

Competitive Analysis

For the Europa Clipper Mission
Scheduling + Planning Project

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Assessment Criteria

General Structure

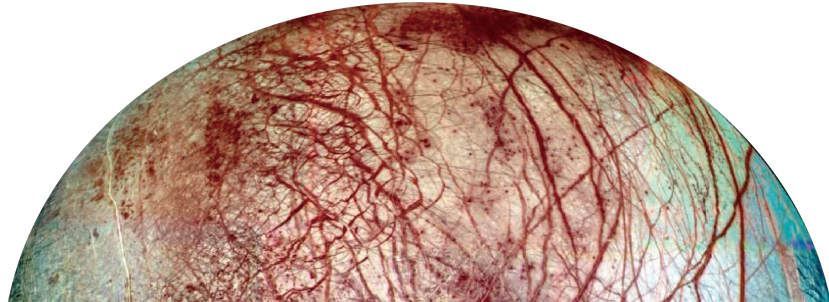
1. Tool Name
2. Tool Description
3. Target User
4. Tool Type: Planning, project management/collaboration, visualizing, merge conflict
5. Features
 - a. Screenshot(s) (each category if applicable)
 - b. Grade rating - A, B, C, F (no major issues, few issues, lots of issues, unusable)
 - c. Assessment - 2-3 sentence max description of what the tool does well and what needs improve

Categories Of Assessment

- Error Discovery
- Memory Load
- Flexibility
- Visibility of System Status
- Recommendations
- Timelines
- Other Notable Visualizations
- Zoom
- Filter
- Save for Later
- Learnability / Help

Overall Synthesis

It was interesting to see industry applications with functionality that we could imagine being applied to such a specialized context as JPL operations. Many of the tools we analyzed were only tangentially related to our problem space, but within the context of each application there were many lessons to be learned about topics important to us, especially the visualization of time, errors, and system status, as well as error explanation and handling. Also importantly, many of the applications we looked at were good examples of interfaces that were easy to learn - we were looking at most of them as beginners ourselves and no one had too much difficulty analyzing them.



Design Recommendations

Tools Should be Flexible to Fit Unique Use Cases

A rigid tool may work well for its one intended use, but having a tool flexible enough to fit a user's unique needs and various requirements at different phases of a project.

Responsive Grid Structures

Many systems utilized 3 column grids or something similar to help organize the information but also gave clear breakpoints to make the tool also responsive on multiple devices.

Actionable Visualizations

Having visualizations indicate statuses is helpful when you can easily find more information or act upon what is shown.

Flat Vector Shape Overlays

Using flat vector shapes are useful as callouts to illustrate important characteristics of a complex visualization.

Design Recommendations

Instant Technical Help

Besides that it is necessary to provide tutorial/user guide to help users familiarize functionalities, instant help responding to user's doubts on interactions/functionalities is important.

Clear Visual Hierarchy

A rigid tool may work well for its one intended use, but having a tool flexible enough to fit a user's unique needs and various requirements at different phases of a project.

Familiar Interaction Patterns

Know your user well enough to know what software they use and model interaction patterns to fit what they already know. This saves on the need to teach users new interaction patterns that might cause confusion.

Implementations to Avoid

External Help

Having an external help center can be used to fill in the gaps for usability problems. Ideally, we should make any help needed contained in the interface being used.

Too Many Icons with No Labels

Some systems have entirely too many icons to memorize. Too many icons obfuscate what affordances are available and require the user to memorize what each each symbol means.

Oversimplification

Some systems oversimplified their UI as a result it's hard to discover additional features without going through external documentation or tutorial help from external users.

Poor visual hierarchy

Visual hierarchy is extremely important for learnability. It helps the user know what elements and actions are related, and thus what actions will affect which elements of the interface. Organizing the layout simply because it “fits” is poor usability.



Reflection

We began our competitive assessment by collectively identifying tools and products that fit our areas of interest: Planning, project management/collaboration, visualizing and merge conflict. The industry specific planning tools we assessed were EUROPA, SPIFe, and ILOG. However, we ran into implementation and code issues that are still a work in progress with our experts. As a result, our competitive analysis assesses only mainstream software (except Cosmographia). We learned that Zoho Projects is best at visualizing timelines and stakeholders while Cosmographia is weak because it is very difficult to adjust timelines. As we continue to go through the planning software recommended by our experts, we are confident that we will discover crucial elements to design for but potentially poor execution (as learned through our interviews). In our design process, we will need to adapt with the high polish of industry software to the requirements of our users. We learned the importance of setting guidelines for this type of analysis and to frame them within the context of our project. While conducting assessments, we paid special attention to features that related to the needs of our users, which ended up generating lots of ideas about how we might go about tackling our problem space.

JIRA

Description

A project management tool for agile software development. Plan, track, and see statuses on the entire product development and support pipeline.

Target User

Project Managers on Development Teams

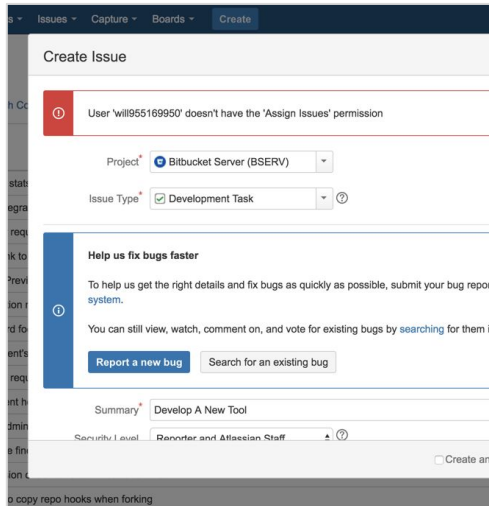
Type

Project Management

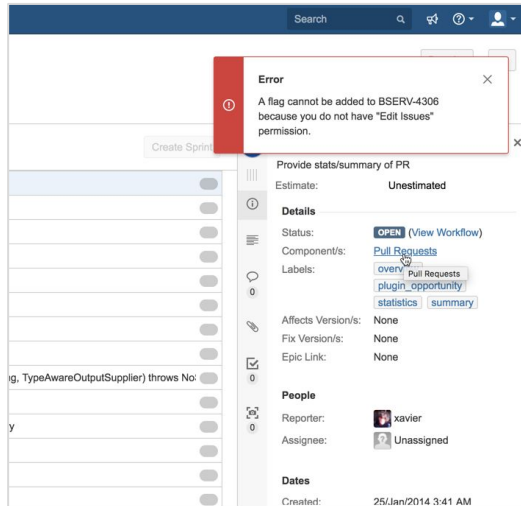
The screenshot shows the JIRA Board interface for the 'Teams in Space' software project. The interface is divided into several sections:

- Navigation Sidebar (Left):** Contains icons for Backlog, Board (selected), Reports, Releases, Components, Issues, Repository, Add item, and Settings.
- Board Header:** Displays 'Board' and 'Quick Filters'.
- Columns:** The board is organized into four columns representing different stages of the workflow:
 - TO DO 5:** Contains three items: 'Engage Jupiter Express for outer solar system travel' (assigned to SPACE TRAVEL PARTNERS, due TIS-25), 'Create 90 day plans for all departments in the Mars Office' (assigned to LOCAL MARS OFFICE, due TIS-12), and 'Engage Saturn's Rings Resort as a preferred provider' (assigned to SPACE TRAVEL PARTNERS, due TIS-17).
 - IN PROGRESS 5:** Contains three items: 'Requesting available flights is now taking > 5 seconds' (assigned to SEESPACEEZ PLUS, due TIS-8), 'Engage Saturn Shuttle Lines for group tours' (assigned to SPACE TRAVEL PARTNERS, due TIS-15), and 'Establish a catering vendor to provide meal service' (assigned to LOCAL MARS OFFICE, due TIS-15).
 - CODE REVIEW 2:** Contains two items: 'Register with the Mars Ministry of Revenue' (assigned to LOCAL MARS OFFICE, due TIS-11) and 'Draft network plan for Mars Office' (assigned to LOCAL MARS OFFICE, due TIS-15).
 - DONE 8:** Contains three items: 'Homepage footer uses an inline style- should use a class' (assigned to LARGE TEAM SUPPORT, due TIS-68), 'Engage JetShuttle SpaceWays for travel' (assigned to SPACE TRAVEL PARTNERS, due TIS-23), and 'Engage Saturn Shuttle Lines for group tours' (assigned to SPACE TRAVEL PARTNERS, due TIS-15).

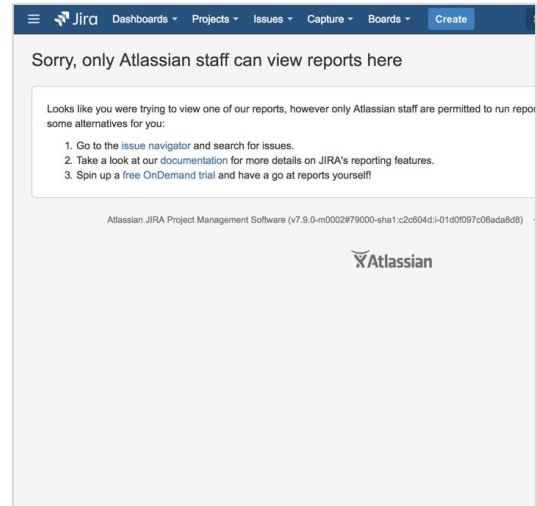
Error Discovery



In-Line



Alert



Full Screen with Prompts

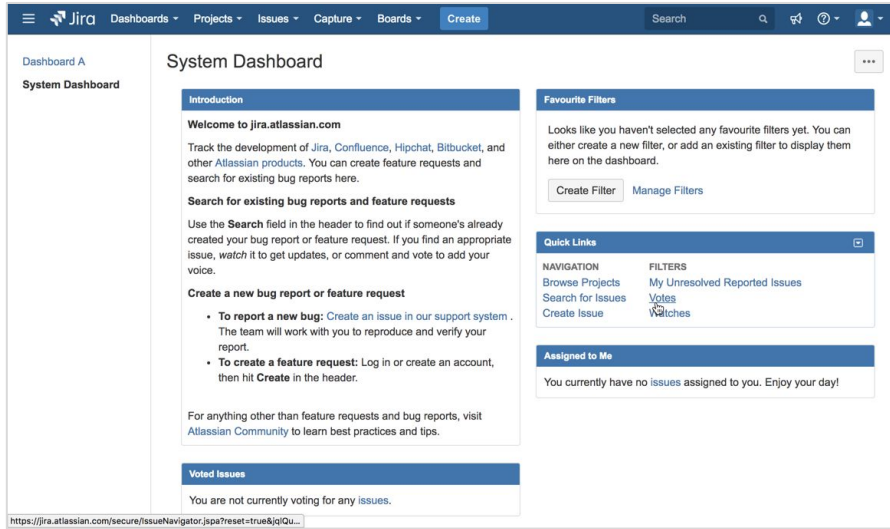
Grade

C

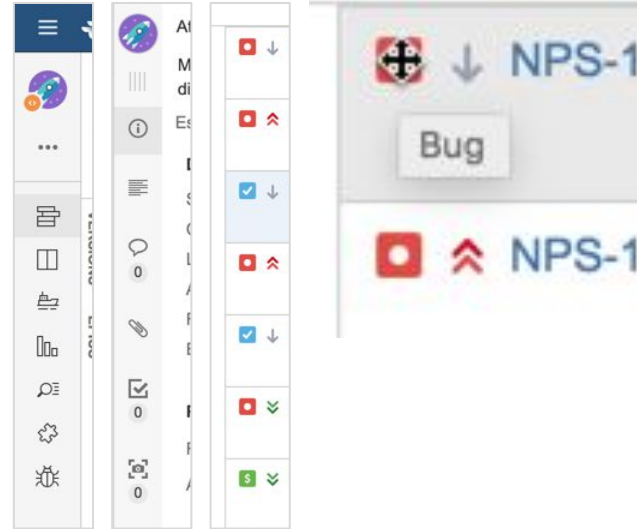
Assessment

Jira's error notification system's strengths are the clear red color that draws attention to the message and in the example of the Full Screen error gives the user alternative options. Where it falls short is in the lack of consistency in placement, messaging, and the amount of information provided. It is hard to know where to expect an error to show, and this system makes it hard to anticipate what is permissible without trying and failing.

Memory Load



Initial System Dashboard Before Customization



Lots of Icons and Features to Remember

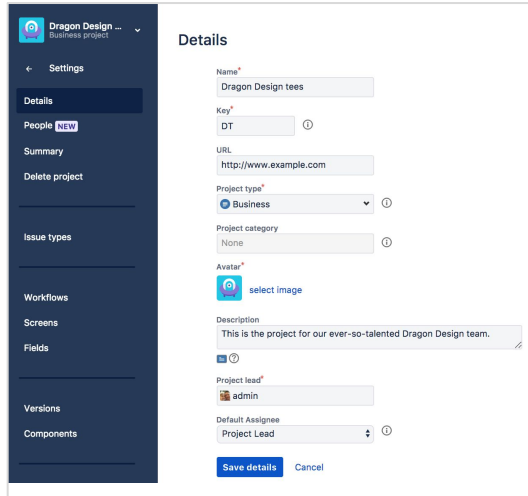
Grade

B

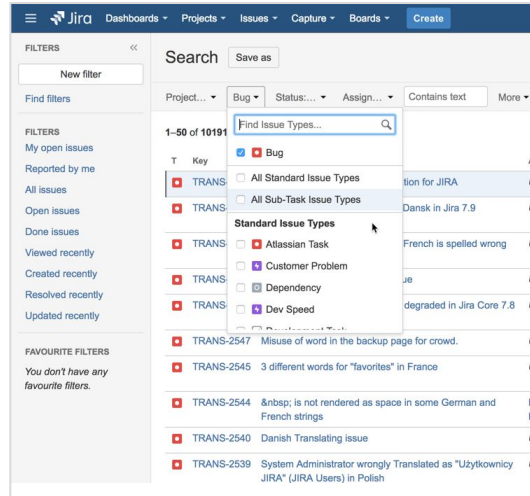
Assessment

Jira allows for many different working styles and it makes this possible by having a non-linear workflow. Customization of dashboards and some easy to find lists such as “My open issues” makes finding relevant content easier without having to remember elaborate processes. Because of all the different functions there are a lot of features that do not get as much use and require the user to remember the purpose of a lot of icons. This is made easier with the use of tooltips, but many important activities require users to remember to check.

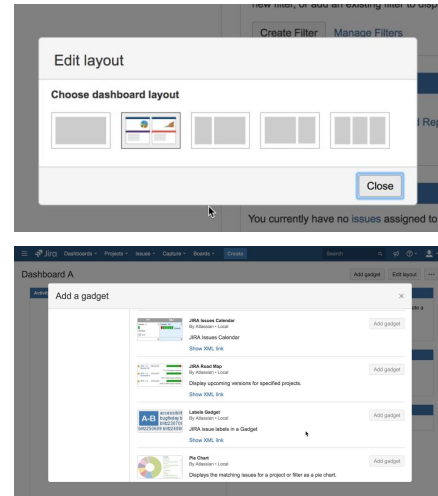
Flexibility



Creating a New Project



Filtering by Issue Type



Dashboard Customization

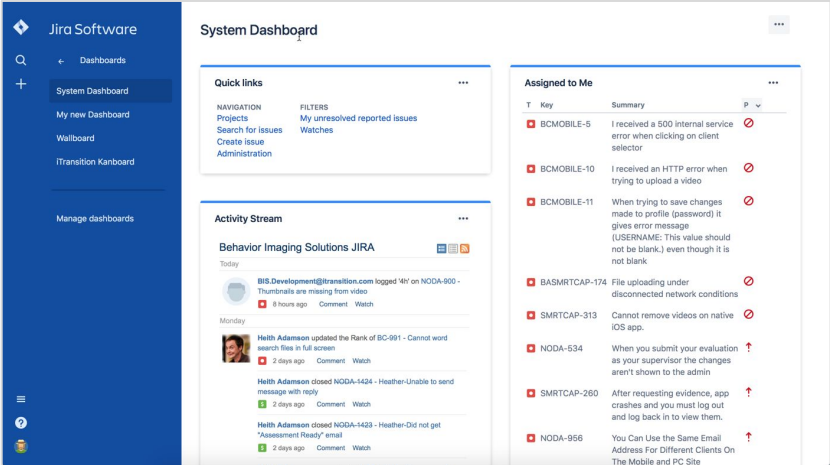
Grade

A

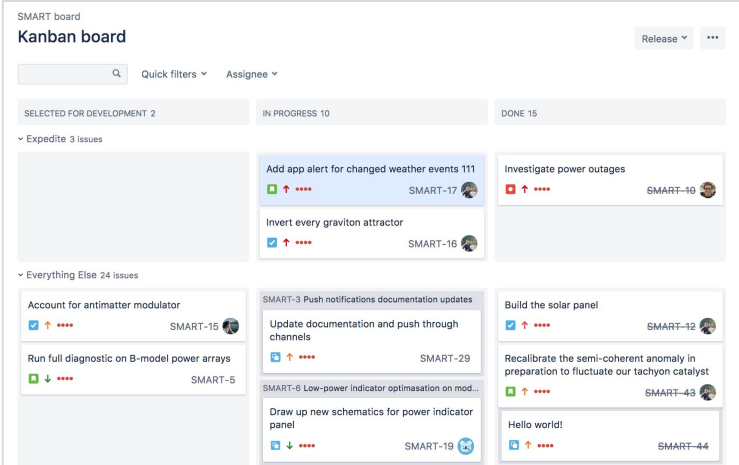
Assessment

JIRA is a very flexible tool. Almost every view can cater to a different organization' workflow and company structure. Nearly every list, dashboard, and view can be customized to fit a different and at times unintended purpose. While JIRA tries to structure itself along common agile processes like Scrum and Kanban a user can use the tool as a simple todo list or complex productivity improvement system. Yet keeping some structure assures the tool doesn't become an usable mess.

System Status



System Dashboard with Activity Stream



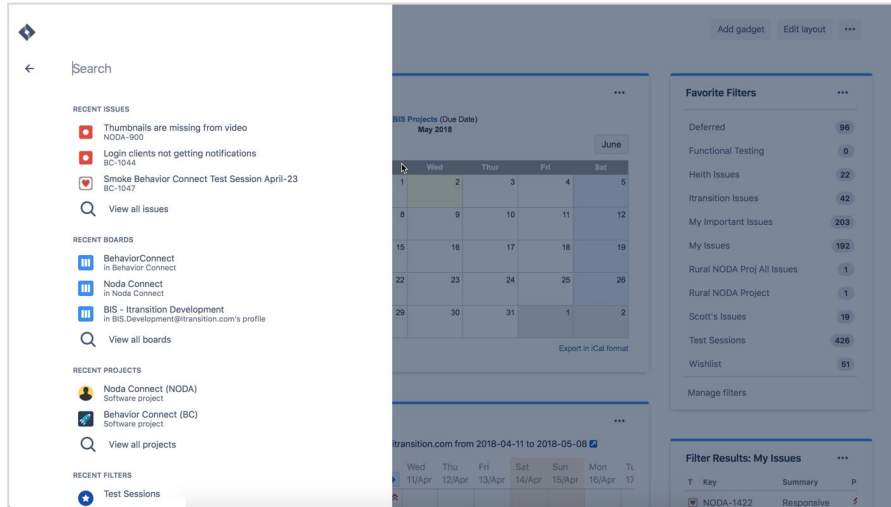
Kanban Board showing Progress

Grade
D

Assessment

Knowing statuses from Jira requires a user to either set up notifications, custom dashboards or to check projects/issues individually. This design is poor and seemingly can lead to errors for users forgetting to check statuses they might be responsible for.

System Suggestions



Search Suggestions

Grade

D

Assessment

System suggestions are limited in JIRA, mainly they are only seen during search. They mainly only show recent entries and are not “smart” to identify what might be relevant before searching. This may be enough for most use cases but seems unremarkable for our purposes. Possibly, forms could be seen as suggestions. Fill this form out to create the best possible issue, epic, user story or project but this is not outstanding and most systems have a form to ensure good data is inputted.

Timelines

Roadmap Scrum

Epics Initiatives + - Releasess: All Teams: All Themes: All Contains text More - Q

#	Title	Release	Team	Estimate (d)	Initiative	Theme
1	Shiny web frontend	CP 1.0, 1.5	The Avengers, T...	: 140	World-class product experience	CUSTOMER SATL...
	I want to share dashboards with colleagues	CP 1.0	The Avengers	:20		CUSTOMER SATL...
	I want to sign up and login	CP 1.5				
	I want to see charts in a dashboard	CP 1.0				
	I want to create my own dashboards	CP 1.0				
	I want it to work on a tablet	CP 1.0				
	Show some whistles	CP 1.0				
	Create some bells	CP 1.0				

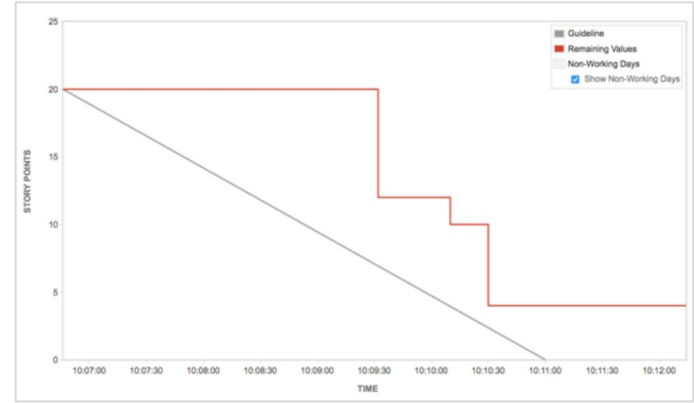
5 Confirm what's in scope

Select all Deselect all 16 selected Projects: All Sources: All Contains text Q Epic -

Scope

Title	Releases	Issue Status
✓ ADR-19 Adapt apps to new payment ...		DONE
✓ PLAT-6 Billing systems integration - b...		TO DO
✓ IOS-21 Team Invitations		TO DO
✓ IOS-22 Social media integrations		TO DO
✓ PERF-1 Java-script optimizations		TO DO
✓ PERF-2 Switch to noSQL DB system		TO DO
✓ PERF-3 Cache optimizations		TO DO
✓ PERF-4 Runtime / backend profiling a...		TO DO
✓ PERF-5 New design		TO DO
✓ PERF-6 Runtime / backend profiling a...		TO DO
✓ PERF-8 Frontend optimization		TO DO
✓ PERF-7 Frontend optimization		TO DO
✓ Issues without parent Epic		

Scheduling Sprints



Burn Down Chart (How close was the actual progress to what was planned)

Grade

C

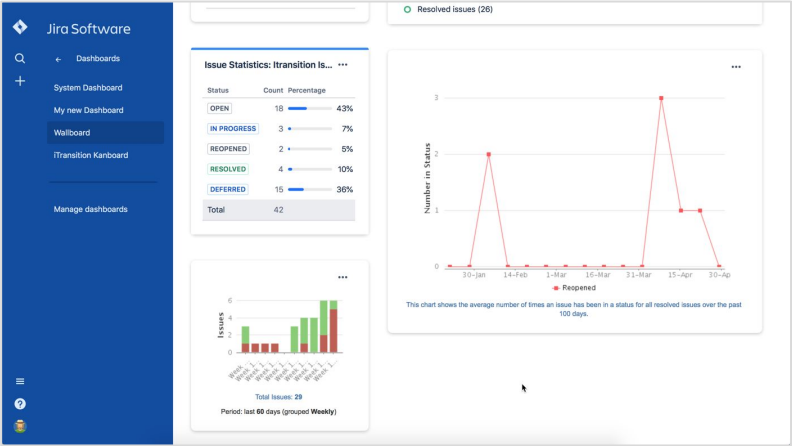
Assessment

While timelines are not exactly present in JIRA there are a few tools that are similar and help with temporal scheduling. Scheduling sprints allows for drag and drop arrangement and some smart segmenting based on priority indicated. Burn down charts are a great way to see how your actual rate of completion changed from your planned estimates. The problem is that these temporal views are generally buried and do not have an easy place to view at a glance.

