

Evaluating The Use Of Public Data Sources To Improve Acquisition Processes: A Market Research Use Case

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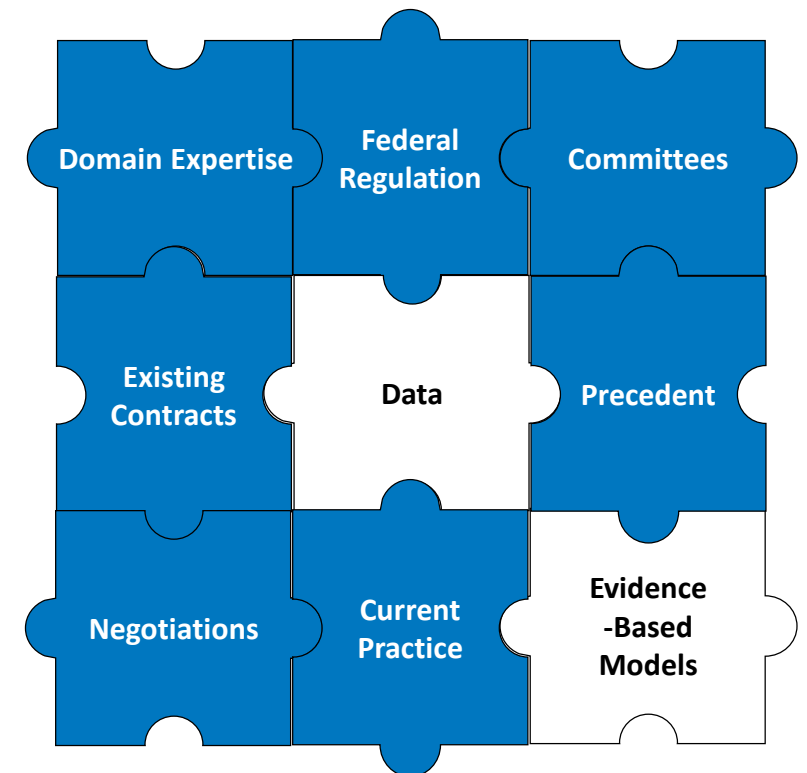
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Motivation

- Acquisition processes are time and resource intensive and rely heavily on staff experience and expertise to develop solutions.
- Federal agencies are interested in leveraging data to inform and improve acquisitions processes.
- There is interplay between evidence-based models and the data.

What drives decisions in acquisitions?



Research Idea: Acquisition Database and Models

Use acquisition data to build tools and models that promote data-driven decision making and analytics thinking in acquisitions

Acquire, store, and document publicly-available acquisition data from a variety of sources

Establish relationships between data sources

Use data to create models to support use cases generated through sponsor relationships and interactions

Create user-friendly tools to make the data easy to understand and to promote data-driven decision making

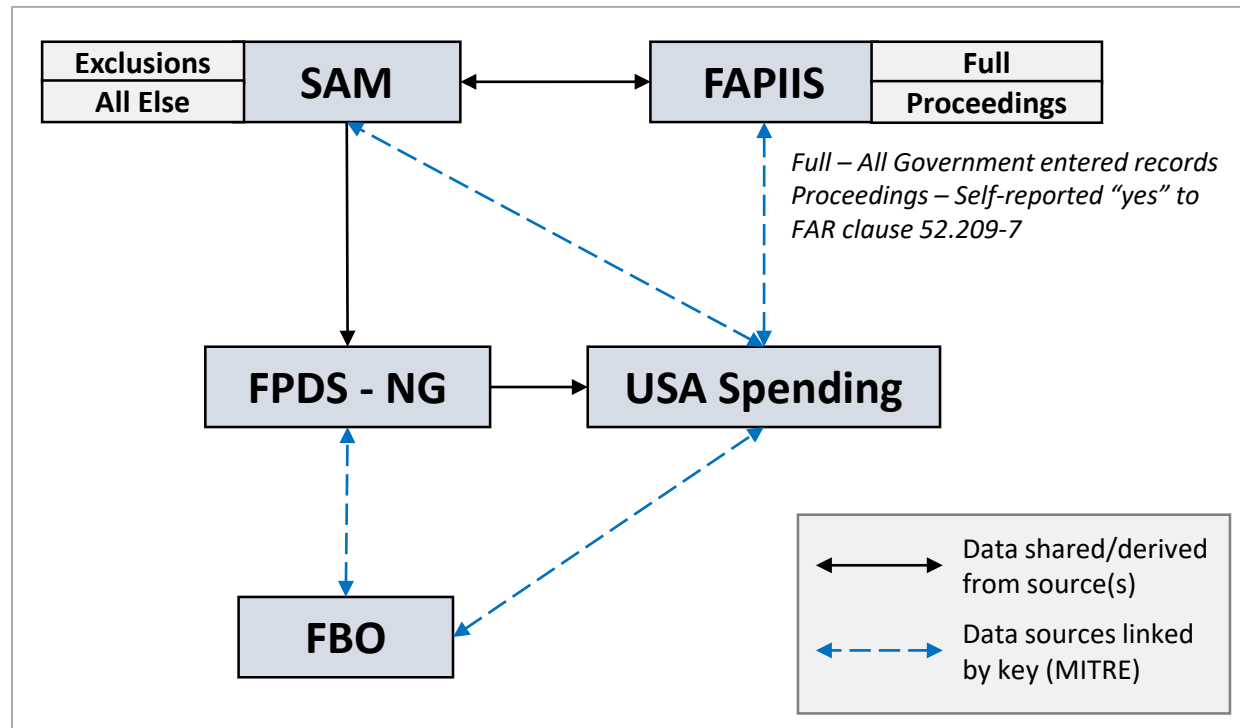
A single warehouse of public acquisition data...

