Preface

DEVELOPING REGIONAL COMMUNITIES WITH INFORMATION AND COMMUNICATION TECHNOLOGIES

It is becoming evident that a "digital divide" is developing between those who are in a position to take advantage of information technology (IT) enabled opportunities and those who are not. This disadvantage can be caused by the lack of access to information and communication technologies (ICT) or by the lack of skills, experience, motivation, support and awareness that are necessary for making good use of ICT. This divide is to a great extent a function of the rural-urban divide, and so disadvantaged groups exist in both developed and developing countries. For example, indigenous populations such as those that can be found in the developed countries of North America, Europe, Australia, New Zealand, together with people from developing countries in the Indian Sub-Continent, Africa, South America and the Asia-Pacific region, are regularly over-represented in statistics relating to the lack of access and use of ICT. Also, people living in regional towns (as opposed to metropolitan cities) in North America and Australia may well have access to ICT, but the actual use of ICT (e.g., home access to the Internet) is well below the national average.

The purpose of this encyclopedia is to outline how ICT can be used for regional transformation and how regional communities can close the digital divide. It does this by bringing together definitions, explanations, research, action research, best practice and case studies to develop and explain policy, practice and theory development in the use of ICT to strengthen regional economies and communities.

This encyclopedia covers the theoretical, thematic and country specific issues of using ICT to develop the social, economic and cultural capital in regional communities around the world. The articles blend theory, policy and practice in a way that encourages an integrative cross-sectoral approach in the use of ICT to increase both social and cultural capital as a means to increased sustainability for regional communities.

Thus, it provides practitioners, regional elected representatives, public service agencies, community groups, international and regional development bodies, researchers, academics and students with successful strategies and principles of ICT use to address regional needs, especially social, health, economic and sustainability problems. It also provides explanations and very practical information on methodologies and hard and soft technologies for practitioners in the field of community development.

The encyclopedia covers five broad topics and sub-categories. The five broad topics are: Theoretical and General Issues; Thematic Issues; Regional and Country Issues; Methodologies; and Technologies.

TOPIC 1: THEORETICAL AND GENERAL ISSUES

This topic comprises descriptive and research articles that outline some of the major concepts and/or develop theories relating to the use of ICT to develop the social, economic and cultural capital in regional communities.

In her article "Civil Society and the New Economy" Susana Finquelievich addresses the issue of the relationship between civil society and the new economy that is being increasingly understood as part of the development process both in the developed and the developing countries. She analyzes the advantages, risks and challenges faced by civil society in the new economic context, and proposes action for civil society organizations. From her account, it is clear that there is a need for civil society to "appropriate" ICT if regional communities are to take advantage of the new economy.

The social appropriation of ICT is emerging as a research and practice field called Community Informatics (CI)—one of the categories of Topic 2 of this encyclopedia. In their article "Assimilation by Communities of Internet

Technologies", Geoff Erwin and Wal Taylor outline how various CI research groups are contributing to the knowledge, policy and practice of enabling of communities with Internet technologies in order to boost local economic and social development, as well as enhance personal empowerment. They describe a project at Cape Technikon in South Africa that aims to establish a research, teaching and community engagement platform in Community Informatics.

Many remote, rural and disadvantaged urban communities in low-income nations are still unable to access ICT tools and services that can help them improve their lives. One way of overcoming this digital divide is by establishing multi-purpose community-based telecentres. This is the theme of the article "Telecentres in Low-Income Nations" by Colin R. Latchem. He describes telecentres as "essentially one-stop shops providing communities with ICT-enabled education, training, information and e-commerce and empowering them in their self-development". His article describes how such centres can help to narrow the technology skills gap and aid development. In the article "Sustainable Telecentres for Local Development", Michele Cocchiglia examines the multiple dimensions of the concept of sustainability as it relates to community telecentres in order to provide new insights and advice to facilitate the development of future initiatives.

Providing ICT access to remote, rural and disadvantaged urban communities can also assist in promoting local culture. Digital libraries permit materials of local relevance to be made available to a wider public, thus reinforcing local culture and development. In his article "Promoting the Culture and Development of Regional Communities with Digital Libraries", Cavan McCarthy outlines specific examples of digital libraries with strong impact on regional communities. He then discusses and evaluates the factors that contribute to the success of community-relevant digital libraries and the constraints affecting the field.

Developments in ICT have eroded traditional spatial and temporal barriers. For example, advancements in the ICT industry have provided a number of firms with the opportunity to lower some operating costs and allow their employees to work from home. In their article "Telework and the Canadian Environment", Stefane M. Kabene, Raymond Leduc and Rick Burjaw outline the importance of this for the Canadian environment. They caution that "working from home is not a panacea for various working environment situations". The article "Connecting Dispersed Communities on the Move" by Juliet Jain and Glenn Lyons examines current understandings of spatiality, regional connection, and travel time within transport studies and the social sciences. It argues that travel time is often actively appropriated for a range of activities, some of which elude quantification and economic evaluation, and thus argues for a new research agenda for travel time use, that considers the many facets of 'on the move' regional connectivity. In her article "Using Virtual Mobility to Alleviate Aspects of Social Exclusion", Susan Kenyon continues the theme of mobility. Her article highlights the role of spatial and temporal accessibility barriers in social exclusion and the role of ICT, specifically, the Internet, in overcoming these barriers. The article suggests examples where Internet use can, not only replace the need to travel, but also provide a new means of access, to activities from which individuals or communities were previously excluded.

The work of those who design, implement, and manage ICT projects aimed at stimulating social and economic development are engaged in activities that have potential to impact the culture of the host community. In his article "Convergence of ICT and Culture", Matthew Mitchell explores three analytical frames in which this cultural impact can be conceptualized: Structural Convergence, Technological Convergence, and Cultural Convergence.

