A Pattern Language for Screencasting

Nicholas Chen, Maurice Rabb
Department of Computer Science
University of Illinois at Urbana-Champaign
{nchen, m3rabb}@illinois.edu

ABSTRACT

Many activities — especially software related ones — are more easily learned by observing a *mentor* as he performs the activity. However, such opportunities for observations are hard to come by and are usually infeasible when there are many participants who are interested. Fortunately, the ubiquity of video sharing sites has spawned numerous screencasts that address this teaching-learning problem. Our pattern language for screencasting proposed here assists the mentor in preparing *high-quality* screencasts in as little time and effort as possible.

Categories and Subject Descriptors

H.1.2 [**User/Machine Systems**]: Human information processing, software psychology

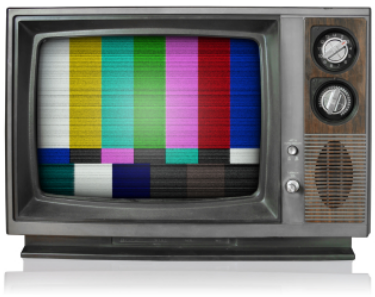
General Terms

Human Factors

Keywords

Patterns, pattern language, screencasting

1. INTRODUCTION



PLoP'09 Chicago, IL, USA

A *screencast* is a video capture of the contents of a computer screen. Screencasts might also include audio narrations from the *screencaster*. Some screencasts are also post-proccessed to allow for additional enhancements such as video filtering, transition effects and other embellishments. Screencasts differ from video tutorials because they tend to be shorter and are usually produced by a single person on a normal computer without specialized hardware or software.

The term *screencast* is fairly new. It was selected by Jon Udell in 2004 from a list of proposals to his blog[8] — the term itself was proposed by both Joseph McDonald and Deeje Cooley. Since then this term has been used extensively by the internet community.

Screencasts have been adopted and used extensively by both commercial and non-commercial organizations as a quick yet effective way to demonstrate new products and features; to popularize a new tool; and to serve as a quick tutorial on how to use a product. In short, screencasts instruct the viewer on various topics from a mentor's point of view. Both free and commercial screencasts abound on the internet, exemplifying that there is an expanding audience for such content.

Screencasts are not hard to produce. There are a variety of affordable software that could be used to produce screencasts on various computer platforms. Popular screencasting applications for the Mac are *Snapz Pro X*, *iShowU* and *ScreenFlow*; and for Windows there are *Camtasia*, *Super Screen Recorder* and *Wink*[1]. Moreover, most computers nowadays are equipped with a built-in microphone making audio narrations possible without additional equipment.

> "ALL [SCREENCASTS] ARE EQUAL, BUT SOME [SCREENCASTS] ARE MORE EQUAL THAN OTHERS."
> – paraphrased from George Orwell's Animal Farm

Unfortunately, not all screencasts are of high quality. This is not surprising since screencasts are intended to be quick and easy means to demonstrate some feature. Even so, a badly produced screencast creates an unpleasant and frustrating viewing experience. Worse, such an experience might **confuse** the viewer, ultimately failing the original task of instructing the viewer on how to do something.

The following patterns serve to help screencasters who wish to go the extra *yard* – **not mile** – to produce high quality screencasts without too much time or effort. The following patterns are easy to implement and do not require the

[1]Refer to Section A in the appendix for a list of software.

use of expensive software or equipment. These patterns were gleaned from our experiences and observations throughout the past years from various screencasts that we have created and watched (and enjoyed).

2. PATTERN LANGUAGE MAP

These patterns assume that you are already familiar with screencasting perhaps through preparing a screencast or two before or by observing someone else make one. After your current experiences with screencasting, you wish to take the next step and produce a screencast that is of better quality with the least amount of additional effort and resources. *How would you use the patterns proposed in this paper to help you prepare your next screencast?*

* * *

Browse through the list of proposed patterns and select those that are most applicable to you. Browsing through the entire list gives you a feel for the different patterns that you can use. However, it is **not** necessary to use all the patterns. Remember, the point of a screencast is to provide a proper learning experience for the viewer; it is **not** about how many patterns you manage to squeeze in.

The patterns proposed here emphasize content and the best way to present that content so that your viewers actually learn something. Most of these patterns are designed so that you can do your screencast in a single pass meaning that you would record everything from start to finish in one session. This is usually how most people would do it since using multiple passes require editing which could very quickly escalate into a tedious affair.

Figure 1 presents a preview of the patterns and the flow between the patterns. An arrow pointing to another pattern suggests that you might be interested in using that other pattern as well. However, this is only a *suggestion*. Depending on your needs, you might decide **not** to use that other pattern. Nonetheless, you should always start with the Rehearsal Script pattern.

It is all right to choose different patterns for different screencasts. You do not need to use the same set of patterns for every screencast that you are planning to make. Instead, experiment with combinations of different patterns to find ones that work best for you.

3. PATTERNS

3.1 Rehearsal Script

You decide that you are going to do a screencast on some topic that you are familiar and passionate about. You have developed some ideas about what you would like to show. *How do you transfer that into a screencast without missing the important topics or making the screencast confusing?*

* * *

Make a written draft of your screencast script. Just like a good instructor who has an agenda of what he would teach for a particular lesson, a good screencaster has a script to guide him on what to include in the screencast. Having a script gives you a vision of what your screencast is all about.

Figure 2 shows an example rehearsal script. It outlines the important steps that the screencaster should remember to perform as he records the screencast. Writing the script on paper[2] allows you to refer to it easily without having to open up a text editor on your computer. Remember, you are recording a screencast and you don't want to capture the text editor as part of your screencast.

