

Working Copy

users guide

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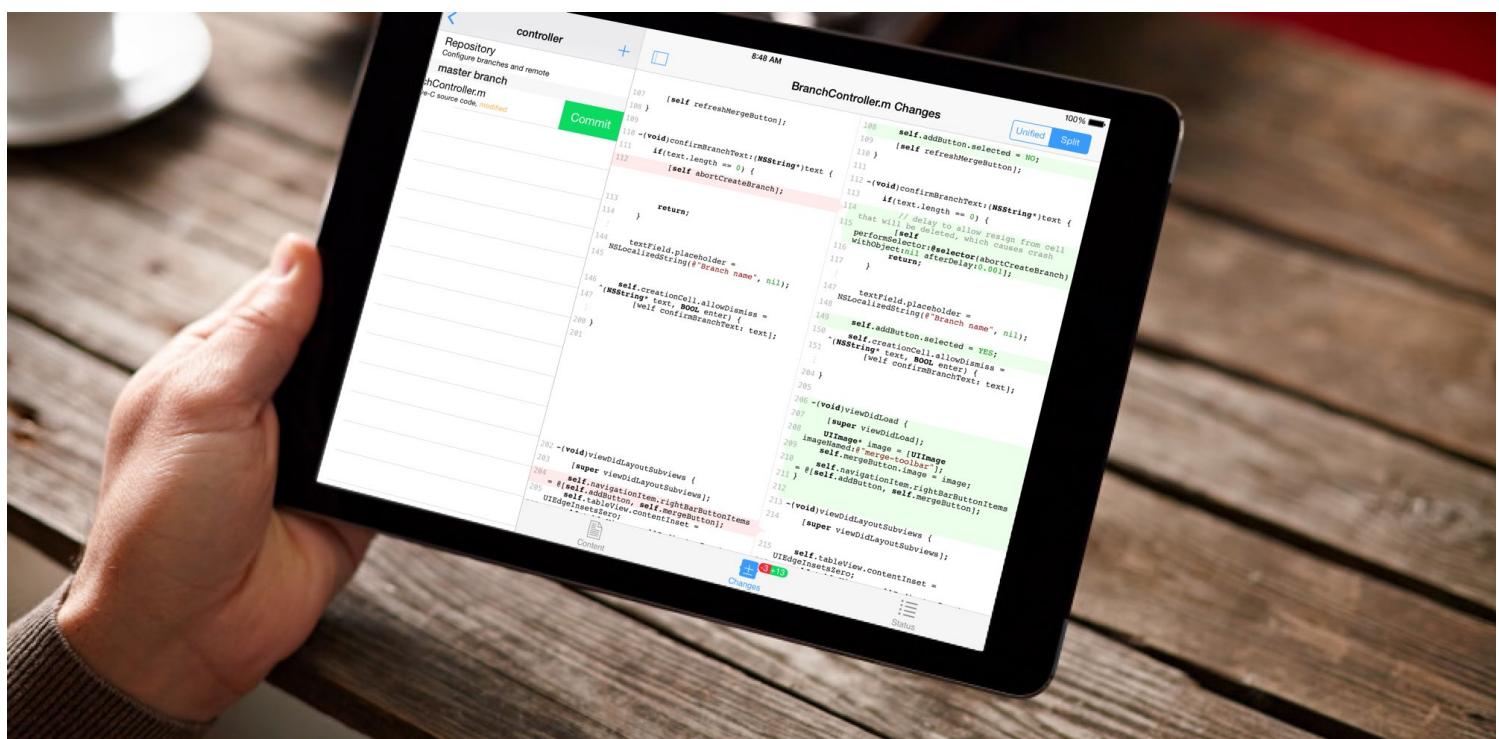
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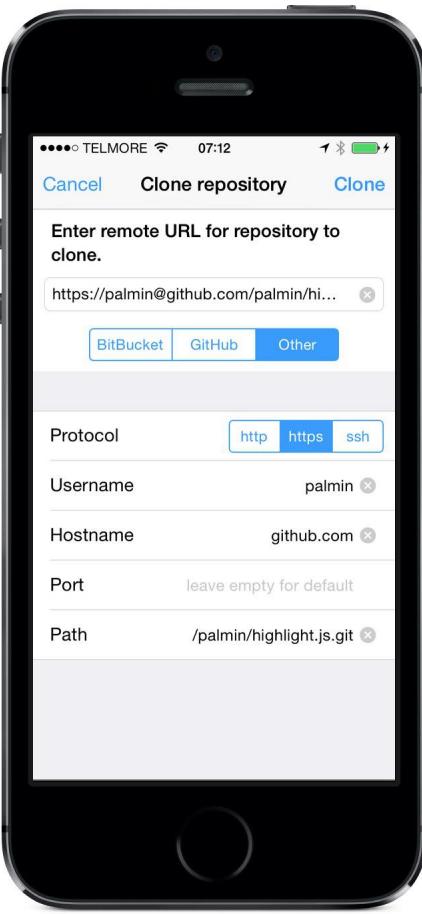
6. Troubleshooting and Support



1. Introduction

Working Copy is a full featured Git client for iOS. Git is a powerful version-control system and can take some time to master. The same is true for Working Copy and even though you will not need to work with the command-line, some understanding of Git is needed. If you are not confident with the core concepts of Git you should read the first few chapters of Pro Git by Scott Chacon or the excellent tutorials Atlassian has made available.

