Sentiment Analysis for Security Sector Reform

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Social Cultural Behavioral Understanding (SCBU)

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Research Problem

- **Events in the Arab Spring countries offer an unprecedented opportunity for democratic political change**

- **Countries are mired in cultural security systems and structures**

- **Security systems and structures are critical to democratic transition and adherence to good governance and rule of law**

- *How can we develop a deep (socio-cultural) understanding of security contexts in denied areas?*

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Arab Spring publics use social media to influence change

Social media was predominantly used in Arab Spring countries, and remains a viable force for change

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Tunisian Case Study

In a 2012 PEW study, 35% of Tunisian respondents reported using social networking sites

Opinion Topic Areas
Community (82%)
Politics (67%)
Religion (63%)

PEW Research Center (2012).Social Networking Popular Across Globe

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Research Questions

- **Can sentiment analysis help us achieve *a deeper socio-cultural awareness and understanding* of security sentiments in Tunisia and Libya?**

- **Can sentiment analysis be applied to *support security governance* and *transformation* in denied areas?**

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Sentimedir is a MITRE prototype that supports detects and analysis of sentiment

- **Sentimedir was created to handle particular difficult content, primarily news, about complex geopolitical matters**
- **Sentiment analysis uses natural language processing to monitor attitude and behavior trends in key strategic areas of operation**
- **Sentiment trends are detected over time from news, blogs and tweets**
- **Supports analysis related to:**
  - positive or negative sentiment about security contexts
  - sentiments of individuals, organizations, events, ideas, and/or things

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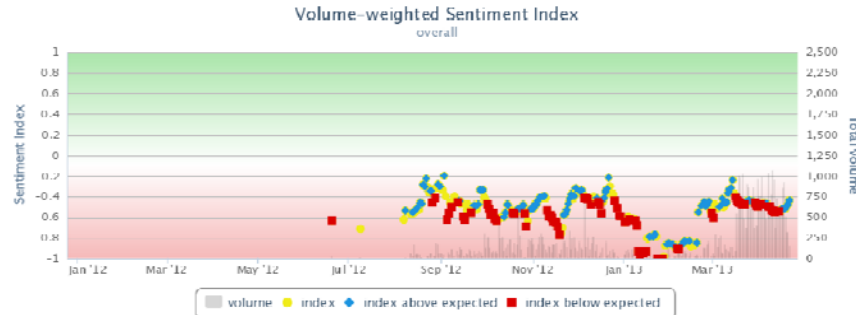
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Sentiment Analysis

- **A process that automates the identification and categorization of opinions expressed in text, to determine whether the writer's attitude towards a particular topic, product, person, is positive, negative, or neutral.**

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There are many sentiment analysis tools

- **There are many sentiment analysis tools available, depending on the question one is trying to answer**
- **Sentimedir**
- **Sentiment Analyzer**

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Where do the sources come from?

- **Variety of open source news, editorial sources, most translated (manually) from regional languages, some from original English publications.**
- **Blog material**

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Scope of Research Study

- **Researched and analyzed the security context of North African countries of Tunisia and Libya during period of January 2011- April 2013)**

- **Used MITRE prototype, Sentimedir, to analyze security signals (keywords: "security" and/or "security sector reform" and/or "SSR" and/or "Libya/Tunisia")**

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What is Security Sector Reform?

- **A comprehensive whole-of-government approach**

- **Critical to transitioning from war to peace**

- **A transformation of the state's security actors, institutions, and oversight mechanisms to safeguard the state and its citizens from security threats**

- **A social contract and the level of trust people have in the state, its leadership and institutions**

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Sentiment Analysis can support Security Sector Reform

- **We need to understand security sector reform through a socio-cultural lens – by examining sentiments, and the attitudes and options that drive them**

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Security Sector Reform addresses a range of challenges

- **Cultural and cognitive diversity**
- **Inadequate institutions, corruption**
- **Illegitimate and ineffective formal or informal justice institutions**
- **Ineffective good governance and rule of law of security sector**
- **Easy access to weapons by armed non-state actors, militias, rebels**

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The challenge with existing Security Sector Reform processes are that they take too long

