PM Symposium

Transformed Into What?
Organizational Models of the Future

Mr. John Johnson and
Dr. Bill Brantley

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Team Performance is Driven by Communication

- Research at Bell labs identified that communication saturation was essential to team performance
  - The Quattro Pro was better than MS Excel
  - Borland Software Group outperformed Microsoft with 8 people compared to 400
  - 50x performance was driven by daily meetings and having very few roles
  - This was the basis for the develop of the Scrum daily standup meeting, AND the elimination of roles and handoffs…

Source: http://jeffsutherland.org/scrum/scrumpapers.pdf

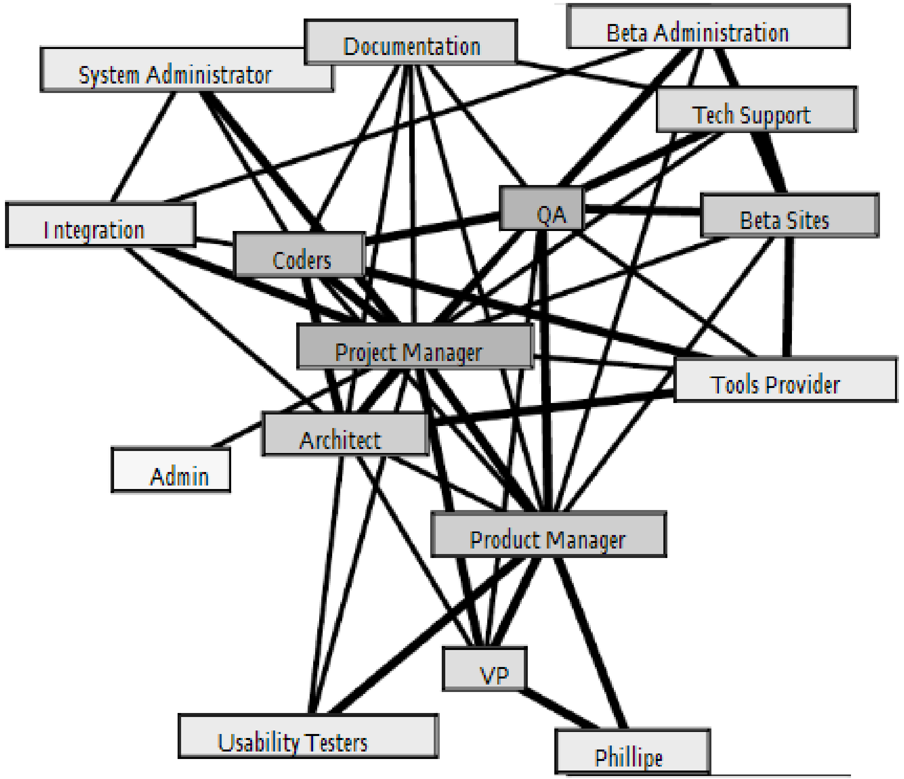
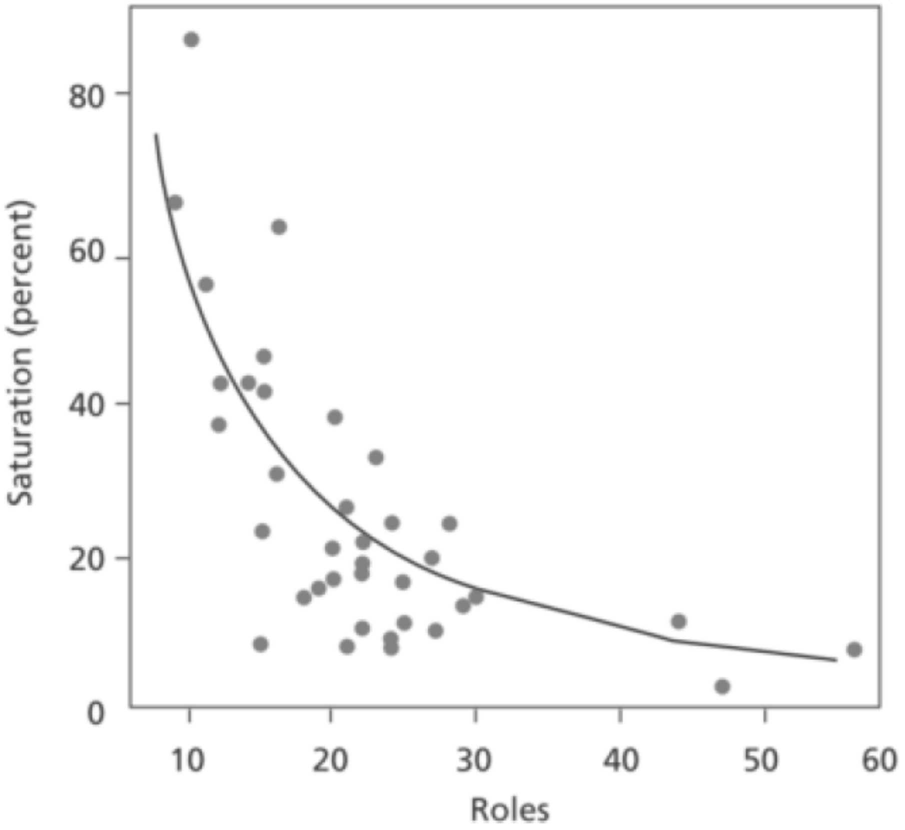

Beta Administration
Documentation
System Administrator
Tech Support
QA
Beta Sites
Integration
Coders
Project Manager
Tools Provider
Architect
Admin
Product Manager
VP
Usability Testers
Phillipe

Figure 2. Natural Force-Based Analysis of QPW

Image Source: Borland Software Craftsmanship: A New Look at Process, Quality and Productivity

Decrease in Communication Saturation with Roles

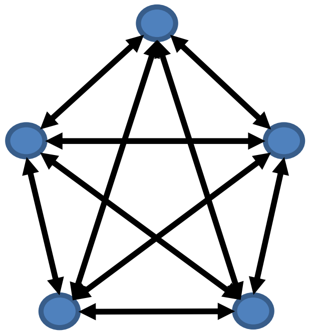
Studies have shown that increasing roles (and therefore integration amongst teams) decreases communication saturation.



Source: A Taxonomy of Design Methods Process Models
https://www.researchgate.net/publication/257391238_A_Taxonomy_of_Design_Methods_Process_Models

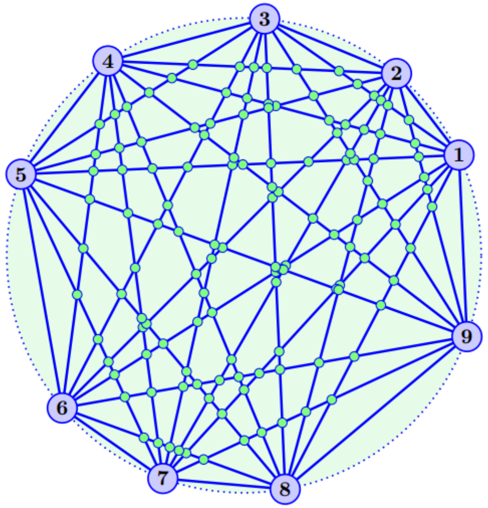
Why Integration Grows the Problem to Be Solved

- A project managers control is inversely proportional to the size of the project
  - Dan Ward, “*F.I.R.E…*”
- Coordination and integration is work, too
- Quickly expands beyond human’s ability to manage face-to-face
- More integration delays the time to testing and feedback on solutions, increasing risk



Comm Paths = n*(n-1) /2

5 People = 10 paths
10 People = 45 paths
50 People = 1,225 paths
100 People = 4,950 paths



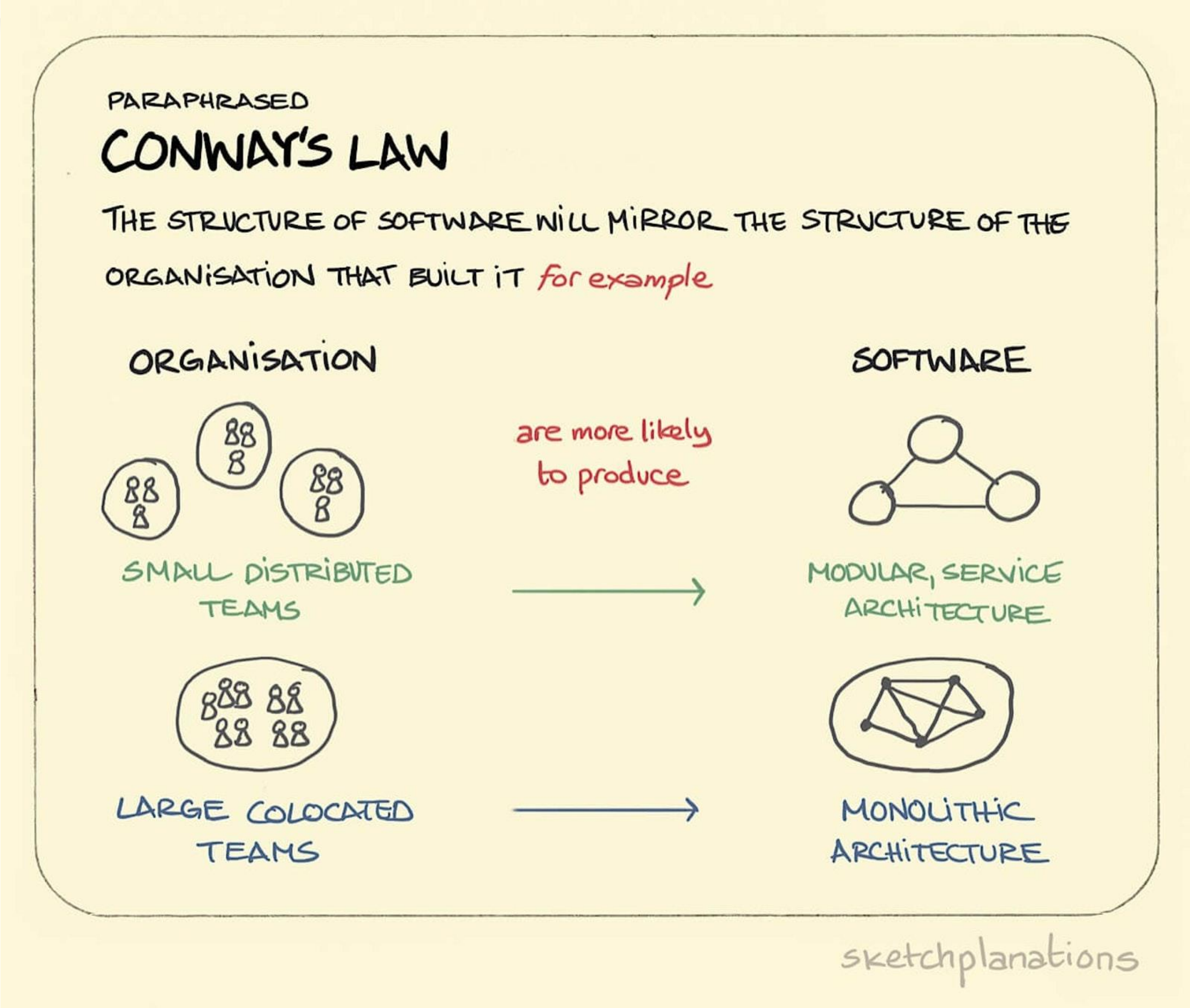
Integration points (dots) among pair teams

