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Free and Open Source Project Management Tools

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Free and Open Source Project Management Tools

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Abstract

Whether a new project manager or an experienced leader project management is an omnipresent challenge for many. Thus, men and women have spent large amounts of time inventing methods and tools to help bring the projects they manage to a successful completion. Project managers of today can choose between the many different tools available to them. Some of the tools are proprietary; some are open source; and others are simply made freely available. For the more budget-conscious, free sounds great. But they must remember that nothing is truly "free." Any tool will take time and effort to manage and implement.

The tool that best fits a particular project manager will depend on their individual requirements, and those requirements will change based on each manager's style and the project at hand. However, it is still beneficial to look at what other project managers find important. Once a manager knows their requirements, it is time to decide which software will meet them. In order to do that they must research the types of tools that exist.

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1. Introduction

Project management has been around for millennia. In the book of Genesis, Noah is given the Ark project (Genesis 6:11-21, New International Version). The story does not go into detail on what project management techniques Noah used to complete his project. It is likely he had to contend with many of the same issues project managers do today. He had to track materials, time lines, and labor. He also dealt with shortages, risks, and cleanup – lots of cleanup.

A more recent example of ancient projects is the many pyramids around the world. Archeologists today still theorize about how such amazing feats of engineering were accomplished with the primitive tools available at the time. Archeologists have found detailed information about the construction of the pyramid at Giza. Records show the organization of work groups and teams. There were paid, skilled workers; risks (apparently the Nile flooded during construction causing a work stoppage); deadlines (finish before the death of the Pharaoh); stakeholders (the Pharaoh); and a project manager (the prime minister and the nephew of the Pharaoh) (Kozak-Holland, 2013).

Today project management is a highly studied and well-defined discipline built on what was learned over thousands of years of experience. In addition, technology further aids project managers in their endeavors. In fact, there are so many tools at this point that it can be difficult to choose between them. Open source project management tools are maturing quickly and are becoming viable alternatives to the paid software that has dominated the market space so far.

Comparing tools is not a simple operation. Each tool is designed to fulfill a particular function and may not compare exactly with another. Therefore, anyone who wants to compare different packages must first create a rubric by which tools can be measured. While the criteria may change slightly for each manager's search, it is possible to speak to enough of them to create a generic scheme that can be helpful to all. Each can then modify it as they see fit.

Once the rubric is built, it is time to take a look at several different pieces of software to see how they stack up. Even a cursory search of the available free and open

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source tools reveals a wildly diverse group of packages. Not all of them were created to fulfill the same requirements. Some designers built their software to help users organize their own lives, others to plan a project, and finally others to manage many areas of a project including data collection. Even with a rubric, it is not fair to compare these different product concepts. It is better to group the tools with similar scope, and then apply the rubric to the tools within each group.

2. What project managers want

Later, this whitepaper describes several open source tools available to project managers. It is likely that creators of each of the tools discussed believe that their tool is the best at what it does. Depending on the nature of the need they set out to fulfill, it may be. With such a wide variety of tools available to project managers, it can be difficult to create a rubric by which to compare them in order for the comparison to be fair.

It is simple to make up a rubric based on the needs of one person, but that is a little short-sighted. It would be ideal to conduct hundreds of live interviews. Unfortunately this is not feasible. Luckily, a student conducted a survey of several hundred project managers from around the world. Arden Lockwood, as part of his master's studies, posted a survey to which he received approximately 500 completed responses. The respondents constituted a diverse cross-section of project managers across several different areas of business (Lockwood, 2008). In order to add additional details, several, more recent, interviews were conducted as well.

All managers were asked what the most important features of a project tool were. In addition, they were questioned about what overall characteristics were important. Building on the data received, it is possible to create a rubric for comparing the different pieces of software.

2.1. Ease of use

"Ease of use" was not a surprising request. It ranked higher than any other topic on the survey and nearly all of the managers mentioned this in one way or another (Lockwood, 2008). When pressed for more detail, they expressed slightly different definitions of what ease of use meant to them.

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2.1.1. User Interface (UI)

Several of the interviewees spoke of the user interface. This is highly subjective, but the managers have some common themes. Speed is very important to them. If a manager must sit and wait for the system to process, especially between entry fields, they considered it "clunky." Some waiting is tolerated, if the wait is while the system calculates something difficult (Griswold, 2013).

Following speed, complexity of the interface was significant. Managers like software with many features, but they do not want all of those options displayed at once (Free, 2013). When there were too many options on the screen the display was considered cluttered. On the other hand, if the most common features were too buried, the software was not convenient (Parisi, 2013). The fine line between "too cluttered" and "clean but inconvenient" varies by user. The logical conclusion then is that the interface should be adjustable to suit the desires of the user.

The last user interface question was the method of input. In general, managers liked to use the mouse when they were first learning a new system but eventually wanted a system that allowed greater use of the keyboard so they can speed through entry. Speech-to-text is nice if it works well, but it can be troublesome if it does not translate well (Burkholder, 2013).

2.1.2. Complexity

Another topic brought up by the project managers was complexity. Not specifically of the user interface but of the program itself. What they indicated was that bigger is not always better. Sometimes project management tools were just too much (Burkholder, 2013). The tools required too much time and effort to maintain and therefore became more of a burden than a boon.

2.2. Features

Features are the reason people implement software. Therefore it is only fitting that software-provided features are part of the discussion. The project managers were asked what features they needed, which ones they liked, and which ones they wished they had.

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2.2.1. General Features

The project management survey lists several features of project management software that are essential. The essential features include the ability to plan a sequence of activities, create a baseline schedule, estimate and track costs, and manage resources (Lockwood, 2008). These needs are clearly no secret because nearly all packages focus on these core features.

Many packages utilize Gantt charts to visualize the time line of a project. From it, managers can create a calendar of events and deadlines that they may communicate to the stakeholders. A project's budget must be closely monitored. Budgeting may or may not be in the project management software itself but it is always tracked. Regardless of whether or not the project software maintained budgets, many of the interviewees used some sort of spreadsheet software like Excel. Different packages track resources differently. While this was indeed part of many packages, how it is done varied from assisting a single asset to a customer relationship management (CRM) system.

2.2.2. Project Templates

Several of the managers, especially the ones who managed many similar projects, liked project templates (Parisi, 2013). It allowed them to quickly create new projects and make efficient updates to the ones they were administering at the time. Those managers whose projects were more varied and larger also liked having a project template, but they complained if the template got too ridged. They explained that it did not allow for the diversity of their work (Eubanks, 2013). No matter how varied the projects became for them, there were almost always parallels. Having a template allowed them to define those similarities which made getting started easier.

2.2.3. Reporting

Project managers must communicate with two major groups of people. The first is between themselves and the project stakeholders. The other is gathering information from the teams that report to them. Therefore they need two sets of reports: clear and concise reports that can be used to inform the stakeholders, and clear progress reporting for themselves. At the same time, managers with teams must have the progress of the various parts of the project reported to them as well.

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One manager who was fairly happy about his system described it. The project system his company employed forced him to create concise benchmarks for the project teams' endeavors. The teams had to measure their progress against those benchmarks and report if their area was good (green), slipping (yellow), or behind (red). The tool he used had a dashboard where he could assess each part of the project at a glance. While he still held weekly meetings with all of his teams, he knew which teams needed assistance and, therefore where to focus his time (Eubanks, 2013).

2.2.4. Integration

Without exception, when asked about the most difficult part about managing a project team, the answer was effective communication. Project managers spend a great deal of time trying to get status reports from their teams. Managers, especially those who lead large teams, liked tools that integrated themselves with other systems such as contact lists, e-mail, and to-do lists (Griswold, 2013). They knew that if their teams were always in a system it was more likely that the data in the system would be up-to-date.

Project managers complained mightily if any systems they used required that they enter the same information more than once. Any double entry leads to out-of-date information or keystroke errors. This occurred more often in larger businesses where executives tracked projects differently from the project managers.

2.3. Software-related Concerns

When choosing any software, the user interface and features cannot be the only considerations. These points do not only apply to open source software. They are equally relevant with commercial software as well. For the most part the interviewees did not have direct control in choosing the project management software they used, and the survey did not ask, so these points come from other sources.

The first thing a user should think about when considering a new tool is whether or not it will operate in the project manager's current environment. If the project manager is in a Microsoft-only business, it would be silly to choose a piece of software which only functions in a Linux environment. There is also the possibility that a user

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may like a tool so much that it is worth creating a special environment in which to use it. While that is a valid solution, the extra work and time needed to set up the environment must be considered in the decision.

Closely related to which operating systems the tool support, comes the issue of installation. Some software tools require almost no effort to install and use, while some others require the creation of server machines to support them. It is important when choosing a tool that the project manager has all of the appropriate resources available (Metcalfe, 2013).

When considering any piece of software, ongoing effort is a key factor. Decision makers should determine when the last update was released. They should look to see if the message boards are active and if the website was recently updated. Investigators should see if there are any programming goals and if they are being met. Even if the tool discovered is the greatest tool ever - if no one is working on it, the software will eventually become useless. That is unless the user himself wants to take on its development (Metcalfe, 2013). While that is a viable option, it is important to take into account in the decision making process.

Managers selecting new tools should inquire about the tool's support. Open source tools which are still active normally have groups that support them. Users collaborate using mailing lists, forums, and Wikis. A decision maker should check those outlets to see if assistance is prompt and useful. Open source communities rely on each other. If a user is planning on relying on the community for assistance, it is expected that every once in a while that community should answer another's question (Metcalfe, 2013).

Community support is not the only type of support available in some cases. Some open source projects are popular and complex enough that for-profit companies will support the software for a fee. Commercial support for an open source piece of software is normally a good indication that the project will remain active for some time to come. It is also comforting for many decision makers to know that if they are truly stuck and have a critical need, there is someone who they can pay for immediate assistance (Metcalfe, 2013).

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Documentation is also important. The unfortunate truth is that many open source projects develop new features faster than they document the features that exist. A manager choosing a new tool must decide if there is enough documentation to support their needs.

It is important to remember that open source software is licensed. The license may limit the terms of use and the ability to make changes to the software. It is a good practice to review that license. If necessary, companies should consult a legal expert if there are any questions in this area.

2.4. Comparisons

Given the information above it is prudent to compare the different tools across several points.

Software Concerns:

Availability: Where to obtain software.

Operating Systems: Describe the operating systems that software will support.

Installation Difficulty: A quick description of the installation procedure and how difficult a user may find it.

Latest Version: The version downloaded and date it was released.

License: The type of license under which the software is distributed.

Support: Where to get assistance and how quick responses are.

User interface: Description of the interface, including complexity, flexibility, and responsiveness.

Features: The features section will detail the functionality of the product but will specifically mention the support of the features listed by the interviewees (E.g. General features, project templates, reporting and integration).

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3. Project Management Software Groups

Like project managers and the projects they oversee, the software and tools available to them vary widely. This is a good thing since different tools fulfill different needs. It is possible to categorize the myriad of tools into three major groupings. There are personal productivity tools, project planning tools, and complete integrated systems.

The groups fulfill different levels of need for different project managers. Tools from different groups can be used together to accomplish their goals. The more complex tools attempt to include everything in one package. At first that may sound ideal, but those tools tend to be more difficult to implement and maintain. The next few sections will detail the groupings and give some examples of tools in each grouping.

3.1. Personal Productivity

On the small side, there are personal productivity tools. There are many different opinions on the best way to accomplish one's daily tasks. There are entire racks of books and hundreds of websites devoted to the subject. Each person must find a system that suits their particular talents and demeanor, which is probably why there are so many opinions.

