

Agile Project Management

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PMG 622
Master of Project Management

Lecture 08





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Key Metrics and Resources to Monitor and Control Agile Projects

Lecture 8

PMG 622

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Key Points from Previous Lecture

Hybrid Methods bring the best of both worlds (Agile and Traditional) to your project.

There are different methods for Hybrid PM

You customize your Hybrid methodology based on each project needs and requirements.

Hybrid PM brings more flexibility, better collaboration, more risk management, and efficient use of resources.

We can implement Hybrid and Agile on an enterprise level using SAFe® and DA™

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Learning Objectives

- Learn how and when to monitor and control Agile Projects.
- Determine the main Key Performance Indicators (KPIs) to monitor an Agile Project
- Use KPIs' to forecast, analyze performance, and take decisions
- Perform Risk Management in Agile Projects

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KPIs and Monitoring and Controlling Agile Projects



Monitoring and Controlling Agile Progress

- Monitoring and controlling is integrated throughout the whole Agile project life cycle
- Agile methodologies, such as Scrum or Kanban, emphasize continuous inspection, adaptation, and collaboration



Monitoring & Controlling events in Agile Projects

Event/Ceremony	Monitor	Control
Sprint Planning	Review and prioritize backlog items for the sprint	Planning involves estimating effort and committing to a set of deliverables for the sprint
Daily Standup	Provide updates, discuss impediments, adjust daily plan	The team collaboratively addresses issues and adapts the plan to optimize progress
Sprint Review	Demonstrated completed work to stakeholders	Stakeholders provide feedback, and the team reflects on what went well and what could be improved for the next sprint.
Sprint Retrospective	Reflect on sprint, examine processes, communication and overall performance	The team identifies areas for improvement and commits to implementing changes in the next sprint
Release Planning	High-level planning for upcoming releases	Adjustments are made based on feedback, changes in priorities, or evolving project requirements
Backlog Refinement	Review and refine the backlog, ensuring it is well-prioritized and contains detailed items for upcoming sprints	Adjustments are made to the backlog based on changing priorities or new information.

Key Performance Indicator KPIs

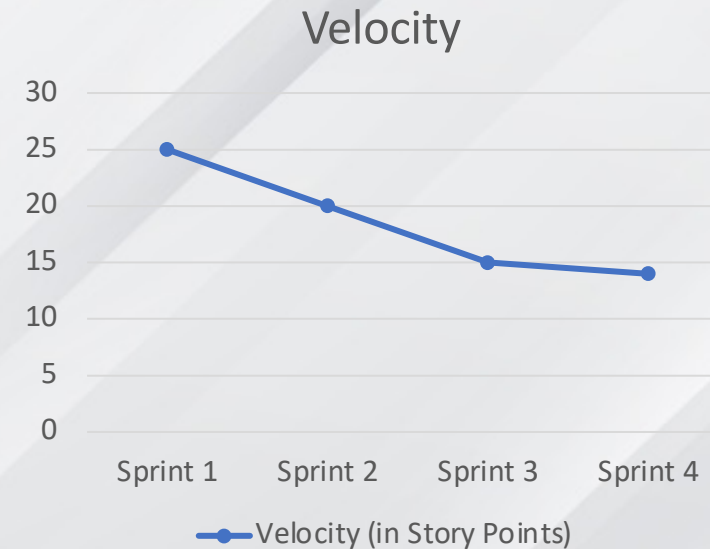
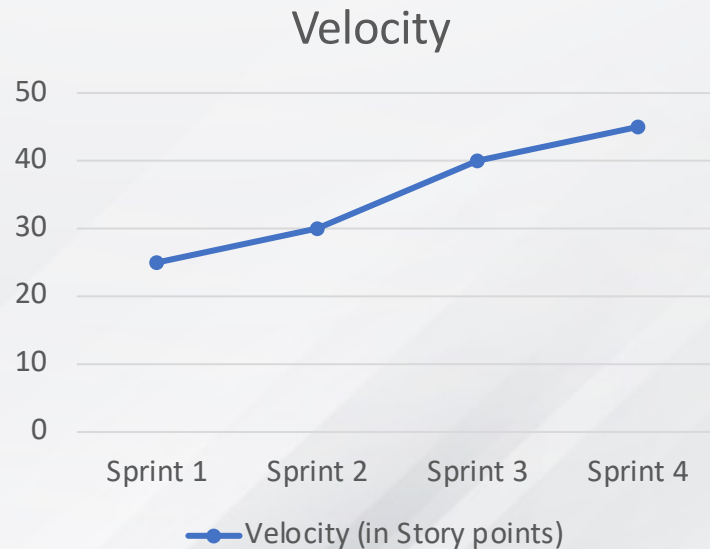
“A measurable value that demonstrates how effectively an organization, department, process, project, or individual is achieving specific objectives. KPIs are used to evaluate performance over time, providing a quantifiable and objective measure of success or progress toward goals..”