(n-1)*(n-2)*(n-3)*(n-4) / 24

9 team members working in pairs have up to 126 integration points!

http://www.texample.net/media/tikz/examples/PDF/cn4-points-of-intersection.pdf

Keep Teams Small and Independent also Helps Avoid Monoliths



PARAPHRASED

CONWAY'S LAW

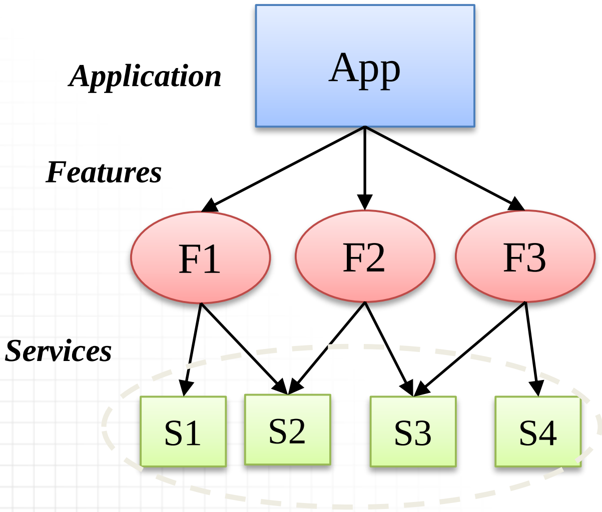
THE STRUCTURE OF SOFTWARE WILL MIRROR THE STRUCTURE OF THE ORGANISATION THAT BUILT IT *for example*

ORGANISATION
SOFTWARE
are more likely to produce
SMALL DISTRIBUTED TEAMS
MODULAR, SERVICE ARCHITECTURE
LARGE COLOCATED TEAMS
MONOLITHIC ARCHITECTURE
sketchplanations

https://sketchplanations.com/conways-law s Stabl nd Iter

Release in Big Batches!

Traditional

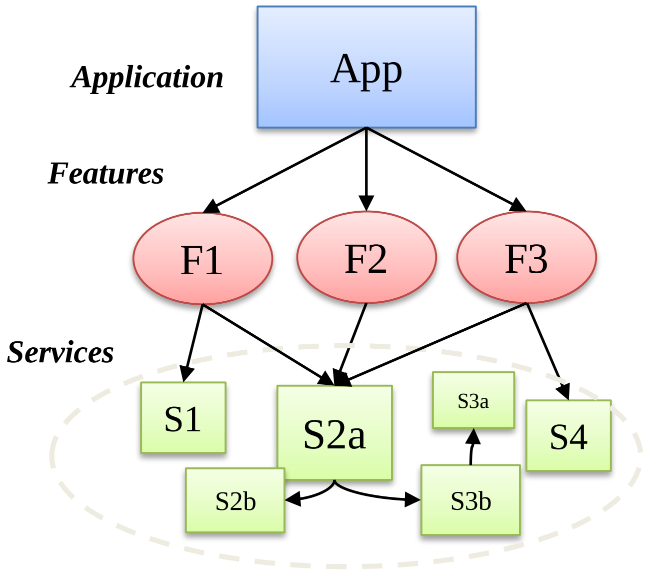

Application
App
Features
F1
F2
F3
Services
S1
S2
S3
S4

High reuse of components means a “Tightly Coupled” design.

- *Small changes have big costs*
- *Lower costs if no changes*

Release in Small Batches!

Lean

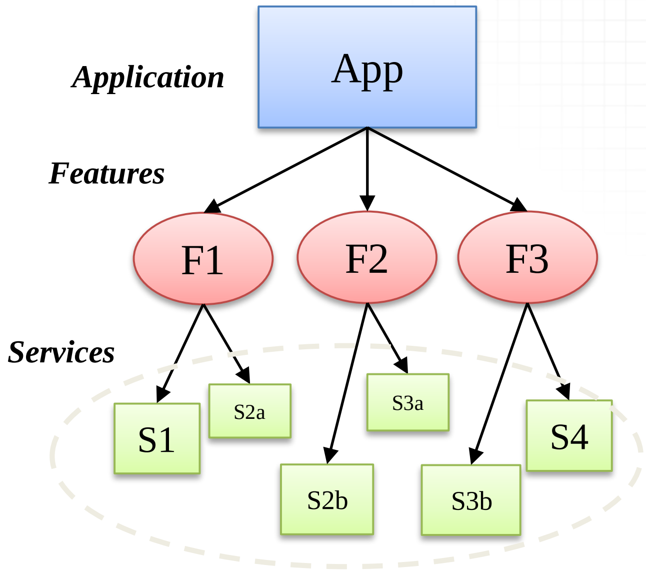

Application
App
Features
F1
F2
F3
Services
S1
S2a
S3a
S4
S2b
S3b

Lean designs “Evolve” as each feature is developed

- *Uses “just enough” feature by feature*
- *Reuses as possible to lower costs*
- *Often results in complex final product*

Replace in Small Batches!

Agile


Application
App
Features
F1
F2
F3
Services
S1
S2a
S3a
S4
S2b
S3b

Low or no reuse of components means a “Decoupled” design.

- *Small changes have small costs*
- *Can release single Features quickly*
- *Higher cost if no expected changes*

Four primary strategies to scaling teams

Agile Manifesto

1. **Individuals & Interactions**
   over Processes and Tools
2. **Working Software**
   over Comprehensive Documentation
3. **Customer Collaboration**
   over Contract Negotiation
4. **Responding to Change**
   over Following a Plan

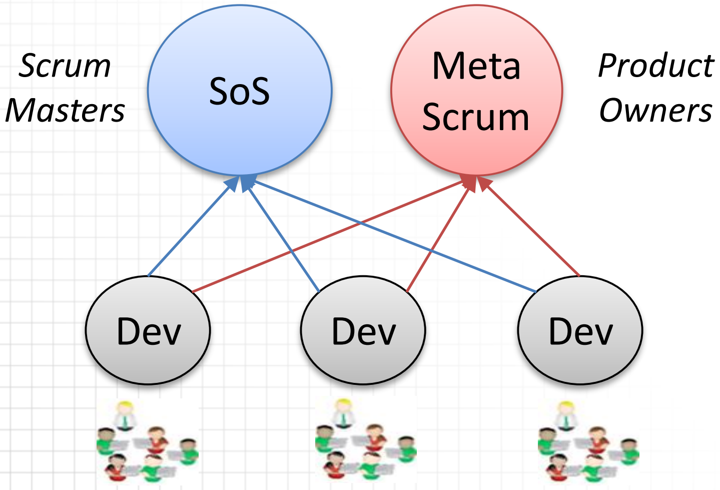
Scaling Strategies for Programs

1. **Isolate & Absorb Dependencies**
   using assumptions and design buffer
2. **Shared Team Planning Events**
   using big room planning deliver working increments
3. **Add "Dotted Line" Teams**
   to pull forward designs & apparatus build-out
4. **Add Phases to Define and Harden**
   to plan, implement, and then adjust as needed

Isolation and Absorption is Key to Agile

Monitor and Remove Conflicts with a "Scrum of Scrums" scaling model

- **Scrum of Scrums** (SoS) for team impediments
- **Meta Scrum** for team planning



