

MacGuide

The SuperSource™

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MacGuide®

Inclement Clouds

Tulips can be pretty, but in 1637 investment demand outstripped commodity supply. Some single tulip bulbs sold for more than ten times a skilled craftsman's annual income. <https://en.wikipedia.org/wiki/Tulip_mania>. Thus the first recorded speculative bubble, and its collapse.

Fads v Innovations

A fad develops among a large population and is collectively followed enthusiastically for a period of time, generally as a result of the behavior being perceived as popular by one's peers or being deemed "cool" by social or other media. <<https://en.wikipedia.org/wiki/Fad>>. Contemporary Twitter, Facebook, and Google "Trends" may live less than the mayfly, <<https://en.wikipedia.org/wiki/Mayfly>>.

Unlike fads, some innovations last much longer. [For a select timeline of lasting innovations and inventors, see *WinGuide*, below.]

Innovations typically diffuse, from the initial innovator to early adopters, an early majority, a late majority, and then to laggards. Everett Rogers (*Diffusion of Innovations*, 1962; 5th ed 2003).

Pre-Cloud Remote Multi-User Computing

The basic technology of Cloud computing is decades old; its economic impact a fast-growing infant. In the 1970s 300 baud acoustic modems permitted remote teletypewriters to use timeshare computers. As computers decreased in price and increased in computing power, minicomputers evolved from mainframes, and then personal computers evolved. Mainframes still provide essential services to large organizations, which in turn serve vast numbers of individuals.

Although several manufacturers make mainframe computers, IBM dominates, currently with 90% of the market. <https://en.wikipedia.org/wiki/Mainframe_computer>. In the early days of mainframes, 1950s, the mainframe market was described as "IBM and the Seven Dwarfs"—Burroughs, UNIVAC, NCR, Control Data, Honeywell, General Electric, and RCA (Id).

Email, network printing, and the World Wide Web typically operate on a client-server model, with centralized computing performed by the server computer and other tasks, generally data input and output but not intensive computation, performed by the remote client.

Cloud Remote Multi-User Computing

Cloud computing is a type of client-server computing where the server is owned and maintained by a company different from that using the remote client. For large client organizations, the possible advantage of cloud computing is that the user organization need not worry about maintaining a computer server room or data center (assuming a reliable cloud provider is chosen). Another potential advantage of cloud computing is that it scales quickly and easily. Additional data storage can readily be rented from the cloud company, lowering expenses for startup companies, and new project launches by established businesses.

For several years, Apple has offered certain centralized data storage and services: iTools (2000), .Mac (2002), MobileMe (2008), and iCloud (2011) with augmented services. Apple's Time Machine and Time Capsule make automatic local backup easy. Apple's iCloud offers automatic cloud storing of fPhotos, Mail, Contacts, Calendars, Reminders, Safari bookmarks, Notes, Keychain easy, and permits enablement of Find My Mac and Back to My Mac.

Currently Apple provides 5 GB of iCloud storage free, with 50 GB for \$0.99/month, 200 GB for \$2.99/mo, and 1 TB for \$9.99/mo. As with Apple's software and devices for the past three decades, Apple services are available in many countries around the globe and in many languages.

Dropbox is widespread, stores data on your enabled devices (decreasing the time-lag inefficiency concern for sole-cloud storage), with cloud backups. Amazon provides both its Amazon Web Services, and its Amazon Simple Storage Service (Amazon S3). Alphabet Inc (nee Google) provides its Google Cloud Platform. A flock of other cloud services are available.

Current Cloud Conditions

Many technology words, products, services, and functions are briefly ephemeral. Lifespans may approach the Pet Rocks, six months in 1975 (1.5 million sold for \$4), <https://en.wikipedia.org/wiki/Pet_Rock>. Distributed, remote computing has been around for at least a third of a century. It likely will persist, although under different names, evolving technologies and protocols, and differing suitabilities for diverse computing users.

Cloud Disadvantages. Some of the disadvantages of cloud computing focus on accessibility, stability, security, privacy, and efficiency.

Accessibility. The Internet is not always available. When your Internet connection is not working your cloud data is not available. Between the cloud server with your data and your computer or smart device seeking to interact with that data are multiple points of failure, including: the cloud server, the Internet service provider for your cloud provider, major Internet backbone transmissions, your Internet service provider, your router, your local network (likely WiFi and/or ethernet cable). In contrast, for most single-location businesses and home use, there are far fewer failure points, often fixed or swapped by walking a few feet and doing it yourself.

