



**GEO DATA AND POPULATION ANALYSIS
ON THE BASIS OF MOBILE OPERATORS DATA**



InfoNet

WHAT IS GEO DATA ABOUT?

Background



Geo Data: Unique source of information

Possibilities to study number and migration dynamics of population on large territories in time



**Comprehensive Data Collection From mobile operators
100% territory and entire population coverage**

GEO DATA is obtained by using statistical analysis and modelling to transform radio frequency events at the base stations of every mobile operator into consolidated parameters of population number and migration dynamics, **excluding the use and processing of personal data.** This makes this **method truly unique.**

Geo Data: Over 100 parameters of population size and migration dynamics

Data on the size of population on a territory and in a period of time, makes it possible to make in-depth analysis of the situation

NUMBER OF PEOPLE IN CATEGORIES

- ALL POPULATION
- SPLIT INTO CATEGORIES:
 - LIVING
 - WORKING
 - SEASONAL
 - IN TRANSIT
 - COUNTRY-GOERS
 - TOURISTS



TIME FRAMES

- 30 MINUTES
- 24 HOURS (DAY/NIGHT)
- WEEK (WORKDAYS/WEEKENDS)
- MONTH
- SEASON

TERRITORIAL PARTITION

- SECTORS OF 500x500m.

Available level of precision depends on technical capabilities of mobile operators.

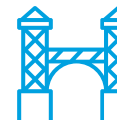
- DISTRICTS (ADMINISTRATIVE-TERRITORY UNITS)
- AREAS upon the Customer's request
- ALL OF THE EXAMINED AREA



