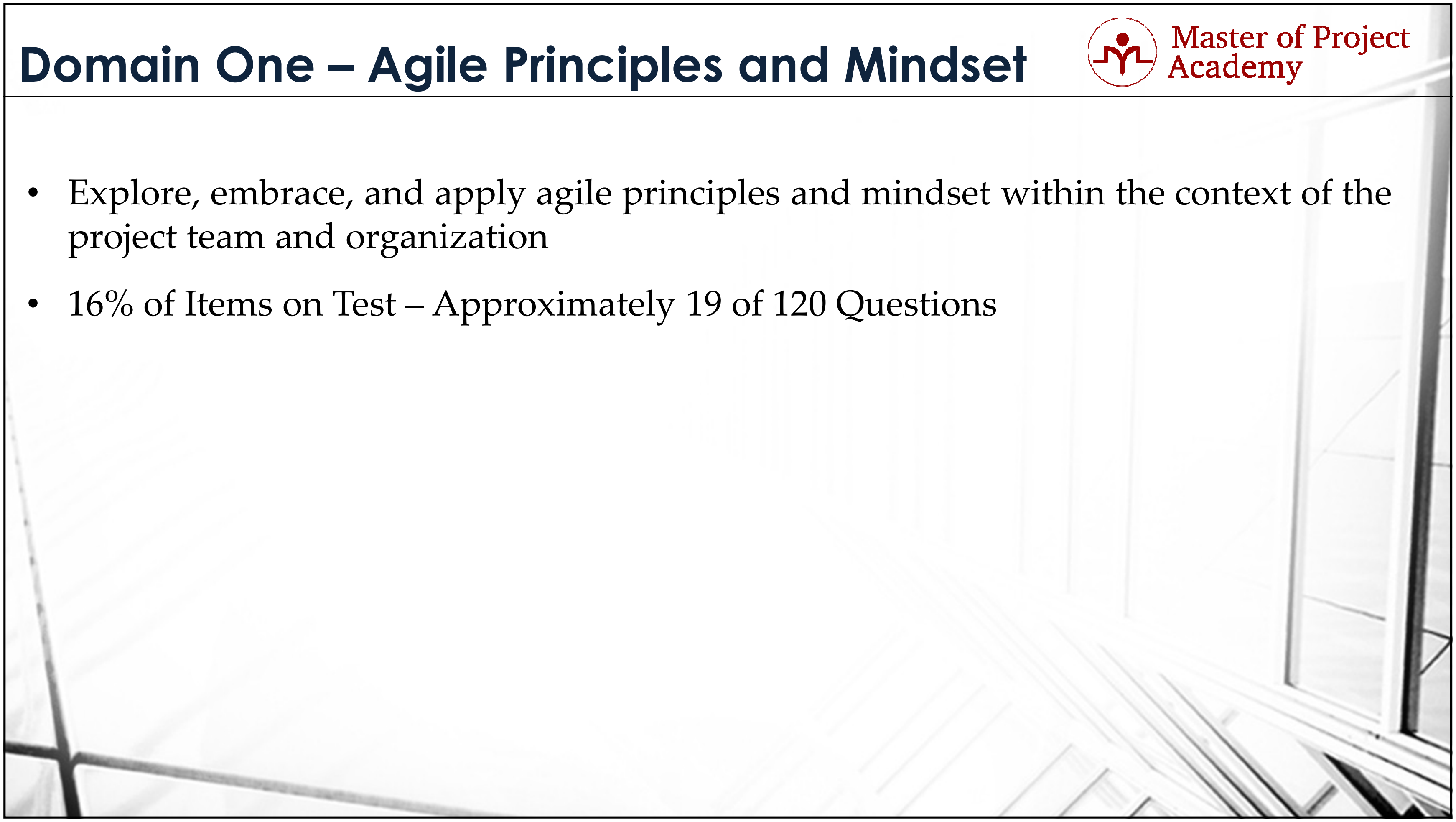
Domain One – Agile Principles and Mindset



Domain One – Agile Principles and Mindset

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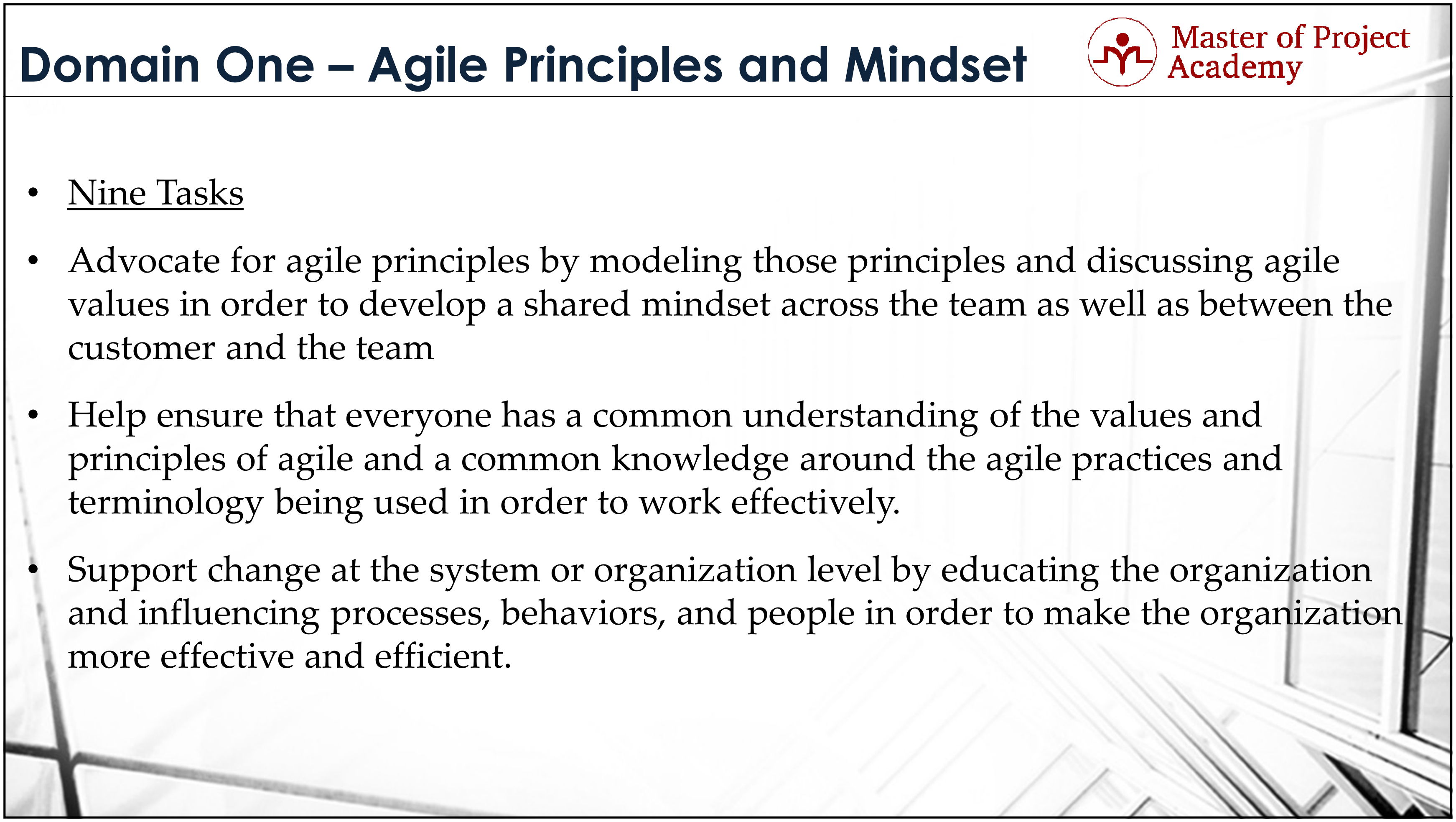
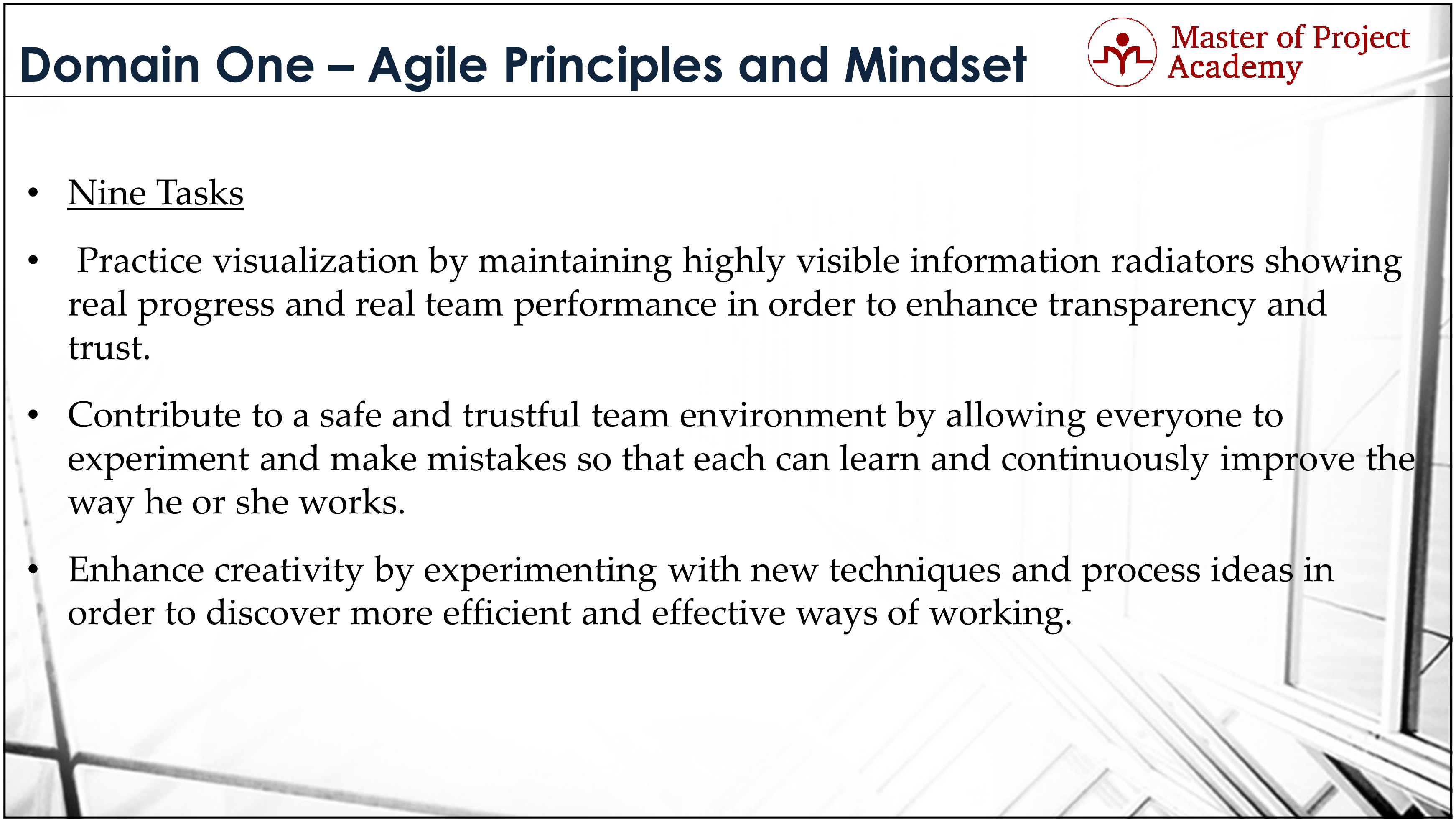
- Explore, embrace, and apply agile principles and mindset within the context of the project team and organization
- 16% of Items on Test – Approximately 19 of 120 Questions



Domain One – Agile Principles and Mindset

- Nine Tasks
- Advocate for agile principles by modeling those principles and discussing agile values in order to develop a shared mindset across the team as well as between the customer and the team
- Help ensure that everyone has a common understanding of the values and principles of agile and a common knowledge around the agile practices and terminology being used in order to work effectively.
- Support change at the system or organization level by educating the organization and influencing processes, behaviors, and people in order to make the organization more effective and efficient.



Domain One – Agile Principles and Mindset

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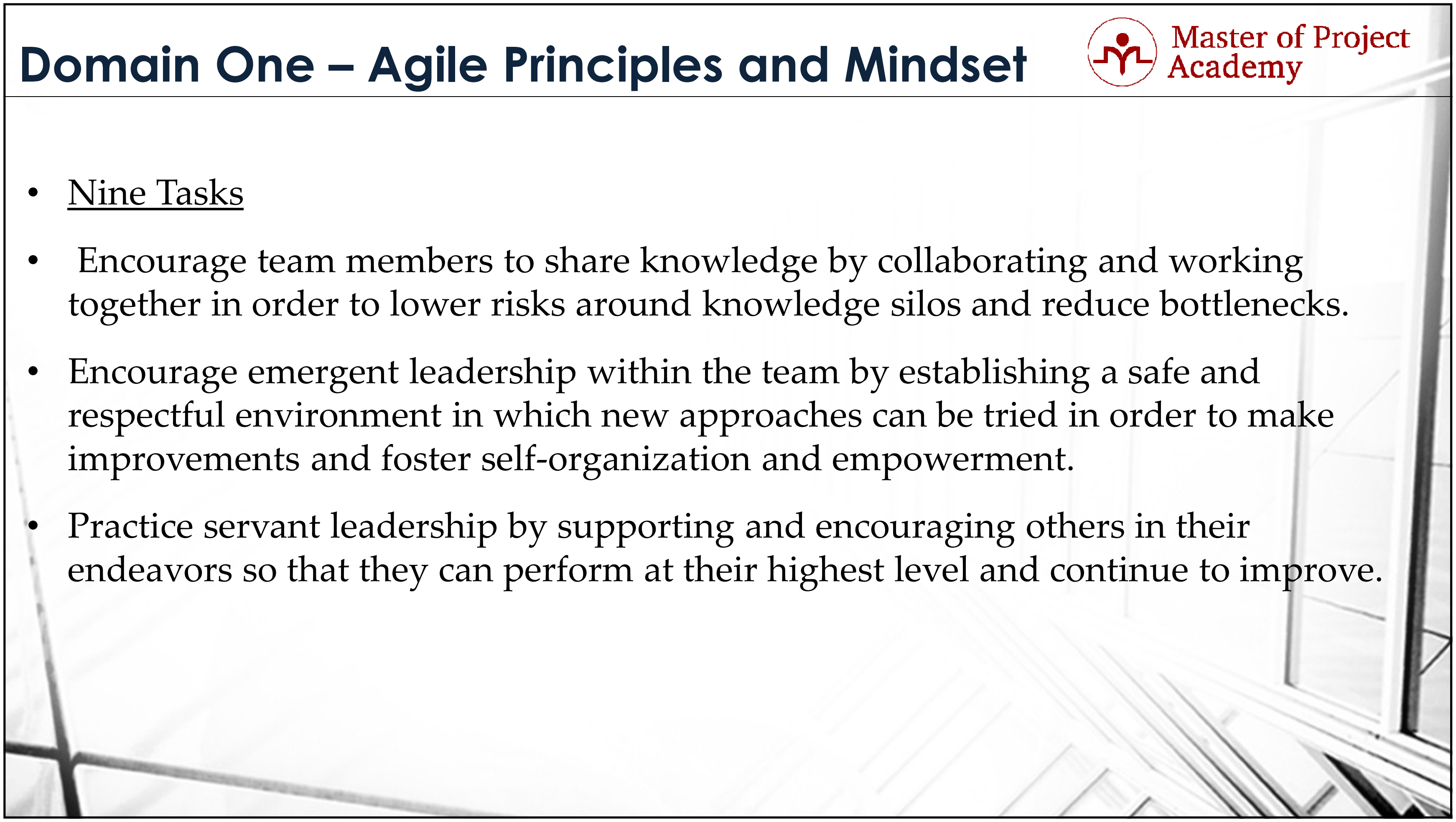
- Nine Tasks
- Practice visualization by maintaining highly visible information radiators showing real progress and real team performance in order to enhance transparency and trust.
- Contribute to a safe and trustful team environment by allowing everyone to experiment and make mistakes so that each can learn and continuously improve the way he or she works.
- Enhance creativity by experimenting with new techniques and process ideas in order to discover more efficient and effective ways of working.



Domain One – Agile Principles and Mindset

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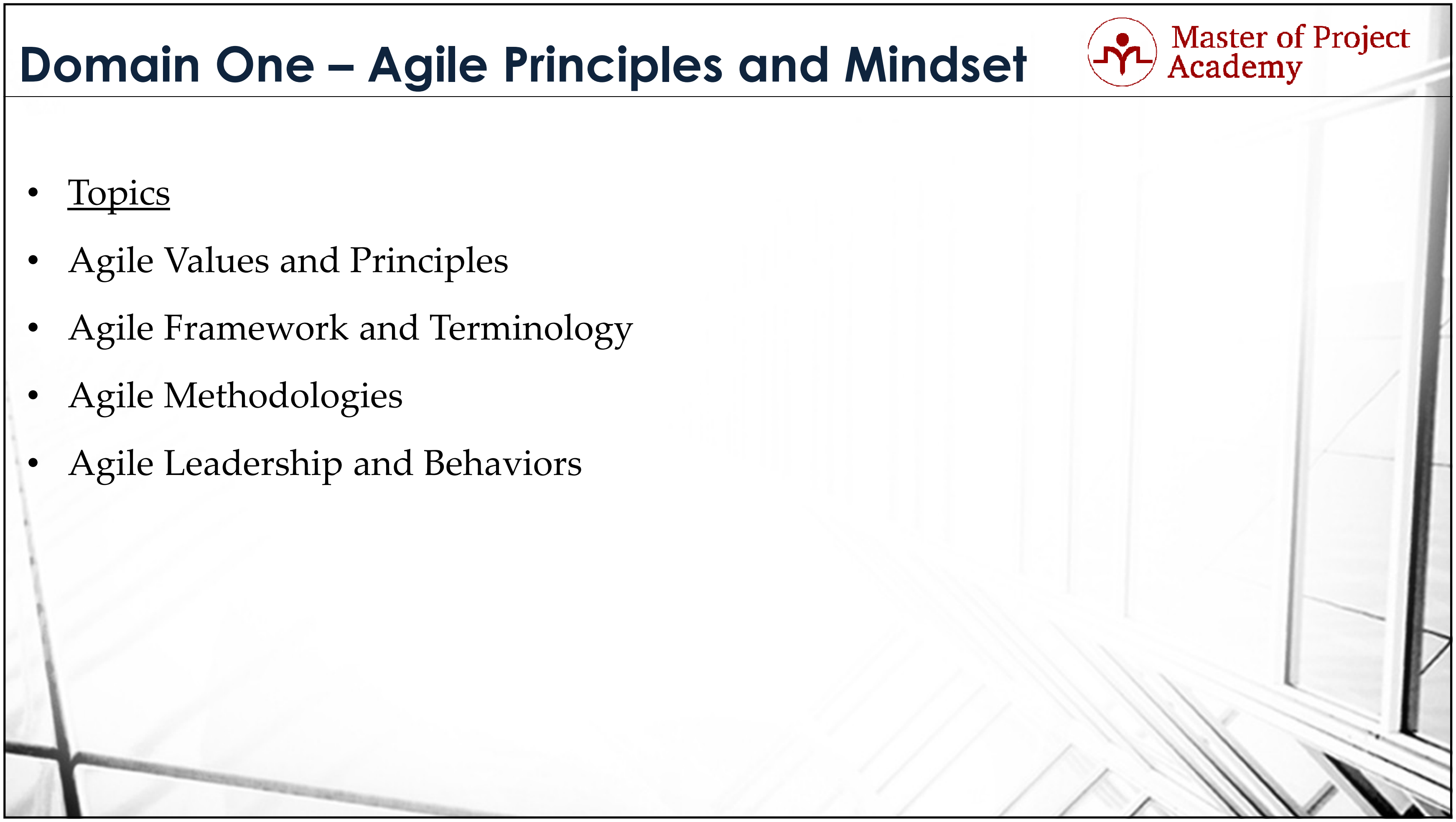
- Nine Tasks
- Encourage team members to share knowledge by collaborating and working together in order to lower risks around knowledge silos and reduce bottlenecks.
- Encourage emergent leadership within the team by establishing a safe and respectful environment in which new approaches can be tried in order to make improvements and foster self-organization and empowerment.
- Practice servant leadership by supporting and encouraging others in their endeavors so that they can perform at their highest level and continue to improve.



Domain One – Agile Principles and Mindset

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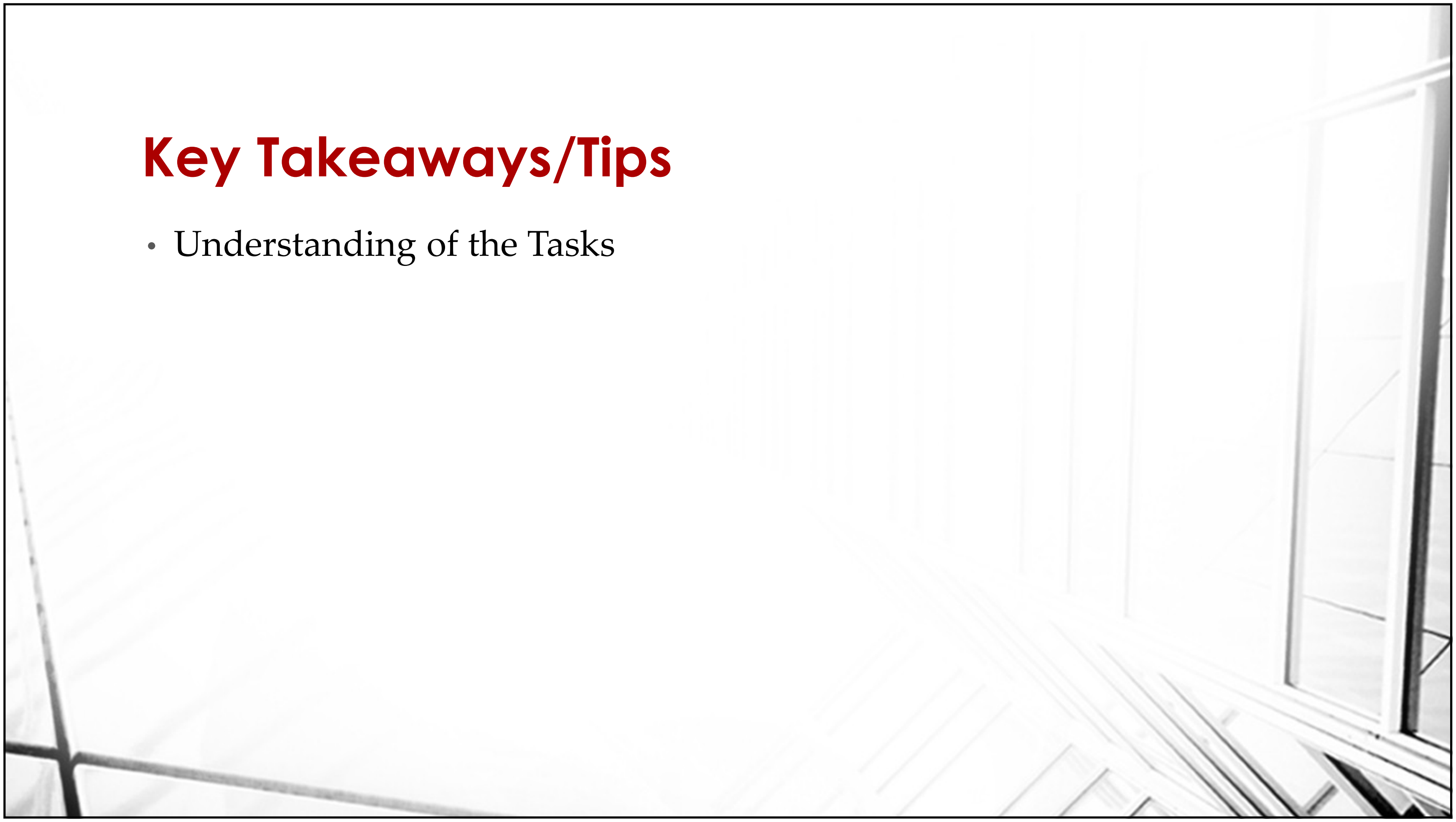
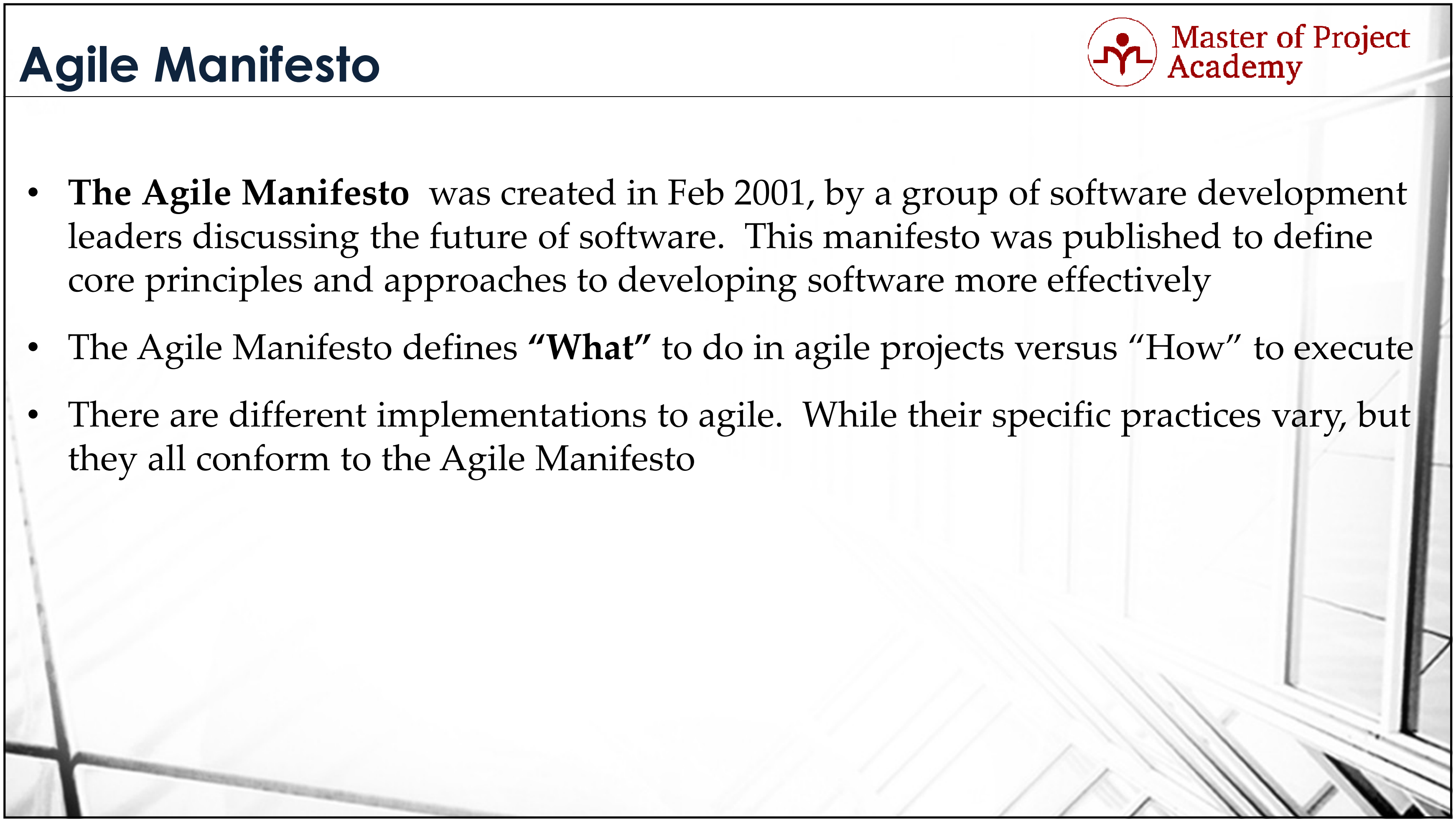
- Topics
- Agile Values and Principles
- Agile Framework and Terminology
- Agile Methodologies
- Agile Leadership and Behaviors



Key Takeaways/Tips

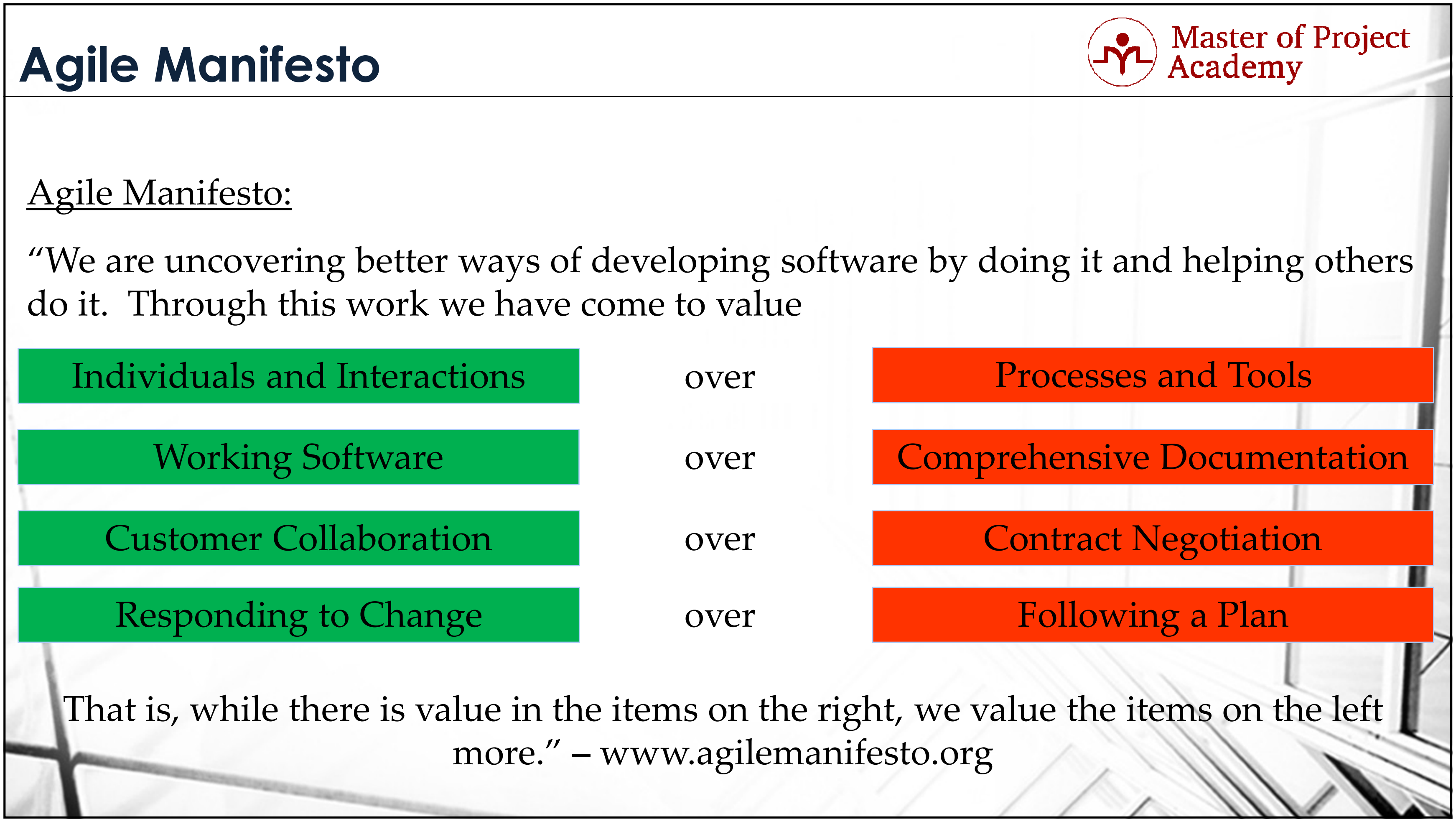
- Understanding of the Tasks

The Agile Manifesto



Agile Manifesto

- **The Agile Manifesto** was created in Feb 2001, by a group of software development leaders discussing the future of software. This manifesto was published to define core principles and approaches to developing software more effectively
- The Agile Manifesto defines **"What"** to do in agile projects versus "How" to execute
- There are different implementations to agile. While their specific practices vary, but they all conform to the Agile Manifesto



