

Research Gone *Agile*

A Case Study on Using an Enterprise Transformation Process to Enable Agility in a Research Program

Rosa R. Heckle, PhD, rheckle@MITRE.org

Paul Matthews, pmatthews@MITRE.org

October, 2017

The author's affiliation with The MITRE Corporation is provided for identification purposes only, and is not intended to convey or imply MITRE's concurrence with, or support for, the positions, opinions or viewpoints expressed by the author



A woman with short blonde hair, wearing a black long-sleeved top and a long, pleated grey skirt, is captured in a joyful dance pose with her arms outstretched. She stands in a vibrant field of yellow wildflowers. The background features majestic, snow-capped mountains under a clear blue sky. The overall scene is bright and cheerful, suggesting a sense of freedom and accomplishment.

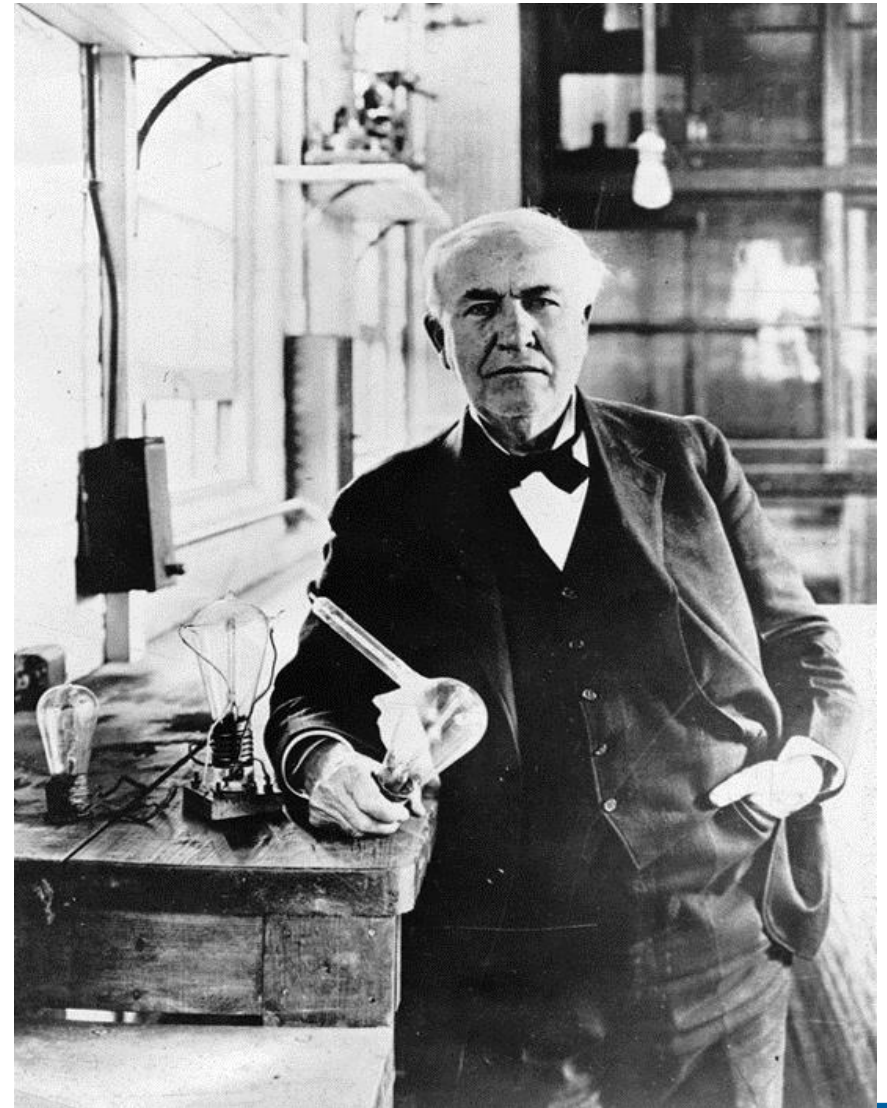
Look at All the Half-finished Projects Lying Around

But... This is Research!

“I have not failed you.

I’ve just found 10,000
ways that won’t work.”

Thomas Edison



Case Study

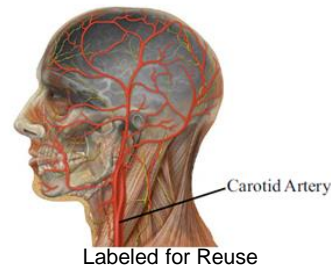
Applied Research in Data Science

- Develop new analytic capabilities
- Evaluate COTS/GOTS analytic capabilities for domain use

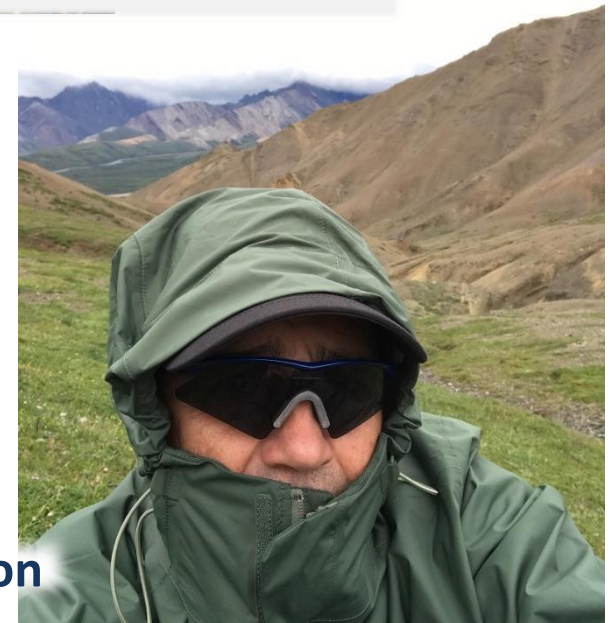


Find in-scene text

Semantic Retrieval
via Deep Learning

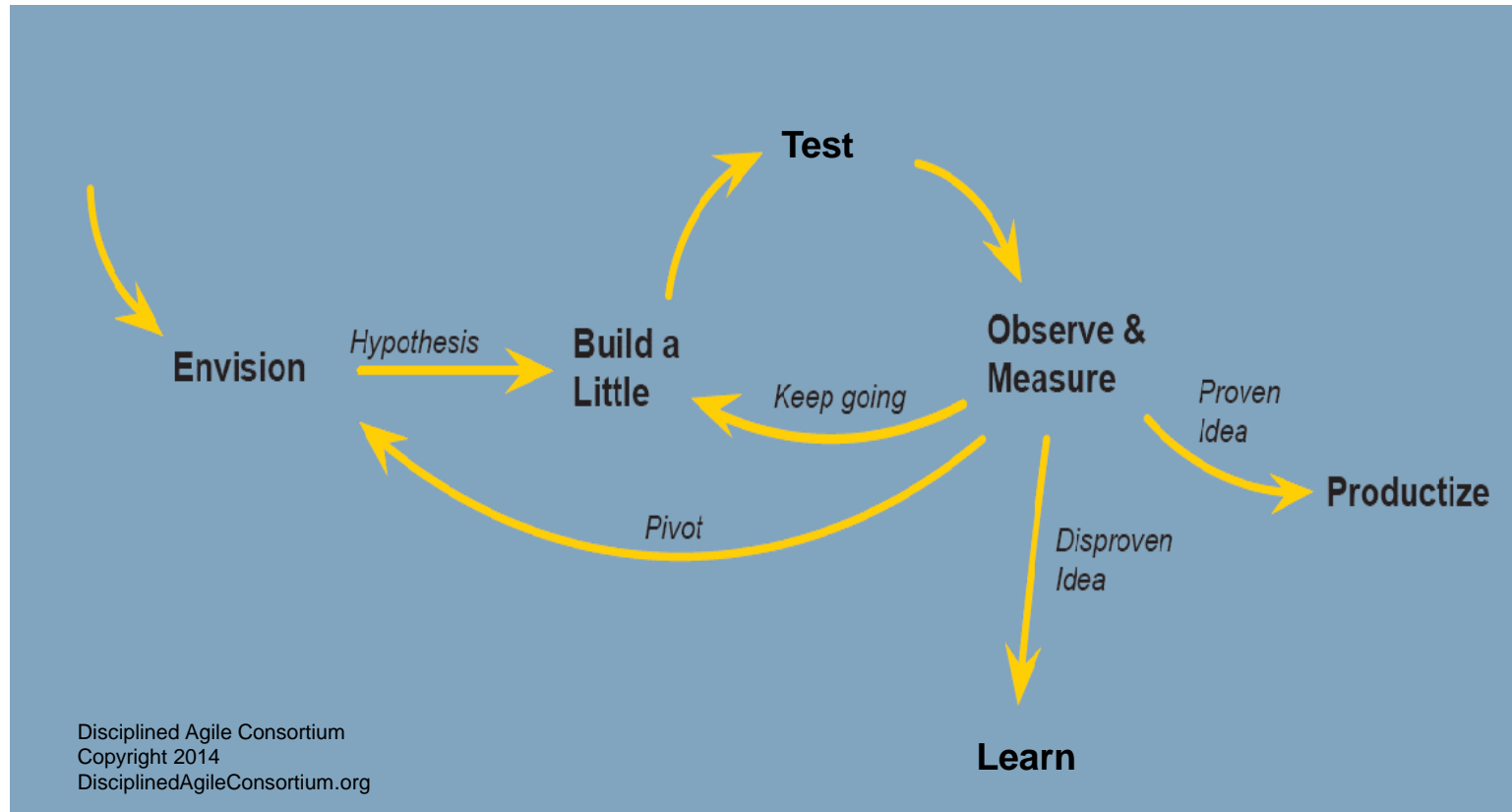


Forensic Analysis



Face Recognition

Multimedia Processing Research (MPR) Project Lifecycle

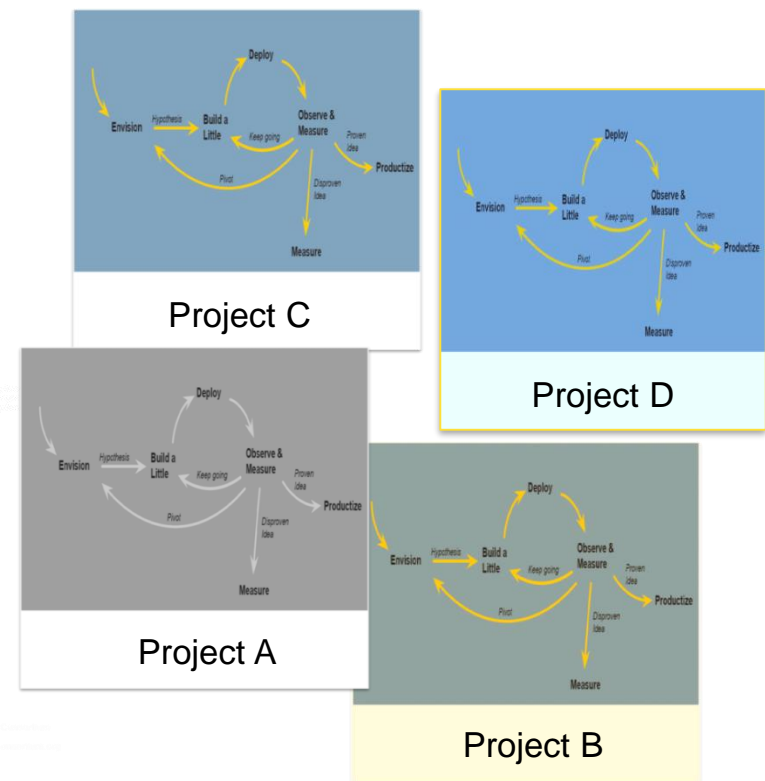


Exploratory Lifecycle

The Problem

Latency...

