

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/259329419>

Software Project Management Tools: A Brief Comparative View

Article in ACM SIGSOFT Software Engineering Notes · May 2013

DOI: 10.1145/2464526.2464537

CITATIONS

5

READS

365

2 authors, including:



[Alok Mishra](#)

Atilim University

147 PUBLICATIONS **606** CITATIONS

SEE PROFILE

Software Project Management Tools: A Brief Comparative View

Alok Mishra

Department of Software Engineering,
Atilim University, Incek 06836, Turkey.

alok@atilim.edu.tr

Deepti Mishra

Department of Computer Engineering,
Atilim University, Incek 06836, Turkey.

deepti@atilim.edu.tr

ABSTRACT

The task of managing a software project can be an extremely complex one, drawing on many personal, team, and organizational resources. The quality of a software product is dependent on the process in which the project is completed. Time delays in software development project and low productivity tend to fall right to the bottom line. Recently, the evolution of project management tools for both software and non-software applications has been accelerating at a rapid pace, and the number of available products have grown significantly. There are many project management tools and software being developed everyday to help managers to automate the administration of individual projects or groups of projects during their life-cycle. This article presents a short comparison of popular software project management tools.

Categories and Subject Descriptors

K.6.1 [Management of Computing and Information Systems]:
Project and People

General Terms

Management.

Keywords

Software Project Management, Tools, Software Engineering, Software Project

1. INTRODUCTION

Software projects tend to bear many issues and problems throughout their life cycles. In today's fast paced environment and in an age of outsourcing, there appear to be not enough resources to cope with so many management issues for a project manager. The task of managing a software project can, therefore, be an extremely complex one, drawing on many personal, team, and organizational resources [7]. The quality of a software product is dependent on the manner in which the project is completed, and if the software is designed in a hasty manner this will, in due course, create chaos in maintenance and future extensions [3]. Time delays in the software development project and low productivity are among the underlying factors which creates obstacles [2] and the evolution of project management tools for both software and non-software applications has therefore been accelerating at a rapid pace with the number of available products on the market growing significantly [1]. There are many project management tools being developed to help project managers to automate the management of individual projects or groups of projects during their life-cycle. In spite of the recent increase in the number of software project management tools, surprisingly limited work has been done in this area and little attention has been paid to the evaluation of the selection criteria [1].

The objective of this article is to briefly review various popular project management tools, and comparatively investigate their different features. The article will facilitate the understanding of different project management tools to software practitioners and is organized as follows: First, project management tools along with their significant features are described. Later on, a comparison chart is presented. Finally, section 3 summarizes the discussions and present our conclusions.

2. PROJECT MANAGEMENT SOFTWARE TOOLS

In this article, 20 popular project management tools used by professionals are discussed and compared. The software tools to be compared have been selected from both open sources and proprietary software groups. All tools are compared side-by-side in the comparison chart section (Table 1).

2.1 @Task

@Task is a web based project management system. It has an enormous number of features for project management, along with other management, collaboration and integration capabilities. The software is proprietary and comes in two forms: professional or enterprise. The enterprise edition has more capabilities than the professional edition.

2.2 Central Desktop

Central Desktop is an online collaboration software that also includes project management capabilities. Its main objective is to facilitate people of non-IT sector to collaborate on projects in an excellent way. The software is proprietary and is monthly-subscription based, under 3 licenses: workgroup, enterprise or community. Enterprise edition has more capabilities than others. The community edition is tailored specifically to non-profit organizations and academic institutions.

2.3 Collabtive

Collabtive is a web-based, open source project management tool. It is created by the German firm Open Dynamics. It has a simple, yet useful set of features for basic project management needs.

2.4 GanttProject

GanttProject is a cross-platform, java-based, project management software. It is open source so it is free to use and also further customizable. The software, as its name implies, makes use of Gantt charts for project management.

2.5 Clarizen

Clarizen is an online project management system. It has an enormous number of features for project management, along with other management, collaboration and integration capabilities.

2.6 Gemini Issue Tracker

Gemini is a simple tool that can be used by all team members providing issue tracking, bug tracking, defect tracking with easy project dashboards, road maps, change logs, customizable screens, leverage workflow, control permissions, metadata and more. It is flexible, scalable, and entrusted by thousands of teams and organizations around the world.

2.7 JIRA

JIRA combines issue tracking, agile project management, customizable workflow, and a pluggable integration framework to increase the velocity of the software development team. With JIRA, delivering quality software on time is easier.

