Congestion: The Modern King Kong Meets its Match

Cities find new ways to get an 8,000-pound traffic monkey off their backs.
Innovation can end the reign of King Congestion.

New approaches to congestion management hold the power to unlock gridlock.

In the classic 1933 movie King Kong, a 30-foot-tall gorilla escapes its captors and rampages through New York City.

It’s an understatement to say that King Kong disrupts traffic flow.

Today, eight decades later, an even more destructive King Kong – King Congestion! – increasingly frustrates travelers and ties traffic in knots. From Smallville to Shanghai, congestion bedevils commuters, communities and planners.

How bad is King Congestion? Consider these data from Texas A&M University’s Transportation Institute* for 2011 (2012 Annual Urban Mobility report).

- The total time United States travelers lost idling in traffic approached 6 billion hours. That’s 34 hours spent stuck in traffic per driver per year.
- Congestion cost each U.S. driver $818 in wasted gas and lost time per year. King Kong totaled $121 billion in costs nationwide.
- Traffic congestion led to another kind of congestion – pulmonary. Pollution from idling vehicles directly affects air quality, which then affects human health in ways ranging from premature birth rates to respiratory problems.

How do cities and planners get this monkey off our backs?

There’s good news. A combination of smart approaches appears to be having an effect. Congestion in the U.S. actually peaked in 2006 … and the minutes drivers spent impatiently drumming fingers in traffic dropped 1 percent yearly through 2011.

Several factors drive the improvement. Planners have focused on reducing car crashes … and clearing accidents faster when they do happen. Planners also more artfully design roads to separate turning cars and through traffic. New GPS tools, traffic apps, and electronic tolling technology keep things moving.

More ideas lie around the curve:

- Public transportation. Travelers increasingly choose buses, trains, even bicycles as options, reducing traffic on streets and highways.
- Some communities (London, Singapore, Rome and others) control congestion with cordon-area pricing. Drivers pay extra to enter restricted urban areas, usually city center.
- Variable tolls on bridges or toll roads reduce congestion.
- Parking demand management informs drivers of parking spaces. (Drivers circling the block to find parking make up 30 percent of congestion.) Tiered pricing for parking also gives drivers choices that minimize search times.
- High Occupancy Toll (HOT) lanes speed flow and reduce traffic volume.

Experience and innovation merge at speed.

King Congestion will be strongly challenged in coming years as new travel management tools and technologies hit the streets. Xerox plays a big role in this wave of innovation.

Most consumers know our 107-year-old company as the world’s foremost printer technology and document management business offering imaging, data capture and research capabilities. In recent years, our business has evolved to provide business processing, data analytics, control systems, sensor/imaging/video technologies and other expertise.
As a result, we developed new capabilities in computer vision and video processing, along with the ability to analyze large quantities of data produced in these businesses, to extract new insights and enable actionable decisions. Because people are involved, ethnography, the naturalistic study and recording of human behavior, has emerged as an important approach in understanding behaviors and motivations … leading to new opportunities for innovation.

These capabilities, combined with long experience, make our company today a worthy rival to King Congestion. After all, we built some of the world’s first electronic toll systems, implemented toll collection projects in key states, and today process more than 50 percent of all electronic toll transactions in the U.S.

**Two current projects in Los Angeles highlight our innovation.**
- **HOT Lanes.** We started work in mid-2012 with the Los Angeles County Metropolitan Transportation Authority to open faster-moving highway lanes, called Metro ExpressLanes. Usually reserved for cars with two or more passengers, lanes may now be used – for a toll – by single-passenger vehicles on two key LA freeways (famously congested I-10 and I-110). Drivers willing to pay extra to use the HOT lane get a definite ROI – a consistent speed of 45 miles per hour. If the HOT lane clogs, the toll price rises – dynamic pricing acts as a governor to regulate how many vehicles use the lanes. A small transponder aboard each vehicle tracks tolls and use.

- **ExpressPark.** Off freeways, we worked with the LA Department of Transportation to launch Express Park, a project to reduce congestion associated with the search for a parking space.

We approached the urban parking puzzle in the same ways we solve traditional document workflow problems. Our researchers observed driver behavior, conducted interviews and surveys, and drove the cityscape themselves to find parking spots. Researchers even watched police officers write parking tickets.

The findings led to a unique algorithm that helps transportation officials make educated pricing adjustments for parking spaces. The city can increase or decrease meter rates based on demand, time of day, events, and other factors, efficiently controlling traffic congestion and pollution. Drivers go online to see parking prices at certain hours and to learn the likely availability of spaces. Then they make an informed choice – they park based on what they’re willing to pay, how far they’re willing to walk, etc.

