Ethics:
the Leadership
Compass

Agile vs. Waterfall
Which is the Ethical Choice?

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What we'll cover….

- Quick review of Agile and Waterfall models

- Definition of ethics and which areas in particular we'll look at today

- A comparison of how Agile and Waterfall each address these ethical obligations

- Agile and Waterfall failures and what we can learn from both, leading us to…

- Which is the ethical choice?
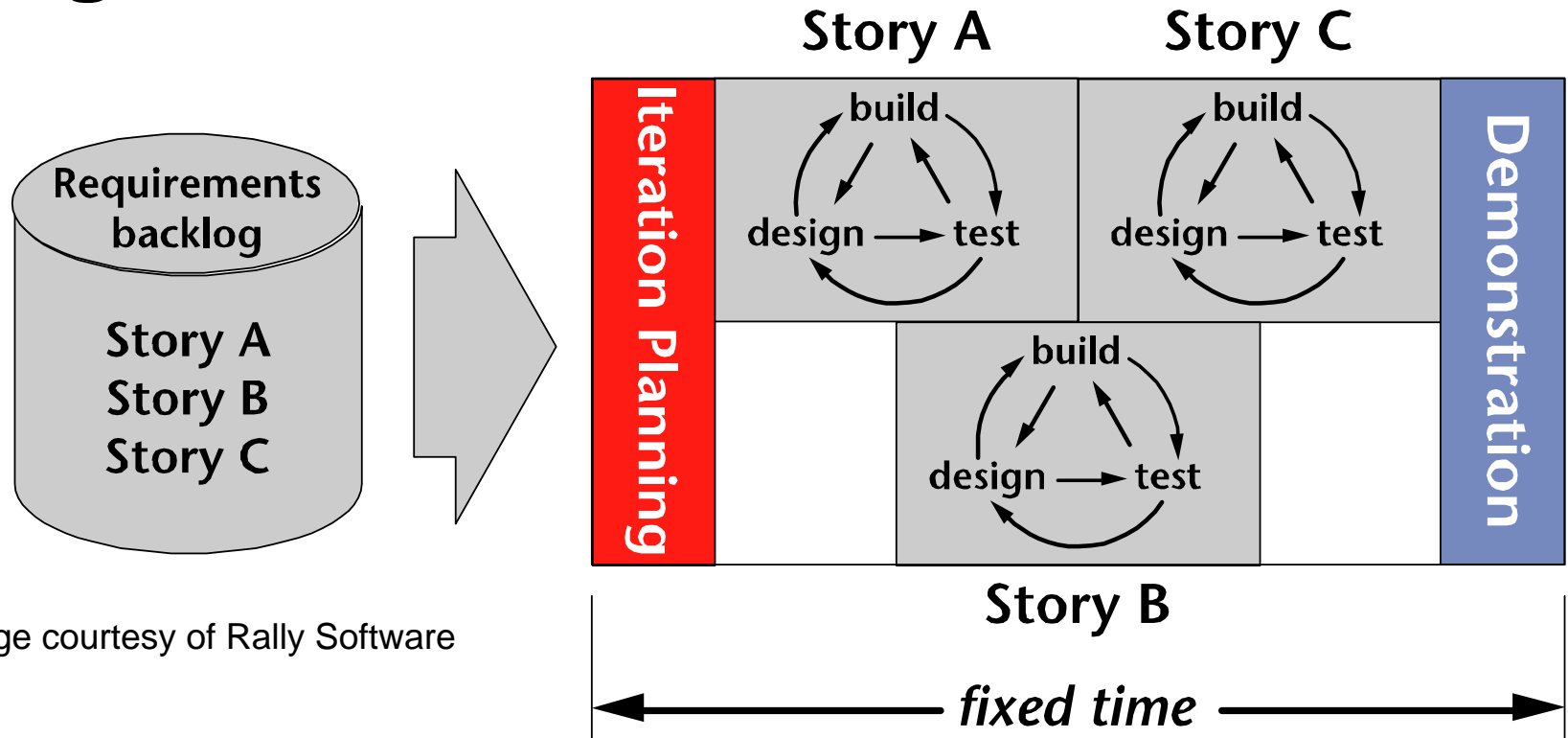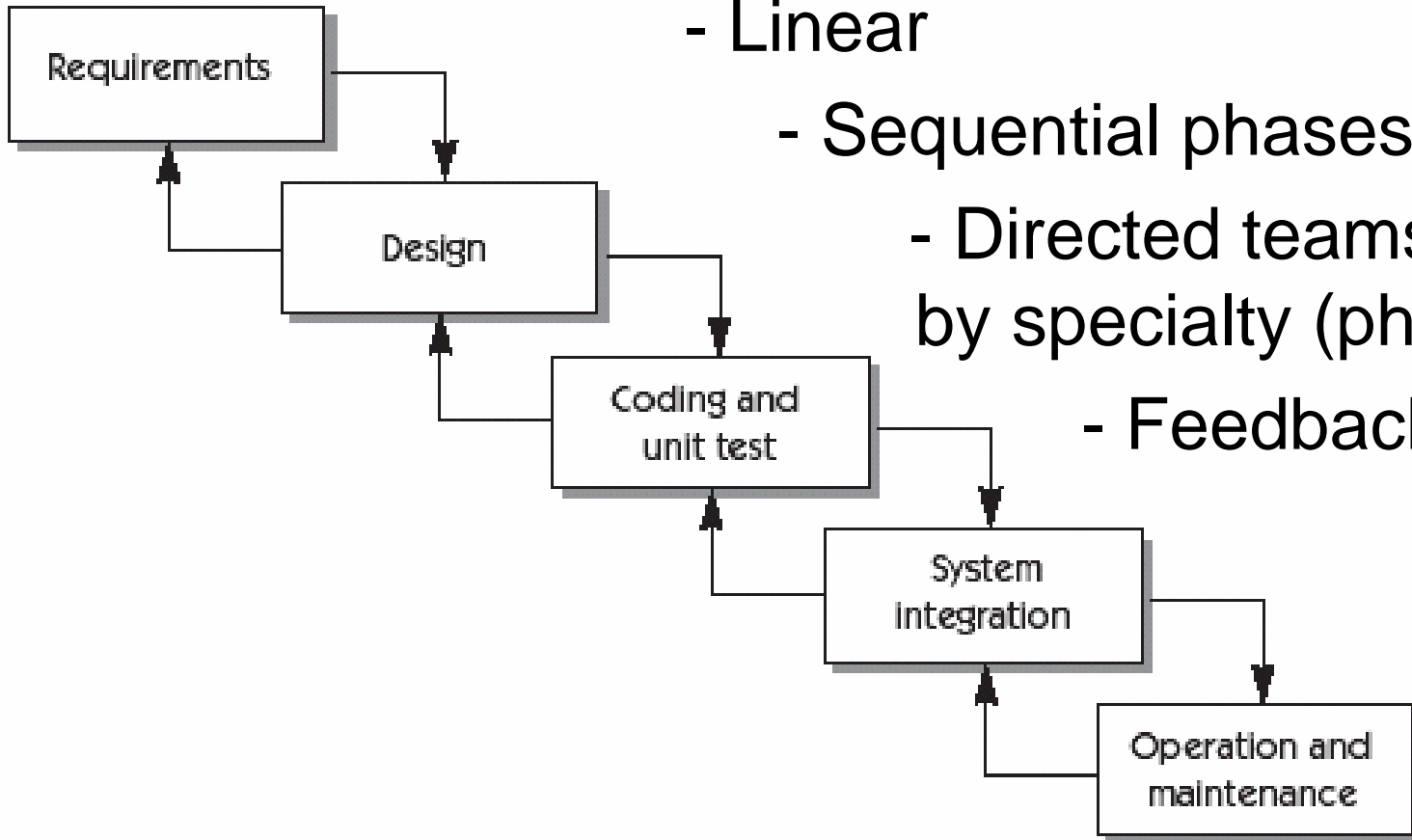
Agile Model

