

PURE GENIUS

# AMTRAK ROLLS INTO THE INFORMATION AGE



BY MELANIE D.G. KAPLAN

POSTING IN CITIES

FOR A LONG TIME, A RIDE ON AN AMTRAK TRAIN MEANT LEAVING DIGITAL TECHNOLOGY AT THE STATION. NOW, THE U.S. RAIL OPERATOR IS WORKING TO LEAP AHEAD -- AND

# CONVINCE COMMUTERS THAT RAIL IS 21ST CENTURY TRANSPORTATION.

## Special Feature: The Mobility Issue

<http://www.smartplanet.com/features/the-mobility-issue/6360728>



<http://i.bnet.com/blogs/amtrak-california-national-train-day-illo-620px.jpg>

Last month, on the way from Washington to Philadelphia, I opened an Internet connection on my laptop and pulled up a map to plan my route in the city. On the way back to D.C., I bought a hot chocolate and watched the cashier ring me up on a touch screen.

Big deal, right?

Yet it was a big deal. In both instances, I was riding Amtrak, the U.S. railroad operator, which has a reputation for holding the caboose

position when it comes to the use of technology in the travel industry. To be sure, some of the charm of train travel is the escape from a wired life. The idea of sitting and watching our nation's countryside go by -- instead of watching a screen -- was so alluring that I recently took a trip from Washington to California by rail.

But as Amtrak ridership levels hit all-time highs, and passengers travel for business enough that the high-speed Acela Express looks like an office on wheels, technological improvements have become inevitable. Now, in a flurry of upgrades, Amtrak is rolling out Wi-Fi and eTicketing, outfitting its conductors with iPhones, installing high-tech tracking equipment and integrating fully automated food and beverage systems. It is also experimenting with alternative fuels and taking steps to advance the long-term vision for high-speed rail.

Amtrak has reason to celebrate: In its 40th year, it's enjoying the eighth new ridership record in nine years (30.2 million passengers for the 2011 fiscal year, ending in September). Furthermore, there is a sense that simply being alive in this economy, with the operating losses Amtrak has sustained, is a joyous occasion.

“Some of our detractors expect us to fold our tent,” Amtrak President and CEO Joe Boardman said recently as he announced an aggressive agenda for 2012. “But we're not going to do that.” As Amtrak shifts from a focus on survival to growth and improvement, it is investing heavily on the equipment and infrastructure side. On the way: 70 new electric locomotives and 130 new single-level long-distance cars, upgrades to tracks and bridges, and plans to increase capacity into

Manhattan.

“All of these investments are important but for different reasons,” said Matt Hardison, who heads up Amtrak’s sales distribution and customer service. “We need to maintain our equipment and tracks, but technology itself is vitally important for our business. To generate the best rate of return, the most logical thing to do is ... deliver a good customer experience.”

It’s also the technology that customers will notice, above all. Let’s face it: For years, we’ve noticed that other transportation options--airlines, rental cars and, increasingly, buses--have kept up with consumer electronics and purchasing habits. We can book flights on our laptops, check in with our smart phones, pull up a mapping device in our rental vehicles. And this way of doing business has become more comfortable for most of us than using the clunky systems available on Amtrak. As those systems are phased out, Amtrak will finally be up to speed with its competitors.

## **CONNECTED AT LAST**

The most requested amenity on Amtrak has also been the most elusive. Amtrak began looking at its Wi-Fi options back in 2006, evaluating everything from satellite and cellular to pay-per-session and track-side radios. The biggest obstacle to providing Internet connectivity is the limited bandwidth on many routes. But Hardison said the supporting technology improved enough in the last few years to make cellular the technology of choice. “We just hadn’t found a satisfactory technology,” he said, “until the advent of the third-

generation network.”

In 2009, Amtrak tested a cellular system for journalists on President Barack Obama’s inauguration train. Today, the free AmtrakConnect Wi-Fi service is available on all 20 Acela trains, and it expanded in 2011 to much of the East and West coasts. Currently, 75 percent of all Amtrak passengers have access to on-board Wi-Fi. Amtrak’s goal is to outfit the entire fleet, but future expansion is contingent on funding. The systems, which can be easily upgraded as technology advances, have been deployed by U.K.-based Nomad Digital.

