MANAGING URBAN MOBILITY SYSTEMS

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INVESTOR IN PEOPLE

Abstract

Careful analysis of Urban Mobility reveals that consistent and effective policies can only be well defined and implemented if the various components of the system and their interrelations are considered. The definition of the Urban Mobility System (UMS) goes far beyond the provision of public transport and should entail all services, infrastructure, and traffic management that in its whole enable citizens to satisfy their mobility requirements. The complexity and diversity of dimensions of the conurbation and agents involved in an UMS imply focusing the analysis of its performance on the symbiotic relationship between its main components. Quality factors and processes should be set up in a coherent organizational framework, providing adequate interaction mechanisms for policies, and intervening institutions. The research work that is now presented used the observation of several cities around the world to confirm that quality improvements done at company and service levels are insufficient to ensure significant improvement of performance of the UMS. This objective was pursued by decoupling, observing and understanding interactions among the different elements of the system and between these and the surrounding environment. The research concludes by stating the need for an holistic quality approach to urban mobility management and presents a model along those lines.

Keywords: urban mobility; urban system; policy; management; integration; quality

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The book that is now published materializes a considerable amount of research work done in the several domains of urban mobility since 1995, and a first version was presented in 2005 as the author's PhD thesis in Transportation at the Lisbon Technical University, in Portugal. This endeavor has only been possible due to engagement of the author in the coordination and executive team of many research projects sponsored by the 4th, 5th, 6th and 7th Research and Development Framework Program of the European Commission. Along the years the several editions of these European research programs have effectively driven the European research community through a knowledge-building process that would have never been attained without it. The empirical details of the cities observed, and the structured analysis done along this work are an irrefutable evidence of the added value of these initiatives and deserve a word of appreciation to all the ones that with more or less visibility have somehow contributed to what is today the reality of the European research community.

A word of gratitude is due to various partners with whom those projects were developed and from whom I have learned so much since I have joined European research. Last but not the least my appreciation is also due to all consultants and researchers who have worked with me at our company, TIS.PT. The many discussions we have had internally and within the European consortia to conceive and develop those research projects have been of inestimable value in pursuing this work.

Three empirical cases have contributed in a very significant way to enrich my knowledge on the difficulties of implementation of the model developed and ultimately in its validation. I remain grateful to the persons who made that work possible and for their availability and interest in discussing in detail all the aspects of the model. They were, in Portugal, the Presidents of the Commission of Installment of the Lisbon and Porto Metropolitan Transport Authorities, at the time respectively Ms. Marina Ferreira and Mr. Amândio Oliveira, as well as the Secretary of State of Transports, Mr. Jorge Borrego, and in Brazil, the Director of Regulation, Mr. Alexandre Gomide, and the Secretary of State of Urban Mobility and Transport at the Ministry of Cities of the Federal Government of Brazil, respectively Mr. Alexandre Gomide and Mr. José Carlos Xavier.

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From family and friends I received unconditional support along these years. They have been always present when I needed them, without complaints or demands, and always tolerant to the moments I was unavailable. Their support and the lasting values left by my parents provided the necessary ingredient to pursue my objectives.

"The game of science is, in principle, without end. He who decides one day that scientific statements do not call for any further test, and that they can be regarded as finally verified, retires from the game"

(Karl Popper, 1935, "The Logic of Scientific Discovery")

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Preface

Cities certainly are some of the most complex outcomes of human initiative and activity, and they give us tremendous examples of diversity of physical shapes, economic foundations, functional paradigms, attitudes to foreigners, and so on, leading to what is frequently called the *character* of a city.

There is also a very strong diversity in the level and nature of planning that occurred across cities, some with a very centralized concept and design, strictly followed in implementation, others with a sequence of plans covering different parts of its territory and adaptable modes of implementation, reflecting in those modes the evolving interpretations of priorities for the urban fabric, still others in which existing plans are mostly an effort of rationalization of infrastructure following location decisions already made by citizens and companies. Quite frequently these different patterns co-exist side-by-side in the same city, as witnesses of different periods of its past.

