Excellence in Measurement Technology

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CMMI–Agile Process Combo

How to be Agile with CMMI

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LMI Technology

ABOUT LMI

LMI is a consulting firm dedicated to improving the management of government. With more than 1,000 consultants, we design and implement solutions to some of the toughest problems facing government managers in logistics, information technology, and resource allocation. For 55 years, LMI has placed our clients' interests first.

INSIGHT

Our innovative problem solving provides valuable insights into possible solutions.

OBJECTIVITY

Our independence ensures we operate free from conflicts of interest.

PRACTICAL RESULTS

Our solutions are outcome driven and results oriented.

SHARED PURPOSE

Our shared spirit of public service and deep knowledge of government operations enhance our recommendations.

SIGNIFICANT VALUE

Our net revenue supports our mission, not shareholder return, delivering more value for the dollar.

LMI Excellence in Measurement Technology

ABOUT EMT

Excellence in Measurement Technology is a business improvement consultancy specializing in CMMI, Agile, Lean, Six Sigma, and other methodologies. Our mission is to help our clients to successfully analyze and achieve their specific business goals. We aim to pragmatically apply our knowledge and experience of industry best practices to achieve measurable business improvement for your organization.

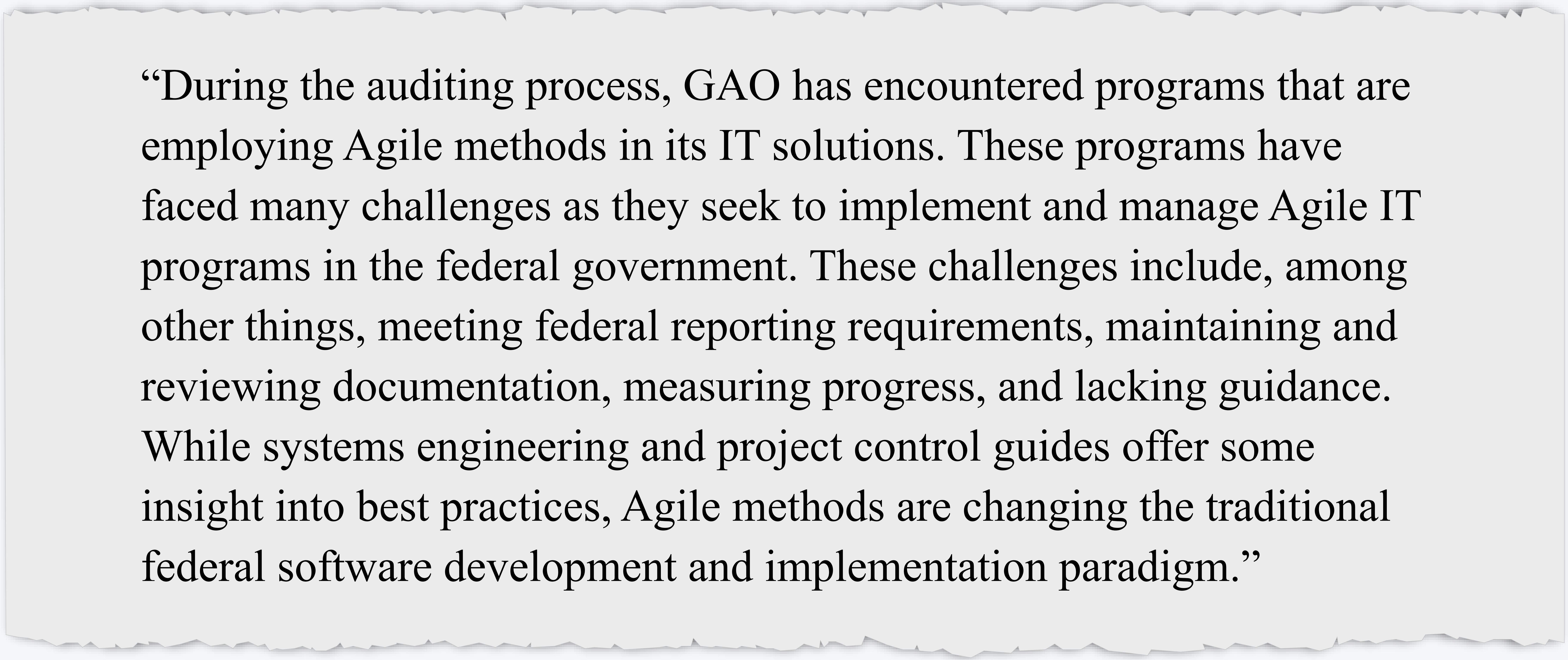
Our consultants can provide your organization with mentoring, training, appraisals and audits. We are certified and experienced in the following:

- Capability Maturity Model Integration (CMMI)
- Scaled Agile Framework (SAFe) Program Consultant
  - Certified Scrum Master (CSM)
  - Certified Product Owner (CPO)
- Lean Manufacturing
- ITIL Foundations
- Six Sigma Black Belt
- ISO Lead Auditor for:
  - ISO 9000 (Quality Management Systems)
  - ISO 13485 (Medical Devices)
  - ISO 20000 (Information Systems)
  - ISO 27000 (Information Security)
- Cloud Security Knowledge (CSK)
- And even more…

Agenda

1. About Agile, SAFe, and CMMI
2. CMMI-Agile Crosswalk
   1. Agile Ceremonies
   2. Agile Roles
   3. Agile Practices
3. LMI Case Study: Agile & CMMI
4. Conclusion

An excerpt from the “GAO Agile Development and Implementation Guide”



“During the auditing process, GAO has encountered programs that are employing Agile methods in its IT solutions. These programs have faced many challenges as they seek to implement and manage Agile IT programs in the federal government. These challenges include, among other things, meeting federal reporting requirements, maintaining and reviewing documentation, measuring progress, and lacking guidance. While systems engineering and project control guides offer some insight into best practices, Agile methods are changing the traditional federal software development and implementation paradigm.”

What is Agile?

ag·ile

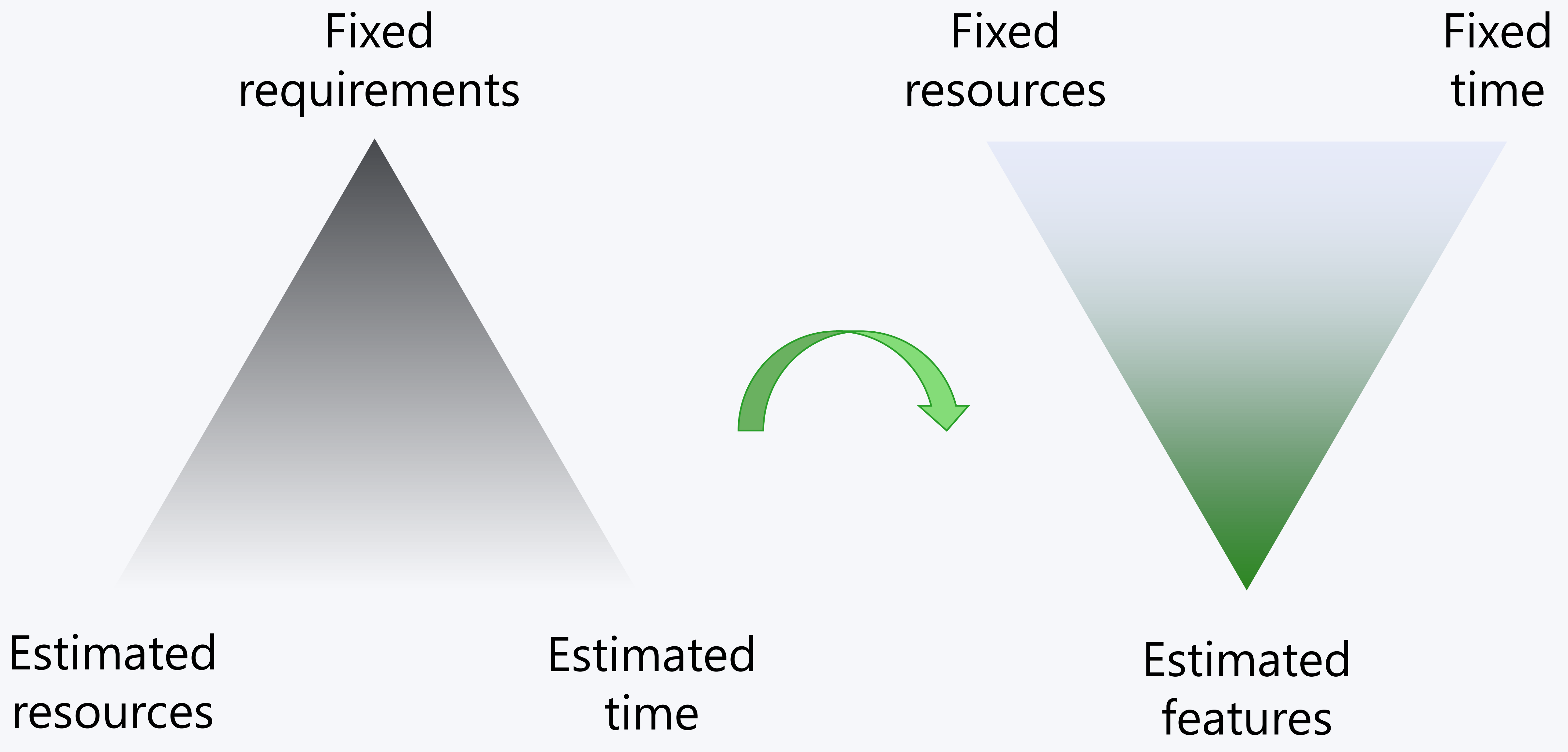
/ˈajəl/

adjective

1. able to move quickly and easily.
2. relating to or denoting a method of project management, used especially for software development, that is characterized by the division of tasks into short phases of work and frequent reassessment and adaptation of plans.

Waterfall Approach

Agile Approach



The Agile Manifesto and Principles

The Manifesto for Agile Software Development

“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.”

Twelve Principles behind the Agile Manifesto

A brief summary of the guiding practices that support teams implementing and executing with agility:

#1: Satisfy the Customer
#2: Embrace Change
#3: Frequent Delivery
#4: Cross-Functional Collaboration
#5: Support and Trust
#6: Face-to-Face Conversation
#7: Working Software
#8: Sustainable Pace
#9: Technical Excellence
#10: Keep it Simple
#11: Self-Organization
#12: Inspect and Adapt

Summarized by Marc Bless (marcbless.blogspot.com)

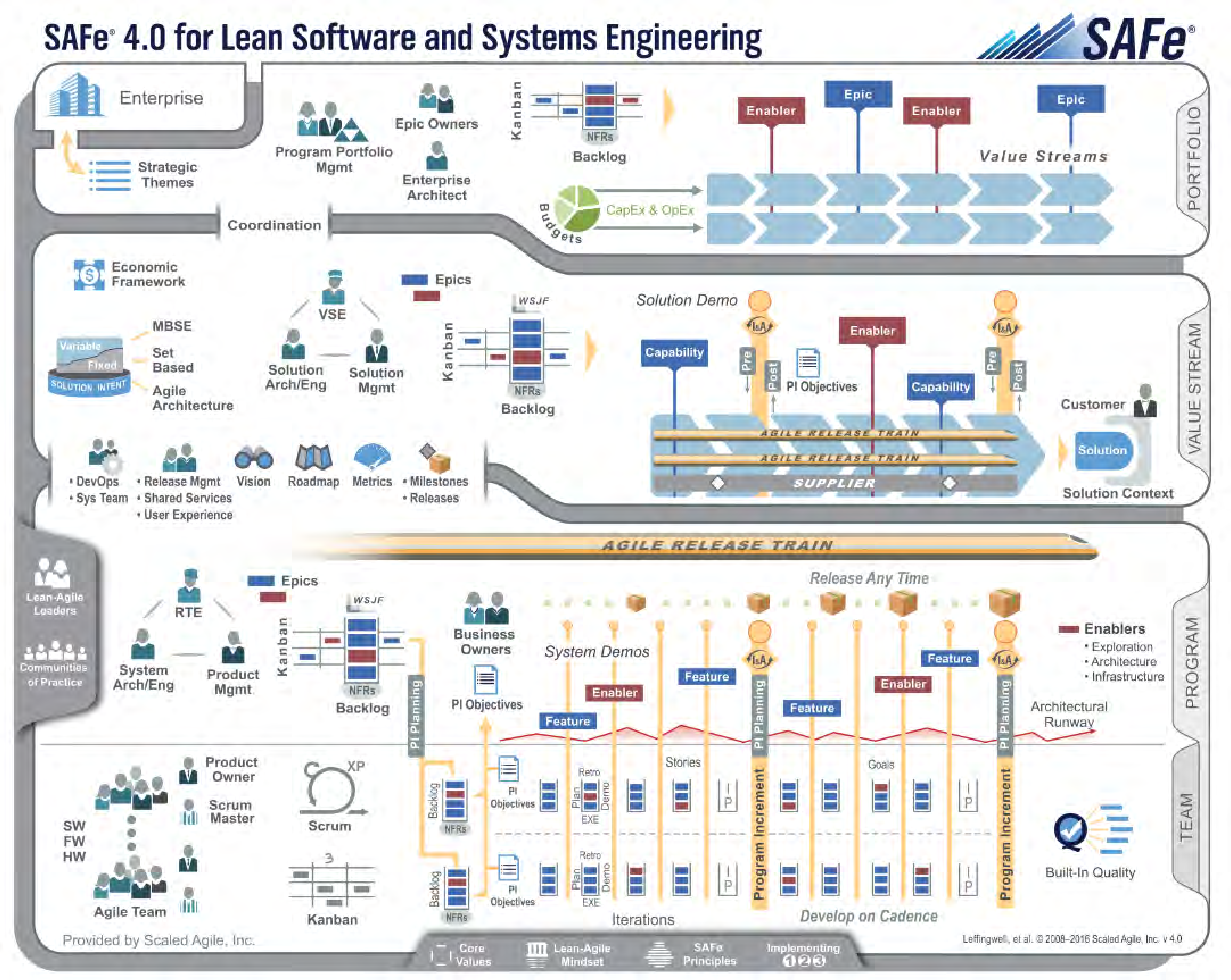
Agile Methodologies

The Agile Manifesto and Principles sound great, but . . . where do all of those Agile terms like "scrum master" and "story point" come from?

- In order to implement these Agile principles, a variety of methodologies and frameworks have been developed, including:
  - Scrum
  - Extreme Programing (XP)
  - Kanban
  - and many more . . .
- Many development teams even create hybrid methodologies (such as Scrumban or ScrumXP) by picking best practices from multiple methodologies.
- Additionally, there are large-scale methodologies for implementing Agile across organizations…

The Scaled Agile Framework (SAFe)

- Synchronizes alignment, collaboration, and delivery for large numbers of Agile teams.
- Scalable and modular, supporting from under a hundred to thousands of practitioners.
- Built upon knowledge from Agile development, Lean product development, and systems thinking.



LMI Excellence in Measurement Technology

What is the CMMI?

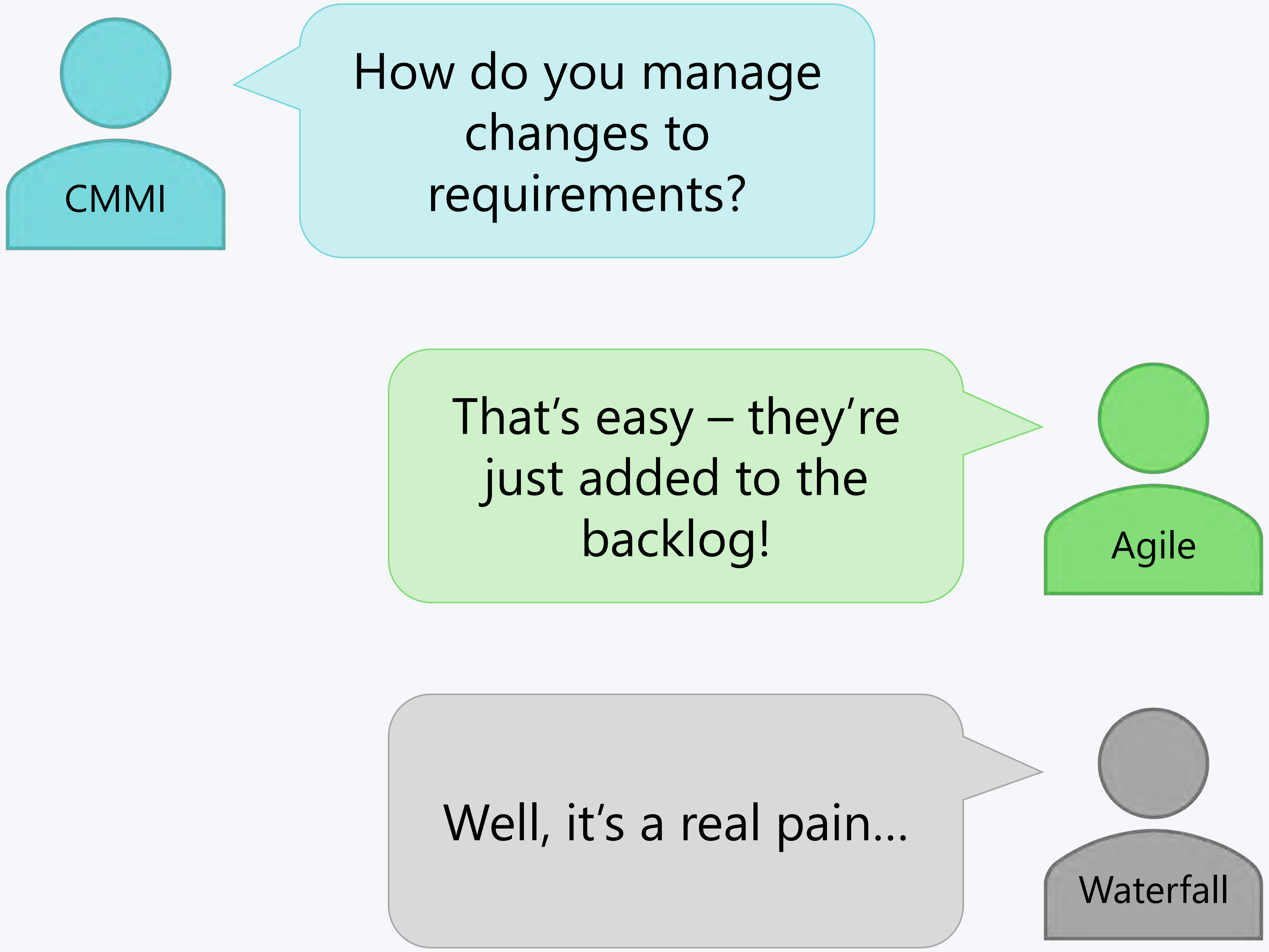
- The Capability Maturity Model Integration (CMMI®) is a world-class performance improvement framework for competitive organizations that want to achieve high-performance operations.
- Building upon an organization’s business performance objectives, CMMI provides a set of practices for improving processes, resulting in a performance improvement system that paves the way for better operations and performance.
- CMMI helps an organization develop their organizational capabilities by learning new behaviors that can help improve performance, speed, quality and profitability.