Stability. Companies under financial stress rarely provide early notification to their customers of the financial distress. Some once respected companies simply go out of business. A customer might prefer the more orderly process of a bankruptcy, but court supervision does not ensure the prior cloud hosting agreements will be maintained nor even that cloud hosting services will be maintained. Whether the cloud service data will be temporarily available to customers for download will depend upon some new entity willing to provide the service, offering to do so at a price acceptable to the creditors committee and under conditions approved by the bankruptcy court.

Security. You know where your office and home computers, disks, and USB

flash drives are, and thus the legal jurisdiction governing them and you. Unless you inquire, you likely don't know what states and foreign nations house the cloud servers and their backups. Without substantial work, you likely don't know the laws of those foreign jurisdictions nor the conditions under which others could access your cloud data, nor what the penalties, if any, would be if they did.

The US Constitution has little force in foreign jurisdictions. Although we often take our Constitutional rights for granted—the Fourth Amendment prohibition against unreasonable search and seizure, the Fifth Amendment providing for due process of law, the First Amendment for freedom of speech and the press, and our other Constitutional Rights—are not universal. What security and access control does the cloud vendor for its physical structures.

For most modest businesses and non-celebrities—for most of us—we do little to attract attention, and stealth data piracy would probably be inefficiently unattractive. A large collection of data—a collection of cloud servers—is a much more attractive target for thieves.

Privacy. Privacy concerns parallel and extend security concerns. On its trip to and from the cloud server, is all data encrypted end-to-end. Do cloud staff have decryption keys. Does the cloud service agreement for the vendor permit access or distribution of you data,

and if so is a local court order required. Do you own your data in the cloud; what do the agreements and local laws say. Do the jurisdiction's laws permit government to order the cloud service to provide data, and perhaps to provide it decrypted. (This issue has been under debate the past few years, much intensified by the 13 November 2015 Paris attacks at Stade de France and elsewhere.)

Efficiency. Although electrons in terrestrial communications generally move quickly, it still takes longer to communicate with distant cloud servers than within a local area network (LAN) or a single computer. Many databases frequently save data, and a user working directly with a database stored on a cloud server may experience multiple frustrating delays. Many computer applications that use databases do not include the term “database” in their name nor user manual.

Cloud Advantages. Some of the advantages of cloud computing focus on accessibility, backup, multiple users, scaling, and hardware-software management.

Accessibility. Cloud data can be available to most locations with reliable Internet service. A single non-cloud Mac or PC can also be set up to permit safe remote access. The Mac access can be limited to certain specified users and passwords. (MacGuide generally

doesn't deal with Windows technologies.)

Backup. Major cloud vendors have multiple backups for your data, with provisions for virtually instantaneous switching when the prime cloud source is down. Minor vendors might not. As a prudent person, you also have multiple backups for your data, including at least a weekly offsite backup (often your home for office data), and an on-site backup not on the hard drive (or main computer's flash storage memory). Apple's Time Capsule hardware and Time Machine software automatically backup your data; setup is easy; retrieval, if needed, is also easy.

If you live or work in a natural disaster-prone area—floods, hurricanes, forest fires, whatever—you should consider remote backup in a distant region. This might be transfer to a colleague hundreds of miles away; or Cloud backup might be a part of your disaster recovery plan.

Multiple Users. Multiple persons with approved credentials can access your cloud data. You can also setup your local Mac or Mac server to permit multiple users. Depending on the application software, either cloud or your local server might permit multiple concurrent users. Software should enable at least record locking, so that only one person at a time can change data, and visual data integrity, so that any changed data is immediately displayed

to all users viewing that data or its consequence (other data derived from the changed data).

Scaling. Major cloud vendors have much more equipment with much higher capacities than needed for any single customer. If you or a business expect rapid growth, major cloud vendors permit rapid expansion in rented server space.

Hardware-Software Management. Computer apps upgrade, operating systems upgrade, and these upgrades outgrow older computer hardware capabilities. Internet protocols change, Internet service providers change their speed offerings and their pricing. A cloud service provider takes over many of these tasks for you, so you need not pay as much attention to those technologies nor hire an information technology (IT) consultant.

The Whether Forecast. Few fads or media popularities should be adopted just because many others are talking the talk or buying the service. You know the kinds of data you use, you can evaluate the levels of security, privacy, backup, and maintenance they need. And you know your work style and preferences. Decide what fits you, your data, and your business.

NexGuide

Small Still Beautiful

Much recent commentary notes the accelerated pace of technological change, as well as much merger and acquisition activity in diverse business sectors.

Once upon a time, for most of the 20th Century, there were Arthur Andersen, Coopers & Lybrand, Ernst & Whinney, Deloitte Haskins & Sells, Peat Marwick Mitchell, Price Waterhouse, Touche Ross, and Arthur Young—the Big Eight accounting firms. The Big Eight became the Big Six in 1989, Big Five in 1998, and after the collapse of Enron and its auditor Arthur Andersen in 2002, the Big Four.

