29 May 2014

MEMORANDUM FOR RECORD

FROM: The Center for Technology and National Security Policy

SUBJECT: Summary of Conference on “*Commercial African Open Source Information Sharing”*

On 22 May 2014, the conference on *“Commercial African Open Source Information Sharing,”* hosted by the Center for Technology and National Security Policy (CTNSP) brought together diverse representatives from the military, US government, NGOs, and academic community with the intent of discussing important trends, challenges and potential solutions in Africa’s information sharing environment.

The conference was organized into three panels and two keynote speakers on subjects including: (1) Indigenous Intelligence, Surveillance and Reconnaissance, (2) Open and Classified Intelligence Sources, and (3) Untapped Open Source Intelligence Opportunities. The discussions were designed to not only identify key issues and challenges but to also propose approaches, previously unrecognized solutions and create dialogue around strengthening Africa’s information sharing environment.

**MORNING KEYNOTE SPEAKER**

Dr. Pauline Kusiak, East Africa Director for the Office of the Deputy Assistant Secretary of Defense for Africa Affairs, the conference opening speaker, commenced by discussing some of the challenges on the African continent for the United States, and its local partners. Dr. Kusiak illustrated that the United States has problems with “knowing, understanding and deciding,” when approaching problems in Africa. These problems include but are not limited to information gaps, an accurate comprehension of problem factors, and establishing valuable and durable connections with local partners. Additionally, issues with perceptions, cultural competencies and partner relationships also require attention. Dr. Kusiak went on to address the magnitude of the challenges on the ground in Africa, noting their massive scale as well as the rich social, religious, political, economic, and ethnic environments in which they take place.

Dr. Kusiak concluded her address with the assertion that the intelligence community and the United States’ information gathering, as a whole, must adapt itself to the complexities of the information environment in Africa. The informational world, despite the best attempts by some governments, is becoming increasingly flat with the spread of mobile device technologies. Similarly, a desire to identify the next big thing can obscure important details in small-scale trends, leaving valuable intelligence material out of consideration.

**PANEL I PRESENTATIONS**

The day’s first panel focused on “*Indigenous Intelligence, Surveillance and Reconnaissance in Africa”.* The panel consisted of Kevin Ofchus, Dr. Teylama Miabey and Dr. Meta Mobula. This panel focused on the state of military and civilian intelligence capabilities and trends on the ground.

Dr. Mobula laid out a case study of the Democratic Republic of the Congo, with specific emphasis on the challenges of gathering information in such a complex socio-economic environment. Congo Kinshasa is vastly rich with natural resources such as sugar, coffee, cocoa, copper, cobalt, gold, diamonds, mineral processing, consumer products, metal products and processed foods and beverages. Yet systemic corruption since its 1960 independence, coupled with nationwide instability and conflict that began in the mid-1990s, has woefully reduced government revenue, national output and increased external debts. As this nation makes slow and steady steps to recover some persistent challenges stand in the way of Congo Kinshasa’s progress. Some of the challenges he addressed included the lack of civic institutions, sparse population distribution, massive land area, and an almost total lack of basic infrastructure. As for data collection, cities and provincial capitals provide usable numbers, however as one moves to the countryside and to a larger scale population, the complexities increase dramatically. Dr. Mobula concluded that with no electrical infrastructure, information communications technology has no market and even if the infrastructure did exist, the government lacks the capacity to carry out large-scale analytical and processing tasks.

Mr. Kevin Ofchus continued the panel by focusing on the transnational nature of many of Africa’s problems. The fact that many issues such as political instability and problem framing do not adhere to national boundaries makes tasks such as managing requirements and gathering sufficient data difficult. While open source information may prove to be a very useful asset, there are still serious problems with limited sources and accessibility. As such, Mr. Ofchus recommended a combination of partner trust-building and capacity training to enhance informational awareness on the ground in Africa. Such a strategy will require a transparent, sustained and fully engaged approach from the United States.

Dr. Teylama Miabey’s contribution to the panel focused on a specific obstacle to Intelligence, Surveillance and Reconnaissance (ISR) in Africa: colonialism. Dr. Miabey commenced by taking the audience on a historic journey that started at the 1884-1985 Berlin Conference- otherwise known as the Scramble for Africa, the culmination of exploratory trips to the continent by European governments to create or expand their sphere of influence in the continent by arbitrarily dividing and claiming territories. With this background, Dr. Miabey asserts that attempts at ISR by foreign groups are often compared to the historic colonialist strategies of subjugation by European powers, and thus carries a negative connotation. He states that, in the post-colonial world, ISR is frequently viewed as a tool used by dictatorial governments to suppress civil society.

