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Quality of Information

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Abstract

In the transformation of generations of nowadays, not only must let the new generation recognize that the development of quality is the gene of improvement due to the needs of human spiritual knowledge, but also must let the old generation know that the development of quality is the induce of prosperity due to the needs of human material satisfaction. In the now of Internet Information Technology, numbers of related hardware and software involve into our life and work, stupid-like old generation feel cannot be adaptive, but smart-like new generation feel cannot be satisfied. The era of Industry 4.0 is coming. It is even more important to recognize the software and hardware technologies related to Internet information technology, and the development of these knowledge technologies is formed through the free-market economy business model. That is to say, the free-market economy is its "core value", practical application is the purpose, system integration is the means, pragmatic benefit is the incentive, and the sustainable development of competition and cooperation is the good result.

Keywords: ICT; MESA / ISA-95; OSI 7-layer network architecture; TCP/IP

Introduction

The major of Taiwan's industrial development is almost focusing on the Information Communication Technology (ICT). In the past 30 years, the ICT industry has dominated the development of our life, work and industrial structure. In my personal age, I really understand the ICT industry was from nothing to something, from something to sufficiency, from sufficiency to convenience, from convenience to rapidity, from rapidity to refinement, from refinement to rarity and so on. As shown in the communication products of Figure 1, from the hand-called call number → dial-up call → button call → BB call → mobile phone 2G, 3G → smart phone 4G → 5G; in terms of computer, from punch card input → Main Frame → PC → Notebook computer → server; in terms of the network: from the local network to the current Internet. In the ICT industry, there is a under table dancer, which is the software industry. The so-called software industry refers to the industry that is actively using ICT resources for programming, information system development, integration and related services. The industry, in which the software industry of the manufacturing industry is more relevant to this article, Figure 2 is a schematic diagram of the software development of the manufacturing industry described in "MESA White Paper No. 5, 1997" [1] (Figures 1,2).

Figure 1: *Communication products.*

From the perspective of micro-industry development, it will create many kinds of innovative business model via customized design and marketing. From supplier chain: purchasing, production controlling, incoming, production and shipping to demand chain: ordering, logistics delivery, retail, and maintain service, it can integrate the all processes to be a value chain

through computation, communication, controlling, collaboration and real time response.

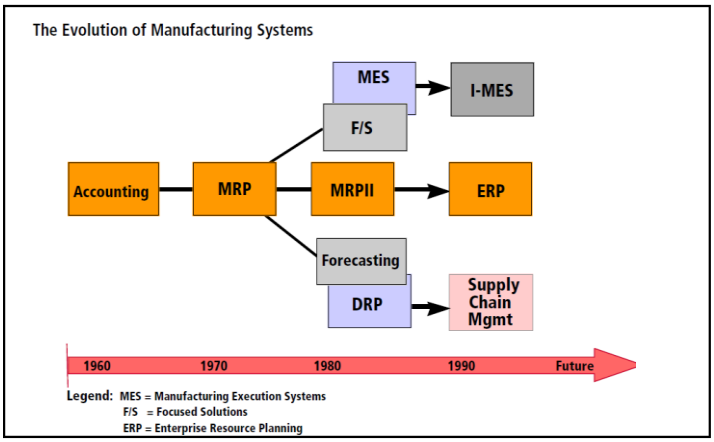

Figure 2: *Software development of the manufacturing industry.*

This cross-company information system enables engineering collaboration and logistics collaboration under the internet platform architecture. Engineering collaboration: provide collaborative process of two-way interaction between customers and suppliers to provide customers with the engineering information needed to speed up customer quality analysis, quality improvement and design improvement process, as well as shorten the customer's time schedule from pilot run to mass production.

