Veteran Suicide Prevention Program (VSPP):
Proof of Concept
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SUBMITTED BY

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Contents

1   Background

Between January and October of 2018, over 5,520 veterans ended their own lives. While the suicide rate among all veterans has decreased slightly in the past ten years, a recent report showed the number of suicides among younger veterans, aged 18-34, has spiked 11% in the same period and remains well above the national average (30% higher for male veterans and 80% higher for female veterans compared to non-veterans). These findings have caused concern and spurred a wide array of responses from veterans' advocacy groups, non-profits, and the Department of Veterans Affairs (VA). The remedies or approaches, however, are based largely on existing assumptions and centered on psychological and mental health-based solutions, which have thus far failed to deliver consistent results for the entire veteran community.

2   Veteran Suicide Prevention Program (VSPP)

"VSPP delivers in-depth understanding of veteran suicide, based on the voices of high-risk veterans themselves."

2.1   Project Overview

ENODO Global's *Veteran Suicide Prevention Program (VSPP)* offers a new approach that augments existing VA programs to reduce the number of suicides among high-risk veterans. VSPP is designed to: shape veteran perceptions about suicide, increase veteran participation in existing programs, assist stakeholders in targeting support services to specific veteran needs, and reduce the occurrence of veteran suicide more broadly. The program links at-risk veterans, who are not aware of or are hesitant to use existing suicide prevention mechanisms, are not currently enrolled in VA programs, and/or do not receive any type of treatment, with veterans support organizations (e.g., VA facilities, NGOs, non-profits, Veterans of Foreign Wars (VFWs), and military support services) in their local communities to deliver timely, customized treatment. VSPP delivers a repeatable, measurable process to coordinate and link disparate activities under a single initiative to better serve the entire veteran community.

ENODO uses customized data collection and analysis tools to examine at-risk veteran groups, identify and monitor high-risk individuals, and uncover the underlying Social Risk factors (e.g., addiction, divorce, post-traumatic stress disorder (PTSD), economic hardship, and family instability) that trigger suicides. VSPP combines our unique population-centric methodology (see Appendix A Section 4.1), advanced data analytics, and social media monitoring to understand the cultures and suicide-related narratives that exists within different veteran communities based on military component (e.g., Army, Navy, Air Force, Marine Corps, Coast Guard, active duty, and

reservists) and demographic differences (e.g., gender, race, age, ethnicity, and geographic location).

"Our findings enable the design and implementation of communications and engagement activities that are measurable, validated by advanced data analytics, and connect at-risk veterans to tailored support services."

Moreover, ENODO's VSPP complements existing programs like REACH VET by enriching data analysis with new information sources and by identifying veterans who are not currently enrolled or do not use VA services. Research shows that veterans who are enrolled in VA healthcare initiatives and use the VA system are less likely to attempt suicide. Yet many programs do little for more high-risk veterans, who choose not to participate in formal programs.

2.2   Project Description

ENODO'S VSPP is divided into three distinct phases: Proof of Concept, Engagement, and Transition in order to demonstrate measurable results through a Proof of Concept, continually track the program's performance across each phase, and scale the program to service the entire veteran community across the United States.

Phase I: Proof of Concept – Together with a partner / resource sponsor(s), ENODO selects an at-risk veteran group (e.g. male, Marine Corps combat veterans, aged 18-25, living in the Northeast) on which a Proof of Concept is conducted to demonstrate the capability and to uncover preliminary insights applicable to the wider veteran community. After building a customized data collection and analysis platform, ENODO analysts use social media monitoring and population-centric analysis to create a Social Risk Analysis (SRA) and Social Media Analyses (SMA), which together map the information environment, uncover pervasive narratives about veteran suicide, identify key influencers, and pinpoint and measure Social Risk factors that trigger suicide. Findings from the analyses are used to inform the design of a Social Risk Action Plan (SRAP), which contains a strategic information operations (IO) campaign and tailored engagement activities that are implemented in Phase II.

Phase II: Engagement – ENODO implements the Social Risk Action Plan's communication and engagement activities, analyzes additional at-risk veteran groups, while expanding VSPP from a regional to national level program. Moreover, ENODO conducts active Social Media monitoring to continually track changes in veteran sentiment and perceptions, measure the effectiveness of the Social Risk Action Plan, and update communications and engagement activities near real-time, and coordinate engagement activities across the entire veterans support network.

Phase III: Transition – ENODO Global transfers the VSPP technology and management to an appropriate resource sponsor(s) / program manager.