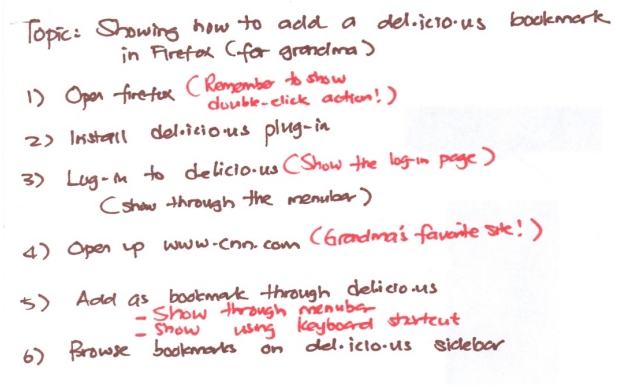


Figure 2: Script for showing how to use the del.icio.us plug-in in *Firefox*. Red ink emphasizes important steps that need to be performed.

The script should be detailed enough that you know what you need to show without missing the important topics. Unless the screencast is particularly complicated – for instance, going through a complex series of steps using the mouse and keyboard – there is no need to write out each and every step. A script that has just enough detail allows for improvisation and makes the screencast more natural.

A good script has a clear **beginning** and **end**. The beginning should tell the viewer what the screencast is all about. The end should have a strong summary of what the screencast has taught or accomplished.

Having a written script helps you as the screencaster realize what might need more elaboration. You might need to pause a moment during crucial steps in the screencast so that the viewer can follow along without getting lost.

With this script, you should do a quick rehearsal of the screencast. As you are doing this rehearsal, **time yourself**. If this is your first time using the software for screencasting, it helps to actually do a rehearsal using the software so that you are familiar with the controls. Use the rehearsal to help you improve the script by jotting down any parts that need to be done differently.

Having a script helps when you are redoing a screencast too. Good quality screencasts might take several recordings. It is easy to fall into the trap of going too fast on your subsequent recordings since you are now very familiar with what you need to do. A script helps you time yourself so that you neither go too slow nor too fast. While recording, it also helps to use a Slower Pace.

If you intend to use any of the other patterns in this paper, then the script should include enough details on how you plan to incorporate those patterns so that you do not forget or get confused as you are making the recording.

[2]If you prefer typing, then type it up in a text editor but print it out so you have a physical copy.

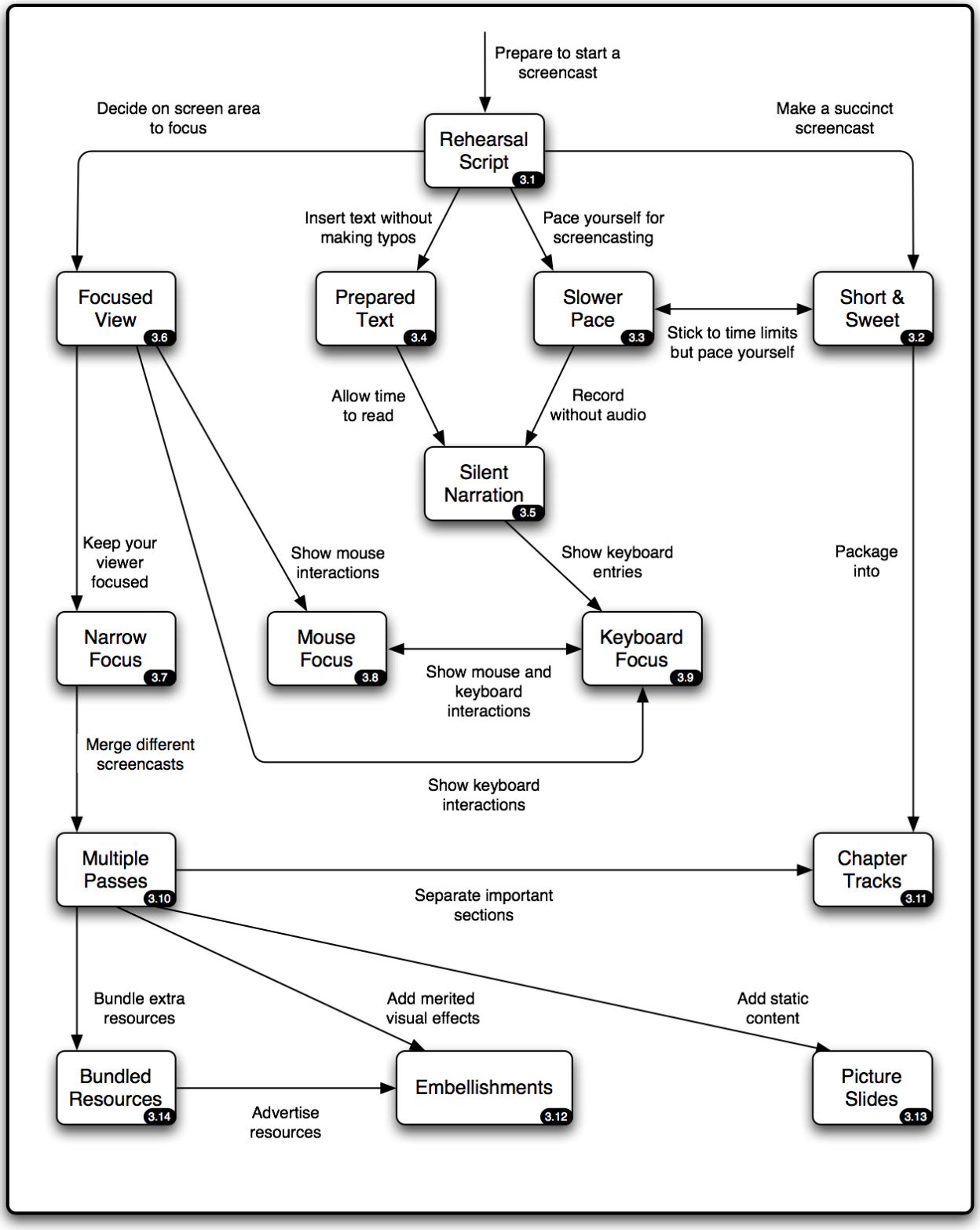


Figure 1: Pattern Language Map showing the flow between different patterns

3.2 Short & Sweet

You want to make a screencast that is short, focused and easy to follow without taking too much time from the viewer. *How should you prevent yourself from making a screencast that is too long (or boring)?*

* * *

Set a time limit on how long the screencast should take. Make this a hard limit for yourself as the screencaster. This allows you to focus on the content at hand without spending too much time on the inconsequential parts of the screencast. Setting this artificial time constraint actually enhances your creativity [6] by pushing you to think of new ways to illustrate your concept succinctly. And this helps create a more engaging screencast that your viewer will benefit from.

