PUBLIC CONTRACT WRITING SYSTEMS: A HOUSE DIVIDED

Robert E. Lloyd*

ABSTRACT. This paper examines automated contract writing systems, a vital aspect of public procurement which has replaced the more manual methods of drafting of contracts used in the past. Using the system of the U.S. federal government as an illustration, the various components of a contract writing system are detailed and discussed, distinguishing contract writing from e-procurement and demonstrating how a bifurcated approach has been adopted for contracting automation. The larger implications of this dual nature are analyzed along with misconceptions about contract writing systems and the contrast between the perspectives of procurement versus finance. Future research devoted more to cross-disciplinary issues and human factors affecting contract writing, rather than just systems development issues, may offer an opportunity to improve the effectiveness of public procurement automation.

INTRODUCTION

The literature of public procurement rarely addresses contract writing systems except in passing. No established definition of contract writing system exists in U.S. federal law or regulation, despite its importance and the critical need in contracting, of all fields, to have clear written definitions (Edwards, 2011). The term “contract writing system” is only mentioned once in the voluminous Federal Acquisition Regulation or FAR (2012, at paragraph 4.604(b)), without definition. In public administration research, the term is scarcely

* Robert E. Lloyd, MPA, is a Certified Professional Contracts Manager and Fellow, National Contract Management Association. His research interests include both theoretical and operational issues in public procurement. The views expressed in this article are those of the author, and do not necessarily reflect those of the U.S. Department of State or the U.S. government.
found; instead, terms such as “e-procurement” are found, which is defined generally as the use of automation to aid the procurement function (see Dooley & Purchase, 2009). International studies (such as Forster, 2008; Vaidya, Callender & Sajeev, 2009) tend to provide only brief overviews of e-procurement or discuss it primarily as a buying method for interfacing with industry, without detail as to how contracts are actually prepared. A more recent, related development is the advent of the concept of “wide area workflow” or WAWF, defined as a secure web-based system for online invoicing, receipt, acceptance, property transfers, and payment, which is a different and more expansive type of system than contract writing (U.S. Department of Defense, 2011a, 2009a; U.S. Department of Defense, Business Transformation Agency, 2009; U.S. Department of Defense, Office of the Inspector General, 2001).

The subject of this paper is the computer-based system used by each U.S. federal agency to create solicitation, contract, and modification documents, referred to here as a “contract writing system”. As is typical of the U.S. government, there is no monolithic approach to these systems; instead, each agency has selected or developed its own system, although some share the same commercially sold, “off the shelf” automation product. The guiding principle has traditionally been to use commercially available software (U.S. Department of Defense, 2011b), even though the process used and clauses included in U.S. government contracting are not the same as those used in the commercial marketplace. Before discussing present-day contract writing systems, it is worthwhile to pause and reflect on a time before they existed at all.

**CONTRACT WRITING: THE OLD DAYS**

While the following brief description of key activities in the U.S. government’s contracting process may at first glance seem to hark back to the nineteenth century, it is how contracting was practiced circa 1980, based on the author’s direct experience (and parallel to that reported by Webb [1985]):

- Procurement requests were drafted by hand and then typed by available clerical staff on a typewriter (electric or manual) on a form containing multiple carbon copies. (Most contracting offices had, at best, a few typewriters, not one for every employee, but just enough for the clerical staff.)
- Market research was conducted by making telephone calls to prospective sources or organizations, or by consulting paper directories such as Yellow Pages, Thomas Register, and others.

- Acquisition plans were created manually, in draft on paper by hand, then typed by available clerical staff on a typewriter (electric or manual; at the time, electric typewriters were still a prized commodity).

- Wage determination requests for service contracts (minimum wage listings) were completed by manually typing on the required form the necessary information and either mailing or driving to the Department of Labor (DOL) to ensure delivery, then waiting for the paper copy to arrive by regular mail (or picked up in person if one was willing to drive to the DOL Wage and Hour Division in Washington, DC, as often occurred).

- Solicitations were prepared by cutting and pasting (literally, with paper, scissors, and tape) similar printed solicitations, marked up by pen with necessary changes into a form which could be typed on a typewriter by clerical staff, or by completing a paper form listing applicable clauses which could then be used to generate a solicitation document on a first-generation word processor. (Personal computers did not exist at the time in U.S. government contracting offices, although by 1985, Webb reported that there were three contracting offices in the entire U.S. government using personal computers.)

- Synopses of upcoming contracts were typed on paper and sent by mail to the Commerce Business Daily (CBD) office, which then retyped them onto the format suitable for publication of the CBD, which itself was printed on paper and available only by mail.

- Solicitation mailing lists, consisting of names of companies that might have been interested in a given contracting opportunity, were compiled manually and mailing labels or envelopes were typed for distribution of hard copy solicitations.