Despite these negative characterizations, African ISR has great potential. Dr. Miabey outlined some of the informal information conduits that would prove useful to ISR endeavors. Namely: Popular locales such as hubs for formal and informal businesses, social settings, residential neighborhoods by socio-economic backgrounds , street vendors and cab drivers. “Radio Trattoir” or small local radio broadcasts and leveraging local institutions such as tribal officials to gather information. Dr. Miabey followed this with the assertion that the digital information gap is closing fast. His concluding remarks were a call for U.S. proactivity in Africa to avoid a consolidation of Chinese influence on the continent.

The final speaker for the first panel was Mr. Jeffrey Baum. Mr. Baum’s contribution to the panel was a presentation on an information aggregator program, known as the “Common Information Environment”, designed to “deconflict, sync and share information”. He presented a brief case study on the Lord’s Resistance Army in Northeast Sub-Saharan Africa, demonstrating the mapping capability offered by the open source platform. Registered members were capable of contributing information on a variety of maps and link specific reports to their intended locations with the goal of providing any interested parties with information on ongoing conflicts. U.S. government personnel were also capable of tasking the system with requests for detailed commercial imagery. After the government had done its work with the system and produced a set of annotated map images, they could be published and shared with foreign partners in order to create a common information picture.

**PANEL I Q&A**

**Q1:** Why has there been so little focus on agricultural strategies in the Democratic Republic of the Congo to help alleviate Africa’s food problems?

***A1:*** *Food increases cannot succeed without sufficient infrastructure, which requires serious rebuilding and rehabilitation in the DRC. Otherwise it is a futile effort.*

**Q2:** What would you perceive to be the gaps between technology and information acquirement?

***A2:*** *The two largest gaps are definitely requisite revenue to allow for technological utilization in-country and a serious lack of good leadership amongst government figures.*

**Q3:** Which is the more useful model for partnering in Africa: the U.S. military model or a civilian economic partnering model?

***A3:*** *Both models in conjunction are necessary. Security first and foremost is necessary to make progress. In ensuring security, integrated and “soft” approaches must be utilized. Social responsibility on the part of foreign and domestic actors is a necessity.*

**AFTERNOON KEYNOTE SPEAKER**

Dr. Patrick Meier from the Qatar Computing Research Institute opened the afternoon keynote with a presentation on crisis computing and its potential impact on humanitarian assistance and disaster relief (HA/DR). He began with the comment that HA/DR was traditionally an undertaking that was forced to operate in information-scarce environments, whereas in recent years organizations have found themselves overwhelmed with raw data. He stated that both of these scenarios can be paralyzing, and asserted that finding actionable data can be like “finding a needle in a haystack.”

Dr. Meier emphasized that human data problems are not new, and that innovative solutions like crowdsourcing could provide solutions. He cited the analysis of some 2 million images of the planet Mars in under 48 hours as one case. He suggested similar undertakings with disaster analysis could be potentially useful exercises. Aside from using the internet to provide mass-analysis, software is in development to provide automatic classifications of raw disaster data. Interactive databases will be capable of mapping the informational results of crowdsourcing and “machine learning artificial intelligence” will be utilized to help sift through information. Dr. Meier concluded with the caveat that while false and bad data will always skew the results to some degree, verification tools such as “Tweet-Cred” are in development to make this a more reliable process.

**Panel 2 Presentations**

The second panel of the day focused on “*Untapped Information Sources, Open and Classified Sources of Intelligence: What Can We Learn from Each?”* This panel addressed the growing trend of Open Source Intelligence (OSINT) and Open Source Technology and how it can be applied effectively. This panel consisted of Dr. Steven Livingston, George Washington University; Nate Haken, Fund for Peace; Robert Piccerillo, Multi-Agency Collaboration Environment; and Dr. Kristie Inman, Center for Strategic Intelligence Research.

Dr. Livingston began the panel discussion and the central theme to his lecture was that the growing levels of mobile telecommunication access is playing a new role as a means to support the improvement of NGO effectiveness, accountability efforts in nations with weak central governments, and the global economy. Special attention was paid to the rising importance of both mobile telephony and high-resolution satellites, which allow for documentation of underperforming government sectors or total state failure. In the past, such incidents could be hidden from outsiders, but the massive expansion of global interconnectivity has destabilized this control and torn the veil down. Dr. Livingston used Amnesty International as a prime example of how greater accountability is being utilized through their documentation of Nigerian Army abuses in the field. Other key points brought attention to the benefits available to those with access to financial transfers through mobile phones and the ease of access to the global financial markets.