2.3   Phase I: Proof of Concept (6 months)

In Phase I, ENODO works with its partner / resource sponsor(s) to identify an at-risk veteran group to conduct the Proof of Concept. Once the target veteran group has been selected, ENODO analysts build a customized data collection and analysis platform, unique to the group's informational, linguistic, and social-cultural nuances. Analysts monitor social media and other non-traditional information sources, track veteran discourse over time, and produce a series of analytical reports that deliver unique insights into the group's narratives and behavior.

Within the first 45 days, ENODO creates a Social Media Analysis (SMA), which details the specific language and narratives the target group uses in suicide-related discussions, uncovers the online platforms the target group uses most, and identifies the key influencers (e.g., individuals and organizations) that shape these discussions. ENODO analysts simultaneously conduct population-centric analysis of veteran-related data, using online information to supplement existing data sources to create a Social Risk Analysis (SRA). The SRA pinpoints Social Risk factors that trigger veteran suicide, measures the impact of each factor, and informs findings and recommendations that enable stakeholders to more effectively address individual Social Risk factors.

Drawing upon the findings and recommendations from the SMA and SRA, ENODO develops a Social Risk Action Plan (SRAP) that includes a comprehensive IO campaign and tailored engagement activities designed to counter negative suicide narratives and positively engage the affected target group. ENODO creates and deploys customized narratives and content that resonate with high-risk veterans through the most effective means (e.g. social media platforms, key influencers, and popular events), which are implemented in Phase II.

The objective of the Proof of Concept is to deliver a repeatable, measurable process and data-driven solution for a single at-risk veteran group. By project completion, the Proof of Concept uncovers unique insights about the specific veteran group, which enables the VA as well as affected persons, families, and communities to enact effective engagements to mitigate the risk of veteran suicide among the target group. Insights uncovered may also prove useful in stakeholders' efforts to curb suicides in other affected veteran groups as well. Moreover, the Proof of Concept enables resource sponsors to assess the capability before continuing onto future Phases and expanding the analysis to other at-risk veteran groups. Figure 2 provides an

illustration of the Proof of Concept timeline and deliverables distributed to resource sponsor(s) and appropriate stake-holders.
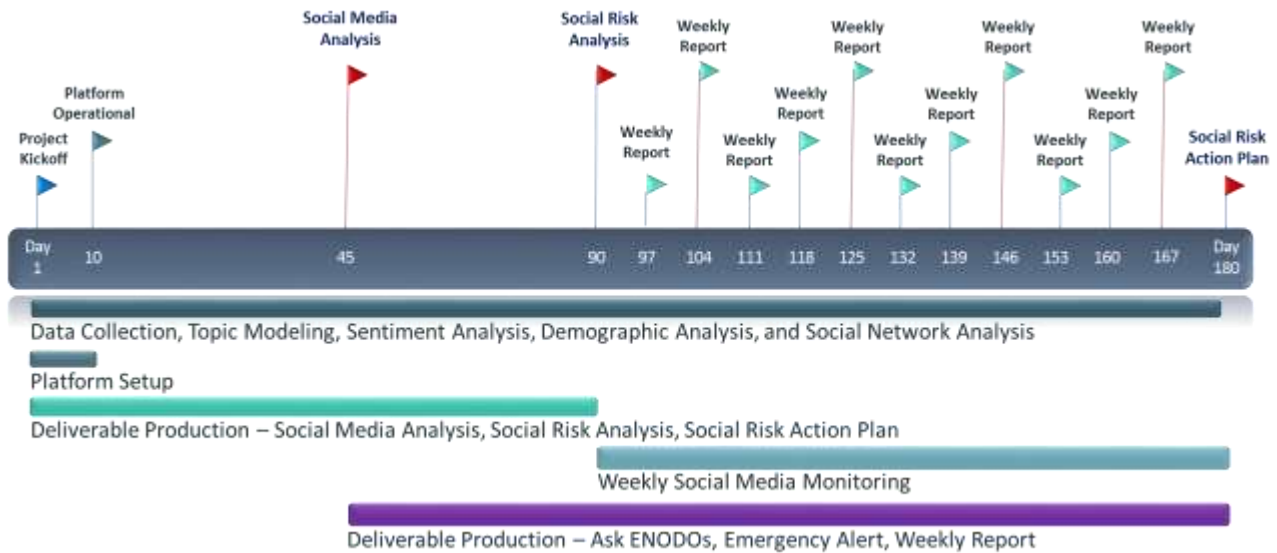

