



# Agile: You're Doing it Wrong (or How to Know You're Doing it Right)

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# Agenda

- Introduction
- Agile Manifesto
- Why Do Agile?
- How Do You Know if Your Organization Needs Agile?
- What Do You Need to Successfully Implement Agile?
- Key Principals of Agile
- Critical Components of Agile Development
- Typical Agile Lifecycles
- Product Backlog
- Estimation of Agile Projects and the challenges
- Hybrid Methodologies
- Large Scale Agile
- Conclusions
- Sources of Information

# A Little About Me

- B.S. in Economics from Virginia Tech
- Graduate of the Chubb Institute Top Gun Program
- Over 15 years experience in software cost estimation
- Counting function points for 19 years and been a Certified Function Point Specialist (CFPS) for 17 years
- Experience in a number of estimation techniques and tools including SEER-SEM, COCOMO, SLiM, Delphi, and Estimating by Analogy
- Chairman of the International Function Point Users Group (IFPUG) Functional Software Sizing Committee (FSSC)
- Former member of the IFPUG Conference Committee for 5 years
- GAO Cost Guide expert team member
- Project Management Institute (PMI) Project Management Professional (PMP)
- Agile Alliance Certified SCRUM Master (CSM)

# The Agile Manifesto<sup>1</sup>

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<sup>1</sup>.

<sup>1</sup> <http://www.agilemanifesto.org/>

# Why Do Agile?

- Earlier Time to Market
- Earlier Return on Investment (ROI)
- Customer involvement in the product development leads to higher satisfaction and acceptance
- Better communication both internally and externally
- Higher product quality
- Built in risk reduction
- Better alignment to business goals/strategy
- Predictability
- Delivery of the most important/highest value features first

# How Do You Know if Your Organization Needs Agile (or is not implementing it properly)?

- There are serious problems with project delivery including:
  - Project cost/schedule control issues
  - Poor product quality
  - Low employee morale
  - Employee burnout
  - High employee turnover
  - Reliance on “Heroes”
  - Broken, unenforced or unused processes

# What Your Organization Needs to Successfully Implement Agile?

- C-Level executive support
- Bottom up support from teams
- Willingness to, and acceptance of, change
- Agile training
- Desire to “Stop The Madness”
- An understanding that Agile is not a “Magic Bullet” that will make all issues disappear

# What Does Implementing Agile Involve?





# Critical Components of Agile Development

- Sprints of 2 – 4 weeks duration
- Small team size (<20)
- Product owner actively participates in team
- Daily Stand up meetings and burndown charts
- Co-location of team
- Active management of product backlog
- No overtime
- Working software delivered at end of sprint

