



SUITS

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DaRe Datasets & Tools

*Datasets and Tools in (Big) (Open) Data Repositories
for Integrated Urban Mobility Planning*

SUITS-TfWM Conference
Coventry, 21/11/2018

Dr. Fotis K. Liotopoulos, (SBOING)

The VISION: Supporting L.A. SUMPs with Data

Data Collection

- Need sustainable data sourcing
- Need more accurate and complete data
- Need real-time and historical data

- ✓ Promote Crowdsourcing
- ✓ Multi-GNSS + INS tracker
- ✓ Vehicle navigation app


Data Selection

- Need to be selective in data searches
- Need to be able to deal with Big Data
- Need to standardize & convert data formats

- ✓ S-DaRe Selection Tools
- ✓ PP4TM system
- ✓ GPX conversion Tools

Data Visualization

- Need data visualization tools
- Need urban traffic monitoring
- Need decision support systems

- ✓ GPX Trace Viewer
- ✓ MyPolisLive.net
- SUITS Toolbox (to be) 

Crowdsourcing using conventional GPS trackers & IoT telecom services

Advanced, multi-GNSS + INS tracker **prototype** for urban vehicle tracking

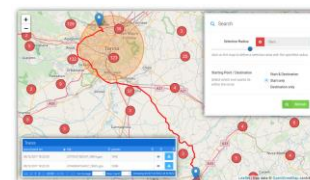
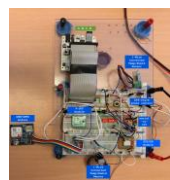
Collaborative, crowdsourced navigation system adapted for in-vehicle multimedia consoles

MyPolisLive.net
A platform for real-time vehicle tracking and traffic monitoring for urban traffic management

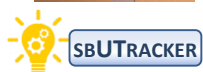
DaRe.SUITS-project.eu/tools

- ❑ GPX format (converter)
- ❑ GPX file anonymization / pseudonymization
- ❑ Insertion of GPX file metadata into a Geospatial DB
- ❑ Geo-selection of GPX trace datasets

Scalable, data homogenization funnel and fast query processing engine over big transport data



Pilot Demo
In Kalamaria



S-DaRe Tools (by )

The PP4TM System

Categories & Sources of Data in Data Repositories

TYPES of DATA and related PROCESSES	TURIN (Univ.)	TfWM (City)	ROME (City)	KALAMARIA (City)	VALENCIA (City)	MAKIOS (Logistics)	LEVER (Consult.)	LOGDRILL (Tech.)	SBOING (Tech.)	3 rd Parties
Passenger data	✓	✓	✓	✓	✓		✓		✓	✓
Freight data						✓			✓	✓
Citizen Mobility data	✓	✓	✓	✓	✓		✓		✓	✓
Urban Traffic data	✓	✓	✓	✓	✓				✓	✓
Time										
Real-time data				✓		✓			✓	✓
Historical (archived) data	✓	✓	✓	✓	✓	✓	✓		✓	✓
Source										
Crowdsourced data		✓							✓	✓
Open data	✓	✓					✓		✓	✓
Proprietary data		✓	✓				✓	✓	✓	
Artificially generated data / metadata	✓	✓						✓	✓	
Processes										
Data collection and storage	✓	✓	✓	✓	✓	✓	✓		✓	
Data manipulation and management	✓	✓					✓	✓	✓	
Data Analysis	✓					✓	✓			

E.g., SUITS DaRe crowdsourced data:

- 581.291 anonymous [OSM\(*\)](#) trace files (.gpx) [251 GB]
- 42.925 anonymized [OSM\(*\)](#) trace files (.gpx) [17 GB]
- 409 [Sboing](#) trace files (.slg → .gpx) [166 MB]
- ~50 GB of **real-time** data ([Kalamaria pilot](#) database)



(*) OSM: www.openstreetmap.org

Data Collection, Processing, Analysis & Management

- **App / Tracker Traffic Data**
- **Personal data**
- **Partner involved:**
SBOING



ID hashing
End-to-end encrypted traffic



- **Fleet / Freight Traffic Data**
- **No personal data**
- **Partners involved:**
Makios, SBOING