- Solicitations were sent to prospective contractors by regular mail (U.S. Postal Service).

- Proposals were received by mail or hand-delivered in paper form only.
- Evaluations of proposals were completed by typewriter based on hand-written drafts.

- To determine whether a contractor was suspended, debarred, or otherwise ineligible for award, agencies had to subscribe to the hard copy publication of the “debarred list” issued by the Government Printing Office. While the list was updated periodically, real-time information was not readily available.

- Negotiations were conducted by phone, in person, or by letter mailed via regular mail. In some cases, for overseas sources, the negotiation letter might have been in the form of a Telex/TWX/telegram/teletype generated on a now-discarded communications system.

- Contracts and supporting file documentation (such as price negotiation memos) were prepared by the cut and paste method described above, and completed by typewriter. Contracts were then sent to the contractor by regular mail and via interoffice mail to the finance office or others (in hard copy).

- Contracting officers on travel had no access to contract files unless they carried them along, which was normally not feasible due to the weight of the paper involved.

- Modifications to contracts were prepared by manually completing a Standard Form 30 and handing it to the clerical staff to type in final form. Upon signature, modifications were mailed to contractors.

- Communications with contractors were essentially limited to telephone calls, letters, and meetings, which limited their frequency and usefulness (recalling the often-cited problem of “telephone tag” which has now been replaced by electronic mail).

- Reports (such as for the Federal Procurement Data System) were completed manually, by hand-writing in each applicable block of the form (such as DD Form 350, which came on legal sized paper with multiple carbon copies, requiring considerable force of the pen to complete). Corrections had to be made by the use of “white-out” or manual erasures on the original and all carbon copies.
- Contractor invoices were submitted by regular mail and paid based on hard copies of contracts on file in the finance office.

Today's federal acquisition is considerably different, due primarily to tools such as the personal computer, electronic mail, local area network, the Internet, and contract writing systems which automate various aspects of the contracting process. The original impetus for an automated contract writing system was primarily to eliminate the inefficiency of manually drafting paper-based contract forms and clauses (Webb, 1985). Practitioners of public procurement no longer use manual methods to draft contracts, except in rare cases. (The familiar scenario of a system being “down”, compelling a resort to hand-filled forms, comes to mind.) Contract specialists now have their own personal computers; can post solicitations on the Internet instead of mailing them to potential contractors; are able to communicate more quickly with customers and contractors by e-mail; have ready access to necessary references, clauses, and forms on web sites; can receive proposals by email or web hosting sites; can report actions on-line; and in general leverage readily available technology to reduce the need for manual methods of contracting.

Since automation is a key feature of any public procurement system, analysis of contract writing systems and their impact on contracting is worthy of exploration. It is widely recognized that automating procurement processes is a major challenge facing government (U.S. General Services Administration, 2008), yet it is rarely examined in detail at the working level in the literature. Academics and practitioners interested in public procurement ignore contract writing systems at their peril, as these systems dictate in many respects the output of public procurement. Rather than a Luddite approach which simply criticizes and rejects as imperfect the contract writing systems of today, this paper seeks to understand the causes for problems currently found, in the hope that proposed solutions and future development can be sound and practical.

**CONTRACT WRITING SYSTEMS: TODAY’S LANDSCAPE**

Contract writing systems are in theory capable of producing many of the crucial operational benefits that have been attributed to the broader heading of “e-procurement,” of which they are a subset (Weigelt, 2011a; Dooley & Purchase, 2009; Barbieri & Zanoni, 2005; Croom & Brandon-Jones, 2005; Leipold, Klemow, Holloway & Vaidya,
These potential advantages include:

- reduced transaction costs,
- lower staffing needs,
- shorter contracting cycles,
- greater transparency,
- process simplification,
- standardization in use of contract clauses,
- price reductions,
- better compliance with regulations,
- better audit trails, including data accuracy and visibility enabled by having an automated repository of contracts (so that someone outside the contracting office can see what is in the contract, unlike the old days when paper files ruled)
- better quality institutional memory, and
- improved communication between the parties to a contractual transaction.

Implementation of these features has been of critical concern, and the varieties of contracting offices and their operational practices pose an obstacle to “one size fits all” automated solutions (MacManus, 2002). It is not surprising, then, that the U.S. government has adopted a bifurcated approach to automation of the public procurement function, consisting of two key systems:

1) a contract writing system in each agency, and

2) the new System for Award Management (SAM) available to all agencies.