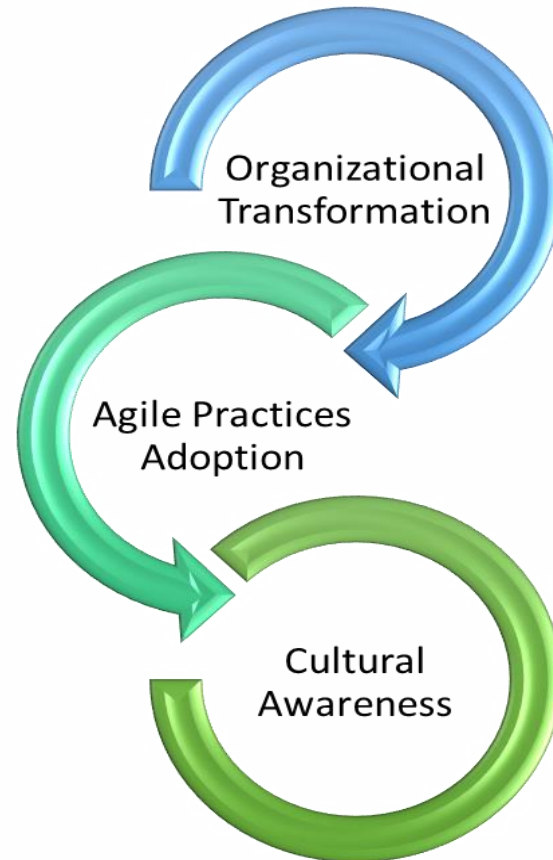
- Competing Projects
- Varied Research Interests
- Scarce Resources
- Redundancy
- Limited collaboration and synchronization among teams



Downloaded from <https://www.mit.edu>
Copyright 2014
© 2014 MITRE Corporation

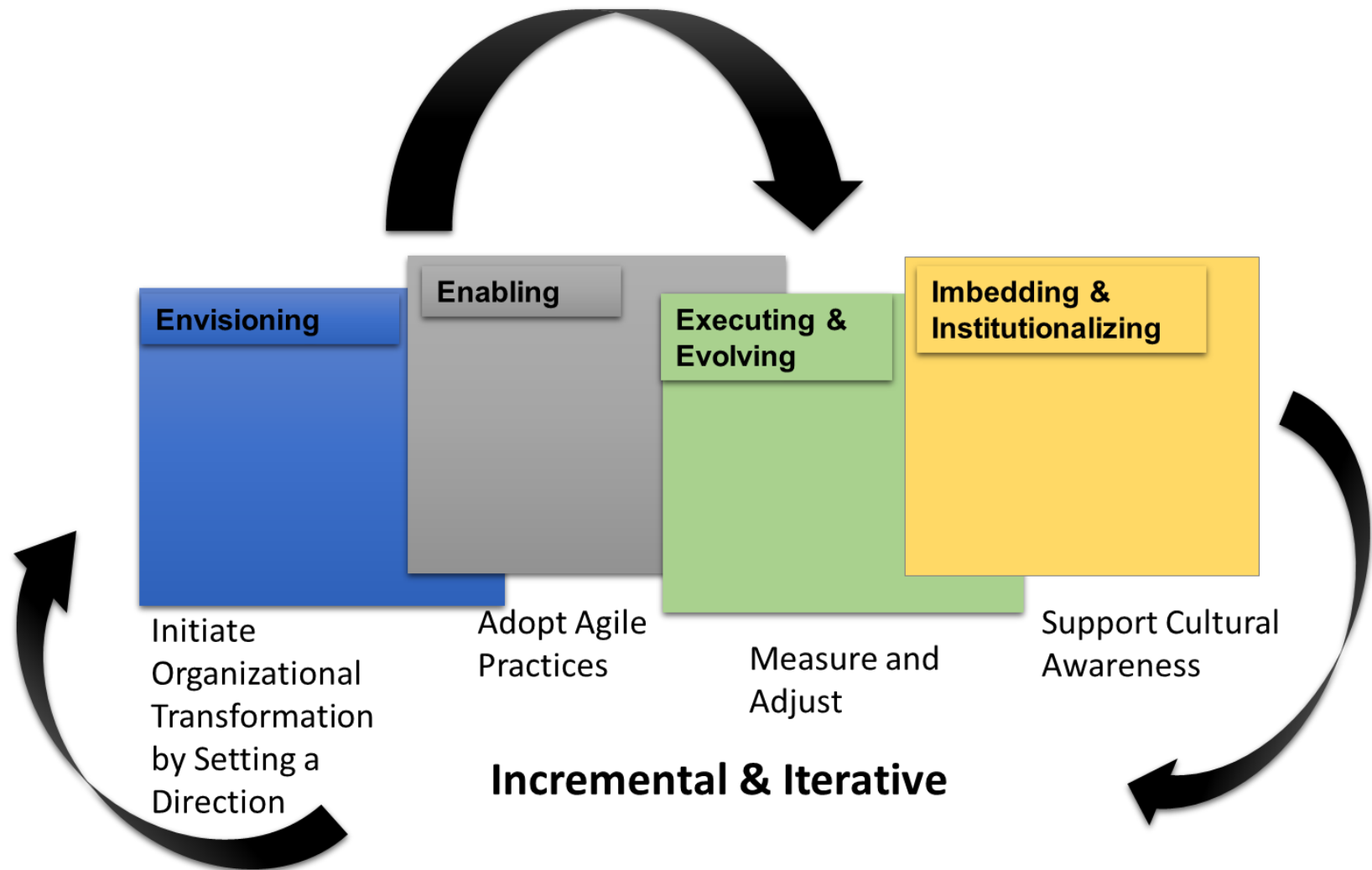
The Solution ...

**Improve Organizational Agility
Through
Organizational Transformation
&
*Adopting Agile Practices***



**3 Elements to
Attain & Sustain Agility**

Organizational Transformation Process



Develop a Program Strategy

- Environmental Scan
- Create Organizational Baseline
- Brainstorm Workshop
- Map R&D thrusts to Organizational Strategy
- Develop and Socialize

- What do we do?
- For whom and why do we do it?
- How do we make maximum impact?

Program Strategy

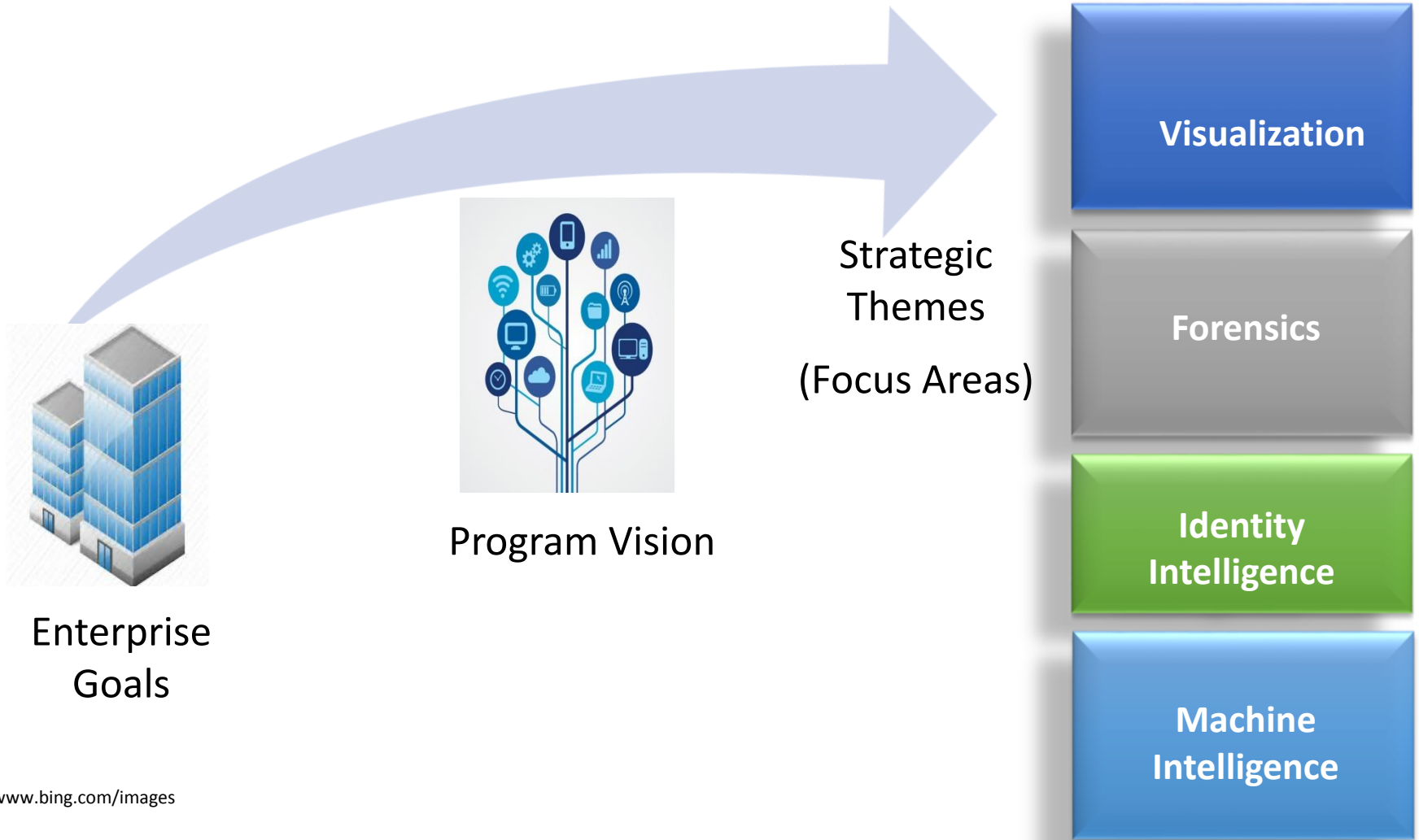
Vision:

Automated Multimedia Understanding

Mission:

The mission of the Multimedia Processing Research (MPR) Program is to conduct world-class scientific research to leverage and advance the state of the art in multimedia analysis technologies...

