Illustration by LUCIANO LOZANO RAYA

COLLABORATIVE INNOVATION IN ACTION

Orchestrating the New Dynamic Capabilities

By AMY SHUEN and SANDRA SIEBER

When Skype first burst onto the scene, everyone predicted the familiar story of disruptive innovation in the telecom industry, where the new destroys the old way of doing business in a spiraling zero-sum game. Fast forward to the present: Apple's iPhone has shown a new win-win path to success using collaborative innovation on the Web. The iPhone brought together thousands of handset makers, operators and software developers, giving them a considerable share of a market already worth $2 billion a year, and reinvented several industries in the process.

In a similar fashion, diverse companies – from Google and Amazon, to IBM, Cisco and Intuit – are continuing to innovate their business models and grow, despite the economic crisis, with revenue and success widely shared. Many industry leaders are wondering if the core principles of

strategic management and competitive advantage have changed. The answer, we argue, is a resounding yes.

Here's why: The Web has changed the economics of business and collaboration. Companies can no longer conceive of their capabilities in isolation, but must learn to co-create them within a broader, dynamic and non-zero-sum ecosystem of external partners. The new "managed" but open ecosystems range from "orchestrated" standards-based networks of developers, to communities and "crowds" of lead users and bloggers, to e-commerce affiliates, to complementary businesses that cross industry divides.

A highly cited *Strategic Management Journal* article from 1997 once defined "dynamic capabilities" as a company's strategic ability to combine inside and outside competences to address volatile environments and periods of rapid change. *Orchestration* was lauded over positioning, *management innovation* and *combinations* over structure, and *transformative collaboration* over traditional strategizing as the means of gaining competitive advantage.

Few could have predicted when that article was written the widespread social transformation that the Web, broadband and mobile technologies would trigger, nor the exponential growth of Google, Facebook, Twitter, Amazon and Apple – businesses that rely on the economics of network effects, social influence, viral distribution and Web-enabled business models. Now, thanks to Web 2.0 business models and platforms, collective user value, along with ways to more productively monetize and

enhance the "wisdom of the crowd," has become commonplace. It's the modern version of the old fable "stone soup," in which hungry villagers each contribute whatever they can spare – a carrot here, a potato there, some leftover scraps of meat. In the end, everyone enjoys a hearty, collectively co-created soup. The Web is today's soup pot, taking individual contributions, remixing them and redistributing them as something new across many networks with almost zero costs.

This year, Berkeley's Oliver Williamson won the Nobel Memorial Prize in Economic Sciences for his research on the transaction costs underlying industrial structure and organizational boundaries. These are the very same transaction and coordination costs that Web-enabled business models are transforming substantially. Little wonder that "collaborative innovation" and the new "dynamic capabilities" of orchestrating knowledge, ecosystems, partnerships and collective user value across multiple industrial and geographic boundaries have become top strategic priorities for the Fortune 500 agenda.

The New Collaborative Matrix

Web 2.0 has changed the rules of business. But it isn't simply about building Web-based businesses to put the old-style ones out of the picture. It's about using a company's own "dynamic capabilities" to orchestrate and recombine the best of what the online world has to offer while multiplying the value of existing networks of users and partners. New-style click-and-mortar, online-offline network partnerships focus on bridging and building new networks so that everyone gains, and potential competitors become potential partners. **Figure 1** shows at least three ways to combine users with company capabilities profitably and speedily. The New Collaborative Matrix has its roots in traditional innovation theory, but wouldn't be as profitable or as successful without the help of digital-plus-network economics.

DEMOCRATIZED INNOVATION. The lower left-hand corner of the innovation matrix reminds us that many peer-to-peer, or user-to-user, innovations produce positive network effects, but the benefits become public goods or consumer surplus. Wikipedia is an example of positive network externalities in which many benefit from the widespread sharing and distribution of digital knowledge or music. However, the founders did not capture or internalize the pe-

■ **EXECUTIVE SUMMARY**

Over a decade ago, "dynamic capabilities" were introduced to the business world as a way for companies to get ahead in times of rapid technological change through orchestration, recombination and transformative collaboration. Now, with the advent of Web 2.0 and the opportunities that presents, dynamic capabilities achieve a new relevance. The emerging technological landscape enables firms to put dynamic capabilities into practice easier than ever before, since it allows for ongoing collaboration and interaction between companies and users, hence fostering new types of innovation. In this article, the authors outline the principles behind Web 2.0-empowered business models, giving managers numerous ideas they can try out immediately, at low cost and with potentially much higher ROI than could ever be achieved with a non-Web-enabled business. Why not put your own dynamic capabilities to the test? You're only a click away.

