

# Mapping Manila Transit

## A New Approach to Solving Old Challenges\*



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### **I** BACKGROUND

Whether they attempt to build jeepney stops, expand transit access, or improve bus routes, transit projects across much of the developing world are often hampered by (1) the lack of accurate transit maps and data and (2) the weak capacity of transit agencies to acquire and use such data. To address the twin aspects of this long-standing challenge, the World Bank, in cooperation with the Philippines, developed both a methodology and a suite of open-source software applications based on free, internationally supported open data standards. The solutions have allowed the quick, low-cost production of transit maps; and they have empowered the agencies—and potentially businesses and the rest of government—for the first time to make ambitious planning and investment decisions based on accurate, comprehensive transit data. The global applicability of this approach has been demonstrated by its adoption in six other developing countries to date.

### **II** No Data, No Maps, Less Progress

“Detailed and accurate maps are so fundamental to sound urban planning, so essential to making smart decisions about

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where to build the next library, clinic or bus station, that it's hard to believe how often they don't exist," says Joana Mikulsi of the nonprofit Next City. The high cost and technical complexity of conventional data collection and mapping have been a perennial barrier to improving transit services in developing countries.

### **III The Manila Challenge**

Nearly 70 percent of all trips made by the 12 million residents of metropolitan Manila (officially, Metro Manila) are via public transit. Yet until 2012, Manila had no map of its transit system—hence, no efficient way for passengers to locate routes or transfers or for transport planners to know whether transit services were reaching target populations.

In 2012, the World Bank and the Philippines Department of Transportation and Communications (DOTC) began an experiment—to develop Manila's first multimodal transit map by way of a simple, inexpensive, and replicable methodology for collecting and maintaining transit service data. [1](#) <note on next page>

Transit databases are not new. But acquiring, using, and maintaining them in conventional fashion is impractical for transit systems with limited budgets and

technical capacity. The World Bank team needed to devise a way for Manila to map its system and maintain the database at low cost, with minimal technical demands and with seamless cross-agency collaboration.

### **IV The Manila Solution**

In support of its institutional capacity building, the World Bank team devised a technical solution relying on three “open transport” principles:

- Open data standards—the team adopted an open international standard for transit service data, the General Transit Feed Specification (GTFS), a well-documented, clearly defined standard that benefits from a global community of practitioners who voluntarily contribute improvements and innovative solutions.

- Open-source software—the team supported development of an open-source mobile phone application, TransitWand, with which transit agency staff members could generate route data in the GTFS format at substantially lower cost than with conventional methods.

- Open data—the team supported development of GTFS Editor, an open-source web-based application for managing the transit data. It allows multiple agencies with minimal technical capacity to view and edit a single database covering all public

transit modes in the city.

- By minimizing the time and expertise required to build and maintain a database from scratch, these technical solutions enormously reduced the traditional barriers to sustained mapping initiatives in Manila.

- The project also included substantial institutional assistance to overcome the financial, coordination, and sustainability hurdles associated with the pursuit of such an initiative in a developing country.

## **V** What the Map Showed

The resulting transit map for Metro Manila showed that the number of transit routes—nearly 1,000—was almost double the existing official estimates. The discrepancy between official and actual routes revealed to transport planners where the true demand for service was. And for the first time, planners could begin to untangle the decades-old spider web of route redundancies—the data revealed that the ratio of route length to service area for buses and jeepneys was as much as 16 times greater than in cities with comparable populations, such as Beijing, New York, and Singapore.

### Bringing It to the Passengers

Through a national competition organized by the World Bank and DOTC, more than 480 local developers competed to create web and mobile trip planning applications for

consumers that rely on the GTFS database. Since its release in July 2013, the database has been downloaded more than 14,000 times from the DOTC website for use in such applications. Wide use of such apps makes government agencies more accountable for the accuracy of the data.

## **VI** The Local and Global Impact

With its newfound ability to document and visualize Metro Manila's network, the government recently developed a two-year plan to greatly reduce the excess jeepney and bus routes. And plans for a World Bank-financed rapid transit corridor in Manila are using the open-source database to develop the corridor's feeder network. More generally, the DOTC now requires vendors to use open-data standards and open-source licenses.

In a telling extension of the Manila initiative, the DOTC hired the firm that won the national consumer-app competition to create a real-time bus tracking system using GTFS data. The contract represents a substantial leap in capacity and initiative and shows how open standards can generate high-quality domestic job opportunities.

Beyond the Philippines, transport agencies and NGOs in Brazil, China, Egypt, Mexico, Mongolia, and Vietnam are using open standards so they can apply the

Manila project tools to their own needs. The project is thus demonstrating that one city's investment based on open-transport

principles can be applied globally—in international development, a very powerful concept.