Other Notable Visualizations



Donut Chart with Scrum Kanban



Line Chart, Progress Bars and Bar Chart

Grade
B

Assessment
 JIRA has every possible visualization possible and many are helpful and can lead to user action if implemented on their dashboard. A Kanban table mixed with other visualizations gives a quick indication of what has been done and what still is left. The problem here is that this requires a lot of customization to be actually useful.

Zoom

Grade



Assessment

Not Applicable

Filter

Actual Result - cf[18031] affectedVersion

Assignee	Reporter	P	Status	Resolution	Created	Updated	Votes
Unassigned	Lenard Lee	↓	OPEN	Unresolved	26/Apr/2018	30/Apr/2018	1
Unassigned	Rene Chiquete	↓	RESOLVED	Fixed	12/Apr/2018	23/Apr/2018	1

1-50 of 229143

T	Key	Summary	Assignee	Reporter	P	Status	Resolution	Created	Updated	Votes
🚩	TRANS-2557	Inconsistencies in Danish translation for JIRA	Unassigned	Lenard Lee	↓	OPEN	Unresolved	26/Apr/2018	30/Apr/2018	1
🚩	TRANS-2554	Incorrect translation for Danish / Dansk in Jira 7.9	Unassigned	Rene Chiquete	↓	RESOLVED	Fixed	12/Apr/2018	23/Apr/2018	1
🚩	TRANS-2553	Approval step called Declined in French is spelled wrong	Unassigned	Benito Picarelli	↓	OPEN	Unresolved	23/Jan/2018	23/Apr/2018	1

Advanced (Top) and Basic (bottom) Filters

My open issues

Order by Updated ↓

- BC-1040
- BC-1039
- BC-1037
- BC-1026
- BC-1025
- BC-1022
- BC-1011
- BC-1014
- BC-1012
- BC-1008
- BC-982
- BC-966

Help boxes can be moved outside of BC Top a...

Notification don't auto refresh

Creative / Functional Connect Test Session Ja...

TRAINING - Behavior Connect Test Session

Global Admins cannot use filter

When not adding the correct password 8 digit...

Behavior Connect Test Session March 22

Heather-Notifications did not work for client c...

Heather-After registering still unable to use th...

You Receive Registration Emails Even When Y...

File Organizer Filter should search for custom...

New Update Filters on Left Side Bar

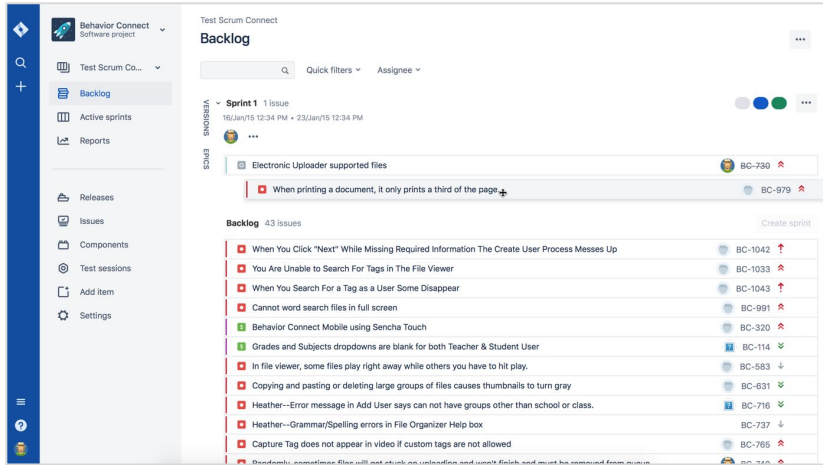
Grade

B

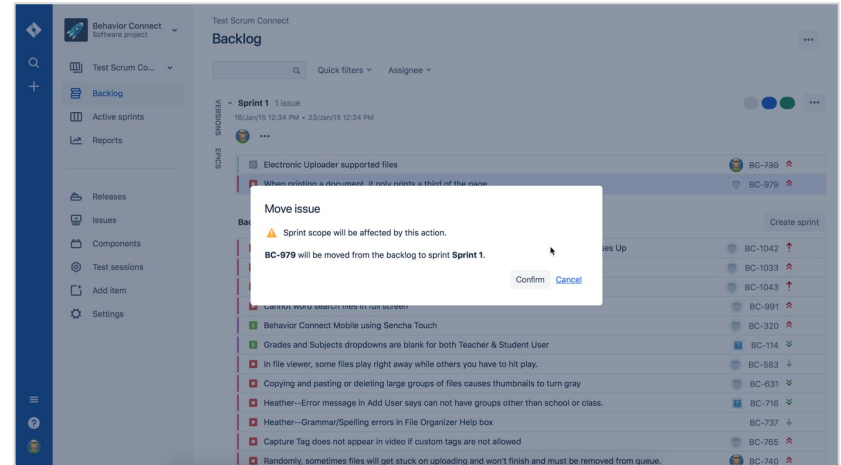
Assessment

The filtering tools for Jira are robust but not exactly unique or simple to use in their most robust layout. Saving a filtered search to a dashboard is a simple way to follow a relevant concern. The left sidebar filter makes this easier but the list becomes a bit long and visually similar to call out important/most used filters. Having clear labels/icons of status and making those searchable and filterable does help keeping relevant information quickly findable.

Save for Later



Adding Backlog Item to Sprint



Confirmation to add to Active Sprint

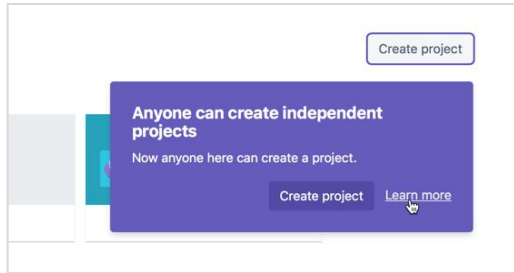
Grade



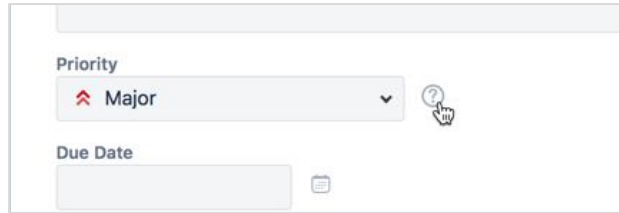
Assessment

Separating backlogs from active and planned sprints makes it easy to organize what possible tasks/epics should make up a sprint without committing. This makes it easy to plan all week long then when your sprint is ready launch it. Drag and drop makes prioritizing easy and the list/table view makes it easy to find enough information when needed.

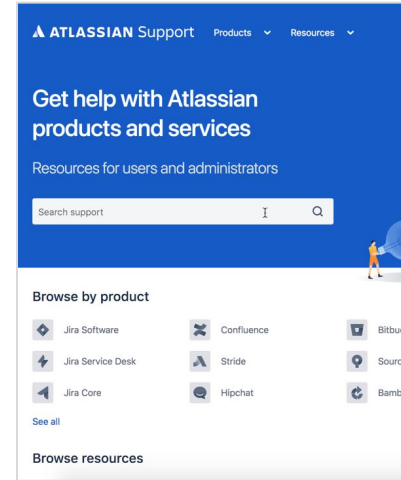
Learnability



Pop-up (first-time using feature)



In-line shortcut to KB (leaves for external site)



KB & Documentation Website (External)

Grade

C

Assessment

JIRA has some shortcuts to help bring relevant help when needed. Popups and alerts for first time users makes it a bit easier but most of the overall important aspects of using JIRA for project planning requires external help.

Cosmographia

Description

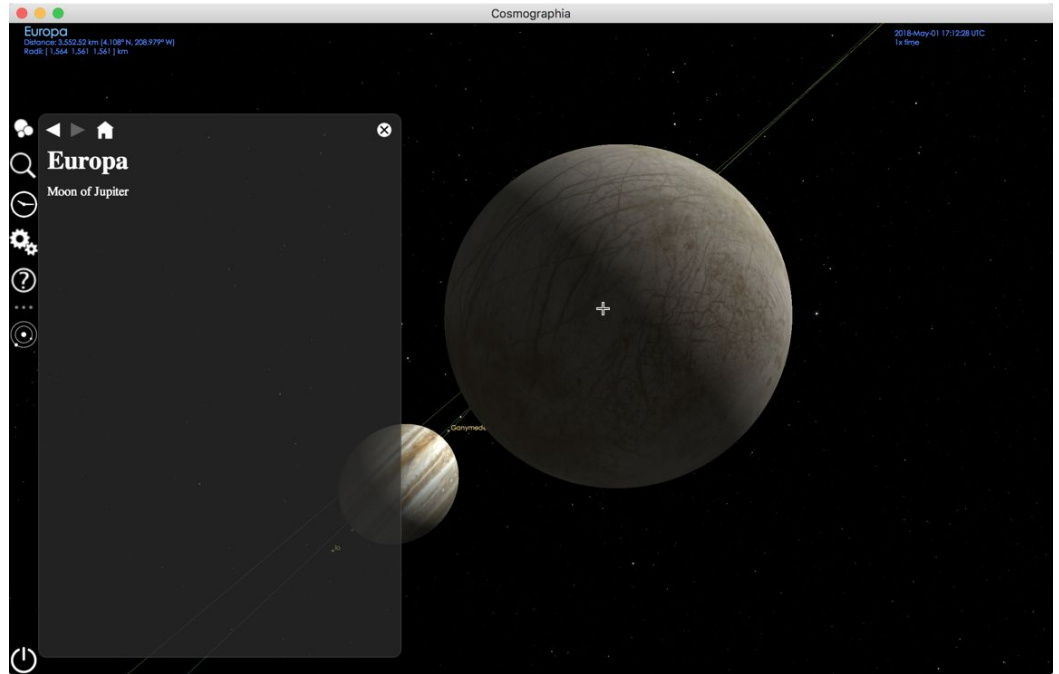
A general solar system simulator and visualization tool. Paired with SPICE, it becomes a way to model observational geometry for planetary missions.

Target User

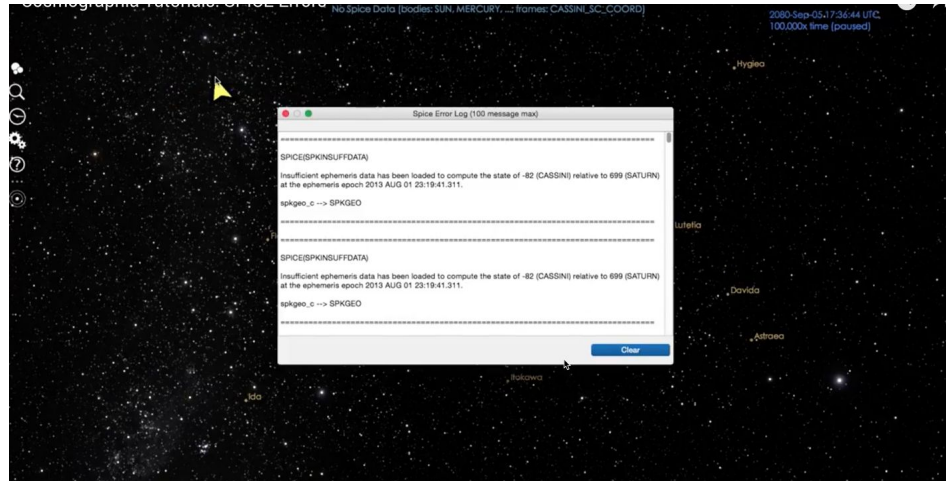
Planetary Scientists & Educators

Type

Visualization Tool



Error Discovery



SPICE Error Log

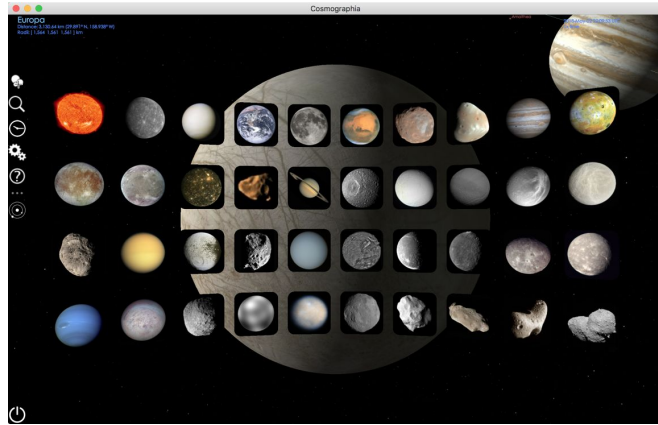
Grade

F

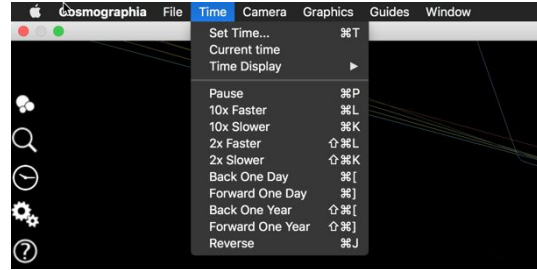
Assessment

If something is not working it is really hard to tell. There is an error log but generally no error messages popup to indicate the problem. The software crashes at times with no warning and no recovery messages, it is really hard to know what happened or how to fix.

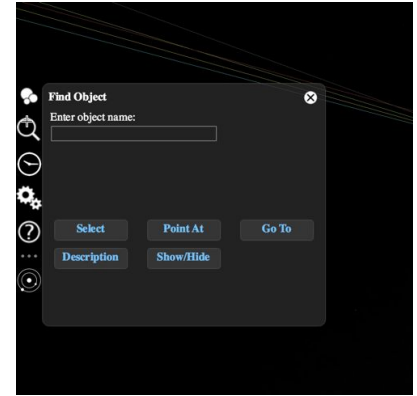
Memory Load



Menu for Accessing Available Solar System Bodies



Features Available on Top Menu Bar



Search Available

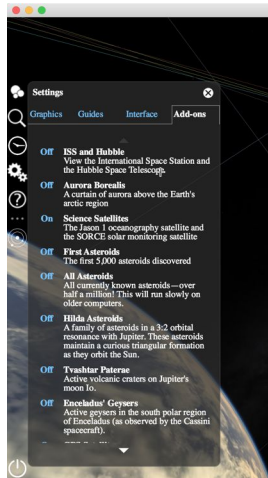
Grade

D

Assessment

Cosmographia on one level is easy to use and does not require much memory to explore simple planets and moons. But to do anything deeper requires writing scripts and importing other “catalogs”. This is hard to understand without searching for external resources. Some features such as pointing, tracking and any external visualization require remembering how to access them through one of the contextual menus.

Flexibility



Customize Add-ons

```
Project
├── scripting
│   ├── .DS_Store
│   ├── cosmoguide_example.py
│   └── cosmoscRIPTing_runall.py
└── cosmoguide_example.py

1 |
2 | # This example script makes the program take users for a 2 minute trip
3 | # to the Earth and Moon.
4 | #
5 | # Import Cosmographia scripting module.
6 | #
7 | import cosmoscRIPTing
8 | cosmo = cosmoscRIPTing.Cosmo()
9 |
10 | #
11 | # Display a welcome message that will stay on the screen for 3 seconds.
12 | # Make Cosmographia wait for 4 seconds before moving onto the next step
13 | # to give users a chance to read the message. In subsequent blocks the
14 | # script will use displayNote to display a message before each set of
15 | # commands but the post-message wait times will be smaller to make
16 | # messages stay on the screen just as the steps themselves start being
17 | # executed.
18 | #
19 | cosmo.displayNote( "Welcome to Cosmographia Scripting Example!", 3 ).wait( 4 )
20 | #
21 | #
22 | # Use hideToolBar to hide the left toolbar. Use hideStatusMessages to hide
23 | # program's default status messages that might collide with
24 | # annotations displayed by calls to displayNotes. Use hideInfoText to
25 | # to hide informational blocks at the top left and top right corners.
26 | # Use showFullScreen to switch to full screen mode. All commands are
27 | # instantaneous and will occur during the 4 second wait set by wait.
28 | #
29 | cosmo.displayNote( "Switch to full screen, hide toolbar and info text", 3 ).wait( 4 )
30 | cosmo.hideToolBar()
31 | cosmo.hideStatusMessages()
32 | cosmo.hideInfoText()
33 |
cosmoguide_example.py 11 CRLF UTF-8 Python 0 files
```

Example Script

Grade

B

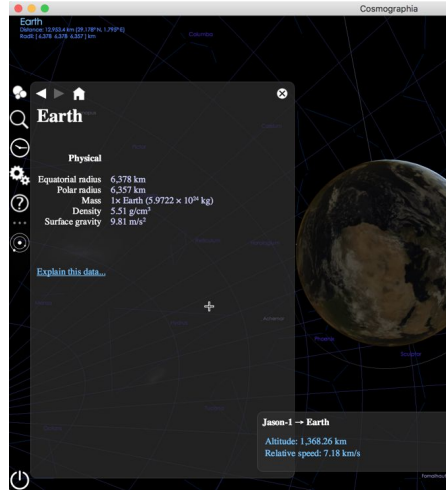
Assessment

If a user is proficient to write scripts and import catalogs what is possible is really impressive. Scripts are possible to run through flybys turning features on and off making it possible to visualize a orbiter flyby showing observational geometries, pointing, and mapping of many celestial bodies with accurate orbits. It is quite amazing what you can do with the tool if you know what you are doing. The downfall is how you have to work with in slowly on confines to customize the tool to your needs. The actual GUI does not provide much customization.

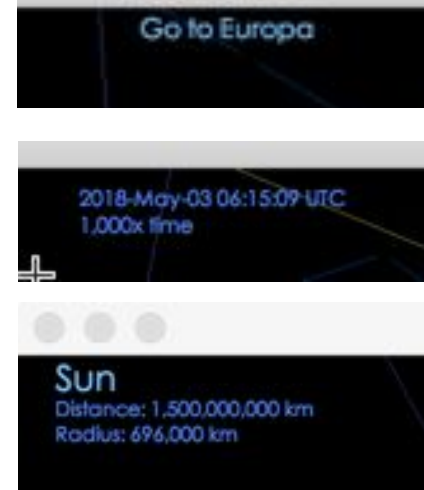
System Status



Loading Animation



Properties of Selected



Some Text Statuses

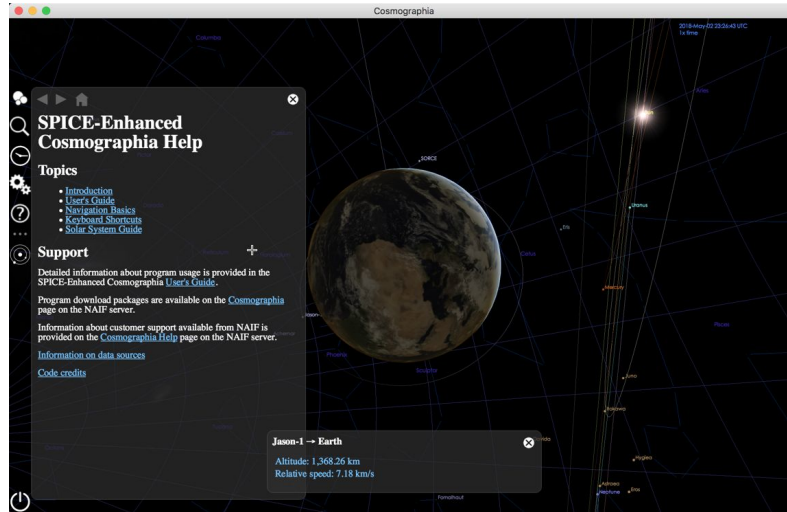
Grade

D

Assessment

What is the system currently doing? There are some issues of knowing what the tool is currently trying to do or tracking, some text indications help but provide little feedback. There is a loading animation that is easily overlooked. Since the system allows for real time manipulation of 3d space it is obvious when something is not showing or frozen in animation. It is frustrating to realize you selected a planet instead of a satellite and have to zoom out and find the satellite again.

System Suggestions



Help Is Available

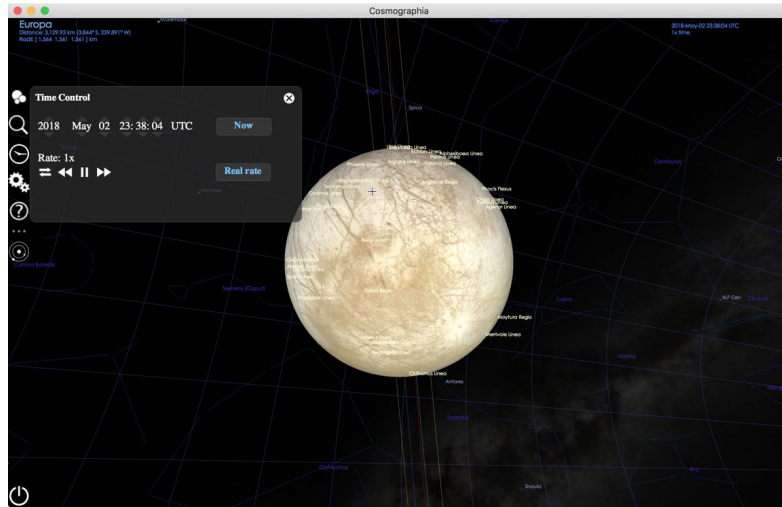
Grade

F

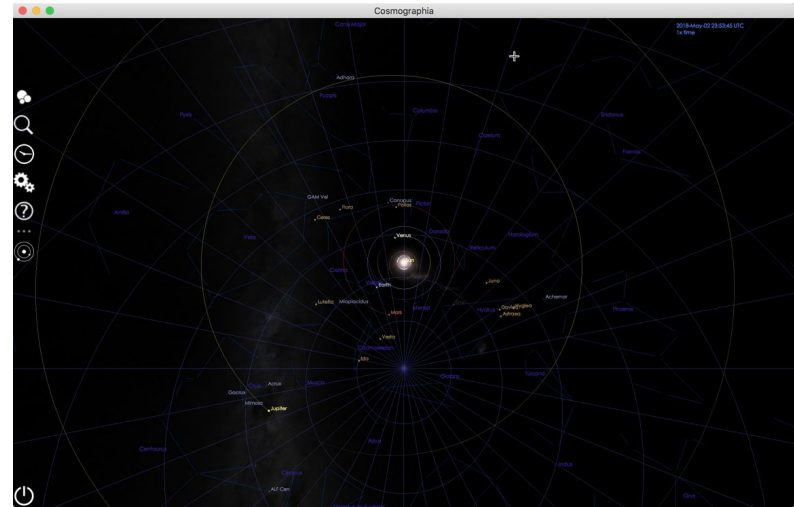
Assessment

There are not any suggestions besides help. This tool seems to be a general sandbox and does not hold your hand. If there is a possible error or something is not possible it will not let you know in advanced, nor does it walk you through how to set up a new visualization or animation.