The 2009 Recession stressed most businesses, and consumers, and broke many over-extended businesses. Many big law firms reduced staff, some closed, others merged into less fragile firms.

Oldest Technology Company Repeatedly Reinvents Itself

IBM, one of the nation's oldest technology companies, was founded in 1911, focused on industrial time recorders and punched card tabulators. Thomas J Watson Sr joined IBM in 1914, after being fired from National Cash Register Company. He became president a year later. During his first four years at IBM, its revenues doubled. IBM processed Social Security records, produced M1 Carbine and

Browning Automatic Rifles for the US during World War I, provided translation services at the Nuremberg Trials. Thomas Watson Jr succeeded his father as president in 1952. IBM developed FORTRAN (FORmula TRANslation) computer programming language and demonstrated early artificial intelligence, an IBM 704 computer played checkers, programmed to learn from its experience. Thomas J Watson Jr became chairman of the Board in 1961; IBM introduced the Selectric changeable type font typewriter. IBM engineer George Laurer developed the Universal Product Code in 1974.

IBM introduced its IBM 5150, soon known as the IBM PC, in 1981, after the Apple II (10Jun1977) and before the Apple Macintosh (24Jan1984). IBM sold its printer manufacturer Lexmark in 1991, followed in 2005 by sale of its personal computer business to Lenovo. IBM's artificial intelligence program, Watson, won against human Jeopardy! game-show champions in 2011. As of 2012, IBM was the top annual recipient of US patents for 20 consecutive years. October 2015 IBM acquired most of the digital assets of The Weather Company, to be used with Watson for weather analytics and predictions.

IBM's current chief executive, Virginia Rometty, sees IBM as the only technology company more than a century old, and attributes its successful longevity to reinventing itself repeated-

ly in the past and currently. "Don't underestimate us. This is our DNA, this ability to transform." <<https://en.wikipedia.org/wiki/IBM>>; "IBM's Design-Centered Strategy to Set Free the Squares," NYTimes 14Nov2015.

Apple's Size Emulates Wonderland's Alice

Apple Computer was founded by Steve Jobs, Steve Wozniak, and Ronald Wayne, 1 April 1976. The Apple II was introduced at the West Coast Computer Faire 16 April 1977 and sold beginning 10 Jun 1977. By the end of the Apple II series production in 1993, over five million were sold, a run of over 16 years. Despite the introduction 24 January 1984 of the graphic user interface (GUI) Macintosh, the Apple II computers accounted for 85% of Apple's revenue first quarter fiscal 1985, and remained for most of the 90s Apple's primary revenue source, <https://en.wikipedia.org/wiki/Apple_II_series>.

Much media and many proclaimed business experts often warned of Apple's imminent death. Apple was often ill in its one-third-century life, but it survived. Some might consider it has now flourished, with its prodigal visionary Steve Jobs iconized after his 5 October 2011 death. The IBM PC and compatibles spread throughout home and business, eclipsing the aging Apple II (June 1977-1981; Apple series through 1993) and the nascent Macintosh.

Rashomon perspectives on Apple are provided by many, leading with Steve Wozniak & Gina Smith, *Woz: From Computer Geek to Cult Icon: How I Invented the Personal Computer, Co-Founded Apple, and Had Fun Doing It* (WW Norton, 2006); Walter Isaacson, *Steve Jobs* (Simon & Schuster, 2015); Steven Levy, *Insanely Great: The Life and Times of Macintosh, the Computer That Changed Everything* (1994); and Director Danny Boyle's 2015 film, *Steve Jobs*, with Michael Fassbender, Kate Winslet, Seth Rogen, and Jeff Daniels, and Aaron Sorkin's screenplay (2015), which focuses on three product launches—Macintosh (January 1984), NeXT (1988), and iMac (1998)—seeking an emotional portrait of Steve Jobs rather than a precisely accurate factual transcript.

Apple Inc (AAPL) is now a dominant component of the Dow Jones Industrial Average, has 115,000 employees, annual revenues of US\$ 233 billion, annual net income \$ 53 billion, and net equity \$ 119 billion, <https://en.wikipedia.org/wiki/Apple_Inc>. Apple is no longer small.

To Stay the Same, Change

PBS' *Making North America* (Nova series, Kirk Johnson, host) illustrates how the continent was shaped, over millions of years, how it has shaped Earth-bound life, and how geologically Earth will continue to change, <<http://www.pbs.org/wgbh/nova/earth/making-north-america.html>>. Darwin and

his evolutionary progeny have described how as the environment changes, successfully surviving species adapt, finding supportive ecological niches.