Identify Strategic Themes



www.bing.com/images

Set Goals for Each Focus Area

Description & Highlights

Objective / Methods

Goals

Timeline

Machine Intelligence

Team Leader: J Doe **Collaborations:**

Stakeholders:

Focus Area Descriptions

What is this research area trying to accomplish. What are they focusing on and why. What do you hope to accomplish with research in this area.

Applications of D

Image classifier/Classifier

Text Extraction

Action recognition

Current Excitement/Highlights

- Enter any current or exceptional findings
- Any accomplishments such as patents, briefings, collaborations

Goals

FY18

- What do you hope to accomplish in this coming year

What goals do you have for the following two years

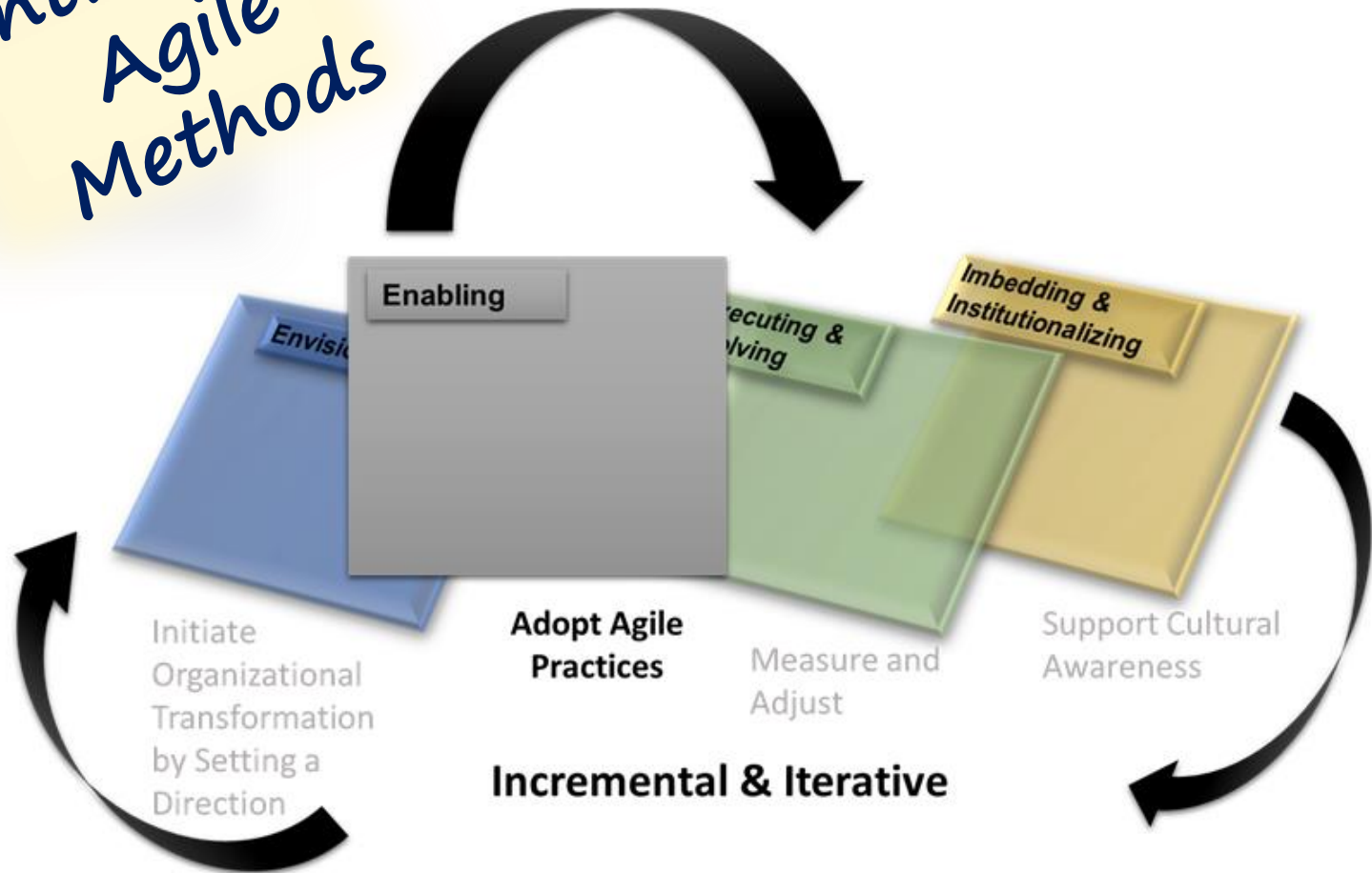
Timeline

Key Project Activities	FY18	FY19	FY20
Project Scope Object Detection	[Timeline bar]		
CRA Analysis		[Timeline bar]	
PICA Processing	[Timeline bar]		

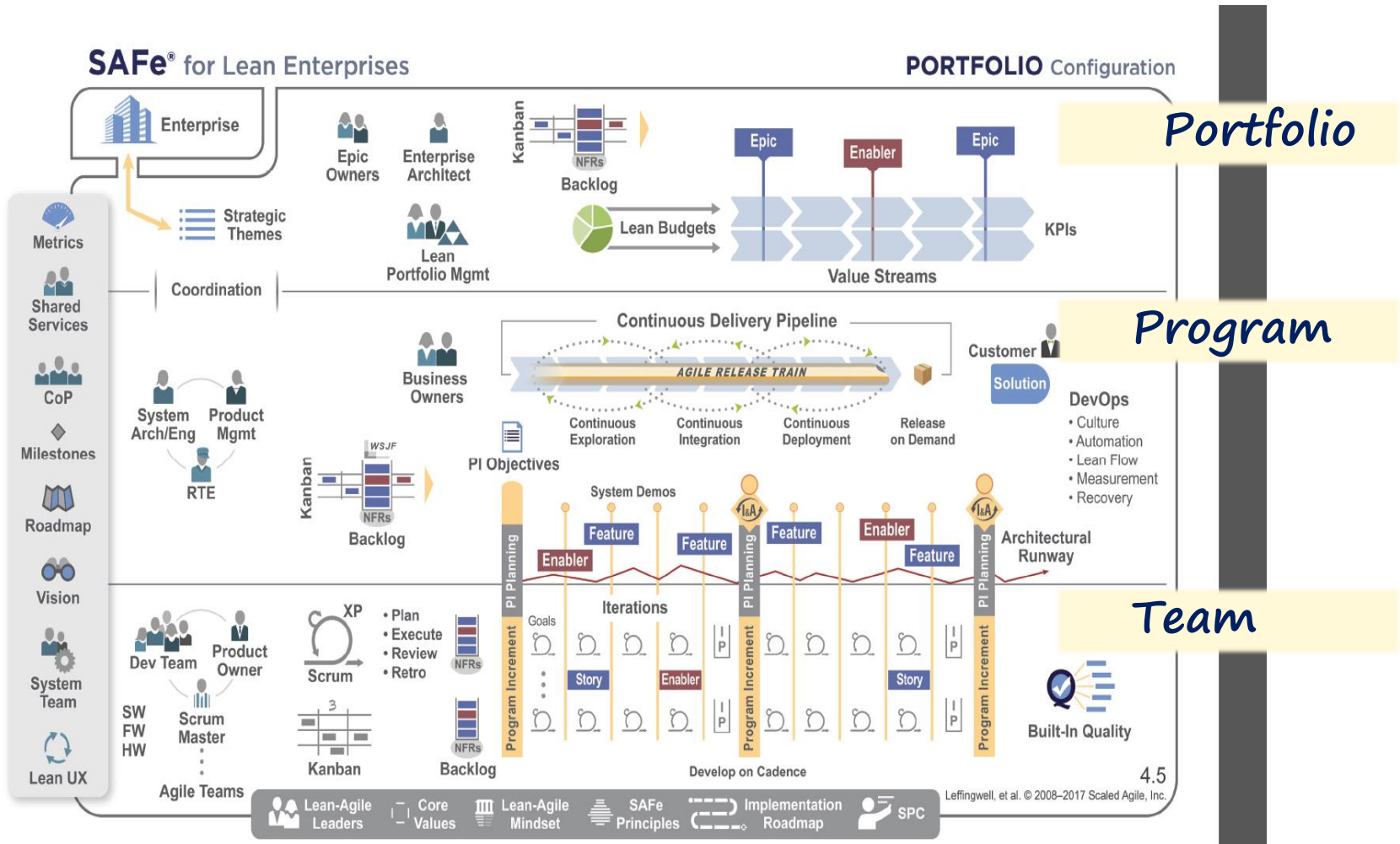
Quad Chart
Review & Synchronize Quarterly