As a rule of thumb, a screencast should not be longer than 5 minutes unless you are showing a lot of features together. On the other hand, if you are showing a lot of features together, consider using Chapter Tracks.

Additionally, the web site that you are uploading to might have a hard limit on the maximum duration of the screencast or a hard limit on maximum the file size; longer screencasts have larger file sizes. Therefore, it is best to actually find out about the time limit and incorporate this restriction in your Rehearsal Script.

With certain screencasting application, it might be possible to edit the screencast to reduce its duration. However, this process is tricky and depends on the features of your screencasting software. Trimming a screencast to fit into the time limit is particularly tedious if the screencast has an audio narration; synchronizing audio is harder than synchronizing video. Nonetheless, this feature is useful when you are capturing a screencast that includes a long running progress indicator[7] that you wish to skip.

Remember, a short and focused screencast is easier for a viewer to follow. By combining this pattern with Rehearsal Script you prevent yourself from including unrelated materials.

However, building rapport with your audience is also important. By artificially imposing a hard time limit, your screencast might feel rushed and emotionless. While sticking to a hard time limit is a good idea, you should also balance if by using a Slower Pace while recording yourself.

3.3 Slower Pace

As a domain expert preparing the screencast, you are likely to know what needs to be done like the back of your hand. Hence, you may have the tendency to move the mouse too quickly, run through the the menu items too quickly or just narrate too quickly. All these actions together conspire to make the screencast too fast and hard to follow for a viewer who is unfamiliar with the system. *How should you pace yourself while recording a screencast?*

* * *

Make a deliberate effort to take about twice as long as you normally would to complete the task. This prevents you from moving your mouse too quickly – which usually creates the effect that your cursor has been *transported* across the screen, especially if your screencasting application is not capturing the screen fast enough.

Moving at a slower pace also provides you with a better tempo for your audio narration. You are less likely to speak too fast when you are moving the mouse at a slower speed. This helps you enunciate your words so the viewer can understand you better. Deliberate pronunciation is a benefit since the screencast is likely to lose some of its fidelity after the final conversion before uploading it to the web.

Briefly pausing to allow the information to sink in is also useful. Difficult concepts in a screencast require careful analysis on the part of the viewer. If you move on too quickly, the viewer might not have time to assimilate the information. The viewer could certainly decide to pause the screencast but that breaks his flow and makes it a less engaging experience.

Just like making a public speech, it takes practice to decide when to pause during a screencast. Pause too long and the viewer is left waiting; pause too briefly and the viewer is left in the middle of his thought. Making a good screencast requires rehearsing a couple of times. As you rehearse, note the places where you need to pause in your Rehearsal Script so that you can easily remind yourself to pause.

3.4 Prepared Text

Screencasts usually capture text as you type. However, entering text is error-prone; you are likely to make typos. Unfortunately, any corrections that you make to your typos are also captured in the screencast. *How should you enter text quickly and minimize errors while typing in your screencast?*

* * *

Prepare the text snippets that you would use beforehand and store them into in a copy-and-paste buffer. This is the easiest way, but you only have access to the most recent text you copied.

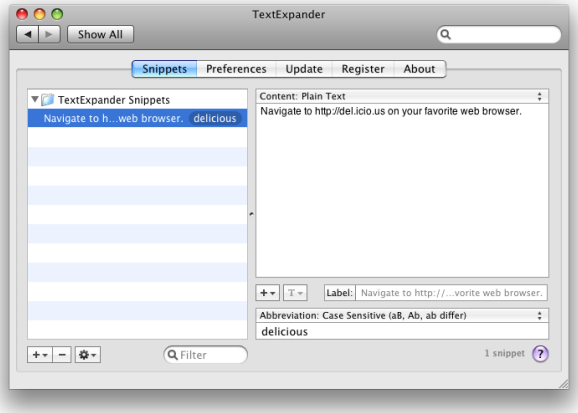


Figure 3: *TextExpander* remembers text snippets and abbreviations assigned to those snippets. When a preassigned abbreviation is detected ("delicious" in the image above), the text snippet ("Navigate to . . . ") is inserted in its place.

Alternatively, you could use a dedicated text insertion application such as *TextExpander*. Such applications allow you to store a list of text snippets and easily insert them later via

some keyboard shortcut or through a special menu. Figure 3 shows the settings for *TextExpander*.

If you are using a web browser, you can enter the text beforehand and then when you are doing the actual screencast, you can rely on the web browser to autocomplete the text for you.

Using Prepared Text not only prevents recording typos but also helps you maintain a Short & Sweet screencast. Entering text usually takes time and preparing those text snippets in advance helps you save seconds or even minutes.

Sometimes, though, you might want to enter text manually. For instance, you might be demonstrating the autocompletion feature of your favorite application. In most web browsers, as you type the first few characters into the location bar, it tries to offer suggestions. In this case, using Prepared Text would **prevent** you from getting that list of suggestions.

If you decide to use Prepared Text, it is usually wise to let your viewers know in advance by stating so upfront. That way, the viewer is not surprised as long sentences suddenly appear on the screen.

As an alternative to Prepared Text, you could always edit your screencast and fast-forward the segments where you are entering text to the final result.