TOPIC 2: THEMATIC ISSUES

This section comprises research articles and case studies that cover various thematic issues of using ICT to develop the social, economic and cultural capital in regional communities. The sub-categories included are: Community Informatics; E-Commerce; E-Governance; Education; Health; and, Tourism.

Community Informatics

Community Informatics—the social appropriation of ICT for local benefit—can help to overcome the digital divide between rural and urban communities in developed and developing countries. In their article "The Need for Community Informatics in Malaysia", Jayapragas Gnaniah, Peter Songan, Alvin W. Yeo, Hushairi Zen and Khairuddin Ab. Hamid describe a baseline study of the Long Bedian community in Sarawak, Malaysia, to determine its communication patterns. Findings from the study revealed that there is a distinct information gap between the Long Bedian community and the urban community. They consider the implications of these findings on the development of a telecentre for the community to help to overcome the digital divide. In their following article "e-Bario and e-Bedian Project Implementation in

Malaysia", they describe the e-Bario project, a community informatics research initiative undertaken to provide opportunities for this remote community in Sarawak, Malaysia, to develop socially, culturally, and economically. The results of the initiative show the many ways in which ICT can be used to improve the lives of the marginalized groups.

A major difficulty associated with implementing community networks is achieving self-sustaining levels of activity. In their article "Critical Mass and Self-Sustaining Activity", Martin R. Gibbs, Phillipa Wright and Michael Arnold identify five factors that contribute to achieving self-sustaining levels of community network activity. These factors are: the aggregation of users and of content; the affordances of networking technology; the shape of community and its relations; the response to community engineering; and the recognition of the technology. In his article "The Arab World, Culture and Information Technology", Mohamed El Louadi considers the cultural aspects of IT adoption in the Arab world. He highlights some Arab traits that are not grasped in existing models of IT adoption.

The concept of the Smart Community is to develop innovative partnerships among community institutions and organisations, including governments, local business and other private sector interests to take full advantage of the digital economy. In their article "Industry-Relevant Smart Community Partnerships", Colin Baskin, Michelle Barker and Peter Woods show how, through united effort, a community is better able to leverage resources to launch projects that both exploit the potential of the ICT infrastructure, and maximise the productive effort of its members.

Web portals have become the most widely used interface for online communities to meet and interact. Those that are specifically designed to provide resources and meet the needs of a particular community are known as community portals. In their article "Measuring the Maturity Level of a Community Portal", Lejla Vrazalic and Peter N. Hyland propose a model for measuring the maturity level of a community portal. The model is based on three development phases, each phase involving a number of social, technical, administrative, funding and policy dimensions, all of which have implications for the long-term sustainability of the community portal. In her article "The South Australian Common Knowledge Community", Helen Robinson describes a project designed to provide a single access point for South Australian communities to share information and improve knowledge, thus raising awareness about the community services sector in South Australia, as a whole. Alfredo Eurico Rodrígues Matta, in his article "Trans-Urbanities and Collaborative Environments in Computer Networks", discusses how network communities can transcend local processes and settings, making possible the construction of trans-urbanities and inter-communities.

E-Commerce

The lack of standard definition for e-commerce presents a challenge to researchers and leads to inaccurate comparisons. In their article "The Definition Dilemma of E-Commerce", Aileen Cater-Steel and Shelly Grist analyse various definitions to create a classification grid. Their recommendations provide guidelines for researchers interested in analysing the adoption of e-commerce by regional communities. ICT researchers and practitioners are well aware of the cultural challenges brought by a global market. In her article "Cultural Barriers of Human-Computer Interaction", Deborah Sater Carstens argues that there is a need to develop a model of cultural barriers to human-computer interaction (HCI) to help designers of ICT avoid these barriers so as to enhance a company's ability to conduct business internally and with international businesses and customers. Kenneth Msiska, in his article "E-Commerce in the Sub-Saharan Africa" examines the growth of the Internet and electronic commerce, the challenges and controversies surrounding e-commerce adoption and the future trend for e-commerce activities in the sub-Saharan Africa.

Sustainable small and medium sized enterprise (SME) growth is a key driver of economic, social and cultural development in regional communities. In his article "Government Procurement ICT's Impact on the Sustainability of SMEs and Regional Communities", Peter Demediuk discusses how ICT can increase the share of the government procurement pie for SMEs if the technologies provide a vehicle for greater transparency and information access. In "Regional Tourism and the Internet in Australia", Patrice Braun discusses the reluctant adoption of e-commerce technologies by regional Australian tourism SMEs. Similarly, Wayne Pease and Michelle Rowe in "E-Commerce and Small Business in Regional Australia" point out that many SMEs, especially in rural and regional areas of Australia, tend to adopt e-commerce 'just by chance' or in a causal manner which tends to be operational rather than strategic. They look at adoption enablers and barriers, and explore these issues via a case study of a regional SME located in the Wide Bay region of Australia. In their article "Adaptive Use of ICT in Response to Disintermediation", Pramod Sharma, Dean Carson and Andrew Taylor discuss how WebMAIL (an online information management system) is an adaptive response to the disintermediation occurring in the Australian travel agency sector as it moves to online product distribution systems from more traditional tourism product supply chains.