One of the most basic tools of the project manager is a list of things to do. One of the simplest tools available for keeping a task list is pen and paper. Several of the interviewed project managers spoke about using white boards or personal notebooks for keeping track of their lists of tasks or projects. In almost all cases, the interviewees said that they believed their colleagues would consider them very old fashioned if they knew how much they relied on such low tech means. If they had known how common their answer was their opinion may change.

David Allen, a productivity expert and the author of *Getting Things Done*, teaches that one should not underestimate pen and paper for noting what needs doing (Kaufman, 2010). He goes so far as to keep paper and pencil in his wallet to note new ideas and tasks as soon as he thinks of them. Each day he throws all of those notes into his physical in-box on his desk (Pinola, 2012). David then sorts the pile of notes tossing almost 80% of them. The rest he enters into his computerized task list.

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Clearly the advantage to the written note is the simple nature of the tool. Pencil and paper is nearly ubiquitous and almost free. Its major disadvantage is organization. Even Mr. Allen's in-box gets to the point where he says, "Okay, it's starting to stink and there's mildew in there, I better empty out my in-basket" (Pinola, 2012). Written notes are a good start but eventually they need to be organized into a different system.

Personal productivity tools do not usually deal with resource lists beyond making the decision to delegate a task to another. They focus on the efficiency of the project manager themselves. Therefore the "features" sections below will not have much to say on that topic.

A Google search for "top task lists" produces many lists of tools. Almost every resulting list contains Any.Do, Wonderlist, and Remember the Milk.

3.1.1. Any.Do

Quick Description: Any.Do is a relatively new application. It is designed for use on smart phones but it also integrates with Chrome so it is possible to use it on a PC. Its primary goal is to create a task list that is available across various platforms.

Availability: Google Play, Apple App store, and Chrome Web store

Operating System: This application is for smart phones and tablets - both Droid and IOS. The Droid version has more features.

Installation: Very simple – find the application in the app store and push the button to install.

Version: 2.34 released recently. The software has a low maturity rating at this time because it is new.

Licensing: Closed source but free with occasional ads

Support: Very little. The website has a FAQ, but beyond that there is not much instruction. However, the software is simplistic and guides the user.

Ease-of-use: very easy (There is not much to do with it)

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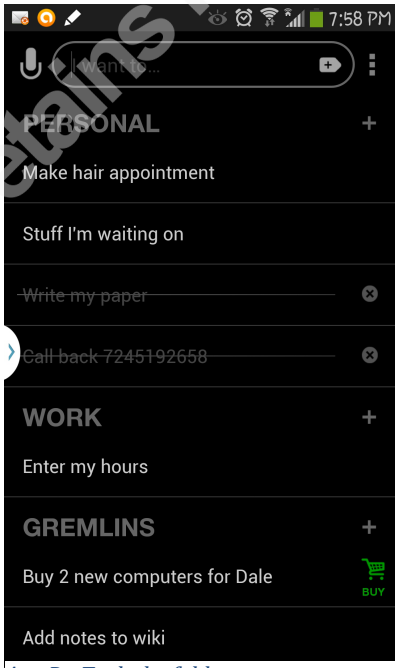
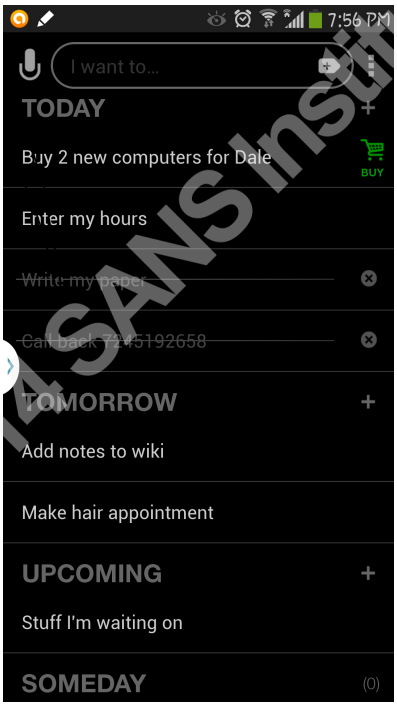
User Interface: Any.Do is primarily a smart phone application. Its interface is the touch screen of the device. Typing can be done with the on-screen keyboard. It is also possible to use voice recognition to enter data. A user must simply touch the microphone icon and speak into the device. Any.Do will add the spoken text as a task.

The interface is very simplistic. There are few items on the screen, but the application is not meant to do too many things. Its aim is to be an excellent task list.

Features: Any.Do's primary function is a task list. Tasks can be added to specific folders to organize them. The first two folders are business and personal but there is the ability to add more. When tasks are first recorded they are put into the "due today" group. That can be changed by dragging and dropping them into one of the other set timeframes (today, tomorrow, upcoming, and someday). It is not meant to plan out entire projects. It is meant to help the user know what needs to be accomplished in the immediate future.



Any.Do Tasks by folder



Any.Do -- Tasks by date

When tasks are finished all one must do is swipe the task to complete it. It is like crossing it out with your finger. The system will usually try to "reward" for completing a task by offering you a coupon (this is how the advertising comes in). It is possible to add notes to each task. The voice recognition feature makes this easy. The application will attempt to help the user complete their task by doing an internet search using the task's text as the search words. The results were not usually very helpful. Finally it is possible to set up reminders for any given task. The reminder can be once, daily, weekly, or even yearly.

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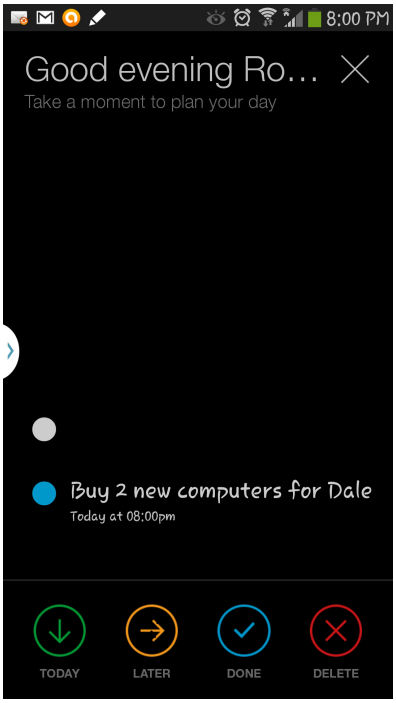

Any.Do Daily Review (Moment)

One of the more unique features is the phone call notifications. When a call comes in, the application automatically creates a reminder to call that number back. That is a step up from a smart phone's normal operation of simply noting that a call came in. It is possible to then click on the task to make the call. In addition, Any.Do can respond with a text message to calls that the user is unable to take. Some of the messages include: "Sorry I am driving," "With a client," and "At the movies." More can be added if necessary. The most useful extra feature is a little program it calls the Any.Do moment. It runs at the beginning or end of the day. It takes a few minutes to run through the to-dos that a user has entered and allows them to prioritize and schedule the items accordingly. The user can also assign tasks to others who use the application. It only runs through the items due that day if done at the beginning of the day or that day and tomorrow if done at the end of the day. It allows the user to prepare for the upcoming day and see what is in store.

There is no reporting of any kind out of this tool and the missed call feature is the only form of integration it has. There are no templates.

Any.Do is easy to use; it could even replace paper if the user is never far from their phone.

Unfortunately on its own there are not enough features to make it a tool that could do project management. There is no good way to print out the tasks. The only integration it provides is the ability to transfer tasks to Google Tasks. While this tool may not be wholly efficient as a project management tool, it could be an effective part of a multi-tool solution.

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3.1.2. Wunderlist

Description: Wunderlist is a cross-platform task list application. It is designed to be a one-stop location for a user's task list no matter which platform they wish to use even if they choose to use several different ones.

Availability: Google Play, Apple App store, and www.wunderlist.com

Operating System: Wunderlist is an on-line application. The other option is to use it on both Android and IOS smart phones

Installation: None - on a PC. Available in app stores for Android and IOS.

Version: The on-line application's version is difficult to ascertain. The apps for both Anroid and IOS were released recently. The software is actively developed by Wunderkinder.

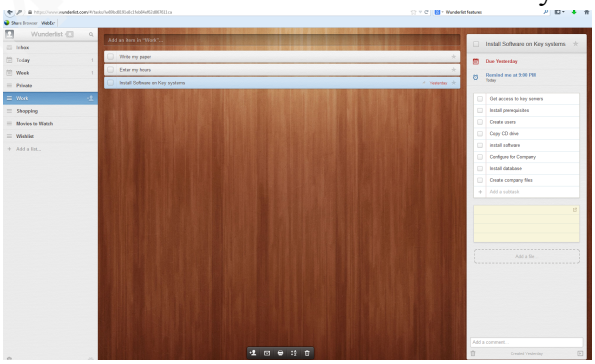
Licensing: Wunderlist is a proprietary application. The source is closed. There is a free version available to everyone but it is limited in its functionality. In order to use all the features there is a fee.

Support: There is a public forum for all users as well as an FAQ. The paid version includes additional support options.

Ease-of-use: Very easy (There is not much to do with it)

User Interface: The interface is fairly straight forward. There is not much to clutter the screen and the use is self-explanatory. The phone app is even more succinct.

Features: Wunderlist shares many similarities with Any.Do such as categorical lists, due dates, task reoccurrence, and a simple interface, but it does have some significant differences as well. Wunderlist lacks the voice recognition feature so all tasks must be typed in. Since its primary place of use is on a computer, this is not a terrible sacrifice.



Wunderlist Desktop computer

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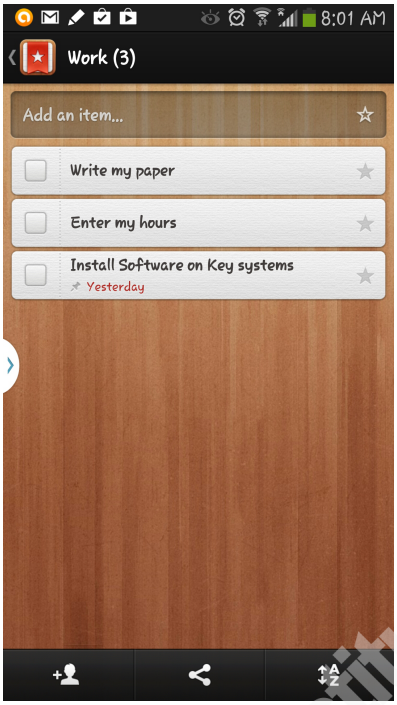
Wunderlist does not integrate into the phone, create reminders for phone calls, nor does it send quick messages to callers telling them why you could not take their call. It does however allow for subtasks, a feature lacking in Any.Do. Reporting is an option for Wunderlist where it was not with Any.Do. Therefore, if a user has that need, Wunderlist may be a better tool.



Wunderlist on a smart phone

The paid version does significantly increase its usefulness as a project management tool. The paid version permits managers to share task lists with others on their team as well as assign tasks to other team members. Attaching files and instant messaging are also available. According to the site, there is a limit on the number of subtasks permitted in the free version (Wunderlist, 2013). The site does not say what the limit is, but some experimenting reveals the number to be twenty-five.

The free product will work for a single user but if a project team wishes to make use of it the paid version will be necessary. It does not integrate with other tools; therefore double entry would be likely. However, the paid version would allow for keeping track of team members' progress.