Enabling

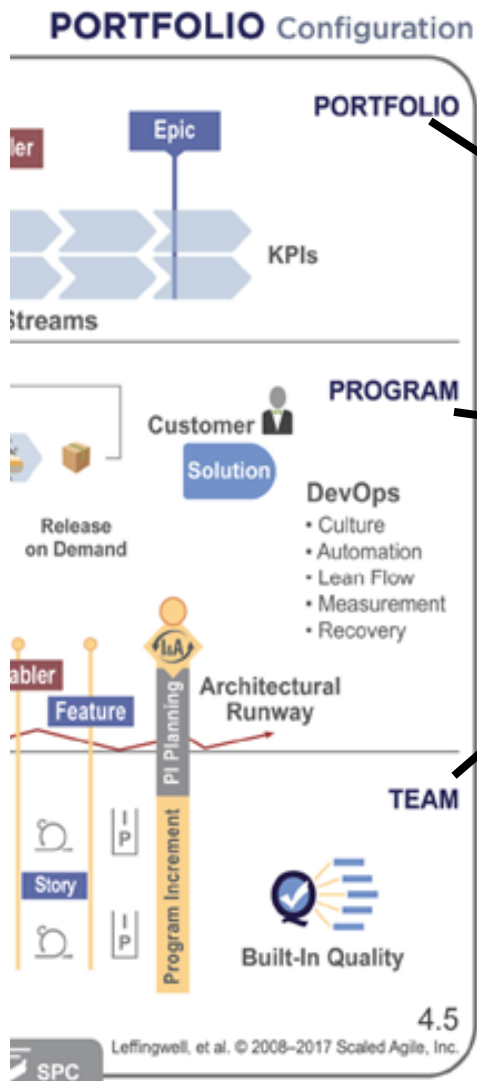
Introduce Agile Methods



SAFe Agile Framework



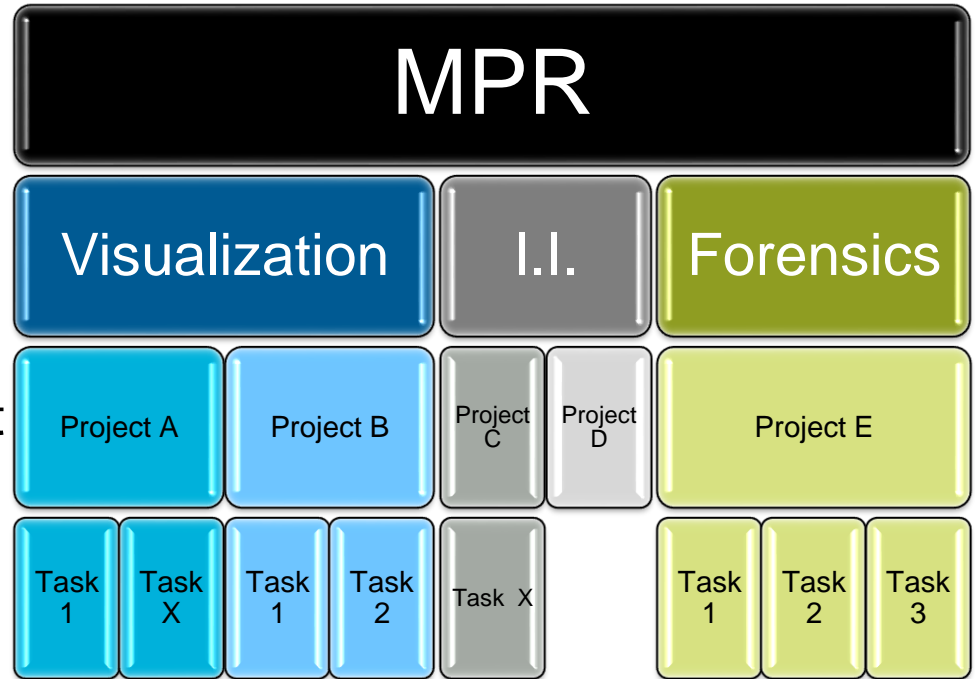
Align Organizational Structure



Focus Area

Project

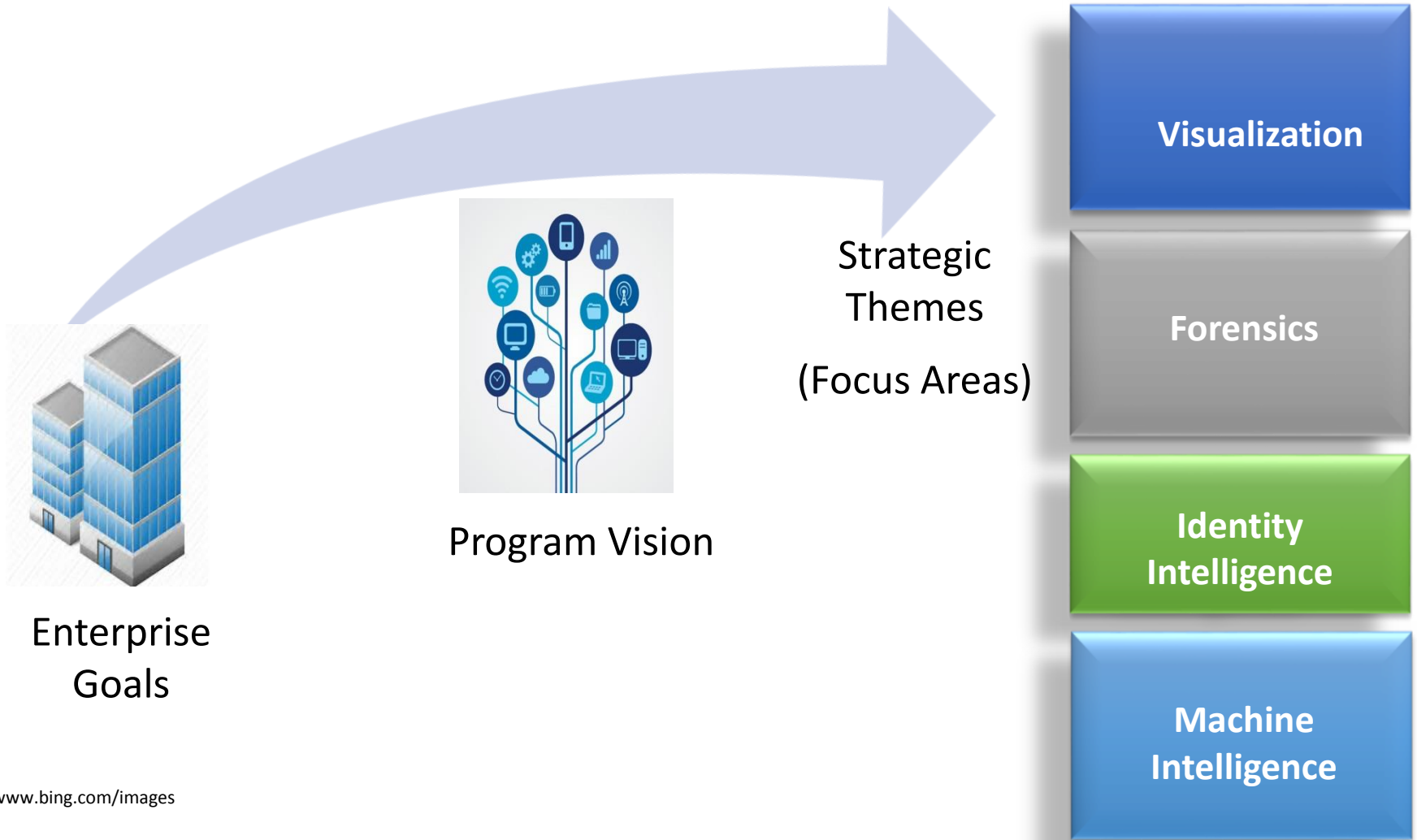
Team



Take What Fits from Scaled Agile Framework for the Enterprise (SAFe Agile)