E-Governance

ICT offers citizens new ways to engage with democratic processes. In their article "Citizen-Oriented Decision Making", Auli Keskinen and Tuomo Kuosa describe and compare the development work under way in various EU projects on e-democracy by introducing a Citizen-oriented Model that emphasises citizens' needs as the fundamental approach to societal decision making and regards citizens as collaborative decision makers. In "Transforming Democracy through ICT", Andy Williamson describes a five stage model for community ICT engagement and maturity which is non-linear and temporal. Such a model is useful in developing effective e-democracy practices within communities and as a way of mapping progress within a wider community or regional setting. Ulrike Kozeluh, in "E-Democracy as a Contemporary Framework for Citizens' Deliberation", reflects on a theoretical framework for e-democracy and the main controversies and problems of the usage of new media tools in the context of citizens' participation in policy making processes. Similarly, Andriy Pazyuk in "Extended Democratic Space for Citizens' E-Participation" presents some theoretical provisions outlining the concept of e-democracy and its applications assigned to increase citizens' participation in public management. His article describes the methods used to increase the potential of e-democracy, evaluates some cases of e-participation techniques usage and lessons learned in practice.

In "Assessment of E-Government Projects", Rahul De' presents a framework for the assessment of e-government projects in less developed countries. This framework includes an analysis of the supply-side and demand-side stakeholders; an analysis of second order effects that arise from the use of the system; and the issue of incentives that determines the extent of corruption in the system. In his article "Establishing a 'Knowledge Network' of Local and Regional Development Subjects", Olexandr Molodtsov considers the problems of the informational interaction between the state and the subjects of local and regional development and outlines the configuration of information and communication systems of local and regional development.

Education

The adoption and innovative use ICT in education can have positive outcomes for regional development, e.g., boosting opportunities for growth in e-commerce, e-business and e-learning. Of particular importance are the opportunities for collaborative learning afforded by ICT. In their article "Choosing Online Learning Communities or Collaborative Learning" Daniel Teghe and Bruce Allen Knight critique a number of ideas and notions that are linked to the concept of online learning 'communities'. They suggest that, rather than be overly concerned with creating communities, online educators should focus on the pragmatic use of online technologies to provide opportunities for learners to participate and interact on their own terms in online learning environments. The theme of collaborative learning is continued in Giorgio Agosti's article "Distance Education in the Era of Internet" in which the author looks at how modern distance education is taking advantage of ICT by transforming self-study into collaborative learning and increasing the impact of education on communities. Bijan B. Gillani, in his article "Problem-Based Learning and the Design of E-Learning Environments" discusses the design and the development of an e-learning site that applies a problem-based learning model to create educational environments that encourage students to be assisted by faculty and more capable peers for deeper understanding of the curriculum. In "Cognitive Theories and the Design of E-Learning Environments", the same author discusses how cognitive developmental theories have contributed to the design, process and development of constructive e-learning environments, and describes an example developed by NASA that used the Web as an appropriate instructional delivery medium to apply Piaget's cognitive theory to create e-learning environment.

The use ICT in education is particularly important in developing countries. In their article, "ICT and Distance Learning for Agricultural Extension in Low Income Countries", Colin R. Latchem and Ajit Maru describe how ICT and distance learning can be harnessed to the newer extension methods to provide greater access for these smallholders and includes examples of how these new methodologies and technologies are being applied around the globe. Antonio Santos, in "Information Literacy for Telecenter Users in Low-Income Regional Mexican Communities" proposes a methodology to increase information literacy among people who attend telecenters in low-income communities in Mexico. The author suggests the employment of an alternative perspective on the use of ICT for social development based on information literacy and social constructivist pedagogy. Higher education in Africa is tasked with the duty of creating the capacity for sustainable development and the democratization of knowledge. In his article "Preparing African Higher Education Faculty in Technology", Wanjira Kinuthia presents an overview of the state of ICT in African higher education institutions in relation to challenges and opportunities. In his article "Expanding E-Commerce into E-Ducation", Kirk St.Amant presents ideas on how creating strategic partnerships between businesses and educational institutions can lead to e-commerce relationships that help both parties succeed in the globalized economy.

The projects described by Greg Whateley, Ian Bofinger and Peter Calvo in their article "'New Frontiers for The New Australian Institute of Music", represent a bold step forward by The Australian Institute of Music (AIM) to make its mark on the regional, national and international market. The article outlines the processes by which 'The Virtual Institute of Music' and 'The Virtual Institute of Management Sciences' entities have been integrated into the operation of the larger Institute giving domestic and international students a whole new range of delivery and content options. Leone Wheeler and Cheryl Lewis-Fitzgerald describe the development of RMIT Learning Networks over a period of four years in their article "Building a Framework for the Development of RMIT Learning Networks". Although it began as a technology-led network based on the delivery of accredited programmes in local community learning centers, it is evolving into a framework based on community engagement and the development of sustainable partnerships with a range of organisations across not-for-profit, business, government and education. Susan Crichton looks at how to help at risk youth stay in school and adults return to learning centres, in her article "Intentional Online Learning Plans", and reports on the literature as well as a case study of actual practice with intentional online learning plans.

Health

The use of ICT in medical education and primary health care can improve the acquisition and dissemination of knowledge across geographic boundaries. In their article "Medical Education in the 21st Century", Stefane M. Kabene, Jatinder Takhar, Raymond Leduc and Rick Burjaw argue that in spite of many positive aspects of ICT in healthcare, much remains to be done, especially in developing countries, to make it fully effective and avoid the deepening of the digital divide in healthcare education. Zubeeda Banu Quraishy, in her article "Implementation of a Health Information Systems Programme" comments that the quality of existing information management practices within the Primary Health Care (PHC) sector in Andhra Pradesh in India is extremely poor. She describes a Health Information Systems Programme that seeks to strengthen information practices within the Primary Health Care (PHC) sector with the larger aim of improving health care delivery for the rural community.

