Dean Leffingwell’s Vision of Agile at Scale Transformation
A Brief Overview and Critique

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Scaling Agile

• Once we have established many working Agile teams in an organization: **WHATS NEXT?**
  – Get teams to work together on larger projects more efficiently ➔ **Introduce Lean**
  – Make the Organization a more friendly environment for Agile Teams ➔ **Servant Leadership**
  – Re-engineer the organization to be Agile at its own higher level of organization ➔ **Scale Agile**
Here we are concentrating on one example of an Agile Scaling Framework

Craig Larman and Bas Vodde in *Scaling Lean & Agile Development: Thinking and Organizational Tools for Large-Scale Scrum* say, ‘DON’T SCALE’

**On to our key recommendation:** After working for some years in the domains of large, multisite, and offshore development, we have distilled our experience and advice down to the following: Don’t do it.

But if you must, they offer some suggestions.

Since projects are getting bigger, more complex and more multi-faceted all the time, it is difficult for Companies to not scale.

Since market pressures are pushing for quicker delivery to market, Companies are forced by the competition to become more Agile.

But, Agile is at odds with traditional large scale development practices, so what do we do on large projects?

And, what do we do across the whole company to support Agile?

Ries, Eric: *The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses*
Cobb, Charles: *Managed Agile Development*
How is Scaled Agile defined by Leffingwell?

• Via *Scaled Agile Framework* (SAFe) Big Picture on Web [http://scaledagileframework.com/](http://scaledagileframework.com/)

• Explained by book

  **Agile Software Requirements** (2011)

  This book as Leffingwell acknowledges is not really about requirements but is an agile at scale model improving on *Scaling Software Agility* (2009)

• Backed up by SAFe Program Consultant Certification [http://scaledagileacademy.com](http://scaledagileacademy.com)
The Basis of the Scaled Agile Framework

• Overview: The Big Picture
• Agile Requirements for the Team
• Agile Requirements for the Program
• Agile Requirements for the Portfolio
The inner workings of the Scaled Agile Framework

Major Themes:

• Economics
• Queues
• Variability
• Batch Size
• WIP Constraints
• Cadence, Synchronization and Flow Control
• Fast Feedback
• Decentralized Control
# SAFe Big Picture

## Narrative Levels

<table>
<thead>
<tr>
<th>Portfolio</th>
<th>Theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scrum Team with Backlog</td>
<td>Epic</td>
</tr>
<tr>
<td>Architecture Team</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Program</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scrum Team with Backlog</td>
<td></td>
</tr>
<tr>
<td>Release Train planning and supervision</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Teams</th>
<th>Story</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agile Production Scrum Teams with Backlogs</td>
<td></td>
</tr>
</tbody>
</table>
Narrative Entity Relation Diagram

Summary – The Full Lean and Scalable Requirements Model

In summary, the full lean and scalable requirements model for the agile enterprise appears below.

Figure 20-Full enterprise requirements model

A fully elaborated model for the agile enterprise

5/11/09 A Lean and Scalable Requirements Model for Agile Enterprises - Leffingwell & Aalto
Who and what on client side is targeted to be changed?

• Team Level normal scrum teams assumed to be in place

• Reorganize Product Management into Product Owners
  – Product Management has own backlog of Features

• Reorganized Portfolio Managers into a scrum team with own backlog of Themes and Epics
  – Organize Architectural Team to produce Technology improvement and infrastructure Epics
Key Issues in Change

• Need to deliver Epics and Features in a timely manner so teams working on stories can maintain cadence
• Need to provide an Agile friendly organizational environment to support teams
• Need to make all levels of R&D transparent and Lean
What in a nutshell does the Agile Organization look like after the transformation is complete?

- Scrum teams with their own backlog at all three levels of abstraction
- Release Planning is functioning with synchronization between teams on large projects
- Whole organization has sustained cadence
- Whole organization applies Reinertsen’s Flow Principles
- Common vocabulary and Vision of the organizations functioning
What are the key steps of the transformation process?

• To my knowledge Leffingwell does not provide guidance on how to achieve the utopian vision of the Big Picture of the Scaled Agile Framework
• Recently an Implementation Strategy has been added See http://scaledagileframework.com/implementing/
• But understanding the picture we can hypothesize some steps
Figure 1 describes this strategy in summary form. Each of the numbered items in this strategy is described in the paragraphs below, along with links to those who can help.

