
From Founding Editor-in-Chief

On the 10th anniversary of *Studies in Science and Technology* (STT), I would like to extend warmest congratulation on the outstanding achievement of Journal in promoting global science and technology development. We are now facing abundant historical opportunities, such as the evolution from the fourth to the fifth industrial revolution and the advantages of the artificial intelligence (AI).

Digital productivity, a typical feature of the fourth industrial revolution that distinguishes from the previous three industrial revolutions, needs to be supported by economic foundation and superstructure. Energy network, information network and transportation network are the three pillars of the economic foundation, while the humanistic network is an important part of the superstructure. Through the integration of these Four Networks and Four Flows (energy flow, information flow, material flow, value flow), the proactive initiative of human can combine energy revolution, information revolution and transportation (mobility) revolution, to establish a new production relationship formed within the "human-cyber-physical" system. This integration can further excavate a huge productivity benefited from those big data approach utilized in the fourth industrial revolution.

The "Four Networks and Four Flows (4N4F)" represents fundamental changes and impacts of human thinking style on the Fourth Industrial Revolution. This puts forward a strategic fusion need for 4N4F that integrate philosophical thinking, scientific theory and engineering practice, as well as mastering the three revolutions, namely energy, information and transportation revolutions. It is essential to establish a holistic thinking, based on the interaction between the economic foundation and superstructure, to create an advantage that the whole of fusion is greater than the sum of the individuals. It is essential to explore the law of interaction between energy, information and human behavior to turn waste energy into useful energy and promote carbon neutrality. It is essential to combine energy technology and information technology, develop a smart energy operating system, adopt an End-Edge-Cloud structure and utilize energy systems with artificial intelligence/big data systems to achieve value-added benefits.

At present, this "New Infrastructure" has received widespread attention, among which infrastructure focuses on "smart energy" and "smart transportation" amalgamation. It involves the technological progress and integration of new energy vehicle charging stations, photovoltaic buildings, distributed energy storage, hydrogen energy, edge computing, the Internet-of-Things and blockchain.

The development of the strategic 4N4F framework will accelerate the application of the Internet-of-Things and artificial intelligence technologies in the energy, information and transportation industries. It further promotes deep cross-border integration in the process of technological innovation and facilitates the realization of open sharing platform of intelligent industry collaboration. The integration of energy gridization and information gridization, together with the integration of distributed energy and distributed supercomputing, will form many new growth areas including green industry development and ecological chain and incubate new technologies for new joint-industries and new business model. Fusion is a deep amalgamation producing long term benefits as the value of the whole is greater than the sum of the individuals.

The fourth industrial revolution will fundamentally change the lives of ours and future generations, and recreate the economy, society, culture and environment on which mankind depends for survival. The integration of 4N4F is to replace the traditional linear thinking with a breakthrough circular comprehensive thinking. It links the energy revolution, information revolution and transportation (mobility) revolution, and formulates the humanistic network of the superstructure with the economic-based integration of energy network, information network and transportation network, resulting in disruptive economic and ecological benefits.

It is hoped that the theory and practice of 4N4F integration will guide the development of *Studies in Science and Technology*.

Society for Science and Technology
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