Scrum Masters

SoS

Meta Scrum

Product Owners

Dev

Dev

Dev

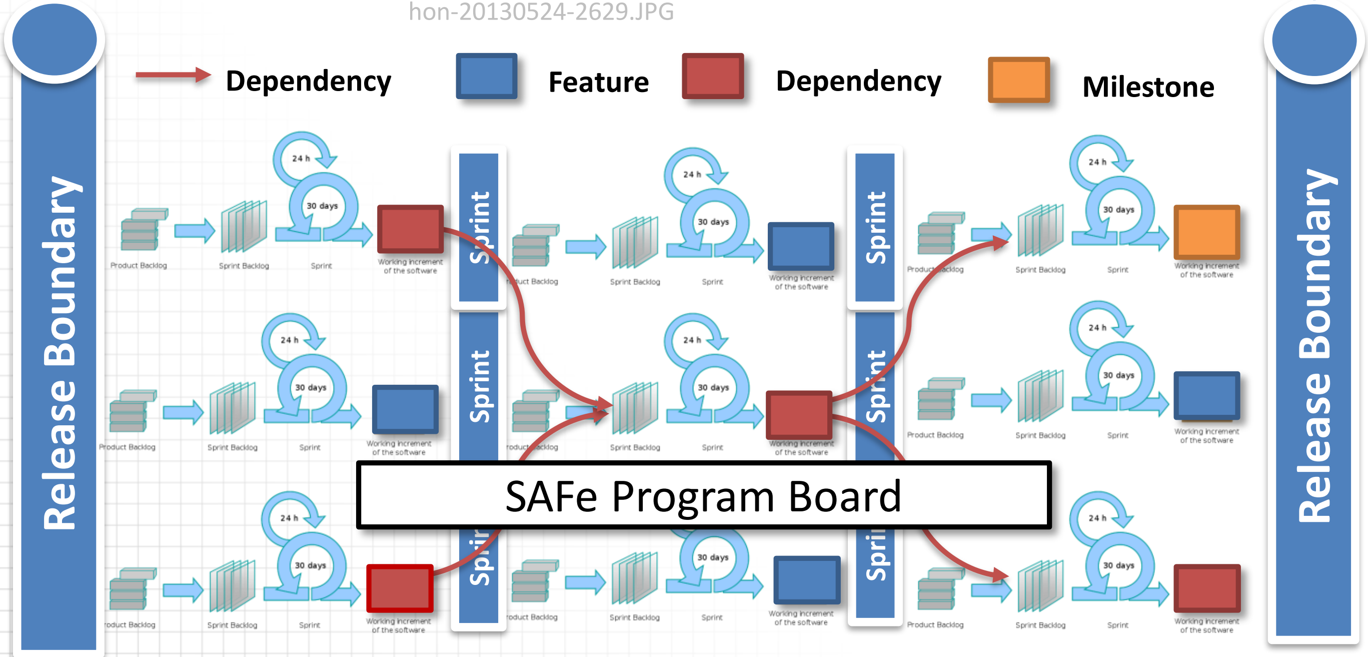
- Teams work independently to build testable features
  - Features are how products deliver value, often at the Epic level, with multiple stories
  - Services are groups of functions that create that value
- Isolate dependencies with planning and design assumptions
  - Planning assumption – ex. *we will have no conflict testing car parts*
  - Design assumptions – ex. *the engine will replenish power to the battery*
- Absorb dependencies with extra resources and over designing
  - Team skills (build, test, close) and support infrastructure
  - Design buffer with safety factors for integration and performance

Shared Team Planning Events

Used by SAFe and Disciplined Agile for scaling

If only we weren't so dependent…

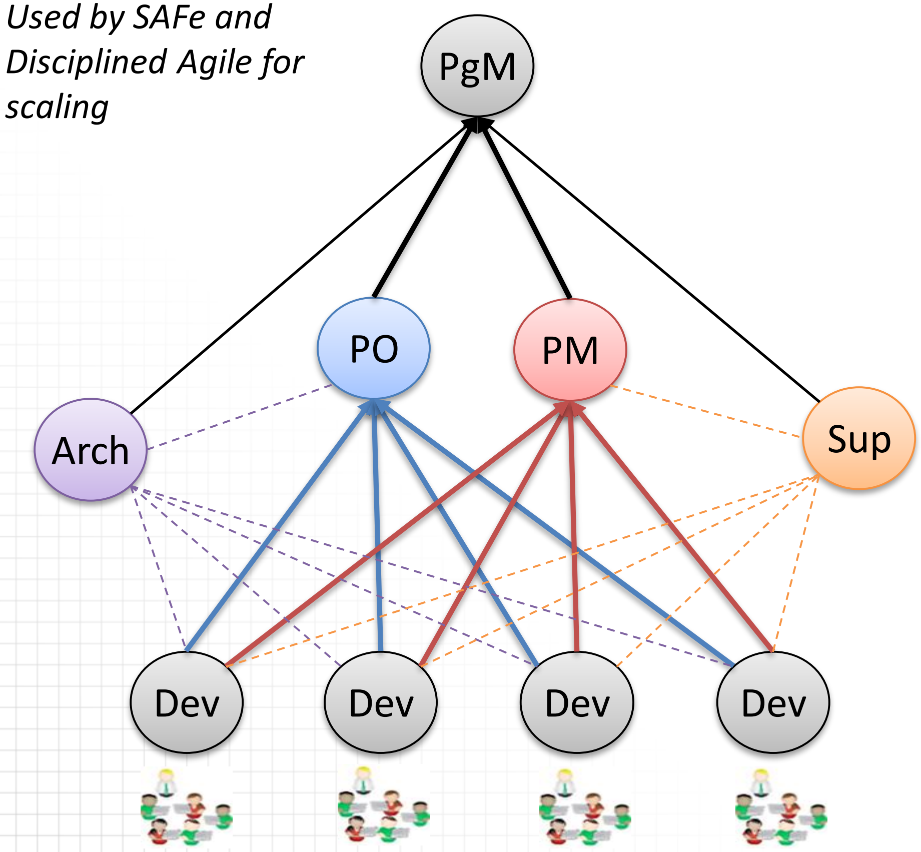
https://commons.wikimedia.org/wiki/File:AmsterdamHackathon-20130524-2629.JPG


Release Boundary
Dependency
Feature
Dependency
Milestone
Sprint
24 h
30 days
Product Backlog
Sprint Backlog
Sprint
Working increment of the software
SAFe Program Board
Release Boundary

- Share Events Include "Big Room Planning" made popular by SAFe
  - Teams collaborate on reviews & retros
  - Teams collaborate on planning
- Divide work by team strengths
- Loosely Coupled Architectures
  - Everyone works together to plan out dependencies
  - No intra-sprint dependencies
- Minimize shared events to major Release Boundaries, if possible

Dotted Lines Teams Keep Development Moving

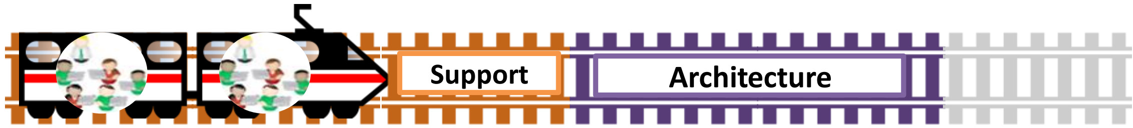
Used by SAFe and Disciplined Agile for scaling



- “Dotted Line” Teams are teams without delivery responsibility – aka “Enabling Teams”
  - Architecture - Architects, designers, marketers*
  - Support - Infrastructure, integration, testing

- They provide tactical planning, by “pulling forward” requirements, designs, and establishing interfaces

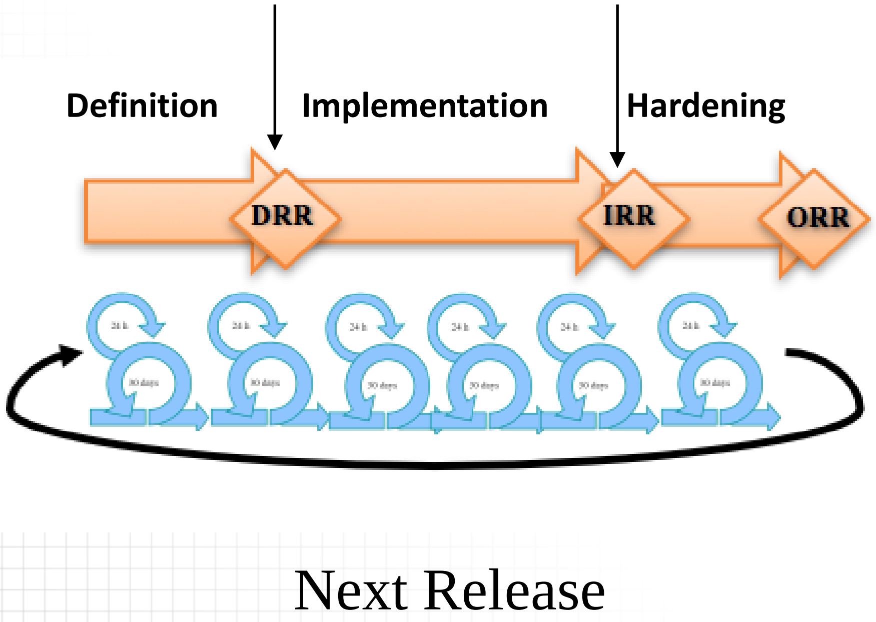
- They also provide enabling capabilities like test apparatus or harnesses to integrate work



