



# Wireless 201

## An Investors Guide to Understanding 3G Technology and Markets

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### Preface

It's really a simple statement, written on the page in front of you in plain black and white: "VoiceBeam Wireless will roll out 3G services by 2H2002". You read it again, still unsure about what this exactly means. You ponder to yourself, "Gee, it sounds like I should know what '3G services' means...". No, you're not the only student in the class who is afraid to raise your hand and say, "um...I don't get it". Actually, no one really understands this statement in detail, not even VoiceBeam. That's because the term "3G services" means different things to different people. And once someone is able to put his or her finger on exactly what it is, that's the instant in time when it will change.

So if no one really knows quite what the third generation (3G) wireless technologies will be, how come there's so much talk about it as if it was available today? Well, the short answer is that they have a good idea of what 3G will be *like*. But since widespread 3G services are still a few years out, the descriptions of the features are still somewhat nebulous and fuzzy. All we really know for sure is that it will be faster and more feature-rich, with new broadband abilities like video streaming. The big unknown has more to do with *how* we are going to get there. Various wireless companies are taking different paths to 3G, and they're not all completely compatible.

Welcome to Wireless 201. The goal of this paper is to familiarize you with the coming wireless technologies. Like its predecessor, Wireless 101, it is designed to provide the big picture of the worldwide wireless industry and 3G technology in particular. While the information presented here is sometimes tedious, it is written in a simple way so that even non-technical people can understand it.

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## How to Read This Report

This report contains features that should make it much easier to read and extract the relevant information that you need. The features added will help mostly with the computer based reader - one who is reading this from their terminal - but also has information included if you happen to be reading from a printout. The major features are listed here:

- **Embedded Information** - The world of wireless is so full of acronyms and complex terms that it is sometimes hard to keep up with them all. I've included a handy tool to allow screen readers to recall a definition without having to move off the page and scroll around the report, looking through text or a glossary. Simply place the mouse cursor over any acronym or term that is highlighted in **blue** and instantly see a pop-up box that contains the definition and/or short description of the item in question. For example, place the mouse cursor over the acronym **AMPS** and see what pops up. Kind of cool, huh?
- **Bookmarks** - Adobe has tools that help you navigate documents easily. The bookmarks allow you hop to any subject or page number in the Table of Contents. If you click anywhere on the Table of Contents, it will bring up the bookmark sidebar on the left of the screen, where you can select the subject or topic you want to jump to. It's just a quick way to get to the information you want. You can toggle the bookmark view on and off by pressing the F5 function key (Adobe 4.0).
- **Glossary** - At the end of this report, you will find a glossary of the technical terms and acronyms used in this report. This section is added mostly for the readers that prefer to print out hard copies of the report, since they can't take advantage of the mousy pop-up thingy.
- **Web Links\*** - Adobe also gives you the power to automatically call up web sites just by clicking a link in the Adobe document. Well, I've finally learned how to implement this so any references to web pages will include the linking feature. Just place your mouse cursor over the link and click to open your default browser and visit the Internet page.
- **Timely Stock Quotes and Financials\*** - How do you take a static document like this and make sure it has the most timely data? If you guessed Web Links, you win a free hat! Not really, but way to go on the guessing. Since I discuss several stocks in this report, I put a Web Link feature into the discussion of each company so you can easily call up the latest stock price and financial figures from Yahoo Finance and Market Guide. Look for the "Financials" and "Quote" headers under each individual company.

\*Note: For the Web Link features to work correctly you must have a connection to your **ISP** enabled at the time you click on the link.

## Introduction

Your golfing partner says that Qualcomm has a lock on 3G and it is only a matter of time before the stock explodes. Another poster on a reputable Internet message board says that they're way overvalued, and he lists several seemingly credible reasons. The worst part is that both of the views, projections, and facts presented seem to *directly* contradict each other. So who's correct?

