

AGLPM5 – Unit 5 - ACTIVITY 2: OBSERVE

Challenges with Project Procurement and Contracts

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Traditional Procurement and Contracts

Agile projects rely on decisions based on mutual trust. They are therefore well suited to in-house projects. But the faith they ask customers to have in service providers makes them ill-suited for external developments. ¹

Alistair Maughan
Partner, Morrison Foerster

Governments have successfully set up and managed their own agile projects. In Part I we saw how the State of Queensland, Australia implemented housing application and referral processes using their own employees. I related how the FBI turned around the failing Sentinel project by taking the project back under their own control, and employing specialist contractors directly where needed. The GDS in London built the beta.gov technology using a similar approach.

However, when the technology used is of a very advanced nature or where the project is a one-off that needs a very large number of development staff, and quickly, then procurement of a solution under supplier management would be an attractive option – if it can be made to work.

This chapter looks at traditional procurement and contracts, and examines the barrier to the agile approach that they present. This barrier has three major facets:

- ◆ Lack of incentives to ‘play the game’ for mutual long-term benefit past the end of the immediate contract
- ◆ Legislation, especially in the European Union, that forces ‘open competition’ based on BDUF requirement specifications
- ◆ Lack of clarity over what an adequate ‘agile contract’ looks like.

Solving these three problems will be an area of major research in the field of agile project management over the next decade as governments struggle to find the optimal approach for engaging with third party suppliers for complex technology developments.

Game Playing in Contractual Relationships

In 2008, the Federal Communications Commission (FCC) auctioned off 1,099 licenses to telecommunications organizations for use of the 700MHz radio bandwidth across the USA. The FCC predicted vast economic benefits from a smooth take-up of new Fourth Generation (4G) services. It was a complex auction. The 4G radio bandwidth had become available for other uses

after the transition from analogue to digital television. This was a much sought after range of radio frequencies. It has much better properties than Third Generation (3G) cellular mobile phone frequencies because its radio waves can penetrate buildings and walls easily and cover larger geographic areas. The value at stake in the 2008 auction was huge. Preparations for the auction were complex, and the final bidding process took place over a two-month period during which bidders could see the bids of others, and raise their bids accordingly. In the event, the auction successfully raised over \$18.9bn.²

This was in stark contrast to the failure of one of the first radio frequency auctions, which was held in New Zealand in 1990. The government there was embarrassed when the sale went badly wrong. In one case a license was sold for only NZ\$5,000 when the winning company had been willing to bid up to NZ\$7m. The auction only raised NZ\$36m overall, rather than the NZ\$250m that the government had expected. The problem was that the bidders had been required to submit the entirety of their bids simultaneously. Bidders did not know how many lots they would actually end up having to pay for, and so they made conservative bids, and only on selected lots. The lack of competition for one license allowed the successful bidder to buy it for only six dollars.³

Getting to a fair price

In economics, there is a theory that in a perfect market with perfect competition, then supply and demand will balance and converge on the *market price*. This is called the '*Law of One Price*'.

If, then, a government buyer commoditizes the supply of services as much as possible, and involves as many bidders in an open procurement as possible, will the Law of One Price be assured? Unfortunately, not often.

Bulow, Levin, and Milgrom have described how they used advanced game theory to help one company to underbid the incumbent operators of advanced wireless licenses by an average of 33.8%. As a result, SpectrumCo became the second largest license holder overnight. It underpaid for its licenses by an astonishing \$1.1bn.⁴

Over-stressful tendering can create two major problems for suppliers. First, suppliers are wary of exposure to overbidding. Problems occur because bidders would like to supply complementary services but do not want to bid high on one unless they know whether they have won another related service. Resource constraints also constrain suppliers from bidding on too many lots, and often they end up under spending. Expensive internal resources set up and ready to start work can be left unutilized if bids on several lots fall through.

What can make a procurement agile?

You can make sure that the outcome of a procurement is agile by applying the same 12 principles to the workings of the relationship with the supplier as you would to those with the project stakeholders. Especially important is point four in the Agile Manifesto:

“We value customer collaboration over contract negotiation.”⁵

With the waterfall approach, procurements often end up with the buyer, the supplier, or both

regretting having entered into a contract in the first place. Agile procurements aim to find the sweet spot where both sides win.