3.5 Silent Narration

Though most screencasts benefit from having an audio narration, not all screencasts actually need it. In some cases, your screencast might be viewed on public computers that have their speakers disabled or you might not be a native speaker of a language and you may be worried that your accent is hard to follow. You want your viewers to follow along even if they cannot hear the audio. So you might decide to do a silent screencast. *How should you narrate a silent screencast?*

* * *

Create a window where you can type text. This could be a text editor application such as *TextEdit*, *Notepad* or simply an open terminal window. All you need is a placeholder for text where the viewer can see your intent. As shown in Figure 4, you can use existing launcher tools such as *Quicksilver*'s text box feature to input text.

Don't enter too much text. It takes the viewer a longer time to read text than to listen to a narration. If you need to enter long paragraphs, consider splitting them into smaller chunks that the viewer can read more effectively.

However, silent screencasts tend to be less engaging; there is a sense of disconnect between the screencaster and his viewers. If you have to create one using Silent Narration try to keep it Short & Sweet.

Since Silent Narration depends a lot on entering text, it is prudent to use it together with Prepared Text. However, just because you are inserting text quickly doesn't mean that the viewer can read it quickly. Be prepared to use a Slower Pace and pause while the viewer is reading the text.

3.6 Focused View

A good screencast only shows the pertinent area of the screen; it doesn't capture the entire screen unnecessarily. This helps your viewer decide where to focus his attention.

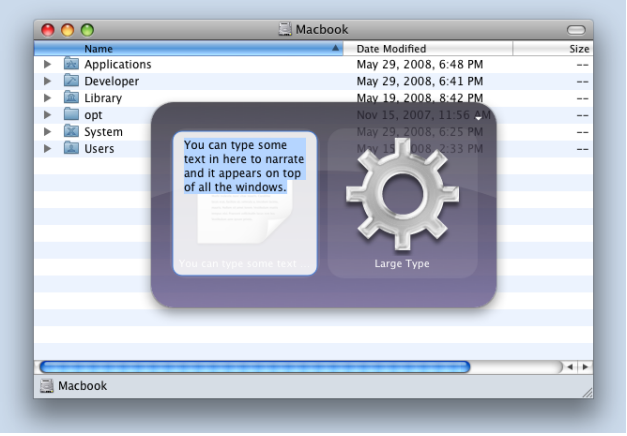


Figure 4: If you ever need to make a silent screencast, *Quicksilver*'s text box can help you quickly display text messages for the viewer.

As a screencaster, how do you decide on the pertinent area of the screen?

* * *

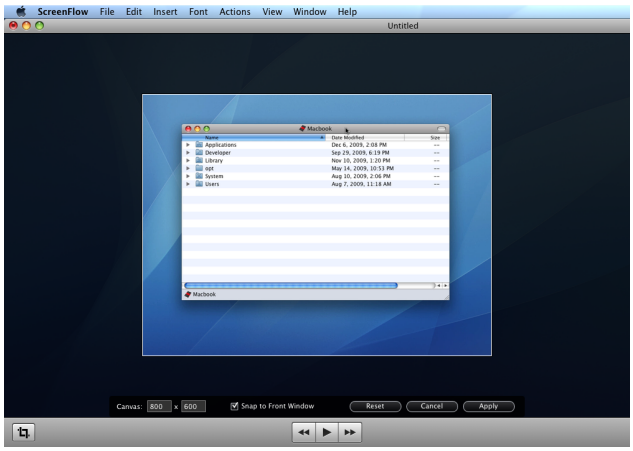


Figure 5: Establishing a focused view in *ScreenFlow*. We establish a focused view around the main window and leave everything else (the grayed areas) out of the screencast.

If you are focusing on just one window, that window serves as the focused view (see Figure 5). On the other hand, if you are using a application that spans multiple windows, it is better for the screencast to designate a rectangular area that encompasses all the windows to prevent frequent focus shifts between the different windows. Try to move all your windows into that area so that even if you flip between windows, you don't need to change your view. It is often unnecessary to capture the desktop of your operating system. So if you find that your focused rectangle captures a portion of the desktop, it might be a good idea to shift the windows around.

You should decide on a suitable resolution that adequately covers this area. It might be necessary to change the screen resolution, resize the windows and toolbars or even reduce

the size of the icons so that everything fits nicely. The viewer should be able to read the text in the window without having to scroll around too much.

Additionally, the web site that you are uploading to might have a hard limit on resolution of your screencast. Having a FOCUSED VIEW solves this problem by placing all the important elements within the constraints of the rectangle. While it is possible to export a large video by converting it to a lower resolution, some smaller-sized details might be lost through the conversion, so choose a proper bound *before* you record your screencast.

Some screencasting applications can draw a focused view as a box around the current position of the mouse. Everything within the perimeter of the bounding box around the mouse is captured; everything outside the perimeter is discarded. This feature keeps the viewer's focus around the mouse where all the relevant actions usually are; however since the bounding box shifts with each mouse movement, some viewers might find the frequent movements annoying. Figure 6 shows an example of this feature.

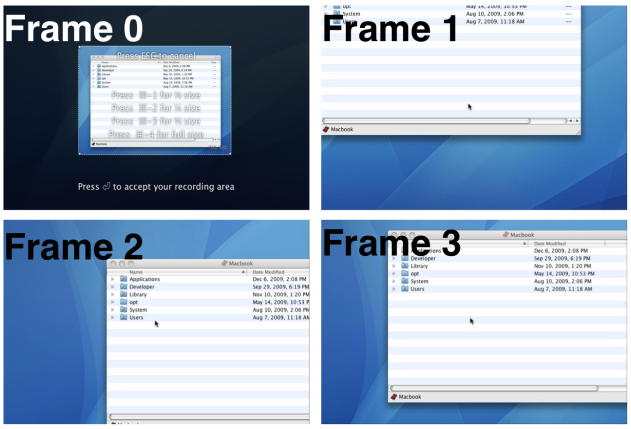


Figure 6: Focused view box that follows the mouse in *iShowU*. In Frame 0, we establish the focused view. In Frames 1 - 3, we move the mouse from the bottom right corner of the screen to the top left corner of the screen. Notice how the mouse remains at the center of frame while the captured screen area shifts around as the mouse moves.