1.1 Cloning repositories



The first step is to get a local copy of the Git repositories you want to access. Duplicating a repository from a remote server is known as cloning, and you do this by pressing + on the list of repositories.

You provide a URL pointing to a repository on the Git remote you want to clone from. Working Copy can transfer data from the remote using http, https or ssh protocols, but you should be careful using http transfer since data will be sent without encryption, which means your login credentials and your source code can be intercepted. If you are not on a trusted network you should avoid using http transfer.

As a convenience for BitBucket and GitHub users, you can enter your credentials and get a list repositories. Cloning then amounts to picking the repository and tapping clone. You are not restricted to these Git services. If you are using some other Git hosting service or a private server to host your repositories, copy-paste your

URL into the top field and Working Copy will clone just as well.

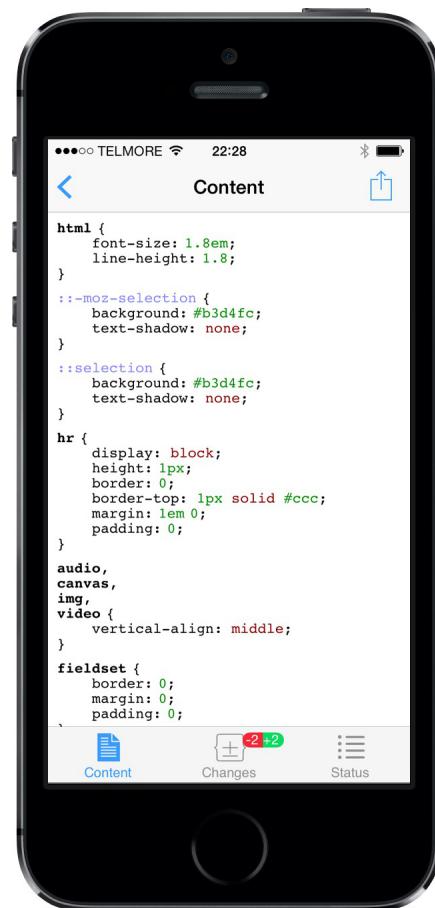
1.2 Accessing files

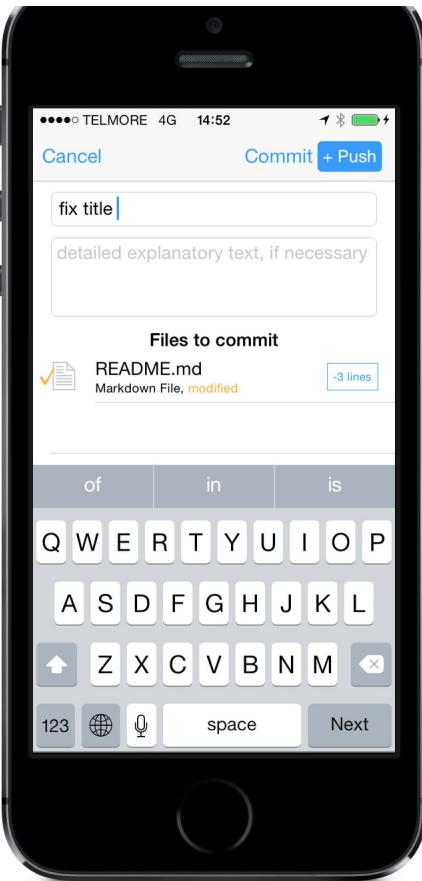
Data in Working Copy is organised as repositories, containing directories, containing either sub-directories or files. Tapping a file shows the file content, the changes to the file and the status of the file.

File content is shown with syntax highlighting for sourcecode and a preview of html and document files. Tap the action-button in the upper right corner to Edit the file or to send the file to other applications such as Mail.

The editing inside Working Copy is bare-bones and neutral in that neither programming languages, markdown or regular text files get special treatment. If you are doing heavy editing consider using specialised text-editor app for programming, markdown or other purposes. You can read [more](#) about using Working Copy in combination with other applications.

1.3 Committing changes





When you have file modifications the Changes tab lights up. You can see what has been added in green and what has been deleted in red. If you are satisfied with the changes you commit them to the repository with a button on the Status tab. A faster way is to swipe left on the file in the directory listing. Swiping left can generally be done on lists of files, directories and repositories allowing convenient access to frequent actions.

You commit a single file, multiple files or the entire repository at once, and it is considered good practice to make a commit represent one conceptual change to your repository. Following this practice also makes it easier to come up with concise yet descriptive commit descriptions.

