UT@2015: A Pocket PC Experience

Interactive wireless handhelds offered the Chancellor's Council a look into the future

By **Glenda Sims**

What will the university experience be like in the year 2015? How could technology transform learning, teaching, and research? The future university might include electronic mentors, custom courses, continuous learning, virtual classes, e-books, GPS maps, augmented live sports events, and perhaps major library collections online and wirelessly accessible.

How do you position your university to benefit from the possibilities of this exciting revolution? Research. Put the latest technology in the hands of your talented faculty, staff, and students and challenge them to see how technology can not only enhance the university experience, but transform it.

In Spring 2001, Larry R. Faulkner, president of The University of Texas at Austin, challenged his executive officers to create a 2015 vision to share with campus leaders at the Chancellor's Council annual meeting in September. In response, Vice President for Information Technology Dan Updegrove proposed that rather than just talk about technology, we let the council members experience technology. He asked, "What if we had 200 handheld wireless computers filled with content to illustrate our vision of UT@2015?"

The Project Plan

IT's contribution to UT@2015 was defined thus: Provide a technology-enhanced vision of what UT might look like to students, faculty, staff, and alumni in the year 2015 by creating an interactive, handheld, wireless experience for every member of the Chancellor's Council at their meeting. Based on recent UT research with handheld wireless computers, the Compaq iPAQ PocketPC 3670 with wireless 802.11b card was chosen as the ideal device. A project team was formed, of which I was the team leader, and the project plan was developed. Resources required were 200 iPAQs, a wireless network for 200 simultaneous connections, a wireless network analyst, systems analysts for application and content creation, a graphic artist, and a media specialist.

Applications

We based our choice of iPAQ applications on four factors:

- adds value to the meeting,
- illustrates the power of wireless handheld computing,
- proves useful in a university setting, and
- is easy to use.

The team chose Outlook Calendar, Contacts, and Inbox for managing schedules and communications. The meeting packet was created as Web pages and synchronized to the PocketPC Internet Explorer as mobile favorites. We chose Internet Explorer over Word because the interface was more intuitive and supportive of the brochure-like text and photos. Later, the decision to go with Internet Explorer really paid off when we were able to update the meeting content wirelessly.

We used Internet Explorer to illustrate the wireless Internet. We created a list of iPAQ-friendly Web sites for wireless Web surfing, including links to the *Wall Street Journal*, ESPN, and Google. Event photos were posted on the Web as they happened. A real-time Web survey created using ColdFusion and Microsoft Access gathered immediate feedback from participants. By including news sites, search engines, and photos taken moments before, the wireless content proved to the atteendees that we weren't pulling any technical tricks.

We chose both Microsoft Reader and Notes as tools that could eliminate the need for students to carry backpacks. Council members were shown how to take notes using the stylus, the Targus stowaway keyboard, or the recording feature. Sample Microsoft Word and Excel documents illustrated the convenience of carrying these documents in an iPAQ, as well as creating or editing them.

Content

The team personalized the "Today" screen with the event logo and entered meeting sessions into the calendar. We developed Web pages for each presentation and synchronized them to the PocketPC Internet Explorer. To give the council members a feeling of having the university in the palms of their hands, we developed a PocketUT Web page to include mobile versions of the academic calendar, campus maps, football schedule, personalized student's

Figure 1

Wireless Test of the 200 iPAQs

© 2001 University of Texas at Austin. Photo by Stephanie Weiler, UT Information Technology Services.

Figure 2

Student Assists Attendee with iPAQ Training

© 2001 University of Texas at Austin. Photo by Jim Rubarth-Lay, UT Information Technology Services.

class schedule, and assignments. Ten books and a dictionary were loaded into MS Reader. Austin, Houston, and Dallas maps were created for Pocket Streets. We cropped and sized campus photographs for the Picture Viewer. We encoded five UT Band songs and four UT videos depicting the treasures of UT, faculty and football, for the Windows Media Player. Last but not least, we installed and tested the Compaq 802.11b Wireless LAN driver.

To Sync or Not to Sync

Original plans included syncing new content to the iPAQs during the meeting using USB cradles and PCs. Unfortunately, a very full meeting agenda denied us time for 200 participants to sync conveniently. However, we discovered that new Web content could be pulled to the devices wirelessly. We chose wireless over syncing as our fresh content solution. This decision greatly simplified logistical and technical issues. While syncing to a laptop is a crucial functionality when you own the iPAQ, we determined it did not add value to iPAQ use during this meeting.