Late 2014 Apple and IBM agreed to collaborate on more than a hundred exclusive industry-specific apps, built primarily for iPads but also iPhones. There are also service, support, and mobile device management elements to the deal. <<http://www.zdnet.com/inside-the-apple-ibm-deal-how-will-it-work-and-what-to-expect-7000033151/>>

Goldman Sachs analyst Simona Jankowski suggests Apple is transforming from a hardware company to one primarily providing service, resulting in her expectations of higher stock prices, largely due to the Apple ecosystem, <www.bloomberg.com/news/articles/2015-11-18/goldman-says-to-buy-apple-because-it-s-becoming-a-services-company>.

The Macintosh was designed for “the rest of us,” putting the human user at the center, not the technology. After 30 years, the Macintosh operating system is no longer as simple as it was in 1984, but its ease of use by mere mortals is still preferred by many users; its training costs and need for professional consultants and crash fixing less than the major alternatives Windows to Mac OS, Android to iPhone iOS, and iPad to a flock of others' tablets. The newer

Apple TV and Apple Watch joined the Apple ecosystem, with their easy to automatic integration and data sharing.

Buying an iPhone provides Apple immediate revenue, whether the consumer purchase is directly from Apple or indirectly from a cellphone service provider which buys from Apple. Buying an iPhone from Apple on the installment plan provides a monthly income stream. Apple TV provides more opportunities for income as users stream for-pay content. If one wants more iCloud storage—often for storing more photos and videos—additional iCloud storage may be purchased. AppleCare insurance is often a prudent safety investment, either purchased with each new iPhone or bundled with the iPhone lease from Apple (via CitizensOne).

Amortizing current Apple revenue streams Jankowski estimates current annual average revenue per USA user (ARPU) at \$42. Considering expected future services, Jankowski concludes Apple may grow to see \$153 ARPU from the United States and \$50 for the rest of the world, on average less affluent than the USA. Important to her analysis is Apple's large and loyal customer base. Many Apple users are repeat customers.

Introducing the iPad 2 in March 2011, Steve Jobs described one of Apple's "non-secret sauces":

"It is in Apple's DNA that technology alone is not enough—it's technology married with liberal arts, married with the humanities, that yields us the results that make our heart sing."

<Jonah Lehrer, "Steve Jobs: 'Technology Alone Is Not Enough,' *New Yorker*, 7Oct2011>.

Apple featured Jobs' DNA comment in its 105-second tribute video to Steve Jobs on the one-year anniversary of his death, <<http://www.cnet.com/news/apple-remembers-steve-jobs-on-first-anniversary-of-death/>>.

Both century-old IBM and Silicon Valley mid-aged Apple cherish core principles, their DNA, that they see as providing flexibility to persist and flourish in a rapidly changing world.

Small Firms Adopt Technology More Easily

A recent research report finds that small entities survive better after major environmental change. Paleontologist Lauren Sallan studied fish fossils from the Mississippian Period, about 340 million years ago. Previous paleontologists noticed the Lilliput Effect, that some species shrunk after abrupt and widespread extinctions of other species. Dr Sallan suggests the world's ecosystems remained decimated for millions of years; vertebrates "had to do more with less."

Small vertebrates recolonized the planet, adapting to ecological niches left empty by the mass extinctions. After a long time the easier niches were full, some vertebrates then started evolving to adapt to different niches, growing in size. (“After a Mass Extinction, Only the Small Survive,” NYTimes, 12Nov2015, <www.nytimes.com/2015/11/13/science/after-a-mass-extinction-only-the-small-survive.html>.)

By 1986 affordable personal computers were available throughout the business world and to many consumers. The Mac Plus (January 1986-October 1990) had one megabyte of random access memory, a magnitude more than the first 1984 Mac. IBM PCs and compatibles were readily obtained. Some places still stigmatized using a computer, with some executives thinking only lower status secretaries “keyboard.” Moreover, it was not uncommon for executives to have their secretaries keyboard outgoing email messages and operate the computer to print to paper incoming email messages.

Contemporary business commentary proclaims the accelerating pace of technological change, stressing rigid bureaucracies of large corporations and inflexible antiquated procedures.

Patient Evolution Favors the Small
Paleontology’s Cope’s Rule postulates that population lineages tend to increase in body size over evolutionary time. Evolutionary advantages of larger

size include being able to catch more prey and to avoid other predators. <https://en.wikipedia.org/wiki/Cope%27s_rule>.

Between Cope’s Rule and the Lilliput Effect lies the conjoint reminders that the world is nonlinear and that “to every thing there is a season, and a time to every purpose under the heaven,” (Ecclesiastes 3:1).