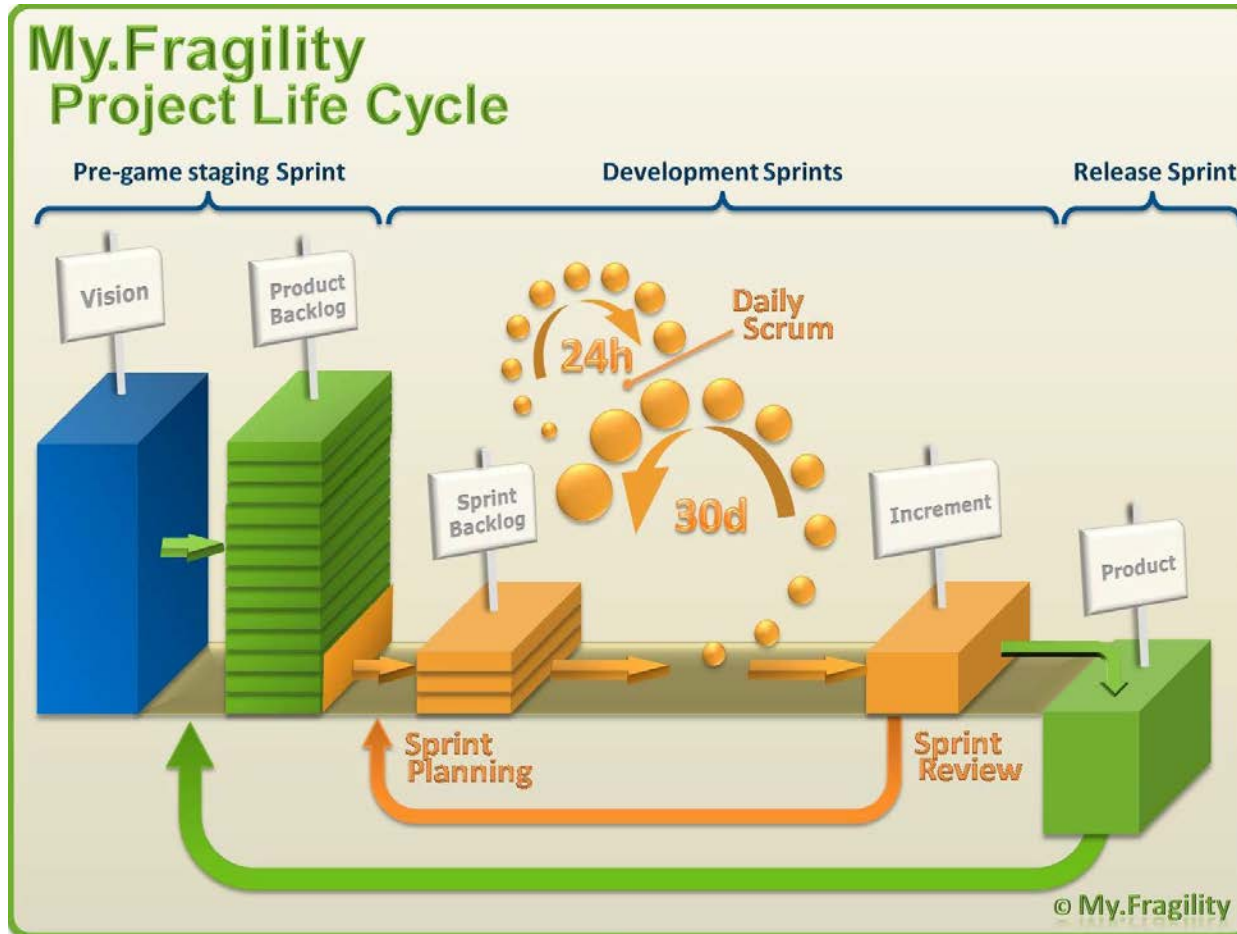
# Key Principles of Agile<sup>2</sup>

- 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.
- Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done.

# Key Principles of Agile

- The most efficient and effective method of conveying information to and within a development team is face-to-face conversation.
- Working software is the primary measure of progress. Agile processes promote sustainable development.
- The sponsors, developers, and users should be able to maintain a constant pace indefinitely.
- Continuous attention to technical excellence and good design enhances agility.
- Simplicity--the art of maximizing the amount of work not done--is essential.
- The best architectures, requirements, and designs emerge from self-organizing teams.
- At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly (post-sprint retrospectives).