AmtrakConnect spokesman Mark Mastro explained that passengers are blocked from downloading more than 10 megabytes and can’t stream video and audio. That means no Netflix, no Pandora, no YouTube -- which passengers will inevitably miss. “Any streaming media will be a bandwidth hog,” Mastro said. “It’s like if you let 20 of your friends on your Wi-Fi at home. It would just crash. So there are limitations.”

## **SAYING GOODBYE TO TICKET PUNCHERS**

Last August, Amtrak launched an iPhone app (an Android version is forthcoming) that allows passengers to plan trips, purchase tickets, modify existing reservations and check schedules and status. This next-generation ticketing system, which has been in the works for five years, will roll out nationwide in the next six months. Currently, it’s available for the Auto Train (Virginia to Florida), Downeaster (New England) and Capital Corridor (northern California).

“There’s no question people have been expecting it for some time,” Hardison said. “You periodically hear people say, ‘Why is it so hard to change a ticket?’ Or, ‘Why can’t I print my ticket at home?’”

eTicketing eliminates the need for paper tickets: Passengers can print their reservations from home or print tickets at a kiosk. They can also present a barcode on their smart phone to the conductor, who will scan it with his iPhone. One improvement over the airlines: Families will only need one travel document per trip, which includes all passengers in the party and all legs of the trip.

The system also allows passengers to purchase tickets at the last minute or once they’ve boarded a train. And for the first time, international passengers will be able to make purchases before they are in the United States—the current system provides no way to sell a paper ticket overseas. Lost your printed ticket? No need to purchase a new one; simply print it again.

Supplying 2,000 conductors with iPhones is the other major component of eTicketing. These conductors and their predecessors have been using hole punches—each conductor has a unique punch—since the 1800s. With eTicketing, each will have the entire reservation system in his handheld device, including a passenger manifest. He will scan eTickets, swipe credit cards, review special needs (i.e. unaccompanied minors, wheelchairs) and compare passenger counts with the expected number of riders.

The iPhone represents a sea change in the way Amtrak handles its reservations and ticketing—not to mention further opportunities for

using the technology. “It’s so obvious and simple, but getting this device into conductors’ hands means a lot more,” Hardison said. “Today when we have to record a defect like a broken lock, they document it, file it with mechanics, enter the information manually...so we’re developing about six to 10 different apps that will help with this kind of thing.”

Amtrak will be testing an app for reporting delays later this year. Currently there are 300 different forms -- paper, of course -- that rail operators use to report a train running behind schedule.

## **MILES OF PAPERWORK, ELIMINATED**

It’s hard to appreciate how much paper Amtrak will soon save until you’ve sat in a conference room at their headquarters in Washington’s Union Station and seen a Form 896. This form, used to track every item sold in the dining and café cars, is a foot wide and nearly 10-and-a-half feet long. It seems to unfold endlessly, reminding me of old dot matrix printer paper, with holes on the sides. In 325 café and dining cars, Amtrak employees fill out these forms -- at the start, middle and end of every trip -- creating a total of 1.23 miles of paperwork *each day*.

The paperwork gets sent, along with meal tickets, to an Amtrak center in El Paso, Texas. It takes three to six weeks to get there, which means it can take that long for Amtrak to learn if there’s a problem with inventory.

“It’s been very paper-based and labor-intensive,” said Lenetta McCampbell, director of on-board systems. “The whole supply chain -

- and the staff in warehouses and on trains -- was disconnected.”

The new streamlined system launched on the Acela in November and will start to roll out nationally this spring. It includes a PC tablet rugged enough that the military uses the same model in Humvees. It will eliminate or automate 19 forms that today have to be printed, scanned, processed and stored.

The system works in real time, so if the dining car runs out of cheeseburgers, the attendant can pick up more at one of the stations. The new system will include handheld scanners for the 13 warehouses, which will decrease human error and prevent under- and over-stocking. It will also monitor data such as refrigeration temperatures and cash on board.

Sales figures, waste and irregularities will be evident within 24 hours, and Amtrak can finally begin to look at trends and expected sales, track theft and spoilage and customize its menus. “We can help the chef understand what to cook and not cook,” McCampbell said. “We won’t throw away 10 chicken entrees, which is what happens sometimes.”

