Chapter 2
AIOps: Evolution and Transformation of IT Operations

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ABSTRACT

The chapter provides a detailed overview of information technology operations from inception to date and its transformation to artificial intelligence operations. Moreover, explain the importance of IT operations, its major functions along with the role of IT operations. Besides, present a case for AI driven IT operation transformation that include cover limitations of traditional IT operations, and the need for intelligent and automation for IT operation. Listed a few implementation challenges. A typical transformation process of ITOps into AIOps. Further, an high level conceptual architecture and explained its working. Mentioned major performance indicators of AIOps. List of potential use case presented along with benefits.

1. INTRODUCTION

Information Technology Operations, in short ITOps, has a long history more than 75 years. Nowadays, the size and complexity of IT operations have increased and become more difficult to manage end to end IT infrastructure manually to meet the business demands in the digital world. The development of new technologies such as artificial intelligence, machine learning and analytics is resulting in a paradigm shift in almost all organizations towards digital transformation, but there is no exception to IT operations as well as project management. By applying AI into IT operations, resulting in a new stream is most commonly known as AIOps. The

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terms AIOps stands AI for IT operations. Similarly, applying AI together with Agile frameworks to project management result in a new evolution in project management is known as Agile AI-powered project management.

This chapter aims to provide a detailed analysis of Information Technology (IT) operations from inception to date and its transformation of IT operations into AIOps. Moreover, explain how AIOps can be utilized for the advantage of AI-powered Agile project management. The target users of this chapter are IT Operation Professionals, Scientists and business executives. Support engineers, site reliability engineers, systems professional, AI practitioners, AI and ML professional, Architects, and project management professionals.

The term Information Technology operations refer to the processes of implementing, managing, delivering, monitoring, and operations and management of IT operations of an organization on a day-to-day basis. In short, IT operations can be summarized as to the management of the technology used within the organization to run the business. Alternatively, ITOps can be summarized as the process of managing an organization's technology infrastructure, including its business applications. The other definition of IT operations (ITOps) describes as the people, processes and services associated with delivering quality IT services and keeping digital services up and running.

The technology infrastructure includes servers, computers, storage and data infrastructure, network infrastructure and multiple software solutions of an organization. All the technology infrastructure of an organization together is commonly referred as IT systems. In general, managing technology infrastructure will fall under the operation management of an organization, which is carried out by the IT department. The IT operation teams mainly focus on installation, monitoring, maintenance, and troubleshooting of IT systems and functioning of application services on day-to-day basis. Figure 1 shows a typical IT Operations, which includes an end-to-end management and maintenance of (i) servers and storage infrastructure, (ii) network and communication infrastructure, and (iii) computer operations and help desk. Broadly, the functionality of ITOps includes operations of servers including tasks like setting up servers, configuring networks, managing databases, monitoring systems performance and support and maintenance of solutions.

In 1980s, IT systems were manually managed by limited technical personal because of their limited complexity. In the early 2000s, the focus of managing IT systems was slightly increased which manual managed by a team of skilled personas that comprise a team of IT experts such as server administrator, system administrator, network administrator, security, database administrator to name a few roles. During this period, one of the most common scenarios adopted by the organizations, as the number of IT systems increases adding more resources to manage its functioning.