- Brings the data into one system and has documentation of the available information; current publicly-available systems are scattered and difficult to access
- Allows for the development of models and best practices that could be implemented across multiple sponsors

Acquisition Models that Leverage Public Data...

- May be published publicly for widespread use
- Integrate easily with sensitive sponsor acquisition data to create more advanced analytic models
- Reinforce the importance and use of accurate US contract data collection by the government

Public Data Sources



- **USA Spending** - Contract spending records for the US government, 2013-2017
- **System for Awards Management (SAM)** - List of all contractors eligible to contract with the federal government, and an exclusions list of contractors excluded from contracting with the government
- **Federal Awardee Performance and Integrity Information System (FAPIIS)** - Contractors performance and integrity records
- **Federal Procurement Data System – Next Generation (FPDS-NG)** - Government-wide procurement and spending database
- **FBO.gov** - General portal of entry for competitive acquisitions and corresponding documentation to include requirements

Market Research Portal Overview

- **Problem:** Market Research informs all major aspects of every acquisition, but is often compiled manually which is time-consuming, tedious, and not fully nor optimally informed.
- **Goals:**
 - Automate the process of scanning government data sources to simplify and standardize collection of data and compilation of parts or all of the market research report.
 - Highlight categories of interest – potential offerors (small businesses, similar business sizes), costs/price, contract type, contract vehicle type, requirements, quality standards, risk indicators.

Market Research Report

For

(Program Name)

Guidance: The template below is based on examples./

Background Information

Author: (Name)

Report Date: (mm/dd/yyyy)

Organization: (Org symbol)

Report Title: (Product or service name)

Product/Service Description

Guidance: Include a description of the product or service to be addressed by this market research report. Information shall be provided to state current and projected quantities or service requirements to be addressed by this acquisition as well as an assessment as to the potential sustainment life cycle for any follow on requirements. Provide an estimated dollar amount and projected period of contract performance for this requirement.

Background

Guidance: Provide a short narrative on the various weapon systems and/or platforms for which this product or service shall be used to support. For follow on contracts include information relative to the previous awards such as:

- *past acquisition strategies supported*
- *activities taken to remove competitive barriers*
- *actions data to resolve deficient data issues*
- *changes in the market place (suppliers, trends, technologies)*

Performance Requirements

Guidance: State the critical performance requirements which the product or service must meet. Provide an assessment as to whether the requirements are military unique or can be acquired to

