



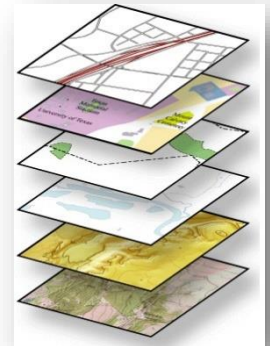
Escola Politécnica da Universidade de São Paulo
Departamento de Engenharia de Transportes
Laboratório de Geoprocessamento

Impact of transport system on the intra-urban scale

"The future of mobility in cities"

The role of Geoprocessing

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EPUSP – PTR – LabGeo
September 30th, 2014



Geoprocessing

- Our understanding:
 - Geographic Information System (GIS) and Remote Sensing (RS) can offer support in future urban mobility studies.



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Geoprocessing

- Our focus
 - Megacities – according to UN, cities with more than 10 million inhabitants; 27 megacities in the world (in 2012)
 - VRU – Vulnerable Road Users – cyclists and pedestrians
 - Spatial Analysis: related to urban land use/land cover (LULC), socioeconomic database, temporal changes.
 - Impact of urban freight transport in urban mobility
 - Sustainable Transport: vehicular emissions
 - Trip generators hubs: RS and GIS as a tool to Origin/Destination Matrix estimations

Geoprocessing

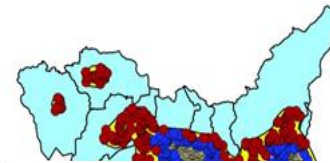
- Use of new RS technologies: UAV - Unmanned Aerial Vehicles (drones), Laser/LIDAR, ITS – Intelligent Transportation System, hyperspectral RS sensors, GNSS - Global Navigation Satellite System
 - In SP: cost, operational difficulties, no legislation



VRU – Vulnerable Road Users

- Cyclists
- Pedestrians

São Paulo - Traffic Accidents VRU - 2012 - Black Spots Zones



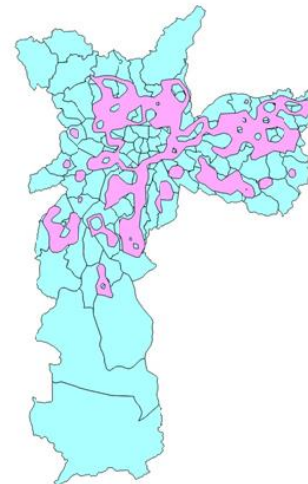
Black Spot Zones – Traffic Accidents – VRU - SP



Very High Density Zone



High Density Zone

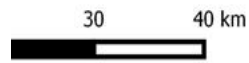


Medium Density Zone



Low Density Zone

Low Density Zone
Medium Density Zone
High Density Zone
Very High Density Zone
Accidents - VRU - 2012





Spatial Analysis

- LULC data

Thematic Mapping

- Global
- Regional
- Local



Medium and Low Spatial Resolution



High Spatial Resolution

Multitemporal Analysis

- Vegetation Cover
- Urban Sprawl
- Urban Systems

Transportation Systems Analysis

- Infrastructure
- Services

Difficulties in research

- Lack of data (reliable and standardized) and / or access to them => little integration
- Lack of qualified persons and skills training through the Post Graduate Programs
- No support from the academic community in the area of Transportation Engineering
 - Difficulties to obtain financial support

Facilities in the research

- Cooperation with different agencies interested in the research results: CET (Companhia de Engenharia de Tráfego), CETESB (Companhia de Tecnologia de Saneamento Ambiental), PMSP (Prefeitura do Município de São Paulo), Comissão Estadual de Acidentes com Transporte de Produtos Perigosos, among others.

Facilities in the research

- Multi and Inter disciplinary theme:
 - Cooperation with colleges and institutes from USP
 - FSP – Faculdade de Saúde Pública,
 - Instituto de Geociências,
 - FFLCH – Faculdade de Filosofia, Letras e Ciências Humanas,
 - FAU – Faculdade de Arquitetura e Urbanismo,
 - EESC – Escola de Engenharia de São Carlos.

Facilities in the research

- Cooperation with other universities and research institutes
 - UFMG – Universidade Federal de Minas Gerais,
 - UFABC – Universidade Federal do ABC,
 - IPT – Instituto de Pesquisas Tecnológicas,
 - UFBA – Universidade Federal da Bahia,
 - UFRJ – Universidade Federal do Rio de Janeiro,
 - INPE – Instituto Nacional de Pesquisas Espaciais,
 - CTL – Centre for Transport and Logistics – University of Rome – La Sapienza,
 - University College London,
 - University of New South Wales (Canberra)
 - DLR - National Aeronautics and Space Research Centre of the Federal Republic of Germany,
 - MIT – Massachusetts Institute of Technology, etc.



Highlights of the research and its results

- Generation of integrated databases (LULC data, socio-economic data, transportation structure)
- Less costly than field research and traditional approaches of data collection and analysis
- Agility in decision-making
- Training of qualified persons for teaching and research in other centers of Brazil





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THANK YOU