ENODO GLOBAL

KUWAIT: SECURITY INITIATIVE
SOCIAL MEDIA EXPLOITATION

Know Your Community. Predict & Mitigate Risk.

About ENODO Global

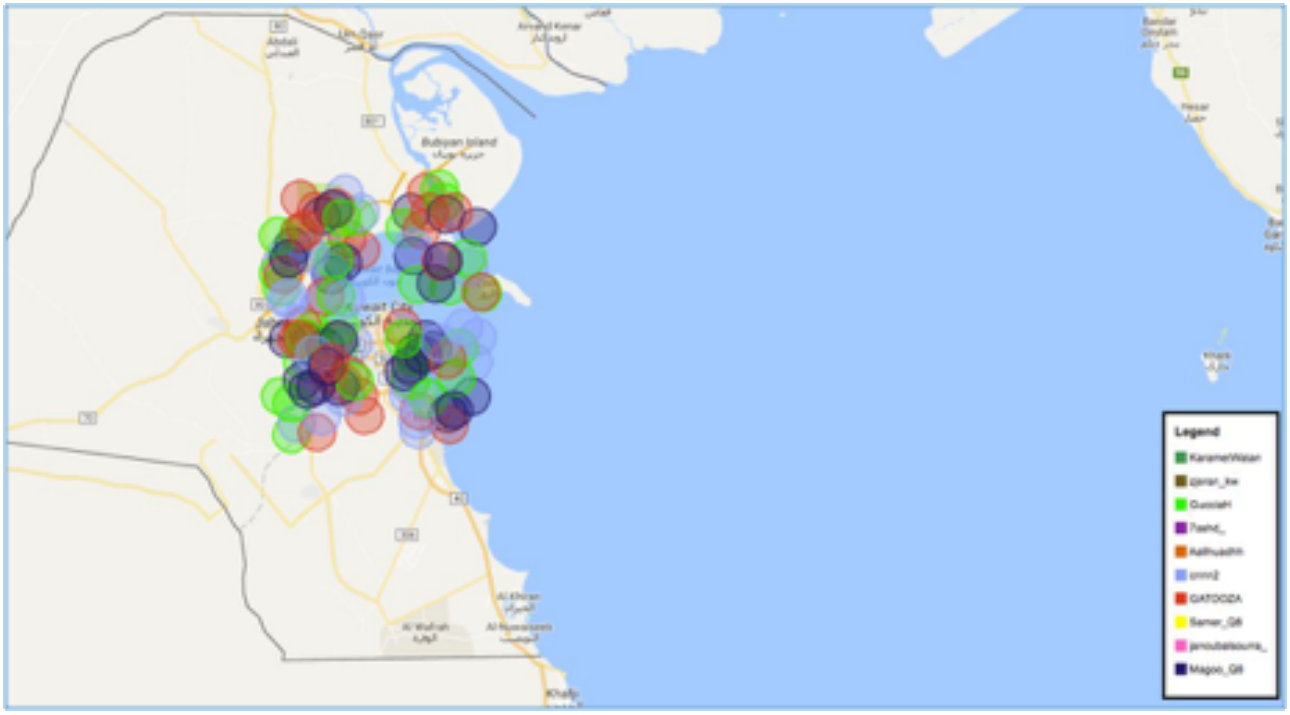
ENODO Global is a business intelligence firm that delivers real-time, population-centric analysis to enhance security initiatives for government and commercial clients. ENODO designs customized intelligence platforms that collect, analyze, and exploit open source information, including social media (e.g., Twitter, Facebook, Instagram, and YouTube). The platform combines ENODO's proprietary methodology with customized data analytics to produce multi-layered assessments that identify, monitor, and influence individuals, activist groups, criminal organizations, and terrorist networks.

Capability Demonstration

ENODO analyzed 11 predetermined Twitter accounts to demonstrate how our customized platform can exploit negative influencers attempting to destabilize the Kuwaiti government. ENODO conducted Geographic Information System (GIS) analysis based on metadata obtained from specified Twitter accounts. Social Network Analysis (SNA) was then performed to identify the networks of specific target accounts, their relationship with other potential negative influencers, and critical nodes in these networks whose placement makes them attractive targets for counter-messaging or disruption campaigns. Sentiment analysis was applied against targeted messages to uncover how narratives resonate within the network and identify opportunities to counter the targets' influence. Multi-layered assessments enabled ENODO to exploit individual Twitter accounts, define the relationships between targets, and identify narratives that promote negative sentiment against the government. A description of each step follows along with detailed information contained within the related Appendix that highlight key findings.