Figure 1 shows the outcomes in four quadrants of combinations of *win* and *fail* for the two sides in procurement. The worst situations are typified by procurements where the process itself does not result in a contract. The project is then stalled without a supplier, with no sight of any of the expected benefits happening any time soon. The suppliers who bid have wasted their time and resources supplying proposals that are not accepted by the client. Even worse, procurement may result in a bad contract being drawn up that results in a painful project – painful for the buyer because the outputs are often not what were required, or that the outputs are so expensive that they are greater than the resultant benefits. In the worst case, expensive litigation can ensue.

A case in point is the UK Firecontrol project previously cited. The main contract to supply the Firecontrol system started late and took two years longer than expected to complete. The relationships in the project between the IT supplier, EADS, and the government were painful to say the least. The Government and EADS failed to provide timely information to each other. A lack of interim milestones undermined the Department's ability to hold EADS to account for delivery and conversely the delays to delivery led to cash flow difficulties for EADS which created further strains in an already tense relationship. Both sides were locked into the deadly embrace of a non-agile contract. The Government took legal advice and found out that it was unable to terminate its contract with EADS without incurring substantial compensation payments provided for under the contract. And EADS in turn was unable to deliver against a final key milestone for mid-2011. In the end, the contract was terminated and the government received a settlement of £22.5m from EADS – little cheer considering that £469m was eventually written off.⁶

The disadvantages to the buyer of being in the *fail/win* quadrant are clear. This is where an un-economic price is agreed, changes (during build and maintenance) are difficult to implement and expensive when they are. It may seem that the supplier should be happy with this result, but there is often a sting in the tail for the supplier.

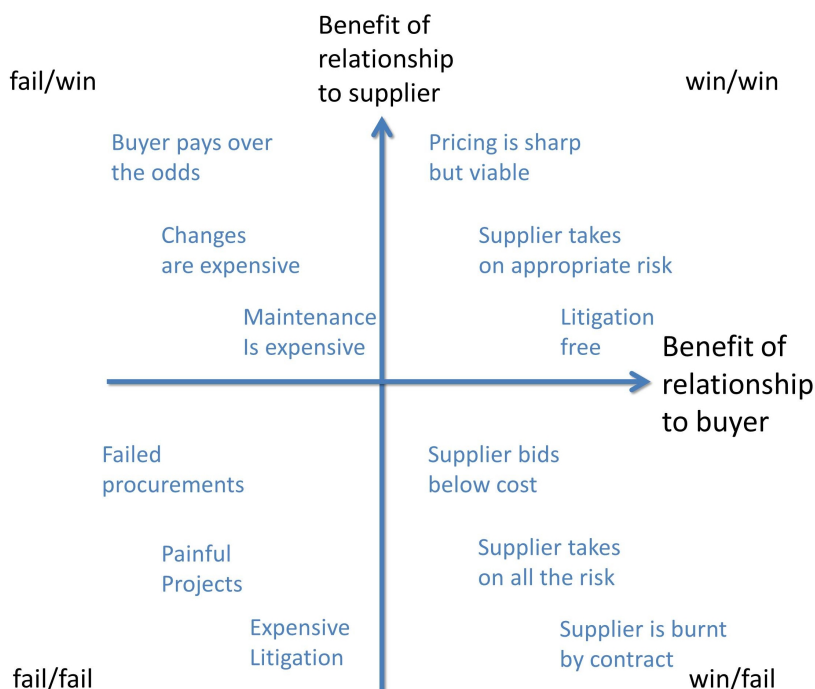


Figure 1: Getting to a *win/win* situation in agile procurements

The next time that there is a procurement, the buyer is wiser, or at least thinks so. Tables are then turned – a *win/fail* may occur where a supplier is browbeaten into submitting a bid at a suicidal level. The supplier may take on risks that it cannot control and may end up losing substantial sums of money. These situations can seesaw back and forth from procurement to procurement, with the buyer or the supplier in turn being burnt on each subsequent contract.

An agile procurement will result in a much higher probability of a *win/win* outcome. The pricing of the accepted proposal should be realistic and allow the project to be run in a co-operative manner. Each side can concentrate on the risks that they can reasonably be expected to control, and the supplier has the flow of money needed to fund the work. Both sides can demonstrate to their own stakeholders the benefits of entering into the deal.

In the next section I will return to the lessons that can be learned from game theory so that you can achieve these *win/win* outcomes. There are two levels at which game theory helps. First, I will consider the game playing within the confines of the procurement, and second I will consider the effects of future (and prior) procurements on the procurement in hand.