Agile Manifesto

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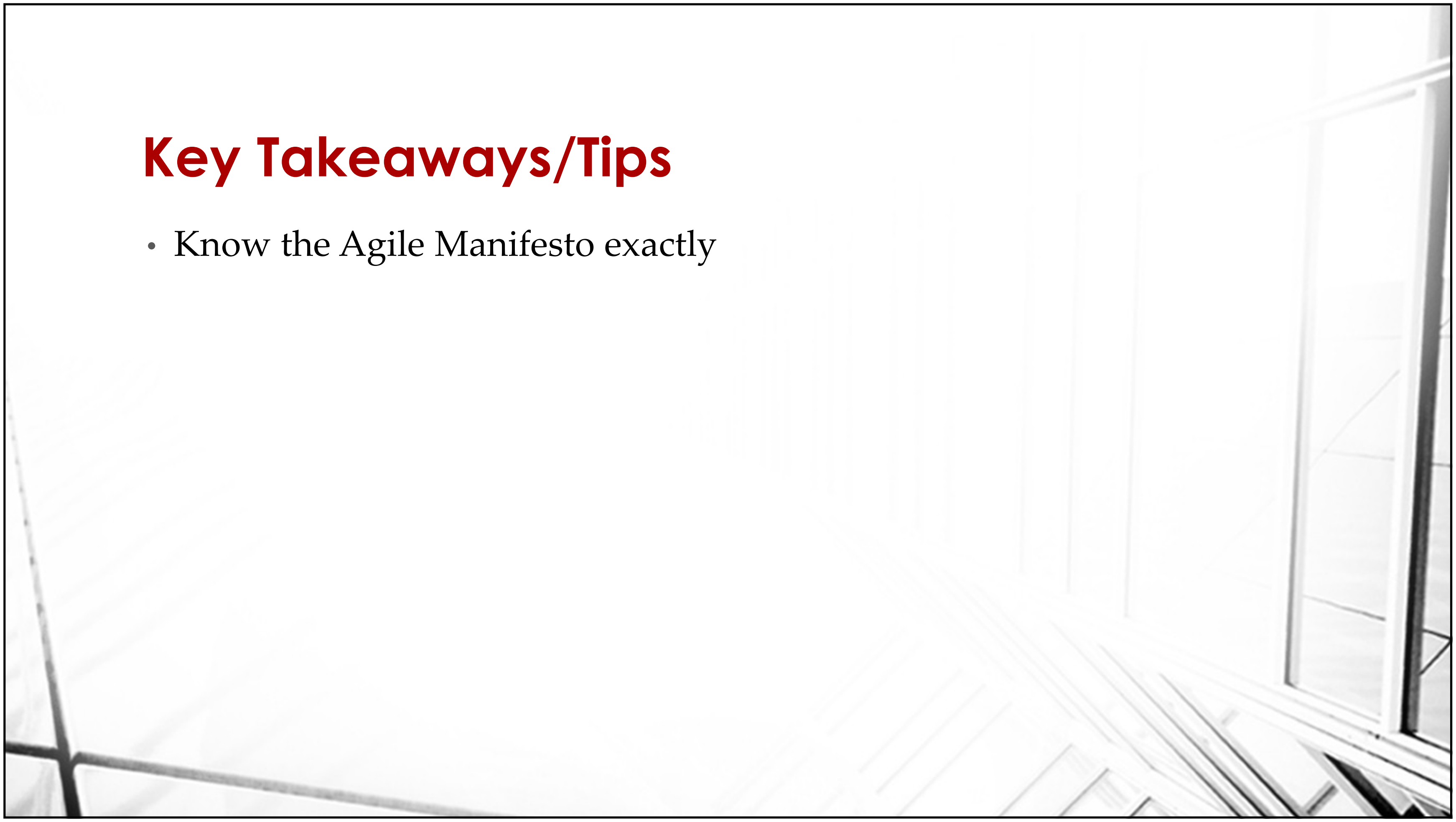
Agile Manifesto:

"We are uncovering better ways of developing software by doing it and helping others do it. Through this work we have come to value

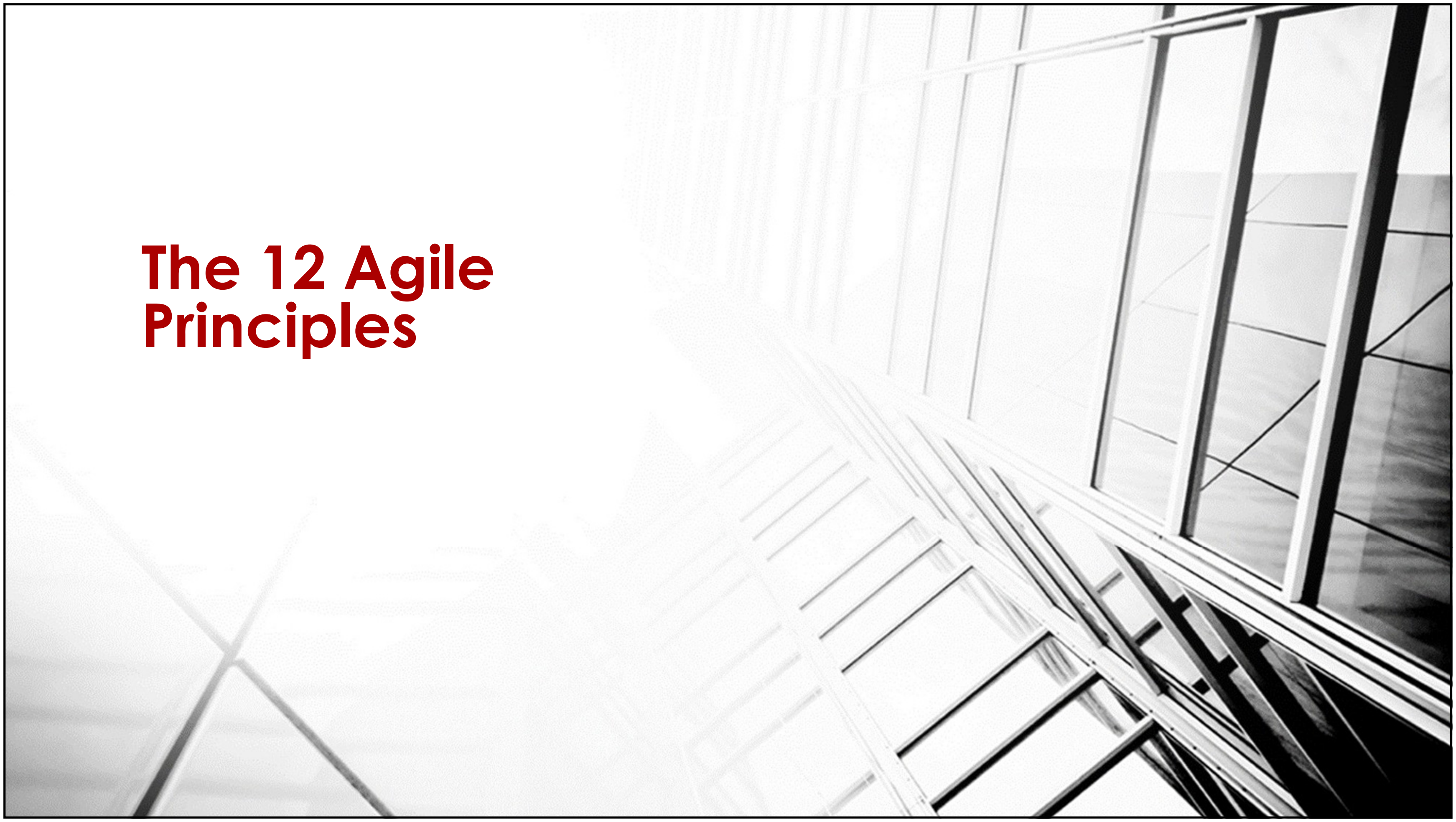
🟩 Individuals and Interactions	over	🟥 Processes and Tools
🟩 Working Software	over	🟥 Comprehensive Documentation
🟩 Customer Collaboration	over	🟥 Contract Negotiation
🟩 Responding to Change	over	🟥 Following a Plan

That is, while there is value in the items on the right, we value the items on the left more." – www.agilemanifesto.org

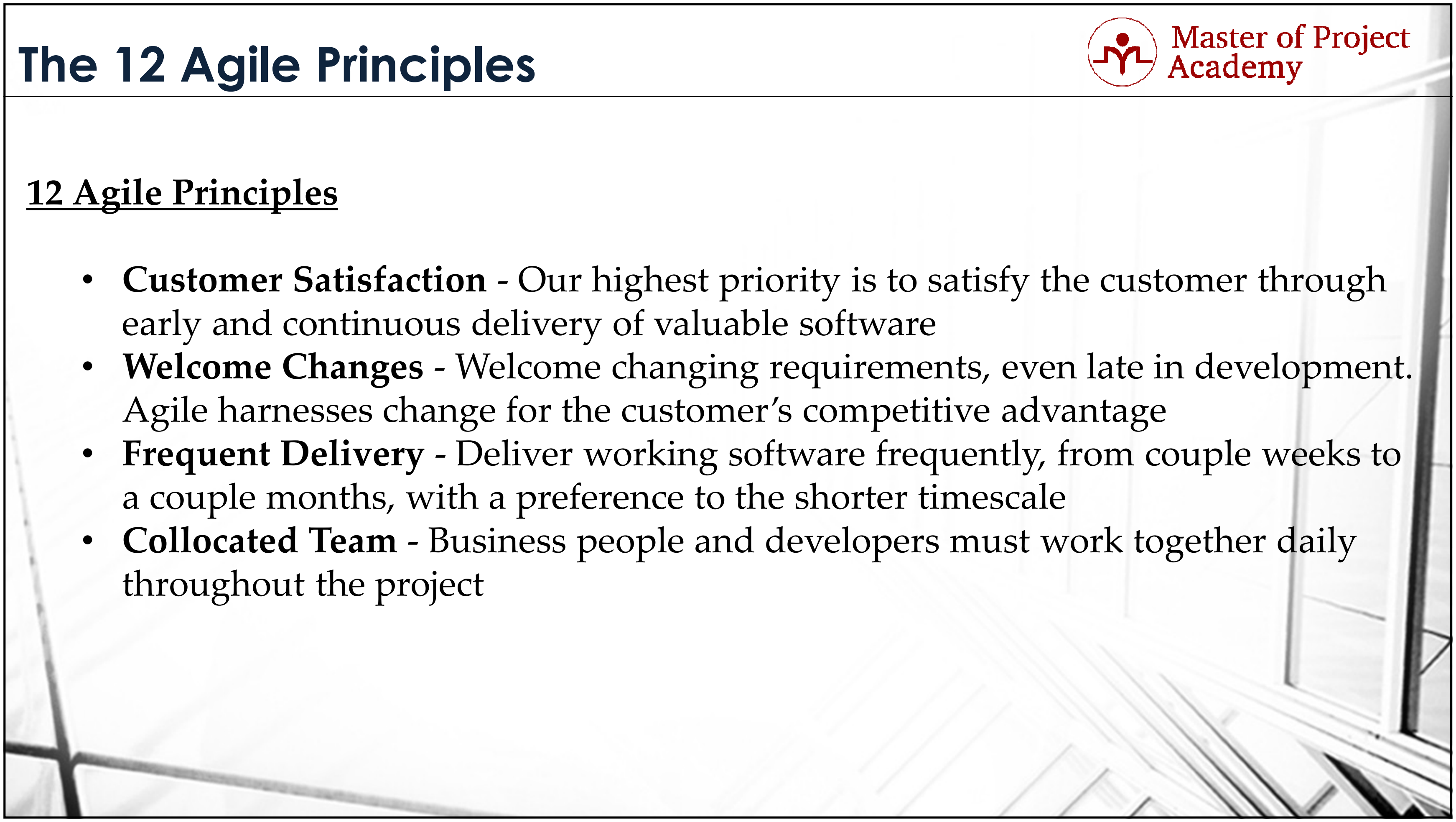


Key Takeaways/Tips

- Know the Agile Manifesto exactly



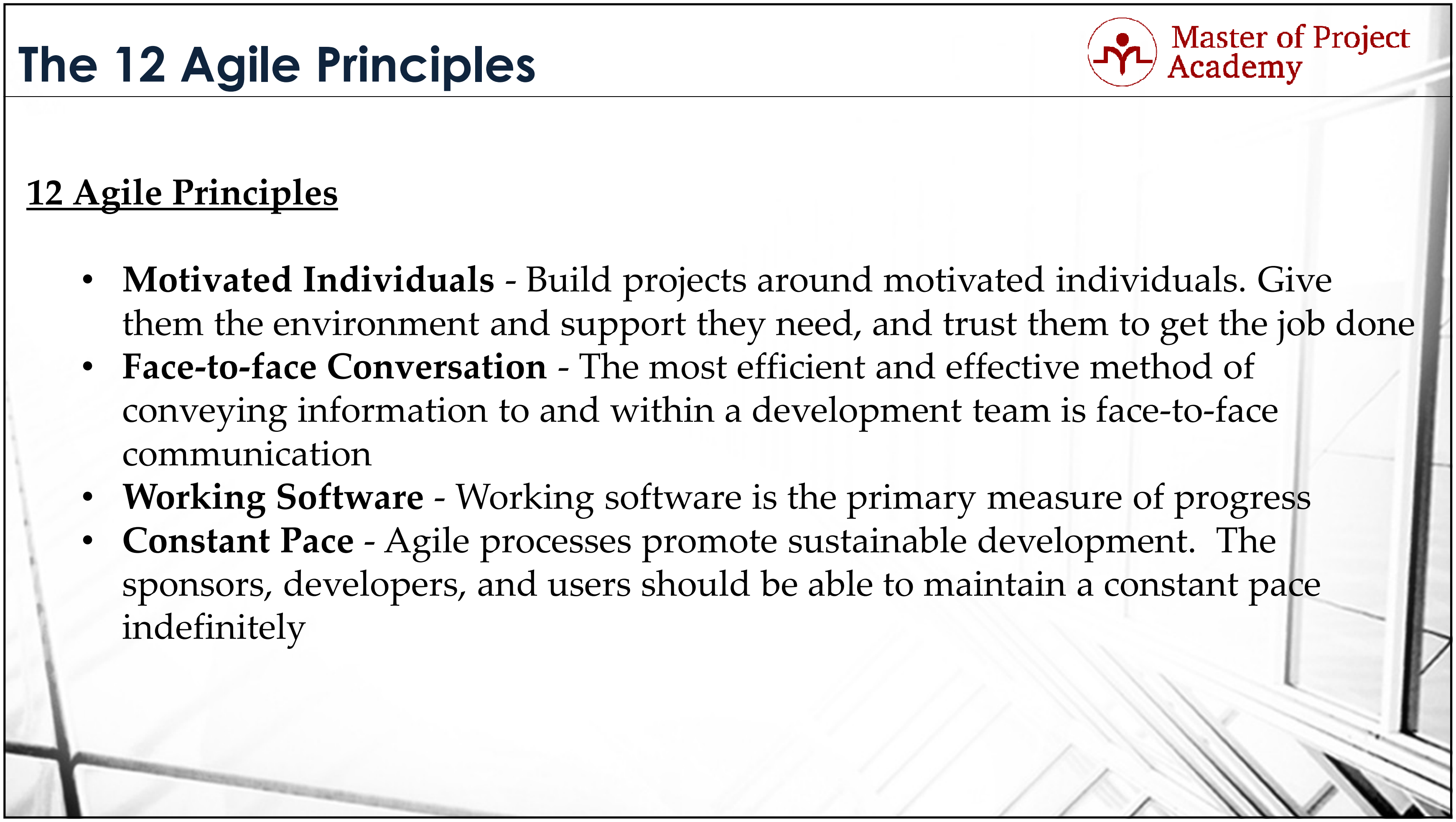
The 12 Agile Principles



The 12 Agile Principles

12 Agile Principles

- **Customer Satisfaction** - Our highest priority is to satisfy the customer through early and continuous delivery of valuable software
- **Welcome Changes** - Welcome changing requirements, even late in development. Agile harnesses change for the customer's competitive advantage
- **Frequent Delivery** - Deliver working software frequently, from couple weeks to a couple months, with a preference to the shorter timescale
- **Collocated Team** - Business people and developers must work together daily throughout the project



The 12 Agile Principles

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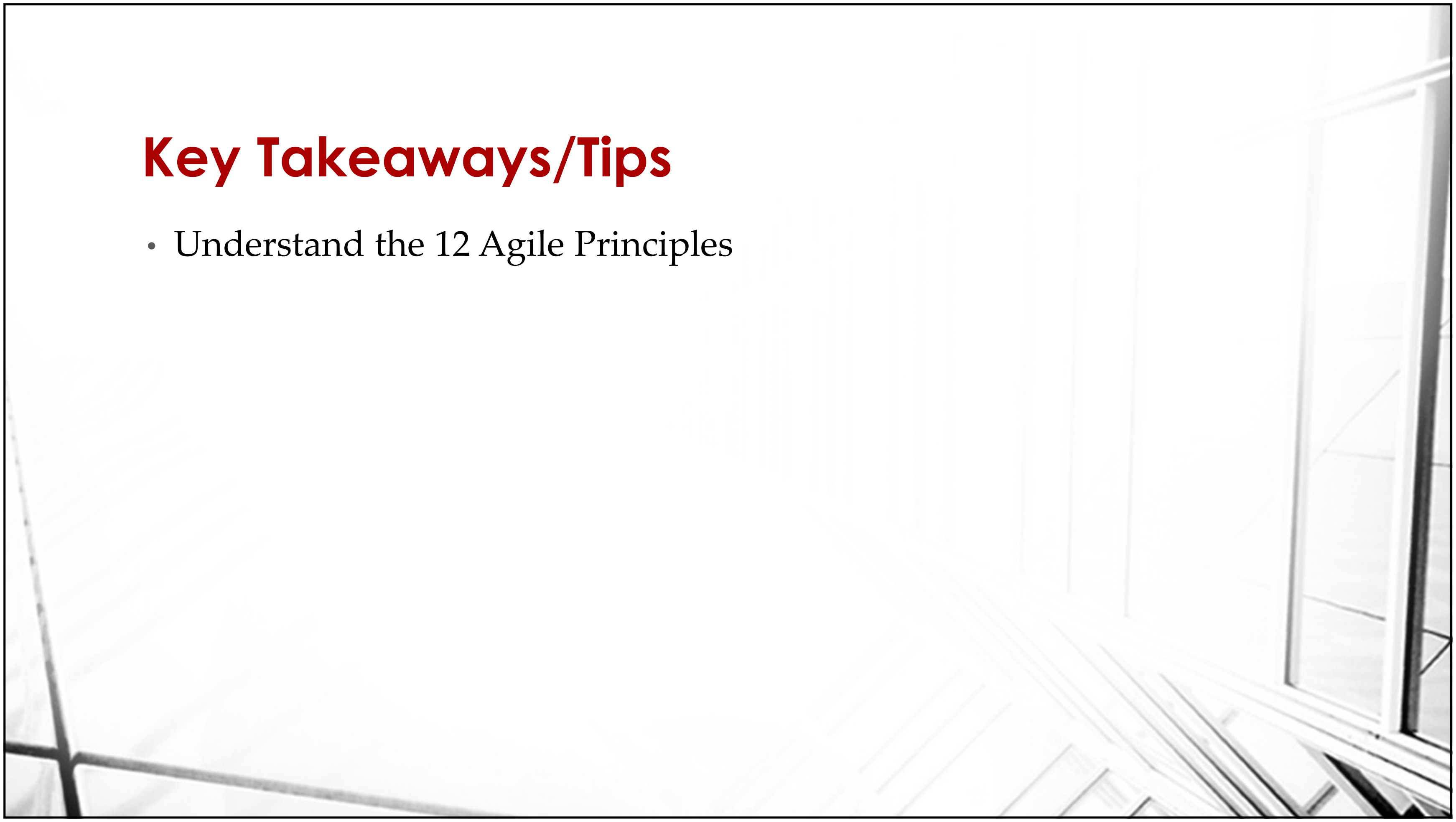
12 Agile Principles

- **Motivated Individuals** - Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done
- **Face-to-face Conversation** - The most efficient and effective method of conveying information to and within a development team is face-to-face communication
- **Working Software** - Working software is the primary measure of progress
- **Constant Pace** - Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely

The 12 Agile Principles

12 Agile Principles

- **Continuous Attention** - Continuous attention to technical excellence and good design enhances agility
- **Simplicity** – the art of maximizing the amount of work not done is essential
- **Self Organization** - The best architectures, requirements, and designs emerge from self-organizing teams
- **Regular Reflection** - At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly



Key Takeaways/Tips

- Understand the 12 Agile Principles

Agile Overview

Agile Overview

What is Agile?

The ability to move quickly and easily

What is Agile Software Development?

- Set of principles
- Requirements and solutions evolve through the collaborative effort of self-organizing cross-functional teams
- Adaptive planning, evolutionary development, early delivery, and continuous improvement
- Rapid and flexible response to change

Agile Overview

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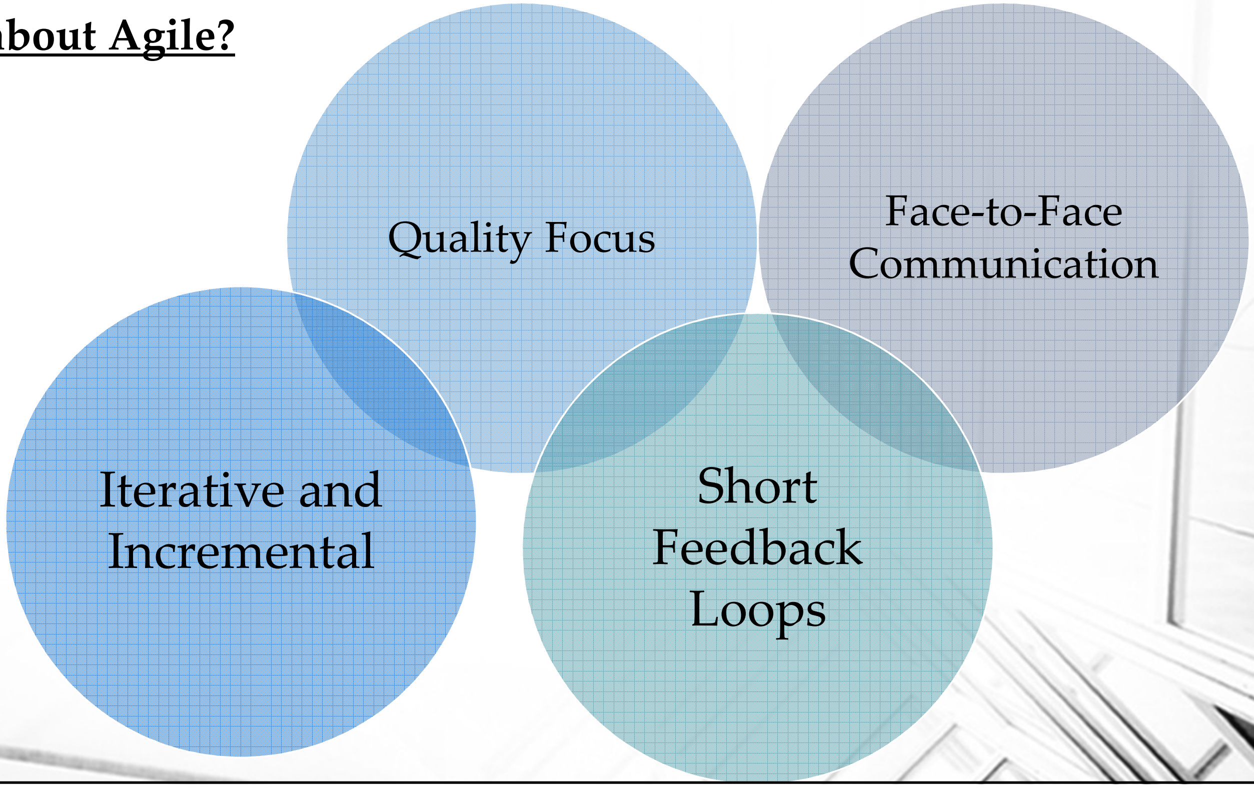
What is distinct about Agile?

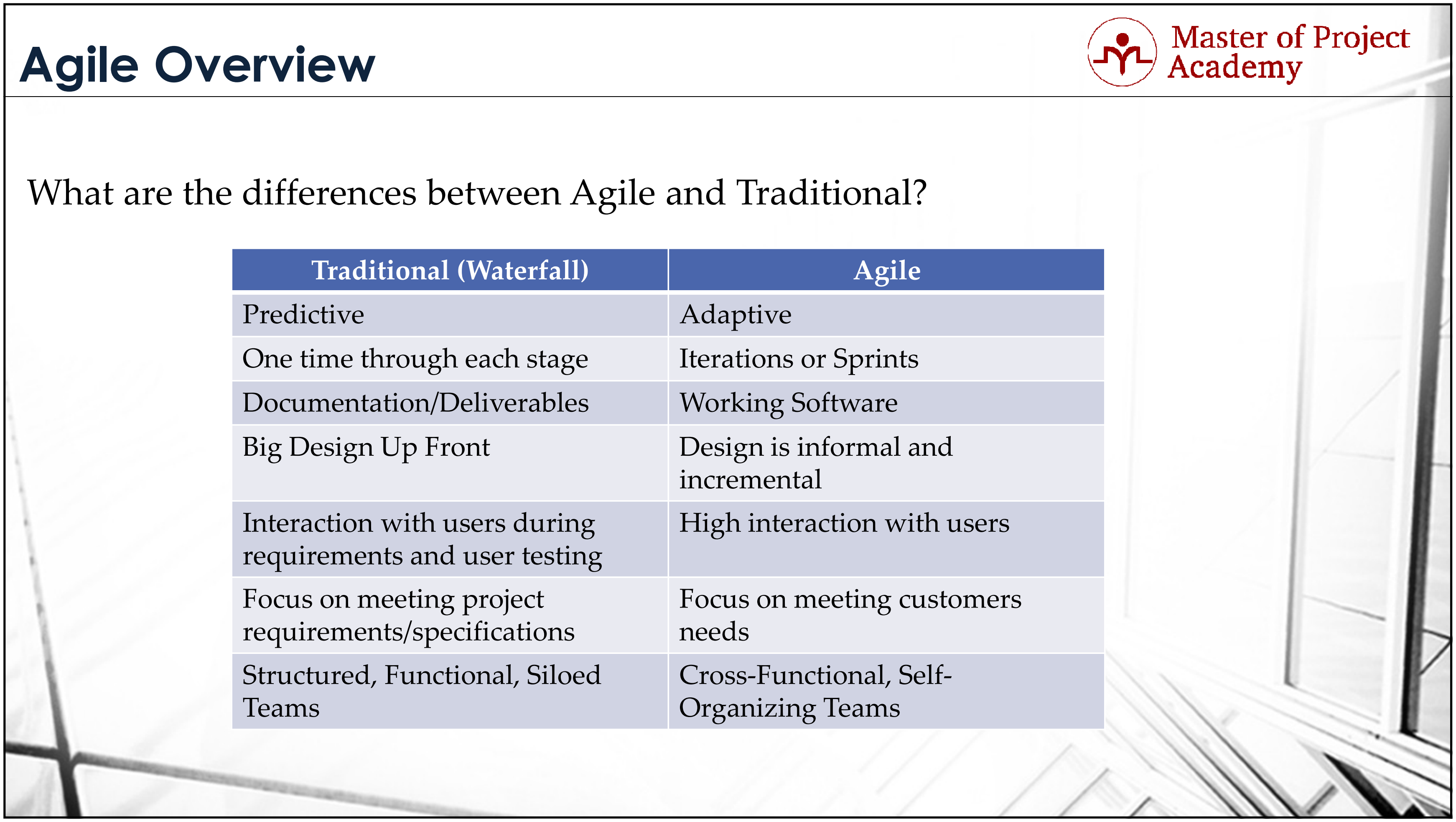


Quality Focus

Face-to-Face Communication

Iterative and Incremental

Short Feedback Loops



Agile Overview

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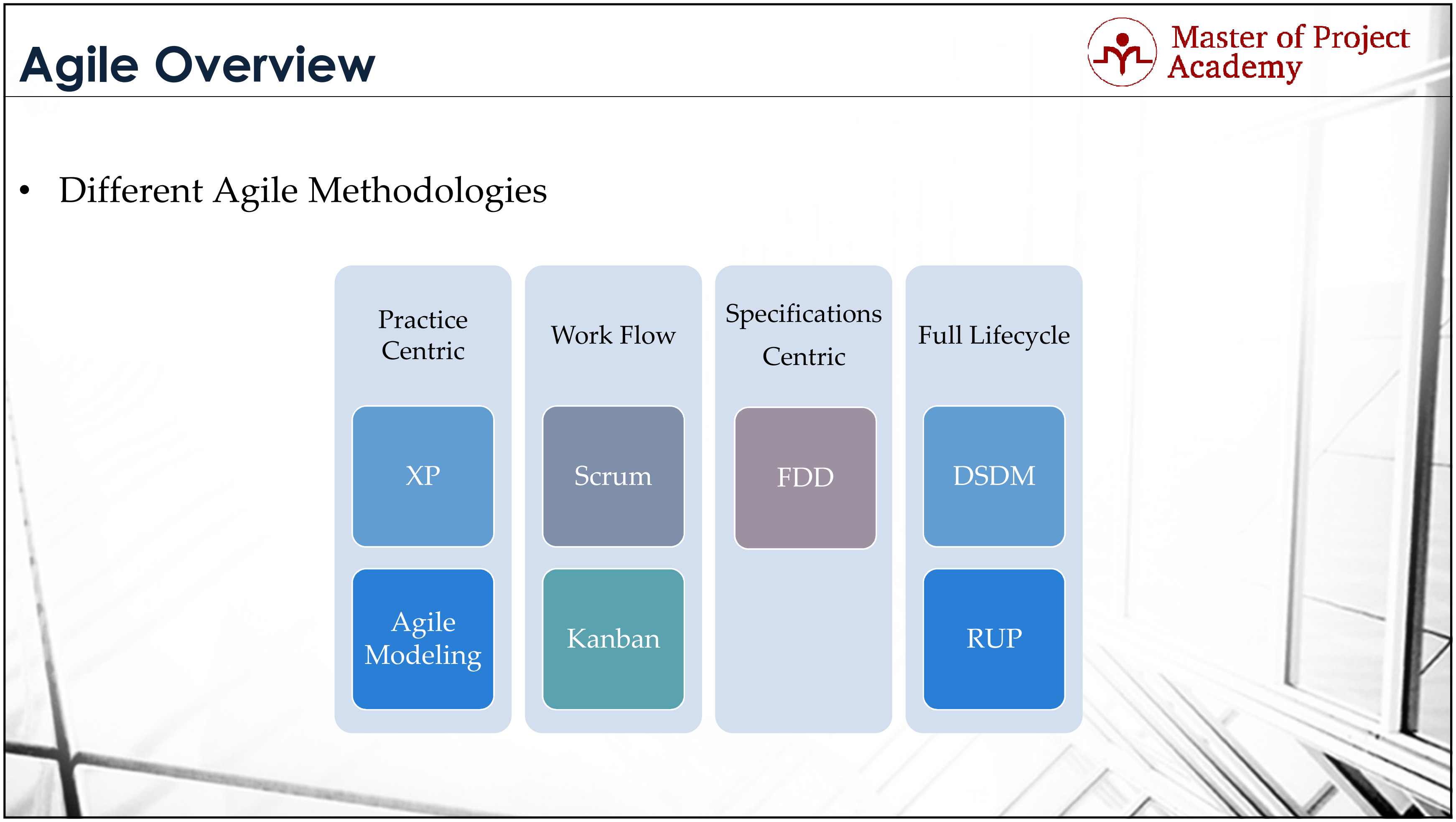
What are the differences between Agile and Traditional?

