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TECHNICAL REPORT

Using EPIC to Find Conflicts, Inconsistencies, and Gaps in Department of Defense Policies

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Prepared for the United States Navy

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Summary

This report describes a new technique developed by RAND to efficiently analyze multiple policy documents to identify potential conflicts, ambiguities, gaps, and overlaps in the roles and responsibilities (R&R) assigned to Department of Defense (DoD) executives. The technique consists of a framework and methodology. This report describes the framework and methodology as well as a new software tool that automates one step of the methodology.

In this study, an R&R is defined as an activity, function, task, duty, job, or action assigned to a DoD official by an authoritative source. Authoritative sources of DoD R&R are federal law; Office of Management and Budget circulars and other issuances; Executive Orders; agency guidance documents including DoD directives, instructions, and memoranda; and pertinent non-DoD policies and issuances such as Office of Homeland Security issuances that address the R&R of DoD officials.

Background

A complex set of interconnected DoD capabilities and resources are managed by the senior executives of the department using complex processes that evolve and change as DoD policy changes and as directed by U.S. law. Effective and efficient management of these capabilities and resources can be accomplished only if each DoD executive clearly understands and executes his or her responsibilities and if this is done in a way that is complementary and not in conflict with the activities of other DoD executives and the organizations under them. Therefore, it is essential that the R&R of DoD executives be clearly articulated in DoD policy. Recent legislation and changes directed by the Secretary of Defense are both changing the organizational structure of the DoD and shifting the R&R of defense officials. Policies that establish the R&R of defense officials will need to be updated to reflect these actions. The updated policies need to be consistent with U.S. law and existing policies that are not affected, thus requiring that policymakers and reviewers analyze large numbers of policies for potential conflicts, ambiguities, gaps, and overlaps.

Purpose

The purpose of this research is to develop a technique to efficiently and effectively assess many defense policies for potential conflicts, inconsistencies, ambiguities, overlaps, and gaps in the R&R assigned to government executives.

The methods and tools developed in this study are designed to enhance the analysts’ ability to detect gaps and areas of potential conflict early in the policy review process, thereby focusing attention on the clarifications and changes that will result in consistent, clear, and effective policy.

Approach

Our approach was to first develop a framework that relates executive positions to roles and responsibilities and the products that result from their execution. The framework then served as a paradigm to formulate a methodology, which, in tandem with the framework, consists of a technique for analysis of policy guidance related to R&R assigned to defense officials. One step of the methodology was suitable for automation. The software tool developed to automate that step of the methodology is named Electronic Policy Improvement Capability, or EPIC (©, TM, RAND, 2010). The technique affords a new semiautomated capability to analyze R&R assigned to defense executives.

We then applied the technique to three case studies to illustrate use of the technique, to serve as proof-of-concept demonstrations of the flexibility of the technique, and to validate and verify EPIC.

R&R Policy Analysis Framework and Methodology

Several pieces of information are needed to determine if potential conflicts, gaps, ambiguities, or overlaps exist in a collection of defense policies. We must know what parties are assigned R&R, what the policies direct the parties to do, and what output results when the parties execute the directed actions.

Framework

The roles and responsibilities analytic framework considers three primary components: the party who is assigned the R&R (termed the actor), what the actor is directed to do (termed the action), and the outcome of the action taken by the actor (termed the product). Figure S.1 shows this basic structure of the R&R analysis framework.