Why Public Procurement in the EU is not Agile

with Susan Atkinson

The European Union (EU) was originally founded as a Common Market to encourage trading and economic activity between the member states by reducing and eliminating trade tariffs. By the mid-1980s considerable progress towards achieving these aims in procurement had been made in the private sector, but the public sector was lagging far behind. The results of a survey

conducted in 1985 in five member states (Belgium, France, Germany, Italy and the UK) showed that whilst the import penetration rates for the economies as a whole was 22%, the comparable figure for the public sector was just 2%.⁷

The public procurement policy and practice of the member states was identified as a significant obstacle to the free movement of goods and services in the EU. Public sector bodies tended to favor national suppliers at the expense of foreign suppliers, thereby sheltering markets from competition and distorting trade patterns. This finding led to the body of EU public procurement law which today governs the procurement by all EU public sector bodies of goods, works and services. There are three sources of EU public procurement law: procedure, principles and case law.

The EU public procurement directives set out the legal framework for public procurement. Member states are mandated to implement these directives into their national law. Broadly speaking, the public procurement directives set out four different award procedures: open, restricted, negotiated and competitive dialogue. Any public sector body must follow one of these procedures when procuring goods, services or works, subject to certain limited exceptions. Each of the procedures is based on the following key stages: advertisement, pre-qualification (except for the open procedure), invitation to tender/dialogue/negotiation, dialogue or negotiation (competitive dialogue and negotiated procedures only), submission of bids, evaluation, award decision, standstill, and finally completion of contract.

In addition, a number of cases decided upon by the Court of Justice of the EU (the CJEU) in the 1990s retrofitted various procurement principles that it ruled were implicit in the public procurement directives current at that time.

These include the principles of equal treatment, non-discrimination, mutual recognition of standards, transparency, and proportionality. Public sector bodies must follow these principles regardless of whether the EU procurement directives apply. The most recent versions of the procurement directives each now emphasize that “contracting entities shall treat economic operators equally and non-discriminatory and shall act in a transparent way.”⁸

Then there is the growing body of case law. The CJEU takes into account EU Treaty principles to a significant degree when considering novel cases. In the last five years, the CJEU decisions have provided the most restrictive and legalistic source of EU procurement law.

There is now quite a minefield of legislation, regulation, principles and case law that any public sector body must navigate when embarking upon a procurement. It is certainly a challenge to be agile within this kind of environment.

First, the procurement process takes an inordinate amount of time. When the Institute for Government compiled the report “System Error – Fixing the flaws in Government IT”, it found that IT procurements take an average of 77 weeks, and so “most large projects are ‘late’ before they have even started”.⁹ The costs and resources involved in any public sector body embarking on such a procedure, not to mention the costs and resources incurred by potential bidders (who may walk away empty-handed), means that these procedures in themselves create a barrier to any new project. Broadly speaking, services contracts for any project worth more than €125,000 must be awarded following a public procurement. At the lower end of the project size, the cost of the public sector body conducting the procedure, or a bidder taking part in the procedure, represents a significant part of the overall cost of the project.

Secondly, there is the problem with the procedure itself. For complex service contracts, such

as IT change initiatives involving software development, the competitive dialogue procedure is generally regarded as the most appropriate procedure. However, under the competitive dialogue procedure the bidders cannot submit their best and final offer until the dialogue stage has been completed. The legal test for closing dialogue is when the public sector body can "identify one or more solutions ... capable of meeting its needs".¹⁰ In practice, this means that the contract should be ready to be signed and that supplier should be ready to start implementing the high level design the day after contract signature. This has been interpreted as meaning that every aspect of the proposed solution should be specified in sufficient detail for the supplier to be able to deliver it and – in many cases – to give a fixed price for it.

Furthermore, in a recent case it was held that if a public sector body subsequently makes any material modification to the selected solution, this may amount to the creation of a new contract which needs to be re-tendered. The decision in this case has served to increase the pressure on public sector bodies to specify in minute detail every aspect of the solution before completing the dialogue stage.¹¹