Our contemporary culture exalts the large, the apparent majority, the seemingly “normal.” Yet our mythology glorifies the solitary hero, sometimes with subservient sidekick—Lone Ranger, Batman, Superman, Hans Solo, Frodo, and now Steve Jobs.

In its early years, Apple was a disrespected underdog. Mass opinion denigrated the Macintosh’s graphic user interface (GUI), Human Interface Guidelines (HIG), and the Mac’s lower Total Cost of Ownership (TCO), <https://en.wikipedia.org/wiki/Total_cost_of_ownership>.

MacGuide urged Macintosh users and user groups to publicly purchase at least one share of Apple Computer stock, and to actively exercise their stockholder rights (February 1996).

"First we want to awaken Macintosh users to their civic responsibility to own and support Apple. More than anything else now, Apple and its 20 million evangelistic users need to rec-

ognize their interdependence, common goals, and the tremendous value of the Macintosh platform." The Angels for Apple program just might help Apple, one Macintosh user at a time."

February 1996 a share of Apple stock sold at about \$30, or adjusted for the subsequent splits and dividends, a bit under one dollar, <<http://www.dividend.com/dividend-education/the-complete-history-of-apple-aapl/>>. Apple (AAPL) now dominates the Dow Jones Industrial Average (DJIA) and trades at over \$100 this year. (Past performance is no guarantee of future performance.)

Steve Jobs has been lionized since his death, his life and work recounted in Walter Isaacson's five-star biography. Steve Wozniak's major contributions to Apple are recognized in through histories of Apple, and in his own book, "Woz: Computer Geek to Cult Icon," WW Norton & Kindle, 2007.

Back a century ago, Wilbur and Orville Wright, bicycle builders, with curiosity and a life-long dedication to inventing a flying machine, did their own research, experimentation, failing, learning, fund-raising, collaborative communicating with other researchers, startup development, patent protection and enforcement. (David McCullough, *The Wright Brothers*, Simon & Schuster, 2015).

"Some men see things as they are and say why.
I dream things that never were and say why not."
Robert Kennedy.

OpenGuide

Security v Privacy v Efficiency v Cost
"When an online service is free, you're not the customer, you're the product" (Tim Cook, Apple CEO).

Traditional tradeoffs, like many sports contests, recognize two opposing goals, often analyzed by the classic T-chart of pros and cons. The current security versus privacy debate is at least a four-dimensional conflict, conceptually analyzed by a tetrahedron, a polyhedron with four triangular faces, six straight edges, and four vertex corners, a symmetrical triangular pyramid.

In a **four-issue consideration**, 100% focus on only one issue graphs at that one vertex; a 50-50 split between two issues graphs in the middle of the edge connecting the two issue vertices; a 33-1/3 split among three issues graphs in the middle of the triangle face connecting the three issue vertices; and a 25% split among all four issues graphs in the middle of the pyramid space. Uneven divisions, such as 60% security and 40% privacy are off center of the edge.

A classic engineering project formula is "Fast, Quality, Inexpensive—Pick

Two.” Much of our practical human choices are optimized, not maximized. We are enmeshed in tradeoffs. (Most of our Supreme Court disputes are not about the existence of a right, but the balance, or tradeoff, between competing rights.)

Large **data breaches**—the intentional or unintentional release of secure information to an untrusted environment—are now frequently front-page media reports, <https://en.wikipedia.org/wiki/Data_breach>. Some data breaches are perpetrated by thieves seeking personally identified information for identity and financial theft. Some data breaches are committed by ideologues, seeking to expose, without judicial permission, what they consider evil. However, most data breaches are small, and caused by busy, distracted, ordinary people. The “fat finger” mistyping an email address or fax number, an auto-address email application retrieving a similar to the intended name addressee, an earlier, draft computer file being sent rather than the properly edited newer one.

In response to data breaches, largely financial concerns, many jurisdictions strengthened computer “trespass” laws and enacted security breach notification laws, covering personally identifiable information, and often health information also, <https://en.wikipedia.org/wiki/Security_breach_notification_laws>. Data breach laws generally require an entity to immediately dis-

close a data breach to customers. IBM estimated the average 2015 cost for each lost or stolen record containing sensitive and confidential information at \$154, <http://www-03.ibm.com/security/data-breach/?S_PKG=&S_TACT=&campaign=Unbranded%7C-Search%7CSecurity%20Services%20Research%20-%20Awareness%7CNA%7C3571&group=Data_breach&mkwid=78d0e3e4-508a-7069-2335-000030b29a70&ct=&iio=BSEC&cmp=&ck=security%20data%20breach&cs=b&ccy=US&cr=google&cm=k&cn=Data_breach>. Data breach notifications are currently regulated in the USA by the states, initially by California in 2002. Currently the strictest requirements are for Massachusetts. <<http://www.mass.gov/ocabr/data-privacy-and-security/data/requirements-for-security-breach-notifications.html>>. Since many businesses have customers outside the business’s home state, prudence suggests complying with the strictest requirements.