Timeline



Time Control



Orbit Trajectories

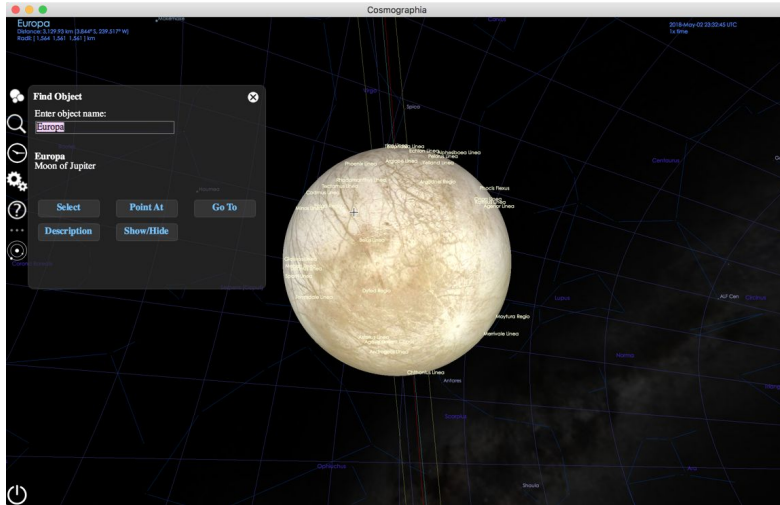
Grade

D

Assessment

Cosmographia does not show time well. Orbital trajectories and speed that time passes are the two main methods of showing time. Orbits and trajectories are not seemingly customizable and show little information besides direction and current placement. What really feels like it is missing is a clear timeline of activities a script might run or specific events during a planet's orbit.

Zoom



Search and Press "Go To"



Right Click Contextual Menu

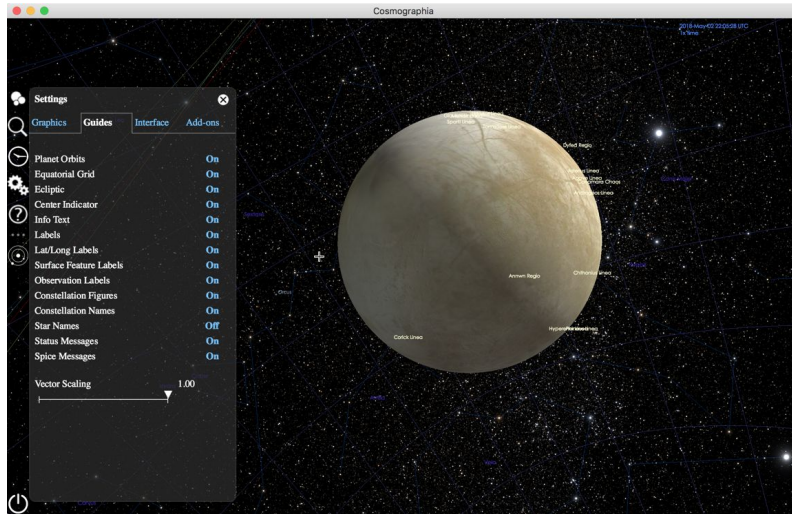
Grade

B

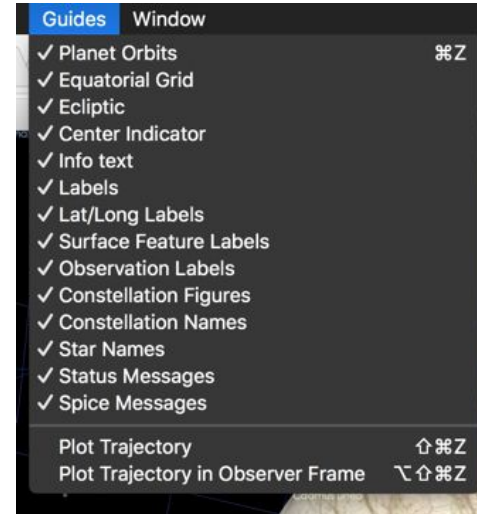
Assessment

Zooming is pretty easy and has multiple methods to get to the planet/destination of interest. Searching for something or right clicking and selecting "Go To" will take you there. There are also keyboard and mouse shortcuts (pinch to zoom, scrolling, panning are possible with trackpad and keyboard shortcuts). What prevents this from being an "A" is there is no on screen indication of your zoom or a slider to control zoom in a more precise way.

Filter



Turning Guides On and Off



Guides From Top Menu

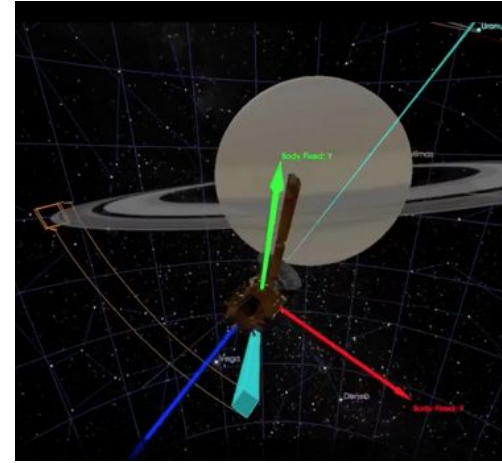
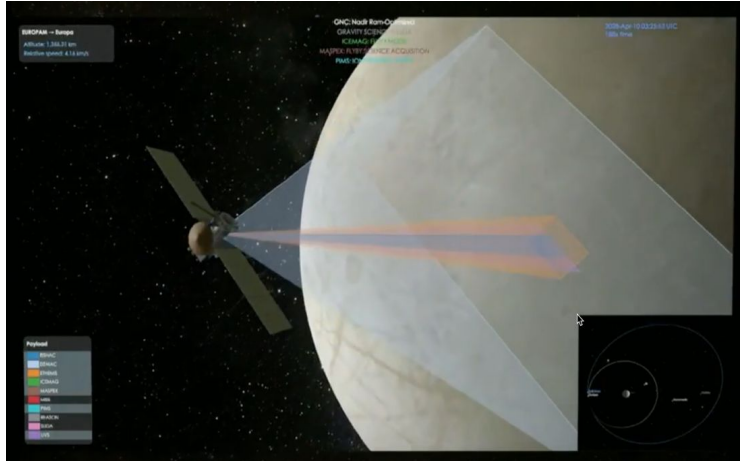
Grade

C

Assessment

Filtering certain views are simple through settings and the above menu. It is a simple list view that allows you to turn on/off certain views. This list becomes a bit hard to understand what will actually happen, or what the point of the visualization is. At the same time certain more informative filters are not available. Maybe you want to view only moons with possibility of water or of a certain size. These filters seem to require code to use.

Other Notable Visualizations



Showing Observational Geometries

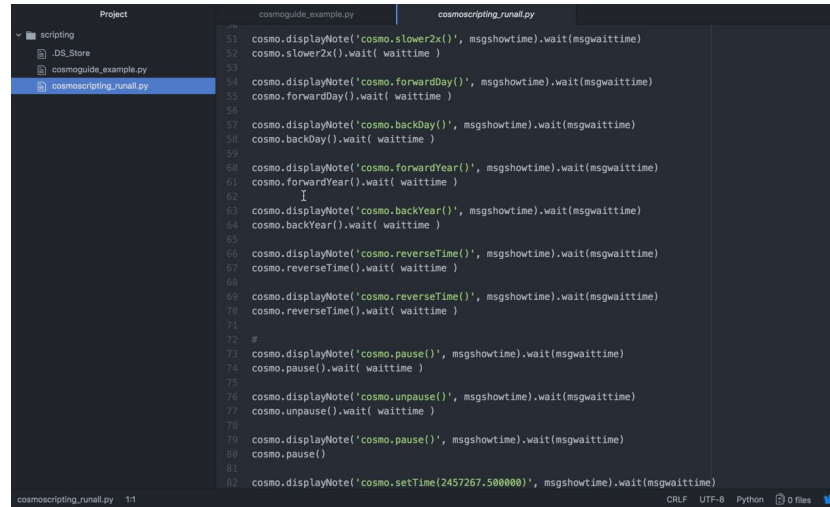
Grade

A

Assessment

The possibilities with cosmography's visualization engine are really amazing. These vector overlays make it very clear what certain sensors may capture, what pointing positions are necessary and other abstractions related to collecting sensor data. We learned so much about the necessity and complexity of pointing by watching an animation of each sensor activating when approaching Europa.

Save For Later



```
Project
├── scripting
│   ├── .DS_Store
│   ├── cosmoguide_example.py
│   └── cosmoscritping_runall.py
└── ...

51 cosmo.displayNote('cosmo.slower2x()', msgshowtime).wait(msgwaittime)
52 cosmo.slower2x().wait( waittime )
53
54 cosmo.displayNote('cosmo.forwardDay()', msgshowtime).wait(msgwaittime)
55 cosmo.forwardDay().wait( waittime )
56
57 cosmo.displayNote('cosmo.backDay()', msgshowtime).wait(msgwaittime)
58 cosmo.backDay().wait( waittime )
59
60 cosmo.displayNote('cosmo.forwardYear()', msgshowtime).wait(msgwaittime)
61 cosmo.forwardYear().wait( waittime )
62
63 cosmo.displayNote('cosmo.backYear()', msgshowtime).wait(msgwaittime)
64 cosmo.backYear().wait( waittime )
65
66 cosmo.displayNote('cosmo.reverseTime()', msgshowtime).wait(msgwaittime)
67 cosmo.reverseTime().wait( waittime )
68
69 cosmo.displayNote('cosmo.reverseTime()', msgshowtime).wait(msgwaittime)
70 cosmo.reverseTime().wait( waittime )
71
72 #
73 cosmo.displayNote('cosmo.pause()', msgshowtime).wait(msgwaittime)
74 cosmo.pause().wait( waittime )
75
76 cosmo.displayNote('cosmo.unpause()', msgshowtime).wait(msgwaittime)
77 cosmo.unpause().wait( waittime )
78
79 cosmo.displayNote('cosmo.pause()', msgshowtime).wait(msgwaittime)
80 cosmo.pause()
81
82 cosmo.displayNote('cosmo.setTime(2457267.580000)', msgshowtime).wait(msgwaittime)
```

Save as many scripts as you would like...

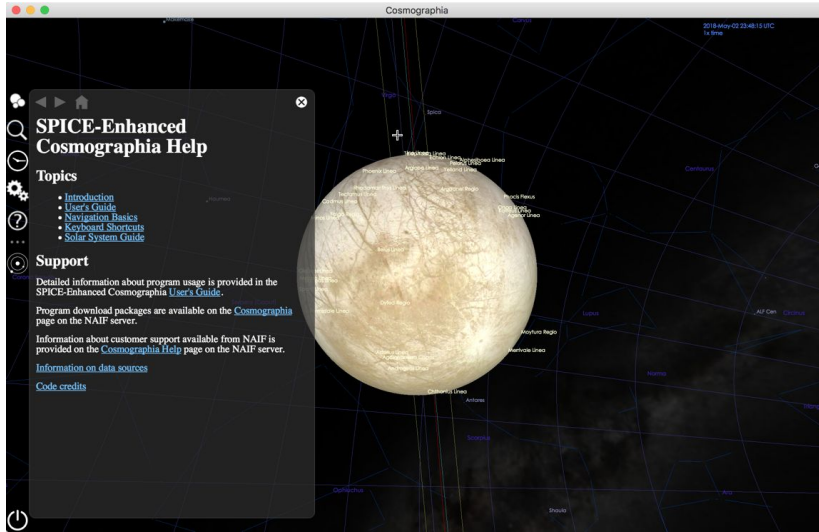
Grade

F

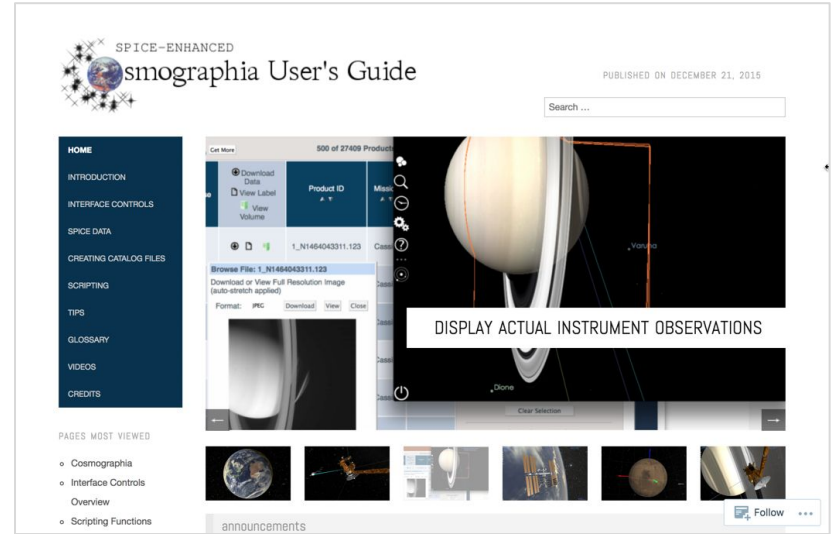
Assessment

Cosmographia does not seemingly save any configuration. To save anything it seems necessary to make edits to the script or catalog files. This makes it difficult to use the GUI to set up a flyby or animate an approach.

Learnability



Minimal Instruction & Shortcut to KB



External Knowledge Base

Grade

D

Assessment

This tool is easy to learn if you just want to view the few planets and moons available from the main selection. Anything deeper requires external documentation and tutorials. It is really difficult to learn how to set up our own sensor pointing tests and how do mission scientists add their own instruments with their constraints to the tool. The learning curve to make this useful to mission and science planners seems steep.

Visual Planning

Description

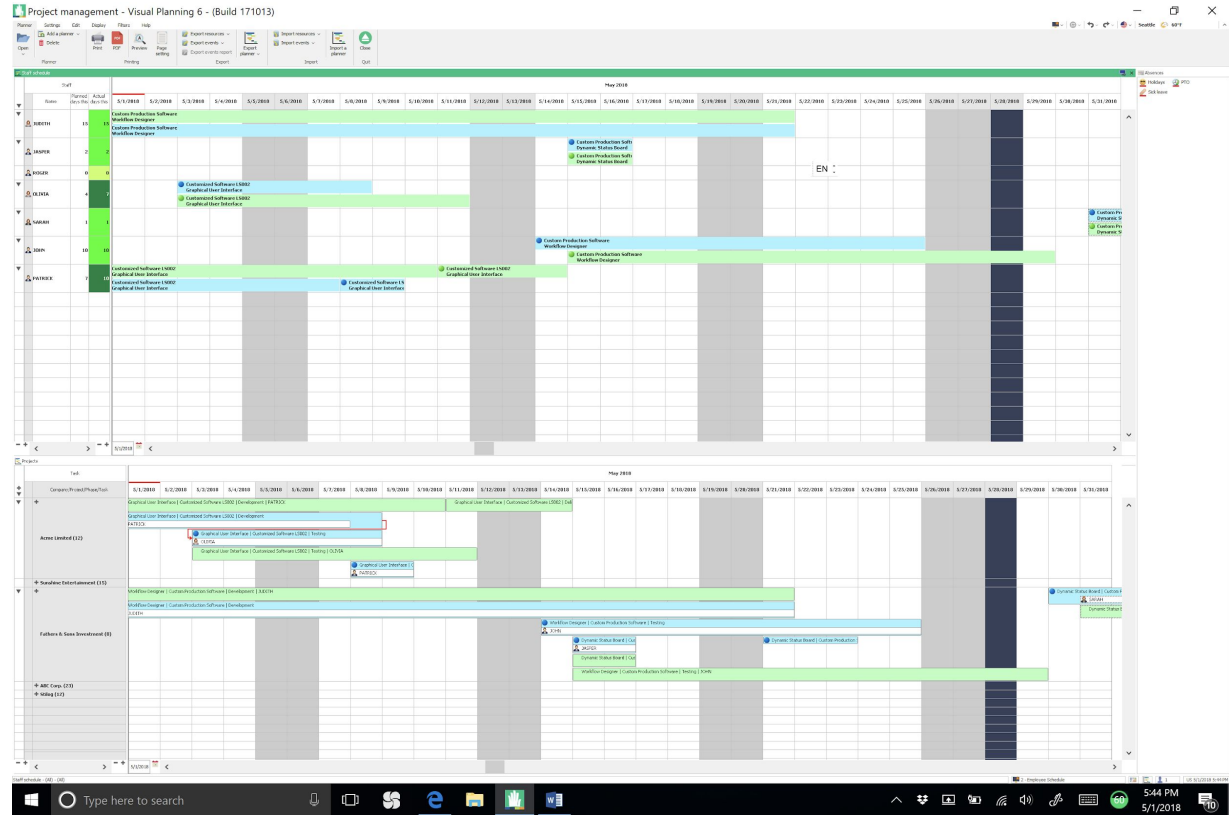
Visual Planning is a resource management and scheduling application that shares schedules with colleagues and works together more efficiently.

Target User

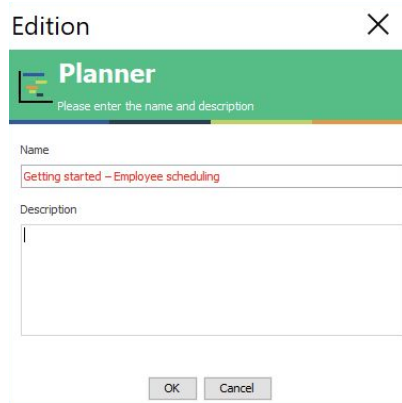
employees involved in team project (hr, project manager etc)

Type

Project Management

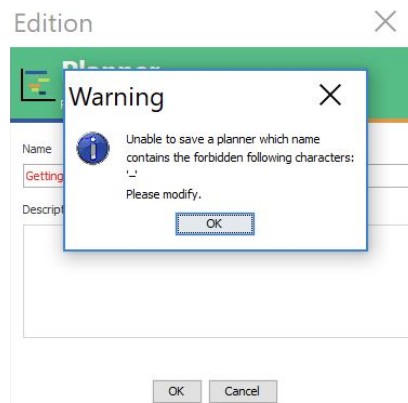


Error Discovery



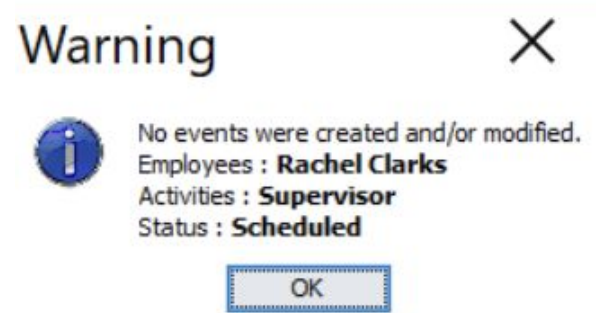
The screenshot shows a window titled 'Edition' with a close button (X). Below the title bar is a green header with the word 'Planner' and a sub-header 'Please enter the name and description'. There are two input fields: 'Name' and 'Description'. The 'Name' field contains the text 'Getting started - Employee scheduling', which is highlighted in red. The 'Description' field is empty. At the bottom, there are 'OK' and 'Cancel' buttons.

Text turns into red when it is invalid



The screenshot shows the same 'Edition' window as before, but with a 'Warning' dialog box overlaid. The dialog box has a close button (X) and an information icon (i). The text inside the dialog reads: 'Unable to save a planner which name contains the forbidden following characters: \'. Please modify.' Below the text is an 'OK' button. The background window is partially obscured by the dialog box.

Warning box appear when the the input is invalid



The screenshot shows a 'Warning' dialog box with a close button (X) and an information icon (i). The text inside the dialog reads: 'No events were created and/or modified. Employees : **Rachel Clarks** Activities : **Supervisor** Status : **Scheduled**'. Below the text is an 'OK' button.

Warning box when the constraint is violated

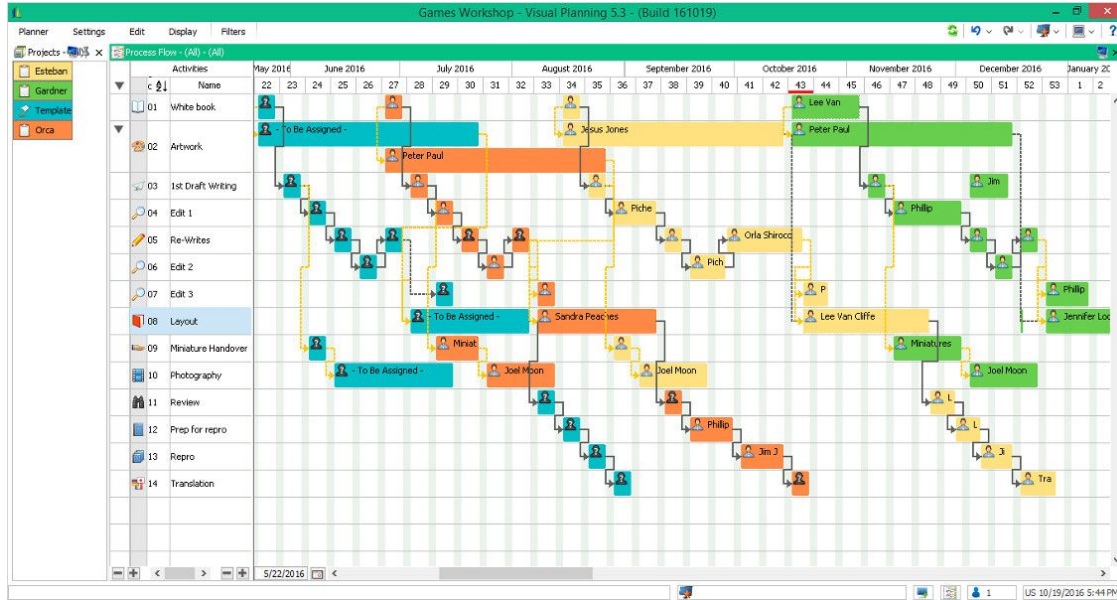
Grade

A

Assessment

Visual Planning gives sufficient warnings and hints when users' input decision is invalid to prevent further errors happening.

