

President Obama departs evening campaign rally in Dubuque, Iowa, November 3, 2012

The White House (Pete Souza)

GOLDCORP CROWDSOURCING

An Industry Best Practice for the Intelligence Community?

By JESSE ROY WILSON

Jesse Roy Wilson is a Defense Intelligence Agency Senior Intelligence Officer with U.S. Central Command in Tampa, Florida. He is currently working on a Master's degree at the National Intelligence University in Washington, DC.

Report Documentation Page

*Form Approved
OMB No. 0704-0188*

Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

1. REPORT DATE 2013	2. REPORT TYPE	3. DATES COVERED 00-00-2013 to 00-00-2013			
4. TITLE AND SUBTITLE Goldcorp Crowdsourcing: An Industry Best Practice for the Intelligence Community?		5a. CONTRACT NUMBER			
		5b. GRANT NUMBER			
		5c. PROGRAM ELEMENT NUMBER			
6. AUTHOR(S)		5d. PROJECT NUMBER			
		5e. TASK NUMBER			
		5f. WORK UNIT NUMBER			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) National Defense University, Joint Force Quarterly, 260 Fifth Avenue, Building 64, Fort Lesley J. McNair, Washington, DC, 20319		8. PERFORMING ORGANIZATION REPORT NUMBER			
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)		10. SPONSOR/MONITOR'S ACRONYM(S)			
		11. SPONSOR/MONITOR'S REPORT NUMBER(S)			
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified	Same as Report (SAR)	5	

A growing number of businesses use crowdsourcing—that is, they outsource tasks to people outside the organization¹—in a way that harnesses the capabilities and knowledge of external individuals on a mass scale to create innovative solutions. This article describes how Goldcorp, Incorporated, an international gold-mining company on the brink of collapse, used crowdsourcing via the Internet to turn its business around. The article then explores some challenges and successes behind crowdsourcing initiatives and offers crowdsourcing as an approach with applicability for the Intelligence Community (IC).

Goldcorp

In *Wikinomics*, Don Tapscott, a Canadian business executive and one of *Thinkers50's* most influential management thinkers, works with coauthor Anthony D. Williams to describe how Goldcorp turned its struggling 1950s gold-mining company into a multimillion dollar success.² Headquartered in Vancouver, British Columbia, Goldcorp employs 14,000 people who operate 10 mines in Canada, the United States, Mexico, and Central and South America. In the 1990s, the company was struggling with high production costs, debt, and strikes. The new chief executive officer, Rob McEwen, was new to the gold-mining business, serving previously as a young mutual fund manager at Merrill Lynch.³ Goldcorp analysts projected the death of a 50-year-old mine in Red Lake, Ontario. Without discovery of new gold deposits, the company seemed likely to go down with it.

McEwen held an emergency meeting with his geologists and made the decision to send them with \$10 million to find gold on the Red Lake property. Weeks later, the geologists returned with good news. They had discovered gold deposits; however, they were unable to estimate the value and determine the exact location of the gold. During a Massachusetts Institute of Technology conference in 1999, McEwen listened intently to a presentation on the production of the Linux computer operating system using volunteer software developers to “crowdsource” its development over the Internet. The company’s chief architect and software engineer, Linus Torvalds, disclosed the company’s software code publically so anonymous developers could review it and make improvements.

McEwen wondered if he could use the same model with the gold mine.

Back at Goldcorp, McEwen pitched his idea to take “all of our geology, all the data we have that goes back to 1948, and put it into a file and share it with the world . . . [and] ask the world to tell us where we’re going to find the next six million ounces of gold.”⁴ He experienced some resistance. For example, the information that McEwen wanted to

*and capability. In doing so he stumbled successfully into the future of innovation, business, and how wealth and just about everything else will be created. Welcome to the new world of wikinomics where collaboration on a mass scale is set to change every institution in society.*⁹

Like Goldcorp, the Intelligence Community could embrace crowdsourcing

the company posted its entire repository of information on its Web site and offered \$575,000 to participants with the best methods

make public was proprietary. A mining company had never made this information public before.⁵ Second, the geologists were concerned how the message would reflect on their reputations, which essentially told everyone—including their competitors—that they were unable to find the gold. Nevertheless, McEwen prevailed, and in March 2000 he launched the “Goldcorp Challenge,” the world’s first Internet gold rush.⁶

