

Guest editorial

## Regional development and business prospects for ICT and broadband networks

Broadband and mobile Internet network infrastructure has provided a base for the development of e-commerce. Accordingly, recent research on broadband networks is forward looking. The broadband regime brings with it concerns of identifying appropriate infrastructure deployment, business models and universal service. National and international matters are also of importance. The structure of this issue is guided by the basic themes considered at the International Telecommunications Society's Asia-Australasian Regional Conference 'M-business, E-commerce and the Impact of Broadband on Regional Development and Business Prospects', which took place in Perth, Western Australia, on 22–24, June 2003. This issue contains a selection of papers presented at this conference. Peter Dell examines issues related to the optimal choice of over-lapping generation technology. Michael Minges' concern is equally fundamental, the specification of network indicators to enable the measurement of market performance and enable international comparisons. Changing focus from the network infrastructure to business models, Mohammed Quaddus and Didi Achjari employ a statistically based structural equation methodology to determine e-commerce success and inhibiting factors for large Australian companies. Ashley Lloyd continues the focus on firm-level activity by considering the role of grid computing and CRM for a UK financial services firm. Max Kummerow and Joëlle Chan Lun study ICT within the real estate industry, and assess resultant productivity, industry structure and macroeconomic impacts. Highlighting the need for international indicators of performance, Quinyan Fan provides a comparison of Australian and Chinese markets, with a particular focus on deregulation and interconnection. More broadly again, Angus Henderson provides an assessment of WTO principles as related to telecommunications in developing countries. The remaining articles contained in this issue focus on social aspects of the introduction of broadband infrastructure and service availability. Lucy Firth and David Mellor call for social research. Susan Bandias and Siva Ram Vemuri conduct such an analysis, and in doing so highlight the need for a new USO paradigm to assist in the maintenance of a competitive telecommunications market environment. Their application is rural and remote communities in Northern Australia.

Peter Dell in the paper, 'Towards an Asian Structured Cable Planning Model,' notes that communications electronics become obsolete within 3–5 years, but communications cabling has a lifespan often approaching ten years. Clearly, as cabling outlives connected devices, structured cabling systems should use cabling that can support future generations of devices. A consideration in such planning is whether that technology is likely to be widely adopted. To do so requires an understanding of the drivers of individual and organisational adoption. With this in mind a cable planning model is applied to industry survey data to provide a clearer picture of the cable types likely to emerge as dominant to assist organisations to extend the lifespan of their infrastructure.

Michael Minges notes in the paper, 'Is the Internet Mobile? Measurements from Asia–Pacific' that during 2002, mobile telephone subscriber numbers globally surpassed fixed-telephone subscription, while the number of global Internet users reached 580 million (up seven million from a decade earlier). As mobile telephone and Internet use grow, Minges believes that they will merge and lead to rising web access through wireless networks. Available data shows growing non-voice mobile use. A difficulty in analysing the mobile Internet is in defining exactly what the term means. This paper proposes standard mobile Internet indicators that can assist inter-country comparability and improve understanding of trends. An Asia-Pacific focus is taken because key mobile Internet developments have occurred in the region. For example, the Republic of Korea launched the first high-speed mobile network in October 2000, while Japan launched third generation networks based on W-CDMA

technology in October 2001. In addition, unlike Europe, a variety of diverse cellular technologies is in use.

The study, 'A Model for Electronic Commerce Success' by Mohammed Quaddus and Didi Achjari, develops a framework with which to determine e-commerce success. Factors that impact on e-commerce performance are identified from the literature review. These factors are differentiated from their contribution to the success of e-commerce and locus of impact. Modelling is undertaken within a structural equation framework. The final model comprises four exogenous variables (internal driver, internal impediment, external driver and external impediment) and an endogenous variable (e-commerce success) with 24 observed variables. Data are collected from a questionnaire-based survey of large Australian companies. Results suggest that increased benefit (both internal and external) from the use of e-commerce predicts the perceived and/or expected success of e-commerce. However, lowering of impediments (internal and external) does not affect success.

