Flocktracker:
Example Applications in Urban Environments

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Project	Research question	Place	Time	Partner	Approach	Status	Notes	Surveys or Observations
Safety perception on bus routes	How is safety perception related to the transportation routes of northern Mexico City?	Mexico City, Mexico	2013	UTL, MISTI Mexico	On-board survey of bus users' security perceptions, matched with vehicle location and speed.	Finished and published		~1500 people surveyed
First Bus Map of Dhaka	Can an informal bus map be created with smartphone data collection tools?	Dhaka, Bangladesh	2013	Urban Launchpad, Kewkradong	Deploy a volunteer team to track vehicles operating informal bus routes in the city.	Finished and published		
Poverty assessment	What's the distribution of poverty in informal developments in southern Mexico City?	Mexico City, Mexico	2014	UNAM	Household survey using poverty measurement tool (200+ questions with branching logic structure) to understand spatial distribution of poverty	Finished	Surveys were 200 questions long with branching structures.	~130 households surveyed and their conditions observed
Security over space, a comparison of North and South St. Louis	How does perception of security change over the length of a bus route traversing the length of St. Louis City, from South to North?	St. Louis, Missouri, USA	2014	MIT	On-board survey of bus users' security perceptions, matched with vehicle location and speed.	Finished and Published		~236 people surveyed
Safe walking routes for women	What are the main factors that determine security for women at informal settlements?	Mexico City, Mexico	2014	Urban Planning -UNAM, ACCART	Using tracker and surveyor to get specific elements of a route that affect directly or indirectly on safety perception, specifically for women.	Finished.	Students from UNAM presented architectural projects based on the data collected	~71 people surveyed
Analyzing elementary school´s surroundings	What are the specific elements that affect safety at school?	Mexico City, Mexico	2014	Planeación y Desarrollo	Mapping safe routes for women inside an informal development in Mexico City.	Finished and published	Principals and students from their schools used the app combining tracker and surveyor.	~1,551 people surveyed
Surveying gentrification	What are physical the main housing typology related to gentrification at the native towns in Mexico City?	Mexico, City & Leipzig, Germany	2014	UNAM, Pontificia Universidad Católica de Chile	Household survey to collect key parameters to measure gentrification.	Finished.	The research was also made in Santiago the Chile with traditional data collection.	~613 houses observed
Participatory design in public space	How to create an inclusive urban design through crowdsourced data collection?	Andalucia, Spain	2014	ACCART21	Survey of public space users on perceptions of conditions of space.	Finished	Surveying included the interaction with people more than 70 years old	~40 people surveyed
Public bus survey in Surakarta	Who are the users of public transportation in Surakarta?	Surakarta, Indonesia	2014	Solo Kota Kita	On board origin-destination survey.	Finished		~2036 people surveyed
Informal Commerce Index	What is the impact of informal commerce on college's urban environments in Mexico City?	Mexico City, Mexico	2015	Planeación y Desarrollo, Universidad Autónoma Metropolitana	Through an index design, observers collected specific data about the dynamics of informal commerce of a university. Gathering data of customers, products typology, and evaluating risks.	Ongoing.		~160 informal commerce places observed
Transportation analysis of Mexico State	What are the occupancy rates of vehicles operating on two transport routes covering the same street segment?	Toluca, Mexico City	2015	Secretaría de Movilidad, Estado de México.	Bus routes were traced while keeping track of the occupancy of the buses.	Finished		~1,256 people surveyed
Mapathon	Can bus route information in a semi-formal system be "crowdsourced"?	Mexico City, Mexico	2015	Laboratorio para la Ciudad, SEMOVI, CETRAM, INJUVE, PIDES, PyD, M +Urbano, ITDP, Transconsult	Launch an open competition to motivate volunteer teams to map bus routes.	Pilot completed	The results were successful, next steps is to create the same project but in a larger scale, using techniques of gamification to get hundreds of people involved.	~968 people surveyed
NGOs impact in a District from Mexico City	What is the impact and knowledge of the work performed by NGOs in a district?	Coyoacán, Mexico City	2015	Propedregales	Surveying people from different profiles to measure impact and knowledge of the work performed by local NGOs.	Finished		~150 people surveyed
Social Housing Data Collection	What are the living conditions and social housing settlements in Mexico?	12 cities through Mexico	2014 -2015	Fundación Hogares	Household survey of living conditions at social (i.e., public) housing projects on outskirts of major urban centers.	Ongoing.		~23,450 households surveyed and observed
WalkTracker	Is a better walkability audit possible by using smartphones and their sensors to gather data?	Singapore	2015 -	SUTD	Geo-referenced walkability assessment of HDB development in Singapore.	Design and prototyping		
Warehouse retailer behavior survey	What are the surpply patterns for retailers?	Singapore, Santiago de Chile, Chile	2014 -2015	Universidad de Andres Bello	On site survey with retailers.	Prototyping		
Stated preference motorcycle ownership survey	What attributes might influence consumers' willingness to choose electric- versus gasoline-powered motorcycles?	Surakarta, Indonesia	2015	Solo Kota Kita, University of Pennsylvania	Asking people questions with randomized possible answers utilizing randomized choice sets based on a full factorial design, representing variations in vehicle price, performance, operating costs. etc.	Design and prototyping		