In all cities the issue of mobility is essential for it is mobility that allows the interaction of people and the trading of goods, the two defining elements of the reasons for the very existence of cities. And of course, mobility being so much at the heart of the city, there are also very diverse examples of mobility patterns, intensities, and shapes.

Also on the mobility infrastructure dimension of the city different levels and natures of planning can be observed. In many, the very design of the city was established on the basis of the street network, itself prepared with clear rational foundations, in others we can see that it were just the main elements of that network (the Avenues) that were pre-established, with the secondary and tertiary streets showing a more haphazard layout, depending on the particular circumstances of wealth and taste of those that were acquiring the successive land plots. Of course, since the middle of the nineteenth century, many cities show clear elements of their layout in adaptation to the railway lines and stations which became key players in their connections to other cities and territories.

There is a very strong dialectic relation between the layout of the city and its functions, and the mobility system that connects the different pieces. This mobility system and its performance have become so important in the lives of people that it no longer can be considered as an agent at the service of the city as its principal, and in fact also has to be considered a fully assumed first rank actor on stage, in par with the

city itself. Each of them now shows its own objectives and their developments should be harmonized, but the only hierarchy that is accepted is of them both to society at large, and not of one to the other.

That is one of the leading reasons why the theme of this book is so important and its timing so adequate.

The complexity of the problem and of the associated system have long been recognized, and the quest for an integrated approach can also be found in many policy and research documents for at least two decades, mostly in a European context. However, these approaches have mostly followed two separate lines of endeavor: the transport–land use integration and the multimodal transport integration, where in the former efforts are concentrated on urban forms and functional mixes that reduce the propensity to move by private car, whereas in the latter those efforts are geared in making the use of multiple modes of public transport more attractive, no matter whether as legs of one journey or across the day or week in separate journeys.

The author clearly defines quality of the Urban Mobility System as the goal, and produces a theoretical framework in the domain of Systems Dynamics to develop her work. These options provide a much richer field for a systematic exploration of concepts across different levels of policy intervention.

A rather interesting part of the text is dedicated to the identification of the agents in the system, the tensions that evolve among them as individual agents and as collective entities, and to the different types of instruments available to organize and manage their interactions.

This is followed by the main innovative contribution of this work, which is a careful definition of Quality of the Urban Mobility System, for the system as a whole and not — as had already been done in several instances — for any of its components. This is a challenging step given the diversity of the agents and of their interests, and it is where the theoretical framework proves its value, providing the author and the reader with the foundations for a coherent approach to the challenge.

Careful review of the quality concept in Urban Mobility Systems and appraisal of the effectiveness and sufficiency of the traditional quality management models in this field are made, followed by analysis of what the direct and indirect quality factors are and of their roles in the system.

Possible quality management issues in these systems are explored next, in full recognition not only of its complexity but also of the dispersion of decision power over the different subsystems and associated policies. The key elements for overcoming the ensuing difficulties are a clear separation between the strategic, tactical and operational decision levels, and the full and explicit recognition and use of the numerous feedbacks in the system, based on a careful definition of indicators. Naturally, Causal Loop Diagrams come to the surface as the more capable instruments to represent these interactions.

The proposed quality management model is finally reached after a careful discussion of the different patterns of dialogue between institutions in different cultural and political settings across the world, and indeed seems rather adaptable. A key feature of that adaptability is the recommended separation between the processes for quality planning, control, and improvement.

The proposed model seems of general applicability although the immense variety of existing situations implies that its *declination* to the local circumstances must be carried out by the reader. Not only this, but it is very likely that different agents in the same urban area will produce different declinations from the same abstract model proposed in this book. However, this should not be seen as a negative feature, as those different declinations may well serve as starting points for the indispensable discussions across the field, with the advantage that there would be a reference platform that could have been previously accepted by all parties.

That is indeed the major strength of this work, presenting an abstract model based on substantial experience of the author in concrete cases. Publication in this form should allow it to reach wider audiences and thus greatly increase its value for urban communities across the world.

José M. Viegas
December 2010