Formerly known as the Integrated Acquisition Environment (U.S. General Services Administration, 2012a&b, 2008; U.S. Department of Defense, General Services Administration & National Aeronautics and Space Administration, 2012), SAM is an aggregation of several government-wide sub-systems (eight for contracts, one for grants). The scope of SAM encompasses both the public procurement workforce and companies doing business with the U.S. government.
Its stated goals are to create efficiency for users, increase data quality, and save money, as it is designed to “integrate, unify and streamline” by automating “every phase of the acquisition lifecycle, from market research to contract administration” (U.S. General Services Administration, 2012a).

The eight contracting web sites covered by SAM deal with the following aspects of contracting:

- Contractor registration (prospective contractors must be registered in a central, government-wide database known as CCR or central contractor registration),
- Contractor certifications (the Online Representations and Certifications - Annual, or ORCA web site),
- Prohibited source lists (Excluded Parties List System or EPLS),
- Subcontract reporting by contractors (electronic subcontractor reporting system, eSRS),
- Publicizing of contracting opportunities (Fedbizopps web site),
- List of minimum wages to be paid by contractors for service contracts (Wage Determinations On-Line or WDOL),
- Post-award contract reporting (Federal Procurement Data System or FPDS), and
- Contractor past performance evaluations (Past Performance Information Retrieval Systems or PPIRS and subsystems such as the Contractor Performance Assessment and Reporting System CPARS).

Each of these contracting functions has its own separate web-based application, managed centrally, and all are simply a list of hyperlinks on a single web page, rather than functionally or operationally integrated system-wise. For contract writing systems, whose focus is somewhat more narrow, interfaces with external databases such as these are simply mandated (U.S. General Services Administration, 2008). Public procurement automation as it is practiced today has evolved into a familiar taxonomy. Specifically, the high-level model of public procurement as a “nested structure of systems within systems” depicted by Thai (2001, p. 40) is now mirrored at the operational contracting level in its automation tools.
The relationship between SAM and any given contract writing system used by a U.S. federal agency is that contract writing systems are internally based automated tools for agency users to create contracts and related documents, whereas SAM provides links to external databases and transaction brokers used in the contracting process. For example, one would create a solicitation document in the agency’s contract writing system, but it would be issued to the public via a separate, external web site (Fedbizopps) which is part of SAM. A perception has long existed that the “holy grail” of contracting automation in the form of a single, “turnkey” system exists or can be attained, but the reality has been markedly different.

Examples of contract writing systems across the U.S. government include the Standard Procurement System (SPS) or Procurement Desktop used by components of the Department of Defense (U.S. Department of Defense, 2009c), and the system “PRISM” used by the Department of the Treasury and other federal agencies (U.S. Department of the Treasury, 2011). In addition to Treasury, as of 2008, the National Aeronautics and Space Administration, U.S. Department of Agriculture, Department of Energy, Department of the Interior, and Coast Guard also used PRISM, the Defense Intelligence Agency used the “Comprizon” software, and Customs and Border Protection used SAP’s “IPRO” (U.S. Department of Defense, 2008a).

As of 2011, there were ten different contract writing systems in the Department of Defense alone (U.S. Department of Defense, 2011b). This disparity earlier led to an attempt to implement a single system department-wide. At one point, the Department of Defense directed a move to a “totally paper-free contract writing, administration, finance, and auditing process by January 1, 2002” (U.S. Department of Defense, Office of the Inspector General, 2001), but the goal was not reached, likely due to the many pitfalls involved. Even regarding proper use of contract clauses, deployed systems produced “mixed results” with maintenance of up to date clauses and document generation (U.S. Department of Defense, 2008a, p. 9). It came as little surprise when the Department of Defense announced in 2011 that it was phasing out its department-wide contract writing system SPS because of difficulties in maintaining it and the fact that emerging technologies offer alternatives to a uniform software approach (Moser 2011, p. 6). This development may well be due to the enormous complexity involved in trying to automate the contract
writing process or awareness of the reality of being able, as a practical matter, to write contracts with several tools instead of only a single, integrated one (see also Weigelt, 2011a). The single system approach was abandoned in favor of a more manageable method, in the wake of, among other things, the Defense Logistics Agency’s reporting a “failed integration” to SPS (U.S. Department of Defense, 2008a, p.6).

In place of the misconception that public procurement automation can be an integrated whole, recent commentators have pointed out the advantage of a modular approach (Weigelt, 2011b). A “request for information” issued by the U.S. Navy (2009) regarding contract writing systems admits that “contracting personnel use various products to write contracts, purchase orders, delivery orders and modifications; examples include legacy systems, SPS, Word, Excel, and Adobe Acrobat.” This is another demonstration of the fact that a single, end-to-end system does not exist for federal acquisition, even within a single department. In fact, the basis for the Navy’s public notice was that it was seeking a modular system rather than a “grand design” approach.