3.1.3. mGSD MonkeyGTD

Description: mGSD is an interesting step away from the simple task list. It allows for far more interrelations between tasks. These complex relationships allow a user to better model real life, and therefore mange a more complex system than a simple task list would allow.

Availability: Can be downloaded from http://mgsd.tiddlyspot.com/#mGSD

Operating System: Works in any operating system that can support a web browser.

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Installation: Easy; mGSD consists of a single html file which contains the entire product. One must simply open the file in a browser. Some browsers have settings that prevent the saving of data to the file. At least for Firefox there is an add-on called TiddlyFox which corrects the issue (Bolle, 2012).

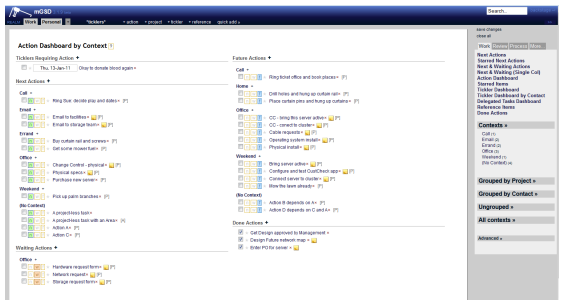
Version: 3.1.9 beta (not regularly updated)

Licensing: BSD open source license. Based on TiddlyWiki which is also under a BSD open source license.

Support: There is a website with instructions which recently moved. Unfortunately they did not update the original site (It can be found here: http://mgsd-docs.tiddlyspace.com/). There is also a Google group which has recent posts but not many.

Ease-of-use: Medium - The instructions are not complete so some experimentation is necessary. The program is based on the *Getting Things Done* book. Some knowledge of that system is useful.

User Interface: The website is based on TiddlyWiki. The site is completely contained on the host machine. Therefore, it is rather quick. It has the tendency to open many smaller windows called Tiddlers. Therefore a user must make an effort to keep the screen clutter free.



mGSD Screen Shot

Features:

At the highest level of organization mGSD has Realms. Realms, while not technically part of the *Getting Things Done* concept, allows the user to separate major areas of their lives (e.g. work, personal, and church). Each task or project can be

Realm tabs -- Click to activate/deactivate

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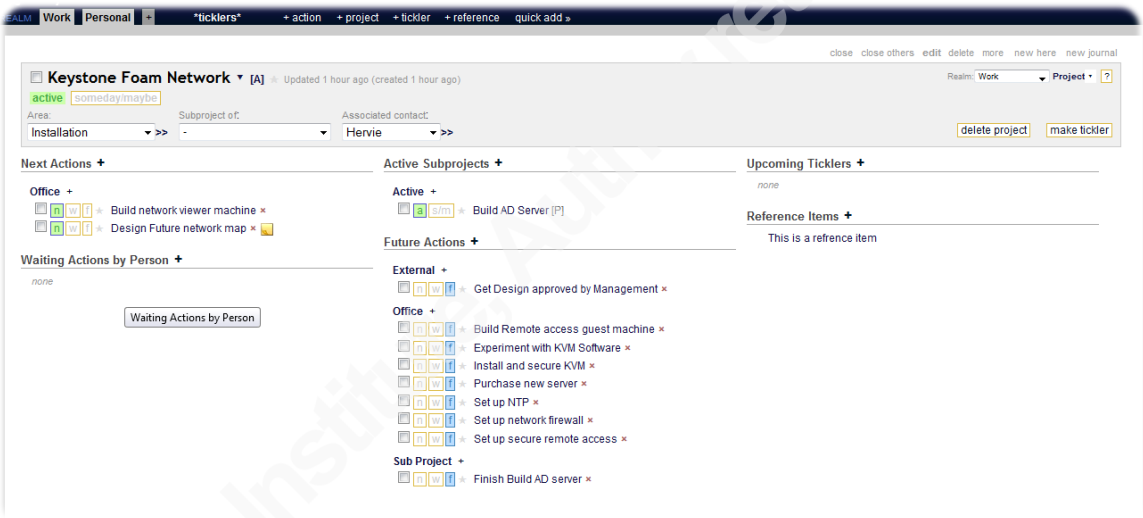
assigned to a realm; then the user can choose to activate or deactivate the realms by clicking them at the top of the screen. The program reacts by filtering all tasks to only those of active realms. It allows the user to see everything they are tasked with accomplishing or focusing their view on a specific area.

Below the realm is the project level. Projects are collections of actions (think tasks), ticklers, subtasks, contacts, and references. There is no limit to the depth of the project tree. This allows a project planner to create sub-projects out of a larger one, without needing to define the tasks and sub-projects of that activity until circumstances make clear what must be done. Project managers can also assign projects to an area but that does nothing more than allow them to segregate their projects into groups.



mGSD Screenshot of a project with several tasks, a sub project and a reference.

The parts of the project are mostly self-explanatory but they work in concert to allow for a very good view of what should or can be done next. References are areas where the user can keep notes about projects. Ticklers are reminders to the user to get a task done at a certain time. Contacts are interesting because they can refer to individuals to whom tasks are delegated or stakeholders. Unfortunately, contacts only exist as a name. No further information about them can be entered. If you look at an individual contact, the site will show the user information about any actions delegated to them or any projects to which they are associated.

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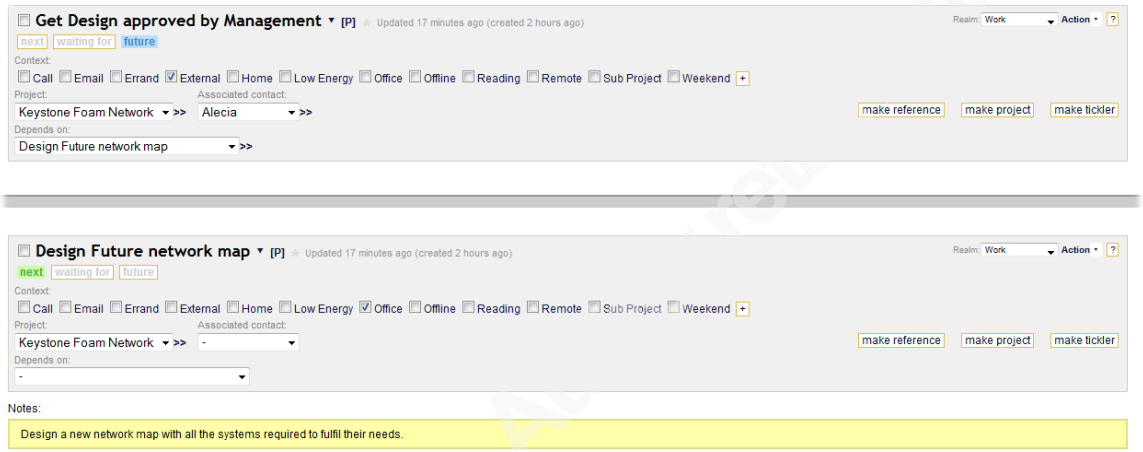
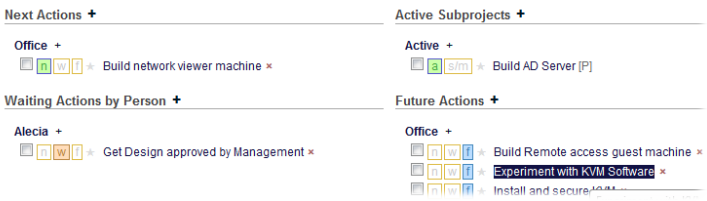
Actions are the "bread and butter" of the system. Each task is assigned a context. This is a *Getting Things Done* concept that attempts to segregate tasks into groups by location. For example, if a project manager is at work, he or she can only accomplish work-related tasks. They may need to load the dishwasher at home, but that task is impossible to perform while they are at work. One of the options is to show all tasks grouped by context so the task manager can view what can be done given their location or circumstance.



mGSD two tasks from the project above. Clicking on the task opens its detail window. All windows are displayed after one another. They can be closed individually or all at once with commands in the upper right hand side of the window with the focus.

One task can depend on another. Project managers see this all the time. One cannot start ordering new servers for a network until the new network plan is approved by the stakeholders. Just as a network plan cannot be approved by the stakeholders until it is finished and presented to them. This relationship drives the most useful feature of the mGSD tool. All actions fall into one of three categories: Next, Waiting, or Future.

These three categories are not directly controlled by the user. They are assigned by the circumstances of their related tasks. Using the example above of the network diagram, the system would track the progress of the project. At first only the design task would be considered a "Next" action. The approval task and the purchasing task would be in the "Future" state. Once the project manager completes the design and presents it to the stakeholders, the design task disappears and the approval project would move



mGSD - Once the Design action is completed the approval task is moved to next actions. Since there is nothing the PM can do but wait, they can click the "w" which moves it to the waiting area and lists who is to work on it (in this case Alecia)

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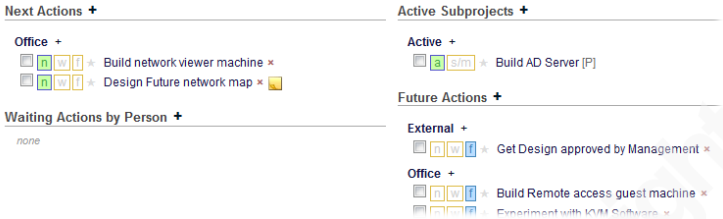
to the "Waiting On" area. Since tasks generally have a contact associated with them it is possible to sort the list of waiting tasks by those on whom the project manager is waiting. This is a useful feature for sending out reminder messages. The other useful feature is that a project manager can easily see what he can do to move a project forward. Sometimes it is not possible to take any direct action on a project except to prod others along. mGSD makes it simple to see when a project is in that state.



mGSD - Note that in the next action area Design future network map is listed. Get design approved by management is in Future actions.

Finally when approval arrives the purchase task moves to the next task group.

mGSD Sort options on the right side on the screen

At the right of the web page are links that will sort tasks and projects based on various criteria. A user looking for what they can accomplish next can list all of the next actions, regardless of the project to which they belong. It is possible to look at projects with tasks waiting on others and then dig into them to see on whom the project manager is waiting. They could also look at future tasks to better plan their upcoming time.

All-in-all it is a very different but effective tool for single users. It is fast and simple to use. A single person who manages many different projects would find it extremely useful to keep their mind straight. Someone who leads a large project team would be disappointed in the lack of options available to them. There is no way to visually plan out tasks or determine how long something will take. There are no budget tools for calculating costs.

3.1.4. Task Coach

Description: Task Coach pushes the genre of task list to its limit. Beyond this point exist full blown project planning tools. Task Coach focuses on lists of tasks and sub-tasks, but it stores and processes much more information about each.

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Availability: Download from http://taskcoach.org

Operating System: Made for Microsoft Windows-based operating systems.

