



Book The New World of Wireless

How to Compete in the 4G Revolution

Scott A. Snyder
Wharton School Publishing, 2009
[Listen now](#)

- play
- pause

00:00
00:00

Recommendation

Are you ready to become a “biological networked appliance”? That’s the next big thing, according to Scott Snyder, technology maven and scenario planner. He predicts a device-filled future, offering remarkable digital simulations, Internet “bots” filtering out data that doesn’t fit your interests, and a digital network that will surround, monitor and cater to you. Welcome to the wonderful world of 4G wireless. As fanciful as it sounds, such a future is just around the corner, for your company as well as yourself, thanks to advances in wireless technology, artificial intelligence and biotechnology. Snyder explains how organizations should plan for 4G and what it portends. *BooksInShort* recommends Snyder’s thorough report and analysis to CEOs, information technology executives and anyone who wants to prepare for the radically new world of wireless.

Take-Aways

- New 4G, or fourth generation, technology will change how people use wireless.
- Future wireless devices, the descendents of today’s smart phones and netbooks, will be extremely fast, powerful tools.
- Upgraded wireless networks and applications will spur decentralized collaboration.
- Masses of people will group together over wireless platforms, forming the “Digital Swarm.” This social phenomenon will redefine how companies innovate and grow.
- Consumers have been quicker than businesses to adopt wireless innovations.
- Two radically different scenarios are possible for the coming wireless revolution.
- The first scenario involves a positive transformation that creates value for society. In the second scenario, wireless innovations lead to widespread disorder and crime.
- Elements from each scenario will likely combine to create the actual digital swarm.
- Grade your organization’s “wireless IQ” (WiQ) to determine how prepared it is for the dramatic changes in wireless and, as a result, in everything else.
- Develop your firm’s “wireless ecosystems” to stay up-to-date and competitive.

Summary

Your Networked Life to Come

Picture yourself in your office or home. Information streams flow around you. Using your mobile device, you coordinate a variety of activities from your chair. Your “bot,” or Web robot, filters out irrelevant information and ensures that what you see or hear fits your interests. You engage in multiple conversations simultaneously with

colleagues or friends' virtual profiles. Your mobile device constantly monitors your health and feelings via a surrounding "personal network." In this wireless world, your life and work merge seamlessly. As a "biological networked appliance," you can connect with the global communications grid whenever and wherever you choose.

"The Digital Swarm will be shaped more by how people use next-generation wireless technology than the technology itself."

Is such a scenario sheer science fiction? Not at all. The stage is set. This new reality is on the horizon. Currently, almost four billion people utilize wireless devices. The technology is evolving rapidly as users apply it in dramatically new ways.

What Is a "Digital Swarm"?

Wireless technology already affects individual behavior. Globally, people are connecting over wireless platforms to collaborate, innovate and effect change. These independent, self-governing users collectively form the digital swarm. *Merriam-Webster's* defines "swarm" as "a large number of animate or inanimate things massed together and usually in motion." This aptly describes a wireless network, which unites a "virtual mass of users and networked objects." Swarming has the power to transform consumerism and business practices, perhaps even more than the Internet already has done.

"Digital Swarm Drivers"

Existing wireless networks are not designed to support swarming. However, fourth generation (4G) wireless technologies will help make it common practice. Evolved networks and applications will lead to an uncontrolled, barrier-free digital environment where people can rally around shared ideas and goals. Technological innovations will enable users to receive more than 100 megabits of data per second on their wireless devices, no matter where they are. That is more capacity than an entire office building now has. Intelligent devices will offer expanded services like ultrafast movie downloads and "real-time, rich media" tailored to users' interests and locations. High speed and "contextual awareness" will provide a fully immersive, user-centric experience.

"The business sector has been laggard as a whole in adopting and leveraging wireless technology when compared to the consumer sector, where innovation is rampant."