https://pixabay.com/en/train-fence-rails-icon-symbol-1345889/

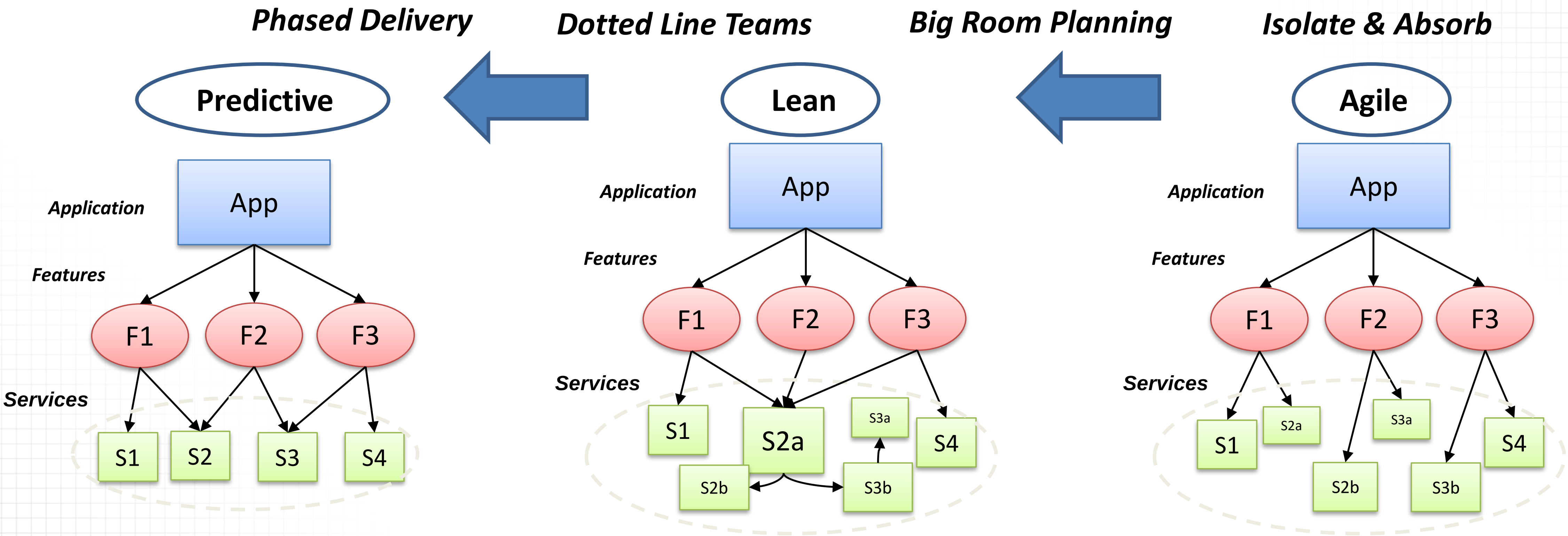
Defining and Hardening Enable Program Platforms

Sometimes used for a “Hybrid Agile” Design (e.g. Disciplined Agile)



- For very large programs or platform development, additional phases can be added
  - Solution Definition – teams plan and prototype together
  - Solution Hardening – teams test at scale and for security
- Solution Definition can be functional or cross-functional to maximize information sharing or team challenges
- Solution Hardening offers a way to absorb overhead and technical debt
  - Teams can share lessons learned
  - Testing has a buffer with a “frozen” product
  - Product team can rally for planning next release

Remember the Trade-offs in Engineering Paradigms


Phased Delivery
Dotted Line Teams
Big Room Planning
Isolate & Absorb
Predictive
Application
App
Features
F1
F2
F3
Services
S1
S2
S3
S4
Lean
Application
App
Features
F1
F2
F3
Services
S1
S2a
S3a
S4
S2b
S3b
Agile
Application
App
Features
F1
F2
F3
Services
S1
S2a
S3a
S4
S2b
S3b

High reuse of components means a "Tightly Coupled" design.

- *Reuses for maximum efficiency*
- *Lower cost, high performance*
- *One-time, complex design*

Lean designs "Evolve" as each feature is developed

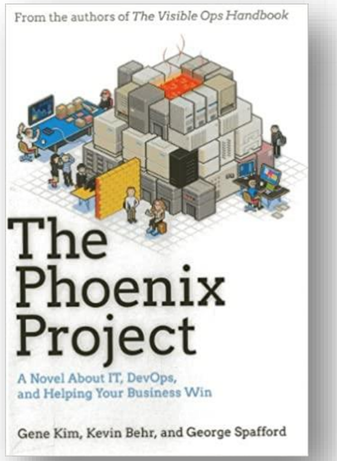
- *Uses "just enough" feature by feature*
- *Reuses as possible to balance costs*
- *Results in "platform" or "core" design*

Low or no reuse of components means a "Decoupled" design.

- *Can replace single features quickly*
- *Services can be built concurrently*
- *Results in a fast, adaptive product*

5 Ideals of Work

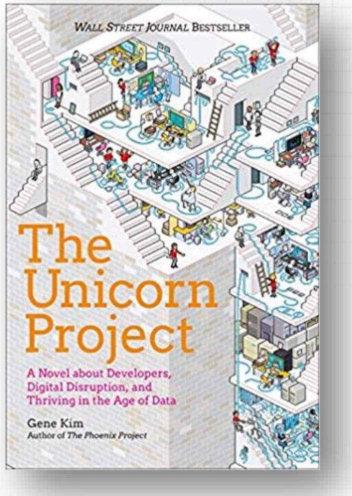
1. Locality and Simplicity
2. Focus, Flow, and Joy
3. Improvement of Daily Work
4. Psychological Safety
5. Customer Focus

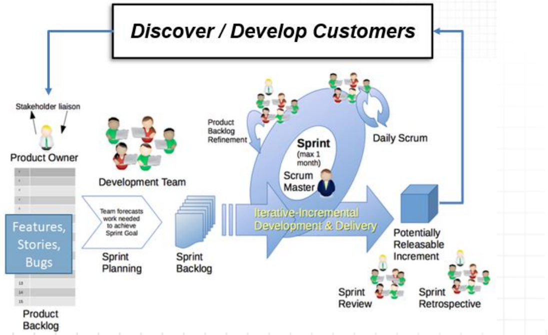

From the authors of The Visible Ops Handbook
The Phoenix Project
A Novel About IT, DevOps, and Helping Your Business Win
Gene Kim, Kevin Behr, and George Spafford

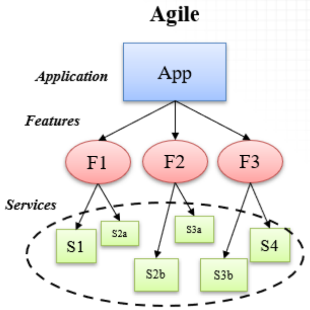
3 Ways of DevOps
4 Types of Work

6 years later…

5 Ideals of Work


WALL STREET JOURNAL BESTSELLER
The Unicorn Project
A Novel about Developers, Digital Disruption, and Thriving in the Age of Data
Gene Kim
Author of The Phoenix Project


Discover / Develop Customers
Stakeholder liaison
Product Owner
Features, Stories, Bugs
Product Backlog
Development Team
Team forecasts work needed to achieve Sprint Goal
Sprint Planning
Sprint Backlog
Product Backlog Refinement
Sprint (max 1 month)
Scrum Master
Daily Scrum
Iterative-Incremental Development & Delivery
Potentially Releasable Increment
Sprint Review
Sprint Retrospective


Agile
Application
App
Features
F1
F2
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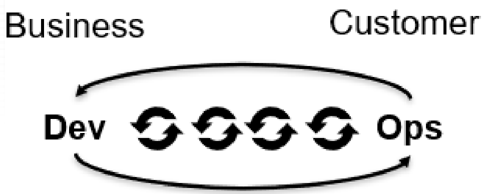
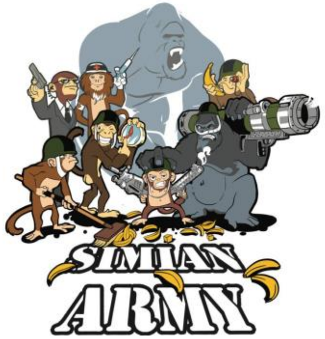
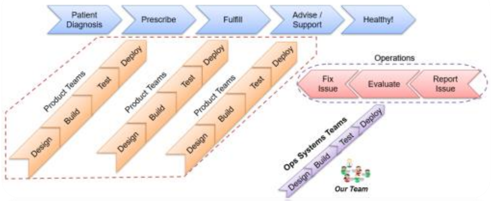
Services
S1
S2a
S2b
S3a
S3b
S4

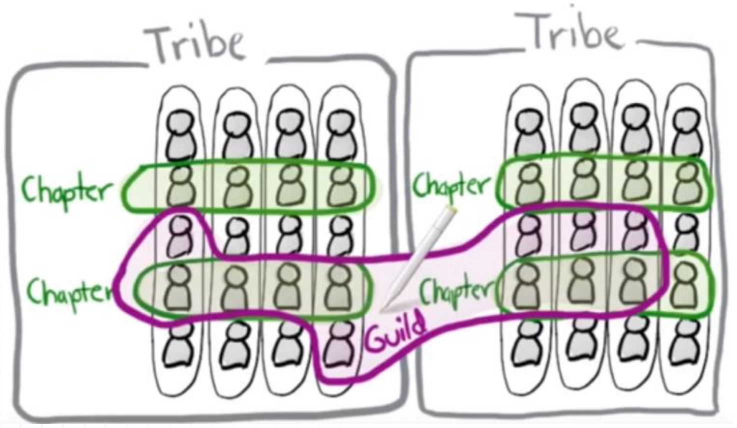

Business
Customer
Dev
Ops


SIMIAN ARMY

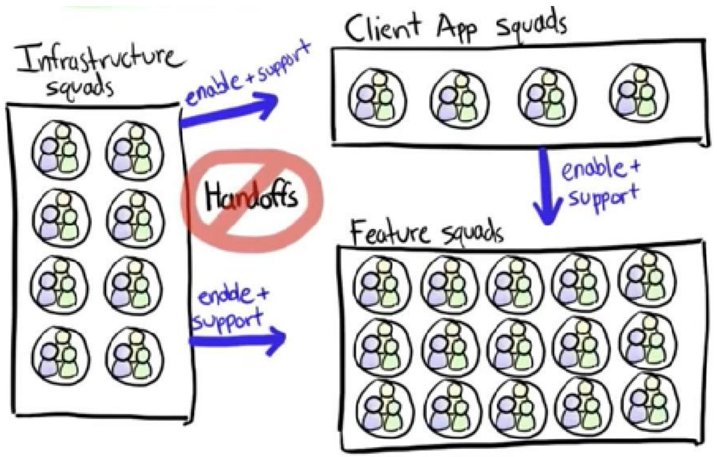

Patient Diagnosis
Prescribe
Fulfill
Advise / Support
Healthy!
Product Teams
Design
Build
Test
Deploy
Operations
Fix Issue
Evaluate
Report Issue
Ops Systems Teams
Our Team

