

The end of Wintel

As Microsoft and Intel move apart, computing becomes multipolar.

THEY were the Macbeths of information technology (IT): a wicked couple who seized power and abused it in bloody and avaricious ways. Or so critics of Microsoft and Intel used to say, citing the two firms' supposed love of monopoly profits and dead rivals. But in recent years, the story has changed. Bill Gates, Microsoft's founder, has retired to give away his billions. The "Wintel" couple (short for "Windows", Microsoft's flagship operating system, and "Intel") are increasingly seen as yesterday's tyrants. Rumours persist that a coup is brewing to oust Steve Ballmer, Microsoft's current boss.

Yet there is life in the old technopolists. They still control the two most important standards in computing: Windows, the operating system for most personal computers, and "Intel Architecture", the set of rules governing how software interacts with the processor it runs on. More than 80% of PCs still run on the "Wintel" standard. Demand for Windows and PC chips, which flagged during the global recession, has recovered. So have both firms' results: to many people's surprise, Microsoft announced a thumping quarterly profit of \$4.5 billion in July; Intel earned an impressive \$2.9 billion.

So now is a good time to take stock of IT's most hated power couple. As *The Economist* went to press, Intel was on track to reach a settlement with America's Federal Trade Commission (FTC), which would in effect end the antitrust woes that have plagued both firms. And Microsoft has recently strengthened its ties with ARM, Intel's new archrival. This suggests that the Wintel marriage is crumbling.

Critics have often questioned both firms' technological prowess. Yet Windows 7, the latest version of Microsoft's operating system, is excellent, and customers have snapped it up. As for Intel, its manufacturing machine is peerless. Some of its transistors are so tiny that 2m would fit on the "." at the end of this sentence.

Both firms have often co-operated, despite occasional crockery-throwing. Microsoft has been pushier: in the mid-1990s, for instance, Mr Gates leaned heavily on Andy Grove, Intel's boss, to stop the development of software that trod on Windows' turf. Intel backed down.

The Wintel marriage is now threatened, oddly enough, by technological progress. Processors grow ever smaller and more powerful; internet and wireless connections keep speeding up. This has created both centripetal and centrifugal forces, which are pushing computing into data centres (huge warehouses full of servers) and onto mobile devices—businesses that Microsoft and Intel do not dominate.

Other firms have leapt into the gap. Apple is now worth more than Microsoft, thanks to its hugely successful mobile devices, such as the iPod and the iPhone. Google may be best known for its search service, but the firm can also be seen as a global network of data centres—dozens of them—which allow it to offer free web-based services that compete with many of Microsoft's pricey programmes.

The shift to mobile computing and data centres (also known as "cloud computing") has speeded up the "verticalisation" of the IT industry. Imagine that the industry is a stack of pancakes, each representing a "layer" of technology: chips, hardware, operating systems, applications. Microsoft, Intel and other IT giants have long focused on one or two layers of the stack. But now firms are becoming more vertically integrated. For these new forms of computing to work well, the different layers must be closely intertwined.

Apple, whose products have always been more integrated, is building a huge data centre and also offering web-based services. Google has developed Android, an operating system for smart-phones. The heavyweights in corporate IT are invading each other's territory, too. That is the only way to grow, they believe. Also, clients love a one-stop-shop. Cisco, the world's largest maker of data-networking gear, has started to sell servers. That spurred HP, a vendor of these machines, to push into the networking business. Oracle, which sells business software, bought Sun Microsystems, a computer-maker, last year.

Intel also has to deal with new competitors. For most of its 42-year history its main rival was Advanced Micro Devices (AMD), which makes processors based on a Windows-compatible architecture. Now Intel has to slug it out with ARM, a British firm. ARM does not make its own chips, but its designs are the basis for most of those that go into most mobile handsets.

Trustbusters have made life for the Wintel couple more difficult, mostly by curbing the ways they can defend and expand their near-monopolies. Having lost its battle with the European Commission, for instance, Microsoft must now give Windows users in the European Union a choice of which web browser to install. The commission also went after Intel, fining it €1.06 billion in May 2009 (\$1.44 billion at the time) for giving rebates to computer makers if they used fewer AMD chips. The rules governing how Intel can price its chips will finally be settled soon, when negotiations with the FTC conclude.