Traditional (Waterfall)	Agile
Predictive	Adaptive
One time through each stage	Iterations or Sprints
Documentation/Deliverables	Working Software
Big Design Up Front	Design is informal and incremental
Interaction with users during requirements and user testing	High interaction with users
Focus on meeting project requirements/specifications	Focus on meeting customers needs
Structured, Functional, Siloed Teams	Cross-Functional, Self-Organizing Teams



Agile Overview

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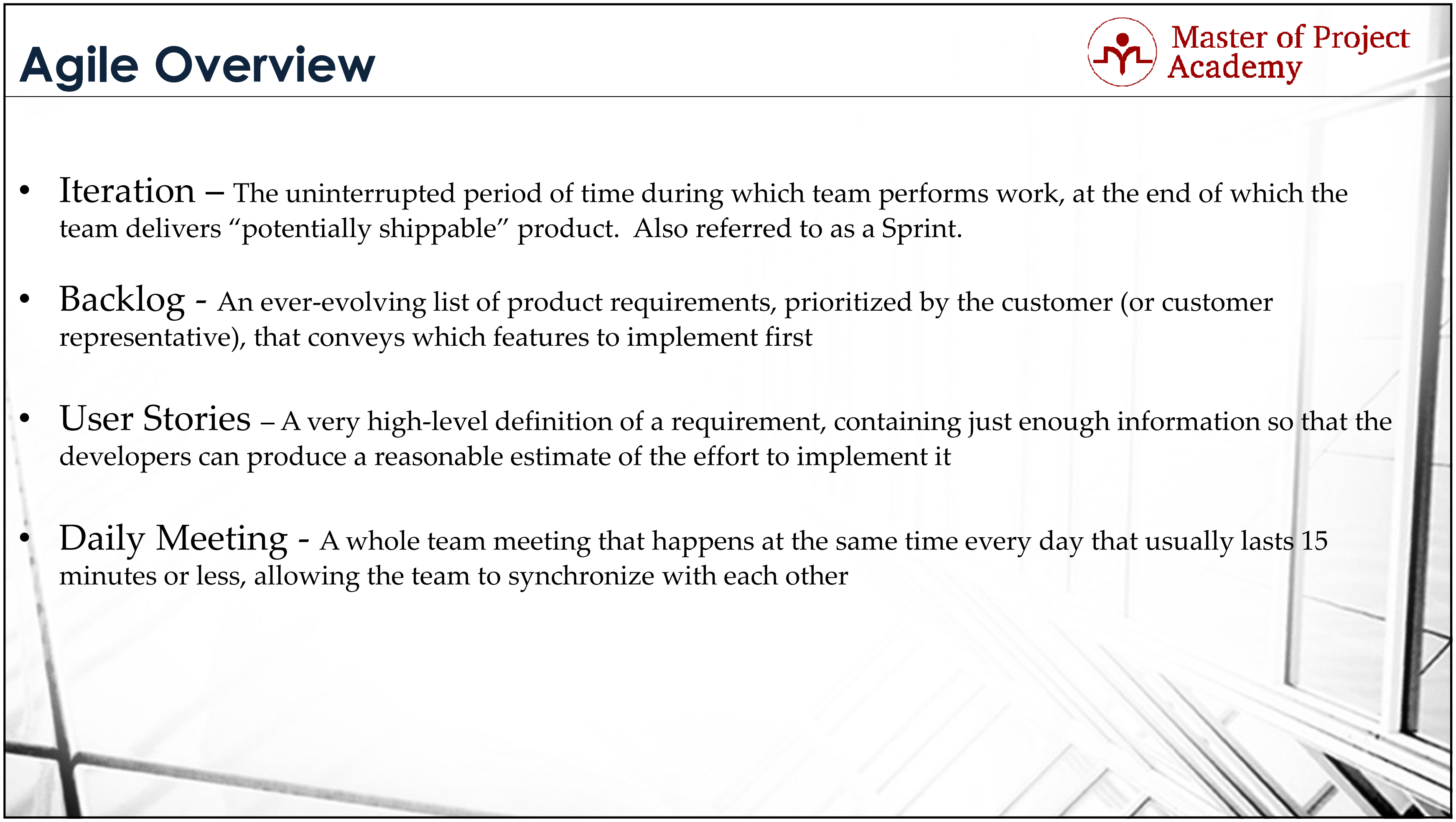
- Different Agile Methodologies

Practice Centric	Work Flow	Specifications Centric	Full Lifecycle
XP	Scrum	FDD	DSDM
Agile Modeling	Kanban		RUP



Agile Overview

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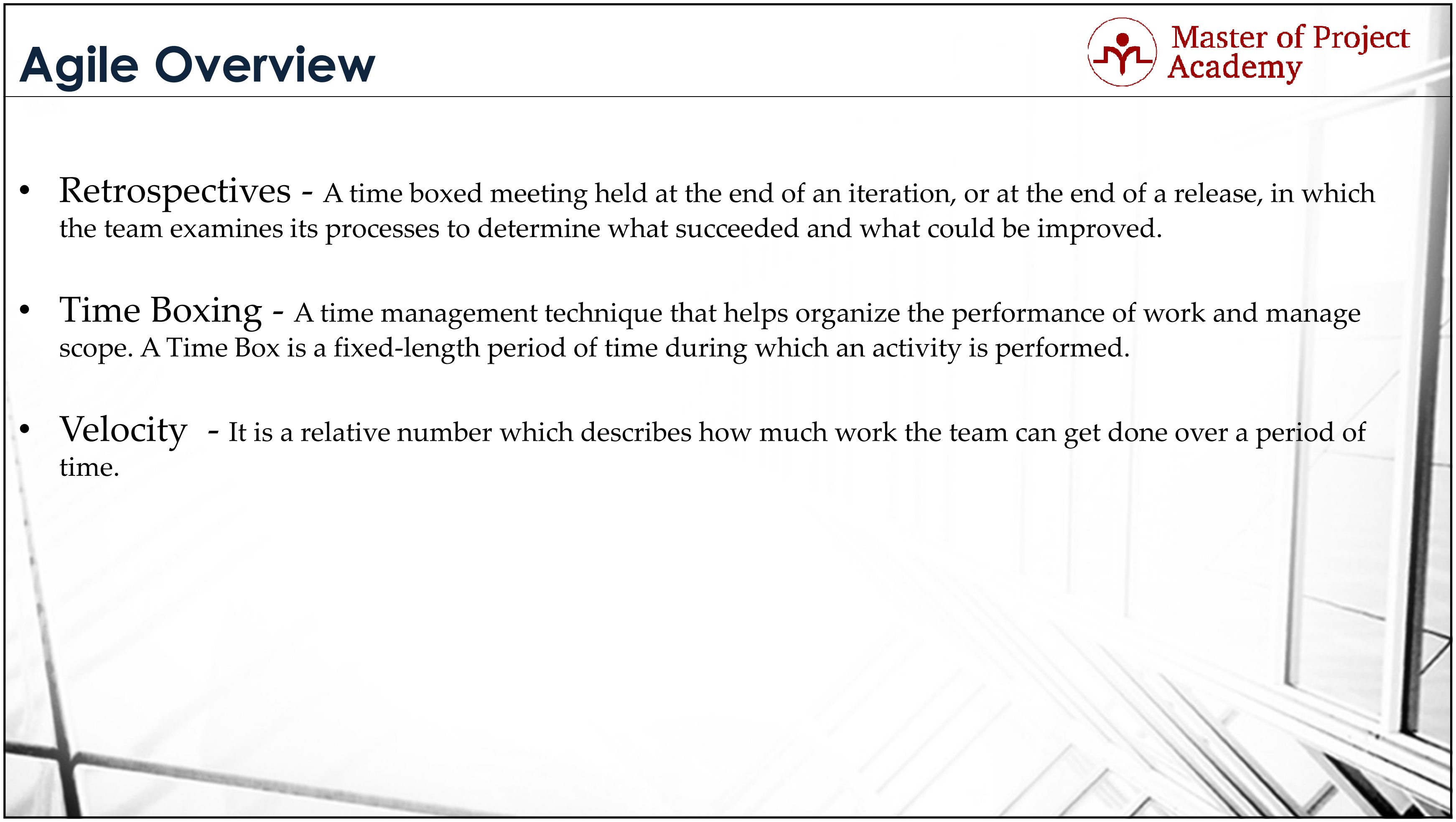
- Iteration – The uninterrupted period of time during which team performs work, at the end of which the team delivers "potentially shippable" product. Also referred to as a Sprint.
- Backlog - An ever-evolving list of product requirements, prioritized by the customer (or customer representative), that conveys which features to implement first
- User Stories – A very high-level definition of a requirement, containing just enough information so that the developers can produce a reasonable estimate of the effort to implement it
- Daily Meeting - A whole team meeting that happens at the same time every day that usually lasts 15 minutes or less, allowing the team to synchronize with each other



Agile Overview

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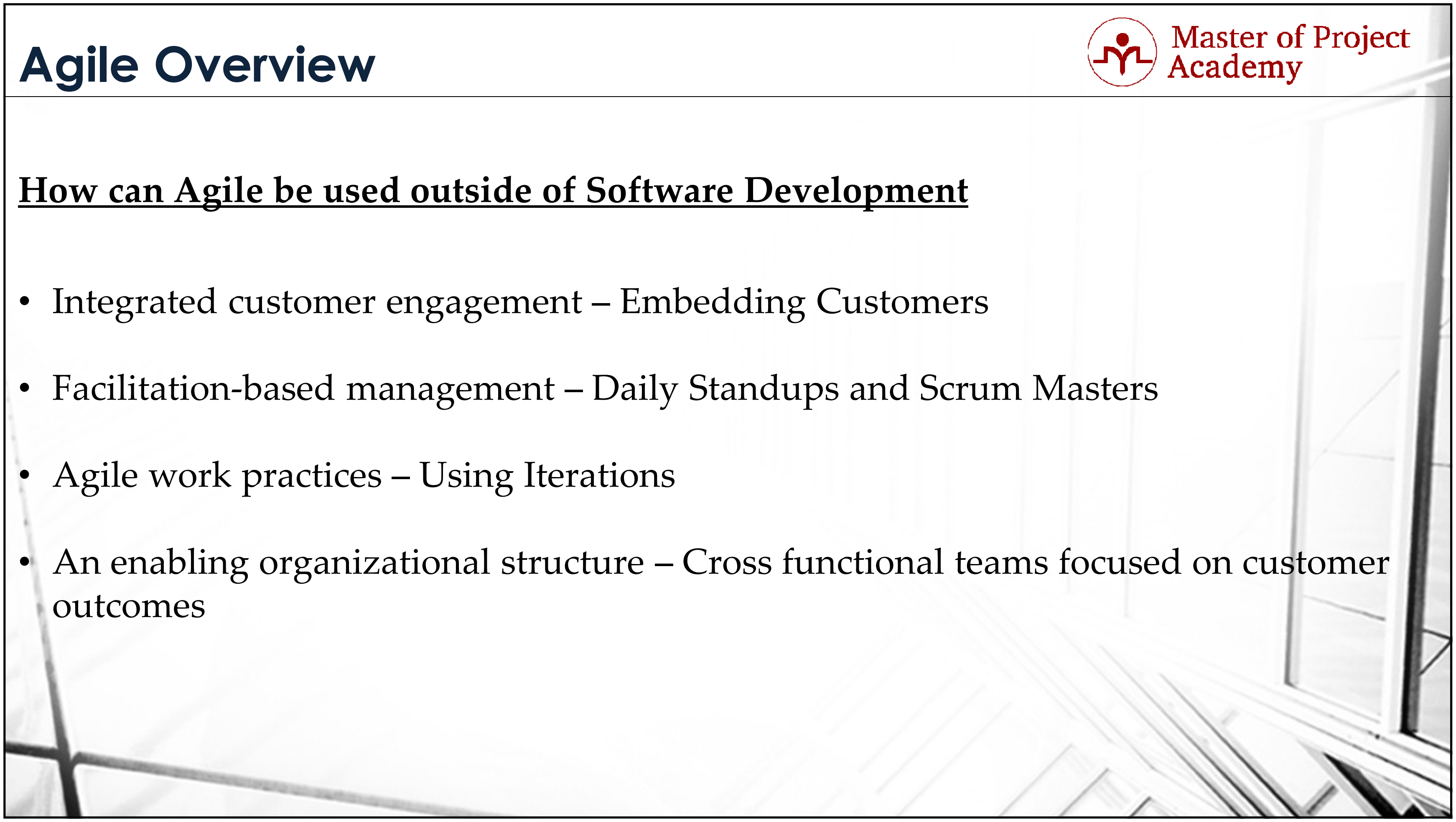
- Retrospectives - A time boxed meeting held at the end of an iteration, or at the end of a release, in which the team examines its processes to determine what succeeded and what could be improved.
- Time Boxing - A time management technique that helps organize the performance of work and manage scope. A Time Box is a fixed-length period of time during which an activity is performed.
- Velocity - It is a relative number which describes how much work the team can get done over a period of time.



Agile Overview

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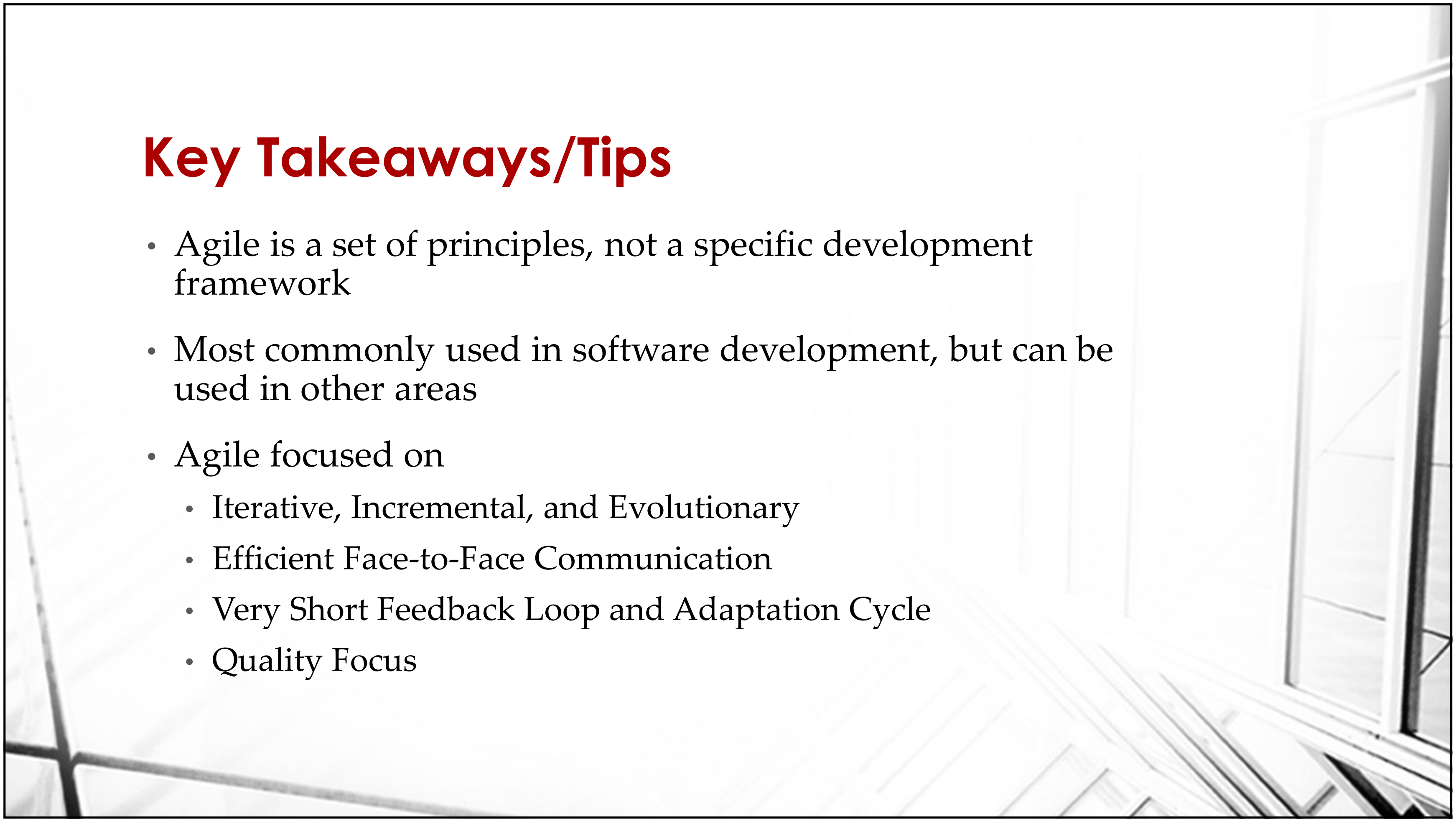
How can Agile be used outside of Software Development

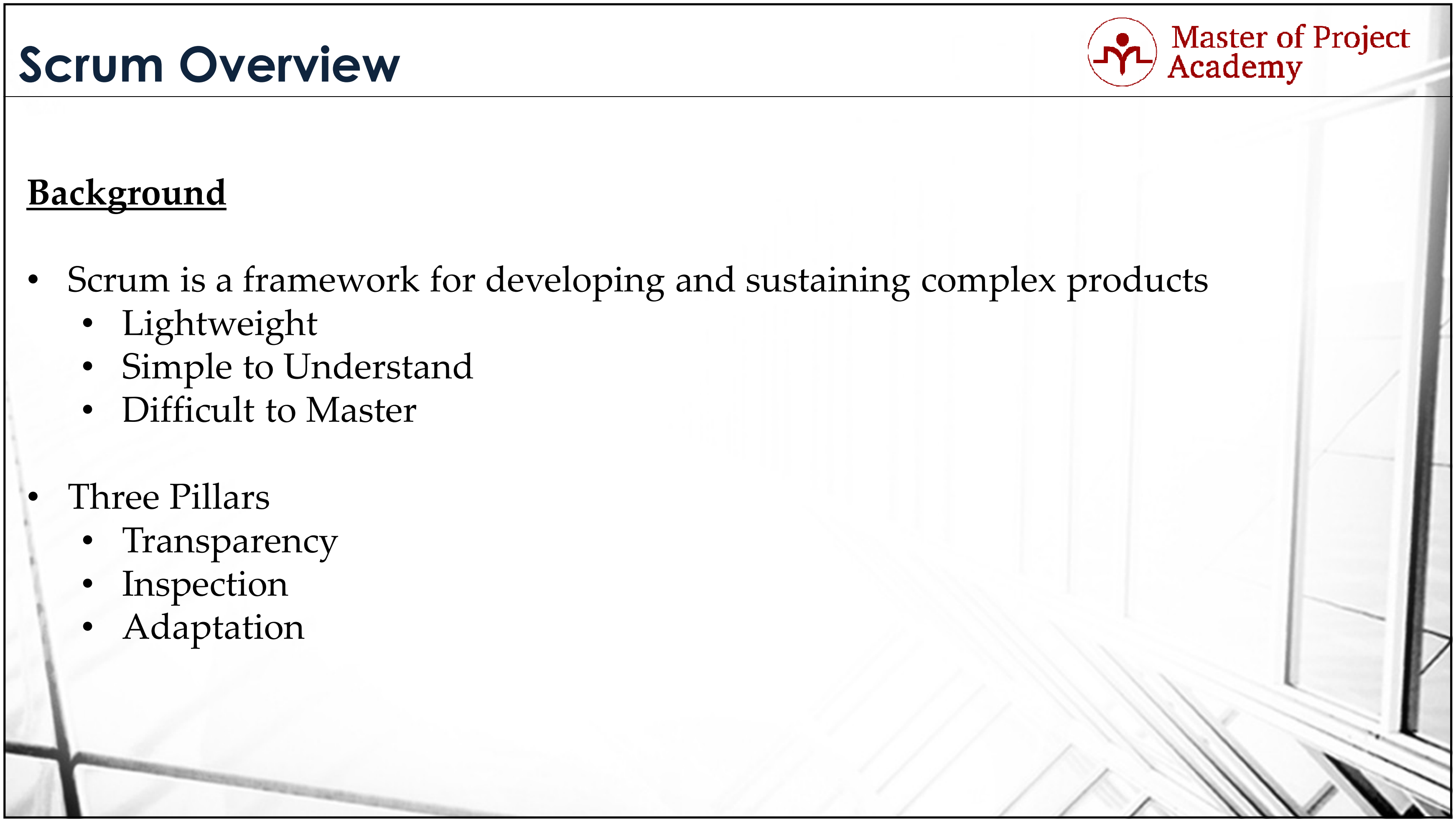
- Integrated customer engagement – Embedding Customers
- Facilitation-based management – Daily Standups and Scrum Masters
- Agile work practices – Using Iterations
- An enabling organizational structure – Cross functional teams focused on customer outcomes



Key Takeaways/Tips

- Agile is a set of principles, not a specific development framework
- Most commonly used in software development, but can be used in other areas
- Agile focused on
  - Iterative, Incremental, and Evolutionary
  - Efficient Face-to-Face Communication
  - Very Short Feedback Loop and Adaptation Cycle
  - Quality Focus

Scrum Overview



Scrum Overview

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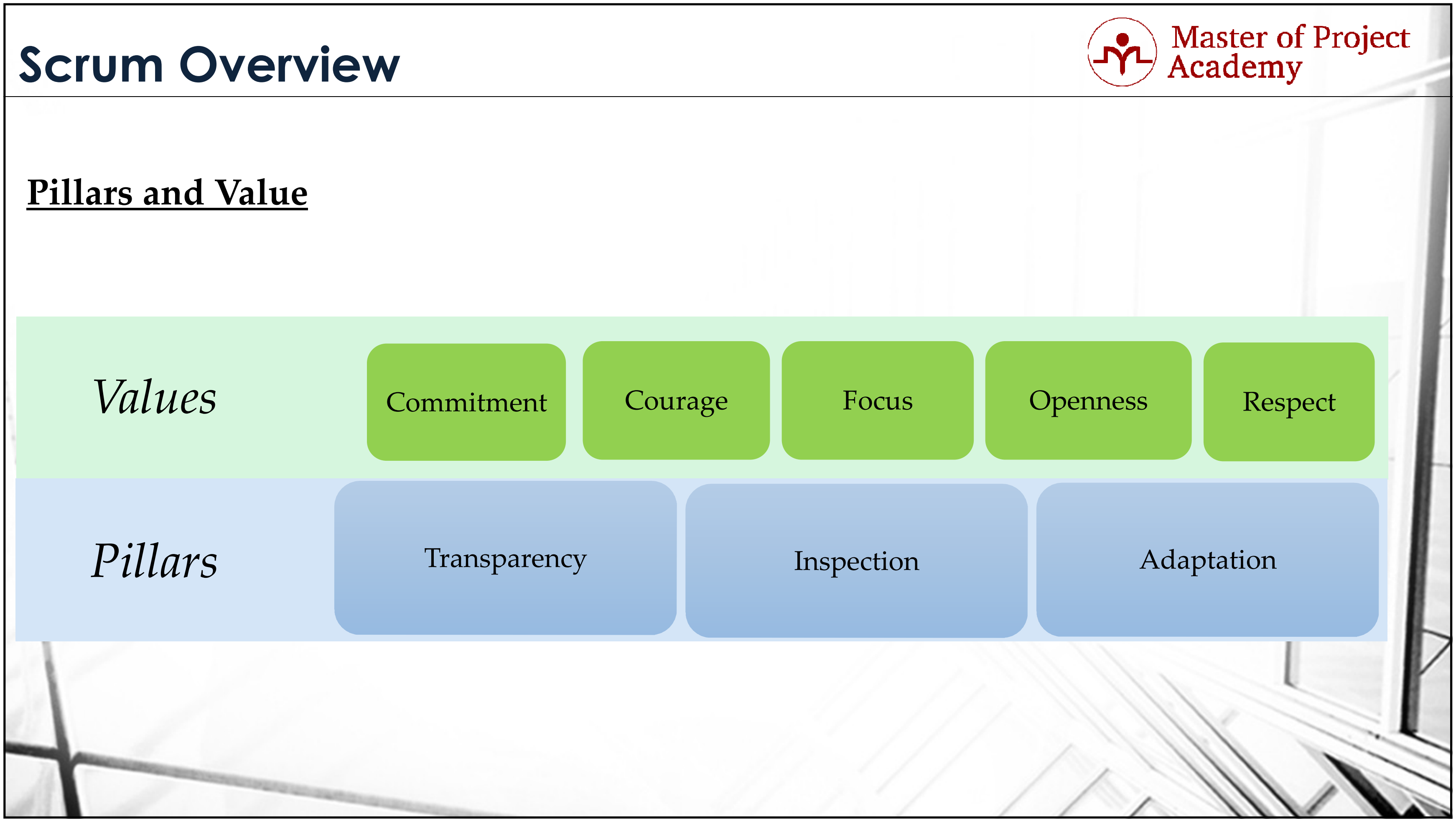
Background

- Scrum is a framework for developing and sustaining complex products
  - Lightweight
  - Simple to Understand
  - Difficult to Master
- Three Pillars
  - Transparency
  - Inspection
  - Adaptation



Scrum Overview

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Pillars and Value

Values

Commitment

Courage

Focus

Openness

Respect

Pillars

Transparency

Inspection

Adaptation

Scrum Overview

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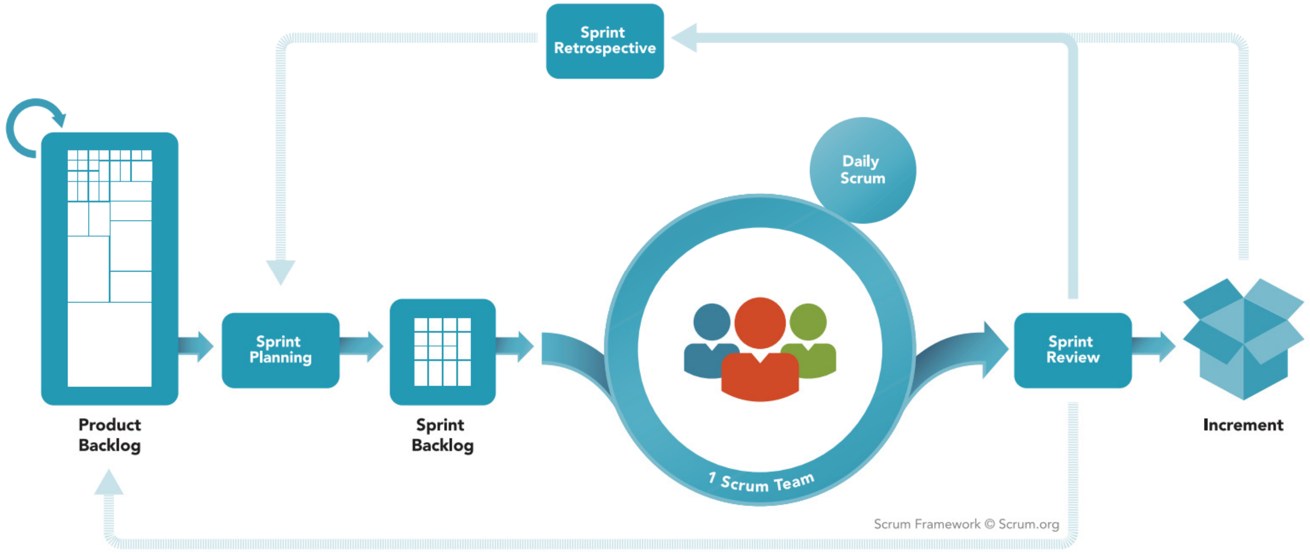
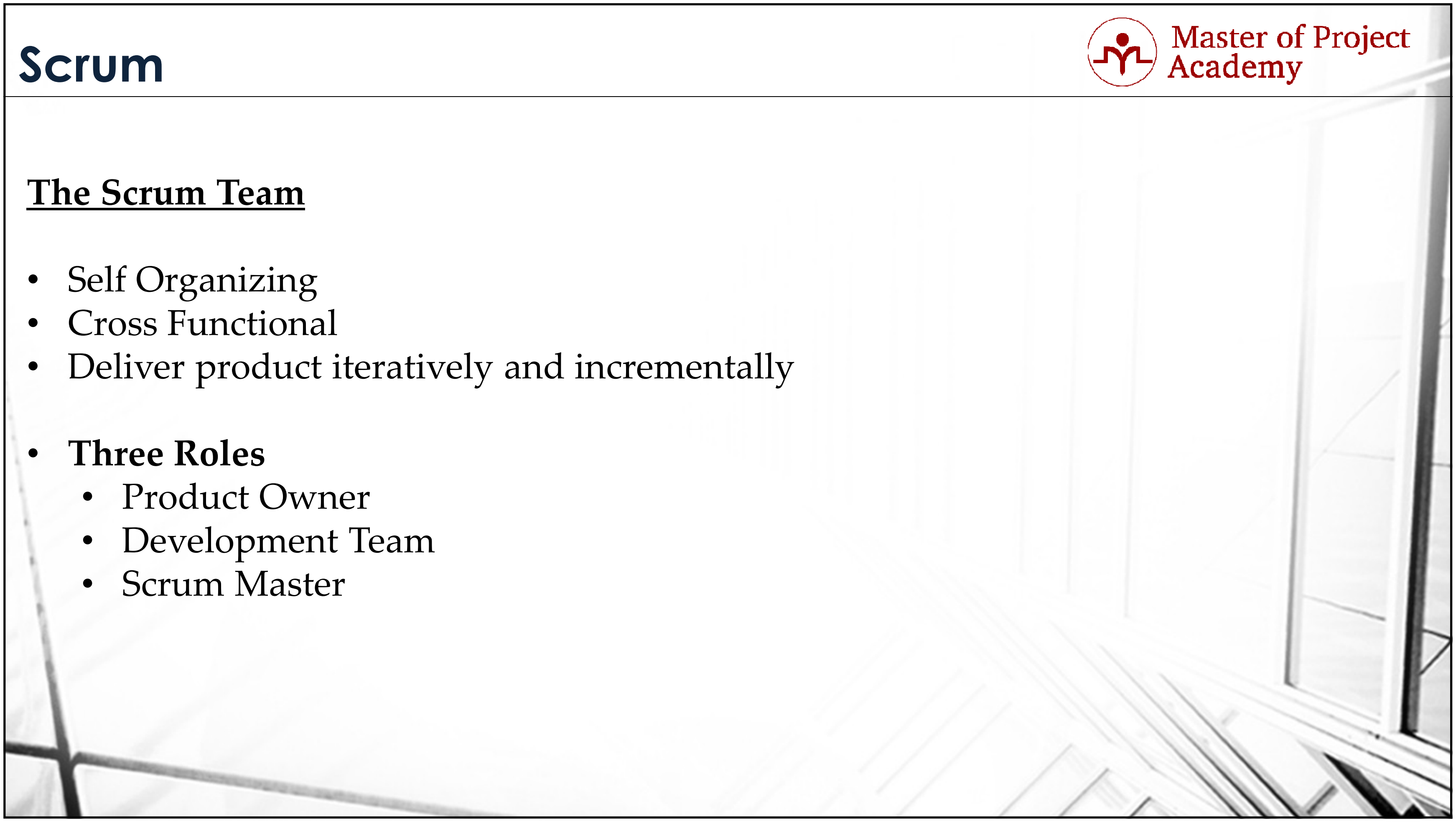
Scrum Framework



