Alp Ustundag · Emre Cevikcan

Industry 4.0: Managing The Digital Transformation

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Preface

As a new industrial revolution, the term Industry 4.0 is one of the most popular topics among industry and academia in the world. Industry 4.0 plays a significant role in strategy to take the opportunities of digitalization of all stages of production and service systems. The fourth industrial revolution is realized by the combination of numerous physical and digital technologies such as artificial intelligence, cloud computing, adaptive robotics, augmented reality, additive manufacturing and Internet of Things (IoT). Regardless of the triggering technologies, the main purpose of industrial transformation is to increase the resource efficiency and productivity to increase the competitive power of the companies. The transformation era, which we are living in now, differs from the others in that it not only provides the change in main business processes but also reveals the concepts of smart and connected products by presenting service-driven business models.

In this context, this book is presented so as to provide a comprehensive guidance for Industry 4.0 applications. Therefore, this book not only introduces implementation aspects of Industry 4.0, but also proposes conceptual framework for Industry 4.0 with respect to its design principles. In addition, a maturity and readiness model is proposed so that the companies deciding to follow the path of digital transformation can evaluate themselves and overcome the problem of spotting the starting point. A technology roadmap is also presented to guide the managers of how to set the Industry 4.0 strategies, select the key technologies, determine the projects, construct the optimized project portfolio under risk and schedule the projects in planning horizon. Meanwhile, the reflections of digital transformation on engineering education and talent management are also discussed. Then, the book proceeds with key technological advances that form the pillars for Industry 4.0 and explores their potential technical and economic benefits via demonstrations with real-life applications.

We would like to thank all the authors for contributing to this book

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