Tourism

Developments in ICT impact on the tourism and hospitality industries in regional destinations and sound business planning is required to enable tourism and hospitality enterprises to cope more effectively with the rapid rate of change. In "Developing Regional Tourism Using Information Communications Technology", Dean Carson examines a small number of ICT initiatives which may present opportunities for the continuing development of regional tourism industries. Patrice Braun, in her article "E-Commerce and Small Tourism Firms", focuses on regional network development within the tourism industry and discusses some of the issues small tourism firms are facing in becoming part of the networked economy. Recent developments in national tourism policy in Australia and a growing volume of literature signal increasing recognition of the role of strategic information and research commodities in the growth and sustainability of regional tourism. In Australia there is a poor history of application for such commodities by tourism firms and organisations. In his article "ICT and the Tourism Information Marketplace in Australia", Andrew Taylor examines a conceptual model of the marketplace in which tourism information commodities are exchanged, the Tourism Information Marketplace (TIM), demonstrating the potential for ICT technologies to promote the diffusion and application of information commodities. For tourism operators, destination marketing systems offer the benefits of website marketing together with the benefits of cooperative marketing. Glen Hornby illustrates how stakeholder issues can present obstacles in taking advantage of destination marketing technology, and examines the issues that affect tourism operator participation, in his article "Developing Regional Destination Marketing Systems".

TOPIC 3: REGIONAL AND COUNTRY ISSUES

This section comprises research articles and case studies that discuss the use of ICT to develop the social, economic and cultural capital in communities in specific countries, in Africa, the Americas, Asia, Caribbean, Europe, Indian Sub-Continent, Middle East, and Oceania.

Africa Region

The successful integration of ICT into Africa's governance is threatened by a number of technological and human barriers. In"E-Africa Initiative for Good Governance", Gianluca Misuraca highlights the main challenges for e-governance in Africa and presents the key elements of the Framework for Action and the draft Plan of Action, as agreed by the promoters of the e-Africa initiative, CAFRAD, NEPAD and UNDESA. In the "NetTel@Africa", Matthew Mitchell describes the purpose, structure, principles, practices, and lessons learned of the NetTel@Africa program developed through a transnational collaboration of university, regulatory, private sector, and governmental organizations. "Telecommunications Sector and Internet Access in Africa" by Vanessa Phala summarizes the key findings from two main research projects conducted by the Research ICT Africa! network members between 2003 and 2004 namely, the Fair Access to Internet (FAIR) Report and the Sector Performance Review.

The initiative described by Sylvie Siyam Siwe and Clarisse Loumou Loe in the article "Open and Distance Programme for Rural Women", aimed to use open and distance training programme to empower rural women and enable them to implement income generating activities and to practice effective local leadership in Cameroon. Countries with developing economies like Ethiopia are faced with chronic underdevelopment. In Ethiopia, for example, 82% of its population lives under US$1.00 per day. Solomon Negash, in his article "ICT for Ethiopian Community Development" addresses two critical issues to reverse underdevelopment: ICT assimilation and ICT supported local content development. Godfred Frempong and Imoro Braimah tackle the issue of access to ICT services in Ghana in their article "Assessing Universal Access to ICT in Ghana". They argue that although considerable progress has been made in improving access to ICT in Ghana, most of the services are urban based, and interconnection, affordability and low e-literacy level remain challenges that need to be addressed. The article by John Pryor describes a development awareness initiative in Ghana—the Fiankoma Project. His article "Analysing a Rural Community's Reception of ICT in Ghana", reports on people's attitudes to ICT before the intervention, describes the project's approach to using digital media and appraises its effect on attitudes towards community development. It then develops a framework for considering how the use of ICT might impact on rural people in disadvantaged contexts. Pamela McLean provides an illustrative case study on how the informal communications infrastructure in rural Nigeria is being overlapped with the communication systems provided by the Internet and other ICT, in her article "An ICT Enabled 'Community' in Rural Nigeria and the UK".

Several of the articles in the encyclopedia describe South African ICT development initiatives. The article by Nicole Arellano, Wallace Chigona, Jeanne Moore and Jean-Paul Van Belle, "ICT-Based Community Development Initiatives in South Africa", gives an overview of the wide range of initiative types that are being undertaken, rather than attempting to be a comprehensive census. Thus it serves as a good introduction to the different intervention models which are being followed. The article "Clustering Dynamics of the ICT Sector in South Africa" by Sagren Moodley focuses on the analysis of two regional ICT cluster case studies in South Africa which illustrate a clear and intensifying concentration tendency of ICT-related production and research and development. Johnathan Trusler and Jean-Paul Van Belle present an in-depth case study analysis of a rural telecentre in their article "A Rural Multi-Purpose Community Centre in South Africa". Teresa Peters uses the City of Cape Town to provide an illustrative example of a local government committed to putting ICT to work for social and economic development, and driving the changes necessary to ensure ICT is used effectively, in her article "Crossing the Digital Divide and Putting ICT to Work to Improve People's Lives".

In their article "Improving Electronic Information Literacy in West African Higher Education", Ibrahima Poda and William F. Brescia describe some of the obstacles and the main challenges affecting electronic information literacy in Sub-Saharan West Africa, which include limited telecommunications infrastructure, weak policy and regulatory frameworks, limited human resources, and lack of support and expertise. Although a number of higher education institutions have established distance education departments, and new ways to use the Internet including video-conferencing and other multimedia applications, the authors argue that strategic planning and campus leadership are needed to improve ICT applications in Sub-Sahara. In his article "Forging Partnerships to Provide Computer Literacy in Swaziland", Cisco M. Magagula examines the impact of the Computer Education Trust (CET) set up in Swaziland to extend computer literacy and vocational ICT to every child in secondary and high schools in Swaziland. The author concludes that CET faces some major challenges in that there is a lack of a curriculum on computer education that is examinable, there is a low level of ICT education in schools, there is a lack of properly trained teachers to teach computer education as a fully-fledge subject in the school curriculum, and the slow pace of building computer laboratories by schools since this depends upon school fees and contributions from parents.