The idea was simple. The company posted its entire repository of information on the 55,000-acre Red Lake property on its Web site and offered \$575,000 to participants with the best methods and estimates. More than 1,000 participants from 50 countries registered for the challenge with submissions coming from graduate students, consultants, mathematicians, physicists, and military officers. “There were capabilities I had never seen before in the industry,” stated McEwen. Contestants identified 110 potential sites, half of which were new to the company, and 80 percent of them yielded substantial quantities of gold, eventually totaling 8 million ounces. The company estimates that the challenge saved 3 years of exploration time, and in 2001 revenues increased 170 percent, cash flow grew 1,180 percent, and profits soared from \$2 million to \$52 million.⁷

The company awarded the top four “virtual explorers” a shared prize of \$325,000, and 25 semifinalists prizes totaled \$250,000.⁸ As *Wikinomics* ends its story about Goldcorp:

McEwen . . . realized the uniquely qualified minds to make new discoveries were probably outside the boundaries of his organization, and by sharing some intellectual property he could harness the power of collective genius

to tap into the knowledge and expertise outside of its boundaries when appropriate. To explore this possibility, we need to understand how crowdsourcing works and its benefits and risks.

Crowdsourcing

Crowdsourcing is a portmanteau that refers to outsourcing tasks from within an organization to people outside the organization.¹⁰ The term originated in 2006 from a *Wired* magazine article in which Jeff Howe modified the term *outsourcing* to describe a business model using the Internet workforce without the need for a traditional outsourcing company.¹¹ A variety of other terms are used to describe similar activity, such as *open access*, *open innovation*, *open source*, and *collective intelligence*. Over the last decade, a number of successful companies have incorporated this approach. Proctor and Gamble uses crowdsourcing to support up to 50 percent of its innovations, helping produce such products as Mr. Clean Magic Eraser and Pringles Prints.¹² Other examples include Affinova, Amazon, Bell Canada’s I.D.ah!, Delicious, Dell’s IdeaStorm, Digg, Goldcorp, Google, IBM, InnoCentive, Kimberly Clark, Kraft, LG Electronics, ManyEyes, Marketocracy, Reckitt Benckiser, Salesforce.com’s Idea Exchange, Swivel, Threadless, and Unilever.¹³ A key difference, however, between crowdsourcing and open innovation in general is that crowdsourcing typically uses some kind of incentive or reward for the work.¹⁴

The most well-known crowdsourcing Web site is Amazon’s Mechanical Turk.¹⁵ The site gives businesses and developers access to 250,000 on-demand workers. Requestors post jobs and workers choose



U.S. Coast Guard (Ayla Kelley)

Admiral Thad Allen provides a briefing to the Unified Area Command in New Orleans in response to BP *Deepwater Horizon* oil spill

the jobs they want for the money offered. One highly cited example was the attempt to use Mechanical Turk to find the crash site of American entrepreneur and aviator Steve Fossett, who went missing in his plane between the Sierra Nevada Mountains and the Nevada desert. Although the effort did not find the crash site, an estimated 50,000 people looked for Fossett's plane by reviewing two million snapshots of commercial imagery covering 17,000 square miles.¹⁶ Wikipedia, the world's largest encyclopedia, is another example of crowdsourcing. It has over four million articles (and growing) produced, edited, and reviewed by volunteers. Their reward is simply the satisfaction that their work is instantly available to the world. Tara Behrend, an organizational sciences professor at The George Washington University, states that one unrealized benefit of using crowdsourcing over the Internet for research is the potential to reach a wider and more diverse audience to solve a common research challenge.¹⁷

There is a growing interest in harnessing crowds to tap the collective intelligence of the masses, experts and nonexperts alike, to forecast events. Known as prediction markets, these initiatives typically pose time-bound questions or statements (for example, Barack Obama's 2012 reelection) to users in a market, allowing individuals to buy and sell contracts based on what they believe will happen.¹⁸ The idea of dilettantes beating experts in certain situations has some merit. Phillip Tetlock, a professor

at the University of California Berkeley, used his seminal *Expert Political Judgment* to publish 20 years of research on human prediction capabilities, using more than 20,000 forecasts. His research concludes that experts have no more forecasting skill than nonexperts. The best forecasters were moderate along the ideological spectrum, skeptical of grand schemes, and more likely to consider contradictory evidence and hypotheses and hedge on their probabilities when making bets.¹⁹