Cloning 200 Units

From the beginning of the project, the team had planned to use a cloning process to get content on the 200 units. The cloning process involved backing up the final image of the "alpha unit" to a CF flashcard, then using that flashcard to restore the image to the 199 remaining units. We purchased 10 CF flash memory cards to speed up the process. On August 30, 2001, a team of seven gathered to carry out the cloning process. Within four hours 200 iPAQs were set with the UT@2015 content.

Cloning was the simplest, fastest, and most reliable way of making sure each device had all of the UT@2015 content. Of course, the moment you have 200 devices filled with content, you get a request to change the content. Question: What is the fastest way to change the content of a synced Web page on 200 iPAQs? Answer: Update the Web page on the central Web server and have every device load that page wirelessly.

Wireless Test

All the iPAQs were taken to the event location to test the two wireless access points with 200 simultaneous requests. Network analysts observed the load and made adjustments. (See Figure 1.) While each access point could technically support a maximum of 1,024 clients, a limit of 70 clients proved more realistic for good response time. We added a third wireless access point, resulting in a balanced load and 200 simultaneous wireless connections.

iPAQ Student Volunteers

We carefully selected 20 student volunteers to serve as iPAQ tutors throughout the event. A 1.5-hour training session introduced the students to iPAQs. Armed with an iPAQ and a single page of instructions, the students quickly learned how to use the device and each of the applications with special UT content. We chose these students for their people skills and their ability to share information and tailor it to the needs of each attendee.

The Event

September 6, 2001, as they checked into the Austin Four Seasons Hotel, each member of the Chancellor's Council was handed an iPAQ and introduced to an iPAQ student tutor. The students offered as much or as little hands-on training as needed (see Figure 2) before the group boarded buses for their meeting on the UT Austin campus. Some novices were hesitant, but quickly warmed to their iPAQ with help from their student tutors.

The iPAQ experience was judged highly successful. Council members were impressed at how quickly they could learn to use a handheld computer. They found the calendar of the meeting events very useful. Before, during, and after presentations they learned more about the topics through Internet Explorer. They were dazzled with the concept of the e-book and the number of complete books that could fit on the iPAQ. They also enjoyed the videos and music, play-

ing them over and over again. Council members saw the potential of wireless handheld computing for themselves, for students, and for faculty. They experienced it in their own hands and learned that with just a simple tap on the screen, they really could surf the wireless Web.

The iPAQs became stars of the show by putting each attendee in the driver's seat. Council members became participants, not passive listeners. They engaged, they learned, they experienced the UT@2015 vision first hand. Months after the event, people were still talking about the best Chancellor's Council Executive Committee meeting ever.

Wireless and Handhelds in UT's Future

Following the event, the iPAQs were inventoried and prepared for their next mission. Campus departments bought 120 iPAQs at cost. Eighty devices were used in conjunction with an ongoing research project on PocketPCs. Leveraging our experiences from UT@2015, we began the following projects:

- Research how faculty, executive officers, staff, and students use PocketPCs in a university environment.
- Map out strategies for making sections of campus 802.11b accessible.
- Identify useful mobile Web pages and determine effective ways to create single versions that are both desktop and PocketPC friendly.
- Create professional e-books in conjunction with UT Press.

The success of UT@2015 also begs the question, what other activities would be enhanced by wireless handhelds? We are looking for opportunities to use handheld wireless devices to

- Create interactive museum exhibits, like the Seattle Experience Music Project <http://www.emplive.com/visit/ about_emp/tech.asp>.
- Test advertising students' commercials with people on the street.
- Introduce nontechnical audiences to educational technology prospects.
- Introduce technical audiences to handheld and wireless devices.
- Enhance conventions and short courses.
- Create new interactive classroom experiences.

How can the lessons of UT@2015 be used in future events?

- Make sure a handheld wireless device and the content truly add value to the event — no technology just for technology's sake.
- Use the most intuitive and powerful wireless handheld computer available.
- Make sure the handheld device puts the participants in control.
- If the audience is nontechnical, provide one-on-one tutors for each participant, to raise their confidence in using the devices.

Then be prepared to glimpse the future in your own hands. What will your university look like in 2015? *e*

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