In his article "How the National E-Strategy Shapes Competitiveness in the Information Economy", Alf Neumann discusses the connection between an e-strategy and the development of dynamic ICT businesses in Tunisia. The article "E-Mail as a Teaching Supplement in Tunisia" by Mohamed El Louadi reports on an experiment conducted at the Higher Institute of Management in Tunisia over three consecutive years that involved the use of e-mail for communicating with and distributing lecture notes to students enrolled in an elective course. Peter G. Mwesige examines the promise and limits of Internet use and access in Uganda in his article "The State of Internet Access in Uganda". The article focuses on the users of two major public access points: Internet cafés and telecentres. It argues that while more Ugandans are getting online following the proliferation of such public access points, the risks of exclusion of large sections of the population from the information society remain.

Americas Region

Many ICT-based regional development initiatives have been initiated by governments in the Americas, including virtual communities, local or regional portals, and e-marketplaces. In their article "E-Business for SME Development", Éliane M.-F. Moreau, Louis Raymond and Bernard Vermot-Desroches outline the needs of manufacturing and technological SMEs in the Mauricie region of the province of Quebec, Canada. They identify promising initiatives for the development of SMEs, including the integration of tools and advanced business practices within a regional e-business appropriation portal.

In "Leveraging Digital Multimedia Training for At-Risk Teens", Timothy Shea and Craig Davis describe a programme in the USA in which 15 inner city, at-risk teenagers were provided a unique summer learning opportunity creating a high-quality 26-minute video documentary with audio, music and video tracks. Their article describes this extremely cost effective community-based ICT project, the students' experiences in this program, and how the right technology combined with the right curriculum can dramatically enhance an educational experience, open up new career opportunities, and improve the economic capital of a community.

Ester Kaufman in "E-Government and E-Democracy in Latin America" reports on the stages of development of e-government in Latin American Countries. The stages of development of e-government are discussed on the basis of the existing models and other models which are developed by the author; alignment with the literature; and, an examination of the national portals. Simone Cecchini in "Poverty, Inequality and New Technologies in Latin America" introduces theories and data that explain why an internal divide exists within Latin American Countries, presents projects that are attempting to use ICT for poverty reduction, and proposes policies to create a more equal information society.

Asia Region

In his article "Telecommunication Problems in Rural Areas of Armenia", Gevorg Melkonyan outlines the importance of ICT for sustained and dynamic development of villages and in the integration of the agro-industrial sector of the country into the global economy. He concludes that a solution to the problem of general access of the population to the Internet and ICT in Armenia is possible only by means of the creation of community Internet centres in the small towns and villages together with familiarization programs for the population.

In "The Role of Multinationals in Recent IT Developments in China", Michelle Rowe explores developments in China with respect to the IT industry. She provides examples of investment activity by multinationals and an overview of the industrial city of Shenyang in north east China, with IT playing a major role in this development. The same author, in the article "Information Technology Standards in China" describes China's stance in relation to the setting of standards.

Kelly Hutchinson, in "Cambodian Youth Making Connections" contends that the uptake of new ICT highlights the emergence of an urban elite; a digital elite whose use of ICT is helping define the new generation and secondly facilitate connections that build community within the Khmer diaspora. In "Pedal Powered Wireless Internet in the Laotion Jungle", Neil Anderson describes an exciting project undertaken by the Jhai Foundation to bring wireless, pedal-powered, Internet connectivity to isolated Lao communities to improve communications and trade. The article includes a discussion about the technical features of the project, the staff involved and their roles along with a broader examination of important issues associated with bringing new technologies to people living in traditional lifestyles in isolated communities, such as cultural imperialism and sustainability.

In "Planning for Electronic Government in a Remote Malaysian Site" A. Lee Gilbert lays out a basic structure, process, and content for a plan for the electronic delivery of government services, and provides a planning template that serves

as a starting point for jurisdictions in a similar context. Jayapragas Gnaniah, Alvin W. Yeo, Hushairi Zen, Peter Songan and Khairuddin Ab. Hamid describe the "e-Bario and e-Bedian Project Implementation in Malaysia". They compare the approaches taken in initiation, implementation as well as the outcomes of the e-Bario and e-Bedian project.

"Introducing Electronic Governance in the Philippines" by Vicente D. Mariano describes how the government of the Philippines is poised to maximize the use of ICT to improve public service at the local government level through the adoption of the E-LGU Project, which advocates the use of open-source technology, reduction of our heavy reliance on expensive proprietary software and consequent up-to-date training and upgrading. Ian Weber and Eric T.K. Lim in their article "Selling Singapore's E-Lifestyle Initiative to Late Adopters" examine the communication strategies employed by the Infocomm Development Authority of Singapore (IDA) to promote the diffusion of the world's first nation-wide e-lifestyle initiative. Findings indicate that IDA's social marketing strategies played an important role in the success of NITLP because they identified and linked cogently to the communication behaviors, attitudes and cultural values of targeted groups. The lessons learnt from Singapore's e-lifestyle initiative serve as key indicators to countries in the Asia-Pacific and internationally of how to conceptualize, implement and foster community involvement in the development of e-inclusive societies and knowledge-based economies.

Thailand has had an ICT leapfrogging initiative under consideration and development for a number of years. In their article "Technology Leapfrogging in Thailand", Louis Sanzogni and Heather Arthur-Gray point out that the initial impetus appears to have stalled somewhat, so some parallels are briefly drawn with the successful advancements in technology leapfrogging enjoyed by South Korea in the hope that this will highlight opportunities for Thailand. In the next article, Heather Arthur-Gray and John Campbell consider "Education Trends in Thai Businesses Utilizing Information Technology". Their article incorporates an analysis of Educational trends from a survey of non-agricultural Thai businesses in Chiang Mai. The research considers the employees in these businesses, what the current trends are, and whether these trends may or may not support electronic enablement and digital divide reduction. In "Wireless in Vietnam", A. Lee Gilbert explores the dynamics of the interplay between demand and supply in the context of the interests of the key actors in mobile services, and then applies scenario analysis, as a useful planning tool for evaluating entry mode and policy options, to the case of evaluating investment in the mobile sector in Vietnam.