One illustration of the newly advocated modular or incremental methodology features various contract writing systems tapping into a “central clause logic service” (U.S. Department of Defense, 2011b). It is argued that this is more efficient than having the separate systems continuing current practices which vary from use of a template approach for each contract type to system-developed rules which produce a customized collection of clauses for review by the contracting staff and inclusion in contracts. The underlying concept is to include clauses in contract documents automatically based on the regulatory instructions for clause usage and contract attributes. By removing the need for each contract writing system to create a clause inclusion feature, the argument is that this modular component of a contract writing system could be offered from a central service and in doing so produce economies of scale and greater consistency in contract terms.

The overarching goal for contracting automation is now expressed not in terms of a single, unified, and uniform system but an “interoperable and data-centric procurement environment” (U.S. Department of Defense, 2011c, p.1). Automation of the “procure to pay” process involves traceability from procurement request through
payment (U.S. Department of Defense 2009d, 2008b), rather than a unitary information, technology system. A position recently articulated by the Department of Defense is that “[a]ny CWS [contract writing system] must be able to function in this standardized environment as both a consumer and creator of standard data”. It is recognized that this includes both SAM and WAWF, because “transparency requires that the contract writing system be able to share data with the larger data environment to enable both visibility of actions by the public…and sharing of data across all parties involved in awarding and managing the contract” (U.S. Department of Defense, 2011d, pp. 6-7). The focus has now changed to the data produced by the system as much as the system itself.

What follows is a discussion of the most significant and commonly found attributes of contract writing systems in the U.S. government, along with a discussion of their larger implications.

CRITICAL FEATURES

MacManus (2002) inventoried a list of public procurement functions susceptible to automation, which now requires augmentation in order to capture the essence of contract writing at the U.S. federal level today. Building on this foundation, the following are some of the most important steps in the U.S. federal contract writing and administration process which any contract writing system must feature (though this is not necessarily an exhaustive list):

Procurement Requests (Submission and Tracking)

Contract writing systems as used in the U.S. federal government typically include a procurement request feature, which may be in the form of a separate module connected somehow to the contract writing system itself. Although it is universally known that the procurement request document is a source of critical data, only in 2010 did the Department of Defense acknowledge the need to introduce a Department-wide standard; until then each military agency had its own system (U.S. Department of Defense, 2010). Since funds for contracts are provided on procurement requests, they are of critical importance to finance offices as well as contracting personnel.
Preparing Solicitations

Two key aspects of the solicitation preparation process are completing required forms, in the proper structure/format, and including necessary provisions and clauses. One of the most important features of a contract writing system is selection of contract clauses and solicitation provisions. Although underlying regulations prescribe when to use FAR clauses and provisions, the wide variation in clause selection and interpretation by the contracting workforce has recently garnered management attention. As a result, it is now said that “developing an enterprise contract clause logic capability is critical to the future of contract writing” (U.S. Department of Defense, 2011b, p. 4).

Unique Numbering

Part of both the solicitation and contract award portion of a contract writing system is the ability automatically to assign solicitation and contract numbers with no duplication.

Amending Solicitations

Contract writing systems allow users to amend or revise solicitations once issued, with sequentially numbered amendments. As a minimum, the system must be able to produce mandatory, correctly numbered forms for the specific type of solicitation required.

Making Contract Awards

Naturally, a contract writing system must have the ability to generate an actual contract, including the capacity to obligate funds via interface with the agency’s automated financial system.

Preparing Contract Modifications

As with solicitation amendments, any successful contract writing system must have a feature allowing users with the proper authority to create modifications to contracts to reflect changed conditions, extend performance periods, and the like.

Post-award Reporting

In the U.S. government, each contract action other than micro-purchases using the government purchase card must be reported to
the Federal Procurement Data System (FPDS). Although, as recognized by the underlying regulations (Federal Acquisition Regulation 4.604(b)(2), 2012), a contract writing system may be integrated with the reporting system, typically this means only that the user is connected by the contract writing system to the FPDS website, and needed data is entered manually by the user in the reporting system, because the contract writing system does not capture all required data on its own.

In addition to automation of these steps in the contracting process, other aspects of public procurement are within the scope of a contract writing system, as follows:

**Financial Interface**

It has been said that public procurement automation projects typically have broader reach and greater scope than traditional IT development projects (Vaidya, Callender & Sajeev, 2009). This is evident in public contracting when an interface with the agency’s financial system is made. As noted above, this normally would only be needed during the funding commitment process (at time of preparation of a procurement request), at the time the contract is signed (when funds are obligated on the award document), and for invoice payment purposes (the contract writing system provides access to awards and records of payments).