Assessment

Planning

> **Sentiment Analysis can, in near real-time, provide much needed information about security sector, including actors, institutions, issues, topics, influencers, and messages**
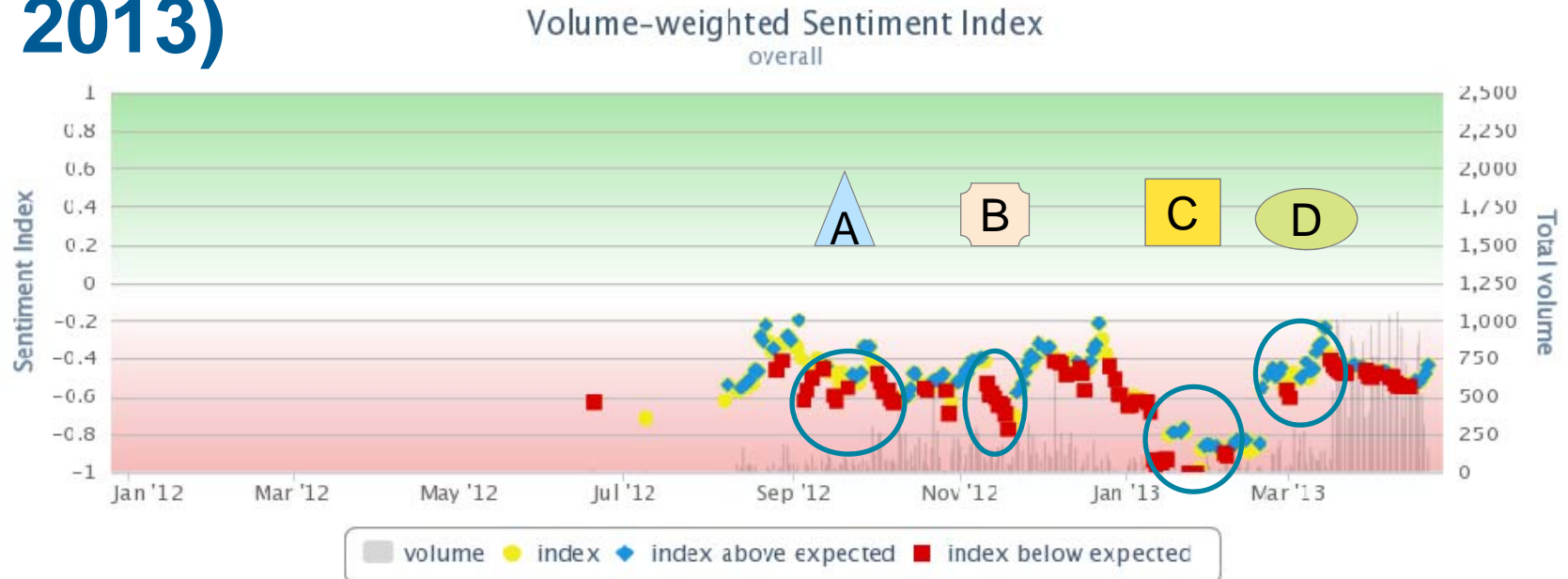
Monitoring & Evaluation

Implementation

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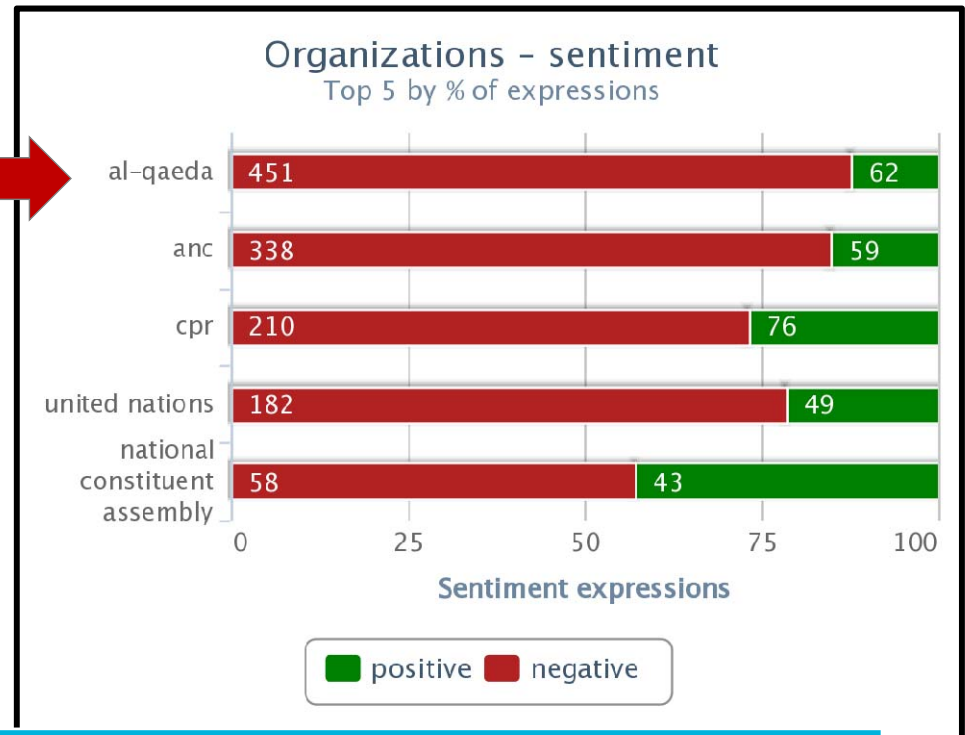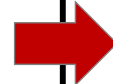
Tunisia Case Study