Agile Procurement

An influential paper from Emergn puts the suppliers' point of view as a response to the UK Government IT Strategy that stresses agility and involvement of Small/Medium Enterprises (SMEs). It found that many procurement staff regard feedback as "bad in that it creates opportunities for change leading to variation in the work requested from the supplier."¹² The paper proposes that procurement should be involved from the very beginning of a relationship. Procurement experts must not treat technology development as a commodity service. Large project procurements often fail because of inflexible use of standard forms and contracts. This, Emergn argues, slows the agility of both suppliers and customers. They propose that cultural fit should take precedence over date and price, and that commitment to specifics should wait until the project has progressed so that both customer and supplier can commit together once enough has been researched.¹³ Experts in buying and negotiation are too distant from the technology experts they argue, and those experts are conversely so intimate with the requirements that they overlook the importance of the "commercial realities of the contract". When the contract is signed, relationships between procurement, technology staff and supplier must be maintained, they say, to drive collaborative program delivery.¹⁴

The solution is to encourage more *hybrid managers* rather than specialist roles, such as "Procurement Manager" or "Vendor Manager". Hybrid managers will need a combination of procurement and technical skills to create an "end-to-end value chain". They conclude:

"If an organization is looking to apply increased agility in its IT development programs, the time has come for managerial skills to be integrated in the creation of a new breed of procurement executive encompassing both sourcing and supplier management expertise."¹⁵

The evolutionary acquisition strategy and associated DOD-5000 life cycle pursued over the last decade has only a weak associated procurement process. The Australian Department of Defence (AU DOD) adopted these standards for its own acquisitions, but then found that the competitive tendering and contracting process simply replicated and reinforced waterfall approaches. It was a

12-step process from contract planning through to post-project performance management. Each step could only commence when the previous step was completed. Budgets for each project were estimated at an early stage when only the broad scope was determined, being thereafter very inflexible to the discovery of the detail of the requirements.¹⁶ Conflict often occurred between the government and the suppliers as contract managers moved in and out of roles. New contract managers often had little or no knowledge of the requirements of the project, and often worked for a different unit of the organization than the unit that managed the initial contract award.¹⁷

Diane Jamieson has analyzed the disconnect between procurement and the Agile process, and found that:

"Key (Agile) ideas are not consistently embraced by procurers, viz: Anticipate and manage for change (principle 2); Continually review business needs (principle 10); Have reasonable work expectations of both customer and supplier personnel (principles 5, 8); Embrace interim deliveries (principles 1, 3, 7) Have suitable communications channels (principles 4, 6); and Maintain positive relationships with suppliers (principles 2, 4, 5, 6, 12). The next challenge is to link these principles to an appropriate procurement methodology."¹⁸

Jamieson proposes an agile procurement process where budgets are estimated incrementally as scope is incrementally explored. This should result in smaller variances from budgets, she argues, and improved customer supplier relationships. Each supplier would guarantee the delivery dates of iterations, and given a fixed number of people and reasonable certainty of overhead costs. A price would be set at the beginning of each iteration when the backlog for that iteration was agreed. Calibration of the team's performance in terms of *velocity* of output would take place, and the total number of iterations required would be estimable. This would give flexibility to descope any items that would not produce a net benefit for the agreed estimates.¹⁹

As a success story to highlight the advantages of agile procurements, Jamieson cites the ongoing enhancement of the Joint Command Support System (JCSS) by ADI, an Australian software supplier.

Elements of adaptive budgeting and iterative development (although ADI makes no claim to use a specific agile method) are used to keep budgets on track. The JCSS project has been delivered in seven phases at a total cost of \$58m.²⁰

The ADI team maintains a *product backlog* of required enhancements. At the start of each year this is matched to a fixed budget allocated by the Australian DOD.²¹ Each year, the AU DOD makes two deployments, each resulting from a series of short iterations, each typically less than a month long. The graphs of actual spend versus budget show low levels of variance against budget. Many of the deployments are made at a lower cost than budgeted, and the average annual cost has stayed comfortably within allocated budgets.²²

An extension of this idea of incremental budgeting is the concept of *Agile Commitment Management*. Mauricio Concha defines a more sophisticated framework to complement an agile approach with the accounting concept of *commitment management*. The aim is to provide cost control and risk visibility, and a clear basis for contract collaboration between customer and supplier.²³ This is an extension to the principle of *Commitment Accounting*, where any rolling contract to purchase goods or services must be accounted for on the basis that a firm order is implied for at least as long as the contract termination notice period. Commitment Management is an approach to planning and controlling the buyer's commitment to purchase future services

based on a rolling framework agreements. It uses the commitment between the buyer and the supplier to the product backlog as the basis for identifying commitments at the start of every iteration. A major benefit, Concha says, is in:²⁴

“Achieving continuous risk visibility during the project by ... measuring risk in terms of qualitative metrics, as well as potential losses incurred if a business value goal is not met.”