**Document Storage**

As noted by the National Aeronautics and Space Administration (2011) in a recent public “sources sought” notice, storage of contract documents is a valuable feature of a contract writing system. A well-functioning system would provide the necessary audit trail to be able to explain how and why a given contract was awarded, as well as help to reduce the problem of lost or missing paper files. Proper automated storage of contracts also allows greater efficiency in payment of contractor invoices.

**Global Accessibility**

Contracting officers on travel or away from the office are able to log into a web-based contract writing system to award or administer contracts (a key attribute identified by U.S. Department of Defense, Business Transformation Office, 2009).
Post-award Monitoring

A contract writing system which stores indefinite delivery contracts or blanket purchase agreements could provide current information on usage to enable proper monitoring.

Workload Management

It is common for contract writing systems to allow assignment of procurement requests to contract specialists and produce reports on topics such as current assignments, status of actions, and timelines (procurement administrative lead-time).

The essence of a contract writing system is to generate a contract or modification and associated documents (the “writing” part of contracting). It can only step beyond this horizon and into “contracting” as a complete process if there are links within the contract writing system to the external components needed to consummate the transaction, or “offshoots” (U.S. Department of Defense, 2011d). As discussed earlier, public procurement requires interface with the public, so a closed system of contract writing will be insufficient, giving rise to the need for a system that features external links. An analogy can be drawn to the distinctions between Internet web site hosting/processing (SAM functions) versus web site content (contract writing). Each element is crucial, and a designer who considers only one side will not likely produce a successful system.

LIMITATIONS AND IMPLICATIONS

A fallacy regarding contract writing systems is that they automate the entire contracting process. In reality, contract writing systems in the U.S. government do not encompass the entire range of activities involved in awarding and administering public contracts, as a consequence of the dual methodology discussed above, but instead these systems represent only a portion of the process.

Typical omissions, deliberate or otherwise, of a contract writing system itself include the following critical functions, which are part of the contracting process but typically are not, or arguably cannot by their very nature, be included in a contract writing system:

- Market research,
- Acquisition planning,
- Publicizing upcoming contracting opportunities,
- Submission and receipt of proposals,
- Negotiations with contractors,
- Source selection (choosing the winning contractor),
- Responding to bid protests, and
- Monitoring of contractor performance and appointment of Contracting Officer’s Representatives, and so on.

A more detailed explanation of these limitations follows.

**Market Research**

Market research must, of necessity, involve actions outside the contract writing system, such as performing Internet searches, meeting with prospective suppliers, attending trade shows, and so forth. A contracting writing system cannot provide this service, any more than an agency financial system can.

**Acquisition Planning**

In the case of acquisition planning, this is a management function not normally amenable to automation as a whole, although Barbieri and Zanoni (2005) argued that aggregation, control, and monitoring of requirements could be part of the automation of public procurement. Regrettably, current contract writing systems do not normally offer this capability.

**Public Notice**

The mechanics of contract drafting can be distinguished from the full contracting process itself in the following example: most public procurement offices post a public notice of upcoming contracting opportunities or copies of solicitation documents. While a contract writing system may assist with preparing either document, the public notice and posting itself will involve a separate transaction, which in the case of the U.S. government, means placing information on an external web site (currently, Federal Business Opportunities, www.fbo.gov).
Proposal Submission

Submission of proposals is done by a variety of methods, as currently the Department of Defense notes that “there is no common method” (U.S. Department of Defense, 2011d, p. 8). Federal contracting offices may receive proposals directly by email, via agency web sites, or on the Fedbizopps web site.

Contract Negotiations

Negotiations with offerors are handled generally by e-mail, not within a contract writing system, and face-to-face negotiations may still occur as they have in the past.

Source Selection

A recent analysis views the typical source selection process as follows: the contracting office evaluates proposals received; checks SAM databases like CCR, PPIRS, EPLS, etc. for contractor qualification and eligibility/enforcement of prohibitions; and creates the contract (U.S. Department of Defense, 2011d). What is left out of the discussion is preparing specifications (including justifications for noncompetitive buys) and technical and price evaluations of proposals, neither of which are part of standard contract writing systems now in use.

Protests and Disputes/Claims

Contracting offices unfortunate enough to receive a bid protest for a contract award will find that the contracting writing system will not create a response to the protest, although hopefully it will contain the necessary documents related to the contract. Similarly, responding to a contractor dispute or claim after award is not something a contract writing system can do in and of itself, although its repository of historical documents relating to a contract will naturally be useful.

Performance Monitoring

After a contract is successfully awarded, the contract writing system will not itself monitor contractor performance, a domain reserved for interpersonal communications between buyer and seller. A separate web site (PPIRS and its components) for assessing post-
award performance has become mandatory, but is only used after the fact rather than for routine follow-up on delivery/performance, etc.