The New Collaborative Matrix   FIGURE 1
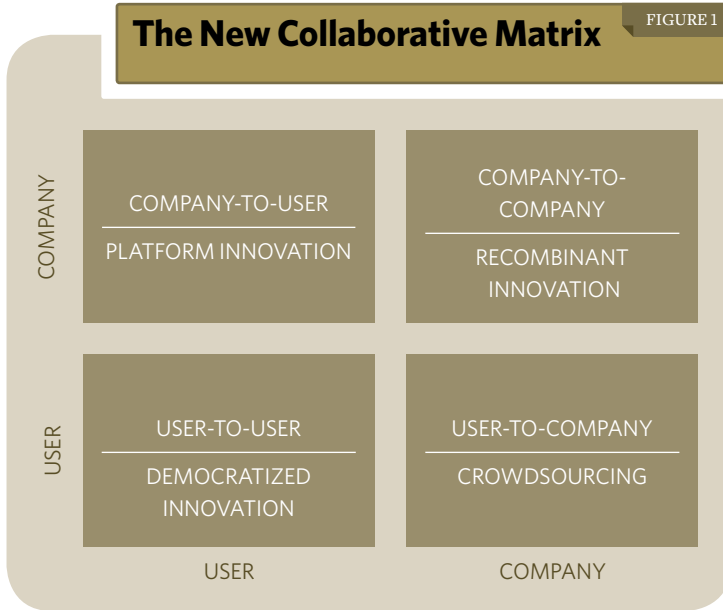
SOURCE: Based on concepts originally published in *Web 2.0: A Strategy Guide* by Amy Shuen (O'Reilly Media, 2008)

cuniary value of these network effects. In contrast, the other three boxes show that collective network effects can be successfully monetized and create new business value.

CROWDSOURCING. How many users of Google, YouTube, Flickr, Amazon or Trip Advisor realize that their usage, clicks, tags, photos, videos, reviews, comments and participation in online contests and polls are being turned into positive network effects by *crowdsourcing*, which makes the site better for everyone? The main difference between user-to-company and user-to-user innovation is that a company is able to capture tangible, monetary benefits of the user in exchange for continued innovation and improvement. There are numerous well-known examples: IBM, which identified and developed several fast-growing, high-potential new businesses via its global Innovation Jams; and Google's PageRank and AdWords algorithms, which both improve the relevance of search results for users while pricing advertising according to relevant clicks. But it doesn't stop there: Threadless.com harnesses the power of the online community to design funky T-shirts; and the mining company Goldcorp mobilizes prospectors to find gold for them.

PLATFORM INNOVATION. Company-to-user innovation is when a company provides the platform for users and developers to distribute their software, applications or digital goods, such as music or games, to their social or professional networks, or simply to the marketplace at large. IBM, Apple and Facebook spring to mind, but

Neopets and South Korea's Cyworld also stand out in this regard.

RECOMBINANT INNOVATION. Perhaps the best-known example of company-to-company innovation is Apple. Before the iTunes store, it had already teamed up with Gracenote to give the names of the tracks to consumers ripping CDs. But rather than working against the record companies by encouraging consumers to download music illegally, Apple wanted to legitimize the sale of music on line, so it worked with record companies, convincing them to collaborate and sell music digitally. The result was a win-win situation, with all parties dependent on each other for success.

As we can see from these examples, you don't have to invent the wheel to have a successful project. By simply working with other companies, you can make something highly valuable for a specific group of consumers and users. The biggest challenge for companies innovating in these areas is to convert from an ingrained culture of competition to collaboration. It's not easy to turn around and preach "give to get" and "let's revenue-share," but the payoffs are worth it.

How to Multiply Your Dynamic Capabilities

1. BUILD ON COLLECTIVE USER VALUE. The first and critical step is to start thinking exponentially rather than incrementally. The Web makes it 10 times faster for any company with an existing network of relationships to orchestrate 10 times the users and 10 times the partners to connect and combine for new value creation. And you don't have to be a Fortune 500 company, or an online store, to benefit. Governments, public agencies and nonprofits are relatively lacking in capital, assets and resources, but they have managed to achieve great things simply by leveraging their rich social capital. Barack Obama's use of Web 2.0 during his bid for the White House serves as an excellent example (see **Figure 2**).

