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Table 1. Requirements Definition. First two columns from Ferguson and de Riso (1994)

Requirements Definition		
Best commercial practice	**Current DoD practice**	**Further insights**
Requirements based on strategic plan and market analysis	Requirements based on using command Mission Need statement	Requirements meliorated by skills/ offerings in the network
Requirements based on life-cycle resource constraints	Requirements based largely on annual budget resource constraints	Financing of systems differs across the options. ASPs are likely to be from the revenue budget and predictable. In-house developments are usually from the capital investment budget and, at the current state of the art, not predicted well.
Detailed requirements generated by interdisciplinary team including users, domain experts and systems engineers	Detailed requirements generated by buyer in collaboration with user. Team generally includes domain experts and acquisition personnel	The customer sets broad requirements. Detailed requirements generated by contractors best fitted to deal with them (*ab initio* or based on an existing system).
Functional specification is modified by knowledge of availability of existing products	Functional and/ or performance specification; little to no regard for existing products	Functional and non-functional requirements modified by knowledge of available skills, incl. those embodied in existing e.g. COTS/ ASP products
Vendors involved early in study, analysis and prototyping with emphasis on reuse and evolution of existing systems	May contract for prototypes but contractor involvement in pre-award discussion is discouraged	Distribution of core competences and hence the timely distribution of information and knowledge is a major strategic issue
Level of documentation is negotiable based on individual user needs and complexity of system being developed	Extensive (often redundant or unnecessary) documentation required under 2167A. Tailoring of documentation requirements is often minimal or discouraged	Level of documentation negotiable but may rise because of inter-organisational information needs (i.e. there is a cost of co-ordination)
More requirements trade-off decisions (involving complexity and schedule) for reduced time to field	Very little flexibility to trade off requirements creep versus complexity and schedule	Likely to exaggerate initial evolutionary change, but could pay off in terms of a more acceptable product later on.
Tools used to create system models for use in requirements definition e.g.GUI building	Requirements definition based on Mission Need statement	Need tools that will work across organisations, i.e. cultural, organisational and technical fit

Table 2 Vendor selection. First two columns from Ferguson and de Riso (1994)

Vendor selection		
Best commercial practice	**Current DoD practice**	**Further insights**
Solicit multiple (but not all) qualified vendors. Encourage teaming with a view to obtaining a relationship that covers the entire lifecycle and fosters trade-offs in cost and schedule	Solicit all possible vendors. Vendor proposals must meet 100% of requirements. Teaming seldom encouraged: development and maintenance usually separate entities	If integrated product architecture, look for close proximity: organisational, cultural, and electronic. If modular product architecture, and in-house integration, and high degree of standardisation, then proximity of the supply chain possibly matters less. Do not outsource your core competencies.
Compare vendor history and experience. Maintain long-term relationships	Can compare previous performance but normally can't have long-term relationships	Compare vendor history, experience and stability. Maintain a portfolio of types of relationship - spot for one-offs, or highly standardised components
The organisation that will be responsible for a system over its full life cycle is heavily involved from the beginning	Maintenance organisation not usually involved in vendor selection process	In a community of creation there needs to be a central organising body [26]
Use site visits and demonstrations to gain knowledge of vendor capabilities	Site visits only by capability evaluation team, or other expert teams. Visits are very structured	-
Overall goals: (1) obtain product at reasonable cost as soon as possible; and (2) achieve the business case for the system	Overall goal: obtain lowest cost product that rigorously meets all requirement , but be fair	Overall goals: obtain product in competitively driven time and cost; garner the strategic and operational benefits; maximise organisational learning for next time. Make sure your suppliers learn, but that they are not through lack of foresight on your part in a position to take over your core competencies.
Relatively few review and approval steps once vendor is selected	Review and approval process more structured and complex once vendor is selected	-
Past performance weighted heavily (sometimes primary factor) in selection process	Past performance considered, but usually only as a minor factor	Past performance heavily weighted, but network flexibility is also an issue. The critical issue is organisational knowledge.

Table 3. The development process. First two columns from Ferguson and de Riso (1994)

Development process		
Best Commercial practice	**Current DoD practice**	**Further insights**
Vendor often tailors existing systems and uses COTS. System designed to fit in a defined architecture or product line	Varies with application. Some systems use COTS. However, usually a new system that doesn't reuse legacy software. Unique systems are built with little regard for architecture	Ability to fit in existing architectures is a crucial criterion for vendor selection. Architecture design is critical phase in product design. Focal firm must get agreement on, and take ownership of architecture
Buyer may have heavy involvement in design and development as part of the team (integrated Product Development team)	Formal, structured spiral or waterfall model. Buyer oversees, but team approach is not usually emphasised.	With 3-D concurrent design involvement can be planned into the process, to make use of skills across the chain
Reviews typically informal and stress progress against goals	Reviews usually very formal and include technical design details in addition to progress metrics	Use continuous, triggered, review system, like COLA, starting early in the requirements phase [22]
Heavy user involvement	Limited user involvement. Heavy buyer involvement	Considered stakeholder involvement
Vendor embraces one or more industry standards which improves interface with COTS products	Government and industry standards called out. Not all government standards enhanced by COTS products	Technical compatibility is a criterion for vendor selection
Buyer requirements may be translated to more "general purpose" requirements for potential software reuse	Tailored system: little, if any, focus on designing reusable code	-
Management reviews and degree of oversight are commensurate with size and risk of program	Notably more detailed reviews and oversight performed	Degree of oversight required is a function of trust? A criteria for selection?
Prototyping common, with joint applications development teams (user and developer) working to clarify requirements and incorporate new requirements that do not affect cost or schedule	Prototyping seldom used but becoming more popular	-
		Decompose architecture, requirements and processes eg V&V, SI, into blocks. Identify interactions between blocks
		Establish competences required for each block of work, for maintaining coherence between them, and for system integration. And deployment and maintenance.
		Establish potential supplier pool
		Map competences onto suppliers as in Section 4

Table 4 Business Practices. First two columns from Ferguson and de Riso (1994)

Business Practices		
Best Commercial practice	**Current DoD practice**	**Further insights**
Informal contracting, joint ventures, partnerships with mutual economic benefit and vested interest in success	Formal contract with little incentive to reduce cost	Choosing the right forms of relationship is crucial to success.
Oversight built on established relationships	Burdensome cost accounting procedures required; extensive oversight, reporting and documentation requirements	Governance is an issue. Ideally the governance mechanism is adapted to get the most from a business relationship
Can hire and fire vendors and managers	Government personnel regulations, policies and practices determine qualifications of its managers, rotations of assignment and training	Project may not be a one off. Advantages of including or excluding one or more vendors must be seen in the light of totality of relationships
Multi-year effort and funding	Multi-year effort. Yearly, unpredictable funding	-