Memory Load



Information hierarchy is complex that increases learning time

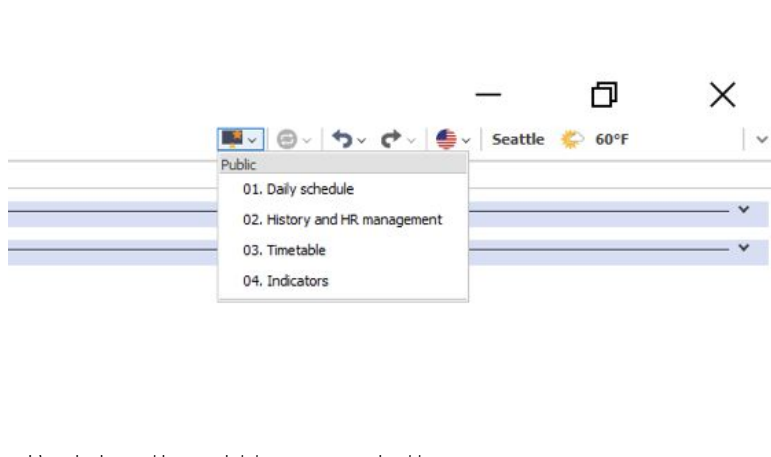
Grade

B

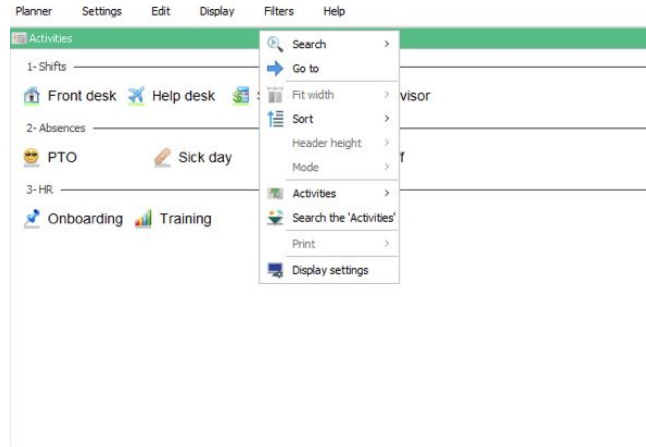
Assessment

Visual Planning is a complicated software to work with. Because it involves lots of data types that are all assigned to abbreviation, icons or color coating, users are easily overwhelmed by tons of data and need time to remember details of data pieces. On the other hand, it includes lots of functionalities, lots of them are hidden in the menu by right clicking somewhere. Users have to follow the tutorial and practice several times. Additionally, the search bar is invisible in the main interface, which increases the difficulty to access to their wanted functionality.

Flexibility



By clicking the right top corner button users would be able to see different views



To filter information, users have to right click the title bar (green bar)

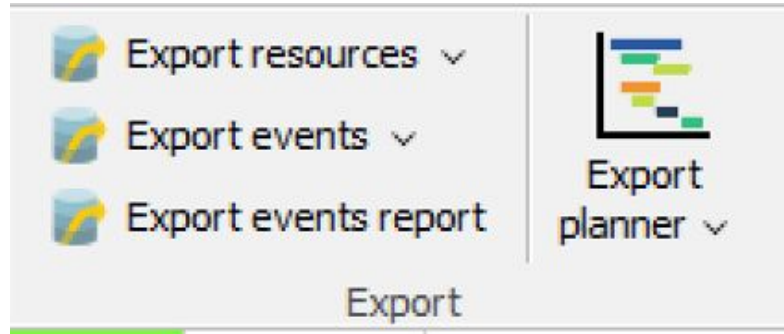
Grade

C

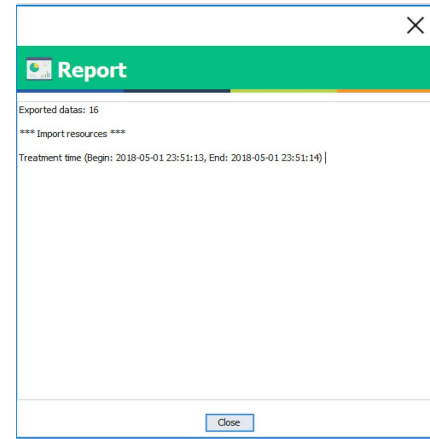
Assessment

Visual Planning is not sufficiently flexible. Although it gives users different views on data visualization, the search bar, where users have to right click the title box to get access, is inconspicuous. And there is no way to customize the views of data visualizations.

Save for Later



Export resources, events or the whole planner into files



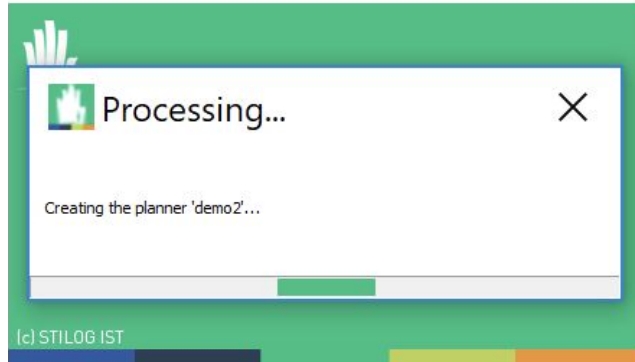
Grade

B

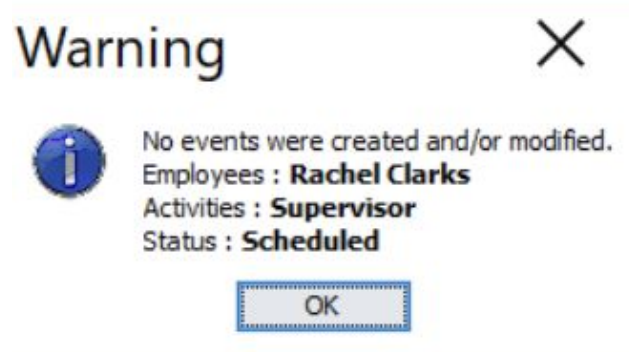
Assessment

Users are able to export any sections they want into local files for sharing.

System Status



In the process of creating the new planner



Warning is given when constraints are violated.

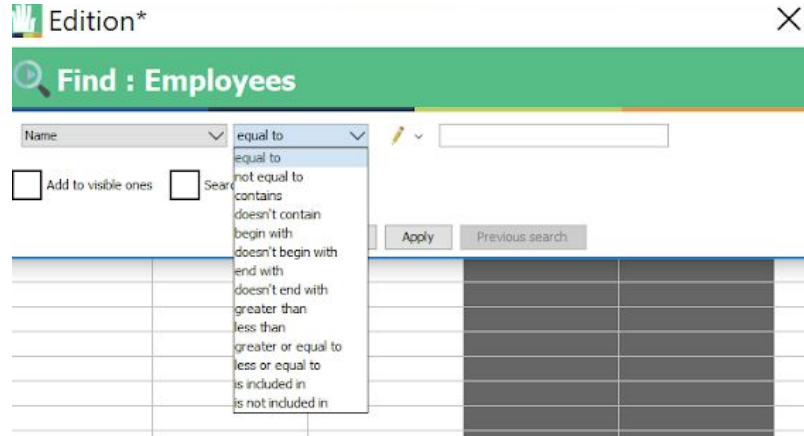
Grade

A

Assessment

There is always visual feedback to indicate the progress when the task is still going or something goes wrong. Users get noticed of what happened immediately.

System Suggestions



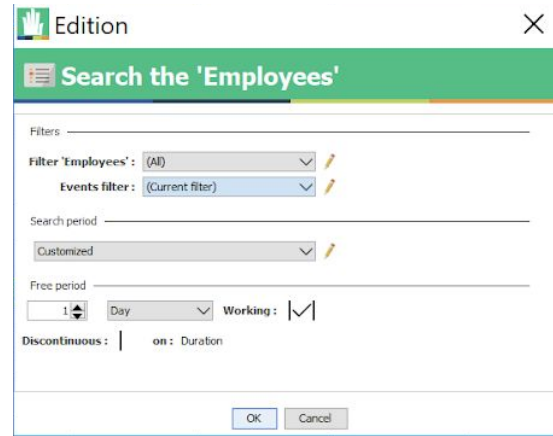
Edition*

Find : Employees

Name equal to

Add to visible ones Search

- equal to
- not equal to
- contains
- doesn't contain
- begin with
- doesn't begin with
- end with
- doesn't end with
- greater than
- less than
- greater or equal to
- less or equal to
- is included in
- is not included in



Edition

Search the 'Employees'

Filters

Filter 'Employees': (All)

Events filter: (Current filter)

Search period

Customized

Free period

1 Day Working:

Discontinuous: | on: Duration

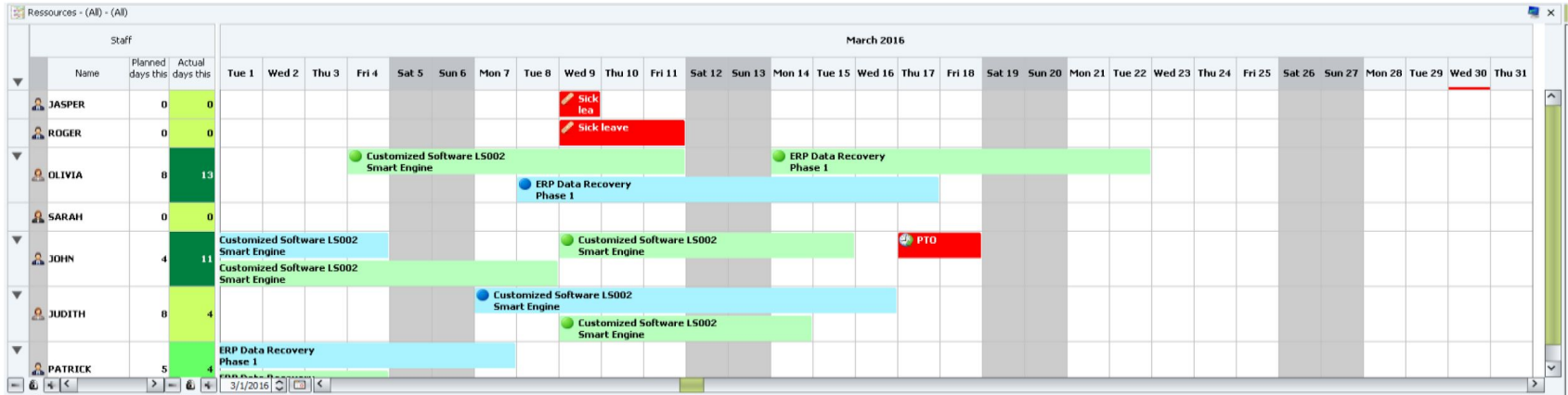
Grade

A

Assessment

The search bar function gives options on condition to be met. And it gives different filter fors users for choosing event type, time scale and employee type.Overall the system provide great support for helping users get access to their wanted information more quickly.

Timelines



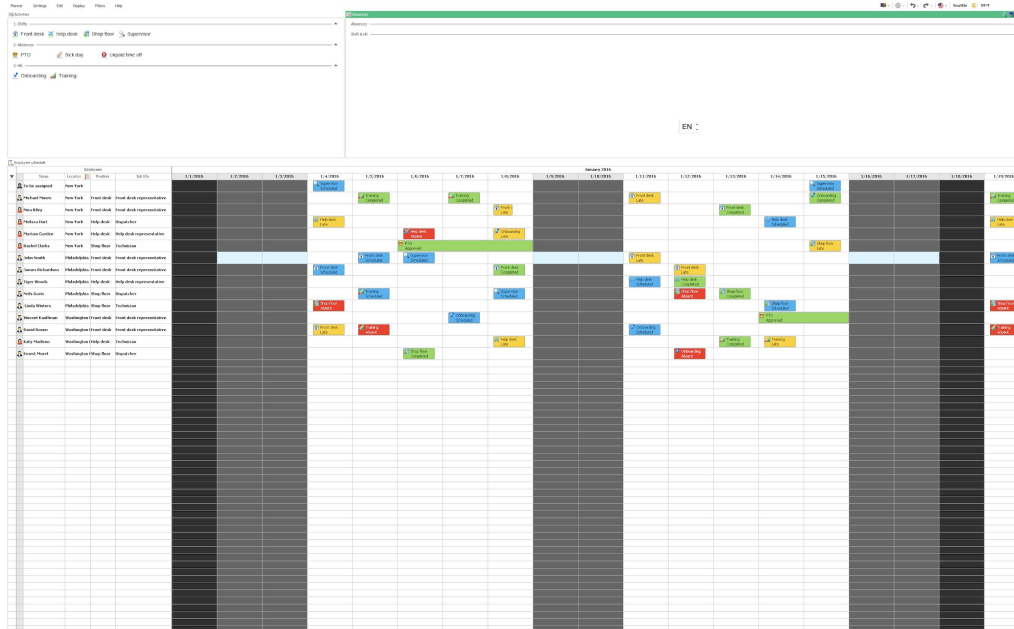
Grade

A

Assessment

Its timeline function is easy to read and adjust. By dragging and moving the box users easily adjust and timeline. Color coating and icons indicate types of activities clearly.

Zoom



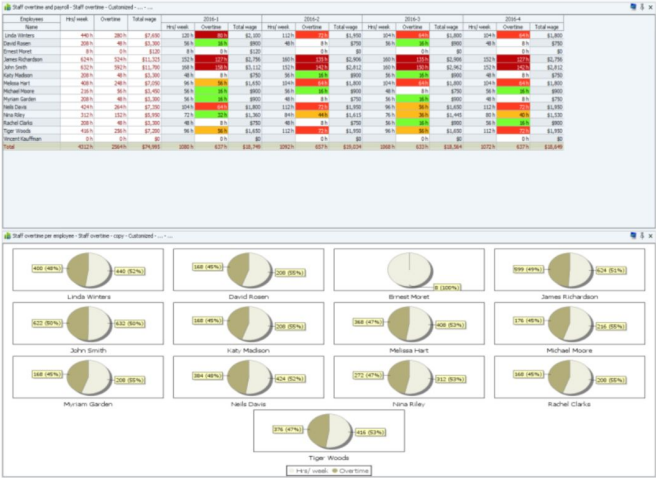
Grade



Assessment

The default view of Visual Planning is too small to see clearly. Users have to zoom in for more comfortable view by using the default zoom in shortcut/mouse of their computer.

Other Notable Visualizations



Employees		Absences (d)	Approved	Rejected	Requested
Linda Winters	Shop floor	0.00			
David Rosen	Front desk	5.00	4.00	1.00	
Ernest Moret	Shop floor	1.00			1.0
James Rich...	Front desk	8.00			8.0
John Smith	Front desk	10.00		10.00	
Katy Madison	Help desk	2.00	2.00		
Melissa Hart	Help desk	3.00		3.00	
Michael Moore	Front desk	1.00	1.00		
Myriam Gar...	Help desk	8.00	2.00		6.0
Neils Davis	Shop floor	1.00		1.00	
Nina Riley	Front desk	2.00	2.00		
Rachel Clarks	Shop floor	13.00	12.00		1.0
Tiger Woods	Help desk	7.00	5.00	2.00	
To be assign...		0.00			
Vincent Kau...	Front desk	54.00	54.00		
Total		115.00	82.00	17.00	16.0

The screenshot shows a 'Task' configuration window. It includes fields for 'Project(*)', 'Phase', 'Lead Forecast', 'Daily Rate', 'Task Ref.', and 'Task(*)'. There is a 'Task Description' field with a text area. At the bottom, there are 'Start Date' and 'End Date' fields, a 'Calculations' section with 'Billing Price' and 'Planned Lead' values, and a progress bar showing 'Planned Lead (d): 5' and 'Actual Cost: \$4,350'.

Grade A

Assessment

It allows users to get access to different views of data by presentation of charts and pies. Users are able to have a general understanding of different sections of data come into integration. Detailed information can be accessed by clicking on the cell.

HUB Planner

Description

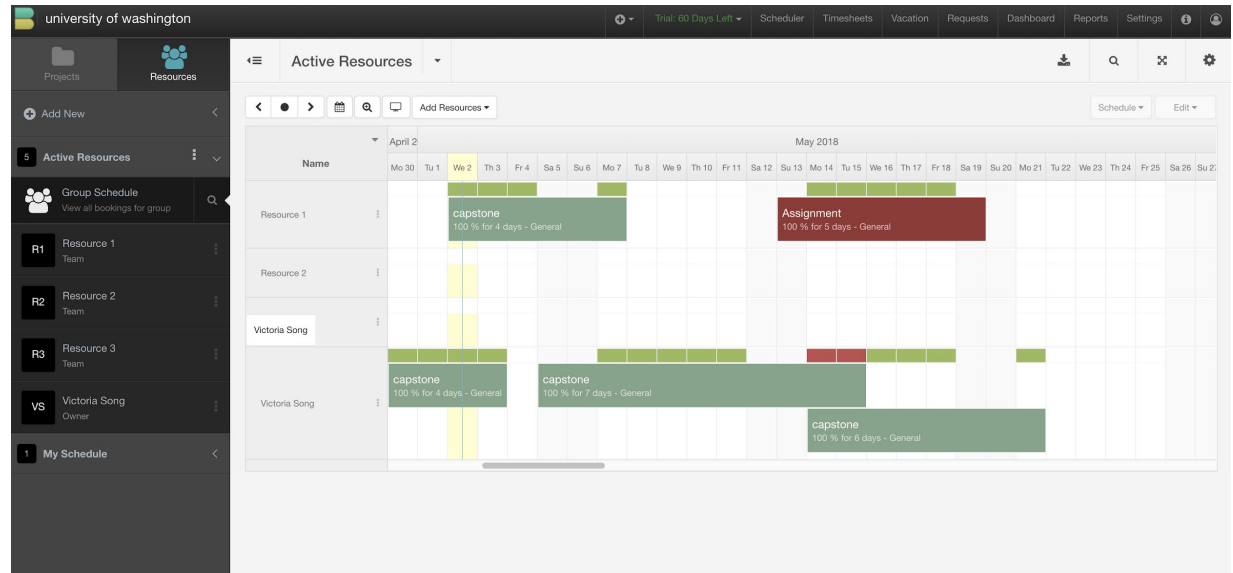
HUB Planning is a resource scheduling, time track and project management software.

Target User

People involved in team group project

Type

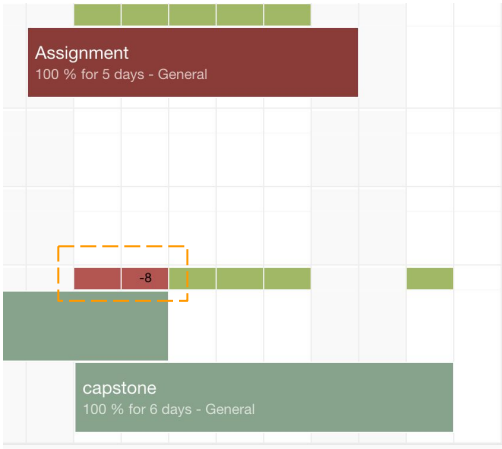
Project Management



Error Discovery

The screenshot shows a software interface for 'capstone' with a table of project activities. The table has columns for Date, Project Name, Scheduled Project Time (hours), and Unassigned Project Time (hours). A warning message 'This row is overlapped by a Project or Event' is displayed over the row for May 16th 2018, which shows a scheduled time of 16 hours. The table also includes a 'Sub Total' row showing 128 hours.

Date	Project Name	Scheduled Project Time (hours)	Unassigned Project Time (hours)
May 15th 2018	capstone	8	0
May 16th 2018	capstone	16	0
May 17th 2018	capstone	8	0
May 18th 2018	capstone	8	0
May 21st 2018	capstone	8	0
Sub Total:	capstone	128	0



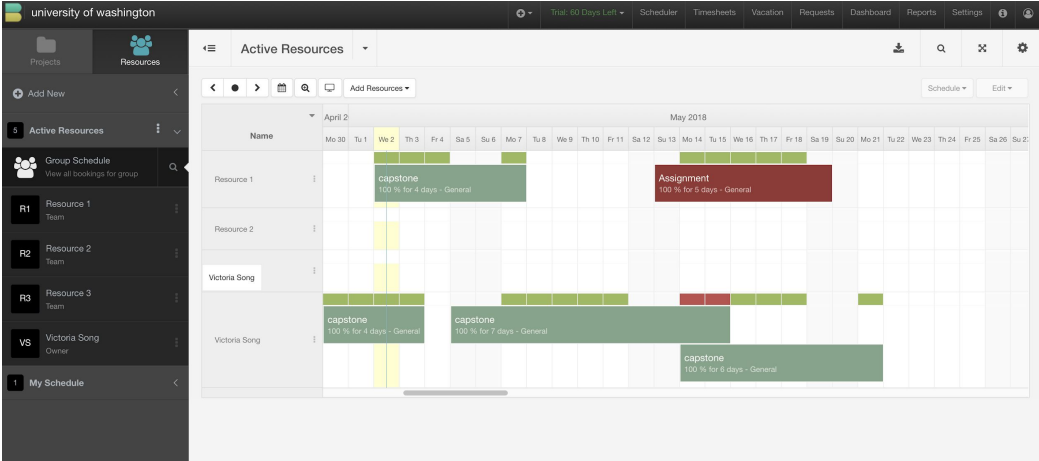
Grade

B

Assessment

When constraints are violated, the system offers warning but not obvious enough. For example, when the time of two activities overlap, the only warning indicator is two red boxes, which cannot capture users' attention efficiently.

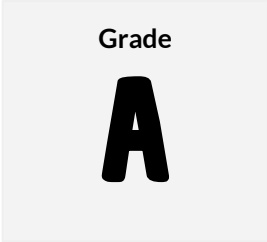
Memory Load



Landing page

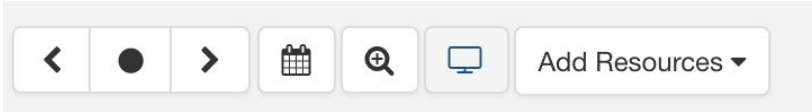
The screenshot shows the configuration page for a resource. It includes several sections: 'Make Project Manager' with a checkbox and a note that it can be assigned from a project; 'Make Approver' with a checkbox and a note that it requires installing extensions; 'Set Resource Role' with a dropdown menu set to 'Team'; 'Set Resource Status' with a dropdown menu set to 'Archived' and a link for more details; and 'Add Tags' with a text input field and a note about using 'Press' or 'Enter' to add tags.