Note: Survey here is an interview with a subject and an observation is to collect information about inanimate objects.

1 Overview

- Android-based platform with cloud-based back-end
- To enable easily customizable data collection methods for field research requiring high spatial and temporal resolution

2 Benefits observed

Real-time data collection team management:
- Real-time control of surveyors
- Improve safety of the team
- Evaluate individual surveyors' output and efficiency
- Improve the logistics of the data collection process

Real-time data analysis and instrument calibration:
- Correct questions identified as misleading questions while surveyors are in field
- Improve distribution (age, gender, etc.) of surveyees
- Eliminate data coding tedium and error
- Enhance engagement between surveyees and surveyors

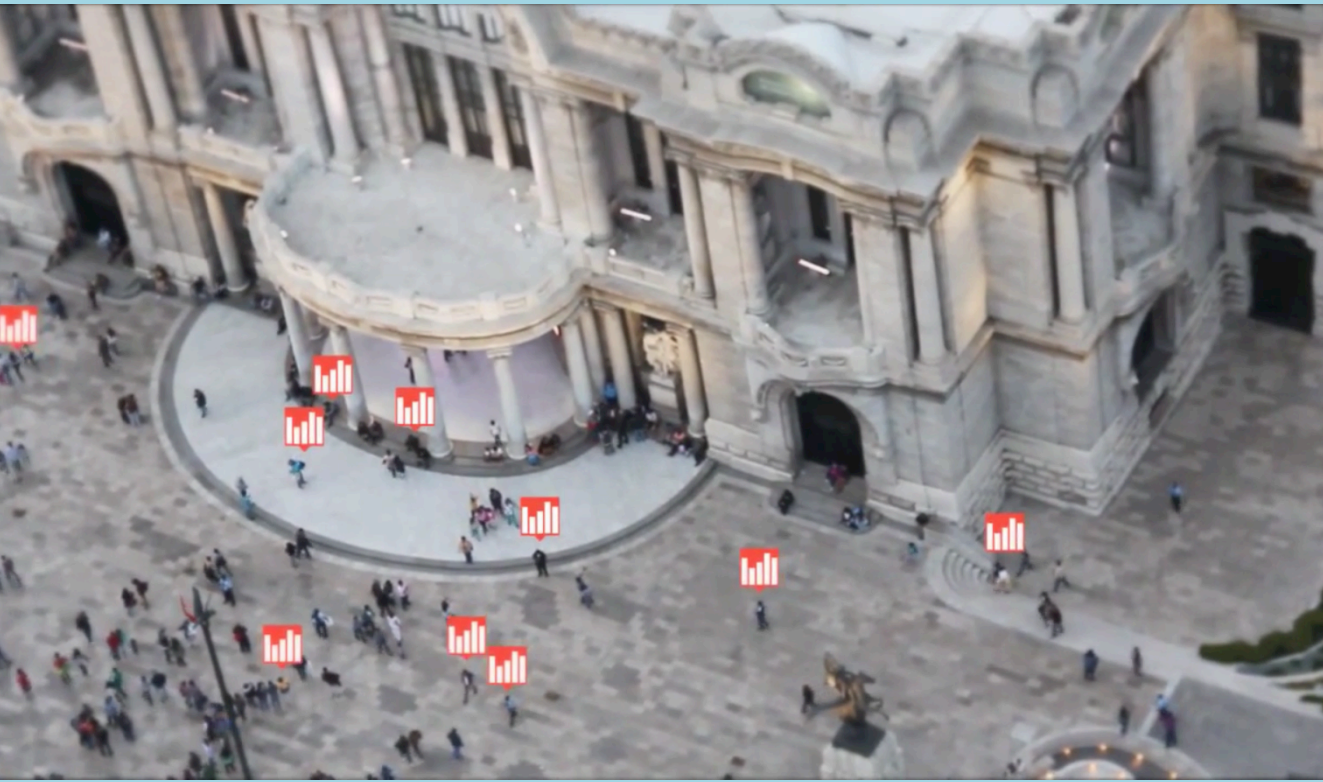## 3 Ongoing Deployment in Singapore: Walktracker

Can smartphones improve our abilities to conduct field-based assessments of neighborhood walkability?

