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The future of computing

The next big thing?

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The uncertain promise of computing that is foolproof, invisible and everywhere

IT IS increasingly painful to watch Carly Fiorina, the boss of Hewlett-Packard (HP), as she tries to explain to yet another conference audience what her new grand vision of "adaptive" information technology is about. It has something to do with "Darwinian reference architectures", she suggests, and also with "modularising" and "integrating", as well as with lots of "enabling" and "processes". IBM, HP's arch rival, is trying even harder, with a marketing splurge for what it calls "on-demand computing". Microsoft's Bill Gates talks of "seamless computing". Other vendors prefer "ubiquitous", "autonomous" or "utility" computing. Forrester Research, a consultancy, likes "organic". Gartner, a rival, opts for "real-time".

Clearly, something monumental must be going on in the world of computing for these technology titans simultaneously to discover something that is so profound and yet so hard to name. What is certainly monumental, reckons Pip Coburn, an analyst at UBS, is the hype, which concerns, he says, "stuff that doesn't work yet". Frank Gens at IDC, another tech consultancy, quips that, in 2004 at least, "utility" computing is actually "futility" computing.

Yet as a long-term vision for computing, what the likes of IBM, Microsoft and HP (and Oracle, Sun, etc) are peddling is plausible. The question is, how long will it take? Some day, firms will indeed stop maintaining huge, complex and expensive computer systems that often sit idle and cannot communicate with the computers of suppliers and customers. Instead, they will outsource their computing to specialists (IBM, HP, etc) and pay for it as they use it, just as they now pay for their electricity, gas and water. As with such traditional utilities, the complexity of the supply-systems will be entirely hidden from users.

ER meets the Matrix

The potential for a computing infrastructure such as this to boost efficiency—and even to save lives—is impressive. Irving Wladawsky-Berger, an in-house guru at IBM, pictures an ambulance delivering an unconscious patient to a random hospital. The doctors go online and get the patient's data (medical history, drug allergies, etc), which happens to be stored on the computer of a clinic on the other side of the world. They upload their scans of the patient on to the network and crunch the data with the processing power of thousands of remote computers—not just the little machine which is all that the hospital itself can nowadays afford.

For its nuts and bolts, this vision relies on two unglamorous technologies. The first is "web services"—software that resides in a big shared "server" computer and can be found and used by applications on other servers, even ones far away and belonging to different organisations. Mr Wladawsky-Berger's hospital would be getting the patient's info from his home clinic through such a web service.

The second technology is "grid computing". This involves the sharing of processing power. The best-known example is a "search for extra-terrestrial intelligence" project called SETI@home, overseen by the University of California at Berkeley. Nearly 5m people in 226 countries have downloaded a screensaver that makes their computer available, whenever it is sitting idle, to process radio signals gathered from outer space. The aim is to find a pattern that may be from aliens. Mr Wladawsky-Berger's hospital would similarly crunch patient-data using the internet, or grid, as if it were a single, giant virtual microprocessor, but for a more earth-bound purpose.

Both technologies have made great strides recently. Web services, for instance, need common standards and protocols. Some basic standards already exist—awkward acronyms such as XML, SOAP and WSDL provide a rudimentary grammar to let computers talk to each other. But the sticking point, says Phillip Merrick, boss of webMethods, one of the pioneers in the field, has been the many other fiddly but necessary protocols for security, transaction certification, and so on. A breakthrough occurred in October, when the two superpowers, IBM and Microsoft, simply got up on a stage together and declared what protocols they will use. Dubbed "WS splat" by the geeks, this ought to speed up the adoption of web services.

Web services are currently most visible in the business model of so-called application service providers. These are firms that offer to host software applications and databases for customers for a monthly fee—an analogy would be for firms to do their e-mailing via Yahoo! or their buying via eBay. The most successful is Salesforce.com, a San Francisco firm that, as the name says, specialises in software for managing customer information and marketing leads. It says that it was poaching so much business from a more traditional seller of customer-relations software, Siebel Systems, that Siebel had to adopt the model itself. In October, Siebel teamed up with IBM and now also offers its software as a service over the internet.

Nonetheless, this particular form of web services is overhyped, says Rahul Sood of Tech Strategy Partners, a consultancy in Silicon Valley. Such services appeal mostly to small businesses and firms that do not need to customise their applications very much. For the grander vision—the on-demand, adaptive, seamless, ubiquitous, organic sort—a lot more needs to happen.

At the core of the vision is flexibility—a firm must be able to make its operating costs, and therefore its computing and information costs, totally variable so that they go up and down with business volumes. Firms can improve cost flexibility today, says Mr Sood, but only if they stick with one vendor, such as IBM, or if they make only one of their many computing functions (data storage, say) flexible. But for computing to be bought and sold as a utility, firms must be able to switch vendors, to do it for all their computing functions, and with meter-based pricing. All of this will take a few more years to get right.

And yet, though some years away, the very idea of utility-style computing is making waves

today. IBM already describes practically every major corporate sale, whether of humdrum servers or of comprehensive consulting, as having to do with its "on demand" vision. This is forcing HP, its arch rival, to redouble its efforts to be seen less as a box-shifter and more as a provider of "solutions". And software suppliers are preparing for a different revenue model: instead of chunks of licence fees at point-of-sale, monthly-usage fees will trickle in from their customers.

Still, it is tempting to conclude that the current marketing hype of the big computer firms is meant mostly to obscure the humdrum reality that overall tech spending will not regain the fizz of the bubble era any time soon. Instead, the new model of computing, says Halsey Minor, founder of Grand Central Communications, one of the many firms that are now working out the details of web services, is inevitable and important, but "sooo boring".

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