1.	Record Nr.	UNINA9910254347903321
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	Titolo	Traffic Networks as Information Systems : A Viability Approach / / by Jean-Pierre Aubin, Anya Désilles
	Pubbl/distr/stampa	Berlin, Heidelberg : , : Springer Berlin Heidelberg : , : Imprint : Springer, , 2017
	ISBN	3-642-54771-0
	Edizione	[1st ed. 2017.]
	Descrizione fisica	1 online resource (XVI, 246 p. 39 illus., 37 illus. in color.)
	Collana	Mathematical Engineering, , 2192-4732
	Disciplina	338.31
	Soggetti	Computational complexity
		Mathematical optimization
		Regional economics
		Space in economics
		Application software
		Complexity
		Optimization
		Regional/Spatial Science
		Computer Appl. in Administrative Data Processing
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Nota di bibliografia	Includes bibliographical references and indexes.
	Nota di contenuto	1 Introduction -- 2 Celerity Regulators on Networks -- 3 Traveling on the Network -- 4 Viability Characterizations and Construction of Celerity Regulators .
	Sommario/riassunto	This authored monograph covers a viability to approach to traffic management by advising to vehicles circulated on the network the velocity they should follow for satisfying global traffic conditions;. It presents an investigation of three structural innovations: The objective is to broadcast at each instant and at each position the advised celerity to vehicles, which could be read by auxiliary speedometers or used by cruise control devices. Namely, 1. Construct regulation feedback providing at each time and position advised velocities (celerities) for minimizing congestion or other requirements. 2. Taking into account traffic constraints of different type, the first one being to remain on the roads, to stop at junctions, etc. 3. Use

information provided by the probe vehicles equipped with GPS to the traffic regulator; 4. Use other global traffic measures of vehicles provided by different types of sensors;   These results are based on convex analysis, intertemporal optimization and viability theory as mathematical tools as well as viability algorithms on the computing side, instead of conventional techniques such as partial differential equations and their resolution by finite difference or finite elements algorithms. The target audience primarily covers researchers and mathematically oriented engineers but the book may also be beneficial for graduate students.