Efficiency KPI: Velocity

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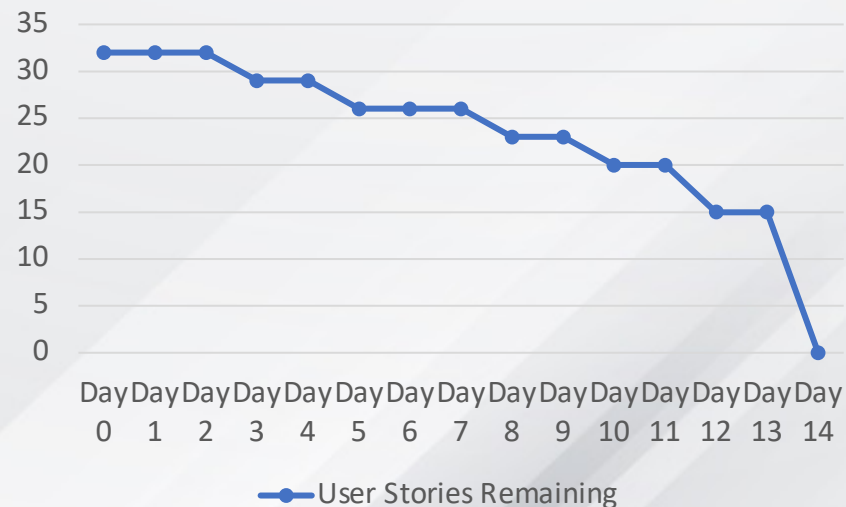
- **Definition:** The amount of work a team can complete in a given iteration (sprint). Indicates the team's efficiency and helps in predicting future work capacity.
- Projects aim to increase velocity to speed up delivery and shorten project time and reduce cost.



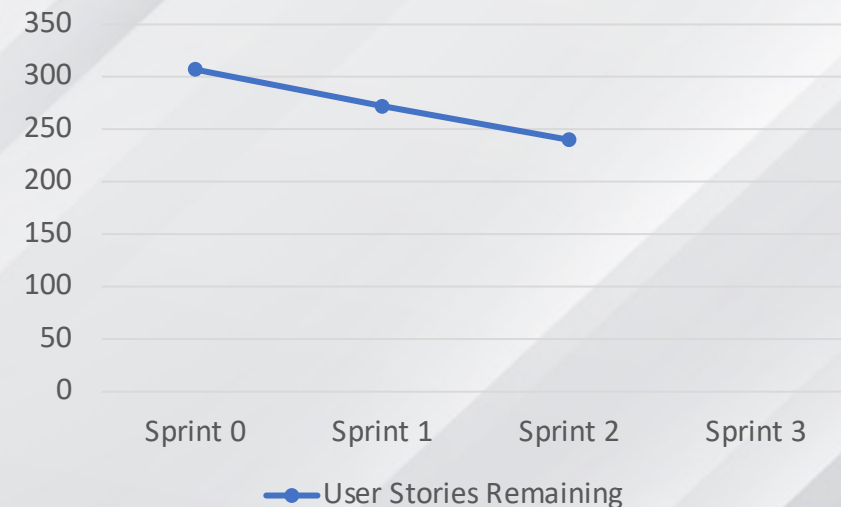
Efficiency KPI: Burn-Down

- **Sprint Burn-Down:** the progress of tasks within a sprint against the planned work. Provides a visual representation of work completed and remaining, aiding in timely adjustments.
- **Overall Burn-Down:** The rate at which work is completed over time, often measured in story points. Helps in assessing the team's ability to meet goals and deliver on time.