Geographic Information System (GIS) Analysis

GIS (Layer 1) provides a geographic visualization of the 11 predetermined Twitter accounts for this demonstration. A graphical user interface displays the locations obtained from metadata associated with individual accounts. The metadata contains information, which includes the source from which a Tweet emanates, location, and time for specific Twitter user actions. The GIS layer enables analysts to assess the general location where the Twitter account is accessed—internal or external to Kuwait. This enables the location of a mobile device to be assessed even if the location capability is turned off. Appendix A provides a visual representation of the locations for the predetermined accounts along with metadata for a targeted Twitter account analyzed for this demonstration.



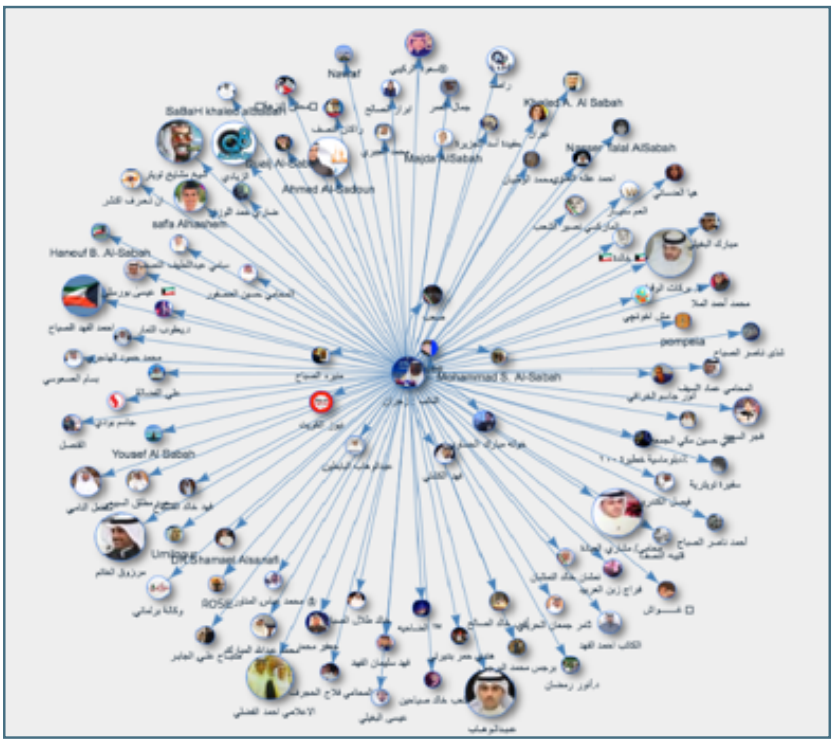
Geographic Visualization of Pre-determined Twitter Accounts

Social Network Analysis (SNA)

SNA (Layer 2) combines nodal and link analysis to create detailed visual and quantitative depictions of individual Twitter accounts, their associated networks, and relationship to each other. The combination of automated visual and quantitative tools allows analysts to efficiently analyze large amounts of data to quickly determine which accounts and relationships matter and understand the information dynamics among the accounts of interest.