Resource setting

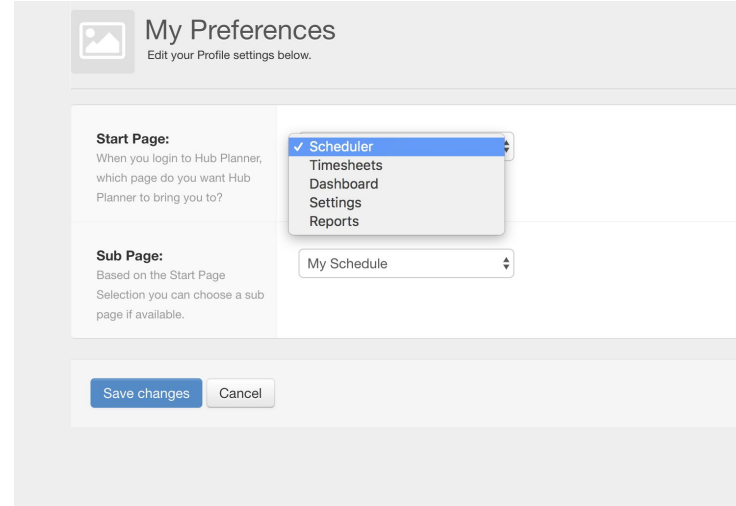


Assessment
Hub planner is easy to learn. The information hierarchy is clear and easy to follow. Interaction are prioritized correctly so that there's no struggle finding most of the desired functionalities. When having a multi-step decision making, the system gives appropriate hint in grey to prompt users.

Flexibility



Users have freedom to choose view modes, time scale, time etc.



Set preference on what to see in different pages.

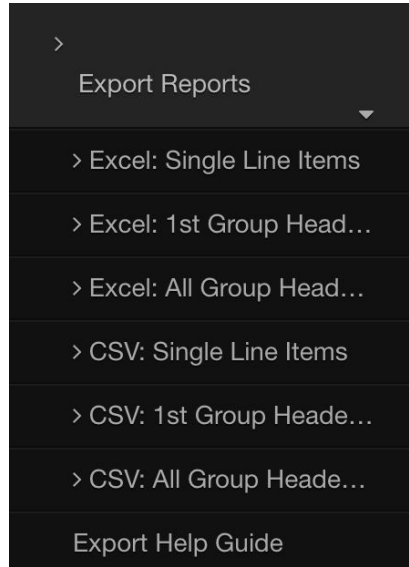
Grade

B

Assessment

Users have freedom on customize the interface and adjust timeline components but not sufficiently. But users are not able to customize the report and dashboard.

Save for Later



Export resources, events or the whole planner into files

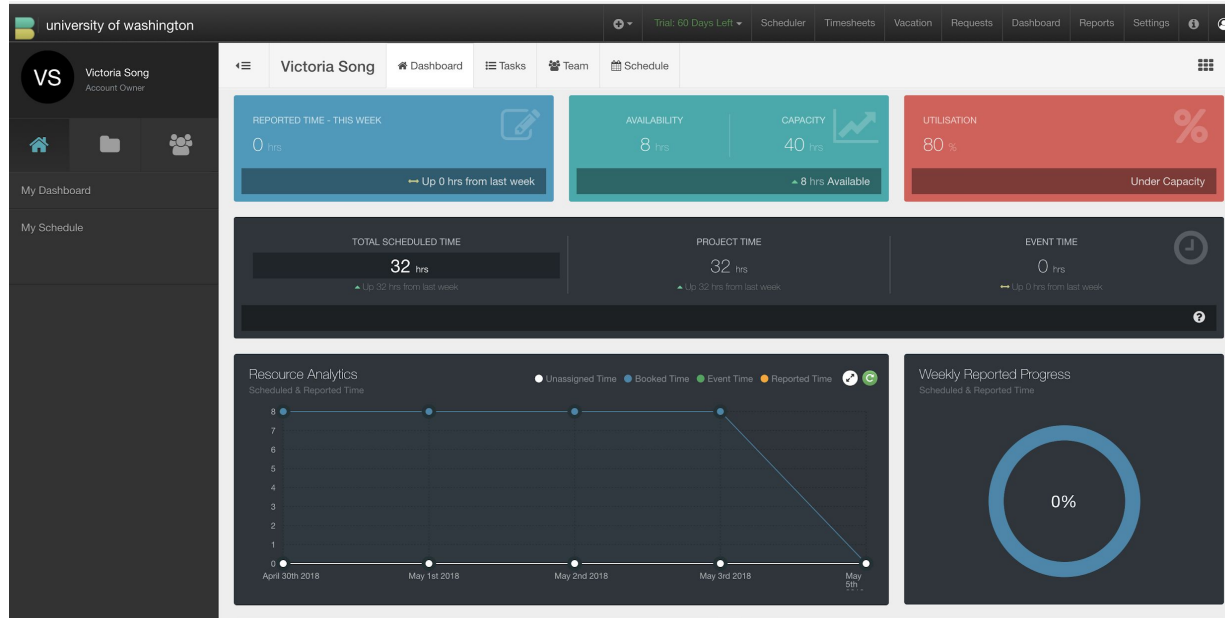
Grade

B

Assessment

Users are able to export any sections they want into local files for sharing. But there is no other alternative for sharing.

System Status



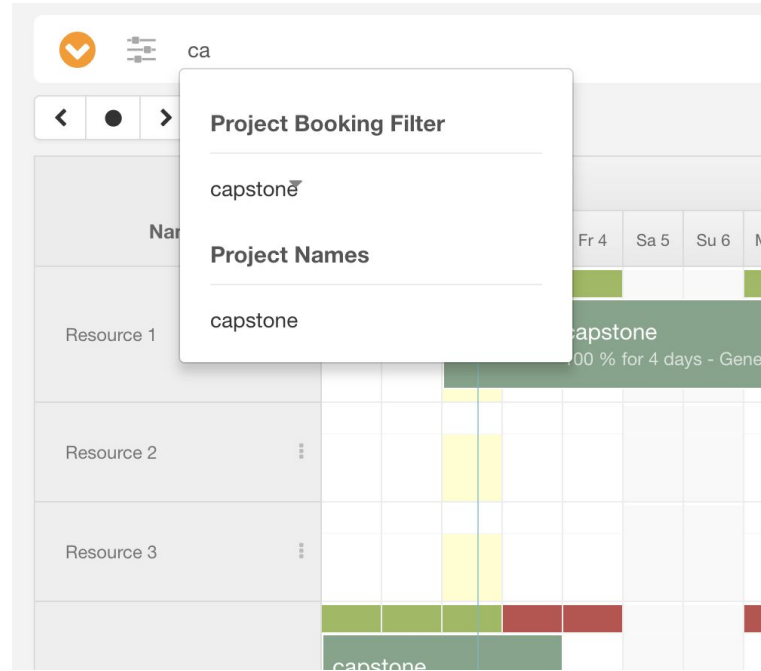
Grade

B

Assessment

Users access to all data by presentation of charts and graphs in the dashboard and monitor what goes wrong. But there are barely feedback showing up after users make decisions or make changes to current setting.

System Suggestion



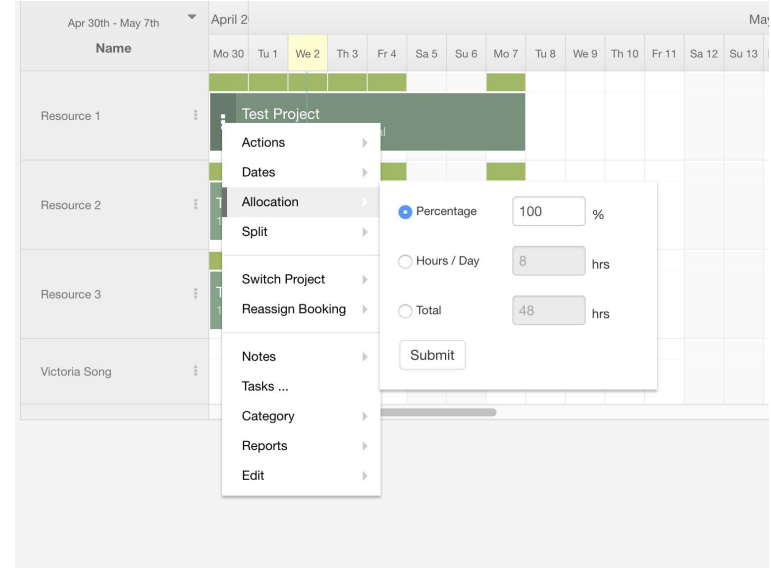
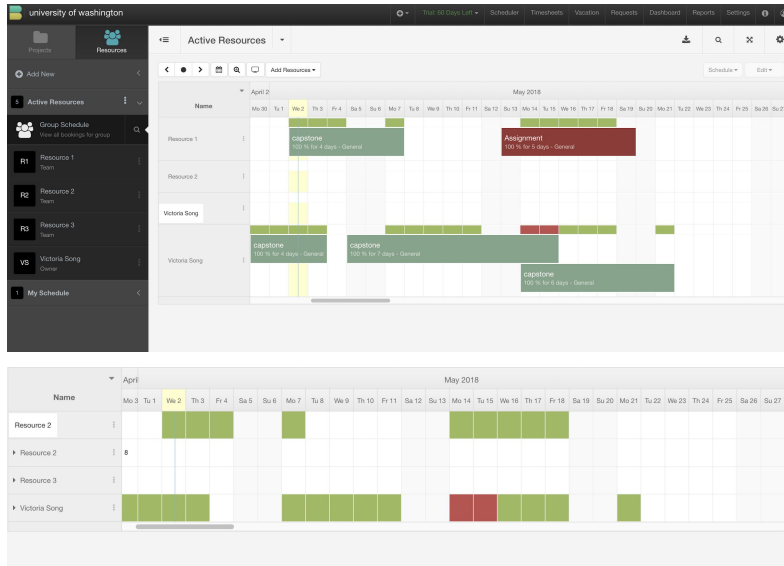
Grade

A

Assessment

When searching things in the search bar, the system gives hints on the intended category and words to help users clarify their searches.

Timelines



Grade

A

Assessment

Its timeline function is easy to read and adjust. By dragging and moving the box users easily adjust the timeline. Color coating and icons indicate types of activities clearly. By right clicking, users can split and allocate resources etc. The timeline is easy to be manipulated overall.

Other Notable Visualizations

Report

This Month: May 1, 2018 - May 31, 2018

Filters ▾

Expand / Collapse All 1 2

Hours

Date	Project Name	Total Scheduled Resource Time (hours)	Resource Data ID
▣ 14 capstone			
▣ 1 May 1st 2018			
Sub Total:	capstone	8	5aaa098204ea0b0c4e7faaa9
▣ 1 May 2nd 2018			
Sub Total:	capstone	8	5aaa098204ea0b0c4e7faaa9
▣ 1 May 3rd 2018			
Sub Total:	capstone	8	5aaa098204ea0b0c4e7faaa9
▣ 1 May 7th 2018			
Sub Total:	capstone	8	5aaa098204ea0b0c4e7faaa9
▣ 1 May 8th 2018			
Sub Total:	capstone	8	5aaa098204ea0b0c4e7faaa9
▣ 1 May 9th 2018			
Sub Total:	capstone	8	5aaa098204ea0b0c4e7faaa9
▣ 1 May 10th 2018			
Sub Total:	capstone	8	5aaa098204ea0b0c4e7faaa9
▣ 1 May 11th 2018			
Sub Total:	capstone	8	5aaa098204ea0b0c4e7faaa9

Grade

A

Assessment

Hub Planner gives a report on all data and give how resource is allocated on each activity.

Zoom

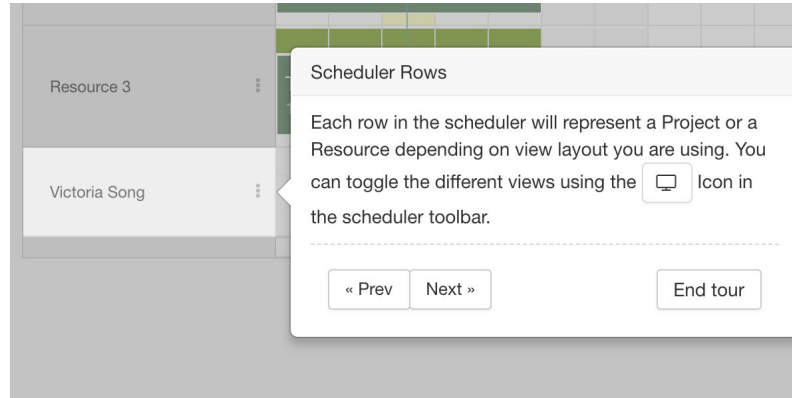
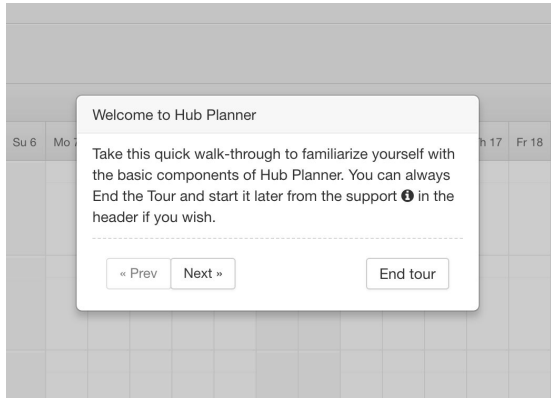
Grade



Assessment

Tool does not have native zoom feature but is responsive to trackpad zoom in/out

Learnability



[Start Tour](#)

[Knowledge-base](#)

[Suggest a Feature](#)

[View Planned Updates](#)

[Contact Us](#)

[About Hub Planner](#)

 [Report a Bug](#)

Grade

B

Assessment

HUB planner gives text tutorial for learning the software. And users are able to report the bug or contact the company for further help. But when users have doubts on a specific interaction, there's no direct entry to the answer. User have to go back to the tutorial to find answers.

SQL Compare

Description

Comparing SQL Server schema changes from dev, to test, to production. Error free deployment script in minutes.

Description

Database developers and DBAs

Type

Merge conflict tool

The screenshot displays the SQL Compare application interface. At the top, the title bar reads "SQL Compare - New project*" and the menu includes "File", "Actions", "Tools", and "Help". The main window shows a comparison between two SQL Server instances: "(local)SQL2012 GridSource" and "(local)SQL2012 GridTarget".

Filter Pane (Left):

- Objects excluded by this filter: 0
- Nothing excluded
- Custom filter rules...
 - All object types included
 - Assembly
 - Asymmetric key
 - Certificate
 - Contract
 - DDL trigger
 - Default
 - Event notification
 - Extended property
 - Full text catalog
 - Full text stop list
 - Function
 - Message type
 - Partition function
 - Partition scheme
 - Queue
 - Role
 - Route
 - Schema
 - Search property list
 - Security policy
 - Sequence
 - Service
 - Service binding
 - Stored procedure
 - Symmetric key
 - Synonym
 - Table
 - User
 - User defined type
 - View
 - XML schema collection

Main Table:

Type	Last modified	Owner	Object name	Object name	Owner	Last modified
3	in both, but different			0 of 3		
Table	2017-07-28 14:51	xyz	bar	bar	xyz	2017-07-28 14:52
Table	2016-10-17 15:26	dbo	foo	foo	dbo	2016-10-17 15:26
Stored pr	2016-10-20 12:57	dbo	fooProc	fooProc	dbo	2016-10-20 12:57
3	only in (local)SQL2012 GridSource			0 of 3		
Table	2016-10-17 15:26	dbo	onlyOne			
Table	2016-10-27 16:30	dbo	WidgetPrices			
Table	2016-10-28 10:13	dbo	WidgetReferences			
1	only in (local)SQL2012 GridTarget			0 of 1		
24	identical			=		

Summary View (Bottom):

- Column: b** (Green bar)
- Column: a** (Yellow bar)
Data type: int
- Column: d** (Red bar)
- Column: a** (Yellow bar)
Collation: Latin1_General_CI_AS
Data type: varchar (max)

Error Discovery

The screenshot shows the Deployment Wizard interface. The Source is 'MKT-TOMR2\SQL2012 WidgetStaging' and the Target is 'MKT-TOMR2\SQL2012 WidgetProduction'. The progress bar is at step 4, 'objects selected for deployment'. A warning icon is present next to the 'Table rebuild' section for '[dbo].[WidgetReferences]'. The warning text reads: 'Cannot alter 'SCHEMATA' property on column '[WidgetID]' on table '[dbo].[WidgetReferences]'. The table must be rebuilt. The data in the table apart from dropped columns will be preserved.'

Deployment method

1. Deployment method
2. No dependencies
3. Deploy

4 objects selected for deployment

Deployment Script Summary Warnings [1]

Table rebuild

[dbo].[WidgetReferences]

Cannot alter 'SCHEMATA' property on column '[WidgetID]' on table '[dbo].[WidgetReferences]'. The table must be rebuilt. The data in the table apart from dropped columns will be preserved.

Back Deploy now Close

The screenshot shows the Deployment Wizard interface. The Source is 'MKT-LTCARLY2\SQL2014 SimpleTalk_Test' and the Target is 'MKT-LTCARLY2\SQL2014 SimpleTalk_Production'. The progress bar is at step 2, 'Dependencies'. The 'Deploy all dependencies (recommended)' checkbox is checked. The 'Dependencies' section lists the following dependencies:

Objects selected for deployment	Dependencies	Referencing or referenced by
[dbo].[ArticleDescriptions]	[dbo].[Contact]	[dbo].[ArticleDescriptions], [dbo].[GetContact]
[dbo].[Articles]	[dbo].[CountryCodes]	[dbo].[ArticleDescriptions], [dbo].[GetContact]
[dbo].[OpinionPieces]		
[dbo].[GetContact]		

1. Deployment method

2. Dependencies

3. Deploy

Deploy all dependencies (recommended)

Back Deploy now Cancel

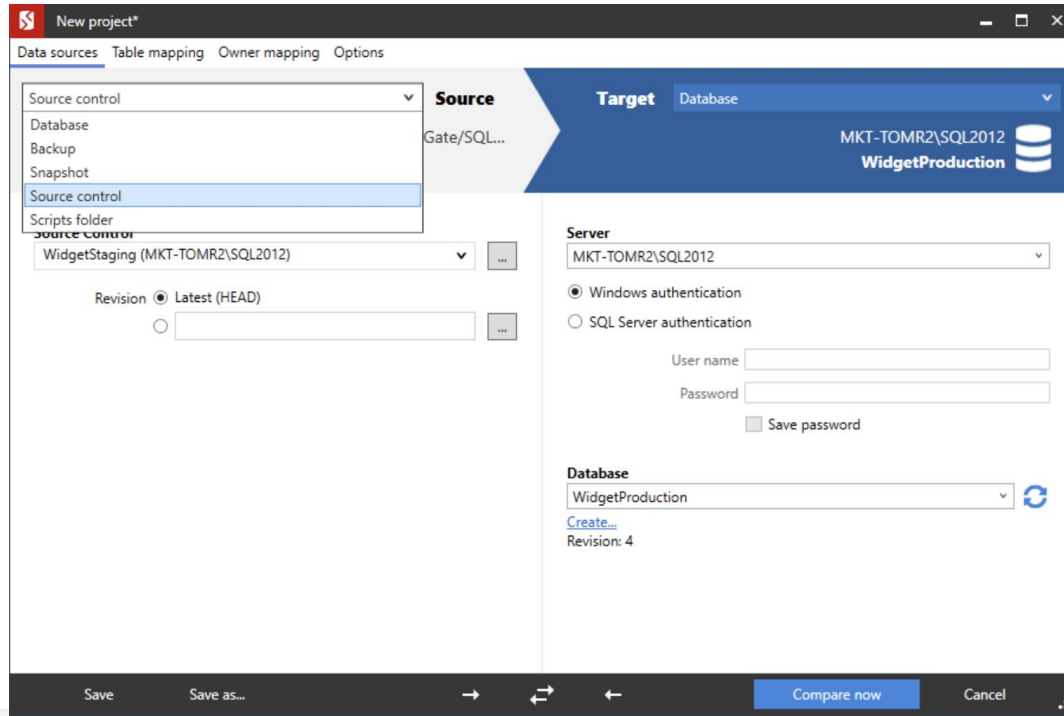
Grade

A

Assessment

Warnings are displayed in a final check off page pre deployment. Dependencies are also noted pre deployment.

Memory Load



Grade

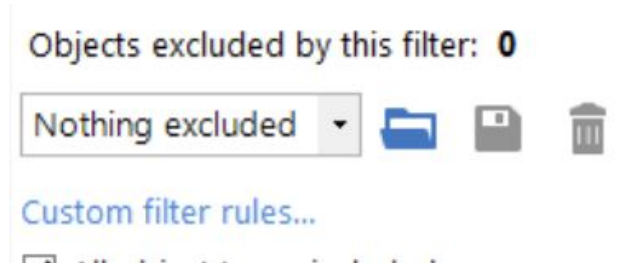
A

Assessment

Based on online reviews, users don't seem to have much trouble with this tool. It matches the mental model of users who are in this space. A look at the tool shows that options look very similar to Microsoft Visual Studio and SSMS design patterns.

Flexibility

What can I compare, synchronize, and deploy?	Standard	Pro
SQL Server 2005, 2008, 2012, 2014, 2016, 2017, SQL Azure, & SQL Server on Amazon RDS databases	✓	✓
Snapshots of the schema	✓	✓
Backup files (both native SQL Server & Redgate SQL Backup Pro)		✓
Folders of SQL scripts (for source control)		✓



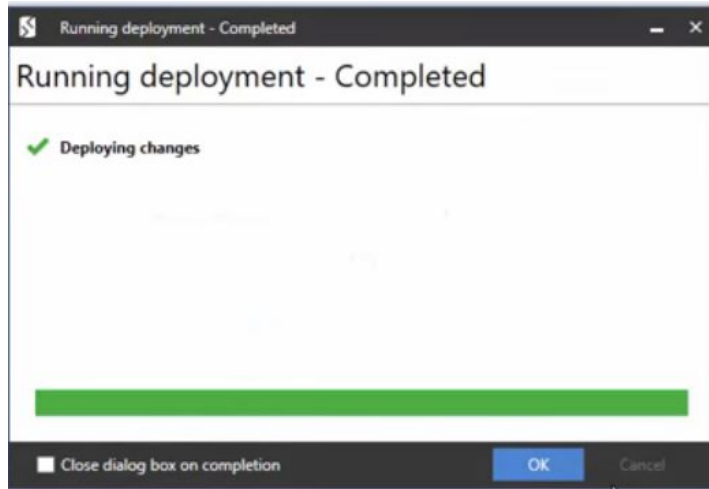
Grade

B

Assessment

Some use case flexibility in the Pro version of the tool which is \$300 more expensive than the standard version. The Pro version of the tool allows command line support and deployment from source control and backups. The standard version of the tool only allows for manual diffs and syncing of databases. Developers can create custom filter rules and write their own rules.

System Status



Grade

B

Assessment

Status bar when tool is diff-ing but doesn't seem to be updating in real time. Highlights in red for error states.

System suggestions

The screenshot shows a comparison of two databases: **MKT-LTCARLY2\SQL2014 SimpleTalk_Test** and **MKT-LTCARLY2\SQL2014 SimpleTalk_Production**. The interface displays a table of objects with columns for Type, Owner, Object Name, and a checkbox for selection. A tooltip is visible over the 'OpinionPieces' table, stating: 'dbo.OpinionPieces This object will be created in the target database if it is selected for deployment'.