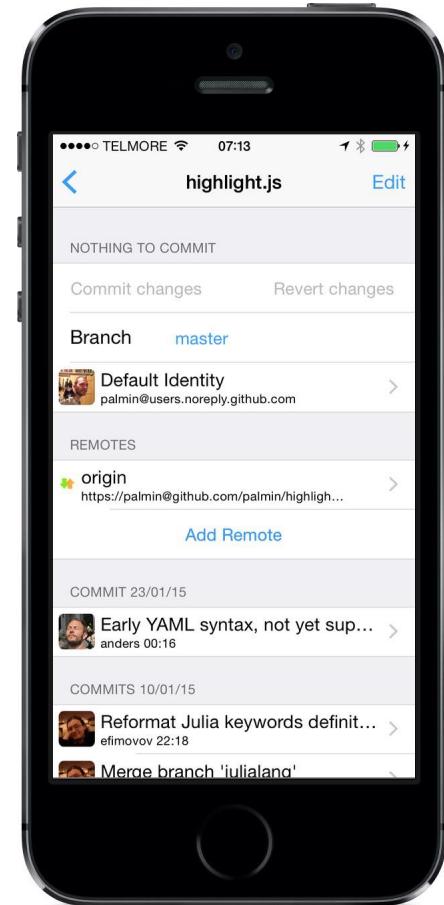
When you have made one or more commits your on-device repository is seen as ahead of the remote repository and you *push* these commits to the remote. Because *Commit* and *Push* are distinct actions you can *Commit* while offline and *Push* once you get back online.

1.4 Staying up-to-date

Commits can be pushed to the remote from many sources. Other people contribute their work or you could be doing something on a regular computer or another iOS device which results in commits that end up on the remote. You need to unlock the ability to *Push* with a in-app purchase.

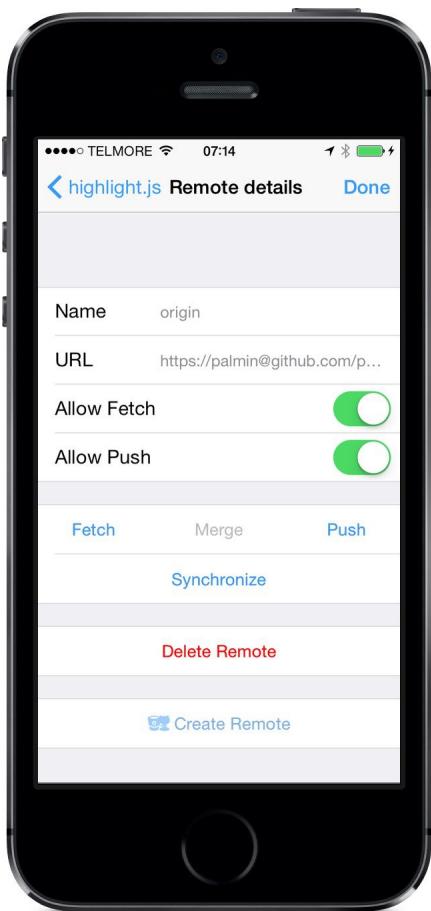
You get commits back into Working Copy through a two-step process where you *Fetch* and *Merge*. *Fetch* reads commits from the server and requires a network connection. The commits will not be integrated with the local data on your device until you *Merge* which will combine the new commits from the server with your local data.

Sometimes data cannot be automatically combined because your local changes conflict with the changes from the commits fetched. These conflicts need to be resolved by hand-picking the correct content of the conflicted files and picking *Resolve* from the action button.



As a short-hand you can *Fetch*, *Merge* and *Push* a repository with the *Sync* button on the detail screen of your remote.

2. Remotes



Git remotes are server-side duplicates of your repositories with full history. These can be services such as GitHub, BitBucket etc. or they can be privately hosted servers or NAS drives.

When you clone a repository, the URL of the remote repository is your starting point. Working Copy supports ssh, https and http remotes and the URL consists of protocol scheme, the hostname, username and the path to the repository on the host. The following is typical examples of remote URLs:

`https://user@git.company.se/home/user/site.git`
`ssh://andrew@company.se/home/andrew/git/site.git/`
`andrew@company.se/home/andrew/git/site.git/`

The last two URLs are equivalent since ssh is the default protocol.

there is no need for additional remotes.

2.1 Clone catalog

When cloning repositories from BitBucket or GitHub you enter your credentials to get a list of repositories to clone. Working Copy tries to show the most relevant repositories at the top, these being the ones where you have administrative privileges or write privileges. If the list is long, enter keywords in the search field to only see repositories containing these. If you do not see the repository you want to clone, you can still copy-paste the clone URL into the top-field manually.

Working Copy will not store your BitBucket or GitHub password used to populate the list of remotes, but rather a authentication token that you can revoke from the BitBucket or GitHub settings. This is why you are required to login through Safari rather than inside Working Copy.