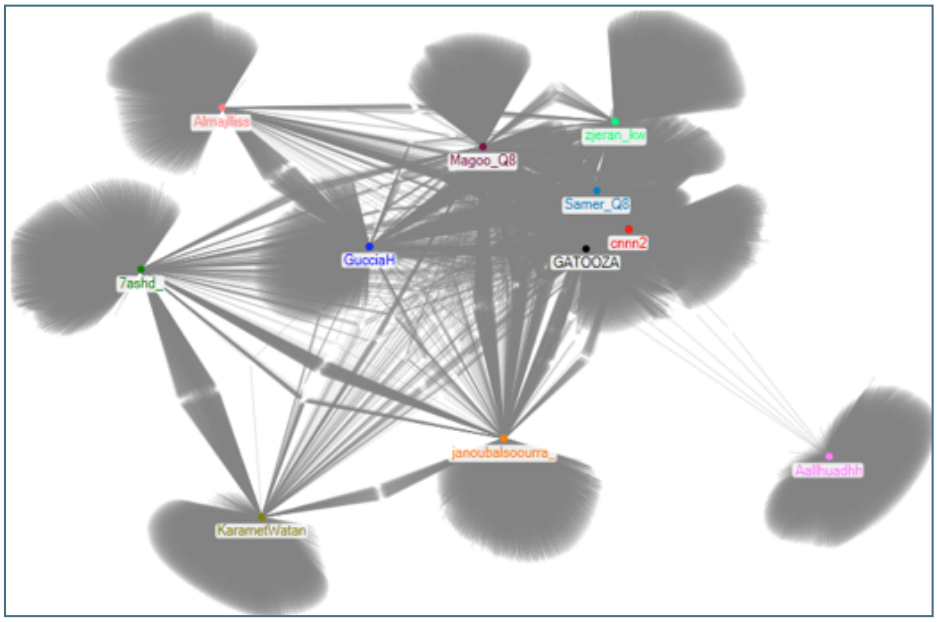
Nodal Analysis

Nodal Analysis produces detailed insights of a specific Twitter user, other accounts directly or indirectly linked to it, and the importance of these associated accounts. Nodal analysis enables analysts to visually determine the relationship of a target with an associated entity—whether it is a follower, friend, or someone who shares communications with or retweets messages from the target. It also provides easy access to summary data of the account, such as message and retweet rates that can be used to statistically track the behavior of the account over time. Nodal analysis also enables analysts to determine which associates are the most important by applying a numerical ranking to each of the associates based on a customized algorithm that assesses the broader Twitter activity and relationships of these associates.



Nodal Analysis of @zjeran_kw

Link Analysis combines the relationships of individual target nodes to produce a detailed picture of the associations between different Twitter accounts. Link analysis uses a combination of advanced data visualization tools and mathematical algorithms to analyze large scale networks comprised of thousands or millions of relationships. These tools enable analysts to determine the inter-relationships between target nodes by highlighting common associates shared by multiple targets. It also identifies subnetworks of accounts that indicate a community of users clustered around specific targets and key nodes who act as virtual conduits and gatekeepers between different nodes.