Believe it or not, this scenario is surprisingly common in wireless discussions today. The migration of wireless technologies to the third generation (3G) has created a tremendous void that has quickly been filled with a lot of hype, speculation, and wishful thinking. Unfortunately, the facts that exist to dispel the misconceptions and set the record straight are buried in various acronyms and technical jargon that goes right over the head of most of the investing population. I'd even be willing to bet that in some cases, wireless companies (and stock analysts) don't want investors or consumers to know the real story behind 3G.

Before you get too overwhelmed and depressed at the situation, let me say that as a whole, 3G will be a good thing.

Because the 3G landscape is dynamic, even the best predictions today may only be partially true tomorrow.

There are plenty of investments within the wireless sector that present a great opportunity for savvy investors. The goal of an investor should be to have a fair amount of confidence in their personal vision of 3G wireless. Notice that I did not say "complete" confidence. Because 3G products and services are still a ways out, it is difficult to project or anticipate the course of events, and it is far too early to claim victory or defeat for any element of 3G. Anyone who claims to have unwavering confidence in a company's 3G prospects probably has blinders on to the competition and the dynamic nature of the industry.

### Take a Balanced Approach

You will hear all sorts of predictions about 3G wireless companies and their embraced technology. A lot of these predictions are exaggerated one way or the other; either a particular wireless company will make billions in the 3G space, or they will be absolutely trampled by the competition. This often leaves an investor feeling like the wireless industry is a "do or die" gamble - they'll either lose their shirt and be publicly humiliated if they pick the wrong stock or they'll be exalted and praised as a seer for having the tremendous ability to foresee the future.

What is far more likely is that neither of these scenarios will occur (sorry to disappoint those shooting for 'seer' status). Because the 3G landscape is dynamic, even the best predictions today may only be partially true tomorrow. What will likely happen is that each company will stick to its plan until it becomes evident that there is a better solution. Most public companies are made up of intelligent people and their

decisions will be made carefully to ensure profitable returns. If at some point Company A finds that their products or services will not effectively compete, they will usually opt to change strategy rather than drive their stock price into the ground and alienate a large shareholder base. Public companies don't have much room for egos when it comes to meeting top and bottom line growth.

For this reason I would encourage investors to take all discussion of 3G wireless technology and companies (even in this report) with a grain of salt. The wireless industry, like many technology industries, is just far too dynamic to make any definitive arguments. Try to keep a balanced approach when looking at companies and technology, staying open to the idea that some things may not go as planned. The best preparation for an investor is to learn the "rules of the game" that have profound influence on the success of any product or service.

### Learn the Rules of the Wireless Game

Let's say you're betting on a horse race. You take a good long look at the horses prior to the race and pick *She's A Sure Bet*, who is obviously larger and stronger than the rest of the field. The filly even shows a lot more spunk and seems to be eager to blaze a few miles. You confidently plunk all your afternoon beer money down on the horse, drooling at the certainty of newfound wealth. You return to your seat and kick your feet up only to watch your dreams of riches vanish as *She's A Sure Bet* suddenly becomes *She's A Sure Loser*. What happened???

Well, you didn't bother to learn the rules of the game. You failed to recognize that your horse runs best on mud, not the turf track here. You also missed the handicap that she has in terms of weight. You also seemed to miss that her recent trials were below even some of her worst times. To top it all off, the 1-130 odds on the horse didn't tip you off either. You just figured you had spotted a gem that a stadium full of gambling rookies missed.

The same issues come up in picking good stocks, especially wireless stocks. There are a number of factors that effect the success of companies' product or services, and often times these factors are neither tangible nor measurable. Even products or services that seem to have everything going for them - technical merit, standard compliance, cost effectiveness, etc. - can struggle in the market for various reasons. There are just no "sure bets" in this game.

But before you throw your hands up and resign to soybean futures and pork bellies, let me say that there is hope - you can pick a great wireless stock. The goal of this report is to give you insight into the worldwide wireless market, including future technologies and the steps that various companies are taking to get there. It is up to you to weigh all the pros and cons and decide which companies are best suited for success. Hopefully, the information here will help expand your mind and see new dimensions in the path to 3G.