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Aggregate patterns of sentiment of Tunisian sources expressed in sentences about security reform (July 2012- April 2013)

Volume-weighted Sentiment Index
overall

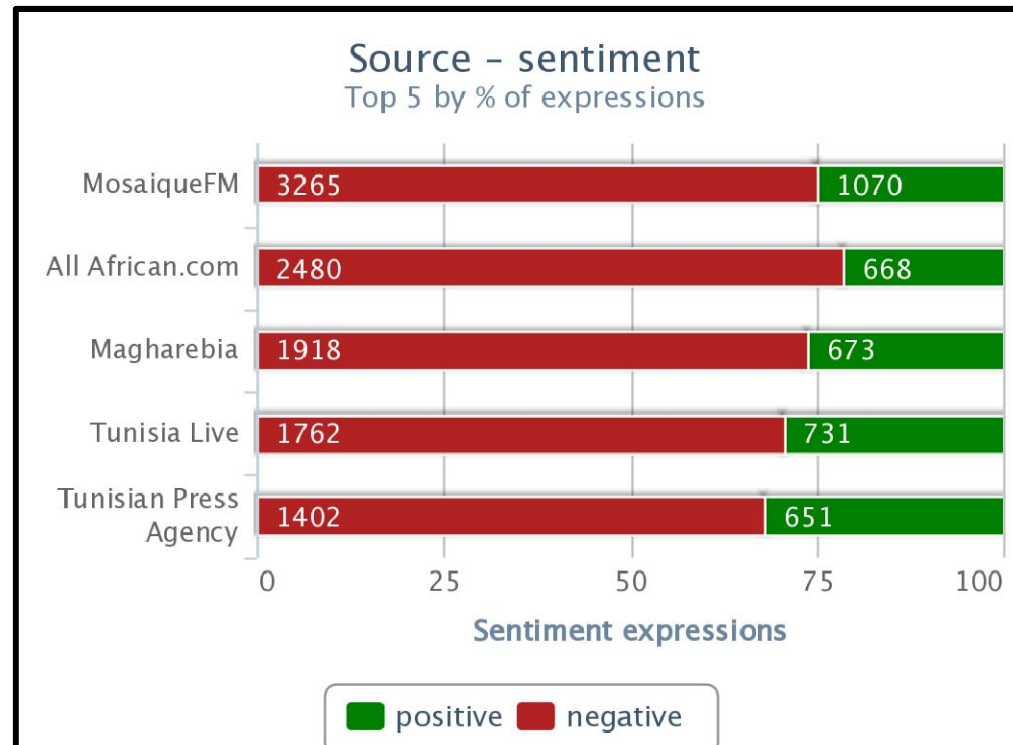| Events	Key
September 2012 – Tunisians protest U.S. embassy due to anti-Prophet Muhammad film. Embassy attacked. (2) the American school looted and damaged (3) Senior Salafi leader arrested over embassy attack (4) Date of elections delayed for October 18, 2012.	A
November 2012 – Salafists imprisoned for their September 2012 attacks died form self-imposed hunger strike.	B
February, 2013 - Opposition secularist politician Chokri Belaid is shot dead, sparking huge street protests. Prime Minister Jebali, to stop unrest, calls the killing a political assassination and a strike against the "Arab Spring" revolution.	C
March 2013 – Ansar Al Sharia officially allies with Al Qaeda and severs ties with Ennahda. PM Laarayedh establishes new government.	D