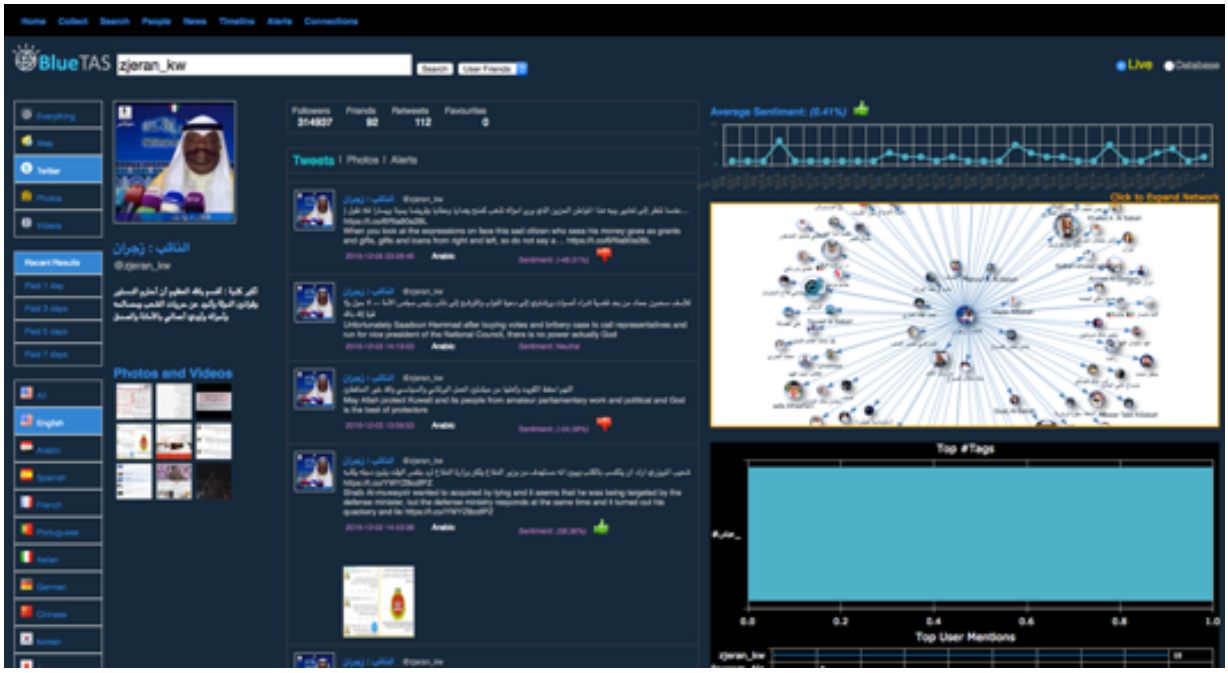
Twitter Link Analysis

The combination of nodal and link analyses pinpoints critical nodes where interdiction would have the most disruptive impact on a network. The SNA layer manages large volumes of data, identifies the followers of target accounts who act as key information influencers, gatekeepers and conduits, and allows analysts to understand how malicious accounts interact and have real-world effects across thousands of followers. When overlaid on GIS analysis, it indicates how virtual networks are physically distributed and highlights key nodes that connect different neighborhoods, cities, and regions. Combined, they identify critical nodes and efficiently analyze and deconstruct large-scale malicious networks. Appendix B illustrates a sample nodal analysis for Twitter account @zjeran_kw and a link analysis for the 11 target accounts, which includes 3.2 million followers.

Narrative and Sentiment Analysis

Narrative and sentiment analysis (Layer 3) delivers a sophisticated analytic capability to enhance GIS and SNA. Sentiment analysis uses automated machine learning, natural language processing, and computational linguistic tools to quantitatively measure the attitude of individual Tweets from targeted accounts towards a particular subject. It can also be used as a starting point to assess how a user's messages are received, interpreted, and internalized by large audiences. Analysis can be performed nationally or for a specified geographic area and is conducted against Tweets in Arabic language from individual targets and their followers.

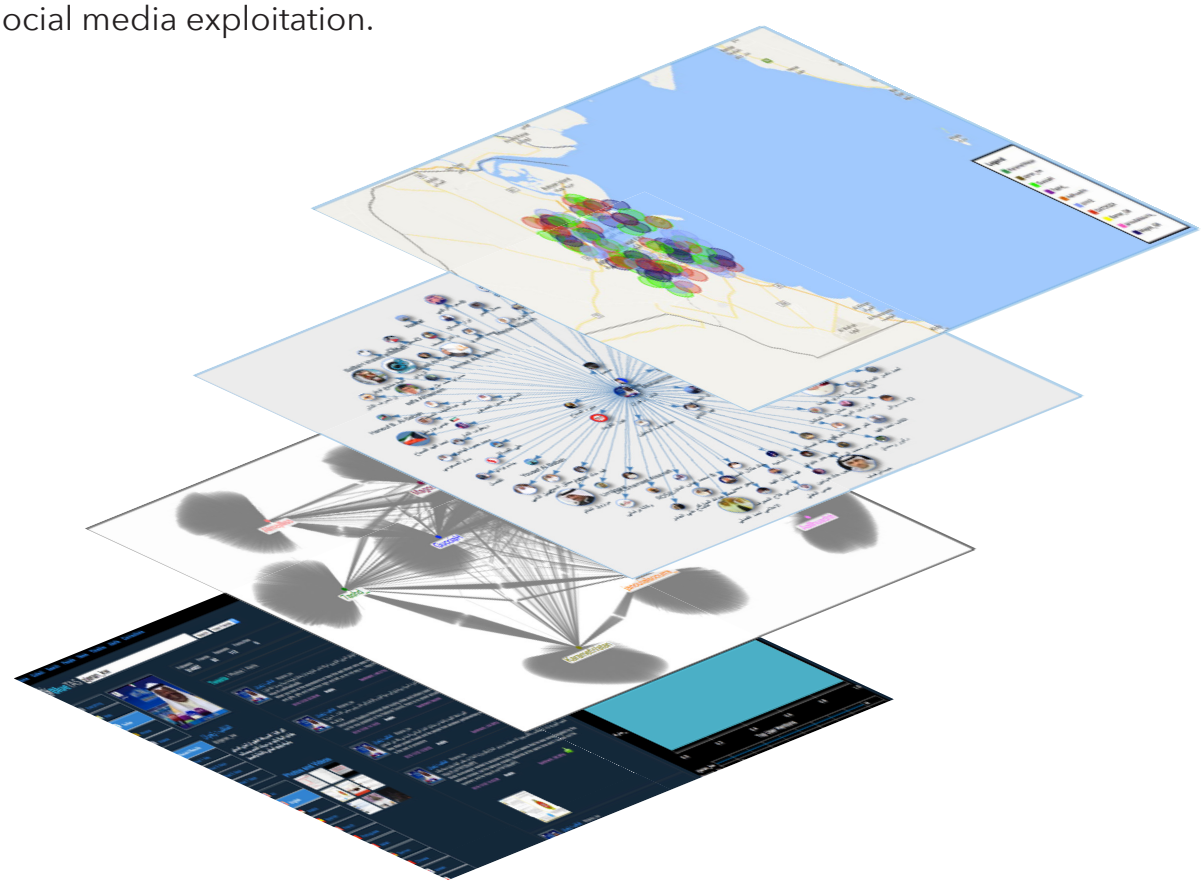
Narrative and sentiment analysis delivers unparalleled understanding of how Twitter users influence their audiences across different groups, locations, and networks. Moreover, it enables analysts to develop and deploy tailored narratives to counter negative perceptions in selected segments of the population. Appendix C demonstrates how ENODO's customized quantitative techniques identify accounts influenced by @zjeran_kw and broader relationships connecting all the target accounts.