This same comparison of the ROI and cash flow curves of Web 2.0, Web 1.0 and traditional approaches characterizes many other cases. A great example of a company that built itself on collective user value is the photo-sharing site Flickr. It initially offered users free online space to store and organize photos with features to comment and tag. Of course, word soon spread, and as people contributed to Flickr, they made it better and better. When the site had a critical mass of users, popularity and information, it offered a premium service to those willing to pay for more benefits. With virtually zero marketing costs and low-cost online distribution and capi-

tal investment, Flickr managed to create a number of positive revenue streams quickly to cover the cost of the free services it offered.

Nevertheless, coming up with a viable business model based on collective user value is not without its challenges. First, you need to start from a blank slate and honestly look at your business from the customers' point of view: What are their real needs? How do you propose to address them? This is crucial, as in order for your effort to be effective, the collaboration and cooperation must be conceived in ways that users consider helpful and valuable to them.

Once people get engaged, you need to clarify the different types of value that are created by their contributions, and then decide on the revenue model. This normally implies a cost structure that allows the top contributors to be rewarded in some way, for collective user value to be incentivized, and then monetizing this value.

An interesting example in this vein is that of professional online networks, of which there are currently several vying for dominance in Europe. The initial leader – the German company Xing – has managed to develop a business model that relies heavily on its community, which numbered some 8 million in August 2009. Apart from the usual staying-in-touch with colleagues and job contacts, Xing facilitates over 30,000 specialized groups and 90,000 live networking events a year, organized by members for members. So far, users have acknowledged the value of these services, and the site currently counts around 700,000 paying Premium Members. In the midst of the crisis, Xing announced a 35 percent increase in total revenues to 21.54 million euros for the first six months of 2009, largely driven by Premium Membership revenues, which were up by 41 percent in 2009 over 2008. The international leader, LinkedIn, which is aggressively entering the Eu-

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The Multiplied Advantages of Web 2.0

A traditional brick-and-mortar business spends a lot at the outset before seeing any profit. Think of the traditional pavement-pounding, knocking-on-doors approach to drumming up sales, or getting out the vote.

A typical Web 1.0 method is "robocalling" – automated dialing of phone lists using a prerecorded message. This requires an expensive initial outlay, which will only see returns over time. It also risks alienating potential supporters who don't like being interrupted at meal times. Besides, would you rather receive a call from an old friend or an impersonal machine?

In the 2008 U.S. presidential election, Barack Obama used Web 2.0 innovation: The initial cost of his iPhone downloads was much lower, and the payback was enormous almost immediately. There were about 5,000 downloads the first day, and within minutes people had a powerful tool that enabled them to call their "first degree of separation"

friends and associates in key battleground states using their iPhone contact lists. What's more, they received up-to-the-minute coverage and position statements on key campaign talking points. This generated half a million phone calls in the run-up to the election. One simple application turned supporters nationwide into

a powerful, targeted, evangelistic telesales force. The rest is history.

Now, imagine getting that kind of multiplied response from marketing your own product or service. Every business could use a similar customized sales and customer relationship management tool on their company cell phones.
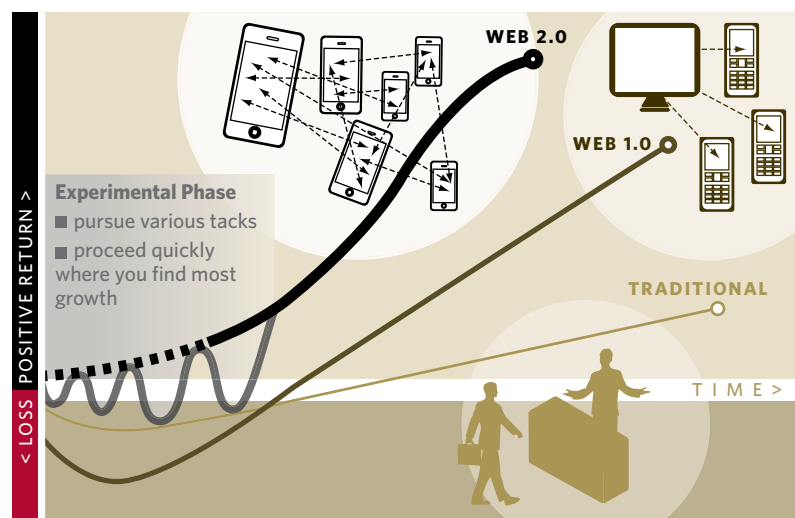
SOURCE: Based on concepts originally published in
Web 2.0: A Strategy Guide by Amy Shuen (O'Reilly Media, 2008)

ropean market, has adopted a different approach by building a large user base that only gets limited services, while some lead users – headhunters and recruiters – pay a significant sum for the possibility of browsing the huge database that LinkedIn has, and afterwards contacting individual profiles.

