DIGITAL MAPPING OF ADDIS ABABA PUBLIC TRANSPORT NETWORK

WORLD RESOURCES INSTITUTE

Transport for Cairo

مواصلات للقاهرة

digitalmatatus

ADDIS ABABA UNIVERSITY

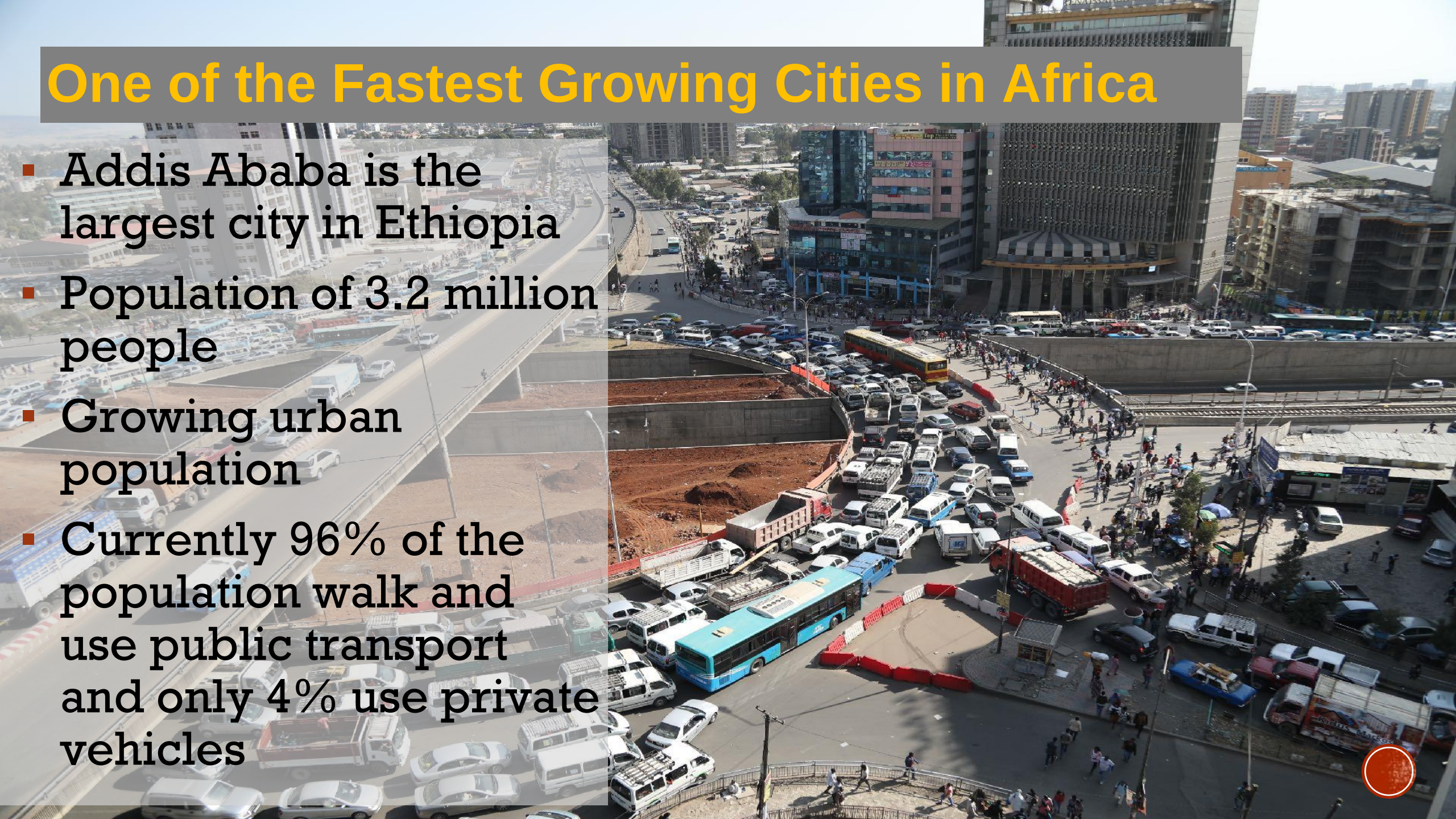
AGENDA

- Why a Digital Map?
- Mapping Project Overview
- Main Findings, Challenges and Opportunities
- Next Steps
- Q&A

Why A Digital map?

One of the Fastest Growing Cities in Africa

- Addis Ababa is the largest city in Ethiopia
- Population of 3.2 million people
- Growing urban population
- Currently 96% of the population walk and use public transport and only 4% use private vehicles



Why A Digital map?

What has the city been doing?

- Restructuring transport sector and focusing on improving public transport and active mobility
- Launch of Addis Ababa Road Safety Strategy
- Introducing mass transit i.e. LRT, BRT
- Procuring more locally assembled buses- where do we deploy these buses?

DATA! DATA! DATA!

- Hard to make effective decision with little or no data *i.e. demand and supply*
- Transport planners and operators are facing challenges when improving or integrating different modes of transport *i.e. BRT and paratransit*
- Currently data is collected manually which makes it difficult to update the data collected, visualize all the data in one platform and represent spatial information

