

# Exhibit 20

## **Army tactics are the business:**

*PEER-TO-PEER COMPUTING: Businesses that adopt 'swarming' can imitate the military and avoid management over-control, writes Paul Rubens*

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By PAUL RUBENS

Swarming, a technique pioneered by the US army, is emerging as a peer-to-peer (P2P) networking technique in the civilian world, helping organisations reduce the time needed to react to new business opportunities.

During swarming, employees use P2P collaboration tools to pull together an ad hoc team of people from anywhere in an organisation - or even outside it - to work on a specific task.

When problems arise any individual can add new team members with the additional skills required, and the team's composition evolves until the project is successfully completed.

Swarming was developed as a tactic by the US army to enable separate units to come together for a particular attack. By enabling small forces to co-ordinate with each other directly, rather than through a central command post, the army has cut the time needed to plan military operations from 10 hours during the first Gulf war to just 10 minutes in Afghanistan.

"The reduction from 10 hours to 10 minutes happened because of the willingness of senior military officers to allow the networks in the field to talk to each other and make snap decisions," says John Arquilla, professor of information warfare at the Naval Postgraduate School in California.

"All were basically connected to all others (in a peer-to-peer network) and senior leaders came to understand that the art of generalship now consists of avoiding over-control," he says.

Businesses that adopt swarming can avoid managerial over-control in exactly the same way, says Craig Samuel, chief knowledge officer at HP Services, part of Hewlett-Packard.

"The potential prize is worth billions of dollars to companies like HP if we can collaborate in the right manner, and the breakthrough technology is P2P. Napster showed that using P2P it is possible to link

individuals around the world into a unit with a common focus very quickly," he says.

Alternative collaboration systems which are based on centralised servers are unsuitable for swarming because they are not flexible enough: they require too much time-consuming administration before new members can be added to a team, and admitting people from outside an organisation is often impossible.

When account managers at HP Services receive requests for proposals (RFPs) from potential customers, they invite technical architects, product specialists, and other experts from all over the world into a swarm in a matter of minutes. This is done by using a P2P collaboration platform called Groove, developed by Massachusetts-based Groove Networks.

The platform includes P2P file sharing, instant messaging and group document editing. Teams at HP Services using swarming to work on proposals have found they can cut the time needed to generate a response by up to 60 per cent, Mr Samuel says.

Lowe & Partners Worldwide, an international advertising agency, uses swarming to generate creative ideas for new business pitches. The time taken to formulate proposals has been vastly reduced by bringing together appropriate staff from offices around the world with industry experts from outside the organisation for instant brainstorming sessions.

"Swarming's direct results are faster, more collaborative work, more creative ideas, and better use of geographically distributed resources," says Ethan Schoonover, Lowe's Hong Kong-based e-business director.

P2P systems such as Groove allow outside experts to join swarms because the P2P traffic can pass through corporate firewalls.

Clearly security is important, but Groove offers a higher level than other collaboration systems, Mr Samuel believes.

"One of my concerns is obviously the security of HP intellectual capital and client information, but Groove uses 192 bit encryption which can't be turned off and is approved by the US government. You could use the system with a Wi-Fi connection in an internet cafe and still be highly secure," he says.

Several armies worldwide have adopted swarming, but corporate adoption of P2P technology has been slow, but as it becomes more common it seems likely that swarming will be used with increasing frequency as a business tactic as well.

"Unlike the rigid, highly structured way of working 20 years ago, what we need to have now are clusters of people that work quickly independent of - but in the same direction as - the organisation as a whole. From the outside swarming looks disorganised, but from close up it is anything but," says Mr Samuel.

A second article, on the security implications of P2P in business, is due to appear in the December 10 FT-IT.

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