End-to-end encrypted traffic



Anonymous Data Analysis



- **Partners involved:**
LogDrill, SBOING, POLITO, VTM, Lever, TUIL, WI, Interactions, ITENE, Eurokleis

- **Data Collection (interviews)**
- **Anonymous collection**
- **Partners involved:**
Interactions, SC, VTM, InteCo



- **Municipality Data**
- **Anonymized data**
- **Partners involved:**
Coventry City, AIM, Rome (RSM), Torino, Kalamaria, Valencia



- **Proprietary Data**
- **Anonymized data**
- **Partner involved:**
SBOING



- **Open Data**
- **Anonymized data**
- **Partners involved:**
SBOING, LogDrill, Coventry City, Rome, Torino, Kalamaria, Lever

- **SBOING Cloud Servers**
(@Hetzner, @Germany)
- Anonymization
- Encrypted Storage



- **LOGDRILL Local Storage**
(@Hungary)
- Anonymized data
- Encrypted Storage

SUITS Data Collection

S-DaRe: SUITS' Data Repository



The SUITS consortium deposits all project data in a (now private, to become open) **Data Repository**, setup and maintained by **SBOING**, who will take measures to make it possible for third parties to access, mine, exploit, reproduce and disseminate — free of charge — the following:

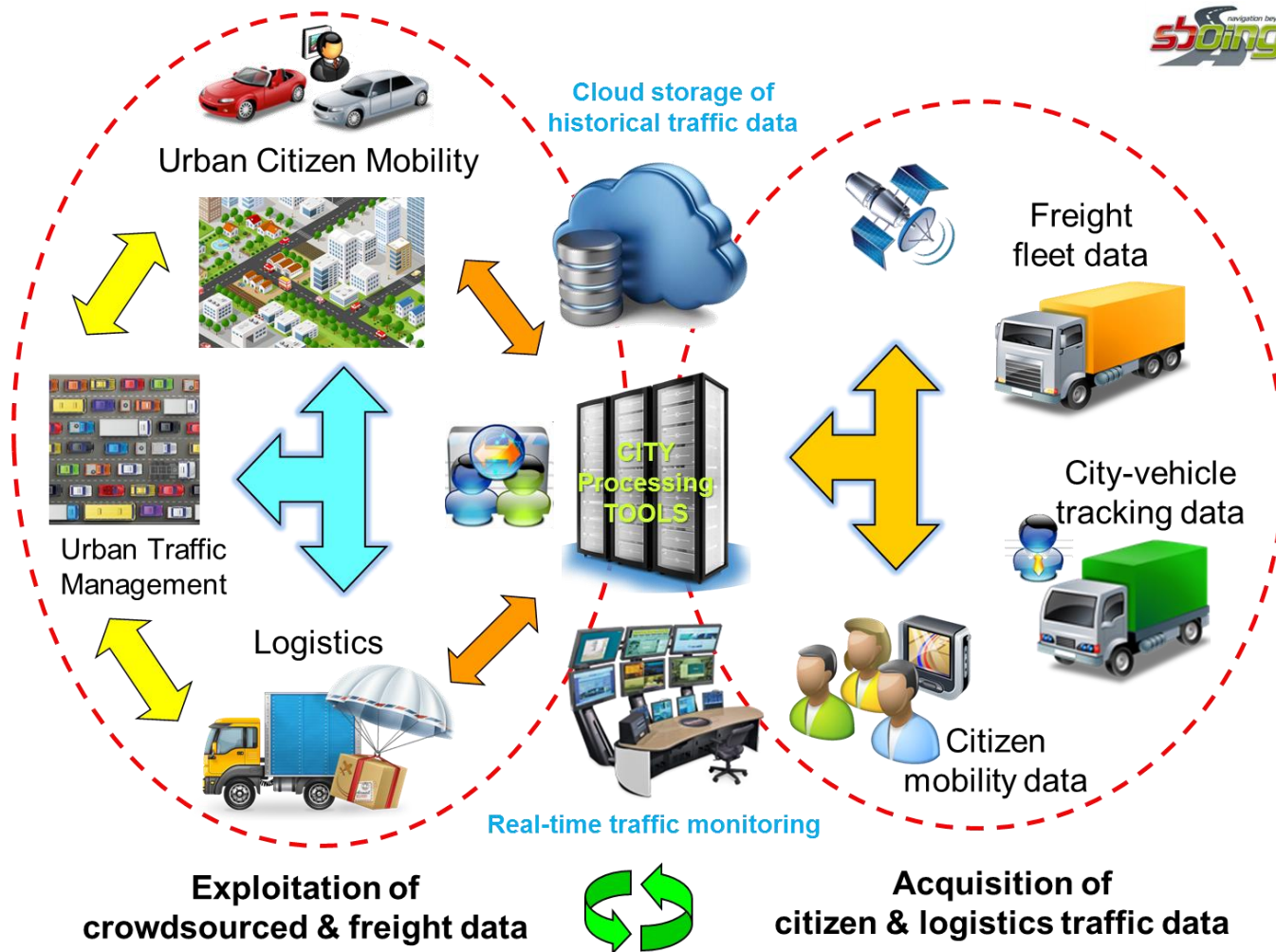
- The data, including associated metadata, needed to validate the results presented in scientific publications;
- Collected data from partners, during the project, after anonymization and including associated metadata, as specified in the DMP;
- Generated data during the project, including associated metadata, as specified in the Consortium Agreement and in the DMP;
- Public project reports and public deliverables;
- All dissemination-related material (all that is public).