Tactical Questions to Consider:

- Do you allow users to participate on your site with their own ideas?
- How do you support your most active community members?

2. ACTIVATE NETWORK EFFECTS. For most of us, traffic has negative connotations. But in the digital world, it's good news for business. Why? Because under certain conditions online traffic may be made up of network effects, which, put simply, are the effect each user has on the value of a product or service. They are very often at the heart of the new Web business models. If strong network effects exist, this may have a potentially huge effect on the overall profitability of a company.

Activating network effects, however, is tricky, since one has to understand that there are different kinds of effects, and that a misunderstanding of the effect has vast implications on the overall viability of the envisioned strategy. The five different kinds of network effects are direct, indirect, demand-side, cross-network and social.

A classic example of a *direct network effect* is the telephone. An individual telephone was useless but as people bought them, their value increased. *Indirect network effects* are when the popularity of a product or service spawns the production of increasingly valuable complementary goods – for example, the iPod and its accessories. *Demand-side effects* are, as we saw with Flickr, when willingness to pay for a service increases as more and more people use it. *Cross-network effects* are when a rise in usage by one group of users increases the value of a complementary product or service to another distinct group of users, such as reader/writer software pairs. Lastly, *social or local network effects*, such as instant messaging, are when a user is influenced directly by the decisions of other consumers.

Network effects are the results of users jumping on the bandwagon. For this reason, they can mean the difference between your company having the lion's share or the leftovers of a competitive market. If two companies are locked in battle and one is slightly ahead of the other, network effects can tip the scales in favor of one of the competitors. Positive feedback can amplify the stronger company so that it gets stronger while the reverse is true of the weaker. In such tippy markets, network effects are so powerful that they can ultimately determine the rise or fall of entire companies.

In order to make network effects work, you need to figure out what yours are and how you can measure their value. Find out which groups could generate positive network effects for you and how you can get them to do so. Free or highly subsidized services, such as Google's search engine, are usually the answer. In addition, figure out a way to monetize the business model by finding a group of users that has a positive willingness to pay. Google gets almost all of its revenue from advertising, by placing ads (that then need to be clicked on) on either its own or third-party pages. Don't forget that network effects accumulate exponentially, and once you have activated them, the sky's the limit, because one network effect gives birth to more, which in turn give birth to even more and so on.

Tactical Questions to Consider:

- As users visit your site, do you learn from their activities, or just present information to them?

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> Social networking sites are projects in themselves, but even if you don't want to launch a MySpace or Facebook, more businesses are capitalizing on the use of social networking to help their project along.

- If you are in a competitive race, how do your users see your offerings vs. your competitor's?

3. WORK THROUGH SOCIAL NETWORKS. While people might think of social networking as a particular kind of Web 2.0 application, it can enrich projects even when it isn't the central focus. The communities built by social networks can serve to strengthen the appeal of an endeavor. Members of a community naturally influence each other, so positive network effects can be triggered left, right and center. As in the physical world, once key influencers are talking about a product or service, everybody will be, but the pace of this picks up on line.

Again, the extreme power law of the Web means that once a network has a critical mass, more and more want to join, and the number of members grows exponentially. As we see with websites such as Facebook, Flickr and MySpace, social networks acquire customers fast. They can attract tens of millions of new, active and frequently engaged customers in a short amount of time, bringing with them valuable storehouses of openly uploaded, digital, personal and social content. This content can be turned into cash through charging certain users. But the value of this base can also be immediately monetized through target revenue advertising. Just think, while Google can offer advertisers the relevance of a keyword, Facebook gives them a personalized view of the consumers they want to reach.

Facebook isn't just a great audience for advertisers, though; developers are able to distribute their applications on the site. Consider possibilities within your own organization. Very often, IT projects have to be pushed back because of a lack of programming resources available internally. Outsourcing may be a solution. But traditional outsourcing only partially overcomes the resourcing problem, since the solution will be restricted to available capacity. What if we try to organize the idle capacity of IT programmers from virtually any country on Earth, and go for crowdsourcing?