Spotify Model Embodies the Extreme

Community > Structure

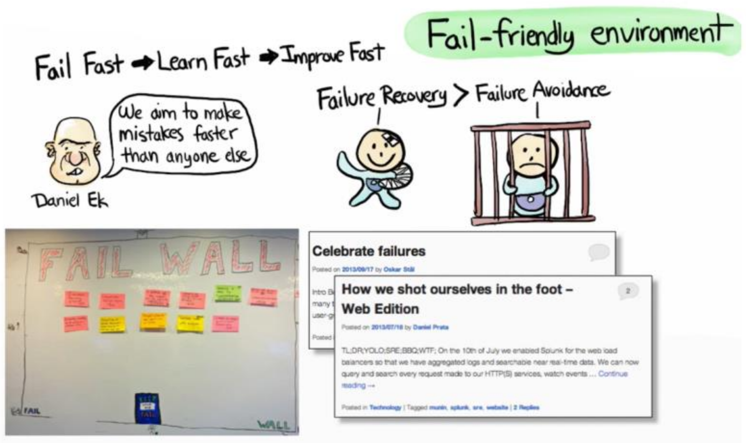

Tribe
Tribe
Chapter
Chapter
Chapter
Chapter
Guild

Self-Service > Coordination


Infrastructure squads
enable + support
Handoffs
enable + support
Client App squads
enable + support
Feature squads

https://www.youtube.com/watch?v=4GK1NDTWbkY

Innovation > Prediction


Fail-friendly environment
Fail Fast → Learn Fast → Improve Fast
Failure Recovery > Failure Avoidance
We aim to make mistakes faster than anyone else
Daniel Ek
FAIL WALL
Celebrate failures
Posted on 2013/09/17 by Oskar Ståhl
How we shot ourselves in the foot – Web Edition
Posted on 2013/07/18 by Daniel Prata

TL;DR;YOLO;SRE;BBQ;WTF; On the 10th of July we enabled Splunk for the web load balancers so that we have aggregated logs and searchable near real-time data. We can now query and search every request made to our HTTP(S) services, watch events … Continue reading →

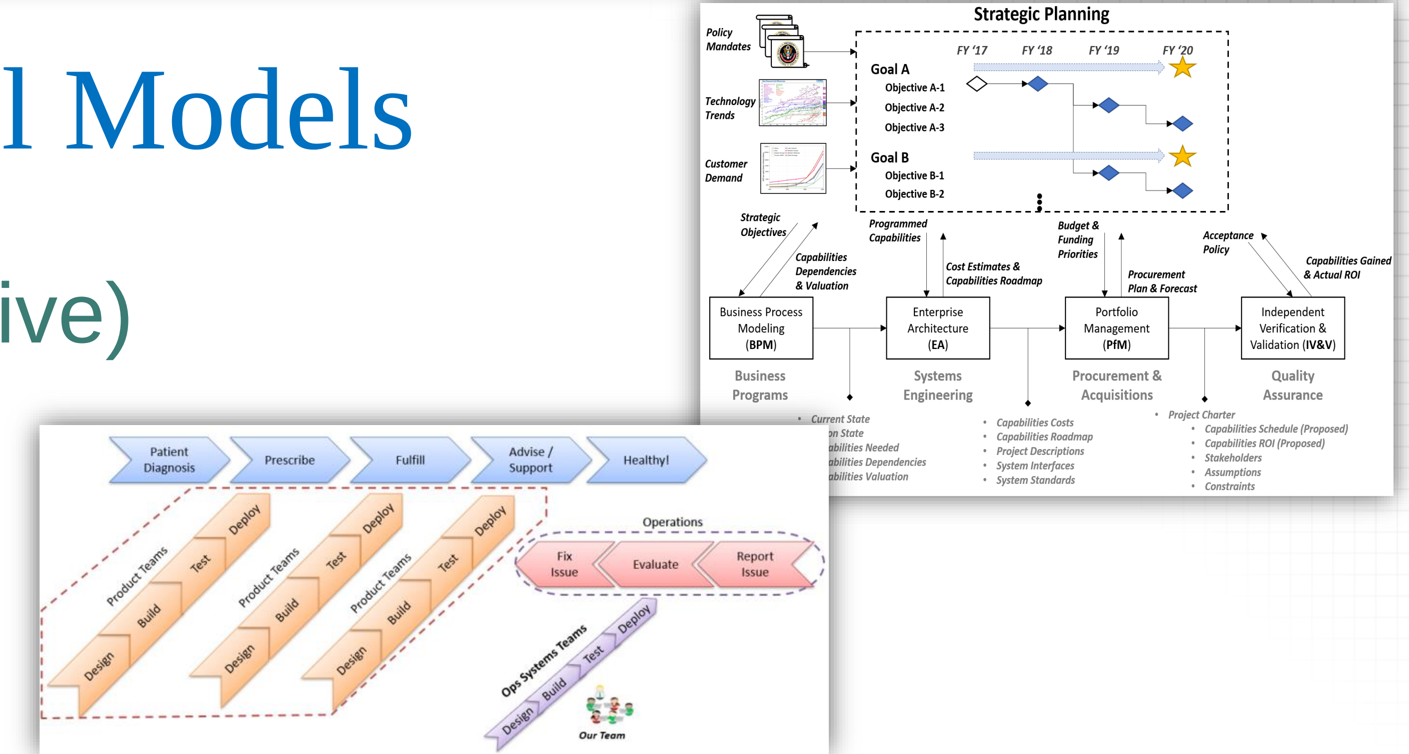
Posted in Technology | Tagged munin, splunk, sre, website | 2 Replies

https://www.youtube.com/watch?v=rzoyryY2STQ

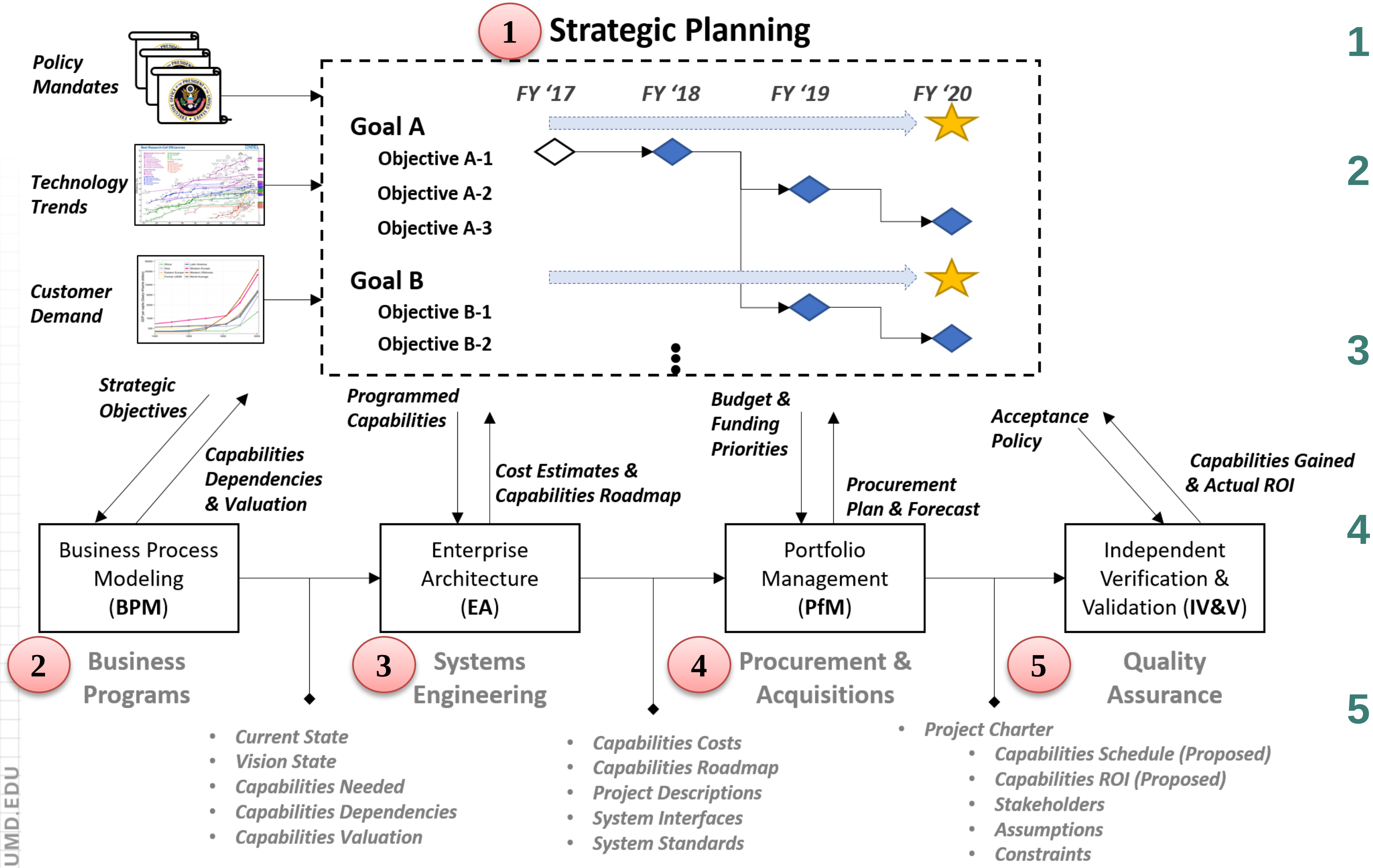
- Spotify runs a completely open, empowered organization
- Intense focus on culture with little focus on process
- Continues to lead the global streaming music (31+%)

