Advanced Software Engineering

Dr. Elham Mahmoudzadeh

Isfahan University of Technology

mahmoudzadeh@iut.ac.ir

2020

Agile Principles(VI)

Dr. Elham Mahmoudzadeh

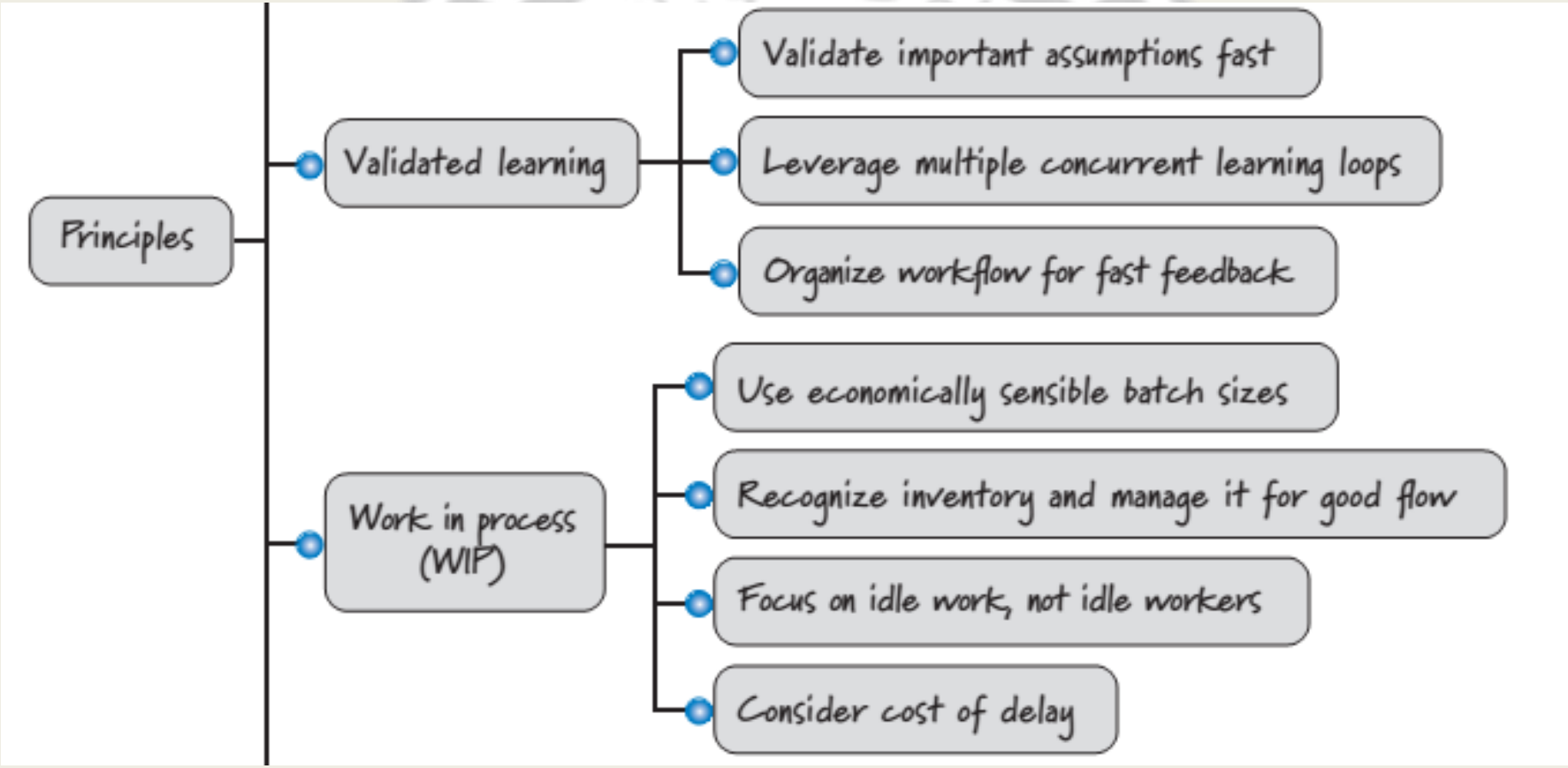
Isfahan University of Technology

mahmoudzadeh@iut.ac.ir

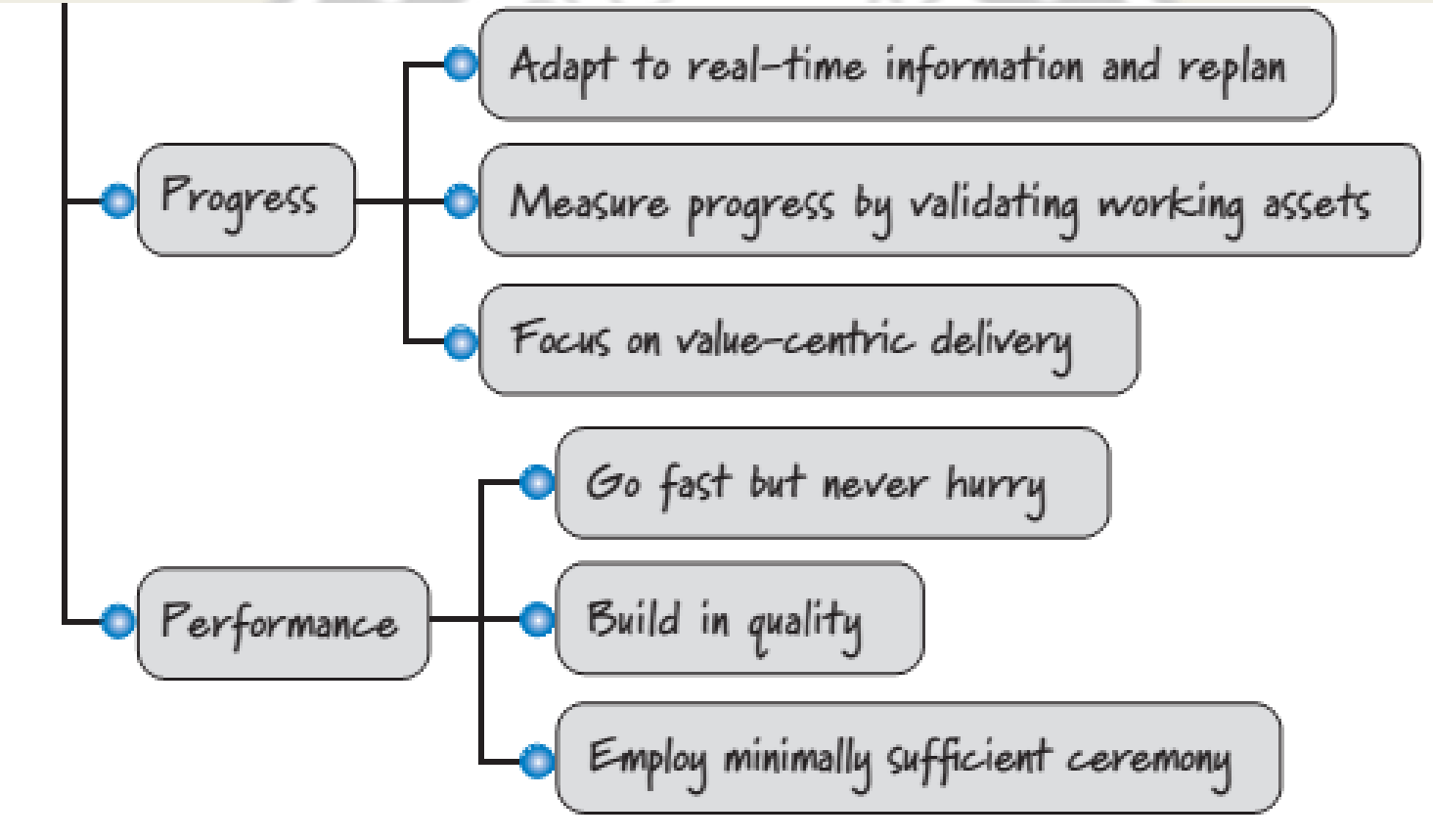
2021

Categorization of principles (Up)

Categorization of principles (Middle)



Categorization of principles (Bottom)



Progress

- When using Scrum, we measure progress by what we have delivered and validated, not by how we are proceeding according to the predefined plan or how far we are into a particular phase or stage of development.