@zjeran_kw Narrative & Sentiment Analysis

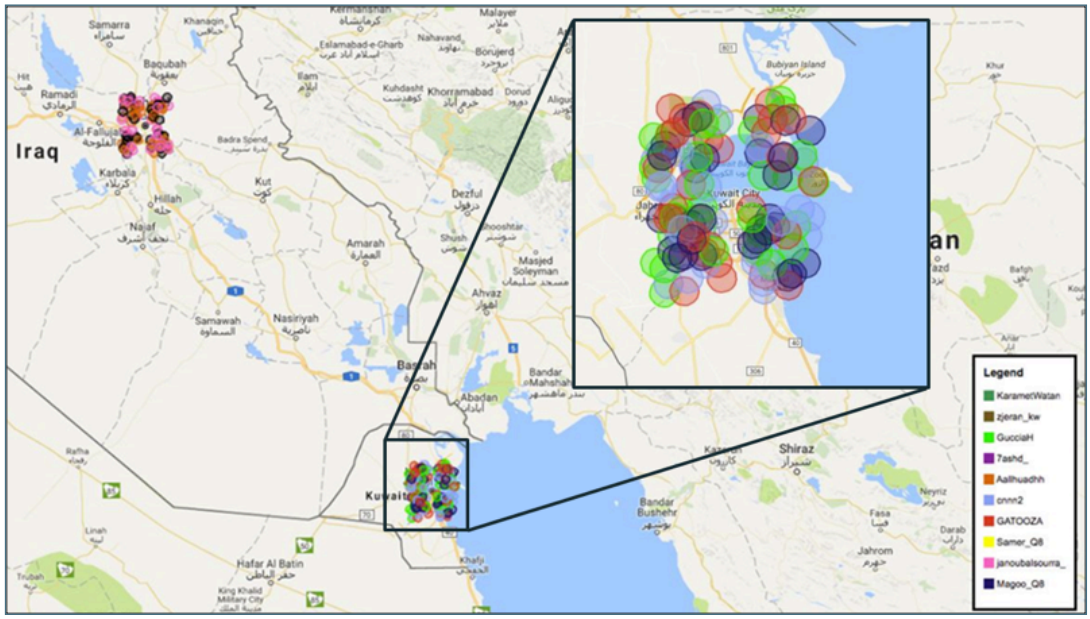
Multi-layered Assessment

ENODO's customized intelligence platforms produce multi-layered assessments that deliver effective alternatives to traditional strategies. Multi-layered assessments provide an analytical framework to examine the entire Twitter ecosystem. These assessments combine maps of geographic locations and relationship networks of targeted accounts to identify how information is transmitted and perceived simultaneously across thousands of followers. ENODO's assessments manage large-scale information networks and conduct quantitative analysis across physical, virtual, and communication landscapes. They identify critical nodes and develop interdiction strategies, which alter the information landscape. ENODO's multi-layered assessments create an unparalleled understanding of large scale social media accounts and build the appropriate networks and research methods to derive operationally relevant analysis. ENODO is prepared to design a customized pilot project for Kuwait's Ministry of Interior (MoI) to combat internal and external security threats through social media exploitation.



