



skype™ Code Sandbox

A Shared Workspace for Programmers

When programmers are working together at a distance, Skype can be a valuable tool for communication. Its already rich features for video and text chat give professionals the opportunity to discuss their work in a synchronous environment that limits the confusion and delays that sometimes occur through technologies such as e-mail.

In an effort to increase the value of Skype for programmers even further, we propose a new feature, Code Sandbox, which provides a shared space for Skype users to reference, edit, and create code together as they discuss their work.



Current Workflow

Often during projects in which several programmers are participating, members of the team need to ask questions about, discuss, or troubleshoot particular pieces of code together.

In order to do so using the tools that are available on Skype now, users must first connect to the person they want to collaborate with through their contacts list and enable video chat, voice chat, or text chat, depending on their preference.

At this point, they will be able to talk freely and perhaps even see each other in real time, but it is difficult to “point” to particular sections of code that they may be discussing. Within Skype, users can share code, albeit in a limited way, by uploading a file for the conversation partner to download and refer to within another application, perhaps using line numbers as reference points. However, each user will then have a different

Text chat and video chat are both optional, as always on Skype.

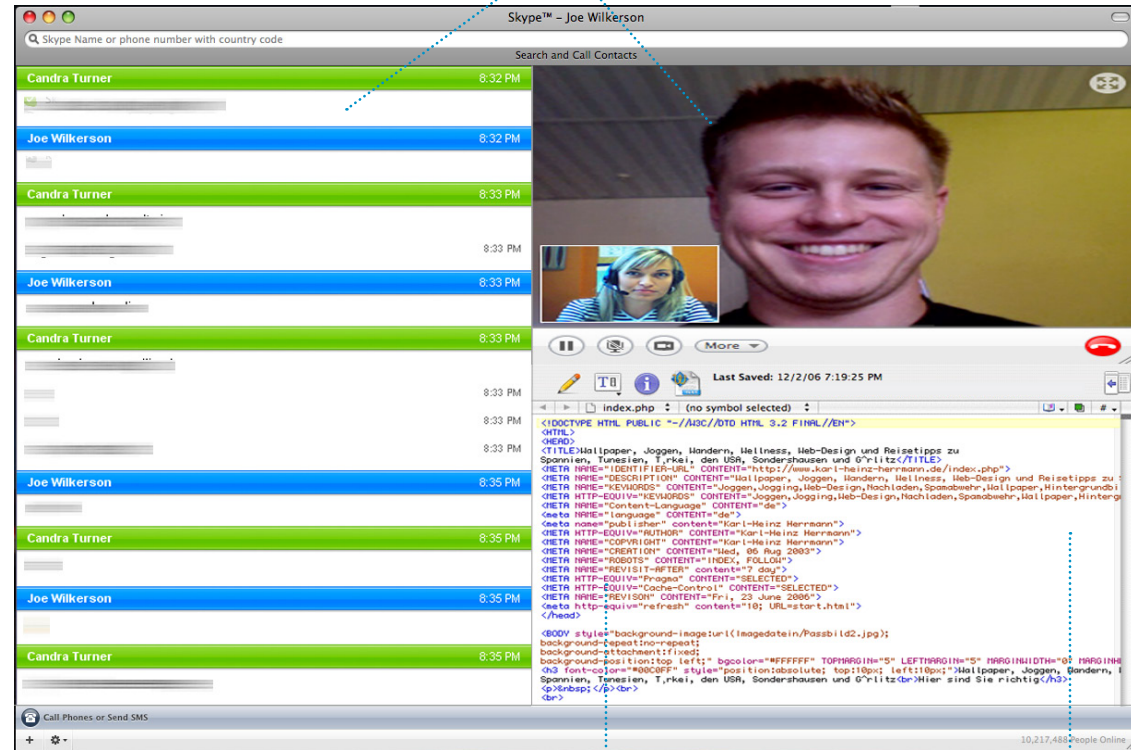
version of the file, and any changes made to one will not be reflected on the other, so it can be difficult to keep track of changes made without continually uploading new versions for the other user to download.

Users without a separate, Google-Docs-like application for editing code together have limited opportunity to gain a shared understanding of issues surrounding particular pieces of code and to try out solutions together synchronously.

Even if programmers use the text chat function to share code, they cannot directly manipulate a shared version easily.

Workflow With the Code Sandbox

With the Code Sandbox add-on to Skype, users can take advantage of a more information-rich environment while they discuss and troubleshoot code together. Instead of passing along



Support for language-specific syntax cues in many programming languages is available to aid in easy reference.