Aggregate patterns of sentiment about organizations expressed in sentences about security reform

Aggregate patterns of sentiment expressions of AQ from Tunisian news sources trended negative

Organizations – sentiment
Top 5 by % of expressions

Organization	negative	positive
al-qaeda	451	62
anc	338	59
cpr	210	76
united nations	182	49
national constituent assembly	58	43

Sentiment expressions

positive negative

Search Terms	("security" OR "reform" OR "SSR" OR "security sector reform") source_country:"Tunisia"
Number of Sentences	47,509
Date Range	12/31/2011 – 4/22/2013

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Aggregate patterns of sentiment expressed in sentences about security and reform trended negative in all Tunisian media sources
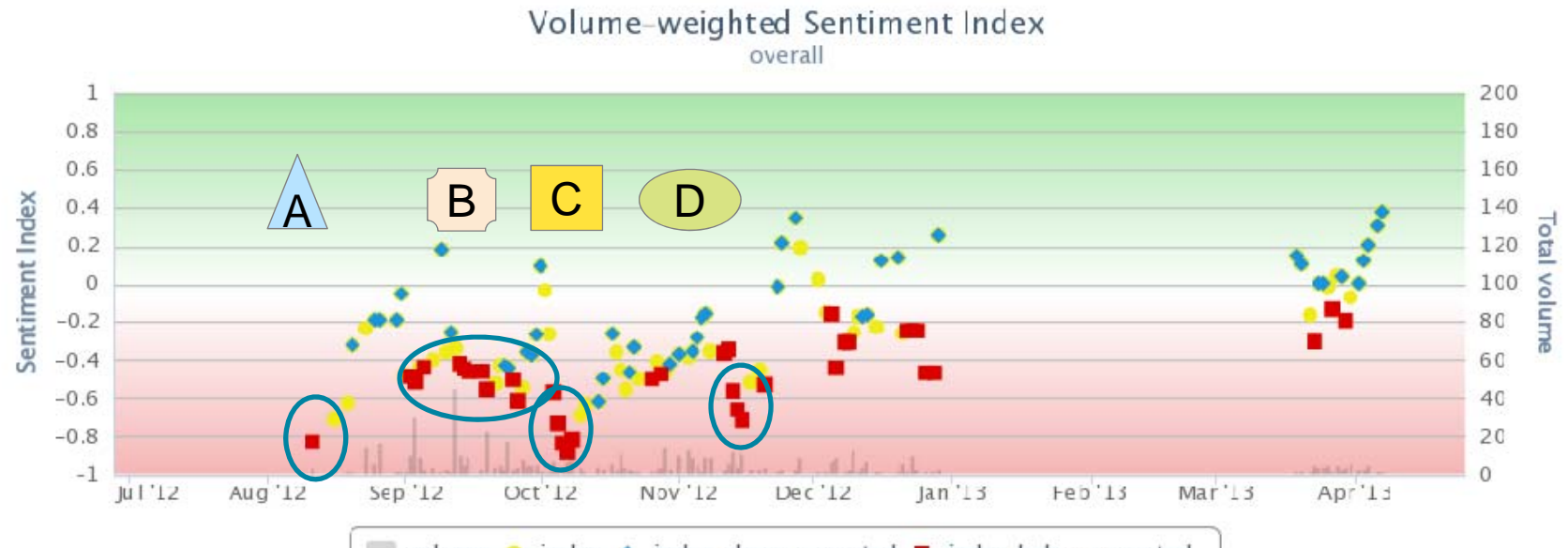

Source – sentiment
Top 5 by % of expressions

Source	negative	positive
MosaiqueFM	3265	1070
All African.com	2480	668
Magharebia	1918	673
Tunisia Live	1762	731
Tunisian Press Agency	1402	651

Sentiment expressions

positive ■ negative

Search Terms	("security" OR "reform" OR "SSR" OR "security sector reform") source_country:"Tunisia"
Number of Sentences	47509
Date Range	12/31/2011 – 4/22/2013