At least after World War II, Europe has placed a higher value on personal privacy than the United States. The European Parliament and Council in 1995 adopted the Data Protection Directive on the protection of individuals with regard to the processing of personal data and on the free movement of such data, <https://en.wikipedia.org/wiki/Data_Protection_Directive>. The European Commission in 2012 released its draft General Data Protection Regu-

lation that is expected to supersede the Data Protection Directive.

Europe remembers the World War II-era fascist governments and post-war Communist regimes, with secret denunciations and seizures sending victims to work and concentration camps. European distrust of secret government files underlies its distrust of corporate databases.

In 2000 the European Commission decided that USA companies self-certifying adherence to the Safe Harbor Privacy Principles would satisfy the European Data Protection Directive, <https://en.wikipedia.org/wiki/International_Safe_Harbor_Privacy_Principles>. However, in October 2015 the European Court of Justice, responding to a Facebook customer complaint of insufficient data protection, invalidated the Safe Harbor Decision.

The 13 November 2015 Paris terrorist attacks have heightened in the USA a concern for security, for some at the expense of Constitutional rights, privacy, and humanitarian concerns for refugees from the Syrian civil war, <https://en.wikipedia.org/wiki/Refugees_of_the_Syrian_Civil_War>; cf Emma Lazarus' *The New Colossus* and her welcome to huddled masses yearning to breathe free.

For the individual and small business owner the security and privacy issues are simpler.

First, basics. Ensure your Mac firewall is on (System Preferences> Security & Privacy> Firewall> On). At home and work, password protect your WiFi networks. Passcode protect your Mac, iPhone, and iPad. Use easy to remember but non-dictionary and hard to guess passwords. Avoid common passwords such as 123456, 111111, password, qwerty, admin, and the names of your family and pets.

Second, learn a bit more how computers and the Internet work. Learn where your data is stored: on your Mac, your iPhone, iPad, iCloud, external hard drive, USB flash drives, work computer, work servers, Dropbox, Facebook, LinkedIn, other social media, etc. If you want to more fully understand how a computer works, enjoy Charles Petzold's *Code: The Hidden Language of Computer Hardware and Software* (Microsoft, 2000).

Third, be skeptical, wary, and cautious of clicking any link or responding to any email for which you are not fairly sure who the actual sender is. Financial scammers often imitate the look of legitimate businesses. Instead of clicking the link or hitting respond, use your browser and directly enter the address you know for the bank or other business.

Fourth, review your privacy settings on each of your social media accounts. Remember once something is posted on the Internet, it may last longer than

you. Even if you can delete your post, others might have already copied your post. Europe's Right to be Forgotten rarely reaches to individuals in other jurisdictions.

Fifth, Evaluate the different kinds of information you use. Banking online and related financial transactions deserve high security. Your oatmeal cookie recipe probably not.

Sixth. Don't post or send messages when angry. Don't post or send messages you expect no one else will ever see.

Seventh. Consider whether you need any encryption. Encryption requires keys, keys require safe keeping. Lose your encryption key and you lose your encrypted data, rarely can even a computer expert retrieve encrypted data without the key; even the attempt will be highly expensive. How often do you misplace your physical keys, glasses, paper files, other things. Can the recipients of your messages easily decrypt your messages; are they easily familiar with most computer/ smartphone/ Internet operations. Don't encrypt because a media article discussed it, or your neighbor said everyone has to. Make your decision based on your review of your types of digital data, and your personal style and preferences.

Eighth. Companies differ in how they treat the information they get from you. Consider what you get from "free" services and apps, and how those compa-

nies treat your information. Some free services might be worth the potential privacy breach. Perhaps all your Dropbox posts are dully worthless to anyone else. Apple's CEO Tim Cook said: "I want to be absolutely clear that we have never worked with any government agency from any country to create a backdoor in any of our products or services. We have also never allowed access to our servers. And we never will." ApplePay was designed to keep customer payment information private from the retailer, creating a dynamic security code generated for each transaction. Apple does not track Apple Pay usage.

Tim Cook further described Apple privacy for its customers. "We don't build a profile based on your email content or web browsing habits to sell to advertisers. We don't 'monetise' the information you store on your iPhone or in iCloud. And we don't read your email or your messages to get information to market to you."