Code sandbox

versioned files to each other, users can copy and paste code straight into the Code Sandbox window or import a file, choose the language they're coding in for appropriate syntax cues, and be assured that their conversation partner

can see the exact same code to which they're referring.

Social Presence

Users will be able to see when their conversation partner is editing or entering code into the sandbox—the

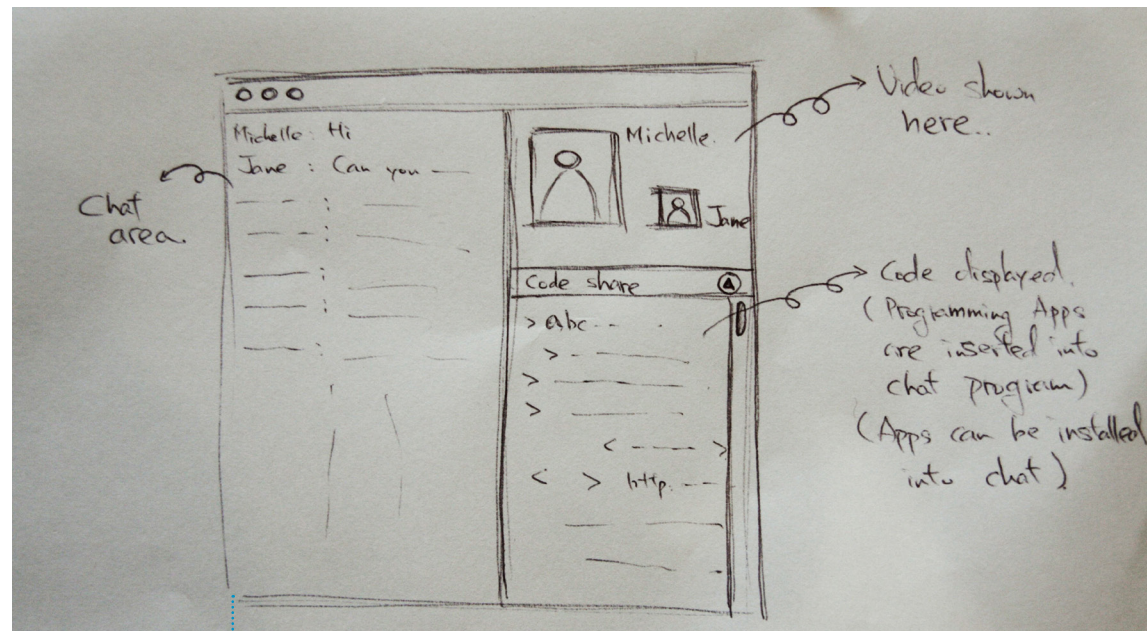
sandbox code-entry field will be covered in a transparent overlay to indicate that the user should not make edits of his or her own until the other user has finished.

The user who is currently manipulating the code can point to a specific spot by choosing a “highlight” option, which the conversation partner will synchronously see.

Similarly, a line of code that is being manipulated will become highlighted as a user works so that his or her conversation partner can easily keep track of which section of the code is being tinkered with.

Integrating the Code Back Into the Original Document

The Sandbox files will be saved within Skype until they are manually deleted, but users will also have the option to export the files or to simply copy and paste the code back onto their original document if they’re confident that



Our Paper Prototype: We used this sketch/prototype to gain initial feedback from three participants who were familiar with Skype and programming.

they’ve reached a solution through troubleshooting with their colleague.

Design Strategy: Paper Prototype

After creating an initial sketch/paper prototype of our design, we enlisted three people to participate in an evaluation and short follow-up interview. We gave them specific tasks and

asked them how they would go about completing them, and we followed up with questions about their impressions of the interface as well as how they might use the Code Sandbox.

Overall, the participants could see the need for such an add-on to Skype and were eager to give us feedback for future iterations. We saw similarities in many of

the comments, a sampling of which is below:

- Would be nice to be able to adjust the size/locations of the different portions. Would preferably want the code window to be detachable just for easier use.
- Code window doesn't clearly show who has edited different portions of code.
- Is there a way to lock out actions while one or the other is working on the code snippet?

(We did incorporate this into our features for this iteration.)

- The video may not be necessary for coding purposes ... or chat. The video and presumably audio + coding window may be sufficient, or the chat window + coding window, but not all three.

- Perhaps show different option tabs (Tabs for Call, SMS, etc)
- If both programmers could see both screens (my screen and the other person's screen) at the same time, programmers can see other person programming while working on their own. Is there additional value in screen sharing?
- The size of the video chatting window can be smaller because video chatting may not be deemed as that important if you are programming.
- Is video conferencing with more than two people possible?
- Can I see how the actual result is running? (After working on the programming together, it would be great if both programmers could see the results shown.)