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3	ከጉራራ ፈረ/ቤላ - አዲስ ከተማ	6	አንበሳ
4	ከኮተቤ ኮሌጅ - ፒያሳ	5	አንበሳ
5	ከጣሊያን ኤምባሲ - አዲስ ከተማ	3	አንበሳ
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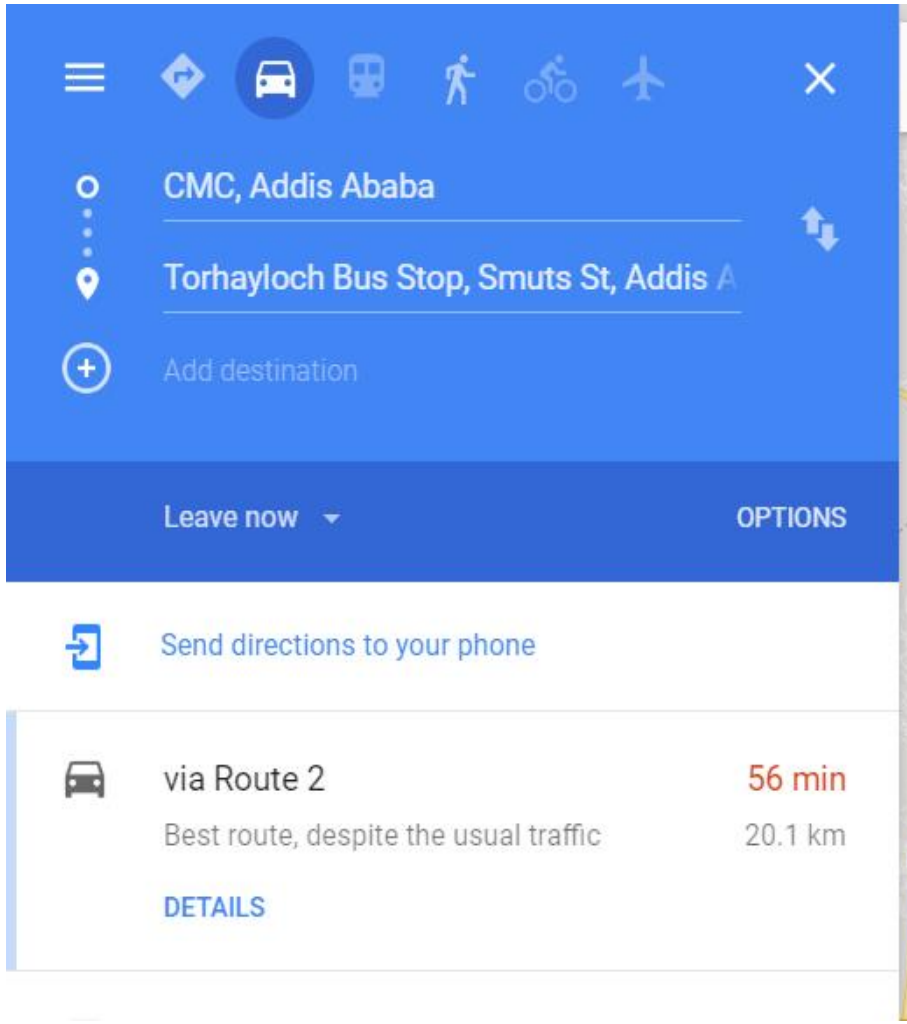
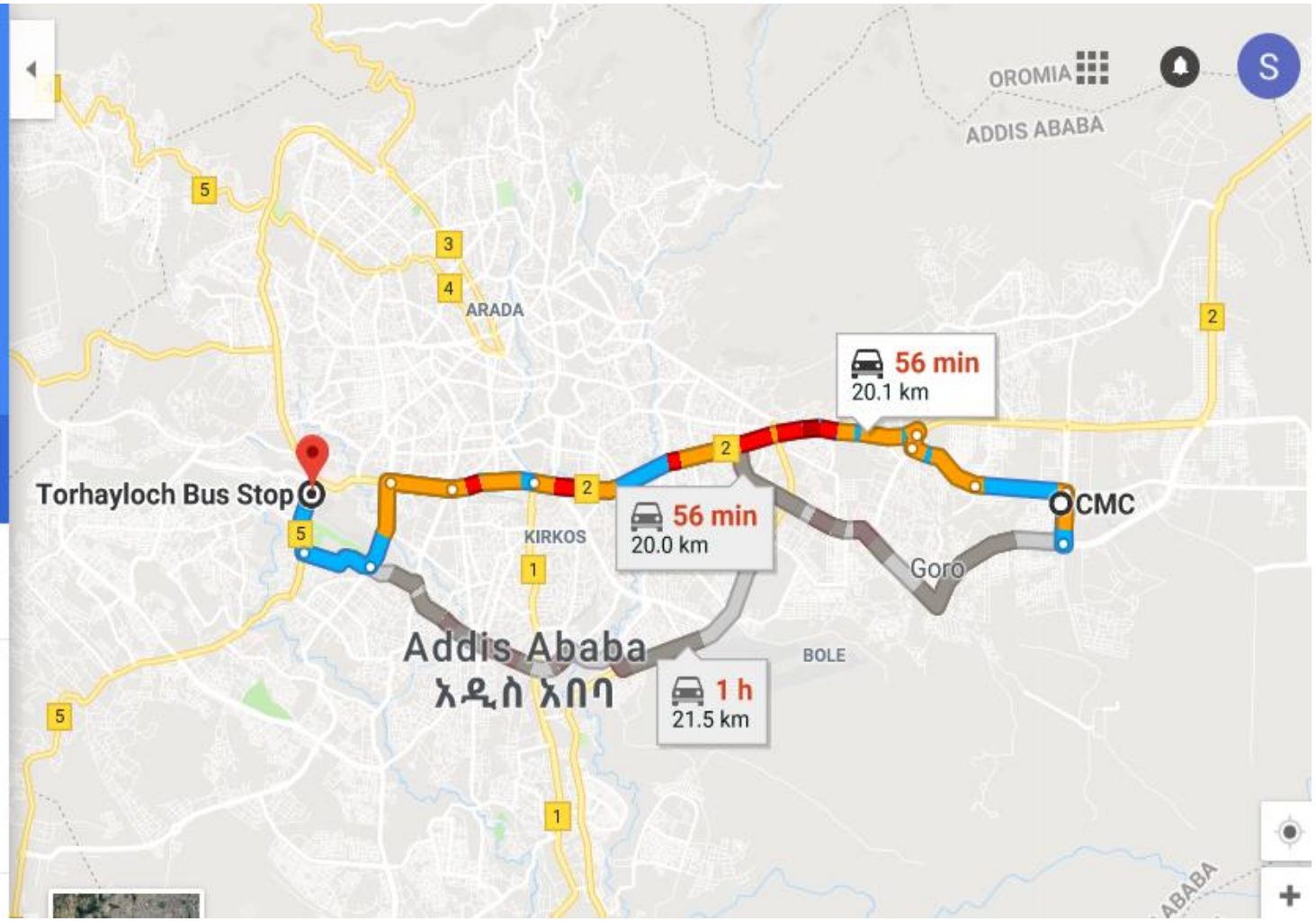
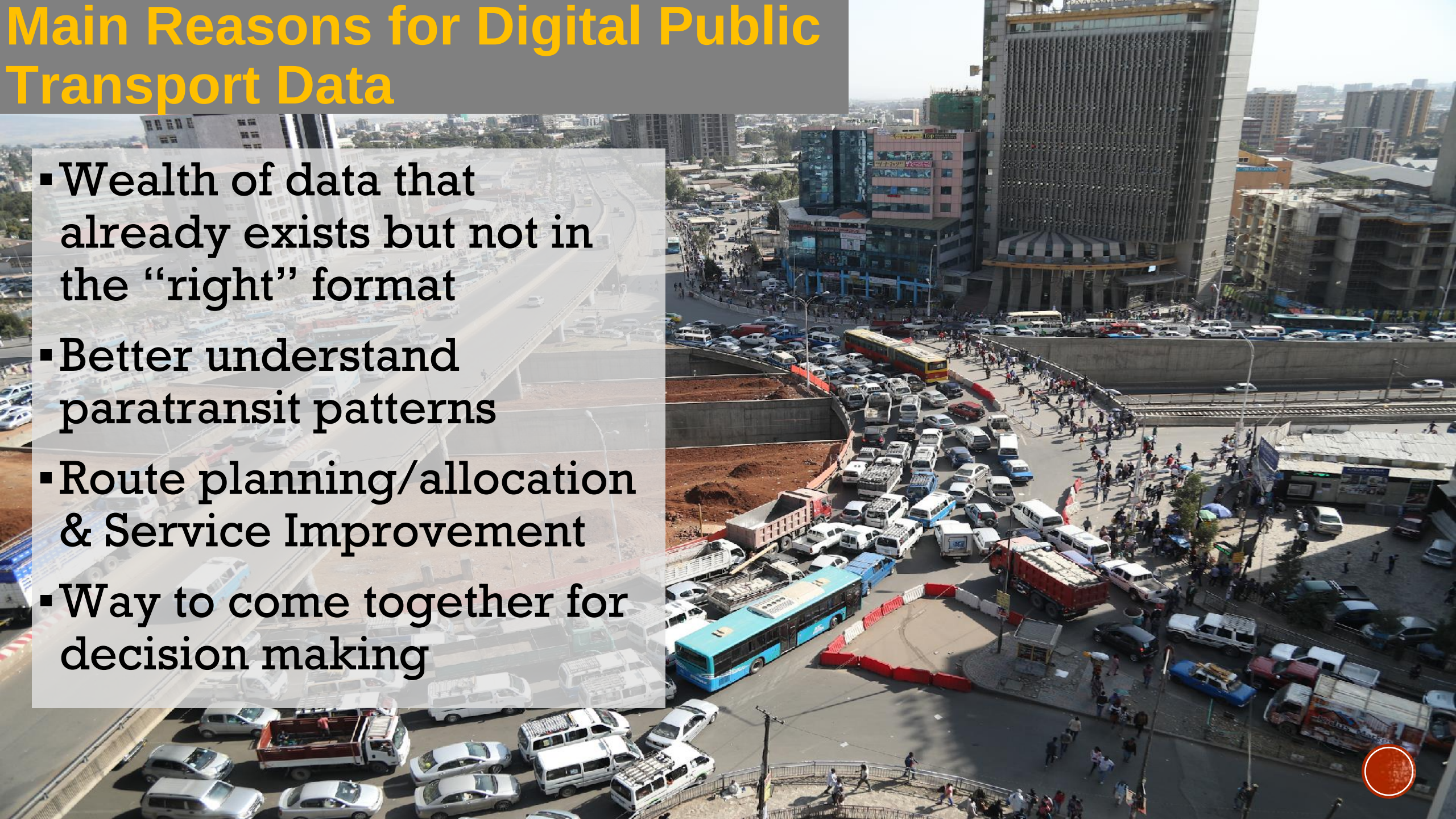
Trip Planning





