PLATFORMS FOR GLOBAL PROBLEM SOLVING:

How Online Platforms are Revolutionizing Social Change

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In an age of networks and mass collaboration, organizations can be much more than just organizations; they can be platforms for value creation and innovation, igniting and supporting broader problem solving networks. Creating a platform for global problem solving harnesses the creative power of a larger more diverse and ultimately more capable network than could ever be found in a single organization.

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GLOBAL SOLUTION NETWORKS

Table of Contents

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Idea in Brief

In an age of networks and mass collaboration, organizations can be much more than just organizations; they can be platforms for value creation and innovation, igniting and supporting broader problem solving networks. Just as companies such as Amazon, Apple and Google have built vast ecosystems of external contributors that contribute to their products, creating a platform for global problem solving harnesses the creative power of a larger, more diverse and ultimately more capable network of contributors than could ever be found in a single organization. In fact, online platforms are already catalyzing new solutions to issues such as climate change, energy and transportation. Three kinds of collaborative action platforms demonstrate how online platforms are revolutionizing social change: platforms for advocacy; platforms for transparency and open data; and platforms for sustainability and smart services.

Platforms for Global Problem Solving

Before the invention of computing, and the widespread adoption of social networking and the Internet, the term "platform" likely conjured up images of scaffolding, theatre stages, platform shoes and perhaps even Olympic diving. Today, the digital revolution has given the term "platform" a new meaning. Platforms have become synonymous with computer networks and software and the vast ecosystems of external contributors that companies like Apple, Amazon and Google have built on top of their products and services.

These modern platforms are more than technology, however. They include technology but also organizational capabilities and design features that facilitate collaborative production and collective action on a mass scale. And they not only enable radical new models of business innovation and product development, they increasingly support the ability of vast networks of citizens, businesses, governments and NGOs to co-create solutions to global problems. Online platforms have become so important to global problem solving that we include them as one of the ten types in our taxonomy of global solution networks.[1]

It is worth reflecting on how the rise of new computing platforms has challenged conventional business wisdom about innovation. Gone are the days when companies carried out esoteric R&D projects in remote, closed-off laboratories in a secretive and strictly proprietary fashion. The key lesson emerging from diverse industries like software, pharmaceuticals and online retailing is that openness, done right, is a powerful force for growth and competitiveness. As long as you're smart about how and when, you can blow open the windows and unlock the doors to build vast business ecosystems

on top of what Don Tapscott and I call "platforms for innovation."[2] Such platforms can include physical products ranging from a videogame console to a cell phone—virtually anything that runs software. The idea is that tens of thousands of inter-operating agents converged on a shared platform can marshal more bandwidth, more raw intelligence and more requisite variety than the largest organization. In fact, Amazon's platform success is legendary: some 200,000 external partners get a cut of the retail action by building compatible applications and services that drive more traffic, more clicks and ultimately more purchases through Amazon's e-commerce system for warehousing, purchasing and distributing goods.

If a platform includes virtually anything that runs software, then the possibility that platforms could enable not just business innovation, but powerful new models of global problem solving seems inevitable. And that's exactly what's happening today. Online advocacy communities like Causes.com and Avaaz.org provide platforms for millions of connected individuals to organize for social and political change.

The possibilities do not end there. Indeed, why not think of the cars, energy grids and public data sets as potential platforms for problem solving too? Could the same form of serendipitous, mass innovation on shared platforms catalyze new solutions to issues such as climate change, energy and transportation?

Our cars, for example, are not just vehicles for moving around; they are increasingly places for work, learning, and entertainment with a series of software programs connected to a wireless network—from remote personal assistants to navigation and geospatial search applications to on-demand movies and music, and why not throw in mobile Skype for good measure. But what if this rich cloud of in-car services could do much more than simply inform and entertain us? Could opening up the APIs to our car's informatics systems enable a vast network of programmers and niche businesses to invent new ways of optimizing our entire transportation infrastructure and revolutionize personal transport?

Imagine the following scenario: accompanying your iTunes service would be an infinite number of applications that enable you to fundamentally change the way you use your car. Some apps could facilitate ride sharing. Others could ease congestion and keep you safe by distributing road traffic more evenly or selecting optimal routes for reducing air pollution on days when concentrations reach dangerous levels. Or, rather than sole ownership, there could be applications to facilitate shared car ownership, with dynamic pricing models that take into account environmental factors like location, time of day, traffic congestion and seasonal demand patterns. These networked cars will be enriched with sensors that share data about weather, traffic and road conditions with other drivers in the vicinity. Drive over a pothole and that information will be relayed to the local municipality. Get into an accident and your car will instantly alert all drivers behind you. Cars could even self-organize in a fashion that makes the whole notion of "driving" redundant. Indeed, your "car" will just be another node in an intelligent ad-hoc network of vehicles that cart people and goods around the planet with zero noise, zero fuss and zero emissions.

Many of these possibilities are in development today and some are already well underway. Google's prototype self-driving car has already travelled more than 500,000 miles on public roads, covering a wide range of traffic conditions, and there hasn't been a single accident under computer control.[3] Meanwhile, Zipcar founder Robin Chase claims that the car-as-an-open-platform has far-reaching potential and will be integral to confronting 21st century transportation challenges. "The only way we will change our driving habits is when we're paying the real cost of driving: including the full cost of carbon, the cost of congestion, the cost of building and maintaining the roads," says Chase.[4] "And the easiest way to be able to pay the real cost of transportation would be if we had ubiquitous wireless data connections and dynamically priced consumption, with the real price of what personal transport is costing." In other words, automobiles—like a growing number of human artifacts—are becoming just another network device in a broader intelligent network that promotes smart solutions for a connected planet.

Turning cars into platforms for problem solving is just one of countless opportunities. GSN research has uncovered some significant new initiatives creating powerful new platforms that promise to enable new innovations and further reduce the transaction costs associated with global problem solving. This report examines three kinds of platforms that are enabling new solutions on the global scene:

- Platforms for advocacy provide capabilities for social activists to share information and organize for social change, whether raising money for their causes or garnering supporters for an online petition. Examples include Causes.com, Avaaz.org and Change.org.
- Platforms for open data and transparency make information and knowledge widely available in formats that decision makers can readily understand. In most cases, they also enable knowledgeable developers and social innovators to build socially useful applications using the data. Examples include the Carbon Disclosure Project, the World Bank's Open Data Catalogue and consumer information sites like GoodGuide.
- Platforms for smart services and sustainability turn modern consumer items—from cars to household appliances—into smart, Internet-connected devices that enable innovation in the same way that an iPhone is a platform for an incredible diversity of third party apps. Examples include efforts to open up the energy grid to external innovation, thereby allowing third party developers to build new applications for smart energy service that will enable consumers and businesses to make smarter energy consumption decisions.

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Platforms for Advocacy and Social Change

Political scientists have long taken for granted the notion that if groups share common interests they will tend to work collectively to further their interests. But in his classic work of political theory, The Logic of Collective Action, economist Mancur Olson showed that not all groups are equally successful in organizing for social change.[5] Olson's essential insight was that concentrated interest groups have lower information and organization costs than large diffuse ones. As a result, concentrated groups pursuing narrow and selfish interests can gain benefits from the state (like favorable regulations or subsidies and tax breaks) at the expense of more diffuse groups pursuing broader goals, like economic growth or good education for children. Indeed, Olson's theory of collective lies at the heart of many of our contemporary explanations of core political problems, including, for example, why many people don't vote,[6] why some interest groups are politically successful and others are not,[7] why international agreements fail,[8] why industrial cartels are not stable[9] and why unrestricted access to the commons will lead to environmental ruin.[10]

Today, the Internet is helping redress the balance between special interests and more encompassing interests by reducing the cost of accessing information and organizing on mass scale. Such reduction redounds to the advantage of diffuse groups more than concentrated groups because reduced costs can temper the former groups' larger problems of coordination. As countless campaigns have demonstrated, the Internet is a powerful medium for spreading information and recruiting and organizing supporters. It promotes affinity among like-minded individuals and groups, allowing them to seek common causes, coordinate actions and share critical information, despite being separated by time zones and geography. Social networks like Twitter and Facebook also increase the visibility of social actions, transforming once largely anonymous tasks like voting or supporting a cause into public expressions and gestures that are easily observable by peer networks. Such networks recreate social pressures that were once only possible in face-to-face groups. But they do so on a scale that face-to-face groups could scarcely replicate. For example, it is easy to ask one thousand friends to repost information on Twitter or Facebook—and to notice whether they have done so. These foundational insights from political theory help explain why social media and social networks are such a vital part of the emerging technological infrastructure that has made global solution networks a powerful addition to the global problem solving landscape.