Mr. Kalev Leetaru followed with his presentation on GDELT, which stands for the Global Database of Events, Language, and Tone. This massive initiative aims to catalogue the internet from 1979-Present. The closest equivalent is DARPA’s Integrated Crisis Early Warning System, but the comparison ends there, as the focus is to create an open, academic database that leverages local sources and tools. The inspiration for this came from the rapid expansion of online news media, whose market share increased from 0-50% from, 1994-2010, and this pace continues today. The long-term goal is to create a global societal-scale, real-time dashboard that can analyze and highlight important global trends and events. It is free and the open-source format allows for genuine local interaction, which will hopefully sustain and support such a large operation. It continues to grow and experts anticipate it will have a capability of 15 min global updates by this time next month.

Proceeding after Kalev Leetaru was Nate Haken, who presented on a far-smaller information collection operation through Fund for Peace. His approach, which uses systems-based analytics, specializes on Nigeria. The central factor to his methodology, in his words, must “account for
second and third-order effects, cross-cutting issues, interdependencies, and multi-level analysis.” Without such complex analytics, it is possible to misread events on the ground. As he has seen, “relatively flat trends at the state level sometimes mask extreme volatility at the local level.” Solving an isolated issue does nothing if the problem is deeper than anticipated. If data collection and sharing is to really be used for problem solving, it is necessary to involve the local stakeholders and develop any open-source database around them to create feelings of ownership. The Fund for Peace has embraced this philosophy through leveraging global and local news media, as well as datasets produced by civil society-based early warning systems, to create early crisis maps and bulletins, then proceeds to transfer the products to local NGOs and social infrastructure for qualitative analysis. Such a procedure is vital to ensure accurate and involved participation in crisis prevention.

Lastly, Dr. Kristie Inman explored how Human Subjects Data can be utilized and abused. Human Subjects Data, is defined by the WHO as “data about people that involve the systematic collection or analysis of data in which human beings are exposed to manipulation, intervention, observation or other interaction with investigators…” Prime examples of this data are surveys, interviews, focus groups, and experiments. When exploring the utilization of any human subject data, she emphasized the ethics that must be applied. The essential rules to follow involve subject consent, voluntary participation, risk should not exceed benefits, and all research protocols should be reviewed by an independent committee prior to initiation. These steps are very important as human data provides unique data that is rigorous, replicable, reliable, and, most importantly, valid. Application of this subset of data is highly effective in intelligence analyses, so long as the analysts are capable of inductive and deductive reasoning and understand the benefits and limitations that exist between different data sources.

**Panel 3 Presentations**

The third panel, which was entitled “*Developing Effective Intelligence Institutions in Africa: How Should African Institutions Be Developed to Take Enduring Advantage of New Approaches? What is Affordable and Maintainable?”* This panel assessed how crucial institutional development accentuates successful use of ISR technologies for security purposes. The panel was composed of Miguel Ferreira da Silva, Africa Center for Strategic Studies, Thomas Snitch, University of Maryland, Dave Webb, USAFRICOM, and Dr. Kehbuma Langmia, Howard University.

Dave Webb led the opening discussion with his presentation on how AFRICOM can further promote Building Partner Capacity (BPC). One of the primary missions of U.S. AFRICOM is to build partner capacity and his office, which specifically focuses on Open Source Intelligence (OSINT), was tasked about three years ago now to build/improve the Intelligence Capacity of our Partner Nations. The Open Source Engagement Team was created to engage with members of Partner Nations in order to discuss and share OSINT capabilities. The primary objectives of the Open Source Engagement Team (OET) include, bilateral discussions on open source techniques, showing how to maximize search efforts on the internet to answer intelligence questions, improve analytical and critical thinking skills, build partnerships with a strategic African country and geospatial capabilities available on the web. These discussions include engagements that generally last five days. There are between 20-25 people in the engagement and contain a mixture of enlisted and officers, all of which have basic computer skills. They have performed the engagements in eight different countries, in both English and French. The engagements consist of formal/informal discussions, practical exercises, hands-on computer work and a Capstone Exercise on the final day.

Important lessons learned from these exercises denote the centrality of access to computers and internet for it to be a success. Furthermore, given the variety of countries that AFRICOM has worked with in recent years, it is necessary to remember that all countries are different and the skillsets that each military is provided with can vary widely.

Miguel Ferreira da Silva followed with a presentation on intelligence sharing and the importance of such a system. He emphasized how these networks are vital to national security and that various intelligence services need to cooperate to ensure security is not breached.

