Agile Principles: 
The Foundation Underlying Successful Agile Development 
March 25, 2015 
by Ken Rubin

Essential Scrum in Six Languages

- English
- French
- German
- Chinese
- Japanese
- Polish
US Airdrops and Cargo Staging
Cargo Cult Issues...

- Imitating actions alone produces desired results
- Correlation implies causation
- Process is more important than core principles
- No need to know the foundational “why”
People who apply Scrum without understanding its underlying principles lack the necessary context to understand why they are doing things and when and how best to inspect and adapt their approaches.
Traditional, Phased-based, Plan-driven Development (aka Waterfall)

- Deliverable/Milestone
- Review/Approval

Agile Development – The Scrum Framework
**Development Isn’t Manufacturing**

* In manufacturing our goal is:
  * Take a fixed set of requirements
  * Follow a sequential set of well-understood steps
  * Manufacture a finished product that is the same every time

**Agile is Iterative & Incremental**
Agile is an Empirical Process Model

Comparison of Plan-Driven and Agile Processes

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Plan-driven</th>
<th>Agile</th>
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<tbody>
<tr>
<td>Degree of process definition</td>
<td>Well-defined set of sequential steps</td>
<td>Complex process that would defy a complete up-front definition</td>
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<tr>
<td>Randomness of output</td>
<td>Little or no output variability</td>
<td>Expect variability because we are not trying to build the same thing over and over</td>
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<tr>
<td>Amount of feedback used</td>
<td>Little and late</td>
<td>Frequent and early</td>
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Uncertainty Management

Waterfall

Means Uncertainty

High

Low

Ends Uncertainty

Defined

Empirical

Fragile, Robust, Antifragile

Fragile

Harmed by disorder

Robust

Resilient to disorder

Antifragile

Benefits from disorder
Asymmetric Payoffs Create Economic Value or Harm

Positive asymmetric payoff (**antifragile**) anything that has more upside than downside from random events (variability)

Negative asymmetric payoff (**fragile**) anything that has more downside than upside from random events (variability)


Getting Right Up-front

Danger zone! That's a lot of low-quality requirements specified when we don't have enough knowledge

- Quantity of requirements produced at each point in time
- Cumulative knowledge
- Our cumulative product knowledge grows over time

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**Decision Making**

Make each decision in its proper phase

- Deliverables/Milestones
- Review/Approval

Make important decisions at the last responsible moment

![Graph showing cost over time]

**Exploration vs. Exploitation**

- Adaptive processes
  - Interleave small-scale
  - In the presence of Uncertainty
  - Requires Knowledge acquisition
  - Increases Level of certainty

- Predictive processes
  - Heavily focus on early
  - In the presence of Uncertainty
  - Requires Predicting
  - Does not increase Level of certainty

Knowledge acquisition always a tension between in the presence of Uncertainty increases Level of certainty.
**Balance between Predictive and Adaptive**

- Type of product
- Degree of end uncertainty
- Degree of means uncertainty
- Constraints on development
- Compliance/regulatory requirements

**Managing Change Risk During a Traditional Development Project**

Capture complete requirements
Requirements approval/sign-off
Approved baseline requirements
Design
Build
Test

Primary flow

Outside-of-primary-flow change control process (unplanned work)

Change request
Change review and approval
Update requirements and plans

Time
Managing Change Risk Using Scrum

Leverage Multiple Concurrent Learning Loops
Organize Flow of Work for Fast Feedback

We almost always underestimate the true effort here; we have no idea how long it will take.

Large vs. Small Batch Sizes

Large batches (100%) All before any

Small batches
Benefits of Small Batch Sizes in Product Development

- Reduced cycle time
- Reduced flow variability
- Accelerated feedback
- Lower risk of failure
- Reduced overhead
- Increased motivation & urgency
- Reduced cost and schedule growth

Poorly Managed Inventory Causes Economic Damage

1. We believe late change is very expensive
2. We fear cost of late change, so we work longer and harder up front to avoid change
3. Which causes us to prematurely create many work products such as specifications and designs
4. When change happens, many work products need to be changed or thrown out, ensuring high change cost

Analysis Design Coding Testing Ops

Cost of change using sequential development

Cost of change

Analysis Design Coding Testing Ops

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Recognize Inventory (WIP) and Manage it for Good Flow

Manufacturing inventory is both physically and financially visible

Product-development inventory are knowledge assets that aren’t visible in the same way as physical parts

Focus on Idle Work Not Idle Workers

Watch the Baton Not the Runners
Waterfall is Conformance to Plan

Agile is Replanning and Adapting
Moving through phases or stages

Validated, working assets

Summary: Principles are the Foundational Why
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Choose a chapter... 1
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**SEE WHAT PEOPLE ARE SAYING:**

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Corporate IT leadership, which has been slow to embrace agile methods, would benefit immensely from going a copy of this book to all of their project and delivery managers. Kenny Watt has laid out in this book all the pragmatic business case and process metrics needed for any corporate IT shop to successfully implement Scrum.

- John P. Powers III, veteran of technical innovation delivery at large corporate IT shops
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