

Technology trends, Internet Applications and Possible Roadblocks

Information technology is improving at an accelerating rate. This opens the way for innovative applications, which make organizations and individuals more efficient and effective. This chapter outlines hardware progress, which has led to new forms of software and software development. Software evolution has brought us to the current era of Internet-based software. After describing some of the characteristics of Internet-based software, we ask whether the progress we have enjoyed will continue and conclude with a discussion of some of the non-technical issues, which tend to impede that progress.

- I. Hardware progress
- II. Software progress
- III. Internet based software

IV. Will the progress continue?

- V. Bumps in the information technology road

I. Hardware progress

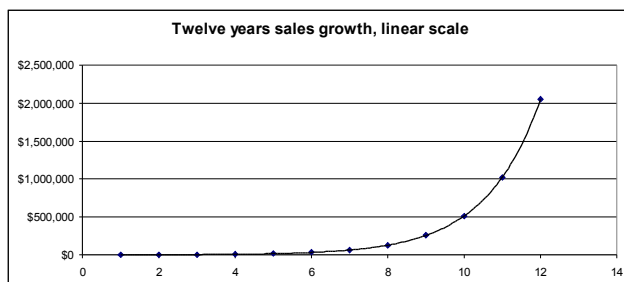
Technology is improving rapidly. It seems that a new cell phone or computer is outdated the day after you buy it. This is nothing new. Consider manned flight for example. The Wright Brothers first flight in 1903 lasted only 12 seconds and covered 37 meters.¹ Once we understand the science underlying an invention, engineers make rapid improvements in the technology. Within 66 years of that historical first flight, Apollo 11 landed on the moon.

Would you guess that that information technology progress is slowing down, holding steady, or accelerating? It turns out that it is accelerating – the improvements this year were greater than those of last year, and those of next year will be still greater. We often use the term **exponential** to describe such improvement. Informally, it means that something is improving very rapidly. More precisely, it means that the improvement is taking place at a *constant rate*, like compound interest. In this section, we consider three technologies underlying IT – electronics, storage, and communication. Each of these technologies is improving exponentially.

Sidebar: Exponential growth

Take, for example, a startup company with \$1,000 sales during the first year. If sales double (100 percent growth rate) every year, the sales curve over the first twelve years will be:

Exhibit 1: Exponential growth graphed with a linear scale.



¹ <http://www.nasm.si.edu/galleries/gal100/wright1903.html>.