Main Repository:

- Hosted in Germany (@Hetzner.de), 3TB+, SFTP accessible (+more)
- (Mirrored in a local Data Center)

SUITS Crowdsourcing Model for Local Authorities

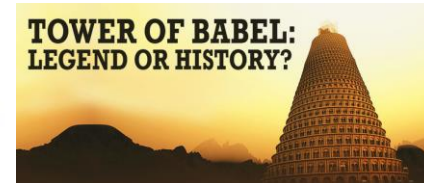
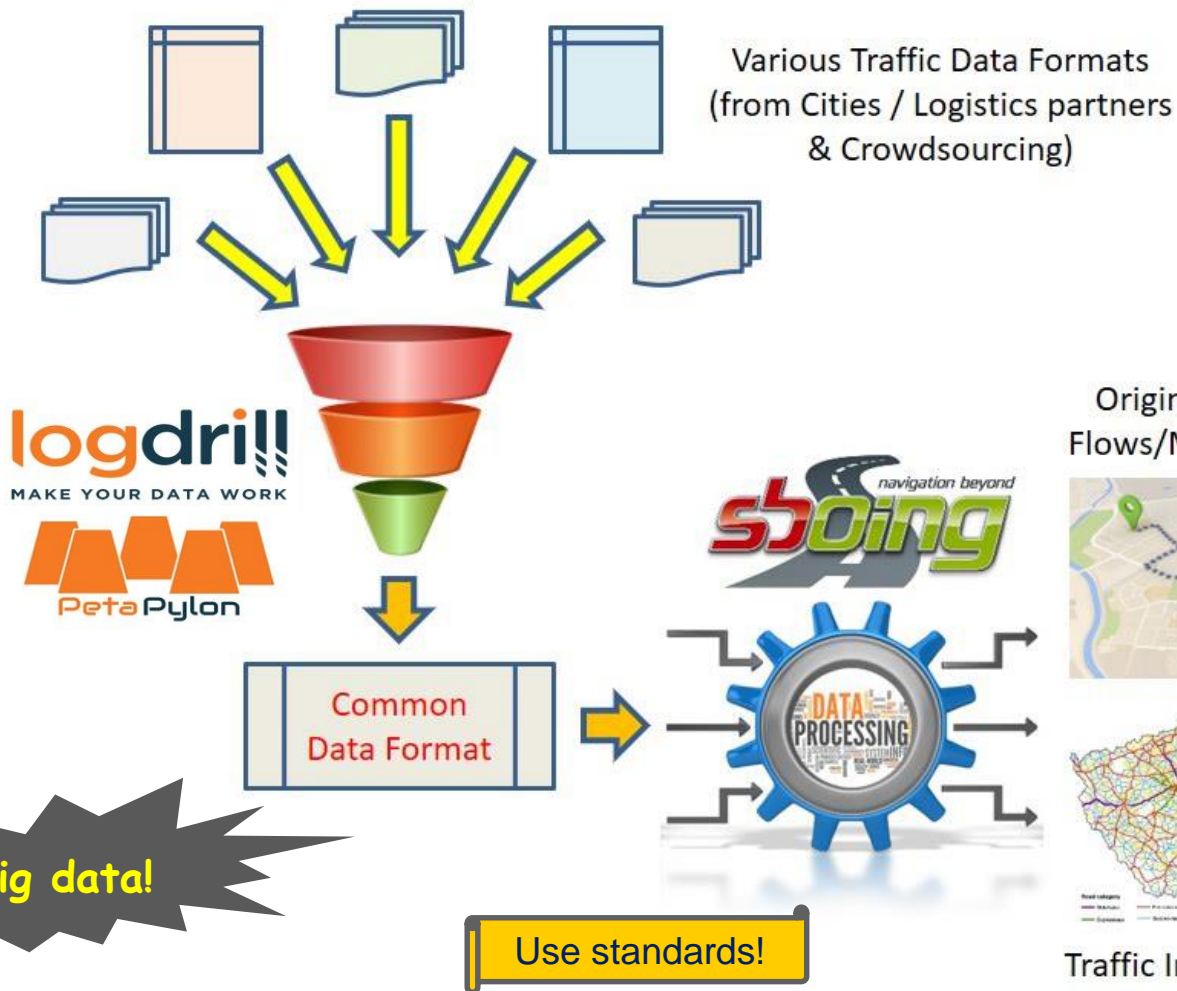
- Integrating Citizen Mobility data & Logistics data