Figure S.1
R&R Policy Analysis Framework



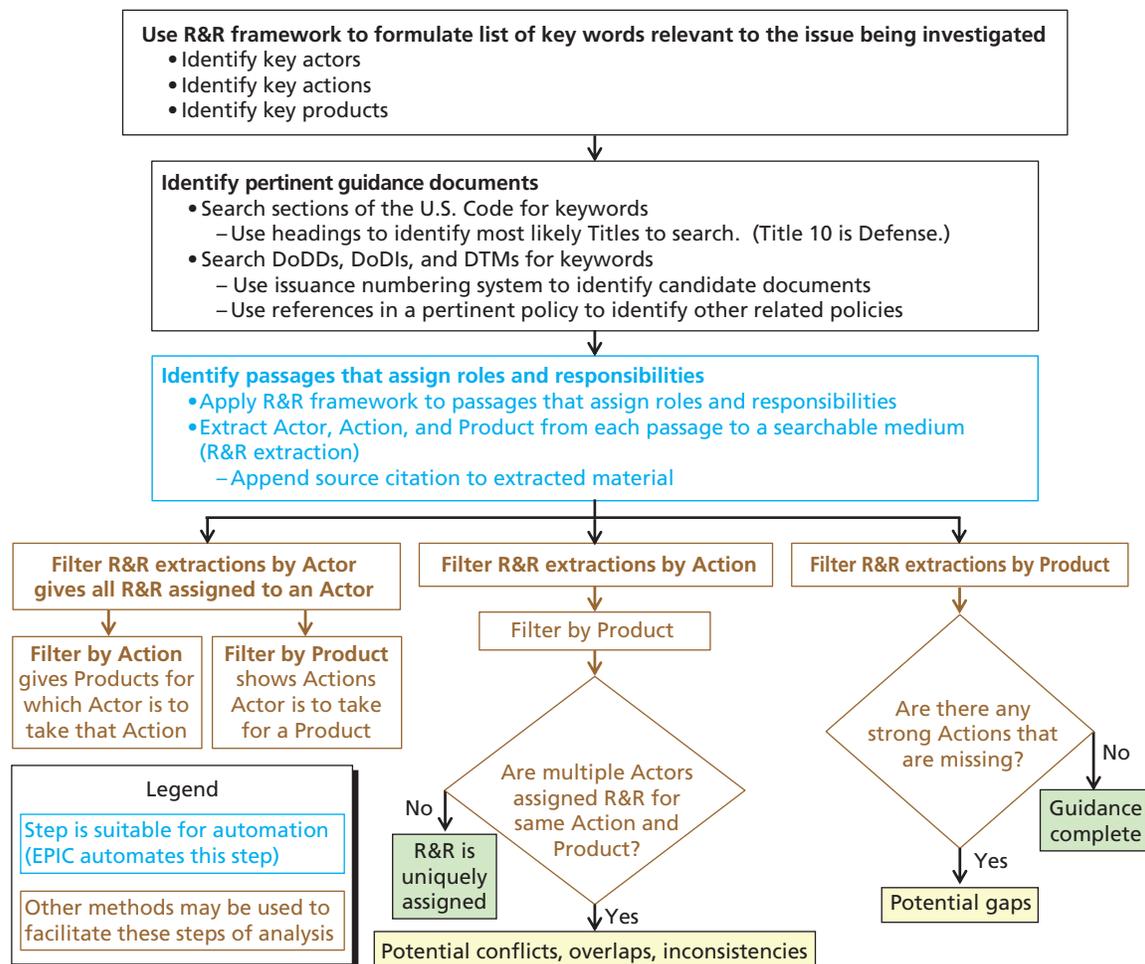
Methodology

Using the R&R policy analysis framework described above, analysts can examine related bodies of policy to compare the R&R assigned to defense executives. If more than one actor is assigned to take the same action on the same product, then a potential conflict exists in the body of policy. If, on the other hand, no executive is assigned to take action on a product, then there is a potential gap in the body of policy. Hence, the R&R framework lends itself to a methodology for identifying potential conflicts, inconsistencies, gaps, ambiguities, and redundancies in defense policy. The steps of such an R&R methodology are shown in Figure S.2.

Electronic Policy Improvement Capability

To use the policy analysis framework described above, the analyst needs to create a searchable file (such as a spreadsheet) that shows the actor, action, and product components of R&R assigned to defense officials in policies. Building R&R spreadsheets is labor-intensive and time-consuming. RAND has addressed this issue by developing and building EPIC to facilitate

Figure S.2
R&R Methodology



R&R analysis.¹ EPIC is an automated tool that uses the policy analysis framework to enable keyword searches of policy documents. EPIC searches for occurrences of user-selected keywords from built-in lists of actors, actions, and products in policy documents and automatically records sentences from the document that contain combinations of the user-selected keywords in a MS Excel worksheet. The user can manually parse, sort, and filter through results relatively quickly to determine relevance. EPIC also outputs a version of the scanned policy as an Extensible Markup Language (XML) document with the actors, actions, and products of interest highlighted. An analyst can review the document to determine the completeness of the Excel results worksheet.

Program Manager R&R Case Study

Our program manager (PM) case study has a dual purpose: (1) to determine the purview of PM R&R, particularly as these R&R apply to the acquisition of weapon systems with national security system or information technology elements, and (2) to validate the EPIC tool via a concrete indication of how R&R found by EPIC compare with R&R found by manual examination.

We ran EPIC on 21 key policy documents relevant to PMs, specifying the term “program manager” and all of its variants as the single actor of interest. EPIC extracted sentences from 11 of the 21 documents indicating that PMs are assigned R&R in 11 of the 21 policies examined. Once duplicates were eliminated, there were 136 unique extractions, 111 of which were from Department of Defense Instruction (DoDI) 5000.02. We found that 5 percent of the EPIC extractions from DoDI 5000.02 were false positives that did not actually contain PM R&R.