Type	Owner	Object Name	Object Name	Owner
3 in both, but different				
Table	dbo	ArticleDescriptions	ArticleDescriptions	dbo
Table	dbo	Articles	Articles	dbo
Stored procedure	dbo	prcGetContacts	prcGetContacts	dbo
1 only in MKT-LTCARLY2\SQL2014				
Table	dbo	OpinionPieces		

Grade



Assessment

Doesn't make recommendations for other options but does provide tooltips.

Timelines

Grade



Assessment

Does not apply

Uses visualizations

Grade



Assessment

Does not apply

Zoom

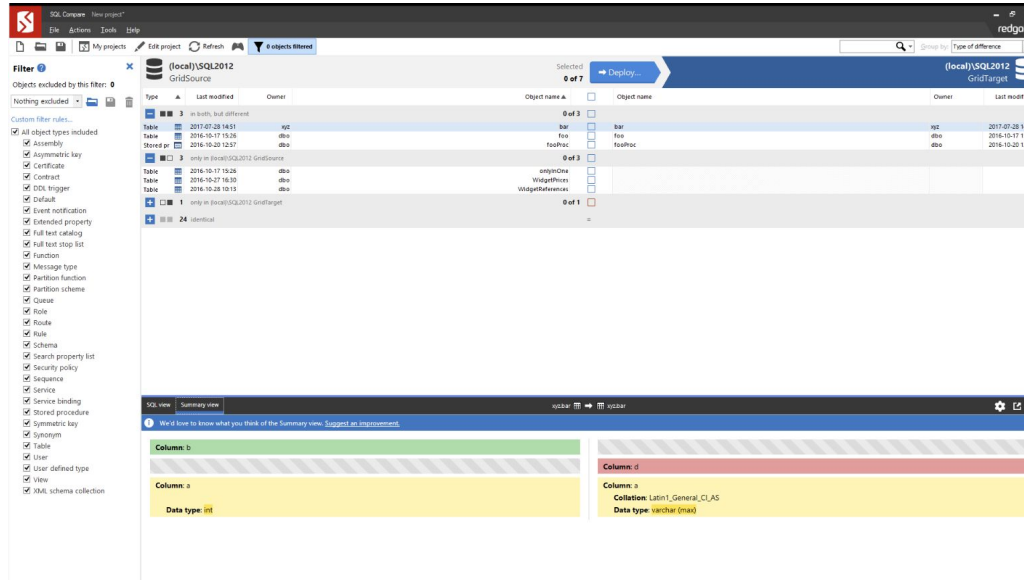
Grade



Assessment

Does not apply

Filter options



Grade

A

Assessment

A lot of advanced filtering options available. This tool advertises this as a key feature as well. It's easy to discover the filtering option functionality as there is a logo as well as a text tag. There is also the ability to create custom rules.

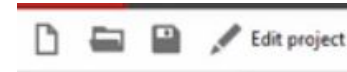
Save for later

Deploy using SQL Compare
 Create a deployment script

Back up target before deployment
 Recompare after deployment
 Save a copy of the deployment script:

Name

Create in 



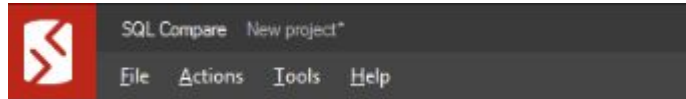
Grade

A

Assessment

Diffs and deployment scripts can be saved off for later use. This feature is similar to how you would save in Microsoft Word and easy to do.

Learnability

A screenshot of the SQL Compare 13 documentation page. The header includes the SQL Compare 13 logo and the text 'SQL Compare 13 documentation' and 'SQL Compare 13 documentation'. A link for 'Help for older versions available.' is present. A navigation menu on the left lists various topics. The main content area has a red header 'About SQL Compare' and a section 'Quick links' with several links.

SQL Compare 13
SQL Compare 13 documentation

Help for [older versions](#) available.

- > Requirements
- > About SQL Compare
 - Installing
- > Licensing
- > Upgrading
- > Setting up the comparison
- > Reviewing the comparison results
- > Deploying data sources
- > Working with other data sources
- > SQL Server Management Studio add-in
- > Using the command line
- > Getting more from SQL Compare
- > Worked examples
- > Troubleshooting
- > Release notes and other versions

SQL Compare 13 documentation

Last updated 12 September 2017

About SQL Compare

With SQL Compare, you can compare and deploy the structure of two Microsoft SQL Server databases.

SQL Compare includes an add-in for Management Studio you can use to compare and deploy databases. For more information, see [Getting started with the add-in](#).

Quick links

- [SQL Compare product page](#)
- [Release notes for SQL Compare 13.0](#)
- [Worked example - comparing and deploying two databases](#)
- [Using the command line](#)

Grade

B

Assessment

The help bar is where one might expect it would be for a tool like this, on the toolbar. There is easy access to documentation as well as contact information to reach the technical support team.

Zoho Projects

Description

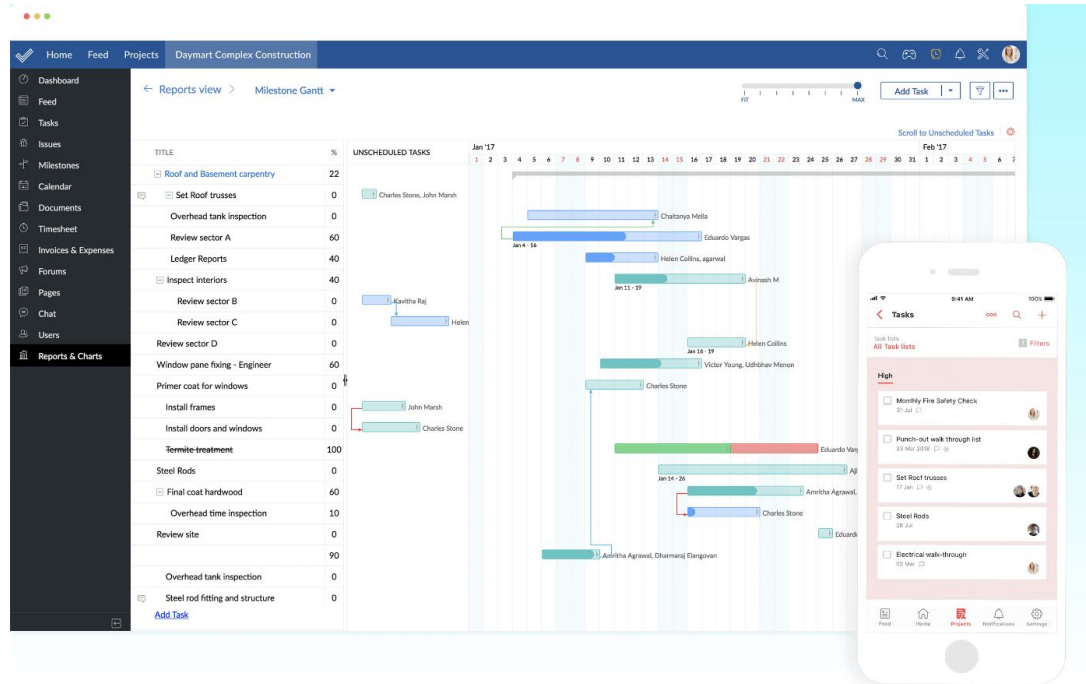
Project management tool that serves two different purposes: traditional project management and to manage sprints for agile teams. The tool can be used to plan, track, and collaborate.

User

Anybody working collaboratively on a project. Business software.

Type

Project Management tool



Error Discovery

The screenshot shows a project management application interface. The top navigation bar includes 'Home', 'Feed', 'Projects', 'ERP Phase III', and 'Donnelly Apartments Construction'. A left sidebar contains navigation options: Dashboard, Feed, Tasks, Bugs, Milestones, Calendar, Documents, Timesheet (with a red notification badge), Invoices & Expe..., Forums, Pages, Chat, and Users. The main content area is titled 'Classic Plain Dependency Kanban' and displays a table of tasks with their dependencies.

	TASK	DURATION	START	FINISH	PREDECESSORS	RESOURCE NAMES	STATUS Open/Close
1	Strip top soil and stock pile	33:0 hrs	10/31/2016 09:00	11/03/2016 09:00		John Marsh	<input type="checkbox"/>
2	Stake Lot for excavation	25:0 hrs	11/04/2016 09:00	11/08/2016 09:00		John Marsh , Steve Banks	<input type="checkbox"/>
3	Excavate for foundation	49:0 hrs	11/09/2016 09:00	11/16/2016 09:00	2, 1	John Marsh	<input type="checkbox"/>
4	Layout footings	0 day	11/17/2016 09:00	11/17/2016 09:00		John Marsh	<input type="checkbox"/>
5	Dig footings and install reinforcing	0 day	11/18/2016 09:00	11/18/2016 09:00		John Marsh	<input type="checkbox"/>
6	Footing inspection	0 day	11/21/2016 09:00	11/21/2016 09:00	4	John Marsh	<input type="checkbox"/>
7	Pour footings	0 day	11/21/2016 09:00	11/21/2016 09:00	5	John Marsh	<input type="checkbox"/>
8	Stock block, Mortar, sand	0 day	11/22/2016 09:00	11/22/2016 09:00		John Marsh	<input type="checkbox"/>
9	Build block foundation	145:0 hrs	11/23/2016 09:00	12/16/2016 09:00		John Marsh	<input type="checkbox"/>
10	Set steel	0 day	12/21/2016 09:00	12/21/2016 09:00		John Marsh	<input type="checkbox"/>

Grade

B

Assessment

Not exactly the same as error discovery, but dependencies can be viewed on the task page. This helps the user identify bottlenecks when things get delayed.

Memory Load

All Milestones Add Milestone Filter More

MILESTONE	OWNER	START DATE	END DATE	TASKS	BUGS
Upcoming Milestones					
Plumbing Rough-in	Charles Stone	01/24/2017	02/28/2017 (15 days to go)	1 <div style="width: 25%;"></div> 3	No Bugs
Electric Rough-in	Charles Stone	02/22/2017	03/15/2017 (25 days to go)	2 <div style="width: 50%;"></div> 2	No Bugs
Exterior Finishes	Steve Banks	05/25/2017	07/13/2017 (111 days to go)	2 <div style="width: 50%;"></div> 2	No Bugs
Reorder					
Overdue Milestones					
Contracts and Agreements	Eduardo Vargas	10/03/2016	10/14/2016 (82 days ago)	9 <div style="width: 100%;"></div> 0	No Bugs
Document Review and Revision	Helen Collins	10/17/2016	10/21/2016 (77 days ago)	5 <div style="width: 100%;"></div> 1	No Bugs
Preparatory Site work	John Marsh	10/24/2016	11/16/2016 (59 days ago)	1 <div style="width: 100%;"></div> 3	No Bugs

Grade

A

Assessment

Easy to know what you are doing at any given point in time. All actions are clearly labeled, reducing cognitive load. There is also a milestone page that allows for the project manager to see easily what is upcoming and what is overdue.

Flexibility

The screenshot displays a Zoho project management interface. On the left, a sidebar shows a hierarchy of tasks under the heading "Site plans". The main area shows the details for the "Supply contract site plan" task, including its creation date, a list of subtasks, and various management options. On the right, a details panel provides information about followers, project name, task list, associated milestones, and assigned users, along with start and due dates.

Task Name	Owner
Supply contract site plan	Eduardo Vargas, Helen Collins
Sketch rough plan	Helen Collins
Finalize site plan drawing	Helen Collins
Supply-contract-specifications	John Marsh
Supply-contract-plans	Helen Collins

Supply contract site plan
Created by Helen Collins on 01/04/2017 16:22

Comments (1) Description **Subtask (2)** Log Hours (5:00) Documents Forums Activities Bugs

- Supply contract site plan
 - Sketch rough plan
 - Finalize site plan drawing

[Add Subtask](#) [Subtask Reorder](#)

Mark as complete [trash] [more]

Followers :
None [Add Followers](#)

Project Name
Donnelly Apartments Construction

TaskList
Site plans [change](#)

Associated Milestone
Contracts and Agreements

Assigned to :
Eduardo Vargas, Helen Collins [change](#)

Start Date
10/11/2016 09:00 [calendar]

Due on
10/14/2016 17:00 [calendar]

Export this view to



Grade

A

Assessment

A lot of integration with other Zoho tools as well as mainstream tools such as Slack, GitHub, Google products, and Dropbox, Microsoft products. Has an API which means can integrate into existing workflow or build new apps on top of Zoho API. The Gantt charts also have different views based on project structure, task, or start dates. Subtasks can also be captured and assigned to people.

Visibility of System Status



Grade

A

Assessment

Details of each task, including percentage, duration, start date, end date, and owner are shown on the Gantt charts. Unread messages and tasks are also shown in red. It is easy to tell which task you are working on among a lot of tasks.

Makes recommendations for other options

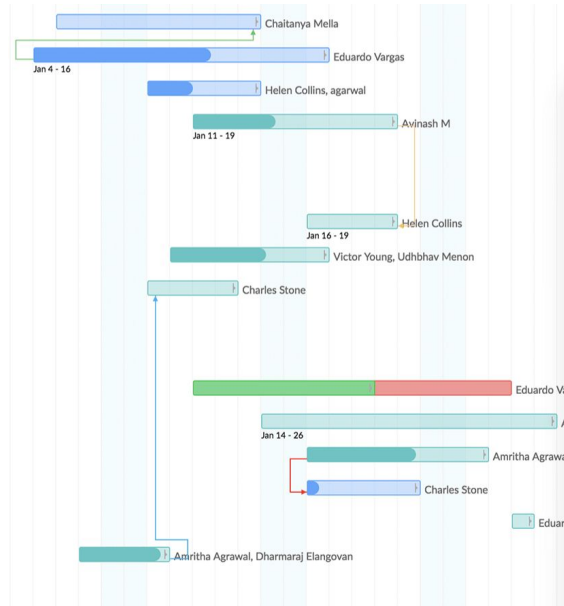
Grade



Assessment

Does not apply, however, dependencies are color coded hence making it easy to see how each change might affect another

Timelines



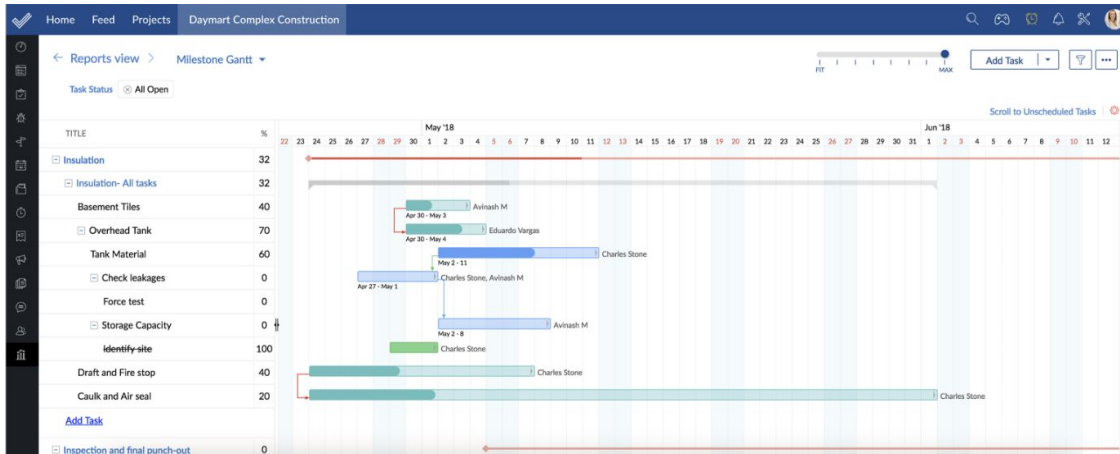
Grade

A

Assessment

Timelines can be adjusted by dragging and dropping the bars

Uses visualizations



END DATE	TASKS	BUGS
02/28/2017 (15 days to go)	1 <div style="width: 25%;"></div> 25% 3	No Bugs
03/15/2017 (25 days to go)	2 <div style="width: 50%;"></div> 50% 2	No Bugs
07/13/2017 (111 days to go)	2 <div style="width: 50%;"></div> 50% 2	No Bugs
10/14/2016 (82 days ago)	9 <div style="width: 100%;"></div> 100% 0	No Bugs
10/21/2016 (77 days ago)	5 <div style="width: 100%;"></div> 100% 1	No Bugs
11/16/2016 (59 days ago)	1 <div style="width: 100%;"></div> 100% 3	No Bugs

Grade

A

Assessment

One of the highlighted features of Zoho Projects is Gantt charts. Dependencies are color coded.

Zoom

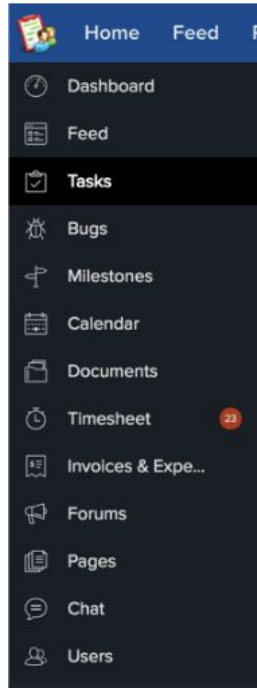
Grade



Assessment

Does not apply, there are several filtering options that allow you to view shorter or longer time frames but are not zoom functionalities.

Filter options



Grade

A

Assessment

Filter options are available for chart view. Types of tasks are also broken down in the toolbar on the left side of the tool.

Save for later

Grade



Assessment

Does not apply, adjustments are dynamically adjusted the last edited is automatically saved.

Learnability



Grade

C

Assessment

Pretty high reviews on all software review platforms. Relies on documentation, webinars, and email to support@zohoprojects.com for additional help. Most icons have labeling but the ones without are not easy to interpret what they might offer after clicking.

GitHub Desktop

Description

GitHub Desktop is an interface for project management that uses git to manage and track changes to files and allows collaboration through branching and merging.

Type

Project Management

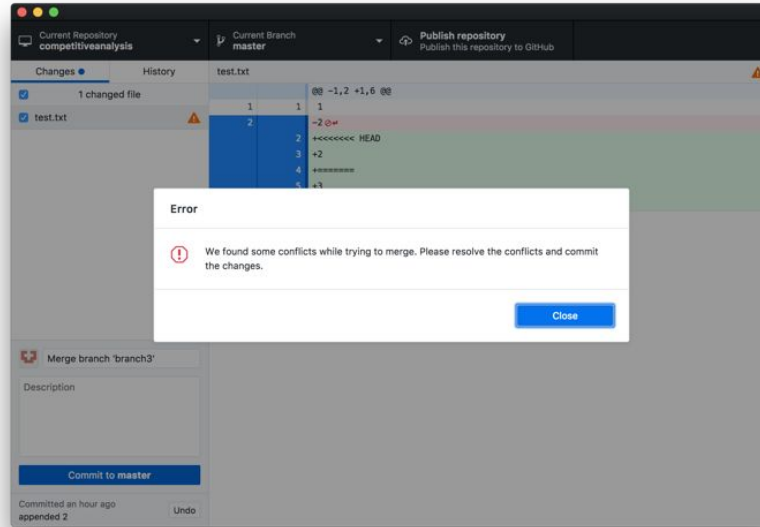
Target Users

Software engineers, other developers, including UI and designers

The screenshot displays the GitHub Desktop application interface. At the top, it shows the 'Current Repository' as 'desktop' and the 'Current Branch' as 'esc-pr' with a commit hash of '#3972'. A 'Fetch origin' button indicates the last fetch was 3 minutes ago. Below this, a list of changes is shown, including 'Add event handler to dropdown component', 'Move escape behavior to correct co...', and 'Merge pull request #4044 from des...'. The right pane shows a diff for the file 'app/src/ui/t.../dropdown.tsx'. The diff highlights several changes, including the addition of a state property 'clientRect' and a new event handler 'onFoldoutKeyDown'.

```
@@ -145,6 +145,10 @@ export class ToolbarDropdown extends
React.Component<
  this.state = { clientRect: null }
}
+ private get isOpen() {
+   return this.props.dropdownState === 'open'
+ }
+ private dropdownIcon(state: DropdownState): OcticonSym
bol {
  // @TODO: Remake triangle octicon in a 12px version,
  // right now it's scaled badly on normal dpi monitor
s.
@@ -249,6 +253,13 @@ export class ToolbarDropdown extends
React.Component<
  }
}
+ private onFoldoutKeyDown = (event:
React.KeyboardEvent<HTMLInputElement>) => {
+   if (!event.defaultPrevented && this.isOpen &&
event.key === 'Escape') {
+     event.preventDefault()
+     this.props.onDropDownStateChanged('closed', 'keybo
ard')
```

Error Discovery



Pop-up Window

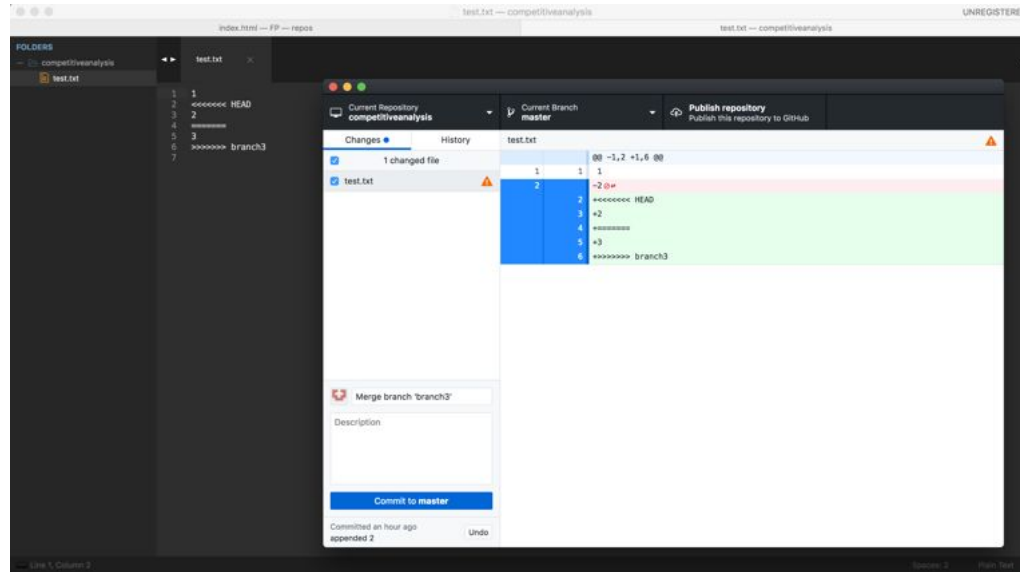
Grade

A

Assessment

User is notified of errors immediately. Error notifications are impossible to miss as they appear in a popup window that requires action to close.

