Topic: N132-128

DECISIVE ANALYTICS Corporation

Automated Concept Map Elicitation (ACME)
Rapid response missions to remote, unknown areas require time-sensitive development of intelligence from multi-source data including open source, historic imagery, and live collections. Capabilities currently exist to extract low-level information (i.e. entities, relationships, and actions) from these large-scale data sources but it must be aggregated with surrounding context to provide analytical value. Therefore, DAC has developed a system called Automated Concept Map Elicitation (ACME). The ACME system is focused on providing users with a rapid, visual mechanism for developing situational awareness around a specific intelligence requirement from multi source data. ACME extracts information stored across numerous ontologies, utilizes automated clustering of entity nodes and relationships to simplify the developed concept maps, and include an intuitive visualization of concept maps based on knowledge pertinent to the specific intelligence requirement. Decisive Analytics is an Employee-owned company providing data processing capabilities that move beyond simple extraction by automatically organizing, identifying, and extracting activities and relationships from large corpora of text, imagery, video, and audio. We are seeking opportunities to transition this capability to programs where making identifying the high-level concepts in such data is a difficult challenge.

Technology Category Alignment:
None
None
None

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SYSCOM: ONR
Contract: N00014-15-C-0112

Corporate Brochure: https://navystp.com/vtm/open_file?type=brochure&id=N00014-15-C-0112

Department of the Navy SBIR/STTR Transition Program
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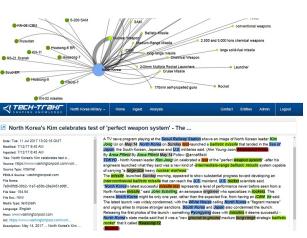DECISIVE ANALYTICS Corporation

WHO

SYSCOM: ONR

Sponsoring Program: Expeditionary Maneuver Warfare and Combating Terrorism Department - ISR Programs

Transition Target: Distributed Common Ground System-Navy (DCGS-N)

TPOC:
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Other transition opportunities: DCGS-A, AF DCGS, Securities and Exchange Commission, Special Operations Command, FBI

Notes: Image is screenshot from the developed technology. Visit this capability at the TechTrakr Operational Website

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WHAT

Operational Need and Improvement: It is difficult if not impossible for Warfighters to make sense out of today's ever-growing sea of intelligence data. To have a crisp understanding of all of this data, Warfighters must often go through tedious rounds of analysis to identify the organizations, products, people, and other entities identified in the data. Furthermore, this data comes from multiple disparate data sources. Intelligence sources, open source data, and other public/private data stores each contribute information to the overall intelligence picture. Each data source provides different types of information, in different formats, with varying levels of quality and detail. The automation of the "grunt work" of data acquisition, manual extraction of the relevant entities, and normalization and structuring of the relevant data enables the Warfighter to better put their cognitive skills towards the critical analytical problems.

Specifications Required: The objective of this topic is to develop a capability to propose concept maps from very large unstructured data stores. To meet this objective, the need exists to construct visual graphs, reorganize nodes/edges to increase readability, remove irrelevant data and prioritize content with respect to user needs.

Technology Developed: The capability developed is called TechTrakr, which gathers domain-relevant information, both from internal repositories and from open sources, and normalizes/organizes it based on content extraction. TechTrakr accelerates the data retrieval and analysis cycle, allowing analysts to focus on understanding the web of relationships hidden within data. TechTrakr's visualizations allow end users to explore and understand the complex web of entities, relationships, and activities that exist unstructured data.

Warfighter Value: The TechTrakr capability allows Warfighters to quickly and easily understand large unstructured repositories of data faster and more accurately than ever before.

WHEN

Contract Number: N00014-15-C-0112 **Ending on:** April 5, 2018

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Automated generation of concept maps from raw, structured and unstructured data sources	Low	Demonstrate extraction of key information from structured and unstructured data	4	October 2015
Scalability testing for large-scale data sources	Low	Support analysis of large scale data sources	5	December 2015
Testing and Deployment within PEO Land Systems Architecture	Low	Deploy within the PEO Land Systems Architecture	6	March 2016
Operational deployment at PEO Land Systems	Low	Complete accreditation requirements	9	September 2016
Rapid expansion of capabilities to new domains	Med	Easily expand to new knowledge domains	9	April 2018

HOW

Projected Business Model: The business model for this effort is a mix of license fees and custom development for various user communities. Through our experience, we know that this capability requires some custom development for different domains to produce effective results.

Company Objectives: Below is a list of transition partners that can benefit from this technology.

DCGS-N / DCGS-A / AF DCGS: Entity network graphs are a powerful and flexible tool to help analysts understand the human terrain of a region or organization of interest. DAC's automated capability results in a large reduction in the labor required to perform network analysis. Inclusion these developed methods of processing large scale data repositories of documents will be important to these customers.

The Intelligence Community including the CIA, DIA, NSA, NASIC, MSIC, NGA, and others have requirements for analysts to automatically make senses out of large amounts of unstructured text data. The TechTrakr relationship extraction capability is a analytic that identifies relevant entities and their relationships based on textual mentions enabling analysts to do just that.

Potential Commercial Applications: Financial Analysts: Investment management and other financial market analysts have a need to analyze complex data sets about companies and industries. Many of these problems mimic the problems facing intelligence analysts: analysis must draw from huge amounts of data, a variety of expertise is required, and understanding and managing the data is crucial to success. Through a self-funded marketing effort, DAC has past performance and relationships with banks, hedge funds, and investment advisers in the financial markets and has validated this requirement.

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