Agile Contracts
Blast Off to a Zone of Collaborative Systems Building

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Velocity

Our Lean-Agile scaling methods are keeping pace, but are traditional contracts putting a drag on escape velocity?
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What’s Slowing Us Down?
We Cannot Know Everything Up Front

Contract:

This contract is between Aero Dinero, Inc. (ADI) and Programming Promises, LLC (PPL)

PPL will deliver the software which successfully passes the tests to meet the specified 35,672 requirements by August 4, 2019.

Upon delivery, ADI will pay PPL $1,000,000 as per the following terms and conditions...

$1 MILLION dollars!

https://en.wikipedia.org/wiki/Dr._Evil
Our Contracts Reflect the Iron Triangle

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Let’s Look at an Alternative…

<table>
<thead>
<tr>
<th>Scope:</th>
<th>Traditional contracts</th>
<th>Agile contracts</th>
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<tbody>
<tr>
<td></td>
<td>Detailed requirements with big up-front design</td>
<td>Flexible requirements driven by a vision, backlog, and roadmap</td>
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<tr>
<td></td>
<td><em>Can you really know everything up front?</em></td>
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| Schedule:        | Fixed delivery date with phase-gate milestones             | Shorter horizon consisting of iterations to show progress through working software and enable fast learning cycles |
|                  | *Do phase-gate milestones really indicate progress and validate assumptions?* |                                                          |

| Cost:            | Fixed cost                                                | Time & Materials or Shared Pain/Gain                     |
|                  | *Should we consider cost & Cost of Delay (CoD)? Do we motivate through incentives and penalties?* | *(often Incentive/Penalty Cost-Plus in a government context)* |
The Constraint Comes from Traditional Mindsets

Sales
“Let’s do whatever it takes to get the bid (and my commission)”

Procurement
“We need to know exactly what, when, and how much… and also a discount”

Lawyers
“Let’s reduce risk and avoid law suits”

Program Managers
“Let’s reduce risk by having phase-gate milestones to check on progress”

Architects
“Let’s create the design up front to meet our deadlines”
Attaining Escape Velocity

Sales

“Let’s not just get new customers… let’s create happy ones”

Procurement

“There’s value in collaborative relationships and mutual motivation”

Lawyers

“Agile can actually lower risk… and there are existing contract models to support it”

Program Managers

“Let’s measure progress through working software, business value achieved, and risk reduction”

Architects

“Let’s keep our design options open as long as is economically feasible”
Common Commercial Contract Models
Firm Fixed-Price Contracts

Overview:
- Fixed price and delivery date
- Assumes fixed requirements
- Changes usually come with a fee
- Risk shifted to supplier

Pros:
- Well understood in the industry

Cons:
- Requires up-front detailed specs and risk analysis
- Changes can be expensive
- Final cost and delivery date are less predictable
- Promotes the “blame game,” and reduces transparency
Time and Materials Contracts

- **Overview:**
  - Price based on rate
  - Contract does not contain a complete specification of the system
  - Ends as specified by customer
  - Risk shifted to customer

- **Pros:**
  - Well understood in the industry
  - Good if vision and solution are unclear

- **Cons:**
  - Lack of objective milestones
  - Can encourage supplier to maximize billable time
Cost-Plus Contracts

Overview:
- Customer pays for all supplier’s cost plus an additional fee that contains the profit. Variations:
  - **Cost-Plus Fixed Fee** – Supplier has pre-specified profit fee
  - **Cost-Plus Incentive Fee** -- Supplier receives a higher profit fee if they meet or exceed a specific target
  - **Cost-Plus Award Fee** -- Supplier receives awards based on more subjective determinations like quality, timeliness, and responsiveness
- Risk shifted to customer compared to Firm Fixed-Price contracts

Pros:
- Allows more flexibility than Firm Fixed-Price contracts

Cons:
- Promotes “gaming the system,” the “blame game,” and reduced transparency
Target Price Contracts