Sprint 2 Burndown Chart

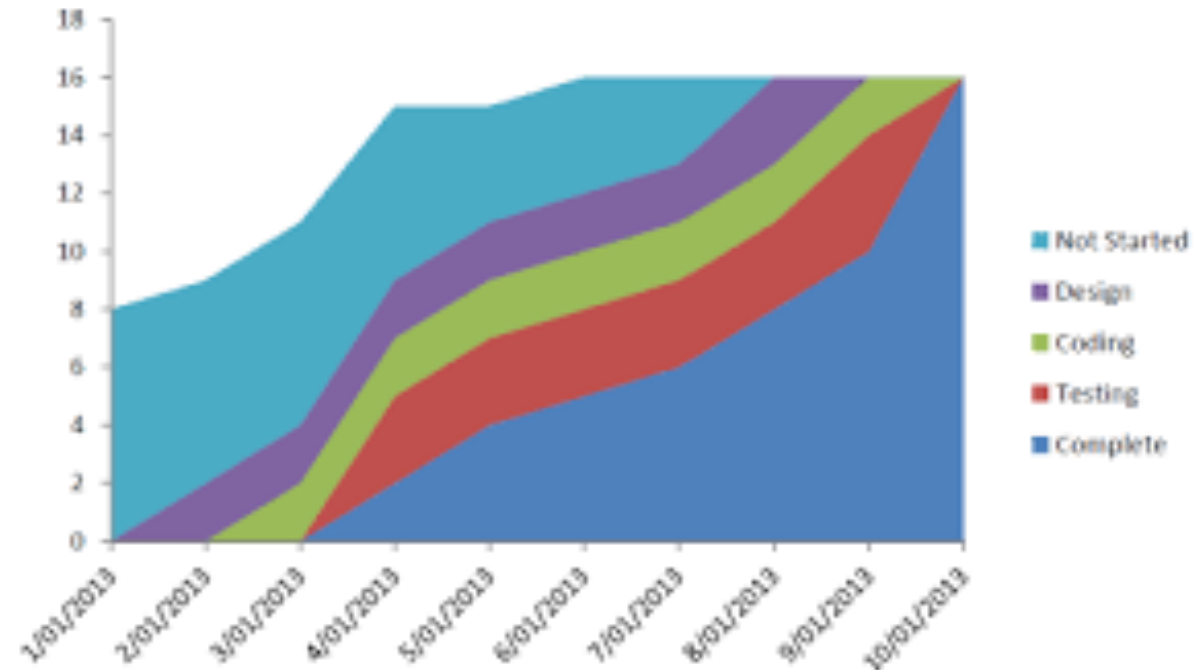


Project Burndown Chart



Efficiency KPI: Cumulative Flow Diagram (CFD)

- **Definition:** A visual representation showing the flow of work items across different stages. Identifies bottlenecks and helps in optimizing the flow of work through the implementation process.
- Each line represents one of your workflow items as organized in a Kanban board.



Efficiency KPI: Lead Time vs. Cycle Time

- **Lead Time:** The time it takes for a new requirement to be implemented and delivered. Reflects the speed of delivery from idea to implementation, helping to identify bottlenecks.
- **Cycle Time:** The time taken to complete a single task or user story. Offers insights into the efficiency of the implementation process.