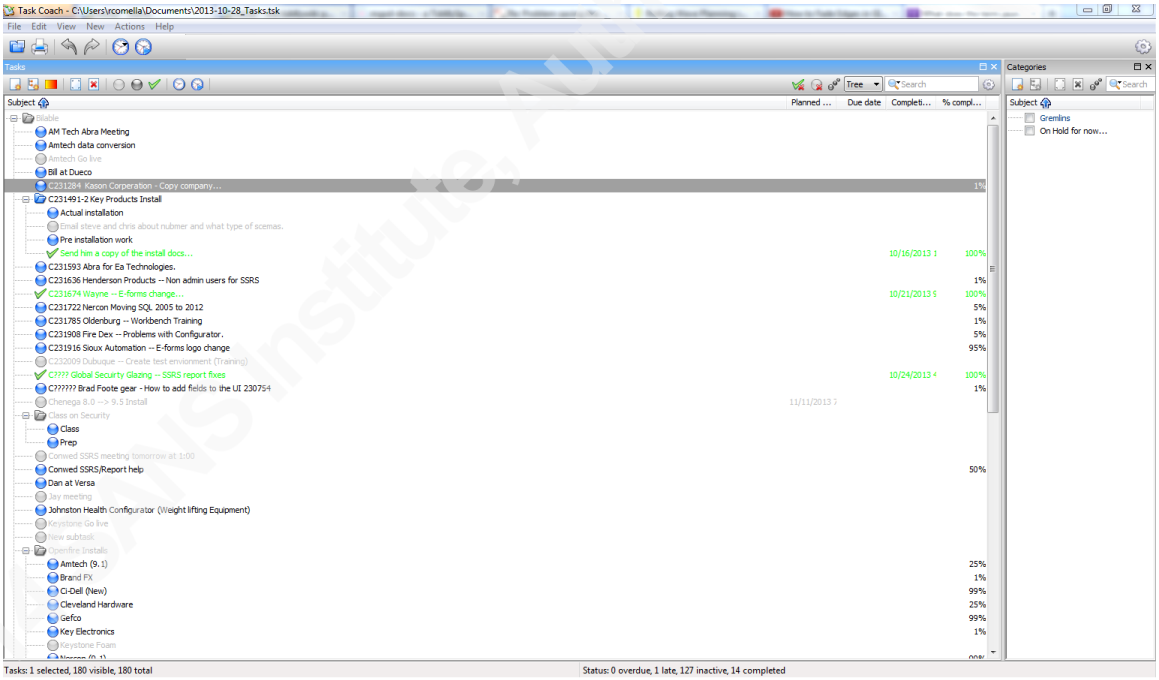
Installation: Easy - Download the software and double click to install or right click and run as administrator.

Version: 1.3.32 (updated August 27 2013) Updates are fairly regular.

Licensing: GNU General Public License.

Ease-of-use: Easy - Interface is simple to understand and there are instructions. There are lots of options, and they are well laid out.

Features: Task Coach is the first tool on this list that is not web-based in any way. The software allows users to create task lists as files. The files can be loaded, modified, and saved separately much like word processor documents or project files.



Task Coach - Main Screen with many tasks.

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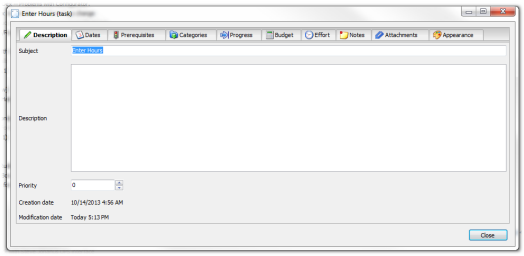
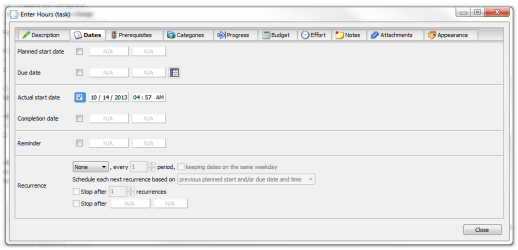
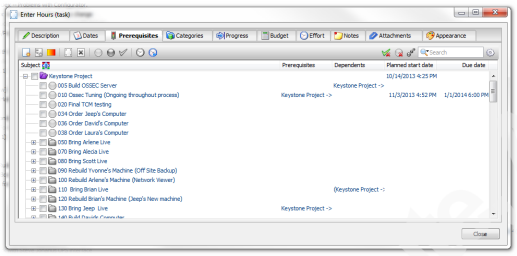


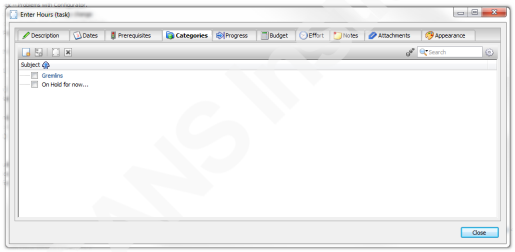
Task Coach: Description tab



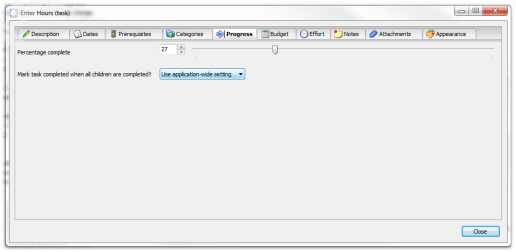
Task Coach: Date tab



Task Coach: Prerequisite tab



Task Coach: Categories tab



Task Coach: Progress tab

While the list of tasks seems pretty straight forward, the users can do a lot with each task. When a user double clicks on a task they are presented with a screen with ten tabs. The first tab description is rather self-explanatory. The Dates tab allows the user to choose planned start dates (actual start dates are stored here too) as well as planned due dates (and the actual ones too). Tasks can be set to recur if necessary as well. The Prerequisites tab allows the user to choose tasks that must be completed before a particular one can start. Unfortunately there is very little in the way of Gantt charting capabilities, so this tab is not as useful as it could be. The Categories tab allows the user to place each task into a category and then choose a color to represent it. This tab can be used in all kinds of different ways. The software allows the user to easily sort the tasks on their list by categories. The colors allow a user to see them graphically when they look at the list as a whole. The progress tab allows for the manual tracking of task progress on individual tasks. Task groups will automatically set the percent complete based on how many sub tasks are marked as complete.

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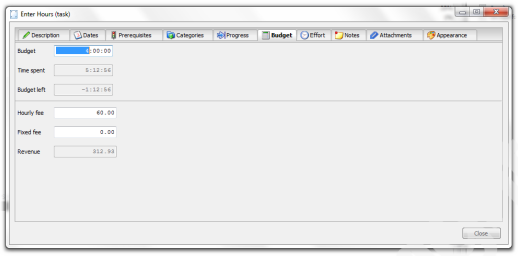
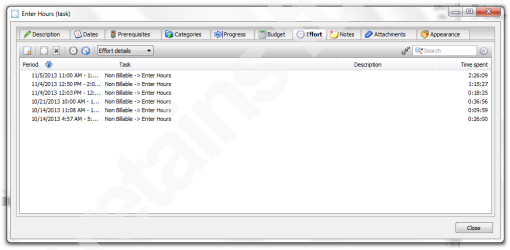
The next two tabs work in concert. The first is Budget and the second is Effort. The Effort tab allows the user to track time put forth to a task. Effort can be viewed by week or day to get a clear picture of what the user was working on. The Budget tab allows the user to set a budgeted amount of time for a task as well as an hourly rate. As effort is accumulated the time remaining is reduced. The total revenue or cost of the time on a task is also calculated.

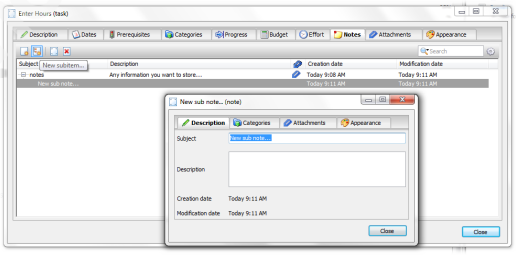


Task Coach: Budget tab – contains hourly rate field then multiplies by hours on effort tab.

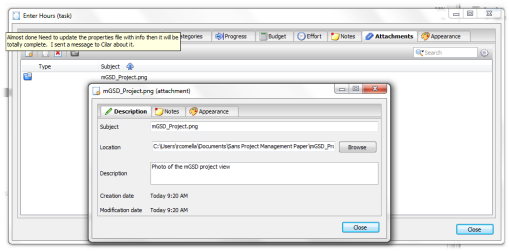


Task Coach: Effort tab – List of all work performed

The final three tabs are Notes, Attachments, and Appearance. The Notes tab allows for the creation of notes. Notes are like mini tasks within a task. Notes themselves can have sub-notes, attachments, and categories. Attachments are exactly what they sound like. They allow the user to attach photos, word documents, and other types of files to a task or note. The final tab is Appearance. It is possible to adjust things like colors and icons. It allows the user to visually separate certain tasks.



Task Coach: Creating a sub note



Task Coach: Creating a normal note

Compared to mGSD, Task Coach is not as good at displaying what is due next, but users who are diligent about setting start and end dates for tasks can come close by sorting the tasks by the column headings. A major advantage of Task Coach is its ability to track time. This function is great for any project manager who needs to log their time for billing. Task Coach is designed for a single user. Whether that is a feature or limitation will depend on the project manager. . Task Coach does have IOS extensions

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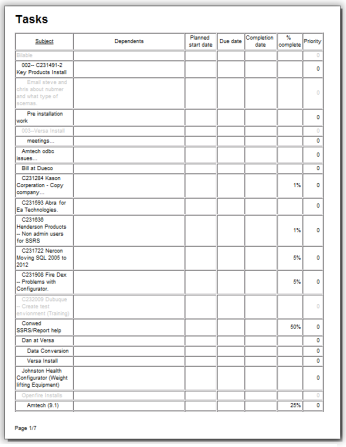
that allow users to see their task lists on their iPhones. Unfortunately the developers have no real interest in porting it to any Android devices (Niessink, 2012).

The software has few options for exporting data. They include comma separated value lists, text files, html, and iCalendar. Therefore double data entry will be necessary if a manager wants to use data from Task Coach in other programs that do not accept those as inputs.



Tasks

Subject	Dependents	Planned start date	Due date	Completion date	% complete	Priority
Bugs						
002– C231491-2 Key Products Install						0
Email steve and chris about runner and what type of license						0
Pre installation work						0
003– Versa Install						
meetings...						0
Amtech odbc issues...						0
Bill at Dueco						0
C231284 Kaeon Corporation - Copy company...					1%	0
C231580 Abra for Ea Technologies...						0
C231639 Henderson Products – Non admin users for SSRS					1%	0
C231722 Neroon Moving SQL 2005 to 2012					5%	0
C231906 Fire Dex – Problems with Configurator					5%	0
C231909 Dubuque – Create test environment (Training)						
Consied SSRS/Report help					50%	0
Dan at Versa						0
Data Conversion						0
Versa Install						0
Johnston Health Configurator (Weight lifting Equipment)						0
Overtime Details						
Amtech (9.1)					25%	0

Page 1/7

Task Coach: Print preview

Task Coach does offer a printing option. Printing is controlled by what is shown on the screen at the time. Since it is possible for a user to filter the tasks shown on the screen by completion or by category, it is possible to show only the desired tasks at one time. When the user asks for a printout they get a list of those tasks, their descriptions, dependencies, planned start and due dates, percent complete and the priority. It is rather basic; it does not even indent to show tasks and sub tasks.

3.1.5. Conclusions

These are just a few of the tools available to a project manager who needs to organize their day a little more. Most others are simply variations of the ones shown. Some of the more advanced tools do blur the lines between this group and the next. Many managers need simple tools to help them keep their minds in order. These tools can accomplish that goal and not overwhelm them.

3.2. Planning tools

The next level above the personal productivity tools are project planning tools. These are programs that are specifically written to manage projects. Tools at this level make it simpler for a project manager to track total time, project lag, budget, scheduling, critical path, and resource allocation. However, they are still aimed at the single user. The tools assume a single project manager who updates the software and then if necessary directs their team(s) using other communication tools. These types of tools can

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be effectively used in concert with some other communication tools to manage even larger projects. The tools in the group are usually easy to install and manage which makes them good choices for non-technical project managers without an IT team to assist them.

