Book Review on "The Knowledge Grid"

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"*Knowledge is power*", written by the English philosopher Francis Bacon in 1597, inspired a great rising in the human consciousness, opened the horizons for the human intelligence activities, and developed such a splendid world with a proliferation of knowledge that even Bacon could hardly imagine.

The book "The Knowledge Grid" inaugurated an intelligent interconnection application platform for organizing, managing and utilizing continuously expanding information and knowledge in the future Internet environment[1]. As the IEEE Computer's editor Neville Holmes wrote in the forward of the book, the author and his research group are leading a challenging effort towards an open and scalable platform for the knowledge sharing and utilization. The book panoramically depicts the Knowledge Grid environment in terms of its principles, technical methods and evolving methodologies that enable a seamless and ubiquitous access to the intelligent services for queries, problem solving and decision-making.

Summary of the Book

In the first part of the book, the desiderata and the methodology of the Knowledge Grid are systematically introduced to give readers a thorough understanding on why and how it deals with the management, integration and utilization of heterogeneous knowledge resources. The idea of the Knowledge Grid envisions a virtual, adaptive, society-like, evolving semantic information world where people as virtual roles are provided with intelligent services on publishing, capturing, managing, coordinating, understanding knowledge resource. The principles behind it lie in many folds that can be derived from those basic rules that have governed nature and social development, enabling the Knowledge Grid much like an organic entity. The demanding services of the Knowledge Grid pose challenges as well as opportunities to the researchers, among whom the author has led the first step towards the solution. The rest chapters of the book document the leading practices of the author and his research group in this new area.

The second chapter depicts the Semantic Link Network, an approach towards enriching the web by adding semantics to the conventional hyperlinks. The Semantic Link can be easily embedded into web pages to give users and the browsers more meaningful indication on the hyperlinks. Moreover, the normalized Semantic Link Network can provide machine-understandable semantics that supports searching, matching and reasoning. This effective method opens a way to the semantic-rich world.

The next two chapters come with a more aggressive step towards a semantic space: the Resource Space Model. The author provides a systematic theory of the Resource Space Model for constructing a brand-new interconnection world where resources are well organized following norms and rules. The model gives the concepts, the normal forms, and the operations to organize heterogeneous resources on the future large-scale interconnection environments. Reorganizing current chaos of web information is a huge challenge. The Resource Space Model builds a firm infrastructure to enable a well-organized future resource management and utilization platform.

The future Knowledge Grid bears many evolving features envisioned in this book. The author studies the knowledge flow in the Knowledge Grid as well as the topology evolvement in the future large-scale interconnection environments, indicating that those basic properties can be leveraged to design an adaptive and evolving Knowledge Grid.

Specialties of the Book

The book is the first systematic state of the Knowledge Grid area. The key feature lies in that it synthesizes the principles from various disciplines to attack the challenging problem of integrating future heterogeneous resources in the Knowledge Grid. The second feature is that the book gives readers a thorough view on the future Knowledge Grid by digging up the reasoning and methodology. The third, the book exploits various facets of the Knowledge Grid to give readers a macro view on the basic principles, the infrastructure, the know-how and the evolving features. The keen sight on the future interconnection environments in this book will definitely inspire readers to join this promising process of approaching the future intelligent Internet.

Vistas of the Knowledge Grid

"*Knowledge is a treasure, but practice is the key to it*" wrote the Thomas Fuller in the 17th century. We have seen a lot of valuable practices conducted by the author and his research group in the Knowledge Grid area. The rise of this new area counts on these firm yet imaginary research. The attractive view presented in this book gives readers a promising approach towards the future interconnection world.

References

[1] Zhuge H. The Knowledge Grid. World Scientific, 2004.