Error Handling



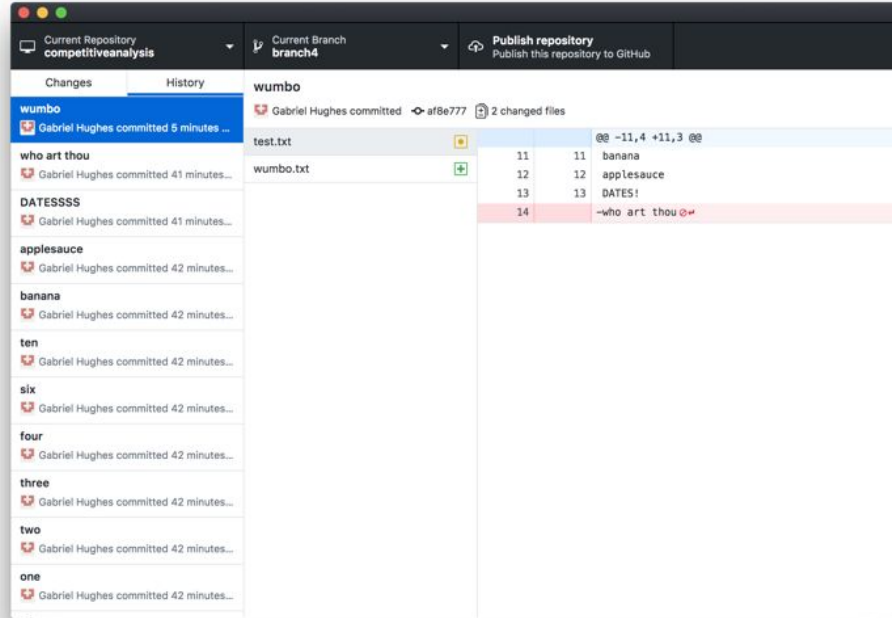
Grade

F

Assessment

Errors cannot be handled in the GitHub Desktop interface. The user must edit the original file to resolve error conflict. Visualizing the error is also poor. Git edits the original file, adding in text indicators that point to the conflict. The larger the conflict, the more difficult this will be to identify, and to identify the differences in the files that are causing the issue. Once the issue has been identified, it is not clear what the user should do.

Memory Load



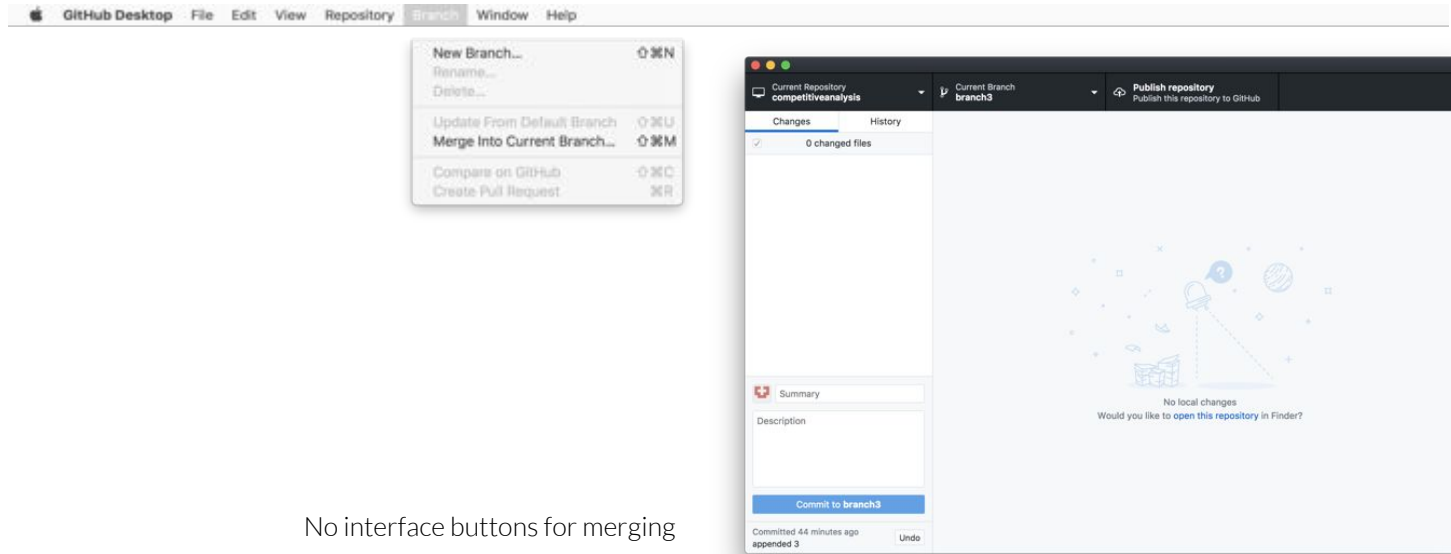
Grade

A

Assessment

Clear visual hierarchy that goes from general to specific in a linear fashion. Users can filter by commit, then by file to see the content and how it changed from the previous commit. The interface overall is quite minimal considering its functionality. However, this can be a disadvantage for new users in terms of discovering features.

Merging



No interface buttons for merging

Grade

C

Assessment

Unclear how to merge branch into master. Solution is not visible within the actual interface and is only accessible via the menu bar. However, once it has been discovered, merging is relatively easy to understand, but could certainly benefit from more instructions or help.

Flexibility

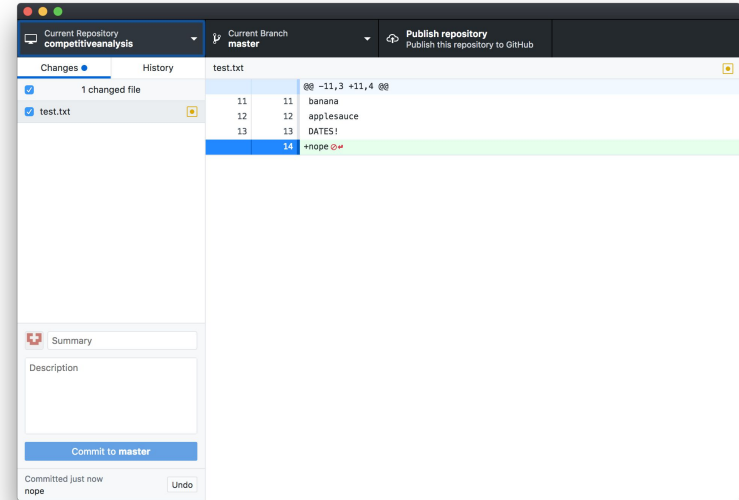
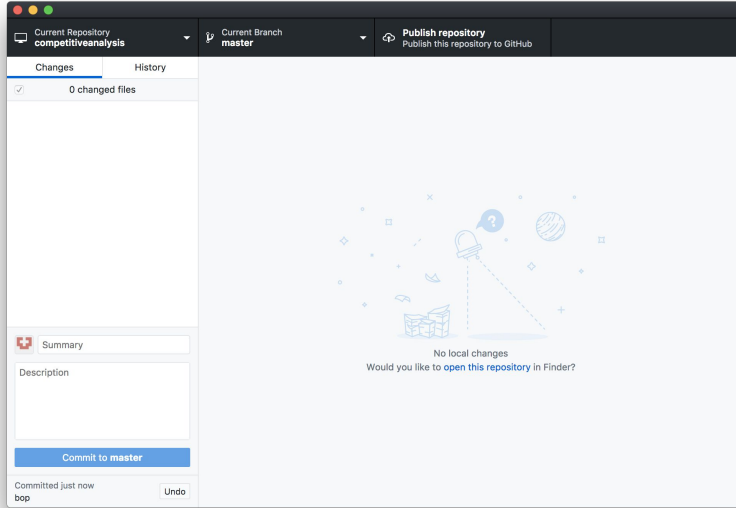
Grade

F

Assessment

GitHub Desktop offers no customization and, overall, does not have as many features as Sourcetree.

System Status



Grade

A

Assessment

GitHub Desktop is perhaps even clearer with indicating system changes than Sourcetree. It says “1 changed file” where Sourcetree only uses icons. Evaluation of changes could be better in the cases of errors/conflicts.

System Suggestions

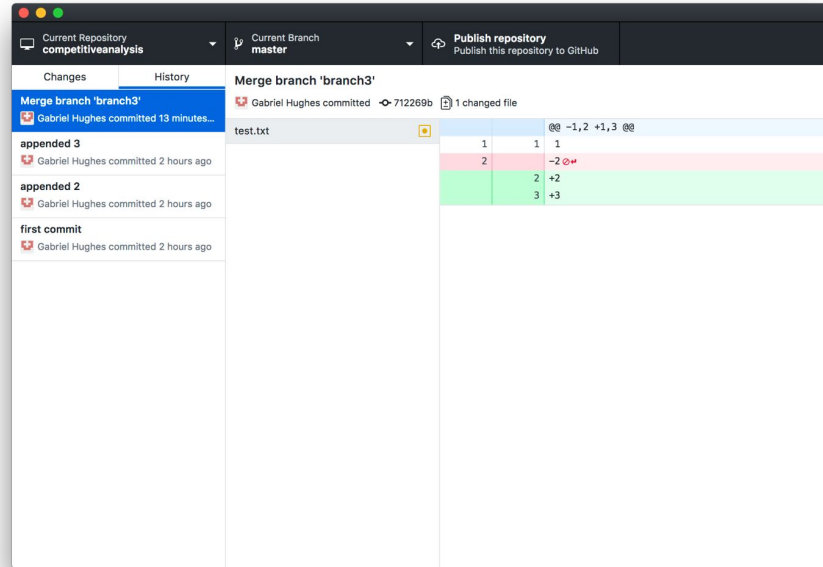
Grade



Assessment

GitHub Desktop does not provide suggestions. For a tool with such wide range of use, recommendations do not make total sense. However, the system could provide better instructions overall for handling errors, etc.

Timeline (History)



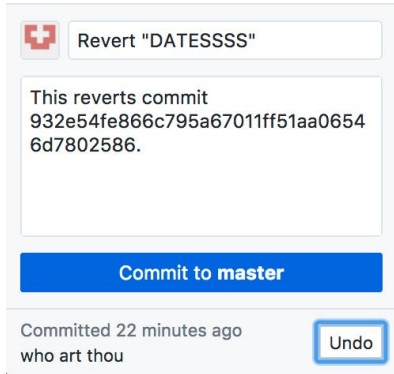
Grade

B

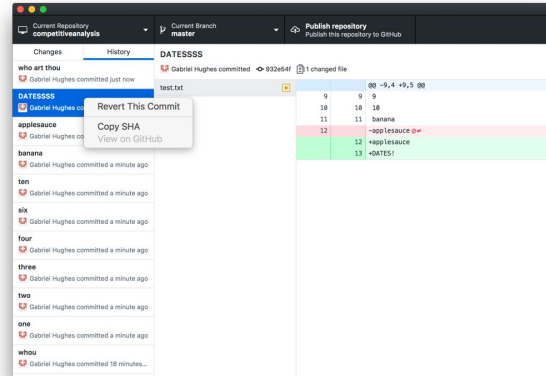
Assessment

GitHub Desktop is not a scheduling tool and thus does not have any scheduling functionality or timelines. However, it is important to be able to track changes and the order in which they occurred. History of changes is easily accessible. Visualization of changes could be better, but because of the use case it is not necessary to view more than just added or deleted text. Unclear what some icons mean.

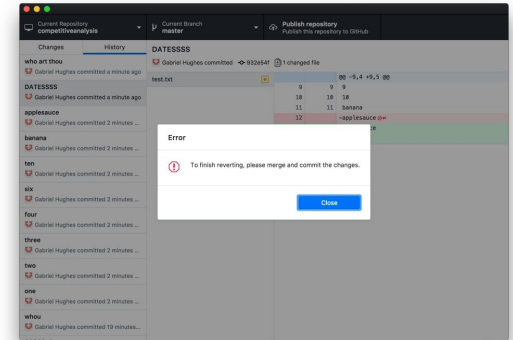
Undo



Undo Button



Revert Commits



No Instructions

Grade

B

Assessment

Plain git does not support undo. Instead, the user is required to revert to a previous commit, which can be a cumbersome process. GitHub desktop makes this slightly easier by including an “Undo” button on the most recent change. However, reverting to a previous commit has issues; it is unclear why the user needs to “merge and commit the changes,” nor does the system tell the user how to do so.

Zoom

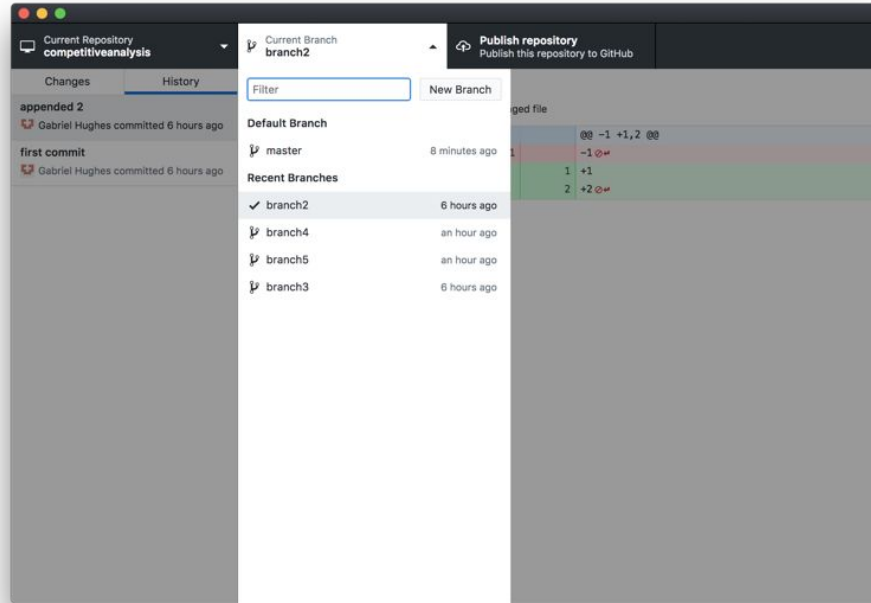
Grade



Assessment

Not Applicable

Filter



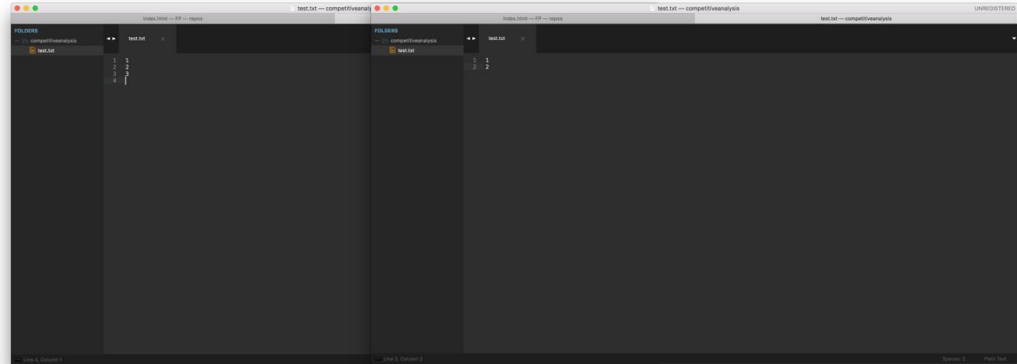
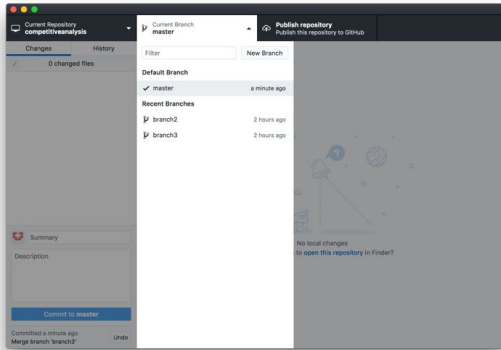
Grade

A

Assessment

Users can filter by branch, i.e., only see changes made in their branch. This is a highly useful feature, especially on a project with multiple teams. It removes the possibility of accidentally changing other teams' work.

State Saving + Switching



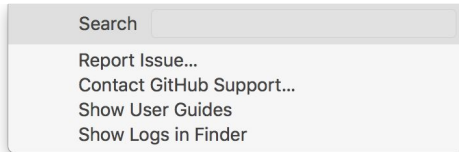
Grade

A

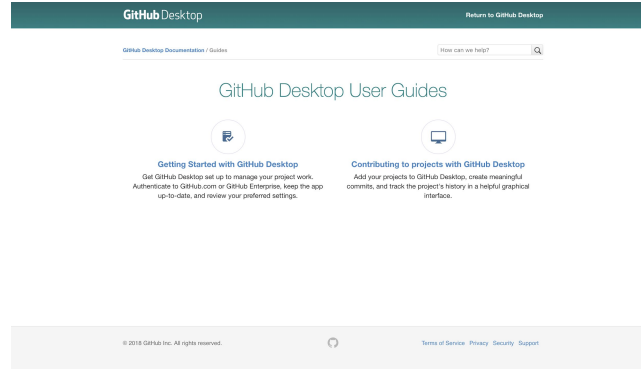
Assessment

Switching between original and changed files is easy. Git overwrites the user's files but keeps track of all of them so that the user can easily switch between files with different changes. Committing is required to write changes and all previous commits are saved.

Learnability



Help must be accessed in menu bar



Documentation Website
(External)

Grade

C

Assessment

Jira's error notification system's strengths are the clear red color that draws attention to the to message and in the example of the Full Screen error gives the user alternative options. Where it falls short is in the lack of consistency in placement, messaging, and the amount of information provided. It is hard to know where to expect an error to show, and this system makes it hard to anticipate what is permissible without trying and failing.

Sourcetree

Description

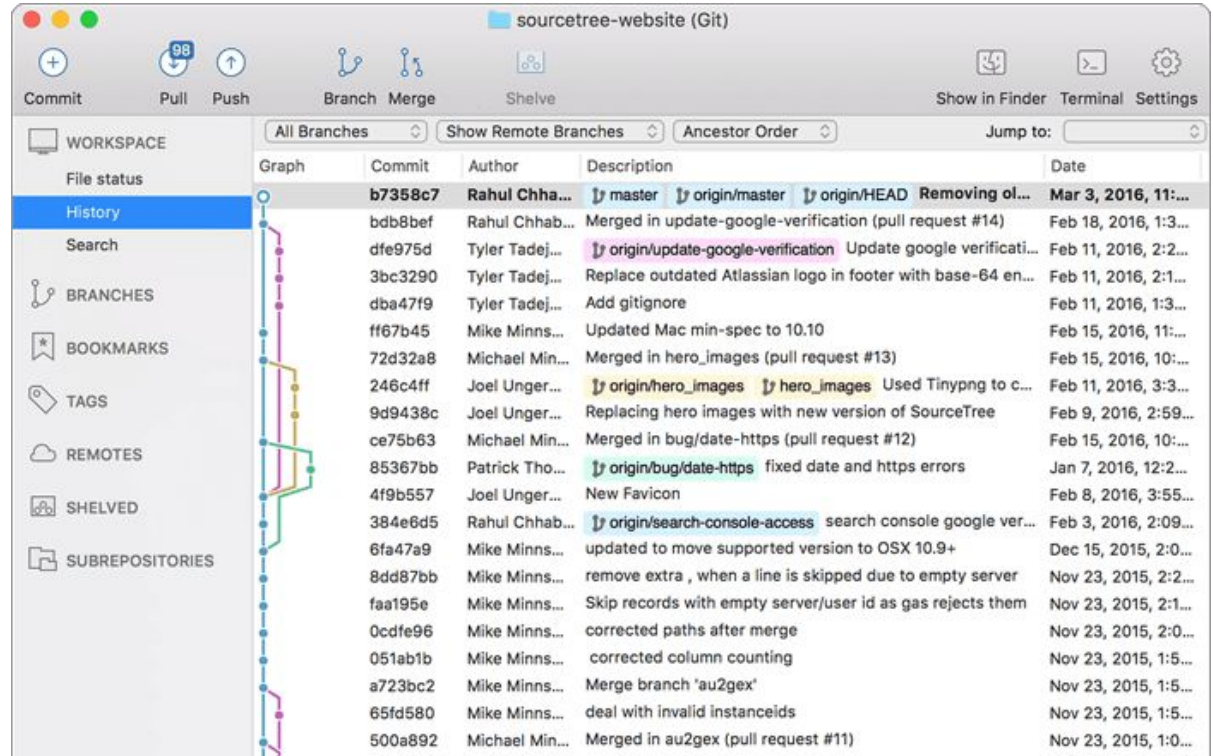
Sourcetree is an interface for project management that uses git to manage and track changes to files and allows collaboration through branching and merging.

Type

Project Management

Target Users

Software engineers, other developers, including UI and designers



The screenshot shows the Sourcetree application window for a repository named "sourcetree-website (Git)". The interface includes a top toolbar with actions like Commit, Pull, Push, Branch, Merge, and Shelve. Below the toolbar is a navigation sidebar with sections for WORKSPACE, BRANCHES, BOOKMARKS, TAGS, REMOTES, SHELVED, and SUBREPOSITORIES. The main area displays a commit history table and a corresponding branch graph.

Graph	Commit	Author	Description	Date
	b7358c7	Rahul Chha...	↳ master ↳ origin/master ↳ origin/HEAD Removing ol...	Mar 3, 2016, 11:...
	bdb8bef	Rahul Chhab...	Merged in update-google-verification (pull request #14)	Feb 18, 2016, 1:3...
	dfe975d	Tyler Tadej...	↳ origin/update-google-verification Update google verificati...	Feb 11, 2016, 2:2...
	3bc3290	Tyler Tadej...	Replace outdated Atlassian logo in footer with base-64 en...	Feb 11, 2016, 2:1...
	dba47f9	Tyler Tadej...	Add gigitgnore	Feb 11, 2016, 1:3...
	ff67b45	Mike Minns...	Updated Mac min-spec to 10.10	Feb 15, 2016, 11:...
	72d32a8	Michael Min...	Merged in hero_images (pull request #13)	Feb 15, 2016, 10:...
	246c4ff	Joel Unger...	↳ origin/hero_images ↳ hero_images Used Tinypng to c...	Feb 11, 2016, 3:3...
	9d9438c	Joel Unger...	Replacing hero images with new version of SourceTree	Feb 9, 2016, 2:59...
	ce75b63	Michael Min...	Merged in bug/date-https (pull request #12)	Feb 15, 2016, 10:...
	85367bb	Patrick Tho...	↳ origin/bug/date-https fixed date and https errors	Jan 7, 2016, 12:2...
	4f9b557	Joel Unger...	New Favicon	Feb 8, 2016, 3:55...
	384e6d5	Rahul Chhab...	↳ origin/search-console-access search console google ver...	Feb 3, 2016, 2:09...
	6fa47a9	Mike Minns...	updated to move supported version to OSX 10.9+	Dec 15, 2015, 2:0...
	8dd87bb	Mike Minns...	remove extra , when a line is skipped due to empty server	Nov 23, 2015, 2:2...
	faa195e	Mike Minns...	Skip records with empty server/user id as gas rejects them	Nov 23, 2015, 2:1...
	0cdf96	Mike Minns...	corrected paths after merge	Nov 23, 2015, 2:0...
	051ab1b	Mike Minns...	corrected column counting	Nov 23, 2015, 1:5...
	a723bc2	Mike Minns...	Merge branch 'au2gex'	Nov 23, 2015, 1:5...
	65fd580	Mike Minns...	deal with invalid instanceids	Nov 23, 2015, 1:5...
	500a892	Michael Min...	Merged in au2gex (pull request #11)	Nov 23, 2015, 1:0...

