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Are We There Yet?

Roy Want

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Are We There Yet?

Roy Want

I've always been an avid traveler and often look forward to planning summer trips to faraway destinations. However, whether by train, plane, or automobile, long-distance travel for the majority of us usually comes with some degree of discomfort—long periods of time sitting in a seat with a limited selection of things to do. Fun traveling companions and a good book can help, but faced with a long flight or transcontinental road trip, cramped seating, bland scenery, and ambient engine noise make the environment challenging.

Electronic entertainment systems have been a considerable boon to helping alleviate the dull side of travel: for a long time, cars have been equipped with radios or cassette players, and commercial airplanes have provided audio programming and a limited selection of movies. Over the past 10 years, pervasive computing technologies have contributed to mobile entertainment's evolving capabilities. Reflecting on this evolution for some of the most popular forms of transportation reveals that although there were initially few improvements, capabilities are now improving at a breakneck pace.

PLANES

Until the mid 90s, airlines on long routes entertained their passengers with a couple of movies projected onto retractable screens in a few key positions in the cabin. For me, the experience was better than the alternative—no movie—but the enjoyment factor was always hit or miss. It depended on where I was seated, the quality of the light-beam projector's tricolor optics, and my fellow travelers' good will. I can remember a couple of flights in which the movie-viewing experience was particularly difficult because another passenger wanted to keep his or her window shade open.

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In the mid 90s, the display quality improved with TV monitors and LCD panels mounted more pervasively in the cabins, and in the late 90s many of the wide-body jets on transcontinental flights incorporated personal LCD panels in the seat backs. With these systems, it was possible to lose yourself in a good movie for a couple of hours and not have the critical plot scenes interrupted by the almost predictable silhouette of a stewardess pushing a dinner cart.

Portable displays have had a positive impact on mobile entertainment's quality, and the opportunity for personalization has been an added bonus. On a flight, I now have a choice of what movie or documentary to watch, or I can even switch to the GPS map channel showing my exact position on the world when I begin to wonder, "Are we there yet?" And, if I upgrade to Business Class, I can have even more choices—it almost makes the inflated price worth it (well, maybe not). Despite the improvements, these systems, which are still in common use today, are limited to about four movies and a few other channels such as cartoons for the kids, comedy, travel programs, and documentaries. Also, they require that I start watching a new show at a particular time, because the programming typically restarts a few times during a long flight. Of course, despite the quirk, these systems are still a great improvement over the previous in-flight movie experience.

However, the biggest improvement has come from video-on-demand. I must confess I was taken by surprise when I first experienced an on-demand video system on a Virgin Atlantic flight in 2005 from San Francisco to London. Each seat back had an LCD screen about double the size of the previous displays and was controlled by a sophisticated handheld

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device tethered to the armrest. The system let me choose from an extensive array of programs and select between at least 40 full-length movies and 50 TV shows. This wide selection included the expected new titles alongside some all-time classics, encompassing a wide variety of movie genres and likely satisfying a large percentage of the passengers.

The feature that made the experience really new for air travel, however, was that I could play each movie and pause, rewind, and fast forward as I chose, all independent of what the other passengers were doing. The personal viewing experience had become even more personal. I could easily accommodate the arrival of lunch or a neighboring traveler's request to move by pressing the pause button without spoiling the experience.

This on-demand entertainment system had still more surprises: interseat messaging and interactive video games. For messaging, all you had to know was the seat number, and you could instant message with travel companions in another part of the plane, or perhaps make new friends, creating a whole new in-flight experience. While playing a video game, you could whittle away the hours using the in-seat controller to jump over turtles or play solitaire. Although not operational on the systems I used, surfing the Internet was also listed on the menu and clearly intended to be available on future systems.

As it turned out, this was the best in-flight entertainment system I've ever used; it kept me busy for hours. When traveling to the UK, I usually take a 6 p.m. flight out of San Francisco so I can sleep in my seat and arrive reasonably refreshed. But this time I was so enthralled with the programming that I barely slept, which left me feeling shattered the following day. This is a reminder that pervasive technologies can effectively improve our social and work practices but sometimes with unexpected consequences.

For some of our readers, I'm sure on-demand video in airplanes is old news, but as only a few long-haul carriers currently support this technology (I have yet to see this service on a US domestic flight), I can only assume there is a fun experience waiting for the rest of you.

AUTOMOBILES

Automobiles are also experiencing an entertainment revolution with similar seat-back video systems being made available as standard features or post-sale options. In a recent Sunday paper, I spotted a portable DVD player with dual displays, installed by simply strapping them around the front-seat headrests. The advertisement showed two children enjoying the experience in the back of a station wagon, implying that if you buy this gadget, family car trips will now be totally blissful. The DVD player even had a games option that one of the passengers could access as an alternative to the movie.

This device cost US$150, exemplifying the remarkable fall in prices occurring in recent years in this area. The DVD-player and LCD-display markets have both enjoyed cost reductions resulting from standardization and worldwide mass production. In-car entertainment has now become so much part of the car experience that auto manufacturers are integrating radio and CD-player controls (push switches) into the steering wheel. Consequently, a driver can change channels, select the play mode, and adjust the volume, all without taking his or her hands off the wheel or eyes off the road. With practice, drivers can use these controls in an ambient way without losing focus on driving or interrupting a conversation with other passengers, aligning well with Mark Weiser's vision of ubiquitous computing.

GOING PORTABLE

Although we can build entertainment systems into transportation systems, the reduction in size and power consumption has enabled a personal,

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FROM THE EDITOR IN CHIEF

portable device revolution. The Apple iPod is the most salient example. Why would I want to listen to a tape loop in an airplane when I can carry around all the music from every CD I've ever bought on a device that I can drop in my pocket? Car manufacturers such as BMW have produced an iPod adapter kit for this very reason; it's a better solution than supporting a CD changer with a limited selection of music and a propensity for mechanical failures.

Similarly, the number of people using portable DVD players on flights has markedly increased. For the business traveler who's already carrying a laptop computer and probably an integrated DVD drive, the device doubles as a DVD player, assuming the batteries will last the duration of the flight. In some senses, carrying around your own laptop computer is the ultimate entertainment system, enabling photo browsing and offering music, videos, and games.

SMART TRAVEL

Integrating electronic entertainment systems with vehicular travel is just one of many benefits of merging pervasive computing technologies with transportation. Others include automated or driver-assisted navigation, vehicles that sense and adapt to environmental conditions, personalized driver and passenger configurations, congestion monitoring, route monitoring, automated toll collection, and ad hoc vehicular networks. In all these domains, transportation is becoming more intelligent.

In this special issue, our guest editors have selected articles that describe work taken from some of these broader transportation categories and that dive into the specifics of this very successful application area for pervasive computing. P

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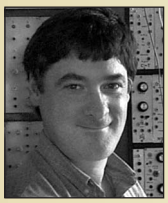

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