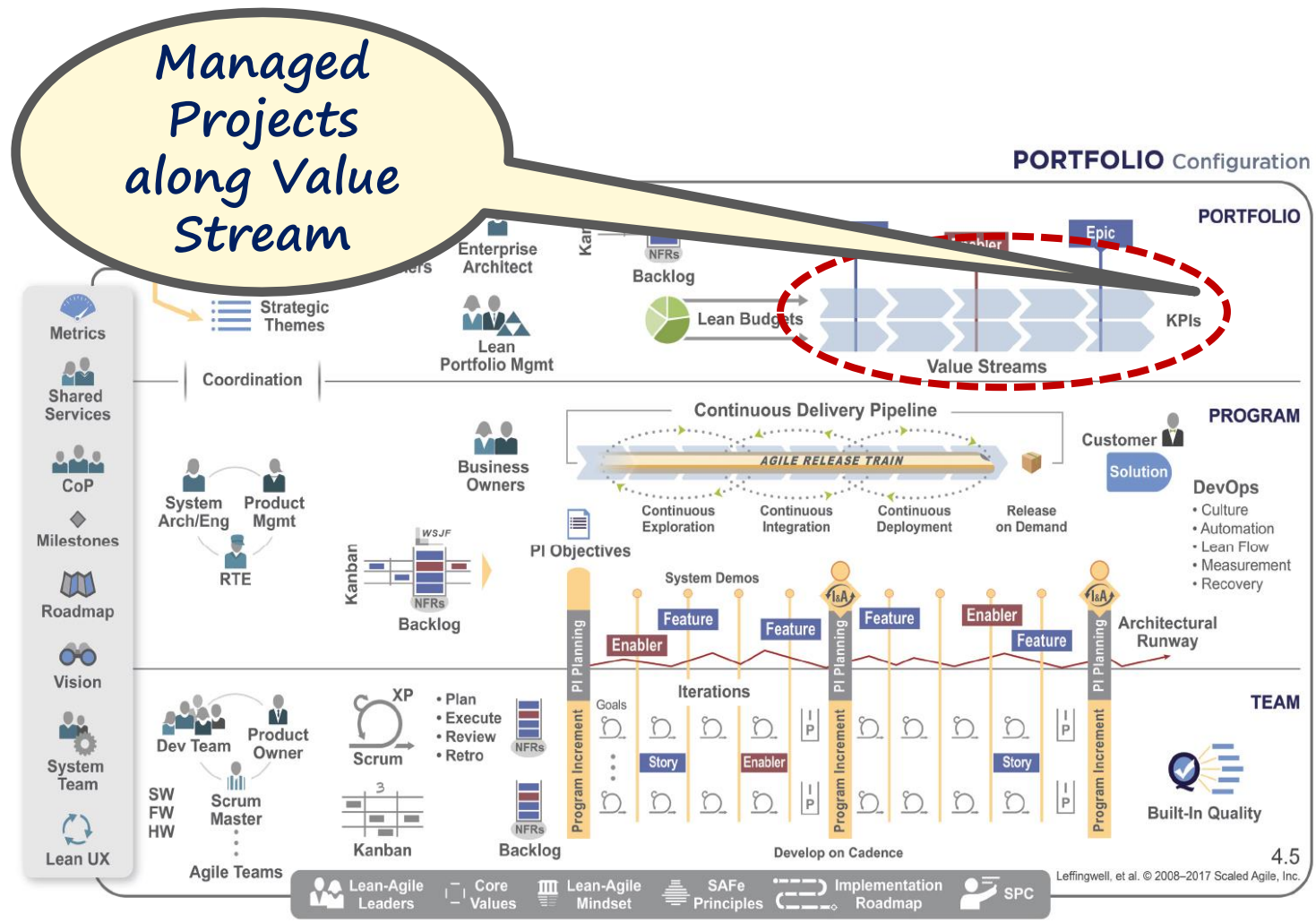


Identify Strategic Themes



www.bing.com/images

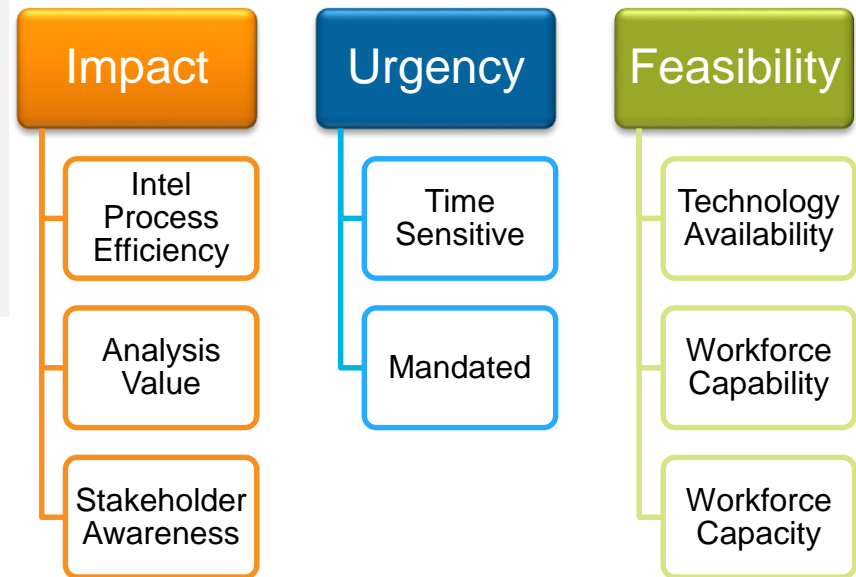
Take What Fits from SAFe Agile



Limit Work in Progress

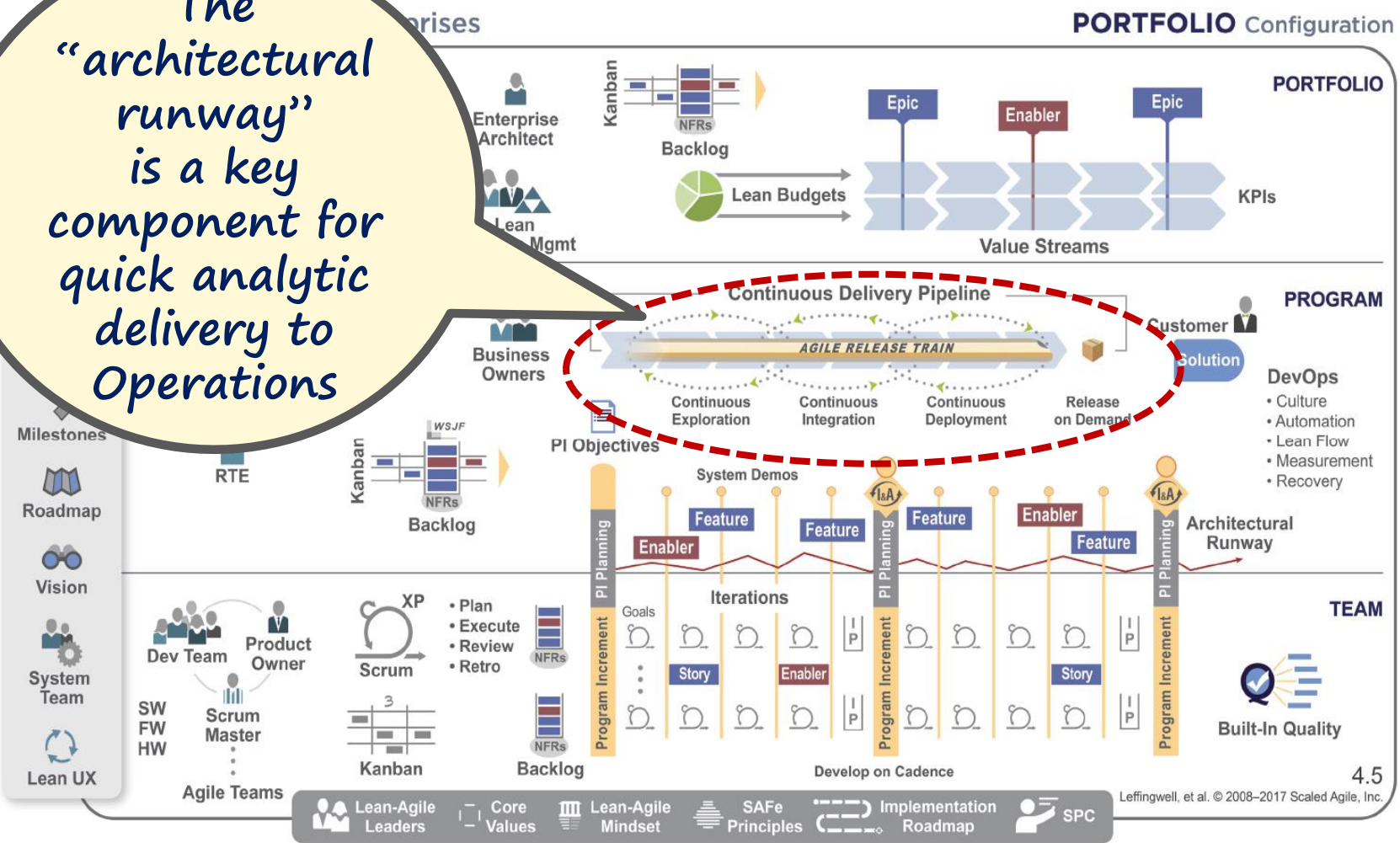
- Terminate “Pet” Projects
- Limit development timeframe to months
- Dynamically reprioritize based upon changing demands and criteria
- Balance portfolio

Set Program Priorities Using Standard Criteria

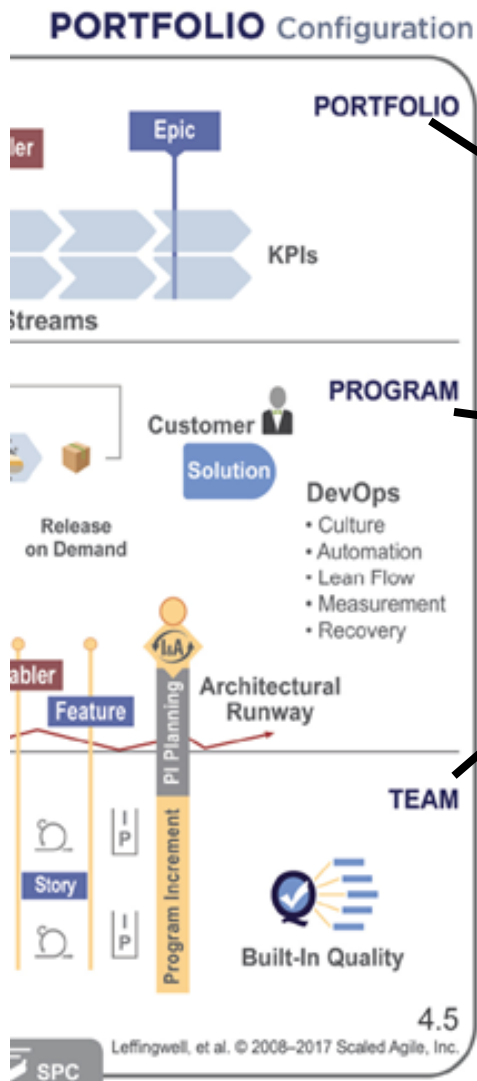


Stress Technology Planning

The "architectural runway" is a key component for quick analytic delivery to Operations