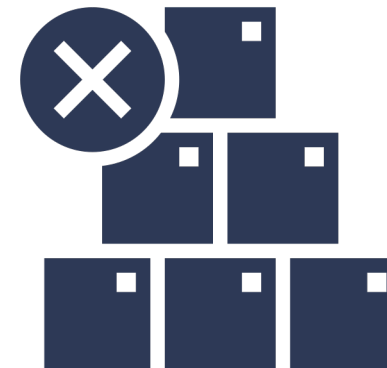


Example for Lead Time vs. Cycle Time

- At Sprint 5 review, the customer asked for a new requirement. It was added to the product log and implemented after 3 sprints, each sprint is 15 days. The team worked on it from day 1 and completed it on day 8 of that sprint.
- Lead time = 3 sprints x 15 days = 45 days
- Cycle time = days (8 – 1) = 7 days

Quality KPI: Defects (Escaped Defects)

- **Definition:** The number of defects discovered by customers or end-users after the product release. Reflects the quality of the delivered product and the effectiveness of testing processes.
- Note: Testing and documentation time are already included in story estimation



Value KPI: Customer Satisfaction

- **Customer Satisfaction:** Measures the satisfaction level of customers or stakeholders with the delivered product. Provides insights into the alignment of the product with user expectations and needs.
- Customer Satisfaction is a qualitative measure of value and measured through surveys or customer feedback.



Value KPI: Customer Value Delivered

There are many ways to measure value delivered to customers as:

User Story
Points
completed

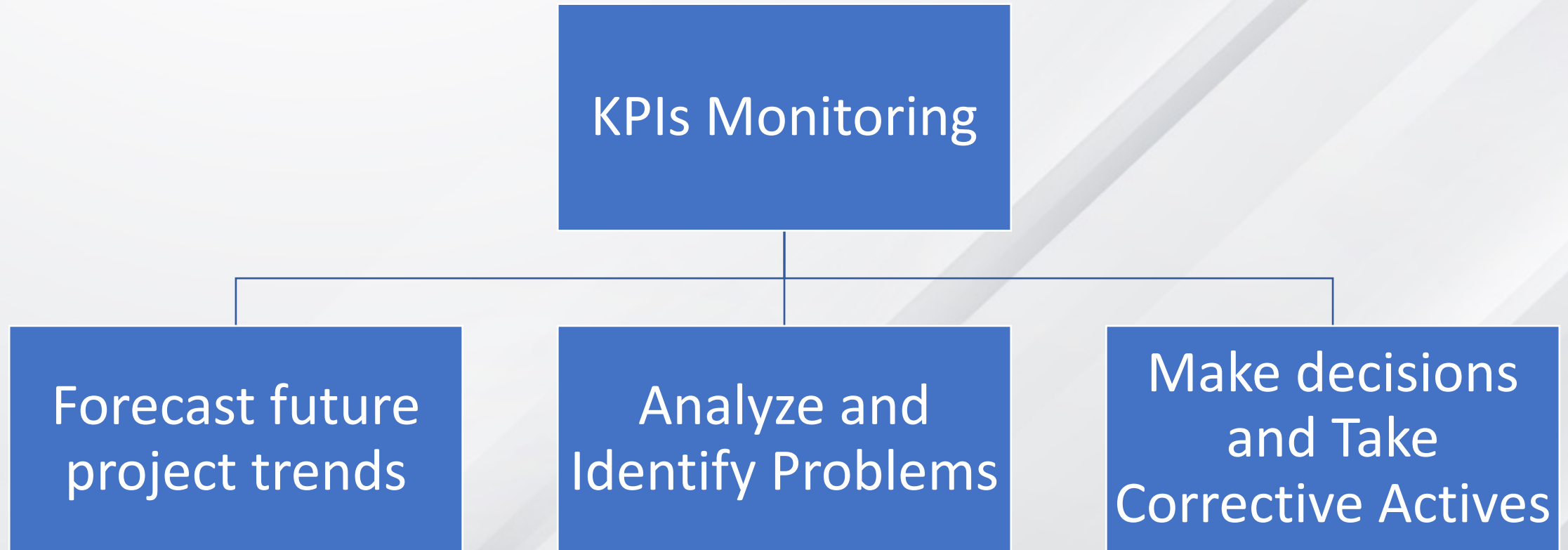
Feature
Adoption
Rates

Time to
Market

Percentage of
Features used

Value Stream
Mapping

How to use these KPIs



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Scenarios for using KPIs in the Calculator App Project