The Wintel of our discontent

In response to these threats, Microsoft has made big bets on cloud computing. It has already built a global network of data centres and developed an operating system in the cloud called Azure. The firm has put many of its own applications online, even Office, albeit with few features. What is more, Microsoft has made peace with the antitrust authorities and even largely embraced open standards.

In other areas, however, the firm is floundering. It is still losing money on its web services, despite having invested billions. And apart from Xbox Live, the online offering for its game console, its new web services attract few eyeballs. Bing, Microsoft's search service, still answers only 13% of online queries in America. Worse, Microsoft's mobile business is in disarray. It recently killed two new smart-phones after just 48 days on the market. A new operating system for smart-phones will only come later this year. And in tablet computers, Microsoft is behind, too. Should the firm fail to catch up fast, Mr Ballmer will surely be tossed through a window.

Paul Otellini, Intel's boss, is more secure. When Intel started losing its edge against AMD, he quickly cut costs and revised the firm's goals. (If regulators are right, however, Intel resorted to all kinds of unfair practices to buy time.) Mr Otellini predicts that Intel's chips will eventually be in every intelligent device with an internet link—which could one day mean just about everything.

He is pinning his hopes on a new family of processors called Atom. Rather than making these chips ever more powerful, Intel is making them ever cheaper and less power-hungry. That way, manufacturers will find it economical to put chips not only in phones but also in television sets, sewing machines, robots and so on. Since such devices tend to need special programmes, Intel has also moved further into the software market. In June 2009 it bought Wind River, which sells operating systems for embedded processors.

Still, Intel faces some high hurdles. Although Atom now powers most netbooks (cheap laptops), its success is hardly guaranteed. ARM's chips guzzle little power and cost much less than Intel's, because its licensing fees are low and most customers use foundries (contract

chipmakers) to make them. Intel may not be able to sell future generations of Atom at a competitive price without hurting its fat margins.

Intel executives are optimistic, however. Atom will be more attractive for device makers, the firm's executives argue, because developers can rely on the Intel Architecture and will not have to learn new tricks. More importantly, Intel believes that it can keep making smaller transistors than anyone else and that Atom chips will continue to be as profitable as its other chips. Yet this suggests a long-term problem. Intel's position seems safe as long as Moore's Law holds (ie, as long as it can keep cramming twice as many transistors on a chip every 18 months or so). But some people think that will become physically difficult sooner rather than later.

Regardless of whether Microsoft and Intel prosper individually, they will drift apart as a couple. Since Microsoft has yet to deliver a competitive version of Windows for smart-phones and tablets, for instance, Intel has teamed up with Nokia, the world's largest maker of handsets, to develop Meego, an open-source operating system for mobile devices. Microsoft, by cuddling up to ARM, will be able to build chips of its own.

Tech giants invade each other's turf

Company	Apple	Google	Microsoft	Intel	HP	IBM	Oracle	Cisco
Revenues, 2009, \$bn	46.7	23.7	58.7	35.1	117.0	95.8	23.2	35.5
Net income, 2009, \$bn	9.4	6.5	16.3	4.4	8.0	13.4	5.8	6.1
Employees, latest	34,300	19,835	93,000	79,800	304,000	399,409	86,000	68,574
Amount of activity in each market								1=a lot, 2=some, 3=only a little
Processors	3*			1		1	1	1†
Computers	1	3‡			1	1	1	2
Network equipment					1	2	3	1
Mobile devices	1	3§	3§		1			3
Software**	1	1	1	1	1	1	1	
Applications	1		1			3	1	
Web-based services	2	1	1		3	3	2	1
Online advertising	3	1	1					
Cloud computing		1	1		2	1		
IT services/consulting			2		1	1	2	1

Sources: Company reports;
The Economist; Bloomberg

*For iPad †Custom processors ‡Servers for its own data centres §Smart-phone/s discontinued, possible tablet **Operating systems, databases, middleware etc.

As the Wintel pair splits, computing will start to look different. Instead of being dominated by two monopolists, the market will be fought over by eight or nine more or less vertically integrated giants. Oracle, Cisco and IBM will vie for corporate customers; Apple and Google will scramble for individuals (see table). IT, like the world, is becoming multipolar.

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