- Three agile principles related to this topic.
  1. *Adapt to real-time information and re-plan.*
  2. *Measure progress by validating working assets.*
  3. *Focus on value-centric delivery.*

Adapt to Real-Time Information and Re-plan

- In a plan-driven, the plan is the authoritative source on how and when work should occur. As such, conformance to the plan is expected.
- In Scrum we believe that unbridled faith in the plan will frequently blind us to the fact that the plan might be wrong.
- Instead, our goal is to rapidly re-plan and adapt to the stream of economically important information that is continuously arriving during the development effort.

Measure Progress by Validating Working Assets(I)

- Progress during a sequential, plan-driven development effort is demonstrated by completing a phase and being permitted to enter the next phase.
- As a result, if each phase starts and completes as expected, the product development effort might seem to be progressing quite well.
- Yet in the end, the product we created in full accordance with the plan might deliver far less customer value than anticipated.

Measure Progress by Validating Working Assets(II)

- With Scrum, we measure progress by building working, validated assets that deliver value and that can be used to validate important assumptions.
- This gives us the feedback to know what the right next step is.
- In Scrum, it’s not about how much work we start; it’s all about what customer-valuable work we finish.

Focus on Value-Centric Delivery(I)

- Plan-driven, sequential development focuses on diligently following the process. By its very structure, the integration and delivery of features during sequential development happen at the end of the effort.

- With this approach there is a risk that we will run out of resources (time or money) before we deliver all of the important value to our customers.

Focus on Value-Centric Delivery(II)

- A related belief of traditional development is that the planning and document artifacts that get produced enroute to delivering features are themselves valuable.

- If these artifacts are indeed valuable, most of the time they are valuable only to the downstream process and not the customers. And, if they are valuable to the customer, that value accrues only if a desirable product is ultimately delivered to the customer. Until that happens, these artifacts provide no direct customer value.

Focus on Value-Centric Delivery(III)