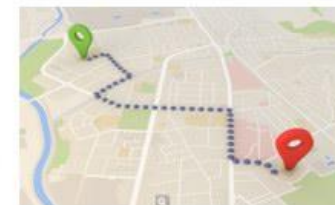
SUITS Data Selection & Processing Tools

The Data Babel:

Homogenizing the Big DaRe data...



Origin-Destination
Flows/Matrices/Maps



Traffic Intensity Maps

Big data!

DaRe Tools (by SBOING)

<https://dare.suits-project.eu/tools>



1. SBOING trace files → GPX format (converter)



2. GPX file anonymization / pseudonymization



3. Insertion of GPX file metadata into a Geospatial Database

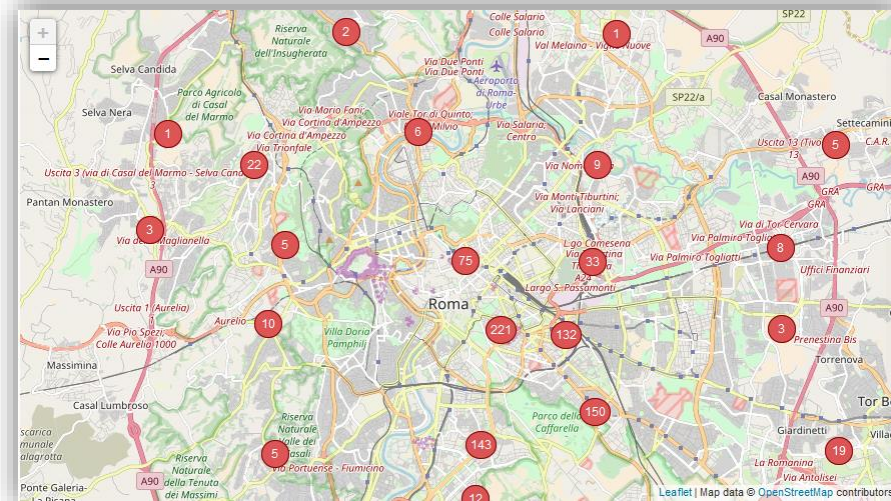
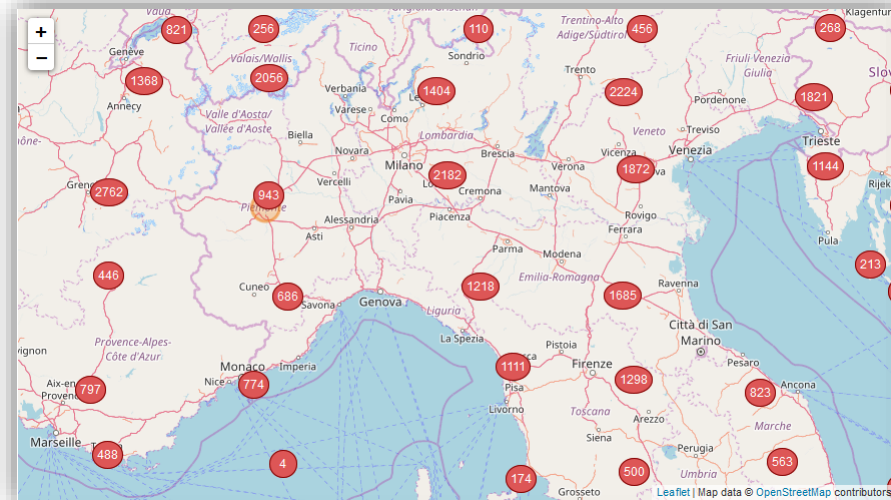


