

Modelling Future Communication Communities: Narrowband and Broadband Trials in Canberra, Australia

The Broadband Services Expert Group in Australia, in its recent final report *Networking Australia's Future*, recommended support for trials of narrowband and broadband innovations. This paper briefly outlines the planning under way for major trials of Internet and broadband in Canberra. The Canberra Telecommunity Project, co-ordinated by the University of Canberra, is an attempt to monitor and to evaluate the impact of new telematic infrastructures and, with community and industry participation, to create prototype services for delivery over complex interactive networks. Work being conducted at the Universities of St. Gallen and Constance is also directly relevant to the project, including the Electronic Mall Bodensee, KHS hypertext and research on electronic markets.

Canberra, in the Australian Capital Territory (ACT), is the capital of Australia and has a population of approximately 17 million people. Apart from kangaroos,

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Canberra has a population of approximately 300'000. Commercial and non-commercial content providers in Canberra, and nationally, are keen to study the role of the Internet and future broadband services in providing information to citizens and businesses and as a new communicative form. Canberra has been chosen as a test site for Australia's major broadband trial. The University of Canberra is coordinating the Canberra Telecommunity Project for the trials, including work on the Internet.

The Canberra Telecommunity - Gungahlin

Australian Telecom (Telstra) and the ACT Government propose to link broadband to at least 5'000 homes in Gungahlin, a new residential area of Canberra. The precise infrastructure will clearly set parameters for the kinds of services and features that will be possible, but it is envisaged that Full Network Service and 500 channels will be provided. The University of Canberra has established a steering committee with participants from industry and the community involved in research on possible prototypes of services for delivery in network and broadcast environments. The aim of the collaborative Canberra Telecommunity Project is to:

- provide indicative data on services and information that are basic to the whole community,
- provide projections on the nature of demand and the volume and ratio of digital traffic in and out of the home,
- explore the social effects of lifestyle changes brought about by the new communication networks,
- explore the educational effects of the Internet,

- conduct experimental work on the provision of interactive news,
- conduct experimental work on the provision of electronic markets,
- conduct experimental work on the provision of Internet hypertext,
- create an 'interactive' environment for the collection of data.

Evaluation

The model for the investigation by the University of Canberra is currently being developed, but the experiences of the Swiss PTT broadband trials [4] and Electronic Mall Bodensee provide an obvious starting point, together with work on electronic markets at both University of St. Gallen and University of Constance.

The Canberra Telecommunity Project differs from many previous trials because it is longitudinal and brings together a range of content providers, commercial and non-commercial, in a systematic fashion for empirical and theoretical work. The theoretical purpose of the University of Canberra study is to identify and to explore the social and communication networks that underpin 'technical networks', and to evaluate 'qualitative growth', over time [4]. Personal Construct Psychology and diffusion of innovations methodology will be modified to collect quantitative and qualitative data about how people make sense of, and use, telecommunications, computing and media services for everyday purposes at personal, group and social network levels (see also previous work on methodology in [1], [2]).

The idea of 'purposes' is important in evaluating qualitative growth and estimating demand for broadband services. Sen [6] suggested that commodities should be seen in terms of their characteristics. For example, a bicycle is treated as having the characteristic of 'transportation', and this is the case whether or not the particular person happening to possess the bike is able-bodied or crippled. Bread, another example Sen uses, can be split into different types of nutrition, related to calories, protein, and so on. In addition to nutrition-giving charac-

teristics, bread possesses other characteristics, such as helping get-togethers over food and drinks, meeting the demands of social conventions or festivities. For a given person at a particular point in time, having more bread increases the person's ability to function in these ways. But in comparing the functioning of two different persons, we do not get enough information by looking merely at the amounts of bread enjoyed by the two persons.

Similar considerations apply in the assessment of information and communication needs and the creation of electronic markets. Frequency of usage of telecommunications, computers and media should be understood in terms of the 'functions' or, more precisely, purposes of those technologies in a particular person's social and psychological context. A bicycle, for example, has the characteristic of 'transportation'. This is a function of a bicycle or a purpose for having a bicycle. A bicycle can have other characteristics, but transportation may be perceived as essential.

Methods

In the Canberra Telecommunity Project, electronic diaries will elicit data on purposes: (i) telephone calls (e.g. the purposes of inbound and outbound calls, time, etc); (ii) media consumption (e.g. uses of computers, television, radio, newspapers, books, etc); (iii) usage of other information sources (e.g. library, citizen's advice, etc.). Appropriate software will be used to enable on-line or personal computer recording of data. Personal interviews will elicit data on awareness of current and future technologies and services, which technologies and services people take to be essential in their information and communication activity, and which activities would fit into an 'interactive' environment (projected demand).