Challenges

The director of innovation and policy at the European branch of RAND, Joanna Chataway, stated, "We have seen plenty of anecdotal evidence that crowdsourcing can work, but there has been little research into how and where it works best."²⁰ Indeed, organizations must use caution when launching crowdsourcing initiatives to ensure that they do not harm the image of the company and that they strike the right balance between diversity and expertise, offer the right incentives, and determine up front who has intellectual rights over the information.²¹

For example, the coach of a Finnish soccer club crowdsourced the recruitment of players and game tactics to the team's fans via cell phone voting.²² The season ended in disaster and the owners fired the coach. James Euchner, a vice president at Goodyear, argues that many online crowdsourcing initiatives are underdeveloped and unsuccessful.²³ For instance, during the

Deepwater Horizon oil spill in 2010, public and private parties launched Web sites and wikis to garner ideas from the public about how to stop the oil flowing from the sea floor. Volunteers submitted approximately 20,000 suggestions on the United States *Deepwater Horizon* Unified Command Web site.²⁴ However, as Euchner points out, most of the submissions were "notional" and lacked real potential. Moreover, it required vast resources to weed through all the information.

Although there are challenges to crowdsourcing, there are certain conditions that make success more likely. As we saw with Goldcorp and Mechanical Turk, given the right circumstances, companies can accomplish more by opening their work to the masses than relying only on company workers. In *The Wisdom of Crowds*, James Surowiecki provides four conditions that enable the aggregate decisions of large groups to make better judgments than experts:

- diversity of opinion
- independence (avoids groupthink)
- decentralization (so individuals can draw on local and tacit knowledge)
- aggregation (using a mechanism to turn individual information into collective judgments).²⁵

The Finnish soccer fans, for example, likely lacked the diversity of opinion and tacit knowledge required to determine recruitment or game tactics.

Applicability to the Intelligence Community

Like Goldcorp, the Intelligence Community (IC) deals with sensitive information and challenging problems. IC assessments establish what is known, unknown, and where developments might be heading. The IC continues to monitor traditional issues such as the capabilities and intentions of nation-states, but it is now responsible for assessing a growing number of nontraditional topics, such as health threats, resource scarcity, and even global climate change.²⁶ Former Deputy Director of National Intelligence (DNI) for Analysis and National Intelligence Council (NIC) Chairman Thomasingar points to the expanding issues in IC threat assessments as evidence of the expanding agenda.²⁷ For example, the IC's 1996 Annual Threat Assessment covered China, North Korea, Russia, Iran, a few unstable states, terrorism, proliferation, narcotics, crime, and economics.²⁸ In 2012, however, the threat assessment included all of the above intelligence topics plus an extended list of unstable nations, countries in our own hemisphere (Mexico, Cuba, and Haiti), the Arab Spring, tense relationships between countries in various regions, space, water security, health threats, and natural disasters.²⁹

Two trends make crowdsourcing via the Internet an attractive option for the IC. First, as exemplified by NIC assessments on global trends,³⁰ many of the new intelligence topics (and their sources, methods, and judgments) are unclassified and less sensitive than traditional political and military related topics. Thus, classification restrictions are minimal. Second, the required knowledge and expertise on these issues are not typically available through the traditional intelligence disciplines (human, signals, and geospatial) and exist outside the IC in academia, nongovernmental organizations, and business.

In 2007, the DNI published a directive on *analytic outreach*, defined as the "open, overt, and deliberate act of an IC analyst engaging with an individual outside the IC to explore ideas and alternative perspectives, gain new insights, generate new knowledge, or obtain new information."³¹ Acknowledging the need for the IC to expand its knowledge base and share burdens, the new policy directs analysts to tap outside expertise, IC elements to establish an analytic outreach coordinator, and the IC to use outside experts whenever possible. The preparation of the

2008 NIC report *Global Trends 2025* included American and non-American contributions through conferences, commissioned studies, and for the first time through a special Web site to allow comments on drafts.³²

Embracing expertise wherever it resides is an increasing requirement. Just in the last year, the Defense Advanced Research Projects Agency launched a crowdsourcing challenge to build an amphibious tank, offering \$1 million.³³ However, the IC has not attempted a crowdsourcing effort of its own. Building on the DNI directive on analytic outreach and the work of *Global Trends 2025*, the IC could conduct a pilot program and crowdsource an intelligence problem to the world over the Internet. It could identify existing outreach initiatives and establish a framework to clear certain intelligence topics for public crowdsourcing initiatives. Like Goldcorp, the DNI or NIC would review agency proposals and host the Internet site to pose intelligence challenges with some type of incentive or reward. Contestants would register so the IC could establish contacts and address any counterintelligence concerns.