These risks are:

- ◆ **Current Risk:** as perceived at the moment of the measure. Because risks are future events that may, or may not occur. Since the scale of the impact cannot be fully known until it occurs, if it occurs at all, this is a subjective assessment using perceived probability of occurrence and perceived likely impact
- ◆ **Risk Mitigated:** The cost of putting in place countermeasures to the risks of failure
- ◆ **Post Project Assessment of Risk Management:** A comparison of the initial business risks, mitigation costs, costs of putting into action contingency plans, and the cost of risk that did occur.²⁵

An Argument Against the Role of Agile in Government

Alistair Maughan has queried whether agile contracts will work for government. His argument is based on four major propositions:

- ◆ **Certainty of price seems to require a BDUF.** A clear specification of outputs is required up-front, he says, to know how much a specified system will cost to build before committing funds. Agile projects provide an alternative model that fixes a budget, but does not fix the specification. Maughan argues that government bodies will not accept what seem like open-ended arrangements.
- ◆ **Agile projects do not appear to be open or transparent.** Procurement requires a comparison of different bidders on a like-for-like basis. Traditional procurements compare BDUF specifications rather than suppliers (as noted earlier in this section). In deciding on best value for money, it uses this input as a proxy for real-world comparison of likely outcomes. Maughan argues that because agile does not give a specification of outputs up-front it cannot give a definitive up-front price.
- ◆ **The agile approach seems to offer insufficient means of remedy if things go wrong:**

“This is a particularly sensitive issue for government, where departments suffer public opprobrium if their project isn't a resounding success. The press, the National Audit Office, and the Public Accounts committee (PAC) will give government a kicking if they cannot make suppliers pay for the damage they caused. Agile makes it hard to apportion blame because the customer is intimately involved in the work. Since agile contracts lack clear contractual delivery obligations or remedies, how do you enforce it properly? How do you recover loss or damage if there's a problem?”²⁶
- ◆ **Agile appears to be a poor fit to government:** Maughan argues that agile decision-making

cannot work in centralized organizations such as governments:

“You can have an IT project with a watertight contract, and detailed deliverables and appropriate remedies. Or you can have an agile project. You can't have both.”²⁷

The Counter-Argument

Susan Atkinson responds to Alistair Maughan's argument above point by point as follows.²⁸

- ◆ **Certainty of price does not require a BDUF.** Certainty of price for a fixed specification is the wrong area of focus, she points out.

“BDUF is one of the most damaging aspects of the traditional contract on software development projects. There is an assumption that if a supplier meets a BDUF specification, then the customer will achieve the desired business value from the resulting solution. However, there is often little connection between delivering against a BDUF specification, and delivering the desired business value to the customer. One of the biggest risks of software development is that the supplier builds the 'wrong product'.”

- ◆ **Agile projects can be open and transparent.** Transparent and non-discriminatory criteria can be used to initiate supply of agile development services, Atkinson argues. Because public sector bodies are not achieving certainty of pricing at present, she says, they should be looking at new ways of assessing bids. Software development involves the transformation of ideas into a product. Public sector bodies should instead be looking for the supplier that is most able to understand their needs and to create a solution that delivers the most value to the public sector body by addressing those needs.

- ◆ **The agile approach can offer means of remedy if things go wrong:** The dynamics in an agile project are quite different from those in a traditional project. This means that the remedies may be different, but no less rigorous. The reason why so many contractual remedies are required in a traditional contract is that the customer's exposure in terms of upfront investment is enormous. She continues:

“The customer may have invested months and possibly years of resources before the supplier delivers anything of any tangible value. Clearly, if the product is suboptimal for any reason the customer needs some form of redress to recover this wasted investment. However, in an agile project the supplier delivers something of tangible value at the end of each iteration. The exposure of customer is therefore much smaller, and the need for contractual recourse is accordingly reduced.”

- ◆ **Government can make the agile approach work:** Whilst trust is one of the core values of the agile approach, Atkinson says that this does not imply a naïve approach should be taken to commercial matters. One of the real benefits of the agile approach is that it provides a transparent development process where the customer has much greater visibility of whether the project is on track or not. Atkinson concludes:

“Maughan refers to centralized decision-making in government. However, governments are now realizing that the world is too interconnected, complex and dynamic for 'command and control' of services, and are moving away from centralized approaches.”

