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Optimal Vessel Planning in Natural Inland Waterways

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Chapter 1
Introduction

1.1 Introduction

This book delves into the intricate world of scheduling and rescheduling vessels in natural inland waterways, offering insights and strategies crucial for effective management in this dynamic environment. Inland waterways serve as vital arteries for transportation, facilitating the movement of goods and people across regions. However, managing vessel schedules amidst varying conditions poses significant challenges. From weather fluctuations to unexpected maintenance issues, navigating these waterways demands meticulous planning and adaptability. Within these pages, we explore the complexities of scheduling within the context of natural inland waterways. Drawing from both theoretical frameworks and practical experiences, we dissect the key factors influencing scheduling decisions and delve into innovative approaches for optimization.

1.2 Motivation and Objectives of This Book

The management of maritime transportation and logistic systems has traditionally been a complex, poorly automated task where a significant burden of decision-making has rested on expert operators responsible for performing each of the various tasks. Despite the expertise of these operators in efficiently carrying out each particular piece of work, this management approach comes with a series of problems and inconveniences. On one hand, we encounter a lack of efficiency and optimality when making decisions, which is inherent to human nature when it comes to decision-making. For instance, it is difficult to carry out an optimal overall management of vessels sailing simultaneously in the canal, since vessel planning is carried out on an individual basis. For this reason, it is necessary to provide each of the operators with the necessary decision support tools to carry out their work as efficiently as

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