Lean & Agile Enterprise Frameworks

Using SAFe 4.5 to Manage U.S. Gov't Agencies, Portfolios & Acquisitions

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Author Background

□ Gov't contractor with 35+ years of IT experience □ B.S. Comp. Sci., M.S. Soft. Eng., & D.M. Info. Sys. □ Large gov't projects in U.S., Far/Mid-East, & Europe



→ Career systems & software engineering methodologist
 → Lean-Agile, Six Sigma, CMMI, ISO 9001, DoD 5000
 → NASA, USAF, Navy, Army, DISA, & DARPA projects
 → Published seven books & numerous journal articles
 → Intn'l keynote speaker, 250 talks to 97,600+ people
 → Specializes in metrics, models, & cost engineering
 → Cloud Computing, SOA, Web Services, FOSS, etc.
 → Professor at 7 Washington, DC-area universities

Strategy vs. Tactics — Sun Tzu

Strategy without tactics is the slowest route to victory. Tactics without strategy is the noise before defeat.

- Sun Tzu

Definition of PORTFOLIO MANAGEMENT

Portfolio. Subportfolio, program, project, operations
 Portfolio Mgt. Manage these to achieve strategic obj.
 Objectives. Includes efficiency, effectiveness, & value



Skrabak, J. L. (2013). The standard for portfolio management (Third Edition). Newtown Square: PA: Project Management Institute.

Lean & Agile FRAMEWORK?

- □ **Frame-work** (frām'wûrk') A support structure, skeletal enclosure, or scaffolding platform; <u>Hypothetical model</u>
 - A multi-tiered framework for using lean & agile methods at the enterprise, portfolio, program, & project levels
 - An approach embracing values and principles of lean thinking, product development flow, & agile methods
 - Adaptable framework for collaboration, teamwork, iterative development, & responding to change
 - Tools for agile scaling, rigorous and disciplined planning & architecture, and a sharp focus on product quality
- Maximizes BUSINESS VALUE of organizations, programs, & projects with lean-agile values, principles, & practices

Leffingwell, D. (2011). Agile software requirements: Lean requirements practices for teams, programs, and the enterprise. Boston, MA: Pearson Education.

What are Lean Values?

Time-centric way to compete on speed & time
 Customer-centric model to optimize cost & quality
 Pull-centric alternative to wasteful mass production



Agile GOVERNMENT Timeline



Mayner, S. (2018). *Growing adoption of SAFe in government*. Boulder, CO: Scaled Agile Academy. Viechnicki, P., & Kelkar, M. (2017). *Agile by the numbers: A data analysis of agile development in the US federal government*. Washington, DC: Deloitte, LLC.

Agile GOVERNMENT Adoption



Viechnicki, P., & Kelkar, M. (2017). Agile by the numbers: A data analysis of agile development in the US federal government. Washington, DC: Deloitte, LLC.

Models of AGILE FRAMEWORKS

Numerous lean-agile enterprise frameworks emerging
 eScrum & LeSS were 1st (but SAFe & DaD dominate)
 SAFe is the most widely-used (with ample resources)

	Factor	eScrum	SAFe	LeSS	DaD	RAGE	SPS
(Simple	\checkmark	\checkmark	\checkmark	\checkmark	 ✓ 	\checkmark
_\	Well-Defined		\checkmark		\checkmark		\checkmark
7	Web Portal		✓			 ✓ 	
	Books	✓	✓	\checkmark	\checkmark		
_(Measurable		✓				
5	Results	✓	✓		\checkmark		
	Training & Cert		✓				
5	Consultants		✓				
	Tools		✓				
(Popularity	\checkmark	✓		\checkmark		
	International		✓	√	\checkmark		
7	Fortune 500	\checkmark	\checkmark		\checkmark		
	Government		✓			 ✓ 	
	Lean-Kanban		\checkmark	\checkmark			

SAFe GOVERNMENT Adoption



Mayner, S. (2018). Growing adoption of SAFe in government. Boulder, CO: Scaled Agile Academy.

