



Human Dynamics – An Urban Networking Perspective

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RESCOM 2014

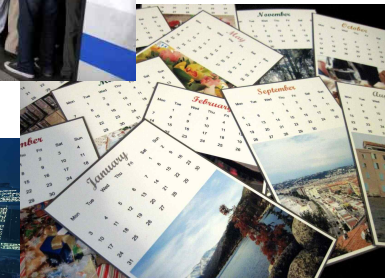
Context

Human Dynamics

Mobility

Habits

Urban Dynamics

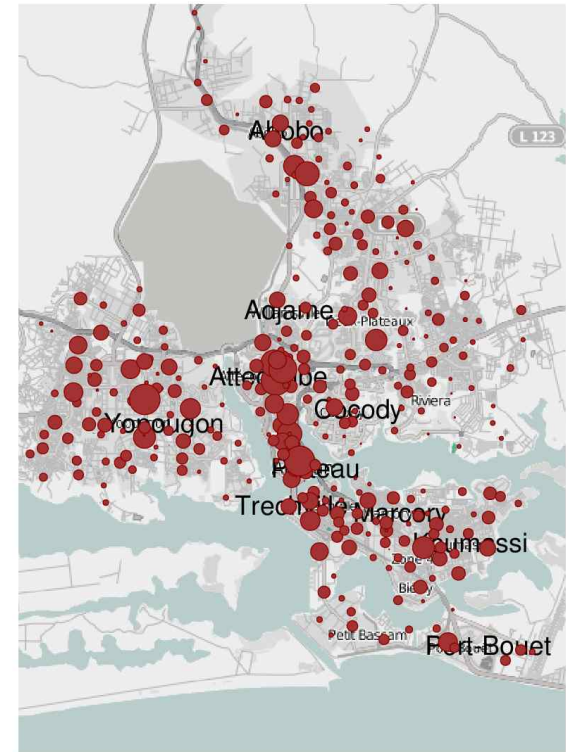


Temporal and Spatial Characteristics of Cellular Network Usage Patterns

How can we improve the cellular network performance taking into account the dynamics of customers?

Methodology

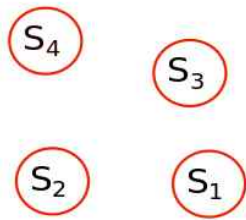
1. Analysis of mobile phone data:
 - Clustering of usage profiles
 - Classification of behaviors
2. Design adequate networking solutions:
 - Optimization tools



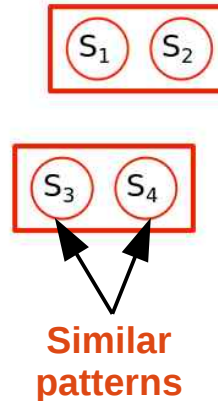
Contributions

- A **framework** for the **characterization** of network **usage** profiles ^[1]
- Evaluation on **real-world** large-scale **dataset**

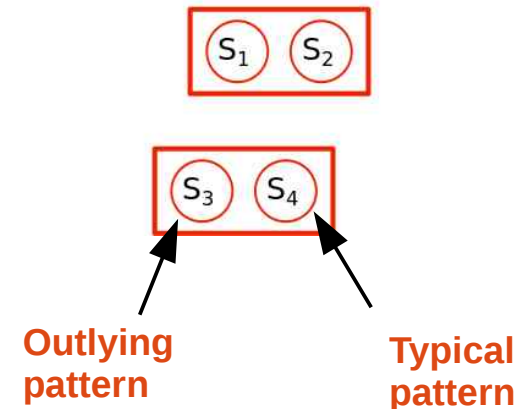
1. Compare
usage patterns



2. Create usage
categories



3. Classify
usages



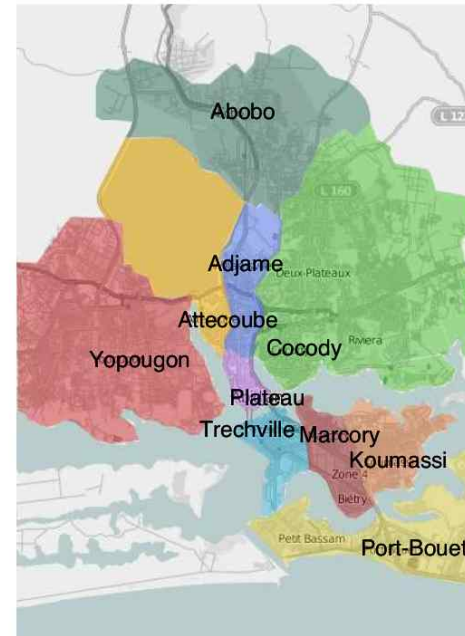
[1] D. Naboulsi, R. Stanica, M. Fiore "Classifying Call Profiles in Large-scale Mobile Traffic Datasets."
IEEE INFOCOM 2014, Toronto, Canada, April 2014

Scenario

- CDR dataset with information about Orange customers in Abidjan
- Dataset with more than 300 million calls
- 5 months: December 5th, 2011 until April 22nd, 2012



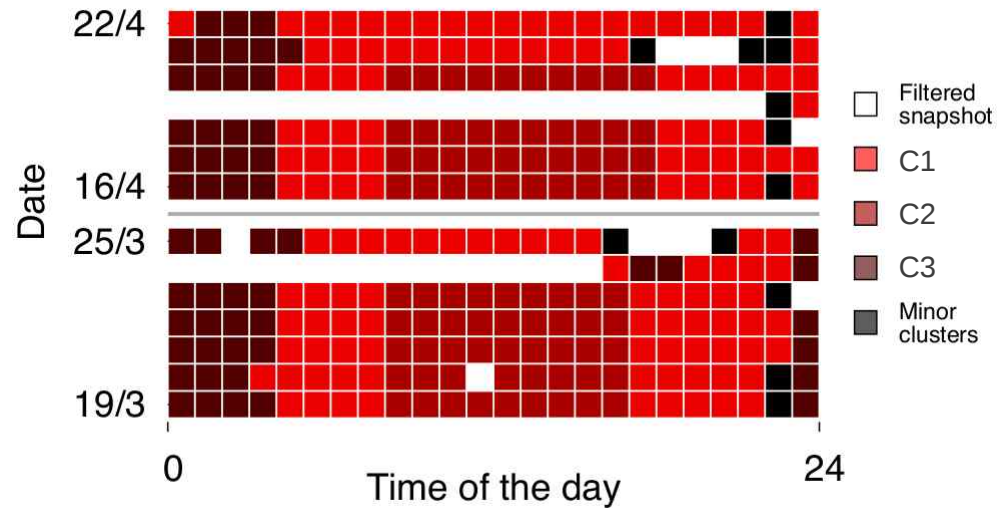
BSs position in Abidjan



Communes of Abidjan

Results

Categories based on volume distributions



Results



Friday, April 6th, 15:00

Outlying



Friday, April 20th, 15:00

Typical

Outlying behaviors: ACN final game, Birth of the Prophet, Easter Monday, Good Friday, Hilary Clinton and Kofi Annan's visit to Abidjan, parliament election ...

Thank you

Inria
INVENTORS FOR THE DIGITAL WORLD