Scrum Framework © Scrum.org



Scrum

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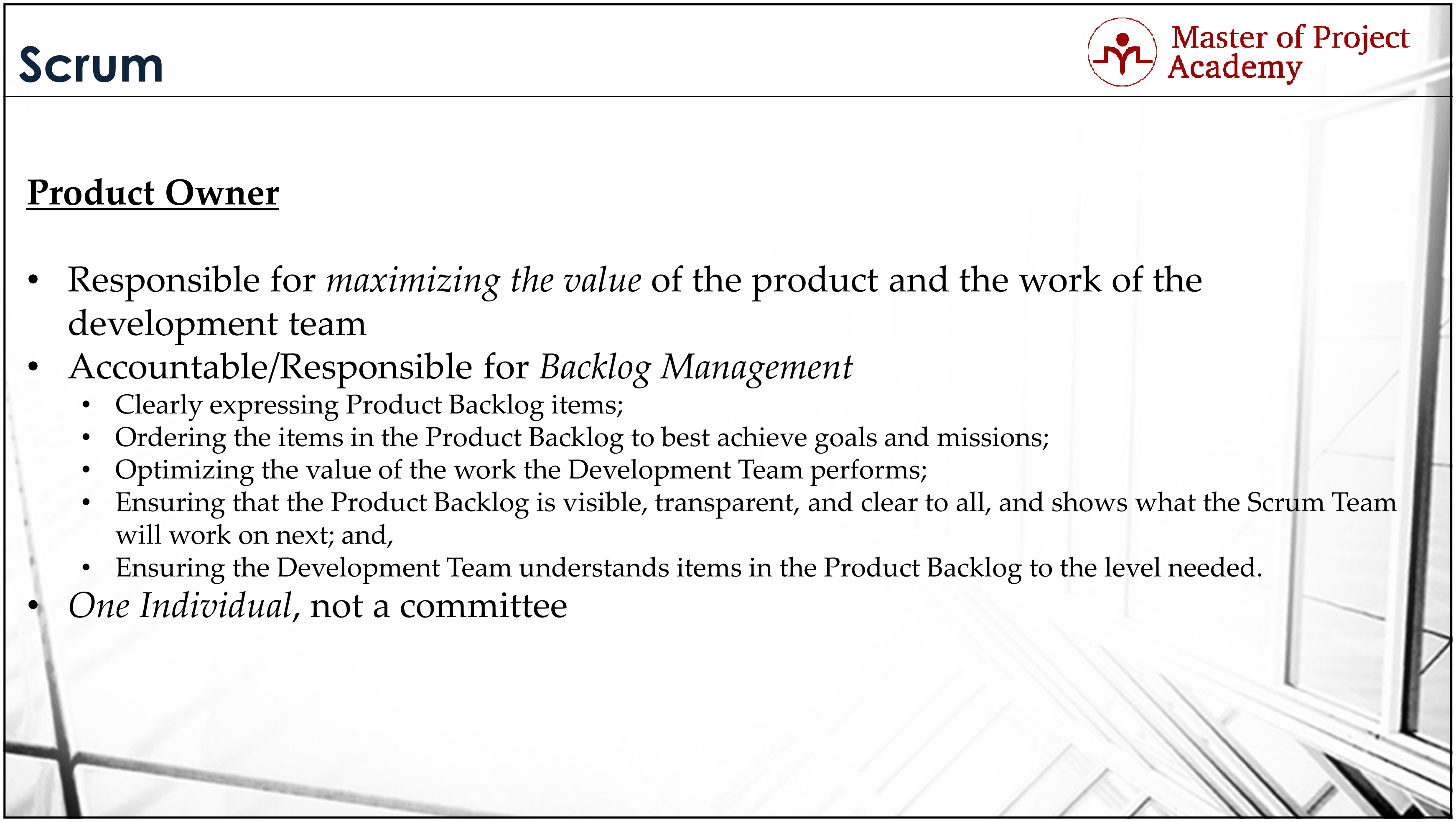
The Scrum Team

- Self Organizing
- Cross Functional
- Deliver product iteratively and incrementally

- **Three Roles**
  - Product Owner
  - Development Team
  - Scrum Master



Scrum

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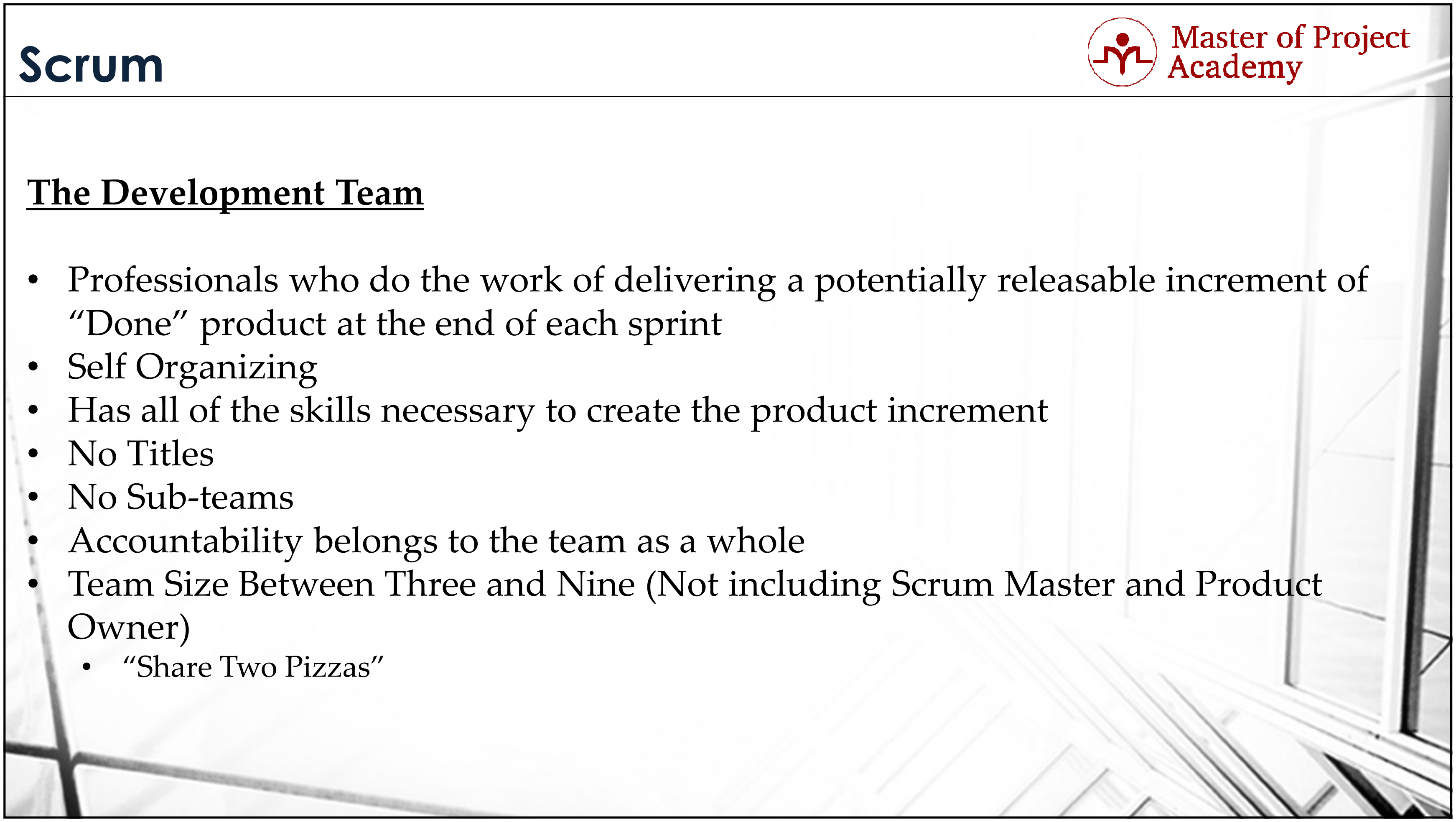
Product Owner

- Responsible for *maximizing the value* of the product and the work of the development team
- Accountable/Responsible for *Backlog Management*
  - Clearly expressing Product Backlog items;
  - Ordering the items in the Product Backlog to best achieve goals and missions;
  - Optimizing the value of the work the Development Team performs;
  - Ensuring that the Product Backlog is visible, transparent, and clear to all, and shows what the Scrum Team will work on next; and,
  - Ensuring the Development Team understands items in the Product Backlog to the level needed.
- *One Individual*, not a committee



Scrum

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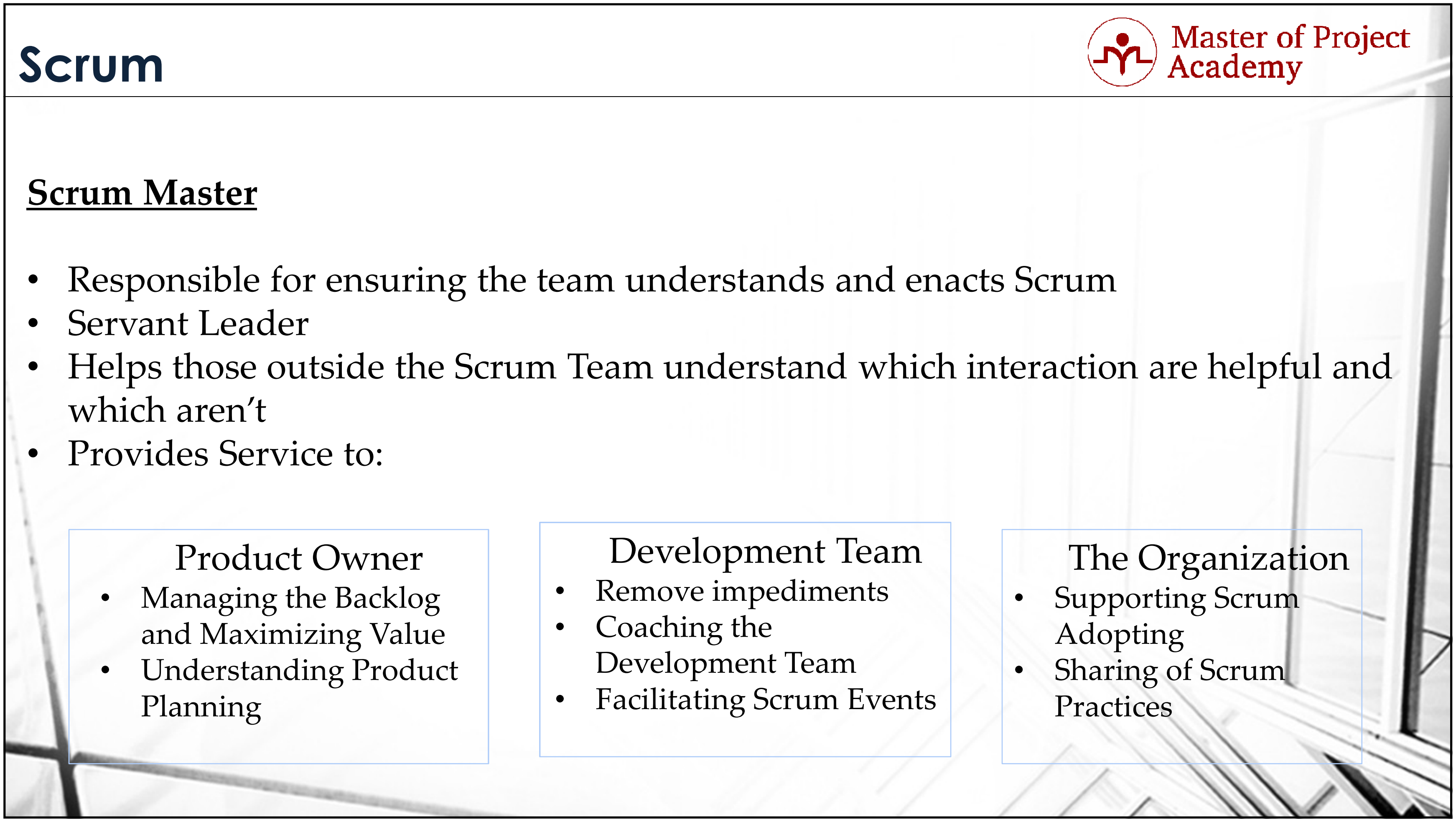
The Development Team

- Professionals who do the work of delivering a potentially releasable increment of “Done” product at the end of each sprint
- Self Organizing
- Has all of the skills necessary to create the product increment
- No Titles
- No Sub-teams
- Accountability belongs to the team as a whole
- Team Size Between Three and Nine (Not including Scrum Master and Product Owner)
  - “Share Two Pizzas”



Scrum

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Scrum Master

- Responsible for ensuring the team understands and enacts Scrum
- Servant Leader
- Helps those outside the Scrum Team understand which interaction are helpful and which aren't
- Provides Service to:

Product Owner

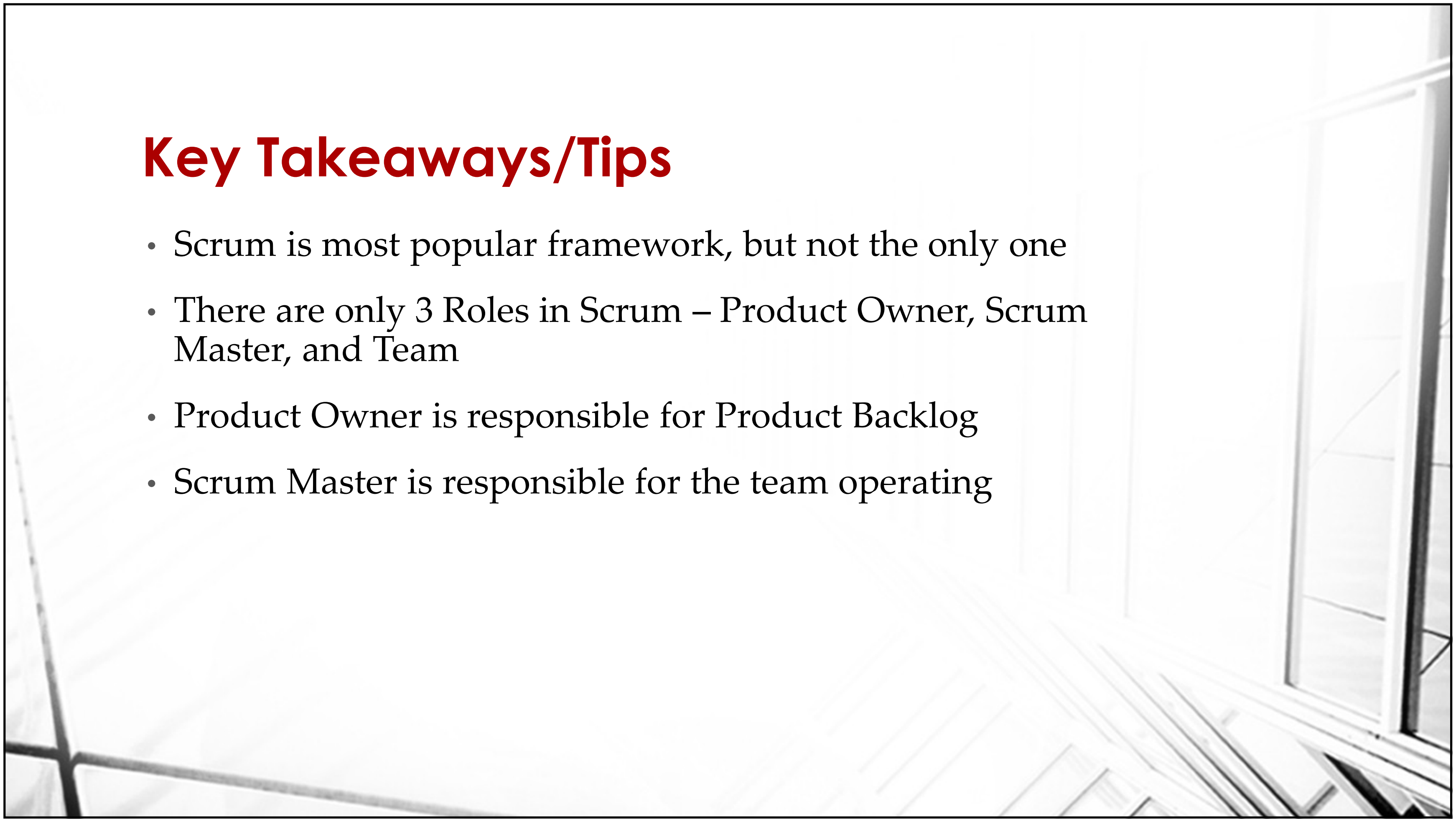
- Managing the Backlog and Maximizing Value
- Understanding Product Planning

Development Team

- Remove impediments
- Coaching the Development Team
- Facilitating Scrum Events

The Organization

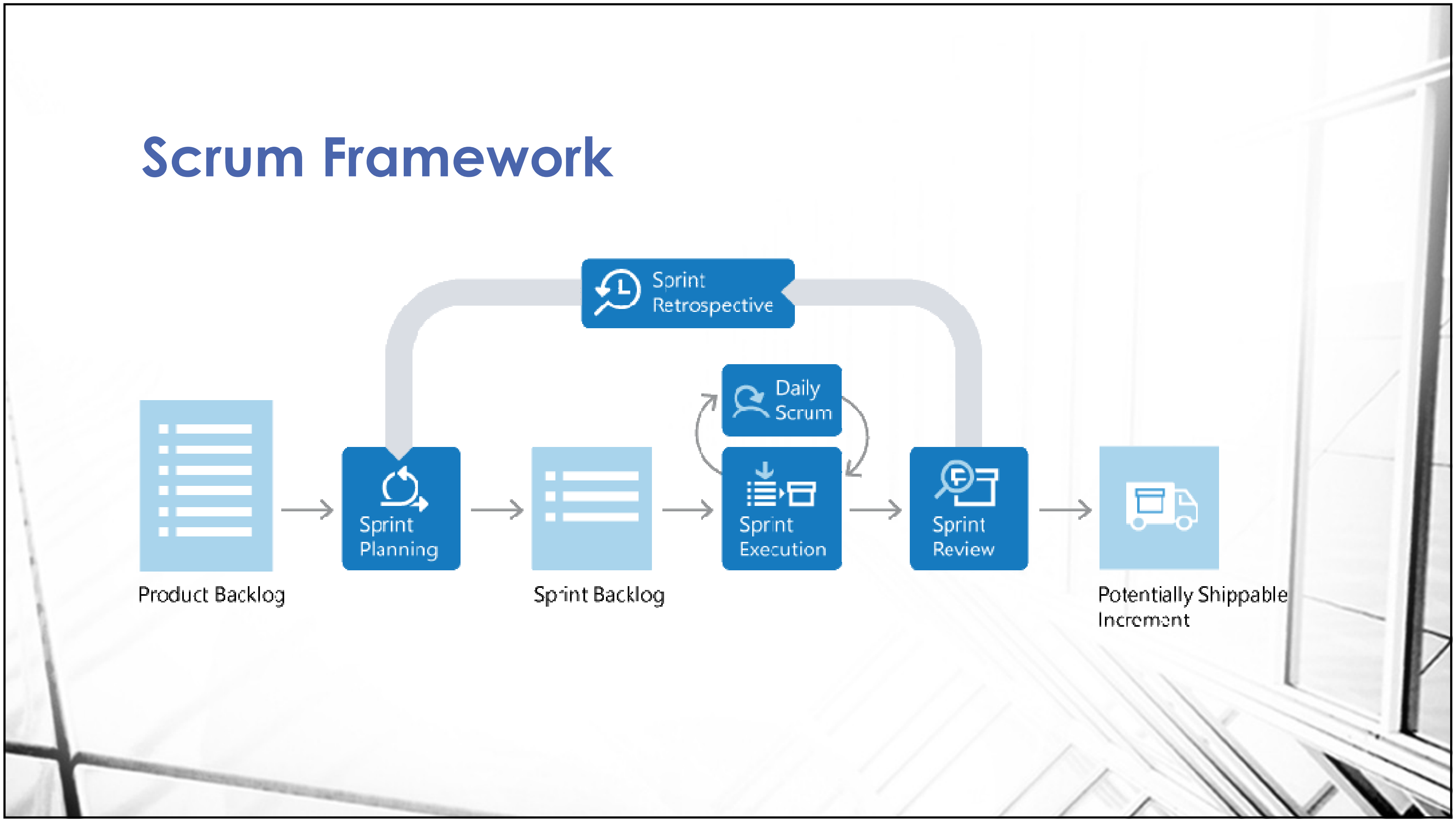
- Supporting Scrum Adopting
- Sharing of Scrum Practices



Key Takeaways/Tips

- Scrum is most popular framework, but not the only one
- There are only 3 Roles in Scrum – Product Owner, Scrum Master, and Team
- Product Owner is responsible for Product Backlog
- Scrum Master is responsible for the team operating

Scrum Events



Scrum Framework

Sprint Retrospective

Daily Scrum

Product Backlog

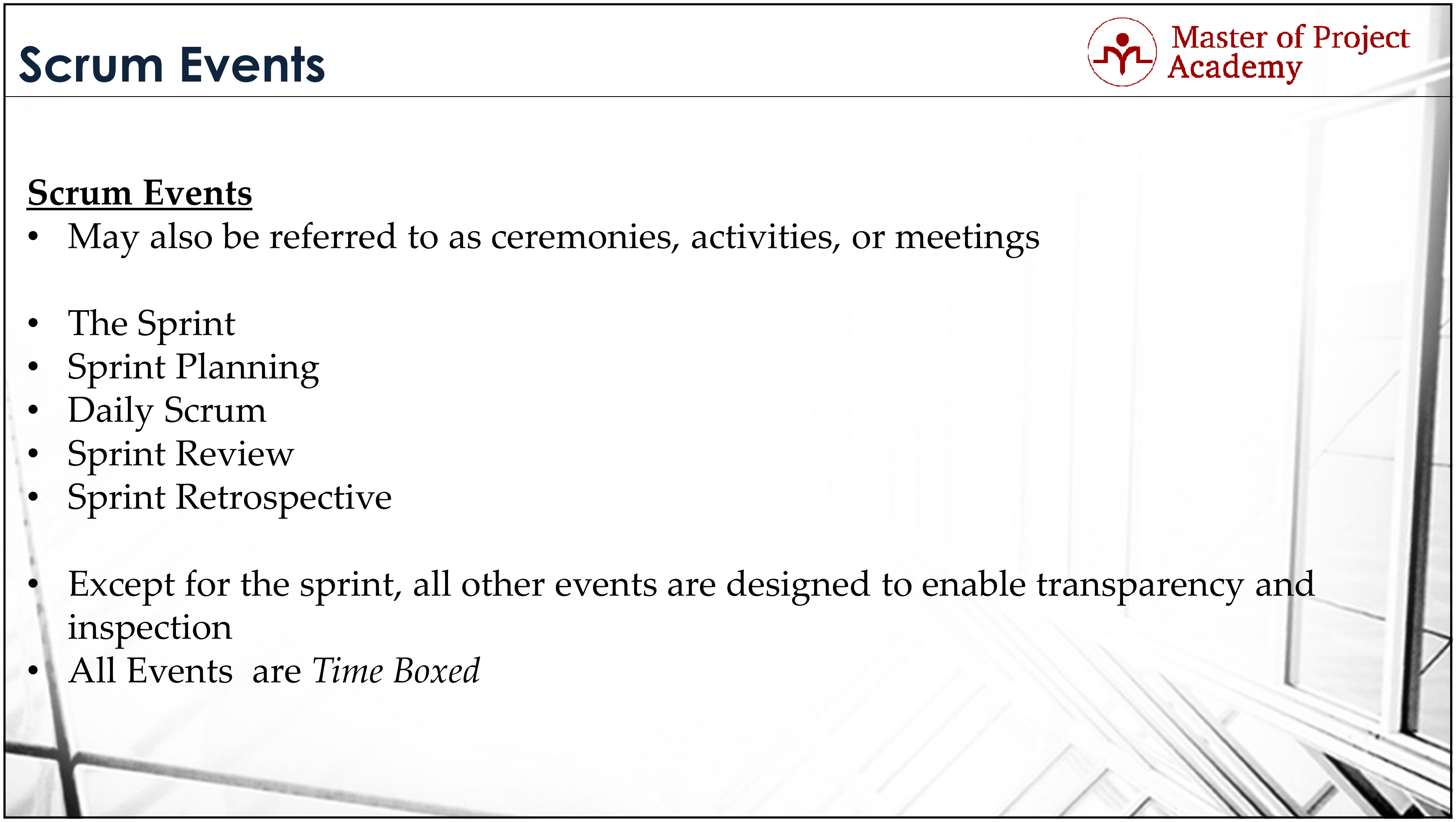
Sprint Planning

Sprint Backlog

Sprint Execution

Sprint Review

Potentially Shippable Increment



Scrum Events

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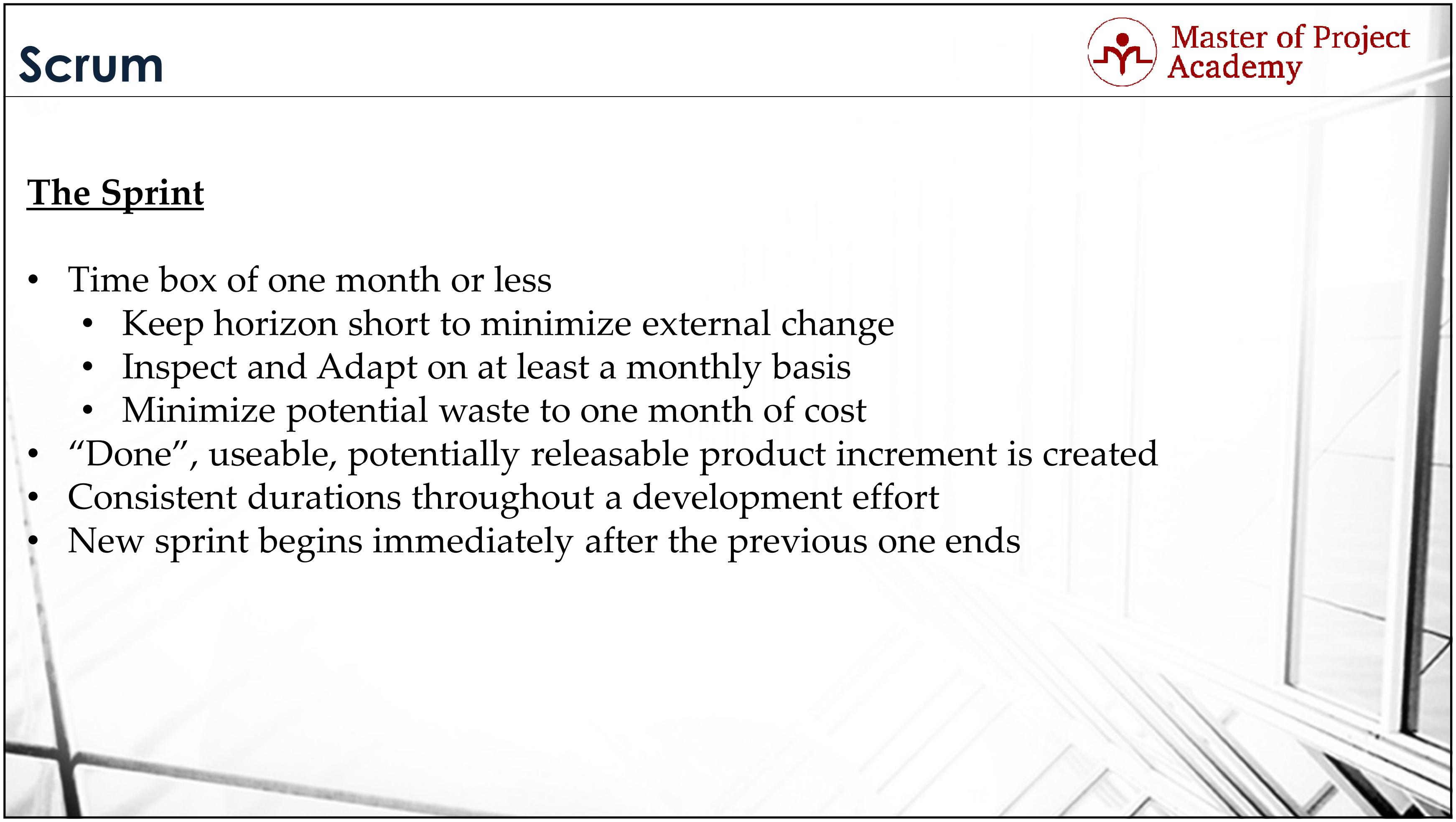
Scrum Events

- May also be referred to as ceremonies, activities, or meetings

- The Sprint
- Sprint Planning
- Daily Scrum
- Sprint Review
- Sprint Retrospective

- Except for the sprint, all other events are designed to enable transparency and inspection
- All Events are *Time Boxed*



Scrum

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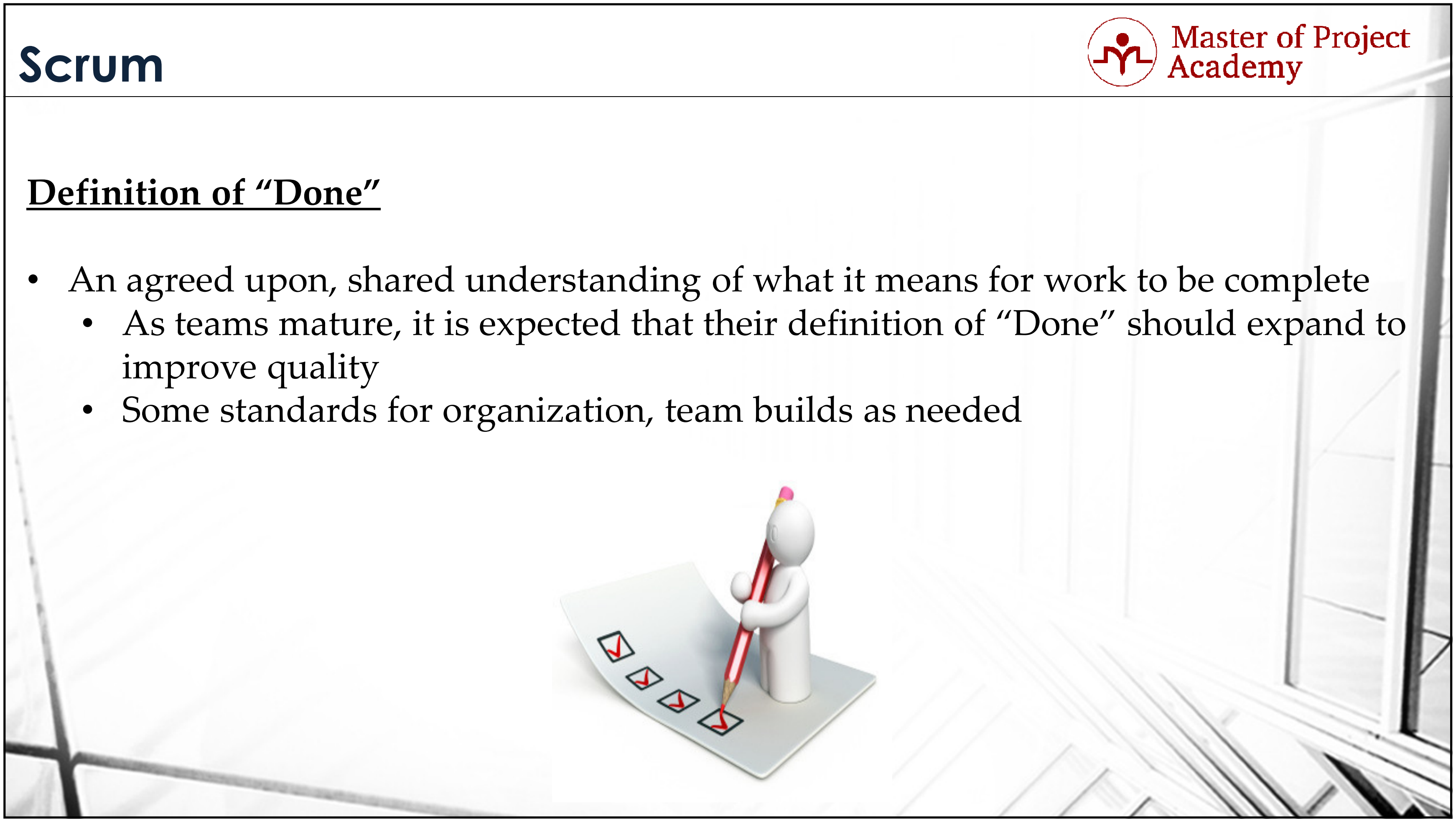
The Sprint