What is the CMMI?

- The CMMI is divided into Process Areas (PAs) named for their area of coverage in any software development effort, examples are Configuration Management (CM), Measurement and Analysis (MA), Process and Product Quality Assurance (PPQA), etc.
  - There are 22 total PAs in CMMI for Development (CMMI-DEV).
- With each Process Area, there are a series of Specific Practices (SP) identified for that Process Area. Each Process Area explains what needs to be done, but the user of the model chooses “how” to do it. CMMI is lifecycle-agnostic.

Using CMMI & Agile Together

- Agile, at its core, is only a set of prescriptive principles. It’s up to the organization to determine what practices and processes to use in order to implement those principles.
- A variety of Agile methodologies can be selected from and adapted, based on which one best fits the organization. Even heavier-weight models like SAFe offer some flexibility.
- CMMI is a descriptive model and is life-cycle agnostic. Some Specific Practices of CMMI are actually more easily satisfied by Agile practices than Waterfall practices!



CMMI: How do you manage changes to requirements?

Agile: That’s easy – they’re just added to the backlog!

Waterfall: Well, it’s a real pain…

The CMMI-Agile Crosswalk: How It Works

A definition of the Agile practice/role/artifact will appear here, from the GAO Agile Development and Implementation Guide's glossary (when available).

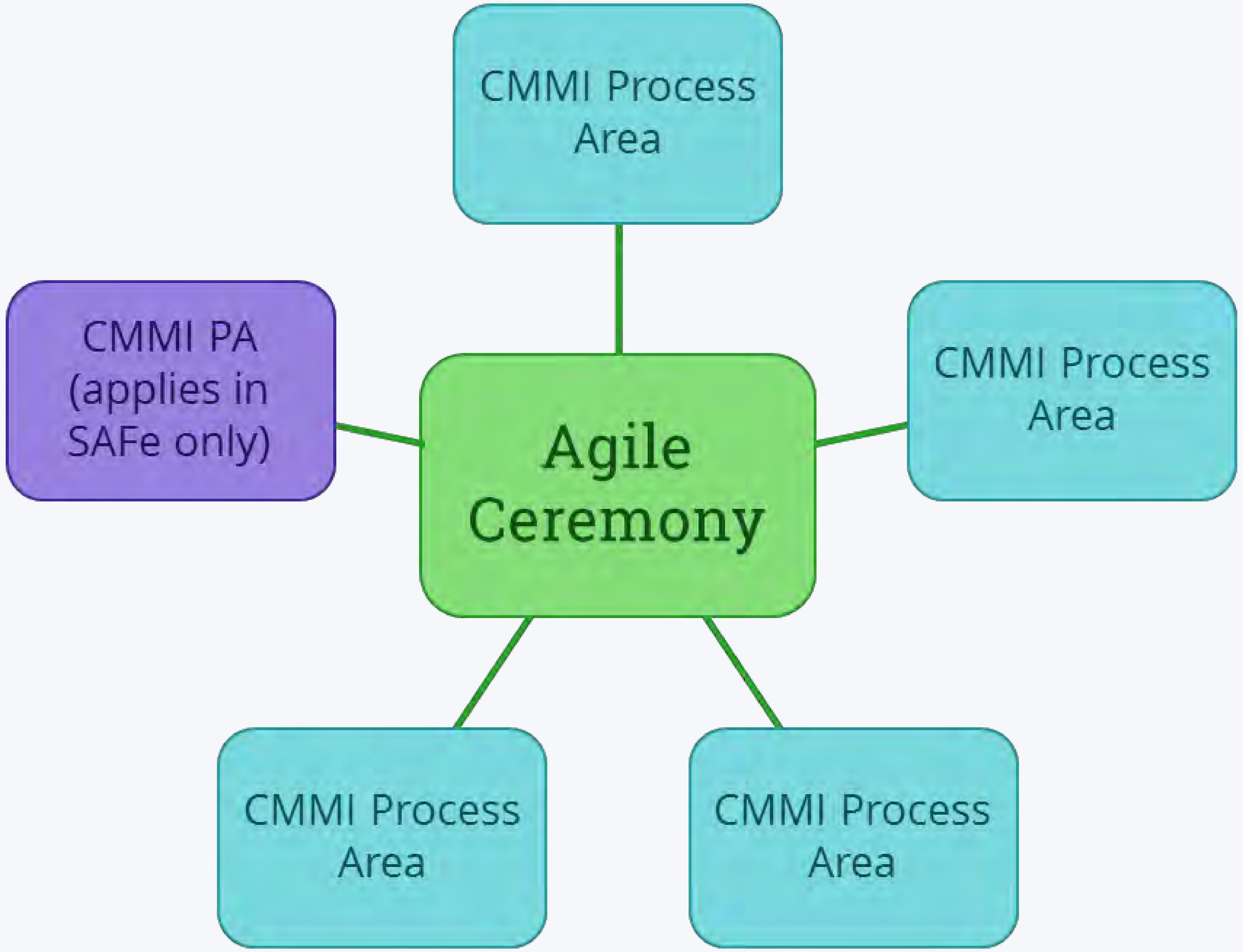
Agile:

Specific information about the Agile practice/role/artifact appears here.

SAFe:

Information about SAFe equivalent of the Agile practice/role/artifact appears here. More information will be here depending on how much the SAFe equivalent differs from and adds to the original Agile item.

- Note: Each Agile item may have more CMMI Process Areas related to it than are shown in the chart. Agile items may also relate to additional or fewer process areas depending on the organization's implementation of the Agile item.



Agile Ceremonies

- Vision
- Roadmap
- Sprint Review / Demo
- Retrospective

Vision

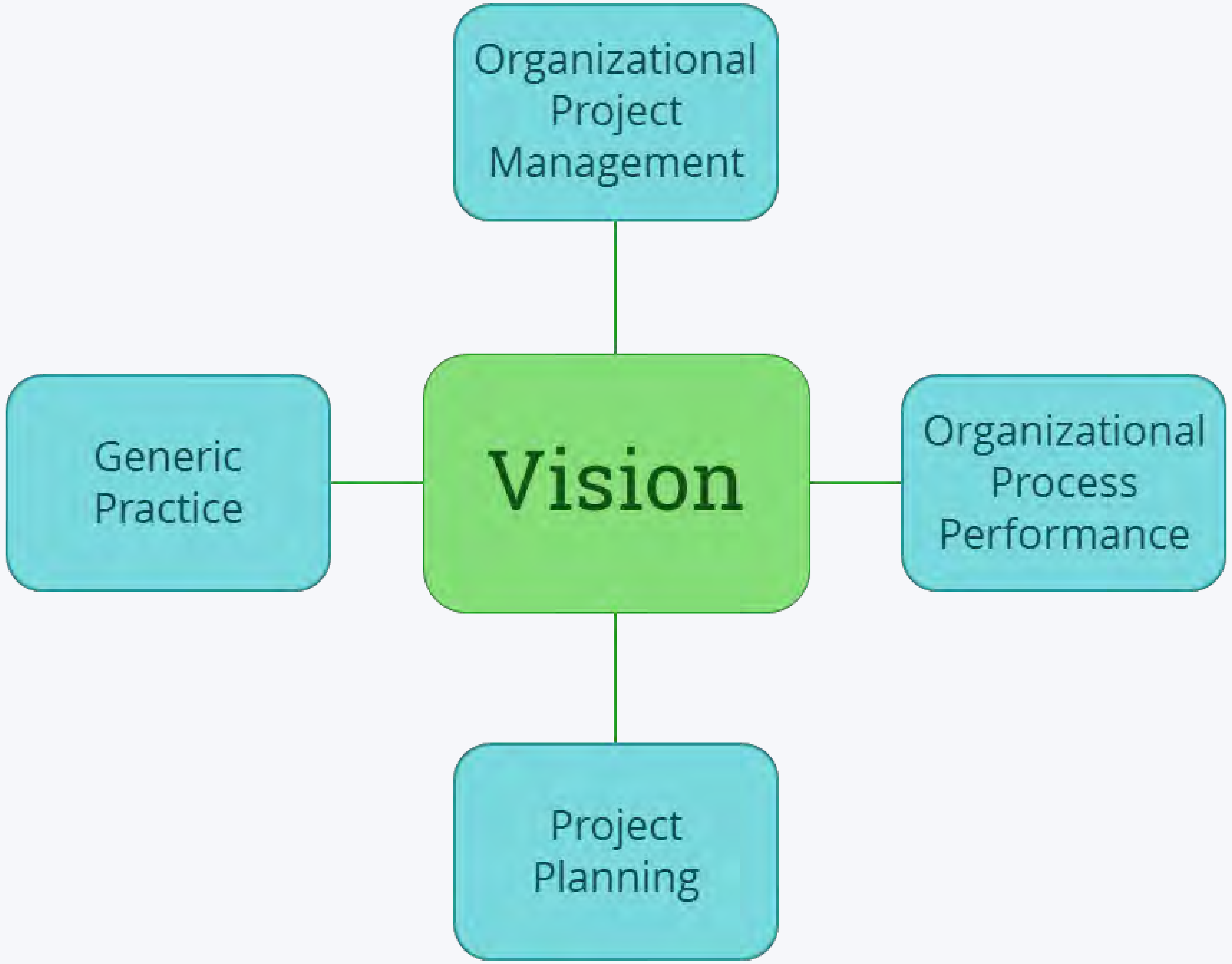
"The highest level of Agile planning, the vision is strategic in nature and is infrequently changed."

Agile:

The Product Vision statement is an elevator pitch, or a quick summary, to communicate how your product supports the company's or organization's strategies.

SAFe:

The Vision describes a future view of the solution to be developed, reflecting Customer and stakeholders needs as well as Features and Capabilities that are proposed to address those need. It provides the larger, contextual overview and purpose of the solution under development. Vision can be applied at any level in the Framework (Team, Program, Value Stream, Portfolio).


Organizational Project Management
Generic Practice
Vision
Organizational Process Performance
Project Planning

Roadmap

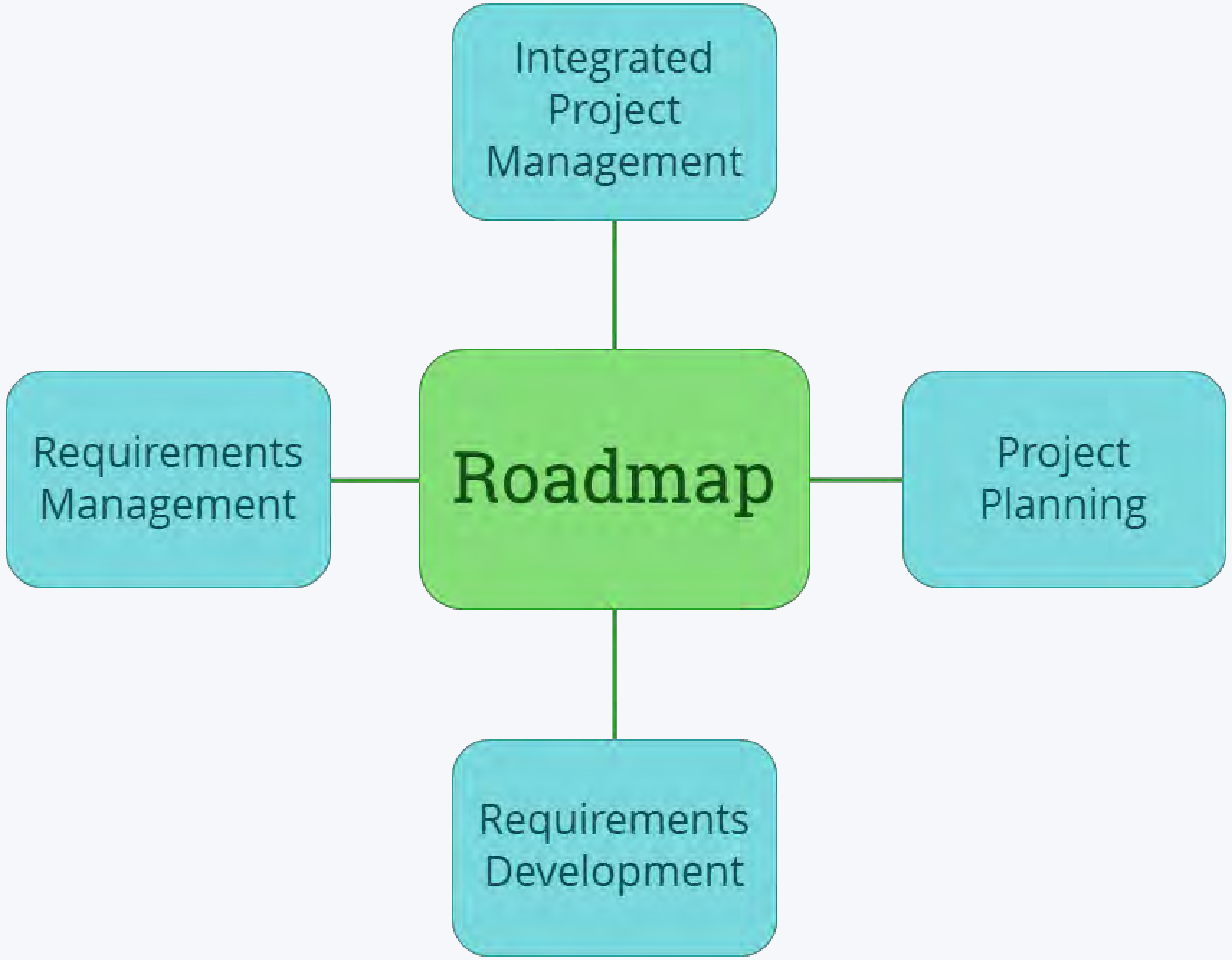
"The roadmap is the second level of Agile planning and distills the vision into a high level plan that outlines work spanning one or more releases."

Agile:

The Product Roadmap is the overall view of the product's requirements and a valuable tool for planning and organizing the journey of product development.".

SAFe:

The Roadmap communicates planned Agile Release Train and Value Stream deliverables and Milestones over a timeline. The Roadmap includes committed deliverables and visibility into the forecasted deliverables of the next few Program Increments. It is developed and updated by Solution and Product Management as the Vision and delivery strategy evolve.