Awareness of these sorts of limitations in contract writing systems seems to be growing. For example, the U.S. Department of Defense (2009e) recognized the importance of tracking equipment warranties, which is a crucial data source not currently captured. There are larger issues at stake, as well; in its drive for greater administrative efficiencies, a federal contracting office must still be concerned about equity and fairness in its treatment of contractors (MacManus, 2002). A contract writing system cannot be expected to have much impact in this regard, as it does not directly control the communications between government and its suppliers or the actual choice of a contractor.

**PUBLIC PROCUREMENT AND PUBLIC FINANCE: THE GREAT DIVIDE?**

The divided nature of contracting automation is paralleled at another level by the procurement-finance duality in the U.S. government. As noted by Sternstein (2010), the regulations governing public procurement are separate and distinct from those controlling public financial management; the former are also considerably more voluminous, complex, and far-reaching. Operationally, the interface between finance and contracting offices is minimal in terms of the workload of a contracting office, occurring only briefly at submission of a funded procurement request, at time of contract award, and for invoice payment (a very small fraction of the critical features listed above). Stated another way, an agency financial system is not required for acquisition planning, preparing solicitations, issuing solicitations, conducting negotiations, drafting the contract, or distributing modifications, to name just a few major contracting milestones. Those reading the description of U.S. federal contracting above must be struck by how little the finance function is involved in daily contracting operations.

Integrating procurement and financial systems in the U.S. government seems to be considered a given, to be viewed uncritically, without question as a key priority for any agency, and the assumption that financial concerns should take priority is widespread (see, for example, U.S. General Services Administration, 2008 & CGI, 2012). The contents of Financial System Integration Office’s (FSIO) “Acquisition System Requirements Document” are telling in this
regard: they show a chart depicting a “wheel” in which finance is the “hub” and “acquisition” (contracting) is only one of fourteen “spokes”, creating the immediate impression that financial concerns take priority over and outweigh procurement matters in the information technology system world. The FSIO model seems at odds with the realities of contracting when in its list of system capabilities needed for contracting it focuses on only the following items: templates for solicitations, funds verification, receiving reports, and contract closeout checklist. Few public procurement professionals would consider this to be a complete, meaningful description of what they need for their daily work. Public procurement activities often begin before a funded procurement request is received, in the form of acquisition planning and market research, and work is over after contract closeout.

A financial document similar to FSIO’s but issued by the Department of Defense (2008b, p.6) lists the data required for financial visibility but has nothing at all from the steps “Create Purchase Requisition” to “Award”, even though this “gap” is where most contracting occurs. This situation is sometimes admitted by finance leaders, as the Joint Financial Management Improvement Project (2002) depicts the contracting process as it relates to finance and shows that only at two critical junctures (funds certification and invoice payment) must the two fields interact. A great deal of effort and money is being devoted to what, from a public procurement workload standpoint, can be regarded as only an ancillary matter, however important it may be. It is evident that the connection between procurement and finance only occurs infrequently, the touch points occupy a very small portion of the contracting process, and the vast majority of the work done by contracting staffs is neither a finance function nor part of the financial system. This is why the contract writing system on its own as an object of study and analysis merits greater attention.

A study by Croom and Brandon-Jones (2005) observed several years ago that the choice of financial system for a government agency universally determined the selection of an e-procurement system, and that procurement-finance integration was paramount in the decision. This situation has arisen despite the fact that the Chief Financial Officers Act (1990) speaks only to each agency having “an integrated agency accounting and financial management system” without
further specificity, as the law centers more on compliance with standards than promoting efficiency. One financial system found in the U.S. government identifies itself as a core financial system or common platform with an optional contract writing module within it which can stand alone or integrate with the financial system (CGI 2012; see also IT Dashboard 2012; U.S. Department of State 2012).

Falcone (2010) recently pointed out the key distinctions between the roles of contracting versus financial management staffs, which in turn demonstrates how little overlap there is between the two fields. This calls into question the wisdom of allowing finance considerations to dominate contracting needs, and may account for shortcomings in public procurement contract writing systems. For one Defense agency, it was admitted that limitations in the contract writing system could be attributed to the fact that “the financial management ERP [enterprise resource planning information technology system] was deployed in a vacuum from the contract writing function and financial policy could or would not be changed to support the end-to-end views” (U.S. Department of Defense, 2008a, p. 9). A common assumption is that a contract writing system can be simply a subset of an agency’s financial system without any detrimental implications for the contracting workforce, yet the complexity of the field of public contract writing makes it all the more essential that systems created for contract writing are not the province of financial managers and software developers or information technology specialists alone.

