Best Ways To Solve Hard Problems:
Applying Agile Principles
Rachel
HELLO
my name is

Zach
Agile is the best way to solve hard problems as a team.
Agile practices
Agile principles
What hard problems are you solving?
Make your work more effective
What’s unique about hard problems?

http://www.flickr.com/photos/horiavarlan/4298997922/
What you don’t know is unknown
The Cynefin framework

- **Complex**
  - Probe
  - Sense
  - Respond
  - Emergent

- **Complicated**
  - Sense
  - Analyse
  - Respond
  - Good practice

- **Chaotic**
  - Act
  - Sense
  - Respond
  - Novel

- **Simple**
  - Sense
  - Categorise
  - Respond
  - Best practice

- **Unorder**

- **Order**

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The Cynefin framework

Complex
- Probe
- Sense
- Respond

Complicated
- Sense
- Analyse
- Respond

Emergent
- Disorder

Good practice

Chaotic
- Novel
- Act
- Sense
- Respond

Simple
- Sense
- Categorise
- Respond

Best practice
### Actions in the complicated domain

In the complicated domain there are right answers which can be discovered either by deployment of expertise or research of some type. The difference with the simple domain is that the nature of the answer is not self-evident.

<table>
<thead>
<tr>
<th>Name of project</th>
<th>Description of project</th>
<th>Justification of project</th>
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<tbody>
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<table>
<thead>
<tr>
<th>Investigatory techniques to be used</th>
<th>Experts to be deployed</th>
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<tr>
<th>Actions</th>
<th>Responsibility for actions</th>
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### Actions in the complex domain

In the complex domain we focus on safe-fail experiments rather than fail-safe design. For any coherent perspective or theory, an experimental probe or series of probes are created. Experiments are not necessarily designed to succeed but to create insight and understanding about what is possible. Experiments can be parallel and may even contradict each other as the domain is unknowable.

<table>
<thead>
<tr>
<th>Name of experiment</th>
<th>Description of experiment</th>
<th>Rationale for experiment</th>
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<tr>
<th>Indications of success</th>
<th>Indications of failure</th>
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<tr>
<th>Amplification strategy</th>
<th>Recovery strategy</th>
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Wise teams
An experiment
Instructions
Count how many times the players wearing white pass the basketball.
Coping strategies in software engineering
Figure 10. Summary
1. Determine objectives

2. Identify and resolve risks

3. Development and Test

4. Plan the next iteration
Iterative Feedback
Scrum Model

http://www.controlchaos.com/about/
How people respond
SYSTEM THINKING
What is a system?
From the mutual interaction of the parts of a system there arise characteristics which cannot be found as characteristic of any of the individual parts.

Gene Bellinger, systems-thinking.org, 2004
DOLLAR AUCTION
The Rules

The dollar goes to the highest bidder, who pays the amount he bids.

The second-highest bidder also must pay the highest amount that he bid, but gets nothing in return.
<table>
<thead>
<tr>
<th>Bidder 1</th>
<th>Bidder 2</th>
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</thead>
<tbody>
<tr>
<td>Bid: 0.01</td>
<td></td>
</tr>
<tr>
<td>Profit: 0.99</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bid: 0.02</td>
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<tr>
<td></td>
<td>Profit: 0.98</td>
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<tr>
<td>Potential Loss: 0.01</td>
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<tr>
<td>Bid: 0.03</td>
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<td>Profit: 0.97</td>
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<tr>
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Should they stop? Will they stop?
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“Escalation”
“Shifting the Burden”
“Unintended Consequences”
“Accidental Adversaries”
“Fixes that Fail”
TUCKMAN’S TEAM MODEL
Teams can make decisions many ways.
Conflict and Pain
Conflict + Facilitation = Collaboration
Forming
Applying Lean and Agile principles

<table>
<thead>
<tr>
<th>Respect for People</th>
<th>Product Development</th>
<th>Continuous Improvement</th>
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<tbody>
<tr>
<td>- don’t trouble your ‘customer’</td>
<td>- long-term great engineers</td>
<td>- Go See</td>
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<tr>
<td>- “develop people, then build products”</td>
<td>- mentoring from manager-engineer-teacher</td>
<td>- kaizen</td>
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<tr>
<td>- no wasteful work</td>
<td>- cadence</td>
<td>- spread knowledge</td>
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<tr>
<td>- teams &amp; individuals evolve their own practices and improvements</td>
<td>- cross-functional</td>
<td>- small, relentless</td>
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<tr>
<td>- build partners with stable relationships, trust, and coaching in lean thinking</td>
<td>- team room + visual mgmt</td>
<td>- retrospectives</td>
</tr>
<tr>
<td>- develop teams</td>
<td>- entrepreneurial chief engineer/product mgr</td>
<td>- 5 Whys</td>
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</table>

**14 Principles**
- long-term, flow, pull, less variability & overburden,
- Stop & Fix, master norms,
- simple visual mgmt, good tech, leader-teachers from within, develop exceptional people, help partners be lean, Go See, consensus, reflection & kaizen

Sustainable shortest lead time, best quality and value (to people and society), most customer delight, lowest cost, high morale, safety

Management applies and teaches lean thinking, and bases decisions on this long-term philosophy

Summary of the Toyota Way (Lean Thinking) House by Craig Larman and Bas Vodde. 2009

Kids Are Built to learn
Adults Require

Reflection and structure to learn
Capturing Learning

Title that summarizes problem

Background & Importance
This section is only needed if the Title doesn’t sufficiently define the problem, and why change is needed.

Current Conditions
Graphs, numbers, and facts that clearly depict the As Is state in a way that invites analytic questions. (Go to the genius)

Tools commonly used for A3 illustrations:
- Value Stream Map
- Stick Figure A3 Illustrator
- Flow Chart
- Layout Diagram

Root Cause Analysis
What are the root causes for problems? (Go back to the genius. Keep asking “why?”)
Either use Root Cause Fishbone, or just keep answering...

Goals and Targets
What specific outcomes are desired?

Target Condition
Graphs, numbers, and facts that clearly depict the Desired State and the gap between current & desired

Countermeasures
Proposed actions to address each root cause. Start with ALL ideas, then archive those that don’t pass group evaluation.

Implementation Plan
Literature summary of a more detailed Gantt or To Do List. Reviews are usually both periodic & upon completion.

Some people like to add a final section to anticipate possible implementation problems.
Feasibility

Viability

Desirability

Tim Brown – Change by Design
1. Current Situation

2. Hypothesis

3. Implement

4. Measure

5. Act

Adjust

Plan

Check

Do
DIVERGENCE
CONVERGENCE
Business as Usual

NEW TOPIC

Divergent Zone

TIME →
Sustainable decisions use the “Groan Zone”

Source: "Facilitator's Guide To Participatory Decision-Making, by Sam Kaner and others. Used with permission from Sam Kaner, 415-641-9773."
CONSENSUS
What is consensus?
A general agreement.

The judgment arrived at by most of those concerned.
5: Wild, unbridled support.
4: I think it’s a great idea. I wish I would have thought of it.
3: I can live with that and support it.
2: I have some reservations that I’d like to talk about.
1: I am very opposed and we shouldn’t move forward.
Apply agile principles to solve hard problems
Pick one of these concepts and apply it to your work
4x the visibility, productivity, quality, or time to market
Agile is the best way to solve hard problems as a team.
Q&A