Figure 2. Proof of Concept Project Timeline

2.3.1 *Phase I Deliverables*

<u>Social Media Analysis (Delivered on Day 45)</u>

- Pinpoints the most popular / used online platforms (e.g., Facebook, Twitter, Instagram, and forums) among the affected target group
- Uncovers the online discourse (e.g., prominent narratives, memes, emojis, and emoticons) the affected target group deploys in suicide-related discussions
- Measures target groups' attitudes and perceptions about veteran suicide near real-time, which can be used to alert suicide prevention personnel
- Identifies the key influencers, both positive and negative, and their level of influence on a specific target group

<u>Social Risk Analysis (Delivered on Day 90)</u>

- Pinpoints the specific Social Risk factors (e.g., addiction, divorce, post-traumatic stress disorder, economic hardship, and family instability) that increase the likelihood of suicide for the affected target group
- Identifies and categorizes a high-risk veteran group (e.g. combat duty, male Marine Corps veteran between 18-34) activities and behaviors as they relate to suicide

Social Risk Action Plan (Delivered on Day 180)

- Delivers a strategy to positively shape the target group's sentiment, culture, and behavior through customized communication and engagement activities
- Uses data-backed findings to direct resources, focus efforts, and inform targeted engagement activities
- Increases stakeholders' ability to connect with high-risk veterans through social media exploitation and leveraging social reach of key influencers

2.4   Phase II: Engagement (24 months)

In Phase II, ENODO assists the resource sponsor(s) implementing the Social Risk Action Plan (SRAP) and related communications and engagement activities, which are designed to counter existing narratives, reduce veteran suicide, enable stakeholders to better align existing efforts and support services with veteran needs, and connect at-risk veterans to these programs. Throughout the SRAP's implementation, analysts conduct active Social Media monitoring to track changes in veteran sentiment and perceptions, identify and address additional Social Risk factors, and measure the impact of communication and engagement activities, which are continuously adjusted to shape and influence the target group's perceptions of suicide.

Throughout the 24-month phase II, ENODO works with the partner / resource sponsors to expand the VSPP from a regional Proof of Concept focused on a single at-risk veteran group to a national program focused on multiple at-risk groups across the entire country. As new at-risk groups are introduced, ENODO monitors their discourse and produces additional analysis to improve regional stakeholders' ability to align support services with veteran needs. Moreover, analysts refine targeted, individualized communication and engagement activities designed to connect existing and new veteran groups and individuals with local support organizations, specialized in meeting their needs (i.e., opioid addiction, divorce, or financial hardships).

ENODO also conducts active Social Media monitoring of selected veteran groups, which is used to identify trends and track changing perceptions over time. ENODO analysts deliver resource sponsors with regular updates and notify local partners when urgent situations are detected within their region. Figure 2 provides a visual illustration of a notional Phase II engagement.

Figure 2. Phase II Engagement Activity

2.4.1 Phase II Deliverables

ENODO conducts Social Media Monitoring to continuously analyze veteran groups' online discussions and provide Weekly Updates, Emergency Alerts, and Ask ENODOs:

Weekly Reports

- Monitor target groups' attitudes and perceptions about veteran suicide near real-time
- Measure effectiveness and impact of communication and engagement activities
- Identify emerging influencers and develops methods to enhance or dampen their impact
- Provide findings and recommendations to optimize VSPP performance

Ask ENODO

- Answers a specific question posed by the resource sponsor related to a specific veteran related event or activity. Limited to one Ask ENODO per week--completed in less than one business day.
- Provide recommendations for tailored engagement activities to reduce suicide attempts and induce favorable outcomes

Emergency Alerts

- Identify real time crises (i.e. suicide attempt) based on active Social Media monitoring
- Link individual to appropriate resource provide in the veterans network to provide direct support to veteran in crises

2.5   Phase III: Transition (TBD)

ENODO transfers the VSPP and technology to an appropriate management agency.

2.5.1   Phase III Deliverables

Data Collection & Analysis Platform

- Semi-automated data collection and analysis platform empowered by advanced data analytics, machine learning, and natural language

- Customized for the informational, linguistic and socio-cultural environment for different regions across the United States

Training Materials

- Provide operators with training and instructions to successfully deploy, update, and manipulate the technical platform

- Training curriculum to facilitate fluid transition to new management team

3   Conclusion

ENODO's VSPP delivers a data driven, veteran-centric program to reduce suicide attempts within at-risk groups and high-risk individuals and to continually and effectively engage the entire veteran community. VSPP produces a repeatable and measurable process that leverages the voice of veterans themselves. It enables stakeholders to understand and address the root causes of suicide and coordinate activities of veteran service providers that operate independently into a robust Veterans Support Network that can truly engage at-risk veterans before their most critical moments. VSPP delivers an immediate solution to at-risk veteran groups and provides broader insights that enable stakeholders to reduce suicide rates in the wider veteran community, which remains underserviced by existing programs.

