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Advance Mobile Technologies -Computing Trends

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Abstract

We are moving into a new era of mobile computing, one that promises greater variety in applications, highly improved usability, and speedier networking. The 3G iPhone from Apple is the poster child for this trend, but there are plenty of other developments that point in this direction. The Google-led Android phone will make its appearance this year, offering a compelling open-source alternative to Apple's device. New, faster networking, particularly WiMax, is rolling out, allowing these devices connection speeds that approach wired broadband. This will also benefit the new crop of ultra-light laptops. The significant innovation in this area is the famous $100 XO computer (now $188; all prices are USD). Previous surveys, in LLT, and by researchers (PDF) at the UK's Open University, have highlighted recent projects in mobile assisted language learning. In this column I will be focusing primarily on the changing computing and networking environment and what it might portend for future language learning applications.

Ultra-Mobile Pcs

When I last wrote a column dedicated to mobile computing, nearly 10 years ago, there were few lightweight laptops, and the existing models all had major drawbacks. Today there are many more models and sizes available, but not all the shortcomings have been addressed. In fact, in comparison with developments in the area of mobile phones, it might not seem that a great deal of progress has been made. With the exceptions of a faster processor, larger memory/hard drive, and a higher resolution display, the Toshiba Libretto of 1998 is not that different from the Sony Vaio UX of 2008. The size, weight, and, crucially, battery life are similar. There is, however, a different kind of portable computing device that was not available in 1998, the Tablet PC. The first Tablet PCs, announced with great fanfare in 2002, were not a runaway success, but in 2005 Microsoft introduced the Origami Project with new software enhancements. Models like the Samsung Q1 and the eo series from TabletKiosk feature smaller, more powerful Tablets. They use a 7-inch display and weigh just under 2 lbs. These ultra-mobile PCs are designed to be used for both work and entertainment but are best suited for note taking and editing. They offer multiple options for creating documents: voice recognition or handwriting recognition, a virtual keyboard or an external keyboard. They are not well adapted to intensive computing tasks such as graphic editing or gaming. A recent entrant in this field is the Nokia Internet Tablet, which runs Linux rather than Windows. The absence of a traditional keyboard in small Tablets has been an impediment for many users, making it awkward to use in situations such as instant messaging or entering text in Web forms. The latest Nokia Tablet (N810) addresses this issue by adding a physical keyboard. Chip manufacturer Intel is promoting what it is calling "Mobile Internet Devices", based on its low-power Atom microprocessor and aiming with partners to develop small Tablets for under $500. Actually, miniaturized laptops (complete with keyboards) have proven to be more popular than Tablets. Minis such as the Sony Vaio UX series or the OQO models are very compact, weighing 1.2 lbs, with 41/2 to 5 inch screens. They feature both WiFi and cellular data network connectivity.

Limited format compatibility. Amazon recently purchased Audible.com, which has led to speculation over the opportunity for combining print and audio versions of texts. Of particular interest to language learners would be the possibility of simultaneously listening to and reading a text (as in selected texts on Loudlit) or working with interactive exercises that leverage the availability of both spoken and written versions. This is not possible on the Kindle (you can either read or listen, not both), but it could be done

on other mobile devices, possibly through the Daisy Talking Book XML standard. The mini laptops such as the Sony Vaio are quite expensive, well over $1000. Even more expensive are the new full-featured, lightweight laptops from Apple (MacBook Air) and Dell (Latitude D430), which feature more power and larger screens than the ultra-mobile models. For less affluent consumers, a new crop of small portables has arrived that are much more affordable. These are bare bones models that typically run Linux rather than Windows and sport a 7-inch display. The best known are the Asus Eee PC and the Everex Cloudbook, currently available in the US from Wal-Mart for $299. They are designed to be starter computers for first-time users or as second, travel computers. They work well for Internet access (Web browsing, e-mail, VoIP) and general computing, using the OpenOffice Suite as an alternative to Microsoft Office. However, the fact that they run Linux limits software choices. Some models can be configured to run Windows, but this adds significantly to the cost. One of the more interesting computers in this group is a device designed for a special purpose and population, the XO from the OLPC (One Laptop Per Child) Foundation. It features a 7 1/2 inch screen with two different modes, either full-color for indoors or non-backlit, black and white for outdoors. It can be used as a regular laptop or swiveled to form a tablet. It is very rugged, with a rubber membrane keyboard, and features unique power-charging options including solar and pull-cord chargers. In additional to conventional WiFi networking, it also incorporates mesh networking, which allows XO users to connect to one another even in the absence of a WiFi connection. Its bundled software (running on Linux) is simple and easy to use, designed for first-time computer users. One of the more interesting features of the software is the ability to press a button in virtually any program to see the underlying code. The HTML of Web pages, for example, can be easily viewed, edited, and resaved. While the computer itself is designed for children (the keyboard especially), the innovative features it introduces are likely to spur widespread interest.