# Typical Agile Project Lifecycle<sup>3</sup>

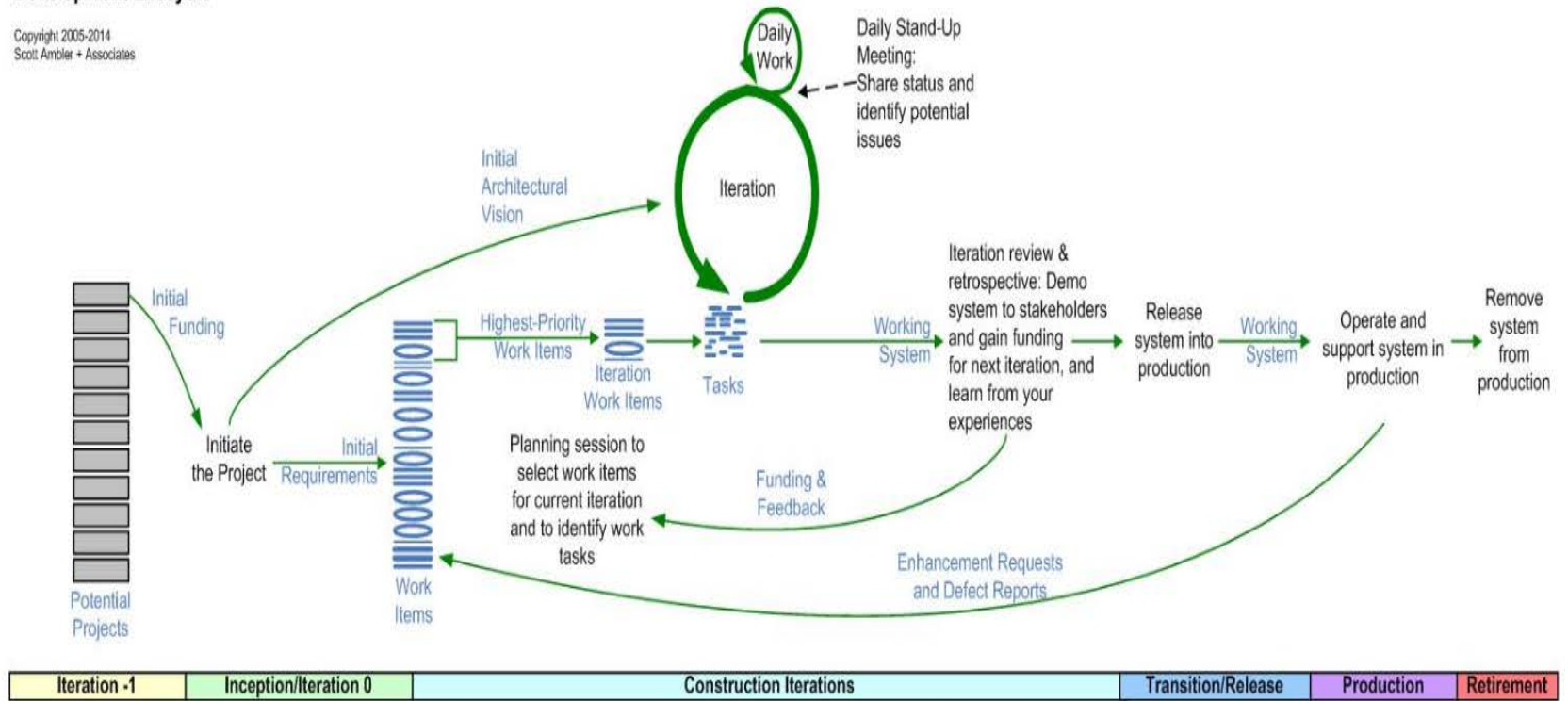


<sup>3</sup><http://guntherverheyen.com/tag/my-fragility/>

# Agile Lifecycle Diagram<sup>4</sup>

## Agile System Development Lifecycle

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<sup>4</sup> <http://www.ambysoft.com/essays/agileLifecycle.html>

# Product Backlog<sup>5</sup>

- A to-do list of all things that needs to be done within the project.
- Replaces the traditional requirements specification artifacts.
- Can have a technical nature or can be user-centric in the form of user stories.
- The owner is the Scrum Product Owner
- The Scrum Master, the Scrum Team and other Stakeholders contribute to it to have a broad and complete To-Do list
- Dynamic and exists as long as the product does
- Team is free to use other artifacts as well

<sup>5</sup>[http://www.scrum-institute.org/The\\_Scrum\\_Product\\_Backlog.php](http://www.scrum-institute.org/The_Scrum_Product_Backlog.php)

# Example Agile Product Backlog<sup>5</sup>

## ToDo List

ID	Story	Estimation	Priority
7	As an unauthorized User I want to create a new account	3	1
1	As an unauthorized User I want to login	1	2
10	As an authorized User I want to logout	1	3
9	Create script to purge database	1	4
2	As an authorized User I want to see the list of items so that I can select one	2	5
4	As an authorized User I want to add a new item so that it appears in the list	5	6
3	As an authorized User I want to delete the selected item	2	7
5	As an authorized User I want to edit the selected item	5	8
6	As an authorized User I want to set a reminder for a selected item so that I am reminded when item is due	8	9
8	As an administrator I want to see the list of accounts on login	2	10
<b>Total</b>		<b>30</b>	