Error Discovery



Pop-up Window

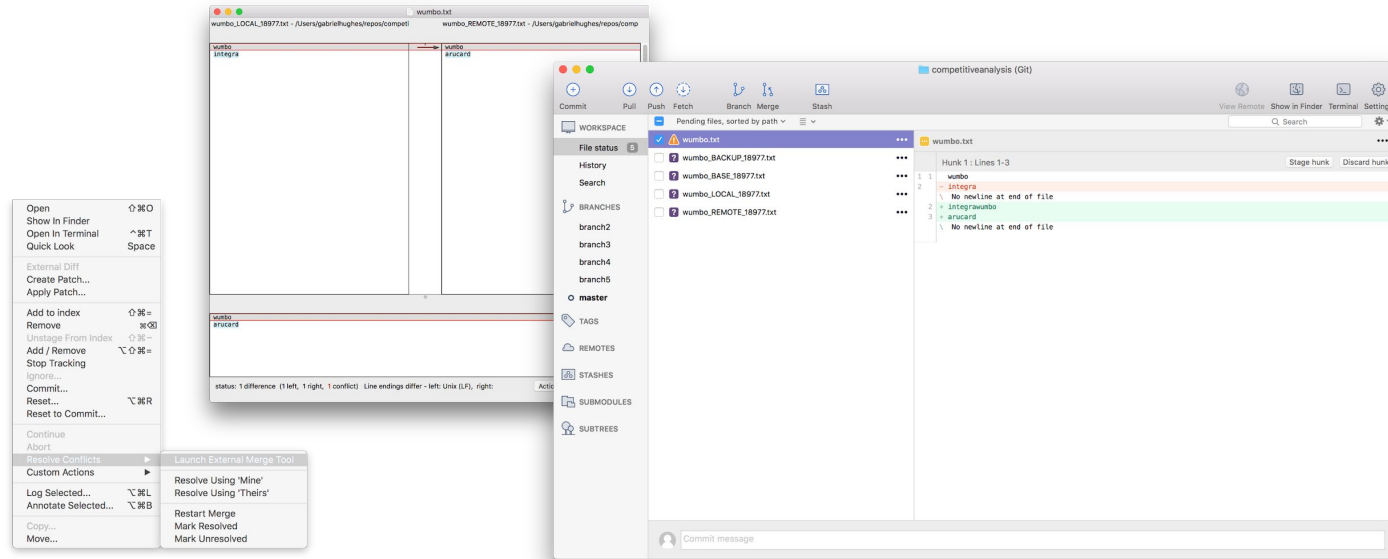
Grade

A

Assessment

User is notified of errors immediately. Error notifications are impossible to miss as they appear in a popup window that requires action to close. Improvements over GitHub Desktop in that the system gives the user brief instructions on exactly how to merge the conflicts (GitHub does not provide instructions).

Error Handling



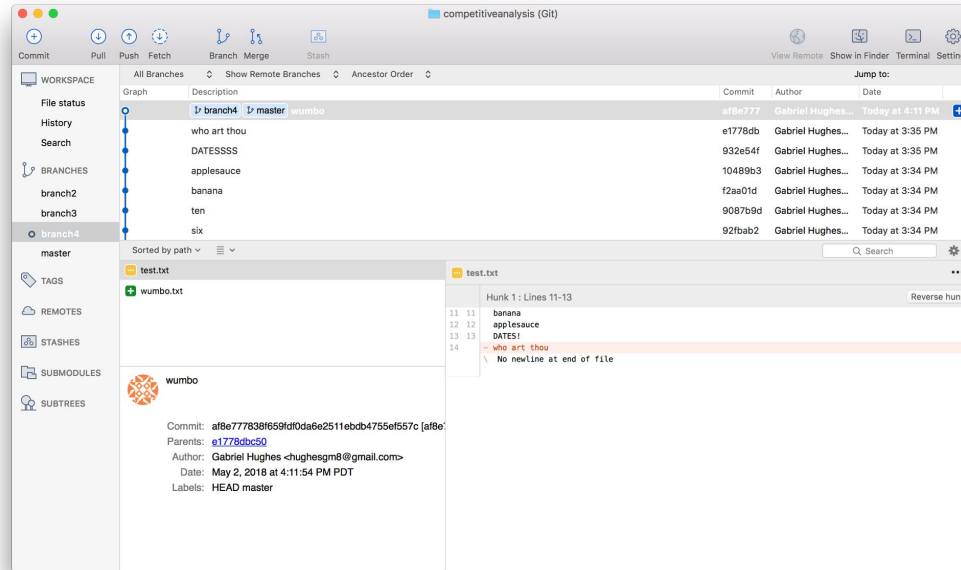
Grade

B

Assessment

Following system instructions from notification gives the user multiple options for resolving conflicts, including launching an external tool. These tools often suffer from gulfs of execution in that it is unclear how the final file will look after resolving a conflict. When I did it, the file was not how I expected it to look. However, Sourcetree creates several backup files for each branch involved.

Memory Load



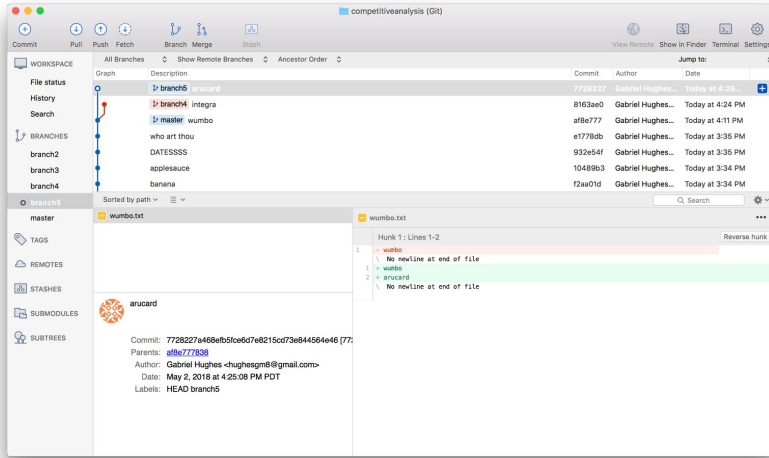
Grade

B

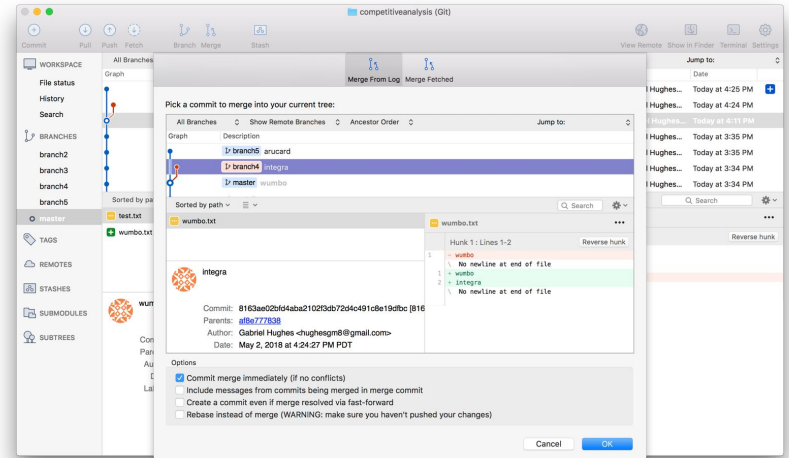
Assessment

Interface has many more features than GitHub Desktop but as a result risks being a burden on cognitive load. Hierarchy is questionable and seems almost arbitrary. It is not clear what interface items relate to others or how interacting with one will affect other elements.

Merging



Interface Buttons for Merging



Clear Instructions

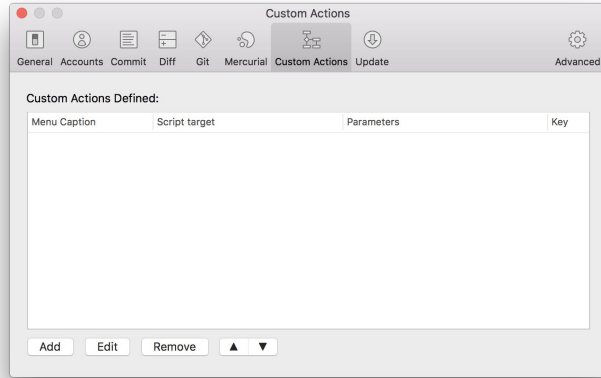
Grade

A

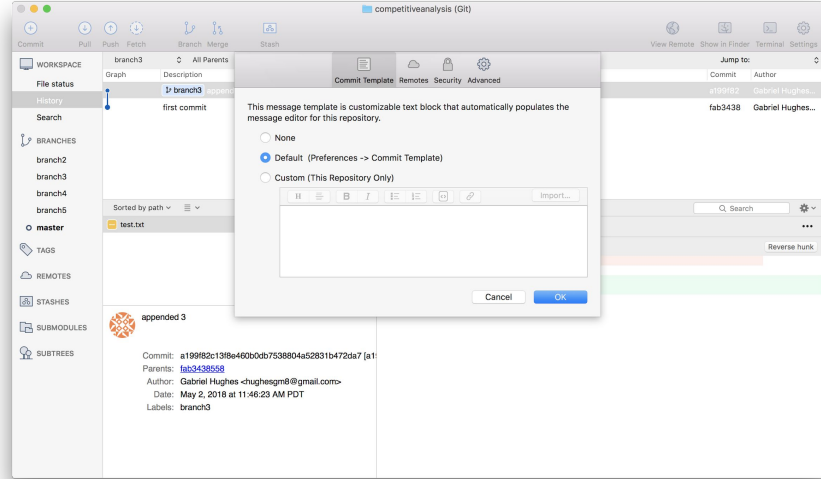
Assessment

Interface removes gulf of execution that GitHub Desktop suffers from by including a dedicated merge button. System provides clear instructions (though on a cluttered window) for how to go about this.

Flexibility



Custom Actions



More Customization

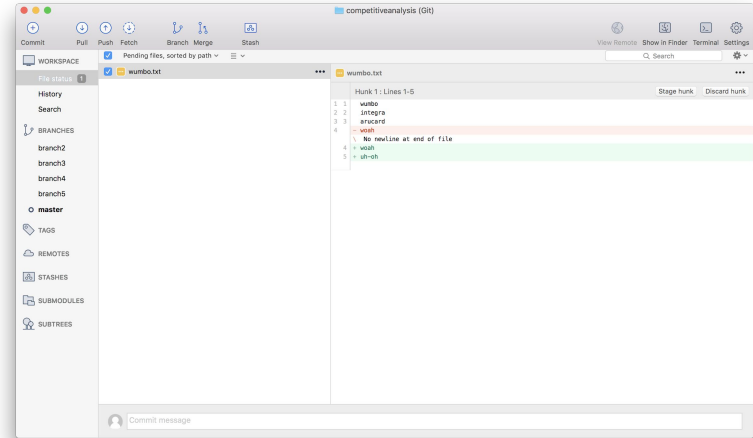
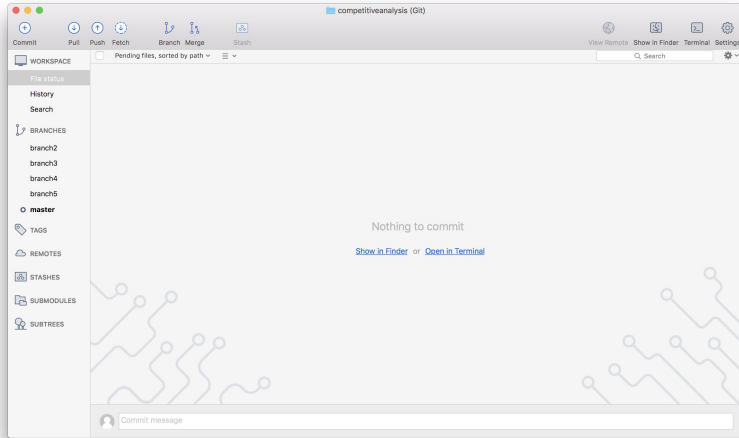
Grade

A

Assessment

Sourcetree allows a surprising amount of customization for a git tool, with custom actions and templates. The level of customization is impressive with these features as well, especially when compared to GitHub Desktop.

System Status



Grade

A

Assessment

Icons, badges, and colors all clearly indicate changes in the system. It could be clearer what exactly has been done or caused the change, but overall feedback is immediate and it is clear that a change has been made. Errors/conflicts are highlighted even more than the changes pictured here.

System Suggestions

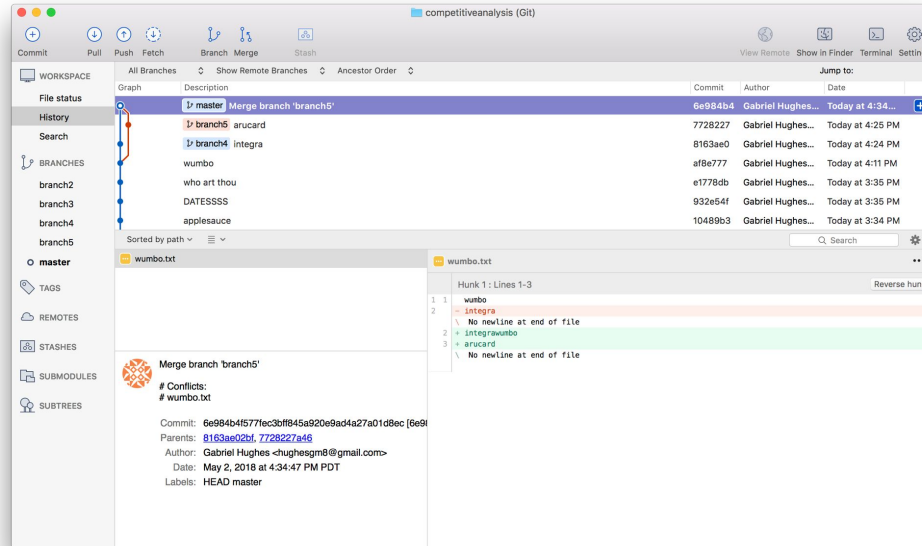
Grade



Assessment

Sourcetree does not provide suggestions for completing actions. For a system with such wide range of use, recommendations would be difficult to implement. It does, however, provide decent instructions for completing actions.

Timeline (History)



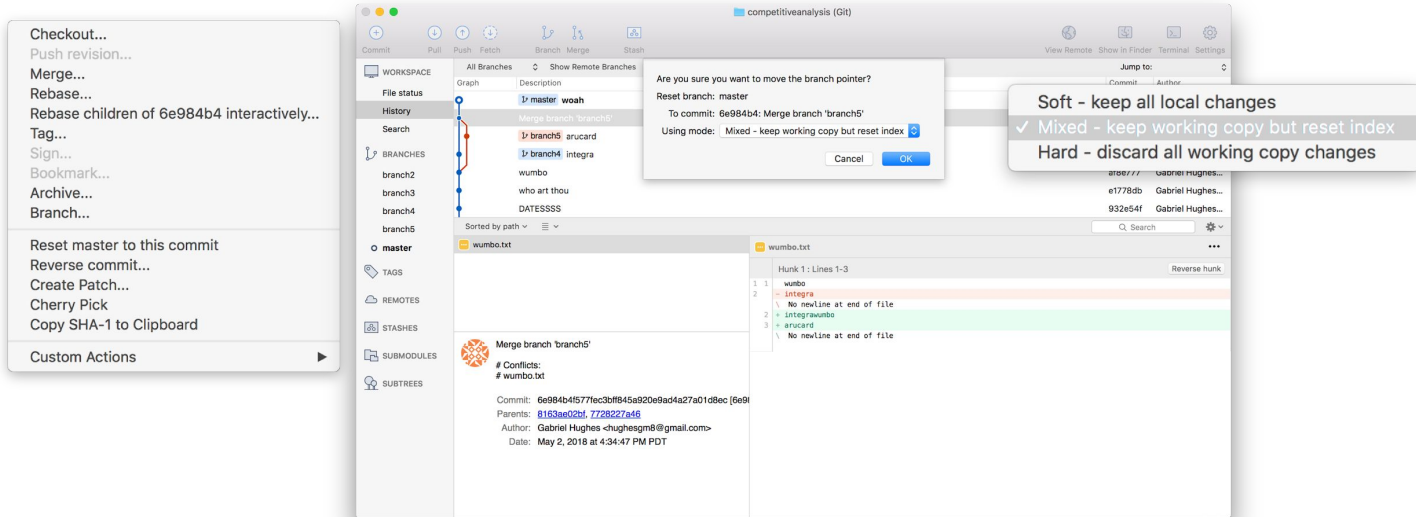
Grade

B

Assessment

History of changes is easily accessible. Visualization of changes could be better, but because of the use case it is not necessary to view more than just added or deleted text. Improvement on GitHub Desktop with visualization of branching, but poor visual hierarchy detracts from the potential of this feature.

Undo



Grade

A

Assessment

No undo button, but resetting to previous commits is easy and flexible. It does require control-clicking, but Sourcetree offers 3 options for resetting to previous commits that save varying degrees of the user's work.

Zoom

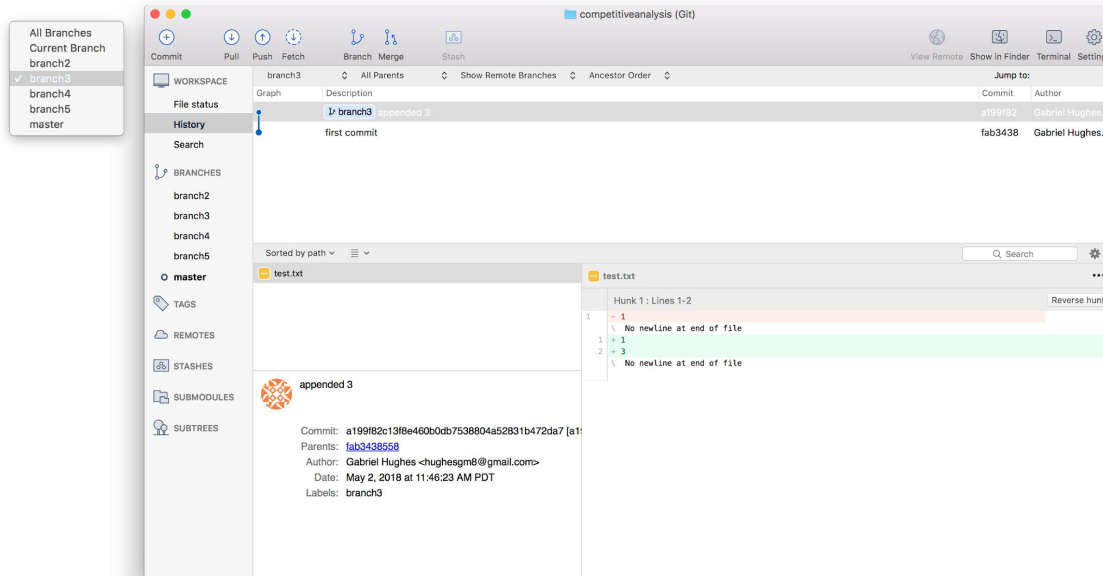
Grade



Assessment

Not Applicable

Filter



Grade

A

Assessment

Users can filter by branch, i.e., only see changes made in their branch. This is a highly useful feature, especially on a project with multiple teams. It removes the possibility of accidentally changing other teams' work.

State Saving + Switching

```
wumbo.txt
Hunk 1: Lines 1-4
1 1 wumbo
2 - integrawumbo
3 - arucard
  \ No newline at end of file
2 + integra
3 + arucard
4 + woah
  \ No newline at end of file
```

File State 1

```
wumbo.txt
Hunk 1: Lines 1-2
1 - wumbo
  \ No newline at end of file
1 + wumbo
2 + arucard
  \ No newline at end of file
```

File State 2

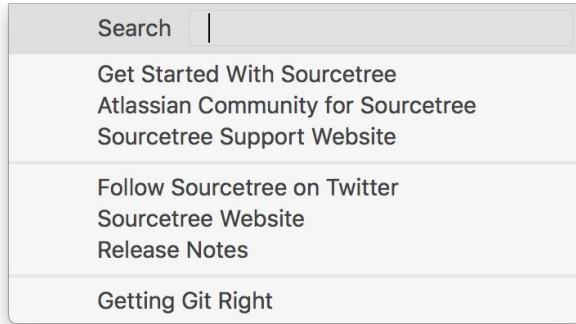
Grade

A

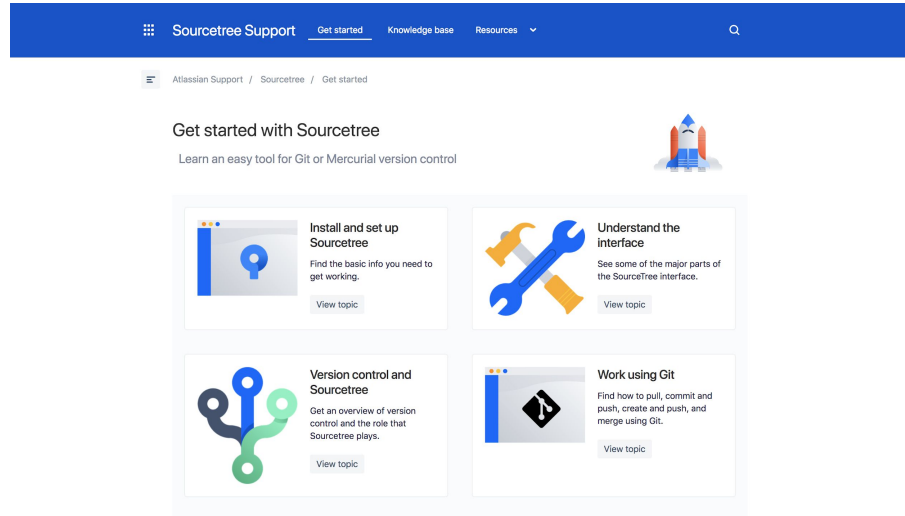
Assessment

Switching between original and changed files is easy. Git overwrites the user's files but keeps track of all of them so that the user can easily switch between files with different changes. Committing is required to write changes and all previous commits are saved. Changes can be seen easily in the app.

Learnability



Help must be accessed in menu bar



Documentation Website
(External)

Grade

B

Assessment

Sourcetree doesn't have tooltips on first launch to guide users through the interface. However, it does provide better, decently clear instructions for actions than GitHub Desktop. Help must be accessed externally through their website.



Thank You!