Sprint Review / Demo

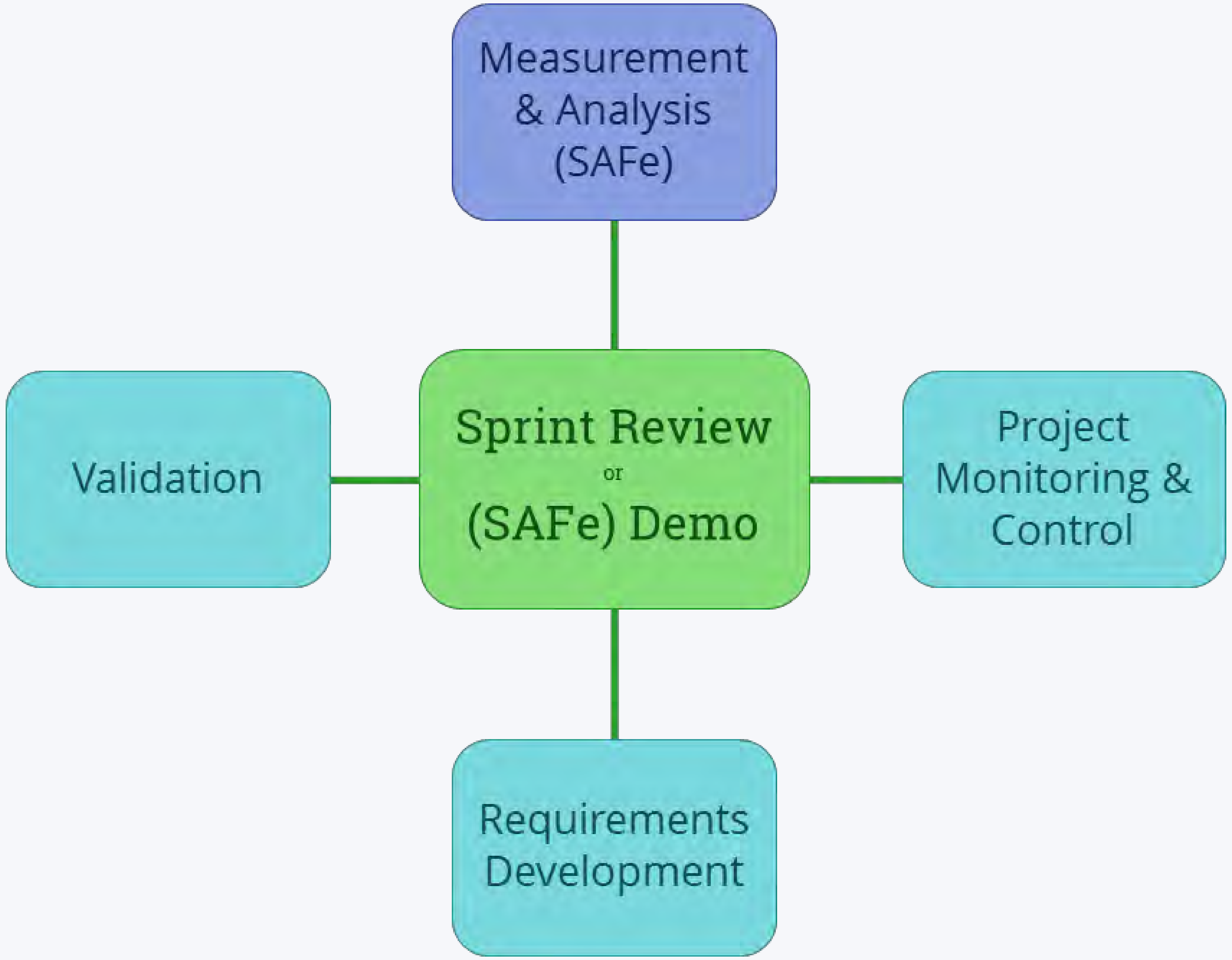
"Sprint reviews are meetings to review and demonstrate the user stories that the development team completed during the sprint."

Agile:

Sprint reviews demonstrate and showcase the development team's finished work, and allow stakeholders to provide feedback on that work.

SAFe:

Depending on the scope of the Solution, there are three Demos in SAFe:
the Team Demo, the System Demo, and the Solution Demo. The Team Demo reviews the increment that results from the Iteration in order to receive the fast feedback they need to build the right thing. The System Demo provides an aggregated view of all of the new system delivered by the Agile Release Train. The Solution Demo is the primary measure of progress for the Value Stream.



Retrospective

"A team meeting that occurs at the end of every iteration to review lessons learned and to discuss how the team can improve in the future."

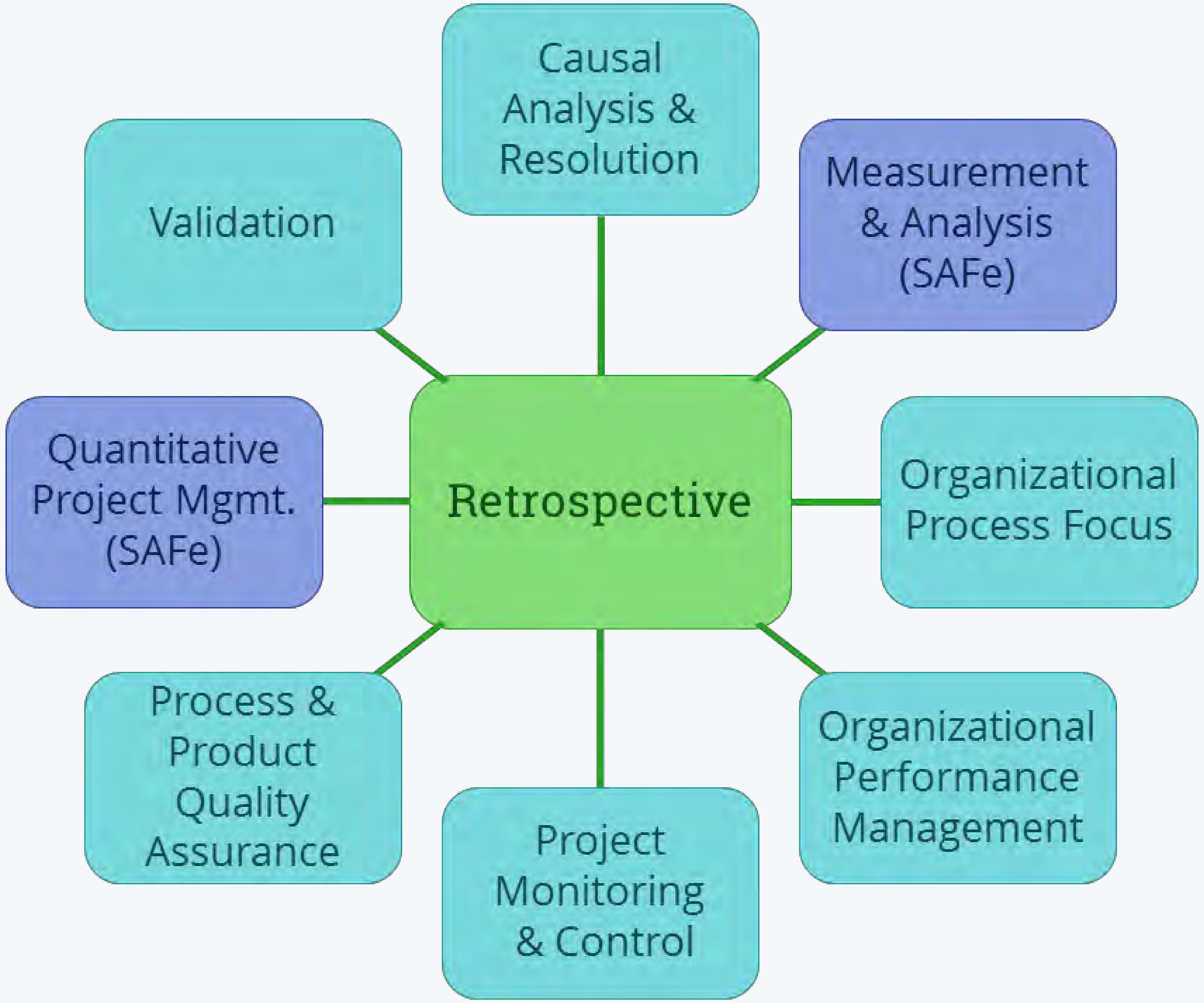
Agile:

The sprint retrospective is a meeting where the scrum master, the product owner, and the development team discuss how the sprint went and what they can do to improve the next sprint.

SAFe:

At the end of each Iteration, Agile Teams gather for an Iteration Retrospective, where the team members discuss their practices and identify ways to improve.

The Retrospective and Problem-Solving Workshop identifies Team- or Program-level issues, performs root cause analysis, and generates improvement backlog items.


Causal Analysis & Resolution
Validation
Measurement & Analysis (SAFe)
Quantitative Project Mgmt. (SAFe)
Retrospective
Organizational Process Focus
Process & Product Quality Assurance
Organizational Performance Management
Project Monitoring & Control

Agile Roles

- Scrum Master
- Product Owner
- Agile / Development Teams

Scrum Master

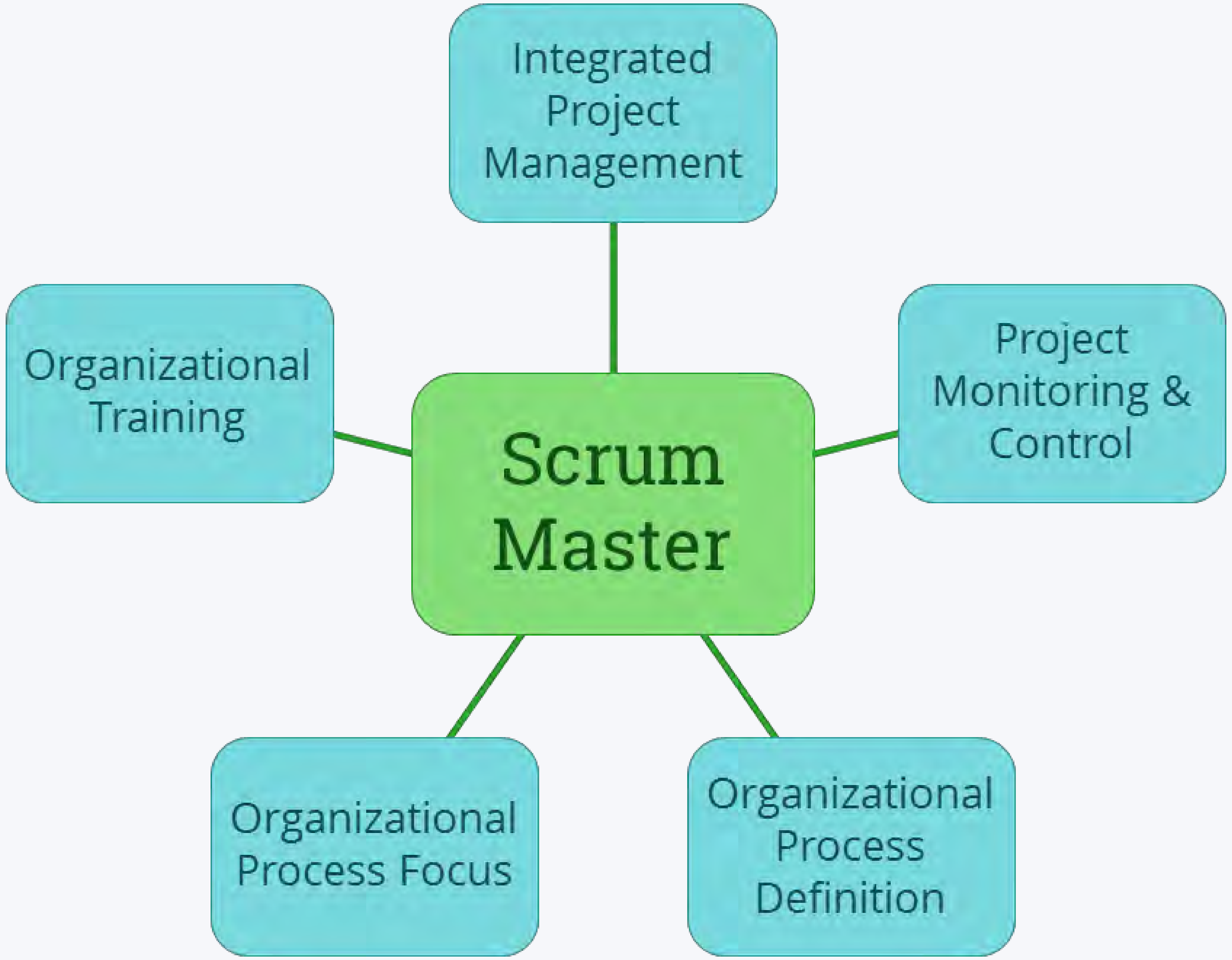
"A member of the scrum team responsible for protecting the team from organizational distractions, clearing roadblocks, and keeping the process consistent."

Agile:

A scrum master is a servant-leader who supports the team so that it is fully functional and productive. The scrum master role is an enabling role, rather than an accountability role. A scrum master is an expert in agile processes and can coach others.

SAFe:

In SAFe, the Scrum Master also helps the team coordinate with other teams on the Agile Release Train and communicates status to management as needed. The Scrum Master is the representative in the Scrum of Scrums meeting.


Integrated Project Management
Organizational Training
Scrum Master
Project Monitoring & Control
Organizational Process Focus
Organizational Process Definition

Product Owner

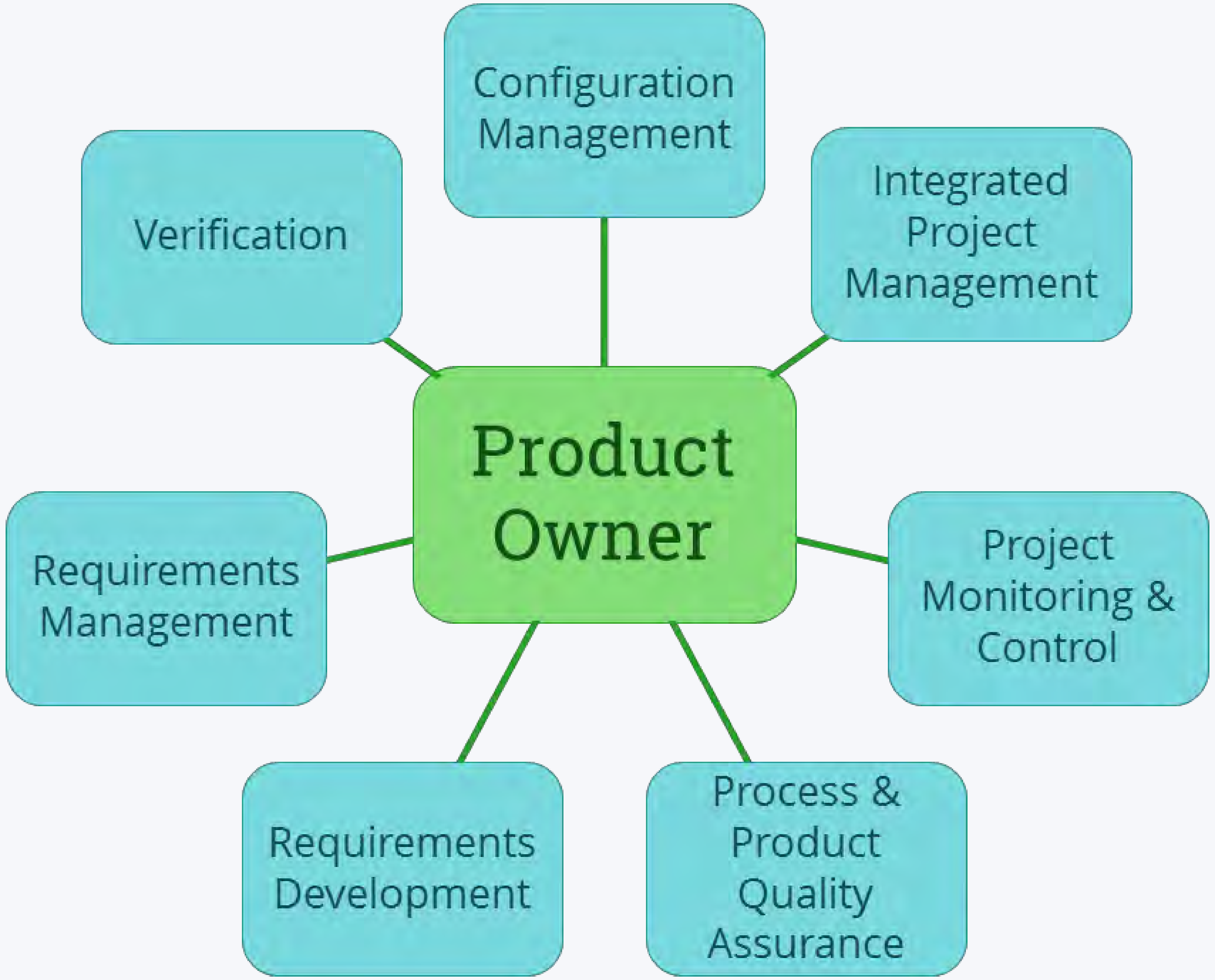
"The 'voice of the customer', accountable for ensuring business value is delivered by creating customer-centric items, ordering them, and maintaining them in the backlog."

Agile:

The product owner is responsible for bridging the gaps between the customer, business stakeholders, and the development team. The product owner is a member of the team and works daily to help clarify requirements.

SAFe:

Outside of the team, the Product Owner has significant relationships and responsibilities, including working with Product Management to prepare for the Program Increment Planning meeting and the System Demo.