## Example Scrum Product Backlog

# What About Estimating?

- Sprints are time-boxed at 2-4 weeks so what is estimated is what can go into a sprint
- Typical Agile Size Estimating Methods include:
  - T-Shirt Sizing (Sm, M, L, XL)
  - Story Points/Planning Poker (Fibonacci sequence)
  - Use Case Points
- Based on velocity, the sprint is assigned a set of capabilities to be delivered that correspond to the velocity of the team/organization
- Just because you are doing Agile doesn't mean you don't have to have estimates and schedules



# The Challenges with These Estimating Methods

- All are subjective and cannot be replicated
- Significant variation amongst and between teams
- No rules on how to size
- Inconsistent and unpredictable
- Cannot be used to develop productivity, cost or quality metrics
- Optimistic bias
- Difficult to determine Velocity, especially when first implementing Agile
- Using IFPUG function points can address most of these limitations

# Challenges with Using Agile

- Organizational resistance, fear of change, and individual skepticism
- Individuals may not be comfortable with having to provide detailed insight into their daily activities
- Product owner availability and access
- Upfront costs of setting up Agile and training
- Learning Curve
- Agile doesn't fit with budget cycles well
- Difficulty in determining velocity
- No industry benchmark data

# What About Using a Hybrid Method?

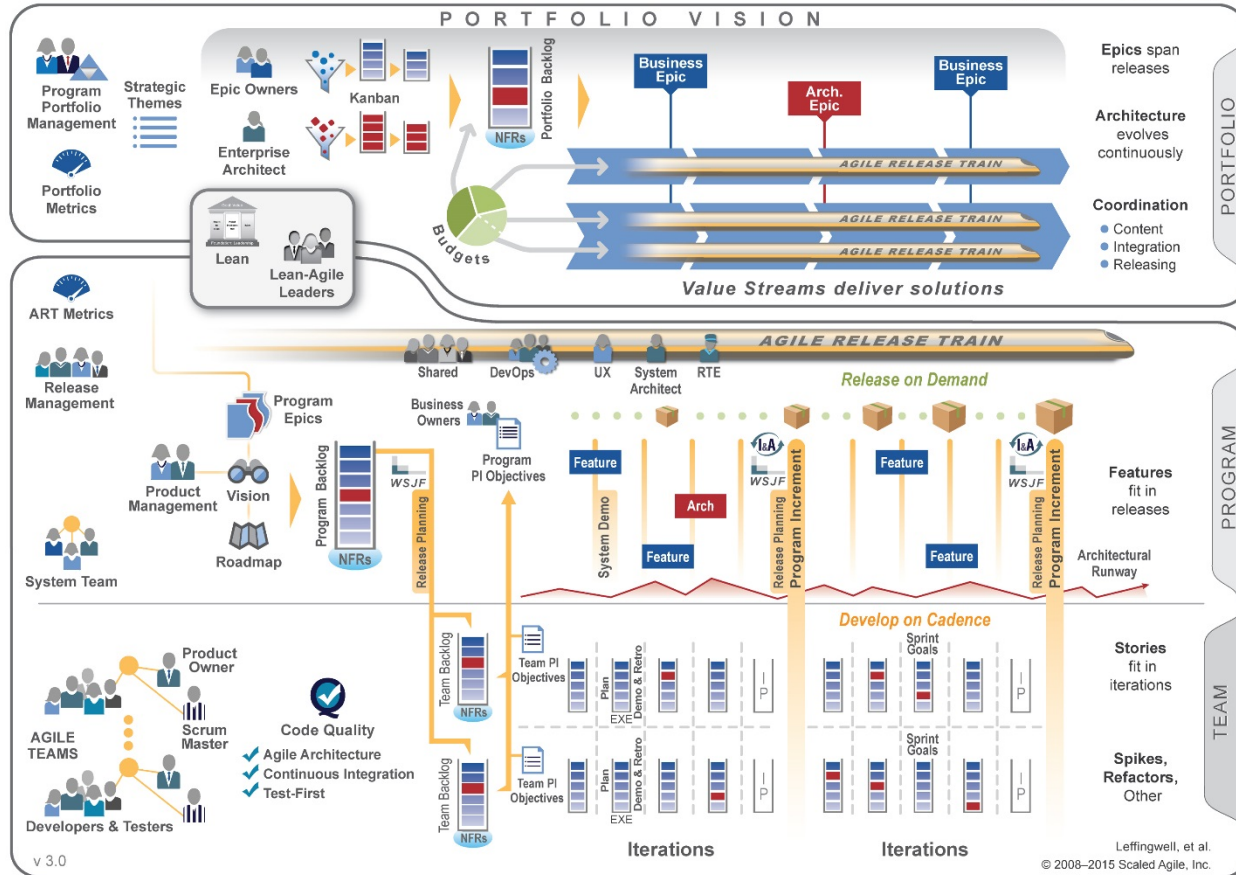
- A hybrid Agile methodology uses aspects of Agile and other methodologies such as waterfall (Water-Scrum-Fall)
- Can be used to help organizations make a smoother transition
- Can be used in cases where there are governance issues that prevent adoption of full Agile
- Typically, however, organizations will cherry pick and only select the easiest parts of each process and likely fail to implement properly

