

TECH

4 ideas the NYC subway needs to steal from other cities

By [Michael Kaplan](#)

December 2, 2017 | 2:56pm | Updated



New York City's subway system is in chaos – with a new boss on the way. He should think creatively.
Christopher Sadowski

In January, Andy Byford, the new president and CEO of the NYC Transit Authority, will start tackling Gotham's subway system head-on. He has called his new assignment "arguably the toughest job in transit right now" — and he's not wrong.

There are some 75,000 subway delays each month, up 237 percent since 2012. The average number of work hours lost by commuters has spiked by 45 percent in that period. According to NYC's Independent Budget Office, subway delays have cost riders \$307 million worth of annual losses in work time. In July, Gov. Cuomo declared that the MTA was in a state of emergency.

So, what should Byford do to turn the whole mess around? Fixing a behemoth founded in 1904 with more stations than any other in the world and the oldest trains still in service (the C trains from 1964 keep running) won't be easy. But four consultants, thinkers and innovators gave their ideas to The Post.

Control crowd size on the platforms

Gabriel Sanchez, MIT lecturer and research associate with a specialization in public transportation, systems, data and operation

We've all been on rush-hour platforms trying to squeeze onto a newly arrived train as fellow commuters push for entry and block doors from closing. This causes massive delays.

According to Sanchez, platforms should be prevented from getting over-crowded in the first place. "In London, they meter the flow of passengers," said Sanchez. "Once there is the critical threshold of people on the platform, access to the platform is shut off — by temporarily keeping passengers on the other side of the turnstile. You shut off the turnstile and make an announcement that it is temporarily closed."

An attendant, either at the platform or at a central location, watches via closed-circuit camera and decides when to reopen the turnstiles, making the announcement to start moving again.

Sanchez said this approach not only makes platforms and subway cars more comfortable, it cuts down on train delays.

By not overcrowding the train, "you can save one-fourth of the time that the train usually spends in the station," Sanchez said. "It creates consistency between when the train leaves the platform and the next one arrives. It prevents trains from getting bunched up."

Switch to levitating trains

Kevin C. Coates, transportation and energy policy consultant who formerly worked with Transrapid, the company that manufactured magnetic train vehicles for the Chinese government

Trains floating above their tracks, flying on waves of magnetism, may sound like the stuff of "Blade Runner 2049," but Coates insists the concept is not that far-fetched. In fact, versions of so-called maglev trains (the name stands for magnetic levitation) already run in England, South Korea and China (where these trains have been operating continuously since 2004).

Coates thinks they would solve problems in New York.

"You don't need drivers, just operators in a central control room to run the trains. They would all be automated and always on time to the second," said Coates. "When I asked one of my Chinese contacts about maintenance, he laughed at me. [Over] 14 years, there was a two-week period when the tracks needed adjusting but the trains still ran. Maintenance can be done on the track while the trains are still running. When vehicles come in for maintenance, the only things that need to be replaced are circuit boards and batteries."

Magnetic trains provide smoother and quieter rides than our existing subways, Coates added. But don't expect the 370-mile-per-hour speeds currently planned for trips between Shanghai and Beijing.

Because of the need to make frequent stops, Coates said, 60 mph is a more manageable speed, similar to a nine-station train currently running in Nagoya, Japan. Current MTA trains can move at a maximum speed of 50 miles per hour. But that speed is rarely reached. According to a national study done by Matt Johnson, project manager at Montgomery County Department of Transportation, near Washington, DC, MTA speeds average 17.4 miles per hour.

So how do magnetic trains work? "A magnetic wave, transmitted by electrical cables underneath the track, causes the train to move," Coates said. "The vehicle follows that wave. "In Shanghai, for example, electromagnets run the length of the train; on-board computers turn the magnets on and off 10,000 times per second to keep the train elevated and laterally stable. Typically the train is 6 inches off the track and you don't feel the train going up and down."

Acknowledging that it won't be cheap for the MTA — a maglev project being considered to connect Washington, DC, and Baltimore, covering only 35 miles, has an estimated cost of \$15 billion — Coates said decision-makers ought to look beyond the immediate outlay, which would require fresh trains, tracks and a computerized control system.

He figures that upgrading to maglev could be completed "within a decade or two," depending on how intrusive the politics get, but insists that it's worth it in the long run. "You won't have to touch it for 100 years. [Maglev] is the technology of the 21st century."



Overcrowding can be eased by stopping people before they enter.
Bloomberg via Getty Images



Trains that are propelled by magnets require little maintenance.
Qianlong - Imaginechina

Replace old signals with computers

Richard Barone, vice president for transportation at Regional Plan Association, an urban-policy organization in New York City. When your train gets stuck to the point that commuters bail and start calling for Ubers, the reason is often due to signal failure — one of the greatest causes of mechanical delays.