Main Reasons for Digital Public Transport Data

- Wealth of data that already exists but not in the “right” format
- Better understand paratransit patterns
- Route planning/allocation & Service Improvement
- Way to come together for decision making



TRANSPORT AUTHORITY TOOK ACTION

Nov,2017 Paris

- Digital Transport for Africa Conference
- Discussion with Digital Matatus, TfC and WRI

Dec, 2017 Addis Ababa

- Workshop on leveraging digital technologies for transport data

Jan – April, 2018

- Developing Work Plan
- Finding local partners

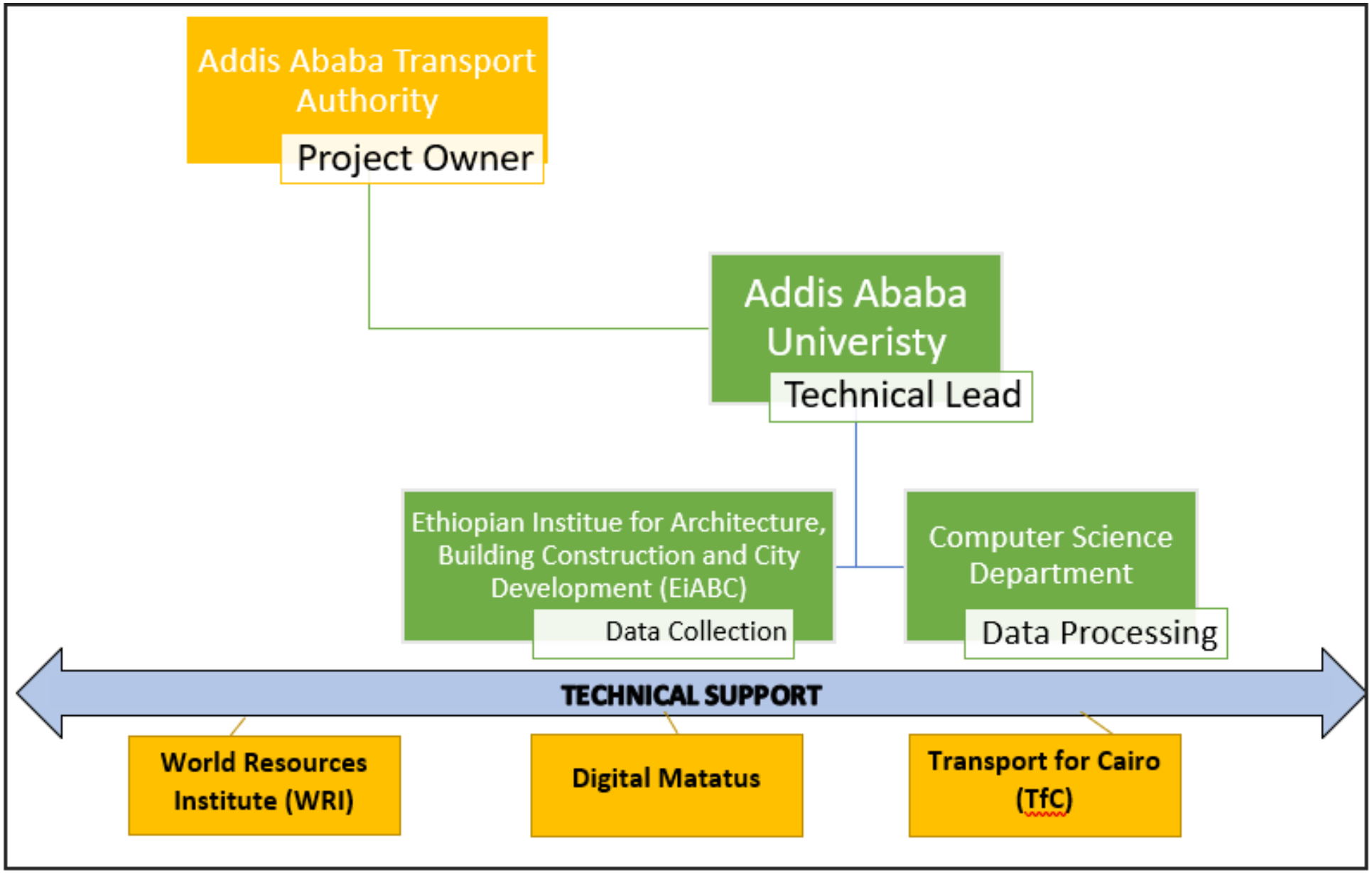
April – June, 2018

- Agreements with Addis Ababa Universities
- Training on Digital Mapping

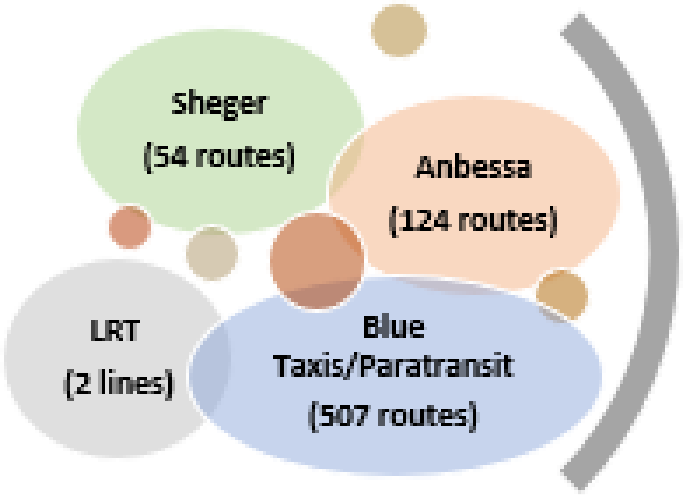
July- September, 2018

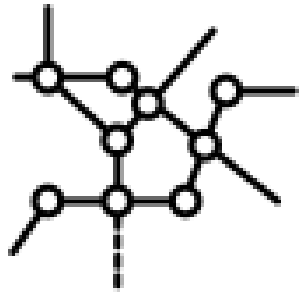
- Data Collection
- Post Processing
- Quality Assurance