Scenario 1: Forecasting # of Sprints and Budget

Situation	Forecast
After 5 Sprints: Velocity is 30 Remaining Story points = 240 Cost per Sprint = \$10,000 Sprint Length = 15 days Management Asks you about when are you going to finish and how much more money do you need?	Remaining # of Sprints = Story Points remaining / velocity Remaining # of Sprints = $240/30 = 8$ Sprints Time left In Months = 4 Months Money needed = cost per sprint * # of Sprints = $\\$10,000 * 8$ = \$80,000 USD

Scenario 2: Analyzing Issues and problems

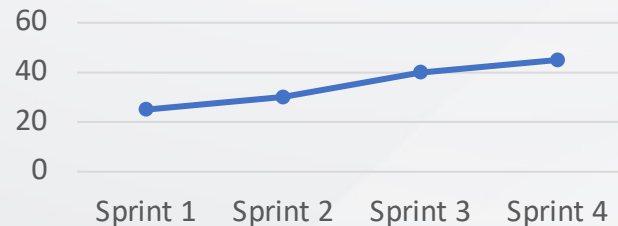
Situation	What does this mean?	What can you do?
Defects highly increased in last release while velocity increased, and cycle time was reduced	It could mean different things as: - Quality team members was absent in some days - Team rushed testing process - Team was efficient but there was a problem in releasing the product outside the team	- Discuss with team to identify reason in daily standup or sprint retrospective - Review CFD to see if there has been significant changes in testing time - Meet release team to find out about reason

Scenario 3: Analyzing Issues and problems

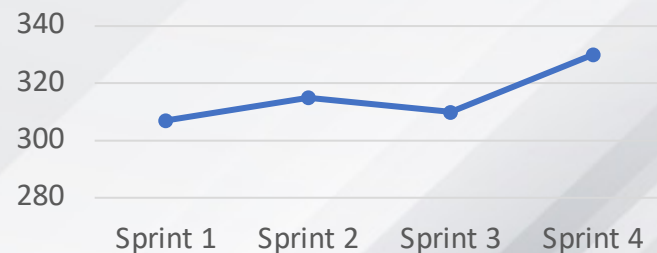
Situation

Velocity is increasing but burndown chart has an upward trend due to increased number of story points

Velocity



Project Burndown Chart



What does this mean?

It could mean different things as:

- many new requirements are being added increasing the number of story points
- User Story estimates was revised and increased
- The project has a potential to keep growing and never ending.

What can you do?

- Product Owner reviews Priorities and works to eliminate low priority items
- Team works to increase velocity to reduce remaining time
- Try to capture majority of unidentified requirements in next sprint review with the customer

Scenario 4: Analyzing Issues and problems

Situation	What does this mean?	What can you do?
Overall Average Cycle time of the project is 5 days. One story so far has a cycle time of 15 days and is not yet completed.	It could mean different things as: - The story was too big needs to be split - The story is too difficult - Their was wrong estimate for the story - There are some quality issues with this story - The team needs training to do this story	- Discuss with team to identify reason in daily standup - Assign more experienced team members to it - Split the story into multiple user stories - Focus all team effort on this task

Scenario 5: Analyzing Issues and problems

Situation	What does this mean?	What can you do?
Lead Time is high and customer satisfaction is low.	It could mean different things as: - Features take too long - Finished Features are of low priority (prioritization issue)	- Discuss with team to identify reason in Retrospective and opportunities to reduce lead time - Review the product backlog to ensure high value features are delivered first - check with the customer what is the main reason for dissatisfaction

Scenario 6: Decision Making

Situation	Action
Two team members (out of 7) have left the team which means reduced velocity and in turn more sprints will be needed Your project has budget cut (reduced) and tight deadline Management Asks you about solutions to reduce budget and achieve timeline	You could analyze and decide on any of the following: - Check possibility of hiring two replacement people in short period of time and at lower cost - Check if current team can work overtime with incentive or increase velocity to achieve goal - Review if we can eliminate low priority items in product backlog

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Agile Risk Management



Defining Risk

“An uncertain event or condition that, if it occurs, has a positive or negative effect on one or more project objectives.”