Upgrading Again— iPhone 6s and iOS 9

A media mantra now is how businesses live in a quickly and constantly changing environment. As consumers and citizens we notice that also. Long familiar names of sports stadiums and landmark buildings change, typically to the highest bidder. Internet and related technological darlings strive to outlast the expected life span of the common mouse, 4 years. Many mid-American areas (and Vivaldi) recognize four seasons; fashionistas might see their fashion change monthly.

I just replaced my aging, four-year-old iPhone 4s (November 2011) with the current iPhone 6s (October 2015). Although not Proust's madeleine, still prompting a remembrance of technological things past. Before the iPhone 4s, the still smart Palm Trio 650 (December 2005), successor to app-loadable, sans-phone Palm m505 (December 2001) and a succession of cell phones.

Average cellphone replacement in the USA used to be about two years, likely partly influenced by phone carriers typical two-year cellphone contracts. Now with carriers offering no-contract phone service and some, as well as Apple, offering variations on included annual phone upgrades, the average replacement cycle shortens. Besides the carrier-contract convention of two

years, many users want at least some of the new features of the newest smartphone. Some want the newest fashion.

After four years, my iPhone 4s battery lost perhaps two-thirds of its initial capacity. Frequent recharging and carrying a small external battery (3200 mAh) extended basic use for a few months until Apple released the new iPhone 6s and 6s Plus. While there were a few interesting new iPhone features introduced by the newer hardware over four years, I could have continued with my 4s if the battery were revived. While battery replacement could be done, its debilitation was an indication of time to upgrade the hardware.

One of Apple's consumer-friendly practices is long respect and support for older hardware and software. Even the four-year old iPhone 4s could install and readily use the many sequential operating system (OS) updates, including the latest, iOS 9. Indications are iOS 10 won't work for the iPhone 4s. To every thing there is a season; a time to be born, and a time to die; a time to break down, and a time to build up. (Ecclesiastes 3).

Ben Franklin and friends had to wait for months for trans-Atlantic news, and days or weeks for inter-colony communications. Affordable office fax machines in the late 1980s brought expectations for a communication send-receive-reply loop to a single day. Email and text has shortened not only our ex-

pectations but also for many our patience.

In the early personal computer and Macintosh days, mid-1980s, an annual software upgrade would be considered frequent, and obtained from a local (brick and mortar) store as a cardboard box with floppy disks inside and a paper user manual. For a few years now, in the Apple and Android ecosystems, computer device apps are readily Internet downloaded, often automatically in the background. Some developers issue weekly software upgrades.

I noticed three new features of my iPhone 6s that surprised and pleased me. **First, its speed.** The average smartphone downloader has about 42 apps on the phone, few are used daily. A Nielsen 2014 study found 87% use less than 10 apps daily, 55% use between one and four apps, and 32% use between five and nine. The average tablet downloader has about 35 apps, with 89% reporting they use less than ten apps daily. <<http://www.nielsen.com/us/en/insights/news/2014/tech-or-treat-consumers-are-sweet-on-mobile-apps.html>>. The survey participants reported using apps when “bored” or “killing time,” 68%, and while waiting for something or someone, 61%.

Current science suggest one cannot “kill” time, although Einstein’s Relativity can bend it, and a black hole might kill, and perhaps resurrect, time.

With my iPhone 4s, most software upgrades took noticeable waiting time. The iPhone 6s upgrades most apps in only a few seconds. (Most upgrades are between 20 and 80 MB; our Internet speed tests reported about 50 Mbps down, 24 up.)

Second, Touch ID noticeably speeds up access—at least for those of us who implemented a passcode. It only took a few seconds to tap in a few digits of my well-remembered passcode; now with Touch ID access appears instantaneous.

Third, the iPhone 6s is bigger than the 4s. The 4s readily fit in many pockets at 4.50 x 2.31 x 0.37 inches (114.3 x 58.6 x 9.3 mm), while the 6s grew an inch longer and a quarter inch wider, at 5.44 x 2.64 x 0.28 inches (138.3 x 67.1 x 7.1 mm). The iPhone 6s still fit my pockets, and as importantly my hand. The “fit” problem eliminated, the slightly added length permitted several more lines of text to display—an obvious but unanticipated efficiency.

Colors, more research and evaluation for the iPhone 6s not needed with the iPhone 4s purchase. Broadly advertised: gold, silver, space gray, and the new rose gold. But only space gray has a black front, the other three have white fronts.

Anticipated peripheral changes: new, larger case and replacing 30-pin cables with Lightning cables. Not all cables

needed replacement. Many more recent cars have USB ports, and thus the round cigarette lighter to USB port adapters not needed.