Passengers will notice a difference, too: No more Casio calculators to ring up sales, no more ancient credit card swipes, and no more receipts that don’t list important information. The attendant on my Acela trip last month told me the system took some time to learn, but once he did, he was hooked. “Now,” he said, “I don’t want to work without it.”

## AROUND THE BEND

The reality of high-speed rail is that the journey to get there remains painfully slow. According to the U.S. Department of Transportation, high-speed rail is intercity passenger rail service that reaches minimum speeds of 110 miles per hour. The Acela, introduced in 2000, is currently the fastest train in the Western Hemisphere, reaching speeds between 135 and 150 m.p.h. (Amtrak reports that nearly half of its 305 daily trains reach 100 m.p.h. at some point during their route.) But that's a crawl compared to train speeds on the other side of the globe. Japan's Shinkansen trains, for example, reach speeds of 186 m.p.h.

Amtrak executives said they are committed to high-speed rail and will release an updated vision report this spring. The current vision includes bringing 220-mile-per-hour rail to the Northeast Corridor, using a stair step approach: The initial operating segment will be between Philadelphia and New York, then New York to Washington, followed by New York to Hartford, and finally Hartford to Boston. Passengers could reach speeds of 220 m.p.h. on the first leg by 2023.

Amtrak says that the plan is already moving forward with a federally-funded \$450 million project that will include 24 miles of electrical and track upgrades in New Jersey to allow for faster and more frequent trains. Construction will begin this year. Nationally, \$1.4 billion worth of related construction projects are underway, helping fix rail bottlenecks, untangle railroad crossings and reduce congestion. Additionally, Amtrak will work this year with accounting firm KPMG to develop a high-speed rail business and financial plan.

Amtrak has also been experimenting with alternative fuels. Between 2010 and 2011, the rail operator used a \$274,000 grant from the Federal Railroad Association to test biofuel on the Heartland Flyer, between Oklahoma City and Fort Worth, Texas. The biodiesel blend was 20 percent biofuel from Texas native feedstock and 80 percent diesel. The engine was not upgraded or modified, and Amtrak found that using biofuel resulted in no more wear on the equipment than traditional diesel fuel, and no reduction in performance or reliability.

And finally, speaking of reliability, Amtrak installed locomotive equipment last year that will provide real-time monitoring and will improve the accuracy of delay reports.

“[National Transportation Safety Board] calls it the black box,” Hardison said. “It tracks position, speed, throttle, monitors fuel and provides communication. It’s also connected to a forward-facing cab video system so we can locally or remotely get information on what’s going on in front of the locomotive. In the case of an incident, we can download it remotely, immediately.”

This year, Amtrak will develop a system that lets passengers know, based on their electronic preferences, when there is a disruption or delay on their route. Currently, there is a program along the Northeast Connector and on the West Coast that uses Twitter to alert passengers about major disruptions.

I asked Hardison whether all these technological upgrades will take away from the Amtrak experience, and he assured me that there is still romance in train travel.

“It’s time to socialize, to work, to rest, to watch something on your iPad,” he said. “A lot of the technologies we’re investing in have no impact on your ability to enjoy those things. What people enjoy is the haven from frenzy.”

*Illustration: Amtrak*

*More from SmartPlanet's Mobility Issue:*

- [Why proximity matters for innovation](http://www.smartplanet.com/blog/pure-genius/why-proximity-matters-for-innovation/)

[\(http://www.smartplanet.com/blog/pure-genius/why-proximity-matters-for-innovation/\)](http://www.smartplanet.com/blog/pure-genius/why-proximity-matters-for-innovation/)

- [Did Wal-Mart love RFID to death?](http://www.smartplanet.com/people/blog/pure-genius/did-wal-mart-love-rfid-to-death/7459/)

[\(http://www.smartplanet.com/people/blog/pure-genius/did-wal-mart-love-rfid-to-death/7459/\)](http://www.smartplanet.com/people/blog/pure-genius/did-wal-mart-love-rfid-to-death/7459/)

FEB 14, 2012

SHARE THIS



MELANIE D.G. KAPLAN

Contributing Editor

Melanie D.G. Kaplan is a Washington, D.C.- based journalist. She is a regular contributor to The Washington Post and National Parks Magazine. Her website is [www.melaniedgkaplan.com](http://www.melaniedgkaplan.com). Follow her on Twitter. **DISCLOSURE +**

**MORE STORIES**

---