With FOCUSED VIEW, you are limiting what the viewer gets to see in the screencast. By limiting what the viewer sees, you are reducing the clutter that he has to filter. The imposed bounds help guide the viewer to focus on the relevant parts of the screencast.

3.7 Narrow Focus

A good screencast should not contain any user interface elements that could distract the viewer from the main task at hand. For instance, e-mail alerts, IM message windows, blinking icons, the time on the menu bar or even a provocative desktop wallpaper are all distractions in a screencast. Such distractions inadvertently make the screencast less effective since the viewer's focus keeps shifting to those distractions. *How should you keep your viewer's focus on the important parts of the screencast?*

* * *

Terminate or hide any application that might cause a window to pop-up on your screen. It is best to turn off applications that have periodic or asynchronous notification mechanisms such as e-mail clients, newsreaders or backup software.

Choose a plain wallpaper that would not distract the viewer. Use the usual layout for the application instead of your own custom layout since it might confuse the viewer. This includes keeping the default set of toolbars and icons for the application.

Capturing distractions in a screencast also makes it harder to do future edits. For instance, if you had captured the clock on the menu bar it would be impossible to seamlessly redo only that portion of the screencast since the clock on the menu bar would show different times. NARROW FOCUS should always be used when you are doing MULTIPLE PASSES to allow seamless composition of different recordings.

However, sometimes you **do** want to capture the clock: to give the viewer a sense that time has passed. For instance, if you are capturing a process such as saving a huge image file that takes a long time to complete, you might actually pause the recording and then resume it after the file has been saved. Capturing the time will allow the viewer to infer that the screencast has been paused halfway and that it is not running in actual time.

Figure 7 shows examples of things that you should avoid in a screencast:

1. Displaying too many icons on the menu bar. None of the icons are actually relevant to this particular screencast.

2. Capturing the clock even though it is not necessary for this screencast.

3. Capturing the pop-up notification as the screencaster's music track changes.

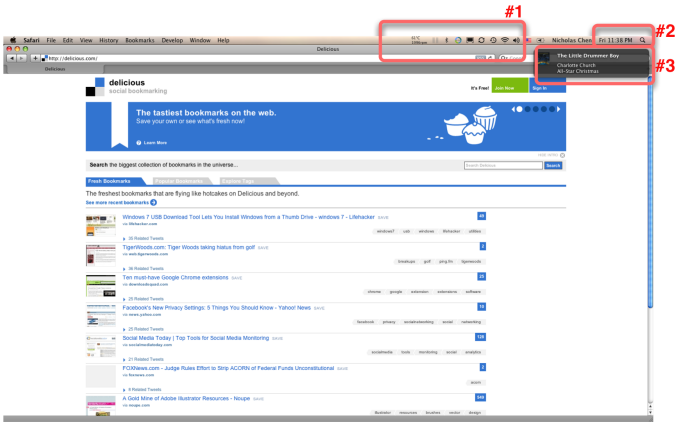


Figure 7: Distractions to avoid while doing a screencast.

FOCUSED VIEW helps the viewer focus on the pertinent portion of the screen. NARROW FOCUS helps maintain the viewer's focus on the main idea of your screencast instead of the little distractions on your screen. This being said, it is neither necessary nor feasible to eliminate all distractions. Fortunately, the viewer can always replay a screencast, to re-watch the portions where his attention was distracted.

3.8 Mouse Focus

Even with FOCUSED VIEW it is still possible for the viewer to lose track of what to focus on in a screencast. Sometimes you would like the viewer to follow your mouse as you move it across the screen. However, since a mouse cursor tends to be small, the viewer might miss its movements. *How should you direct your viewer's attention to your mouse?*

* * *

Momentarily emphasize your mouse to attract the viewer's attention. The emphasis should only be applied momentarily to help shift the viewer's attention to the current position of the mouse. After that, the emphasis should be removed since it can distract the viewer.

There are various ways to accomplish this:

- Your screencasting application may already provide some features for highlighting the position of your mouse. In that case you should use this option. An example of this is shown in Figure 8.
- Your operating system may provide some form of universal access feature for viewers with disabilities. You can make use of the "Locate Mouse" feature which usually draws a halo around the current position of the mouse.
- Your operating system may allow you to enlarge the size of your mouse cursor for extra emphasis.

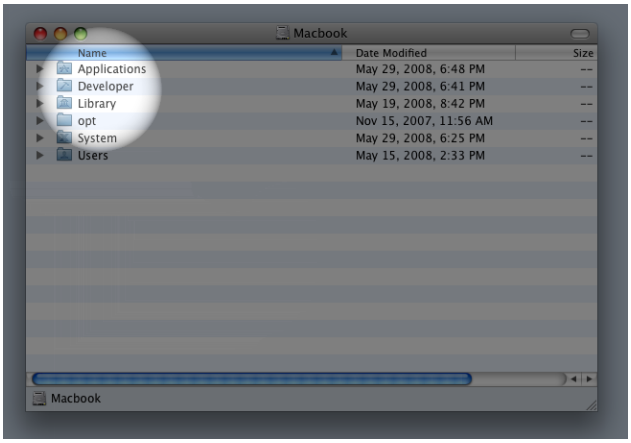


Figure 8: The spotlight feature of *OmniDazzle* allows you to create focus around the current mouse position and serves as a visual hint on where to focus.

Select the method that is minimally intrusive yet apparent enough to attract the viewer's attention. You want to use something that is easy to see but not too gaudy. The purpose is to attract the viewer's attention to what the mouse is *pointing to* and **not** what the mouse cursor looks like.

Use MOUSE FOCUS judiciously. If you use MOUSE FOCUS continuously, the viewer becomes accustomed to the extra emphasis that you are using and might not pay attention when the emphasis is really necessary.