**Scaled Agile Framework Implementation Strategy**

**LEARN**

1. **TRAIN**
   - LEAN THINKING MANAGER-TEACHERS
   - SPCs
   - MENTOR

2. **SCALE**
   - TRAINEE TRAINERS
   - SPCs
   - TRAIN AND CERTIFY

3. **ENABLE**
   - Agile Program Execution
   - Agile Architecture
   - Agile Program Portfolio
   - Lean Thinking Leaders
   - Lean | Agile Culture
   - Endemic code quality

4. **LEAD**
   - LEAN THINKING MANAGER-TEACHERS
   - SPCs
   - LEAN THOUGHT LEADERS

5. **IMPLEMENT**
   - CUSTOM SAFe SCALED AGILE PROCESS
   - CONSULTING, COACHING, TRAINING, TOOLING

**Guidance and Governance**

- **Business Results**
  - Engagement
  - Time to Impact
  - Productivity
  - Quality
- **Performance**
  - +10% Engagement
  - +20-50% Time to Impact
  - +20-50% Productivity
  - +30-50% Quality

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What are the hypothetical key steps of the transformation process?

- Alignment on Agile at Scale Big Picture
- Stabilize functioning of the Agile development production teams
- Re-organize Product Management into scrum team & organize product managers into Product Management sub-teams
- Establish Product Mgmt. backlog of Features
- Provide Features at rate necessary to sustain cadence of Production Teams
- Establish Release Planning discipline on larger programs
- Coordinate work of product owners on large teams
- Create Scrum of Scrums as necessary on large projects to coordinate between Scrum Masters
- Establish program wide cadence with synchronization
What are the hypothetical key steps of the transformation process?

- Re-organize Portfolio Management into scrum team
- Establish a yearly planning cadence with themes
- Establish Portfolio Management backlog of Epics based on Themes
- Establish Architectural oversight team that produces Technical Epics
- Provide Epics at rate necessary to sustain cadence
- Coordinate among programs within the organization
- Maintain and Improve Lean Agile at Scale organization functioning based on 2nd Generation Lean principles
Most Important Elements?

- Common vision of what an Agile at Scale transformation means and vision of agile utopia for whole R&D organization
- Common vocabulary for agile concepts
- Bringing Architecture, Requirements, longer term Planning back into Agile Parlance
- Organization around release planning to make large programs work coordinating agile teams
- Non-conflict with Major Agile Team processes and practices
What is missing?

• The “SAFe Big Picture” is just what it implies: an overarching vision, but lacks many practical fundamentals necessary to make it work in practice
• There is no Process model behind the big picture to make sure the parts actually work together and set detailed expectations
• There is no Practice definition for teams to coordinate internally & externally on Technical Issues
• Framework does not actually address the Reinertsen Flow Principles directly, but they remain behind the scenes and are paid lip service to but are not directly visible in the framework
What is missing?

• Portfolio level is very sketchy and needs more definition than is provided
• No actual guidance on how to make the organizational transformation only the end state is defined
• Book is silent on many issues that are important in practice, so that there are many interpretations of what it means which become points of contention
• Technology to implement backlogs is not addressed but Rally tool is recommended.
What is missing?

- People focus on backlogs but do not read the whole book and backlogs are not well defined enough, thus, how to structure them in practice becomes a point of contention.

- The book is, in effect, the tip of an iceberg of Agile Transformation and most of what needs to be done is actually hidden behind the Façade of the Big Picture.
Lessons to be Considered

- Compare Leffingwell Picture with Ivar Jacobson’s work on practices and you will see that there is a large gap between the abstractions of Leffingwell and practice level help given by Ivar Jacobson and SEMAT. However, Jacobson’s EssWork is too process-like and does not actually change the process abstractions enough, so there is a gap that is not filled on both sides.
Practices need to be considered as an alternative to process heavy governance

- The Kernel Idea Explained
- Using the Kernel to run an Iteration
- Using the Kernel to run a Software Endeavor
- Scaling Development with the Kernel
- How the Kernel Changes the Way you work with Methods
- What is really new here?
- Epilogue
Lessons to be Considered

• Compare Leffingwell with CMMI and you see that much of what he is talking about is the same sort of thing, just in a different terminology and style, however his model is not as complete as the CMMI and is really addressed most directly at Release Coordination and Synchronization and management, which is the problem that firms are facing as they try to scale up Agile teams on larger projects.
There is no reason that with alternative practices that Agile Teams cannot use CMMI for development. The current version of the CMMI includes agile guidance.