Agile / Development Teams

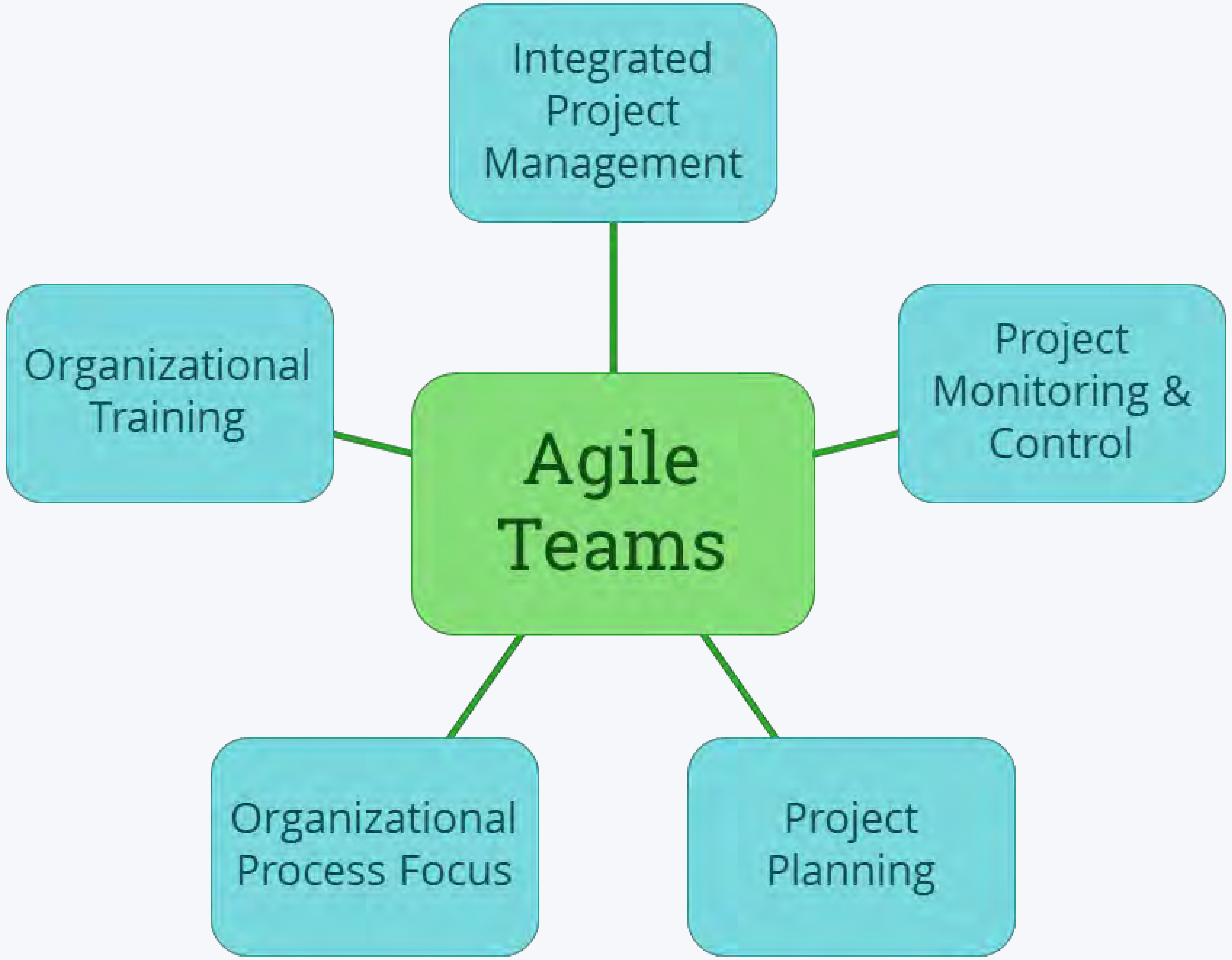
"An Agile Team is a cross-functional group of individuals who have the ability and authority to define, build, and test the product."

Agile:

Agile teams are a small group of dedicated individuals who are cross-functional, self-managing and self-organizing. Agile teams are directly accountable for creating project deliverables. Ideally, team members are collocated and dedicated to one project for the duration of the project.

SAFe:

In SAFe, Agile Teams are not stand-alone units. Instead, they are an integral part of the Agile Release Train where they collectively have responsibility for delivering larger value. Teams operate in the context of the train, adhering to its Vision, collaborating with other teams, and participating in key Agile Release Train ceremonies.


Integrated Project Management
Organizational Training
Agile Teams
Project Monitoring & Control
Organizational Process Focus
Project Planning

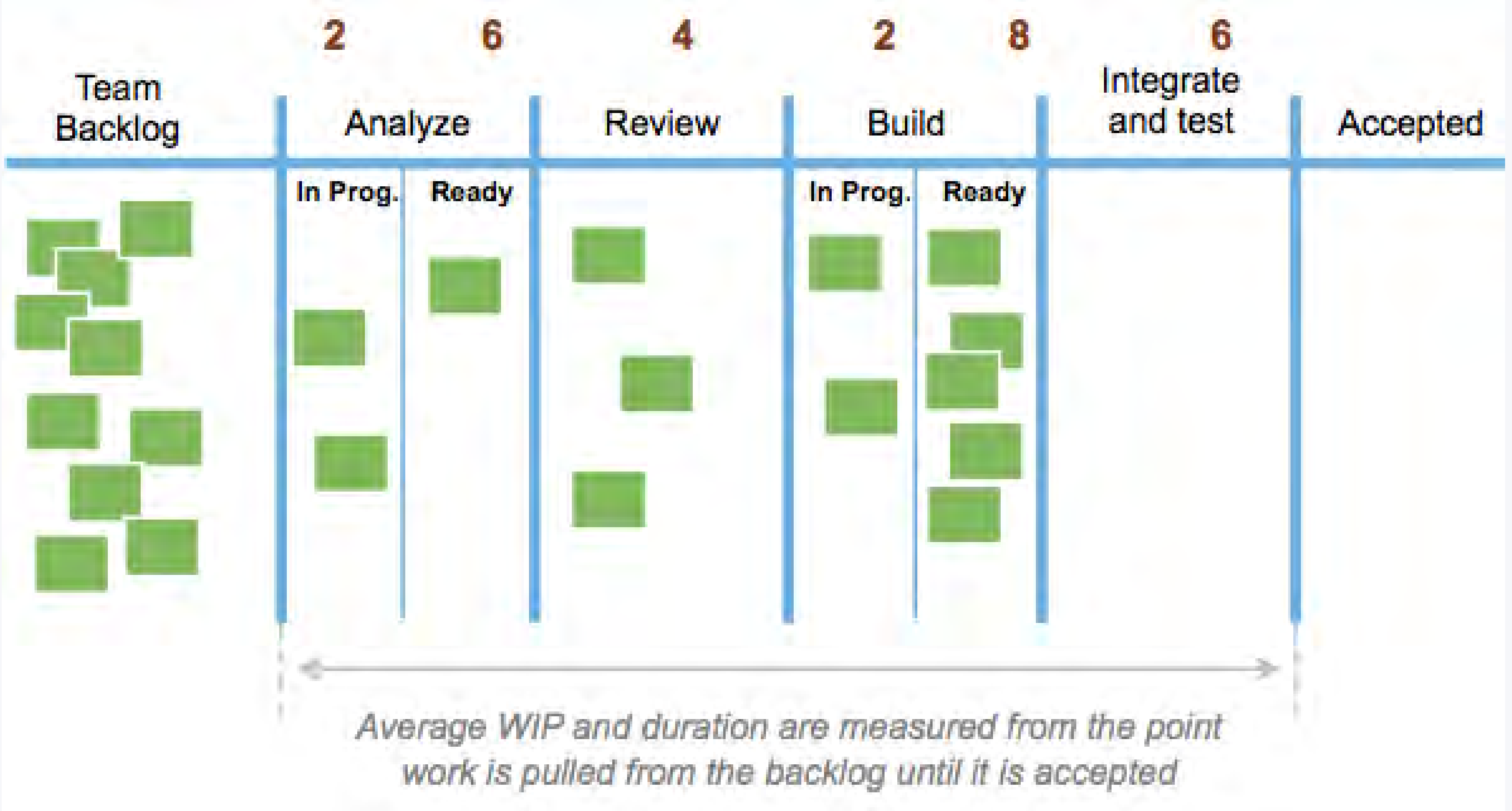
Agile Practices

- Kanban
- User Stories / Stories
- Definition of Done
- Backlog
- Velocity
- Burn-Down Chart
- Themes / Epics
- Test-First / Test-Driven Development
- Proactive / Built-In Quality
- Continuous Improvement

About Kanban

- Japanese for “visual signal”
- Developed by Toyota as a part of their Just-In-Time (JIT) Manufacturing process — now a part of Lean Manufacturing
- A “pull” system for work, based on the team’s capacity
- Enables Agile teams to
  - Visualize work flow
  - Establish work-in-progress (WIP) limits
  - Measure the cycle time
  - Continuously improve their processes
- Teams may choose Kanban as their Agile method or combine Kanban practices with other Agile methods

Work revolves around the Kanban Board:



Average WIP and duration are measured from the point work is pulled from the backlog until it is accepted

Kanban

"The focus of Kanban is to optimize the throughput of work by visualizing its flow of work through the process, limiting work-in-progress, and explicitly identifying policies for the flow of work."

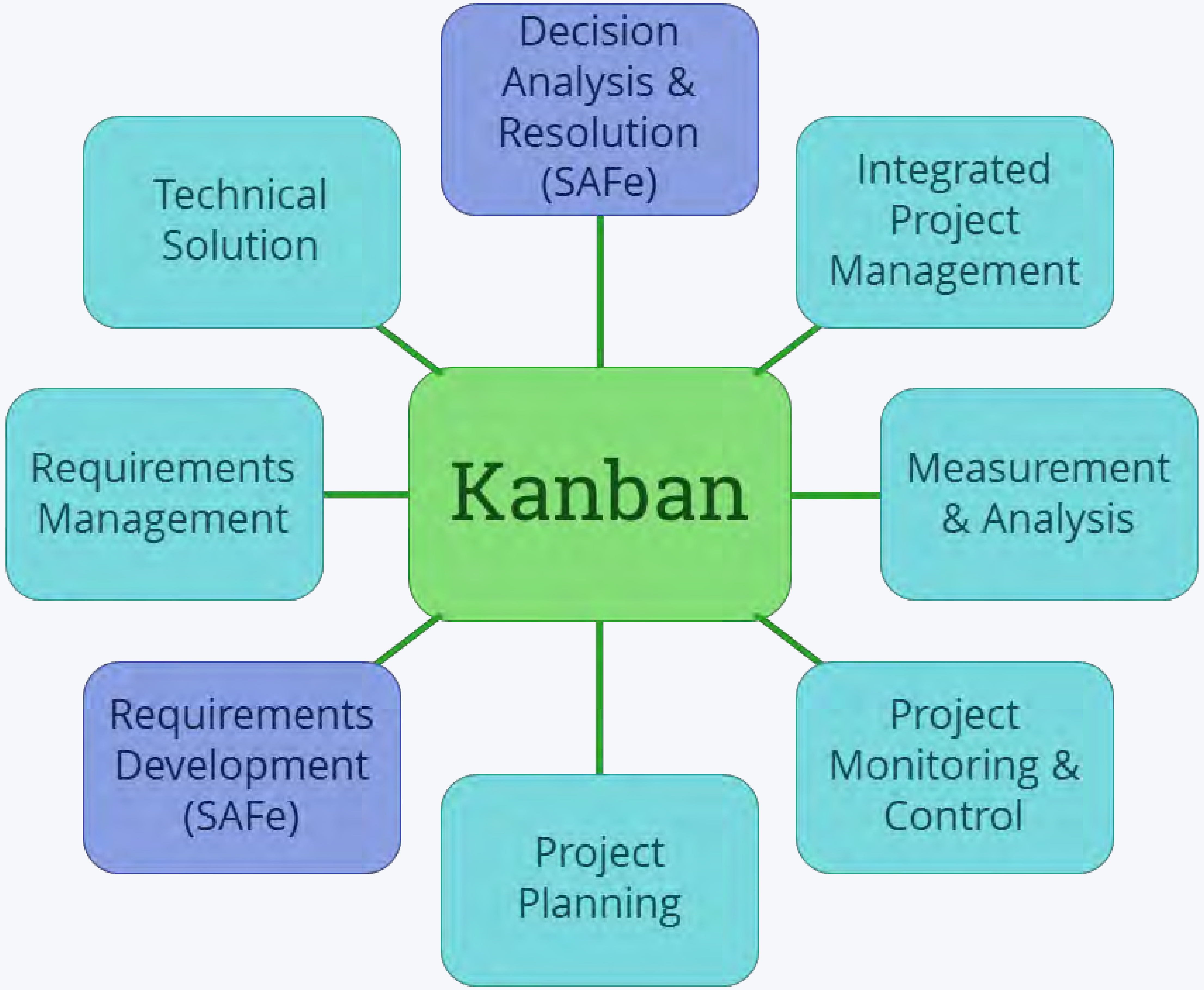
Agile:

Agile teams use Kanban as their framework when they need more flexible planning options, faster output, clearer focus, and more transparency in the development cycle than Scrum and/or XP would provide.

SAFe:

Some teams choose to apply Kanban as their primary Agile method. However, these teams are "on the train", and certain rules of the Agile Release Train must be applied.

The Value Stream and Program Kanbans are connected to the Portfolio Kanban, together they constitute a content governing system for decisions about what gets built.


Kanban
Decision Analysis & Resolution (SAFe)
Technical Solution
Integrated Project Management
Requirements Management
Measurement & Analysis
Requirements Development (SAFe)
Project Planning
Project Monitoring & Control

Themes / Epics

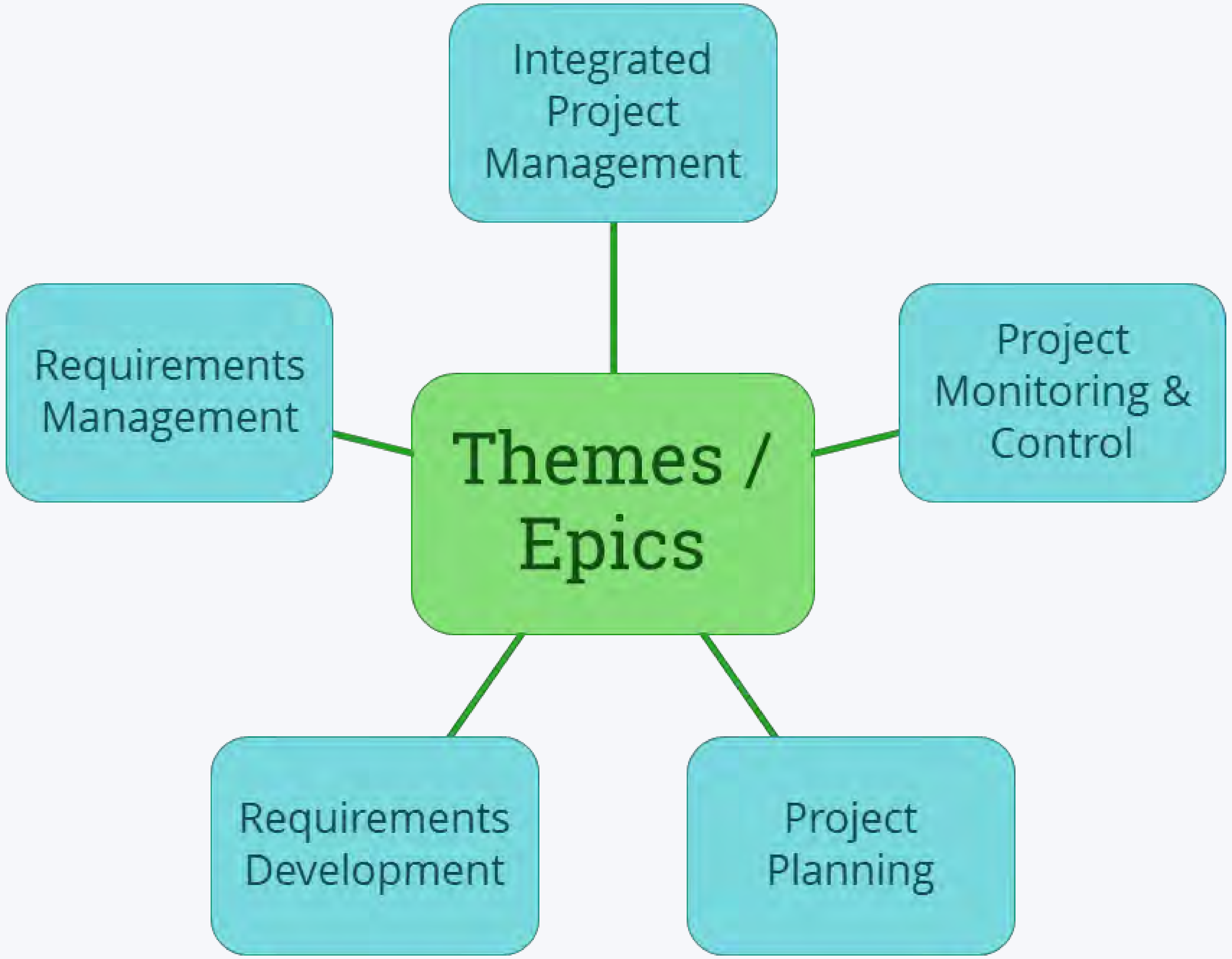
"A requirement at its highest level, or in SAFe, the largest crosscutting initiatives."

