People waiting to buy the iPhone upon its release in New York City, June 29, 2007.
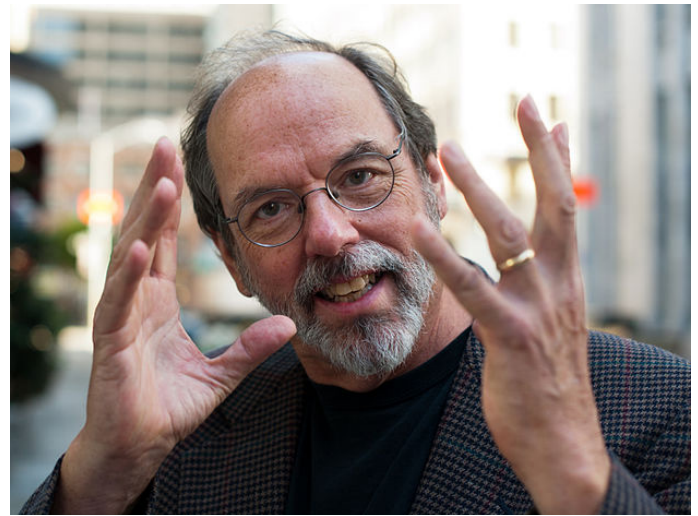
By I, Padraic Ryan, CC BY-SA 3.0,
https://commons.wikimedia.org/w/index.php?curid=2323128

Ward Cunningham, developer of the first wiki, photographed in October 2011.

By Matthew (WMF) - CC BY-SA 3.0,
https://commons.wikimedia.org/w/index.php?curid=18679413

2010, Apple had sold over 90 million iPhones.

Android

Only one company offered a viable alternative to the iPhone, but surprisingly it was not one of the established smartphone manufacturers; it was Google. In 2005, Google acquired a company called Android, which was creating a new operating system for smartphones. The Android operating system is based on Linux, the open-source operating system created by Linus Torvalds back in 1991. Google licensed Android to a number of manufacturers, most notably Samsung, which produced a wide variety of Android smartphones. Within just a few years, Apple and Android came to dominate the smartphone scene, while Nokia, Palm, and BlackBerry faded from prominence. Microsoft made great efforts to revitalize its Windows Mobile operating system with a line of Windows-based phones, even purchasing Nokia's smartphone division in 2014. However, in the end, Microsoft conceded defeat in the smartphone arena and phased out all Windows Phones between 2016 and 2017.

App Stores

One of Apple's and Android's strengths is their "app stores." Traditionally, users purchased software either as a shrink-wrapped product at a store or by downloading it from the website of the software vendor. However, this requires the user to go out and find the software. Taking a cue from Apple's iTunes music store, the Apple App Store and its Android equivalent, Google Play, instead provide a centralized repository for software distribution. In exchange for hosting the app store, Apple and Google retain a percentage of all app sales and in-app purchases. This may be an inconvenience for large software firms that already have established channels of distribution for their software. However, for small independent app developers, a centralized app store greatly lowers the barriers to entry into the software business, as they no longer need to create their own storefront websites or compete for limited space on a retail store's shelf.

WEB 2.0

Let us pause our discussion of mobile computing for a moment to discuss another development. For the first decade or so of the World Wide Web, there was a clear delineation between *viewing* web pages and *creating* web pages. To create a web page, one would craft an HTML file—either by writing the code manually or by using a GUI-based authoring tool—and post it to a web server. To view web pages, one would (of course) use a web browser. However, gradually the line between content creation and content consumption began to blur. Perhaps the earliest example of this was the *web log*, or blog: a type of website that allowed users to post content easily without managing a server or knowing HTML. Readers could likewise post comments on blogs, allowing for an online discussion forum.

The online encyclopedia Wikipedia is another example of a website that is as easy to edit as it is to read. Founded in 2001 by Jimmy Wales and Larry Sanger,

Wikipedia is a prime example of crowdsourcing: spreading the workload across a widely distributed audience. Since anyone can edit Wikipedia articles, errors can be quickly spotted and corrected. The term "wiki" itself is derived from the Hawaiian word *wikiwiki*, meaning "quick." (Ward Cunningham, who in 1995 developed the first *wiki*—a website whose content can be easily edited by users—was inspired by seeing the word on the side of an airport shuttle in Honolulu.)

Social Media

Journalists coined a term for this new type of interactive website, where publishing is as common as reading: Web 2.0. The most visible aspect of Web 2.0 is the advent of social networking websites. Two of the first social networking services to gain prominence were Friendster and MySpace, both launched in 2003. One attribute common to all social networking sites is the ability for individuals to create a profile and link it to profiles of friends or other individuals with similar interests. However, one troubling aspect of early social networking services was the lack of authentication: there was no way to prevent anyone from creating one or more fake profiles. However, both Friendster and MySpace were soon eclipsed by another social network: Facebook.

Facebook

In 2003, Mark Zuckerberg was a freshman studying computer science at Harvard College. During his first semester, he gained some notoriety by creating two social websites at Harvard, *Course Match* (for comparing course schedules) and *Facemash* (for rating people based on physical attractiveness). After taking a course on graph theory, which is a mathematical model for describing relationships among different things, Zuckerberg decided to create a more ambitious website, an electronic version of the "face book," a printed student directory published by Harvard. Although *Course Match* and *Facemash* had been hosted on his personal laptop via his dorm room's Internet connection, Zuckerberg had bigger plans for his electronic face book. Registering the domain name *thefacebook.com* and using an off-campus hosting service, Zuckerberg released his creation in February 2004.

Unlike his previous projects, Thefacebook was a general-purpose social network, allowing users to create personal profile pages for themselves and link to those of others. Within three weeks, the site had over six

Mark Zuckerberg, creator of Facebook, photographed in 2005.
By Elaine Chan and Priscilla Chan – CC BY 2.5,
https://commons.wikimedia.org/w/index.php?curid=1779625

thousand users. Initially, Zuckerberg limited access to Thefacebook to only those with an @harvard.edu email address, namely, Harvard students and employees. This reduced the likelihood of users creating fake profiles, while keeping his audience relatively small. By adding support for additional schools one at a time, Zuckerberg was able to scale up gradually.

By the summer of 2004, Zuckerberg formed a corporation and moved the operation to California. The following year, the company dropped the "the" from its name, becoming simply *facebook.com*. After making the service available to university students, it was later opened up to high school students, and finally to the general public. The gradual roll-out had the effect of creating anticipation among potential users. New features were added, allowing users to update their relationship status and share photos. In 2006, Facebook added a "News Feed" feature that allowed users to automatically see recent changes to their friends' profiles. Although it only showed information that users had publicly shared anyway, his change was met with steep resistance from some users, who felt that it violated their privacy. Facebook responded by granting users the option to disable the News Feed feature, although in practice most kept it on. Facebook