UKBA Immigration Case Work Project

The need for flexible contracting arrangements is of paramount importance in agile project management. One model that can provide this is that of *time and materials* framework contracts. These provide a mechanism for employing specialist contractors by the hour. However, government must take care to monitor the contractors.

An example of a failure to do so occurred at the UK Borders Authority (UKBA), which has an annual spend of over £2bn. In 2009 it began to drastically reduce its workforce from 22,580 to 20,469 that year, with a further reduction of 3,500 planned for 2015.

The bulk of future expected savings, and improvements in service delivery, depended largely on a BPR exercise to transform casework procedures, which cost £1bn a year, and also on the successful delivery of the £385m Immigration Case Work (ICW) project initiated in 2009. Both these measures were expected to allow consolidation of the 4m applications that are received every year for temporary migration, permanent migration, and asylum, to be handled at 'centers of excellence' in the UK and to reduce the number of overseas visa processing centers from 130 to 25.²⁹

The UKBA planned a rollout in 14 separate deployments, and set up a contract through a framework agreement that allowed for a *time and materials* approach to the ICW project. It had some initial successes with easy to implement *lipstick on a pig* functions such as a new search function and a module to guide caseworkers through the regulations (see the FBI Sentinel project case in Part I for a similar situation in the first phase of a long project).

But by 2012, both the ICW and the parallel BPR exercise were a combined £28m over budget and the optimistic expectation of annual savings have been revised down, from £139m to £106m.³⁰

Unfortunately, the project board did not monitor the situation carefully enough. They were over optimistic in assessing the project status that was perceived as *green* status in 2011, and only updated to a realistic assessment of the status as *red* just ahead of the arrival of NAO auditors in 2011. A new project executive was appointed who admitted that the release schedule was unrealistic and that the project was not going to deliver until 2016.³¹ The project board had not:

- ◆ Challenged the IT contractors about their use of resources
- ◆ Ensured that implementation was being planned with front-line staff, who were confused about the timing of releases
- ◆ Carried out any in-depth discussion of spending in their board meetings
- ◆ Coordinated the work of different development teams that were preparing different releases of software in parallel.³²

This case demonstrates the need for care when managing projects with external contractors. Contracting for incremental development using a *time and materials* approach can work. With care, the *burn rate* of the team can be controlled – in this case spend was only 12% higher than expected. However, there are responsibilities that come with direct control of a project, and top management need to have robust *tight* management in place to carry out those responsibilities.

Agile Contracts

with Susan Atkinson

According to the “State of Agile Survey 2011”, the ability to change organizational culture is now the single largest barrier to the adoption of the agile approach, with over half the respondents citing this as their biggest problem.³³ Legal, management, and procurement functions have yet to adapt practices and values that take account of the challenges of today's environment, and have barely changed in the last thirty years. Much of the thinking underlying the traditional contract is rooted in the Industrial Revolution and its production line practices. Often, even if an organization is running an IT project internally, it will apply the same management practices as if it had outsourced it to a third party supplier. Organizational policies often create contractual relationships between departments inside a single organization that can produce the same effect as the traditional contract. Whilst there has been much discussion of the need to change the traditional contract model, these dialogues have been led principally by the agile community.³⁴ Unfortunately, the proposed solutions do not get to the crux of the matter. The understanding of the legal dynamics of contracts by agilists is limited, and the legal profession appears to be largely oblivious to the shortcomings in the traditional contract model. It has been surprisingly quiet in supplying alternatives reflecting the agile approach.

Various organizations have now put forward possible contract models. However, these do not fully address the problem. The DSDM was one of the first organizations to put forward a contract model. Although an interesting model, it is now more than ten years old, and does not reflect the current version of DSDM, and is not a comprehensive contract. Its 12 clauses do not address the difficult issues of measuring the progress of the supplier, ensuring that the customer is getting value for its money, and defining supplier warranties.³⁵

Other attempts include the Norwegian Computer Society PS2000 contract model, and the Danish Ministry of Science, Technology and Innovation contract for short-term agile IT projects. However, both of these contract models are complex and do not offer the flexibility and dynamism required in agile projects.