STAKEHOLDERS



OBJECTIVES



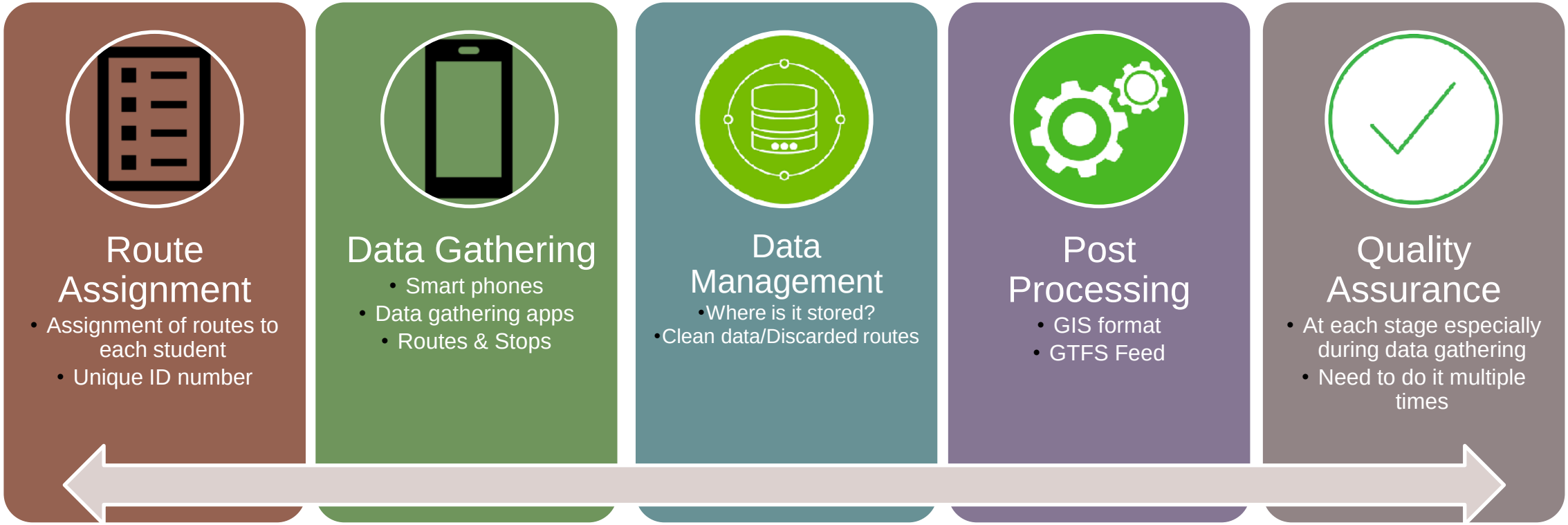


1. Create a GIS map for Addis Ababa's Transportation Network

2. Create a GTFS Feed for Trip planning

3. Visualize the data in a simple, informative manner

PROCESS



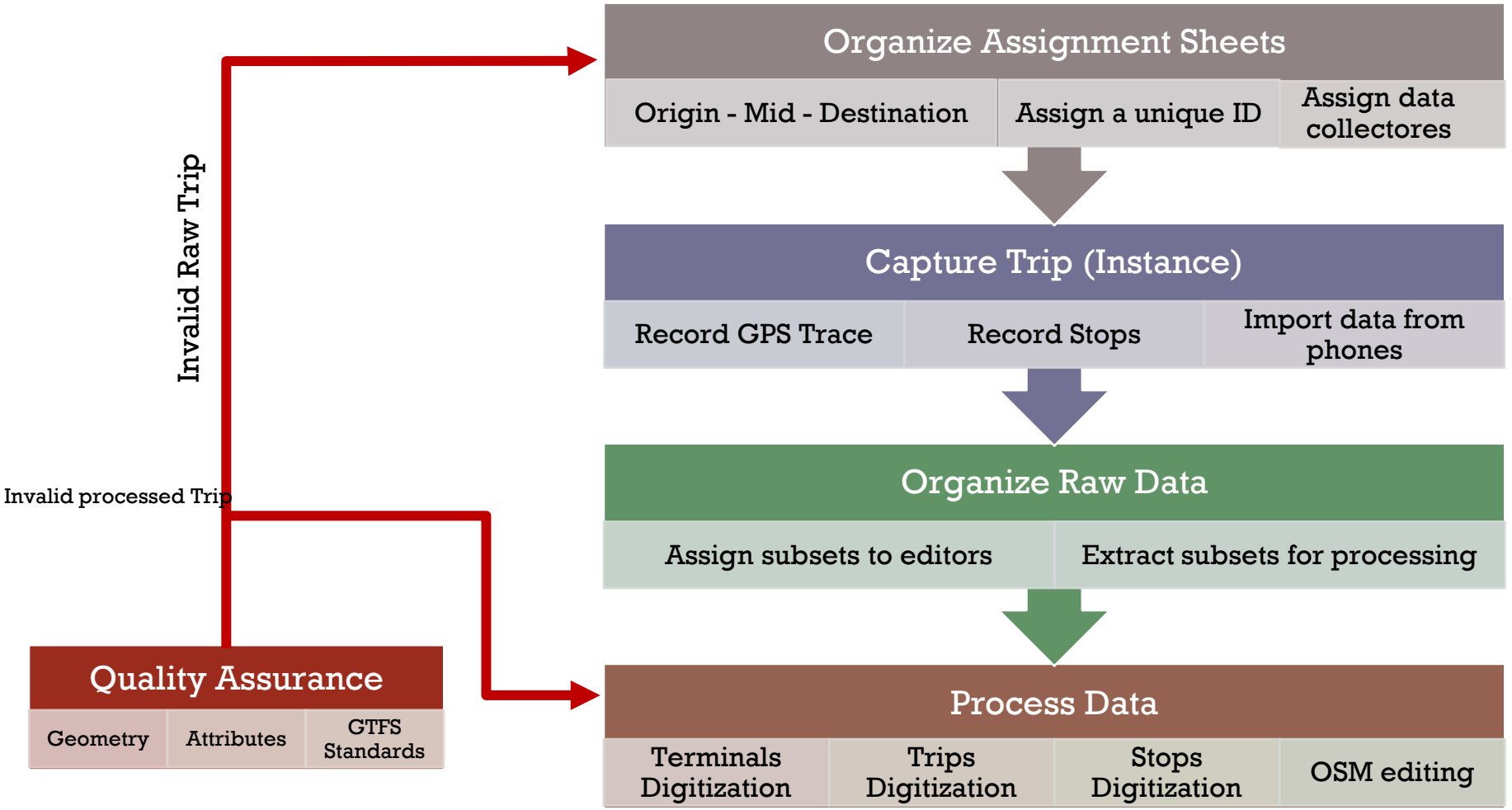
Data Collection

- Urban Regional Planning Department
- Project Manager
- Technical Lead
- Students (30)

