

Chapter 18

Urban Master Data Management: Case of the YUSIIP Platform

Adolphe Ayissi Eteme
University of Ngaoundere, Cameroon

Justin Moskolai Ngossaha
University of Ngaoundere, Cameroon

ABSTRACT

The use of information technology in council management has resulted in the generation of a large amount of data through various autonomous urban bodies. The relevant bodies barely or never reuse such locally-generated data. This may be due particularly to managers', policy makers' and users' lack of awareness of existing information. The Platform for the Integration and Interoperability of the Yaounde Urban Information Systems (YUSIIP) project seeks to reduce this deficit by establishing a federated operational platform of heterogeneous and distributed data systems based on a distributed data repository. The position developed in this paper is that Master Data Management (MDM) will contribute to achieving this objective in a context marked by the dispersion and duplication of data and diversity of information systems.

INTRODUCTION

The complexity of territorial, urban or peri-urban management increasingly calls for the concerted use of data from diverse sources or from distributed systems which can handle large quantities of data that is correlated geographically or have a membership relationship. Digital data plays a prominent role in the increasingly systematic automation of processes. In a growing number of cases, digital data has become the only manifestation and trace of transaction, decision, legal purpose [DISIC, 2013], hence the need to have reliable and relevant information, irrespective of the method used. This may require verification, cross referencing, reprocessing, etc. to avoid collecting the same data several times (through data pool-

DOI: 10.4018/978-1-5225-0937-0.ch018

ing) and avoid, as much as possible typing, re-typing and intermediation, and prioritize interconnection with existing information systems that are closer to the reference source.

The Platform for the Integration and Interoperability of the Yaounde Urban Information Systems (YUSIIP) projects to build a federated operational platform of heterogeneous and distributed data systems based on a distributed data repository addresses this need [Ayissi, 2007]. Ultimately, this platform will help to make urban data available and accessible to all State, organizational and private services. The available data must be processed for decision-making or evaluation purposes. This study seeks to achieve these objectives through the management of reference data or master data management (MDM) in a context characterized by dispersion and duplication of data, and multiple information systems.

The next section presents the context of developing countries, highlighting their specificities as well as the complexity of decision-making frameworks. This suggests the need for a working tool such as an information system. The example of urban reference data management will be presented. An inventory of approaches and systems of data integration will be proposed in Section 3, while the positioning of MDM in the literature and architectural options will be discussed in Sections 4 and 5 respectively. Lastly, an architectural model for operationalizing YUSIIP, followed by a conclusion and prospects of the study will be presented in Section 6.

BACKGROUND AND PROBLEM

Cities in developing countries, particularly Cameroonian cities, are developing in a very disorganized manner, hence the need to systematize and professionalize their management. The mastery of data management is at the heart of this problem [Ayissi, 2014; Cointot & Eychenne, 2014; Ayissi, 2007]. To design, implement, monitor and steer, evaluate and communicate plans and programmes, policy makers and urban managers need consolidated and reliable information [Bertrand de Feydeau, 2015; Pumain & Mattei, 2011].

Urban Development in Cameroon

Urbanization in Cameroon is fast and uncontrolled. [Ayissi, 2014, 2007] identifies five characteristics of urban development in the country. The first characteristic of urban development in Cameroon is the rapid spatial expansion of towns. The growth rate of major towns in Cameroon, like in most towns in Africa, is 10% per year. The spatial expansion of towns is a concern because it is not in line with the Planning and Urban Development Master Plan (SDAU). This situation is posing many problems regarding the control and management of towns, namely:

- Lack of statistical indicators such as the size and characteristics of the urban population, the dynamic indicators used to measure the changes observed, particularly urban growth. Urban statistics are generally outdated, unreliable and scarce.
- Failure to update tools used to plan and monitor the spatial growth of towns, difficulties in collecting data (information) on land occupation and use to enable the analysis, identification and description of the ongoing process. Data on land occupation and use generally provide quantitative information (occupation classes/use, estimate of area) and details concerning qualitative

23 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

www.igi-global.com/chapter/urban-master-data-management/170000

Related Content

A Testifying Development of a Benchmark Study Approach Applicable to Land in the ECOWAS Area

Moustapha Gning Tine and Gbeagblewo Edem (2019). *Geospatial Technologies for Effective Land Governance* (pp. 249-261).

www.irma-international.org/chapter/a-testifying-development-of-a-benchmark-study-approach-applicable-to-land-in-the-ecowas-area/214492

A Taxonomic Analysis of Perspectives in Generating Space-Time Research Questions in Environmental Sciences

Xinyue Ye, Bing She, Huanyang Zhao and Xiaoyan Zhou (2016). *International Journal of Applied Geospatial Research* (pp. 50-60).

www.irma-international.org/article/a-taxonomic-analysis-of-perspectives-in-generating-space-time-research-questions-in-environmental-sciences/146548

Participatory Geographic Information Systems Within a Crowdsourcing Environment, With Special Reference to Volunteered Geographic Information

Mulalu I. Mulalu (2018). *Handbook of Research on Geospatial Science and Technologies* (pp. 392-419).

www.irma-international.org/chapter/participatory-geographic-information-systems-within-a-crowdsourcing-environment-with-special-reference-to-volunteered-geographic-information/187740

Spatiotemporal Pattern Analysis of Rapid Urban Expansion Using GIS and Remote Sensing

Hyun Joong Kim (2010). *International Journal of Applied Geospatial Research* (pp. 55-70).

www.irma-international.org/article/spatiotemporal-pattern-analysis-rapid-urban/42130

A Study of Cross-Market Branch Banking in Illinois: A Multiple Regression Quadratic Assignment Procedure Approach

Bin Zhou (2016). *International Journal of Applied Geospatial Research* (pp. 1-15).

www.irma-international.org/article/a-study-of-cross-market-branch-banking-in-illinois/143073