Adapted from: Project Management Institute, *Agile Practice Guide*, Project Management Institute Inc., 2017, Page 397..

Agile Principles and Risk Management

- Applying Agile principles significantly mitigate or eliminate many risks that frequently lead to project challenges and failure.
- On Agile projects, risk management doesn't have to involve formal risk documentation and meetings.
- Instead, Risk Management is built into Agile roles, artifacts, and events

Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.

Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.

Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.

Business people and developers must work together daily throughout the project.

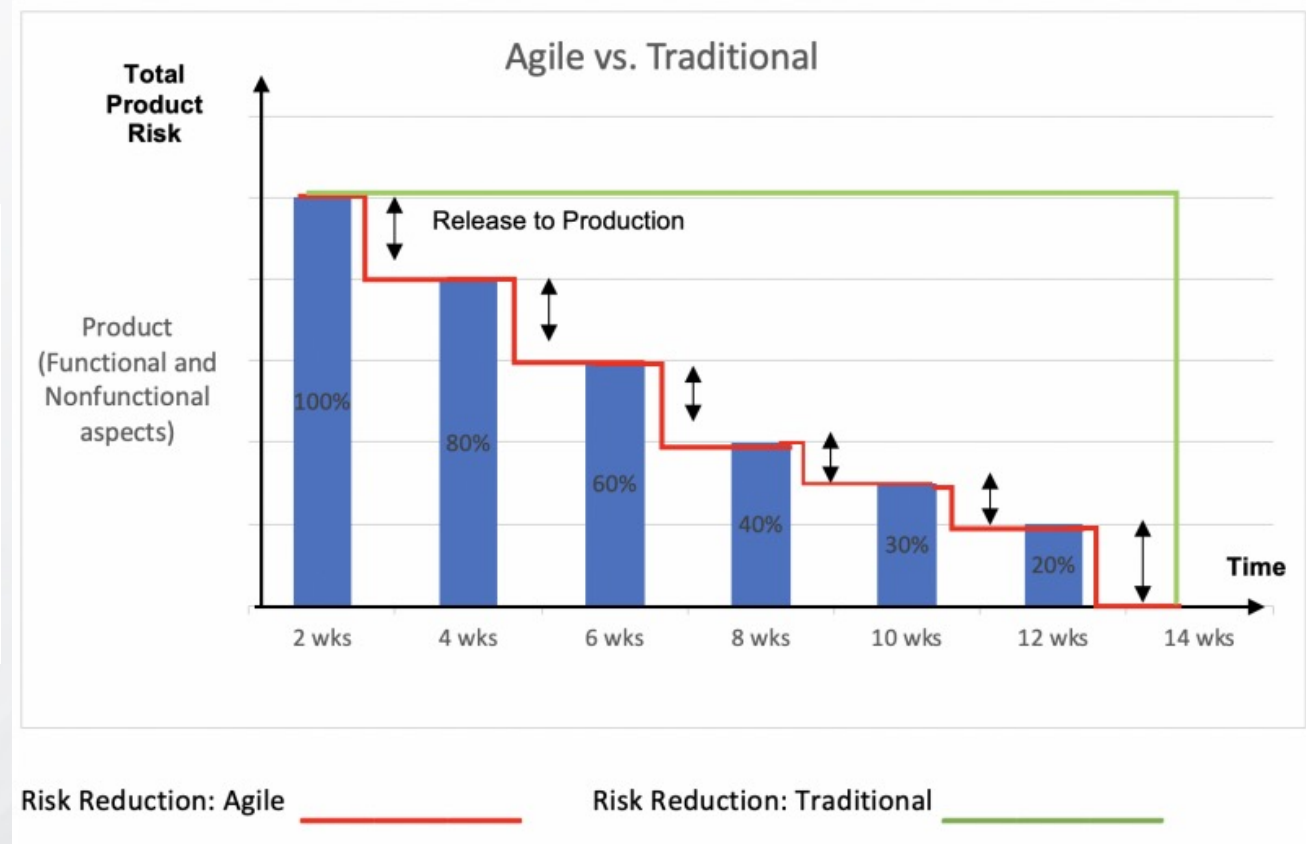
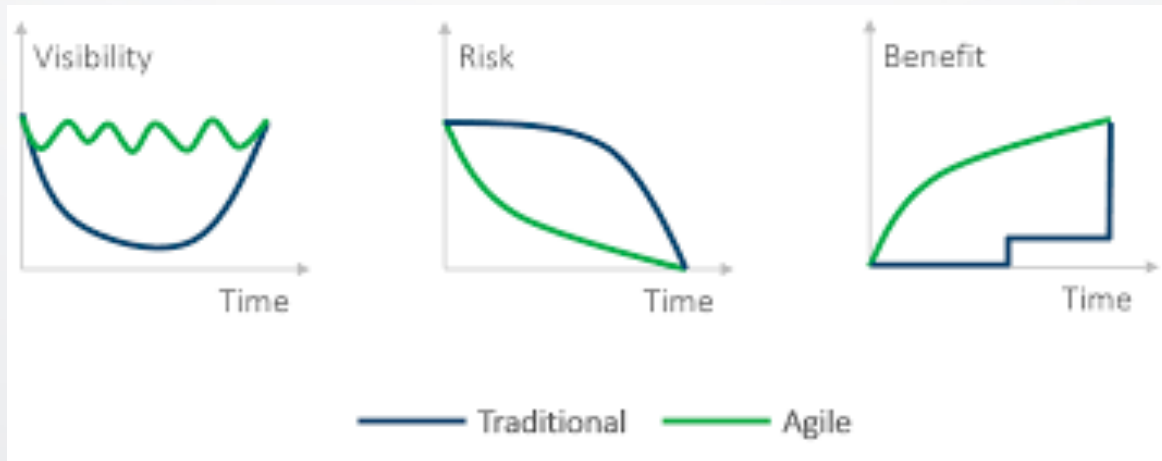
Working software is the primary measure of progress.