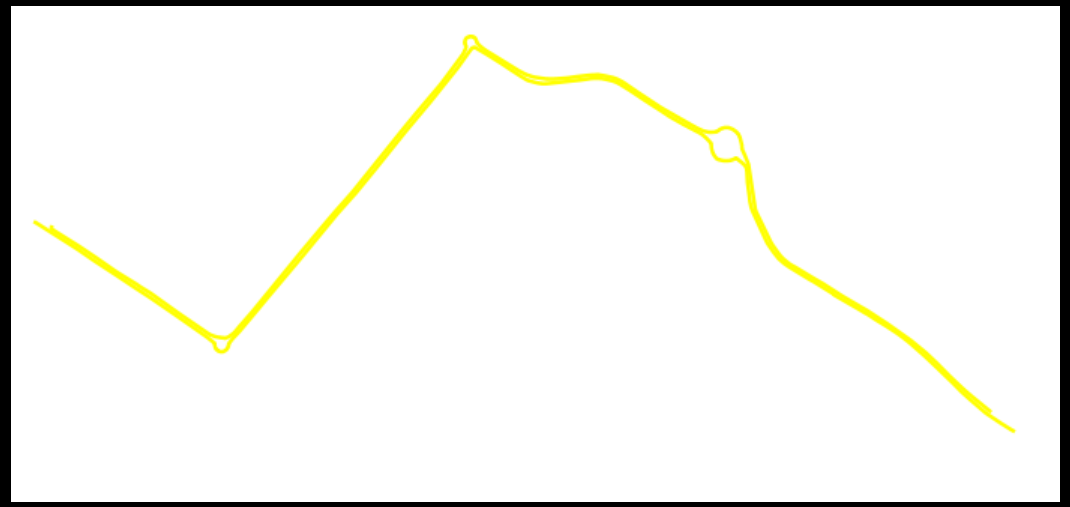
Data Processing

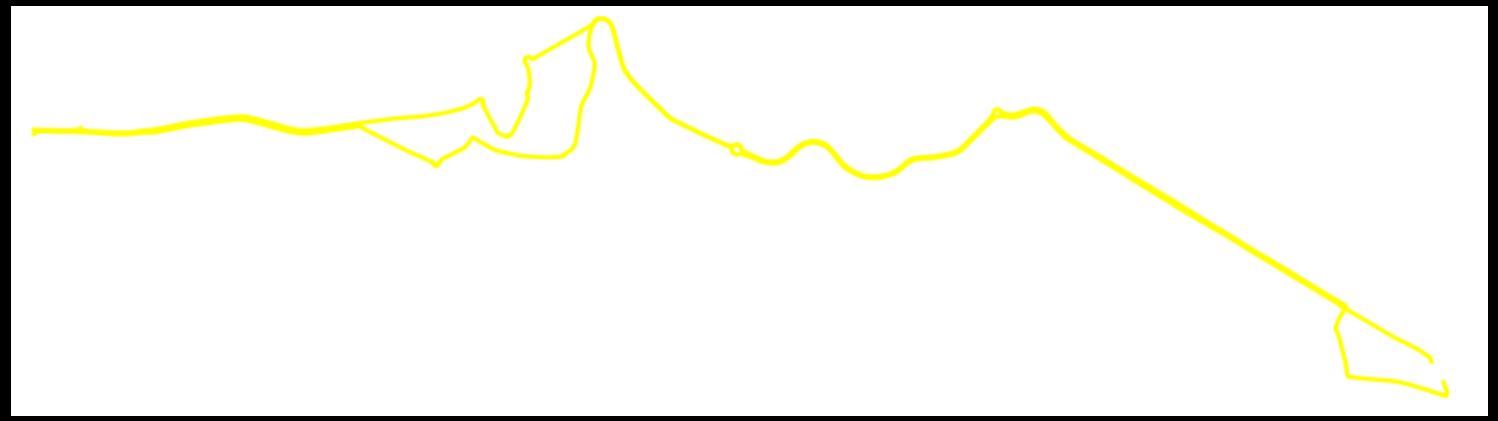
- Computer Science Deparmtnet
- Project Manager
- Technical Leads (2)
- Students (15)