That procurement and finance each has a different model of the universe may help explain why the integration of procurement and finance systems has been problematic in the U.S. Federal government. Such integration is rarely reported as a success story, and the most favorable report is that “integration with the financial system proved achievable, but not necessarily optimal” (U.S. Department of Defense, 2008a, p. 9). The rationale for having the contract writing system integrated with the agency’s financial system is that “given proper system access and security profiles, a user who creates a requisition can see downstream transactions such as contracts, delivery orders, and invoicing” (U.S. Department of Defense, 2008a, p. 10). Customs and Border Protection offered the feature of allowing requesting offices to view a solicitation on-line as well as the pre-award milestones in the contract writing system. Still, a Department of Defense survey reported that “[n]one of the [eight]
agencies interviewed have yet implemented contract writing functionality within their ERP applications because the ERPs do not sufficiently support Federal or Defense procurement requirements” and “ERP application support for contract writing was found to be lacking” (U.S. Department of Defense, 2008a, p.4).

As a result of the procurement-finance dichotomy, some federal agencies have purchased contract writing systems separately and then built a connection to the financial system where needed. In cases where a purchasing module within the financial system has been adopted, results have been mixed (see Wifcon, 2012). The frequently found precedence given to finance at the expense of procurement may explain at least in part why some contract writing systems have been so roundly criticized by their users as being the “stepchildren” of agency financial systems and thus pose operational difficulties for users.

COGNITIVE ASPECTS OF CONTRACT WRITING

Contract writing systems are not a “black box” solution into which a procurement request is submitted and a contract comes out the other end, untouched by human hands. At its essence, a contract writing system has two elements: the computer system and the human who operates it. It has justifiably been observed that greater attention needs to be paid to human factors in public procurement and that these are more important than technological factors in the success of contracting automation, because technology alone is not enough (Vaidya, Callender & Sajeev, 2009; Leipold, Klemow, Holloway & Vaidya, 2004). The size and scope of contract writing systems can also be viewed in terms of the numbers of humans who use them. The system deployed by the National Aeronautics and Space Administration (2011) alone has approximately one thousand users, even though it is a small agency. In the Department of Defense, for example, the number has recently been estimated at 25,000 users (U.S. Department of Defense, 2011b). The U.S. government-wide figure must be many-fold larger.

Many years ago, Webb (1985) posed the question of whether contracting officers needed to become computer programmers to improve public procurement. This concern has not diminished over time, as implementation of contract writing systems has become universal across the U.S. government. Recently, Edwards (2009)
noted that “as tools become more complex they themselves become objects of attention and drive process design.” He describes how the thinking involved in determining which specific actions (keystrokes, mouse clicks, computer techniques, and workarounds, etc.) are required to create a contract modification in a contract writing system diverts the focus of contracting staffs from consideration of the content and substance of the modification itself. In other words, a contract modification may appear a certain way not because of its subject matter, content, or intrinsic nature, but due to the fact that the contract writing system producing it only allows certain features or characteristics. It seems that software is not being adapted to fit human needs, but the opposite. To illustrate this point, it has been reported that “agencies...were willing to reasonably adapt their business around the provided functionality” of commercial software (U.S. Department of Defense, 2008a, p. 8). In contrast, recent blog postings from those involved in U.S. federal acquisition include comments such as “you must ‘fight’ the system in order to get your action right” (Wifcon, 2012).

Edwards’ concern is echoed by Ward (2012, p. 51), who reminds us of the dangers inherent in stressing process rather than results and the importance of having “a dependable gut-feel on how to get things done”. Without reaching too far into a discussion of the long-lamented problem of the aging or “legacy” federal acquisition workforce in the U.S. (see, for example, the analyses with similar conclusions, separated by a decade, in Gill 2001; Thai 2001; and Weigelt 2011b) and the general issue of cognitive decline in humans over time (Daviglus et al., 2010), a vital advantage of a sound contract writing system would be to prompt or remind acquisition personnel of specific actions required at various steps in the contracting process. Forgetfulness can be a valid explanation of failures to follow regulations in a highly regulated endeavor like contracting where the volume of regulations is considerable. The large number of required steps or actions in rule-bound federal contracting has long been a cause for criticism of the U.S. government’s process, and until that changes, automated reminders (such as e-mail alerts or pop-up notices within the contract writing system) will be beneficial. For example, a contract with renewal options requires both the requiring office and the contracting office to produce documents needed to execute the required contract extension before the contract expires, so a contract writing system
that does not prompt these offices automatically before renewal time will be of less utility than a system offering such capability.

