

Disruptive innovation

Case study: Intelligence – Open-source data analytics



As with defense, intelligence doesn't come cheap. The collection and analysis of intelligence has become a particularly complex and resource-intensive task. Better intelligence capabilities historically required more people, more satellites, and lots of very expensive custom technology. Complexity increased due to new external threats, and by adding intelligence agencies, creating barriers to information sharing, and increasing technological demands.¹

Civilian and military intelligence cost the U.S. government US\$80 billion in 2010, more than twice what was spent in 2001.² This price tag dwarfs the US\$42.6 billion spent on the Department of Homeland Security or the US\$48.9 billion State Department budget.³

Many intelligence capabilities were created, refashioned or grown in the wake of 9/11.⁴ The massive growth caused even former Defense Secretary Robert Gates to remark: "Nine years after 9/11, it makes a lot of sense to sort of take a look at this and say, 'Okay, we've built tremendous capability, but do we have more than we need?'"⁵

The extreme level of technological sophistication needed for advanced intelligence has resulted in a number of high-profile failures, perhaps the most well-known being the cancellation of a six-year, multi-billion-dollar effort to develop the next generation of spy satellites, the Future Imagery Architecture.⁶ Human intelligence or "HUMINT" also comes at a cost — the cost of human life, as it often requires placing American operatives and foreign agents in potentially deadly situations.



Rising costs of U.S. intelligence

In fiscal 2010, the National Intelligence Program, run by the CIA and other agencies that report to the Director of National Intelligence, cost US\$53.1 billion, while the Military Intelligence Program cost an additional US\$27 billion.⁷

Breaking the trade-off

Given today's budgetary environment, the meteoric rise in intelligence spending is over — in fact many intelligence agencies are already planning for significant budget cuts. The question then becomes: can these same agencies provide critical intelligence capabilities at a lower price?⁸ The combination of two developments suggests the answer to this question may be yes.

The first development is the rise in open-source intelligence (OSINT). This refers to the broad array of information and sources publicly available from the media, social networks, academia and other public data. OSINT has been collected since 1940, but typically this collection focused on acquiring and translating mass media such as newspapers, television, and radio. The analysis of the material was done primarily by individuals and focused on understanding trends and differences in media coverage of issues. The Foreign Broadcast Information Service was responsible for this media analysis.

In 2005, the broadcasting service, previously a CIA component, became the Open Source Center. OSC was authorized by the Director of National Intelligence, but the CIA functioned as its executive agent. The OSC was charged with improving the availability of open-source material to intelligence officers and others in the government. The OSC launch signaled a more serious commitment to leveraging OSINT, as well as the recognition that the traditional paradigm of secret intelligence operations comes with a crushingly high overhead cost.⁹

The value of open-source information is that it's essentially free.¹⁰ The difficulty with open-source information is two-fold. First, many intelligence professionals view open source information as 'un-vettable' i.e., inaccurate, or not actionable. Second, with the world producing the digital equivalent of the Library of Congress every five minutes — sorting out what matters from what doesn't can seem like a Sisyphean task, the digital equivalent of finding a needle in a haystack.

A second development, advances in analytics, however, begins to address these problems. Rapidly maturing analytics technologies — modern data mining, pattern matching, data visualization, and predictive modeling tools — can help make sense of the mountains of data available today, and apply them to make more informed decisions. The speed at which these capabilities are getting better cannot be emphasized enough. Facial recognition search technology, for example, has gotten good enough to where computers can sift through millions of pictures or videos in seconds to link a picture to the identity of an individual.

These analytic technologies can help intelligence organizations to overcome data overload by pinpointing important information and filtering out extraneous data.¹¹ Our everyday actions in the digital world, from posting messages on Facebook to checking a bank account balance, create "digital exhaust" — trails conveying information about behavior, preferences and interactions. Analytics can help exploit this vast sea of data, thereby turning "overload" into opportunity. In the words of Clay Shirky, "there is no such thing as information overload, there's only filter failure."¹²

The Arab Spring provides a useful window into the power of joining open-source information with sophisticated analytics. Simply aggregating and analyzing tweets provided one valuable window into subsequent developments. Automated analysis tools discovered that an astounding 88 percent of Arabic conversations on social media during the first quarter of 2011 included political terms, up from a mere 35 percent in 2010.¹³

Open source information matched with advanced analytics potentially enables intelligence to be provided at a lower cost.

Targeted analytics examining social-media discussions about the Egyptian crisis also revealed that conciliatory actions might have saved Hosni Mubarak's job. Of all of the popular demands, ousting Mubarak was only the fourth most-popular, lagging behind intermediate steps such as ousting the interior minister, increasing minimum wages and ending emergency laws.¹⁴

Social sentiment analysis capabilities make it possible to predict to the day when a certain country might have a significant public protest or the growth of a political movement. Software can also now aggregate buzz expressed across various social media outlets to predict election outcomes.¹⁵ This includes not just the ability to