Intelligence sharing serves several purposes, and not least among them is legitimization of political decision making but also peer review and recognition.

Within the intelligence community, there are a number of principles of action that include respect for the constitution, submission to political power and oversight. Intelligence services define, verify and assess internal and external threats, and inform decision-making. Consequently, this limits objectives and defines priorities. The opposite also happens as political powers create parallel instruments of security that can bypass the traditional security force and usurp them. Consequently it is important to foster professionalism, namely by requesting products on human security and not only on political movements. Likewise, an institutional process of dialogue could allow for rather isolated intelligence officials to raise internal concerns within the system and without breach of security.

Intelligence services comprise three types of defense; 1) elite (president or leader), 2) regime and 3) state. The latter two types of intelligence services actively defend democracy and need legitimacy of professionalism, trust and guidance.

Within intelligence services, leadership, command, and officers all play a key role. However, the only links between the levels of leadership are the government, parliament and councils. If leadership taints any level, the whole system ends up with nepotism. Therefore, if we want partners in Africa, we need a completely new government approach, which designates the need to serve the three branches, and special oversight and the capability to talk to the parliament. Lastly, we need to support intelligence officers in Africa.

The challenges he faced as an intelligence officer show a widespread lack of knowledge, and therefore trust and cooperation, from other services within government. The demystification of the role of intelligence could greatly contribute to a normalization, transparence, accountability as well as effectiveness and accuracy of intelligence in the national decision making processes.

 Thomas Snitch spoke about his work at the University of Maryland on Big Data. The University of Maryland employs high technology UAVs to combat poachers in Africa and these technologies are affordable, exportable and importable, easy to maintain and simple to use and operate in the field. This concept uses drones that carry multiple video cameras, some infrared and they fly themselves while an operator can see what the drones see in real time on a laptop. The team uses historical records of wildlife movements and poaching to write a computer program that educates the drones. This model allows for pre-deployment of resources, provides for rapid response to incidents, increase likelihood of prevention or apprehension, it has been battle tested in the field and is easily replicated for other areas. One area that can take advantage of this project is: border control. Certain African countries could use these UAVs to control and protect their country borders. The University of Maryland team deployed this project at the Olifants West Reserve in the Balule Reserve in South Africa in May, 2013. Within 48 hours of the first UAV flights, four alleged poachers were spotted from the air and subsequently apprehended. This was critical in that the local rangers were initially very skeptical and somewhat fearful of the use of UAVs in their reserve. We believe that this was due to a misplaced fear that UAVs would take their jobs away from them. As one ranger said: "if you can track animals and possibly poachers from the sky, why will anyone need us?".

We spent the next two weeks working with the rangers in the use, operation, maintainable, and CONOPS that are part of a total UAV based solutions set. The rangers were shown how the UAV could video monitoring and scan the entire 30 km external fence of the reserve in 40 minutes as opposed to using two rangers, driving a vehicle for 8 hours, to do the same work. At the same time, the UAV saved 40 liters of fuel a day and allowed the two rangers to work on other tasks.

However, the most important activity that changed the rangers from skeptics to true supporters was the fact that the UAV was flown, at night, along their patrol routes before the rangers left camp for the mission. In this way, the rangers could watch live IR video of where they would be walking in the coming hours and they were able to easily see if poachers were setting up ambushes to kill them. Given the tremendous danger the rangers face on their nightly patrols, the UAVs were able to given them tremendous confidence that they would not be facing hostile forces, or possible agitated animals, on that night's patrol.

Lastly, Dr. Langmia concluded the panel with a presentation on how commercial Information Communication Technology (ICT) is changing communication related activities in Africa. The traditional forms of communication, radio and TV, are being outpaced by mobile telephony, commonly known as cell phones, and internet-driven smart phones and tablets. However, radio remains a powerful medium of communication for most people especially in the rural parts of the region. She proceeded to highlight the efforts of President Victor Mbarika, who founded the ICT University with campuses in Cameroon, Uganda and Nigeria. The university is a first step in training the future technology savvy citizens in Africa. The long term goal of this project is to enable citizens to partner and collaborate meaningfully with external stakeholders willing to gain human intelligence on the continent.

There are numerous challenges that accompany this new technology. Language barriers between nations are impeding the sharing of information. There are Anglophone, Francophone and Lusophone African countries and these countries also have native languages that are not easy to write, read and interpret from mobile devices using European keyboards. Digital divide, further increased by the fact that only a select few are educated in western languages, use all the features on mobile devices. Gender and age gap is yet another challenge.