PROCESS….cntd



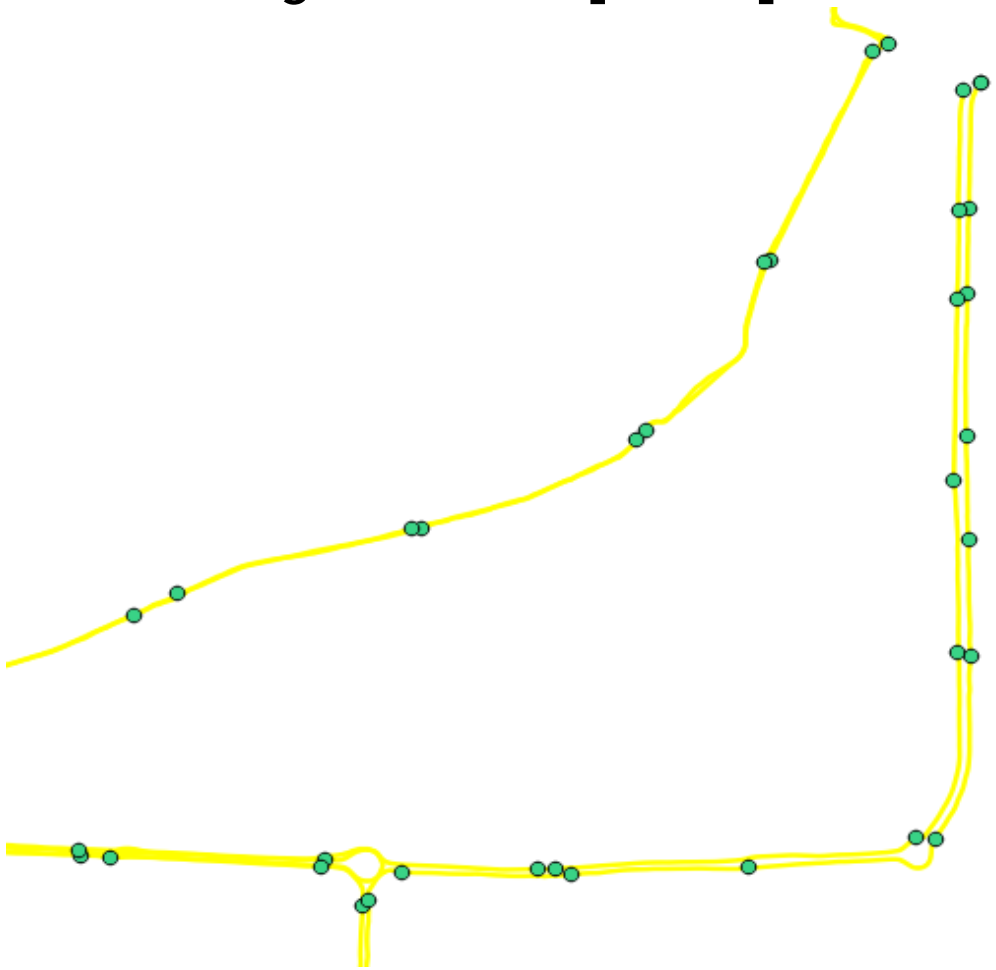
1.DATA LAYERS – ROUTES



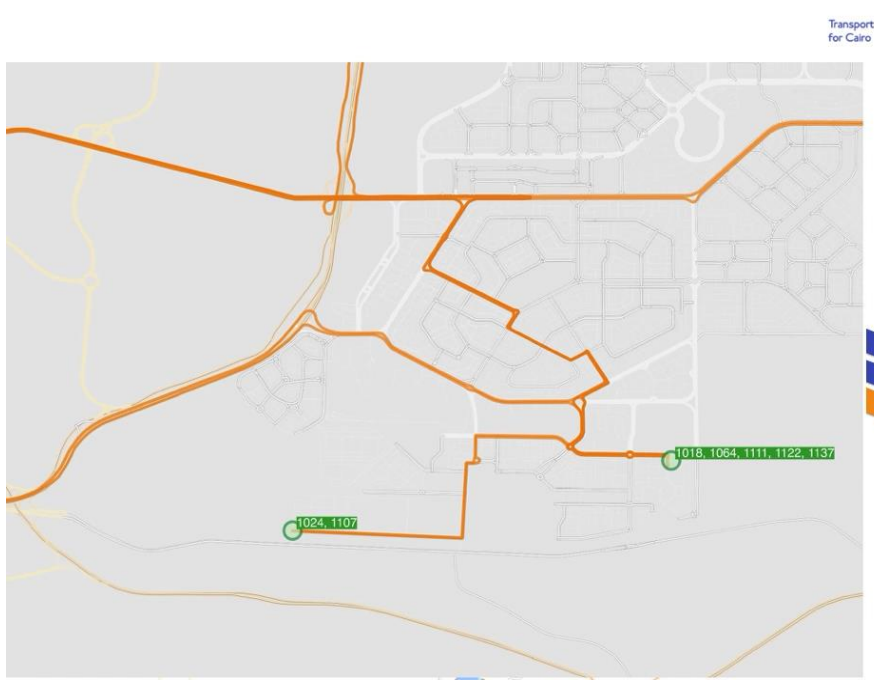


2. DATA LAYERS: STOPS

- Single Instance per Trip

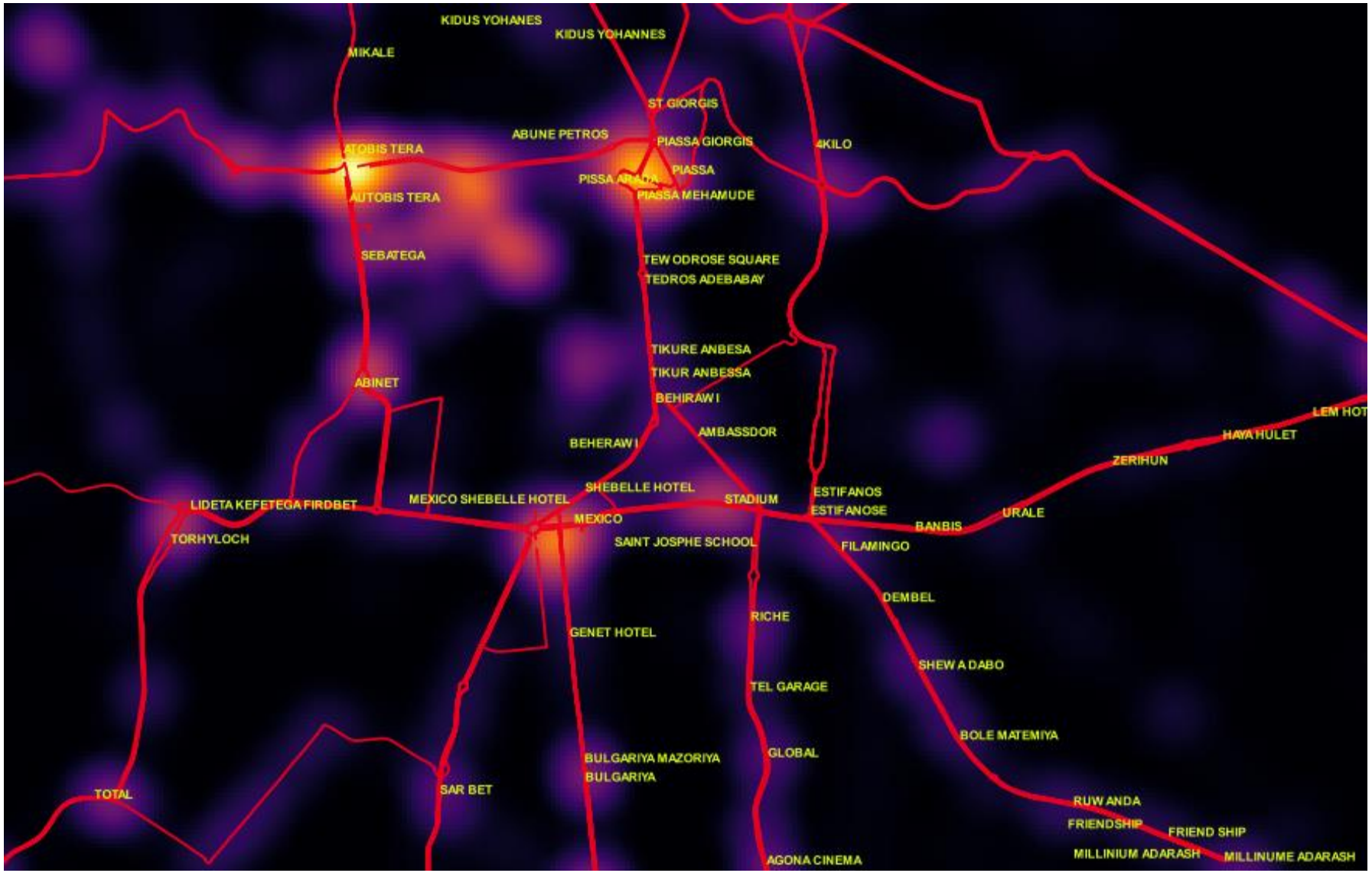


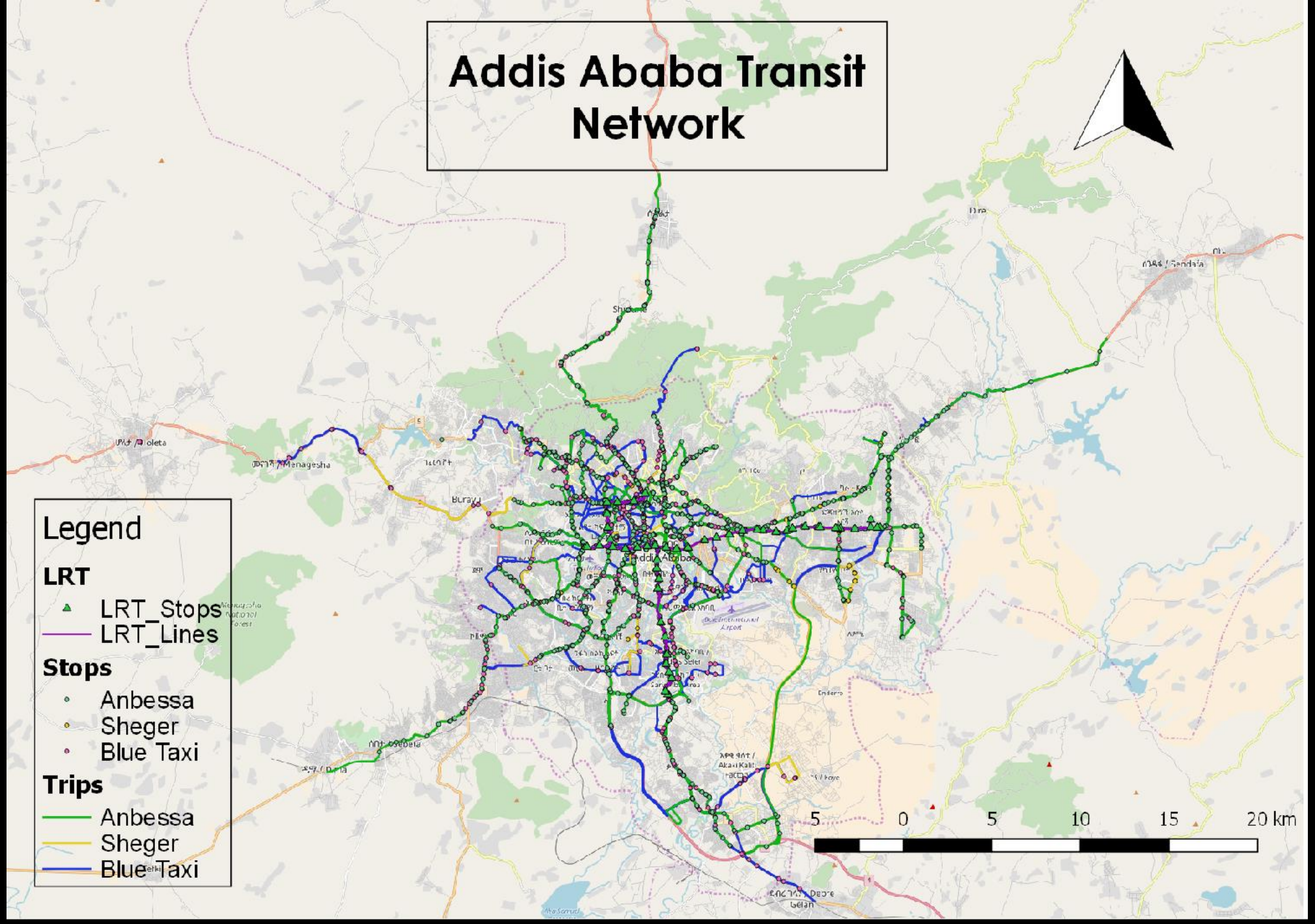
- Multiple Instances per Trip



3. DATA LAYERS: TERMINALS

Already we can where the demand/cluster points are




Addis Ababa Transit Network
Legend
LRT
LRT_Stops
LRT_Lines
Stops
Anbessa
Sheger
Blue Taxi
Trips
Anbessa
Sheger
Blue Taxi
5 0 5 10 15 20 km

Challenges

Data Collectors

- Phone models varied and some did not support data collection apps with newer systems/versions
- Inaccurate and overlapping baseline data
- Unavailability of buses and taxis
- Taxis take different routes than the assigned ones
- Transportation cost higher than legal tarrifs
- Technical difficulties with data collection app
- GPS problems due to cloudy weather

Data Processors

- Limited and interrupted internet access
- Electric power interruption
- Errors and lack of street connectivity on Open Street Map
- Inaccurate and overlapping baseline data
- Difficult to get data from data collectors daily as manually uploaded
- Data not saved in correct coding format
