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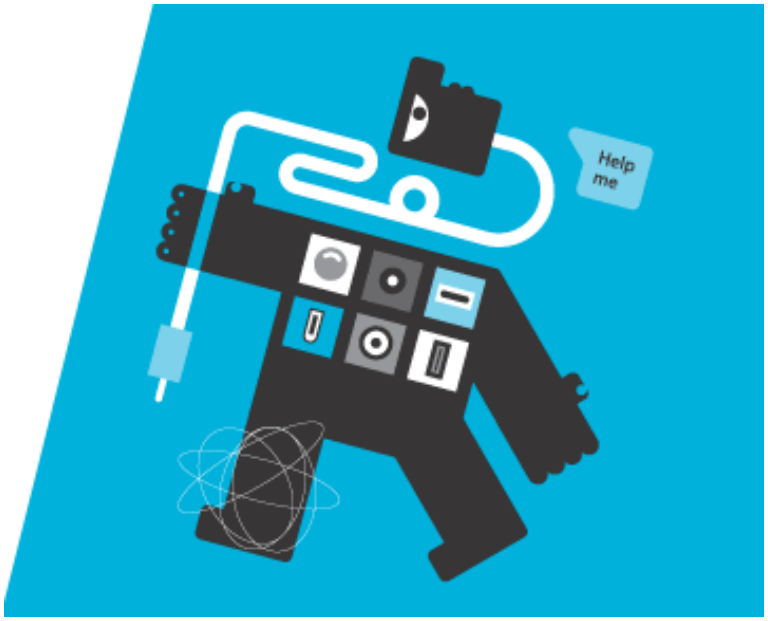
Make it simple

Oct 28th 2004
From The Economist print edition



The next thing in technology, says Andreas Kluth, is not just big but truly huge: the conquest of complexity

“THE computer knows me as its enemy,” says John Maeda. “Everything I touch doesn't work.” Take those “plug-and-play” devices, such as printers and digital cameras, that any personal computer (PC) allegedly recognises automatically as soon as they are plugged into an orifice called a USB port at the back of the PC. Whenever Mr Maeda plugs something in, he says, his PC sends a long and incomprehensible error message from Windows, Microsoft's ubiquitous operating system. But he knows from bitter experience that the gist of it is no.

At first glance, Mr Maeda's troubles might not seem very noteworthy. Who has not watched Windows crash and reboot without provocation, downloaded endless anti-virus programs to reclaim a moribund hard disc, fiddled with cables and settings to hook up a printer, and sometimes simply given up? Yet Mr Maeda is not just any old technophobic user. He has a master's degree in computer science and a PhD in interface design, and is currently a professor in computer design at the Massachusetts Institute of Technology (MIT). He is, in short, one of the world's foremost computer geeks. Mr Maeda concluded that if he, of all people, cannot master the technology needed to use computers effectively, it is time to declare a crisis. So, earlier this year, he launched a new research initiative called “Simplicity” at the MIT Media Lab. Its mission is to look for ways out of today's mess.

Mr Maeda has plenty of sympathisers. “It is time for us to rise up with a profound demand,” declared the late Michael Dertouzos in his 2001 book, “The Unfinished Revolution”: “Make our computers simpler to use!” Donald Norman, a long-standing advocate of design simplicity, concurs. “Today's technology is intrusive and overbearing. It leaves us with no moments of silence, with less time to ourselves, with a sense of diminished control over our lives,” he writes in his book, “The Invisible Computer”. “People are analogue, not digital; biological, not mechanical. It is time for human-centred technology, a humane technology.”

The information-technology (IT) industry itself is long past denial. Greg Papadopoulos, chief technologist at Sun Microsystems, a maker of powerful corporate computers, says that IT today is “in a state that we should be ashamed of; it's embarrassing.” Ray Lane, a venture capitalist at Kleiner Perkins Caufield & Byers, one of the most prominent technology financiers in Silicon Valley, explains: “Complexity is holding our industry back right now. A lot of what is bought and paid for doesn't get implemented because of complexity. Maybe this is the industry's biggest challenge.” Even Microsoft, which people like Mr Lane identify as a prime culprit, is apologetic. “So far, most people would say that technology has made life more complex,” concedes Chris Capossela, the boss of Microsoft's desktop applications.

The economic costs of IT complexity are hard to quantify but probably exorbitant. The Standish Group, a research outfit that tracks corporate IT purchases, has found that 66% of all IT projects either fail outright or take much longer to install than expected because of their complexity. Among very big IT projects—those costing over $10m apiece—98% fall short.

Gartner, another research firm, uses other proxies for complexity. An average firm's computer networks are down for an unplanned 175 hours a year, calculates Gartner, causing an average loss of over $7m. On top of that, employees waste an average of one week a year struggling with their recalcitrant PCs. And itinerant employees, such as salesmen, incur an extra $4,400 a year in IT costs, says the firm.