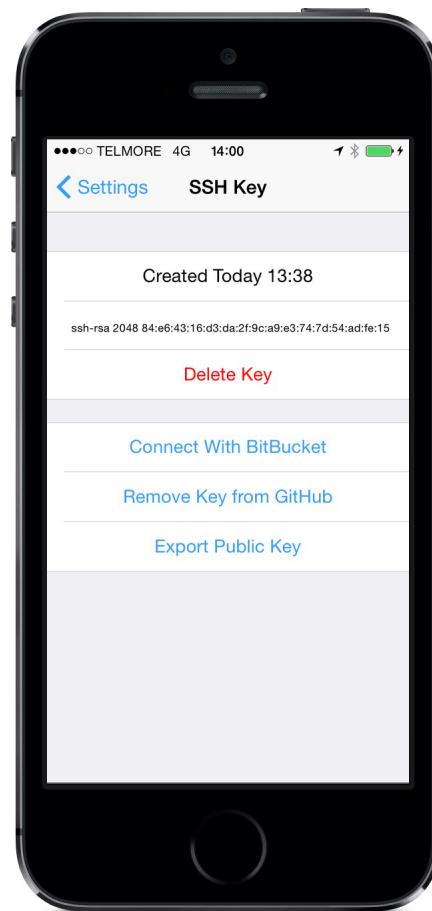
When actually cloning the repository you cannot use the authentication token for the transfer and will either need to configure a SSH authentication key or enter your password inside Working Copy. This password is stored in a encrypted keychain maintained by iOS that is only accessible when your phone is unlocked. If you are using two-factor

authentication the password authentication will not work and you are required to use SSH key authentication for transfer.

2.2 SSH keys

SSH transfers support password authentication but also public/private key authentication for improved security. The public part of SSH key corresponds to a padlock that you use to lock-down resources. The private part of the SSH key corresponds to the physical key that opens the padlock. Your private key must be kept secret and the public key can be distributed to servers where you want to store remote repositories.

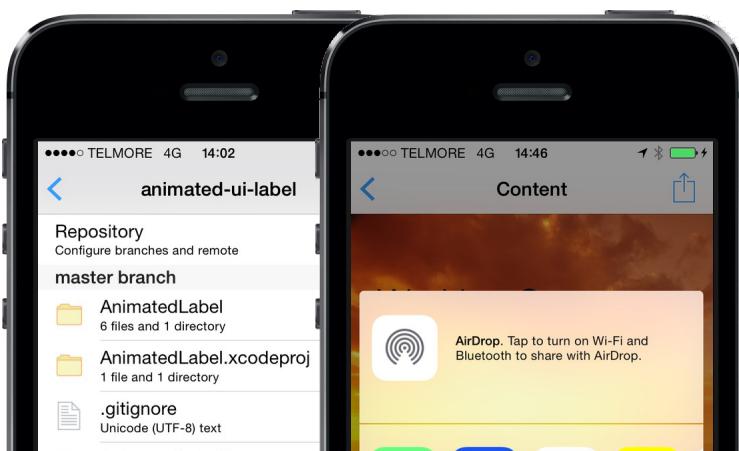
If you tap “Connect with BitBucket” or “Connect with GitHub” your public key will automatically be registered with this BitBucket or GitHub. For other Git hosting providers such as OpenShift or GitLab you need to enter your public key in the settings page for that service. Details will depend on the service in question, but your first step is to Export the public key. When using a Linux server, you need to append the public key to \$HOME/.ssh/authorized_keys file.



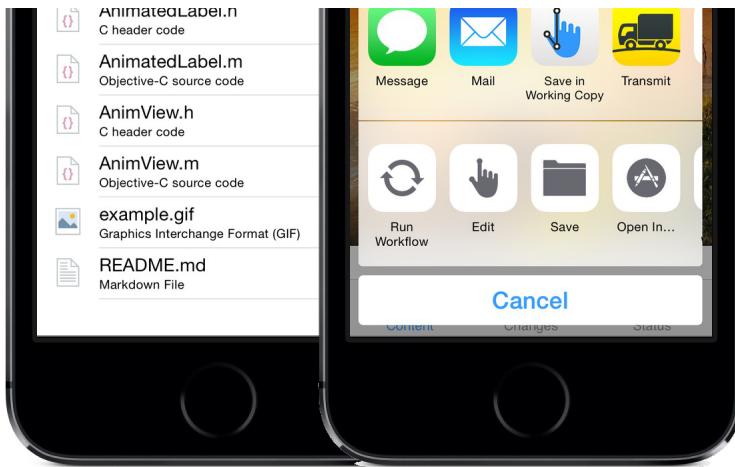
2.3 SSH Troubleshooting

If you are having problems authenticating with a SSH server you should make sure the public key installed on the server matches the private key in Working Copy. If you have some other SSH client on your device or computer, you should make sure you can connect from these without problems and if this works, make sure you use the same SSH key in Working Copy, possibly importing the private key from the other application.

3. Viewing and editing

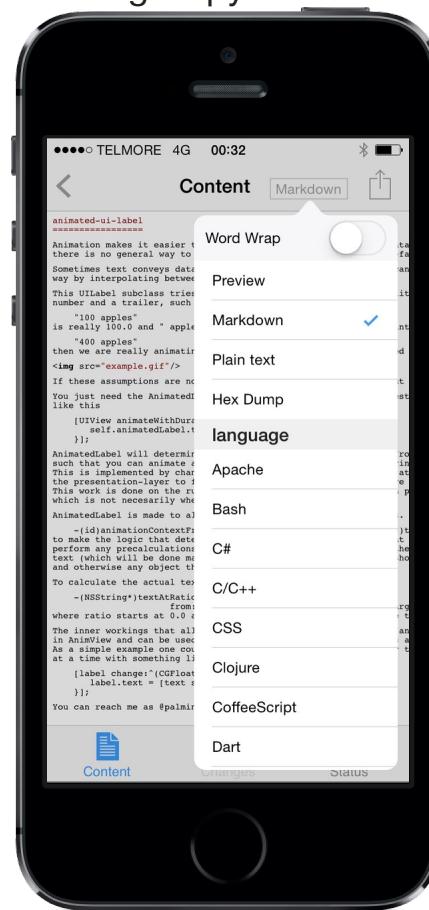


A repository is presented as a hierarchy of directories and files where you tap a directory to enter and view the contents. If you tap a file you are shown tab for Content with the ability to switch between Preview, Syntax Highlighted or Hex Dump modes. Use the

