

Pen & Paper Will Never Look the Same!



By Jan Howells, ARM

The ARM Powered Livescribe Pulse smartpen is just as it says – smart. It is the same size as a Montblanc fountain pen, yet packs in advanced processing power and memory for handwriting capture and audio recording. It is targeted at anyone, from professionals, and executives to students, who need to take down accurately notes to refer to later. The notes can be uploaded, complete with associated audio, to a Mac or a PC, and replayed, saved, searched or sent to a colleague.



In today's digital world we all deal with information overload every-day – the Livescribe Pulse Smartpen just makes it that bit easier to deal with.

The smartpen has been designed to make it easier to capture data, making it easily accessible and available to share with others. The smartpen is basically a computer in a pen that records everything you hear and write, and synchronizes the audio to what you write, so you never miss a word.

The smartpen is powered by an ARM9 processor. “We chose to use the ARM9 design customized by Austria Microsystems because its product was oriented towards the audio processing embedded systems market and it allowed us to achieve a good price/performance ratio on the overall system design by reducing some extraneous component count,” Jim Allison, senior VP engineering at Livescribe explained to IQ Magazine.

“The ARM9™ also as a proven design and majority market share, resulting in pervasive tools and driver support,” added Allison.

The smartpen has an embedded microphone to record clear sound. It also comes with a so called 3-D recording headset, which Livescribe claims makes it possible for users to capture multi-directional, far-field audio. The user taps an icon on the special ‘smart’ paper to start a recording and another icon to stop. If the user hears a comment of interest they note it down on the smart ‘Dot Paper’ and that becomes its point of reference for the recording. The user can then listen to that piece of the recording back by tapping the pen on the comment on the Dot Paper, without having to perform a lengthy search.

The Livescribe Dot Paper, which is made up of tiny microscopic dots all over the notebook page, coupled with Dot Positioning System (DPS) is the key to making the ‘interactive’ documents work. The smartpen uses an in-built infrared camera to track everything the user notes down. Special icon controls are printed at the bottom of each Dot Paper page, including record, pause, stop, which enable the user to navigate the pen's various features and downloadable applications, including a calculator and phrase translation for Spanish, French, German, Japanese and Korean, simply by tapping on them.

Users can either purchase Dot Paper notebooks and journals from Livescribe, or print out their own dotted paper via the LiveScribe desktop using a color printer with 600 dpi resolution or above that is Adobe PostScript compatible. The pages users print will work in the same way as Dot Paper products purchased from LiveScribe, enabling users to record audio and link it to what they are writing. Notes can be tapped to play back recorded sessions, or they can be transferred, stored and played back via the Livescribe Desktop on a

computer. The smartpen comes with a USB mobile charging cradle that, once connected, easily transfers notes onto the computer.

The Livescribe Desktop enables users to backup, search, and replay notes from a computer. Users can export notes into a PDF or audio file. It is also the door to the Livescribe Community - here users can upload and convert notes into interactive Flash movies and share them online or via Facebook.

If the user is writing and recording audio at the same time, the smartpen can operate for over 5 hours before it needs to be recharged. If the user just wants to record the audio or handwritten notes, the smartpen can record audio for over 6 hours or writing for over 12 hours, according to Livescribe.

The smartpen is available in 2GB and 4 GB models – holding 200 hours more than 400 hours of recorded audio respectively. It also provides ample storage for users to download paid for and free applications from Livescribe's online application store, which is currently in beta. Applications range from productivity and reference tools to games and entertainment to travel and education.

Livescribe is encouraging its community of more than 5,500 registered developers to create, develop and distribute next-generation paper-based computer applications.

“For a developer, it's hard to resist the allure of writing applications for a fully functional computer that fits inside a pen,” commented Clarke Stevens, one of over one thousand third party developers who downloaded the free smartpen SDK in the first six weeks of its availability last fall. “The tools provided for Pulse developers are some of the most simple and complete that I've seen for developing and testing embedded applications. This fact makes what was already a fun process into a relatively painless one.”

In addition, Livescribe has partnered with Vision Objects to develop handwriting recognition software, dubbed MyScript for Livescribe, that converts ink handwriting to text in twenty-six languages. The text can be copied to multiple applications, including Microsoft Word and email. This is available to download at an additional charge.

The smartpen's ability to capture handwritten notes and audio and sync the two together will make it a must for anyone swimming against a growing tide of data. In addition, environmentalists will be pleased to hear that Livescribe is also doing its bit for the planet – all Livescribe paper products are recyclable.



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