So rather than being a barrier to group action, large numbers are now a source of strength. And nowhere is this more the case than with the rise of increasingly powerful advocacy and watchdog networks that are more global, distributed and technologically sophisticated than their 20th century predecessors. Organizations such as Greenpeace, Amnesty International and Oxfam remain important and visible manifestations of civic advocacy. But such large, centralized non-governmental organizations are not necessarily the most important or influential drivers of change. In today's increasingly connected world, there is a new bottom-up model of social advocacy where hundreds of millions of people use modern communications platforms like Facebook and Twitter to advance their causes. In fact, the advocacy and

non-governmental sector as a whole has been exploding with legions of more diffuse networks becoming active around an increasingly wide range of issues and projects at local, national and international levels.

The upshot is that individual citizens are getting involved in change, in part because the Internet reduces collective action problems and makes advocacy easier than ever before, and in part because social networks make saving the world a highly visible social activity. But does this bottom-up model of advocacy work? As the examples described below will illustrate, Internet-enabled activists played important roles in bringing down dictators in the Arab world. They stopped the Stop Online Piracy Act (SOPA) in Congress and helped elect Barack Obama, just to name a few examples. Meanwhile, platforms like Causes.com, Avaaz.org and Change.org have mobilized unprecedented levels of social engagement by tapping Facebook's mammoth user base for social good. Launched first as a Facebook app in 2007, Causes.com, for example, has enabled 153 million users of the social networking site to organize boycotts, create petitions or raise money for their causes.

The Changing Structure of Social Change

In addition to lowering the costs of organizing through social networking, there are longer-term secular trends that appear to be transforming the very nature of social action. Consider, for example, recent evidence from Harvard political scientists like Robert Putnam and Theda Skocpol. They independently registered increased levels of disillusionment with traditional political and civic institutions, but found growing interest in advocacy organizations attached to social causes like women's rights or the environment. They also found that citizens are now more likely to drop in and out of organizations and issues than they are to make a long-term commitment to membership in apolitical associations like the old Rotary Club.[11]

This is a significant change from how social change unfolded in the past. Take the international movement for freedom and democracy, for example. In the old paradigm of international advocacy and diplomacy, promoting freedom was the job of the United Nations, national diplomats and a handful of NGOs. The methods of advancing freedom were slow and ineffective. Diplomats might make a few phone calls, activists would write letters, and if the media and activists complained enough, Western countries were occasionally cajoled into applying a smattering of sanctions. Social change took decades and sometimes never happened at all. Witness the recent events in Iraq, where billions of dollars and hundreds of thousands of lives have been lost in a decade-long effort to install democracy from the top down.

Contrast the old model with the extraordinary impact social media and Internet connectivity has had on the so-called Arab Spring in the Middle East. In June 2010, Khaled Said, a 28-year-old Egyptian businessman, was beaten to death by two police officers. (Said had posted a video on the Internet of the policemen dealing illegal drugs.) Within days of his death, an anonymous human-rights activist (later confirmed as a Google executive)

created a Facebook page called "We Are All Khaled Said." Posted on the page were photos of Said's battered and bruised body in the morgue as well as Said's original video of the corrupt police. Within weeks, the Facebook profile had more than 100,000 friends, eventually growing to more than half a million. The focus of the Facebook community was on the brutality of the Egyptian police, but when the Tunisian government fell at the beginning of 2011, the community that had formed around the brutality issue was already assembled to take the next steps. More than 5 million people used Facebook in Egypt, and the "We Are All Khaled Said" page served as a rallying point for protesters whose occupation of Tahrir Square would soon force Hosni Mubarak from power.

The events of the Arab Spring are the world's first leaderless revolutions.[12]

Before long, a wave of rebellion had engulfed not only Egypt and Tunisia, but also Yemen, Libya, Bahrain and Syria. A generation of young people, tired of being treated as subjects and determined to have jobs, justice and democracy, essentially rewrote the rules that govern how global progress is achieved. Armed with a new communications medium that provides access to secular information and the ability to organize without umbrella organizations, their deep stirrings for individual expression and democracy quickly congealed into organized political movements that reached across national borders to affect real change.

Change.org: the Web's Largest Global Advocacy Platform

The Arab Spring is just one manifestation of a broader set of radical and even explosive movements toward a more open, just and free world that are enabled by networked technologies. Inspired by the growing adoption

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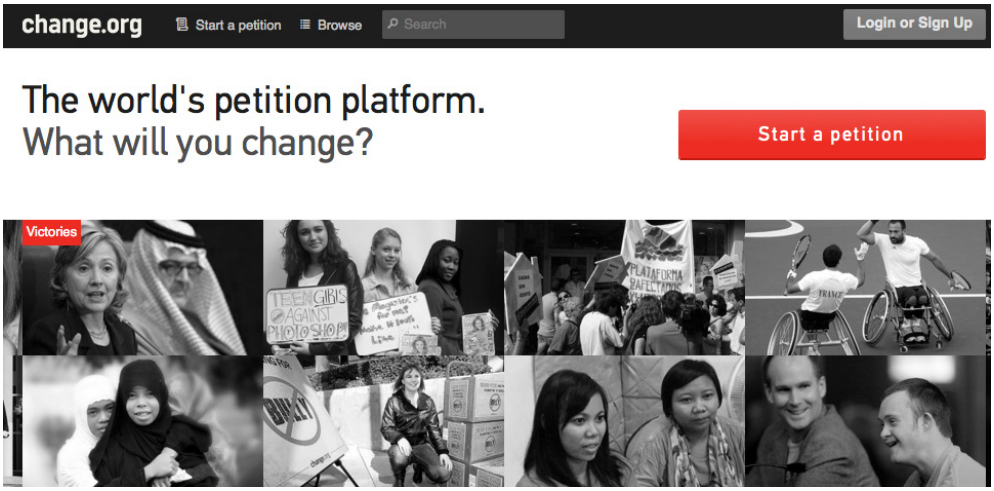
of social media, non-governmental organizations and advocacy networks have developed collaboration action platforms that are purpose-built for orchestrating social change, aided by the fact that skills and expertise have become infinitely portable, thanks to the Internet. One of the leading examples is Change.org, one of the Web's largest global advocacy platforms for social activists.



Change.org, the Web's largest global advocacy network[13]

Change.org empowers individuals to initiate change in the world by creating online campaigns in support of social causes, from human rights to environmental issues to criminal justice. Founded in 2007, the site brings campaigning into the 21st century by tapping into social media. Rather than simply gathering signatures for a petition and moving on, campaigners use social networks such as Facebook and Twitter to engage their peers and turn ordinary citizens into active participants in social dialogue. Whether the issues are local or global, Change.org uses the power of the Internet to help people reach others in relevant communities. Besides hosting online petitions, the site also provides support for campaigners by offering tips on topics ranging from building support and engaging supporters to gaining media coverage. Currently growing at a rate of more than 2 million new members each month, Change.org is having a significant impact on social issues around the world. The site's "victories" page provides numerous examples of regular citizens who have successfully brought about change through the network. Change.org harnesses technology to make leading campaigns as simple as possible, while maximizing reach and impact.

From global warming to human trafficking, there are countless examples of social issues that people feel outraged about. Unfortunately, these issues are often so large that individuals feel their voices cannot possibly make a difference, leading many concerned citizens to sit at home and stew over the evening news. While social activism has a long history, organizers of grassroots campaigns traditionally relied on methods of communication that were labor intensive and reached a limited number of people, such as

telephone calling trees and flyers. Starting up a campaign that would reach a global audience was a particular challenge in the days before the Internet, when expensive long distance phone charges and slow overseas mail delivery severely limited worldwide communication. Bringing about even modest social change required a great deal of effort, which meant that only the most dedicated activists participated in campaigns.

Traditionally, the work of tackling large social issues was handled by well-established organizations with broad networks of contacts. Groups such as Amnesty International and the World Wildlife Fund were formed to address specific issues on an ongoing basis. These organizations served (and continue to serve) their function admirably, but their size is a double-edged sword. The larger the network, the more people can be reached, but the more difficult it becomes for each participant to have a say in which particular issues are targeted. So, for example, if someone wanted to petition a corporation to stop their factories from polluting, the individual would have to take the issue to an environmental organization and convince the group's leadership to take on this local cause. Since a traditional organization can only take on a limited number of campaigns at a time, not every participant's ideas can be put into action in a timely manner. While these institutions continue to succeed in bringing about social change, they are unable to offer the level of personalization and individual ownership expected by many of today's citizens, especially digital natives who have grown accustomed to creating and immediately publishing their own content using social media.

Ben Rattray, who founded Change.org in 2007, says he started the organization because of this "disconnect between people's interest in social change and their ability to take powerful action." The site's campaigns revolve around online petitions, which people from around the world are able to sign. However, participation doesn't end with an electronic signature; as Rattray puts it, "It used to be when someone signed a petition, that was the extent of their experience, you put your name on the digital parchment, and that was it. Now, we provide a set of tools to mobilize people … to call the decision maker, to write a letter to the editor, to really get involved in a campaign. It's not just a one-off petition." He explains that social media is key to achieving this deep level of engagement: "The difference between us and other petition sites is, the petitions we develop are saturated in social media. People start a campaign and immediately connect through Facebook and Twitter. That makes them grow much more rapidly, much more viral, and therefore transparent, exposing the decision maker to pressure."