**Overview:**
- Contract contains a target in effort, a negotiated profit for the supplier, and often a deadline
- May be set up with minimum and maximum hours
- Both sides have “skin in the game” and share in the pain/gain
- Contract awards take into account trust and collaboration, not just cost
- Risk shared; overruns and underruns are split

**Pros:**
- Increases collaboration, incents scope management, and drives transparency

**Cons:**
- Requires reasonable clarification of ambiguities and risks, but overall, a good “Shared Pain/Gain” model
Agile Contract Trends

Overview:
- Has vision, flexible roadmap, and backlog, but variable scope
- Has fixed quality
- Has a price range or ceiling
- Has scope and expense management processes; governance and decision-making processes; and motivational and cooperative models
- Has "Checkpoint Phase" to test cooperation and "Exit Points" for contract termination

Pros:
- Has benefits of Agile, with a governance process for “checks and balances”
- Fast feedback cycles provide greater supplier performance visibility

Cons:
- Requires a new way of thinking by Procurement, Legal, etc.

For more information, see Agile Contracts: Creating and Managing Successful Projects with Scrum, Andreas Opelt, et. al., 2013, Wiley Publishing
Moving to Agile, Case Study 1:
A Consumer Automotive Supplier
Context

- “SupplyCo” supplies parts to an automotive company (“AutoCo”)
- AutoCo integrates components (mechanical, firmware, software) from hundreds of suppliers
- AutoCo does an up front best-effort analysis
- Despite ambiguities, AutoCo needs a cost range from each supplier (the magnitude is in the millions to billions of dollars)
- SupplyCo is a strategic supplier and treated like a partner; collaboration is as important as cost
Outcome

- A Fixed-Price Plus Changes” contract was used, with a buffer based on historic data

- Before the contract was binding:
  - They gained agreement up front on capabilities which were then broken down into hundreds of features
  - They created a flexible roadmap, knowing it would change
  - The agreed to share cloud-based tools to increase transparency and reduce hand-offs

- Once the contract was binding:
  - Change requests went through a Kanban system to reduce delays
  - Plan adaptation happened at increment boundaries
U.S. Federal Government Contract Models
Government Contracting Context

- Competitive bids are required (if over a context-specific amounts) due to government policies, statutes, and trade treaties
- Required to be an open, public bidding process (except with heavy up-front approvals)
- Have to disclose evaluation process
- Federal Contracting Officers have more power, delivery responsibility, and personal liability
The Federal Journey to More Agile Contracts

Federal Airspace

1. Commercial Sector Lean-Agile Best Practices
   - Fewer and less rigorous constraints; recognizes Lean-Agile value proposition
   - Federal Acquisition Regulation (FAR)
     - Constraints on the acquisition process

   - Draws from 13 key “plays” in the private sector including Agile practices

3. TechFAR
   - Highlights flexibilities in the FAR to help agencies implement the “plays” in the Digital Services Handbook
   - Apply TechFar for greater contract agility

Greater Contract Agility
The FAR system governs the acquisition process by which the U.S. federal government purchases goods and services.

### FAR Contracts Types*

#### 6.2-Fixed-Price Contracts
- 16.203 Fixed-price contracts with economic price adjustment.
- 16.204 Fixed-price incentive contracts.
- 16.205 Fixed-price contracts with prospective price redetermination.
- 16.206 Fixed-ceiling-price contracts with retroactive price redetermination.

#### 16.3-Cost-Reimbursement Contracts
- 16.302 Cost contracts.
- 16.303 Cost-sharing contracts.
- 16.304 Cost-plus-incentive-fee contracts.
- 16.305 Cost-plus-award-fee contracts.
- 16.306 Cost-plus-fixed-fee contracts.

#### 16.4-Incentive Contracts
- 16.402-1 Cost incentives.
- 16.402-2 Performance incentives.
- 16.402-3 Delivery incentives.
- 16.403 Fixed-price incentive contracts.
- 16.403-1 Fixed-price incentive (firm target) contracts.
- 16.403-2 Fixed-price incentive (successive targets) contracts.
- 16.404 Fixed-price contracts with award fees.
- 16.405 Cost-reimbursement incentive contracts.
- 16.405-1 Cost-plus-incentive-fee contracts.
- 16.405-2 Cost-plus-award-fee contracts.

