

Make your own Digital Music Stand

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We're developing the Espresso software that will turn a Windows computer into a digital music stand, but while you're waiting for it to come out, you can actually get a lot of the functionality using freely available software. Furthermore, if you set up a music stand as we describe below, moving onto Espresso will be easy because you'll already have the files of music and suitable hardware working. The following setup will work on both Windows and Macintosh systems; we describe how to use it on Windows, but the equivalent Macintosh setup should be easy to work out from these instructions.

The system below is based on using iTunes to index your PDF files (yes, it can do that!), and Acrobat to display them (it has a full-screen mode). We've also got some suggestions for setting up the hardware, based on a few years of experience using this kind of system for gigs.

Espresso itself is planned to be available some time in 2007, and we expect that it will be relatively inexpensive (under \$50). We've been trialing various prototypes for several years now and have learned a lot from testing it in live performances – we want to make Espresso as useful and safe as possible. Work on a production version that capitalises on this is underway.

Like the system suggested below, it will be based on storing PDF files in iTunes, which provides indexing, searching, playlists, and tags for files.

Getting music in PDF

We've got some links on the Espresso digital music web site with hints on how to get music in PDF format. Some of these methods may not be possible depending on the law in your country, and we don't encourage you to take illegal copies of music – some of our best friends get their income from their music!

- There are a number of sites that make out-of-copyright sheet music available for download or on CD for free or at a nominal cost. We've got some links to them on our web site.
- For music on paper, you can capture it with a scanner or digital camera. If you use a camera it will be very fast to capture, but may need some post-processing to make it clearer on the screen. (This might be useful for those rarely used tunes if you don't want to spend a lot of time capturing them and don't mind if they're not top quality). A sheet feeding scanner is good if you have lots of pages, and some digital photocopiers work well as fast scanners. Your capture software may output PDF files, or you can use Adobe Acrobat to collate images and edit them. There are also web-based services available for producing PDF files. Of course, if you are scanning music you should ensure that you are entitled to make an electronic copy. You should experiment with file sizes and scanning resolution, and decide if you want to make colour, gray, or black and white scans. We find the 300 dpi black and white scans are pretty good.

- Some on-line music stores sell sheet music in PDF format.
- You can use the image search facility of a search engine to find scanned music on-line. Limiting the search to black-and-white or gray-scale may help to narrow the search. (For example, you can do this using Google's image search under the "advanced" options).

Setting up the software

You'll need to install Apple's iTunes (available free from <http://www.apple.com/itunes/download/>) and Adobe's Acrobat Reader (most computers already have it installed, or you can get it from <http://www.adobe.com/>). If you want to be able to annotate your music electronically, consider buying the full version of Acrobat. The full version can also be helpful for putting together your PDF files – for example, you can change the order of pages, crop them, and add comments and highlighting.

It's not essential to use iTunes – it is just an indexing system for the PDF files so you could just use the normal file system– but iTunes is very convenient because it is designed so that you can have a single file on multiple playlists, and you can index by information like composer, genre, and date last used.

Once you have iTunes and Acrobat installed:

- From the file menu of iTunes, choose "Add file to library", and select all the PDF files that you want to access (it accepts PDF, but not other document formats).
- create iTunes playlists, labels, genres, and so on, to suit your needs.
- To display a file from iTunes, double click on the file. If you want to use the keyboard only (which can be handy if you can't reach a mouse), unfortunately you can't currently just press "Enter" in iTunes to show the PDF file. Instead, find the menu item "Show in Windows Explorer" or "Show Song File", which can be chosen with ctrl-R or alt-F-F in iTunes version 6 or alt-F-W in iTunes version 7. When the file comes up, press "Enter" to open the file. It's a bit round-about, but it's quite fast and convenient when you get used to it.
- In Acrobat, use full screen mode (ctrl-L on Windows) to make the image as large as possible. If you leave the image there and use alt-Tab to go back to iTunes, the next song will also open in full-screen mode.
- In the settings (ctrl-K on Windows) for full screen, choose "wipe down" as the transition. This means that you have a little leeway from when you read the last bar on the page to when you start reading the top of the next page (they will both be visible for a short time).
- use arrow or paging keys in Acrobat (e.g. a USB numeric keypad) or the left/right mouse buttons to go back and forward a page, or solder pedal switch(es) into a mouse for remote control!

Espresso will be similar to this, but more suited to page turning for music.