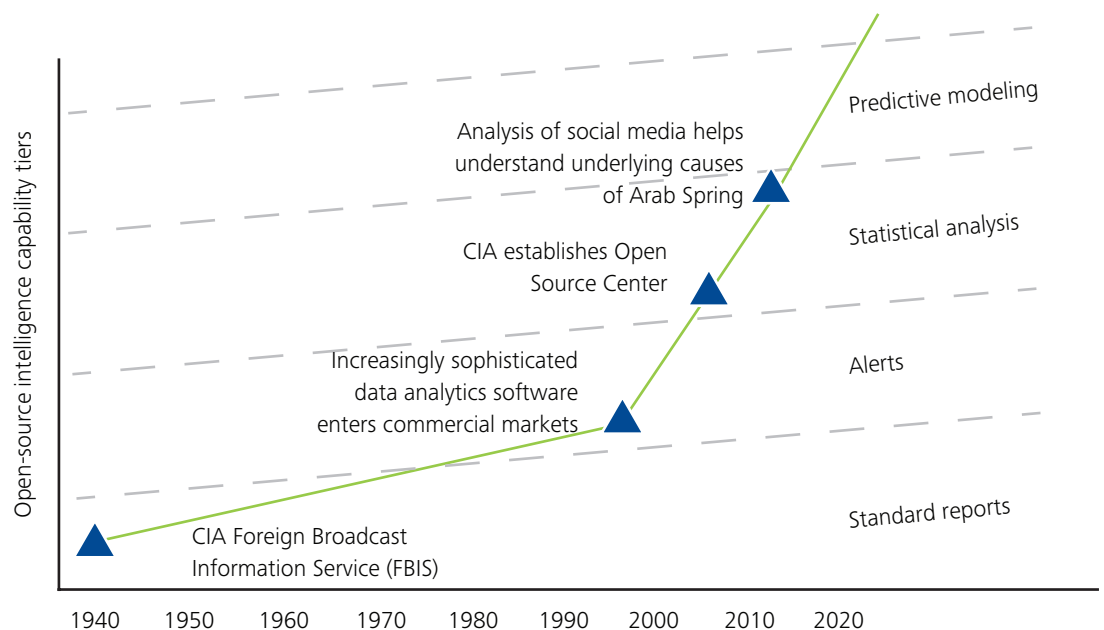
track the presence of a candidate's or political party's name and brand but the sentiments and context of how they are discussed in social media. Algorithms can help analysts use open source to track growing distrust of specific attributes of political leaders and political parties or anticipate an uprising.

Pace of disruption

Figure 6 depicts at a very high level how the upward march in capabilities in open source methods has already impacted intelligence. IARPA (Intelligence Advanced Research Projects Activity) and DARPA (Defense Advanced Research Projects Agency) initiatives exploring how social media and sophisticated open source methods can assist the U.S. government to better anticipate significant societal events reflect the direction the capabilities are headed.¹⁶

Secret sources and methods will remain important for information that can only be discovered through clandestine means. Many of the new challenges facing

Figure 1: Expanding capabilities of open-source intelligence



Source: Deloitte GovLab

the intelligence community, however, from detecting political instability to understanding social dynamics, might most effectively be answered through open source. As a result open source should no longer be seen, as it is today, primarily as a source of information that supports secret intelligence.¹⁷ Open source — particularly the marriage between large volumes of data and advanced analytic techniques — could eventually emerge as the intelligence resource of choice for many priority issues.

We live in an open world, yet the intelligence community today still operates largely as a closed loop system.¹⁸ Open source approaches provide one way to change this paradigm.

Endnotes

1. The international threat climate changed from single entities and bodies of state to loose networks with political or terrorist agendas that are embedded more deeply and more difficult to analyze. These constraints, needs, and complexities required change and the direction chosen was to increase resources in terms of people and funds to support research, analysis and the creation of new tools.
2. Pincus, "Intelligence spending at record US\$80.1 billion overall."
3. Ibid.
4. Dana Priest and William M. Arkin, "A hidden world, growing beyond control," *The Washington Post*, July 19, 2010. <<http://projects.washingtonpost.com/top-secret-america/articles/a-hidden-world-growing-beyond-control/2/>>
5. Ibid.
6. Anne Flaherty, "U.S. plans next-gen spy satellite program," *Associated Press*, November 30, 2007. <<http://www.msnbc.msn.com/id/22046019/>>
7. Walter Pincus, "Intelligence spending at record US\$80.1 billion overall," *The Washington Post*, October 29, 2010. <<http://www.washingtonpost.com/wp-dyn/content/article/2010/10/28/AR2010102807284.html>>
8. "Intelligence Collection Disciplines." <<http://www.fbi.gov/about-us/intelligence/disciplines>>
9. Carmen Medina, interview with the author, July 2011.
10. To be sure, substantial costs may be incurred analyzing open source information but apart from some license, and subscription fees and pay walls, the access to the information is largely free of charge.
11. Intelligence agencies still have a long way to go in analyzing and disseminating data better to provide maximum value. Examples in the commercial world, from data aggregators to content delivery networks, may provide some useful lessons.
12. Russ Juskalian, "Interview with Clay Shirky, Part I," *Columbia Journalism Review*, December 19, 2008 <http://www.cjr.org/overload/interview_with_clay_shirky_par.php?page=all>
13. "Arab Media Influence Report –AMIR 2011 Social Media & the Arab Spring." *News Group*, March, 2011. <<http://www.usip.org/files/centers/CoI%20Science%20and%20Tech/Presentation1%20final%20march%2029.pdf>>
14. Ibid.
15. One example is NMS Buzzmark.
16. See, for example: http://www.iarpa.gov/solicitations_osi.html and https://www.fbo.gov/index?s=opportunity&mode=form&id=04329fe397d72eccd3f7873bc123ff49&tab=core&_cview=0
17. Email from Carmen Medina, former Director Center for the Study of Intelligence, CIA, (now specialist leader at Deloitte), November 1, 2011.
18. Ibid.

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