Academic Articles

1) Coombes, R., Siddiqi, J. (2008). A framework for IT as a utility. *2008 5th International Conference on Information Technology: New Generation*. *Las Vegas, NV, USA. 7-9 April 2008.* DOI: 10.1109/ITNG.2008.56

The IT Utility Model has created a new market for the delivery of IT, one that is not yet standardised or regulated let alone commoditised or traded. This paper takes a cross sectional look at the key players and their specific pricing policies aligned to the delivery of IT as a utility. The research seeks to explain the different pricing policies that are deployed in the market place today and the influences that affect these policies. This paper outlines the foundations in the development of an IT Utility Framework based on the underlying principles and environment in which a traditional utility functions are applied to the delivery of IT as a utility. The framework provides the underlying mechanisms in which IT services could be priced and traded on Global Exchange Market. The initial framework has been evaluated through contact with key stakeholders in the field; this forms the basis for further research that could advance the framework for delivering IT as a utility.

FT available – No. 1

2) Turk, T. (2007). Utility in information technology adoption. *WSEAS Transactions on Computers, 6*(6), 901-6

In this paper we are focusing on the IT adoption framework, developed to investigate the relationships between IT and users, and the comparison of that framework to the Sen's capability framework, which introduces the well-being approach. We also discuss the definitions of terms such as utility, usability and usefulness, which are used in the research of a quality of user interfaces nowadays. The question of a definition of utility is especially interesting, since in this paper we combine several disciplines, microeconomic analysis and the technological aspects of the quality of human interfaces. Both disciplines use the term utility, but define it in different ways. We also introduce some basic models of human - device interactions and their combinations, which can be the basis of the system dynamics approach in further research work in this field.

3) Kun Yang & Jincheng Zhang. (2005). Information technology, service productivity and service quality - the application of information technology based on a company-customer opening production system. *2005 International Conference on Services Systems and Services Management, Chongquing, China, 13-15 June 2005*

An important characteristic of service sector is that customers participate in service process, and form a so-called opening production system. Thus, a dual company-customer orientation, which gives consideration to both party's inputs and outputs, needs to be built into the application of information technology in services, so that the integrated service productivity could be enhanced, and service quality finally could get improved fundamentally. This is very different from carrying on technical innovations and applications in a closed system of manufacturing. And it is also a breaking point of overcoming "productivity paradox." This paper, taking the interactive service process as its main clue and based on the characteristics of service, discusses the functions of IT in improving service productivity and service quality at each different stages of the interactive process, which will have theoretical directive significance in our country's strategy of energetically developing service sectors in the information economy era

FT Available – No. 3

5) Buyya, Rajkumar; Yeo., Chee Shin., & Venugopal, Srikumar., et al. (2009). Cloud computing and emerging IT platforms: Vision, hype, and reality for delivering computing as the 5th utility. *Future Generation Computer Systems The International Journal of Grid Computing: Theory, Methods & Applications, 25(*6), 599-616. DOI: 10.1016/j.future.2008.12.001

With the significant advances in Information and Communications Technology (ICT) over the last half century, there is an increasingly perceived vision that computing will one day be the 5th utility (after water, electricity, gas, and telephony). This Computing utility, like all other four existing utilities. will provide the basic level of computing service that is considered essential to meet the everyday needs of the general Community. To deliver this vision, a number Of Computing paradigms have been proposed, of which the latest one is known as Cloud Computing. Hence, in this paper, we define Cloud computing and provide the architecture for creating Clouds with market-oriented resource allocation by leveraging technologies such as Virtual Machines (VMs). We also provide insights on market-based resource management strategies that encompass both customer-drive service management and computational risk management to sustain Service Level Agreement (SLA)-oriented resource allocation. In addition, we reveal our early thoughts on interconnecting Clouds for dynamically creating global Cloud exchanges and markets. Then, we present some representative Cloud platforms, especially those developed in industries, along with our Current work towards realizing market-oriented resource allocation of Clouds as realized in Aneka enterprise Cloud technology. Furthermore, we highlight the difference between High Performance Computing (HPC) workload and Internet-based services workload. We also describe a meta-negotiation

infrastructure to establish global Cloud exchanges and markets, and illustrate a case Study of harnessing 'Storage Clouds' for high performance content delivery. Finally, we conclude with the need for convergence of competing IT paradigms to deliver our 21st century vision. (C) 2008 Elsevier B.V. All rights reserved.