Setting up the hardware

A tablet PC is ideal as a digital music stand, as it sits flat on your conventional music stand (which is especially helpful for a piano or pipe organ), and the pen interface will be useful long term for marking up music. A laptop can also be suitable if you can mount it

on a stand (e.g. sit it on a flat music stand, or one of those flat stands that percussionists use to hold their sticks and bits and pieces). A laptop or tablet also has the advantage that it will work for a while without power (e.g. it won't reboot if someone trips over the power cable, and for short sessions you don't need to run any wires to the power).

You may want to buy an LCD monitor and mount it on a stand (e.g. you can get adaptors that fit some screens onto a microphone stand). This can then be run from a desktop computer (e.g. for home use, or in a situation where you're not setting up often, such as a pit orchestra). In this situation you might also want to consider using a laptop since it will be more portable and less vulnerable to power problems.

Hints

Here are some hints based on several years experience with this kind of system.

- Allow some practice time to get used to using a digital music stand. Although they can make life a lot easier, you don't want to discover in a performance that there are issues like navigating while playing, screen-savers, or font problems! There are lots of things that you will want to get set correctly for performances, including stopping disk scans, updates and virus checks, switching off the screen saver, and anything else that will prevent the computer giving most of its attention to your music display. Don't forget to switch off the sound on your computer!
- When you arrive at a performance, start your computer before you get your instrument out. This allows time for it to boot, do any startup scans that it wants to, and reboot if necessary!
- Outdoors you may find that sunglasses help to reduce glare on the screen. You can also buy shades that clip onto screens.
- If you have the full version of Acrobat, you can manually crop and repaginate music to make the page turns easier.
- Think about the security of your computer when in public places.
- If the screen is visible during breaks, consider putting up your group's logo and contact details, along with some text that hints that the computer is just a music stand and isn't playing the music for you!
- You can hook up slave monitors to your screen so that other musicians can have their own screen to read from – and you are doing the page turning for them! If you have more than one screen connected you'll need a video splitter, and probably a video amplifier.
- You can get roll up rubber USB computer keyboards which are easy to sit on an electric piano or other handy surface and are very useful for choosing songs, page turning, and switching applications, especially if you have one free hand. You can also get wireless keypads (a numeric one may be sufficient as they have navigation control). Tablets often have some limited navigation control (mini joystick, escape and enter buttons) on the front panel.
- In iTunes, when importing a batch of files that have the same genre/composer etc., sort the files by date after they have been imported, select them all, and assign the tags to them all in one go.
- A quick way to get lots of sheets of paper onto the system is to use a sheet-fed "mopier" (digital photocopier) that has a scanning function. The group of pages that have been scanned can later be split or combined as needed.

- If you're using a laptop, keep it charged as much as possible. If you have to do without power (either because it isn't available or there is an outage), you'll still have your music for a while. Laptops are typically good for a few hours of battery, which should cover most gigs, but don't forget to allow for preparation time, or intervals and breaks during the performance. Also, you'll probably be running in a high power consumption mode: bright screen, avoiding disk wind-down and screen saver, so your battery may get used up faster than normal.
- If you've set up a computer on stage but don't need it for a particular song, in some situations you use the screen to provide some colour on stage! For example, if a drummer has a screen near the drums, putting a bright colour on the screen may light up the cymbals. You can do this with a simple Powerpoint presentation.
- If you are using a computer monitor on stage, to avoid it being too conspicuous, choose one with a black backing on it, or put a black cloth over the back. Alternatively, put a banner for your band on the back of it!
- Use the system to help you memorise music by blacking out parts as you get to know them.
- You can make a USB foot pedal for page turning from an old mouse. Buy a foot pedal (you'll probably need a "normally off" pedal). Dismantle the mouse and wire a 1/4" jack socket across the button switch to plug the pedal into. Do the same for the right click button for a second pedal, which will go back a page in Acrobat. Put some black tape over the LED or ball so that it doesn't accidentally move the cursor on the screen. Alternatively, just tape the mouse to the floor and stomp (gently) on the buttons! (Note that you can also buy pedals for Dictaphone software that might be suitable to control page turns).
- The data collected about when your files were last opened, or the playlists that you generate, can be useful for tracking royalties (you can see what songs you played during a gig) and for planning your future playlists.
- Don't just store music files as PDF. You might like to capture copies of documents that are useful to have on a gig like run-sheets, jokes, synth patch lists, programmes, reviews, and contracts.

We welcome any feedback, ideas, or wish lists – our goal is to share information to help musicians work more effectively when playing from sheet music. This is primarily a research project, not a money-making venture.