Image courtesy of Rally Software

- Iterative
- Incremental
- Self-organizing cross-functional teams
- Continuous feedback

Waterfall Model

- Linear
  - Sequential phases
    - Directed teams separated by specialty (phase)
      - Feedback at end

Requirements → Design → Coding and unit test → System integration → Operation and maintenance

Benefits of Each Model

Waterfall:

- Sets expectations up front for cost, schedule
- Requirements must be validated and exit criteria must be met before proceeding to next phase
- Customer can focus on other things in the meantime
- "Measure twice, cut once" means less potential for rework

Agile:

- Continuous delivery and feedback cycles (iterative and incremental development)
- Changing requirements are welcome
- Early testing and continuous integration
- Customer collaboration and acceptance of each feature as it's developed

Agile Gone Bad

- Mini-dictatorships
- Death marches to meet iteration commitments
- Lack of automated testing means that "potentially shippable" could translate into "potentially a big buggy mess"
- Cowboy coding
- No documentation whatsoever
- "You'll get it when you get it." – the Team
- "You're self-organizing—you figure it out." – the Project Manager

Waterfall Gone Bad

- Oversights and flawed design don't become apparent until the end
- Testing at the end introduces more risk
  - "The basic framework described in the waterfall model is risky and invites failure." – Winston Royce, creator of the original waterfall model, 1970
- "We must be done testing because the ship date is today!" – the Testers
- "Just document a work-around. I'm already on another project and don't have time to fix this." – the Developers
- "This is what I asked for, but it's not really what I want." – the Customer

Agile vs. Waterfall—Which is the Ethical Choice?

Ethics:

"The discipline dealing with what is good and bad, and with moral duty and obligation"

- Merriam Webster definition

1. Provide Value to the Customer

- Delivery of what they need and want
- When they want it
- At a high enough quality to be fit for use
- With an eye towards reducing cost and
- Addressing risks appropriately

2. Provide Effective Communication

In support of #1 and as proof—

- Provide clear and open communication
- Ensuring a common focus
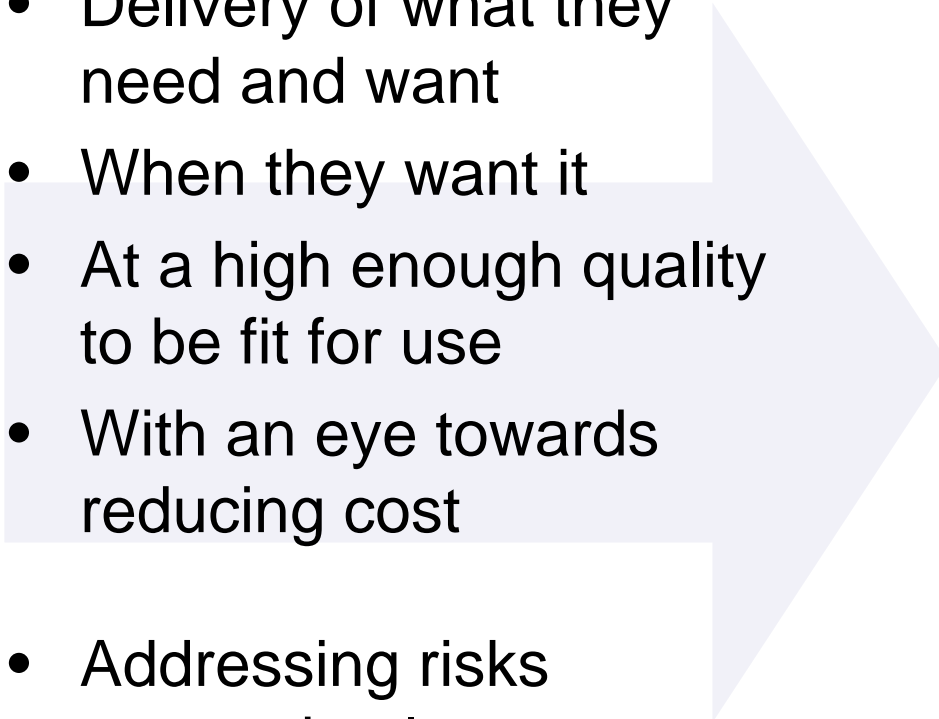- Transparency into all facets of the project

