METHODOLOGY SUBMISSION

(Billet Express.SARL**)**

Mapping Public Transport in Bamako

Data collection	**1. Meeting and exchange with the syndicates of Sotrama** The purpose of this meeting is to inform syndicates and transport operators about the data collection project and also to collect information from them such as: the number of lines, number of sotrama being moved, time and frequency of movement, operators and the dispatching of sotrama in Bamako City. **2. Field data collection** This is the step where the collector agents will be deployed in the city of Bamako based on the sotrama lines for data collection. 2 interviewers per line, will make 2 trips on the same line (round trip/peak time and round trip/hour with little traffic) -First we will identify the lines making up the urban transport network of Bamako specific to Sotrama. -Then the assignment of collecting agents on all lines, this collection will be done from 7am (rush hour) to 12pm (little traffic). - The collecting agents will be on board the sotrama serving the main lines to collect the data, they will exceptionally be positioned with the driver near the windscreen to allow a good reception of satellite signals and to ensure a good accuracy of the collected points. It should be noted that the collection tool (osmtraker, kobotoolbox) used works without the Internet. **3. Types of data to be collected** - Departure points sotrama -Sotrama operator (company name, address) -Stops of each of the sotrama lines -Destinations (arrival points) -On traffic days. -Time of course between 2 courses of a line. A trip is a distance between the starting point and the destination, between 2 stops, one station and the final destination. Schedules (rush hour and off-peak hour) for running to stop points -Transportation line (name of the line) -GPS traces (geo-referenced polyline) -The direction of the roads (round trip) -The cost of transport on all lines and stops -Collect data: the segments that cannot be used in rain, the time

	period, the stopping time by sotrama drivers during this period This collected information will be used to digitalize the sotrama transport network and to create the GTFS format. Digitization and consolidation will be performed on a daily basis by another team located in a connected space. The collected data will be processed, digitized and sent to the OpenStreetMap database.

Data Digitalization	The data being digitized in OpenStreetMap: - Sotrama Departure points -Sotrama operator -Sotrama stop -Transport line -GPS Tracking

Establishment of the GTFS Data	A GTFS feed, which contains static transit information, is composed of a number of text (.txt) files that are contained in a single ZIP file. Each file describes a particular aspect of transit information: stops, routes, trips, fares, etc. For the constitution of this file tools will be necessary please see the tools table. But the types of data collected are essential in the GTFS constitution, each of these files will receive specific data. - agency.txt will receive information on the transport service (sotrama operator). -calendar.txt will receive data on sotrama traffic days. -routes.txt will receive the data on the direction of the roads (in the direction) of departure and destination. -stops.txt will receive the data of geographical type, the starting and stopping points of sotrama, the destinations. -trips.txt will provide the link between services (agency), roads and traffic regimes -stops_times.txt will receive data on trip schedules at stop points. -shapes.txt the data of types of transport line, GPS traces will allow to build this file. -frequencies.txt this file will receive the data of type Time of course between 2 trips of a line.

Tools

Process	Tools	Kick description of the tool	More detail	Platform /Equipment
Data Collection	-OSM Tracker -KoboToolBox	GPS Trace recorder and data collection	- GPX tracker - Stops geographically registred - Picture - Notes... Survey -Question -	Smartphone : -Android
Data Digitalization	-JOSM	Data editor for OpenStreetMap (OSM)	Loading GPX tracks, background imagery and OSM data from local sources as well as from online sources and allows to edit the OSM data	Computer : -Windows -Linux -Mac
Data Quality	- OSMOSE -OSM Inspector -PT Assistant - GTFS Validator	-Quality assurance tools for detecting issues and showing them on OSM -Web debugging tool -Validation of Public Transport Route -Quality assurance for GTFS data	- Detect contributor's and conflation issues - Show those identified anomalies on a map - Allow to fix anomalies - Useful for integrating external Data Base	Computer : -Web tools -OSM Plugin
		Export data to	-Edit, and	Computer :

Data Export	-QGIS - Watrifeed	shapfile. Opensource Collaborative web solution for GTFS multiple workflow management.	analysis of geospatial data -Create, edit and, export of static GTFS data	-Windows -Linux -Mac