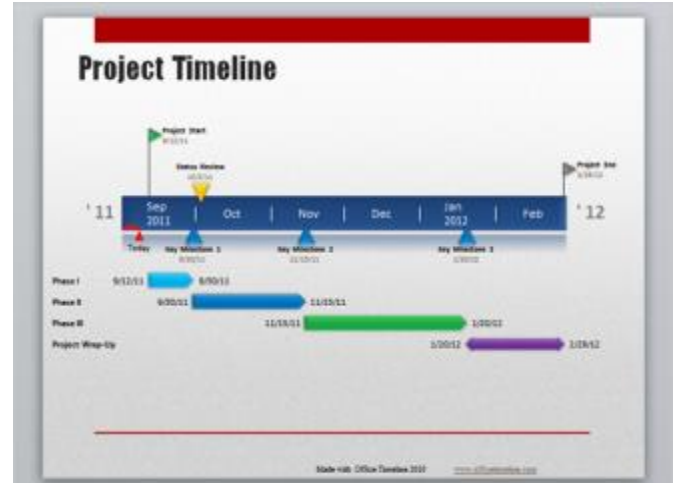

Figure 7. Timeline

7. Mind Mapping

Mind mapping is a graphing technique that outlines concepts related to a central idea. The image shows relationships among pieces of the whole, from outward branches to specific ideas within them.

At the heart of mind mapping is simplicity. Creators are likely to make use of their entire space, using colors, images, and words to get their ideas across.
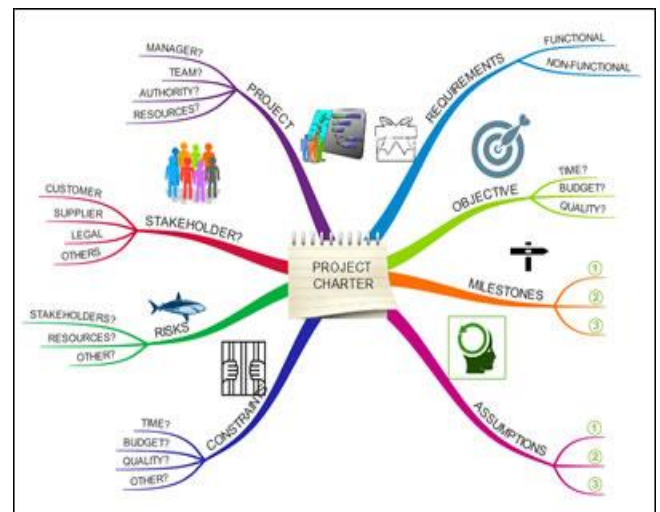
Figure 8. Mindmap

8. HOQ

HOQ, representing house of quality, is a quality management tool used to define the relationship between customer desires and the product capabilities. It's a tool used in QFD to facilitate group decision-making. Though looks complicated, it's easy to create through Edraw. All the components in the FOQ, including the roof, matrix, legend box, and markers, are already included in the software. You can create a quality HOQ diagram with no efforts.

Figure 9. HOQ

IV. NEED OF PROJECT MANAGEMENT TOOLS

- **Easy Planning**

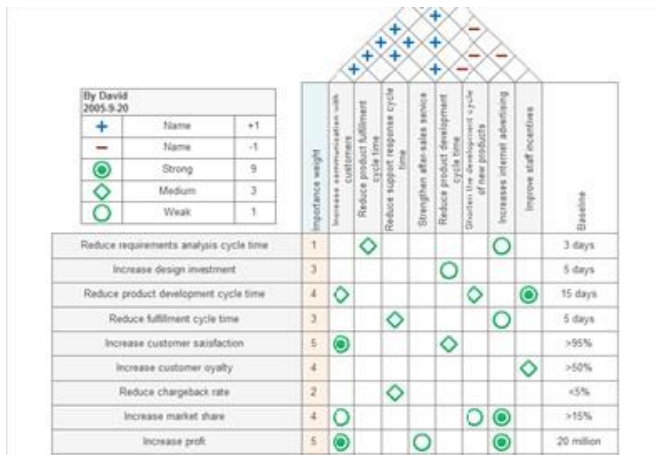The project planning process takes a lot of time as you have to map-out all the important steps. A project management tool provides you the ability to easily establish a hierarchy of tasks for effective and efficient completion. It also lets you indicate which steps are sequential and which tasks are dependent on one another. In turn, this makes it easier for the team to do their work. This is a time saver, because when the team leader knows which steps are the most important, he/she then knows which tasks to assign to whom.