3. Professional & Personal Rights

In support of #1 and #2—

- Ensure the team is working at a sustainable pace
- Doing challenging and fulfilling work
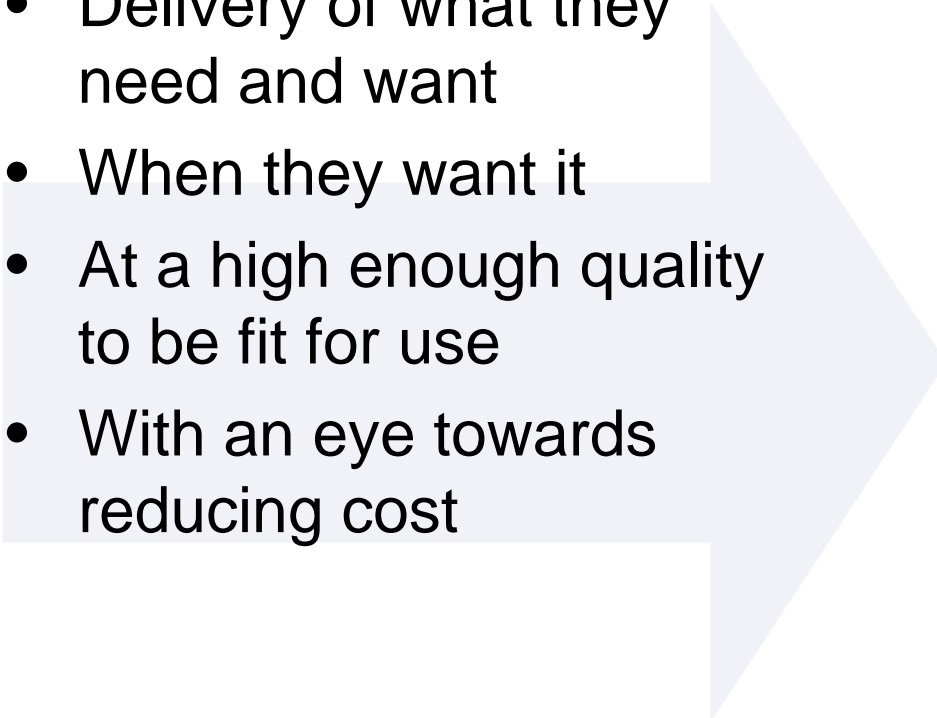- Where they each have a voice