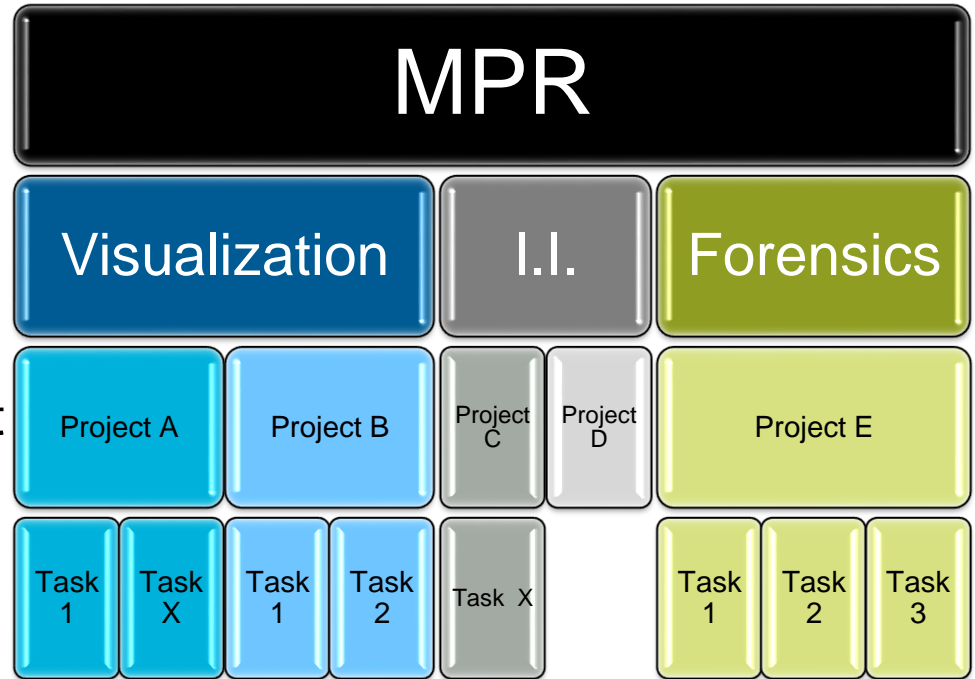
Align Organizational Structure



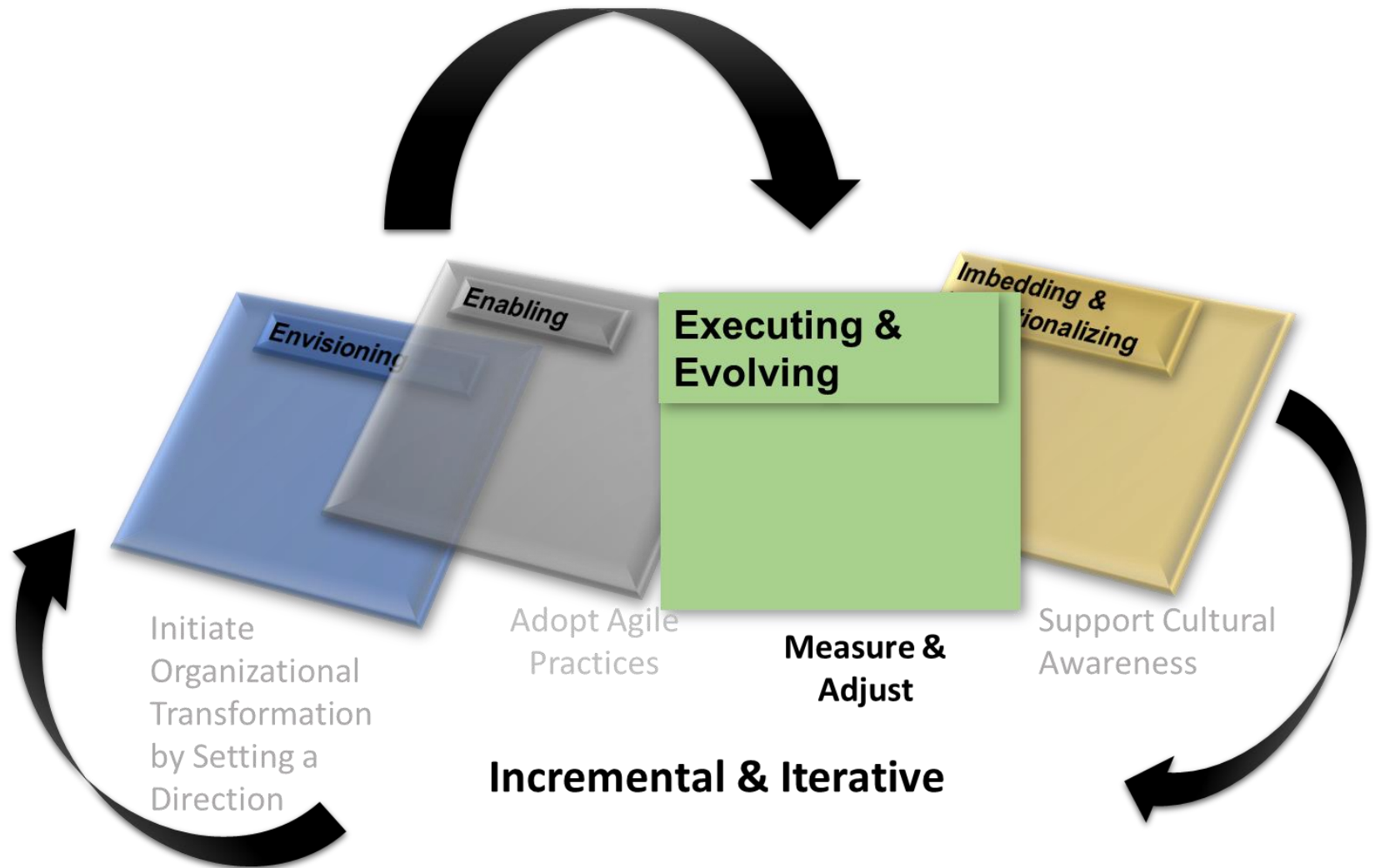
Focus Area

Project

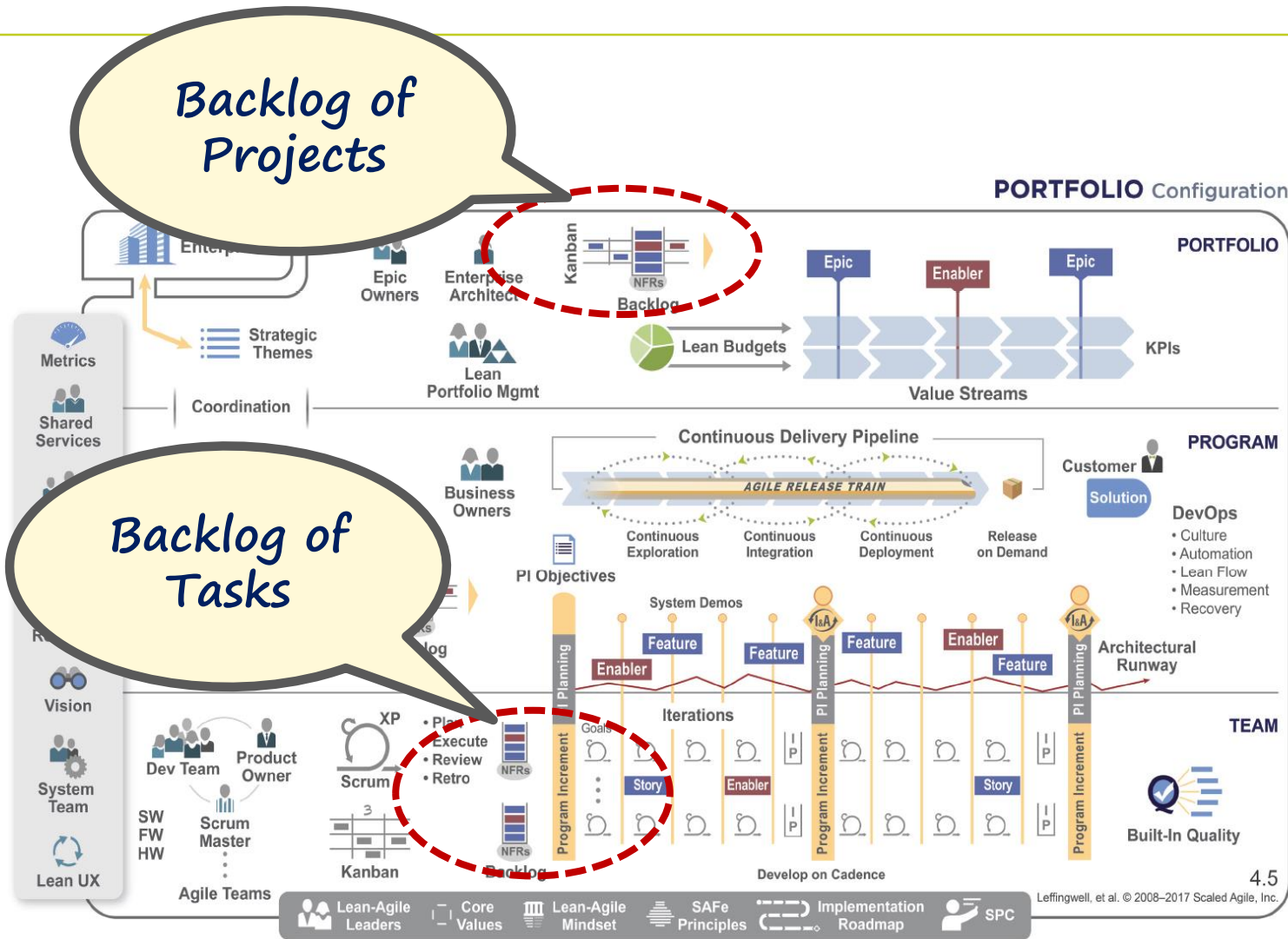
Team



Executing and Evolving

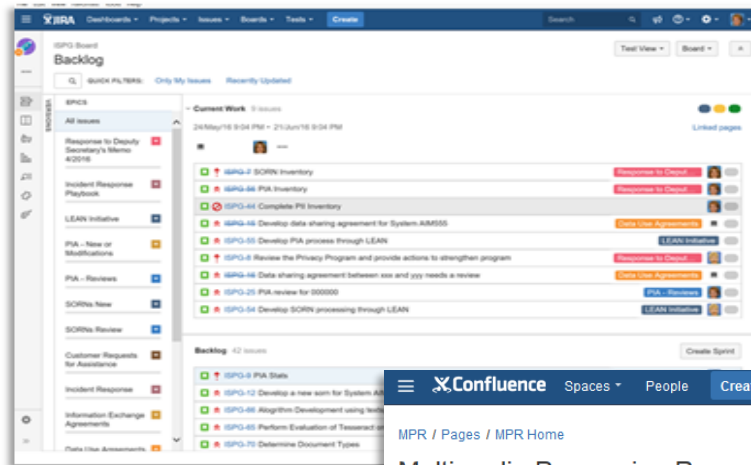


Take What Fits from SAFe Agile



Use Agile Full-Life-cycle Tools

Backlog management



Wiki communication

The image shows a screenshot of a Confluence wiki page titled 'Multimedia Processing Research (MPR) Home'. The page content includes an 'ABOUT' section, a 'VISION' section with the goal to 'Automate multimedia understanding', and a 'MISSION' section describing the division's role in conducting scientific research. A table lists focus areas and their leads.

ABOUT As part of the Research Division, MPR provides solutions that support the Organization's analysis mission through the development of advanced algorithms that automate the discovery and development of.

VISION:
Automate multimedia understanding

MISSION:
The mission of the Multimedia Processing Research (MPR) division is to conduct world-class scientific research to leverage and advance the state of the art in multimedia analysis technologies, organize the Organization's multimedia data, transform content into information, and make it universally accessible and useful.

Focus Areas	Description	Lead
VIZ	Retrieval and Visualization	J. Doe
LATTE	Lab, Architecture, Training, Test and Evaluation	S. Smith
II	Identity Intelligence	J. Dade
MI	Machine Intelligence	M. Model
FRN	Forensics	C. Jonshon

The right sidebar of the Confluence page contains a 'NAVIGATE SPACE' search bar, a 'Community' section with links to 'Publications', 'Briefings', and 'Conference Material', and a 'Resources' section with links to 'Analytic Inventory', 'Data Inventory', 'Workflows', 'Models', 'How To', and 'Libraries'.