Mobile Phones: The iphone Factor

The XO was designed to be used in developing countries to provide universal access to computing and networking services. For a variety of political and practical reasons, adoption has been slow, with few country-wide contracts so far. One obstacle to effective wide-spread usage of even inexpensive laptop computers is the absence of Internet access. On the other hand, in countries such as India, cell phone ownership is growing fast. As a result, many educational projects are taking advantage of that development to create applications that run on mobile phones. This includes programs for language study. A project out of the University of California at Berkeley, MILLEE (Mobile and Immersive Learning for Literacy in Emerging Economies), has designed e-learning games for mobile phones which deliver English language instruction in an engaging way in India. There are similar programs to teach Irish in the Dublin area (County Meath Project - PDF) or to provide English instruction to small children in Asia (the L-Mo project). Other projects using mobile phones prepare ESL students for the workplace (Athabasca University's mLearning pilot project) and bring basic language and literacy to unschooled Indians (TeachMe Akshara). In fact, there have been for some time quite a few language-related applications available for mobile phones and PDAs, principally for the Windows Mobile and Palm platforms. These range from dictionaries and phrasebooks to flashcards and full-fledged interactive lessons. Increasingly, such programs incorporate audio and, more recently, video. Fluenz Mandarin, originally developed for standard computer access, is now available in a Windows Mobile version that contains the same content, including high quality video segments

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Android: The Future?

We seem likely to see in the near future another mobile phone with considerable promise for the development of educational applications, the Android phone. While Android phones will also feature. A device with a similar form factor (but no keyboard) that has proved to be surprisingly popular is Amazon's Kindle. It is not a full-featured computer, but rather a dedicated e-book reader. However, its

networking capabilities (through a EVDO cellular network) allow it also to be used as an Internet device. It has a 6-inch screen, weighs 10.5 ounces, and is very thin. Its principal selling points are excellent readability (using e-paper display) and long battery life; drawbacks are its relative high cost ($359) and advanced capabilities and encourage third-party applications, this is not a single phone offered by a particular company. Google, with a coalition of companies under the rubric of the Open Handset Alliance, is actually developing an entire mobile phone platform and operating system using embedded Linux. The phones themselves will come from a variety of manufacturers, including HTC and Motorola. The first Android phones in the US will be offered through T-Mobile, and possibly Sprint. There has been tremendous interest in Android, principally because of Google. The Android platform promises to be competitive in features with the iPhone and in some areas eclipse it. It will feature, for example, background access to networks, shared copy and paste, and support for Flash, all missing on the iPhone. Prototypes that have been demonstrated show an optimized user interface similar to the iPhone with added features such as home screen customization and an always-available pull-down window for access to newly received data. Development for the Android platform has been spurred by the $10 million that Google is making available through the Android Developer Challenge. There are some challenges facing Android. There have been a number of complaints from developers concerning missing elements in the Android SDK, frequently changing code parameters, and poor documentation. While these issues are likely to be fixed in the short term by Google, a deeper concern has to do with handset compatibility. In contrast to developing for the iPhone, Android developers do not know what the features of the phone will be for which they are developing applications. The handsets, for example, might have a touch screen like the iPhone or a traditional keypad. Of course this is an issue developers for Windows Mobile have had to face as well. The ambitions for Android, however, are higher than for Windows Mobile devices. The selling point for Windows Mobile has principally been the integration between desktop and mobile applications, particularly in the area of email synchronization and mobile access to MS Office documents. The vision for the Android phone is to become a full-fledged computing and networking device in its own right, not just an adjunct to a desktop computer. This adds a higher level of challenge to Android application development, and having application developers settle for the lowest common denominator among possible phones is probably not the most effective means to reach Google's lofty goals. In this sense, Apple has an advantage in controlling both software and hardware for the iPhone. On the other hand, this places limits on hardware features, which Android does not face.

The Android platform is built on a version of Linux. This is true as well for a competing mobile phone platform, LiMo (for Linux Mobile), an open source project supported by a consortium that includes Mozilla/Firefox, Panasonic, Samsung, and others. There are already LiMo phones available from Motorola and Samsung. OpenMoko is another open source project for phones. Neither at this point can compete with the iPhone or Android in the sophistication of the user interface. For mobile phone carriers, open source operating systems and third party applications are a source of worry, as they threaten loss of control and loss of revenue. Cellular carriers want to continue to charge a monthly fee for photo transfers for example, which is compromised if users are able to do so for free through a third party application. It's perhaps no surprise that the two largest carriers in the US passed on the Android phone. On the other hand, an operating system used by some 60% of phones worldwide is following the lead of Android in the direction of openness. The Symbian OS, recently purchased by Nokia, is to be unified into one platform (instead of the current three different versions) and is to become open source by 2010. Given Symbian/Nokia's large client base, this is likely to force carriers to accept the inevitability of users being able to customize their phone's functionality. Meanwhile, the other major smartphone manufacturer, Research in Motion, maker of the Blackberry, is pursuing a path similar to Apple's with the company controlling both hardware and software.

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