Acquisition Research Program | Acquisition Research Symposium

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Issues With Access to Acquisition Data and Information in the Department of Defense: Doing Data Right in Weapon System Acquisition

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Doing Data Right in DoD Weapon System Acquisition

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Acquisition Data Have Many Purposes

- **Transparency**

- **Cost control**

- **Distribution of federal spending**

- **Small business goals attainment**

- **Identify and prevent fraud, waste, and abuse**

- **Analyses for improved decision making**

- **Compliance and tracking items in various processes**

- **Archive**

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Acquisition Data Opportunities

- **AT&L/ARA/EI has identified 76 potential acquisition decision-making data opportunities**

- **These data opportunities are highly dispersed throughout DoD and the Federal Government**

- **Data are organized by both information system owner and also by the following functional business areas:**
  - **Research and development (R&D)**
  - **Requirements**
  - **Budgeting**
  - **Contracting**
  - **Contract Performance**
  - **Financial Execution**
  - **Program Cost /Schedule/Performance**
  - **Human Capital**
  - **Acquisition Oversight/Portfolio Management**

> *Can DoD solve its acquisition questions with these sources?*

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RAND Was Asked to Consider Several Key Questions

- **What data are available to help assist in defense acquisition decision-making? (complete)**

- **Where do acquisition data reside? (complete)**

- **Who can access the information? (complete)**

- **Can we get access to these data for acquisition-related purposes? (complete)**

- **What would we utilize the data for? (future work)**

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Research Approach

Identify data domains

Review information systems and their elements

→

Identify data users

Collect user information from systems

→

Identify data providers

Review DoDI 5000.02 information requirements
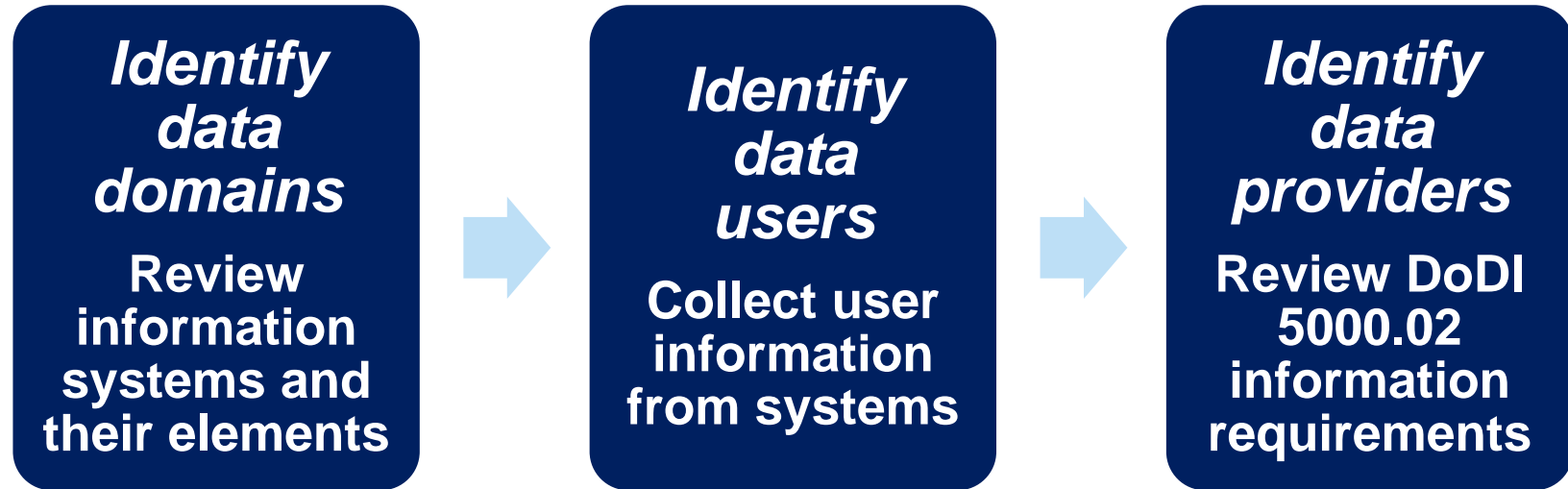
- **Heavily leveraged some of RAND's most advanced users of acquisition data for the deep dives**

- **Identified policies that specified the origins of the information system and data**

- **Reviewed documents that identified managers/owners/users/providers of acquisition data**

- **Conducted discussions to supplement RAND knowledge and available information**

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We Analyzed 21 Acquisition Information Systems

- **We analyzed these information systems in order to identify where acquisition data or information reside that support current information requirements in DoDI 5000.02**

- **We reviewed 5 federal-level, 13 OSD-level, and 3 service-level systems (one Army, one Air Force, and one Navy):**