- **Efficient Task Management**

Every project out there consists of numerous tasks that you, or your team, must complete. Writing notes about what your team members are doing is sometimes impossible, especially when it comes to ongoing projects that take a lot of time to complete. This is where a project management tool is very useful: assign all of the important tasks to employees and monitor how they are performing. Project management becomes much easier as you have access to this data and can follow who has which tasks. Through better task management, teams work in unity. Hence, achieving incredible results and benefiting the company.

- **Seamless Team Workflow**

Getting the whole team to work as one is often very hard to achieve, but project management software can make it much easier. Using this software solution gives a team leader a chance to always be able to see the tasks that his team is working on and which team members are involved in the task.

Furthermore, there are tasks which require more people. This is where a team leader can include several different people to collectively work on bigger tasks – while other members do smaller tasks simultaneously. Creating a seamless team workflow is something very important to

attain as it contributes to a company's sustainable future, as well as creating cohesion within a team.

- **Shared Documents, Calendars and Contacts**

Consider that project management tools are useful as they support storage and organization of a variety of documents. This is extremely important as a majority of projects have a high number of documents. By creating a centralized document storage plan, every team member can easily, and more quickly, edit and contribute. This feature is very important in cases where the work is outsourced to a person or a team. It is much easier to perform all the necessary tasks without sending thousands of emails with attached documents where, sooner or later, things become convoluted.

As well, having access to calendars of other team members is convenient because sooner or later, a meeting between team members has to be organized. So, having access to people's calendar makes coordinating much easier. Make sure to share a document containing every team members' contact information. This ensures remote team members can communicate with one other.

- **Precise Project Tracking**

Tracking the time spent on every task is of great value. It allows you to collect data about team members, to know their work pace. This will make planning future projects much easier. The team leader can then make much more precise time estimations. For example, a team leader can give different types of tasks to team members throughout a project to determine their strengths. This creates better performance and faster results.

V. CONCLUSION

These are some of the most important reasons why you want to rely on project management tools in your company. These are the various tools available for managing the project. Each tool has its own merits and one can use any of above according to his project. Utilizing the latest technologies currently available maximizes the performance of project teams. The whole workflow becomes improved, as people are capable of collaborating on a variety of tasks. This leads to a significant improvement in productivity, which leads to higher profits in the business world.

REFERENCES

[1] Christelle Scharff, "Guiding Global Software Development Projects using Scrum and Agile with Quality Assurance", IEEE-CS Conference on Software Engineering Education and Training (CSEE&T), ISBN: **978-1-4577-0349-2**, May **2011**, pp. **274 – 283**.

[2] Demetrios Sarantis, Yannis Charalabidis and Dimitris Askounis, "A Goal Oriented and Knowledge Based eGovernment Project Management Platform", IEEE 43rd Hawaii International

Conference on System Sciences (HICSS), ISBN: **978-1-4244-5509-6**, January **2010**, pp. **1 – 13**.

[3] Carstens, D. S., Richardson, G. L., & Smith, R. B. "Project management tools and techniques: A practical guide" CRC Press, **2016**.

[4] Lock, D. "Project Management", Gower Publishing, Eighth edition, **2003**.

[5] Tuman, G.J."Development and implementation of effective project management information and control systems", in Cleland, D.I. & King, W.R. (eds.) Project management handbook. New York: Van Nostrand Reinhold Co., **495-532, 1983**.

[6] Turner, J.R "The handbook of project-based management: improving the processes for achieving strategic objectives", 2nd ed. London : McGraw-Hill, **1999**.

[7] Wideman, R.M. "Project Management Body of Knowledge", Project Management Institute, Upper Darby, PA, Glossary of Terms, 22, **1987**.

[8] Capers Jones, "*Software Project Management Practices: Failure versus Success*", Crosstalk – The Journal of Defense Software Engineering, Oct **2004**.

[9] Margo Visitacion, "Project Portfolio Management", Forrester's Ultimate Consumer Panel, March 13, **2006**.

[10] Kastor A. and Sirakoulis, K. , "*The effectiveness of resource levelling tools for resource constraint project scheduling problem*", International Journal of Project Management, doi:10.1016/j.ijproman.2008.08.006., **2008**.

AUTHOR PROFILE

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