3.9 Keyboard Focus

Many actions on a computer are performed using keyboard shortcuts. Some of these keyboard shortcuts such as copy and paste are almost second nature to us. However, other keyboard shortcuts are application-specific and your viewer might not know them. When you use these keyboard shortcuts, an action is *magically* performed and the viewer has no way of knowing what has happened. It would help the viewer to know that you are using a keyboard shortcut. *How should you let the viewer know that you are using a keyboard shortcut?*

* * *

Use an on-screen tool that will show you the key sequences that you press. The tool should display the key sequences in a subtle and non-obtrusive way since not every viewer would be interested in the key sequences. Whenever possible, you should position the on-screen tool at the bottom corner of the screencast. That way, the on-screen tools remains visible without being overly conspicuous.

Figure 9 shows an example of displaying the keyboard shortcut to invoke the "Go to the folder" in the Mac OS X *Finder*. The key combination "*Shift+Apple+G*" is displayed in the gray window at the bottom right corner.

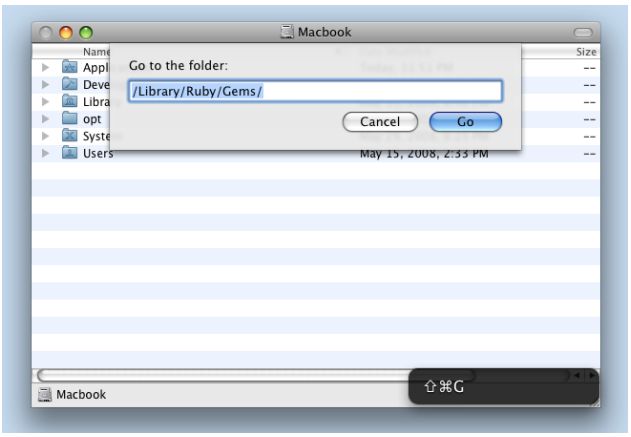


Figure 9: Using a tool such as *KeyCastr* allows you to show capture the keyboard shortcut and display it on the screen.

Depending upon your tool, this method could also be used to do a SILENT NARRATION since it shows all the keys that you have pressed.

Because it is not always possible to find such a tool, consider avoiding keyboard shortcuts in your screencast. Instead invoke the actions from the menu bar or the right-click menu. Doing so makes it clear that you are invoking an action and the viewer can see that instead of wondering why something magically happened.

Even when using a tool, use KEYBOARD FOCUS judiciously. Each time a keyboard shortcut is displayed, the viewer's eyes shift temporarily to the on-screen tool. The more keyboard shortcuts that you use, the more distracting it becomes since the viewer's attention is divided between the *actual* interaction in your screencast and the information in the on-screen tool.

3.10 Multiple Passes

Most good screencasts are usually SHORT & SWEET. Sometimes, you need to produce a screencast that is longer. It is not feasible to do a long screencast in a single recording since the chances of making mistakes are too high: it's easy to make a mistake halfway that might jeopardize the rest of the screencast. Re-recording a long screencast is also tedious and time consuming. *How should you choreograph a longer screencast to minimize mistakes?*

* * *

Use multiple passes to record your screencast. Break your screencast into independent sections that you can re-record if something goes wrong. Then using a video editing application, merge all those different recordings into a single coherent screencast. Depending on your tool, it might be possible to layer the recordings on top of one another as well to create different effects. Figure 10 shows how you would do this using *iMovie*.

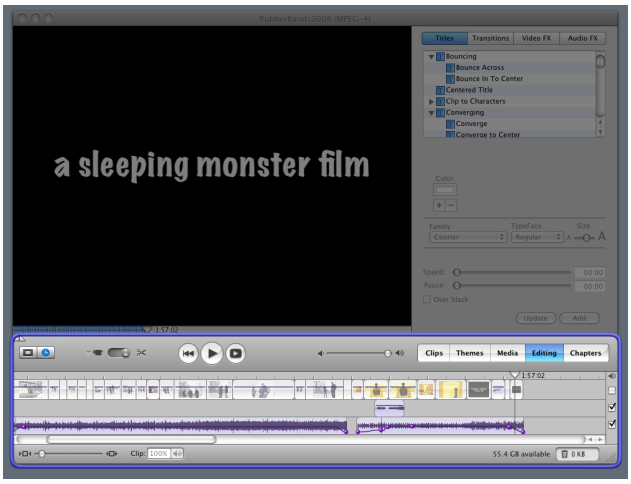


Figure 10: Using a specialized application such as *iMovie* allows you to compose multiple recordings (see the highlighted section in the image above). This is useful if you would like to have greater control over a complex recording.

When composing a longer screencast from a set of shorter recorded *snippets*, each of the these snippets should have its own audio narration. Even though the longer final screencast will have its own audio narration, the act of narrating each snippet will help you maintain a proper pace while performing the actions on screen. Also, each snippet's narration serve as a reminder of its purpose in case you want to reuse it in other screencasts in the future.

Your screencasting tools will enable you to silence the audio from the individual snippets, and replace them with a single continuous audio narration for the finished screencast. It is usually easier to re-record a new audio track for the final screencast, than try to splice the individual audio snippets together. Re-recording is also preferred because the human brain is far more sensitive to audio inconsistencies than visual inconsistencies [4].

MULTIPLE PASSES give you the flexibility of making more intricate screencasts but they require specialized tools that are usually more expensive. Using MULTIPLE PASSES requires more work because you have to synchronize and merge different recordings together. For most screencasts, a single recording is usually sufficient.

3.11 Chapter Tracks

You have a long screencast that addresses various related topics. Because it addresses multiple topics, your viewers would appreciate the ability to navigate quickly to a particular topic. *How should you support this?*

* * *

Break your screencast into chapters. A list of chapters gives an outline of your screencast, and enables your viewers to navigate to a particular section quickly. CHAPTER TRACKS are usually used in conjunction with MULTIPLE PASSES to separate out each recording. Figure 11 shows chapter tracks in a *Quicktime* movie.