New

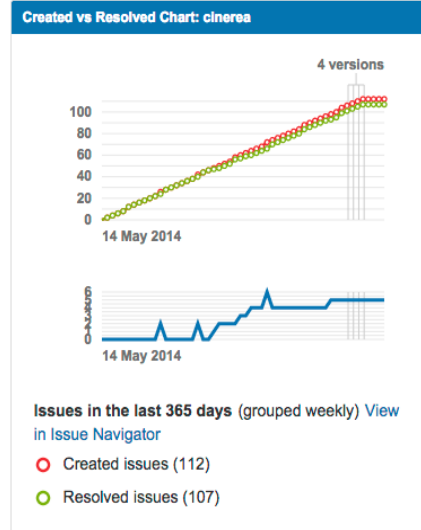
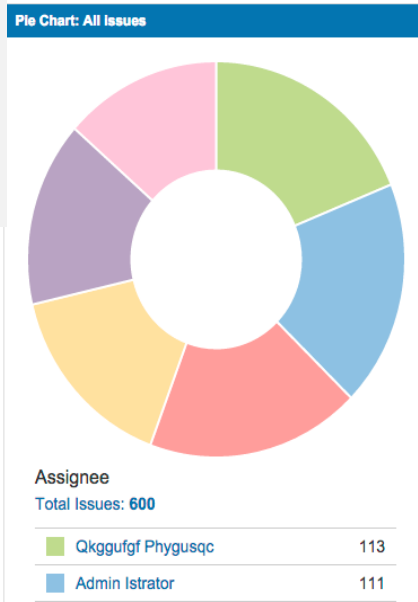
+ Add Gadget Edit Layout Tools

Using Dashboards for Decision Support and Communication

Two Dimensional Filter Statistics by Assignee

Status	Admin Istrator	Atvmlyhh Uottoson	Dzoqurfs Udbbigyh
OPEN	7	4	3
IN PROGRESS	16	14	10
REOPENED	9	11	10
RESOLVED	34	22	19
CLOSED	20	19	18
Total Unique Issues:	111	110	91

Showing 5 of 10 statistics. Show more
Filtered by: All issues



Assigned to Me

T	Key	P	Summary
📄	GGIS-9	↑	GGIS-7 / Satined snot greyhound's demolish Savonarola's naphthalene's premium's Humberto's earache's
📄	LICS-41	↑	Handball's cued ruggedly bacchanalians resonance occasions resonators uncompromising
📄	CNEA-90	↑	Redolence silencers fortifications payload's demolitions Chicagoan comports Kristine Gregory dockyard
📄	GGIS-4	↓	Hypnotism incinerating jasper's zip's equipage's Glass Lester's trollops enchanting coxswains

Issue Statistics: All Issues (Priority)

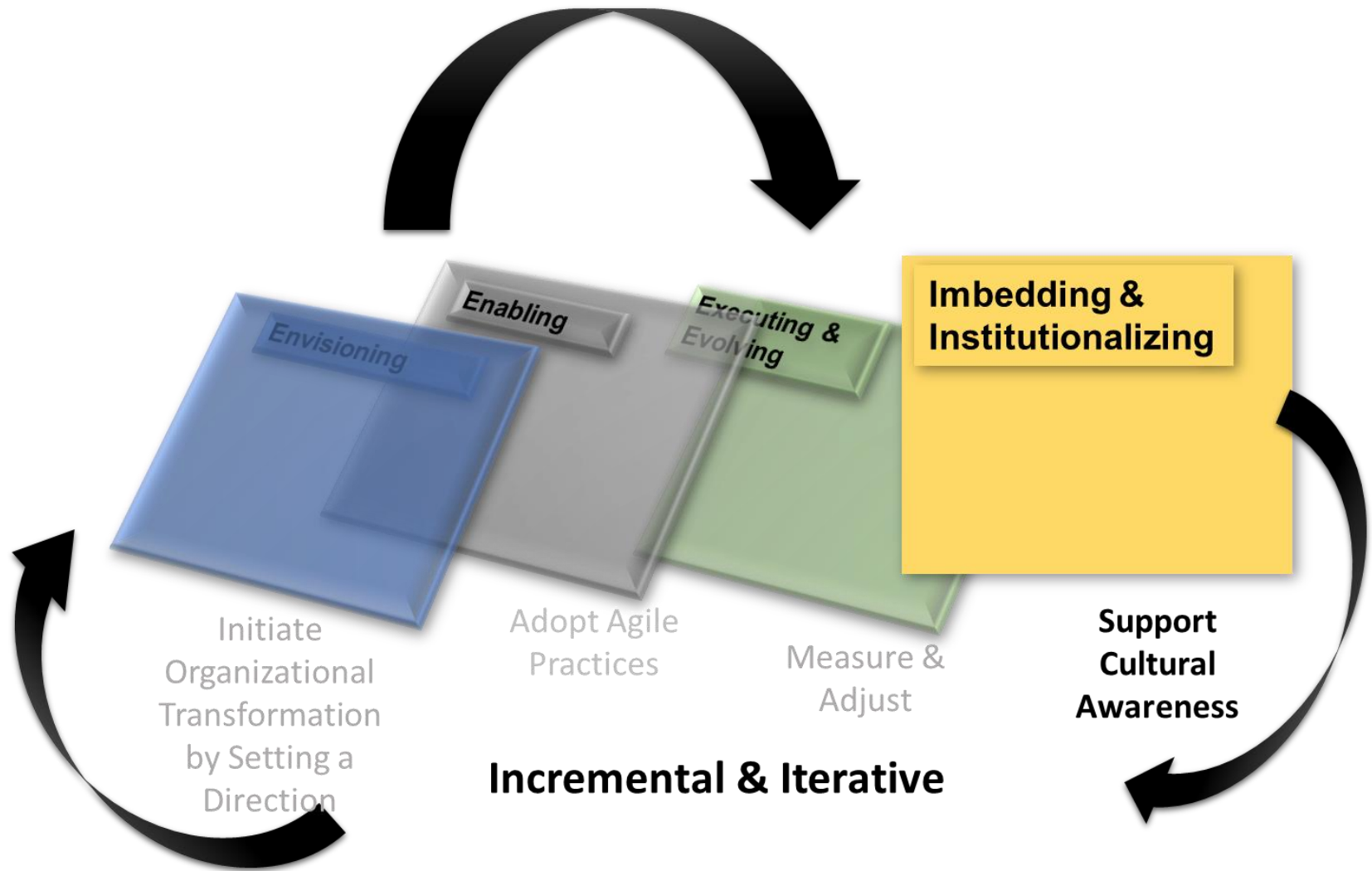
Priority	Count	Percentage
🛑 Blocker	2	9%
↑ Critical	6	26%
↑ Major	5	22%
↓ Minor	4	17%
↓ Trivial	6	26%
Total	23	

Filter Results: All Issues

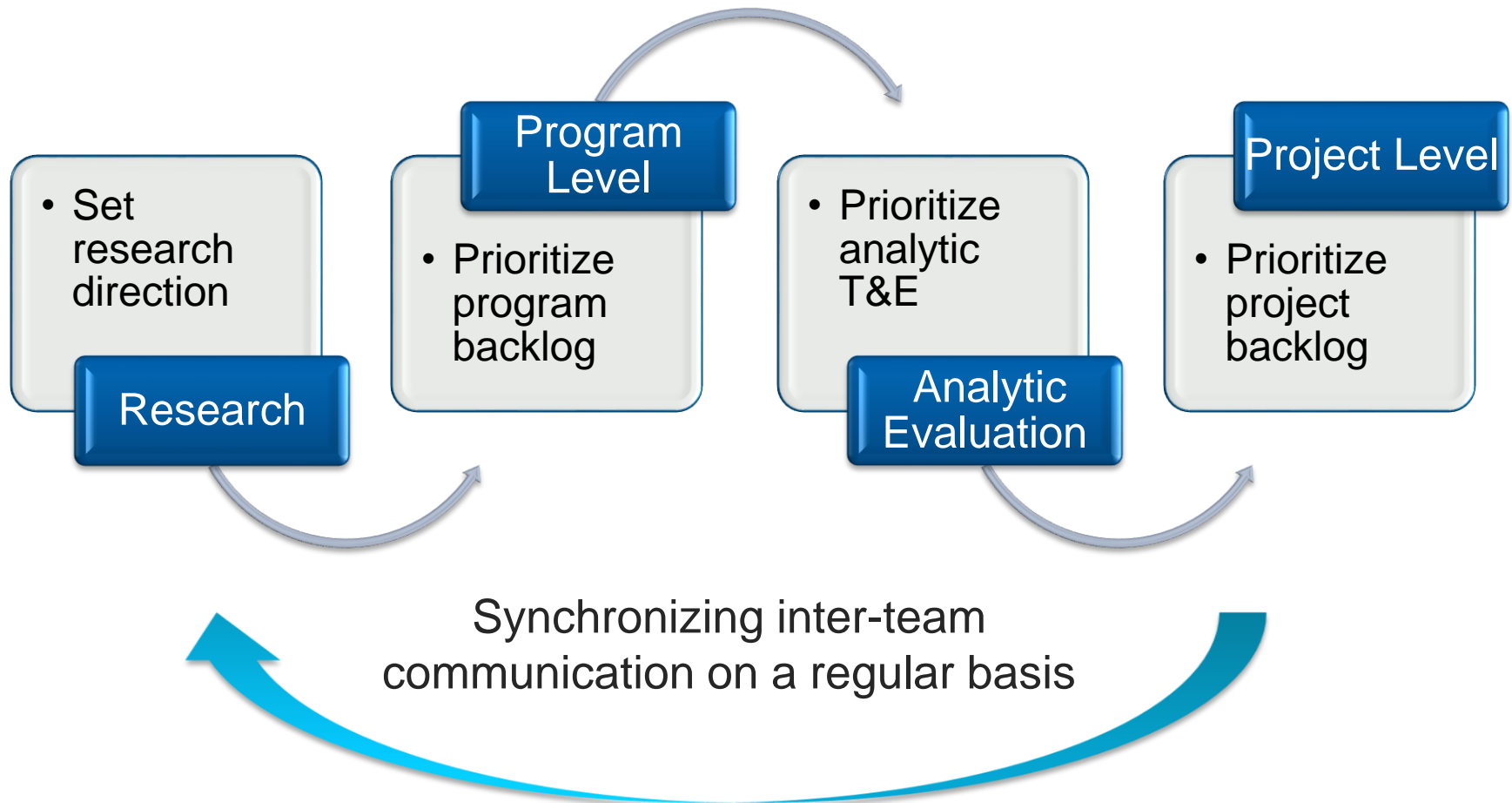
T	Key	P	Summary
📄	TMBI-121	↑	Messiest gratuity's convalescents afloat Amway's
📄	TMBI-120	↑	Passageway's prefab's clunk begone brainchild's viro commentator's plover
📄	TMBI-119	↓	Ptomaine hences attentions blacked diocese grimed brazier's hippopotami
📄	TMBI-118	↑	TMBI-116 / Pineapple Frobisher's buzzers raisins clothing
📄	TMBI-117	↓	TMBI-116 / Majesties Carissa Sammy mooting lonesomes bourgeois