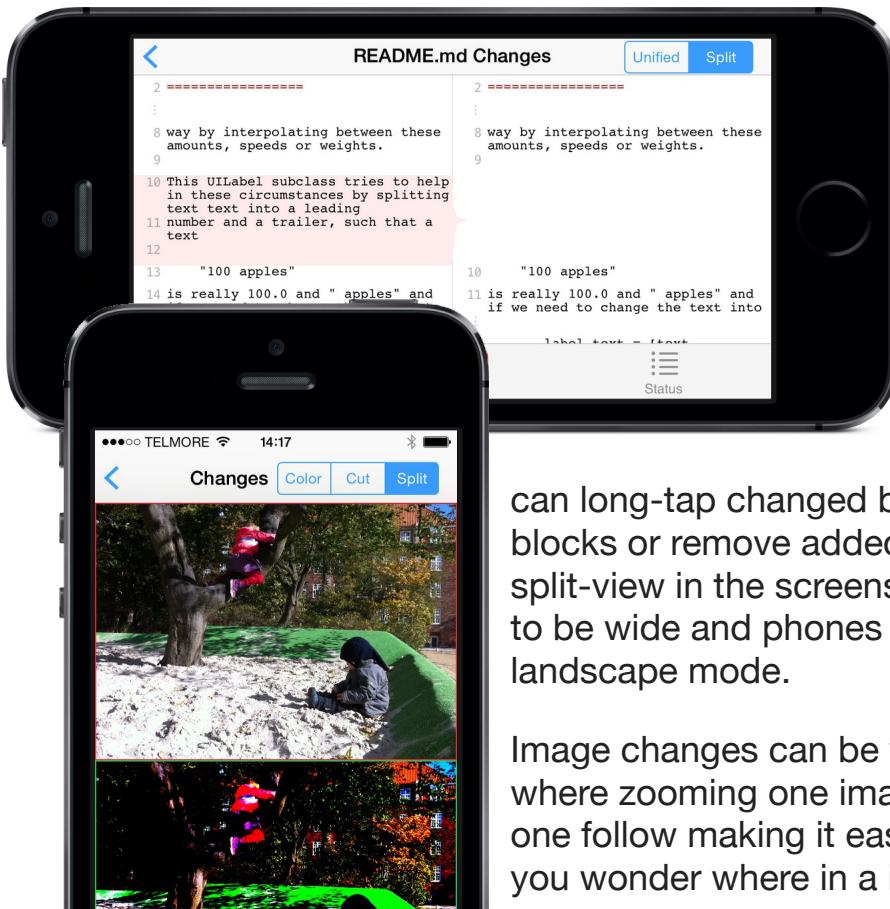


Some repositories have deep directory hierarchies and to avoid having to go back many times in succession, you can tap and hold the back button to choose how far back you want to step.

action button in the upper right corner to send the file to other apps or to edit inside Working Copy.



3.1 File changes



A badge on the Changes tab shows the number of lines added or deleted from a file. The Changes tab itself shows the differences between the last version committed and the current version. You

can long-tap changed blocks to recover deleted blocks or remove added blocks. The two-panel split-view in the screenshot requires the screen to be wide and phones need to be turned to landscape mode.

Image changes can be viewed in a split-mode where zooming one image will make the other one follow making it easy to focus on details. If you wonder where in a image there are changes,



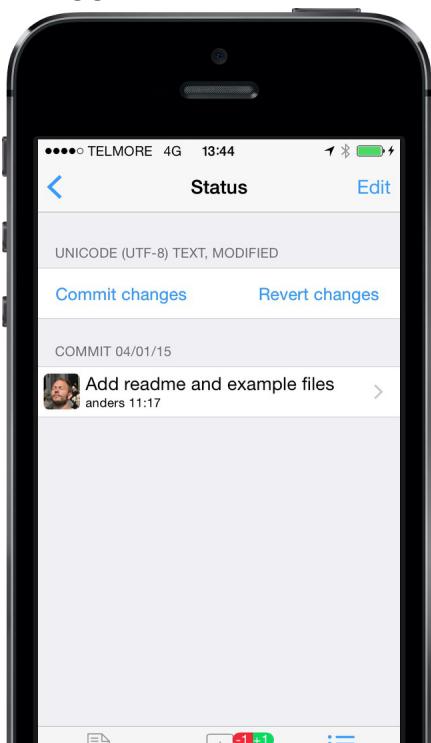
use the Color mode that highlight changed areas. Cut mode is useful for images with global changes and allows you to drag and rotate a partitioning line such that everything on one side is the old image. The previous image will have a red border, and the new one a green border.