# What If My Project or Organization is Too Big for Agile?

- There are a number of Agile Frameworks that can Scale Agile for Large Projects or Teams.
- The most commonly used include:
  - Scaled Agile Framework (SAFe)
  - Large Scale Scrum (LeSS)
  - Disciplined Agile Delivery (DAD)
  - Nexus

# SAFe<sup>6</sup>

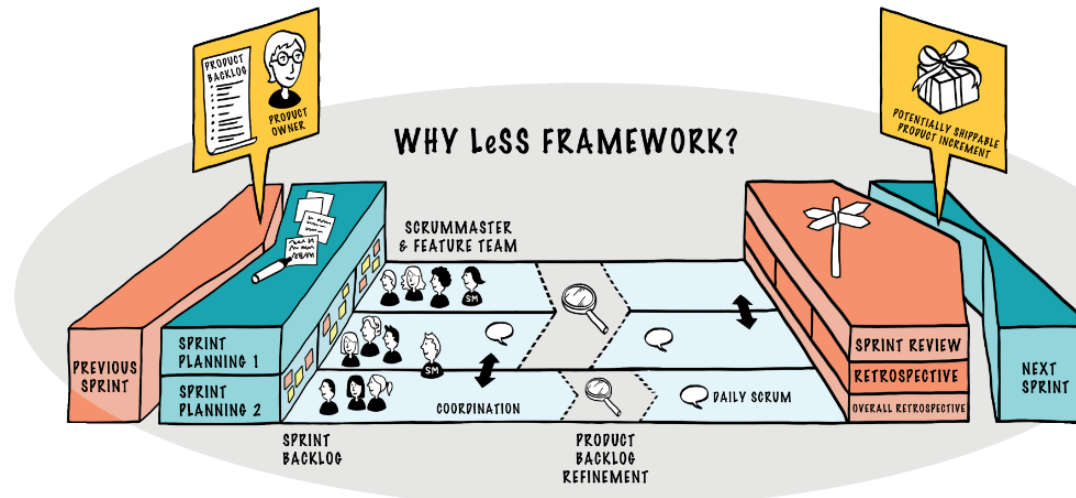
## Scaled Agile Framework<sup>®</sup>



<http://torak.com/resources/agile/scaled-agile-framework-safe/>

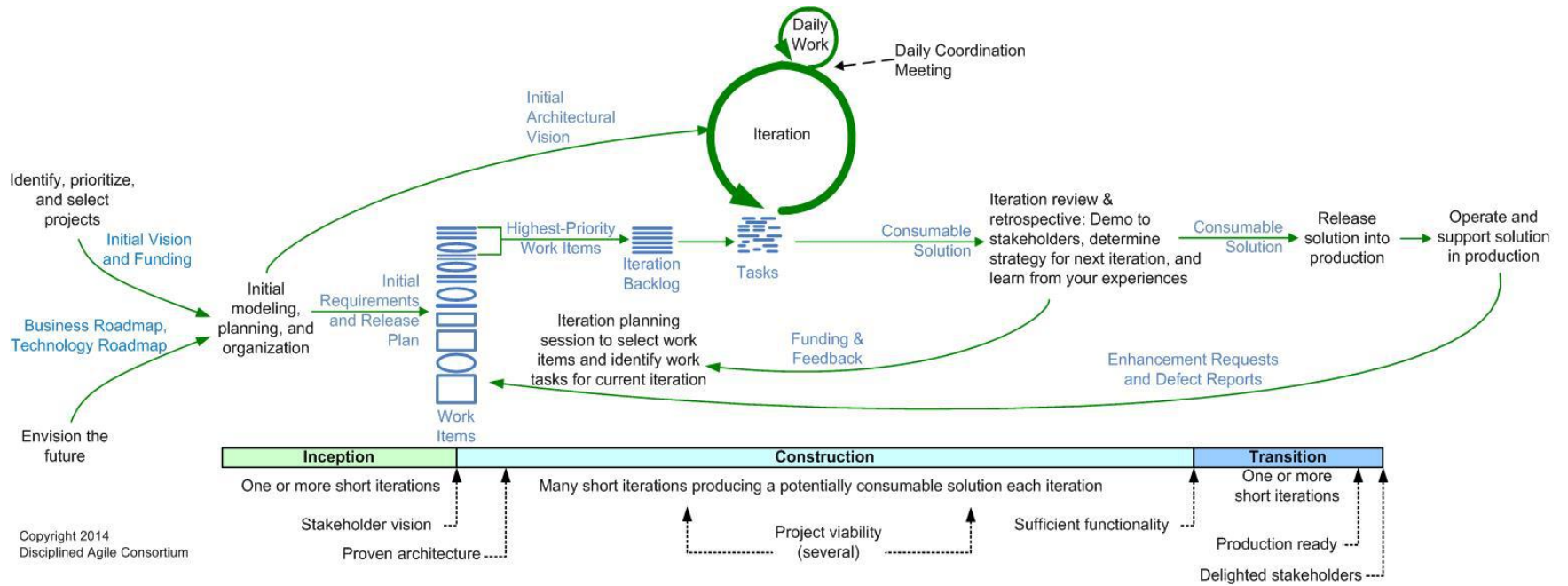
# LeSS<sup>7</sup>

## LeSS Framework



<https://less.works/less/framework/index.html>

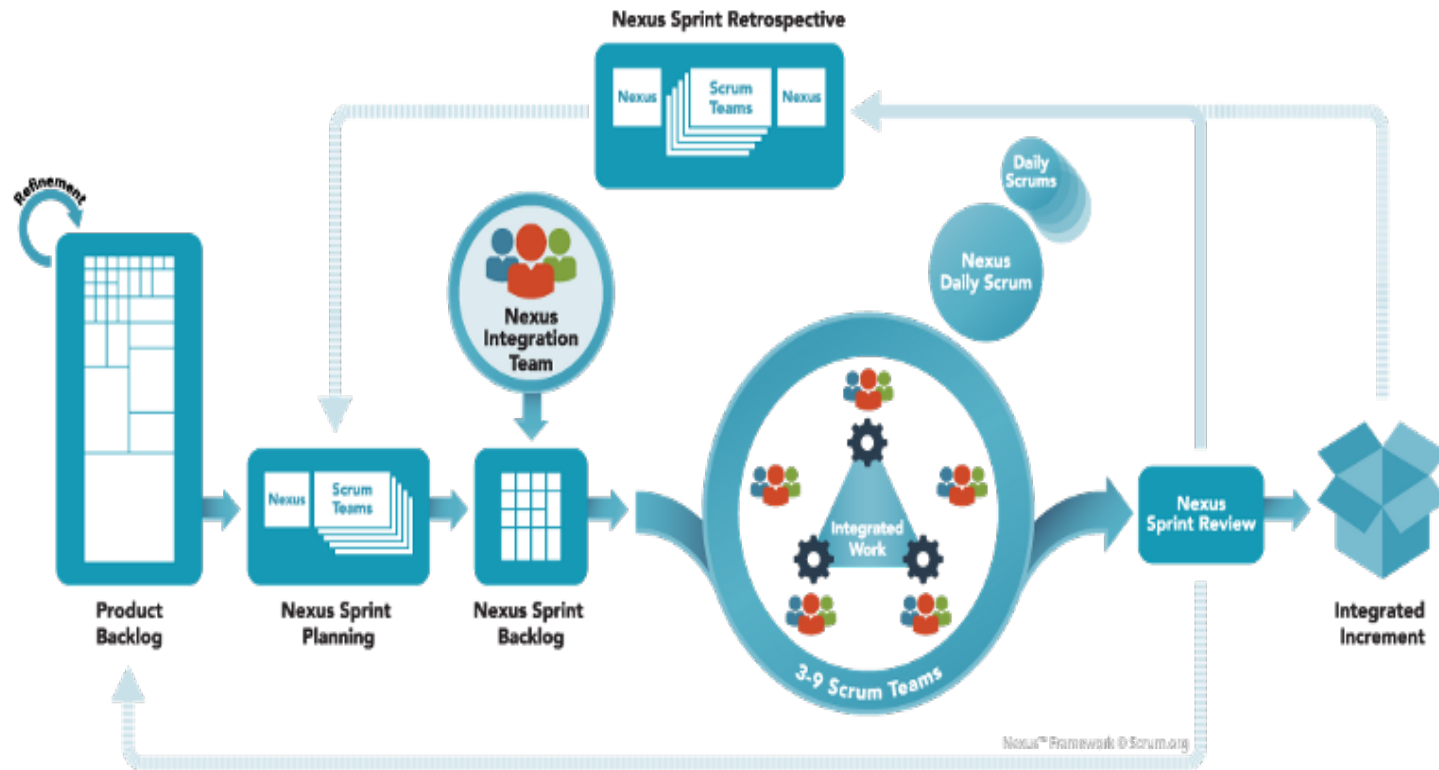
# DAD<sup>8</sup>



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Disciplined Agile Consortium

<https://i2.wp.com/www.disciplinedagiledelivery.com/wp-content/uploads/2014/05/disciplined-agile-lifecycle-basic1.jpg>

# Nexus<sup>9</sup>



<https://dzone.com/articles/what-is-the-nexus-framework-scrum-at-scale>



# Some Large Scale Agile Caveats

- It is difficult to implement Large Scale Agile if it is the organizations first use of Agile
- SAFe and DAD are more complex approaches and should only be attempted by mature organizations with larger number of teams (15+)