According to the Standish Group's "2015 Chaos Report," a study of 10,000 software projects, agile projects are more likely to succeed than traditional projects.

CHAOS RESOLUTION BY AGILE VERSUS WATERFALL				
SIZE	METHOD	SUCCESSFUL	CHALLENGED	FAILED
All Size Projects	Agile	39%	52%	9%
	Waterfall	11%	60%	29%
Large Size Projects	Agile	18%	59%	23%
	Waterfall	3%	55%	42%
Medium Size Projects	Agile	27%	62%	11%
	Waterfall	7%	68%	25%
Small Size Projects	Agile	58%	38%	4%
	Waterfall	44%	45%	11%

Adapted from: The Standish Group "2015 Chaos Report", Page 7.

Agile Projects declining Risk Model



Risk on agile projects declines as the project progresses much faster than traditional projects.

Agile Characteristics that Reduce Risks



Reducing Risks Inherently

Sprints, releases, reviews, retrospectives, product owner involvement,



Definition of Done

The product owner and team agree upon the details of the definition of done ; user story estimation is all inclusive, i.e. includes times for testing and documentation



Self-Funding Projects

Agile projects can mitigate financial risk in a unique way as the self-funding project. If the product is income-generating, you could use that income to help fund the rest of your project.



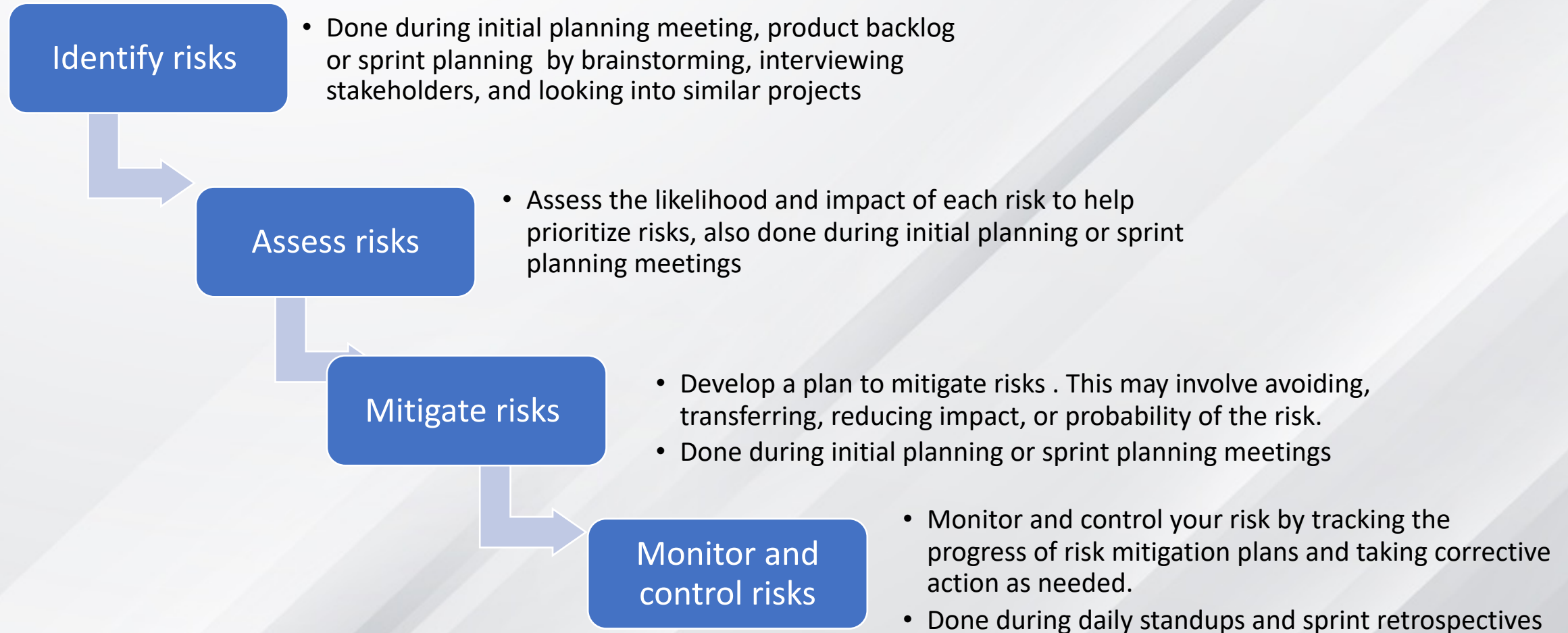
Failing Fast

Instead of sinking costs into a long effort for requirements, design, and development, and then finding problems very late, agile projects identify critical problems within a few sprints saving large amounts of money.

Agile considerations for identifying, prioritizing, and responding to risks