Since the Express Park launch in 2012, the average parking rate decreased 16 percent for parking spaces in downtown L.A. The average rate rose for just 4 percent of the spaces.

This parking model integrates into the entire parking management system we designed: Merge™. Using Merge™, Los Angeles manages parking meters, a pay-by-mobile phone system, traffic sensors, enforcement, and collections through a single portal.

**Weighty issues to wrestle.**

At the heart of efforts to de-crown King Congestion lies a practical notion – congestion costs billions, and those who cause the problem might rightly be expected to share in its cost. Drivers idling in traffic or searching out a parking space burn fuel, pollute the air, wear out roadways … and everyone suffers the consequences.

A solution may be congestion pricing – a system that sets an extra fee, or surcharge, for the use of the transportation network at peak periods. We pay congestion pricing routinely in our lives. Tolls for telephone use go higher at certain times. Airlines charge more for tickets when demand outstrips supply.

Congestion pricing doesn’t sit well with every traveler, of course. Some drivers feel their taxes already pay for travel access and information; any extra charge adds insult to injury.

Other consumers have concerns about equality. Does the use of HOT lanes by those willing … and able … to pay more favor the rich at the expense of all others?
Whatever the answers to these questions, it appears that technology and policy and expertise seem aligned at last to face down King Congestion. The beastly problem has delayed and drained and irritated communities for decades. Now new tools and teams have the problem squarely in their searchlights.

**Innovation here, there, everywhere.**

We will continue to play a major role in congestion mitigation, collecting information on mass transit and toll roads, input from roadway sensors and traffic cameras, even data from weather stations, then transforming it all into innovations that change the way we live … and the way we get places.

ExpressLanes is revolutionary – only 11 of these HOT programs exist in the U.S. Express Park also blazes a new trail … and both these programs undergo testing as we work with the city of L.A. on a macro scale to encourage other smart transportation choices. Examples? A carpool loyalty program. Toll credits for using public transit, the first program of its kind in the U.S.

But King Congestion is a global 8,000-pound gorilla … so we confront the issue globally too.

In Lima, Peru, we created and financed an agent-free ticketing, fare collection, geolocation and passenger information system for bus transport in the teeming capital city of 8 million. The 500-bus public system handles 700,000 journeys a day, runs on compressed natural gas, and makes a bus available every two minutes at 49 stations. The system takes thousands of cars off the grid daily, and reduces pollution.

In dozens of other nations, congestion management initiatives – many of them complete solutions with guaranteed long-term revenue – create more streamlined, livable workplaces and communities.

So … are King Congestion’s days numbered? Do we finally have a handle on the problem?

Let’s say we’re reaching for it. We still have more cars on the road than blacktop to hold them. Infrastructure will age. Travel still poses environmental challenges. Plus, potent and powerful problems always seem to charge unexpectedly out of nowhere, like beasts from the jungle.

Still … in the right hands, technology and innovation create our own potent, powerful solutions.

We never minimize the daunting challenge of King Congestion. We’ve seen some communities raise their hands in frustration, run up a white flag. They settle for surrender: That’s just the way it is. Congestion’s just too complicated to fix.

That’s not what we believe.

We believe our nation – our world – can rise to challenge King Congestion. Improvement already shows in cities facing the very toughest challenges. If planners with the right partners and tools can begin to master King Congestion in L.A. and crowded Lima … does it have a good chance in your community?

Contact us. Ask our researchers and experts your questions. Why monkey around any longer?

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Innovation

Innovation only happens when it makes a difference to our customers. The Xerox Innovation Group ensures a balanced portfolio of research and technology projects that address the needs of today’s businesses as well as create options for the future. Our researchers bring their expertise in the transportation market to help build the right solution for the project. As a technology integrator, we’re not restricted to one solution. In fact, with four percent of our revenue spent on R&D every year, we have the ability to meet your needs today and anticipate them for the future.

- $1.5 billion invested on R&D each year (Xerox/Fuji Xerox).
- 1,600 patents in 2010 (Xerox/Fuji Xerox).
- In the top 20 world leaders for patents.
- 100+ new products and 500 awards in the last three years.
- 55,000 global patents.
- 4 of our global R&D centers work on innovation for Transportation.

Throughout our global research labs, data scientists are working on innovation projects to make multimodal transportation seamless and sustainable.

* _http://mobility.tamu.edu/ums/media-information/press-release/_