After manual refinement of the database, we found that EPIC helped identify 94 percent of the PM R&R in DoDI 5000.02. This shows that EPIC complements human analysis but does not replace it. While EPIC output can provide PM R&R insights to analysts of all experience levels, the identification of any remaining R&R not detected by EPIC will be less challenging for analysts already familiar with PM R&R.

Analysts used EPIC output to determine that the purview of PM R&R is extensive. PMs must be cognizant of the contents of at least 11 policy issuances, be thoroughly familiar with DoDI 5000.02, and execute at least 132 R&R in DoDI 5000.02 alone to perform PM functions.

Interoperability and Standards Case Study

The purpose of this case study was to demonstrate the utility of applying EPIC to four DoD policies across a broad array of topics related to interoperability and standards R&R to identify areas of potential conflict. In this case study, we focused on R&R that include decisionmaking authority, and we term such R&R as “strong” R&R. We used filtering on EPIC output to efficiently find potential R&R conflicts. EPIC reduced 243 pages of policy to 1,137 unique extractions. Filtering by analysts showed that 113 of the extractions were related to standards. Analy-

¹ The EPIC tool is a Microsoft (MS) Office–based program written in Visual Basic for Applications. It runs on the MS Windows platform with MS Office 2003 Professional or MS Office 2007. EPIC is described in detail in the appendix.

sis of the 113 standards-related extractions found that DoDD 5144.1 assigns strong R&R for intelligence standards to the DoD chief information officer (CIO), whereas DoDI 4630.8 and Chairman of the Joint Chiefs of Staff Instruction 6212.01E assign similar strong R&R for intelligence standards to the National Security Agency, the Defense Intelligence Agency, and the National Geospatial-Intelligence Agency (NGA) with no role for the DoD CIO. While strong R&R do not inherently lead to conflicts, the similarities among these assignments of R&R can lead to conflicts as the various officials execute their duties.

Analysis of the distribution of R&R in the four policies found that the strong R&R for information assurance (IA) are evenly distributed among three major actors—the Defense Information Systems Agency, NGA, and DoD CIO, creating a potential for conflicts to arise when these actors execute their assigned responsibilities.

Categorizing the EPIC output by topic revealed that only weak links exist between the development of interoperability standards/architectures and the determination of interoperability requirements, and that Net Ready-Key Performance Parameters requirements are inconsistent in defense policy.

Information Assurance Case Study

Entity relationship (ER) diagramming is a systematic method for defining relationships between specific entities such as actors, actions, and products. Applying ER diagramming to EPIC output allows analysts to quickly identify possible conflicts and inconsistencies for information assurance managers, PMs, designated approval authorities, and security managers across the DoD 8500-series documents. The inconsistencies found include issues pertaining to the accreditation status of those DoD information systems with a Category II weakness and an Interim Authority to Operate status, and to the setting and implementation of IA controls. We also identified possible inconsistencies in R&R for certification and accreditation across the DoD 8500-series issuances, and with regard to determining the applicability of DoDI 8581.1 for some legacy space systems.

Study Products

Aside from the potential conflicts discovered in the policy documents examined in the case studies, the framework, methodology, and EPIC are the primary products of this study. The framework provides the basis of the methodology, and EPIC automates one step of the methodology. Analysis of EPIC output is still required to identify gaps, overlaps, and areas of potential conflict in the R&R assigned to defense executives. As the case studies show, a variety of methods can be used to facilitate analysis of EPIC output to identify potential conflicts, inconsistencies, gaps, redundancies, ambiguities, and overlaps in a collection of policy documents.

Potential Next Steps

This study demonstrates the potential and promise of a new technique for policy analysis. The new technique should facilitate policy analyses suggested by DoD officials such as the following:

- Investigate potential conflicts identified in the case studies. Detailed investigations into the potential conflicts identified in the case studies are required to determine whether actual conflicts exist and to recommend actions to correct policy if actual conflicts are found.
- Develop a process to identify the origins of R&R conflicts. This would involve developing a technique that would allow for full-spectrum analysis of R&R from their origins in U.S. law to DoD-level policy and finally to Service-level implementation documents. Such research would help identify the root causes of R&R conflicts. Extending the automated policy format and processing capabilities of EPIC is a candidate approach.
- Use EPIC to review draft DoD and Navy policies. EPIC can help analysts determine if R&R in draft policy is internally consistent as well as consistent with the R&R found in existing policy.

The technique developed in this study provide policymakers and reviewers with new capabilities for identifying gaps, ambiguities, overlaps, inconsistencies, and areas of potential conflict in policy. This new capability can result in better and more consistent defense policy.