- Agile teams should be aware of the risks that can arise during a project, they are responsible for trying to identify risks and find ways to prevent those risks from materializing.
- **Prioritize High-Value and High-Risk requirements first by creating a “Risk-Adjusted Backlog” giving priority to high-risk features and stories.**
- Teams use existing agile artifacts and meetings to manage risk (as Product Backlog, Sprint Planning, Daily Standups, Reviews and Retrospectives)
- You can use traditional risk management documents if needed as:
 - Risk Register
 - Probability-Impact Matrix

Agile Risk Management Steps



Key Points

Monitoring and controlling is done throughout agile projects using existing events and artifacts

KPIs allows us to forecast, analyze, take decisions and corrective actions

There are many KPIs around efficiency, customer value, and quality

Applying Agile principles reduces project risks. We develop Risk Adjusted Backlog that prioritizes high value and high risk features.

Risk management is inherent in Agile processes and the team is responsible for identifying, prioritizing and mitigating risks.

Preparation for discussion panel:

- Watch the VIDEO
[“POWERFUL AGILE METRICS THAT CHANGE THE GAME”](#)
- Question:
What other KPIs can you think of using in Agile Projects?



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For Discussion Panel

Before next lecture:

- Role of the Agile PM
- Watch the video

[“Top 50 Agile Project Manager Interview Questions and Answers / Invensis Learning”](#)



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For Next Lecture



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Thank You