"What could you accomplish with a team of 225,534?" poses TopCoder.com, citing the number of developers in 200 countries that it counts among its software development community – and that number is constantly rising. TopCoder proposes a novel method of building and delivering software. TopCoder receives a project from a corporate client, and breaks it down into manageable pieces, which are then put out for competition on line. Programmers in the community write the pieces that are put together according to the client's requirements and time frame. The client only pays the prize money for the chosen result, not for the hours of time the developers may have spent coming up with various solutions. Since several teams are competing for the same project, the quality of the winning solution is usually quite high. With this business model, TopCoder has turned an age-old labor problem into a business proposition.

Tactical Questions to Consider:
- Do you provide mechanisms for your users to communicate among themselves?
- Could user information, like profiles, create advertising value for you?

4. MULTIPLY YOUR PARTNERS THROUGH SYNDICATION. In the online world, almost anything can be syndicated, because everything is in digital bits that can be copied at no extra cost. But the online syndication of competences takes it to a whole new level. When a company has the dynamic capabilities to change its initial business model and embrace syndication, it can find itself in a different league.

Originally an online bookseller, Amazon soon wised up to the fact that a lead in the market would be difficult to maintain when competitors were a click away. So, in 2001, it decided to sell shelf space, or zShops, to rivals. Sales increased by 34 percent in 2003 and at the end of that year Amazon posted its first profit after operating at a loss for a decade. Today, zShops have morphed into Amazon Marketplace, and Amazon has become the online platform for a broad range of online retailers, providing them back-office services, such as its shopping cart or payment system, which they never would have had the resources to build on their own. Paradoxically, Amazon

gained competitive advantage by openly sell-ing company secrets to potential rivals, and then turning them into a new set of partners and affiliates. Again, like Apple, IBM and other network-savvy corporations, Amazon pre-ferred to take advantage of a small segment of businesses in the long tail, and then expanding that market sliver exponentially, while sharing revenue with others.

The online phenomenon of mashups also sees companies working with each other. Mash-ups are digital open remixing of information from different sources. For example, Housing-Maps.com combined the rentals on Craigslist with Google maps so that viewers could instantly see where addresses were. Two formerly unre-lated sites were remixed to produce something that was more useful than its parts to a certain group of users. Web 2.0 competence syndication can turn competitors, ecosystem partners and a broad range of small and medium enterprises into loyal, revenue-generating, revenue-sharing users, while increasing economies of scale and scope. This is a long way from the game theory of business strategy in the '80s, which saw keeping rivals on their toes as the key to success.

Tactical Questions to Consider:

- Are there aspects of your business that you could sell or syndicate as services?
- Could you work with businesses that might feel threatened by your projects?
- Do you have a product or service that could complement an existing Web service?

No Excuses

Though many examples of the new high-tech business models are Web-based, traditional businesses have no excuse for failing to take full advantage of these opportunities as well. Let's look at some who have done just that.

WEBKINZ. This stuffed toy company used dy-namic capabilities and Web 2.0 to meet the de-mands of the Noughties child who likes teddy bears and computer games. The plush toys are no different from any others in the physical sense, but each comes with a secret code that enables its owner to enter the online Webkinz World, a virtual play area with its own economy. Every time you buy a pet, play a game, answer questions or do activities, you get KinzCash to be spent in the online store. In addition, you in-teract with other pet owners through Webkinz chat. However, accounts expire within a year, unless another Webkinz animal is purchased, so kids have to keep buying if they want to re-main part of the world.

The Webkinz business model has a big ele-ment of recombinant innovation, where a com-pany took a classic product and mixed it with new technology to make something more valuable than the sum of its parts. The Webkinz World ex-ploits a range of network effects including: direct – the experience of being part of the world gets better as more people join; indirect – the stuffed toys encourage complementary products in the shop; and social – the online chat room connects fellow pet owners who influence each other.