According to Rattray, the site reached its tipping point in early 2011, with a campaign demanding that the South African government stop the practice of "corrective rape," where men rape lesbians to "turn them straight." "The campaign went massively viral," says Rattray. "170,000 people joined the campaign from 150 countries and it ended up embarrassing the national government in South Africa." A government official even phoned Rattray directly, asking him to stop the campaign, but in the end the petition was successful and a task force was formed to address this deplorable practice. "This is a remarkable demonstration of the potential of the Internet…. We were already doing well, there had been episodic victories, but this was a monumental example of the potential of this model."

"The truth is that for every cause resulting in a high profile victory, there are many worthy issues that are left off the agenda and many more that fail to get enough traction to make an impact."

Rattray recognized early that simple tools for advocacy can be the most effective. "We recognized that what is most effective is a very simple… petition tool that allows you to aggregate voices around a common objective and then mobilize people for further support." Rattray draws parallels to consumer Internet phenomena like YouTube and Twitter. The online services that have had massive impacts have tended to be very simple. "YouTube is just about hosting and watching videos. Twitter is just about expressing a momentary thought in short form. Instagram is about taking a photo and sharing it with friends. Simple wins. Simple is effective," he says.

That recipe has worked for Change.org too. The site takes the hard work out of changing the world by leveraging existing networks to bring likeminded people together for a common cause. Indeed, a quick browse through the site's "victories" page dramatically reveals the types of social change the site is facilitating and demonstrates that anyone in the world can start a successful global campaign. And while the network's impact on the world has been clearly demonstrated by its many victories, Change.org also serves as a shining example of how organizations of all kinds can use the Internet to build and grow their networks. "Whereas it took us the first three and a half years of our existence to grow to two million members, we are now growing by 2 million members every month," says Rattray.

Thousands of Individual Efforts = A Powerful Collective Force

Although Change.org is growing quickly, it is only one of several collaborative action platforms. Another prominent example is Avaaz.org, a community of 50 million change-minded activists that campaigns in 15 different languages and involves people of all backgrounds and walks of life. Like Change.org, the Avaaz community makes its voice heard on a wide range of local and global issues by signing petitions, funding media campaigns and direct actions, emailing, calling, lobbying governments and organizing "offline" protests and events.

In one of its most notable accomplishments, Avaaz delivered a petition signed by nearly 3 million members to the European Parliament calling on decision-makers to reject the Anti-Counterfeiting Trade Agreement treaty (ACTA). Ostensibly designed to establish international standards for intellectual property rights enforcement, Internet freedom campaigners saw ACTA as a dangerous attack on fundamental rights, including freedom of expression and privacy. Facing mass opposition across Europe, the European Parliament's own press release announcing ACTA's eventual defeat in January 2012 identified the Avaaz petition as a key factor in its decision.

Both Avaaz and Change.org support a model of Internet organizing that allows thousands of individual efforts, however small, to be rapidly combined into a powerful collective force advocating for change. And both networks offer a remarkable demonstration of the power of the Internet to bring likeminded people together. But not everyone agrees that this is a healthy evolution in the nature of social change.

The power of Avaaz-inspired anti-ACTA protests caught European policymakers by surprise.[14]

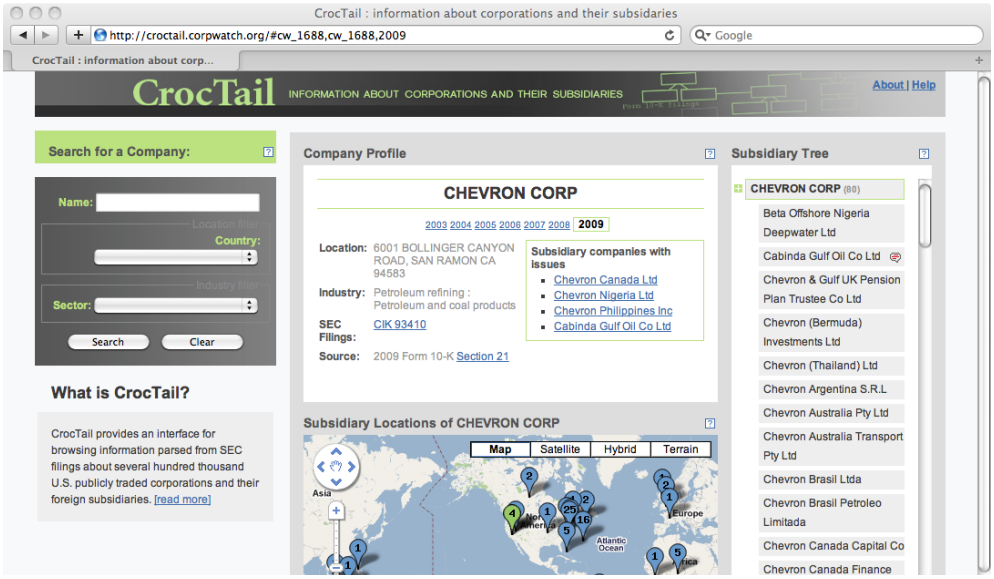
One of the dangers with platforms like Change.org is that we could end up with a system of global problem solving where digital activists tackle only the most marketable causes. The truth is that for every cause resulting in a high profile victory, there are many worthy issues that are left off the agenda and many more that fail to get enough traction to make an impact. As political scientist Clifford Bob put it, the world of social activism is still "a harsh, Darwinian marketplace where legions of desperate groups vie for scarce attention, sympathy, and money."[15] So while the have-nots of the world are increasingly empowered to make their causes visible, our limited capacity to pay attention means that only the most magnetic causes will rally significant constituencies.

If there is another criticism of collaborative action platforms like Change.org, it's that networks focus on quick victories and undermine the ability to cement the social capital required to build enduring solutions to global problems. After all, a successful petition campaign may provide the impetus for change, but it does not necessarily offer a viable solution. Indeed, solutions are most likely to emerge when corporations, governments and civil society groups engage in regular dialogue and are willing to collaborate and experiment with new ideas and new approaches. If platforms for advocacy are to carve out a more potent role on the global scene, they should focus more of their energies on organizing their constituents to advance innovative, grassroots solutions to global problems.

"In a global age where information can move in milliseconds anywhere in the world," says Kundra.,"you can't necessarily limit innovation across national boundaries. You have the ability to tap into innovation all over the world."

Platforms for Transparency and Open Data

Platforms for advocacy bring dispersed people together around common causes and provide tools for social change. Platforms for transparency and open data have a related, but distinct purpose: they make information and knowledge widely available, allowing knowledgeable developers and social innovators to build socially useful applications with that information that might otherwise not have been possible.



CorpWatch.org hosts a multi-faceted platform for corporate watchdogs.[16]

Take CorpWatch.org, for example. The San Francisco-based advocacy network hosts a multi-faceted platform for corporate watchdogs that boasts a sophisticated array of research tools that empower amateur corporate investigators operating out of the comfort of their living rooms. Launched in partnership with the Sunlight Foundation in June 2009, the CrocTail application on Crocodyl.org provides an interface for browsing SEC filings from several hundred thousand US publicly traded corporations and their many foreign and domestic subsidiaries. The app features a world map pinpointing subsidiary locations and an expandable subsidiary tree for navigating corporate hierarchies. Registered researchers can tag subsidiaries with issue notes that are automatically linked to the parent company profiles. There's even a so-called corporate malfeasance wiki, which covers 15 issues, 35 industries and has detailed profiles on hundreds of companies that are kept up-to-date by volunteers around the world.[17] And in a bid to spawn more powerful research tools in the future, CorpWatch's open API gives other organizations access to the underlying tools and data.[18] Tonya Hennessey, project director at CorpWatch, says "The CrocTail application has particular relevance at this moment, with the public eye focused on the structural nature of corporate abuses, including multinational tax-avoidance and the use of off-shore subsidiaries to evade responsibility for human rights violations."[19]

"When enough people can collect, re-use and distribute public sector information, people organize around it in new ways, creating new enterprises and new communities. In the past, only large companies, government or universities were able to re-use and recombine information. Now, virtually anyone with an Internet connection can mix and 'mash' data to design new ways of solving old problems."

Of course, the SEC would never initiate a project like Crocodyl.org on its own. But the agency's open data policy means it doesn't need to. Making the data available for third party reuse allows organizations with the ingenuity and impetus to build public good applications around the data—applications ranging from CorpWatch's advocacy-driven tools to Brightscope's financial advisor directory, an app built on SEC data that allows investors to do due diligence on the performance of thousands of financial advisors before selecting one to manage their money.