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Libya Case Study

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Aggregate patterns of sentiment in Libya expressed in sentences about security and reform (August 2012 – April 2013)

Volume-weighted Sentiment Index
overall

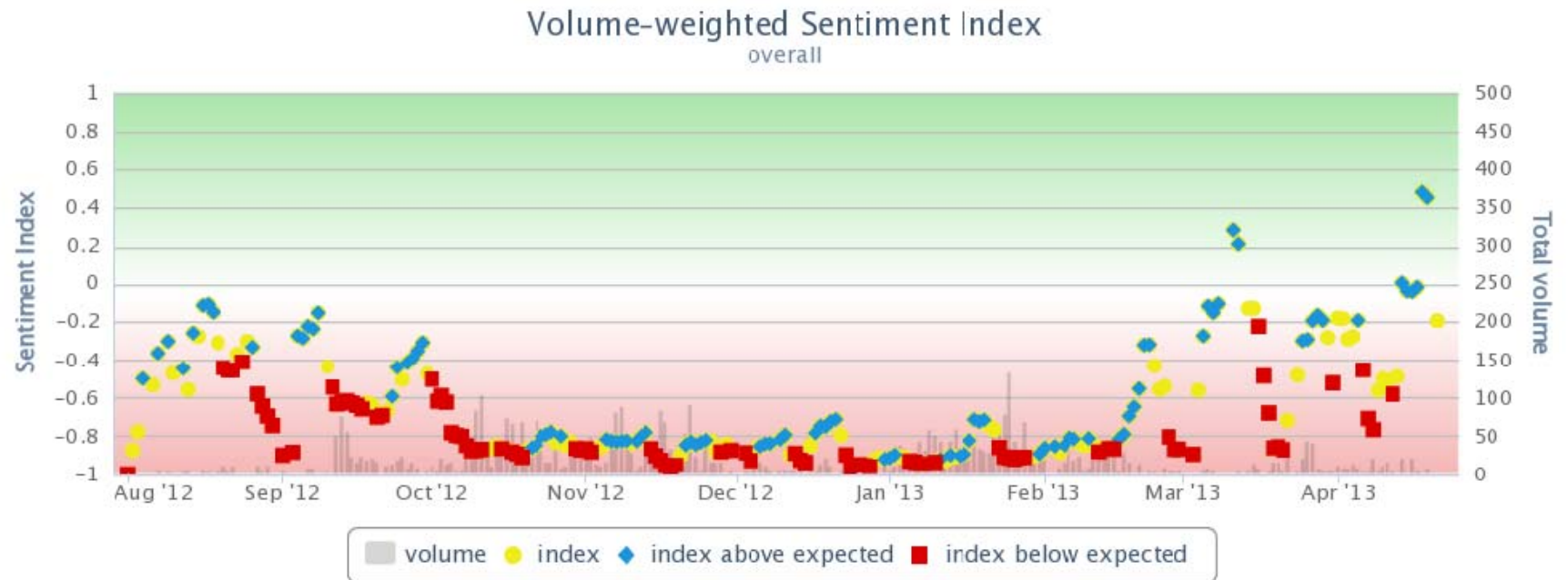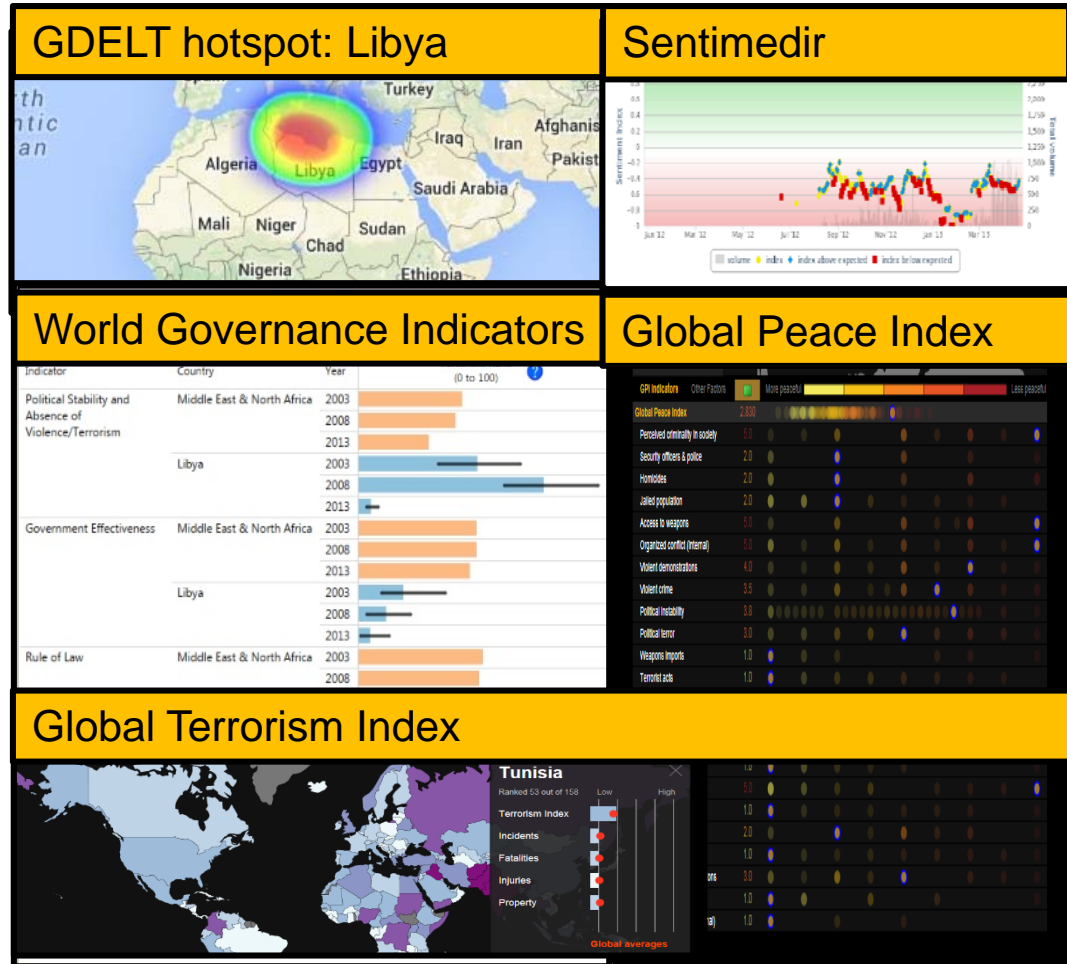| Events	Key
August 2012 – Libyan Transitional National Council hands over government; (2) Libya's first general to defect during revolution is assassinated	A
September 2012 – American embassy attacked, Ambassador Chris Stevens killed. Several militias close down and weapons handed over to government	B
October 2012 – PM Abushaghour stands down; Zeidan elected new PM – Libyan militias found to have executed dozens according to HRW video footage	C
November 2012 – Benghazi security chief assassinated	D