Goldcorp and a growing number of business industries have successfully harnessed the power of crowdsourcing to enlarge their pool of talent and create innovative solutions. The DNI directive and NIC report are a step in the right direction. Globalization will likely continue to drive economic, political, and social tension, thus it is only natural

for decisionmakers to have more questions on more issues and to direct those questions to the IC. Given the right circumstances and intelligence issues, the IC can adopt this industry best practice to take advantage of the talent, expertise, and knowledge available across the globe to solve some of the most perplexing problems related to U.S. national security, generating additional capacity to deliver decision advantage to the Nation's policymakers. **JFQ**

NOTES

¹ Adapted from Clare Sansom, "The Power of Many," *Nature Biotechnology* 29, no. 3 (2011), 201. A *portmanteau* is a combination of two or more words into one new word.

² Unless referenced otherwise, this section relies on Don Tapscott and Anthony D. Williams, *Wikinomics: How Mass Collaboration Changes Everything* (New York: Penguin Group, 2010), 7–10.

³ Linda Tischler, "He Struck Gold on the Net (Really)," *Fast Company*, May 31, 2002, available at <www.fastcompany.com/44917/he-struck-gold-net-really>.

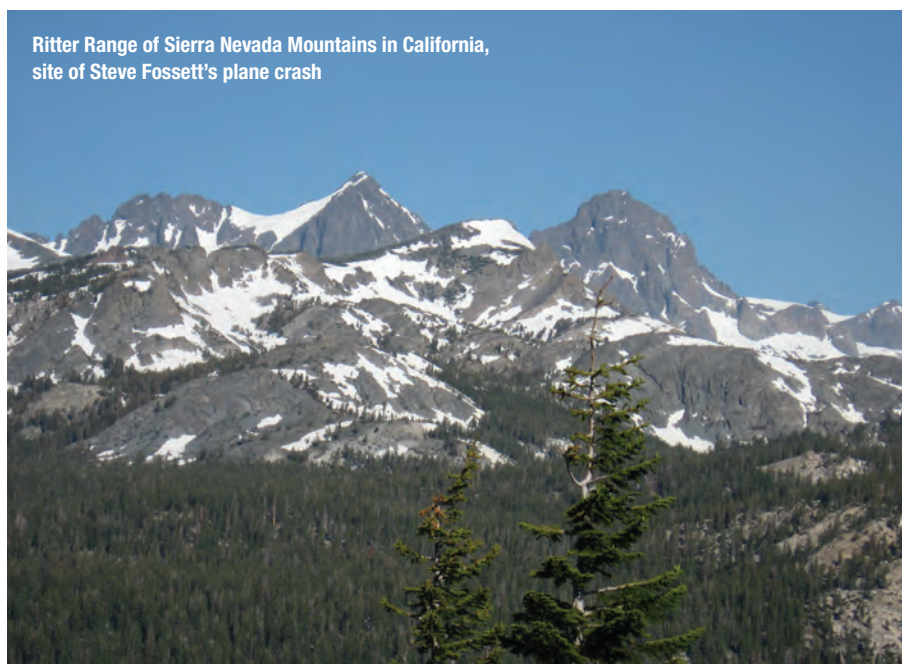
⁴ Tapscott and Williams, 8.

⁵ Goldcorp, Inc., "Announcement: Fast Company Selects Goldcorp as a *Fast 50* Champion of Innovation," February 18, 2002, available at <www.robmcewen.com/award/pdf/4.pdf>.

⁶ *Ibid.*

⁷ See Wikinvest, "Goldcorp," available at <www.wikinvest.com/stock/>

Ritter Range of Sierra Nevada Mountains in California, site of Steve Fossett's plane crash



Wikimedia Commons (Chuhern Hwang)



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Strategic Forum 279

*Trust, Engagement, and
Technology Transfer:
Underpinnings for
U.S.-Brazil Defense
Cooperation*

By E. Richard Downes

As Brazil's power and international standing grow, so does the importance to the United States of a close relationship with Brazil. Among emerging powers, Brazil is politically and culturally the closest to the United States. For this South American neighbor, defense technology has become a critical aspect of strategic reorientation and force modernization. According to author E. Richard Downes, sharing U.S. defense technology, including know-how, would strengthen U.S.-Brazil relations.