The paper, 'The Grid and CRM: From 'If' to 'When?'' by Ashley Lloyd regards the 'Grid', as an initiative of the distributed computing community that offers unprecedented computing power for organisations to apply in solving their business problems. Uniquely it also offers a communications infrastructure to overcome the 'tyranny of distance'. However, recent reports of the 'death of distance' and a consequent strategy of trans-national companies to centralise operations are tempered by reports of a growing 'psychic' distance with customers. This paper reports the application of high-performance computing to modelling consumer behaviour within a large UK financial services company to predict not only 'if' a certain customer behaviour is likely to occur, but also 'when'. The resultant impact on their CRM strategy leads to the observation that grid computing offers many new opportunities for managing the problem of 'psychic' distance. In particular, such a policy leads to revenue growth by widening the geographic scope of operation and scale efficiency through physical centralisation.

Max Kummerow and Joëlle Chan Lun in their study, 'Information and Communication Technology in the Real Estate Industry: Productivity, Industry Structure and Market Efficiency', review potential real estate industry change due to information and communication technology (ICT). The analysis considers: ICT applications; market structure and productivity; and macroeconomic implications. They argue that improvements in information and productivity may lead to long-run changes in business process and industry structure favouring larger firms, promoting the specialisation of functions. While changing the information structure of real estate decision systems has the potential to alter system dynamics and improve allocative efficiency, better information could increase the amplitude of real estate cycles and destabilise economies.

Qiuyan Fan's study, 'Regulatory Factors Influencing Internet Access in Australia and China: A Comparative Analysis' provides a comparison and a review of policy approaches to regulating the Internet in China and Australia. The analysis identifies factors affecting Internet access in terms of availability and affordability, especially factors that encourage a policy and regulatory environment favourable to the development of Internet infrastructure and access. Preliminary results suggest that the government policy concerning telecommunications service markets and the promotion of information infrastructure impact on affordability and availability. Further, regulatory initiatives to facilitate deregulation and interconnection are needed to establish a more competitive environment in both countries, particularly in China.

Angus Henderson in the paper, 'WTO Principles and Telecommunications in Developing Nations: Challenges and Consequences of Accession' argues that the impending accession to the World Trade Organisation (WTO) of many developing nations will highlight both successes and shortcomings of the Organisation's General Agreement on Trade in Services. Henderson argues that WTO principles can have unintended consequences as evidenced by recent disputes brought under the auspices of the Dispute Settlement Body of the WTO. Indeed, it is important for the world community to bring developing nations within the fold of WTO membership with minimum attendant cost to those nations. This paper concludes that

implementation of WTO principles must be carefully considered, including the impact on society in developing nations.

While the WTO is deserving of praise for its success in formulating principles relevant to the telecommunications sector across nations, for many developing countries the challenges remain in successfully implementing those principles in a manner sympathetic to the needs of the developing world.

Lucy Firth and David Mellor argue in their paper, 'Broadband: Benefits and Problems' that the impact of broadband on social and personal issues needs to be addressed. The received literature typically focuses on the economic impact of broadband deployment and use. Their paper extrapolates from the literature on narrowband in an attempt to identify the potential social impacts of broadband deployment. In so doing, the study identifies a set of concerns relating to nations, organisations and individuals that require further analysis. Only with such analysis is it possible to place the likely broadband future in the context of broader aspirations.

Susan Bandias and Siva Ram Vemuri in their study, 'Rural and Remote Communities in Northern Australia', reveal that poor quality infrastructure, insufficient service provision, highcost access and 'thin' markets impact disproportionately on regional community welfare. Any disparity that exists is further exacerbated as reliance of goods and services delivered via computer-mediated networks increases—further diminishing sustainable economic and social development of remote communities, especially indigenous communities. They examine the current Universal Service Obligation within the context of its applicability in a deregulated, competitive telecommunications environment and its capacity to deliver equitable telecommunications access. The paper concludes with recommendations for a new paradigm that assists in maintaining a competitive telecommunications environment.

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