



## A CAPITAL IDEA

Egypt has begun what might be the most ambitious megacity project ever: a 40-year effort to build a new capital city from scratch to relieve Cairo's notorious congestion.

The as-yet unnamed city, referred to as Capital Cairo for now, will cost US\$300 billion to build. The first phase, estimated to cost US\$45 billion, was initially slated to take up to seven years, but Egyptian President Abdel-Fattah el-Sissi compressed that schedule to a startling two years and ordered construction to start in January.

Egyptian officials say the project is necessary because the Cairo metropolitan area's population—about 18 million people—stands to double during the next four decades.

Project plans call for the new city, east of Cairo near the Red Sea, to house 5 million to 7 million people across 270 square miles (699 square kilometers). The metropolis would include 40,000 hotel rooms, nearly 2,000 schools and more than 600 healthcare facilities, which would create more than 1 million jobs.

But the expensive project has run into plenty of skepticism. Some believe it's a publicity stunt intended to boost President el-Sissi's approval ratings.

"We'll be left with a cluster of skyscrapers in the desert, a testimony to grandiose government plans that lead nowhere," Mohamed El Dahshan, a fellow at the Tahrir Institute for Middle East Policy, told CNBC.

The project is being designed by architecture giant Skidmore, Owings & Merrill and financed by Capital City Partners, a private real estate investment fund based in the United Arab Emirates. China State Construction Engineering Corp. is building the first phase—government buildings, a giant park, 15,000 housing units, a university and more. —*Brigid Sweeney*

requiring high-level programmers to write code for each new dataset, a number of staff members, including interns, can be trained to do it.

"By reducing the technical work needed to upload the data, we can spend more time on focusing and prioritizing worthwhile datasets," says Mr. Schenk. —*Novid Parsi*

## Boston's Lessons Learned

**The Big Dig** has cast a long shadow over Boston, Massachusetts, USA. And with a new wave of major infrastructure projects now underway, project sponsors and practitioners in the city are determined to avoid the mistakes that turned the highway tunnel megaproject into a debacle: The US\$14.8 billion project closed nine years late, in 2007, and overran its original budget of US\$2.6 billion.

"After the Big Dig, Boston and the surrounding region experienced a drought of capital funding," says Eduardo Gamez, PhD, deputy director of risk management, program and construction management practice, AECOM, Boston, Massachusetts, USA. Many in Boston's project community spent the years immediately after the project closed involved in projects outside the region, learning best practices, he says. "Now agencies that never looked at risk before in a formalized way are trying to understand the 'what-ifs' before they start construction."

Robust risk management may be one reason Boston's public transit agency revealed last August that a planned 4.3-mile (6.9-kilometer) extension of its Green Line subway could cost US\$700 million to US\$1 billion above the previously announced US\$2 billion price tag. (The project's future is now uncertain.) Other recent projects have hit snags after construction started: The Massachusetts Department of Transportation announced in mid-2015 that completion of a US\$255 million project to reconstruct the city's Longfellow Bridge would be delayed by two years because of complications associated with preserving the century-old structure. And in 2014, a US\$160 million renovation of a terminal at the city's Logan Airport came in US\$61 million over budget.

### A City on Some Fill

Boston's infrastructure project woes stem from the city's size, density, climate and age.

"It's the complexity of building in a small, congested city that makes projects here so challenging," says Virginia Greiman, PMP, author of *Megaproject*



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*Management: Lessons on Risk and Project Management from the Big Dig.* She served as the Big Dig's deputy chief legal counsel and risk manager.

Geotechnical challenges also crop up; parts of Boston sit atop fill. "Boston is a city built on and along the shoreline. Consequently, it's always been difficult to build here," Ms. Greiman says. "The movement of the tides means soil conditions are not very stable."

Yet another challenge is an unpredictable construction season length due to erratic winter weather, Dr. Gamez says. And then there's Boston's age: Founded in 1630, it's one of the oldest cities in the United States. "Working downtown, especially, has its own challenges in terms of the historic grounds and making precautions for any undocumented artifacts you might uncover underground," Dr. Gamez says.

Archaeological risks translate into complicated and expensive preservation techniques, along with extra stakeholders. "We have to work hand-in-hand with municipal government agencies, of which there are many," says David Petersile, PMP, senior project manager in the Boston office of PMI Global Executive Council member Burns & McDonnell.



PHOTO BY JOHN TLUMACKI/THE BOSTON GLOBE VIA GETTY IMAGES

Input from neighborhood associations, citizen groups, historical societies, universities and other organizations is also common.

"A lot of schedule delays and cost overruns are due to stakeholder involvement," Mr. Petersile says. "Many projects today are being pushed forward without designs that are 100-percent complete. That can slow down projects because everyone wants to give their input as the design evolves."

### Plan for the Worst

For infrastructure project leaders, the best approaches to Boston's complex project environment are clear. They must do deep up-front planning, prepare stakeholders for lengthy projects and learn to be patient.

"These are long-term projects. We need to be more transparent about the fact that they may take longer, cause more inconvenience and perhaps cost more money than we'd like," Ms. Greiman says. "And we need to make sure we have the right structure in place—including the right governance, expertise, budget, risk assessment and stakeholder engagement—before moving forward with procurement."

Communicating and realizing benefits is also crucial, says Mr. Petersile. From a benefits standpoint, he notes that Boston's infrastructure project track record is better than its reputation. For example, by rerouting an expressway into a new tunnel beneath downtown, the Big Dig improved access to the South Boston waterfront and spurred rapid development. It has been one of the fastest-growing urban areas in the state. Nearly 8,000 jobs were created between 2000 and 2013 and another 22,930 are projected by 2035, according to the *South Boston Waterfront Sustainable Transportation Plan*, a report released by a coalition of government agencies in 2015.

"Boston residents have come to accept that with growth comes some pain and difficulty. They've experienced the trials and tribulations of projects, but now they're seeing the positive results," he says. "The city since I've lived here has changed dramatically, and it's only for the better. With all the development that's taking place, it's poised for continued growth." —Matt Alderton



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