The two nations have taken initial steps to strengthen defense relations, including the 2010 Defense Cooperation Agreement and the first U.S.-Brazil Defense Cooperation Dialogue. Full implementation of 2010 agreements, pursuit of a shared vision of deeper defense cooperation, and development of a bilateral plan to advance the transfer of defense technology (and knowhow) based on Brazil's National Defense Strategy can improve defense collaboration and provide each country with important benefits.



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Goldcorp_%28GG%29/Data/Gross_Profit/1999/Q4>; and Goldcorp, Inc.

⁸ "US\$575,000 Goldcorp Challenge Awards World's First 6 Million Ounce Internet Gold Rush Yields High Grade Results!" 2001 Prospectors and Developers Association of Canada Conference, Toronto, Canada, *Infomine.com*, March 12, 2001, available at <www.infomine.com/index/pr/Pa065434.PDF>.

⁹ Tapscott and Williams, 10.

¹⁰ Adapted from Sansom.

¹¹ Jeff Howe, "The Rise of Crowdsourcing," *Wired* (June 2006), available at <www.wired.com/wired/archive/14.06/crowds.html>.

¹² Paul Sloane, "The Brave New World of Open Innovation," *Strategic Direction* 27, no. 5 (2011), 3.

¹³ List adapted from Sloane; and Eric Bonabeau, "Decisions 2.0: The Power of Collective Intelligence," *MIT Sloan Management Review* 50, no. 2 (Winter 2009), 46.

¹⁴ Sansom.

¹⁵ Tara S. Behrend et al., "The Viability of Crowdsourcing for Survey Research," *Behavior Research Methods* 43, no. 3 (2011), 802.

¹⁶ See Steve Friess, "50,000 Volunteers Join Distributed Search for Steve Fossett," *Wired*, September 11, 2007, available at <www.wired.com/software/webservices/news/2007/09/distributed_search>.

¹⁷ Behrend et al.

¹⁸ See, for example, Intrade, available at <www.intrade.com/v4/home/>. For background on examples in business that have predicted circumstances accurately, see Aleksandar Ivanov, "Using Prediction Markets to Harness Collective Wisdom for Forecasting," *Journal of Business Forecasting* (Fall 2009), 9–14.

¹⁹ Philip E. Tetlock, *Expert Political Judgment: How Good Is It? How Can We Know?* (Princeton: Princeton University Press, 2005), chapters 2–3, 5.

²⁰ Sansom.

²¹ Bonabeau.

²² Ibid.

²³ James A. Euchner, "The Limits of Crowds," *Research Technology Management* 53, no. 5 (2010), 7–8.

²⁴ Ibid., 7.

²⁵ James Surowiecki, *The Wisdom of Crowds: Why the Many Are Smarter Than the Few and How Collective Wisdom Shapes Business, Economies, Societies, and Nations* (New York: Doubleday, 2004).

²⁶ For example, compare Director of Central Intelligence, "Worldwide Threat Assessment Brief to the Senate Select Committee on Intelligence by the Director of Central Intelligence, John M. Deutch," February 22, 1996, available at <www.cia.gov/news-information/speeches-testimony/1996/dci_speech_022296.html>, with Director of National Intelligence, "Unclassified Statement for the Record on the Worldwide Threat Assessment of the US IC for the House Permanent Select Com-

mittee on Intelligence," February 2, 2012, available at <www.dni.gov/files/documents/Newsroom/Testimonies/20120202_testimony_wta.pdf>.

²⁷ Thomas Fingar, *Reducing Uncertainty: Intelligence Analysis and National Security* (Stanford: Stanford University Press, 2011), 27.

²⁸ Director of Central Intelligence.

²⁹ Director of National Intelligence.

³⁰ See, for example, National Intelligence Council (NIC), *Global Trends 2025: A Transformed World* (Washington, DC: NIC, November 2008), available at <www.dni.gov/files/documents/Global%20Trends_2025%20Report.pdf>.

³¹ Office of the Director of National Intelligence, "Intelligence Community Directive Number 205: Analytic Outreach," July 16, 2008, 1, available at <www.dni.gov/files/documents/ICD/ICD_205.pdf>.

³² Fingar, 56.

³³ Spencer Ackerman, "DARPA Offers a Million Dollars for Crowdsourced Amphibious Tank," *Wired.co.uk*, October 3, 2012, available at <www.wired.co.uk/news/archive/2012-10/03/darpa-swimming-tank-contest>.