Contracts are often obsessed with complexity of detail. Yet there is another aspect to complexity, largely over-looked by contracts to date, and that is dynamic complexity. Dynamic complexity exists where cause and effect are subtle, and where the effects over time of interventions are not obvious. We cannot address dynamic complexity with complex contract models. A different approach is required. A solution to the contract model requires a much greater understanding of complexity theory, chaos theory, and systems thinking. We must give greater focus to the target outcomes that an organization is trying to achieve when it embarks on an IT project. And the solution may be simpler than we think.

Conclusions

The use of waterfall procurement exacerbates the risks already inherent in waterfall approaches to managing a project. Waterfall procurement encourages waterfall project behaviors, which, conversely encourage and amplify waterfall tendencies in procurement approaches.

Fixed price contracts all too often become a game of change control management. This happens when there is a lack of trust between the Government and the supplier. If there is no *meta-game* advantage to the supplier for keeping in the customer's good books in anticipation of the next piece of work that is coming along, then the relationship can quickly deteriorate into a sophisticated version of the *prisoners' dilemma*. Both sides may take defensive, but ultimately self-destructive, standpoints.

Agile procurements and contract wordings can help move relationships in line with the Agile Manifesto. Collaboration should be favored over negotiation, and flexibility favored over pre-determined delivery. The concepts of Agile Commitment Management, Agile Procurement and Agile Contracts, promise to embed flexibility into government-supplier relationships and reduce the risks of project failure. Further research is needed to define contract models that can support these processes.

Questions

Refer to Arboblast, Vodde, and Larman's paper (see Endnote ³⁶, page 21). Do you agree with the following statements?

1. "The issue of change is largely inherently addressed within the overall philosophy of an agile approach because of a re-prioritizable backlog and adaptive iterative planning; no special (traditional) change-management process, board, or request mechanism is needed."

"The ideal termination model in an agile contract is to allow the customer to stop, without penalty, at the end of any iteration".

¹ {Maughan 2011 #437}

² Although one major lot did not sell – bids for the single nationwide license would meet the reserve price of \$1.3bn were not realized. The highest was for only \$472m from Qualcomm {FCC #273}

³ {Milgrom 1995 #274}

⁴ {Bulow 2009 #275}

⁵ {Manifesto for agile Software Development 2001 #113}

⁶ {NAO #206}

⁷ European Commission (1985), “White Paper for the Completion of the Internal Market”.

⁸ Directive 2004/18/EC (2004) (the Procurement Directive) Article 2 on the coordination of procedures for the award of public works contracts, public supply contracts, and public service contracts and Directive 2004/17/EC (2004) (the Utilities Procurement Directive) Article 10 on the coordination of the procurement procedures of entities operating in the water, energy, transport, and postal services sectors.

⁹ {Stephen 2011 #87}

¹⁰ UK Public Contracts Regulations (2006), Section 18(24)

¹¹ Case C-454/06 - presstext Nachrichtenagentur GmbH v Republik Österreich (Bund), APA-OTS Originaltext – Service GmbH and APA Austria Presse Agentur registrierte Genossenschaft mit beschränkter Haftung.

¹² {Emergn 2012 #321: 4}

¹³ {Emergn 2012 #321: 5}

¹⁴ {Emergn 2012 #321: 6}

¹⁵ {Emergn 2012 #321: 7}

¹⁶ {Proceedings of the 31st EUROMICRO 2005 #392: 2}

¹⁷ {Proceedings of the 31st EUROMICRO 2005 #392: 3}

¹⁸ {Proceedings of the 31st EUROMICRO 2005 #392: 5}

¹⁹ {Proceedings of the 31st EUROMICRO 2005 #392: 6}

²⁰ {Proceedings of the 31st EUROMICRO 2005 #392: 6}

²¹ {Proceedings of the 31st EUROMICRO 2005 #392: 6}

²² {Proceedings of the 31st EUROMICRO 2005 #392: 7}

²³ {Concha 2007 #395: 149}

²⁴ {Concha 2007 #395: 150}

²⁵ {Concha 2007 #395: 151}

²⁶ {Maughan 2011 #437}

²⁷ {Maughan 2011 #437}

²⁸ In correspondence with the author elaborating on her article: {Atkinson 2011 #442}

²⁹ {UK NAO 2012 #418: 27}

³⁰ {UK NAO 2012 #418: 27}

³¹ {UK NAO 2012 #418: 28}

³² {UK NAO 2012 #418: 28}

³³ {Version One 2012 #443}

³⁴ {Arbogast 2012 #438: 499}

³⁵ {Stephens 2006 #439}

³⁶ {Arbogast 2012 #438: 21}