- Time box of one month or less
  - Keep horizon short to minimize external change
  - Inspect and Adapt on at least a monthly basis
  - Minimize potential waste to one month of cost
- “Done”, useable, potentially releasable product increment is created
- Consistent durations throughout a development effort
- New sprint begins immediately after the previous one ends



Scrum

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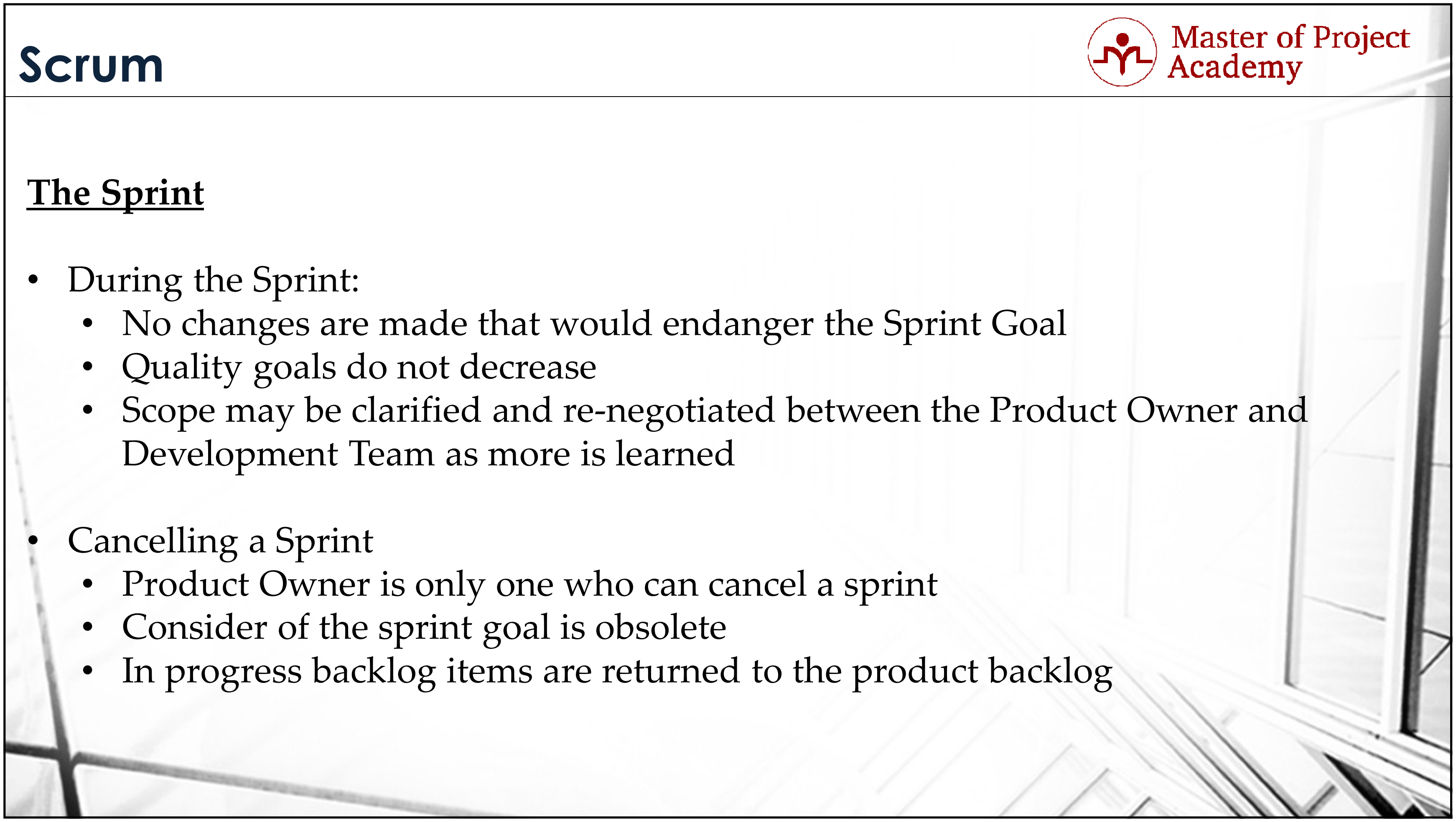
Definition of "Done"

- An agreed upon, shared understanding of what it means for work to be complete
  - As teams mature, it is expected that their definition of "Done" should expand to improve quality
  - Some standards for organization, team builds as needed



Scrum

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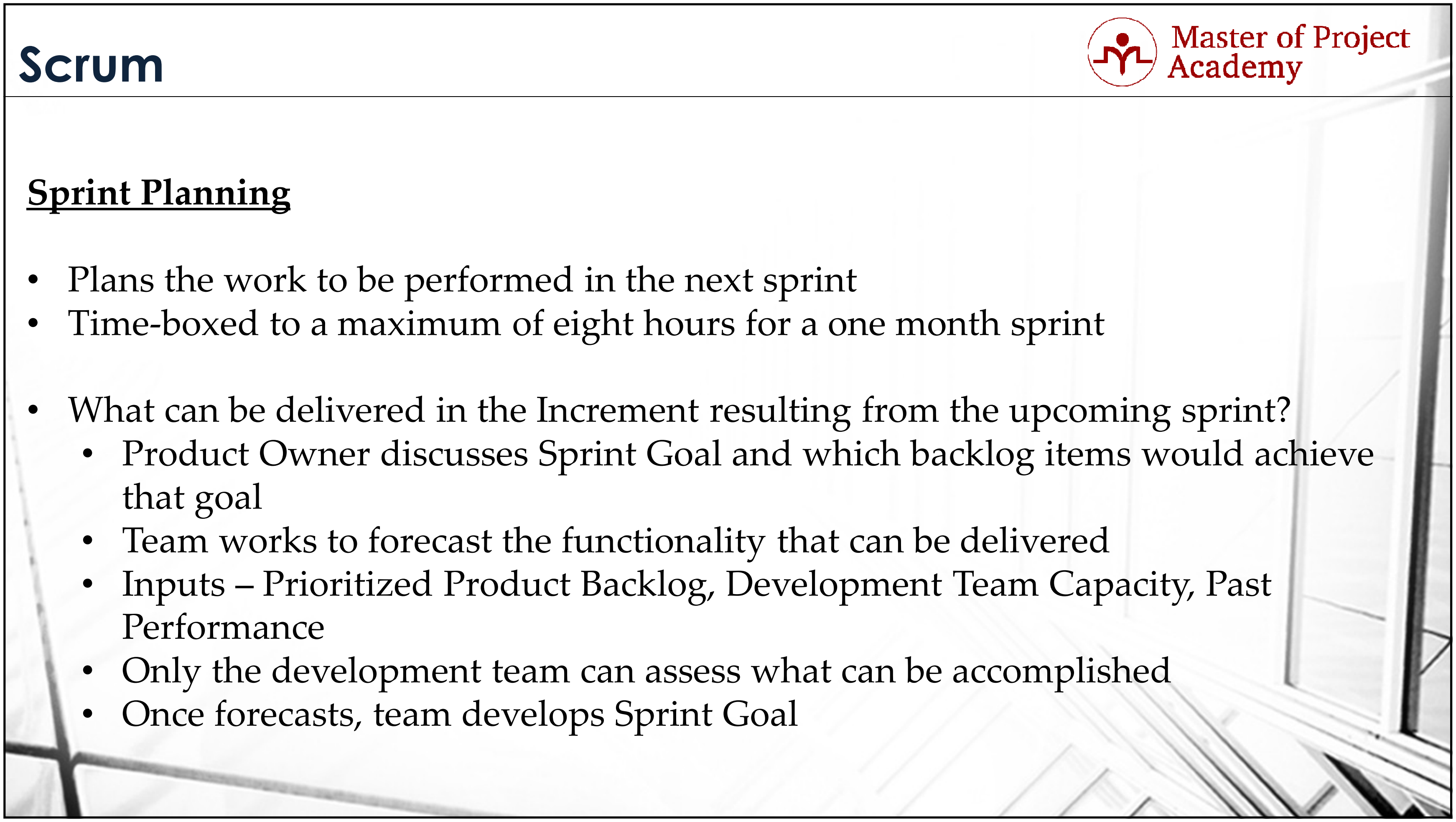
The Sprint

- During the Sprint:
  - No changes are made that would endanger the Sprint Goal
  - Quality goals do not decrease
  - Scope may be clarified and re-negotiated between the Product Owner and Development Team as more is learned
- Cancelling a Sprint
  - Product Owner is only one who can cancel a sprint
  - Consider of the sprint goal is obsolete
  - In progress backlog items are returned to the product backlog



Scrum

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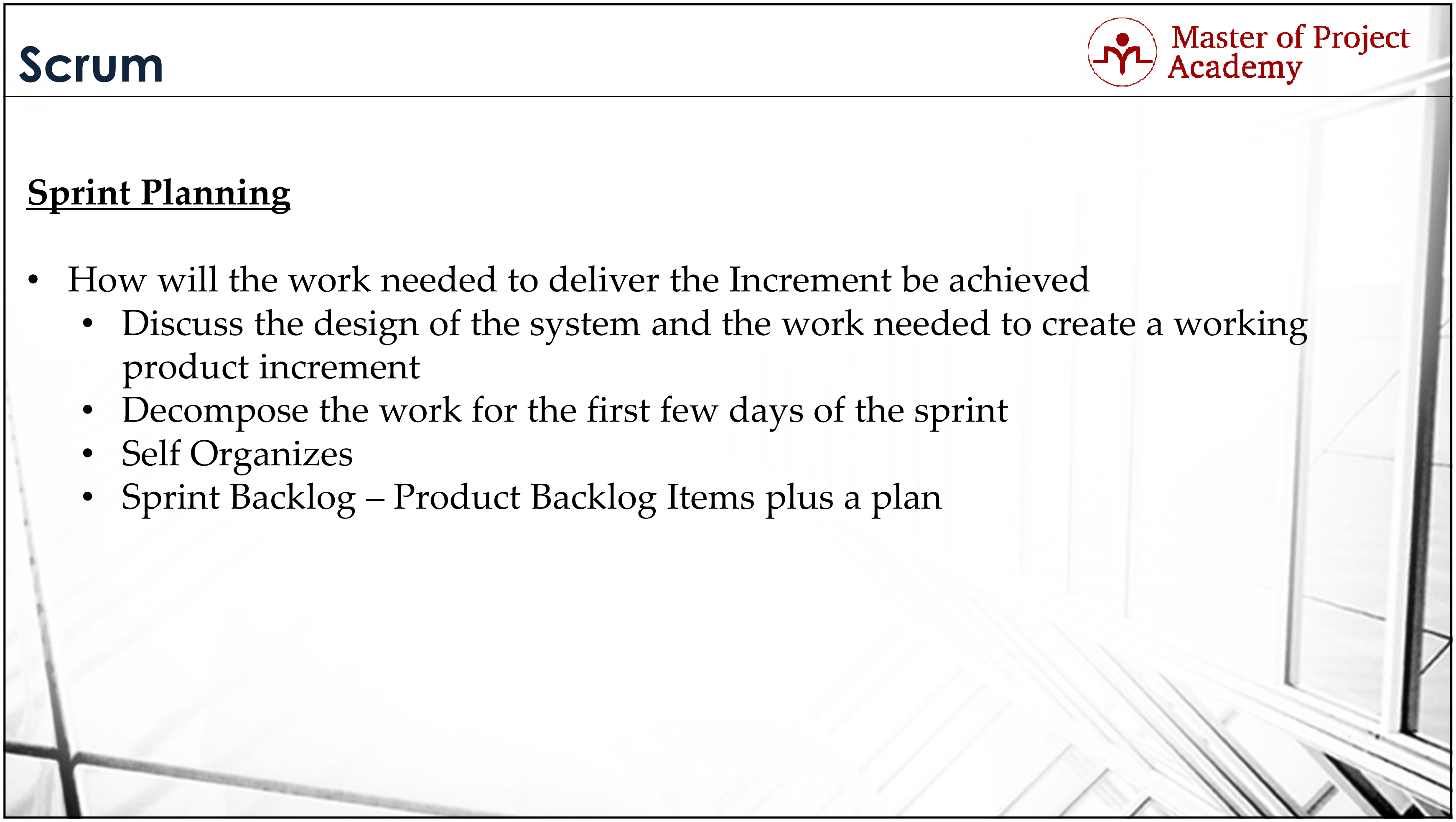
Sprint Planning

- Plans the work to be performed in the next sprint
- Time-boxed to a maximum of eight hours for a one month sprint

- What can be delivered in the Increment resulting from the upcoming sprint?
    - Product Owner discusses Sprint Goal and which backlog items would achieve that goal
    - Team works to forecast the functionality that can be delivered
    - Inputs – Prioritized Product Backlog, Development Team Capacity, Past Performance
    - Only the development team can assess what can be accomplished
    - Once forecasts, team develops Sprint Goal



Scrum

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Sprint Planning

- How will the work needed to deliver the Increment be achieved
  - Discuss the design of the system and the work needed to create a working product increment
  - Decompose the work for the first few days of the sprint
  - Self Organizes
  - Sprint Backlog – Product Backlog Items plus a plan

Scrum

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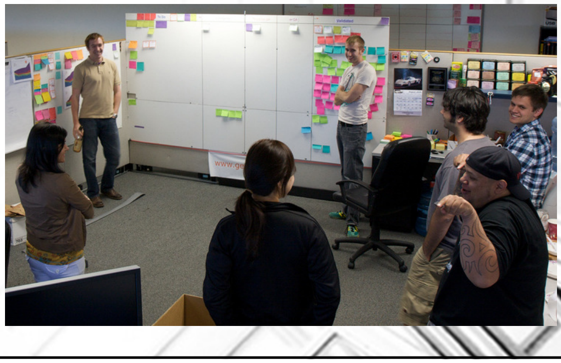
Daily Scrum

- 15 minute time boxed meeting for team to coordinate and create a plan for the next day (Also called Daily Standup)
- Three Main Questions
  - What did I accomplish yesterday?
  - What am I going to accomplish today?
  - What is blocking me?

Scrum Master ensures the team has the meeting and is operating correctly, but it is the teams responsibility for conducting the Daily Scrum; Only the team attends



Scrum

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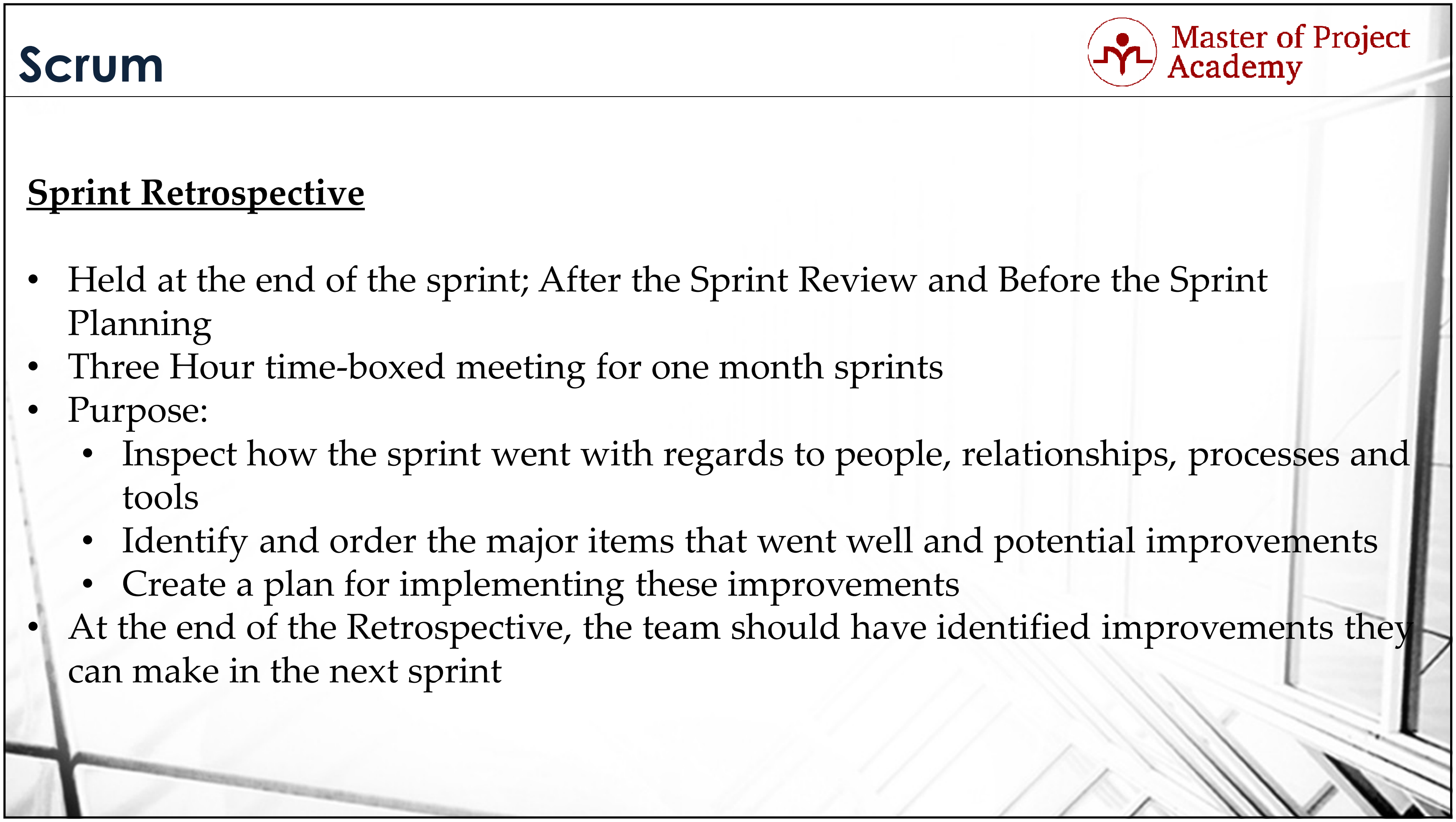
Sprint Review

- Opportunity to Inspect the Increment and Adapt the Product Backlog
- Occurs at the End of the Sprint
- Demonstrate what is "Done" and receives feedback
- Team plus key stakeholders
- Discuss any needed changes to the Product Backlog
- Four Hour time-boxed meeting for one-month sprints

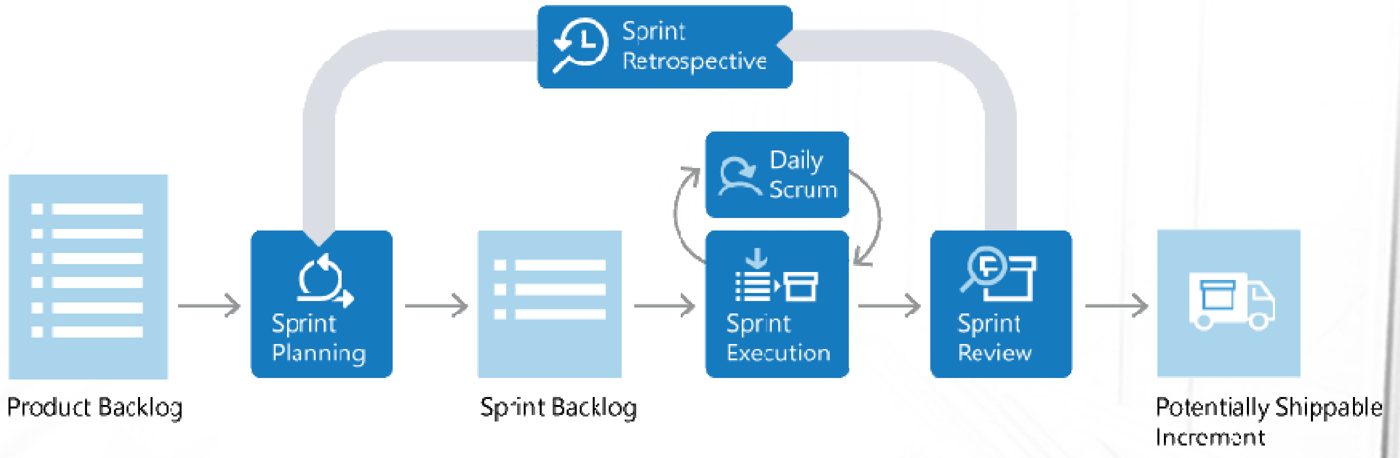


Scrum

Sprint Retrospective

- Held at the end of the sprint; After the Sprint Review and Before the Sprint Planning
- Three Hour time-boxed meeting for one month sprints
- Purpose:
  - Inspect how the sprint went with regards to people, relationships, processes and tools
  - Identify and order the major items that went well and potential improvements
  - Create a plan for implementing these improvements
- At the end of the Retrospective, the team should have identified improvements they can make in the next sprint

Scrum Framework



Sprint Retrospective

Daily Scrum

Product Backlog

Sprint Planning

Sprint Backlog

Sprint Execution

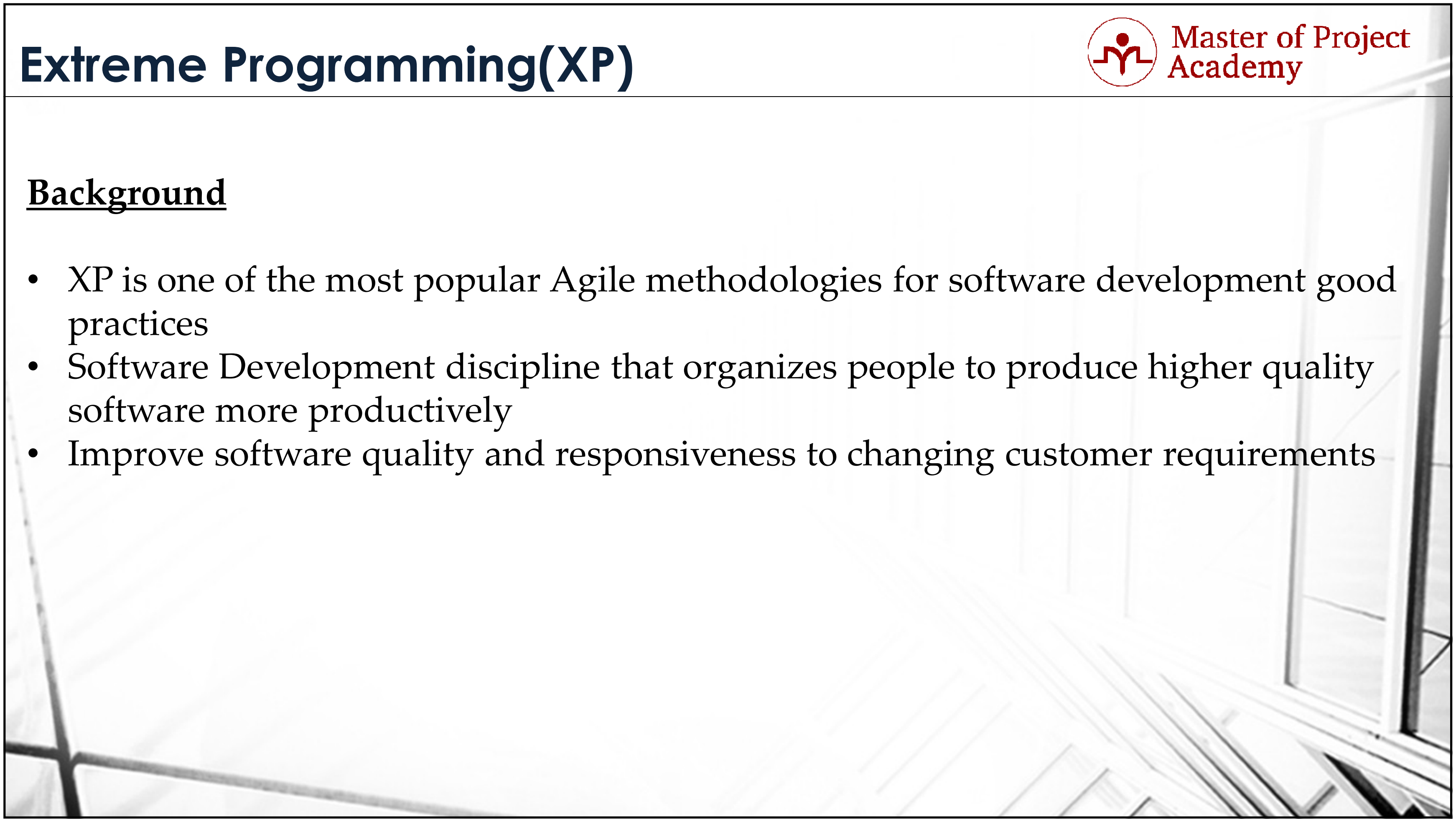
Sprint Review

Potentially Shippable Increment

Key Takeaways/Tips

- Understand the different ceremonies and purposes
- Gives a good grounding to Agile lifecycle

Extreme Programming (XP)



Extreme Programming(XP)

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Background

- XP is one of the most popular Agile methodologies for software development good practices
- Software Development discipline that organizes people to produce higher quality software more productively
- Improve software quality and responsiveness to changing customer requirements

Extreme Programming(XP)

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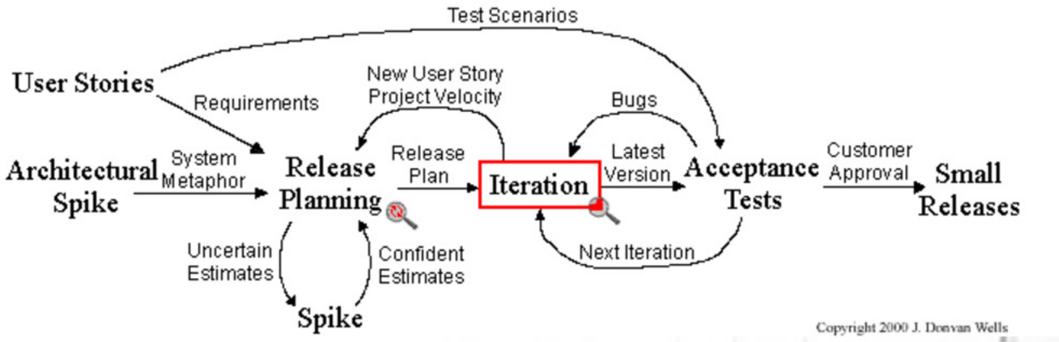
- XP Core Values
  - Simplicity
  - Communication
  - Feedback
  - Courage
  - Respect
- XP Life Cycle



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Extreme Programming(XP)

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12 Practices

Fine Scale Feedback

- Pair Programming – Two developers working as a pair; One codes, One Reviews
- Planning Game – Release and Iterations
- Test Driven Development – Write automated tests first, then code to make them pass
- Whole Team – Everyone sets together; Generalized specialists

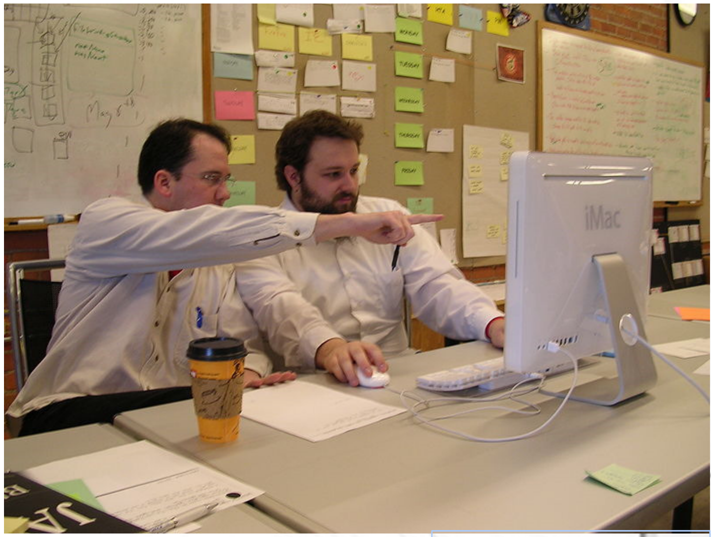
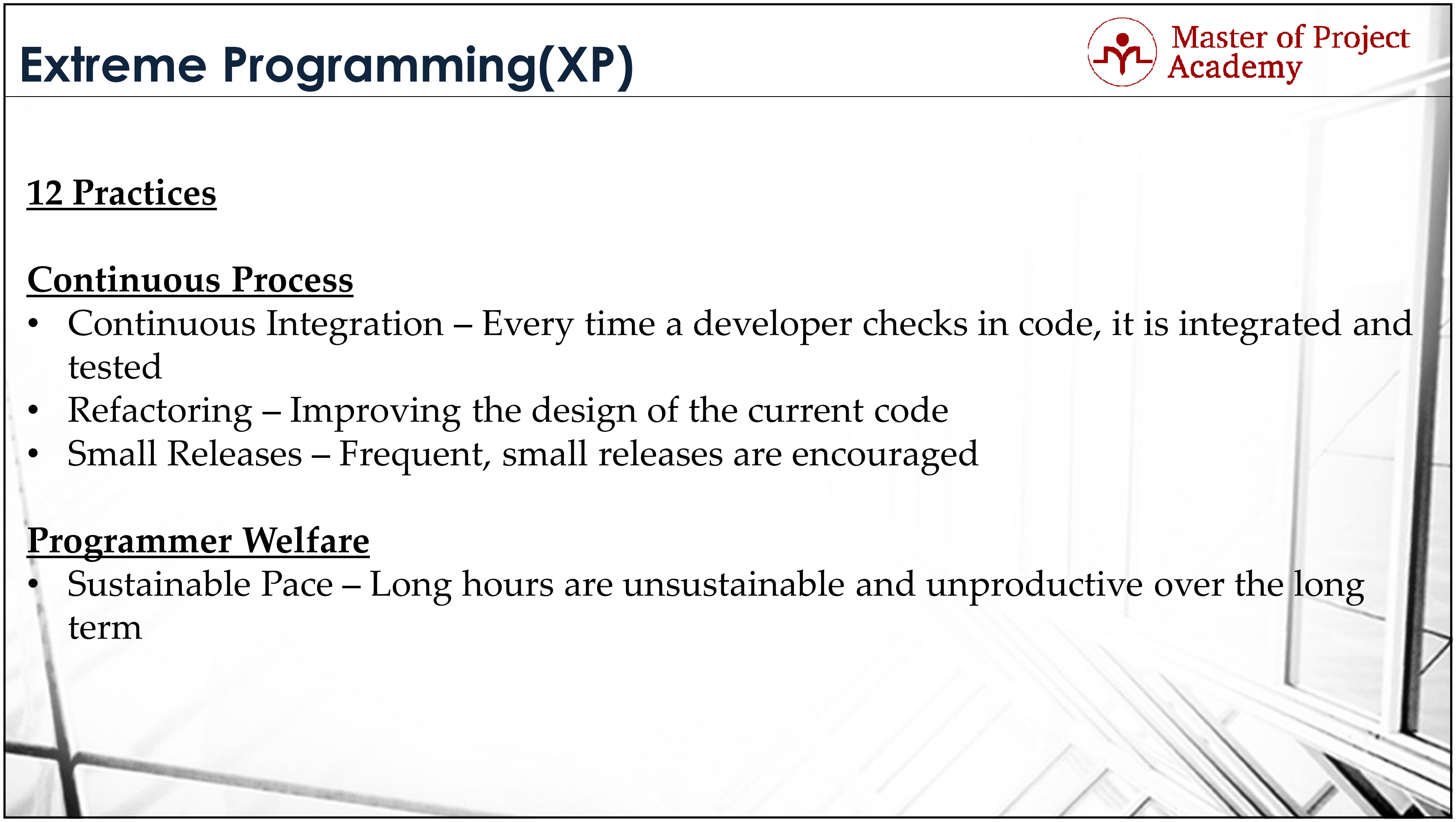