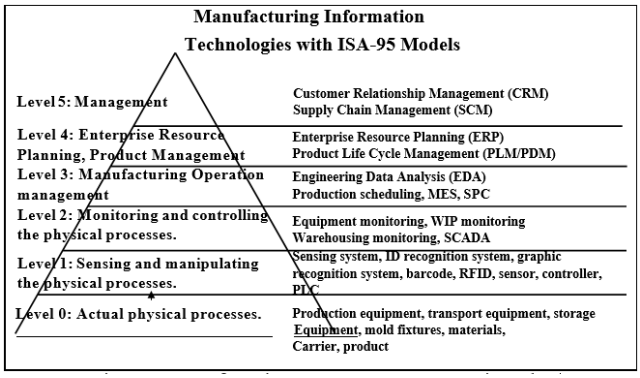

Figure 3: *Manufacturing management system hierarchy.*

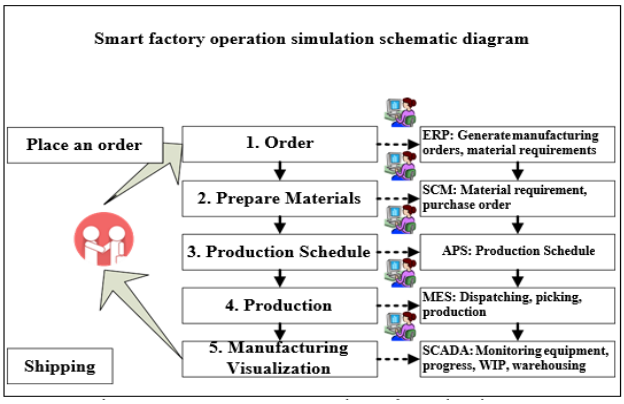

Figure 4: *Smart factory operation schematic diagram.*

Logistics Collaboration: provide customers and suppliers more transparent and complete information interface, from the customer's order to the production schedule, from the production order to status of the lot number, from the outgoing quality control to the shipping, customers can get the information from the system and analyze in advance, solve the common problems of both sides immediately. The above situation is the vision of the industry 4.0 for manufacturing operations management. Some advanced enterprises have already had the ability to self-improve to this level; however, the SMEs are lack of this kind ability. The MESA / ISA-95 standard have been defined the manufacturing management system hierarchy, as shown in Figure 3. In general, SMEs can achieve the vision of Industry 4.0 operation by using Figure 4: Smart Factory Operation Schematic to improve the quality of information of internal operations step by step [2] (Figures 3,4).

The ecosystem of Industry 4.0 is the Cyber-Physical System (CPS).

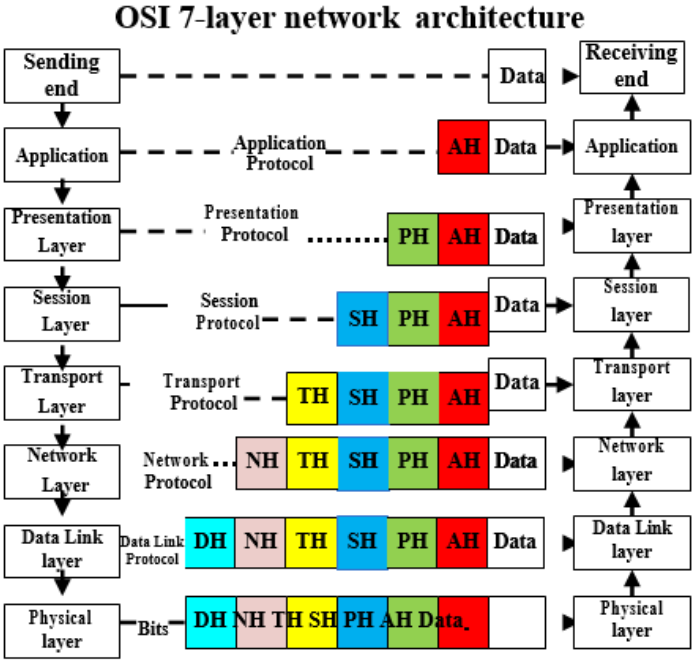

Figure 5: *OSI 7-layer network architecture.*

In addition to the MESA / ISA-95 standard architecture, the Open System Interconnection Reference Model (OSI) is also considered. The relationship between the 7-layer network architecture of the internet system and the TCP/IP protocol hierarchy are shown as Figure 5: OSI 7-layer network architecture and Figure 6: TCP/IP protocol hierarchy. As for the quality of information, we must understand the infrastructure of modern network architecture (Figure 5,6).