Appendix A: Geographic Information System Analysis

GIS Analysis identified the geographic locations for tweets made by 10 of the 11 predetermined Twitter users. Although many users did not have any geolocation data associated with the account, they could be tagged with in a particular region (such as Kuwait or Baghdad) based on an assessment of the metadata associated with the Tweets.



Locations of Predetermined Twitter Accounts

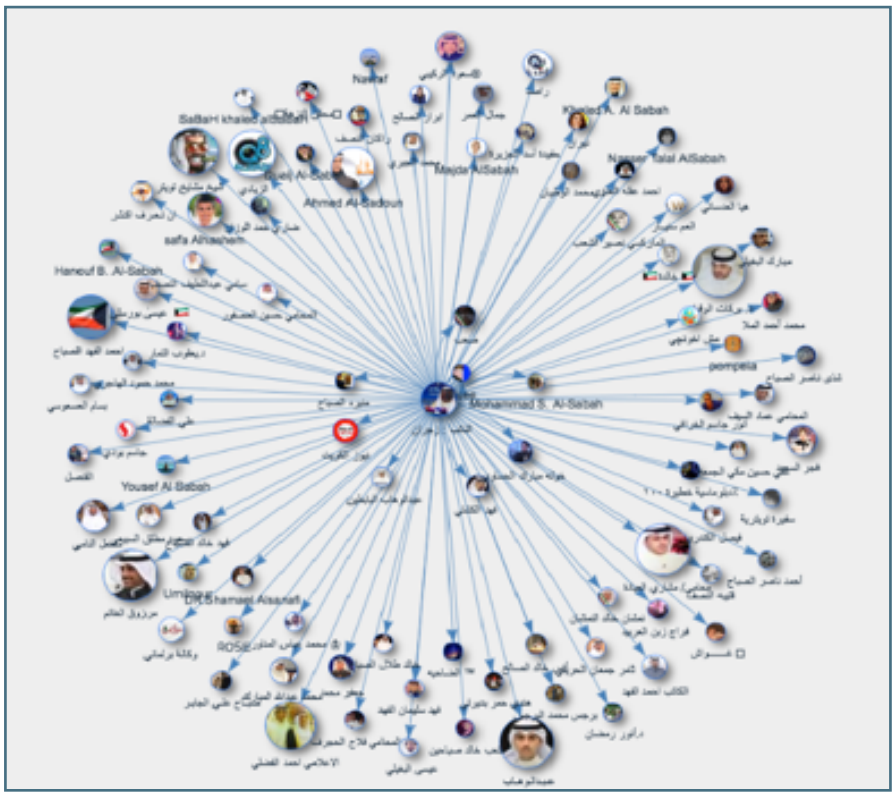
The following table contains metadata for two of thirty tweets associated with @Aallhuadhh. It illustrates how geolocation assessments for a particular account yield different location results from what the user publicly states. The metadata contains a detailed timestamp for when the tweet was posted, the platform used to generate the tweet, the time zone the platform references when making a tweet, an assessment of the location of the platform's access to the internet, and the account's publicly stated location.

Sample Metadata for Recent @ Aallhuadhh Tweets

Screen Name	Timestamp	Access Platform	Account Time Zone	Assessed Access Coordinates	Publicly Claimed Location
@ Aallhuadhh	2016-12-14T 23:53:08.000Z	iPhone	Baghdad, Iraq	33.312805,44.361488	دولة الكويت
@ Aallhuadhh	2016-12-18T02:49:07.000Z	iPhone	Baghdad, Iraq	33.312805,44.361488	نيوزيلندا

Appendix B: Social Network Analysis

Nodal Analysis of @zjeran_kw provides a visualization of the network associated with the account. ENODO applied a specialized algorithm to the network to measure the influence of its Twitter friends based on their activity. This enabled analysts to identify the most influential key contacts.