However, wireless innovations alone will not cause the digital swarm. Ten "social, economic, political and technological" trends will drive it by combining in groundbreaking ways:

1. **"Smart mobs"** – These "ad hoc wireless social networks" prove that mobs aren't always chaotic or destructive. Many such networks are turning into organized, "empowered" groups capable of achieving large-scale change. For example, people in the Philippines used cellphone communication to rally against their government.
2. **"Privacy and security"** – Due to Global Positioning System (GPS) innovations, mobile devices can provide a continuous report on where users are. Companies are beginning to tap into that data with a process called "reality mining." Some schools monitor their students' whereabouts and some government agencies are using wireless tags to keep track of their employees.
3. **"Broadband anywhere"** – As wireless technology becomes ubiquitous, the lines between people's work and home lives will blur. Demand will grow for devices that satisfy both personal and job-related needs. Some people are using existing technology to develop decentralized "mesh networks," where the users themselves "are the networks."
4. **"Cognitive devices"** – The popularity of artificial intelligence plummeted in the 1980s, but it is making a comeback. As cognitive devices advance, they will become more sensitive to users' contexts and even their physical states. For example, a device may be able to read your vital signs and recognize that you are running, rather than resting. Then it can offer you a selection of applications adapted to that situation.
5. **"Connected objects"** – Today, "machine to machine" (M2M) communications greatly outnumber communications between people. Consumers already own billions of microprocessors in devices like cellphones. That trend will drive the creation of powerful "sensor networks" that could, for example, detect the threat of a natural disaster.
6. **"Generation Z"** – Young people do their best to stay networked. They tend to see technology "as an extension of their lives and personalities," and already have completely adapted to combining texting, instant messaging and social media networking to interact.
7. **"Bioconvergence"** – Wireless innovations are permeating the health care industry. Medical professionals now use wireless devices to track patients' "health indicators." Many people can consult their doctors through mobile videoconferences.
8. **"Distributed authority"** – Wireless puts the "power of the enterprise" in people's hands, offering an alternative to traditional corporate hierarchies. In many industries, workers may no longer need to be physically present in the office, except for developing collegial networks and socializing.
9. **"Low-end disruption"** – In underdeveloped nations, where fixed-line phone service is sporadic, wireless is experiencing remarkable growth. Wireless users in those nations are "leapfrogging" into the future.
10. **"IP regimes"** – Existing standards (like TCP/IP and GSM) are catalysts for product growth. With more wireless subscribers than any other nation, China created a special 3G standard to avoid paying royalties to Qualcomm and other providers.

"Wirelessly enabled swarms have occurred in recent years, such as the throngs of disgruntled citizens in the Philippines who tried to take over government buildings using text messaging to coordinate their movements."

Although consumers are adapting to new wireless technologies, many businesses are not preparing for the wireless revolution. They view wireless as merely a communications medium and may even attempt to limit employees' use of devices like the iPhone. Those firms risk losing their customers and their competitive edge. The ground is shifting beneath their feet. Modern business leaders must understand how wireless technology can redefine their work and change their operations. To compete, they must tap into the power of the digital swarm and take advantage of new wireless opportunities.

Two Futures

Systems thinking and scenario planning are tools for examining complex future situations. They can help you envision the coming digital swarm. Two distinct scenarios present themselves, though elements from both will likely combine to form the actual digital swarm in the future.

“We know the Digital Swarm will surprise us with some curveballs. But we also need to take enough swings to get a hit or even a home run.”

The first scenario is “Nature Aligns.” In this scenario, the “wireless ecosystem” undergoes comprehensive change. Technological advances improve society. Broadband wireless becomes as ubiquitous as utilities like gas and electricity. “Body-area networks” (BANs), in which technology becomes part of people’s clothing, grow popular. Some individuals even have technology implanted in their bodies to monitor their health and to move medications through their internal systems. Sensors are “embedded everywhere.” Wireless users don’t hesitate to trust these networks’ security and to share highly personal information – financial, medical, and so on – over them. Wireless technology continually gets better. Extremely useful, groundbreaking applications multiply. Wireless markets expand and standards align, assuring a “seamless wireless experience.”