Monitor variation in number, density and dynamics of population



Evaluate Behavioral patterns on certain territories



Detect attraction locations in the city territory

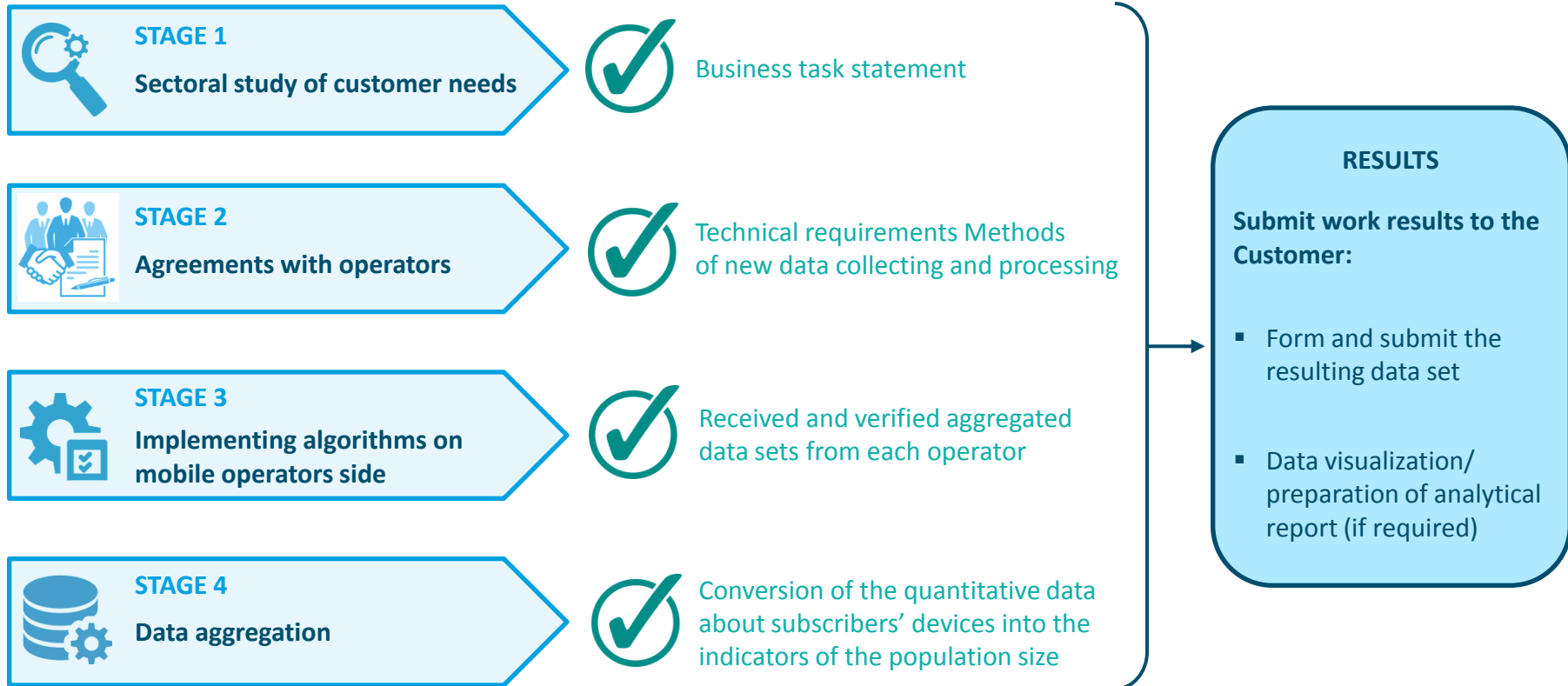


Study impact of major/mass events on behavioral patterns



Reveal seasonal trends

Geo Data Obtaining



Barriers of direct integration with mobile operators

Need for the integrator company participation

ACTIONS ON DATA CONSUMER SIDE

- Justification of data legality, obtained from mobile operators
- Development of methods to form necessary indicators, and their implementation on the mobile operators side
- Forming the resulting aggregated data set, including evaluation and verification of data quality

DISTRIBUTION
OF THE PROJECT TIME

70% 30%

ACTIONS ON MOBILE OPERATORS SIDE

- Development of terminology (unification of definitions/ indicators)
- Development of methods for assessing analysis results quality
- Providing aggregated datasets to the Customer

Need for the integrator company participation:



- SUCCESS OF THE SOLUTION IS PROVIDED BY WORKING WITH GEO DATA **BEYOND THE BIGDATA OF THE MOBILE OPERATOR**
- TO PROVIDE HIGH COVERAGE AND QUALITY OF DATA FOR LONG-TERM DURATION, WORK WITH **MULTIPLE KEY MOBILE OPERATORS IN THE REGION IS NECESSARY**



GEO DATA PROJECT DEVELOPMENT FOR MUNICIPALITY

Prerequisites for creating a product

Quality Information: The Foundation of Smart Cities



Transport



Infrastructures



Social Services



Construction



Entertainment



Billing



City Planning



The Current Information Gap

Traditional Sources

Energy metering, smart grids,
Road traffic sensors, Surveys

- Limited area coverage
- Expensive
- Time consuming
- Not adapt to urban advancement
- Do not reflect long term dynamics

Data Mining Technologies

- Limited information
- Task specific
- Low efficiency of data

Lack of quality comprehensive information and analysis to enhance overall municipality processes