Image by Lisamarie Babik



Extreme Programming(XP)

Master of Project Academy

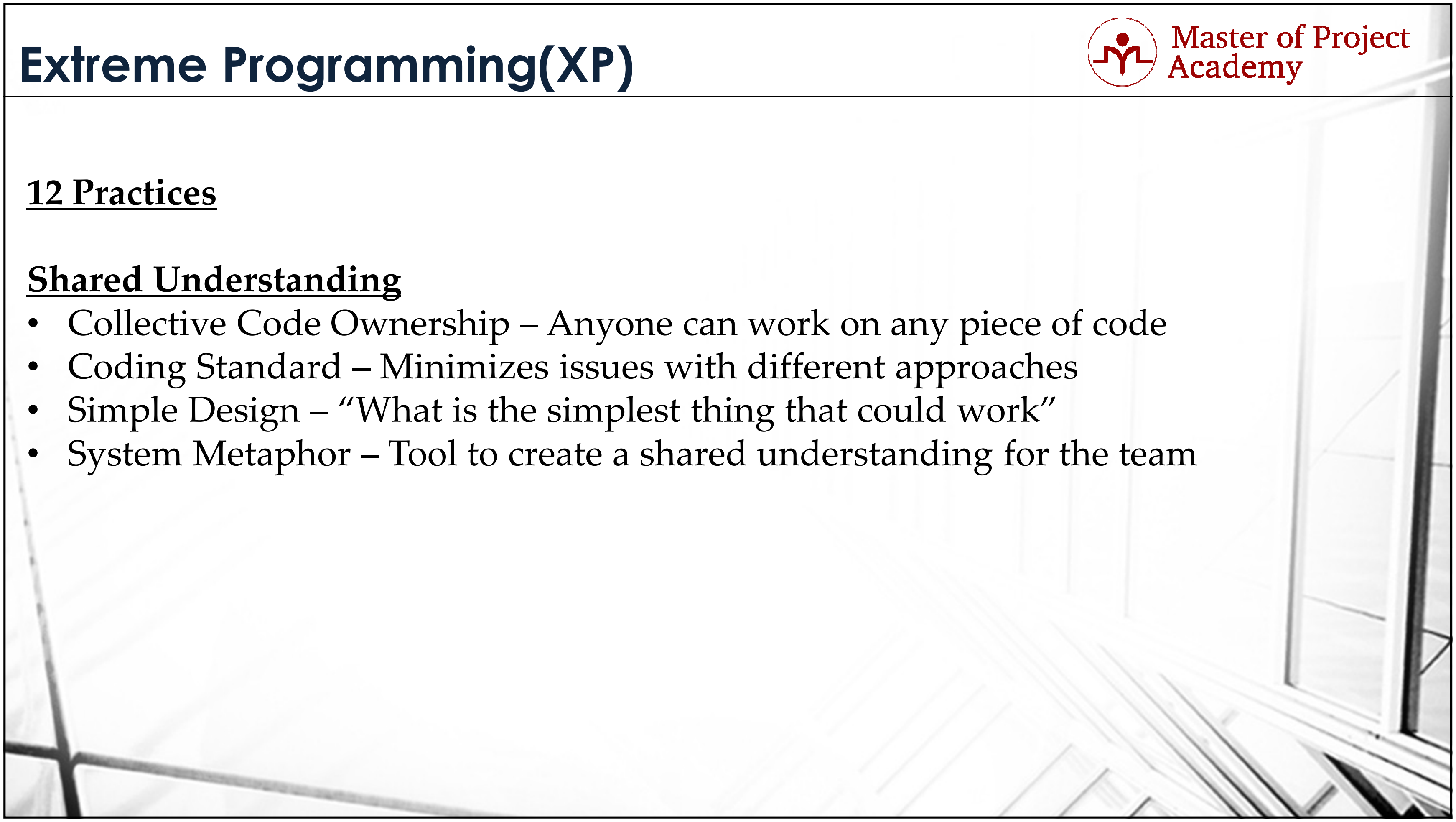
12 Practices

Continuous Process

- Continuous Integration – Every time a developer checks in code, it is integrated and tested
- Refactoring – Improving the design of the current code
- Small Releases – Frequent, small releases are encouraged

Programmer Welfare

- Sustainable Pace – Long hours are unsustainable and unproductive over the long term



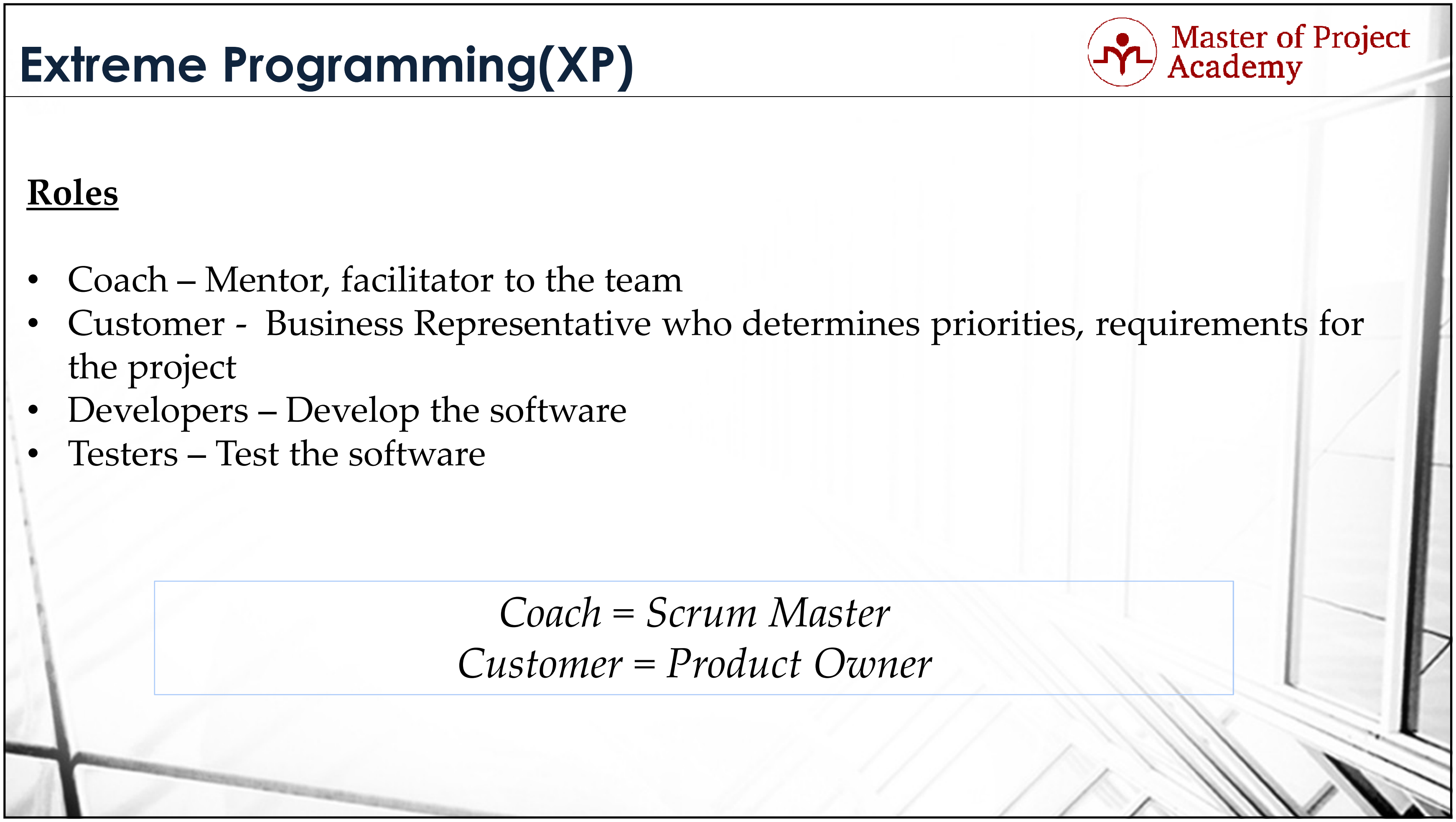
Extreme Programming(XP)

Master of Project Academy

12 Practices

Shared Understanding

- Collective Code Ownership – Anyone can work on any piece of code
- Coding Standard – Minimizes issues with different approaches
- Simple Design – “What is the simplest thing that could work”
- System Metaphor – Tool to create a shared understanding for the team



Extreme Programming(XP)

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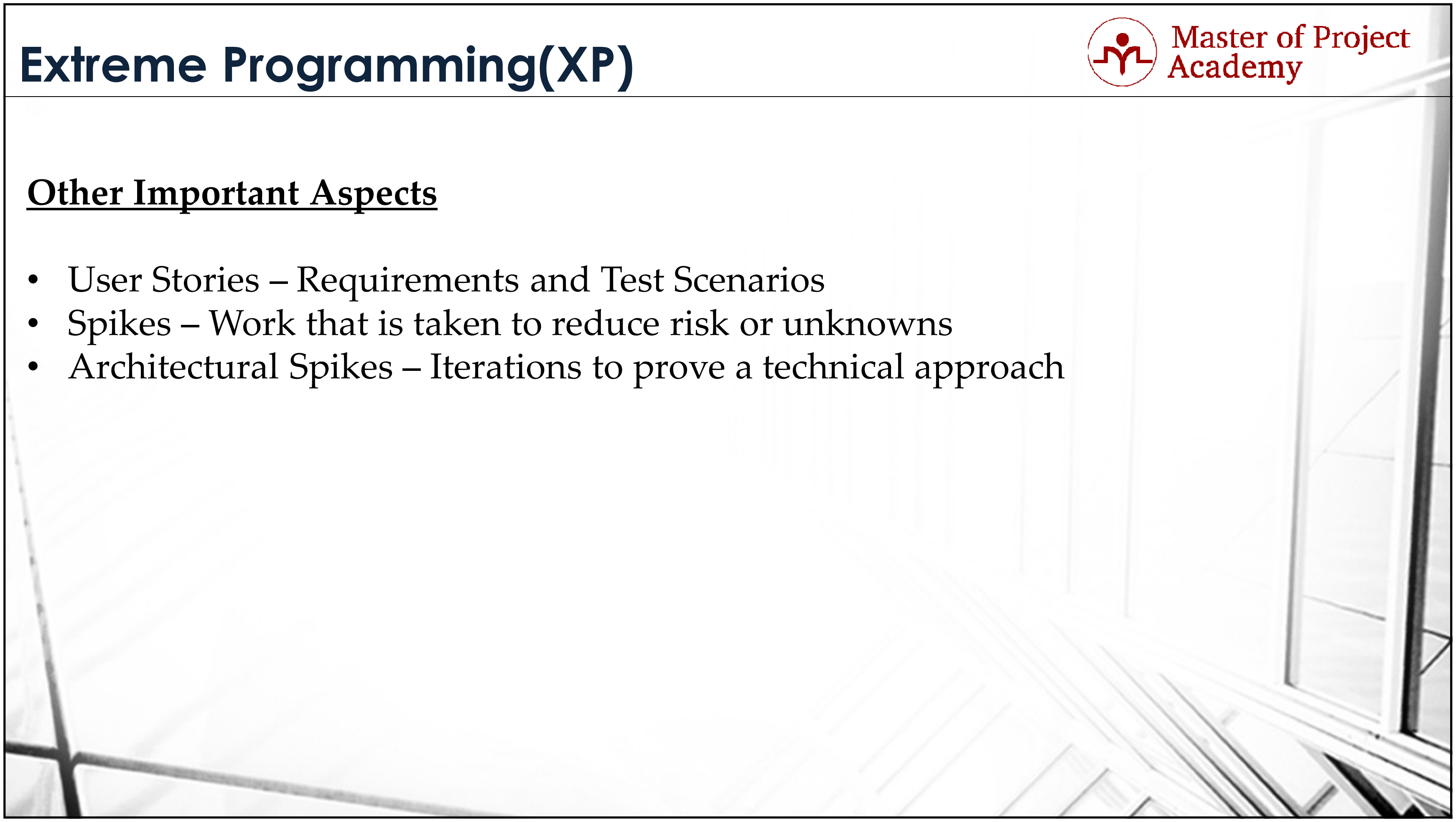
<u>Roles</u>

- Coach – Mentor, facilitator to the team
- Customer - Business Representative who determines priorities, requirements for the project
- Developers – Develop the software
- Testers – Test the software

Coach = Scrum Master
Customer = Product Owner



Extreme Programming(XP)

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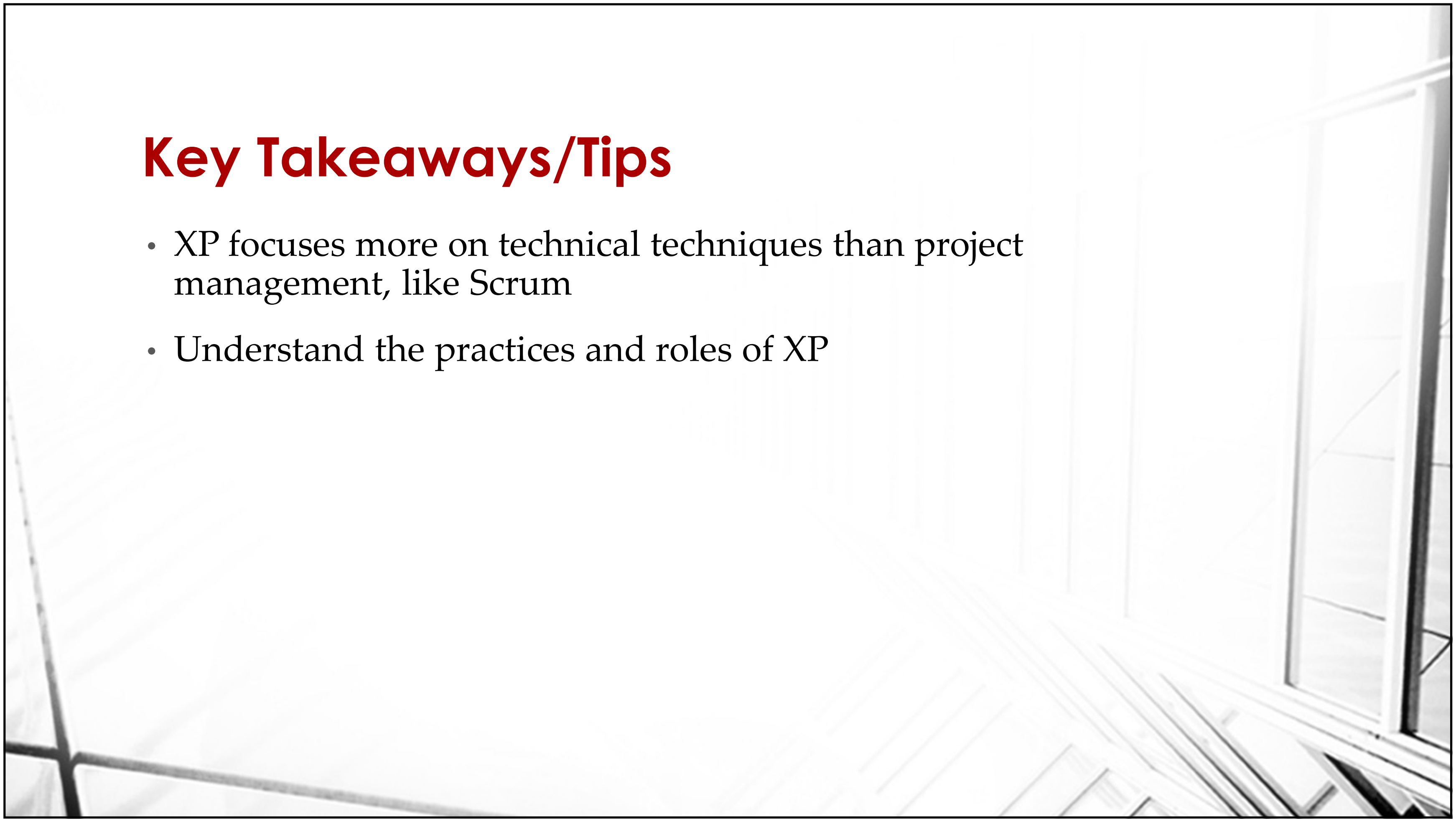
Other Important Aspects

- User Stories – Requirements and Test Scenarios
- Spikes – Work that is taken to reduce risk or unknowns
- Architectural Spikes – Iterations to prove a technical approach



Key Takeaways/Tips

- XP focuses more on technical techniques than project management, like Scrum
- Understand the practices and roles of XP

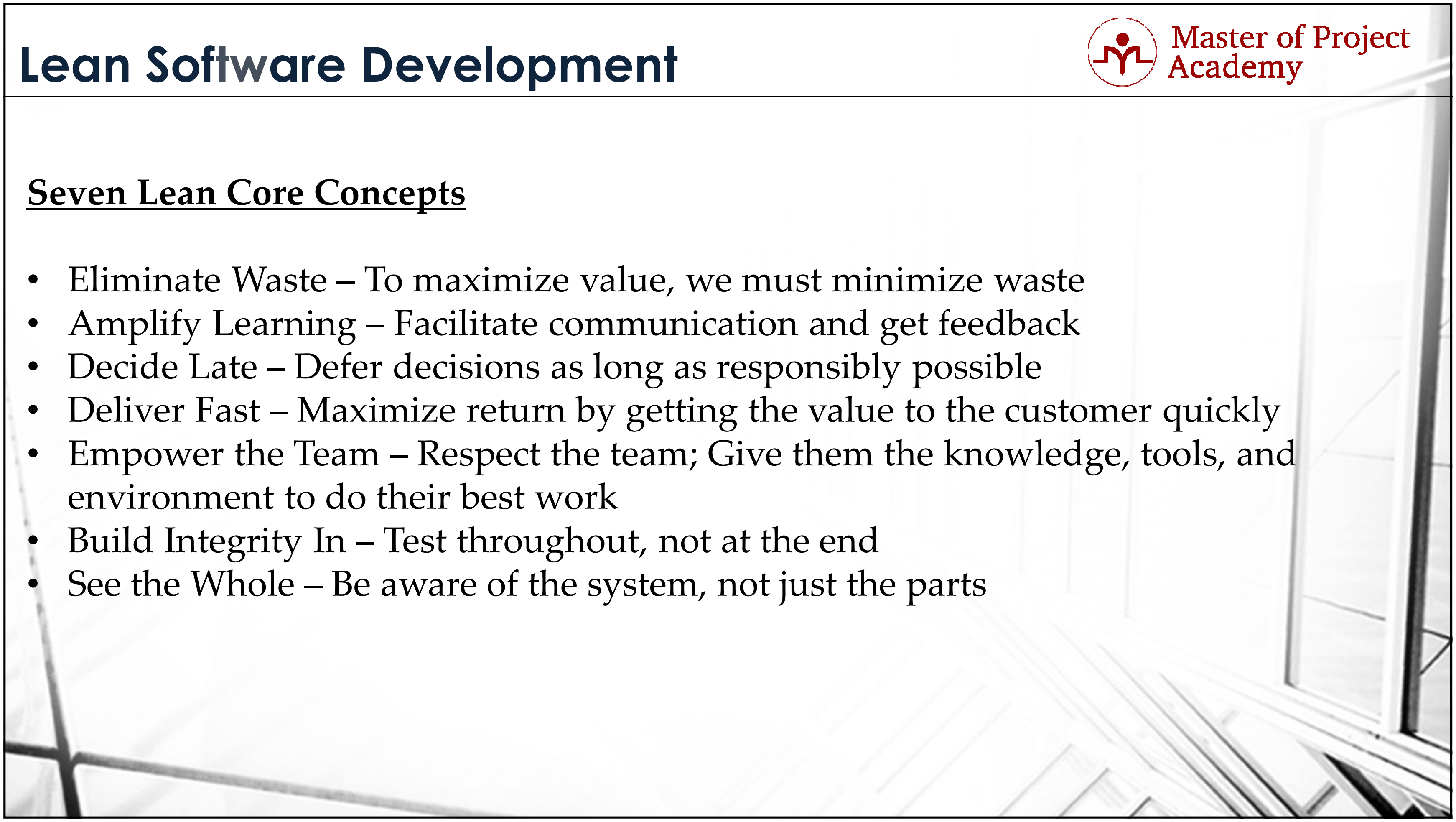
Lean Software Development

Lean Software Development

Master of Project Academy

Background

- Lean is an overall mindset while Lean Software Development, applies to software development (and all agile methodologies)
- Lean Software Development is derived from the lean manufacturing, most famous from the Toyota Production System
- Lean Focuses on the Value Steam



Lean Software Development

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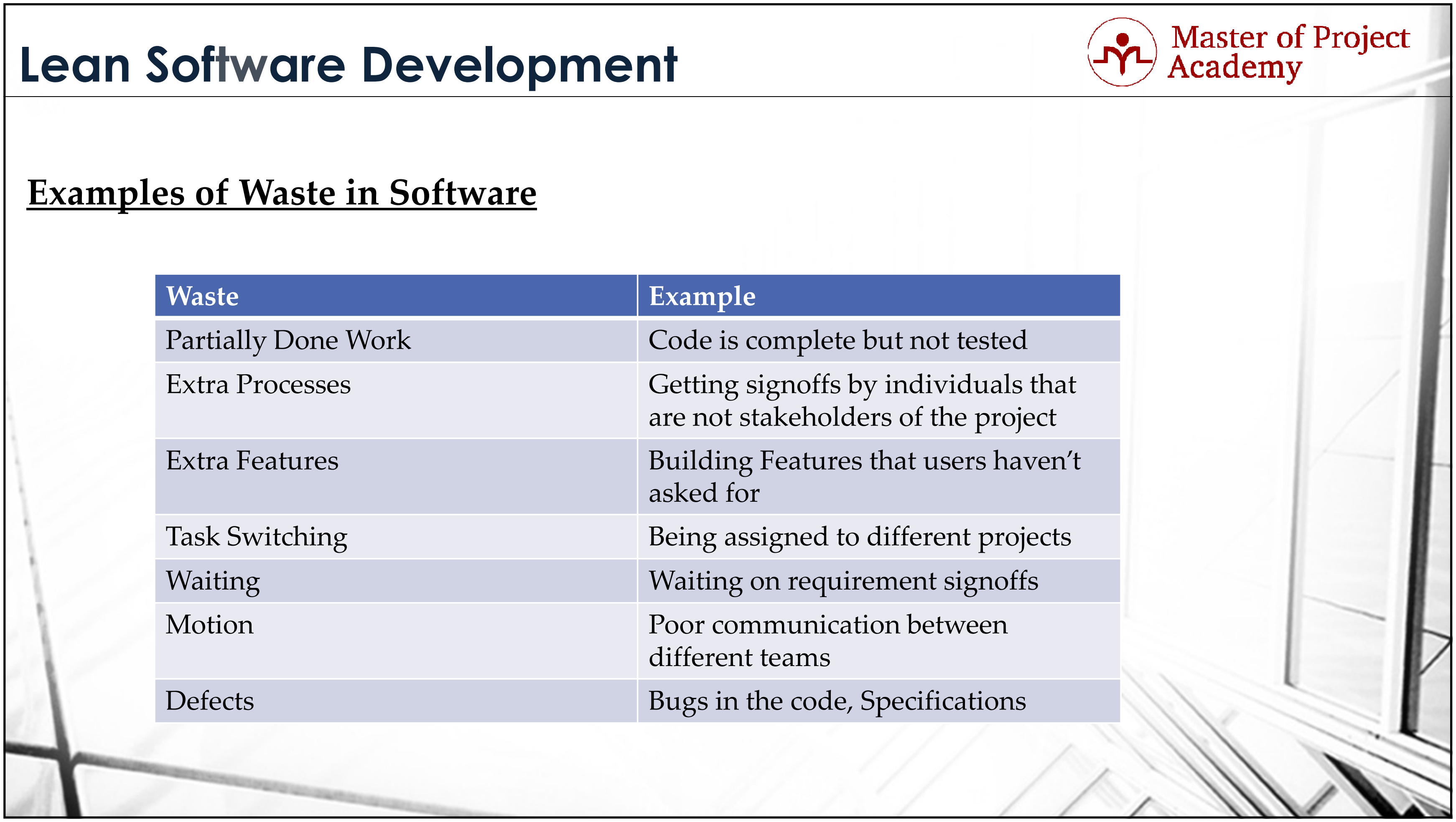
Seven Lean Core Concepts

- Eliminate Waste – To maximize value, we must minimize waste
- Amplify Learning – Facilitate communication and get feedback
- Decide Late – Defer decisions as long as responsibly possible
- Deliver Fast – Maximize return by getting the value to the customer quickly
- Empower the Team – Respect the team; Give them the knowledge, tools, and environment to do their best work
- Build Integrity In – Test throughout, not at the end
- See the Whole – Be aware of the system, not just the parts



Lean Software Development

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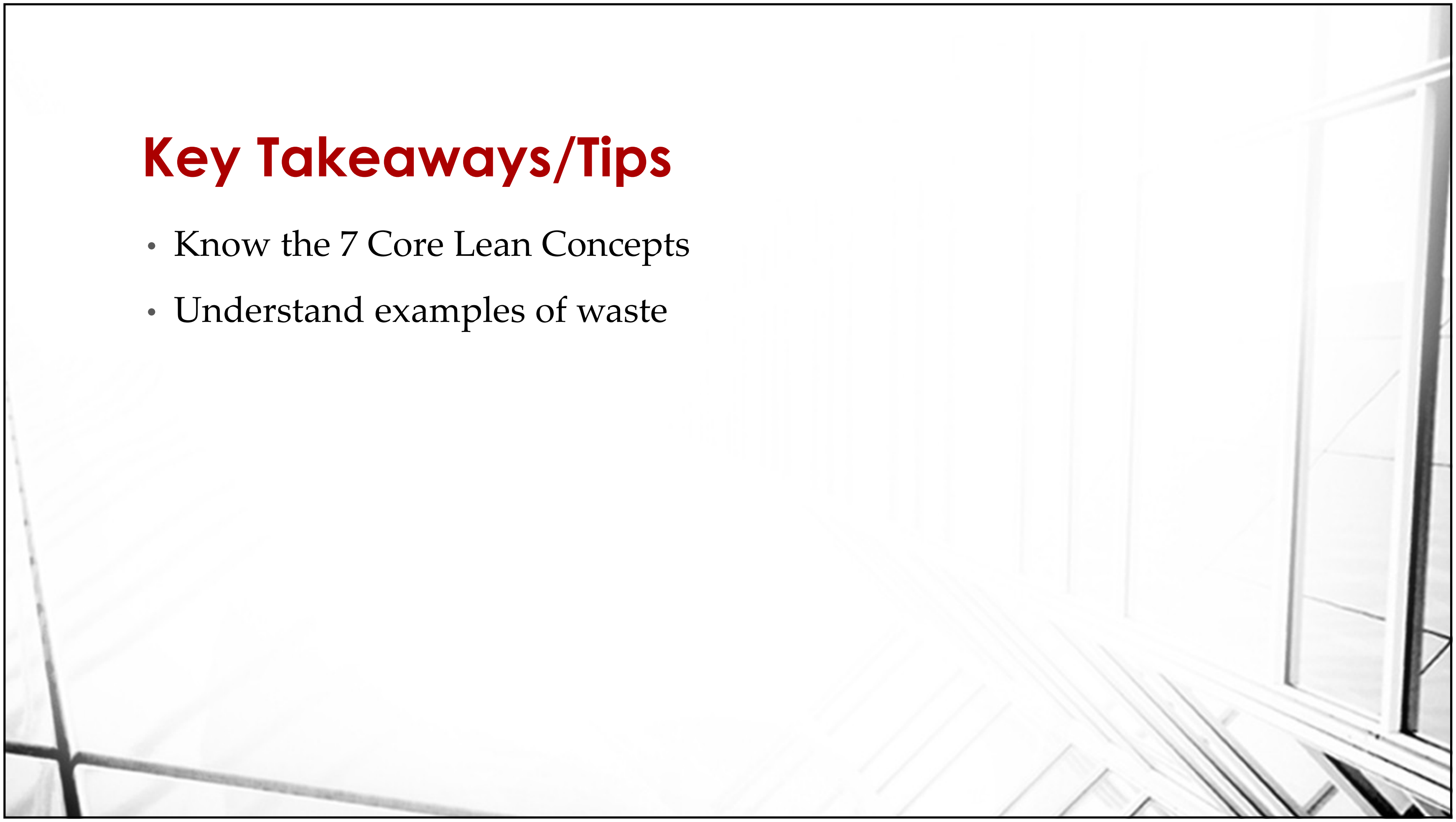
Examples of Waste in Software

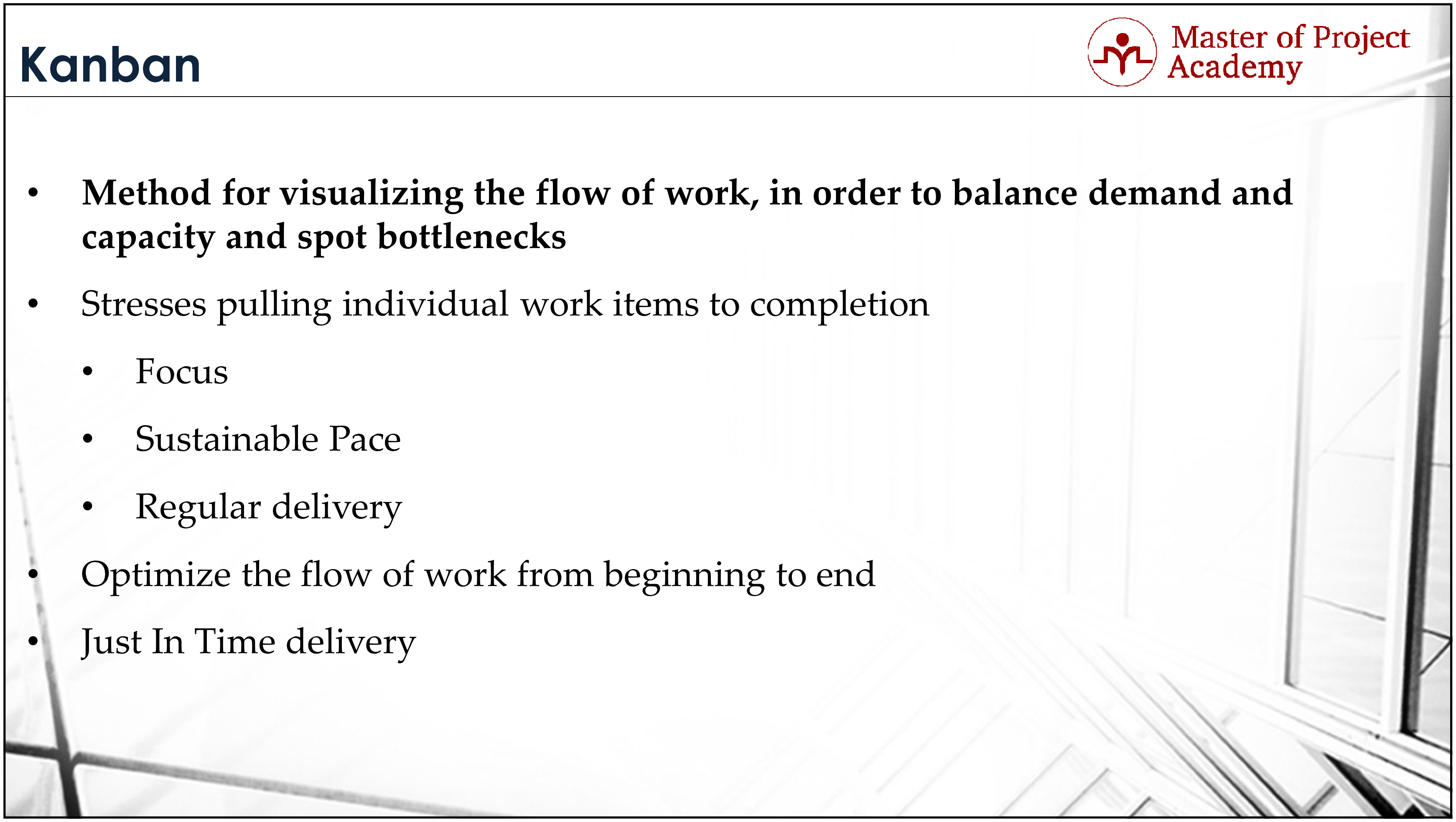
Waste	Example
Partially Done Work	Code is complete but not tested
Extra Processes	Getting signoffs by individuals that are not stakeholders of the project
Extra Features	Building Features that users haven't asked for
Task Switching	Being assigned to different projects
Waiting	Waiting on requirement signoffs
Motion	Poor communication between different teams
Defects	Bugs in the code, Specifications



