**Joe Weinman**

# Business Strategies for the Cloud Economy

| **By** *Joe Weinman, Author, Cloudonomics: The Business Value of Cloud Computing and Digital Disciplines: Attaining Market Leadership via the Cloud, Big Data, Social, Mobile, and the Internet of Things*

*ICT technologies enable digital business strategies — or digital disciplines — that focus on differentiated processes, products and services, customer relationships, and innovation.* >>

It is easy to see that digitalization is impacting businesses and society in an exponentially increasing fashion. It's equally easy to get caught up in the complexities of digitalization — hybrid clouds, containers, Solid-State Drives (SSDs), Software-Defined Networking (SDN), and Network Functions Virtualization (NFV) — and lose sight of the bigger picture: Technologies only matter in the context of creating differentiated customer value and enhancing competitive advantage.

Consequently, rather than starting with a technology and then asking what business initiatives that technology can enable, it is advisable to develop a focused business strategy with an understanding of stated and unstated needs and wants of customers, the evolving global competitive environment, critical industry trends, and existing competencies and market position. Technologies and other business system elements, such as culture, organization, and metrics, can then be structured to support the business strategy.

### Four Strategies

I've identified four generic business strategies enabled by today's ICT developments, such as the cloud, Big Data and analytics, social, mobile, and the Internet of Things, which I call *digital disciplines*.

· **Information Excellence** complements, supplants, and drives operational excellence to enable cognitive computing or robotic automation of processes; optimization algorithms to enhance process performance; the seamless fusion of online and offline experiences; and the creation of highly dynamic value networks of suppliers, partners, channels, and customers.

· **Solution Leadership** represents a new generation of products and services that are smart, digital, and connected to the cloud. Being cloud-connected creates unique customer value and enables businesses to climb the experience-economy hierarchy from lower value commodities to products, services, experiences,



and ultimately transformations, where each layer drives greater customer value and greater profitability.

· **Collective Intimacy** represents the evolution of traditional customer intimacy, from humans to algorithms and from in-person and face-to-face relationships to virtual and remote ones. This is more than a transition from offline service delivery to online commerce and social media. Collective intimacy uses Big Data and recommendation engines to consider all data collectively, which enhances each relationship with individualized, contextualized products and services.

· **Accelerated Innovation** is important because customers value companies that demonstrate a commitment to future improvements. ICT can not only accelerate the development of new outcomes, but new ICT inventions can also simultaneously reduce the cost and increase the quality of products and services in the market because of past developments that have enabled and mediated crowdsourcing, idea markets, contests and challenges, innovation networks, and rapid prototyping. Increasingly, and ultimately, computers are being programmed to innovate with a minimum of human collaboration.

### Strategies in Action

● Information Excellence

Information and ICT can be used in many ways to automate, complement, supplant, mirror, or optimize processes and resources across a variety of industries. For example, shipping port operations offer immense opportunities for exploiting Information Technology (IT) to optimize the transfer of freight between land and sea-based vessels, improve throughput, reduce labor costs, increase sustainability, and improve on-time delivery of goods. This requires a real-time system that can ingest and manage constantly changing information, such as ship arrival times, truck and rail status, and container locations at the port, as well as external data such as weather forecasts and traffic congestion.

Fusing the worlds of information and operations is a concept that applies across verticals. Although

the Internet is transforming education, the most successful initiatives must provide Online-to-Offline (O2O) integration, where online educational content and testing holistically relate to classroom activities. Banking 3.0 requires the same O2O integration via omni-channel integration of physical branches with online banking, particularly mobile.

● Solution Leadership

Products are becoming smart and cloud-connected to ecosystems across broad value chains. Vehicles, too, are connected to the cloud and to each other. Thermostats are not only adaptive but because they are also connected, they can be remotely controlled by residents in advance of arriving home or coordinated dynamically with smart energy grids. Wearables and the new generation of 'connected' apparel enable the monitoring, tracking, and linking of exercise activities to results, such as body fat loss and weight reduction.

Services are becoming smart, digital, and cloud-connected as well. For example, Zhengzhou University Hospital, in China's Henan province, has become a leader in telemedicine. The hospital has deployed teleconsultation devices in over 100 counties, enabling tens of thousands of remote consultations and diagnostics. Remote emergency care, imaging, diagnostics, and other services are possible because of the wide-scale deployment of cloud platforms and optical networks.

Solutions that consist of connected products and services provide a 360 degree view of each customer. Although individual radiological equipment is calibrated to deliver a safe dose of radiation to each patient, combinations of X-ray machines, Computed Tomography (CT) scanners, and other radiological equipment require a connected solution like GE's DoseWatch to deliver a patient-centric view. Similarly, in financial services, traditional silos for checking accounts, personal loans, mortgages, and equities must be broken down and integrated to develop a holistic view of each customer's financial health.

New ICT technologies are enabling entirely new business models. Automobile insurance premiums, for example, have traditionally been based on

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static, historical demographic data, such as driver age, gender, home address, and prior violations, along with automobile make, model, and year. Now, Pay-As-You-Drive (PAYD) insurance data using telematics from smart, connected vehicles can determine insurance premiums based on real-time, actual driving behaviors and conditions, from speeding to traffic congestion among others. Furthermore, these premiums can be rated, billed, and paid in real time, mile by mile. In North America, growth projections regarding such policies indicate a Compound Annual Growth Rate (CAGR) of 50 percent over the coming years.