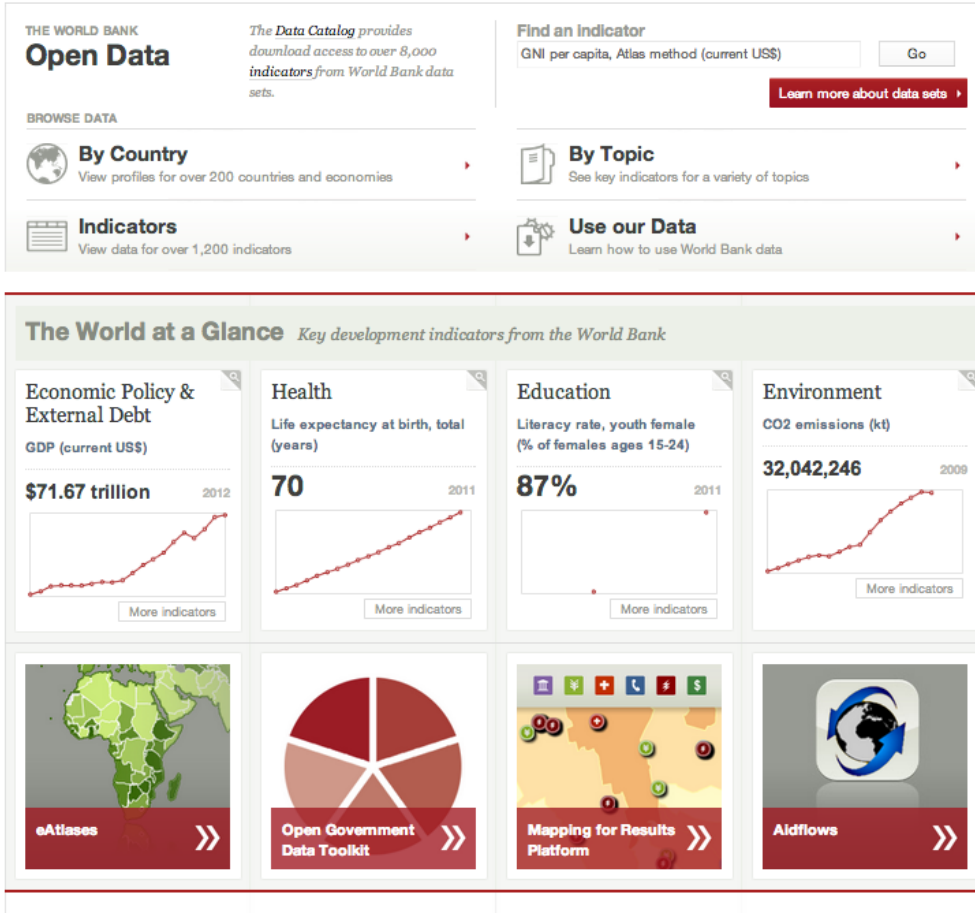
The success of applications like these has cultivated a global movement demanding more access to public data. The Power of Information Taskforce, which was established to advise the UK government on how to take advantage of new developments in digital media, recommended that all public agencies in the UK create online innovation spaces where the general public and staff can co-create information-based public services, much the way companies such as Amazon, Google and Apple enable third-party developers to build extensions to their software platforms. The taskforce also recommended the UK government create a pubic service R&D function with a "modest fund for leading-edge R&D to continue to test ideas and incubate new capabilities."

In the US, the Obama administration's Open Government Initiative mandated that federal agencies develop strategies for openness and transparency. Vivek Kundra, the former US CIO who led efforts to increase accountability by improving citizen access to public data, said at the time: "I wanted people to hold us accountable, whether they're a student or an expert. Releasing data is integral to analyzing our operations and seeing where we can improve, where we have improved and where we have failed."[20] Enabling new levels of transparency in government, however, was only half the story. Equally important, according to Kundra, was the desire to foster social innovation. "In a global age where information can move in milliseconds anywhere in the world," says Kundra. "You can't necessarily limit innovation across national boundaries. You have the ability to tap into innovation all over the world."[21]

Open data initiatives pioneered in the US and the UK have since been replicated around the globe. But with public sector organizations now opening up huge stockpiles of data, the challenge is increasingly to extract meaningful insights that can inform action. Some changes, like the relationship between health and GDP, are so gradual that they're nearly imperceptible to us. Animating nearly 200 years' worth of data depicting the relationship between infant mortality rates and GDP per capita in a 45-second clip is much more revealing that a static chart, according to Professor Hans Rosling, the creator of Trendalyzer, a tool that allows users to turn spreadsheet data into rich, interactive visualizations on the Web.[22] "If you present the same data set without animation — just using "before" and "after" graphs — people somehow disbelieve it," says Rosling.[23] "These animations don't tell a story: they're 'story busters,' because they correctly convey the richness and diversity of the data without oversimplifying."[24]

Freeing the Data to Improve Trust in Global Institutions

Pioneers like Rosling and Kundra see the flourishing open data movement as the beginning of a sea change in the way governments and other stakeholders collaborate to create value for citizens. As Tom Steinberg, a member of the Power of Information Taskforce put it: "When enough people can collect, re-use and distribute public sector information, people organize around it in new ways, creating new enterprises and new communities. In the past, only large companies, government or universities were able to re-use and recombine information. Now, virtually anyone with an Internet connection can mix and 'mash' data to design new ways of solving old problems."[25]



The World Bank's open data platform provides unparalleled access to data about international development.[26]

And yet, in the domain of global institutions and global problem solving, getting more data into the hands of solution networks like Brightscope and CorpWatch has proven challenging. In many cases organizations possessing large quantities of valuable data have opened up their assets reluctantly, only granting third parties access in response to considerable pressure from

"Getting our hands on comparable CO_2 emission data for all industrial facilities and other human activities such as logging, fishing or mining would be a goldmine for scientists, policy-makers, environmentalists, investors and ordinary citizens."

external stakeholders. In April 2010, for example, the World Bank launched data.worldbank.org, an open data platform with data covering over 2,000 development indicators from the Bank's flagship "World Development Report," a widely trusted benchmark for global development. But the move only came after decades of external criticism of the Bank's lending practices and repeated calls to allow diverse audiences to create new knowledge from the vast array of data the Bank collects on a regular basis.

Tariq Khokhar, a leader within the Bank's Open Data Initiative, concedes that calls for greater transparency were met with a great deal of internal resistance. But a combination of "high profile pressure" and a "sense of opportunity," led to the eventual launch of the open data platform and what Khokhar describes as a "massive cultural shift" within the Bank. "After decades of keeping our data behind a firewall," says Khokhar, "there was a decisive shift in thinking. Not only did we agree to be open about what we know, we wanted to be transparent about what we do as a development organization." That meant flipping the traditional norms around disclosure 180 degrees. "In the past," says Khokhar "everything was presumed closed, unless there was a conscious effort to open it. Now, everything is presumed to be open, unless you close it."[27]

Stakeholders inside and outside the Bank largely agree that the Bank's efforts to open up have paid off, with many now seeing open access to data as a key part of the institution's commitment to sharing its knowledge to improve people's lives. Researchers now get free access to once costly datasets tracking key issues ranging from poverty alleviation to climate change, including cross-country comparable data on GDP growth, migration, education, health care and many other topics. Meanwhile inquisitive stakeholders can scrutinize the World Bank's operations and finances, and can even drill down for details about procurements, transactions, relationships, results and evaluations for individual departments and projects.

In fact, open data is increasingly seen as a source of strength at the World Bank. Khokhar says the World Development dataset is "the Bank's single most important resource," calling data "more important that money."[28] He notes that a million and a half visitors go to the Bank's website every month to download the latest data—a fact that is not lost on the institution's 10,000 employees. Whereas eager up-and-comers used to prioritize operational work in the country divisions, increasingly the Bank's data and knowledge work is gaining internal currency. "There is now a giant audience for our knowledge work," says Khokhar "and that's changed the incentives."[29]

Most important, however, is the impact of open data on the Bank's ability to solve global challenges. "If we want to reduce childhood mortality," says Khokhar, "we need the data to measure these things. In many cases we didn't have it. That is beginning to improve. Measurement and data are increasingly seen as core to how we do development."[30] The standards are higher now and there is more investment in collecting timely and reliable data, both by the Bank and by its stakeholders. For example, data that is 2-3 years old is no longer considered good enough.

At the same time, the World Bank is working with other international organizations and networks on a broader aid transparency initiative to help improve coordination within the international development ecosystem. Khokhar hopes the movement will help get aid relief to the areas most in need, while cutting down on redundancy and overlap between disparate organizations. So far, 130 institutions have agreed to publish details about who's doing what in an easily comparable format. According to Khokhar, the data covers 60-70% of the global investment in foreign assistance and development lending.

Opening the Kimono on Climate Change

If there is one global issue around which open data platforms could truly move the needle, it's surely climate change. As the intermingling of science and public policy intensifies in an era of new global risks, questions about how scientists relate to the public and how the public relates to science are becoming critical. Nothing illustrates the challenges better than the recent "climategate" scandal in which a large stash of e-mails from and to investigators at the Climatic Research Unit of the University of East Anglia provided more than enough evidence for concern about the way some climate science is done.[31]

In the end, the US House of Commons' Science and Technology Committee concluded in March 2010 that there was, in fact, no evidence to support the critics' charges that the University of East Anglia's Climatic Research Unit or its director, Phil Jones, had tampered with data or perverted the peer review process to exaggerate the threat of global warming. Moreover, the committee noted that nothing in the more than 1,000 stolen e-mails challenged scientific consensus that "global warming is happening and that it is induced by human activity." Still, that doesn't mean that Jones and colleagues are off the hook.