Agile:

Themes are logical groups of features and requirements at their highest levels. Themes are largest group of requirements which are broken down into Epics, Features, User Stories and Tasks are traced to.

SAFe:

Epics are significant initiatives that help guide value streams toward the larger aim of the portfolio. They are investment intensive and far-ranging in impact. They require a formulation and analysis of cost, impact, and opportunity in a lightweight business case, as well as financial approval before implementation. They may appear at the portfolio, value stream, and program levels.



User Stories / Stories

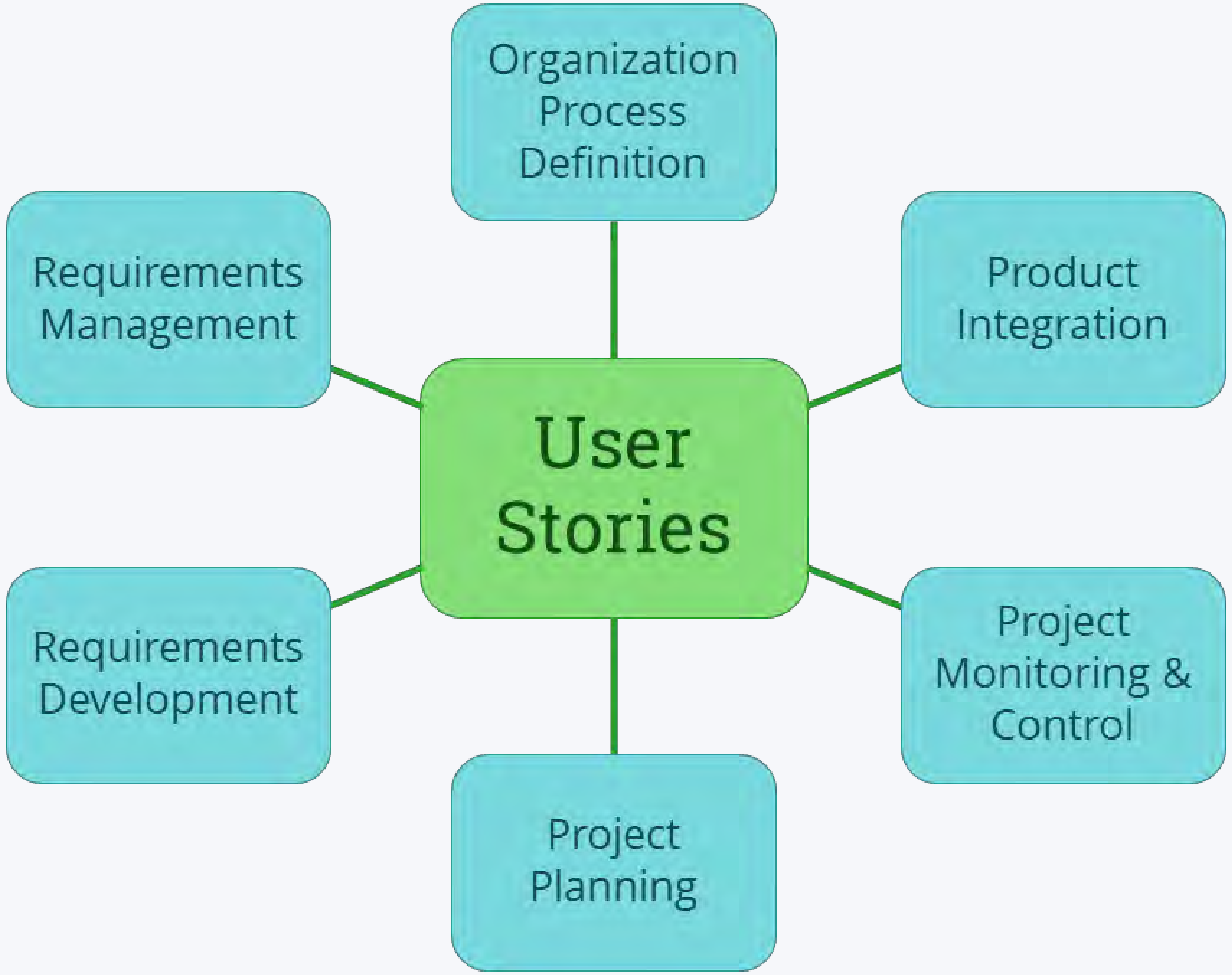
"A high-level requirement definition written in everyday or business language. It captures the 'who', 'what' and 'why' of a requirement in a simple, concise way."

Agile:

The user story is a simple description of a product requirement in terms of what that requirement must accomplish for whom. It also includes validation steps to test whether the working requirement for the user story is correct. The effort required to complete each user story is estimated as story points to help teams plan the sprint.

SAFe:

SAFe includes Enabler Stories in addition to User Stories, which are used by teams to bring visibility to the work items needed in support of exploration, architecture, and infrastructure.



Definition of Done

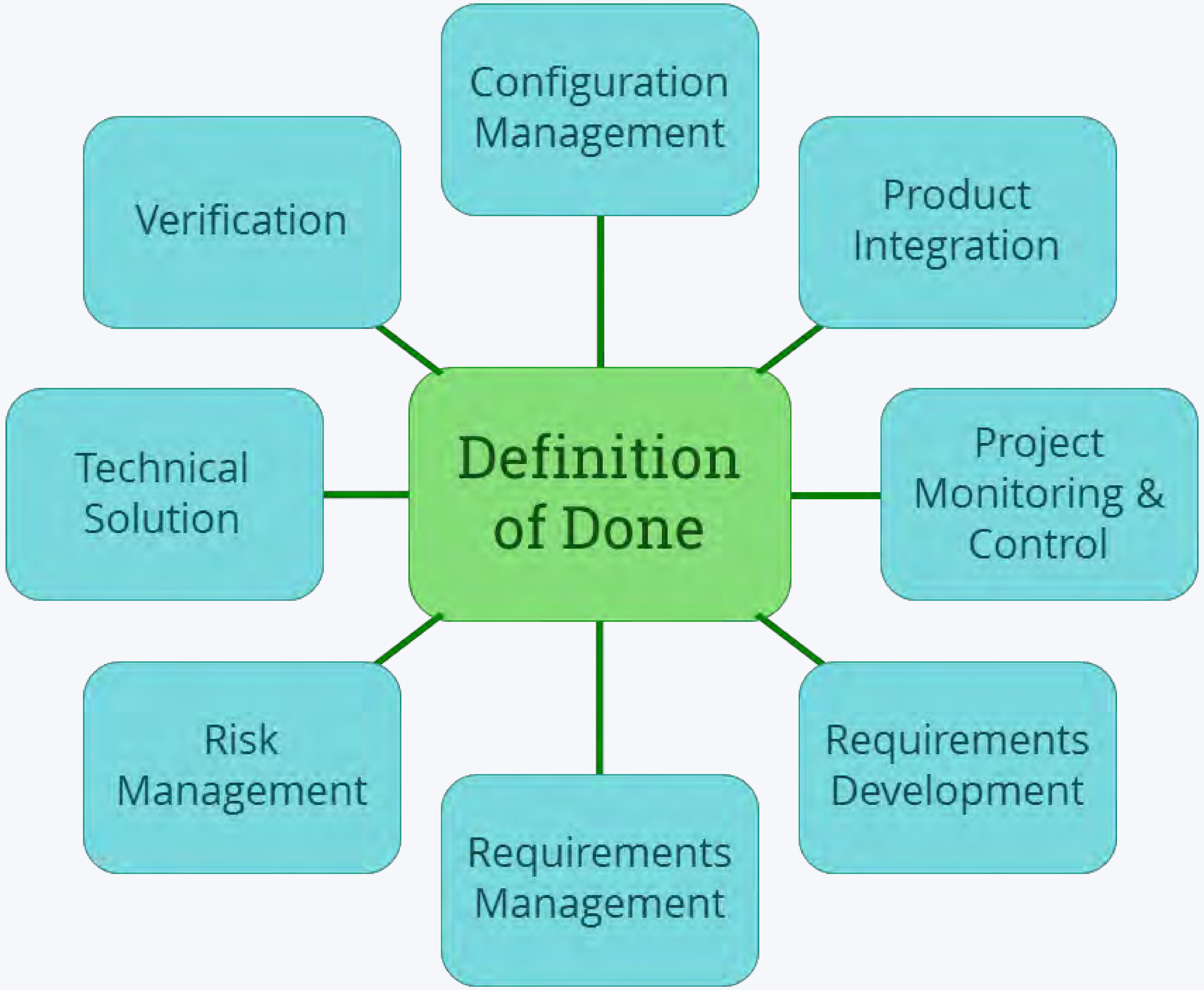
"A predefined set of criteria defined and displayed by the team that must be met before a work item is considered complete."

Agile:

To consider a requirement complete and ready to demonstrate at the end of a sprint, that requirement must meet the scrum team's definition of done. The product owner and the development team agree upon the details of the definition. The product owner and the development team may also create a list of acceptable risks.

SAFe:

Taken together, the continuous buildup of system functionality, along with continuous verification and validation of the elements of the solution, as well as the final solution itself, can be reflected in a scaled Definition of Done.



Backlog

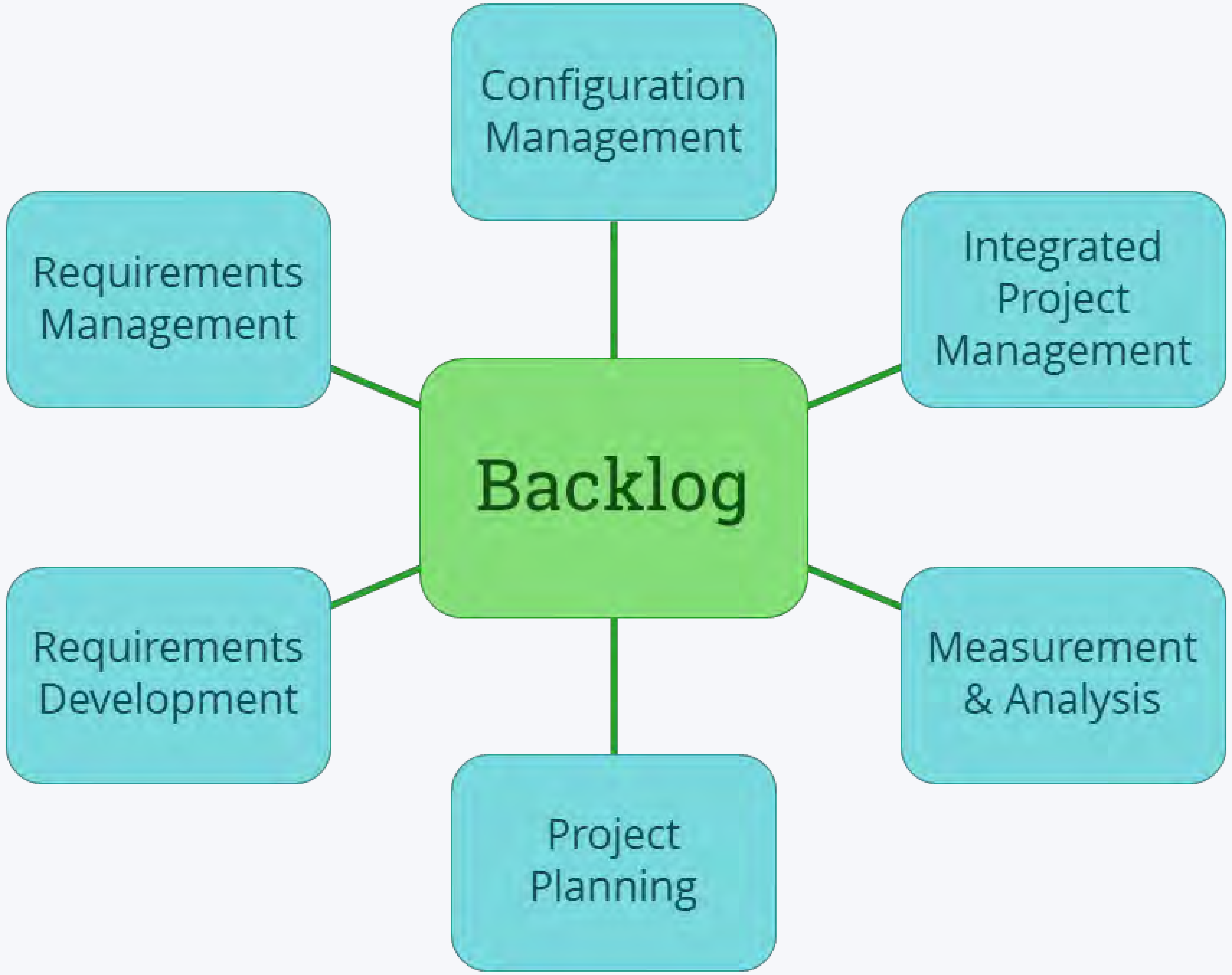
"The backlog is a list of user stories to be addressed by working software."

Agile:

The product backlog is the full list of requirements, often documented as user stories, that defines the product. The product backlog can be fluid throughout the project. During sprint planning, stories in the Product Backlog which support the sprint goals are pulled into the sprint backlog.

SAFe:

SAFe has a Portfolio Backlog, a Value Stream and Program Backlog, and Team Backlog, which each contains items from the same level as well as items from higher-level Kanban systems. Items from the Program and Team Backlogs which support the Program Increment and Iteration Goals are pulled into their respective backlogs.



Velocity

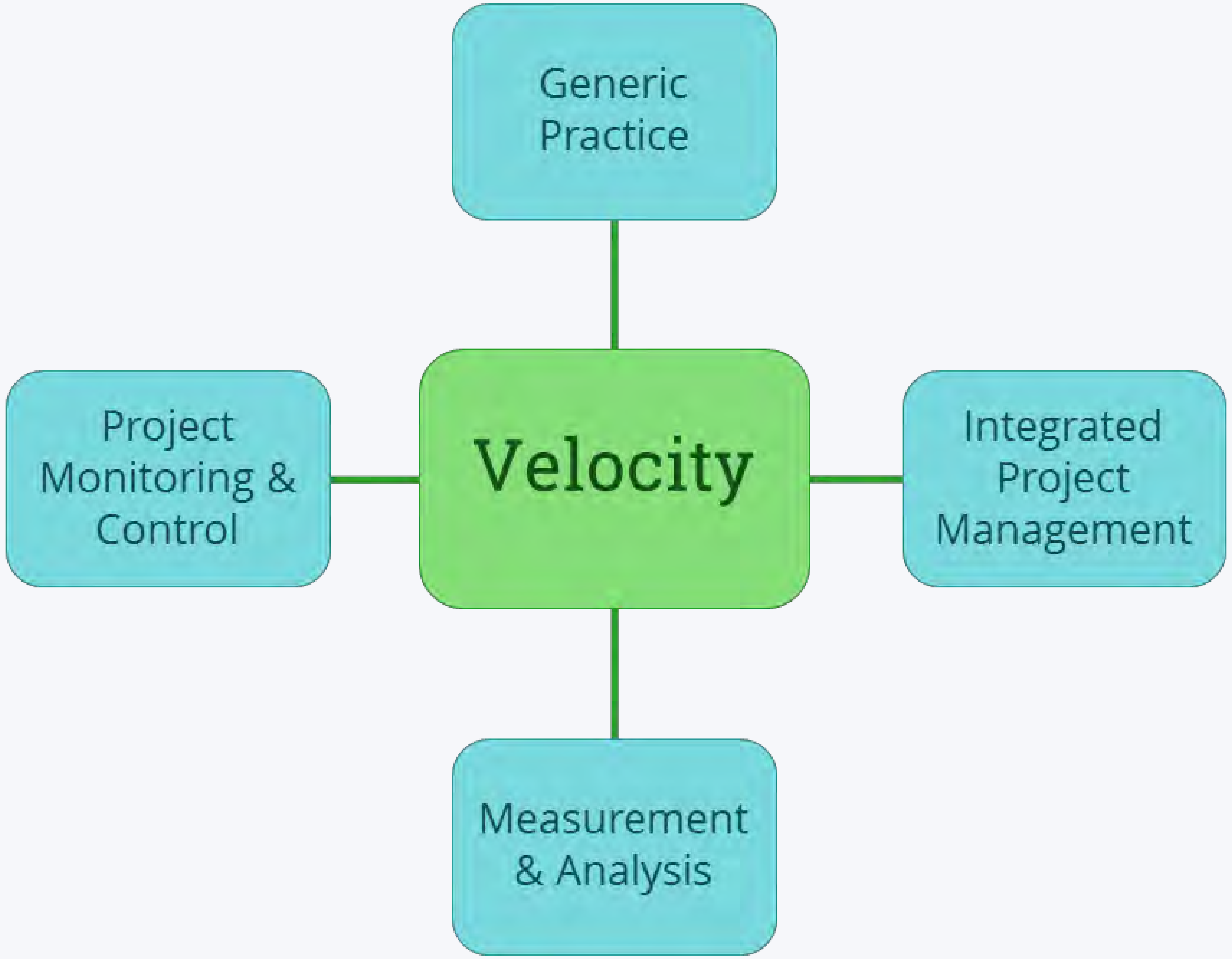
"Velocity measures the amount of work a team can deliver each iteration."