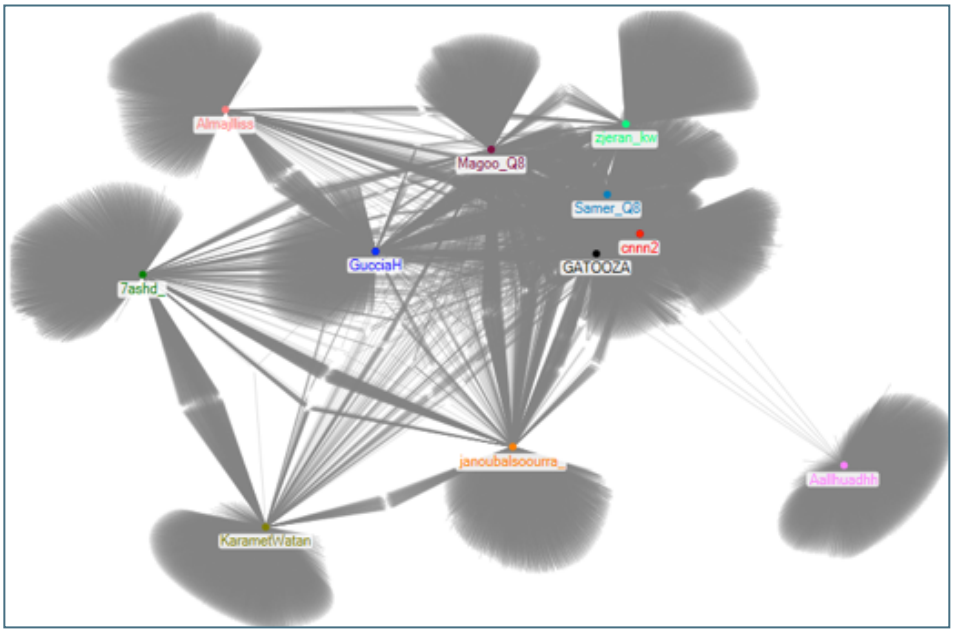
Nodal Analysis of @zjeran_kw

Five Most Influential Friends of @zjeran_kw

Rank	Screen Name	User Name	Claimed Location
1	@_Abdulwahab_	عبدالوهاب	Kuwait
2	@Aallhuadhh	شيخ مشايخ تويتر	Kuwait
3	@AlziadiQ8	الزيادي	Kuwait
4	@BarakatAlwegyan	د. بركات الوقيان	Kuwait
5	@Mashari_al3yada	محامي/ مشاري العيادة	القبلة - العاصمه - دولة الكويت

Appendix B: Social Network Analysis (Cont)

Link Analysis was conducted on a subset of 36,000 of the 3.2 million followers of the 11 target accounts. It visually recognized a subnetwork of interrelated accounts and quantitatively identified a set of users who potentially play significant roles in shaping and spreading the perceptions and beliefs of the targets. The analysis provides a visual understanding of the targets and their followers across all the target accounts and identified a close association between the followers of @cnn2, @Samer_Q8, and @GATOOZA.



Network of Followers across All Target Accounts

ENODO's SNA ranking methodology identified the five most important followers of the target accounts across the entire network subsample. Additional insights on the network, the information flowing through it, and opportunities for influencing it could be gained by performing additional nodal analysis on these influential followers.

Most Important Followers across All Target Accounts

Rank	Screen Name	User Name	Claimed Location
1	@_Abdulwahab_	عبدالوهاب	Kuwait
2	@Aallhuadhh	شيخ مشايخ تويتر	Kuwait
3	@AlziadiQ8	الزيادي	Kuwait
4	@BarakatAlwegyan	د. بركات الوقيان	Kuwait
5	@Mashari_al3yada	محامي/ مشاري العيادة	القبلة - العاصمه - دولة الكويت

Appendix C: Sentiment Analysis

Sentiment Analysis of recent tweets from @zjeran_kw demonstrate how ENODO's methodology can scientifically and automatically assess the tone of individual tweets and track changes in sentiment over time. The analysis indicated that @zjeran_kw's recent messages contained negative sentiments regarding corruption and the Kuwaiti Parliament, however, @zjeran_kw's tweets are marginally positive. By tracking quantifiable metrics on a target's sentiment over time and how they relate to certain themes, analysis can detect changes in online behavior of a target that provide early warnings of emerging risks and opportunities to influence online conversations.

Sentiment Profile of @zjeran_kw Recent Tweets

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enodoglobal.com | info@enodoglobal.com

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