● Collective Intimacy

Customer intimacy entails deeply understanding the needs and wants of a customer — whether a business or consumer — and then meeting those needs. This is the exact inverse of mass production approaches, such as the first Model T cars in which all customers got exactly the same car, in any color they wanted — so long as it was black. Customer intimacy is practiced by tailors, hairstylists, physicians, and bartenders, who, of course, customize the fit, hairstyle, treatment, or drink order based on the customer's needs and desires.

However, customer intimacy is yielding to collective intimacy. Rather than individual pairwise relationships between consumers and human service providers or business customers and human account teams, data from all customers is processed by sophisticated algorithms to better derive finely personalized and contextualized recommendations to customer groups with the same preferences.

Netflix offers an excellent example of collective intimacy, using the following customer information:

· **Intent**, based on what they've searched for

· **Behaviors**, including the movie titles or images that they click on (when determining what to watch) or the portions of a movie that they watch, skip over, or watch again

· **Contexts**, such as whether the movie is being viewed on a mobile device or a family TV, the time of day, and the geolocation

· **Demographics**, such as the age, gender, and

home residence of the subscriber

· **External data**, including movie titles, language, actors, locations, and genres

It takes trillions of such data points, across all subscribers, to generate personalized recommendations for each subscriber, including the 'micro-genres' that are displayed to users — for example, 'quirky romantic comedies' or 'cerebral science fiction' — and the particular movies displayed in each micro-genre. It balances opposing objectives, from presenting movies with wide appeal to ones targeted to specific subscribers.

In healthcare, the Mayo Clinic does something similar by maintaining massive repositories of genetic, epigenetic, and microbiomic data. The Minnesota-based clinic also maintains pharmacological efficacy data, which details the effectiveness of each drug based on individual genetic profiles and medical diagnoses to deliver personalized therapies and medicine. Stated another way, data sourced collectively is used to deliver unique, individual treatments.

Broadly speaking, collective intimacy entails moving from a product-centric view to a customer-centric one. For example, retail banking clients are coming to expect personalized products, as measured over social media networks. Increased personalization can dramatically increase key business outcomes, such as the size of deposits, use of payment products, and overall bank revenue.

● Accelerated Innovation

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Most IT organizations are adopting approaches like agile development and DevOps to increase the speed and flexibility of development processes; however, ICT can enable innovation well beyond the IT organization and can thus have an even more dramatic impact, thanks to crowdsourcing, idea markets, contests, challenges, innovation networks, and other approaches.

As one example, GE used the cloud to run several online contests including *Flight Quest I*,



with the intent to better predict flight arrival times, and *Flight Quest II* to optimize flight paths and thus the passenger experience. To do this, GE published a number of Big Data sets on weather conditions, scheduled arrival times, and actual arrival times, and then opened up the contest to anyone in the world who wanted to solve it. One million dollars in prizes were awarded to a variety of teams, which used sophisticated statistical methods to innovate new algorithms.

*Fold.it* was a project set up at the University of Washington by professor and researcher David Baker to determine the structure of a disease-causing protein: Mason-Pfizer Monkey Virus (MPMV) retroviral protease. To attract as many people as possible to their cause, the developers implemented gamification to make the online contest more engaging to the general public. The protein problem, which had eluded a solution by the world's top biomedical researchers for 15 years, was solved in three weeks by someone who knew nothing about proteins or viruses or biochemistry.

We are also now entering an era in which innovation is not just a human endeavor — but one where machines are performing increasingly larger roles. For example, Google's DeepMind AlphaGo program made headlines around the world when it beat the world champion Go player Lee Sedol of South Korea, 4 games to 1 in March 2016. AlphaGo does not use a 'brute force' recursive examination of the all possible responses to all possible moves. Instead, it 'learns' to play through 'deep' Machine Learning (ML), in effect, mirroring the neural network approaches that we humans use to learn things, including language, abstract thinking, and, of course, the game of Go. Perhaps most interesting is that AlphaGo innovated new strategies and

moves. In Game 2, Move 37, the program made a move that most game observers thought was a mistake, perhaps due to a bug in the program. It was only many moves later that the beauty of this innovative move became clear: It was a key move leading to a positional advantage and, ultimately, the program's victory.

Machine innovation isn't just happening in games. Melvin is a software program for quantum physics that takes common building blocks and designs new experiments, a notoriously tricky activity due to the inherently non-intuitive behavior of the quantum realm.

**Making the Right Calculations**

Revered Chinese general and philosopher Sun Tzu said an army that is strong on the left is weak on the right; one that is strong on the right is weak on the left; and one that sends reinforcements everywhere is weak everywhere. To apply these teachings implies that a firm should first focus on a single *digital discipline*, say, information excellence or collective intimacy.

However, information economics is different from military tactics. For a company in any industry today to be as successful as a great army, it cannot be weak in any area and perhaps must be strong in all digital disciplines. Thus, we see some leading companies exploit ICT to optimize their processes through information excellence; create industry-leading products and services through solution leadership; enhance customer relationships and the customer experience through collective intimacy; and accelerate innovation.

Sun Tzu also said that the general who wins a battle makes many calculations before the battle is fought. What is your digital strategy? ▲