Aggregate patterns of sentiment expressed in sentiment in sentences about security and Libya from other country sources (August 2012 – April 2013)

Volume-weighted Sentiment Index
overall

What we need: An Integrated Analytical Dashboard that monitors and evaluates security sectors through a socio-cultural lens

- **Integrated**
- **Automated**
- **Timely**
- **Accurate**
- **Relevant**

GDELT hotspot: Libya

Sentimedir

World Governance Indicators

Global Peace Index

Global Terrorism Index

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Security Sector Reform Dashboard Measures

Measures of Effectiveness	Key Performance Indicators
Quality of security provision	Security/ Security Sector Reform State Centered Security International Peace and Security War and violent conflict Militarization
People centered security	Safety and Internal Security Crime Victimization Culture of Peace Safety perceptions Fundamental Rights Civil Liberties Political Rights
Quality of security sector governance	State and stability of democratic institutions Civilian control and autonomy Rule of Law

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Research Outcomes

- Preliminary findings indicate that sentiment analysis is promising
- Sentiment analysis is useful in surfacing trends and helping to pinpoint data for further analysis
- There are industry and academic solutions available
- Current research including Sentimedir prototype, focuses on sentiment in context. Who is the opinion holder and the target of the sentiment? Once this research challenge it tackled, it will help in monitoring sentiment on specific topics as those highlighted on the mission chart.

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Acronyms Table

Acronym	Name
CPR	Congress for the Republic
ANC	National Constituent Assembly

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Thank you!

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