Agile:

Velocity is used to forecast how much functionality an agile team can deliver within a set amount of time. Velocity is measured by the number of user story points that the team completes in each sprint. However, velocity should *not* be used to dictate how much work the team should complete in a sprint. Velocity is a team-specific metric and should not be compared across teams.

SAFe:

In SAFe, story point velocity must have a common starting baseline in order to make accurate estimates for initiatives that require coordination across multiple teams.



Burn-Down Chart

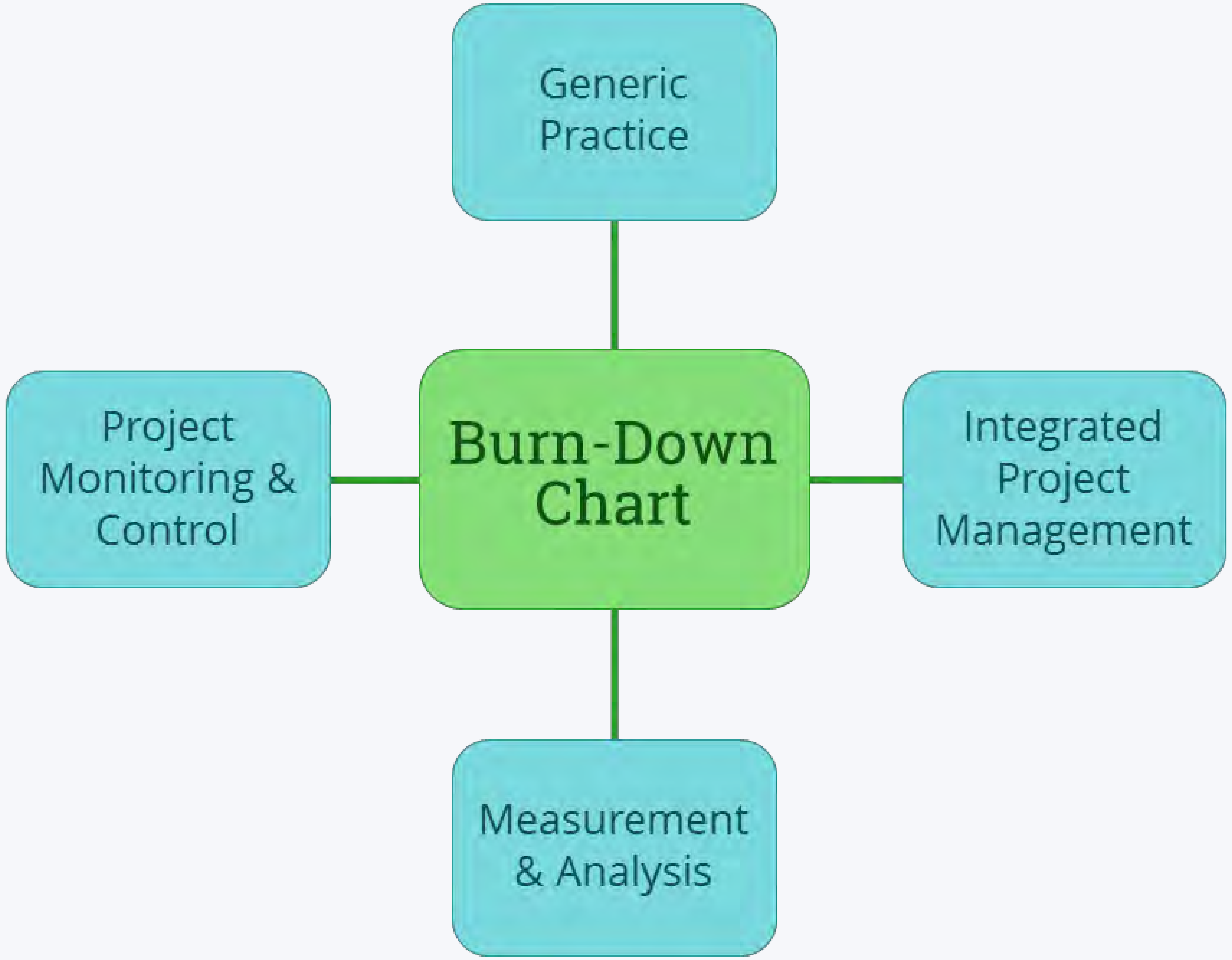
"A visual tool displaying progress via a simple line chart representing the remaining work (vertical axis) over time (horizontal axis)."

Agile:

A burndown chart enables anyone, at a glance, to see the status of the sprint. It shows whether the effort is going as planned, is in better shape than expected, or is in trouble.

SAFe:

In addition to tracking the status of a Team's Iteration execution, a Program Increment burndown chart shows the status of the Program Increment for the entire Agile Release Train.



Test-Driven / Test-First Development

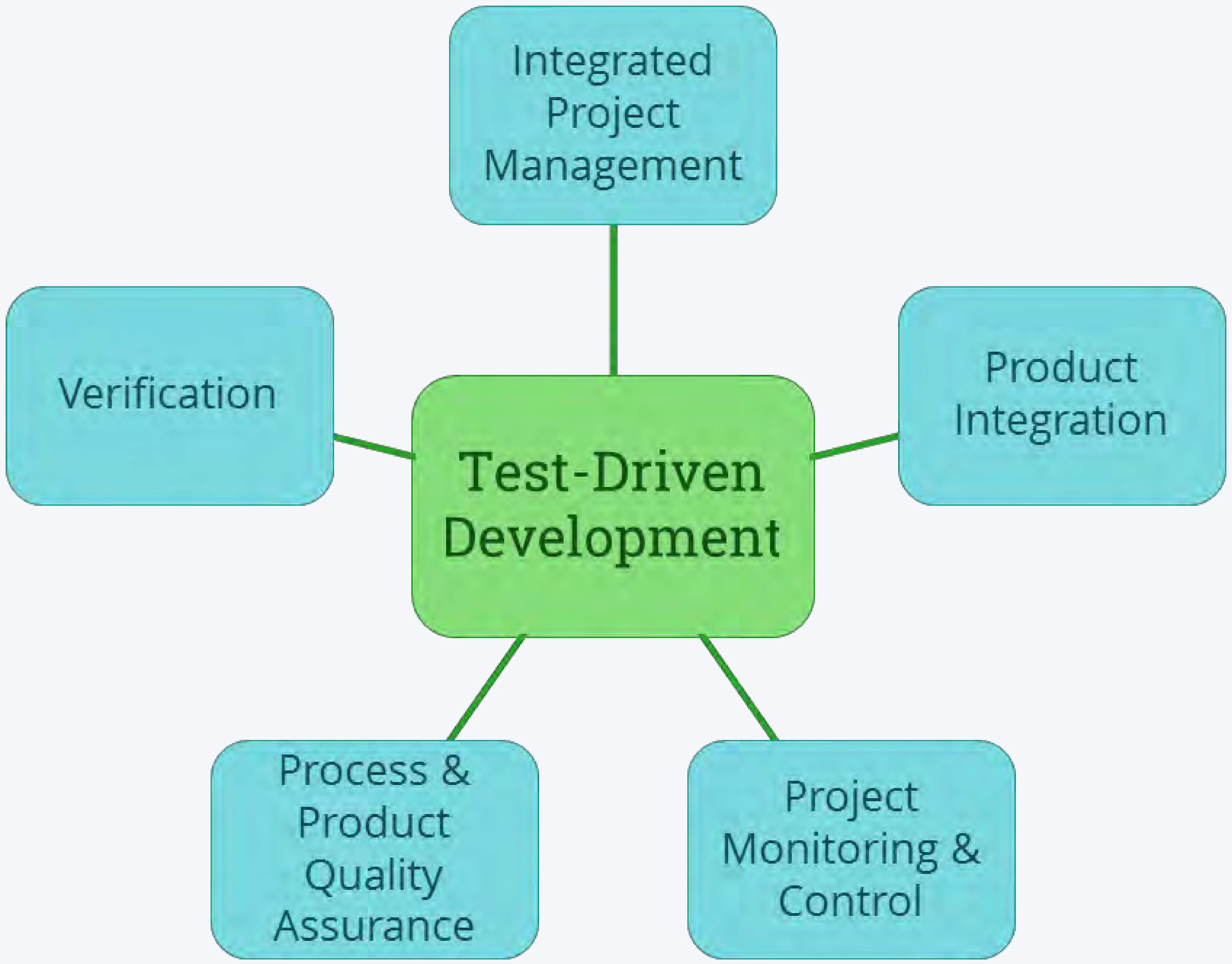
"A software development process of writing automated customer acceptance and unit tests before coding."

Agile:

Originally an Extreme Programming practice, Test-Driven Development is a quality development technique practiced by first creating and running the test for the requirement, developing the requirement until it passes the test, then refactoring the code as much as possible while still having it able to pass the test.

SAFe:

Test-first is a philosophy that supports Built-in Quality, one of the four Core Values of SAFe. It can be divided into Test-Driven Development and Acceptance Test-Driven Development, which are both supported by the practice of Automated Testing.


Integrated Project Management
Verification
Test-Driven Development
Product Integration
Process & Product Quality Assurance
Project Monitoring & Control

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Proactive / Built-in Quality

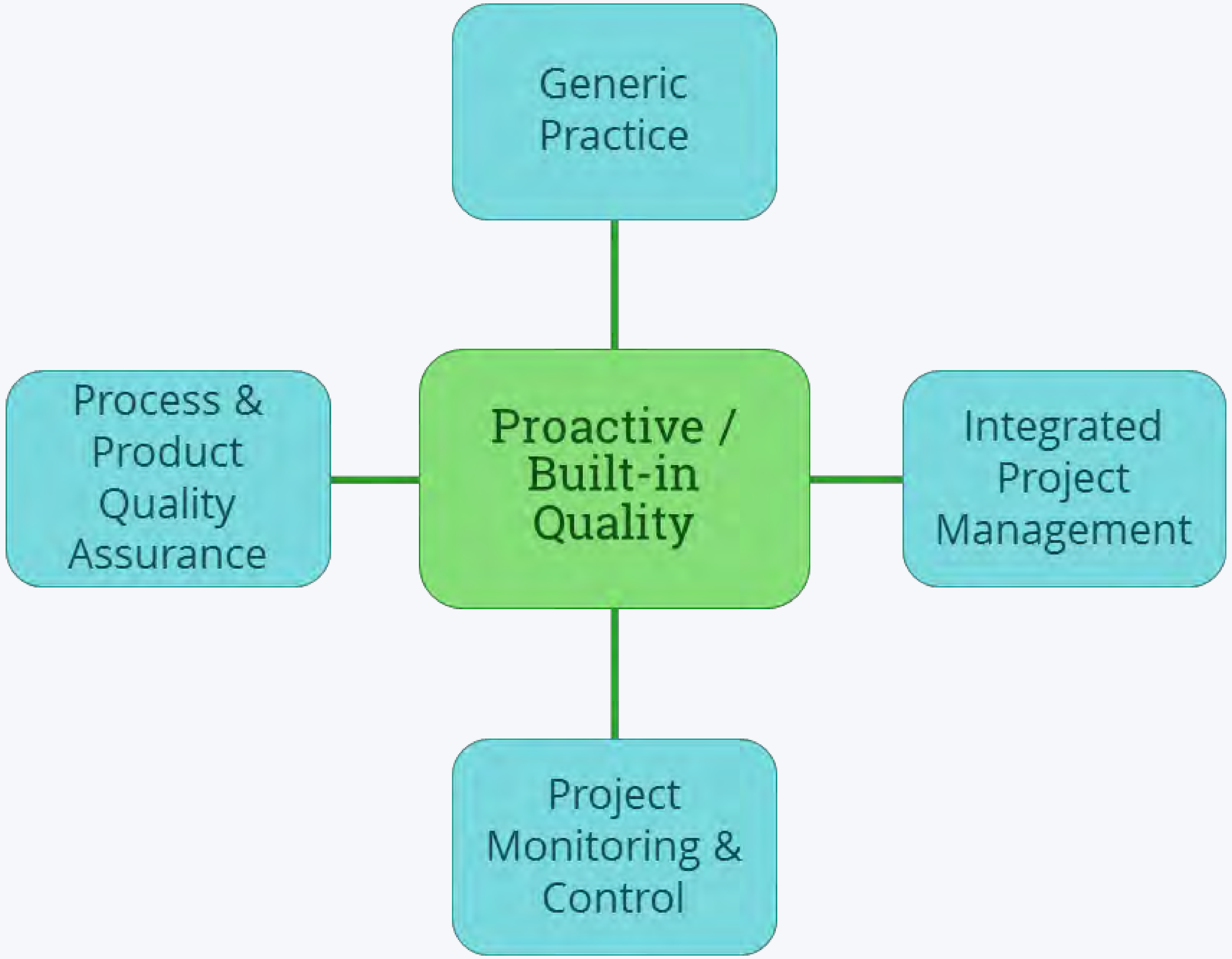
"At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly." (from the 12 Agile Principles)

Agile:

Agile approaches have a number of practices that allow and encourage scrum teams to proactively create quality products. These include an emphasis on excellence and good design, use of quality development techniques, built-in acceptance criteria, daily, high-fidelity communication and collocation, sustainable development, and regular inspection and adaption.

SAFe:

Built-in-Quality is one of the four Core Values of SAFe. The Enterprise's ability to deliver new functionality with the fastest sustainable lead time and to be able to react to rapidly changing business environments is dependent on Solution quality.


Generic Practice
Process & Product Quality Assurance
Proactive / Built-in Quality
Integrated Project Management
Project Monitoring & Control

Continuous Improvement

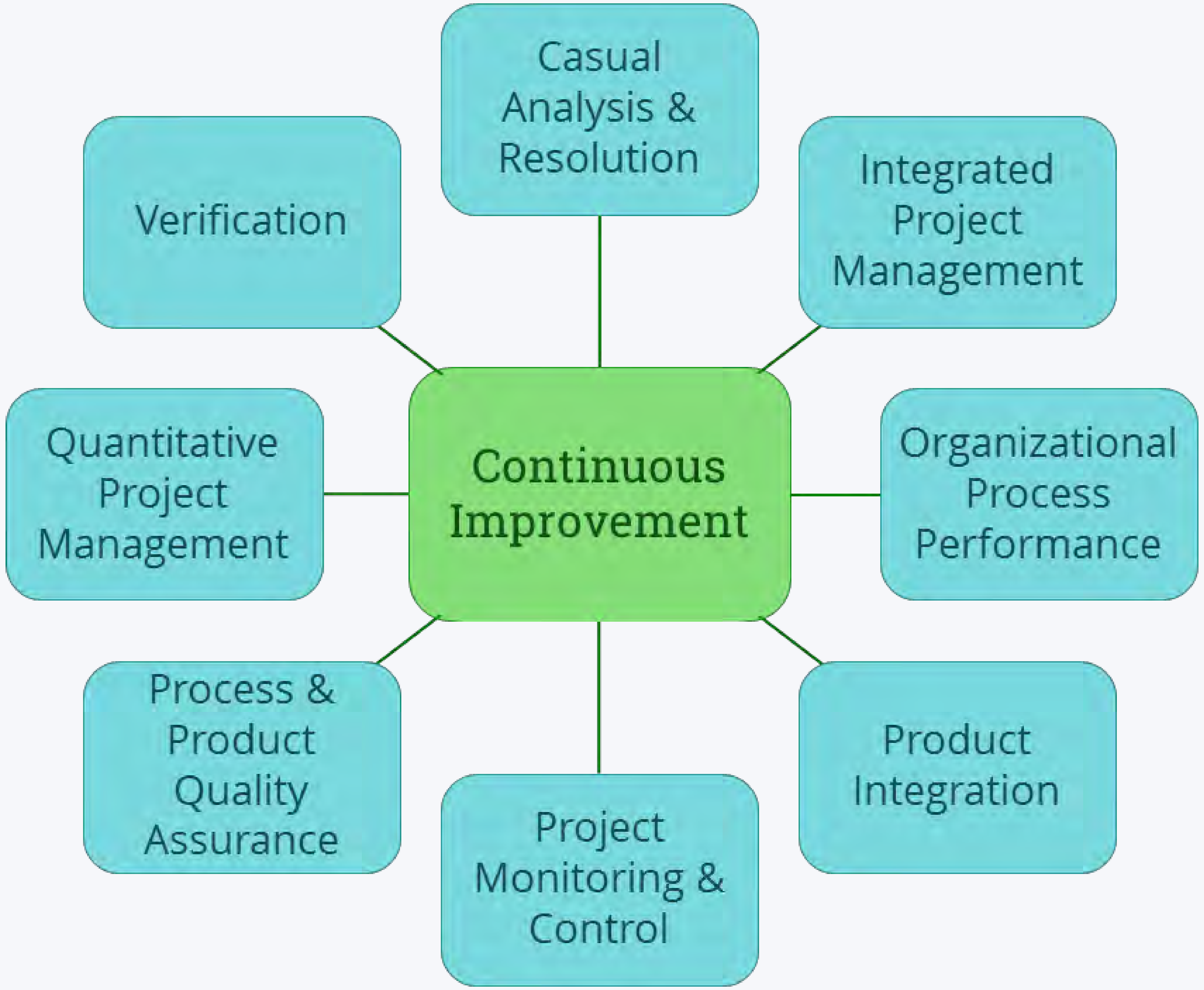
"The philosophy of continuous improvement is integral to Agile."