Other Organizational Models

- Mission-Driven (Predictive)
- Product-Driven (Lean)
- Composable (Agile)
- Exponential Organization (10x)


Strategic Planning
Policy Mandates
Technology Trends
Customer Demand
FY '17
FY '18
FY '19
FY '20
Goal A
Objective A-1
Objective A-2
Objective A-3
Goal B
Objective B-1
Objective B-2
Strategic Objectives
Capabilities Dependencies & Valuation
Programmed Capabilities
Cost Estimates & Capabilities Roadmap
Budget & Funding Priorities
Procurement Plan & Forecast
Acceptance Policy
Capabilities Gained & Actual ROI
Business Process Modeling (BPM)
Enterprise Architecture (EA)
Portfolio Management (PfM)
Independent Verification & Validation (IV&V)
Business Programs
Systems Engineering
Procurement & Acquisitions
Quality Assurance
Current State
on State
abilities Needed
abilities Dependencies
abilities Valuation
Capabilities Costs
Capabilities Roadmap
Project Descriptions
System Interfaces
System Standards
Project Charter
Capabilities Schedule (Proposed)
Capabilities ROI (Proposed)
Stakeholders
Assumptions
Constraints
Patient Diagnosis
Prescribe
Fulfill
Advise / Support
Healthy!
Product Teams
Design
Build
Test
Deploy
Product Teams
Design
Build
Test
Deploy
Product Teams
Design
Build
Test
Deploy
Operations
Fix Issue
Evaluate
Report Issue
Ops Systems Teams
Design
Build
Test
Deploy
Our Team

Mission-Driven Organizations


1
Strategic Planning
Policy Mandates
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FY '17
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Goal A
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Objective A-2
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Business Process Modeling (BPM)
Enterprise Architecture (EA)
Portfolio Management (PfM)
Independent Verification & Validation (IV&V)
2
Business Programs
3
Systems Engineering
4
Procurement & Acquisitions
5
Quality Assurance

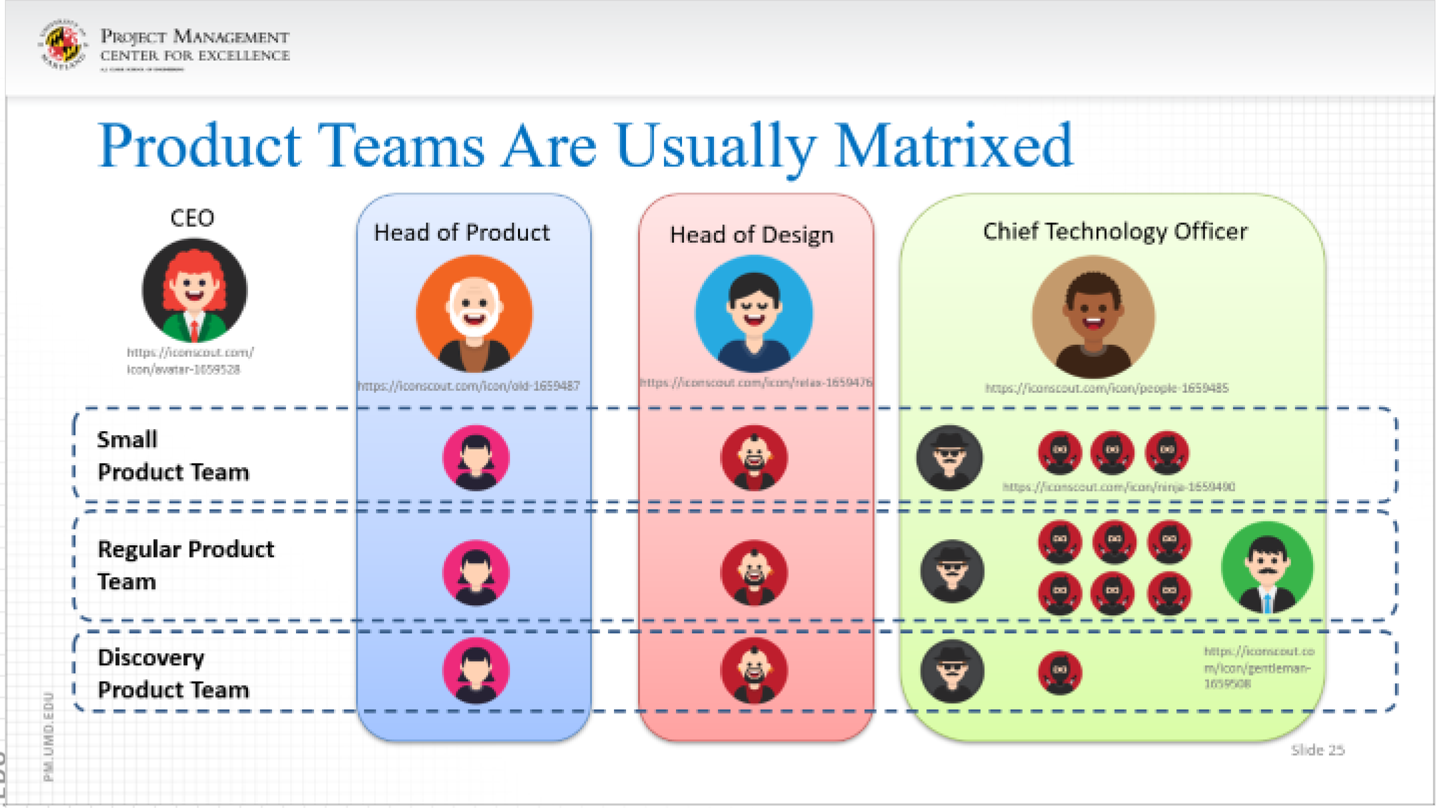
- *Current State*
- *Vision State*
- *Capabilities Needed*
- *Capabilities Dependencies*
- *Capabilities Valuation*

- *Capabilities Costs*
- *Capabilities Roadmap*
- *Project Descriptions*
- *System Interfaces*
- *System Standards*

- *Project Charter*
  - *Capabilities Schedule (Proposed)*
  - *Capabilities ROI (Proposed)*
  - *Stakeholders*
  - *Assumptions*
  - *Constraints*

1. **Executive** – elaborates mission and vision as goals and objectives
2. **Business Programs** – identifies capabilities needed to reach strategic objectives
3. **Systems Engineering** – estimates costs of capabilities and manages system interfaces
4. **Procurement & Acquisitions** – programs and controls projects to achieve objectives
5. **Quality Assurance** – provides actionable feedback on true ROI

Product-Driven

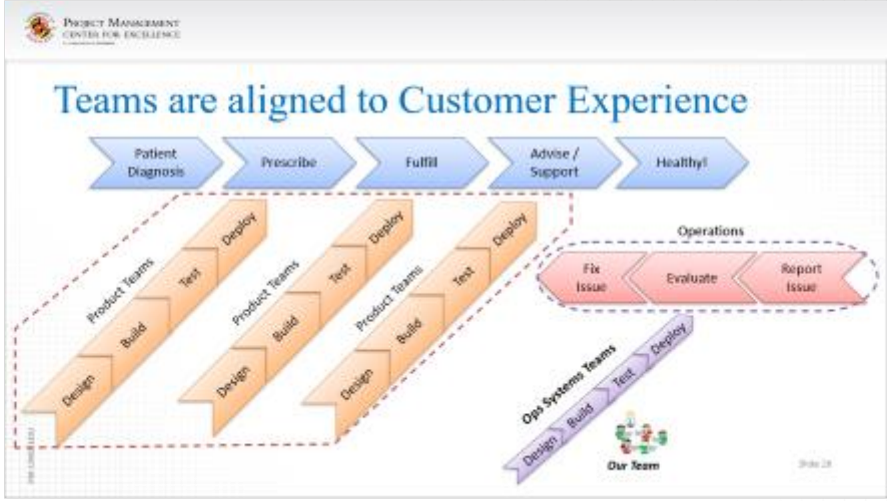


Project Management
Center for Excellence

Product Teams Are Usually Matrixed

CEO
https://iconscout.com/icon/avatar-1659528
Head of Product
https://iconscout.com/icon/old-1659487
Head of Design
https://iconscout.com/icon/relax-1659476
Chief Technology Officer
https://iconscout.com/icon/people-1659485
Small Product Team
https://iconscout.com/icon/ninja-1659490
Regular Product Team
Discovery Product Team
https://iconscout.com/icon/gentleman-1659508
PM.UMD.EDU