There are several major players in this group; however, they share many similarities. Therefore, it is easier to explain one, then present what makes each stand apart from the others.

3.2.1. Calligra Plan

Description: Plan is part of the Calligra office suite. There are many other tools in that suite as well, but the rest are not directly related to project management. Plan is designed to help a project manager define and track their project from conception to completion. It is for a single person to use and update. Any project manager using this software will need to use other tools to communicate what needs to be done to their team. This tool has the most functionality but the interface is a little rigid, which can make it cumbersome to use in certain circumstances.

Availability: Download and installation instructions can be found at http://www.calligra-suite.org/

Operating System: Ported to most Linux distributions and Mac. There is a highly experimental installer for Microsoft Windows.

Installation: Easy; Calligra is an installable package for Linux. Mac must download the package from the site. Windows has an MSI.

Version: 2.7.5 (updated November 27, 2013) Updates are fairly regular. The site maintains an active news feed as well as documentation. There is also a forum that is fairly active.

Licensing: GNU General Public License

Ease-of-use: Easy – Interface is simple to understand and there are instructions. There are lots of options that are well laid out.

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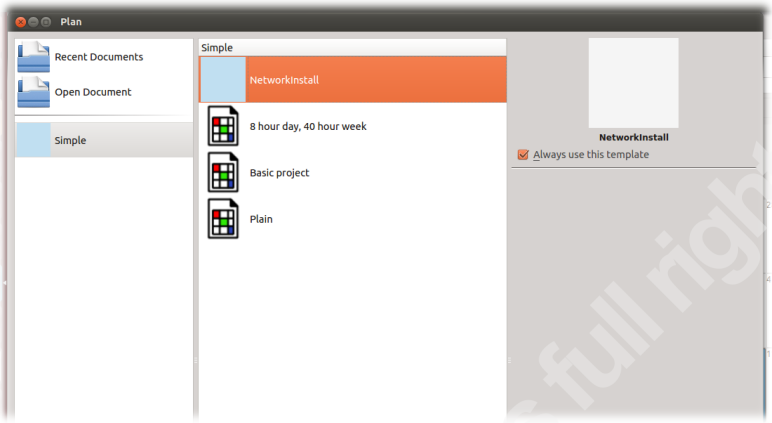
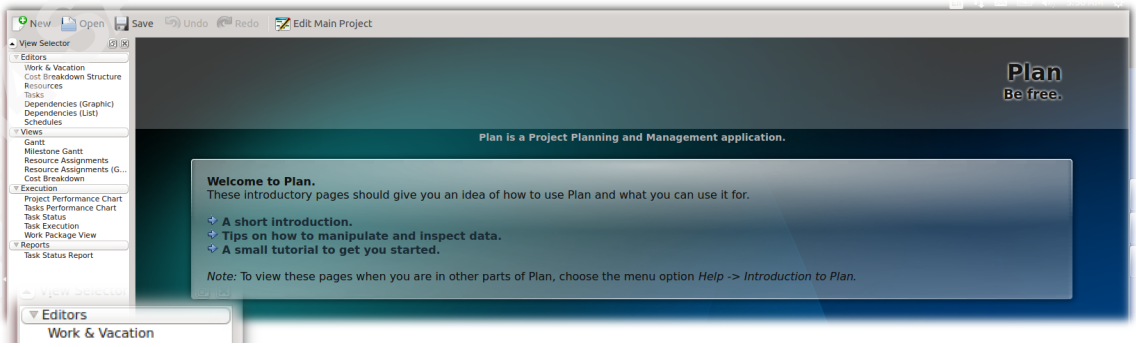
Features: When Plan is opened it presents the user with a start screen where they can open a new project file or create a new one. It is possible to create project templates by starting from scratch and then generating templates from project files. Since many of the screens, menus, and views are customizable it would be useful for users to set items the way they like, then save the template so that it may only be done once. Depending on the types of projects normally tackled by the user, the template can be as detailed or as sparse as necessary. For project houses whose projects are similar, most of the project can be made part of the template so that all a manager needs to do is change the project's specifics. For those places where projects share less in common, the template only needs to contain the absolute minimum.

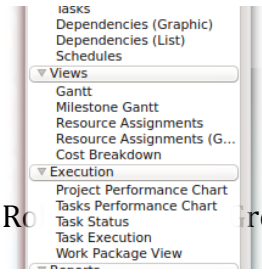


Calligra Plan: Main Start screen.

Non-Template empty projects essentially contain nothing but a list of things to do and a short introduction to the software. Despite the emptiness, it is easy to see what to do next. The list of items on the left will take the user through each of the areas necessary to plan the project. All they need to do is start at the top and work their way down.



Calligra Plan: Starting screen of empty project.



Calligra Plan: Project

The task list at the left is customizable. The version here shows nearly all of the possibilities. Some projects do not require

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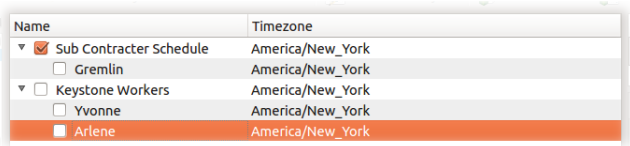
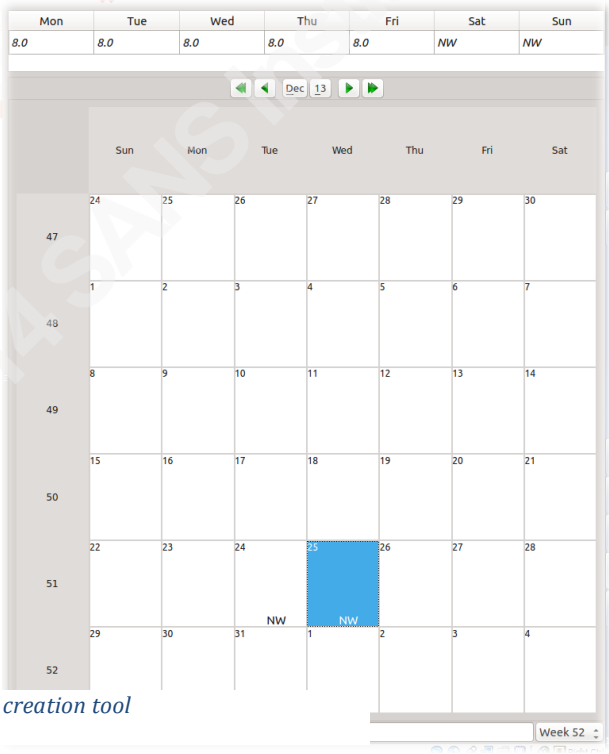
all of the options. Therefore, it is possible to remove the unwanted items to clean up the interface. Each of the items are configurable so it is possible to add more options, each with a slightly different view of the project defined. If the user starts at the top and simply works their way down, the project will be complete. It is of course possible to go back and add more detail or new records to any area after the user has moved on.

The Work & Vacation editor is exactly as it sounds. It allows a project manager to define calendars and sub-calendars. Sub-calendars contain all of the same information as the parent, but allows for changes specific to that particular sub calendar. For example, if a calendar for normal working hours contains all normal company holidays, a sub-calendar for each employee could be created to define employee-specific data such as vacations. Calendars can be dragged and dropped if they must be put under different parents.

Calligra Plan: List of calendars created.



Each calendar consists of two areas. The Week definition allows the user to set what normal work hours are for a week. That schedule is then assumed for all weeks of the year unless it is changed by the lower area of the calendar. The lower part defines which days are not normal working days. The project manager can define the day to be non-working altogether or have a shorter or longer day depending on need. Unfortunately, it is not possible to define recurring dates. Therefore the user must manually enter all holidays for as many years as the project will continue, or the time estimates will be incorrect.



lligra Plan: Calendar creation tool

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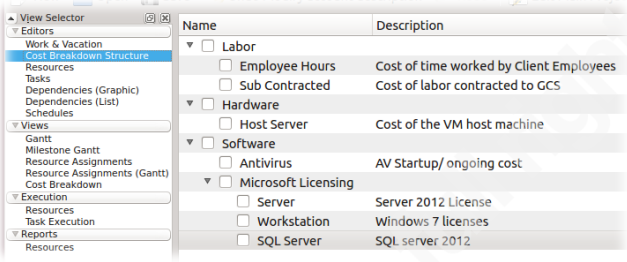
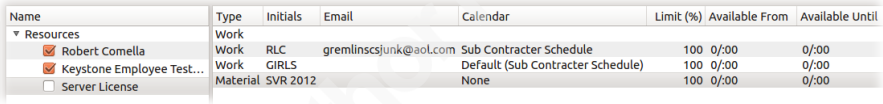
The next section down is the Cost Breakdown Structure. In this area the project's costs can be separated into accounts and sub-accounts. There is not much logic at this level of the project. These buckets will be used through the rest of the Plan tool to break up the costs into meaningful groups.



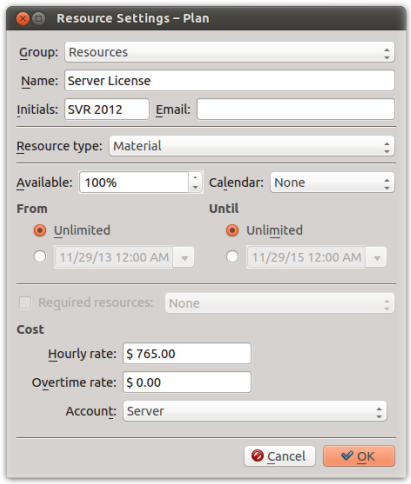
Calligra Plan: Cost Breakdown Structure

After the cost breakdown item is the Resources tab. This area allows the project manager to define the resources available to the project. Each resource can be assigned to a specific work/vacation schedule and a cost account created in the previous two sections. The Resource Settings screens assume



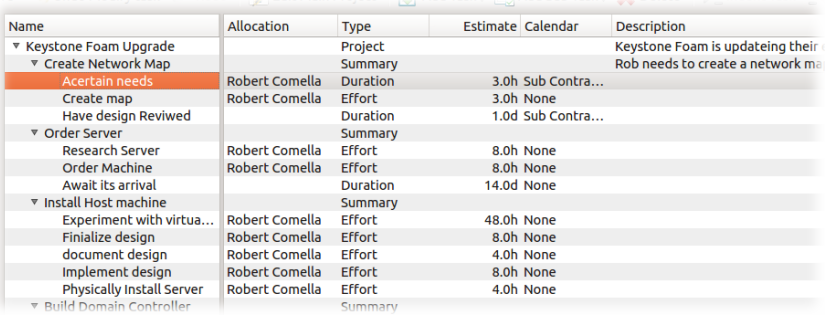
Calligra Plan: Resouce List

that resources are work or time-related. Resources that are one-time fees can be entered as well. It is possible to assign resource start and ending dates, as well as overtime rates. Once a resource is defined it can be assigned tasks.