2.8 GoPlan

The GoPlan is an online project management and collaboration solution for individuals and teams. The Go Plan dash board provides an overview of everything that is happening across several projects

2.9 GlassCubes

The major benefits of a hosted CRM solution such as glasscubes include low initial and support cost—Web based CRM eliminates the need for deploying clients and backend software—along with the elimination of complicated initial setup, configuration, data migration and integration.

2.10 KPlato

KPlato is a project management application. It is intended for managing moderately large projects with multiple resources. It is focused on the planning and scheduling of projects. Also KPlato is a cross-platform project management application and a member of the KOffice suite. It creates Gantt charts, which represent project schedules. KPlato is designed to manage moderately large projects with multiple resources.

2.11 Prowork Flow

Proworkflow is a web based management tool to manage tasks and schedules in projects. Being a web based application, it helps project members who are situated at external locations. It easily creates tasks with allocated times and a start and end date. This information is used to create a highlight timelines that display resource allocation. Effective time tracking and additional export to PDF, CSV and XML are pluses.

2.12 Zoho Project

Zoho Projects is a team collaboration and project management application that allows teams to plan, track and collaborate on big projects.

2.13 SmartSheet

Smartsheet is a software project management tool with main features that include online project management collaboration, file sharing features, Smartsheet's intuitive spreadsheet-like applications is used broadly to track and manage diverse types of work including: team projects and task lists, customer information, sales pipelines, event schedules, and business processes.

2.14 Microsoft Project 2003

It is a robust project management tool with the right blend of usability, power, and flexibility all of which help to manage projects more efficiently and effectively. The main features are staying informed and controlling project work, schedules, and finances, keeping project teams aligned, and creating more productivity through integration with familiar Microsoft Office system programs, powerful reporting, guided planning, and flexible tools.

2.15 Planner Suite

Planner is the GNOME project management tool. This includes features like: define the project, define general working times, list the tasks in the project, organize tasks into phases, schedule tasks, link to or attach more task information, identify risks to the project, Gantt chart, task view, resource usage view, cross-platform, earned value analysis, multi currency support, integration with accounting systems, report generator, and resource allocation.

2.16 Microsoft Project

A tool that helps to create project planning and real-times and scheduled times for finishing projects. It assists project managers in developing plans, assigning resources to tasks, tracking progress, managing budgets and analyzing workloads.

2.17 OpenProj

OpenProj is an open source project management software intended as a complete desktop replacement for Microsoft Project, being able to open existing native Project files. OpenProj runs on the Java Platform, allowing it to run on a variety of different operating systems.

2.18 Planner Suite

Planner Suite is an open source project management software intended as a complete desktop replacement for Microsoft Project, being able to open existing native Project files. It includes features such as WBS Scheduling, Gantt Schedule, Time and progress tracking, Utilization optimization, Portfolio overview, Resource allocation, Document management, Cost estimation, Expense management, Authorization, Invoicing, Earned Value and reports.

2.19 Project.Net

It develops project collaboration applications using Internet technologies, and builds and deploys a collaboration engine for use by public and private web-based exchanges.

2.20 MicroPlanner X-Pert

It is a project management software package. X-Pert is geared to producing CPM (critical path method) and PERT (path evaluation review techniques) schedules for major, long-term projects.

3. DISCUSSION & CONCLUSION

As seen from the preceeding sections, there are many kinds of project management appliances, be they open-source or proprietary, that help project managers in some way. Some of these are more oriented towards software project managers, whereas others are generic by nature and can be used in almost any sector.

The chart in this section compares on the next page 20 project management tools side-by-side on a feature basis. Features to be compared have been selected by the authors according to significance. The first 3 and last 2 columns in the table are not features, but rather filters describing the software's operation base and license, respectively.

The leading proprietary products in the comparison chart are @Task, Clarizen and Gemini with @Task supporting 12 out of 13 features listed. Obviously, the price tag rises as more features are added into a package. Most of these products are web-based and provide services to their customers online. The trend indicates that project management and the online collaboration sector are moving in more evolving direction.

Leading open-source products in the comparison chart appear to be GanttProject and OpenProj. Being of an open-source nature adds to the already available functionality of these products. Proprietary products usually provide an API (Application Programming Interface) for developers but in open-source products, the ability to control, customize, and enhance every aspect of a project management tool is valuable. A project manager who enhances this product with other features will, therefore, be more likely to succeed since project manager has acquired a software package for free that helps him in project management tasks. The important thing to consider, when deciding between among all these tools, is what features are needed in the project to be undertaken. As it can be seen from the comparison chart, there is an overwhelming number of features that can be included in a software package. Since pricing changes for some packages or set of features, all project managers should choose the tool that has the optimal set of features for optimal expected utility within projects. For example, a project may not have clients; i.e., it may be off-the-shelf rather than bespoke, so the project manager probably does not need a tool that provides workspaces that allow collaboration between the client and suppliers. Another point is that a project may not be big in size; consequently, many of the features listed may not be needed to begin with. All these and other factors should be evaluated carefully by the project manager to select the best tool in the management of the project. Presently, the agile project management approach is becoming popular and the framework of Scrum activities, XP's feedback and communication are used for the management processes in Agile project management [4].