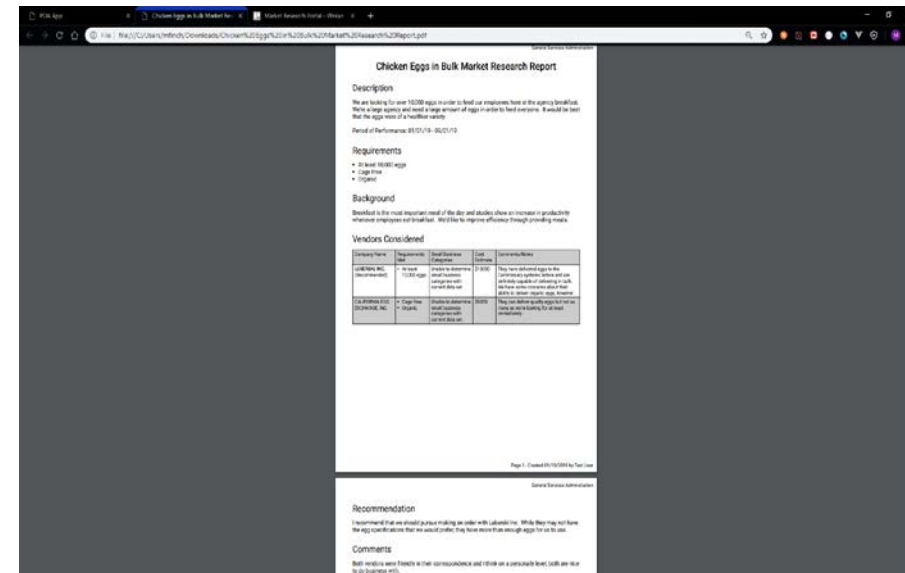
Prototype Overview

■ Process Details

- Used standard agile development practices to build prototype
- Leveraged MITRE subject matter experts as well as government entities to perform usability studies and to evaluate features.
- A future controlled experiment is planned to quantify the quality added and time reduced by using the prototype.

■ Technical Details

- MEVN (Mongo Express Vue Node.js) web stack for application development
- Read replica of data warehouse on same platforms (Mongo, Postgres)
- Dockerized containers enable modular deployment to a sponsor as an option



Description

The screenshot displays a web browser window with the URL `acquisitions.mitre.org/#/description`. The page title is "Market Research Portal" and the user is logged in as "Sample User". The main content area is titled "Bonneville Hatchery" and features a navigation menu on the left with options: "Description" (highlighted in blue), "Vendors", "Research", "Analysis", and "Recommendation".

The "Description" form contains the following sections:

- Description:** A text area with the placeholder text: "Use this space below to fill out some text about the research you're doing. You won't regret it, I promise!"
- Product/Service Description:** A text area containing "Fish feed for sturgeon rearing for fiscal year FY20." with a plus icon to its right.
- Requirements:** A list of requirements, each with a minus icon to its right:
 - 5,600 lbs of feed/month
 - Domestically sourced
 - Certified small business
- Background:** A text area containing "This contract is being put out for annual recompile, and we are trying to survey the current market state for the coming fiscal year." with a plus icon to its right.
- Delivery/Performance Time:** Two date pickers: "Start Date" set to "10/01/20" and "End Date" set to "09/30/20".

At the bottom of the form, there are three buttons: "Cancel", "Save", and "Continue".

Vendors

The screenshot shows a web browser window with the URL `acquisitions.mitre.org/#/vendors`. The page is titled "Market Research Portal" and is accessed by "Sample User". A left sidebar contains navigation options: "Description", "Vendors" (highlighted in blue), "Research", "Analysis", and "Recommendation".

Vendors

Use this space below to find and select vendors you might want to do business with

Search for vendors

Legal Business Name	Research
DOUGLAS ISLAND PINK & CHUM, INC	★
AMERICAN SPORT FISH HATCHERY MANAGEMENT GROUP LLC	★
MUSKY TROUT HATCHERIES LIMITED LIABILITY COMPANY	★
DRISCOLL DAN	☆
SOUTHEAST POND LLC	☆
DELTA NET & TWINE CO., INC.	☆
T & S WELDING, INC.	☆
DARRELL SAUL, FARMS, INC.	☆
PENTAIR AQUATIC ECO-SYSTEMS, INC.	☆

MUSKY TROUT HATCHERIES LIMITED LIABILITY COMPANY

DUNS: 828235106

Contact Information

Primary Business Contact: VERNON MANCINI
908-479-4893
musky279@yahoo.com

Past Performance Contact

Previous Contracts

Contract Number	Cost	Start	Office
W911SD10P0446	\$0.00	Mar 4th 2014	W911SD: W6QM MICC-WEST POINT

Buttons: Cancel, Save, Continue

Research

The screenshot displays a web browser window with the URL `acquisitions.mitre.org/#/research`. The page is titled "Market Research Portal" and shows a user profile for "Sample User". The main content area is titled "Bonneville Hatchery" and includes a navigation menu with options: "Description", "Vendors", "Research" (highlighted in blue), "Analysis", and "Recommendation".

The "Research" section is active, showing a search bar with the text "Search for vendors". Below the search bar is a table of vendor results:

Legal Business Name	Completed
MUSKY TROUT HATCHERIES LIMITED LIABILITY COMPANY	<input checked="" type="checkbox"/>
DOUGLAS ISLAND PINK & CHUM, INC	<input type="checkbox"/>
AMERICAN SPORT FISH HATCHERY MANAGEMENT GROUP LLC	<input checked="" type="checkbox"/>

The selected vendor, "MUSKY TROUT HATCHERIES LIMITED LIABILITY COMPANY", is shown in detail. It includes the DUNS number "828235106" and contact information for the Primary Business Contact: "VERNON MANCINI", phone number "9084794893", and email "musky279@yahoo.com".