Key Takeaways/Tips

- Know the 7 Core Lean Concepts
- Understand examples of waste

Kanban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Kanban

- **Method for visualizing the flow of work, in order to balance demand and capacity and spot bottlenecks**
- Stresses pulling individual work items to completion
  - Focus
  - Sustainable Pace
  - Regular delivery
- Optimize the flow of work from beginning to end
- Just In Time delivery

Kanban

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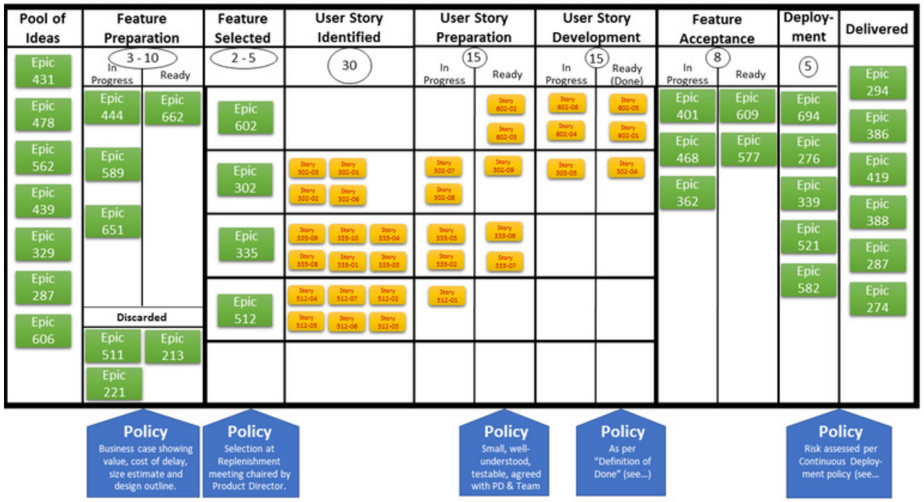
Core Practices

- Define and Visualize the Workflow
- Limit Work-In-Progress (WIP)
- Measure and Manage Flow
- Make Process Policies Explicit
- Use Models to Suggest Improvement



Kanban

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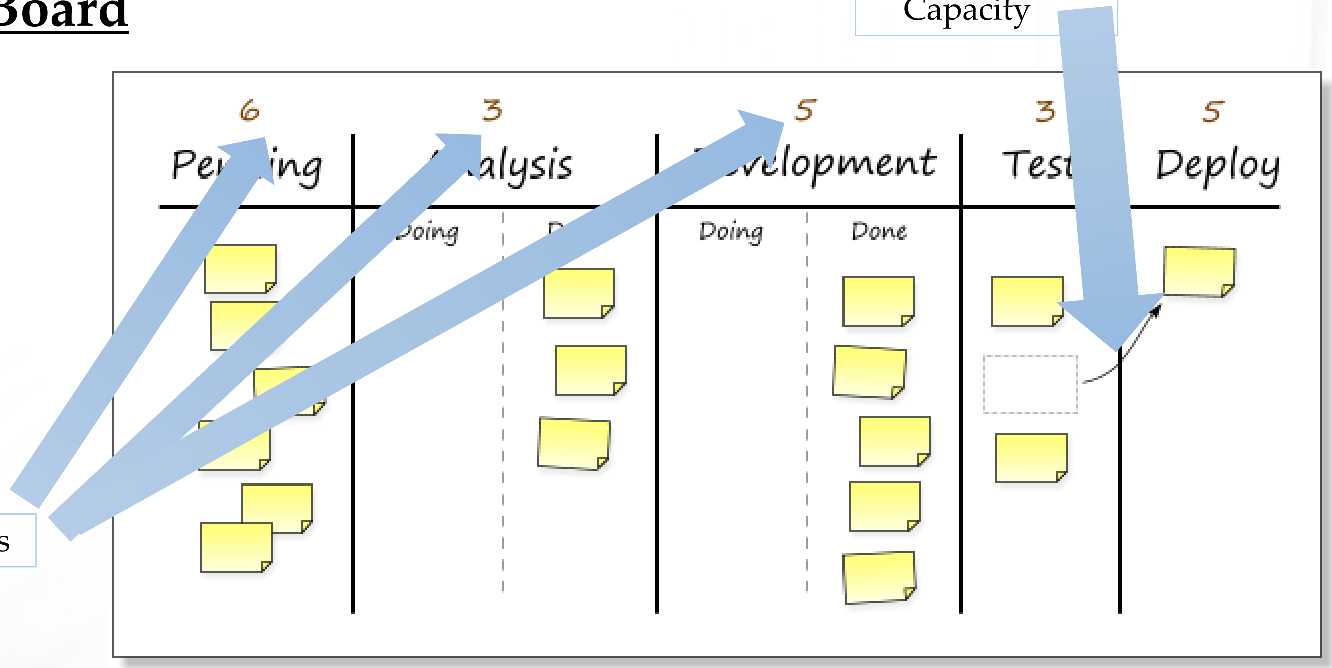
Kanban Board

Pull When Availability Capacity



WIP Limits

Kanban

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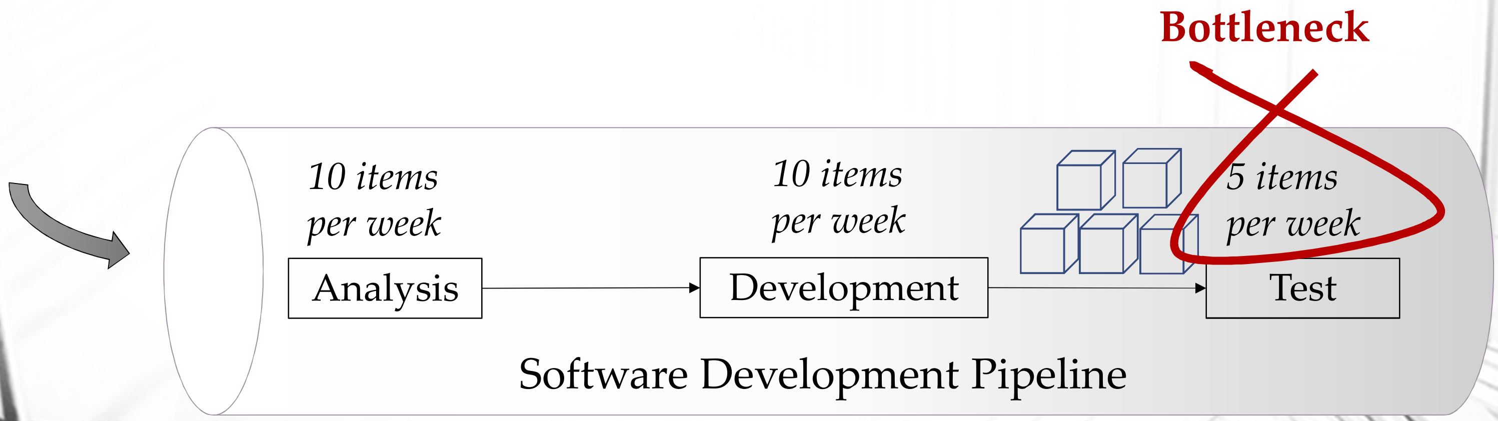
Bottlenecks

- That part of the system that is the limiting factor
- Exploit the bottleneck



Bottleneck

10 items per week

10 items per week

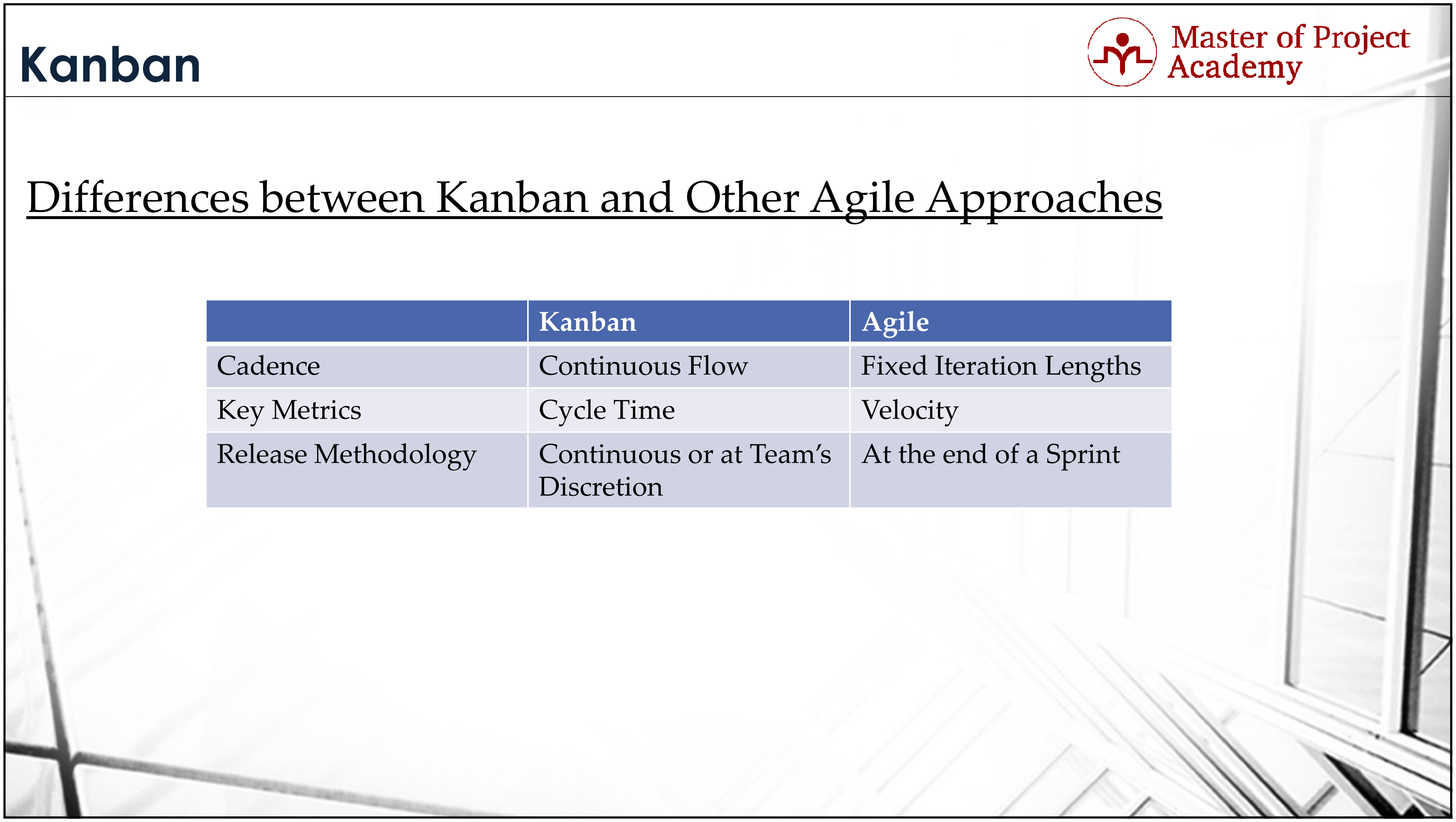
5 items per week

Analysis

Development

Test

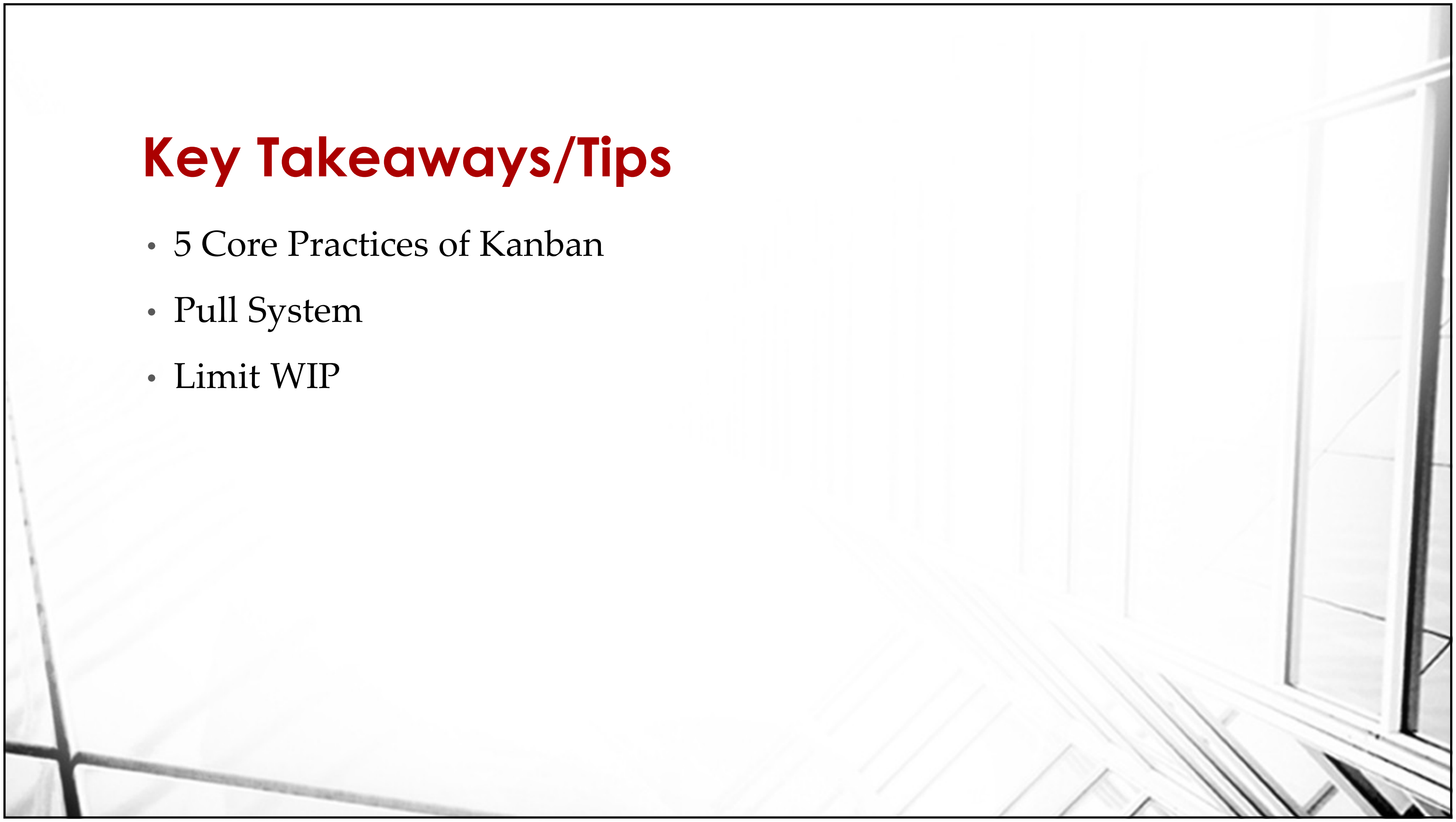
Software Development Pipeline



Kanban

Differences between Kanban and Other Agile Approaches

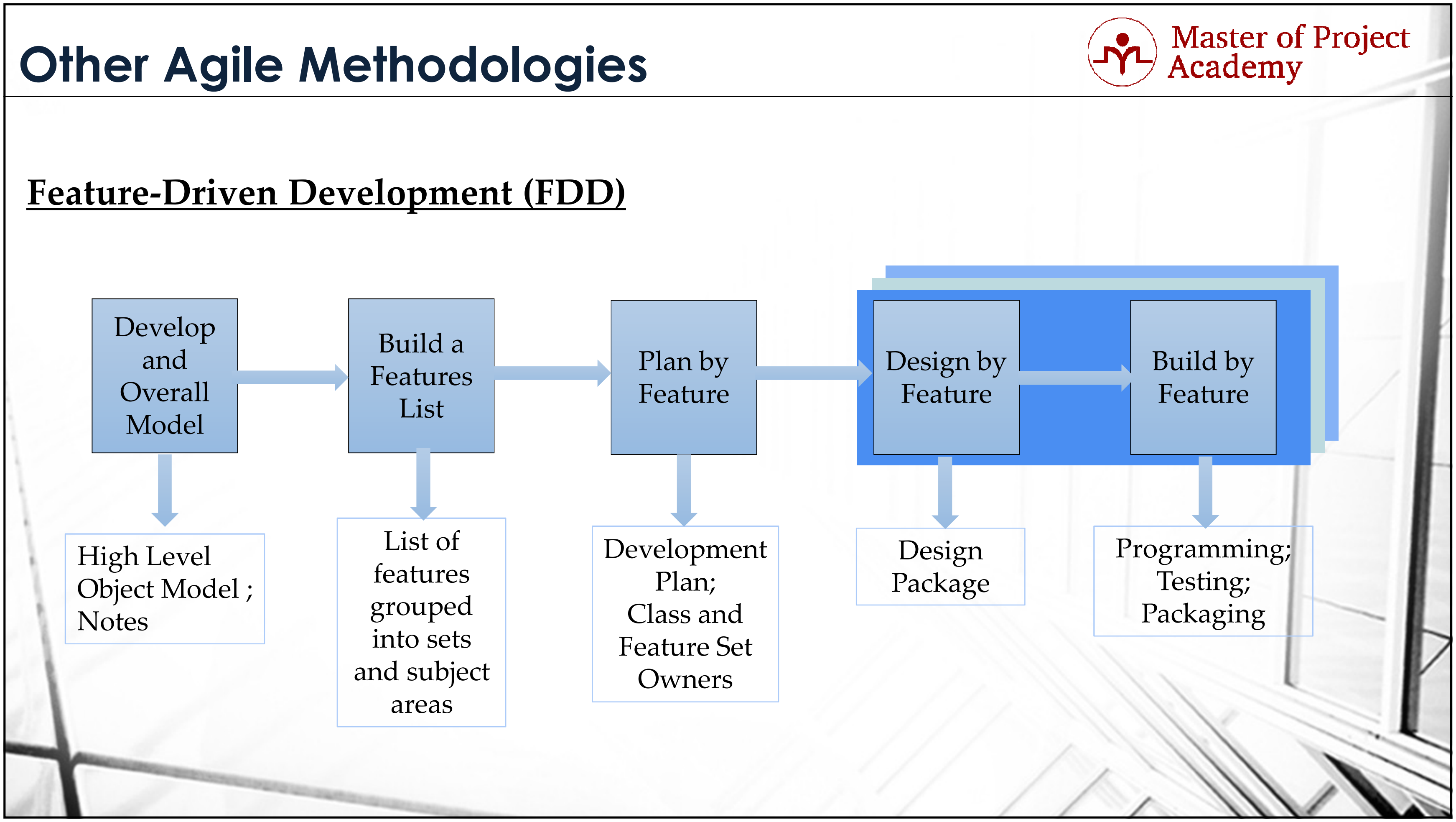
	Kanban	Agile
Cadence	Continuous Flow	Fixed Iteration Lengths
Key Metrics	Cycle Time	Velocity
Release Methodology	Continuous or at Team's Discretion	At the end of a Sprint



Key Takeaways/Tips

- 5 Core Practices of Kanban
- Pull System
- Limit WIP

Other Agile Methodologies



Other Agile Methodologies

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Feature-Driven Development (FDD)

Develop and Overall Model → Build a Features List → Plan by Feature → Design by Feature → Build by Feature

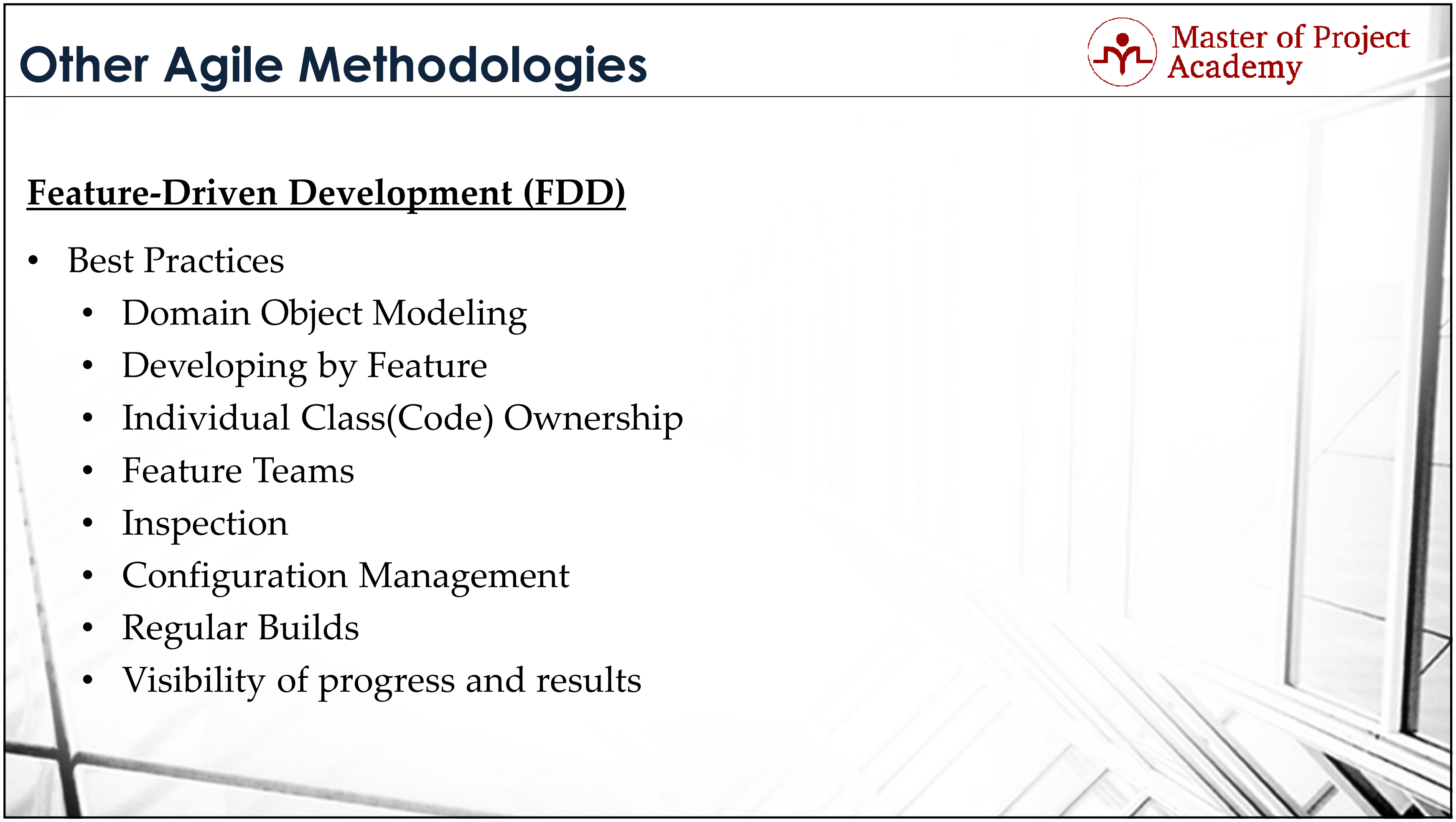
Develop and Overall Model: High Level Object Model ; Notes

Build a Features List: List of features grouped into sets and subject areas

Plan by Feature: Development Plan; Class and Feature Set Owners

Design by Feature: Design Package

Build by Feature: Programming; Testing; Packaging



Other Agile Methodologies

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Feature-Driven Development (FDD)

- Best Practices
  - Domain Object Modeling
  - Developing by Feature
  - Individual Class(Code) Ownership
  - Feature Teams
  - Inspection
  - Configuration Management
  - Regular Builds
  - Visibility of progress and results

Other Agile Methodologies

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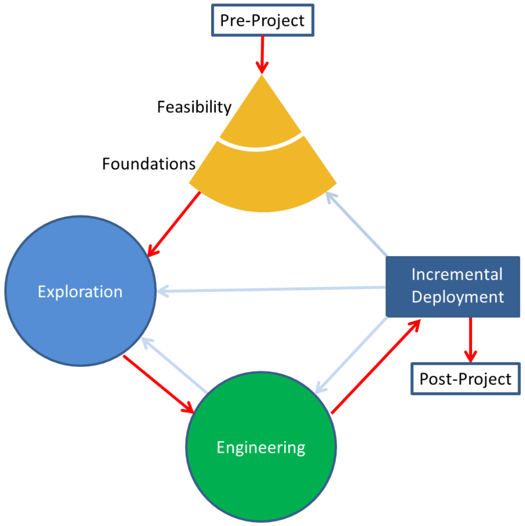
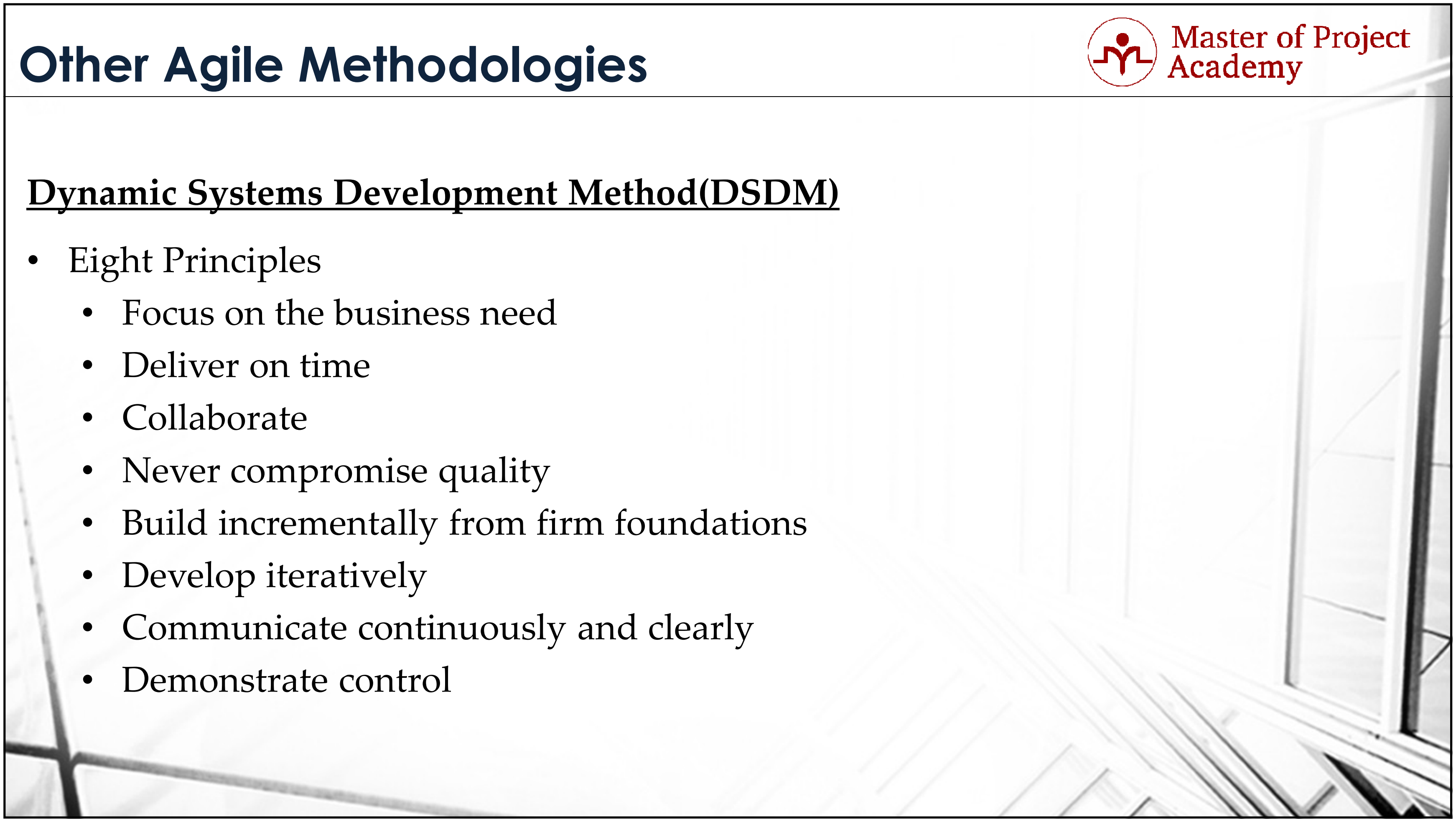
Dynamic Systems Development Method(DSDM)

Philosophy – Projects must be aligned to clearly defined strategic goals and focus on early delivery of real benefits to the business

Advocates use of several proven practices

- Facilitated Workshops
- Modeling and Iterative Development
- MoSCoW Prioritization
- Time Boxing





Other Agile Methodologies

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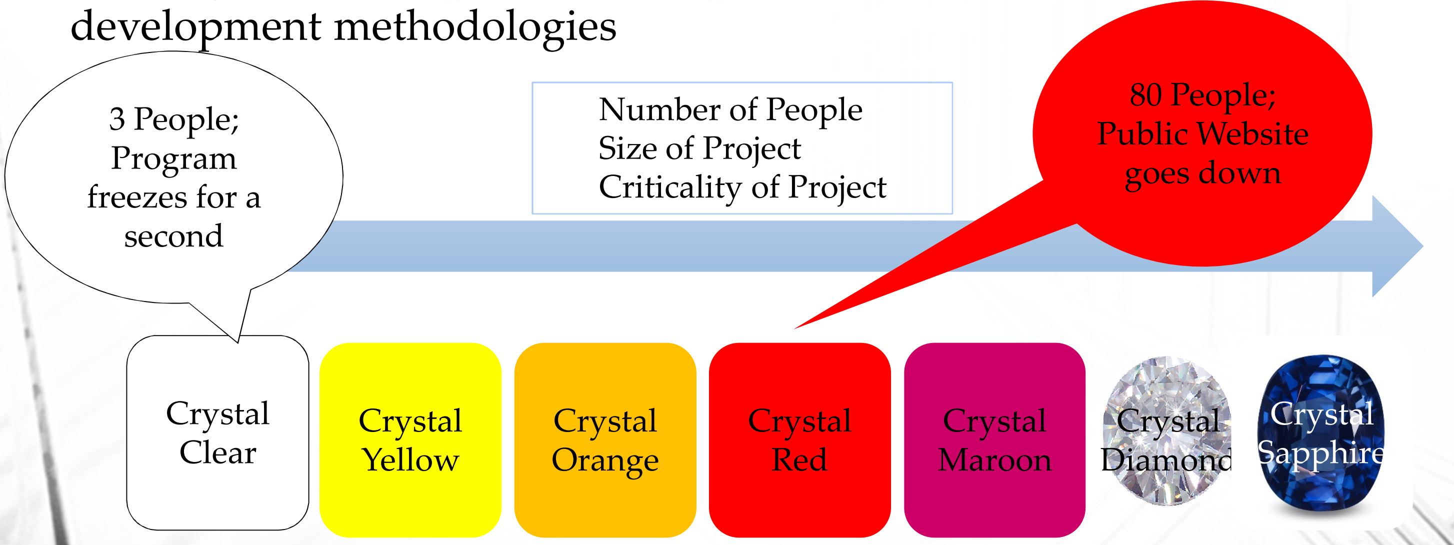
Dynamic Systems Development Method(DSDM)