- Less mature/smaller numbers of teams (2-8 is best) should use LeSS or Nexux
- There are also lesser known methodologies that can also be used such as FAST Agile, Scrum at Scale, Scrum Lean in Motion (SLIM) and others that may be better suited to your organization
- Do not try for the first time on a critical or very large project
- Each Large Scale Agile methodology introduces new roles such as steering committee (SAFe), architect owner (DAD) and integration team (Nexus) that are not traditional roles in regular Agile

# Conclusions

- Agile is a powerful methodology that, if implemented correctly and effectively, can produce high quality software quicker and potentially less costly than other software development methodologies
- Use of Agile requires adherence to the framework, organizational buy-in from top to bottom, trust, and cultural change
- Agile can be used for large projects and enterprises, but there are additional challenges
- It is not a cure-all for dysfunctional organizations or projects
- It is not advisable to use on applications where safety is a concern

# Additional Sources of Information



The global and independent source  
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Software Engineering Institute | Carnegie Mellon

- These organizations can assist in establishing a metrics program or providing industry data for use until a metrics program is established:
  - International Function Point Users Group (IFPUG) ([www.ifpug.org](http://www.ifpug.org))
  - Agile Alliance (<https://www.agilealliance.org/>)
  - International Software Benchmark Standards Group ([www.isbsg.org](http://www.isbsg.org))
  - International Cost Estimating and Analysis Association (<http://www.iceaaonline.com/>)
  - Systems and Software Consortium, Inc. ([www.software.org](http://www.software.org))
  - Software Engineering Institute (SEI) ([www.sei.cmu.edu](http://www.sei.cmu.edu))

# Agile Certifications

- Scrum Alliance Certified Scrum Master (CSM), Certified Scrum Product Owner (CSPO), Certified Scrum Developer (CSD) and Certified Scrum Professional (CSP)
- Program Management Institute-Agile Certified Practitioner (PMI-ACP)
- Professional Scrum Master (PSM)
- International Consortium for Agile (ICAgile)
- Certified LeSS Practitioner
- SAFe Program Consultant (SPC4)