Before the main questions were which cellphone provider to choose (AT&T, Verizon, Sprint the majors) and how much memory (16, 32, 64 GB). The iPhone 6s memory choices remain small, medium, and large, albeit now 16, 64, and 128 GB. Now the relatively easy cell provider decision has split into service provider and iPhone provider.

Cell service provider used to be the task of finding the least-bad provider, which frequently differed by urban location, with many rural areas having poor reception on all networks. Now, cell coverage has greatly expanded, and most populated areas have some service, albeit sometimes spotty as hills, towers, or perhaps phlogiston piles intercept cell signals.

Current service plans offer no-contract monthly service fees, two-year iPhone lease with monthly service and fees, and threshold or unlimited voice, text, and data bundled. In addition to the now four-major cell service providers (the prior three joined by T-mobile), Apple offers sale of locked (to a particular cellphone service provider) or unlocked iPhones 6s and iPhone 6s Plus, and a 2-year lease bundled with AppleCare.

Buying and installing new hardware or software the first available week still risks diverse bugs and re-installs, as de-

velopers and most users learn from the pioneers. Thereafter, there is the multi-day joy of researching technical specifications and others' early public evaluations, and self-reflection of needs, wants, preferences, and accommodations. Research revealed Silver clear coated but not otherwise treated, so a scratch or chip is rarely noticeable unless light hits it precisely. The three other colors are anodized, so scratches are more noticeable. But Silver has the white front. Thus, chose Space Gray, the only choice with a black front.

Software upgrade process remains fairly stable. Multiple precautions. Backup retiring iPhone through iTunes to Mac hard drive, and then through WiFi to iCloud. Back up the data from a few key iPhone apps to parallel Mac apps. The day of new iPhone purchase delete key sensitive data on iPhone 4s. In process of purchase and setup of new iPhone 6s (at Apple Store) return replaced iPhone 4s to factory condition, without all the additional apps and without user data.

Next task, proceeding through the major iPhone 6s iOS 9 settings, changing a few to fit personal preference, noticing the few new settings and the new placements of some settings—a process aided by reading a few early iPhone 6s and iOS 9 reviews. Launching most apps on iPhone 6s, many initially needing user name and passwords (less needed if one uses the iCloud keychain, but that raises some cloud issues.)

So after a few days, the iPhone 6s no longer looks or feels big. I'm used to the instantaneous launch with just a thumb press via Touch ID, and the fast app updates are now the new norm. Impatience tempered, for now.

WinGuide

Timeline of select innovations:

- agriculture (c 9,500 BCE)
- writing (c 5500 BCE)
- bronze (c 5000 BCE)
- Leonardo di ser Piero da Vinci (1452-1519)
- Michelangelo di Ludovico (1475-1564)
- wood-encased graphite pencil (c 1560)
- Edward Jenner, smallpox vaccination (1796)
- Charles Goodyear, vulcanized rubber (1839)
- William Henry Perkin, first aniline dye, mauveine, foundation for pharmaceuticals (1856)
- Louis Pasteur, vaccination, microbial fermentation (1857), pasteurization
- Joseph Lister, antiseptic surgery (carbolic acid/ phenol) (1865)
- Newspaper color comics, The Yellow Kid (1895)
- Orville & Wilbur Wright, controlled heavier-than-air flight (1903)
- Albert Einstein, relativity & mass-energy equivalence, $E=mc^2$ (1905)
- Manhattan Project, nuclear reaction (1942)
- transistor (1947)
- Jonas Salk, polio vaccine (1957)
- typewriter (1960s)
- Steve Jobs & Steve Wozniak, Apple (1976)
- automobile (1886)

- Gem paperclip (1890s)
- airplane (1903)
- mass production (1926)
- satellites, Sputnik (1957)
- Motorola hand-held mobile phone (1973)
- Graphic User Interface, Macintosh (1984)
- Tim Berners-Lee, Internet's World Wide Web (1989)

HyperGuide

No matter how much you are fond of your iPhone if you drop it, attend to your environment before trying to retrieve it. "Man dies after being struck by roller coaster at Cedar Point," 13Aug2015. "The man had hopped a fence into a restricted area at the Sandusky amusement park in an attempt to retrieve a cell phone that had fallen below the Raptor roller coaster before he was struck.

<<http://www.nbcchicago.com/news/local/Man-Killed-by-Popular-Cedar-Point-Roller-Coaster-321826432.html>>

Essentials for refugees and migrants from the Mideast and elsewhere now include a smart-phone as well as food and shelter. One said, "Every time I go to a new country, I buy a SIM card and activate the Internet and download the map to locate myself."

<http://www.nytimes.com/2015/08/26/world/europe/a-21st-century-migrants-checklist-wa-ter-shelter-smartphone.html?_r=0>

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