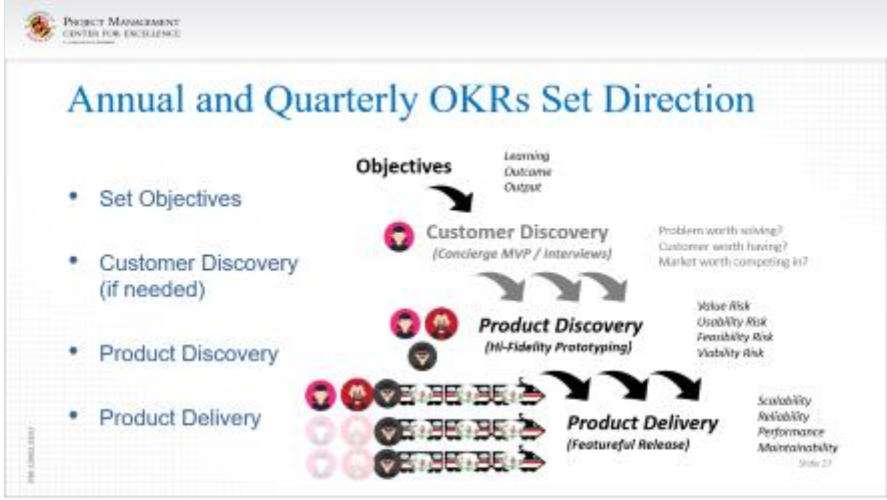
Slide 25



Project Management
Center for Excellence

Teams are aligned to Customer Experience

Patient Diagnosis
Prescribe
Fulfill
Advise / Support
Healthy!
Product Teams
Design
Build
Test
Deploy
Product Teams
Design
Build
Test
Deploy
Product Teams
Design
Build
Test
Deploy
Operations
Fix Issue
Evaluate
Report Issue
Ops Systems Teams
Design
Build
Test
Deploy
Our Team



Project Management
Center for Excellence

Annual and Quarterly OKRs Set Direction

- Set Objectives
- Customer Discovery (if needed)
- Product Discovery
- Product Delivery

Objectives
Learning
Outcome
Output
Customer Discovery
(Concierge MVP / Interviews)
Problem worth solving?
Customer worth having?
Market worth competing in?
Product Discovery
(Hi-Fidelity Prototyping)
Value Risk
Usability Risk
Feasibility Risk
Viability Risk
Product Delivery
(Featureful Release)
Scalability
Reliability
Performance
Maintainability

Slide 27

Composable

Microservices

APIs

Cloud-native

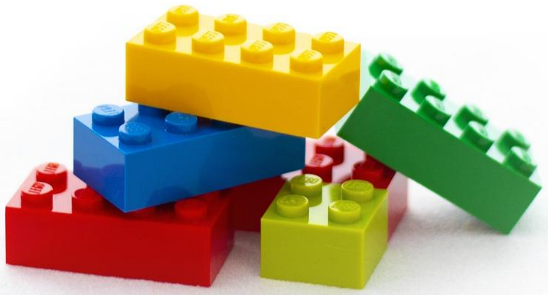
Headless

"Services Australia rapidly pivoted to accommodate this surge in demand and made changes to how it traditionally operated. They shifted in-person appointments to phones or online, deployed voiceprint technology to 1.2 million users and saw a 600% increase in the use of digital assistants to orchestrate fast responses. "

Composable Business Architecture

Composable Technologies

Composable Thinking



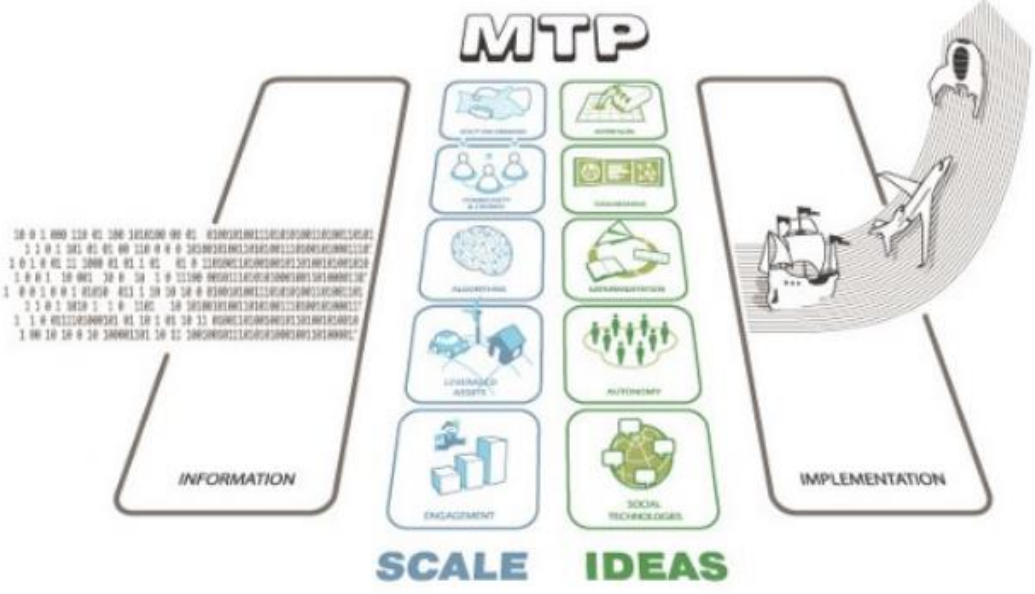
Exponential Organizations

10X better, faster, and cheaper than the competition

Massive Transformative Purpose

Interfaces
Dashboards
Experimentation
Autonomy
Social

Staff on Demand
Community and Crowd
Algorithms
Leveraged Assets
Engagement


MTP
INFORMATION
ENGAGEMENT
SOCIAL TECHNOLOGIES
IMPLEMENTATION
SCALE
IDEAS

Source: https://medium.com/openexo/forget-startups-exos-exponential-organizations-are-the-new-way-to-innovate-32305d628928

Thank You!

- Communication Saturation Drives Speed
- Team Design Is Architecture Design
- Organizational Spectrum
  - Mission-Driven (Predictive)
  - Product-Driven (Lean)
  - Composable (Agile)
  - Spotify (Extreme)
  - ExO (Minimal)

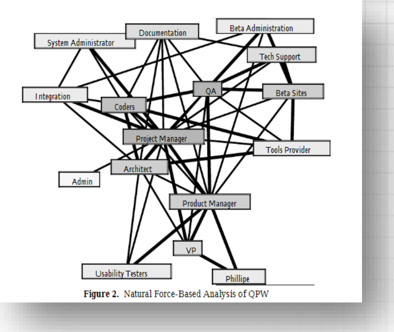
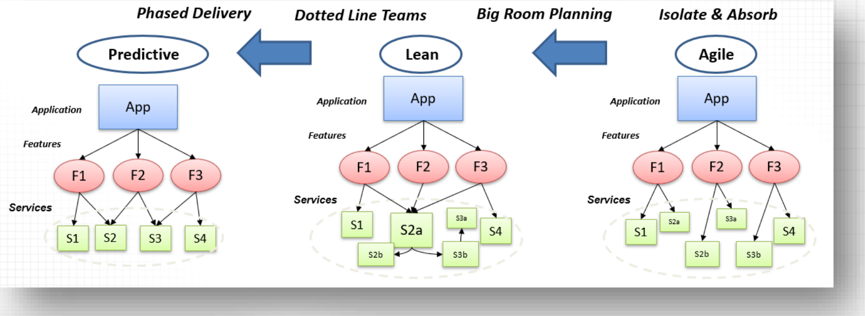
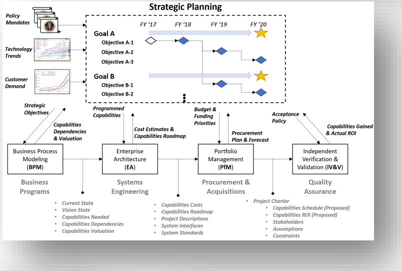
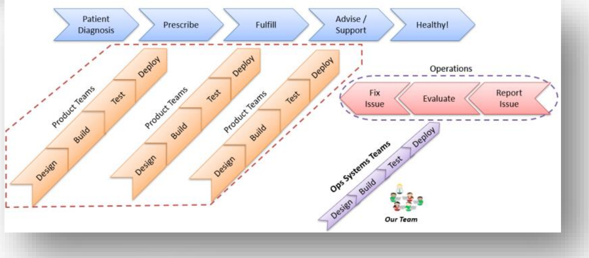
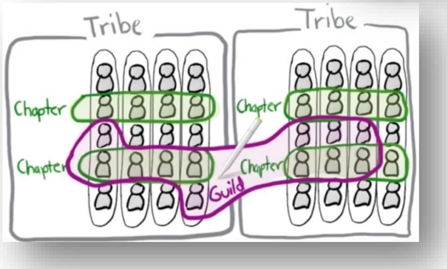

Documentation
Beta Administration
System Administrator
Tech Support
Integration
QA
Beta Sites
Coders
Project Manager
Tools Provider
Architect
Admin
Product Manager
VP
Usability Testers
Phillipe

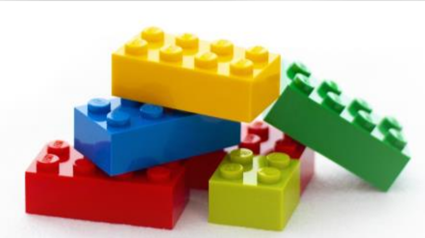
Figure 2. Natural Force-Based Analysis of QPW

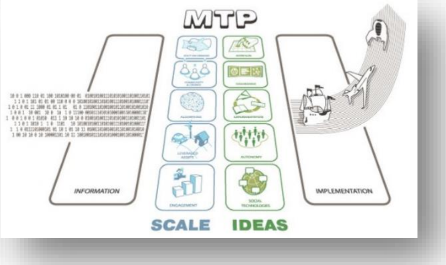

Phased Delivery
Dotted Line Teams
Big Room Planning
Isolate & Absorb
Predictive
Lean
Agile
Application
App
Features
F1
F2
F3
Services
S1
S2
S3
S4
S2a
S2b
S3a
S3b


Strategic Planning
Policy Mandates
Technology Trends
Customer Demand
Goal A
Objective A-1
Objective A-2
Objective A-3
Goal B
Objective B-1
Objective B-2
FY '17
FY '18
FY '19
FY '20
Business Process Modeling (BPM)
Enterprise Architecture (EA)
Portfolio Management (PfM)
Independent Verification & Validation (IV&V)
Business Programs
Systems Engineering
Procurement & Acquisitions
Quality Assurance


Patient Diagnosis
Prescribe
Fulfill
Advise / Support
Healthy!
Product Teams
Design
Build
Test
Deploy
Operations
Fix Issue
Evaluate
Report Issue
Ops Systems Teams
Our Team


Tribe
Tribe
Chapter
Chapter
Chapter
Chapter
Guild




MTP
INFORMATION
IMPLEMENTATION
SCALE
IDEAS

Let’s Connect!