Files can sometimes be conflicted because there have been changes made to the file that could not be automatically merged. This will happen when two people work on the same part of a file at once and they commit changes without knowing about the other changes made. You will then need to pick one, the other or a combined version of the file. When you edit the file there are conflict markers showing how the two different versions of the file disagree on content. You need to sort this out and mark the file as Resolved, which is done with the action button.

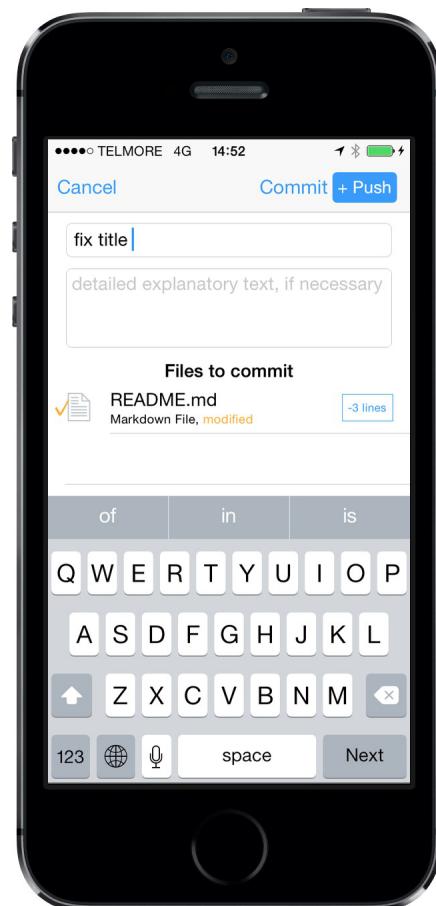
The Status tab says whether the file is modified and allows you to commit or revert changes. If you tap edit you can rename or delete the file.

4. Committing or reverting

You commit changes to your files for the entire repository, for all files in a sub-directory or for a specific file. If you do not wish to commit some of your files you can Revert to how they were at last commit. The files taken into account is determined by where in the directory structure you initiate the commit. As a short-hand you can swipe left on a repository, directory or file to commit.



During commit you are shown a list of changed files and can view differences for individual files by pressing the button that shows the number of lines added or deleted. Files with a checkmark will be included in the commit and you toggle the checkmark by tapping the file. Working Copy will push the commit to the remote right away if you enable the +Push button.





As a general rule you should make commits with a single purpose and only include the changed files that helped achieve this purpose. You write a message in the top line describing this purpose; if it is hard to write something short but concrete you might need to break your commit into smaller parts.

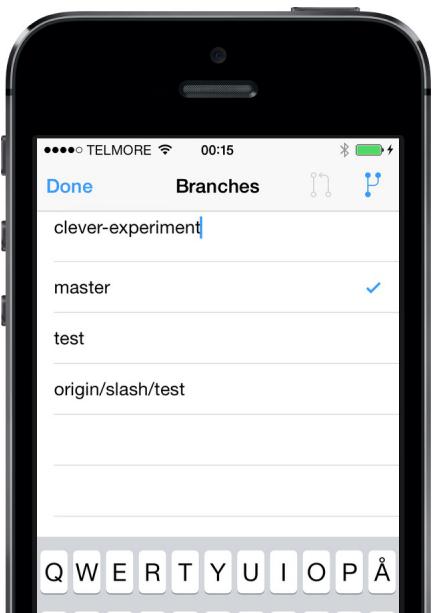
4.1 Commit history

The value of well-drafted commit messages is apparent when looking at a log of previous commits. You do this for either the entire repository, a directory with all its files or for single files. If your commit messages are meaningful, even as you return to a project after months or years you have a much better chance of making sense of the source-code. Tap a commit to see specific changes this commit made to the files in question.

The images shown in commit-logs are determined from the email-address of the person making the commit with the help of gravatar.com. At the commit-list for the entire repository you can Checkout old versions of your files by swiping left on a commit. Your repository will be in a “detached head” state where you cannot commit any changes, but if you make modifications and wish to keep these, you should create a new branch.

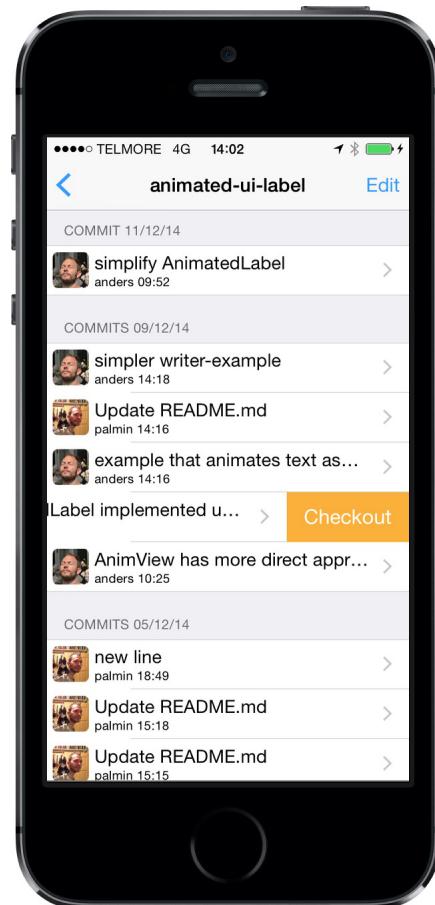
Checking out the topmost commit will reattach head such that your repository is back to normal.