Calligra Plan: Resouce Detail

Next on the list is the Tasks area. This is where most other tools in this group start. It is possible to skip to this section and do it first in Plan as well. Since, however, a task is not complete until a resource is added, it makes sense to, first, define calendars, cost accounts, and resources before starting on tasks. Like



Calligra Plan: Task List

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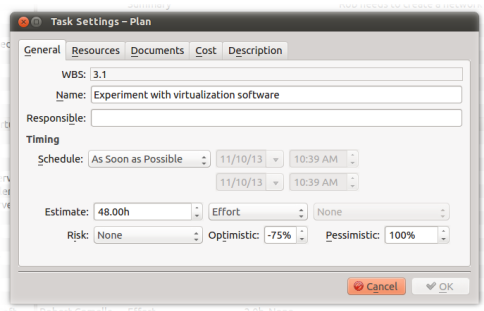
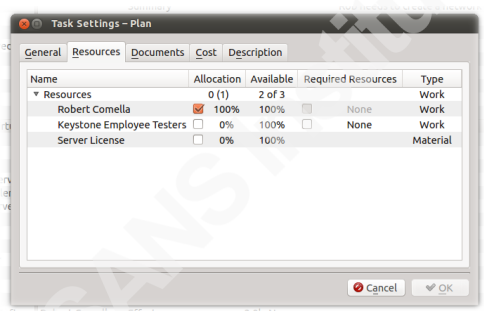
in the other systems, the entire Plan package orbits around the tasks. A project is broken up into a list of to-dos. Plan allows for multiple sub levels of tasks to break a project down into manageable chunks. Tasks, once created, can be moved from one place on the list to another by clicking on them and dragging them around.

Tasks contain many pieces of data. When the user opens a task they are presented with five tabs. The first tab, General, shows the task's position in the work breakdown structure, its name, who is responsible, and timing information. The timing information is an estimate which can be set in hours, days, weeks, or longer periods of time. Plan allows for an optimistic and pessimistic estimate. It assumes that the time estimate entered was the mean time and then allows the users to add or subtract a percentage of that time to account for variation.



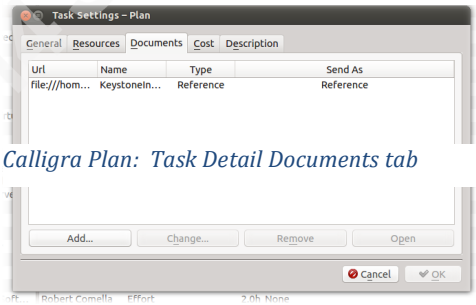
Calligra Plan: Task detail General tab

The Resource tab, as the name suggests, allows the user to assign resources to the given task. It is possible to assign percentages of resources to a task. Unfortunately, only resources that were already defined are available. Plan does not allow users to add resources here on the fly.



Calligra Plan: Task Detail Resouces tab

The Documents tab allows the project manager to assign external files to the task. The object of this function is unclear. The instructions do not mention it and once the document is linked, there is not much the user can do with it.



Calligra Plan: Task Detail Documents tab

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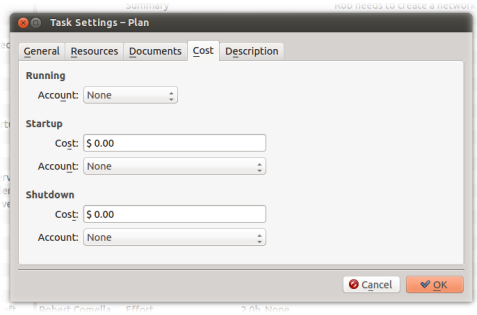
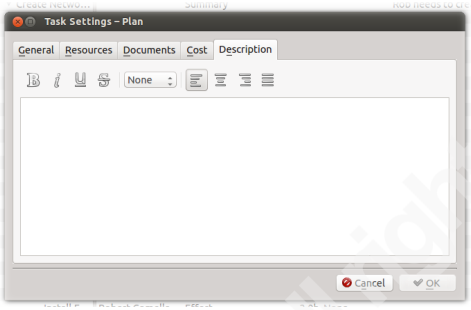


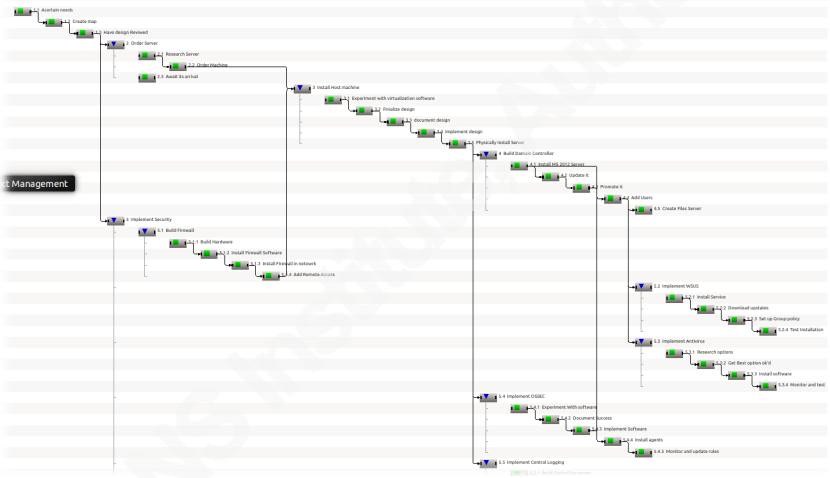
Calligra Plan: Task Detail Cost Tab



Calligra Plan: Task detail Description tab

The Cost tab allows the project manager to input costs of the task itself above and beyond those of the resources it uses. The accounts must be defined in the cost breakdown structure before they can be used here.

The final tab is Description. This tab is nothing more than a note field. It is possible to keep notes about the successes, failures, or ongoing progress of the task.



Calligra Plan: Zoomed out view of task relationships

Once a number of tasks have been entered into the system, the next step is to relate them. Plan offers two methods of defining the relationships between tasks. The simpler of the two is a graphical screen that allows the user to simply click on the end of one task and drag to the beginning of another task. Once the tasks have been linked, the arrow between the tasks can be selected and the type of relationship can be defined (SF, FF, or Lag). Unlike many other areas of the software, it is possible to add new tasks from within this screen just in case the user remembers a new task while assigning relations. New tasks can be entered on the spot. The individual tasks themselves can be edited from this view as well. All tasks are shown with equal length icons even though the screen looks like a Gantt chart.

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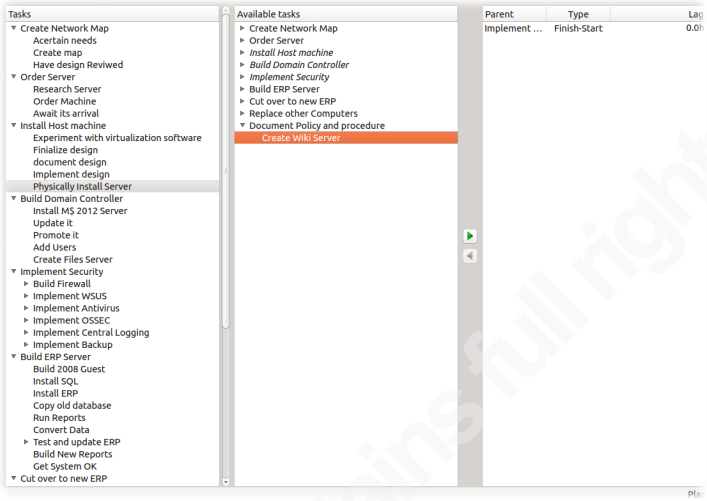
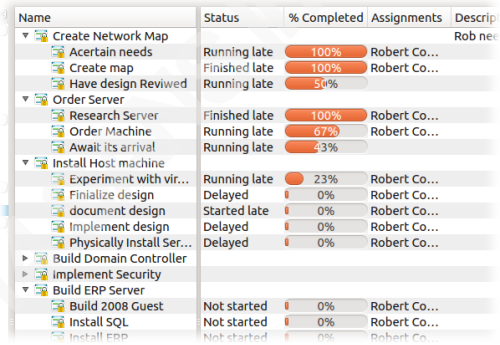
The second way to assign relationships is to use a list tool. While effective, it is not as easy as the graphical map. Sometimes though, tasks are so far apart on the list that this tool makes it a little simpler.



Calligra Plan: View of the list relation tool

Plan has a function called Schedule. It will attempt to create a project projection given the schedules of the resources and the tasks that were assigned to them. It automatically levels the resources for the user. This generates a fairly accurate time line assuming that the resources stick to the schedule entered and the estimates are accurate. It will also attempt to create an order to the steps fitting them in appropriate places to take up lag and utilize resources as effectively as possible. The computer is efficient at leveling the resources, but some tweaking is often necessary. Once the schedule is calculated, it can be set as the baseline to which the execution of the project is compared.



Calligra Plan: Execution monitoring

Once a project is planned, the manager can track the progress of the project using the tool as well. While the project is executed, Plan has a screen called Task Execution that lists all the tasks and their respective completion levels. In addition to the detail area of each task, a task has another set of tabs that relate to progress. While Plan does not time tasks like Task Coach, it is possible to enter hours against each to tally the actual costs of the resources. It is also possible to simply assign a percentage complete. That will assume that the hours in the estimate were accurate and then add the appropriate amount.

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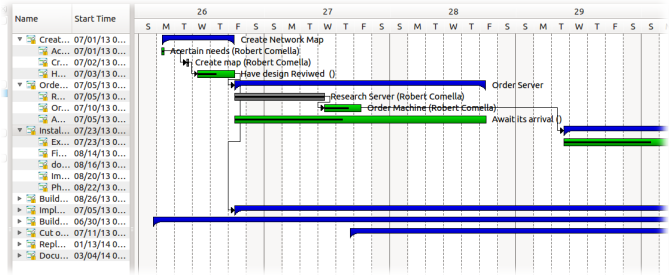
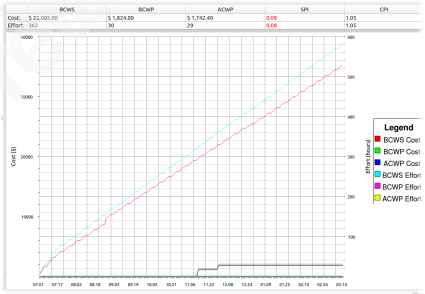


Calligra Plan: Gantt Chart report

Plan has many reports. Many of the tools mentioned so far have their own printed report. Reports can be printed directly or output as PDF files for easy e-mailing. There are several views specifically designed for reporting including Gantt, Resource Gantt which shows where a resource is utilized, a project performance chart which shows actual vs. planned in a graph, and cost breakdown which shows budget vs. actual. If none of those reports are satisfactory, there is a report area that allows the user to create reports based on any data in the system. However, the interface is not visually appealing and reports take a long time to build. The good news is that once they are built, they can be stored as a template for future use. With all the choices, reporting to project stakeholders is something that Plan will do well.



Calligra Plan: Cost budget vs. Actual

Since this tool is designed for a single user, there is no reporting option for the project manager regarding team progress. That data can be tracked but it must be entered by the managers themselves. The data will have to be obtained through other means.

Plan is a very capable tool. It does not integrate well into any other pieces of software. Therefore a project manager will be forced to use another program to get data from his/her teams or to communicate with project stakeholders.

3.2.2. Gantt Project

Description: Gantt Project is a very simple project planner. It does not have many bells and whistles but it is fast.

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Availability: Download and installation instructions can be found at www.ganttproject.biz.

Operating System: Windows, Mac OSX, and Linux

Installation: Easy; Gantt Project is an installable package for Linux. Mac must download the package from the site. Windows has an Executable.