FT AVAILABLE – NO. 5

6) Buyya, R.; Chee Shin Yeo; Venugopal, S. (2008). Market-oriented cloud computing: vision, hype, and reality for delivering IT services as computing utilities. 2008 10th IEEE International Conference on High Performance Computing and Communications (HPCC), Dalian, China: 25-27 Sept. 2008. DOI: 10.1109/HPCC.2008.172

This keynote paper: presents a 21 st century vision of computing; identifies various computing paradigms promising to deliver the vision of computing utilities; defines Cloud computing and provides the architecture for creating market-oriented Clouds by leveraging technologies such as VMs; provides thoughts on market-based resource management strategies that encompass both customer-driven service management and computational risk management to sustain SLA-oriented resource allocation; presents some representative Cloud platforms especially those developed in industries along with our current work towards realising market-oriented resource allocation of Clouds by leveraging the 3rd generation Aneka enterprise Grid technology; reveals our early thoughts on interconnecting Clouds for dynamically creating an atmospheric computing environment along with pointers to future community research; and concludes with the need for convergence of competing IT paradigms for delivering our 21 st century vision.

FT AVAILABLE NO. 6

7) Madhisetty, S.; Busch, P.; Feuerlicht, G.; Flax, L. (2008). Utility computing and its influence on the IT-industry. *Proceedings of the 2008 International Conference on Enterprise Information Systems and Web Base Technologies, Orlando, FL, USA, 7-10 July 2008*

Abstract: Though much service-oriented architecture have failed before to deliver on their promises of remote delivery of IT services, the ubiquitous nature of computing which is now present is the motivating factor for computing to be seen in a "utility model". Utility computing (UC) is an on demand delivery of enterprise applications and business process in a shared, secured and scalable standards based environment over the Internet. The impact of this new technology will be seen in many areas. Utility applications built on multi-tenant architecture where many users

can access their applications concurrently is a cost effective means for providing service oriented computing to the end user. This paper studies the adoption of such technology in the IT industry. This paper studies the inhibiting factors for the successful adoption of utility computing model in the IT-industry.

12) Feeney, G. J., Hilton, R. D., Johnson, R. L., O'Rourke, T. J., & T. E. Kurtz. (1974). Utility computing: a superior alternative? *AFIPS '74: Proceedings of the May 6-10, 1974, national computer conference and exposition*

In 1905, approximately 50,000 small, privately-owned generating stations produced roughly half the total U.S. supply of electricity—largely for their own needs. Today, only about six percent of the nation's electric power is produced by such small local generating stations with the bulk of the country's power needs being met by some 200 large utilities. The data processing industry is on the verge of a similar change for almost identical reasons. Despite the presence of some 60,000 widely-scattered and largely privately-operated general purpose computers, a trend away from in-house, do-it-yourself computing is becoming increasingly apparent. And, as in the electric utility industry, the driving forces are scale economy and variable cost aided by rapidly advancing technology. Today, computer power generated at large, centralized facilities is transmitted and distributed over international data communications networks on a variable cost basis to most business centers in the free world. This "Coming of Age" of utility computing brings with it a major turning-point in the industry, and broad implications for both users of computers and hardware suppliers. These implications and what they portend for business and data processing managers form the core of this panel discussion.

FT available

19) Denne, M. (2007). Pricing Utility Computing Services. *International Journal of Web Services Research 4*(2), 114-127. DOI: 10.4018/jwsr.2007040105

Utility computing is the emerging term for the delivery of information technology in a 'pay-as-you-go' model. It has attracted considerable attention as a means of delivering lower total cost of ownership (TCO) and more predictable service levels for in-house IT At its heart, utility transformation allows IT consumers to switch from capital-based procurement of IT assets to operational cost procurement of IT services. Unsurprisingly, the change is closely linked with the adoption of service oriented architectures (SOA) and service oriented infrastructures (SOI). In fact, utility transformation often provides the overarching business and financial framework for

driving a move to SOA. It defines the IT chargeback environment and the resulting compelling business context. Key to the success of utility transformation is the implementation of appropriate service pricing models. A variety of innovative pricing models can be used to improve service predictability, to create incentives for certain behaviors, and to manage the flow of notional revenue to the IT organization (ITO). They are invaluable to the SOA business case. This article examines several such models.