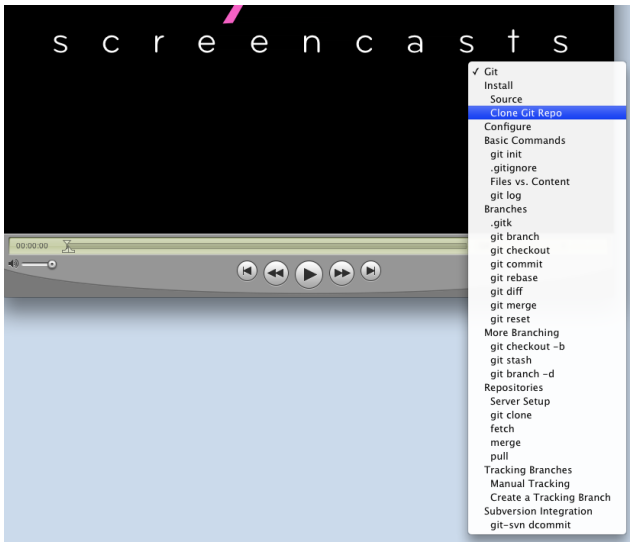


Figure 11: Chapters in a *QuickTime* movie. Clicking on the chapter tracks allow you to navigate quickly to a section of interest.

If your screencasting application does not support the creation of chapters, consider splitting the original screencast into multiple screencasts, divided by topics. Give each screencast a descriptive name and create a playlist of all them. Most screencast players have the ability to support playlists. Playlists serve as *faux* chapters when your screencasting application does not support the creation of chapters.

Even if your screencasting application supports the creation of chapters, you should, regardless, avoid long screencasts and favor breaking each topic into its own shorter, individual screencast. It is often a better idea to create multiple smaller screencasts because the web site that you are uploading to might have a limit on the file size and will reject bigger screencasts.

3.12 Embellishments

You have completed your screencast by making use of a few of the discussed patterns and have presented a focused screencast. Now, you would like to embellish the completed

screencast and personalize it. *How should you embellish your completed screencast?*

* * *

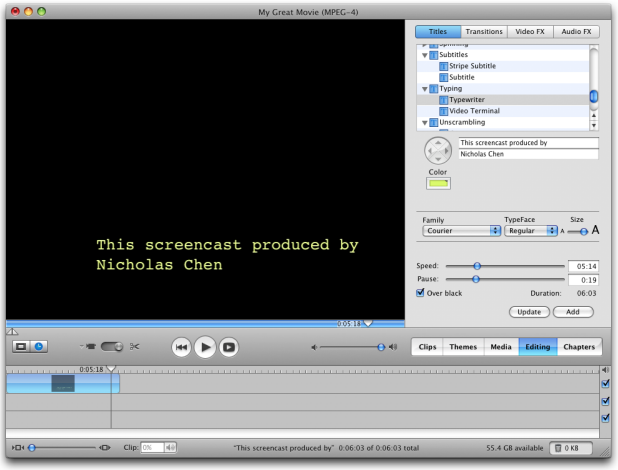


Figure 12: You can create a quick and simple intro screen that displays your name and logo using *iMovie*.

Stick to the simplest embellishments possible and resist the temptation to add more. Embellishments are eye candy that don't add directly to the value of the content. They make the screencast prettier but they also require time to add and they take up precious time especially when you have endeavored to keep it Short & Sweet.

Useful embellishments include:

- The title of the screencast so the viewer knows what the screencast is about.
- The date of the screencast so the viewer knows if he has the latest version of it.
- Your name and contact info so the viewer can contact you to leave questions or comments (see Figure 12).
- The URL for any Bundled Resources.
- Your logo so the viewer can identify the screencasts that you produce.
- A license for your screencast. The Creative Common[1] license is a popular one to use.
- A clear ending screen so the viewer knows that the screencast is over in case the screencast gets cut off halfway as it is streaming over the network.

Most viewers will skip the intro and ending screens if they find it to be repetitious. Save precious time and resources by just making them short. A good rule of thumb is to keep the intro screen around 5 seconds.

Only add embellishments that assist in getting the message across. Do not add gratuitous embellishments just because your screencast application supports it. Remember, you have used Narrow Focus to keep your viewer's attention on the pertinent parts of your screen. Do not negate your efforts by introducing embellishments that distract your viewer.

Adding embellishments usually requires Multiple Passes since it not possible to embellish a screencast as you are capturing it.

3.13 Picture Slides

Screencasts usually capture interactions on the computer screen. Being able to record the interactions on screen is useful for illustrating the actions that a viewer needs to perform since it shows a clear sequence on what to do. However, **not everything** would benefit from having these interactions. *What could you use to illustrate an important concept that doesn't require live interaction on the screen?*

* * *

Insert a static picture or a diagram into the screencast just as you would do in a traditional presentation. Figure 13 shows how an example of using a static picture to demonstrate an important concept.

Not everything in a screencast has to be interactive; sometimes a static diagram illustrates a concept better than a series of actions performed on screen. Remember, a good screencast makes it easy for a viewer to learn something; if a static picture helps you accomplish that, then use it.

Picture Slides usually requires using Multiple Passes. On the first pass, you would capture the interaction on the screen. On the second pass you would insert the picture into the sections that require more explanation. You could then do an audio narration over this segment of your screencast.

If your screencasting software does not provide an easy way to do this, just display the picture in realtime using a simple picture viewer application. Expand the picture viewer application so that it fits inside the Focused View for the screencast.

When using Picture Slides, it is a good idea to hide your mouse so that it does not distract from the picture. The focus should be on the static picture instead of the action that you are performing.

3.14 Bundled Resources

To remain Short & Sweet, a screencast shows only the most important aspects of a concept. Therefore, it is likely to leave out the less important parts for brevity. Nonetheless, the missing aspects might provide the infrastructure needed for the viewer to follow the screencast and perform the actions himself. For instance, if you are doing a screencast about using a feature of an image editing application, you might have already prepared an original source image that you will modify. You would never start the screencast by showing how to create the source image since that is not the focus of the screencast. And yet, without the original image, the viewer will not be able to replicate your steps in the screencast. *How can the viewer access the resources that you are using in your screencast to replicate your steps?*

* * *

Bundle any resources that are referenced in the screencast as a convenient downloadable package. Then advertise the URL for this download package at the beginning or end of your screencast so that the viewer can know where to download the referenced resources. It is also possible to use

Figure 13: In Frame 1, we show the current web browser at the del.icio.us website. In the next frame, we use a static picture to show the different browsers that a viewer can use. And in Frame 2, we transition back to our current web browser.

