Pen gives robust high tech help in the field

FACTS

Customer: Stanford University HCI (Human Computer Interaction) Group.

Challenge: To equip biodiversity researchers in the field with a reliable tool and ability to record notes, collaborate and distribute findings.

Solution: Digital Pen and Paper solution based on Anoto functionality. Data capture and organization via the Butterfly-Net browser developed at Stanford.

Benefits: In-the-field scientists aren't reliant on power sources for note taking. Several media can be merged and viewed simultaneously. Trusted habits using paper and pen are preserved and a physical copy exists for backup.

Roughing it in the field

Biodiversity researchers don't normally have the luxury of a well-equipped laboratory at their disposal. Their laboratory is the spot of wetland or grassy field they crouch down in. Their tasks are observing and noting. Modern digital innovations for recording data don't mesh well in the rough: it's hard to find a wall socket and a back up for a system crash. Anoto functionality allows a traditional laboratory notebook printed with its navigational matrix and a digital pen to travel where laptops fear to tread.

"Paper notebooks have infinite battery life," said Scott Klemmer, assistant professor of computer science at Stanford University and co-creator of ButterflyNet. "Scientists will say, 'I have never had my laboratory notebook crash on me. My notebook never loses data. I have never had to troubleshoot my notebook, spend three hours on hold with IBM or wait for a new part for my notebook to come.'"

Capturing, enriching and securing data

It was the behaviour of the researchers which gave the ButterflyNet browser its name. Field scientists need only scribble their notes on paper specially printed with Anoto's navigational matrix. When they return from the field they simply dock their digital pens incorporating Anoto functionality and upload their notes into ButterflyNet. Using the browser they can add other digital media like photos, video and audio to complement what they've written.

If for any reason the memory of the pen fails or if ButterflyNet crashes, the original laboratory notebook remains as a backup. The failsafe security works in the reverse if the notebook were lost or destroyed.

Klemmer points out, "This means that you have a notebook in the physical domain, and you also have a copy of that notebook in the electronic domain. To the scientists, having a digital backup of their work is a slam-dunk win."

Saves time and effort

There is quite a wealth of qualitative and quantitive information gathered in biology fieldwork. The scientists' notes require time and effort to coordinate and distill. A manual organization of the data is time consuming.

The hybrid solution using a digital paper and pen solution with Anoto functionality in union with the browser, ButterflyNet, reduces the time and effort to convert raw notes into universally accessible data that can be potentially shared the world over. The simplicity of the system has been well received. Klemmer adds, "real people can use it without magic from behind the curtain."

Customer Profile:
ButterflyNet is a mobile capture and access system for field scientists. It enables scientists to quickly find their handwritten notes, photographs, sensor readings, GPS track logs, and other research content through a fast and information-rich interface. ButterflyNet's capture component includes Anoto functionality, digital cameras, GPS devices, sensor networks, audio/video recorders, etc. The access component consists of a browser that presents multiple views of the heterogeneous data. These views are automatically linked by their time, location, or other metadata.

http://hci.stanford.edu/research/biology/butterflynet/

Research center:
The Stanford Center for Innovations in Learning (SCIL) conducts scholarlyresearch to advance the science, technology and practice of learning and teaching. The Center brings together teachers, scholars and students from around the world to study how to improve formal and informal learning across cultural boundaries.

http://scil.stanford.edu/

Research foundation:
The mission of the Wallenberg Global Learning Network (WGLN) is to help students, from primary grades through graduate school, to achieve better learning outcomes, to support faculty investigators in producing new knowledge for best learning practices, and to develop pedagogic and technical solutions suitable for innovative use in a variety of university and pre-college settings.

www.wgln.org/projects/index.html

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For more information:
www.anoto.com