Tony Picardi, a boffin at IDC, yet another big research firm, comes up with perhaps the most frightening number. When he polled a sample of firms 15 years ago, they were spending 75% of their IT budget on new hardware and software and 25% on fixing the systems that they already had; now that ratio has been reversed—70-80% of IT spending goes on fixing things rather than buying new systems. According to Mr Picardi, this suggests that this year alone IT complexity will cost firms worldwide some $750 billion. Even this, however, does not account for the burden on consumers, whether measured in the cost of call-centres and help desks, in the amount of gadgets and features never used because they are so byzantine, or in sheer frustration.

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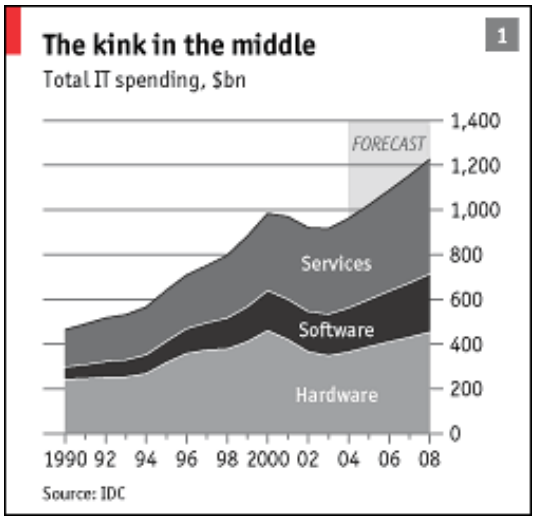
Click to buy from Amazon.com: "The Unfinished Revolution", by Michael Dertouzos; "The Invisible Computer", by Donald Norman (Amazon.co.uk).

John Maeda launched the "Simplicity" research initiative at MIT. The Standish Group monitors corporate spending on IT. See also Donald Norman's homepage.

Why now?

Complaints about complex technology are, of course, nothing new. Arguably, IT has become more complex in each of the 45 years since the integrated circuit made its debut. But a few things have happened in the past three years that now add a greater sense of urgency.

The most obvious change is the IT bust that followed the dotcom boom of the late 1990s. After a decade of strong growth, the IT industry suddenly started shrinking in 2001 (see chart 1). In early 2000 it accounted for 35% of America's S&P 500 index; today its share is down to about 15%. “For the past three years, the tech industry's old formula—build it and they come—has no longer worked,” says Pip Coburn, a technology analyst at UBS, an investment bank. For technology vendors, he thinks, this is the sort of trauma that precedes a paradigm shift. Customers no longer demand “hot” technologies, but instead want “cold” technologies, such as integration software, that help them stitch together and simplify the fancy systems they bought during the boom years.



Steven Milunovich, an analyst at Merrill Lynch, another bank, offers a further reason why simplicity is only now becoming a big issue. He argues that the IT industry progresses in 15-year waves. In the first wave, during the 1970s and early 1980s, companies installed big mainframe computers; in the second wave, they put in PCs that were hooked up to “server” computers in the basement; and in the third wave, which is breaking now, they are beginning to connect every gadget that employees might use, from hand-held computers to mobile phones, to the internet.

The mainframe era, says Mr Milunovich, was dominated by proprietary technology (above all, IBM's), used mostly to automate the back offices of companies, so the number of people actually working with it was small. In the PC era, de facto standards (ie, Microsoft's) ruled, and technology was used for word processors and spreadsheets to make companies' front offices more productive, so the number of people using technology multiplied tenfold. And in the internet era, Mr Milunovich says, de jure standards (those agreed on by industry consortia) are taking over, and every single employee will be expected to use technology, resulting in another tenfold increase in numbers.

Moreover, the boundaries between office, car and home will become increasingly blurred and will eventually disappear altogether. In rich countries, virtually the entire population will be expected to be permanently connected to the internet, both as employees and as consumers. This will at last make IT pervasive and ubiquitous, like electricity or telephones before it, so the emphasis will shift towards making gadgets and networks simple to use.

UBS's Mr Coburn adds a demographic observation. Today, he says, some 70% of the world's population are “analogues”, who are “terrified by technology”, and for whom the pain of technology “is not just the time it takes to figure out new gadgets but the pain of feeling stupid at each moment along the way”. Another 15% are “digital immigrants”, typically thirty-somethings who adopted technology as young adults; and the other 15% are “digital natives”, teenagers and young adults who have never known and cannot imagine life without IM (instant messaging, in case you are an analogue). But a decade from now, Mr Coburn says, virtually the entire population will be digital natives or

immigrants, as the ageing analogues convert to avoid social isolation. Once again, the needs of these converts point to a hugely increased demand for simplicity.

The question is whether this sort of technology can ever become simple, and if so, how. This survey will analyse the causes of technological complexity both for firms and for consumers, evaluate the main efforts toward simplification by IT and telecom vendors today, and consider what the growing demands for simplicity mean for these industries. A good place to start is in the past.

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