ZOPA. In the current economy, access to credit is increasingly difficult for consumers and en-terprises alike. But money hasn't vanished. Part of the difficulty arises from a lack of trust in the system. This is precisely where social financiers such as Zopa.com come in. These platforms want to cut out the traditional middleman – the bank – and connect lenders and borrowers directly. So, if someone has some spare money to lend, he or she can check out the lending options, and then proceed directly to the description of a potential borrower and the motives of his or her financial need. The lender sets the lending rate that suits him or her, and the loan enters an online auction. Thus, social lending is putting risk assessment, rates and returns back in the hands of individual lenders and borrowers themselves, and eschew-ing the overheads and money-making schemes employed by banks, which many regard with cynicism in the wake of the crisis.

GE/GOOGLE SMART GRID. GE provides consumers with wireless "smart meters" and Google makes the detailed energy data available to users via their laptops. In a pilot project involving Okla-homa G&E, even teenagers got in on the act, un-plugging the toaster after breakfast when they knew down to the cent the value of doing so, as their minute-by-minute energy use was being calculated and fed to them via the Web. GE has recombined an old product (metering) with in-formation technologies, and used aspects of Web 2.0 in its business model. Vitally, this innovation has an energy-saving motive at its core, which these days gives any project an added edge.

LEGO. The Danish company Lego allows custom-ers to design their own Lego sets through its "De-sign byME" initiative. This program, launched in October 2009 as a continuation of its Lego Factory customization program, allows users to create their own Lego product, from beginning to end, providing all the necessary information and tools to get the job done. Customers down-load digital design software provided by Lego at no charge. They custom-design their own dream Lego models on computer, right down to the box

and building guide. Then the product can be ordered on line and shipped to their door.

Maybe some of these ideas inspire you. Try them out. The low cost and high connectivity of the Web means you can experiment easily – indeed, experimentation is key to finding out what works and what doesn't. Once you've seen the difference it makes, you can build in the directions that you find the most growth.

Web 3.0 and Beyond

Like backseat passengers on a road trip, we tend to ignore the amazing scenery whizzing past us as we impatiently ask the driver, "Are we at Web 3.0 yet?" If we date the start of the first generation of the Web to Netscape going public in 1995, then it took us a full decade to reach the "crossover point" in 2005 – the year when more bits, bytes and digital goods were being uploaded and shared on the Web than were being downloaded. So, if it took 10 years to go from Web 1.0 to Web 2.0 – from static to dynamic, from passive users to active contributors – and we are nearly halfway through the second decade of the Web, what's next on the horizon?

Part of our impatience is due to the instant gratification we have come to expect from the Web, and we're disappointed that the Web at work doesn't look that much different from the Web at home. This, in itself, says a lot about how we've changed.

John Chambers, CEO of Cisco, speaking at an O'Reilly Media Web 2.0 Summit, pointed out that the new Web paradigm has reversed the usual sequence of technology and business innovation. In the past, disruptive high-tech innovations, such as semiconductor chips, began life in big industry labs, and then trickled down to the mass market in simplified versions, after proving their commercial worth in the professional world. Customers had to be educated by companies on how to use these new products and services, with a small group of early adopters and lead users acting as pioneers before opening up the path to mainstream acceptance.

Those days are fast disappearing. We're witnessing a quantum social shift that has business implications for both digital and traditional industries. All around us, we see industry transformations and network convergence – in media, entertainment, music, telecom, financial services, energy, life sciences, health care, consumer electronics, precious metals. Even everyday branded products like Heinz Ketchup and Doritos are bringing new collaborative innovation and dynamic capabilities to the forefront. In the

United States, Europe and Asia, whole new ecosystems and networks of small businesses are forming around these leaders.

The next Web "crossover point" will be when the world puts the Web to work in jumping the digital divide and bringing local entrepreneurs and users at the bottom of the pyramid into the networked, digital knowledge economy. A few promising and influential innovators in this area include Kiva, the world's first online microlending platform connecting lenders to entrepreneurs across the globe.

Another example is the pharmaceutical distributor McKesson, which has been an IT innovator in providing preventive and emergency services to homeless people in partnership with state health and hospital agencies. In return for a free cellphone and monthly minutes, previously hard-to-reach but at-risk groups such as homeless people can be monitored and receive health care and medical advice to reduce the likelihood of high-cost emergency room and acute-care cases down the road.

Such initiatives are pursuing collaborative innovation on a large scale, connecting digital, financial and knowledge-based capabilities and resources with external networks of local partners and government agencies. The Web of the future, we believe, will see more "feet on the street," featuring even greater transparency, visibility, localization and distribution to global participants at the bottom of the pyramid. □

Sophie Mancuso contributed to this article.

⬚ TO KNOW MORE

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