Caribbean Region

E-commerce in Caribbean developing countries is viewed as a complex but challenging business issue. In these small island states, the peculiar set of social, economic, technical, and legal issues tend to affect these economies. Although businesses in the Caribbean Region have realised the potential benefits that can accrue from e-commerce, several challenges remain to be faced before they can 'leap-frog' into the global economy. In his article "E-Commerce Challenges for Caribbean Businesses", Richard M. Escalante uses the results of a 2002 'Barriers to E-commerce' country survey, to examine both the economic and non-economic obstacles faced by businesses, given the present developments toward a liberalised economy in the Region. Simon Fraser, in his article "Caribbean Companies and the Information Superhighway" seeks to highlight that while the Internet can provide companies in the English speaking Caribbean with significant opportunities, there are also potential negative consequences. Specifically, these include downward pressure on prices, loss of market share and in extreme scenarios almost total loss of markets. In her article "ICT and the Efficient Markets Hypothesis", Andrea J. A. Roofe discusses the contribution of ICT to the level of efficiency of the Jamaican financial markets. In her article, Marilyn Lewis considers "ICT in Medical Education in Trinidad and Tobago".

European Region

In their article "Employability Management of ICT Professionals", Dora Scholarios, Esther van der Schoot and Beatrice van der Heijden examine the management of employability of ICT professionals by small- and medium-sized enterprises (SMEs) in Europe. The article uses secondary data to characterize the ICT sectors in seven countries representing a range of markets, from highly developed to small and emerging, and presents a qualitative study of managers' in ICT SMEs attitudes towards employability and its management. Tarmo Kalvet, in "Digital Divide and the ICT Paradigm Generally and in Estonia", analyzes Internet usage among the Estonian population and specifically takes a closer look at Internet non-users and related barriers.

The article "Connecting the Unconnected in Rural Ireland" by Anneleen Cosemans describes the pilot project Schoolsat in Donegal which ran from February 2002 to February 2003 and was to investigate the potential of satellite

to provide Internet connectivity for schools. The article gives an account of the precise objectives of the project, its background and the major observations that came out of it about the nature of usage of the Internet in the participating schools, the learning benefits, the gender patterns and barriers to the success of the project.

There is ongoing global interest in the building of community memory for purposes of preserving cultural identity, documenting local history, promoting tourism and examining shared heritage. In "Capturing Community Memory with Images", Ted Leath describes the Magee Community Collection project, which demonstrates how ICT can be used to augment and enhance the capture and preservation of community memory.

In their extended article "Building Human-Centered Systems", José L. Moutinho and Manuel Heitor consider the development of selected projects which have been engaged in building information and communication networks in urban and regional environments, with the ultimate goal of developing networked places (or "digital cities and regions"). They argue that such networks have the potential to attract and mobilize people into a "culture of knowledge" and make public administration and markets more effective, but require, nonetheless, effective infrastructures, incentives and adequate institutional frameworks across time and space. In their article "ICT, Education and Regional Development in Swiss Peripheral Areas", Chiara Giorgi and Dieter Schürch look at the role of ICT in regional development and its influence socio-cultural identity, and examine several Swiss case studies.

Virtual Communities are new types of human groups that are facilitated by the advances in ICT. In his article "Developing Regional Communities in Turkey", Melih Kirlidog investigates obstacles and emerging virtual communities in rural areas of Turkey. Koray Velibeyoglu describes "Urban Information Systems in Turkish Local Governments", exploring the organizational and institutional issues associated with implementing urban information systems in the context of Turkish Metropolitan Municipalities.

"Distance Learning, Telematics and Rural Social Exclusion" by Matthew David seeks to build upon empirical research into distance learning via telematics through the examination of a project in the southwest of the United Kingdom. It discusses the theoretical and political difficulties that emerged when seeking to understand practical communication breakdowns in computer mediated learning and the associated action research designed to facilitate such learning, but which relate to the wider domains of both policy making and political practice.

In "Civic Space Portal", Olesya Arkhypska, Svitlana Bilous and Vitaliy Yarinich describe an NGO portal—the Civic Space Portal—that was created as an information and technological facility to improve e-presence and catalyze the influence of the third sector within Ukraine. Serge S. Azarov investigates the problem of identity in the emerging information society in his article "The Information Society in Ukraine".

Indian Sub Continent

In "Formation of a Knowledge-Based Society through Utilization of Information Networking", Hakikur Rahman discusses the concept of a distributed learning system that uses advances in technology to address relatively high levels of illiteracy. A challenge remains for the existing educational system, particularly the University sector to collaborate and bring their ICT infrastructure, knowledge and capacity into a collaborative effort which can then act as a backbone for Bangladesh to develop a platform for an Information Society.

The Indian economy is performing well in ICT growth but lags behind in ICT diffusion. It is important to give more attention to ICT diffusion as it will help in use and accessing ICT and its application thereby increasing productivity and achieving regional economic development. The article "ICT in Regional Development", by Saundarjya Borbara and Mrinal Kanti Dutta discusses a case study of Community Information Centres of Assam in North East India, a project implemented by Government of India to provide IT accessibility and its application in the rural areas of the region. Ashok Banerji and Saswata Basu describe a novel project in their article "ICT Aided Education for People's Empowerment". The primary focus of the project was to promote education and health awareness through the efficient use of ICT. The authors believe that the method of deployment is important rather than the technology itself. The "One Village One Computer Campaign in India" described by Anil Shaligram strives to facilitate the flow of subject knowledge held by experts to the contextual knowledge held by people and vice versa so as to lead to development.