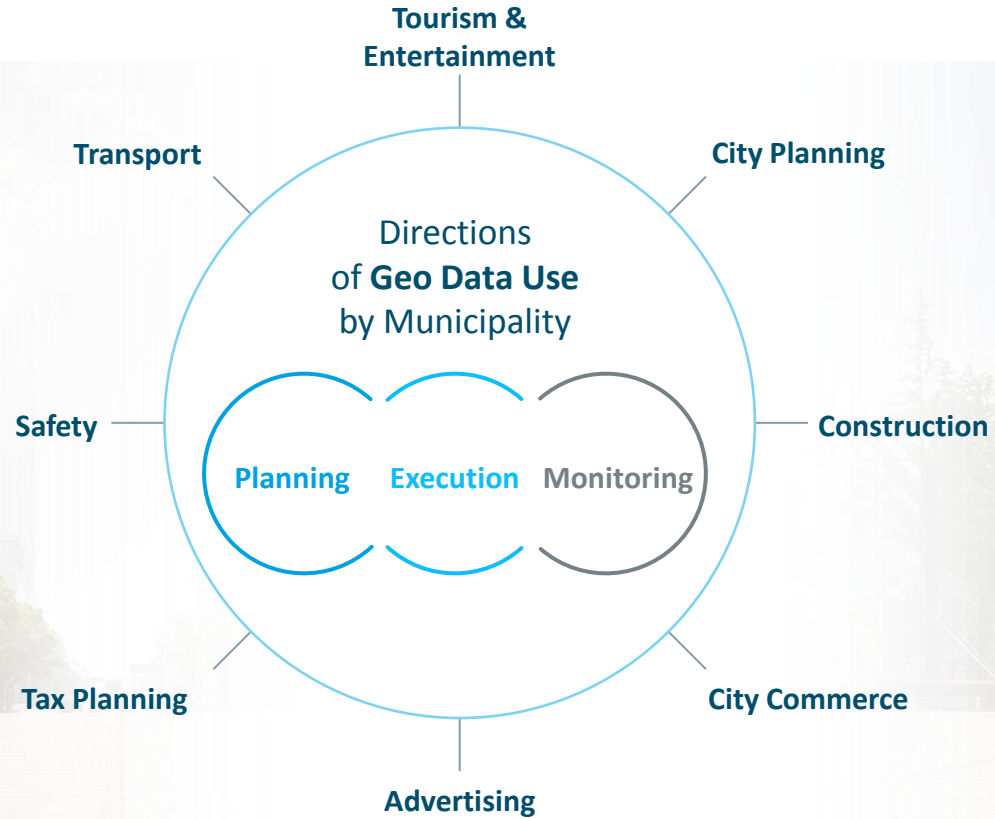


Geo Data: Main Benefits



- ✓ Highest level of penetration
- ✓ Whole coverage of population in a territory
- ✓ Fast collection and submission of data
- ✓ Submission of data for any time intervals
- ✓ Obtaining updated data on a continuous monthly basis
- ✓ Cost effectiveness

Applications

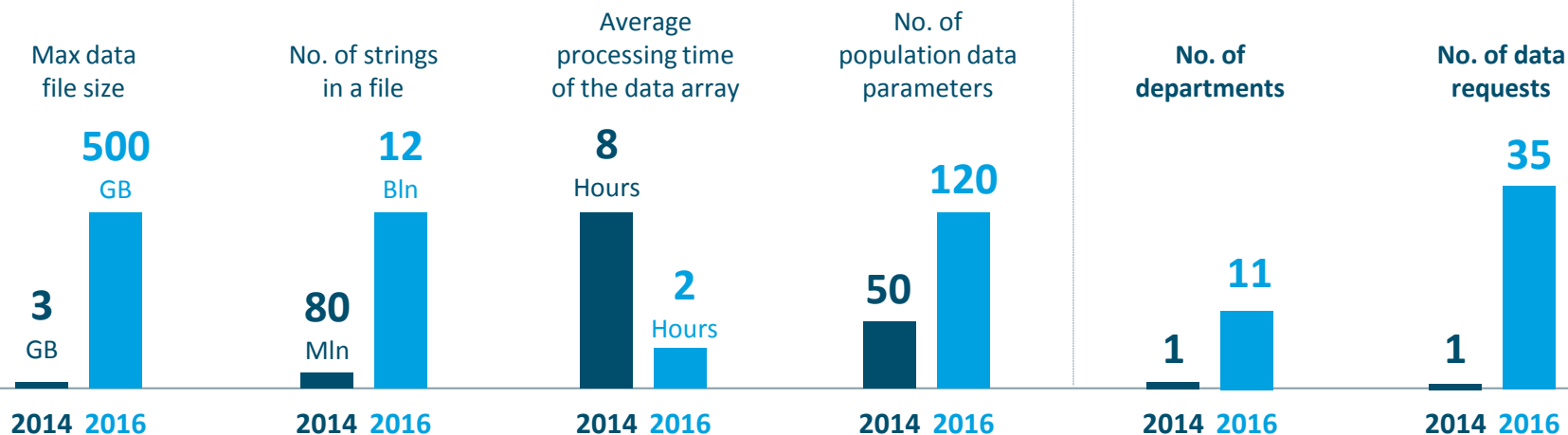


Implications

- Better Informed decision making process
- Enable optimization of city infrastructure according to needs
- Standardization within and across the departments
- Planning quality and precision
- Cost and Time savings
- Additional monetary in-stream generation
- Added business value



