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Network Infrastructures

Technology meets Institutions

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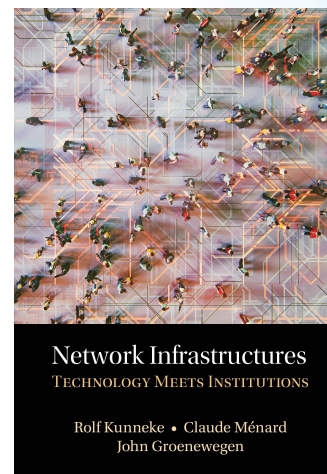
Infrastructures are complex networks dominated by tight interdependencies between technologies and institutions. These networks supply services crucial to modern societies, services that can be provided only if several critical functions are fulfilled. This book proposes a theoretical framework with a set of concepts to analyse rigorously how these critical functions require coordination within the technological dimension as well as within the institutional dimension. It also shows how fundamental the alignment between these two dimensions is. It argues that this alignment operates along different layers characterized successively by the structure, governance and transactions that connect technologies and institutions. These issues of coordination and alignment, at the core of the book, are substantiated through in-depth case studies of networks from the energy, water and wastewater, and transportation sectors.

Introduction. Lifting the veil; Part I. Conceptual Framework: 1. Network infrastructures – from coordination to alignment; 2. Institutional embeddedness – a conceptual challenge; 3. Technology in three dimensions – economics meets system engineering; 4. Bringing together two worlds apart; Part II. Empirical Explorations: 5. Structures – unravelling the energy transition; 6. Governance – a tale of a city's water and wastewater network; 7. Transactions – the many challenges self-driving vehicles face; 8. Taking stock, looking ahead.

This essential book will profoundly alter the way readers think about network infrastructures. The authors' astute and rigorous analysis shows how the marriage between technology and institutions, if not properly consummated, will lead to costly and damaging service failures. It should be required reading for all those concerned with network infrastructures.' **Mary M. Shirley**, *Ronald Coase Institute*

'This book is a critical element to understand the functioning and performance of network infrastructures. By exploring ways in which institutions and technology interact in shaping network infrastructures performance, it opens a new perspective to our understanding of a highly complex topic. It is a must read for all interested in the key role that networks have in modern society.' **Pablo T. Spiller**, *University of California, Berkeley*

'The exploration of the interface between technology and institutions is a vital but tricky project, spanning different academic disciplines. Too often we are told only one side of the story. This book is a shining exception. Its authors develop a rigorous theoretical framework that spans the two domains, which they usefully apply to real world cases. It is a major contribution to an important research programme.' **Geoffrey Hodgson**, *Loughborough University*



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