Version: 2.6.2-r1544 (recently updated)

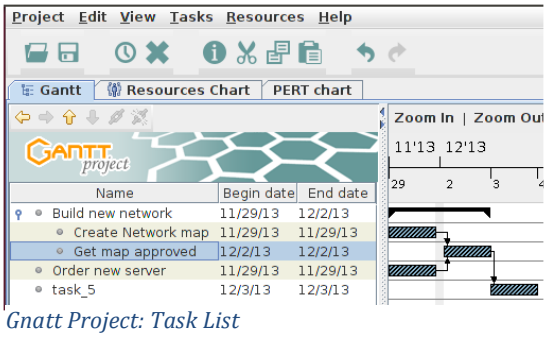
Licensing: GNU General Public License version 3

Ease-of-use: Easy – Interface is similar to most tools in the genre. It is fast.

Features: Gantt Project is a far more simplistic piece of software than Plan. It has the basic layout of Plan but far fewer features.

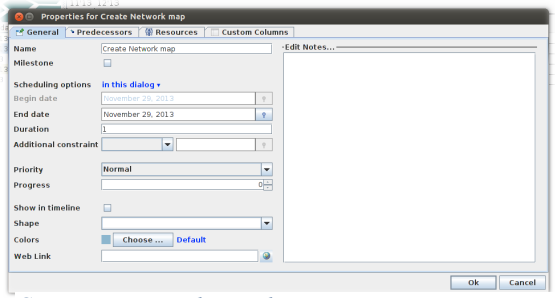
Resources are simply names with a few pieces of data. The program provides for a schedule but only one. On the plus side, it will bring in national holidays for several different countries.

Tasks are easy to enter (easier than in Plan) but that is because there is less detail in each. Each task has a name, beginning and end date, a duration (which is only in days with no shorter options available), progress, and priority. Priority is something that Plan did not include. It is possible to assign a Resources category just like in Plan.



Gnatt Project: Task List

Similarly to Plan, the relationships between the tasks can be defined by dragging and dropping the task lines in the Gantt chart. The links set up this way are only finish-to-start type. If they need to be changed it must be done inside the task. Once all of the links are established the system



Gnatt Project: Task Detail

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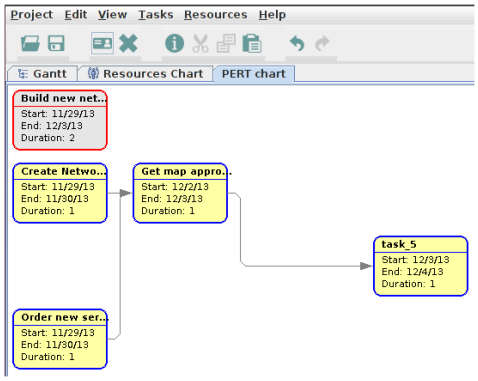
will automatically highlight the critical path of the project but it will not level the resources.



Gnatt Project: Pert Chart

One of the more unique features of Gantt Project is its ability to produce a pert chart. The tasks are linked in the chart and it makes for a nice looking view of the project. Unfortunately it does not go beyond that. The user cannot manipulate the chart in any way.

Due to its speed and lack of detail this is a quick and dirty tool. Its simplicity makes it portable. In fact some of the larger project planning tools discussed later use Gantt Project as their front end for creating task lists and putting together a Work Breakdown Structures. As a tool, there are better options. If, however, it is used in conjunction with a larger solution, it can be said that Gantt Project simply focuses on what is important – creating a great Gantt.

3.2.3. ProjectLibre

Description: ProjectLibre claims to be the open source replacement for Microsoft Project. They come close but don't quite have everything yet.

Availability: Download and install instructions can be found at www.projectlibre.org.

Operating System: Windows, Linux (RPM package)

Installation: Easy for Windows but does require Java installed before running the .msi. Linux is easy on machines with RPM package handlers. For distributions based on APT it is necessary to use alien which complicates matters a little.

Version: 1.5.7 (recently updated)

Licensing: Common Public Attribution License Version 1.0

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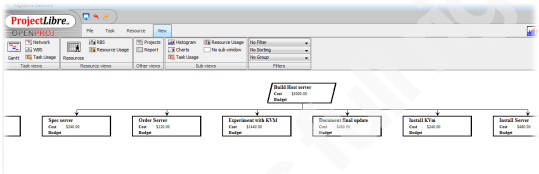
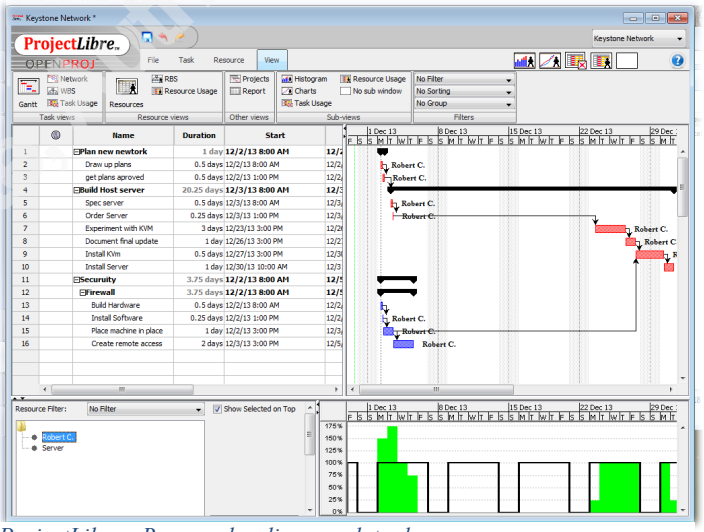
Ease of use: Easy – Interface is similar to most tools in the genre. The spreadsheet-like input for tasks and resources make it very quick to add new resources. Unfortunately there is no direct way to move tasks around once they have been put into the list. However, it can be done through the WBS screen.

Features: ProjectLibre is one of the most mature offerings in the genre of single user project planning tools. It shares many of the features with Plan. Some features such as data entry are better. The more spreadsheet-like entry form is simpler to use. It expands the graphical planning idea a little further by adding a work breakdown structure (WBS) view of the project that shows in pictorial format relationships between parent and sub-projects.



ProjectLibre: Work breakdonw structure view

It does, however, lack a few things that Plan does have. The most notable is the resource leveling feature. It tries to make up for it with a rather useful Task Usage view which shows over-commitment of various resources. The user is then able to move tasks around the Gantt chart to level the resources manually. According to the forum, they are working on a resource leveling program but there is no promise of when that will be included (Marc, 2014). ProjectLibre also does not have the reporting capabilities that Plan has. It is a well laid out and capable tool. Users should try this one and Plan to see which they prefer before making a final decision. It, however, does have some ability to integrate with larger pieces of software. ProjectLibre is not the one who creates that synergy. Other packages have recognized that it does its job well and have written their software to allow for its inclusion.



ProjectLibre: Resouce leveling graph tool

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3.2.4. Conclusions

The tools in this section are designed for smaller projects. Some of the larger tools in the next section do not actually help plan as well as these tools do. As such, the big management solutions tend to use some of the more popular tools in this area. Tools of this group can be incredibly useful even by themselves. People have managed large projects with them.

3.3. Complete Project Management solutions

The top of the project management market are those tools that bring everything together into one piece of software. These packages are meant for project managers that run projects on the corporate level. They are no longer simple programs that are installed on a desktop; they are client server solutions that can be accessed by anyone in the company around the world. This kind of solution brings with it some baggage, but it can be incredibly powerful.

When considering solutions like these, support is a big consideration. These solutions tend to be complex and can be implemented differently or even customized to suit the needs of the project house that implements them. The leaders in this tend to have paid support for their open source offerings. When making a decision on which software to install, it may pay to consult those groups to get questions answered.

3.3.1. Project Open

Description: Project Open, which is often "enclosed" in backwards brackets to emphasize their openness, is a large system meant to track projects as they are implemented. It includes CRM, collaboration tools, resource management, time-sheets, and even some billing.

Availability: Download and installation instructions can be found at www.project-open.org. Their site is very extensive. There is a great deal of information about the product itself and how to install and configure it. Demo sites, tutorials, and how-to's are available.

Operating System: There is a Windows installer if the company wants to install it locally on a system. They also offer native installers for Ubuntu and

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RHEL/Centos. At this point, Project Open says there are problems with their Debian installer. There are also several SAAS solutions.

Installation: Windows install is not too difficult. The install is rather automatic. The Linux versions are not simple. They require quite a bit of knowledge of how the systems work. The instructions are thorough but by no means for the beginner (Project Open, 2013). If someone who is not technically savvy wants to use this software it would be best to stick with the windows install or use one of the SAAS solutions they offered.

Version: 4.0

Licensing: There is a mixed source model according to their site. The commodity modules are truly open source and maintained by the community. It carries a GPL and a Free License. Some of their modules, however, are closed source and available for purchase (Project Open, 2013). For full details it is best to go to the site itself: www.project-open.org/en/project_open_license.

Ease of use: Project Open does a great many things. It is web-based and each screen is fairly easy to understand, but there are hundreds of different functions and areas of the software. While each may not be difficult to understand or comprehend, the entire piece of software requires one to know how each piece reacts with the others. This will take some time.

Features: Project Open is less about project planning and more about project administration. In fact, they are so focused on the project administration that they don't even try to make the planning portion of a project simple. They recommend that a project manager download Gantt Project and or OpenProj/ProjectLibre to do the planning portion of a project. OpenProj is the abandoned project from which ProjectLibre was created (Project Libre, 2014). Once the tasks are entered and linked into those pieces of software, the project can be imported into Project Open (Project Open, 2013). It is possible to make simple changes in a project plan after it has been imported, but if massive changes are necessary it would be best to export it to Gantt Project, make the changes, and bring it back in. This reliance on other project management tools allows each group to focus on what they do best.

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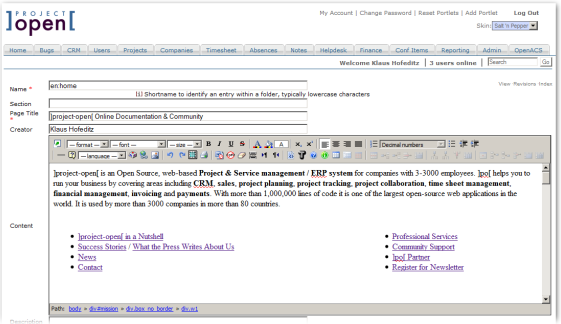
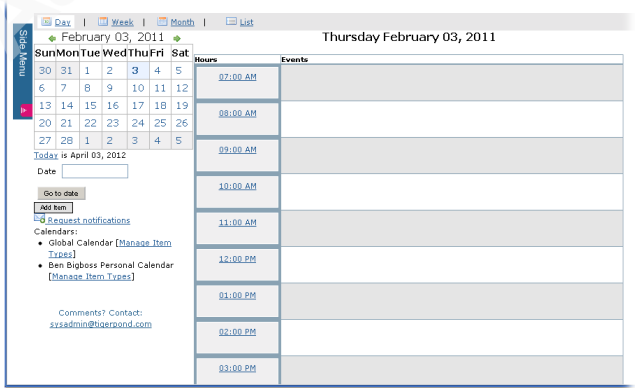
Project Open has many different modules and the modules are in turn made up of different areas. To fully explain everything would be a course in and of itself, both of which they proudly offer. The Project Open website has massive amounts of data and they do offer paid courses on how to best utilize their software. Below is a quick summary of what exists in the software.