In the transformation of generations of nowadays, not only must let the new generation recognize that the development of quality is the gene of improvement due to the needs of human spiritual

knowledge, but also must let the old generation know that the development of quality is the induce of prosperity due to the needs of human material satisfaction.

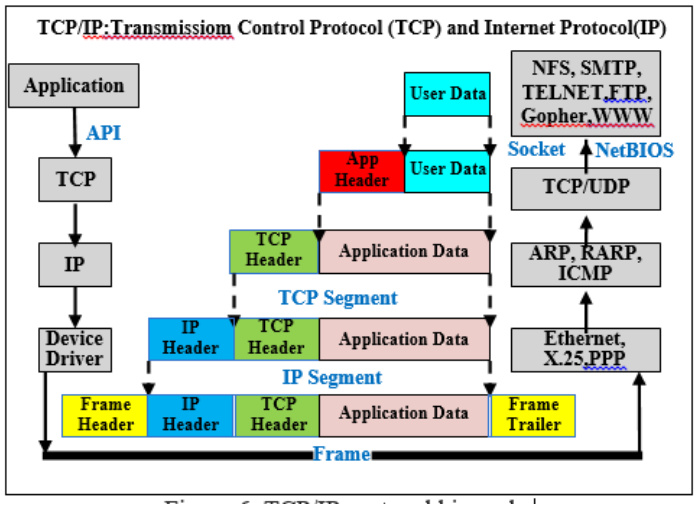

Figure 6: *TCP/IP protocol hierarchy.*

In the now of Internet Information Technology, numbers of related hardware and software involve into our life and work, stupid-like old generation feel cannot be adaptive, but smart-like new generation feel cannot be satisfied. The era of Industry 4.0 is coming. It is even more important to recognize the software and hardware technologies related to Internet information technology, and the development of these knowledge technologies is formed through the free-market economy business model. That is to say, the free-market economy is its "core value", system integration is the means, practical application is the purpose, pragmatic benefit is the incentive, and the sustainable development of competition and cooperation is the good result. The issue of system integration is a topic that we have been paying attention to in recent years, because the future development of various professional fields is still based on the needs of human material and spiritual, and can be developed by the platform provided by network information technology, and system integration theory will be important knowledge and technology, such as human-machine integration, machine-machine integration, information systems integration, supply chain integration, network entity integration, knowledge integration, value integration, ideological integration, and intelligent integration. Furthermore, under the guidance of Internet thinking, its integration model will not only be vertical or horizontal value chain integration, but will also be innovative with ring-type value integration, such as, strategic planning, business model design, brand building, product development, marketing promotion, organizational transformation, cultural change, and other aspects of the business ring-type value integration. As shown in Figure 7: The Industrial age vs. Internet age [3] (Figure 7).

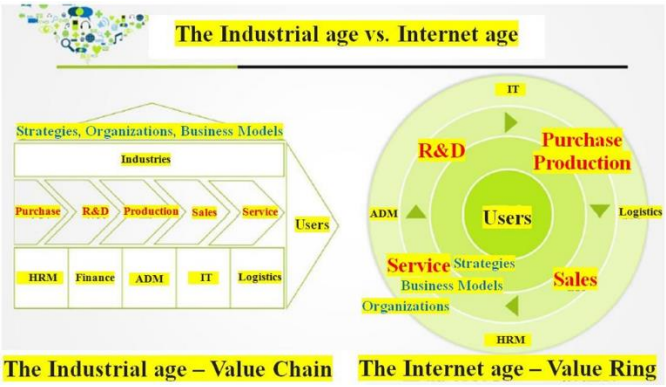

Figure 7: *The Industrial age vs. Internet age.*

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3. Dawei Z. The Internet Thinking, Mechanical Industry Press. 2014.