#### 16.5-Indefinite-Delivery Contracts
- 16.502 Definite-quantity contracts.
- 16.503 Requirements contracts.
- 16.504 Indefinite-quantity contracts.

#### 16.6-Time-and-Materials, Labor-Hour, and Letter Contracts
- 16.601 Time-and-materials contracts.
- 16.602 Labor-hour contracts.
- 16.603 Letter contracts.

The U.S. Digital Services Playbook provides guidance for applying relevant private sector (and more agile) approaches to procurement

1. Understand what people need
2. Address the whole experience, from start to finish
3. Make it simple and intuitive
4. **Build the service using agile and iterative practices**
5. **Structure budgets and contracts to support delivery**
6. Assign one leader and hold that person accountable
7. Bring in experienced teams
8. Choose a modern technology stack
9. Deploy in a flexible hosting environment
10. Automate testing & deployments
11. Manage security and privacy through reusable processes
12. Use data to drive decisions
13. Default to open, publicly accessible data

See [https://playbook.cio.gov](https://playbook.cio.gov)
TechFAR highlights *flexibilities* in the FAR to help agencies implement agile contracts

### Traditional Software Development

<table>
<thead>
<tr>
<th>Pre-Award</th>
<th>Post-Award</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Government Lead role</td>
<td>• Long, linear development phase of design, development, and testing</td>
</tr>
<tr>
<td>• Requirements with big up-front design</td>
<td>• Customer typically involved at the end</td>
</tr>
</tbody>
</table>

### Agile Software Development

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<th>Post-Award</th>
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<tbody>
<tr>
<td>• Product Owner role</td>
<td>• Release Planning and Sprints</td>
</tr>
<tr>
<td>• Product Vision and Roadmap</td>
<td>• User stories become deployable code</td>
</tr>
</tbody>
</table>

- Performance Measurement – Contractor conformance to pre-award detailed requirements
- Performance Measurement - Contractor performance throughout each sprint and release (bug defect rates, speed of time to value, etc.)

See [https://github.com/WhiteHouse/playbook/blob/gh-pages/_includes/techfar-online.md](https://github.com/WhiteHouse/playbook/blob/gh-pages/_includes/techfar-online.md)
Moving to Agile, Case Study 2:
A Government Contractor
A federal agency put out an RFP for an IDIQ Task Order

- **What is IDIQ?**
  - Consists of a Master Contract with a vision and budget
  - A pool of suppliers (“Providers”) are qualified for the Master Contract
  - Under the Master Contract, Task Orders with scope are created as needed
  - For each Task Order, a qualified provider is selected and the Task Order becomes a binding Delivery Order

- **Pros:**
  - Simplifies and expedites the procurement process
  - Validates vendor collaboration and performance while maintaining competition
  - Less overhead in moving from contract model to contract model

- **Cons:**
  - When switching vendors, will lose the teams and their knowledge base
  - May impact architectural consistency and integrity
Context

- After the federal agency put out the IDIQ Task Order, the contractor put in a bid along with other qualified contractors.
- The Task Order contract model was Cost-plus-award-fee with fixed cost and schedule, and variable scope.
- Goal: Select a single qualified supplier.
- Gave each contractor the same set of functionality.
- The “winner” would be paid and become the selected qualified supplier for future Task Orders.
Initial Challenges

- The federal agency tried using velocity as a metric
- System flexibility was difficult to quantify:
  - “Flexible architecture” was open to interpretation; some suppliers took more short cuts than others
  - There were many integration points; different integration solutions were implemented resulting in varying effort across suppliers
- The contractor had a difficult time engaging the federal agency
Outcome and Lessons Learned