Project Open: Wiki page creation tool

The Collaboration and Knowledge Management (CKM) module, does its best to collect all project information into one place. There, it can be perused and updated by project managers, team leaders, end users, and stakeholders. It supports a media Wiki server where data and files can be uploaded for all to see. The interface the user sees while editing is almost identical to the final product, which is great for those who do not know the Wiki formatting. Threaded discussions can be handled through their forum engine. The discussions can be secured so that only certain users have the ability to contribute. All the discussions are indexed by a full text search engine which allows users to find information they require. There are public and private calendars that show important overall project details or specific due dates for users. This module also allows for the creation of simple surveys as well as idea management. The idea management feature encourages others to put forward ideas and have others vote on which ideas should be implemented. Finally, it is possible to associate e-mail with various projects to keep track of communications.



Project Open: Personal todo/calendar

Project Open's finance module allows a company to track project resource and manage costs, expenses, and budgets. It goes beyond project management into accounts payable and receivable as well as billing. Project Open allows users to track their time

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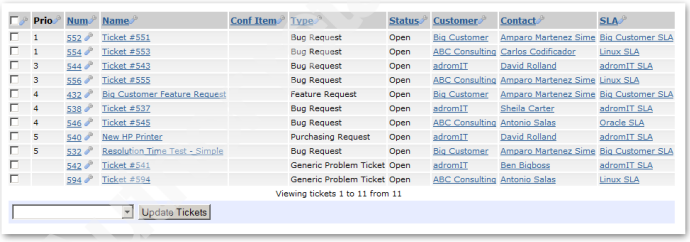
against various projects as well as report their current status. This data can then be used, along with the expense data, to generate invoices for customers. For very large or international projects multiple currencies can be implemented within the system.

The Human Resources (HR) module keeps track of current employees and external resources available to the project manager. This module maintains their schedules so a manager knows when a resource is available and when it is not. A more interesting feature is a skill management area. Here, one may track the various skills of internal and external resources. It allows a manager to more easily find the right person for a specific job.

One of the larger modules is the Information Technology (IT) Services Management Module. Its primary focus is incident management. In this case they are speaking more along the lines of service tickets, but any sort of incident can be reported using this tool. It will even integrate with external systems such as Nagios or Big Brother. On the other end it assists with the release of software. This is only really interesting to those companies whose primary business is software development.



Prio	Num	Name	Conf Item	Type	Status	Customer	Contact	SLA
1	552	Ticket #551		Bug Request	Open	Big Customer	Amparo Martenez Sime	Big Customer SLA
1	554	Ticket #553		Bug Request	Open	ABC Consulting	Carlos Codificador	Linux SLA
3	544	Ticket #543		Bug Request	Open	adromIT	David Rolland	adromIT SLA
3	556	Ticket #555		Bug Request	Open	ABC Consulting	Amparo Martenez Sime	Linux SLA
4	432	Big Customer Feature Request		Feature Request	Open	Big Customer	Amparo Martenez Sime	Big Customer SLA
4	538	Ticket #537		Bug Request	Open	adromIT	Sheila Carter	adromIT SLA
4	546	Ticket #545		Bug Request	Open	ABC Consulting	Antonio Salas	Oracle SLA
5	540	New HP Printer		Purchasing Request	Open	adromIT	David Rolland	adromIT SLA
5	532	Resolution Time Test - Simple		Bug Request	Open	Big Customer	Amparo Martenez Sime	Big Customer SLA
	542	Ticket #541		Generic Problem Ticket	Open	adromIT	Ben Bigboss	adromIT SLA
	594	Ticket #594		Generic Problem Ticket	Open	ABC Consulting	Antonio Salas	Linux SLA

Viewing tickets 1 to 11 from 11

Update Tickets

Project Open: Incident management system

The reporting options of this system are massive. Most of the various pieces of the modules have reports that can be printed. The system is designed to be a multi-user system so it makes it easy for project teams to report their progress to the project managers from within the software. The manager can in turn take the tallies and report the progress of the project to the stakeholders.

Project Open has many tools to help a project manager manage multiple teams to bring a project to a successful completion. It is also a tool for the ongoing maintenance of the product. It does not even try to deal with project planning, but it leaves that to other open source tools. If there is a problem with the tool, it is that the tool is

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comprehensive. If an organization is not willing to embrace this tool and use it across the company, it will be too much to keep up for the single user.

3.3.2. Redmine

Description: According to their site: "Redmine is a flexible project management web application. Written using Ruby on Rails framework, it is cross-platform and cross-database." The most interesting feature of Redmine is its modular design. Anyone with knowledge of Ruby can create expansion modules of which there are many.

Availability: Download and installation instructions can be found at www.Redmine.org. The site does contain a Wiki that has many of the instructions for the main system. The expansion modules have varying levels of instruction.

Operating System: Redmine will run on most Linux, Mac, and Windows platforms. The server requires Ruby be installed. It also needs a database back end and a web server. Redmine supports Mysql, Postgresql, Microsoft SQL, and even sqllite3. It requires an Apache web server.

Installation: Redmine's website has detailed instructions on how to install the software in many of the major Linux and UNIX distributions. There are instructions for Microsoft-based operating systems as well. The instructions are written by IT experts for IT experts. The instructions do not include all of the appropriate security precautions. It is up to the installer to know.

Version: 2.4.1 is now available. Redmine releases a stable version every six months. It is possible to get the interim versions as well but they may break so they are not recommended for production use.

Licensing: GNU General Public License v2. The plug-ins are not generally under the GNU license. The best ones are commercial.

Ease of use: Redmine was originally built to handle software projects. Some of the terminology still remains. The site does take getting used to but it is responsive.

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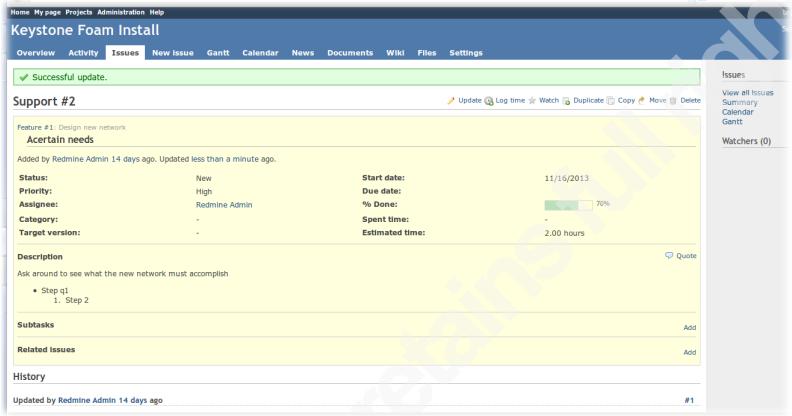
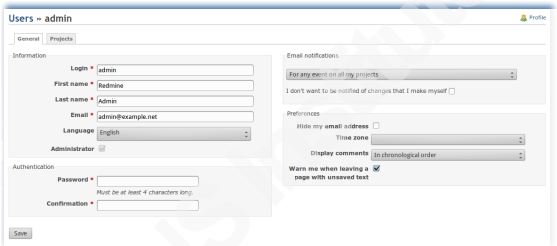
Features: Redmine is rather amorphous. Due to its modular nature it is possible to customize Redmine's functionality greatly. The core system will work for smaller applications. It does not have all the features of Project Open.

The core system tracks "issues." If a user were to replace the word "issue" with "task," the vocabulary makes a little more sense for project management. Issues have many of the same data points that tasks do in other systems like categories, resource assignment, start and dues dates, priority, and time estimates. Different users can log into the system and view the issues that have been assigned to them. When they work on the issue they can track their time against that issue. When it is complete, they can mark it as such.



Redmine: Issue or "Task"



Redmine: User manager

"Users" are Redmine's label for resources, but it goes well beyond simple resources. The user is the basis of the security model in Redmine. Users are granted or refused access to various parts of the program, including different projects, and so on. There are groups as well, and users can belong to those groups. Groups can be assigned access and privileges, and the users in those groups are granted the same access. The vanilla software does not track schedules.

It has some minor support for a Gantt chart but it is not easy to use. There is a free plug-in that significantly increases the usefulness of the Gantt chart. It is called, not surprisingly, Better Gantt Chart. The original Gantt chart will only show events that have assigned starting and due dates. In addition to the Gantt chart there is a calendar which shows when issues began and when they are due.

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A newsfeed allows users to disseminate information about what is going on with a project. The news will show up on the overview page of the project so that anyone who is involved with the project knows that something happened. Additionally, anyone following the newsfeed of the project will get a notification. Authorization to post news items is dependent upon users and groups.

The Documents tab allows files of any kind to be linked to a project. Network maps, printed documentation, or policy and procedure documents can be associated with a project. Once linked, they become links on the site. Users can click on them and download the document. By default the document can only be five megabytes, but that can be changed in the properties section.

Finally, there is a Wiki devoted to a given project. There are some buttons at the top of the edit page that will automatically add the various Wiki tags to the data on the page but the edit screen does not show the exact look of the final page. Users must be familiar with the Wiki tags. One of the nicer features the vanilla Wiki has is the ability to output its information as a PDF document.

The vanilla software does not have much in the line of reporting or integration. The activity screen is convenient as it will detail who has done what with a project. Unfortunately, the only real output is the Gantt chart and the Wiki pages. Plug-ins provide most of the integration with other pieces of software.

While the vanilla software does not have all the tools a project manager may desire, it is possible to augment Redmine with plug-ins. In order to turn Redmine into a tool that is on par with a product such as Project Open, a company may have to apply some capital to purchase some of the paid plug-ins. EasyRedmine offers several high-end plug-ins for the software but they can be costly. Russ McRee, on the other hand, detailed how he combined a few free plug-ins to create a fairly robust system for managing projects. Russ details his solution in a SANS Reading Room paper called *Implementing Redmine for Secure Project Management*. Not only does he discuss some useful plug-ins, he details how to install Redmine in a secure fashion.

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4. Conclusion

Project managers have many different tools from which to choose. They must select the tools that will best fit their needs and technical capabilities. Many times, the best solution is a number of tools working in concert with each other.

While the time management tools may not cover many features as project planning or project management tools, they are still great tools for keeping the day organized. Since most of them work with cell phones, and because project managers carry their cell phones at all times, it is possible to use the tools to make a note of anything that pops up. To paraphrase David Allen, one should keep an empty mind. When inspiration strikes, note it immediately. Any.do or Wunderlist allows a user to do exactly that. Later, when the manager is at their computer they can transfer those ideas into the software of their choice. For the simplest projects an advanced task list like Task Coach or MGSD may be all that is required. More complex tools may have more features, but they are more work to maintain.

Project planning tools allow a project manager to create a project plan such as listing the tasks, defining the relationships, and estimating times. Some, like Plan, then allow a single user to monitor a project's progress. That is great if the team is small or a single person. Though the single user interface limits their scalability, they are still relatively simple tools to install and maintain. ProjectLibre and Gantt Project can be used by themselves as well, but since another project selected them, the work done in these tools can be leveraged by a much more powerful system.

The most powerful project management tools can do many things. They integrate into many different areas of a business and can be extremely helpful tools to manage resources, time, and even accounting issues. They can be used to track progress of teams or individuals and then report on the progress of the project to the stakeholders. Their extreme breath of usefulness, unfortunately, causes them to be complex tools to install, learn, and administer. More is not always better, but sometimes it is necessary.

Reading about the experience of others, and exploring what they found useful should aid decision makers. Their opinions can bring to light needs that were previously

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unknown. In the end, the user must fairly compare the pros and cons of each tool and come to their own conclusion.

This is, of course, not an exhaustive list of tools. There are dozens more available now and more being created each day. Competition is good. It will result in better tools for everyone.

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