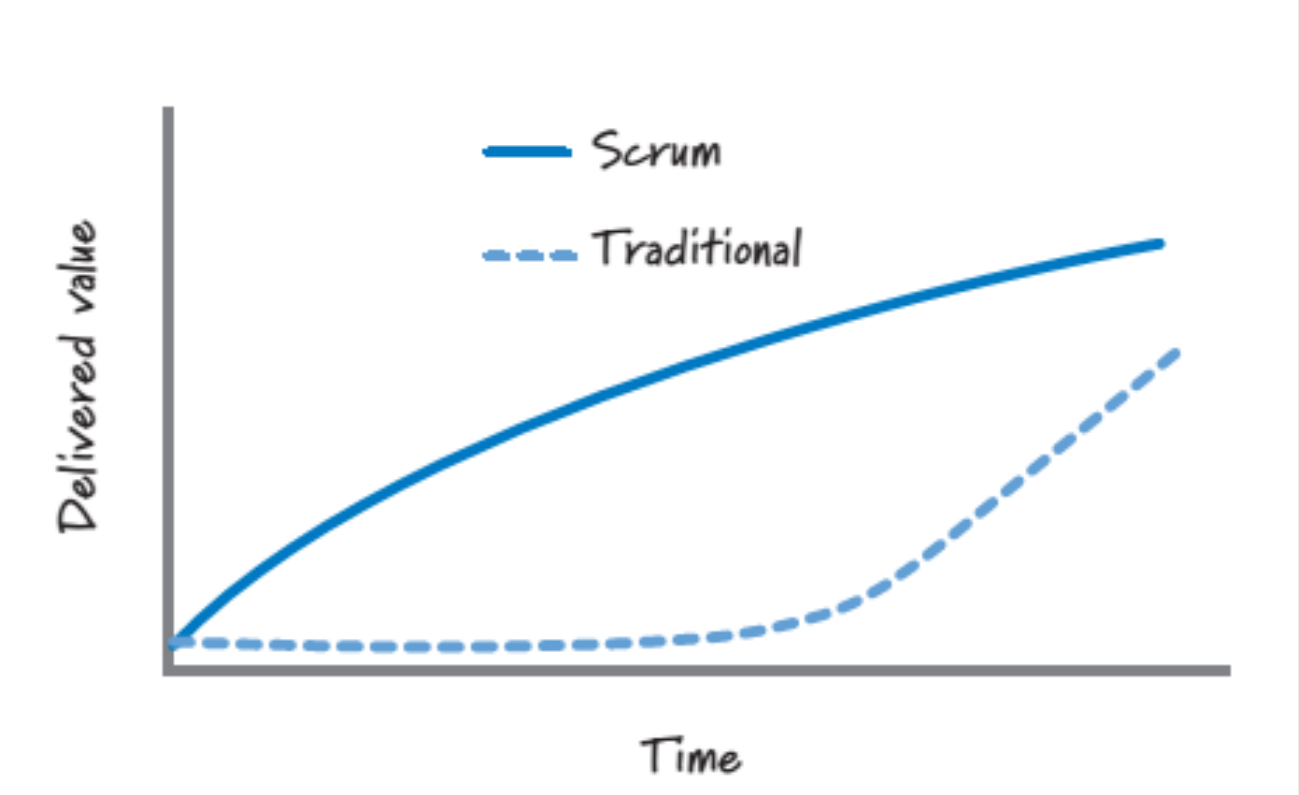
- Scrum is a customer-value-centric form of development.
- It is based on a prioritized, incremental model of delivery in which the highest-value features are continuously built and delivered in the next iteration.
- As a result, customers get a continuous flow of high-value features sooner.

Focus on Value-Centric Delivery(IV)

- In Scrum, value is generated by delivering working assets to customers, by validating important assumptions, or by acquiring valuable knowledge.

- In Scrum, we believe that the intermediate artifacts provide no perceived customer value and are merely a means to an end if they themselves cannot be used to generate important feedback or acquire important knowledge.

Deliver high-value features sooner



Performance

- There are specific performance-related characteristics we expect when using Scrum.

- Three agile principles related to this topic.
  1. *Go fast but never hurry.*
  2. *Build in quality.*
  3. *Employ minimally sufficient ceremony.*

Go fast but never hurry(I)

- Plan-driven development believes that if we follow the plan and do things right the first time, we'll avoid costly and time-consuming rework. Moving from step to step quickly is of course desirable, but it isn't a principal goal.

- In Scrum, one core goal is to be nimble, adaptable, and speedy.
- By going fast, we deliver fast, we get feedback fast, and we get value into the hands of our customers sooner. Learning and reacting quickly allow us to generate revenue and/or reduce costs sooner.

Go fast but never hurry(II)

- Do not, however, mistake going fast for being hurried.
- In Scrum, time is of the essence, but we don’t rush to get things done. Doing so would likely violate the Scrum principle of **sustainable pace**—people should be able to work at a pace that they can continue for an extended period of time.
- In addition, hurrying will likely come at the expense of quality.

Build In Quality(I)

- During plan-driven development, the belief is that through careful, sequential performance of work we get a high-quality product.
- However, we can’t actually verify this quality until we do the testing of the integrated product, which occurs during a late phase of the process.
- If testing should indicate that the quality is lacking, we then must enter the costly test-and-fix phase in an attempt to test quality in.
- Also, because a different team frequently works on each phase, the testing team is often viewed as owning the quality of the result.

Build In Quality(II)

- In Scrum, quality isn't something a testing team "tests in" at the end;
- It is something that a cross-functional Scrum team owns and continuously builds in and verifies every sprint.
- Each increment of value that is created is completed to a high level of confidence and has the potential to be put into production or shipped to customers.
- Need for any significant late testing to tack on quality is substantially reduced.

