UNIVERSITY OF MACAU

FACULTY OF SCIENCE AND TECHNOLOGY

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

"Towards the Third Industrial Revolution"

by

Prof. James M. TIEN

Distinguished Professor and Dean

College of Engineering

University Miami

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Abstract

The outputs or products of an economy can be divided into services products and goods products (due to manufacturing, construction, agriculture and mining). To date, the services and goods products have, for the most part, been separately mass produced. However, in contrast to the first and second industrial revolutions which respectively focused on the development and the mass production of goods, the next – or third – industrial revolution is focused on the integration of services and/or goods; it is beginning in this second decade of the 21st Century. The Third Industrial Revolution (TIR) is based on the confluence of three major technological enablers (i.e., big data analytics, adaptive services and digital manufacturing); they underpin the integration or mass customization of services and/or goods. As detailed in an earlier paper, we regard mass customization as the simultaneous and real-time management of supply and demand chains, based on a taxonomy that can be defined in terms of its underpinning component and management foci. The benefits of real-time mass customization cannot be over-stated as goods and services become indistinguishable and are co-produced – as "servgoods" – in real-time, resulting in an overwhelming economic advantage to the industrialized countries where the consuming customers are at the same time the co-producing producers.

Biography

In 2007, Dr. James M. Tien became a Distinguished Professor and the Dean of the College of Engineering at the University of Miami, Coral Gables, Florida. He received the BEE from Rensselaer Polytechnic Institute (RPI) and the SM, EE and PhD from the Massachusetts Institute of Technology (MIT). He has held leadership positions at Bell Telephone Laboratories, at the Rand Corporation, and at Structured Decisions Corporation (which he co-founded). He joined the Department of Electrical, Computer and Systems Engineering at RPI in 1977, became Acting Chair of the department, joined a unique interdisciplinary Department of Decision Sciences and Engineering Systems as its founding Chair, and twice served as the Acting Dean of Engineering. Dr. Tien has published extensively, been invited to present dozens of plenary lectures, and been honored with both teaching and research awards, including being elected a Fellow in IEEE, INFORMS and AAAS and being a recipient of the IEEE Joseph G. Wohl Outstanding Career Award, the IEEE Major Educational Innovation Award, the

IEEE Norbert Wiener Award, the IEEE Richard M. Emberson Award, and the IBM Faculty Award. He received a Doctor of Engineering (honoris causa) from Canada's University of Waterloo and is also an Honorary Professor at over a dozen non-U.S. universities. Dr. Tien is an elected member of the prestigious U. S. National Academy of Engineering.

ALL ARE WELCOME!