- Errors on manually recorded data on daily assignment sheets

Technical Partners

- Differentiate what we mean by maps and mapping (GIS, GTFS)
- Inaccurate and overlapping baseline data delayed project and difficult to manage project/assign tasks
- Simultaneously building capcity and working with students on data gathering and processing
- Time constraint
- Budget constraint

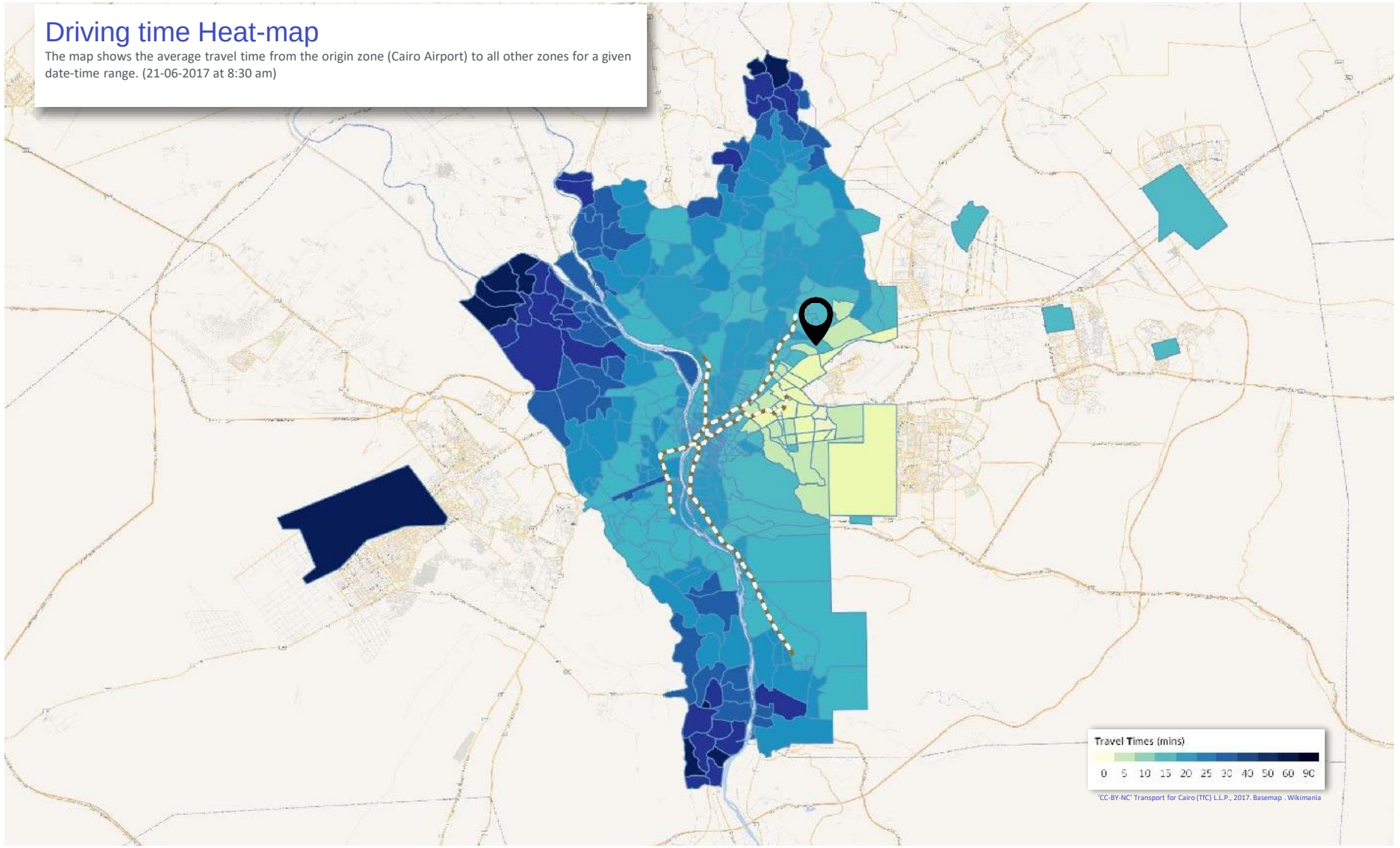
Main Findings

- Easier to map shared taxis than Anbessa and Sheger
- Having initial datasets/spreadsheets are a helpful starting point
- Certain apps are not best fit for cities with similar local conditions as Addis i.e. internet connectivity is expensive and not easily accessible
- Need to map multiple times to pinpoint the stops accurately
- Taxis take routes high in demand and take shortcuts
- Taxis don’t always adhere to tariffs
- Lack of awareness of open tool i.e. QGIS/ My maps
- Already existing local capacity that just needs additional training in some areas that can be tailored to the project needs
- Sustainability is an important component of these kind of projects
- Having the government support was crucial in getting the project done on time