SAFe GOVERNMENT EXAMPLES

Moving SAFe sped adoption of new system capabilities and avoided \$600 million in expenditures

Wes Haga, Chief, U.S. Air Force Research Lab, Information Directorate, U.S. Air Force, Distributed Common Ground System Program (DCGS)

SAFe at GSA enabled 100% on-time delivery, 25% less cost, 96.7% defect free, and 99.82% data migration

Elizabeth Reed, Techflow, U.S. General Services Administration (GSA), Billing and Accounts Receivable Program

IV&V Testing is completed within SAFe Sprints on the most mature Agile Release Train (ARTs) was a big win for us

Mike O'Shea, Accenture Federal Services, U.S. State Department, Bureau of Consular Affairs Program

We turned around a failing U.S. DoD Warfighter program Within 10 months using the Scaled Agile Framework (SAFe)

Scott Keenan, JLVC PM, Joint Staff, Modeling & Simulation (M&S) Program for Joint Training Exercises

Portfolio Management — Box

All models are wrong but some are useful



George E.P. Box

Scaled Agile Framework (SAFE)

Proven, public well-defined F/W for scaling Lean-Agile
 Synchronizes alignment, collaboration, and deliveries
 Quality, execution, alignment, & transparency focus



Leffingwell, D. (2017). Scaled agile framework (SAFe). Retrieved July 4, 2017 from http://www.scaledagileframework.com

PfMP vs. SAFE vs. Scrum

Scrum created to address Agile team mgt.
 SAFe created to address Agile program mgt.
 PfMp created to address Portfolio management



Leffingwell, D. (2007). Scaling software agility: Best practices for large enterprises. Boston, MA: Pearson Education.

SAFe GOLDILOCKS Zone

Traditional project management is scope-based
 Agile project management is primarily time-based
 <u>Batchsize</u>, capacity, & time key to market response



Rico, D. F. (2017). *Lean triangle: Triple constraints*. Retrieved December 17, 2017, from http://davidfrico.com/lean-triangle.pdf Sylvester, T. (2013). *Waterfall, agile, and the triple constraint*. Retrieved December 16, 2017, from http://tom-sylvester.com/lean-agile/waterfall-agile-the-triple-constraint Pound, E. S., Bell, J. H., Spearman, M. L. (2014). *Factory physics: How leaders improve performance in a post-lean six sigma world*. New York, NY: McGraw-Hill Education.

SAFe ANTI-PATTERNS

SAFe is NOT a U.S. Government Hierarchy
 SAFE is NOT a Contract Hierarchy/Bureaucracy
 <u>SAFe is DEFINITELY NOT a Waterfall Life Cycle</u>



SAFe Epic-MVP Teams

SAFe cross functional teams cut across levels
 Inc. portfolio, solution, program, & team functions
 Purpose is to shepherd epics through value streams



SAFe Cross Functional Teams

SAFe Epic-MVP teams consist of diverse personnel Teams range from Epic owners through development ☞□ Include scoping, analysis, planning, & implementation



SAFe Epic Evolution

Portfolio & program epics begin at top levels
 Epics scoped, analyzed, & split by tech. architects
 Narrow epics are built, tested, deployed, & evaluated



Leffingwell, D. (2017). Scaled agile framework (SAFe). Retrieved July 4, 2017 from http://www.scaledagileframework.com

SAFe METRICS

Late big bang integration increases WIP backlog
 Agile testing early and often reduces WIP backlog
 CI/CD/DevOps lower WIP, Cycle Time, & Lead Time





CUMULATIVE FLOW DIAGRAM



PUTTING IT ALL TOGETHER



Nightingale, C. (2015). Seven lean metrics to improve flow. Franklin, TN: LeanKit.

SAFe Benefits

Cycle time and quality are most notable improvement
 Productivity on par with Scrum at 10X above normal
 Data shows SAFe scales to teams of 1,000+ people

	Benefit	Nokia	SEI	Telstra	BMC	Trade Station	Discount Tire	Valpak	Mitchell	John Deere	Spotify	Comcast	Average
	Арр	Maps	Trading	DW	ΙΤ	Trading	Retail	Market	Insurance	Agricult.	Cable	PoS	
	Weeks	95.3	2		52				52	52		52	51
	People	520	400	75	300	100		90	300	800	150	120	286
	Teams	66	30	9	10	10		9	60	80	15	12	30
	Satis		25%	29%					15%				23%
	Costs			50%								10%	20%
	Product				2000%		25%					10%	<mark>678</mark> %
	Quality			95%					44%	50%		50%	60%
	Cycle			600%	600%				300%	50%	300%		370%
	ROI				2500%	200%							1350%
	Morale			43%					63%	10%			39%

Leffingwell, D. (2014). Scaled agile framework (SAFe) case studies. Denver, CO: Leffingwell, LLC.