4.2 Branches



A great advantage of Git compared to other version-control software is the ease at which you can branch your repository to work independently on different things. Once you are confident with the work done in a branch you can merge it back to one of your main branches.

In Working Copy you do this from the Repository screen by tapping the current branch name to access a list of branches with the ability to switch to a new branch, create a new branch or merge branches back together.





4.3 Commit Graph

To explore repository changes across branches use the Commit Graph available from the Repository screen.

Commits are presented in chronological order with lines showing which commits are based on each other, with tags and branch heads displayed as well as the commit message summary, date and information about the author of the commit.

Pinch to zoom will let you explore additional details, such as the full commit message, the full name of the author rather than initials, a commit identifier and the files modified by this commit. If you connect a external screen or projector to your device, you will get a full-screen Commit Graph without any interface elements obscuring the view. This makes for a nice tool when your team needs to discuss the project.

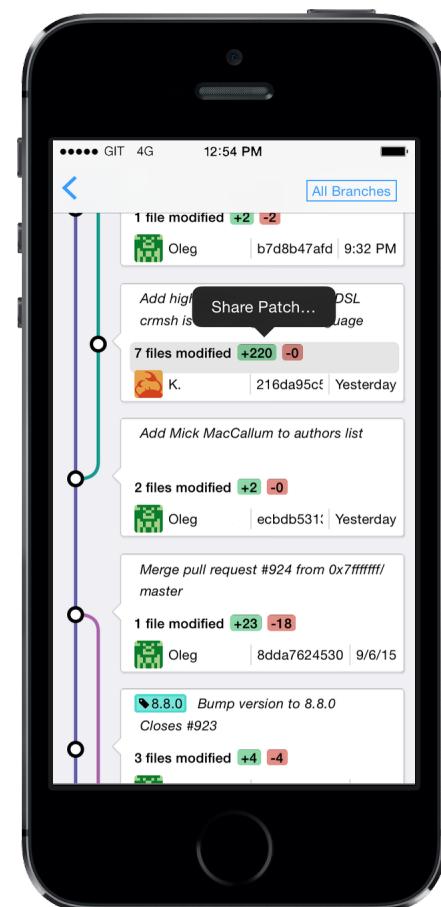
You can tap and hold or double-tap the elements of a commit for additional actions.

The Commit Message lets you activate a share-sheet for the entire commit message, letting you copy to clipboard or send in a email. You can also view Details of the commit switching away from the Commit Graph.

You can copy the author email to the clipboard or start composing a email to the author.

It is also possible to view the commit date in your calendar to see what else happened around this time and when Fantastical is installed, it will be used instead of the built-in Calendar app.

Finally the list of modified files let you generate a Patch, for non-merge Commits.



5. Extending iOS

Working Copy takes advantage of recent



improvements to iOS allowing richer corporation between applications. All repositories in Working Copy can be accessed by other applications using the iCloud document picker. Once a file inside Working Copy is picked, the other application is allowed to read and make changes to this file and these changes stay inside Working Copy. You can do editing in this application and switch to Working Copy to review and commit changes. On iPad you can use Slide Over or Split Screen to avoid switching between Working Copy and the editing application.

Textastic is a very good general purpose/programmers editor that works well with Working Copy and you use Open... to open the document picker.

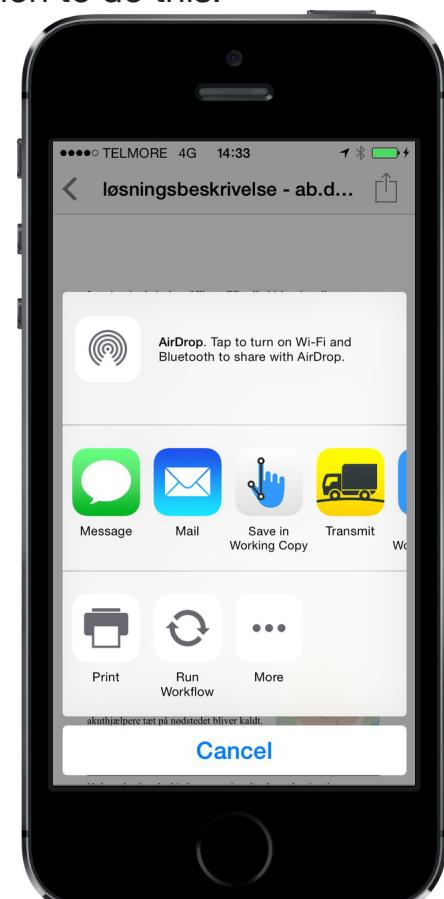
Byword is a special purpose Markdown editor that can also use the iCloud document picker to edit inside Working Copy by choosing Open Other...