1. Provide Value….Agile

- Delivery of what they need and want

- When they want it

- At a high enough quality to be fit for use

- With an eye towards reducing cost

- Addressing risks appropriately

- Customer involvement throughout the project

- Incremental delivery

- Testing and acceptance each iteration

- Reduction of inventory, shorter cycle times, and elimination of waste
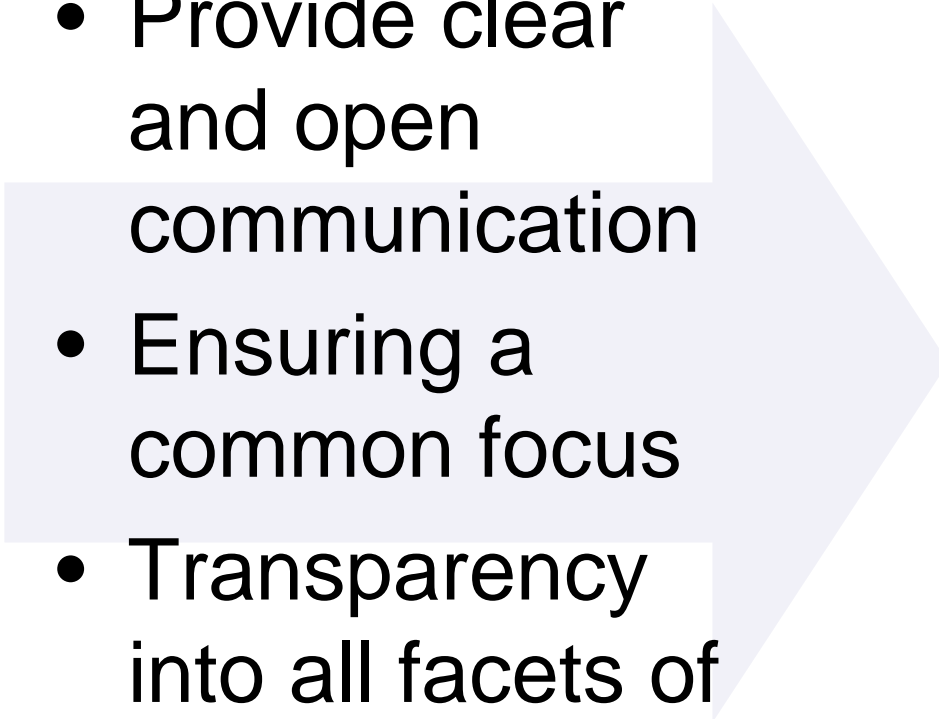
- Risks intrinsically addressed

1. Provide Value….Waterfall

- Delivery of what they need and want
- When they want it
- At a high enough quality to be fit for use
- With an eye towards reducing cost

- Addressing risks appropriately

- Detailed requirements spec and sign-offs
- Detailed schedule
- Testing and IV&V at end
- Detailed design up front eliminates costly rework and reduces bug potential
- Risk Management Plan

2. Communications…Agile

- Provide clear and open communication

- Ensuring a common focus

- Transparency into all facets of the project

- Customer collaboration throughout the project

- Iteration demos and reviews that gather customer feedback

- Retrospectives

- Cross-functional teams involved in all aspects of the project

- Use of high visibility information radiators

2. Communications…Waterfall

- Provide clear and open communication

- Ensuring a common focus

- Transparency into all facets of the project

- Change control process
- Checklists and sign-offs for each phase-gate
- Various documents detailing all aspects of the project
- Status reports and other documentation including email

3. People Rights....Agile

- Ensure the team is working at a sustainable pace
- Doing challenging and fulfilling work
- Where they each have a voice

- "Sustainable pace" is one of the agile principles
- Teams are given the problem and then work together to define the solution
- Participatory decision-making, reviews and retrospectives

3. People Rights….Waterfall

- Ensure the team is working at a sustainable pace
- Doing challenging and fulfilling work
- Where they each have a voice

- Detailed schedule includes productivity algorithms to account for waste
- Individuals implement according to the spec
- Change control board, risk management committee, project manager all accept input from team members

Waterfall Project Failures

Denver, CO project failures:

- 2007 – Snow removal workers still haven't been paid their overtime due to problems with CDOT's new **financial management system** (SAP)

- 2006 – During November elections, the **voter eligibility system** froze creating hours-long waits to vote (Sequoia Voting Systems)

- 2005 – Denver cancelled a **voter registration system** because it didn't work (Accenture)

- 2004 - **Colorado Benefits Management System**, responsible for processing welfare benefits that include Medicaid and food stamps, caused a paralyzing backlog of nearly 30,000 cases when it went online (EDS)

CDOT Financial Management System—

"It was meant to be state-of-the-art. The system was not user-friendly and did not work." – Russ George, Transportation Director

About 80% of the problem turned out to be inadequate training, and about 20% turned out to be coding.