4   Appendix A

4.1   Methodology

ENODO Global's advantage over traditional consultants or data analytics firms lies in our population-centric methodology, allowing us to drill down to the targeted population at risk. Our methodology is designed to systematically solve complex social problems in dynamic environments. ENODO's methodology leverages decades of international development experience, business expertise, and real-world military operations, along with social science competencies to identify and mitigate Social Risk.

The methodology explains how people understand their reality and organize socially, why they support or resist movements, and how and why their identities transform over time. It examines complex social dynamics through a single variable—identity. Identity is the key to unlocking beliefs, values, interests, and behaviors. It is the most fundamental human desire and is the principal source of most conflicts. Identity plays upon the norms, values, and traditions that exist within societies and is so fundamental to how people interpret themselves and the world that any threat to it produces an immediate powerful response. By harnessing the power of identity, ENODO helps shape public sentiment, influence behavior, and facilitate inter-group negotiation and compromise.

ENODO's methodology delivers a proactive approach to understand, measure, and support veterans at risk with messages and channels they identify with. This approach also helps shape public perceptions in the veteran community regarding the suicide epidemic. It uncovers the grievances, identities, and key narratives that drive the online discourse and the social networks that propagate messages that influence attitudes about suicide. It pinpoints the dominant identity within the effected target group, quantifies the attitudes and beliefs that drive perceptions about suicide, and informs development of effective narratives and engagement strategies that resonate with each effected target group. Project findings can be used to inform strategic communications and reduce suicide within each group. While these activities cannot remove the difficult realities facing those contemplating suicide, they can help avoid their falling prey to negative or false narratives, and can encourage them to seek alternative solutions to the challenges they face.

4.2   Technology

ENODO builds customized technology platforms designed for specific language, social, and information environments to augment and accelerate our methodology. Our semi-automated

social media collection and analysis platform delivers accurate, actionable insight tailored for specific topics and organizations in near real-time. We combine our proprietary population-centric methodology that identifies underlying social dynamics with advanced computational techniques that include natural language processing (NLP), machine learning (ML) techniques, and social network analysis (SNA) to maximize the insights we extract from various data sources and quantitatively measure text-based narratives, perceptions, and sentiments.

Our technology platform outperforms off-the-shelf technologies by providing increased sentiment and translation accuracy. Moreover, the platform is dynamic and evolves with the changing social and information conditions and events on the ground. Each tailored technology platform enables clients to make sense of digital information from online news outlets, social media, and proprietary datasets to identify, monitor, and forecast public sentiment and narratives to augment planning and execution within rapidly evolving social environments.
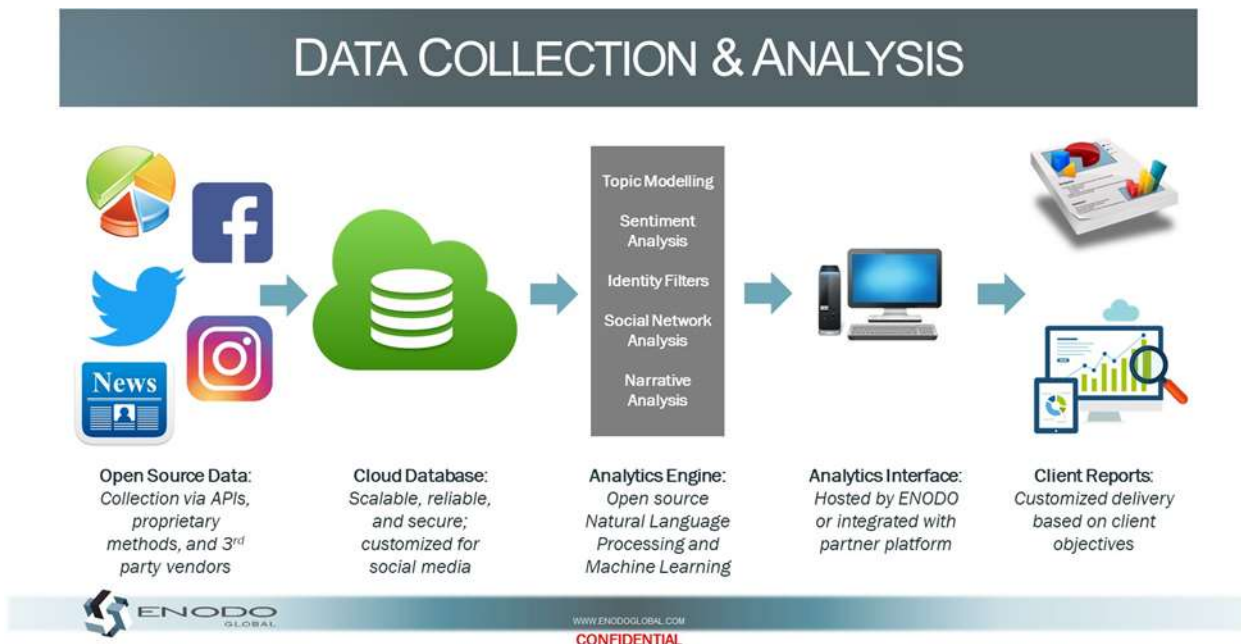