Geo Data Project Development for Municipality (2014-2016)



Demand increase **X 10**

Experts' requirements for detailed data increase **X 200**

Ever-growing demand in additional types of geo-analytical reports

Accumulated data expected to reach ~50 TB by the end of 2018

PRODUCT DESCRIPTION



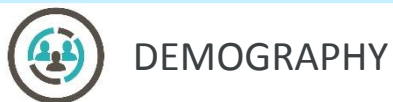
Product

CORE OF PRODUCT

DATA PROCESSING



BASIC "INFO-MODULE"



12 important indicators of population size and density on the territory, including living, working and transit population

BASIC "INFO-MODULE":

- Ensures complete coverage of population in territories
- Takes into consideration mobile groups of citizens, who are difficult to find at place of actual residence
- Increase of objectivity, accuracy and quality of data
(Mobile operators record actual places of residence, work, and directions of population movements)
- Obtains data on the smallest territory units and non-administrative territory entities

PRODUCT EXTENSIONS

SECTORAL "INFO-MODULE"



No. of additional indicators

NUMBER OF INDICATORS IS BEING DETERMINED AFTER SECTORAL STUDY OF CUSTOMER NEEDS

“Info-Module” Basic Characteristics

“INFO-MODULE” INDICATORS TYPES

TIME FRAMES:

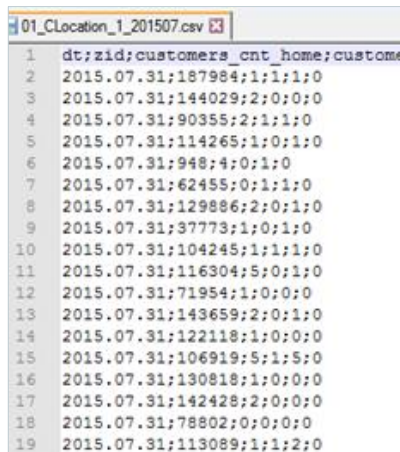
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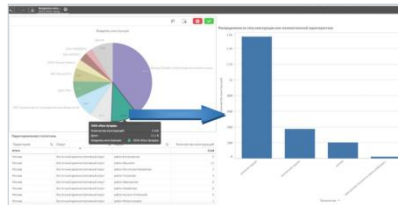
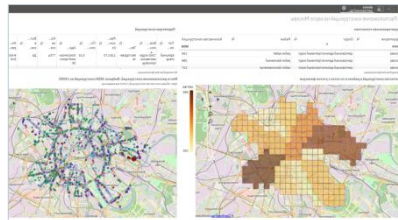
“INFO-MODULE” WORK RESULT TYPES

AGGREGATED DATA SETS



```
01_CLocation_1_201507.csv
1 dt;zid;customers_cnt_home;customer
2 2015.07.31;187984;1;1;1;0
3 2015.07.31;144029;2;0;0;0
4 2015.07.31;90355;2;1;1;0
5 2015.07.31;114265;1;0;1;0
6 2015.07.31;948;4;0;1;0
7 2015.07.31;62455;0;1;1;0
8 2015.07.31;129886;2;0;1;0
9 2015.07.31;37773;1;0;1;0
10 2015.07.31;104245;1;1;1;0
11 2015.07.31;116304;5;0;1;0
12 2015.07.31;71954;1;0;0;0
13 2015.07.31;143659;2;0;1;0
14 2015.07.31;122118;1;0;0;0
15 2015.07.31;106919;5;1;5;0
16 2015.07.31;130818;1;0;0;0
17 2015.07.31;142428;2;0;0;0
18 2015.07.31;78802;0;0;0;0
19 2015.07.31;113089;1;1;2;0
```

DATA VISUALIZATION VIA BI-PLATFORM



REPORTS WITH IN-DEPTH DATA ANALYSIS



THANK YOU