- Rocky Mountain News, 3/21/07

Denver Voter Eligibility System—

Denver election officials never tested the capacity of the troubled computer systems they used to verify voter registrations on Election Day. - *Denver Post 11/16/06*

The Denver election commission asked for web-based software that could be used to check in voters on election day. Appearing before a panel to discuss the failed system, Sequoia's Vice President said he was surprised to hear that the software they had sold to Denver was being used in that fashion – as an electronic poll-book. - *Denver Post, 12/1/06*

Denver Voter Registration System—

Dana Williams, a spokeswoman for Colorado's secretary of state, said the system had trouble registering voters and other problems.

Accenture spokesman James McAvoy said the system could have been operating by the deadline had Colorado not scrapped the deal. He blamed the state for key delays, including decisions on software and hardware and giving Accenture access to information.

- Denver Post, 11/30/05

Colorado Benefits Management System—

Officials from all 64 counties had asked Owens to delay the start of the Colorado Benefits Management System until all the kinks could be fixed, but it went online anyway earlier this month. – *TheDenverChannel.com 9/24/04*

"…another probable mistake was the apparent failure to do load testing which would have alerted EDS to the slowness of the system and the problems that would lead to. (And) Automated functionality testing would have made EDS aware that the Colorado Benefits Management System ran so slowly that data entry timed out when moving between data entry screens. According to some reports 17 different screens had to billed out and it took up to 24 minutes for each new screen to load."

http://www.ad-mkt-review.com/public_html/air/ai200411.html

Agile Project Failures

- Chrysler Comprehensive Compensation (eXtreme Programming)

? Vehicle Cost and Profit System (Ford Motor Company, eXtreme Programming)

Chrysler Comprehensive Compensation (C3)—

"After two more years the next group was ready to ship in the team's opinion but something always got in the way. It wasn't quite like the 90% done syndrome, but there was always another requirement that just had to be done. Communication up and down the chain of command was broken; every manager but one on both the IT side and Finance side was replaced or moved to a new position. Finally the project was terminated.

Was it a process failure? It's hard to say. The things that XP deals with were all chugging along, but it was as if the project had become uninteresting to the high-level stakeholders, and they forgot about it and then one day remembered and turned it off."

http://c2.com/cgi/wiki?ChryslerComprehensiveCompensation

Ford's Vehicle Cost and Profit System (VCAPS)—

"The VcapsProject has been killed because yet another system will replace the VCAPS system we were building to replace the original VEPS system. In the end our customers were very happy with our work and still would like to see the Extreme version put into production. But from a purely political standpoint that will not be possible.

It was killed for external reasons. It was deemed that the systems which feed it needed to be replaced, thus making our project obsolete before it was finished."

http://c2.com/cgi/wiki?VcapsProject

Common Themes

- Communication failures
- Lack of proper testing
- Lack of training

Agile vs. Waterfall – Which is the Ethical Choice?

- Which approach will ensure that we are providing real value to our customer?

- Which approach will provide the most effective means of communication?

- What will help your project team focus on its objectives and do its best work?

- What is working well for you now?

Picking a Method

- Is there a clear set of requirements?
- Are the requirements likely to change?
- Can the customer afford a long development process?
- Has the team done this type of project before?
- Is quality paramount?

From Winston Royce, creator of the original waterfall model in 1970:

The basic framework described in the waterfall model "is risky and invites failure" because it leaves testing until the end, when major design flaws might then be found and then require substantial rework: "In effect the development process has returned to the origin and one can expect up to a 100% overrun in schedule and/or costs."

Seven of the nine pages are then devoted to IMPROVEMENTS to the basic waterfall model, including Iterative development and involving the customer throughout the process

- Managing the Development of Large Software Systems

Be AGILE

Thank you!

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