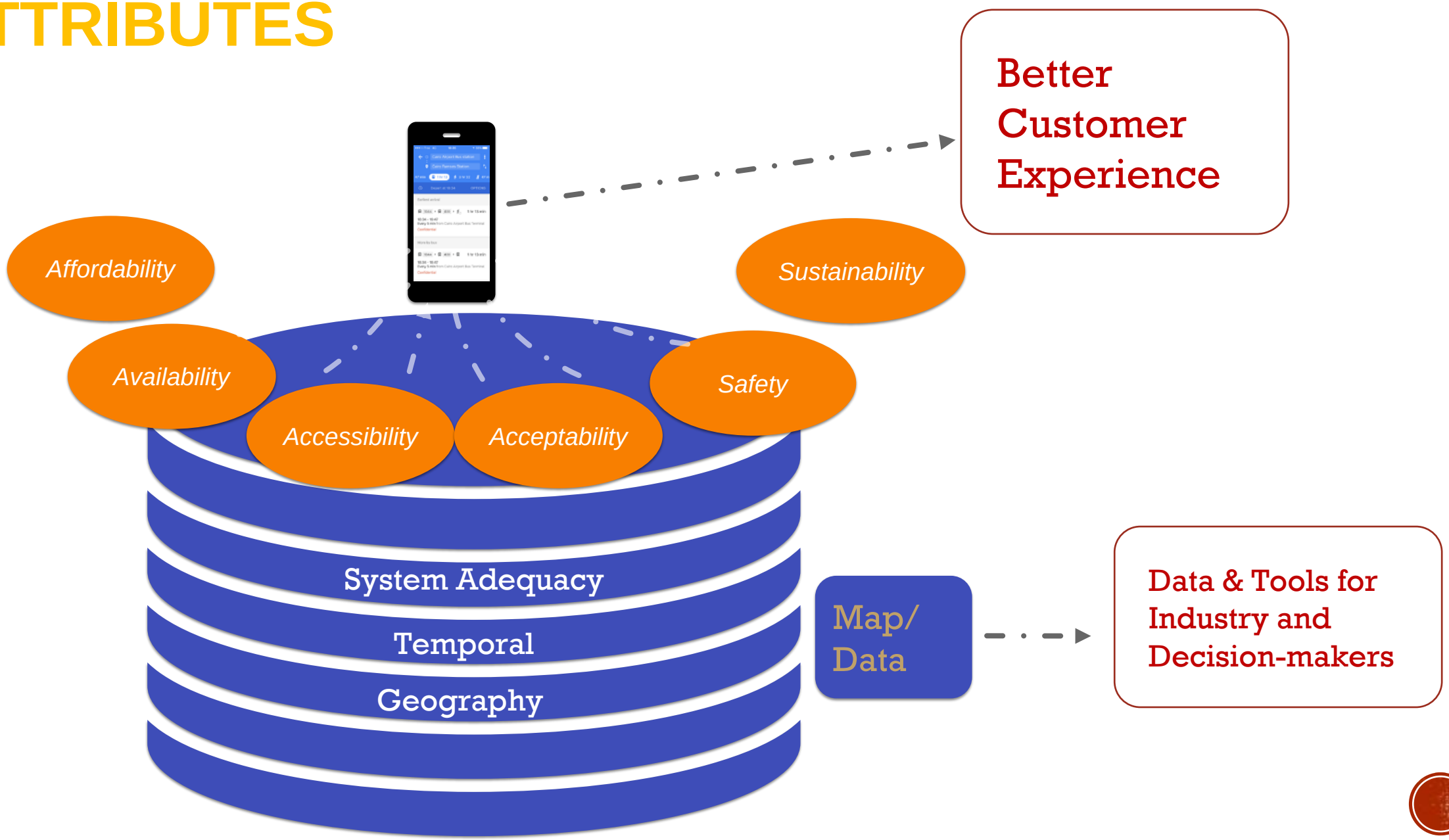
Opportunities

- Support with transport planning i.e. BRT, TOD, Cycling
- Enable street network data for decision makers and researchers
- Contribute to open source data especially African cities
- Opportunities Identifying patterns for different modes of transport
- Generate Innovation i.e. crowd sourcing app, government and university
- Trip Planning
- Analysis i.e. Heat Maps, accessibility

HEAT MAP EXAMPLE

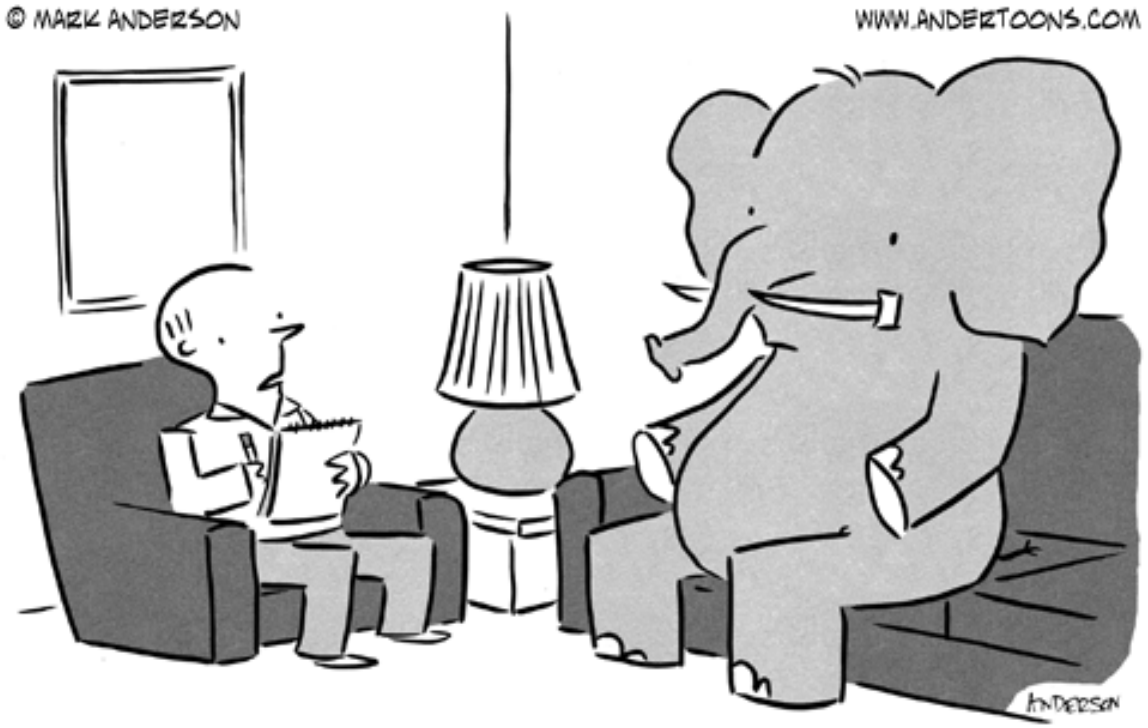


ATTRIBUTES


Better Customer Experience
Affordability
Sustainability
Availability
Safety
Accessibility
Acceptability
System Adequacy
Temporal
Geography
Map/ Data
Data & Tools for Industry and Decision-makers

Elephants in the room

- Paratransit regulate or not?
- BRT vs. Paratransit
- Meaning of informality
- Public good/ Public data Ownership



"Let's try some role playing. I'll be the elephant in the room and you address me."

NEXT STEPS

- Finalize GIS map and GTFS database
- Organize a workshop on schematic mapping/ visualization
- Hand over project to the city
  - Capacity building for transport authority team on data collection, processing, maintaining, updating of data
  - Support the city technically until city is comfortable with the process
    - Temporal data and Adequacy parameters