EMBELLISHMENTS to advertise the static URL and the contents of the package.

Whenever possible, it helpful to create **two** versions of the resources – the source version and the final version. The source version allows the viewer to repeat all of the steps shown in the screencast to completion, and compare his work to the final product. For example, in a screencast about using an image editor to remove red eyes in a photo, the *initial* version would be the original image without any manipulations. The *completed* version would be the image with the red eyes removed.

You should always be mindful of the licenses of any external resources. It is safest to use resources that you have created yourself to avoid thorny licensing issues. Sometimes you do not need to include additional resources. If you have created a previous screencast that shows how to prepare the initial version of something, you can redirect the viewer to that screencast. Further, having the viewer perform the steps shown in that screencast instead of just downloading the completed version is a better way for the viewer to learn.

4. RELATED WORK

The patterns presented here are for creating screencasts to facilitate the teaching-learning experience. Screencasts work best for teaching concepts that can easily be illustrated in short sessions. For longer teaching sessions, such as full online courses, it is beneficial to refer to patterns that others have used in the e-learning community. Chen and Cheng [2] have a collection of such patterns in *A Pattern Language for Personal Authoring in E-Learning*. Their patterns supplement the ones we have here and help you create more formal and structured screencasts that will work better for an online classroom setting.

When making screencasts that focus on demonstrating the features of a new piece of software, it is beneficial to incorporate the patterns presented by Todd Coram [3] in *Demo Prep: A Pattern Language for the Preparation of Software Demonstrations*. His patterns help you create a compelling screencast that will clearly demonstrate the features of your new software to attract customers.

Since screencasts are, essentially, another form of presentation, following the common patterns for creating engaging presentations will help make the screencasts more interesting and memorable. Ralf Reißing [5] has collected such patterns in his paper *A Presentation Paper Language*. The patterns he presents supplement what we have here. Nonetheless, those patterns should be used judiciously since following them tends to make your screencast longer and might defeat the effort you have put into making your screencast SHORT & SWEET.

5. EPILOGUE

Ultimately, screencasts are all about the teaching-learning experience. The proposed patterns emphasize improving presentation quality to help enhance this experience. The patterns themselves are not hard to implement but by following them you can easily create a better experience for both the screencaster and the viewer.

6. ACKNOWLEDGEMENTS

This paper was improved through conversations and feedback from Paul Adamczyk, Yun Young Lee, Stas Negara, Mohsen Vakilian and Roger Whitney. We thank Robert Hanmer and Joe Yoder for shepherding this paper, and thank Takashi Abi, Marco Hernandez, Jeff Hutchinson, Lise Hvatum, Christian Kohls, Jake Miller, Karl Rehmer, Linda Rising, and Robert Zack for their invaluable comments during the writers' workshop at PLoP 2009. Further thanks to Tracy Chong, Ralph Johnson and Audrey Petty for their continued support and encouragement.

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APPENDIX

A. SOFTWARE FOR SCREENCASTING

Here is a list of the software that we mentioned in the paper. Readers might find this list useful to help them get started on screencasting.

As a disclaimer, we do not endorse or advocate the use of any piece of software. We are not paid by or work for any of these companies [3].

For Mac OS X, these are the software that we have used. For Windows, these are the software that we have heard of (but never used). Alternatives might exist that suit your needs better.

A.1 Screencasting Software

Mac OS X

iShowU By *ShinyWhiteBox*. Available for $29.95 from http://store.shinywhitebox.com/home/home.html

ScreenFlow By *Telestream*. Available for $99 from http://www.telestream.net/screen-flow/overview.htm

Snapz Pro X By *Ambrosia Software, Inc.* Available for $69 from http://store.shinywhitebox.com/home/home.html

Windows

Camtasia By *TechSmith*. Available for $299 from http://www.techsmith.com/camtasia.asp

Super Screen Recorder By *Zealsoft*. Available for $49.95 from http://www.free-screen-capture.com/screen-recorder/

Wink By *Satish Kumar*. Available for free from http://www.debugmode.com/wink/

Linux

Istanbul Available for free from http://live.gnome.org/Istanbul

vnc2swf By *Yusuke Shinyama*. Available for free from http://www.unixuser.org/~euske/vnc2swf/

xvidcap Available for free from http://sourceforge.net/projects/xvidcap/

A more comprehensive list is available from Wikipedia's entry on *Comparison of screencasting software* from http://en.wikipedia.org/wiki/Comparison_of_screencasting_software

A.2 Other Software

Mac OS X

iMovie By *Apple Inc.* Available as part of the iLife Suite for $79 from http://www.apple.com/ilife/

Keycastr By *Stephen Deken*. Available for free from http://stephendeken.net/software/keycastr/

OmniDazzle By *The Omni Group*. Available for free from http://www.omnigroup.com/applications/omnidazzle/

Quicksilver By *Blacktree*. Available for free from http://blacktree.com/?quicksilver

TextExpander By *SmileOnMyMac, LLC*. Available for $29.95 from http://www.smileonmymac.com/TextExpander/

[3]Prices are for reference only and reflect the cost at the time this paper was published (December 2009).

B. SHARING SCREENCASTS

Once you have created your screencast, you might like to share it with other people. If you manage your own website, you can upload your screencast directly to your server. On the other hand, if you do not have your own website or would rather not use your disk space or bandwidth, you can always use one of the many video sharing sites that are available.

A comprehensive comparison of different video sharing sites is available from http://www.contentinople.com/proddir/dir_list.asp?dir_id=7.