Agile:

The agile tenet of inspect and adapt is a key to creating quality products. Throughout an agile project, you look at both your product and your process (inspect) and make changes as necessary (adapt). Inspecting and adapting is performed during the sprint review and sprint retrospective, as well as throughout each workday.

SAFe:

Relentless Improvement is one of the four pillars in SAFe's House of Lean. Opportunities for relentless improvement occur continuously throughout development but the Team Retrospective and the Inspect & Adapt workshop provide dedicated time and opportunity for improvement.


Casual Analysis & Resolution
Verification
Integrated Project Management
Quantitative Project Management
Continuous Improvement
Organizational Process Performance
Process & Product Quality Assurance
Project Monitoring & Control
Product Integration

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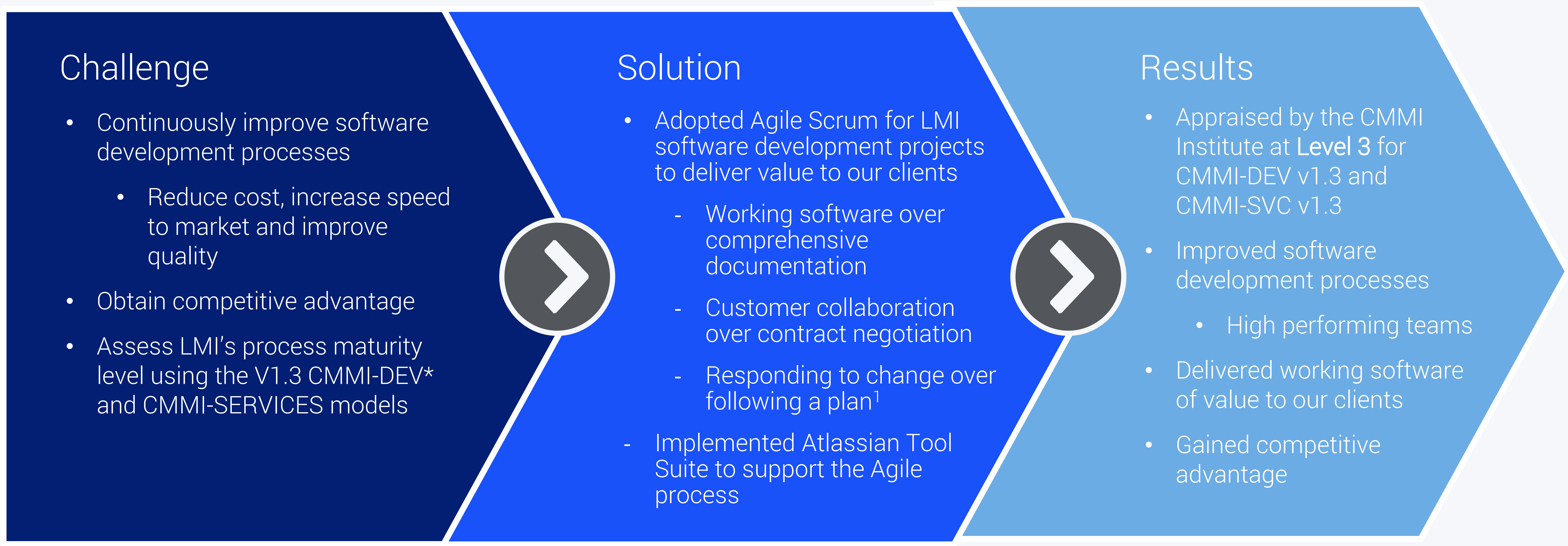
LMI CASE STUDY: CMMI and Agile



Challenge

- Continuously improve software development processes
    - Reduce cost, increase speed to market and improve quality
- Obtain competitive advantage
- Assess LMI's process maturity level using the V1.3 CMMI-DEV* and CMMI-SERVICES models

Solution

- Adopted Agile Scrum for LMI software development projects to deliver value to our clients
    - Working software over comprehensive documentation
    - Customer collaboration over contract negotiation
    - Responding to change over following a plan[1]
- Implemented Atlassian Tool Suite to support the Agile process

Results

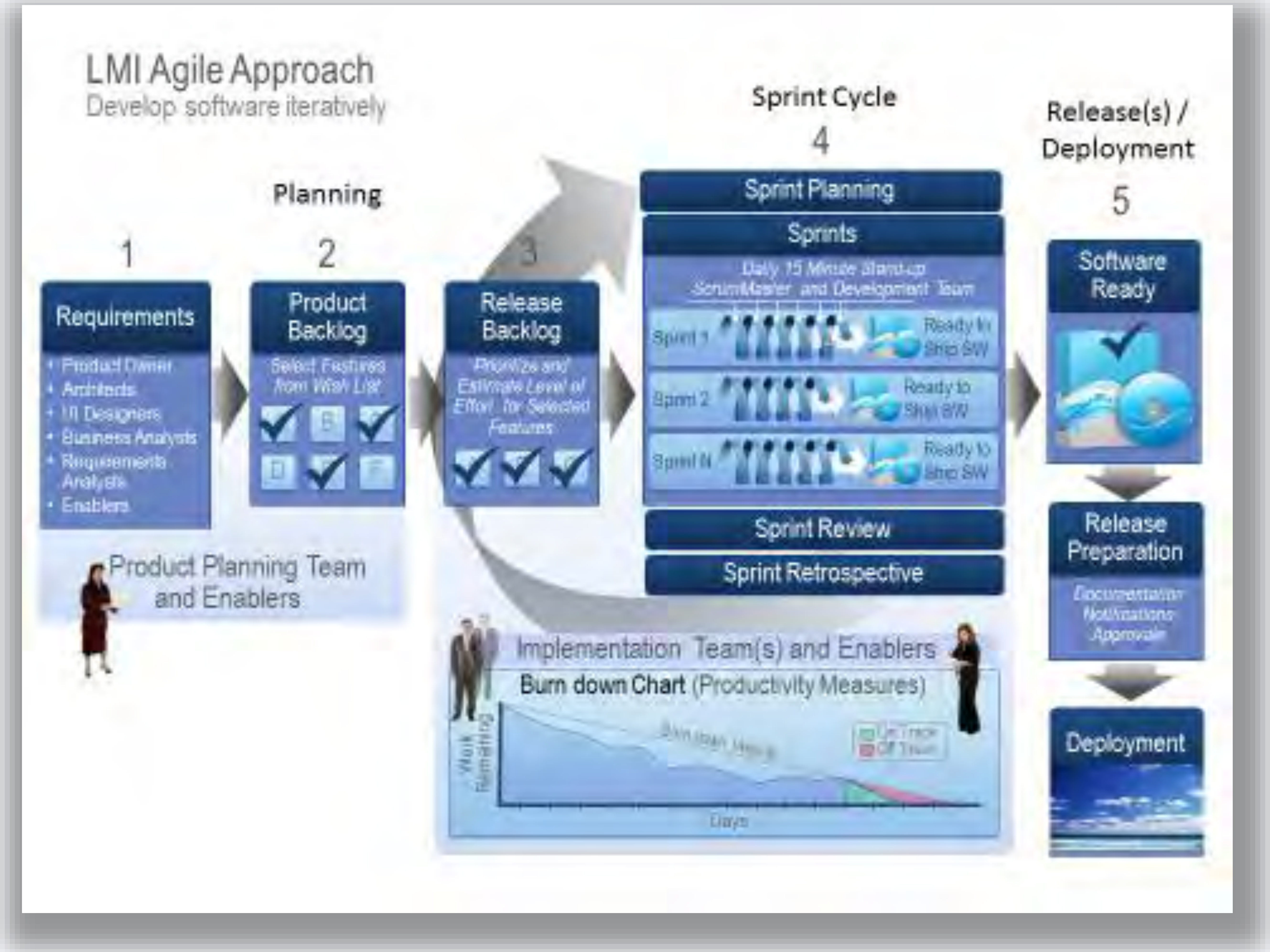
- Appraised by the CMMI Institute at **Level 3** for CMMI-DEV v1.3 and CMMI-SVC v1.3
- Improved software development processes
    - High performing teams
- Delivered working software of value to our clients
- Gained competitive advantage

*All CMMI-DEV model practices focus on the activities of the developer organization. Five process areas focus on practices specific to development: addressing requirements development, technical solution, product integration, verification, and validation.

[1] http://agilemanifesto.org/

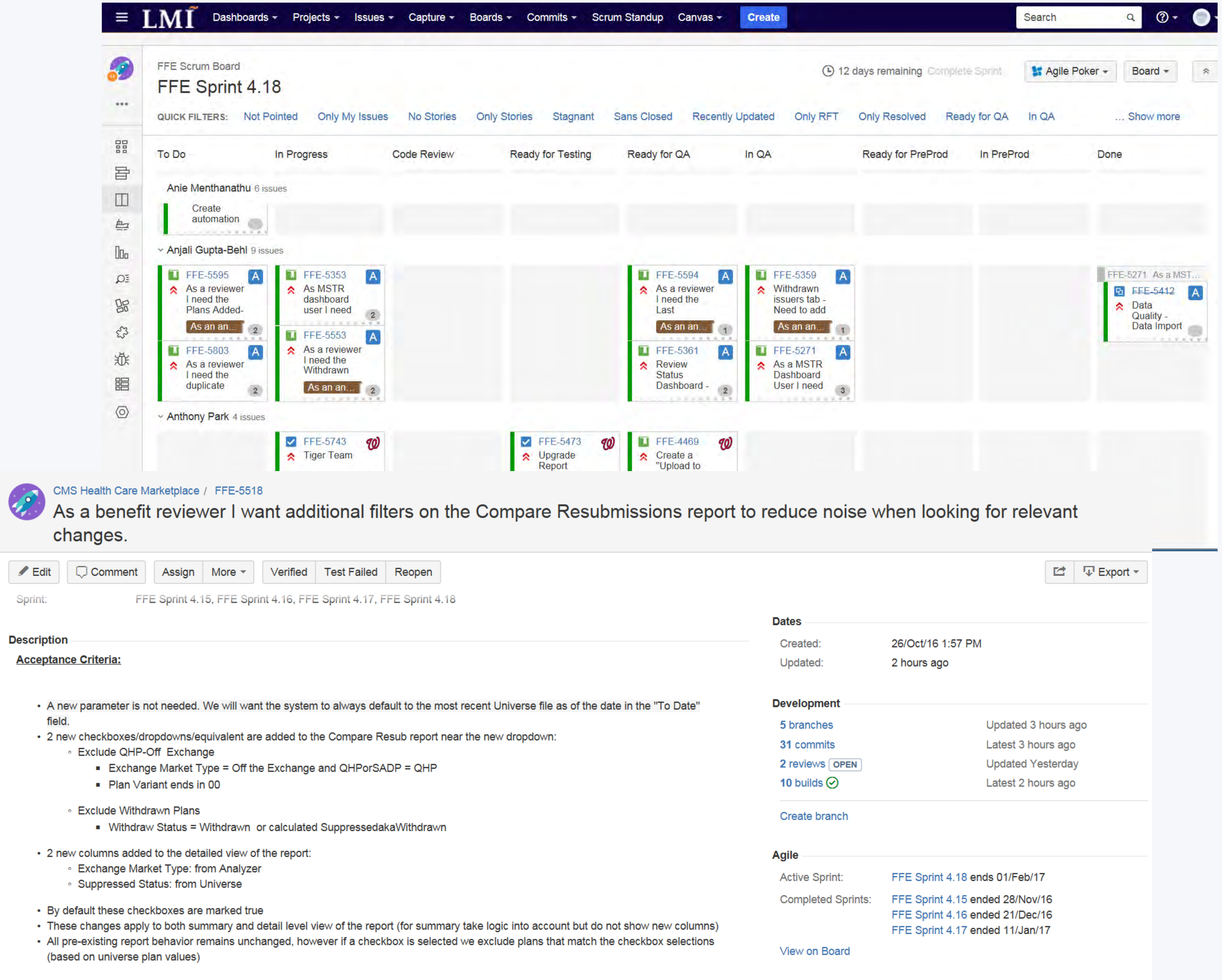
Approach – Agile Scrum and CMMI Models

- Implemented Agile Scrum
  - Identified key projects
  - Conducted training
    - Project team specific
    - Obtained individual certifications (CSM, PMI-ACP, ICAgile)
  - Assigned roles (i.e. Product owners, ScrumMaster, development team)
  - Followed Agile Scrum ceremonies
    - Daily Standup
    - Sprint Planning
    - Pointing
    - Backlog Grooming
    - Sprint Review
    - Retrospectives
- Refined quality processes and operating procedures aligned with best practices and CMMI



Approach – Atlassian Tool Suite

- Adopted Atlassian Tool Suite
  - Pre-defined workflow ensures *traceabilty* throughout the process
  - Enter user stories with acceptance criteria in **Jira**
  - Use **Confluence** for collaboration and release notes
  - Implemented **Crucible** for code reviews
  - Use **Bitbucket** for version control
  - **Bamboo** for CI and build server
  - Combined with SharePoint provides a common repository



CMS Health Care Marketplace / FFE-5518

As a benefit reviewer I want additional filters on the Compare Resubmissions report to reduce noise when looking for relevant changes.

Sprint: FFE Sprint 4.15, FFE Sprint 4.16, FFE Sprint 4.17, FFE Sprint 4.18

Description

Acceptance Criteria:

- A new parameter is not needed. We will want the system to always default to the most recent Universe file as of the date in the "To Date" field.
- 2 new checkboxes/dropdowns/equivalent are added to the Compare Resub report near the new dropdown:
  - Exclude QHP-Off Exchange
    - Exchange Market Type = Off the Exchange and QHPorSADP = QHP
    - Plan Variant ends in 00
  - Exclude Withdrawn Plans
    - Withdraw Status = Withdrawn or calculated SuppressedakaWithdrawn
- 2 new columns added to the detailed view of the report:
  - Exchange Market Type: from Analyzer
  - Suppressed Status: from Universe
- By default these checkboxes are marked true
- These changes apply to both summary and detail level view of the report (for summary take logic into account but do not show new columns)
- All pre-existing report behavior remains unchanged, however if a checkbox is selected we exclude plans that match the checkbox selections (based on universe plan values)

Dates

Created: 26/Oct/16 1:57 PM
Updated: 2 hours ago

Development

5 branches	Updated 3 hours ago
31 commits	Latest 3 hours ago
2 reviews OPEN	Updated Yesterday
10 builds ✓	Latest 2 hours ago

Create branch

Agile

Active Sprint: FFE Sprint 4.18 ends 01/Feb/17

Completed Sprints: FFE Sprint 4.15 ended 28/Nov/16
FFE Sprint 4.16 ended 21/Dec/16
FFE Sprint 4.17 ended 11/Jan/17

View on Board

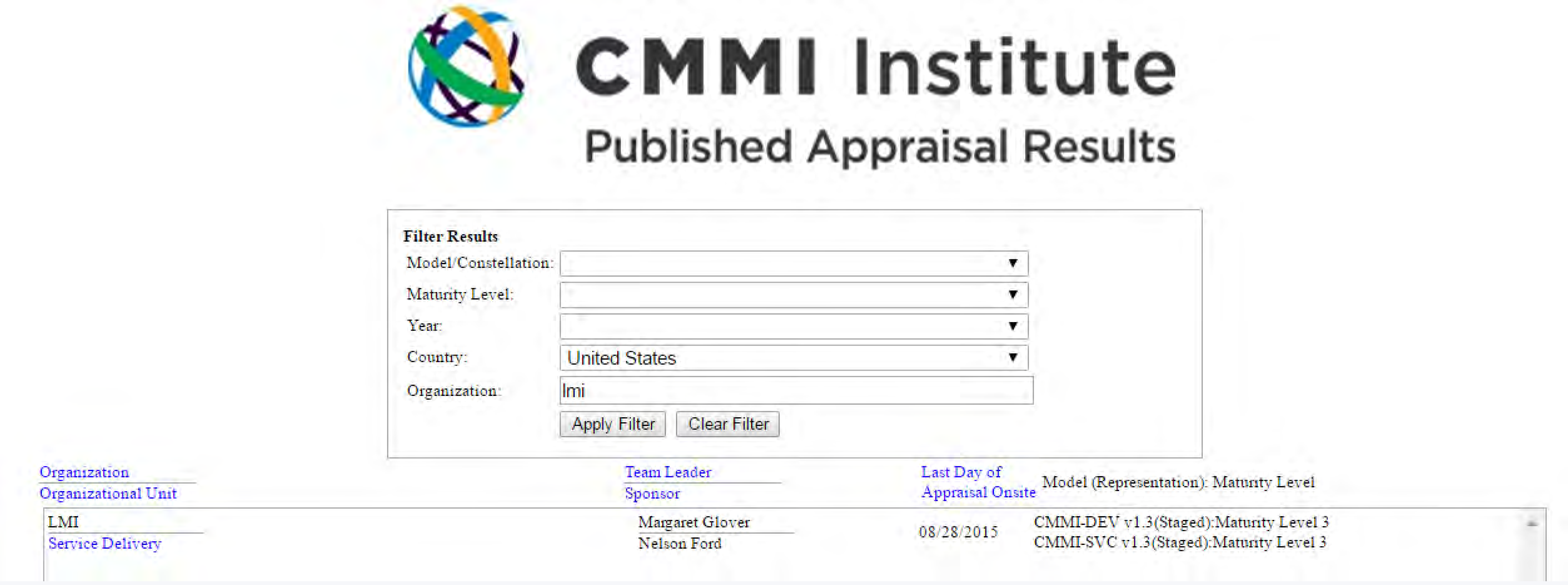
LMI Excellence in Measurement Technology