The CRU's habit of keeping much of its data, methodology and computer code secret is clearly counterproductive. By opening up the climate change databases to independent analysis and interpretation, climate scientists could help restore the credibility of land-surface records and demonstrate an openness on the part of climate science that has not always been evident in the past. Indeed, if the scientific community wants to maintain credibility in the eyes of the public, it will no longer be sufficient for scientists to speak only to each other. They must engage with the rest of the world, and open data platforms and broader solution networks provide the perfect vehicle for doing so.

Open data platforms around climate change would arguably enhance efforts to put meaningful solutions in place. Insufficient information about which economic activities—and, by extension, which companies and nations—are contributing most to climate change undermines society's ability to target remedial actions and assign responsibility for correcting damaging behaviors.[32] The right amount of transparency in such cases can change perceptions, reveal new factors that alter the stakes or compel other participants to accept the need for and legitimacy of new regulations. Getting our hands on comparable CO2 emission data for all industrial

facilities and other human activities such as logging, fishing or mining would be a goldmine for scientists, policy-makers, environmentalists, investors and ordinary citizens. Even better would be the ability to measure, in precise detail, the impact of those activities on our climate in the same way companies apply financial metrics to their investment decisions to understand the bottom line impact.

Scientists and government agencies have collected some of this information for years. But most of it lay trapped, buried deep within university and government databases. Over the past few years, however, a whole new ecosystem of global watchdog networks has emerged to make climate change information more accessible to the public and key institutions, including the investment community, regulators, and government purchasing organizations. Some of these efforts focus on collecting and revealing emissions data, some concentrate on reporting standards, while others assess products for consumer-labeling and document the work that companies are doing to go "carbon neutral." Together, these initiatives are helping improve individual and institutional decision-making around climate change.

One watchdog network, called Carbon Monitoring for Action (CARMA), maps the CO2 emissions of over 50,000 power plants and 4,000 power companies across the world. The data for current and planned installations is easily accessible through a Google Map on the project's website as well as through an application programming interface (API). "Our role is to translate," says CARMA's lead researcher, David Wheeler. "[To] take reams of data which are available out there and translate them into an easily accessible format. There are few other institutions that have the incentive to do this—most scientists don't as it doesn't affect their publication records, and policy people are either too busy or not sufficiently technical to do the work." CARMA's work is particularly important as the energy sector is the single largest contributor of greenhouse gas emissions, at around 65% of the world total, with power generation accounting for a large share of that.[33]

CARMA maps the CO_2 emissions of over 50,000 power plants around the world.[34]

"You go into a store and basically know nothing besides the pricing, the calorie content, and whatever else that brand is willing to tell you about their products. We want to cut through all of the marketing and advertising and tell people what they actually want to know about these products."

The power of the platform became apparent one day when Wheeler received a call from a friend at the World Bank inquiring about a plant being built in Mmamabula, Botswana. It turned out that the installation would be a major polluter, which piqued Wheeler's interest – what else is the World Bank funding? Scrolling over to India he found plans for another coal plant, the Tata Ultra Mega, which ultimately would become one of the biggest emitters of CO2 in the world. Wheeler's finding led to a large campaign by the Environmental Defense Fund, a not-for-profit, to institute stricter standards at the World Bank, and the following year new legislation was put in place to limit the types of projects that would be eligible for funding.

Making Money Green

Another global watchdog network called the Carbon Disclosure Project (CDP) targets the people with lots of money to invest and who have enormous influence on the companies in which they invest. Institutional investors—the big mutual and pension funds—are a critical audience in the effort to accelerate business action on climate change because of their major role in the economy. Paul Dickinson, the network's founder, has calculated that access to capital will become a powerful lever for encouraging companies to reduce carbon emission once a critical mass of investors and lenders starts attaching risk premiums to companies with climate liabilities and those without sound carbon management plans. The CDP aims to speed the transition by helping the investment community better understand how companies are positioned in relation to the risks and commercial opportunities associated with the transition to a low carbon economy.

The Carbon Disclosure Project provides climate change data to institutional investors.[35]

"Truly opening up our energy infrastructure could catalyze new sources of supply, provide a platform for new energy services, and help foster a culture of energy 'prosumption' whereby household and business users become active producers and managers of energy, not just passive consumers and ratepayers."

Suppose you are an investor looking at your local utility company, for example. The Southern Company runs 78 power plants across the southern states and has the dubious distinction of being the largest single source of carbon dioxide in the United States, according to CARMA's database. Collectively, these plants produce a staggering 206,000,000 tons of CO2 every year. In the very near future, either as a result of a carbon tax or a cap and trade scheme, it will cost power companies like Southern at least $10/ton to emit CO2 into the atmosphere (a conservative estimate given that analysts are speculating the price of carbon emissions in the US will be closer to $30/ton once the cap and trade program kicks in). Two hundred million tons a year times $10 a ton is 2 billion dollars. Subtract that from Southern's bottom line and see how it looks. Not good!

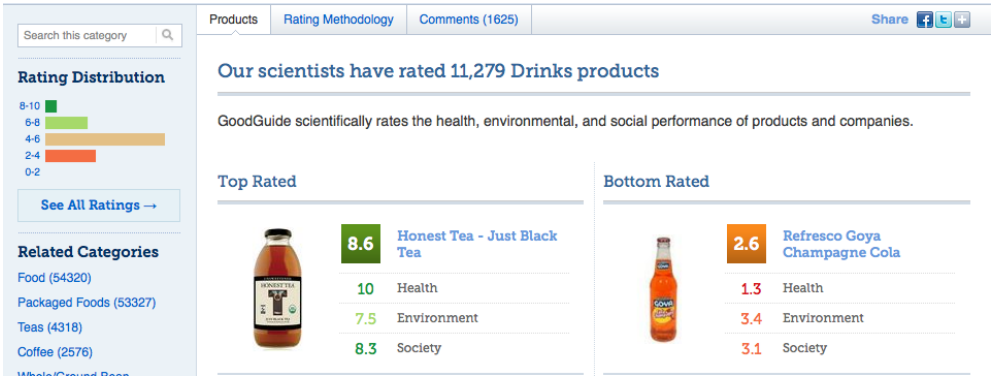
Many investors are already weary of investments in new coal fired plants in the US and many projects have come to a standstill as financial analysts look at the implications of new climate change regulations. CDP's analysis is based on information it receives from some 2500 private and public organizations, including many of the largest corporations in the world. The key was getting companies to agree to voluntarily disclose information about the strategies they are deploying in relation to climate change. Dickinson's strategy was to request it on behalf of a powerful stakeholder. "We identified a legitimate authority to request the data," said Dickinson, "475 institutional investors representing $57 trillion in assets!"[36] The CDP now has one of the largest databases of corporate climate change information in the world. Less altruistic operators might have chosen to keep the data proprietary and make money by selling access to institutional subscribers. But Dickinson thinks the public value of exposing the data to a broader audience exceeds the commercial potential. "Our goal is to apply the intelligence of the world to the climate change problem. Anyone [who] wants to look at the data can go to the website and download it."[37]

Enabling the Socially-Conscious Consumer

Given that money remains one of the most powerful metrics in the global marketplace, some of the most impactful watchdog platforms may be those that help consumers make more socially and environmentally friendly choices while shopping. Over-packaged, over-shipped and often unnecessarily harmful to the environment, consumer products are among the biggest environmental culprits. But in an era where every business wants to tout its green credentials, consumers are flying blind. "Quite frankly we're in the dark ages," says Dara O'Rourke, a UC Berkeley professor and founder of GoodGuide.com, a site where users can enter the name of a product and obtain a rating of its social and environmental impact. "You go into a store and basically know nothing besides the pricing, the calorie content, and whatever else that brand is willing to tell you about their products. We want to cut through all of the marketing and advertising and tell people what they actually want to know about these products."

GoodGuide builds what O'Rourke calls a product ontology, which boils down to "a detailed assessment of a product and the supply chain behind it." To come up with the assessments, GoodGuide's scientists trawl through 200 data sources and apply 1100 criteria to eventually land on an aggregate score

out of 10 which incorporates individual scores for the health, environmental and social performance of the product. For instance, Tom's of Maine deodorant gets an 8.6 in part because it has no carcinogens, while Arrid XX antiperspirant rates a 3.8 because it contains known carcinogens. Another click leads to information behind the scores, like whether an ingredient causes reproductive problems or produces toxic waste, or whether the company has women and racial minorities in executive positions or faces labor lawsuits. To date, GoodGuide has scored some 100,000 products.