Questionnaires will elicit data on demographics and current telecommunications facilities in homes in Gungahlin. Communication network analysis will elicit data on communication structures, including the frequency and nature of contacts at personal, interpersonal and group levels. Negopy and Fatcat, computer programs designed to study communication networks quantitatively and qualitatively, will identify: (i) those who interact with each other relatively more frequently than with other members of a network, (ii) communication roles - individuals who are linked to other networks, and (iii) how 'connected' people are.

Purpose

In summary, the overall purpose of the Canberra Telecommunity Project is to

monitor and to evaluate qualitative growth in narrowband and broadband trials over time and to develop prototype services for delivery over complex network environments. In order to monitor and to evaluate such trials it is critical to have as diverse a range of services as practical on the network. This means securing suitable content/service providers to create the conditions necessary for a meaningful study.

The Centre for Communication Policy Research at the University of Canberra has been successful in bringing together a group of content/service providers to participate in the Telecommunity Project (Table 1). It is envisaged that the University of Konstanz in Germany will assist in work on electronic markets and trial its open hypertext work (KHS), which enables community groups and businesses to better organise and to transfer information on the Internet [3], [5]. It is also envisaged that aspects of the Electronic Mall Bodensee work at the University of St. Gallen may be replicated in the Canberra project.

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| <ul style="list-style-type: none"> <input type="checkbox"/> Big Hand/Fairfax (multi-media production) <input type="checkbox"/> Cisco Systems (Internet provider) <input type="checkbox"/> SETEL (Small Enterprise Telecommunications Centre) <input type="checkbox"/> The Canberra Times (newspaper) <input type="checkbox"/> Local Government <input type="checkbox"/> Federal Department of Employment Education and Training <input type="checkbox"/> Schools (Palmerston Primary School) <input type="checkbox"/> ACT Citizen's Advice Bureau, <input type="checkbox"/> Collaborating universities (Constance and St. Gallen) <input type="checkbox"/> CEMDIA Canberra Institute of Technology |
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Table 1: Participants in the Telecommunity

Timelines

The Canberra Telecommunity Project involves two main stages and two main trials. Stage I in 1995 involves a census of all existing residences (2'760) to elicit data on demographics, telecommunications, computing and media facilities. A stratified random sample of these residents will be included in a trial of the Internet over existing telephone lines, with content provided from project participants. Prototypes of services from this work will assist in evaluation of the broadband trials. Stage II of the project, beginning in 1996, involves evaluation of residences connected to broadband (5'000 initially). The first trial examines how people learn and use network environments given existing technology. The second trial, which will be carried over 5 years, examines, in a continuous panel design,

how people adapt to new broadband innovations.

Wherever possible, households will be provided with diaries in electronic format, with courtesy network passwords from the University, giving access to e-mail, file transfer and Internet services. Additional equipment and training may be provided where necessary.

Nets, Webs and E-Zines

The home is fast becoming a Home-oriented Interactive Telematic System (HITS) - an electronic market, as Zimmermann [7] points out. Analysing how people 'construe' or 'construct' their information environment in commercial and non-commercial electronic contexts can assist us in better understanding the nature of electronic markets, and how preferences are formed in those markets. It would, perhaps, be naive and fatalistic to follow the modern temper and to reduce many of these new electronic forms to systems of domination and power. A better option is to create model communication communities which benefit from the new communicative forms and to monitor those communities over time.

A Web home page for the project will soon be available at the University of Canberra. The home page will serve as a focus for the various projects for residents involved in the trial and a forum for promotion and discussion of the project throughout the Internet community. The Centre for Communication Policy Research at the University of Canberra is also setting up the 'Australian Journal for Internet Research' on the Web site.

Endnotes

RMIT undertook a pilot study of the telephone behaviour of residents in Box Hill, a suburb of Melbourne. Aspects of this methodology will be modified for use

in the Canberra Telecommunity Project including recent advances in Repertory Grid Technology. ■

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What is ...?

The *Electronic Mall Bodensee* ('Bodensee' is the German word for the Lake of Constance) is a joint initiative of the regional departments for industry and commerce (St. Gallen, Baden-Württemberg, Vorarlberg), technology transfer institutions, and the Universities of St. Gallen and Constance. The basic goal of the project is to build a modern telematic infrastructure basing on World Wide Web technology for commerce and communication primarily for the 'Euregio Bodensee', the international region around the Lake of Constance. A first prototype is already available (<http://www.bodan.net>), the 'official' start is planned for mid-1995.

The *Konstanzer Hypertext-system* (KHS) is being developed at the Department of Information Science at the University of Constance since 1990 and supported by the German Science Foundation (DFG) since 1992. KHS is an open hypertext-system being implemented with VisualWorks that allows the support of academic working places. The hierarchical object architecture permits the flexible integration of various applications, such as mail-archiving, management of schedules, literature and software development. External sources of data, such as e-mail, online-databases or the World Wide Web may also be included.