Appraisal – CMMI-DEV v1.3 and CMMI-SVC v1.3

Conducted appraisal

- Lead Appraiser: Margaret Glover, Excellence in Measurement
- Sponsor: Nelson Ford, LMI President and CEO
- LMI Quality Manager: Rebecca Lawler
- LMI appraisal team members: Mike McIntire, Debra Dennie, Helge Soriede, Chuck Lorence
- Selected projects from across the organization
  - Aircraft Sustainability Model (ASM)
  - The Health and Human Services(HHS) Centers for Medicare and Medicaid Services (CMS), Center for Consumer Information and Oversight (CCIIO), Rate and Benefit Package Review and Quality Health Plan Certification
  - USPS Safety Tool Kit for Program Management and Compliance

- Having a lead appraiser with a deep understanding of Agile development is important to ensure a common understanding during an appraisal.
  - *Margaret Glover was able to ask the right questions with an appreciation and understanding of Agile ceremonies and artifacts.*



CMMI Institute

Published Appraisal Results

Filter Results

Model/Constellation: ▼

Maturity Level: ▼

Year: ▼

Country: United States ▼

Organization: lmi

Apply Filter | Clear Filter

Organization Organizational Unit	Team Leader Sponsor	Last Day of Appraisal Onsite	Model (Representation): Maturity Level
LMI Service Delivery	Margaret Glover Nelson Ford	08/28/2015	CMMI-DEV v1.3(Staged):Maturity Level 3 CMMI-SVC v1.3(Staged):Maturity Level 3

LMI was appraised by the CMMI Institute at Level 3 for CMMI-DEV v1.3 and CMMI-SVC v1.3

Benefits of CMMI and Agile

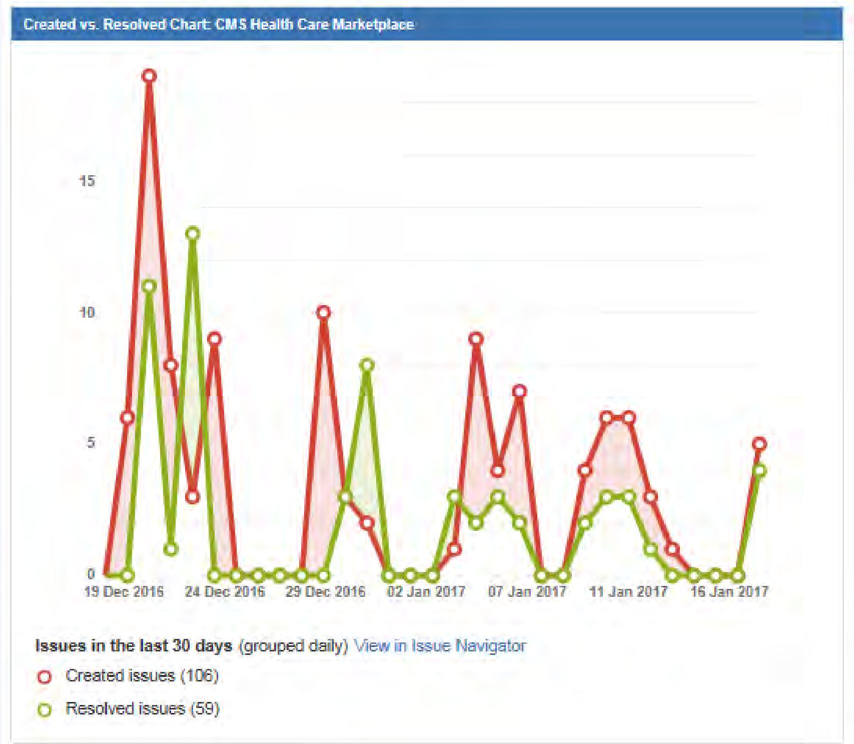
LMI was appraised by the CMMI Institute at Level 3 for CMMI-DEV v1.3 and CMMI-SVC v1.3

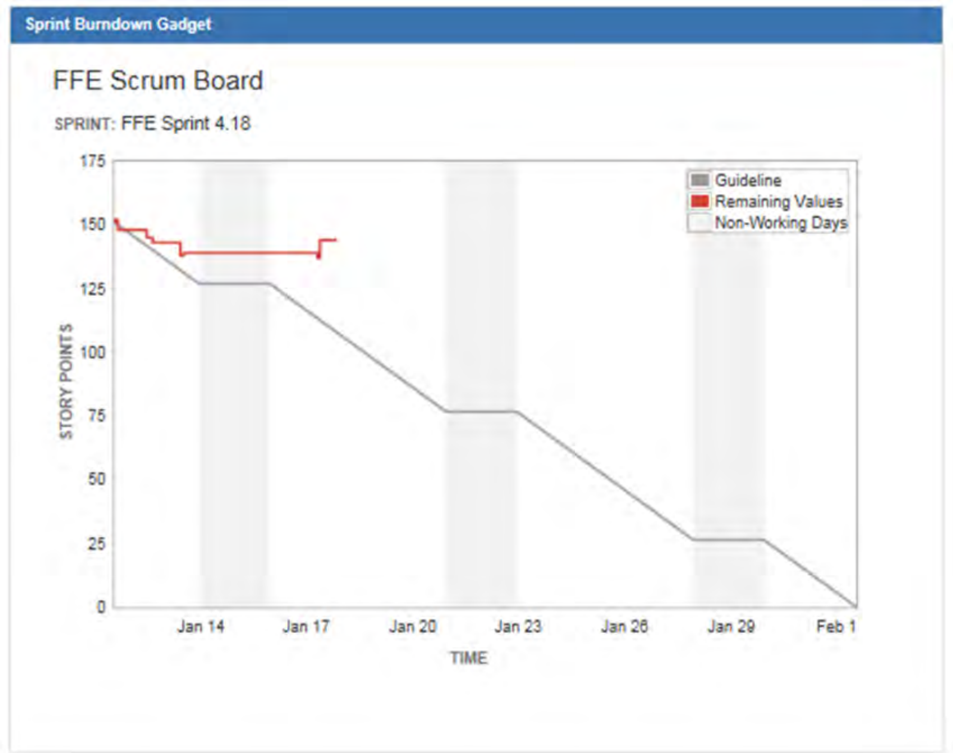
- Consistently and predictably deliver working software of value
  - CMMI models and Agile ceremonies result in improved ***customer satisfaction*** through increased visibility and interaction between stakeholders, end users and development/test team
  - Minimizes expectation gaps
  - Promotes higher levels of ***employee engagement*** with high performing teams
    - LMI was voted as one of the “best places to work”
- Best practices are captured, shared and adopted across the organization
  - Sprint retrospectives empower employees to have an active role in continuous process improvement
  - Results in **higher quality deliverables** with fewer escaped defects
- Provides a competitive advantage for proposals
  - Many government clients require CMMI Level 3 to compete

Key Take-Aways

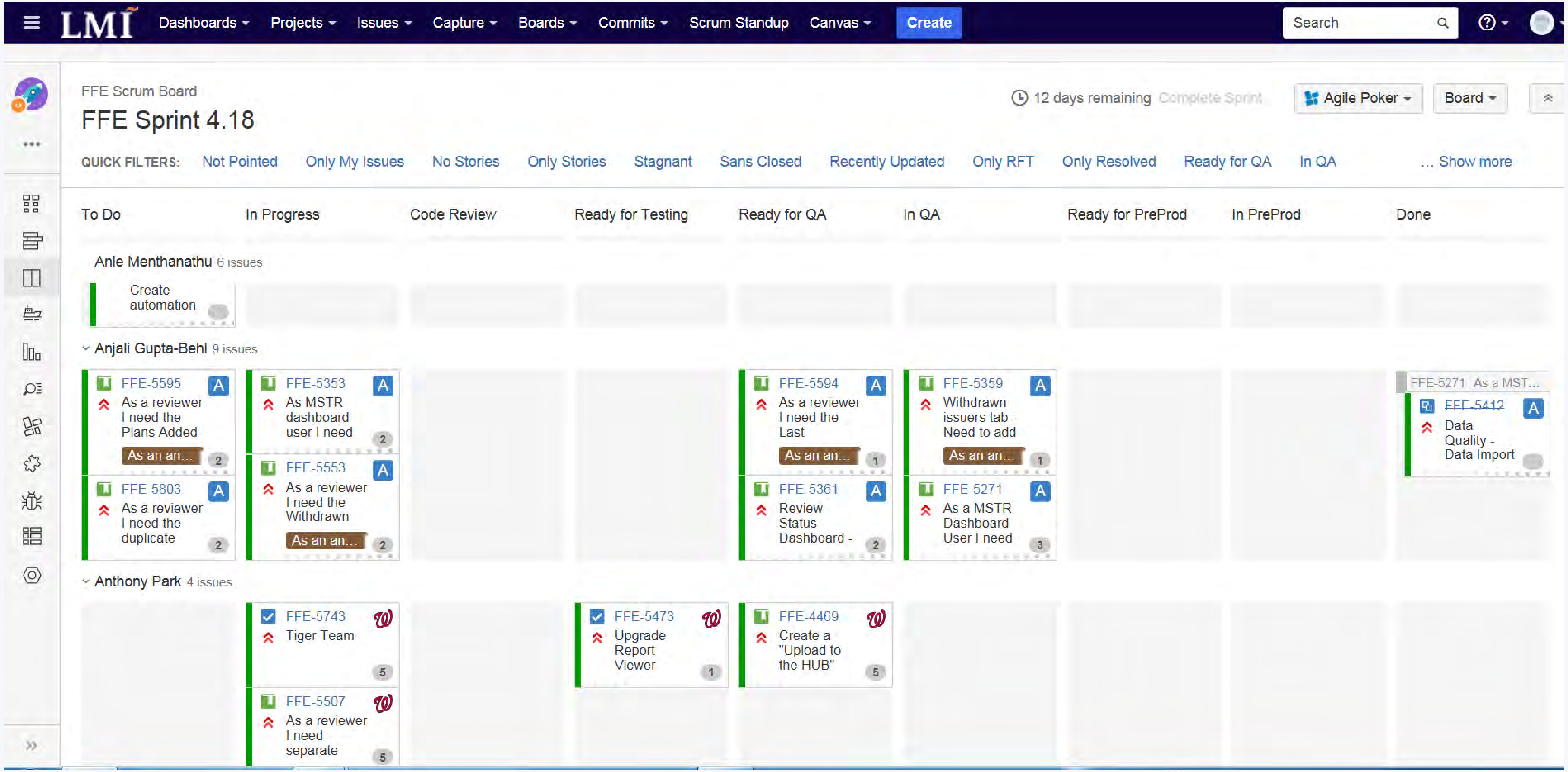
- CMMI and Agile are well aligned
  - CMMI is agnostic regarding the SDLC
  - CMMI does not require “paperweight” documentation per the Waterfall era (i.e. SRS, PDD, SDD)
  - User stories captured in a tool such as Atlassian Jira combined with Agile ceremonies provide artifacts for an appraisal
- CMMI models are all encompassing
  - Agile Scrum on its own doesn’t cover all CMMI process areas
  - CMMI provides a framework that supports an Agile development approach
  - LMI’s quality processes and operating procedures that led to ISO 9001 certification of LMI’s quality management system provided a strong starting point for CMMI

- Many process areas are satisfied by the Agile Scrum approach, *for example*:
  - The Sprint backlog in Jira with user stories along with Sprint Planning meetings provide evidence that **requirements are managed**
  - Burn down charts, story pointing and Scrum Boards support **work monitoring and control**





Agile Scrum Board



FFE Scrum Board

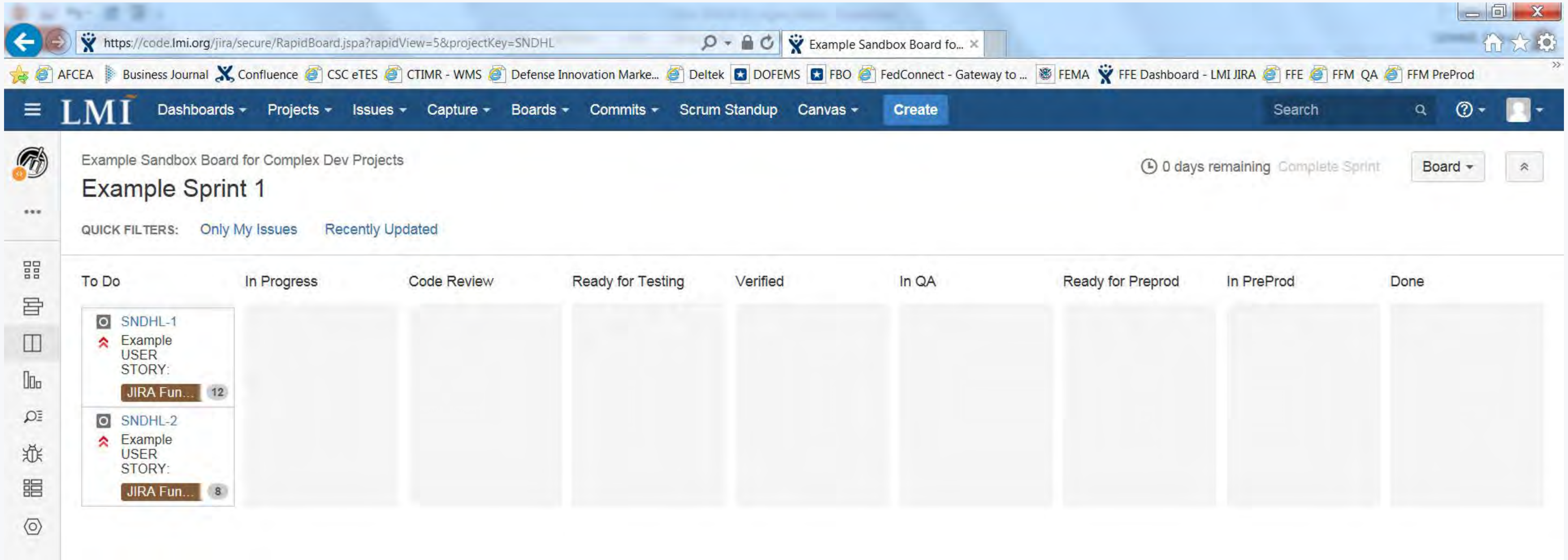
FFE Sprint 4.18

12 days remaining Complete Sprint

QUICK FILTERS: Not Pointed | Only My Issues | No Stories | Only Stories | Stagnant | Sans Closed | Recently Updated | Only RFT | Only Resolved | Ready for QA | In QA | ... Show more

	To Do	In Progress	Code Review	Ready for Testing	Ready for QA	In QA	Ready for PreProd	In PreProd	Done
Anie Menthanathu 6 issues	Create automation								
Anjali Gupta-Behl 9 issues	FFE-5595 As a reviewer I need the Plans Added- As an an... 2 FFE-5803 As a reviewer I need the duplicate 2	FFE-5353 As MSTR dashboard user I need 2 FFE-5553 As a reviewer I need the Withdrawn As an an... 2			FFE-5594 As a reviewer I need the Last As an an... 1 FFE-5361 Review Status Dashboard - 2	FFE-5359 Withdrawn issuers tab - Need to add As an an... 1 FFE-5271 As a MSTR Dashboard User I need 3			FFE-5271 As a MST... ~~FFE-5412~~ Data Quality - Data Import
Anthony Park 4 issues		FFE-5743 Tiger Team 5 FFE-5507 As a reviewer I need separate 5		FFE-5473 Upgrade Report Viewer 1	FFE-4469 Create a "Upload to the HUB" 5				

Agile Workflows



Example Sandbox Board for Complex Dev Projects

Example Sprint 1

0 days remaining

QUICK FILTERS: Only My Issues Recently Updated

To Do	In Progress	Code Review	Ready for Testing	Verified	In QA	Ready for Preprod	In PreProd	Done
SNDHL-1 Example USER STORY: JIRA Fun... 12								
SNDHL-2 Example USER STORY: JIRA Fun... 8								

https://code.lmi.org

In conclusion:

- Multiple models and methodologies can complement one another and be implemented together effectively.
- To implement multiple methodologies, an organization must analyze them to find the parts of each methodology that overlap or support parts of the other methodology, in order to avoid redundant practices and processes.
- Most importantly, an organization needs to fully implement and commit to their chosen methodologies so that they become an integral part of the way the organization operates.

LMI Excellence in Measurement Technology

Thank you!

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