Figure 2. Example Data Analytics Platform

We optimize open source technology with specialized tools. We use a variety of best-in-class libraries such as Google's TensorFlow for machine learning and natural language processing. These tools enable fast, accurate processing and classification of digital data. They are built on trusted and scientifically-vetted algorithms. We also use R—an open source statistical platform—for follow-on analysis derived from insights created by Python libraries. We augment our analysis

with more specialized programs designed to perform Geographic Information System (GIS) and SNA data. Figure 2 (above) provides a flow diagram that visually illustrates the technologies used in a previous platform designed to measure public perception of corruption. Specific technologies and processes are outlined in greater detail below:

4.2.1　Data Collection

ENODO will collaborate with staff to identify terms, topics, hashtags, and accounts to initiate the data collection. The platform automatically collects data on these social media information sources using a combination of public APIs and, where relevant, authorized data vendors. In this specific case, as noted above, ENODO will collaborate to incorporate the prior analytics prepared by REACH VET in order to complement those prior efforts.

4.2.2　Specialized Technologies

Natural language processing (NLP) and machine learning (ML) tools optimize the platform to the particular dialects, slang, and rhetoric used in social media. The platform is built on open-source NLP techniques that ENODO customizes using a mixture of formal and informal texts to create a linguistic model specific to veterans. ENODO applies this model in conjunction with other tailored ML technologies to develop filters that measure sentiment, identify key topics of interest, and aggregate trends.

4.2.3　Topic Modeling

Analysts employ a topic model to identify and classify the most relevant and discussed topics concerning veteran suicide. Insights from the model help understand the key issues associated with veteran suicide, the words and phrases most resonant in social media, and the ways in which these narratives change over time. The topic model can also be used in conjunction with sentiment analysis to uncover perceptions specific to particular aspects of veteran suicide.

4.2.4　Sentiment Analysis

Analysts use the customized Natural Language Processing (NLP) and Machine Learning (ML) tools to continually measure the positive versus negative sentiment of Twitter and Facebook posts associated with key issues, events, and individuals. Analysts track trends in sentiment and identify short-term changes and anomalies that may provide warnings of emerging threats and opportunities. They dissect these trends across social media platforms, hashtags, and different effected target groups to inform strategy.

4.2.5   Demographic Analysis

ENODO collaborates with clients to determine the most important demographic groups and potential variables that influence their perceptions and behaviors. Based upon this, ENODO develops social identity filters across primary (e.g. branch of service, component, rank, combat exposure, age, and gender) and secondary (e.g., education, family, religion, ethnicity, and occupation) factors to measure the influence of individual and communal identity layers within the population.

4.2.6   Narrative Analysis

Analysts use findings from the analysis to identify a Master Narrative and sub-narratives. Narratives connect key groups and the topics they care most about through a common identity. Narrative analysis enables clients to determine where and how to engage each demographic group to increase positive perception and align with the identities of demographic groups. Analysts continuously track responses and changes in public perception to adjust messages and increase impact.

4.2.7   Social Network Analysis

As the understanding of sentiment and relevant topics emerge, analysts map out the most important communications conduits (key individuals) and patterns that drive these narratives. Social Network Analysis focuses on accounts whose messages generate the most "retweets", "likes", and other aggregate measures of usage or specific individuals identified as thought leaders.