Ongoing testing in an HDB development in Jurong East to explore value potential due to:
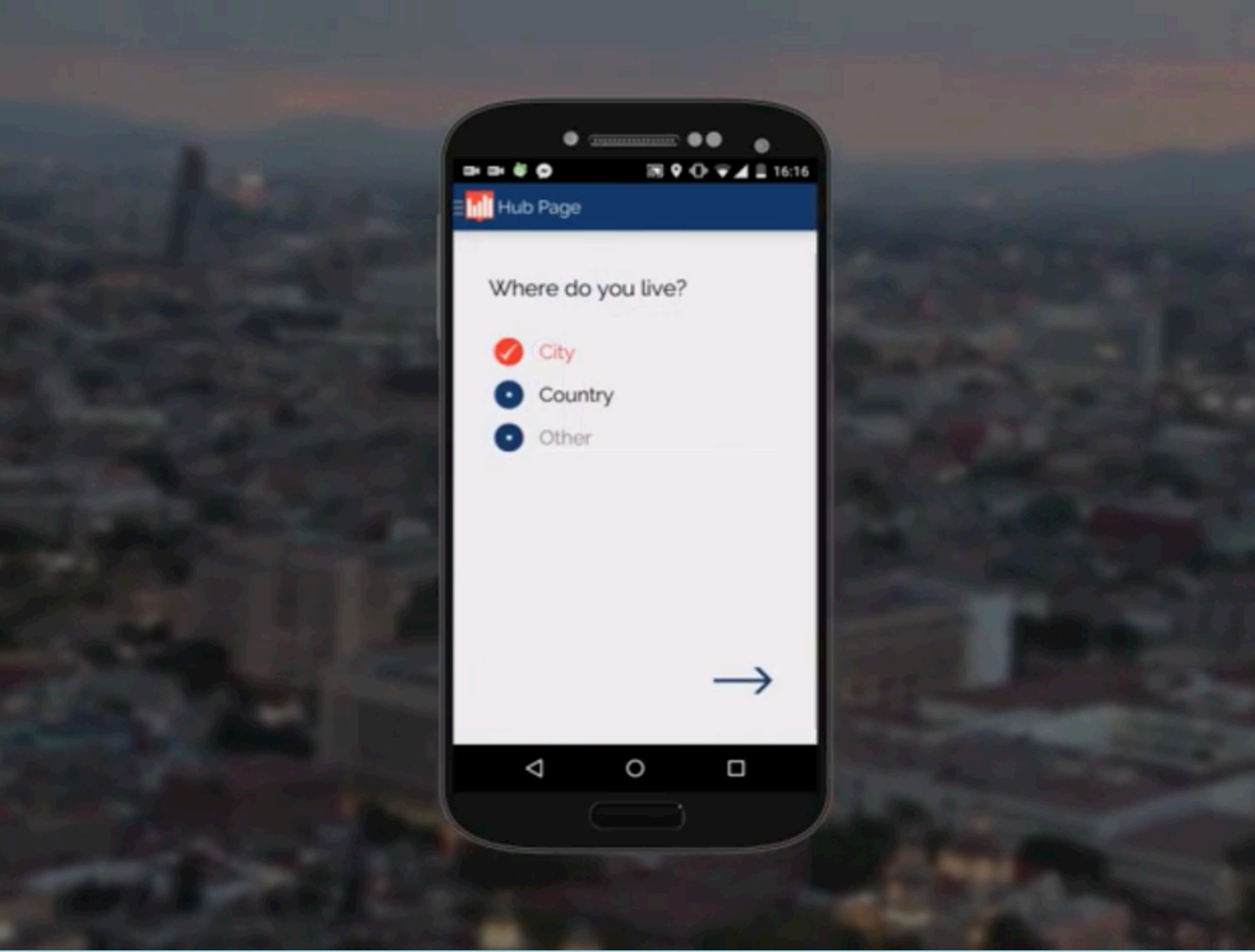- Tracking capabilities
- Spatial granularity of observations
- Geo-tagged photos
- Reduced coding burden and error
- Possibilities for crowdsourcing

Methods:
- Collect observations of features of the site (benches, overpasses, ramps, lighting fixtures),
- Trace walking segments on site, including Pedestrian only paths, Sidewalks, Informal walking paths in empty lots
- Collect qualitative and quantitative measures