GoodGuide scores over 100,000 products.[38]

"Our goal, in two or three years, is to be part of an ecosystem in which every consumer in the world gets the information they need to make better decisions while they're standing in a store or shopping online," says O'Rourke. The ideal scenario would be to have GoodGuide's scores displayed right next to the price tag on retail store shelves. Some retailers like Tesco are already ahead. The UK-based retailer started putting carbon-count labels on varieties of orange juice, potatoes, energy-efficient light bulbs and washing detergent in 2008 allowing shoppers to compare carbon costs in the same way they can compare salt and calorie content. For now, GoodGuide users will need to be content to look up products on their mobile phones. The site already has apps for the iPhone and allows users to scan a bar code to get scores, rather than typing in a product name. The next step is personalization. According to O'Rourke, that means allowing shoppers to set their personal preferences so that the product scores they call up change to reflect how the consumer weighs different issues. So for instance if a consumer is more interested in climate change than animal rights, the products scores will reflect that difference by assigning a stronger weighting to climate change related criteria.

Efforts to increase transparency around social and environmental problems have so far focused on creating a more informed consumer. The next step is to ensure that informed consumption results in changes in production practices that lead to a more sustainable economy. "What we think of now as green is a marketing mirage," usually based on a single environmentally friendly practice, said Daniel Goleman, author of Ecological Intelligence, who switched deodorants and shampoos because of GoodGuide. The site

"And once the grid carries information, there are few reasons, if any, why it shouldn't benefit from all of the rich possibilities for innovation, collaboration and wealth creation that the Internet has fostered in other sectors of the economy."

could potentially "have a revolutionary effect on industry and commerce," he said, by educating shoppers about the ramifications of buying a particular product.[39] But the real challenge lies in educating companies about how to make products that are less environmentally damaging. As entrepreneur and environmentalist Paul Hawken put it, "We assume that everything's becoming more efficient, and in an immediate sense that's true; our lives are better in many ways. But that improvement has been gained through a massively inefficient use of natural resources. We are now heading down a centuries-long path toward increasing the productivity of our natural capital — the resource systems upon which we depend to live."[40] In other words, real innovation will occur when informed consumers, researchers and smart companies collaborate together in global solution networks that can advance a new paradigm of truly sustainable business.

Platforms for Sustainability and Smart Services

Today, the world stands at the brink of a new energy revolution – one that will fundamentally transform the ubiquitous but largely invisible infrastructure that powers every home appliance, every medical device, every light source and virtually every industrial process, from agriculture to construction. The fossil fuel-based economy is coming to an end and a new green energy economy is emerging in its place. Like past energy revolutions, there will be great payoffs for the countries and companies that master the new technologies early. The opportunity for new product and service innovation is huge, as is the potential for smart firms to create hundreds of thousands of new high-skill jobs in fields ranging from solar engineering to software.

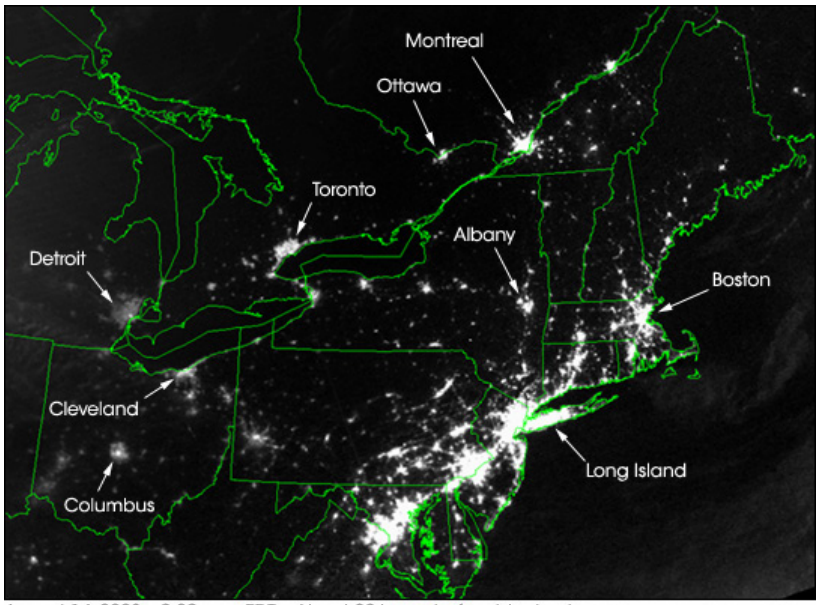
Getting there, however, will not be easy. The need for global solution networks that can foster cross-sector collaboration to develop and scale new technologies is paramount. And open platforms built on smart technology will play a critical role in enabling innovation too. Truly opening up our energy infrastructure could catalyze new sources of supply, provide a platform for new energy services, and help foster a culture of energy 'prosumption' whereby household and business users become active producers and managers of energy, not just passive consumers and ratepayers.

Breaking the Gridlock

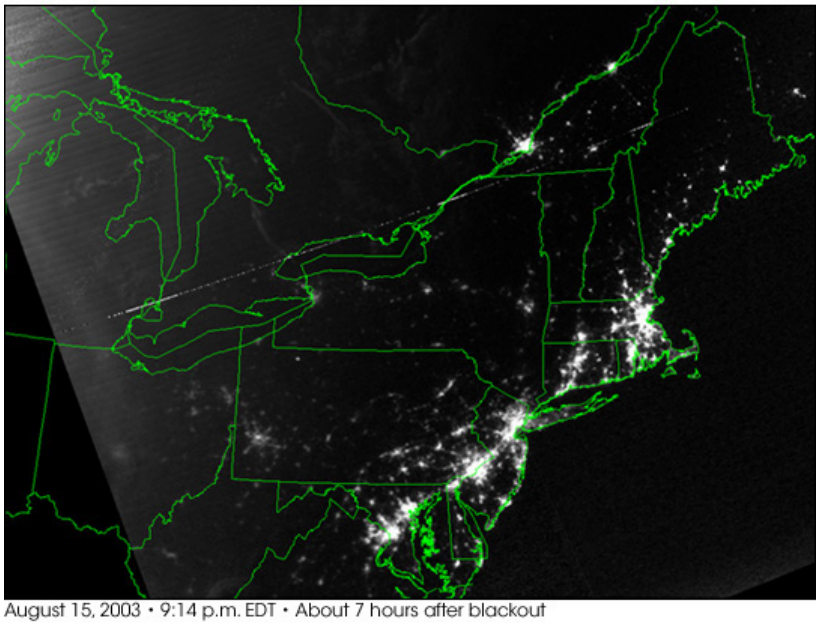
Unfortunately, the electrical systems in most countries lucky enough to have them are antiquated and ill-equipped to meet the demands of an economy based on networking, smart energy services and renewable energy. Blackouts, rising prices, congestion, reduced capital spending and unsatisfying returns for investors all point to disintegration at a time when the need for innovation in the way we produce and consume energy is paramount. According to industry analysts, the faults lie in a series of systemic flaws that all link back to planning traditions that emphasize centralized models of grid design, regulation, operations and profit-making. From an engineering perspective, everything about our current electrical systems—from the transformers, meters and breakers right through to our

"...society needs a new model of energy production and distribution based on the global solution network model—one built on a platform of openness that mobilizes not just large utility companies, but a whole ecosystem of small-scale generators and household producers, software developers and business leaders."

household appliances—is designed on the assumption that power flows one way from large-scale generators to the consumer. Unfortunately, this centralized approach is vastly inefficient. In coal-and gas-fired power plants, almost two-thirds of the energy produced by converting fuel into kilowatts escapes as heat. Another 8 percent, on average, dissipates as the electricity travels over transmission lines to get to your home. A further problem arises from the fact that the grid is designed to handle peak consumption — the points throughout the day when local industry is at



August 14, 2003 • 9:29 p.m. EDT • About 20 hours before blackout



August 15, 2003 • 9:14 p.m. EDT • About 7 hours after blackout

In August 2003, a high-voltage line in Ohio that had sagged due to heating caused by power transmission, brushed some overgrown tree branches and started a cascading blackout that caused 50 million people to lose power.[41,42]

"Because of the networked age, organizations can be much more than just organizations. They can be platforms for value creation and innovation, igniting and supporting broader problem solving networks."

full throttle and household consumption spikes. The system has no built-in storage capacity (e.g., a nation-wide network of electric car batteries). That means a lot of money is misspent building and operating large-scale centralized generating plants that are only called into action to meet those rare instances of peak demand.

On top of this, the grid is remarkably opaque. The average utility company has no visibility into real-time demand for electricity, and often no way to know if there is a power outage in the network until a customer calls to alert them. So utilities produce as much as they think they need and hope that they neither overload the system nor leave consumers going without. When this system fails, it gets expensive. Blackouts cost America an estimated $80 billion a year, according to a study by the Lawrence Berkeley National Laboratory.[43] Consumers fare no better, with little or no way to assess their usage until presented with an aggregate bill at the end of the month. Homeowners rarely get information about pricing considerations. Nor do most people know what proportion of their power was generated by nuclear, coal, gas or some form of renewable energy, or what emissions were produced in the process.