The mandate to automate at times downplays the importance of human judgment. For example, one financial system project office states that agencies “may apply sound business judgment to the use of a compliant acquisition system” (U.S. General Services Administration, 2008, p. 1), as if this were a gift begrudgingly given. Further, this same source (at p. 4) provides the following as a means of describing the intent of automation in procurement: “For example, if a requirement states ‘update the contract file,’ the system is expected to capture and edit specified data and update all necessary internal database records without human intervention.” Apart from the fact that humans (public procurement practitioners), not systems, update contract files, the quoted declaration reveals an all too dismissive view of the human factors involved in public procurement.

Similarly, under the Department of Defense’s newly proposed contract clause logic system, it is stated that “there will remain some amount of discretionary decision-making on the part of the contracting specialist as to which optional clauses should be included” in a contract (U.S. Department of Defense, 2011b, p. 7). The remainder of the (regulatorily mandated) clauses are to be selected by machine rather than man, even though it is admitted that at least some interpretation is required for any given clause. While clearly there are advantages to having a central service provide the clauses needed by contracting staffs, if they are accurate and constantly updated to reflect regulatory changes, the clause selection process at the contract level still possesses subjective elements which even systems advocates are compelled to realize. Also, only humans can determine the meta-level rules by which the central clause service “bank” of clauses is created in the first place, or “manual intervention to ensure proper interpretation of business rules” (U.S. Department of Defense, 2011b, p. 8).

A contract writing system that fails to address the cognitive aspects and human factors involved in federal acquisition is bound to be criticized for its lack of usefulness. A contract writing system which users recognize in appearance and functionality as familiar to contracting as it is practiced will clearly be more suitable than one designed for financial purposes. As an example, one contract writing system which is only a component of an agency’s financial system
(CGI, 2012) has a human interface for drafting solicitations requiring the user to select “Transactions, Acquisitions, New, Solicitation” rather than simply “Prepare Solicitation”, even though the latter requires less effort (one fourth the number of mouse clicks) and would be more recognizable to a contract specialist. For amendments or modifications, the same system steps are even more labor-intensive (“Transactions, Form/Document Selection, [enter solicitation or contract number], Search, Amend” instead of just “Amend Solicitation” or “Modify Contract”).

In addition, the high cost of contract writing systems is an ongoing concern. For example, the U.S. Department of the Treasury (2011), a relatively small agency, recently announced a contract award for a nearly US$90 million system. Croom and Brandon-Jones (2005) found that process cost reductions due to automation in public procurement have been hard to identify. This concern is echoed by a Department of Defense study of eight federal contracting agencies which found that “interviewees could not readily quantify cost savings and performance improvements from implementing contract writing [system] solutions, though most felt some had been achieved” (U.S. Department of Defense, 2008ba, p. 15). Surely the question will continue to be asked as to why, in an era of tight budgets, contracting offices should pay for a system that only incompletely assists working-level contracting personnel in effectively creating and managing contracts.

**CONCLUSION**

The divided nature of contract writing systems has become a significant attribute of contemporary public procurement. It is apparent that current approaches to contract writing, at least in the U.S. Federal government, feature a dual methodology in which contract writing systems do not encompass the full range of contracting activities but must rely on external systems as well to complete a given contract. A second source of division in contracting automation occurs between the separate domains of procurement and finance. The intersection between public procurement and public finance, however significant, is small at the operational level in public procurement. Most contract writing activities do not involve agency financial systems by nature, but may of necessity involve them when the contract writing system is a subset of the financial
system. Recognition of the divergence of views between procurement and finance, and the fact that most of the time in an operational contracting office the two domains do not intersect, is crucial to making future contract writing systems effective across both disciplines and not favor finance at the expense of procurement.

It is believed that most members of the “legacy” workforce would admit that current contract writing systems are an improvement over the work environment in 1980 described above, at least in terms of the time and manual processes required to award contracts. No longer must a contracting officer wait for the typing pool or the regular mail system to work toward a timely contract award. Nevertheless, implementation of contract writing systems has brought its own set of problems, such as the human and technological complexities involved in having to navigate both a contract writing system and SAM for nearly any buy. Further data collection and analysis would be useful regarding the costs and benefits (monetary and human) of contract writing systems. Certainly labor costs could be compared and studied under alternative systems. Future research might profitably explore in more detail the human factors involved in contract writing systems. Likewise, software developers would benefit from considering the actual steps taken to create real contracts as part of the automation process. Even a time and motion study of contract writing systems could be beneficial, given their direct impact on how contracts appear.

Of even broader concern is that other authors have questioned whether greater capacity in a contracting office really does lead to better performance (Yang, Hsieh & Li, 2009). It has been observed that focusing on a process will not automatically improve the outcome (Ward, 2012), which could lead practitioners and policymakers alike to question whether the benefit-cost ratio for a given contract writing system is appropriate. Further analysis would do well to examine all of these concerns, if making contract writing systems serve the greater good of improving public procurement is a priority.

REFERENCES


