

News**The disruptive architecture of the cloud**

John Hagel and John Seely Brown FEBRUARY 10, 2011

There is a lot of hype about cloud computing. And there is also a lot of scepticism from executives, who view its on-demand, self-service nature as just another form of low-cost IT outsourcing.

But in reality, cloud computing is part of a third wave of technology disruption that first hit with the personal computer in the 1970s. This was followed by the public internet more than a decade later. Cloud computing could be just as disruptive, transforming institutional architectures and management practices in a range of industries.

Top management must develop experience with cloud-computing platforms at an early stage to prepare themselves for the disruptions.

“Outside-In” architectural disruptions

Cloud computing allows executives to rethink IT architecture. By “architecture,” we mean how IT resources are organised. At the highest level, we see a transformation from the “inside-out” architecture of today, which finds it challenging to co-ordinate complex transactions across multiple independent parties, to an “outside-in” approach.

Imagine if you had to co-ordinate 10,000 business partners who conduct complex, interdependent activities over a long period of time. That’s what an outside-in approach allows.

It’s a very different kind of architectural challenge from short-term, inside-out transactions within an enterprise.

The outside-in approach has four characteristics:

- An ability to co-ordinate multiple stages of business activities that span a large number of independent business partners;
- A distinct “policy layer” that enables autonomous partners to set business policies and preferences while managing policy conflicts as they emerge;
- A federated platform that aggregates discrete third-party services, such as security and performance monitoring, to support long-lived interactions;
- Compensation mechanisms that cope with unanticipated developments and modify interactions to accomplish the business objectives originally specified.

Disruptions in practice

The outside-in approach is not just a theoretical system. Some companies are already in the early stages of deploying this approach.

For instance, Rearden Commerce sells itself as a “personal travel assistant” to more than 7,000 companies, 160,000 merchants, and millions of users.

Rearden orchestrates a large number of partners to help corporate “road warriors” manage their busy lives.

The challenge for its cloud-based architecture is to facilitate multi-party transactions – such as travel itineraries with multiple flights, car rentals, hotel stays and restaurant reservations. A change to any one segment, such as a flight delay, might require a chain reaction of compensating actions.

Although a few companies such as Rearden are working through these issues in such specific markets as travel, they are building a critical mass of participants and are becoming the first wave

of cloud providers driving architectural innovations.

There is a potential for much more disruption ahead, as a host of companies, mainly in Asia, begin to adopt these architectures to pioneer more scalable network-based businesses.

Innovative companies in demanding global industries – consumer electronics, motorcycles, and clothing, for example – are increasingly playing an “orchestrator” role to harness the outside-in way of thinking.

They co-ordinate complex business processes across a growing number of companies – a fundamental challenge to most western companies, which have been reducing the number of business partners in key processes.

Leading-edge companies in Asia are pioneering management practices to co-ordinate large and expanding networks using only limited technology platforms, such as phone and fax.

Their needs are not being met by on-site architecture, so they use manual processes to orchestrate their complex systems. But as nimbler orchestrators with cloud-based architecture start to emerge, that will change.

Existing in-house solutions are expected quickly to demonstrate their lack of flexibility in dealing with a rapid unforeseen changes and their inability to pass on business lessons and expertise to deliver rapid, customer-centric innovation.

Leading in a disruptive future

Real companies are making significant progress in implementing disruptive IT architecture. These companies have already started using an outside-in approach and they are influencing customers to do the same. They are staging their sorties on established businesses – one day it might be yours – from the cloud.

Given this potential for disruption, senior executives must aggressively explore ways to harness this disruptive capability.

It is a core strategic issue that cannot be left to the chief information officer alone, as it traditionally has. That is because flexible, constantly shifting architecture is set to fuel the business models of tomorrow.

John Hagel III, and John Seely Brown are co-chairman and independent co-chairman, respectively, of the Deloitte Center for the Edge

Their books include The Power of Pull, The Only Sustainable Edge, Out of the Box, The Social Life of Information, Net Worth, and Net Gain.

[Copyright](#) The Financial Times Limited 2019. All rights reserved.