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Value Rational Engineering

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ABSTRACT

Early in the 20th century, our world was small and closed with boundaries. And, there were no appreciable changes. Therefore, we could foresee the future. These days, however, we could apply mathematical rationality and solve problems without any difficulty.

As our world began to expand rapidly and boundaries disappeared, the problem of bounded rationality emerged. Engineeres put forth tremendous effort to overcome this difficulty and succeeded in expanding the bounds of mathematical rationality, thereby establishing the "Controllable World."

However, our world continues to expand. Therefore such an approach can no longer be applied. We have no other choice than "satisficing" (Herbert A. Simon's word, Satisfy + Suffice [2]).

This expanding open world brought us frequent and extensive changes which are unpredictable and diversification and personalization of customer expectations. To cope with these situations, we need diverse knowledge and experience. Thus, to satisfy our customers, we need teamwork.

These changes of environments and situations transformed the meaning of value. It used to mean excellent functions and exact reproducibility. Now, it means how good and flexible we can be to adapt to the situations. Thus, adaptability is the value today.

Although these changes were big, and we needed to re-define value, a greater shift in engineering is now emerging. The Internet of Things (IoT) brought us the "Connected Society," where *things* are connected. *Things* include not only products, but also humans.

As changes are so frequent and extensive, only users know what is happening right now. Thus, the user in this Connected Society needs to be a playing manger—he or she should manage to control the product-human team on the pitch.

Moreover, this Connected Society will bring us another big shift in engineering. Engineering in this framework will become Social Networking, with engineering no longer developing individual products and managing team products.

The Internet works two ways between the sender and the receiver. Our engineering has ever been only one way. Thus, how we establish a social networking framework for engineering is a big challenge facing us today. This will change our engineering. Engineers are expected to develop not only products, but also such dream society.

This book discusses these issues and points out that New Horizons are emerging before us. It is hoped that this book helps readers explore and establish their own New Worlds.

KEYWORDS

value rational design, perception, intrinsic motivation, holistic approach, atmosphere, psychological flow

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Preface

Engineering was created to make our dreams come true. What we need to remember is that we had dreams and that to dream is the most important thing in the world.

However, most engineering books today discuss how to solve a problem. Indeed, there are many problems we need to solve to realize our dreams. Yet, problem solving is not our final goal. Making dreams come true is. Regrettably, we do not discuss much about dreams today. We discuss only what the problems are and how we can solve them.

Making dreams come true is the value of engineering and no matter how we do it, we will be satisfied if our dreams come true. Thus, if this goal is achieved, all paths to get there must be rational. They are very much reasonable because we needed engineering to make our dreams come true. All's well that ends well. This is the core of Value Rational Engineering.

This book, therefore, does not tell you how to solve the problems, but tells you how you can dream a good dream and how you can make it come true your way.

Everybody has his or her own dream. It varies from person to person how you make it come true. I hope this book helps you find how you can have a good dream and find your way of making it come true.

When you make your dream come true your way, you will feel the sense of achievement and fulfilment and you will be truly satisfied.

Let us explore this New World of Dream Engineering together!

Shuichi Fukuda
July 2018

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