In the article "Imagining APNA Punjab in Cyberspace", Anjali Gera Roy explores the reconstruction of a North Indian ethnic group, dispersed by the partition of the Indian subcontinent in 1947, in electronic space aided by digital and satellite networks, which interrogates the cartographic impulse in the making of the modern Indian nation that caused a rupture in the community's collective memory. The Integrated Child Development Services provides a package of services to children of 0-6 years and women of 15-45 years. Malathi Somaiah and V. Vijayalakshmi's article "Information Communication for Child Development Service" assesses the existing status of ICT in the delivery of these services. They argue for a well planned Management Information System at the taluk and district level.

Middle East Region

Traditional media tools in Saudi Arabia such as television and press are largely controlled by the government and any content considered as undesirable likely to be disseminated from them is generally censored. This has made it difficult for people with alternate points of view to get their messages across to others. The introduction of the Internet in the country and the emergence of political online communities (POCs), however, completely altered the situation. In "Political Online Communities in Saudi Arabia", Yeslam Al-Saggaf and John Weckert present the findings of an ethnographic study of POCs in Saudi Arabia, and discuss their role as media tools and facilitators of freedom of expression.

Oceania Region

In "Electronic Government in Small Island States", Janet Toland, Fuatai Purcell and Sid Huff explore the potential that recent developments in e-government offer to small island states. Their findings show that the use of websites and email is common in the public sector in the South Pacific, though there is little transactive use. The main opportunity offered by e-government would be increased transparency, and the main barriers were the low priority it was given by government, and poor telecommunications infrastructure.

Responsibility for the provision of broadband in regional Australia however is unclear, and yet Australia State and Federal governments are continuing in their push to reduce service delivery costs by providing more government services online and via broadband links. In her article "National Competition Policy and Broadband Provision in Australia", Alicia (Lucy) Cameron posits a model whereby local governments take on the responsibility of bandwidth provision (through either attracting external providers or constructing their own infrastructure), and are resourced through the horizontal fiscal equalisation process. In their article, Karin Geiselhart and Peter Jamieson consider "Sustainability Issues for Australian Rural Teleservice Centres". They show how successful rural teleservice centres have been able to use technology holistically to provide the flexible services and training to help them through turbulent times. Rather than being seen as a form of rural welfare, support for these technology hubs can be a valuable national resource for governments at all levels. In the article "Determining Whether ICT Improves Social Interactions", Raj Gururajan presents the results of a pilot project to ascertain whether ICT actually improves the quality of life by facilitating social interactions. In their article "ICT and Regional Development in Australia", Wayne Pease, Michelle Rowe and Lauretta Wright describe the development within the Hervey Bay region of Australia of information technology infrastructure which has in recent times, spawned the development of community based information technology driven organisations.

Gulf Savannah Development (GSD) is a not-for-profit regional development organisation for the Gulf Savannah, a remote, rural region of north Queensland, Australia. In her article "ICT and Developing Social Capital", Kate Sutcliffe discusses GSD's endeavour to encourage greater use of ICT as a tool to build the networks that would broaden the social capital base and deliver e-democracy and e-commerce through the Gulf region. Remote communities in Australia have access to increasingly sophisticated technology: Intranets and the Internet are now standard. Technology has been promoted as a means to overcome "distance" yet distance increases the difficulty of implementation, use and maintenance of technology. In "Workarounds and Security", Fiona Brady explores an example where the expectation and reality of the technology diverged, to identify different types of distance, and to trace some factors and choices that composed this situation. The article explores a short conversation about how to "workaround" the computer security in a remote indigenous council.

There are many potential benefits that remote Indigenous communities in Australia can gain from ICT, including increased employment opportunities, better service delivery, enhanced communication and support for cultural maintenance. Yet these people are currently severely disadvantaged with respect to ICT delivery. In her article "Remote Indigenous Australian Communities and ICT", Laurel Evelyn Dyson explores the issues which are critical in limiting these communities' access to ICT and critiques the Australian government's strategy to overcome these problems, which to date has largely focused on improving ICT infrastructure and has ignored many of the social, educational and cultural issues.

In her article "ICT for Social and Cultural Capital in Pacific Island Communities", Usha Sundar Harris explores the potential value of the Internet for community development and cultural participation in Pacific Island communities. She presents a case study of Internet development in Fiji, focusing on the current technological condition, impediments and milestones, and the potential use of the Internet by local communities. In his article "ITC Policy and Practice in the

Fiji Islands", Graham Hassall outlines how the need to consider both national and regional development has impacted on ICT utilization and policy in Fiji. The article also considers the "Pacific Plan"—a "digital strategy" to maximise cooperation in the development ICT initiatives for the Pacific region. The article "Impact of PFnet Services on Sustainable Rural Development" by Anand Chand and David Leeming examines the role of People First Network (PFnet) services in enhancing information and communication and contributing to sustainable rural development in Solomon Islands. More specifically, the article examines two main issues. First, it examines the uptake and appropriation of PFnet services by rural Solomon Islanders. Second, it examines the impact of PFnet services on sustainable rural development.

TOPIC 4: METHODOLOGIES

This section comprises articles that provide practical advice on methodologies for the research and development of the social, economic and cultural capital in regional communities.

Giacomo Rambaldi in the article "Participatory 3D Modelling" analyses the applications of Participatory 3D Modelling (P3DM), a community-based mapping method used to bridge the gap existing between externally supported geographic information systems (GIS), and capacities found among marginalised, isolated and resource dependant communities.

