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## Foreword

*Planet Broadband* covers the nascent history and status of the broadband movement. In doing so, it wrestles with the definition of broadband, discusses the various forms it's taking around the world, and suggests the possible futures it might have. I have known and worked with Rouzbeh Yassini and his contributors for over a decade, and, in a sense, we (and many others) have tried to discover what broadband is together. This book is a collection of their learnings, observations, and guesses.

Just over a decade ago, I saw an alpha-version of Mosaic—the first web browser. It struck me that the average cable customer could handle “point and click.” But my focus was on the television set. I contacted Delphi in Cambridge, Massachusetts, and met with them to determine the feasibility of adding Internet and web access to an interactive TV service we had in trial at Continental Cablevision (GTE Mainstreet). The Delphi engineers persuaded me to focus instead on the personal computer. Basically, they all wanted high-speed Internet access themselves from their homes. Enter Rouzbeh and LANcity. Continental Cablevision was using some of his equipment to carry lottery data for the state of New Hampshire (LAN-to-LAN connectivity at native speed was the buzzword). Rouzbeh responded by forward pricing the modems for a launch, and the rest, as they say, is history.

But even a decade later, history is not clear on the subject. I am often asked whether broadband is all hype. My reply is if you expect it to change your life tomorrow morning, you may safely consider it all hype. You will do what you did over dialup, only faster and with more satisfaction. But in the longer term, it is not possible to over-hype it. Broadband will change everything about the way you are entertained, informed, educated, how you communicate, and schedule your life. Maybe even how you are governed. Broadband is the electricity of the information age. Before electricity, to light up your home, you lit fires and used candles (dialup). You also went to bed early! Civilized areas and expensive homes had gas lanterns (ISDN?). But electricity changed your way of life. It not only brought you light (the first “killer app”), but powered hundreds of devices—from washers and dryers to toasters to eventually fueling telecommunications.

It is an exciting time to be in telecommunications, but quite often, I wish we were a little smarter. I can tell that in the future, looking back on all this, it will be obvious what is going on. I assure you that in the thick of things, we have little clue what we are hatching. Maybe my colleagues at the telephone companies know more (and aren't saying) about the broadband world, but I doubt it. If we look to another shift from narrowband to broadband, radio to television, TV has progressed from theater over the air, to soap operas and sitcoms. And now to reality shows. Broadband started with e-mail and web pages, and has progressed in under a decade to peer-to-peer applications

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and to multi-player games with audio and video chat to teammates. The latter feels like a reality show, starring you as one of the participants, especially if you like shoot-'em-up games.

This broaches the question of what content is in the broadband age. With cable TV, content comes from studios (largely in Hollywood) and is purchased wholesale and sold retail by cable companies. Content is generated in one place, and consumed by many users—typically at the same time (tune in at 8 P.M. tonight for *Friends!*). With telephone companies, the content is the phone call, and is generated, in a sense, by the participants themselves. It is one-to-one, and the content is generated at the edge of the network. Broadband spans a spectrum of content meanings. You have online service providers, including the portal of your Internet service provider. It is authored centrally and comes with advertising, same as television programs. So it smells like traditional content. But you also have e-mail, analogous to the phone call, where the participants generate the content. Web logs and personal web pages all are content generated at the edge of the network, but generated once and viewed by many (the hope is!). Online games are in between—there is a central authoring and often a hosting function, but the participants play a key role, also. You can see advertising take on multiple roles. When a pop-up ad interrupts your web search for the weather (“Buy a book on weather at Amazon.com!”), it resembles traditional advertising. But when you go to Ford’s website to look up information on a model you are thinking of buying, then look at the inventory of a local dealership, there is a lot of selling going on, but it does not feel the same as advertising. With broadcast, multicast, and unicast models, broadband spans traditional models for content and communication.

Along with the uncertainties in the content and services enabled by broadband is the definition of broadband itself. I believe that broadband is a set of capabilities, not the speed of a single pipe. Video-on-demand at Comcast includes movies-on-demand (pay \$3.99 and get to watch a movie with pause and rewind), subscription-on-demand (subscribe to Showtime, and for no extra fee, or a small fixed fee, see a set of content provided by Showtime), and free-on-demand (included in the price of a digital tier is a set of programming-on-demand for no extra fee). We have personal video recorders built into set-tops that allow a customer to store videos for later viewing, and we also have some live programming stored in the network as part of the free-on-demand service. By the end of this year, both PVR and VoD will have high-definition TV content available. But these capabilities are hard to summarize in a single speed number—the usual way that narrowband is differentiated from broadband.

The definition of broadband may be an academic exercise; the marketplace will determine what it will pay for various data rates, symmetries, and capabilities (services enabled). But it may not. There is an effort to convince the government that ubiquitous

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broadband availability should be a national priority. It seems a little early to be discussing the government stepping in for a number of reasons: First, cable systems, egged on by Telco DSL competition and by countering DBS video competition (in an effort to offer services they can't), are doing a pretty good job of covering the country. In the case of Comcast, we will have a third of the country covered by the end of 2004. Secondly, the actual benefit to the customer is not defined. What services are possible with a symmetric service, or unshared service, that are not possible over today's DSL or cable-modem service? And at what price?

What is broadband anyway? Read on to find out.

David Fellows  
CTO  
Comcast Cable Communications