Signals are the all-important lights that turn red, yellow or green and control the flow of train traffic. When a signal fails, often due to mechanical issues, trains are instantly braked and unable to move in order to avoid collisions.

But much of this system is ancient. “There are a lot of old components that date back to the 1930s, and [Hurricane] Sandy did not help,” said Barone. “Salt water got into copper wiring, which has been fixed [but not necessarily replaced] and that is resulting in more frequent failures.”

Today’s trains cannot communicate their locations and must, for safety’s sake, stay separated by hundreds of feet. This makes for choppy service.

Barone recommends the MTA go “from analogue to digital” by discarding the old signals and installing modern train controls run by computers. It’s “a new type of system where the train and tracks talk to each other,” Barone said. “Every hundreds of feet [on the track] there is a transponder that is coded with its location.” Using radio signals, a central computer tracks all the trains’ locations in the subway system, allowing them to run closer to each other safely and arrive at stations more evenly spaced, resulting in fewer standstills.

Barone dismisses critics who say the NYC subway is too old for such an upgrade. He points to the Paris Metro, founded in 1900, which started getting retrofitted with modern electronics 2007. “Paris has a system that is just as old as ours and today its oldest line is driverless.”

That said, Barone will not be looking to Tokyo for ideas on how to get the trains running efficiently. Asked about adopting the white-gloved “pushers” (this is their actual job title) who are known for shoving passengers onto the super-packed Japanese subways, he demurred. “I don’t think the MTA can get away with physically pushing people without there being a lawsuit,” Barone said.



This Paris train shows that even old lines can still modernize.

AFP/Getty Images

Charge riders and businesses more for tickets — and suck it up!

Robert Paaswell, distinguished professor of engineering at City College; headed up the Chicago Transit Authority from 1986 until 1989

Paaswell agrees that the subway system needs to be overhauled and modernized — not doing so, he points out, could conceivably cause the city’s movers and shakers to decide that “maybe they’d rather go to Portland, Oregon, God forbid” — and he actually has a plan for getting it done.

“When the MTA calculates an operating budget, which is negotiated with the state of New York each year, it is the bare minimum for providing service every day,” he said. “But it [actually] is not enough to meet the needs, or else the stations would be clean and the trains would operate properly and the air conditioning would always work. The demand is so great and the budget is so tight that the system does not get all the maintenance it needs.”

To cover the monetary shortfall, Paaswell suggests turning to the people who benefit most from our transit system. “Business owners, developers, individual apartment owners and landlords — they should all invest something,” he said. “I’m not thinking millions per person but, for example, just a few dollars each month as an MTA fee on top of your \$3,000 maintenance fees that co-op owners pay each month. Developers would fight this, but it would go unnoticed [by individual apartment owners].”

He sees further infusions coming from increased subway fares: “They are low in New York. Many cities in Europe charge the true operating cost of the trip for a single fare drop.” In London, for example, single fares run from \$6.50 to \$7.80; traveling underground in Berlin can cost as much as \$4. He suggested that New York should charge more than the standard \$2.75 fare, and that the city should reimburse the MTA for free rides given to students, senior citizens and less well-off job seekers.

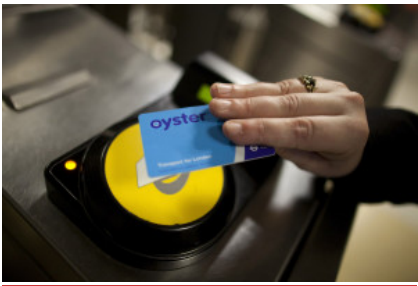
Finally, Paaswell advised taking a cue from London, where subways, buses, ferries, railways, city highways and streets are all operated by

the same entity: Transport For London. (In New York, the streets, city highways and mass transit all function independently.)

When the city of London hit drivers with a congestion charge (approximately \$15.42) for entering or parking in the city during busy times, it led to a better flowing system throughout, Paaswell said. “Because there were fewer cars in the center of London, buses ran better. They ran so fast that they needed to be rescheduled.”

Paaswell’s final piece of advice is that impatient New Yorkers need to be more forgiving, forward-thinking and flexible as improvements get made to the system. If the city shuts down lines to improve them, Paaswell argues, the work can be completed in two to three years.

“In London, around 2007, they shut down lines, people griped for two years, refurbishments were made and the city didn’t collapse,” Paaswell said. “People adjust and, in the end, the payoff is worth it. No pain, no gain.”



Fares on the London Underground are nearly \$8.
Bloomberg via Getty Images

FILED UNDER [CROWDS](#), [MTA](#), [SUBWAY](#), [TECHNOLOGY](#), [TRAINS](#)

Recommended by