Employ Minimally Sufficient Ceremony(I)

- Plan-driven processes tend to be high-ceremony, document-centric, process-heavy approaches.
- A side effect of Scrum's being value-centric is that very little emphasis is put on process-centric ceremonies.
- I am referring to ceremony that is unnecessary formality.
- Some might call it "process for the sake of process." Such ceremony has a cost but adds little or no value (in other words, it's a type of waste).

Employ Minimally Sufficient Ceremony(II)

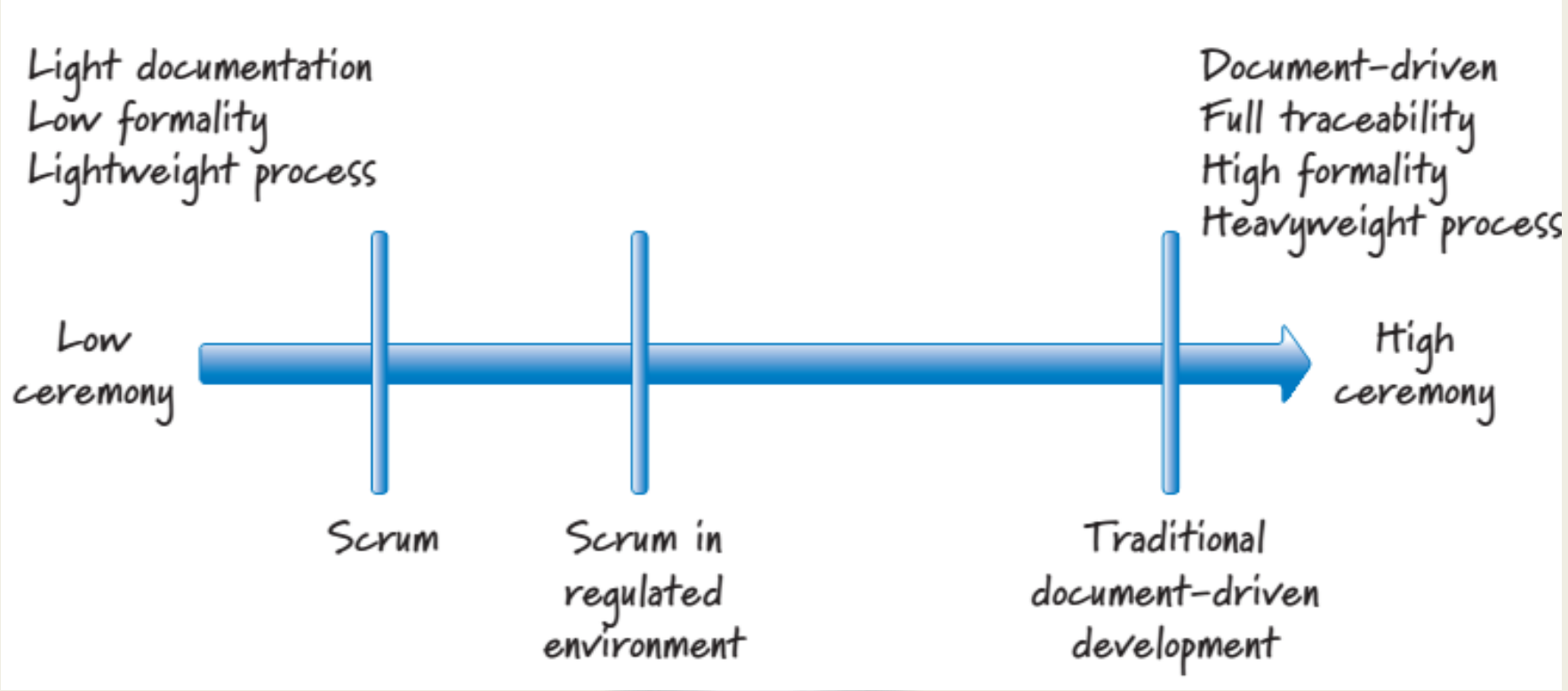
- In Scrum, our goal is to eliminate unnecessary formality.
- Therefore, we set the ceremonial bar at a low level, one that is minimally sufficient or good enough.