Table 1: Software Project Management Tools Comparative Perspective

Name	Platform Based	Web Based	Online	Earned Value Analysis	Gantt Chart	Critical Path Method	Milestones	Resource Management	Time Tracking	Tasks	Dependencies	Reports	Documents	Version Control	Workspaces	User Roles	Proprietary	Open Source
@Task	√		√	√	√	√	√	√	√	√	√	√	√	√		√	√	
Central Desktop			√				√		√	√			√	√	√		√	
Collabtive		√					√		√	√		√	√			√		√
GanttProject	√				√	√	√	√	√	√	√							√
Clarizen			√		√	√	√	√	√	√	√	√	√			√	√	
Gemini	√	√	√		√		√	√	√	√	√	√	√			√	√	
JIRA		√	√				√		√	√		√	√	√		√	√	
GoPlan			√				√		√	√			√	√			√	
GlassCubes			√						√	√			√	√	√		√	
KPlato	√			√	√			√	√	√	√	√						√
Prowork Flow			√		√				√	√	√	√	√			√	√	
Zoho Project			√		√		√		√	√	√	√	√	√			√	
SmartSheet			√						√	√	√	√	√		√		√	
Microsoft Project 2003	√			√	√	√		√	√	√	√	√					√	
Planner	√				√			√	√	√	√							√
Microsoft Project	√			√	√	√		√	√	√	√	√					√	
OpenProj	√			√	√	√		√	√	√	√	√						√
Planner Suite	√			√	√				√	√	√	√					√	
Project.Net	√						√	√	√	√		√	√					√
MicroPlanner X-Pert	√			√	√	√	√		√	√	√						√	

These tools also help useful to access information about the project when many people are working together on one project, or when multiple teams are simultaneously working on different parts of the same project and coordination among them is important [5]. These project management tools are very useful for small and medium enterprises (SMEs) and a significant amount of software is developed all over the world by these SMEs [6].

This review has some limitations in terms of inclusion of tools for distributed software project management, and tools reported in literature as specific case studies to manage specific projects. As a future work, it would be interesting to study and compare other software project management tools, their characteristics and impact on speed, productivity, and overall management in order to increase our understanding regarding how to address different challenges in project management, and also which tool will be best under specific set of requirements or circumstances.

4. REFERENCES

- [1] Ahmad, N. (2006) Software Project Management Tools: Making a Practical Decision Using AHP. In *Proceedings of the 30th Annual IEEE/NASA Software Engineering Workshop* (April 24 - 28, 2006). SEW. IEEE Computer Society, Washington, DC, 76-84
- [2] Blackburn, J. D., Scudder, G. D., and Van Wassenhove, L. N. 1996. Improving Speed and Productivity of Software Development: A Global Survey of Software Developers. *IEEE Trans. Softw. Eng.* 22, 12 (Dec. 1996), 875-885.
- [3] Lam, H.E. and Maheshwari, P. (2001) Task and Team Management in the Distributed Software Project Management Tool. In *Proceedings of the 25th international Computer Software and Applications Conference on invigorating Software Development* (October 08 - 12, 2001). COMPSAC. IEEE Computer Society, Washington, DC, 401-408.
- [4] Mishra, D., and Mishra, A. 2011. Complex software project development: agile methods adoption. *Journal of Software Maintenance and Evolution: Research and Practice*, 23(8), 549-564.
- [5] Mishra, D. and Mishra, A. 2009. Effective communication, collaboration, and coordination in eXtreme Programming: Human-centric perspective in a small organization. *Hum. Factor. Ergon. Manuf.* 19, 5 (September 2009), 438-456.
- [6] Mishra, D. and Mishra, A. 2009. Simplified software inspection process in compliance with international standards. *Comput. Stand. Interfaces* 31, 4 (June 2009), 763-771.
- [7] Rose, J., Pedersen, K., Hosband, J-H, Kraemmergaard, P. (2007) Management competences, not tools and techniques: A grounded examination of software project management at WM-data, *Information and Software Technol.* 49, 6 (Jun. 2007), 605-624.