No free FT

21) Hawkins, B. L., & Oblinger, D. (2007). The myth about IT as a utility. EDUCASE Review, *EDUCAUSE Review, 42*(4), 10–11.

No abstract – FT available

27) Hopper, M. (1990). Rattling SABRE: New ways to compete on information. *Harvard Business Review*. Retrieved from:http://hbr.org/1990/05/rattling-sabre-new-ways-to-compete-on-information/ar/5

Although not visible in the free preview available via this link, another author (no. 28). Says that Hopped argued in 1990 that IT was becoming a utility.

28) Carr, N. G. (2003). IT doesn't matter. *Harvard Business Review*. Retrieved from: http://www.simoes.com.br/mba/material/ebusiness/ITDOESNTMATTER.pdf

FT also saved as no. 28

Interestingly, another article about different topic, once mentions Carr (2003) as the 1st coiner of the notion / concept of 'IT as a utility': http://www.palgrave-journals.com/ejis/journal/v20/n1/pdf/ejis201053a.pdf (prob need to be on VPN)

29) Carr, N. G. (2005). The end of corporate computing. *MIT Sloan Management Review*. Retrieved from: http://cas.uah.edu/guptaj/m691/carr.pdf

FT saved as no. 29

30) Sengupta, K., & Zviran, M. (1997). Measuring user satisfaction in an outsourcing environment. *IEEE Transactions on Engineering Management, 44*(4).

Title & abstract don't' seem immediately relevant, but does refer to IT as utility a few times, and from 1997 so seemed relevant.

FT available

31) Sakaguchi, T, & Dibrell, C. C. (1998). Measurement of the intensity of global information technology usage: Quantitizing the value of a firm's information technology. *Industrial Management & Data Systems, 98*(8), 380 – 394. DOI:

http://dx.doi.org/10.1108/02635579810246499

With the increasing convergence of international markets, a greater number of firms are entering the global arena. As these firms compete in the global marketplace, they utilize information technology to formulate and implement strategies and to control and coordinate their resources. This increased dependence on information technology by the firm leads to the following question: how do firms measure the value of a global information system to the performance of the firm? Ideally, information technology would be evaluated based on its degree of strategic use through a firm's performance. However, the resulting benefits of IT as a utility in performance are generally difficult to identify. First, this paper attempts to conceptualize the intensity of global information technology usage by constructing a new instrument measuring IT investment, strategic importance of the IT and degree of IT training. Second, the paper formulates and submits a pilot test of a holistic model of the relationship between the intensity of global information technology usage and a firm's global strategy and performance.

36) Browning, J. (2008). Internet as utility? *Nature, 452*(20), 287-288.

A sceptic argues that the electricity industry's tale predicts a digital future of diminished privacy.

FT available

37) Madnick, S. E. (1977). Trends in computers and computing: The information utility. *Science, 195*(4283), 1191 – 1199. DOI: 10.1126/science.195.4283.1191

Demands for more effective information management, coupled with advances in computer hardware and software technology, have resulted in the emergence of the information utility concept, whereby computers specialized for information storage and processing serve as information nodes. The information nodes, which may be interconnected, can provide information management services to both conventional and personal computers. In this article the key hardware and software components

of classical information systems are described to provide background on the requirements for an information utility. Four approaches to the development of specialized information nodes, drawing on various advances in technology, are presented: (i) firmware enhancement, (ii) intelligent controllers, (iii) minicomputer back-end processors, and (iv) highly modular database machines. The benefits of these advances will be systems that are more efficient, reliable, and easy to use.

No FT – not sure it's relevant, but I kept it because of the mention of the concept of information utility in 1977. Probably not relevant though.