African governments have begun to recognize the importance of ISR especially as it could help in reducing many social, economic and educational challenges. It is not uncommon to find new ministries of ICT springing up in most African countries. In fact, at the last World Summit for Information Society, most of the African delegations consisted of ministers of new media communications. With the new threats being posed by Boko Haram, while other border and domestic problems persist, African governments from either Anglophone, Francophone or Lusophone Africa need secured "open" source platforms for sharing requisite information that will help them thwart the numerous threats they face.

**FINDINGS**

In conclusion, we gathered a great number of concepts and techniques that can help to develop effective intelligence institutions in Africa. This includes learning more about the growing trends of Open Source Intelligence and Open Source technology and what African militaries and African civilian organizations are already using to collect information. In summary, we would like to highlight a few of the key findings from the conference.

1. **Leverage Civil Society**: partnering with civil society by creating an open source data around them, promotes a sense of local ownership in intelligence gathering activities. The local community can help address issues that a more complex analysis might misinterpret or miss entirely. Partnering with civil society can be an effective way to verify the veracity of sources and contacts, learn about intelligence targets, and provide indicators and warnings
2. **Utilize New Tools and Capabilities**:
* GDELT project is an initiative to construct a catalog of human societal-scale behavior and beliefs across all countries of the world, connecting every person, organization, location, count, theme, news source, and event across the planet into a single massive network that captures what’s happening around the world, what its context is and who’s involved, and how the world is feeling about it, every single day. This technology has a global geo-referenced catalog of a quarter-billion events worldwide in 300 categories 1979-present, updated daily, Open academic equivalent to DARPA’s Integrated Crisis Early Warning System (ICEWS), but vastly enriched, leveraging local sources in every country, including human and machine translation. This is 100% free and open, providing daily updates, moving to 15 minute updates next month.
* **Zoomanitarians**: A joint initiative between zooniverse, planet labs and QCRI. The purpose is to accelerate disaster damage assessments by leveraging planet labs unique constellation of 28 satellites and zooniverse’s highly scalable microtasking platform.
* **United Nations Rapid Assessments**: The goal of rapid assessment exercises is to assess the added value of the Human Security approach. Furthermore, the aim is to assess the impact of people-centered, context-specific, comprehensive, and multi-sectorial solutions that are reinforced through a framework of protection and empowerment. Rapid assessments typically focus on closely related policy issues with an ultimate goal of addressing unaddressed areas of Human Security..
* **Open AIDR**: A free and open source Artificial Intelligence for Disaster Response platform leverages machine learning to automatically identify informative content on twitter during disasters. This project goes beyond simple keyword searches that can miss 50% of content. AIDR has three components: the collector, trainer and tagger. The collector allows you to collect and save a collection of tweets posted during a disaster. The trainer allows one or more users to train the AIDR platform to automatically tag tweets of interest in a given collection of tweets. The tagger analyzes the human-classified tweets from the trainer to automatically tag new tweets coming in from the collector. AIDR is an artificial intelligence engine developed to power consumer applications like Micromappers.
* **P4P Peace Building Map**: For those with a focus on Nigeria, this interactive map integrates data on conflict events and peacebuilding initiatives from seven separate datasets (from civil society networks, web-crawlers, and local media) for cross-validation and triangulation from 2009-present day. Hundreds of incidents are being added every month. The framework includes social, economic, as well as security related factors to encompass the entire human security spectrum. Incidents affecting women and girls are highlighted with a cross-cutting filter feature. The tool not only renders patterns and trends of conflict factors, but also allows for a search on self-identified Peace Agents by specific area of focus. <http://www.p4p-nigerdelta.org/peace-building-map>.

**CONCLUSION**

African ISR, open source or otherwise is critical to the stabilization of the continent.

Transnational threats are demonstrably a destabilizing factor for the region, with impact that is felt beyond its borders. The most significant challenges are geography, technology access, porous borders, and political instability. Most of all, what cannot be overlooked is the

requirement for sustainable human capacity development regarding ISR, in the field

technology by itself to support ISR efforts; is potentially a waste of tax payer dollars without on-the ground support.

Sustainable support yields trust, confidence and transparency - this is a fundamental mandate.

There is a long history of western exploitation which must not be ignored and if not addressed,

can cause ongoing negative speculation regarding the current intent of western support. Human capacity supporting ISR capabilities foster both effective utilization of aid as well as building the

confidence and trust of the host nation. Lastly, we must understand the issues on the ground

(local and sub-national, as well as national scope) from the host nation perspective for host

nation success in addressing the transnational threats.