Many Working Copy users like the excellent Koder which also supports the required document picker. Initially you need to enable Working Copy as a Location choice and you pick More as a location to do this.

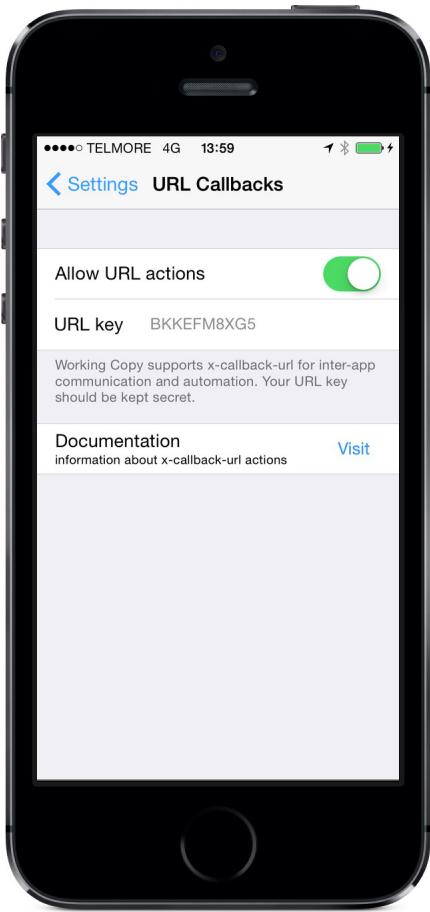
5.1 Saving to Working Copy

Saving files into Working Copy can be done by way of a Share sheet, the mechanism also used to share files through Mail or Messages. Picking Working Copy on a Share sheet will present a list of repositories where you drill down to the directory where the file should be saved. To overwrite existing files you tap before confirming and otherwise you will be prompted to enter a new file name.

After saving a file you can optionally *Commit* this change immediately and *Push* to the remote right away.



5.2 Workflows and Callbacks



Working Copy supports the x-callback-url mechanism for inter-app corporation. This allows reading and writing files from repositories as well as committing changes and pushing commits to your remotes. As a security measure this mechanism needs to be enabled from the settings page and is protected by a random key.

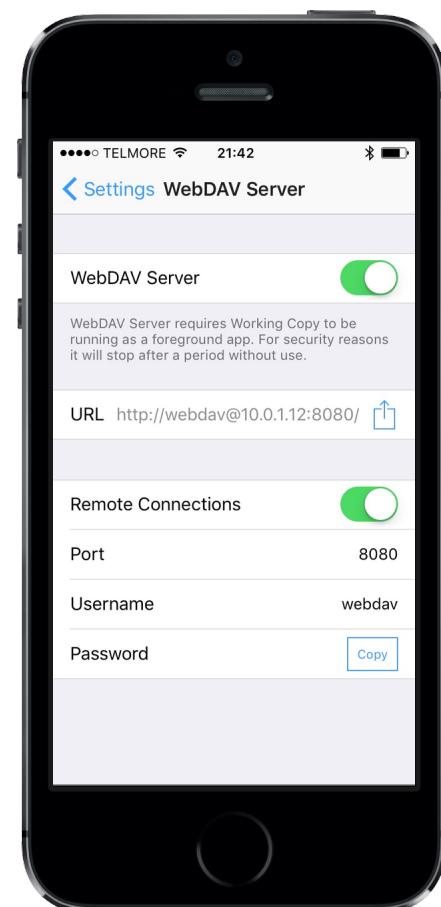
Using applications such as Workflow and Editorial you can achieve some of the power of shell-scripting on iOS by combining actions of several applications into one action.

5.3 WebDAV access

In situations where you need to transfer entire directory hierarchies, a good way to get files into and out of Working Copy the built-in WebDAV server. It is also the best way to let Coda edit directory in your Git repositories.

As a security precaution you need to start the server before each use and it automatically shuts down after 5 minutes without activity. You should be cautious using the WebDAV server on untrusted networks as the transfers are unencrypted. In these cases you should restrict yourself to connections from applications on the same device, as the traffic cannot be intercepted when it never leaves your device. Local connections are also possible in situations without Internet connection. You need to specify *localhost* as the hostname in these situations.

Applications on iOS are restricted in how long they are allowed to run in the background. If you start the WebDAV server and switch to some other application, you will be given a grace period before Working Copy and its WebDAV server is terminated. A



notification will inform you of this. To avoid such restrictions you should keep Working Copy in the foreground and on iPads that support Split Screen multitasking, you can keep both Working Copy and the other application alive.

Using applications such as Textastic and Transmit that can work with both WebDAV and SSH servers, you can deploy from a Git repository to a standard Linux server by transferring the directory hierarchy from Working Copy into the other application and then from the other application onto the server. Watch a short video illustrating this.

6. Troubleshooting and Support

A lot of work has gone into making Working Copy as trouble-free to use as possible, but despite that problems will sometimes occur. Please send your questions by email to anders@workingcopyapp.com and I will do my very best to assist.

Get in touch by email or on Twitter.