The irony is that while Alexander Graham Bell would not recognize today's telephone network, Thomas Edison would feel right at home running today's electrical grid. "Since Edison passed away," said Leonard Gross, vice-president of telecommunications engineering at Ontario's electrical utility Hydro One, "we've created a compact fluorescent light bulb. Nothing else has happened."[44] Indeed, most research into new energy technologies is largely occurring at the edges of the electric network, not at its core, the utility companies. And there's a reason. It's because the incumbents most often don't have the answers and neither are they particularly motivated to find them, irrespective of what incentives governments offer.

The Open Source Grid

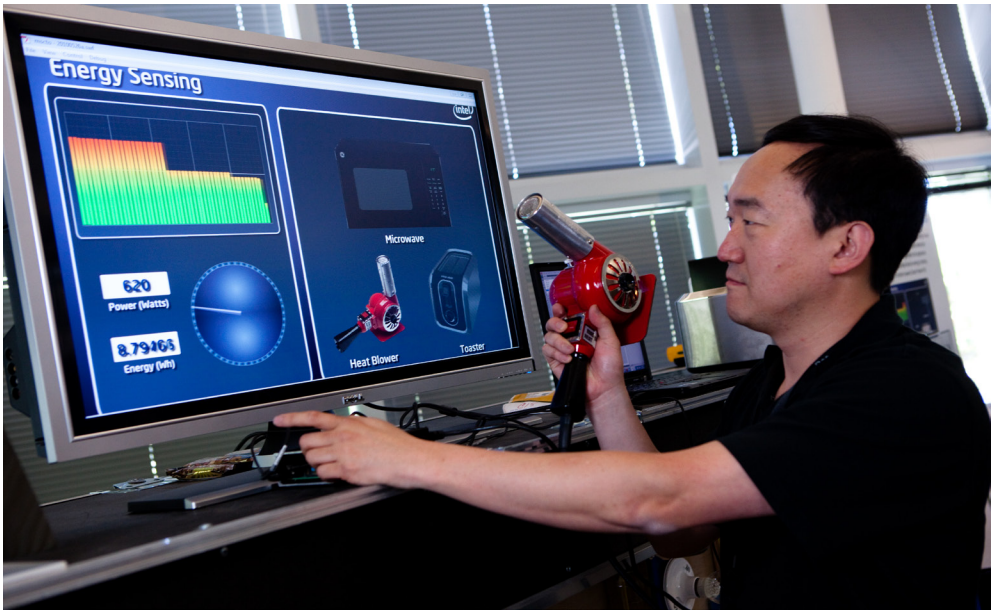
What if there was a way to integrate new sources of renewable power, including the power homeowners, businesses and buildings generate themselves? What if you could also provide better tools and better information to allow consumers to manage their energy usage and even pump energy they generate back into the grid? This same system would allow utilities to monitor and control their networks more effectively and make new business models and dynamic pricing schedules possible for the first time. And, on top of all that, you could also sharply reduce greenhouse-gas emissions and help save the planet.

A mere fantasy? It's not as farfetched as it sounds. We just need an energy grid that is intelligent, decentralized and transparent, and where people and devices everywhere create capability and value. Call it the open source grid or a platform for a new generation of smarter, cleaner and more efficient energy services. After all, there is already increasingly broad agreement that our electrical systems should do more than carry electricity. They should carry information. And once the grid carries information, there are few

"The fossil fuel-based economy is coming to an end and a new green energy economy is emerging in its place."

reasons, if any, why it shouldn't benefit from all of the rich possibilities for innovation, collaboration and wealth creation that the Internet has fostered in other sectors of the economy.

In many ways, the argument for a smart grid based on open standards parallels the argument for an open Internet. The old power grid is analogous to broadcast media with its bias towards centralized, one-way, one-to-many, one-size-fits-all communication. A smart grid, if it could be built, would leverage the Internet's connective tissue to weave millions, and eventually billions, of household appliances, substations and power generators around the planet into an intelligent and programmable network. And, just as open standards and "edge intelligence" helped unleash unparalleled creativity on the Internet, a similar ethos of openness will ensure the new energy grid becomes a platform for a vast array of new energy services, not just a computerized pipeline for delivering cleaner electricity.



Internet-connected energy sensors will give consumers the power to monitor the electricity consumption of individual appliances.[43]

Treating the grid like an open platform would, for example, allow software developers to build applications to help individuals conserve energy the same way developers build apps for the iPhone. A straightforward application could include a service that analyzes a household's electricity usage data, identifies inefficient appliances or practices in the home, and offers tips on how to reduce energy or provides special discounts on efficient appliances or electronic equipment. So you need no longer worry if your son or daughter forgets to turn the lights out when they go to bed no matter how many times you remind them. A smart grid equipped with sensors in your home will follow your instructions to turn the lights off automatically when it's 2am and no one has moved in the house for the last hour! An

> *"The irony is that while Alexander Graham Bell would not recognize today's telephone network, Thomas Edison would feel right at home running today's electrical grid."*

intelligent grid can also change consumer behavior with smart appliances that would save money automatically. Armed with more information about tariffs, the dishwasher would wait for the price to fall below a certain level before switching on or the air-conditioner would turn itself down when the price goes up.

Building Global Solution Networks for Energy

Pilots underway in Europe show how the open source grid could help support the growth of citizen-based global solution networks for energy. Homes across Europe, including Manchester, Birmingham, Bristol, Rousse and Cluj, have been equipped with advanced smart meters and sensor networks that tracks energy usage, efficiency and overall household emissions to generate a real time carbon footprint. Users pull up a web-based interface to analyze the sources of their emissions, compare their home with the neighborhood, forecast household savings, or control their energy use remotely from a PC or a mobile phone.[46] The system developed by Manchester City Council and its partners is an open platform, which means it can be seamlessly integrated with other applications for mobile, TV and social networks.

In 2010, the pilot project set up the world's first neighborhood-level carbon trading scheme. Each household in the pilot project is assigned a "personal carbon allowance" and participates in a household emissions trading market. The carbon allowance sets a cap on household emissions and the marketplace allows households to buy and sell quotas, according to their carbon budgets. Policy makers in the UK are contemplating whether such household emissions trading schemes could set the stage for the introduction of a comprehensive nation-wide cap and trade system that would apply to individuals, not just businesses.[47] Like the pilot, each adult citizen would be assigned a carbon allowance that would determine how much carbon dioxide each can emit driving, flying and keeping a home. Emitters who exceeded their quota by relying on big cars, living in large houses and taking lots of plane journeys would buy additional allowances from people who have allowances to spare because they emit less. British politicians such as David Miliband have argued that low income people would be net winners,[48] a claim backed by exploratory research by the UK Department of Energy and Climate Change which found that 71% of low-income families would, in effect, get paid for having lower than average emissions.[49]

Early results show that individuals armed with data and a few simple suggestions are much more likely to adopt sustainable lifestyles. Studies have found, for example, that when people are made aware of how much power they are using, they reduce their use by about 7%. With added incentives, people curtail their electricity use during peaks in demand by 15% or more.[50] A report released by The Climate Group estimates that the application of digital technologies to enable smart grids and smart buildings has the potential to avert 3.71 gigatons of CO2 equivalent global emissions by 2020, delivering some $464 billion in global energy cost savings to businesses, taxpayers and consumers.[51]

> *"The irony is that while Alexander Graham Bell would not recognize today's telephone network, Thomas Edison would feel right at home running today's electrical grid."*

The mere fact that neighborhood trading schemes and personal carbon allowances are even being debated is a sign that efforts underway to make our infrastructure more intelligent and interactive will pay large dividends. After all, it's easier to remain aloof about climate change when the connections between our actions and the climate seem vague and hard to measure. But it becomes harder to simply ignore one's personal responsibility when the smart meter on your wall not only shows you your real-time carbon footprint, but also compares your score to the neighborhood average and offers you tips on how to improve. Coupled with a real price on carbon, this new transparency and interactivity provides the fuel for truly global networks to emerge to tackle some of the world's great challenges.

In short, society needs a new model of energy production and distribution based on the global solution network model—one built on a platform of openness that mobilizes not just large utility companies, but a whole ecosystem of small-scale generators and household producers, software developers and business leaders. With the right mix of bottom-up collaborative action and inspired leadership, GSNs could help wean the world off its dangerous addiction to fossil fuels and build a new green energy economy that can sustain human civilization for centuries to come.

Implications for Network Leaders

GSN research has uncovered ten types of global solution networks, of which platforms are one. Knowledge networks support the creation of new knowledge and research to provide greater insight both into the nature of global problems and into the efficacy of current efforts to solve them. Operational and delivery networks focus on the hard work of delivering specific essential products and services to people in need. Advocacy networks mobilize people behind social causes in an effort to influence policy and behavior. It would be easy to overlook platforms as the equivalent of the plumbing of global problem solving, but platforms may in fact be one of the most critical elements.

Because of the networked age, organizations can be much more than just organizations. They can be platforms for value creation and innovation, igniting and supporting broader problem solving networks. Creating a platform for global problem solving, as we've seen in this report, expands the power of a network because it harnesses the creative power of a larger, more diverse and ultimately more capable network of contributors than you could ever find in a single organization.