Lynne H. De Weaver examines the complex process of applying for grants in her article "Applying for Government Grants for ICT in Australia". Sustainability, scalability and reproducibility are criteria essential to the successful widespread proliferation of the Internet through schools-based community training centres in developing countries. In his article "Schools-Based Community Networking in Uganda", Daniel Stern presents strategies used in a schools project in Uganda that seem to meet those criteria.

Implementing new business models to achieve competitive advantage in the techno-economic innovation paradigm bring to the fore ICT adoption, strategic planning and network issues. In "Action Research Methods", Patrice Braun builds on the concept that global positioning and competitive advantage for small and medium size enterprises (SMEs) may be achieved through connectivity and clustering, and discusses research into the adoption of networked technologies by SMEs.

The lack of research and research models relating to the impact of ICT on sustainable development, generally, and more specifically relating to African rural women, has been noted by a number of sources. In her article "South African Women's Rural Development and E-Commerce", Jo Rhodes addresses the current void through contributing to the qualitative research body of knowledge. It charts the process taken to construct an ethical, qualitative research model with which to investigate decision makers' perceptual understanding of marketing and e-commerce relating to trading activities within a South African rural women's organisation.

The transformations of ethnographic practice that may result from collaborative Web-based and Web-oriented ethnographic research can be summarized as a series of moves from participant observation to creative observation, from field entry to field creation, and from research with informants to research with correspondents and partners. In "Web Site Development in Action Research", Maximilian C. Forte pays attention to the process of Website development itself as a research method with its own specificities and its own ethical considerations, thereby addressing a gap in the literature on collaborative ethnography and action.

Sociocultural Animation is a way of mobilising the social and cultural participation of individuals and community members so that they become actively engaged in their personal development and in the development of their community. In his article "Sociocultural Animation", Marcus Foth unpacks the social, cultural and educational dimensions that make up the foundation of sociocultural animation, and briefly describes some of the underlying principles and how they can be applied in the context of community informatics and developing regional communities with ICT.

TOPIC 5: TECHNOLOGIES

This section comprises articles that provide practical advice on the use of ICT to develop the social, economic and cultural capital in regional communities. The articles describe various technologies for building communities, including: voice-over-IP, satellite, open source software, radio and digital libraries.

Jiankun Hu gives an "Mobile Ad Hoc Networks", providing a historical overview on the evolution of network technologies starting from conventional circuit switching networks to data switching Internet, and then discussing the

existing data network technologies as well as emerging mobile networking technologies. Savvas Papagiannidis, Joanna Berry and Feng Li discuss "Potential Implications of IPv6 for Regional Development" and provide an analysis of the implications that this new technology may have for more the well-established medium of television broadcasting. In "Voice Over IP for Rural Telecommunication Provision", Thomas Wilsdon and Jill Slay provide a review of the technical and legal issues raised in the use of a wireless Voice over IP solution for rural telecommunication provision.

Wireless technologies, in particular, have a number of features which make them the best candidate for developing countries wanting to create a communications infrastructure at low costs and in a short time frame. In the article "Innovation in Wireless Technologies" Diego Ragazzi the multiplicity of heterogeneous wireless technologies that have been designed and deployed, to better fulfill specific user needs in different scenarios. In "Satellite Technology in Schools", Anneleen Cosemans gives an account of the SchoolSat trial—a 14 month project that interconnected nine schools in County Donegal, a remote and rural region in the north-west of Ireland. She describes the objectives and motives of the project, the phases, the participants and the technology used.

Patrick Craddock and Peggy Duncan, in their article "Radio for Social Development", explore how radio is a strong and effective teaching tool if it is supported by other educational inputs using theatre, print and other media educational tools. By giving an overview of radio usage for education in several countries of Africa and the South Pacific, the article shows how structured information presented in an Entertainment-Education radio format reaches, holds the attention of and educates rural audiences.

The last decade has witnessed the evolution of a number of technologies which have proven to be a boon to the visually impaired. In "Modern Tools and Technologies for the Visually Impaired", Anirban Lahiri and Anupam Basu discusses some of these technologies and also aims to explain the significance and use of such innovations to the visually impaired user.

Digital libraries offer significant selections of books, journal articles, photographs and similar documents, selected from the collections of libraries, archives, historical and cultural associations. Maria F. Trujillo, in her article "Digital Libraries and Development for the Illiterate", discusses how digital libraries software provides a unique opportunity to bridge the various divides: literacy, digital and social. The article outlines a future in which an icon-based (iconic) digital library would not only be fully searchable by an illiterate user without the use of text, but could also be used to train communities in disaster preparedness. In his article "Digital Library Structure and Software", Cavan McCarthy discusses the treatment of both images and text in typical digital library contexts, and the specialized digital library software that is now commonly used.

In "Free/Libre Open Source Software for Bridging the Digital Divide", Yu-Wei Lin argues that FLOSS helps developing regional communities by improving ICT capacity and empowering users. Given the shared code that can be used, copied, studied and modified and redistributed by users freely, FLOSS not only reduces the development costs, but also provides the opportunity to fix a bug or customise a programme for local users' own requirements. However, the author also argues that, while FLOSS could be a silver bullet for bridging the digital divide, the relationship between the ICT expertise and the local cultures should be examined more carefully in order not to lose sight of a symmetrical development. Jean-Philippe Rennard moves the debate from open source to open access resources in his article "Producing and Sharing Free Advanced Scientific and Technological Knowledge Using the Internet". He points out that, given rising journal costs, even the wealthiest institutions often cannot afford access to many important scholarly publications, and universities in developing countries are inevitably cut off from recent knowledge. His article discusses the emerging economic model of open access, to show that it can contribute to narrow the scientific information gap between North and South. It also presents ways to access this information and tools to develop regional scientific information sharing systems.