**Agile at Scale related processes**
- Organizational Process Definition
- Organizational Process Focus
- Organizational Performance Management
- Organizational Process Performance
- Organizational Training
- Product Integration
- Supplier Agreement Management
- Process and Product Quality Assurance

**Both Agile at Scale and Team Level**
- Integrated Project Management
- Causal Analysis and Resolution
- Decision Analysis and Resolution
- Measurement and Analysis
- Project Planning
- Project Monitoring and Control
- Quantitative Project Management
- Risk Management
- Requirements Development
- Requirements Management
- Validation
- Verification

**Agile Team related processes**
- Configuration Management
- Technical Solution
Lessons to be Considered

• Compare Leffingwell with other books on Agile at Scale and you see that his approach is the easiest to digest and the SAFe big picture is very effective as a communication tool among change agents and those participating in the change
Lessons to be Considered

• Leffingwell seems to have caught the imagination of many organizations and is becoming the Agile at Scale approach of choice mainly because it does not conflict with established Agile practices and because it gives a simple picture of the end state that would appear to produce an Agile organization as a whole out of scattered Agile teams, especially for large projects where teams need to synchronize and coordinate to produce a common product.
Opportunities for Improvement

• Whatever approach one takes toward Agile at Scale should remain complementary with the Leffingwell approach because it is likely to be the market leader for some time to come.

• There is room to provide missing elements not covered by Leffingwell’s approach, which would ease transition to Agile at Scale, i.e. provide the “substance” behind the façade of the SAFe Big Picture that is actually needed for large organizations to make the transition.
New Approach toward Agile at Scale Model Building

- Provide a rigorous Agile Theory based on Special Systems Theory
  - See precursor at [http://flowproces.info](http://flowproces.info)
  - Agile Theory manuscript exists
- Provide a rigorous Foundation for Agile Teaming to underpin High Performance Teams
  - The Foundations of Agile Teaming manuscript exists
- Explain Agile and Lean concepts based on Theory including Scrum essentials
  - Lean Agile Systems Engineering manuscript exists
- Explain Agile at Scale Transformation based on Meta-systems Theory rather than in terms of Systems
  - Lean Agile Scaling manuscript exists
- Provide a more robust model of Agile at Scale than the SAFe Big Picture in order to enhance it and to mitigate risks of adoption
  - Emergent Agile at Scale Adaptation Approach at [http://kentpalmer.name](http://kentpalmer.name)
Emergent Agile at Scale Adaptation
MANIFESTO
Values

PRINCIPLES

ReactionFlow
Agile & Lean
Architectural
Management

Emergent Plan

ALL NECESSARY KINDS OF WORK

TEACHING MODULES

CONSTRAINTS

SCALING DIMENSIONS
Tailoring Space

CRAFT

JOB
Opportunities for Improvement

• There is no training in Agile that is appropriate for Aerospace customers who are locked into Standards constraints and so this seems to be an unaddressed market

• Leffingwell is software specific and thus a model that is not software specific would be a good thing to try to produce to smooth the way for the spread of Agile and Lean to other industries
Opportunities for Improvement

• Despite having an entity relation diagram of the various narrative items (Theme, Epic, Feature, Story) the coordination of backlogs is not well defined in Leffingwell and this is a large point of confusion that needs clarification for his approach to succeed and thus this is a place where his approach could be improved significantly. See Roman Pichler’s idea of the multidimensional backlog as one source of improvement.
Opportunities for Improvement

• The steps for a large organization to engage in Agile at Scale Transformation that would mitigate its large risks does not seem to have been developed by Leffingwell as yet, and that is another area where there could be significant contributions
Summary

• The Leffingwell ‘SAFe Big Picture’ (with book and website) is very effective in giving a vision of what Agile at Scale transformation means for an organization

• But without a transformation guideline it may tend to produce chaos when different parts of the organization interpret and then implement it differently
Summary

• This is why there are Certified Consultants who are meant to address in person the gaps in the SAFe Big Picture as applied to specific organizations.

• The present Leffingwell approach needs a roadmap for transformation that provides guidance on organizational change, process, practice, and technological aspects not covered in his approach.
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Kent Palmer is a Real-time Software Engineer, and Systems Engineer. He has a Ph.D. in Sociology and Philosophy of Science from the London School of Economics with a dissertation titled _The Structure of Theoretical Systems in Relation to Emergence_. He has worked in Aerospace Industry for 30 years recently transitioning to Agile at Scale consulting in commercial firms. He also has a Ph.D. in Systems Engineering with a dissertation titled _Emergent Design_. His CV and several monographs related to Special Systems theory are available at http://works.bepress.com/kent_palmer. His homepage for various works on Systems Theory, Systems Engineering, Sociological Theory and other subjects is at http://archonic.net. His most recent dissertation is at http://about.me/emergentdesign. See also http://scaleagile.com, http://agiletheory.com, and http://onticity.com. His resume and recent papers are at http://kentpalmer.name.