The possibilities for global problem solving platforms are vast. Building an open and intelligent network for energy or transportation innovation could help convene communities around shared problems like developing more

advanced electric car batteries or building the next generation of energy services and apps. Likewise, open data platforms can broaden input into policy, shine a light on corporate practices that harm the environment, or get citizens involved in helping development agencies like the World Bank design and deliver better services. What follows are some of the challenges and opportunities that global solution networks will confront in leveraging platforms for problem solving.

GSNs can harness a greater diversity of engagement options. Not only does the Web give rise to a broader spectrum of engagement options, it calls into question the role of traditional charities and non-governmental organizations in a world where citizens can engage directly through global solution networks. Of course, that does not mean everyone will choose to engage directly, but a growing proportion will. While writing a check still constitutes an integral aspect of 'engagement,' as does volunteering, concerned citizens can do everything from the relatively trivial expression of support (say, putting a logo or fundraising application on a Facebook page) to organizing local meet-ups, contributing knowledge and expertise toward a specific problem or leveraging smart systems in homes or businesses to reduce energy consumption. GSNs can tap this more direct and participatory style of engagement by using social media to communicate and collaborate with stakeholders and supporters and by leveraging advocacy platforms like Causes and Avaaz to launch public petitions and campaigns.

The born-digital generation embraces a networked model of engagement and advocacy; GSNs should tap their energy and enthusiasm. Generational difference is an important driver in the changing nature of social advocacy and in the use of new platforms for problem solving more generally. The first generation to "grow up digital" senses that the global economy is out of whack. They fear they are inheriting a deeply troubled planet. In the affluent world, this generation wants a fair chance to obtain the same quality of life as their parents' generation. In emerging nations, young people demand the same freedoms and opportunities that the rest of the world has long enjoyed. And thanks to platforms like Avaaz and Change.org, it's increasingly difficult for the powers that be to either deny that there is a problem or to prevent the young from organizing to achieve their goals.

For the first time, a huge proportion of the global youth population can connect and collaborate using the same devices and social networks. They can express their social and political aspirations with tremendous speed and impact, and there is little that authorities can do to circumvent them. Whether pursuing issues like climate change or economic injustice and unemployment, all GSNs should make conscious and explicit efforts to engage young people in their work. Engaging youth ambassadors to spread the word on social media, elevating young people to spokesperson roles and using popular celebrities to promote involvement in problem solving can help raise awareness and involvement. But more importantly, GSNs should carve out genuine youth-oriented leadership roles in their networks, such as putting young people in charge of digital engagement strategies.

"With the right mix of bottom-up collaborative action and inspired leadership, GSNs could help wean the world off its dangerous addiction to fossil fuels and build a new green energy economy that can sustain human civilization for centuries to come."

Putting data on an open platform can enable GSNs to unleash powerful problem solving networks. When the World Bank opened up its immense collection of data on a wide range of development indicators, it transformed a closed resource that only a privileged few could access into a platform that supports a diverse community of problem solvers who leverage the data to create new knowledge and innovations. With thousands of third party applications in use today, it's clear that the World Bank could never have anticipated all of the creative ways in which this data has been used to date—from applications that interrogate program budget data to identify inefficiencies to projects that analyze nighttime illumination data from satellite imagery as a proxy for measuring local poverty rates. Nor could the Bank have afforded to pay for the countless man-hours that have been invested by external parties to build these applications from scratch. By open sourcing their approach, and particularly their data, GSNs can stay more attuned to emerging issues and social expectations and can also leverage the complementary resources and capabilities needed to address them. GSNs should also learn to harness the open data platforms provided by governments and international institutions. Using data-rich visualizations can be a powerful way to communicate a message or initiate a substantive policy debate among stakeholders.

Weak ties can be exceptionally powerful when networked together. Going back to the civil rights movement of the 1960s and anti-Apartheid campaigns of the 1980s, activists have sought to build ties with like-minded groups in order to share critical resources and acquire strength in numbers. The Internet has dramatically amplified the strength of weak ties between disparate groups, and platforms like Avaaz and Change.org provide the tools to make global solution networks even more effective. In fact, one of the greatest strengths of the uprisings that shook the Arab world was their ability to use social media to win support from sympathizers abroad, especially large diasporas in countries such as the United States, France, England, Germany, Australia, Canada and parts of Scandinavia. And the benefits are not limited to advocacy. The same weak ties can be mobilized to alter or influence socially and environmentally destructive behavior patterns. As initiatives like CARMA and Luum demonstrate, platforms that facilitate new levels of transparency around our personal impact on the planet can be powerful motivators for adoption of sustainable lifestyles.

Even the biggest accomplishments begin with small victories. While major issues like global warming and human trafficking can't be solved overnight, platforms for problem solving like GoodGuide give ordinary citizens the power to make governments, corporations and other organizations change their practices within a relatively brief period of time. Change.org and Avaaz litter their homepages and email blasts with recent victories to reassure contributors that their efforts are making a difference. The point is that no project is so massive that people can't chip away at it by breaking it down into manageable pieces. Just as Wikipedia taps the contributions of millions by breaking down the task of producing an encyclopedia into a series to discrete tasks, GSNs must excel in the art of crafting bit-size opportunities to participate that result in identifiable outcomes. GSNs must also be sure to publicly celebrate these small victories along the way. The act of celebrating

“Rather than overwhelming people with too many tools and functions, global solution networks should work on improving and simplifying their most important service.”

victories and rewarding participants builds morale and momentum on route to accomplishing larger goals.

A GSN can grow by narrowing its focus. A common problem in modern advocacy movements is the temptation to place a “laundry list” of issues under a common umbrella. Such tactics may increase solidarity. They may be inclusive. But they dilute and overcomplicate the message. And in the case of the Occupy movement, one can argue that a lack of clear focus undermines effectiveness. Platforms for problem solving enjoy the most success when they identify a critical need and concentrate their efforts on solving it with simple tools. Change.org, for example, has been successful by focusing on one core service: hosting and supporting online petitions. The Carbon Disclosure Project puts relevant climate change information into the hands of major institutional investors in order to influence their investment decisions. Rather than overwhelming people with too many tools and functions, global solution networks should work on improving and simplifying their most important service.

Equating difficulty with effectiveness misses the point of social change. Commentators such as Malcolm Gladwell have designated people who participate in online campaigns as slacker activists, or “slacktivists,” suggesting that these people feel good about themselves without putting any significant amount of effort into their activism and that they are not actually bringing about social change. Change.org offers a counterpoint by showing how individuals can come together to create change without making a full time job out of it. Rattray explains that, “The goal isn’t to make social change difficult,” and suggests that, “people too often conflate effectiveness with difficulty.” In fact, GSNs should structure public participation on platforms for problem solving with a spectrum of engagement in mind. Enthusiasts will gravitate toward visible roles with more time-intensive, leadership requirements. Participants with less time, or lower levels of personal engagement, should still be able to make a difference, however, by fulfilling less onerous tasks.

Working together, even to change the world, doesn’t have to involve a great deal of effort. In the spirit of the “work smarter, not harder” mantra, platforms for problem solving demonstrate that mass collaboration can result in successful projects while reducing each participant’s workload. Naturally, people will be more willing to participate if they feel they can make a significant contribution with a small amount of effort. The fact that Avaaz and Change.org are integrated with sites like Facebook and Twitter, for example, makes it easy for people to spread the word to their existing contacts. Similarly, the drive to make all household devices and appliances “smarter” by connecting electrified objects to the Internet reduces the decision-making burden on households. Within a few years, these efforts will result in a flood of new data that can be aggregated and analyzed, providing a powerful engine for energy dashboards and trading platforms that help households and businesses optimize their consumption. Seamless integration of social networks would enable neighborhoods and individual households to hold energy saving competitions and literally compete their way to sustainability. The lesson for GSNs is that saving the world should not only be cost effective, it should be fun!

Endnotes

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32 In February 2009, a NASA satellite carrying instruments to produce the first map of the Earth's carbon emissions crashed near Antarctica only three minutes after lift-off. The satellite would have measured carbon emissions at 100,000 points around the planet every day, providing

a wealth of data compared to the 100 or so fixed towers currently in operation in a land-based network. The head of the US National Oceanic and Atmospheric Administration (NOAA), Professor Jane Lubchenco, has warned that the gathering of satellite data is now at "great risk" because America's ageing satellite fleet was not being replaced. Even before her warning, scientists were saying that America, the world's scientific superpower, was virtually blinding itself to climate change by cutting funds to the environmental satellite programs run by the National Oceanic and Atmospheric Administration and NASA. See: Suzanne Goldenberg and Damian Carrington, "Revealed: the secret evidence of global warming Bush tried to hide," *The Observer*, (July 26, 2009).

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About the Author

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Global Solution Networks is a landmark study of the potential of global web-based and mobile networks for cooperation, problem solving and governance. This project is a deliverable of the research program, offered through the Martin Prosperity Institute at the Rotman School of Management, University of Toronto.

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