4. Geo-selection of GPX trace datasets (select, view, export)





Geo-Selection of GPX traces Selecting & Downloading GPX Traces



da-re.suits-project.eu/tools/traces/

Home | Traces | Administrative | Users

TRACES

show clusters of traces for the visible map area

Clear Show On Map

Search

Selection Radius 12km

click on the map to define a selection area with the specified radius

Refresh

Download Selected Traces

Select a circular area on the map above and press the Download button.

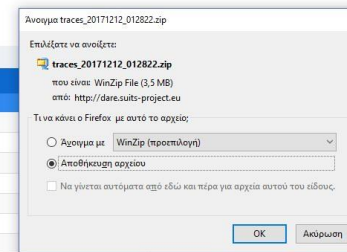
178 traces Download

Traces processed on

processed on	points
09/12/2017 17:22:04	19292
08/12/2017 23:56:23	9809
09/12/2017 19:13:52	8834
09/12/2017 21:09:46	8182
09/12/2017 19:13:46	6594
08/12/2017 23:56:24	5682
09/12/2017 19:13:53	4507
09/12/2017 22:48:09	4486
09/12/2017 17:21:57	3568
09/12/2017 17:21:57	3390

Showing 1-10 of 178

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Geo-Selection of GPX traces

Selecting & Viewing GPX Traces

Search

Selection Radius

click on the map to define a selection area with the specified radius

Starting Point / Destination

Select which end-points lie within the circle

☐ Start & Destination

☒ Start only

☐ Destination only

Traces			
processed on	file	points	
08/12/2017 18:20:30	20170531182547_18814.gpx	1940	
08/12/2017 18:20:30	20140824134457_13825.gpx	5586	

<< < 1 2 ... 61797 61798 > >> Go to page: Row count: Showing 61797-61797 of 61797

Leaflet | Map data © OpenStreetMap contributors

Conclusions

- We need to bring the **Cities and the Tech providers** together to brainstorm on innovative approaches and solutions for urban mobility planning:
 - ❑ Traffic management & citizen mobility
 - ❑ Planning freight distribution & goods delivery
 - ❑ Lane planning (time, space)
 - ❑ Parking space management
 - ❑ Demographics correlation of traffic info & citizen mobility data
 - ❑ Origin-Destination data, land-uses, etc.
- **Decision making** may be assisted and **new policies** may be developed from new information derived from “fresh” (recently updated) or real-time data:
 - ❖ Urban traffic management and optimization
 - ❖ Improving citizen mobility
 - ❖ Optimizing urban freight logistics (efficient & timely distribution of freight in urban areas)
- **Big data** and **(Open) Data Repositories** are concepts and infrastructures LAs need to consider seriously!
 - ✓ Do collect, process, use, share your data!

Thank you!

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<http://www.sboing.net>

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