Additional details for the vendor include a "Checklist" with three items checked: "Certified small business", "Domestically sourced", and "5,600 lbs of feed/month". A "Notes" field contains the text "Can scale supply as needed". At the bottom right, there is a "Cost Estimate" field with a value of "10000".

Analysis

The screenshot shows a web browser window with the URL `acquisitions.mitre.org/#/analysis`. The page is titled 'Market Research Portal' and is accessed by 'Sample User'. The main content area is for 'Bonneville Hatchery' and is titled 'Analysis'. It includes a sub-header: 'Use this space to start making decisions amongst your research options'. A table displays analysis data for three hatcheries. The 'Analysis' button in the left sidebar is highlighted in blue.

Legal Business Name	Requirement Completion	Req Not Met	User Recommended
MUSKY TROUT HATCHERIES LIMITED LIABILITY COMPANY	100%		★
AMERICAN SPORT FISH HATCHERY MANAGEMENT GROUP LLC	67%	Certified small business	☆
DOUGLAS ISLAND PINK & CHUM, INC	0%	5,600 lbs of feed/month, Domestically sourced, Certified small business	☆

At the bottom of the table, there are three buttons: 'Cancel', 'Save', and 'Continue'.

Recommendation

The screenshot shows a web browser window with the URL `acquisitions.mitre.org/#/recommendation`. The page is titled "Market Research Portal" and is for a "Sample User". The main content area is for "Bonneville Hatchery" and is titled "Recommendation". It includes a sidebar with navigation options: "Description", "Vendors", "Research", "Analysis", and "Recommendation" (which is highlighted in blue). The main content area has a sub-header "Recommendation" with the instruction: "Using the research and analysis you've done thus far, make your recommendation of the market options". Below this is a section titled "Recommendations" with a text box containing the text: "Musky Trout Hatcheries is the only vendor who meets all requirements." To the right of the text box is a section for "AMERICAN SPORT FISH HATCHERY MANAGEMENT GROUP LLC" with "Requirements" listed: "5,600 lbs of feed/month" (checked), "Domestically sourced" (checked), and "Certified small business" (unchecked). Below the requirements is a "Notes" section with an empty text box. At the bottom right of the main content area, it says "Cost Estimate \$9000". At the bottom of the page, there are "Cancel", "Save", and "Continue" buttons.

Market Research Portal Sample User

Bonneville Hatchery

- Description
- Vendors
- Research
- Analysis
- Recommendation**

Recommendation

Using the research and analysis you've done thus far, make your recommendation of the market options

Recommendations

Musky Trout Hatcheries is the only vendor who meets all requirements.

AMERICAN SPORT FISH HATCHERY MANAGEMENT GROUP LLC

Requirements

- 5,600 lbs of feed/month
- Domestically sourced
- Certified small business

Notes

Cost Estimate \$9000

Cancel Save Continue

User Requested Features

- Log In - Secured
- Reports Screen – repository of reports that can be created, edited, shared, exported or deleted
- Searching – description, NAICS, PSC, dates, small business, dollar threshold
- Content - narrative description of services, specifications of supplies, requirements background information, period of performance (dates), attachment of previous requirements
- Vendor - select/search a vendor, filter by small business classification, contract dollar estimate, contractor integrity and responsibility details
- Research - email vendors information/ask questions/ get quotes, search FedBizOpps for similar requirements by NAICS or description, list of GWACs that meet requirement

User Requested Features

- Analysis Tab - convergence of selections made in previous tabs, insert/overlay analytics functionality, for example: number of vendors eligible by geo location, trends on small business classifications by eligible vendors, number of active solicitations by selected NAICS, agencies awards by description, vendors who responded to quote request, number of contracts by vendor
- Recommendations Tab - collate feedback if routed to others within department (concurrency/review/approvals), derived document findings, contract type, contract vehicle type, solicitation strategy, key differentiators for source selection

User Testing

- We acquired validation of the use case and problem space at initiation of the research. Participation from sponsors continued throughout the design and build process of the prototype.
- Initial user testing leveraged MITRE subject matter experts who had extensive experience in creating market research reports as previous federal employees or contracted support staff.
- Consistently, we were told that a tool like this would reduce the time required to complete the highly manual portion of the market research process (finding, accessing, extracting the data from many sources, then aggregate and execute reviews of information) and would enable users to dedicate more time into their thought driven analysis and benchmarking of strategy and approach to the acquisition.

Controlled Testing

- In the future, we will quantify the value added by this tool by running a controlled experiment. In the experiment, several users will be asked to create a market research report using either a simple template (that is similarly formatted to the portal report) and using the designed prototype leveraging all the data sources. Users will be asked to report a) time required to complete the report, b) describe how well they believe they were able to complete each report and their experience building the report.

Questions?

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