  - **Of the 21 systems, at least one RAND study-team member had working knowledge of eleven;**

  - **For five systems, a study-team member had limited prior or current working knowledge; and**

  - **For the final five systems, no RAND study team members had working knowledge**

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We Pursued Detailed Information on Data Opportunities Through Discussions With Information Managers

Descriptive details on systems	
Abbreviation/common name	Access restrictions by data type, user, and security policy
Full data information system name	Data source's openness or data availability
Date entered service	"Tech stack" or software used for the system
Overview url for entrance (usually work best with which web browser)	Multiple versions because of access or attributes
Functional business area(s) data supports	Restrictions on downloading
Purpose of the system and its data	Process for requesting access
Owner, manager, and host of the system	Data elements (e.g., unit of data with a exact meaning)
Owner(s) of the data in the system	Other information systems that this system feeds
Organization responsible for adding or populating the system	Types of questions answered using the data in this system
Organization who developed the system	Users: number, composition (e.g., by organization)
Authoritative sources for the data in the system	Strengths of system and its data
Are the data in the system considered authoritative	Challenges of system and its data
Data transmitted to/from the system	Recommendations for improving system and its data
Policy creating/managing (e.g., statutory, order, policy directive)	

Discussions showed that even common terms like "owner" or "user" are subject to interpretation, which suggests that a common taxonomy would be difficult to implement.

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Challenges in Conducting This Study

- **Pursuing access to information systems: RAND worked with ARA/EI to decide on systems for this effort**

  – **Given some challenges, with ARA/EI agreement, decided not to pursue new study access to information systems**

- **Access varied from full (11) to partial (5) to no access (5)**

  – **Relied on discussions with information system owners and materials available on the systems**

  – **Unable to verify discussion information in some cases**

- **Substantial time required (both ARA/EI and RAND time) to set up discussions with information managers**

  – **Amount of information obtained from discussions varied**

- **Study resources were primarily used to identify data opportunities, rather than analyze/assess data quality**

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Plethora of Acquisition Related Data Sources

- **Formats: structured → unstructured**
- **Elements: unique → overlapping**
  - **Definitions can vary**
  - **Some driven by statutory requirements**
- **Time frames are non-stationary**
- **Systems have different:**
  - **Platforms, hardware**
  - **Architectures, software, interfaces**
  - **Vendors**
  - **Databases**
- **Accessibility, security varies**

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Multiple Factors
Affect Future AQ Data Management...

- **Current architectures may not support additional**
  - Statutory requirements
  - Administrative changes
  - Security policy changes

- **Technological advancements may improve**
  - Collection efficiency
  - Quality
  - Aggregation
  - Ease of access/use

- **Archiving data for future analysis/education**

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...and Past and Future AQ Systems Development

- **Statutory compliance reporting/management tracking data needs, not analysis, largely drove**

  - **Creation**

  - **Evolution**

  - **Repurposing**

- **May or may not answer today's questions, but inflexible to answer tomorrow's**

- **Varying architectures/interfaces require analysts with**

  - **Cross system-analytic skills**

  - **Years of access/use to fully understand/master**

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Also Found Barriers to Use, Cross Use

- **Access procedures are complicated and generally consist of many steps that may or may not guarantee access in the end**

- **Varying access procedures/permissions between and sometimes within systems**

  - **Federal systems – most are public**

  - **DoD systems – most are restricted (some more than others)**

  - **New users can have great difficulty establishing and maintaining access (how to, where, who, what?)**

- **Full access to AQ systems enables maximum use of data by analysts with a need to know**

  - **Balancing security and access needs is difficult**

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Lessons Learned From RAND's Experience Using Acquisition Data to Answer Complicated Questions

- **Answering sophisticated acquisition questions requires analysts with detailed knowledge, access, and experience with numerous data sets**

- **When utilizing very large data sets, robust processing and storage capacity and the skills of research programmers are critical**

- **OSD CAPE and ARA/EI are helping to support improved access and use of available acquisition data**
  - **There's a focus on utilizing authoritative sources and analytical tools within CAPE and ARA/EI systems**
  - **ARA/EI provides DoD acquisition personnel with visibility to data opportunities across DoD**

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Improving Data Quality and Analytic Value

- **Minimize manual entry and multiple instances**
  - **Designate authoritative data element sources**
  - **Require new system use and older systems migration**
- **Establish ways to verify/validate data wherever possible**
- **Require development of**
  - **User/data entry guides**
  - **Data dictionaries describing data elements/sources**
- **Require system owners to**
  - **Develop and update plans and budgets for continuous improvement of data quality and analytic value**
  - **Document unfunded requirements**

> *Who has the authority to institutionalize/implement these changes given the diversity of data ownership in DoD?*

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Questions