Rico, D. F. (2014). Scaled agile framework (SAFe) benefits. Retrieved June 2, 2014, from http://davidfrico.com/safe-benefits.txt

SAFe Roadmap—Top-Down (Big Bang)

Roadmap necessary for successful SAFe introduction
 Traditional big-bang—*story maps & incrementalism okay* Keys are top-down commitment, training, & resources



SAFe ADOPTION

Over 200,000 SAFe professionals globally (& growing)
 Over 70% of U.S. firms have SAFe certified people
 50% prefer SAFe for scaling lean-agile principles



★ 200,000 SAFE CERTIFIED PROFESSIONALS IN 2018

★ 50% According to New CPRIME SURVEY

Irani, Z. (2017). Scaling agile report: The first annual edition. Foster City, CA: CPrime, Inc. Leffingwell, D. (2017). Foundations of the scaled agile framework (SAFe). Retrieved March 1, 2017 from http://www.scaledagileframework.com

SAFe SUMMARY

Ŧ	→ SAFe is overarching framework for Lean-Agile thinking
F	→ SAFe like US Digital Service Playbook/Agile Manifesto
F	→ SAFe used by over 200,000 people in 70% of IT firms
F	→ SAFe is preferred approach for U.S. gov't IT contracts
F	→ SAFe supports CI, CD, DevOps, AppSec, UX, and DoE
	→ SAFe is extremely well-defined in books and Internet
	→ SAFe has ample training, certification, consulting, etc.
	→ SAFe leads to increased productivity and quality
	→ SAFe supported by dozens of automated ALM tools
Ŧ	→ SAFe based on soft-skills—visualization, conversation, cooperation, collaboration, transparency, trust, etc.

Portfolio Management — Porter

The essence of strategy is choosing what not to do. Michael Porter

SAFe Resources

Guides to lean systems & software development
 Illustrates key principles, concepts, and practices
 Keys to applying lean ideas systems development



Leffingwell, D. (2007). Scaling software agility: Best practices for large enterprises. Boston, MA: Pearson Education. Leffingwell, D. (2011). Agile software requirements: Lean requirements practices for teams, programs, and the enterprise. Boston, MA: Pearson Education. Yakyma, A. (2016). The rollout: A novel about leadership and building a lean-agile enterprise with safe. Boulder, CO: Yakyma Press. Leffingwell, D. (2018). SAFe reference guide: Scaled agile framework for lean enterprises. Boston, MA: Pearson Education. Knaster, R., & Leffingwell, D. (2018). SAFe distilled: Applying the scaled agile framework for lean lean enterprises. Boston, MA: Pearson Education.

Lean-Thinking Resources

Guides to lean economics, science, and thinking
 Illustrate key principles of just-in-time supply chains
 Keys to apply lean-thinking at strategic-tactical levels



LEAN PORTFOLIO MANAGEMENT (LPM) RESOURCES

- <u>http://youtu.be/gMS_5akjEBs (video)</u>
- <u>http://kanbanize.com/kanban-resources/portfolio-kanban (whitepaper)</u>

Hopp, W. J. (2008). Supply chain science. Long Grove, IL: Waveland Press.

Hopp, W. J., & Spearman, M. L. (2008). Factory physics. Long Grove, IL: Waveland Press.

Reinertsen, D. G. (2009). The principles of product development flow: Second generation lean product development. New York, NY: Celeritas.

Pound, E. S., Bell, J. H., Spearman, M. L. (2014). Factory physics: How leaders improve performance in a post-lean six sigma world. New York, NY: McGraw-Hill Education. Schrage, M. (2014). The innovator's hypothesis: How cheap experiments are worth more than good ideas. Boston, MA: MIT Press.

Dave's Professional Capabilities



STRENGTHS – Communicating Complex Ideas • Brownbags & Webinars • Datasheets & Whitepapers • Reviews & Audits • Comparisons & Tradeoffs • Brainstorming & Ideation • Data Mining & Business Cases • Metrics & Models • Tiger Teams & Shortfuse Tasks • Strategy, Roadmaps, & Plans • Concept Frameworks & Multi-Attribute Models • Etc.



- Data mining. Metrics, benchmarks, & performance.
- Simplification. Refactoring, refinement, & streamlining.
- Assessments. Audits, reviews, appraisals, & risk analysis.
- Coaching. Diagnosing, debugging, & restarting stalled projects.
- Business cases. Cost, benefit, & return-on-investment (ROI) analysis.
- Communications. Executive summaries, white papers, & lightning talks.
- Strategy & tactics. Program, project, task, & activity scoping, charters, & plans.



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