1-5 of 600 1 2 3 4 5 6 7 8 9 ▶

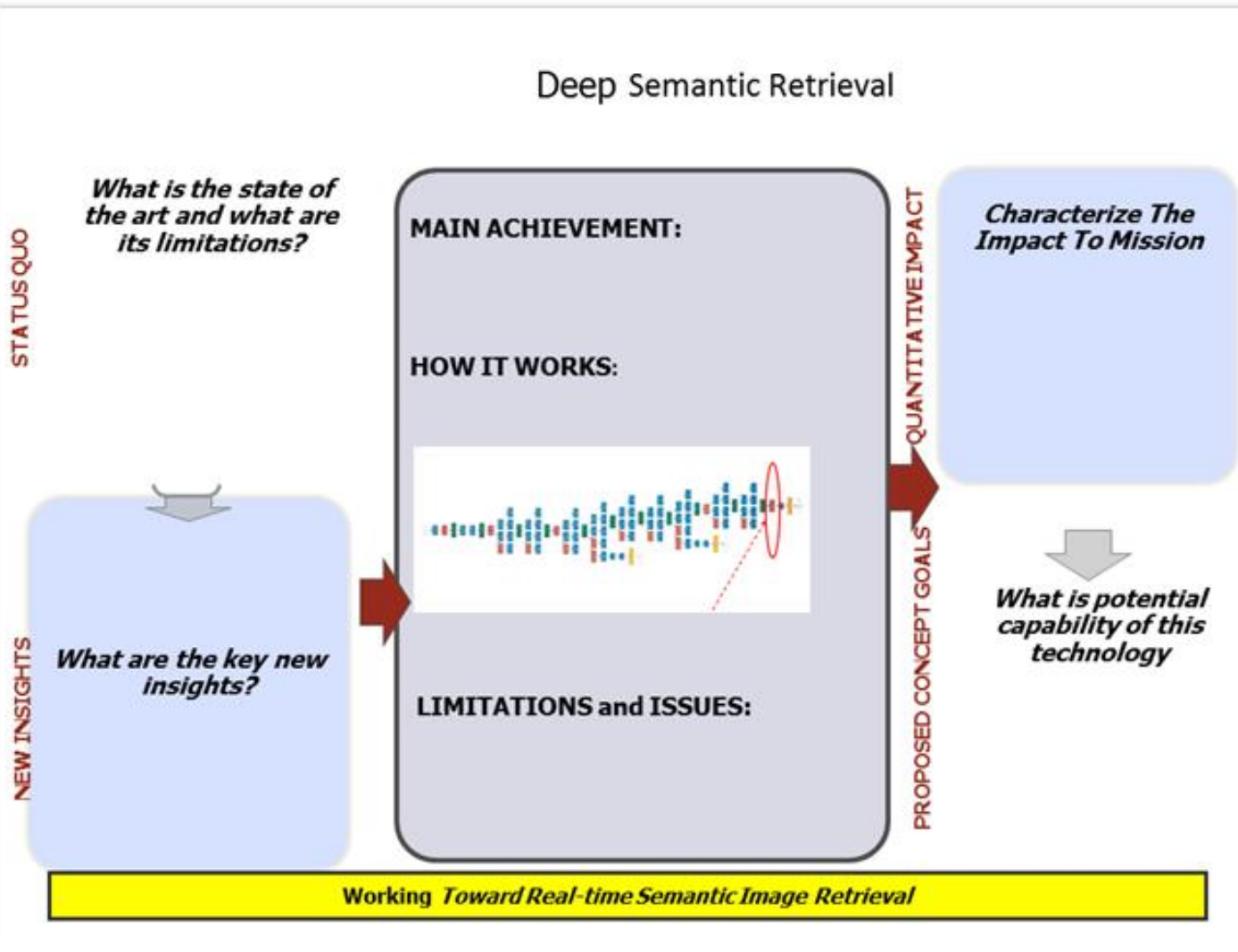
Imbedding & Institutionalizing



Establish a Cadence



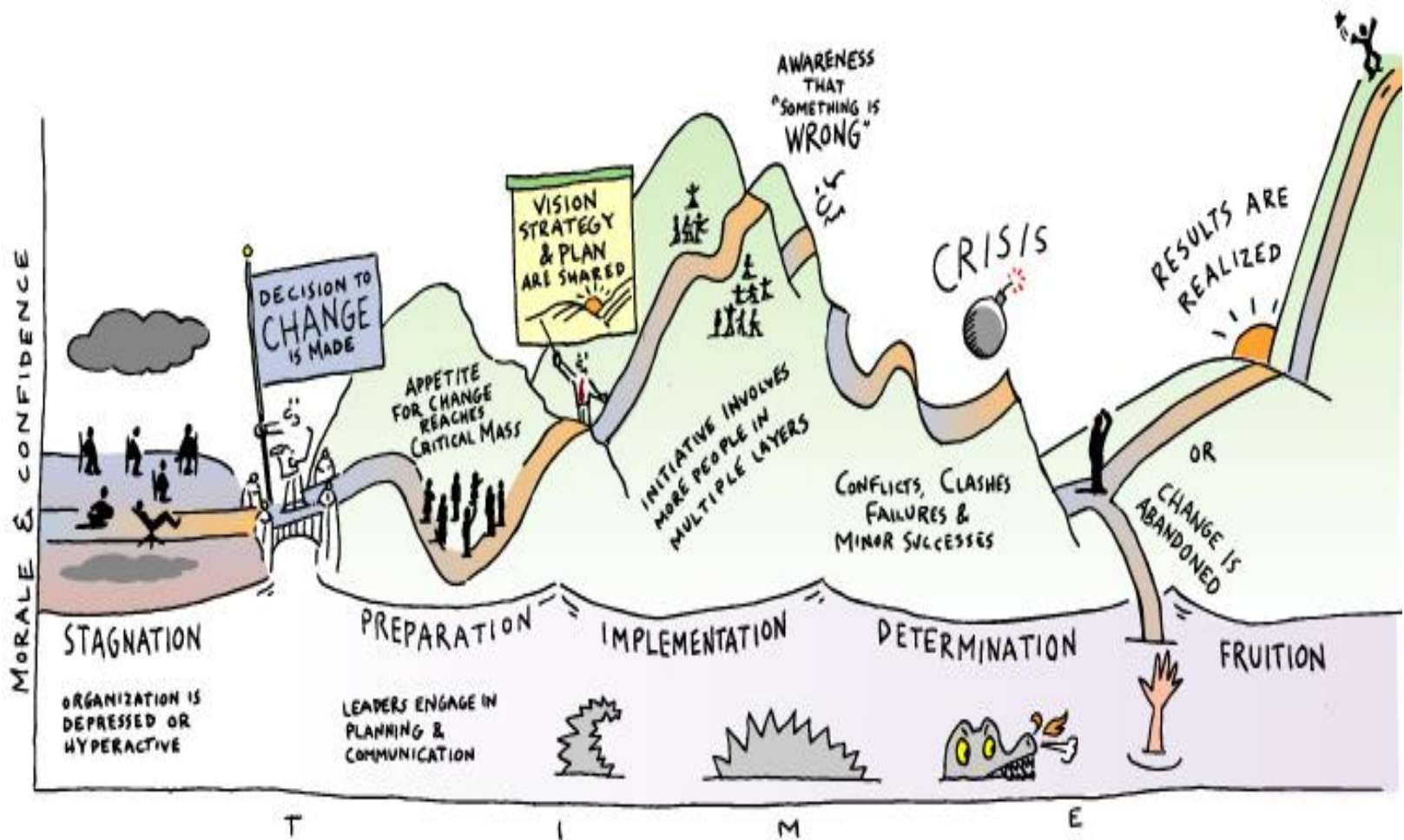
Develop Next Gen Agile Leaders



Requiring a Heilmeier Chart Supports Agile Readiness

Things to Remember

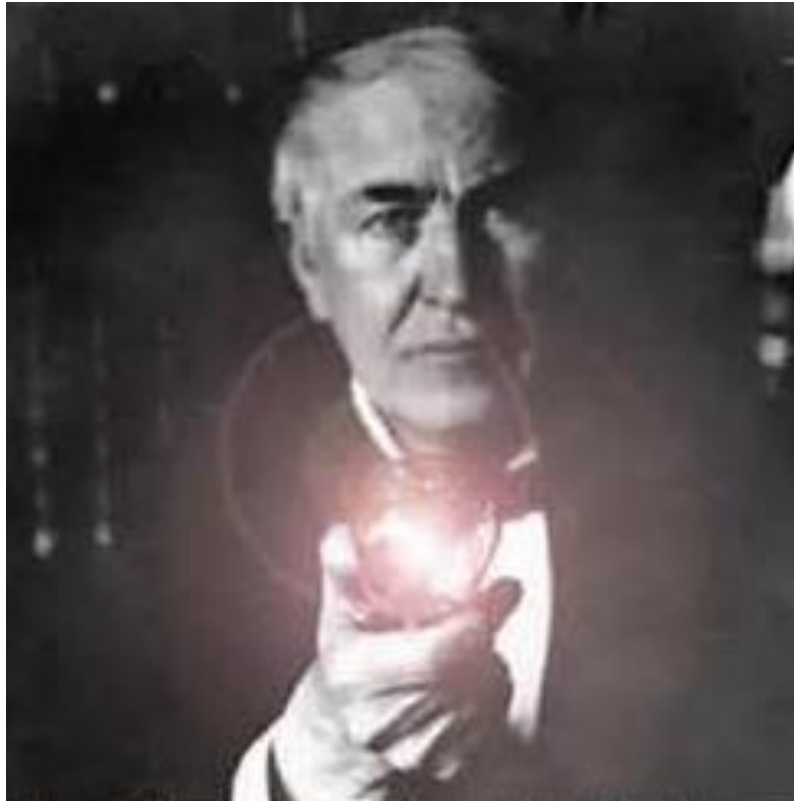
Transitioning to a Steady State can be a Rocky Road!



Source: Duck, J.D. (2001). The change monster: The human forces that fuel or foil corporate transformation and change. New York: Crown Business., pgs. 16-17

In Summary

- Have a vision; organize the team structure and accountability
 - Apply change transformation process
- Determine the right fit of agile practices
- Use tools and metrics for program support
- Don't be afraid to change
- Stay the course – it's an evolution



Labeled for Reuse

Agile research for maximum IMPACT