Employ Minimally Sufficient Ceremony(III)

- Frequently the Scrum focus on minimally sufficient ceremony is misinterpreted to mean things like “Scrum is anti-documentation.” Scrum isn’t anti-documentation.

- Rather, when using Scrum, we adopt an economic perspective and carefully review **which documents we create**. If we write a document that adds no value, we have wasted our time and money creating a dead document. However, not all documents are dead.

Ceremony scale



we will likely write a document if

- It is a deliverable as part of the product (for example, installation instructions, user's guide, and so on).
- Our goal is to capture an important discussion, decision, or agreement so that in the future we will have a clear recollection of what was discussed, decided, or agreed to.
- It is the high-value way of helping new team members come up to speed quickly.
- There is a regulatory requirement that a certain document be written (a cost of doing business in a regulated industry).

What we are trying to avoid is work that adds no short-term or long-term economic value.

In Scrum, we believe that time and money are better spent delivering customer value.

Comparison Summary of Plan-Driven and Agile Principles(I)

Topic	Plan-Driven Principle	Agile Principle
Similarity between development and manufacturing	Both follow a defined process.	Development isn't manufacturing; development creates the recipe for the product.
Process structure	Development is phase-based and sequential.	Development should be iterative and incremental.
Degree of process and product variability	Try to eliminate process and product variability.	Leverage variability through inspection, adaptation, and transparency.
Uncertainty management	Eliminate end uncertainty first, and then means uncertainty.	Reduce uncertainties simultaneously.
Decision making	Make each decision in its proper phase.	Keep options open.
Getting it right the first time	Assumes we have all of the correct information up front to create the requirements and plans.	We can't get it right up front.

Comparison Summary of Plan-Driven and Agile Principles(II)

Topic	Plan-Driven Principle	Agile Principle
Exploration versus exploitation	Exploit what is currently known and predict what isn't known.	Favor an adaptive, exploratory approach.
Change/emergence	Change is disruptive to plans and expensive, so it should be avoided.	Embrace change in an economically sensible way.
Predictive versus adaptive	The process is highly predictive.	Balance predictive up-front work with adaptive just-in-time work.
Assumptions (unvalidated knowledge)	The process is tolerant of long-lived assumptions.	Validate important assumptions fast.
Feedback	Critical learning occurs on one major analyze-design-code-test loop.	Leverage multiple concurrent learning loops.
Fast feedback	The process is tolerant of late learning.	Organize workflow for fast feedback.

Comparison Summary of Plan-Driven and Agile Principles(III)

Topic	Plan-Driven Principle	Agile Principle
Batch size (how much work is completed before the next activity can start)	Batches are large, frequently 100%—all before any. Economies of scale should apply.	Use smaller, economically sensible batch sizes.
Inventory/work in process (WIP)	Inventory isn't part of the belief system so is not a focus.	Recognize inventory and manage it to achieve good flow.
People versus work waste	Allocate people to achieve high levels of utilization.	Focus on idle work, not idle workers.
Cost of delay	Cost of delay is rarely considered.	Always consider cost of delay.
Conformance to plan	Conformance is considered a primary means of achieving a good result.	Adapt and replan rather than conform to a plan.

Comparison Summary of Plan-Driven and Agile Principles(IV)

Topic	Plan-Driven Principle	Agile Principle
Progress	Demonstrate progress by progressing through stages or phases.	Measure progress by validating working assets.
Centricity	Process-centric—follow the process.	Value-centric—deliver the value.
Speed	Follow the process; do things right the first time and go fast.	Go fast but never hurry.
When we get high quality	Quality comes at the end, after an extensive test-and-fix phase.	Build quality in from the beginning.
Formality (ceremony)	Formality (well-defined procedures and checkpoints) is important to effective execution.	Employ minimally sufficient ceremony.

Reference

1- K. S. Rubin, “Essential Scrum, A Practical guide to the most popular agile process,” 2013.