Outcome

- The Cost-plus-award-fee model allowed a more subjective selection process (e.g., supplier responsiveness, completeness of functionality) and the contractor won due to their responsiveness and system flexibility

Lessons Learned

- Understand the danger of velocity-based comparisons
- Have frequent contact to synchronize, prioritize, and negotiate scope
- Consider a single supplier to balance the value of competition against the benefits of stable teams, decreased delays, and architectural consistency
Agile Contracts: A SAFe Approach
The Scaled Agile Framework® (SAFe®)

Synchronizes alignment, collaboration, and delivery for large numbers of teams

Core Values

1. Code Quality
2. Program execution
3. Alignment
4. Transparency

ScaledAgileFramework.com
Move to the Zone of Collaborative Systems Building

- Firm Fixed-price Contracts
- Managed Investment Contracts
- Time & Materials Contracts

Challenging Expectations

Collaborative Systems Building

Innovation and Exploration

Predictability and viability

Responsiveness to Change

0%
SAFe Managed Investment Contracts

1. Define the Program Vision and Roadmap
2. Contract one to two Program Increments (PI) at a time
3. Manage priorities with the Program Backlog; prioritize with the customer via WSJF* for each PI
4. Evaluate jointly and objectively the solution at the end of each PI

- The customer can stop, continue, increase, or decrease funding based on results
- With reasonable notice to the supplier, the customer can exit when sufficient ROI is achieved

Benefits of Collaborative Systems Building

- Better economic outcomes for customers and suppliers, and earlier ROI
- Better risk management
- Higher transparency and predictability
- Faster feedback cycles
  - Shorter time between learning and action
  - More frequent feedback on supplier performance
- Balances benefits of:
  - Over-constrained specifications vs. extreme innovation
  - Predictability vs. the freedom to explore better economic alternatives
Thank you! Questions?
References

- *Agile Contracts: Creating and Managing Successful Projects with Scrum*, Andreas Opelt, et. al., 2013, Wiley Publishing


- *Agile Contracts Primer*, Tom Arbogast, Craig Larman, and Bas Voddee, [http://www.agilecontracts.org](http://www.agilecontracts.org)

- *Contracting in Agile Software Projects: State of Art and How to Understand It*, Shi Hao Zijdemans and Christoph Johann Stettina, 2014

References

Government

- Federal Acquisition Regulation, https://www.acquisition.gov/?q=browsefar
- U.S. General Services Administration Acquisition Policy, http://www.gsa.gov/portal/content/104579
Appendix A: “Book Report” on Agile Fixed-Price Contracts
Agile Fixed-Price Contracts Overview

Has the following:

- Vision
- Backlog
- Fixed quality
- Price ceiling
- Quantifiable value measures

Fast feedback cycles provide greater supplier performance visibility

(Templates available)
Agile Fixed-Price Contracts – Steps

1. Define program vision and roadmap
2. Create reference backlog items: size, value, risk
3. Define fixed-price range based on velocity/cost (not yet contractually binding)
4. Define scope & expense management processes
5. Define governance and decision-making processes
6. Define motivational and cooperative models

Other contract elements included, as needed (e.g., IP ownership, liability, indemnities, warranty, etc.)
Agile Fixed-Price Contracts – Elements

**Checkpoint Phase**
- Initial period to test cooperation

**Riskshare**
- Cost-sharing model when the fixed-price range is exceeded

**Exit Points**
- Points either party may terminate the contract in a controlled manner
  - Gone south – cooperation and delivery distressed
  - Gone north – sufficient value has been achieved
Appendix B: “Book Report” on Flexible Contracts
Flexible Contracts

Replaces “Statements of Work” with “Statements of Target Outcomes” (SOTO)

Written as a “Minimum Viable Contract”
- Simple English, short, lightweight provisions, can be expanded as needed
- Lower legal/admin costs

Contract is a set of targeted outcomes
- Shorter duration so that reprioritization and improvements can be applied in the next SOTO
- Supplier creates options to meet the targeted outcomes
- Problems are explored with potential paths to solve them


(Templates available)