- Eight Principles
  - Focus on the business need
  - Deliver on time
  - Collaborate
  - Never compromise quality
  - Build incrementally from firm foundations
  - Develop iteratively
  - Communicate continuously and clearly
  - Demonstrate control

Other Agile Methodologies

Crystal

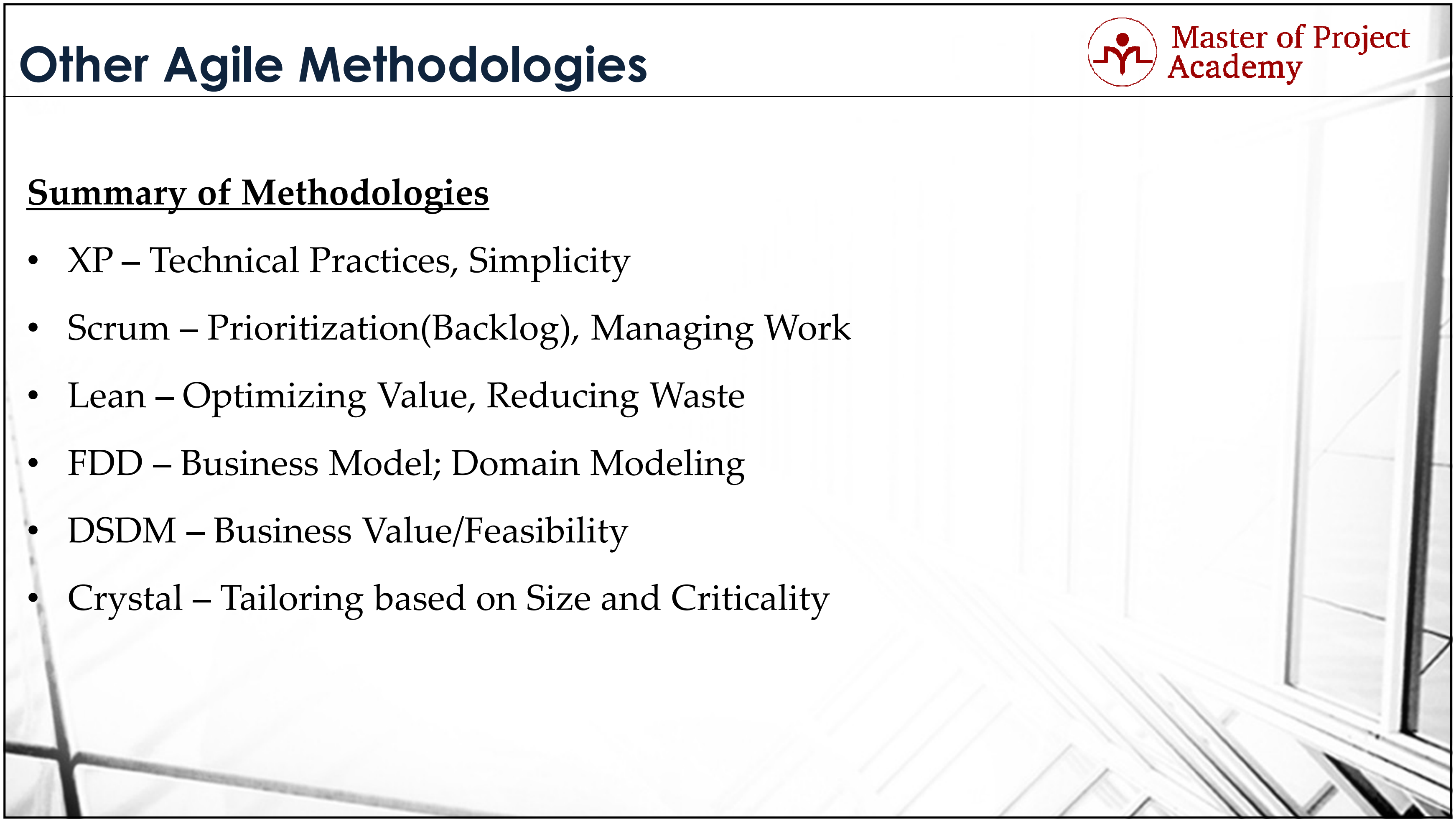
- A family of human-powered, adaptive, ultra light, ‘stretch to fit’ software development methodologies



3 People; Program freezes for a second

Number of People
Size of Project
Criticality of Project

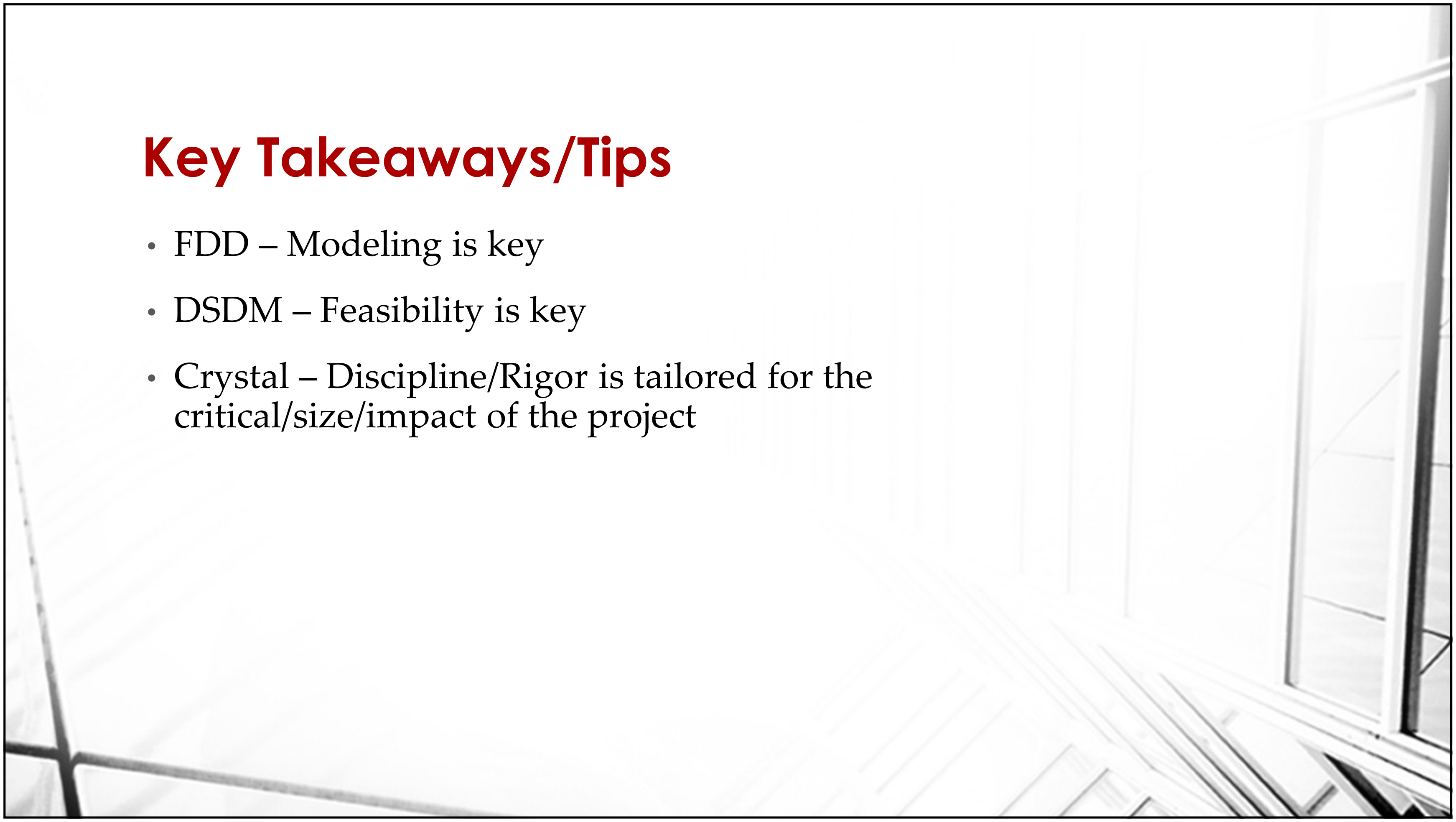
80 People; Public Website goes down



Other Agile Methodologies

Summary of Methodologies

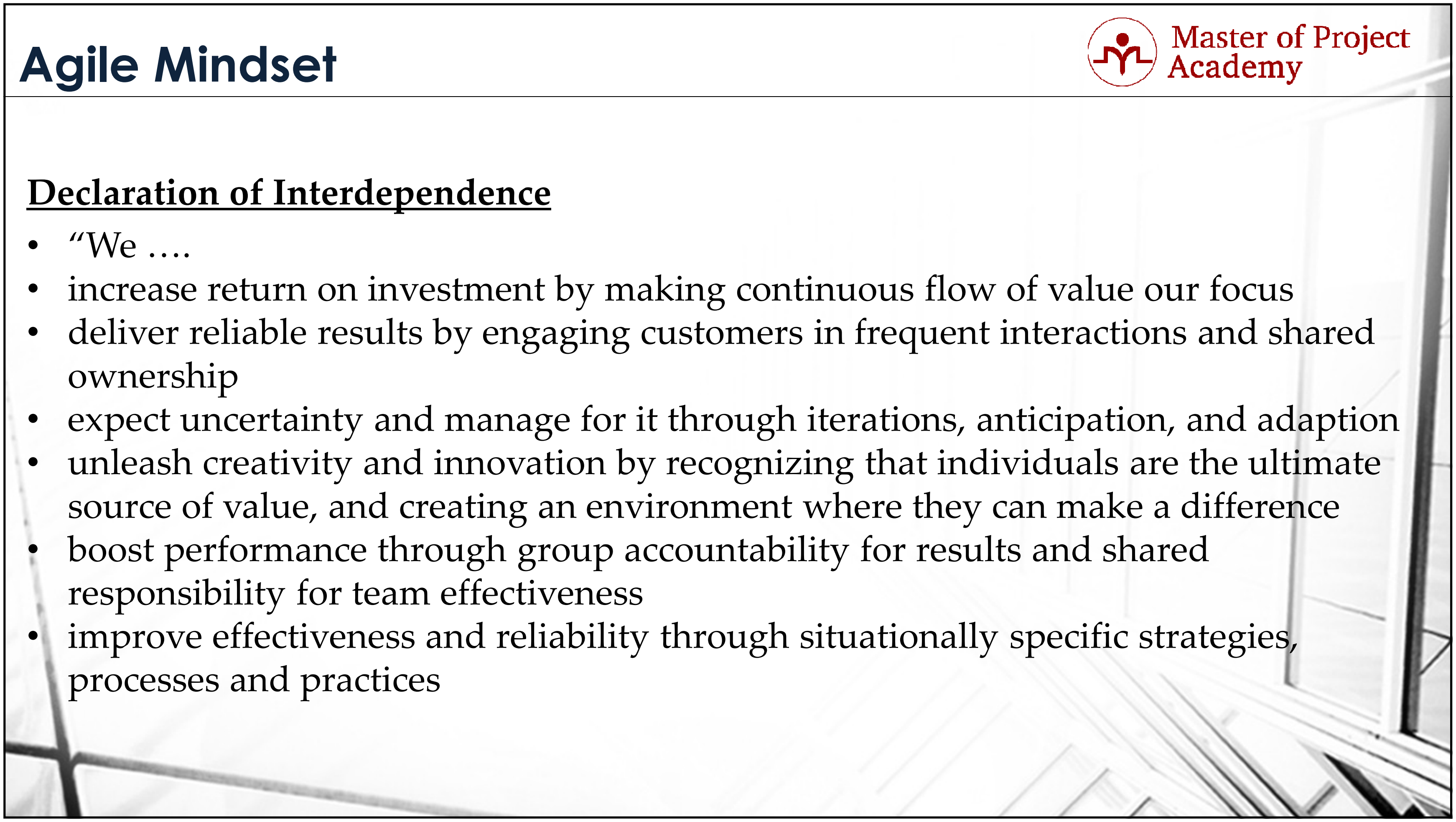
- XP – Technical Practices, Simplicity
- Scrum – Prioritization(Backlog), Managing Work
- Lean – Optimizing Value, Reducing Waste
- FDD – Business Model; Domain Modeling
- DSDM – Business Value/Feasibility
- Crystal – Tailoring based on Size and Criticality



Key Takeaways/Tips

- FDD – Modeling is key
- DSDM – Feasibility is key
- Crystal – Discipline/Rigor is tailored for the critical/size/impact of the project

Agile Mindset



Agile Mindset

Declaration of Interdependence

- "We ….
- increase return on investment by making continuous flow of value our focus
- deliver reliable results by engaging customers in frequent interactions and shared ownership
- expect uncertainty and manage for it through iterations, anticipation, and adaption
- unleash creativity and innovation by recognizing that individuals are the ultimate source of value, and creating an environment where they can make a difference
- boost performance through group accountability for results and shared responsibility for team effectiveness
- improve effectiveness and reliability through situationally specific strategies, processes and practices

Agile Mindset

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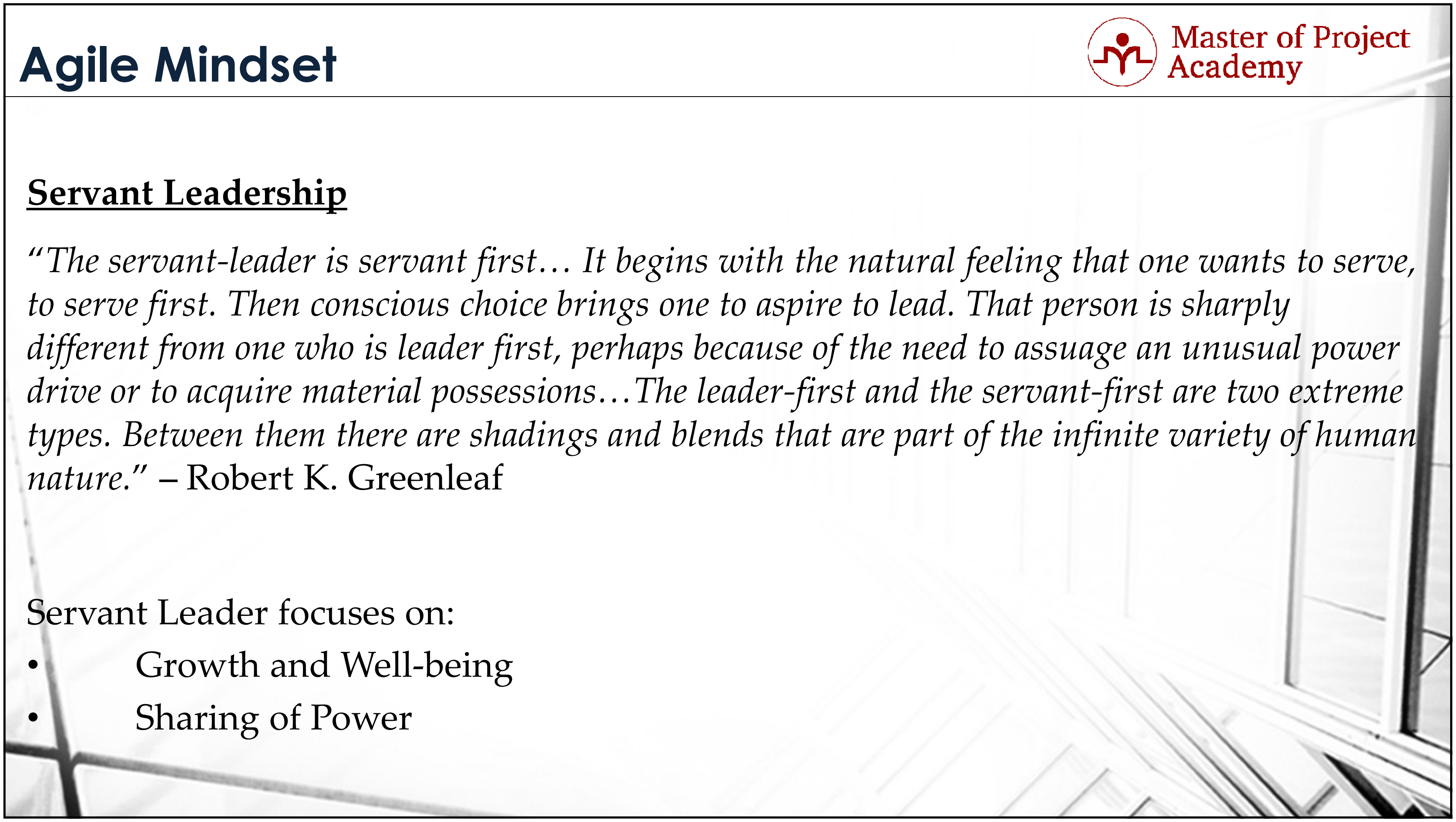
What is an Agile Mindset

- Customer Focused
- Team Success
- Constantly Learning
- Comfortable with Ambiguity
- "Failure" Tolerant
- Not Satisfied with Status Quo

Being Agile vs Doing Agile



Agile Mindset

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Servant Leadership

"The servant-leader is servant first… It begins with the natural feeling that one wants to serve, to serve first. Then conscious choice brings one to aspire to lead. That person is sharply different from one who is leader first, perhaps because of the need to assuage an unusual power drive or to acquire material possessions…The leader-first and the servant-first are two extreme types. Between them there are shadings and blends that are part of the infinite variety of human nature." – Robert K. Greenleaf

Servant Leader focuses on:

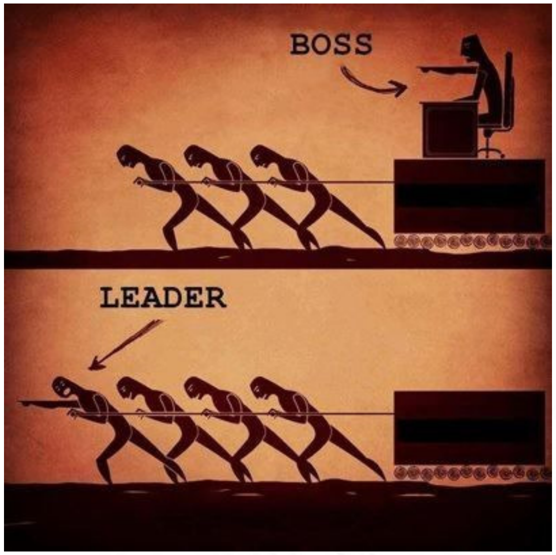
- Growth and Well-being
- Sharing of Power

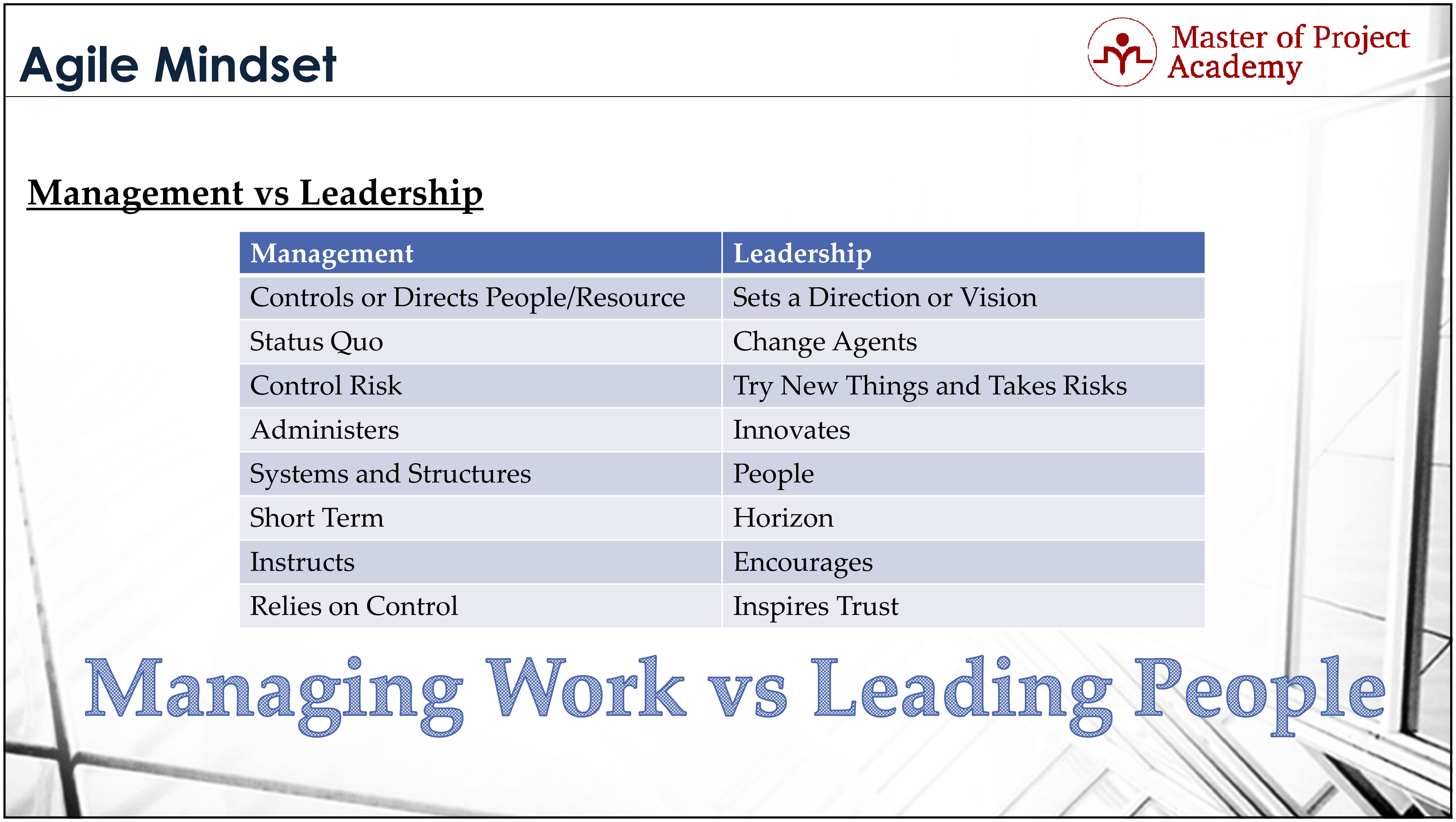
Agile Mindset

Master of Project Academy

Servant Leadership

- Values diverse opinions
- Cultivates a culture of trust
- Develops other leaders
- Helps people with life issues
- Encourages
- Sells instead of tells
- Thinks you, not me
- Thinks long-term
- Acts with humility



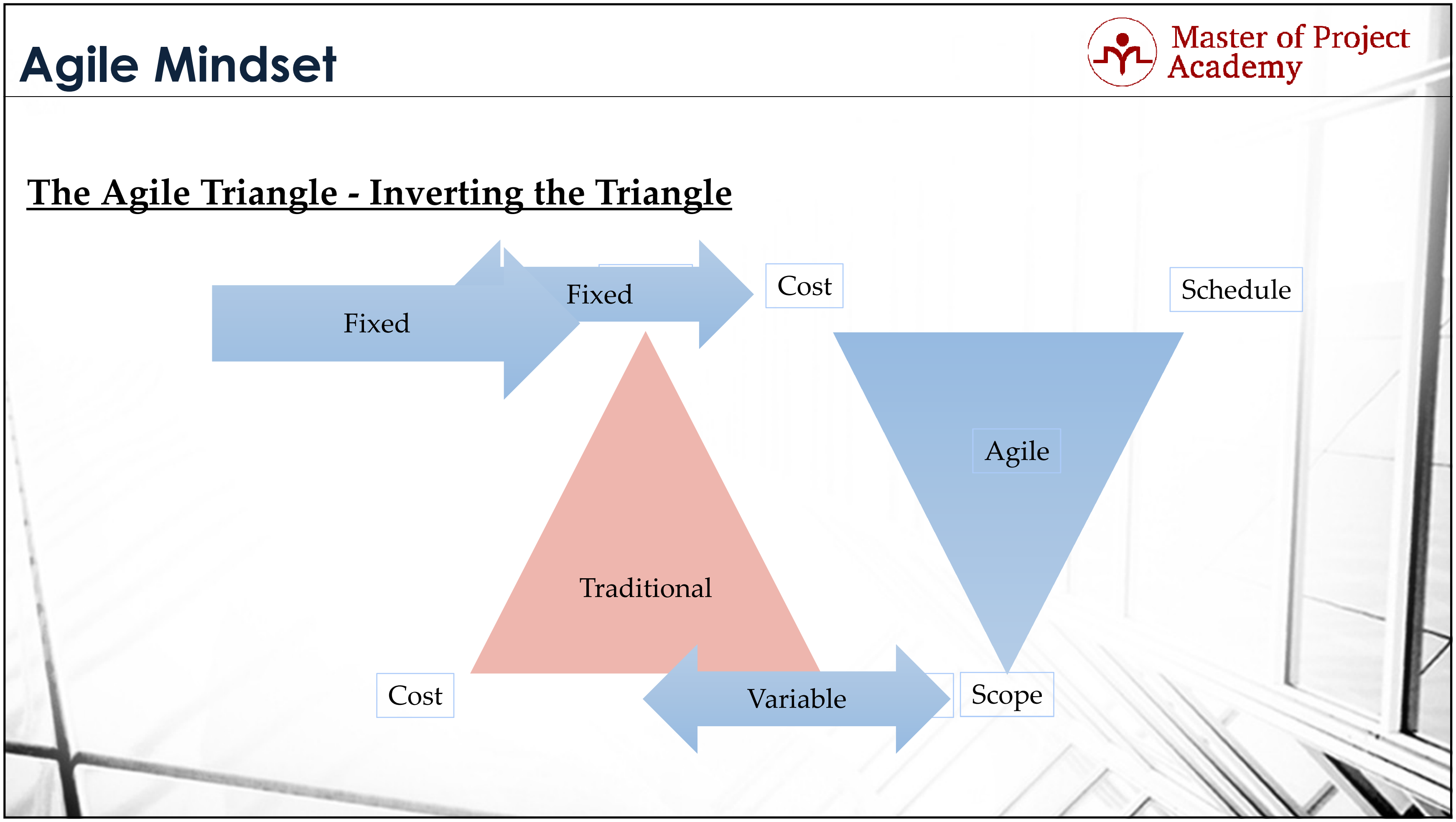


Agile Mindset

Management vs Leadership

Management	Leadership
Controls or Directs People/Resource	Sets a Direction or Vision
Status Quo	Change Agents
Control Risk	Try New Things and Takes Risks
Administers	Innovates
Systems and Structures	People
Short Term	Horizon
Instructs	Encourages
Relies on Control	Inspires Trust

Managing Work vs Leading People



Agile Mindset

Master of Project Academy

The Agile Triangle - Inverting the Triangle

Agile Mindset

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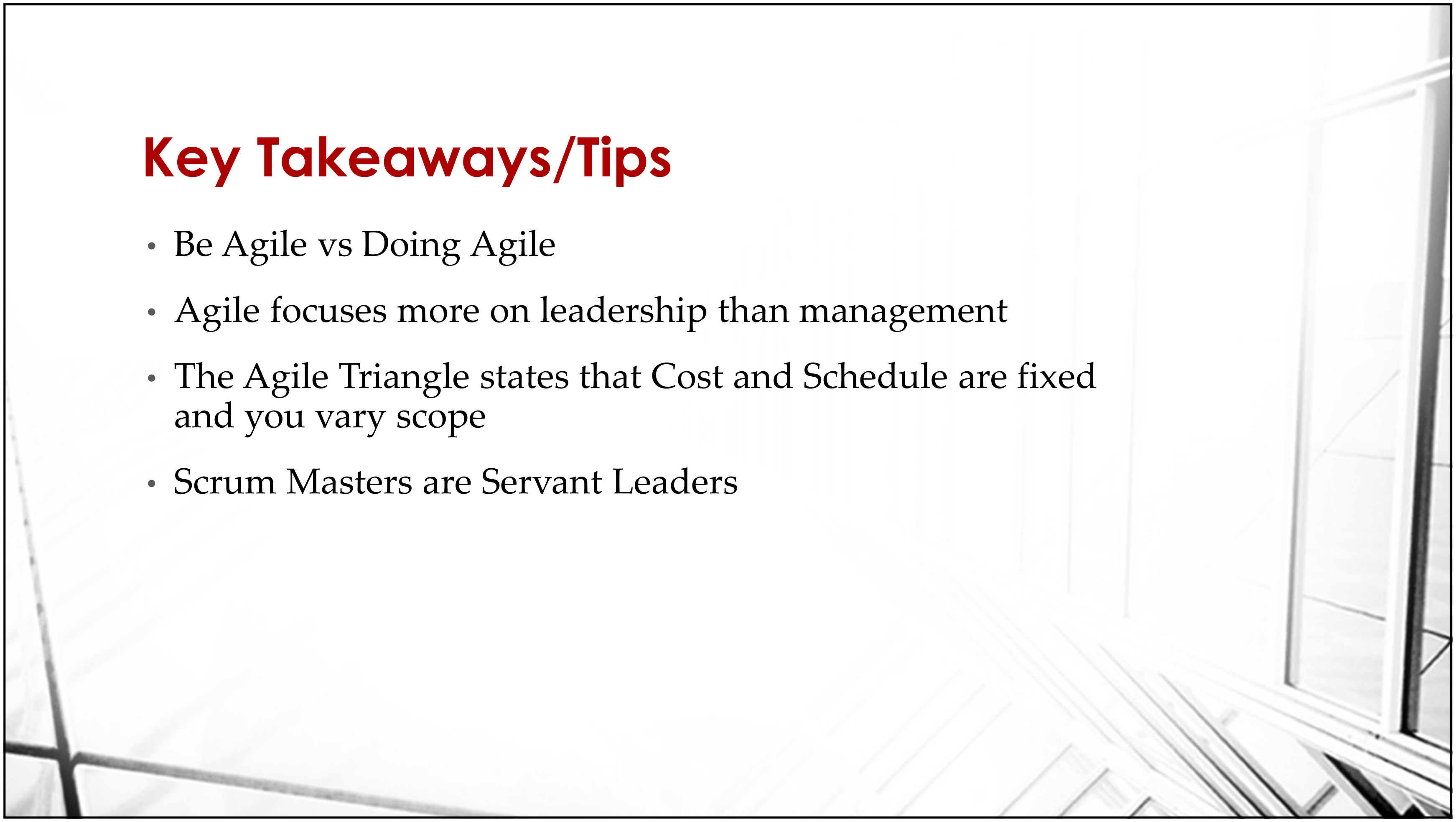
Information Radiators

- An Effective way to communicate project status, issues, or metrics
- Benefits
  - Responsibility among team
  - Provoke conversation
  - Nothing to hide
- Examples
  - Kanban Board
  - Burndown Chart
  - Build Light



Key Takeaways/Tips

- Be Agile vs Doing Agile
- Agile focuses more on leadership than management
- The Agile Triangle states that Cost and Schedule are fixed and you vary scope
- Scrum Masters are Servant Leaders