“The future of mankind is a race between education and catastrophe.” (author H.G. Wells)

In the nature-aligns scenario, network operators become less powerful, and end users become more so. However, without heavy infrastructure, mobile virtual network operators (MVNOs) still do well. North America loses its prominence as a wireless marketplace. Retailers offer comprehensive personalization of their products and services. Governments know everything about their citizens, and vice versa. People use wireless technology to police suspicious behavior, forming sort of an electronic neighborhood watch.

“The more distributed the organization and its decision-making capability, the greater the impact of wireless networks on driving real business benefit.”

In the second scenario, “Killer Bees,” wireless also blooms, but in this case diverging technology and standards produce negative results. Wireless networks, tools and applications pose huge threats to world order. User privacy becomes a major problem. Terrorists employ mobile devices to mount attacks. Countries ruthlessly compete in developing 4G intellectual property. Cybercriminals abound, spreading “wireless worms” that infect digital devices. Around the world, governments cannot agree on wireless standards. New applications become available only to “closed user communities.” As a result, a black market develops for innovations in wireless. Ongoing issues about “reliability, security and cost” impede wireless technology’s positive advance.

“Organizations must decide where to commit and where to stay flexible in order to maximize their overall Digital Swarm opportunity while minimizing their exposure.”

Network operators become more powerful in the killer-bees scenario. In North America, people rely on “proprietary networks and gated communities.” In Latin America, dictatorships flourish as people turn to them for protection from cybercriminals. “Infected” networks become a major problem in Africa. Governments everywhere place a premium on “surveillance and monitoring.”

“Emerging technologies are hard to predict. Missing the important signals increases the chance that we will get blindsided or overreact.”

The nature-aligns and killer-bees scenarios describe the “outer boundaries of what may occur.” They are not outright predictions of the future. However, “technology disruption” will persist, and people’s trust – or lack of trust – in wireless networks will tip the balance one way or the other.

Measuring Your Firm’s “Wireless IQ”

Whether the nature-aligns or killer-bees scenario develops, or something in between, your firm should be as prepared as possible for a wireless future. When it is ready, it will be able to earn strong tallies in 10 important areas that indicate its wireless IQ, or WiQ. Measure these wireless-ready “success factors”:

1. **“Wireless savvy/literacy”** – What percent of your staff possesses the most up-to-date wireless devices and uses the “latest-generation wireless services”?
2. **“Wireless broadband access”** – How many employees use broadband to open work-related applications?
3. **“Wireless innovation”** – What percent of your products or services draw upon wireless for delivery or use?
4. **“Organizational authority”** – Are your employees empowered to make decisions for the business or is your organization governed only from the top?
5. **“Wireless ecosystem”** – Do a high percentage of staffers, customers and other stakeholders interact through a wireless network?
6. **“Wireless technology”** – Does your organization frequently update its wireless technology?
7. **“Wireless content”** – How much of your business’s content provides an “immersive wireless experience”?
8. **“Wireless interconnectedness”** – Is wireless interconnectivity smooth and are your handoffs invisible?
9. **“Wireless mass collaboration”** – Do your people communicate and manage projects through wireless handhelds? Do they use text messaging, blogs and wikis?
10. **“Wireless social networking”** – Do employees use wireless social networks in their personal lives, for example, for “relationship building, charity [or] entertainment”?

“Monitoring and Adapting to Early Signals”

The coming digital swarm has the power to redefine how goods are designed, manufactured, tested, distributed, used and maintained. Companies must be vigilant about this changing environment and acclimate quickly to new developments. Experimentation, involving “innovation, rollout and feedback,” is crucial. Download and test the latest wireless applications. To keep your capital commitment low try numerous small projects instead of one large, expensive one. As you begin to see wireless’s business potential, up the ante. This “embedded options” approach is a great way to handle risk in an uncertain environment.

“Innovation distinguishes between a leader and a follower.”

Watch for numerous possible “killer swarm applications.” Transportation, retail and health care are likely areas of development. Innovation also will lead to entirely new experiences in traffic navigation, personalized online shopping and medical treatment.

About the Author

Scott Snyder is president and CEO of a scenario-planning consultancy. He is also a senior fellow at The Wharton School and an adjunct associate professor at the University of Pennsylvania.