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Assistant Director,
PM Center, UMD
johnj85@umd.edu

Bill Brantley, PhD.
Training Specialist,
US Navy Inspector General
Bill@BillBrantley.com

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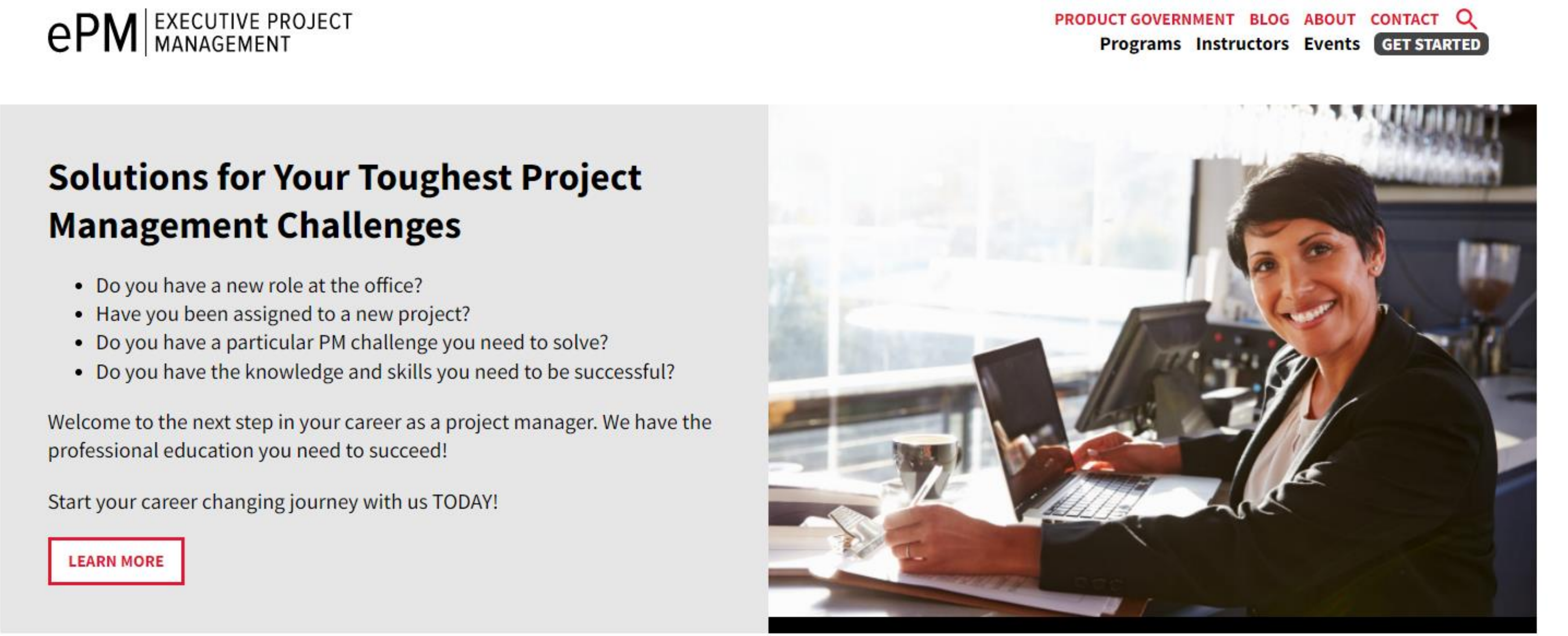


ePM | EXECUTIVE PROJECT MANAGEMENT
PRODUCT GOVERNMENT
BLOG
ABOUT
CONTACT
Programs
Instructors
Events
GET STARTED

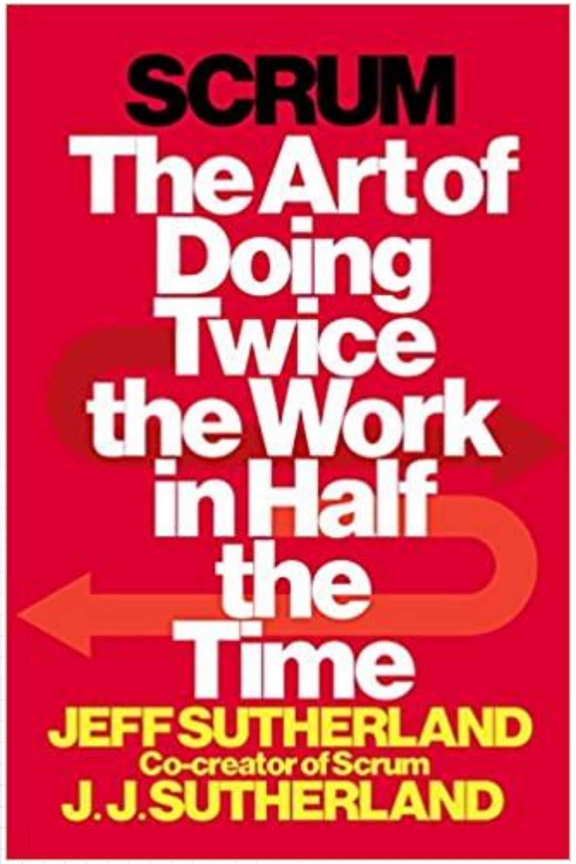
Solutions for Your Toughest Project Management Challenges

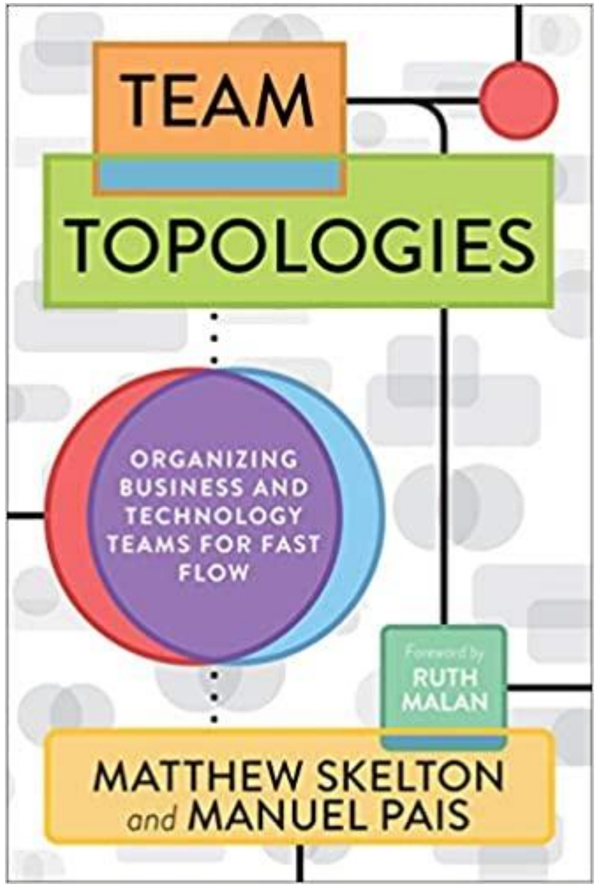
- Do you have a new role at the office?
- Have you been assigned to a new project?
- Do you have a particular PM challenge you need to solve?
- Do you have the knowledge and skills you need to be successful?

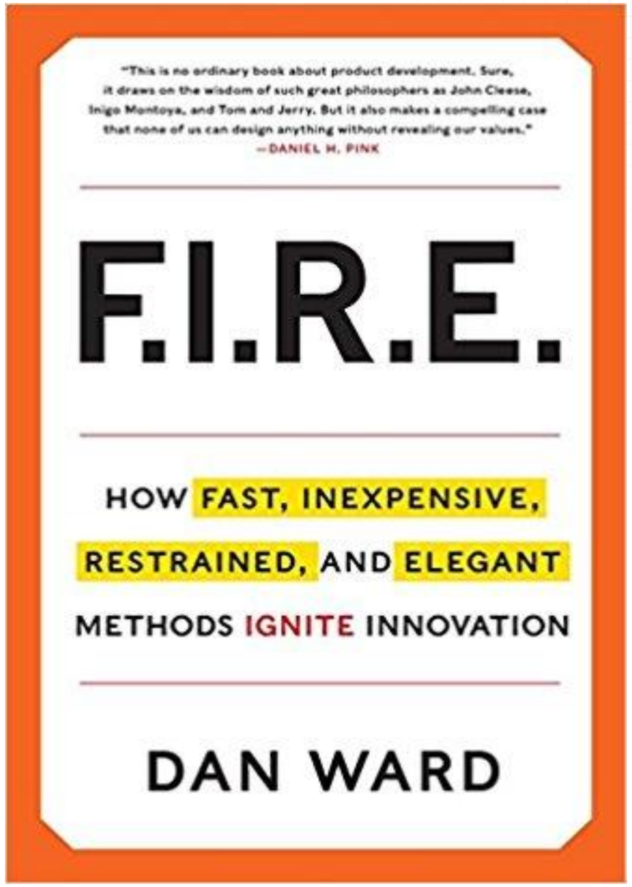
Welcome to the next step in your career as a project manager. We have the professional education you need to succeed!

Start your career changing journey with us TODAY!

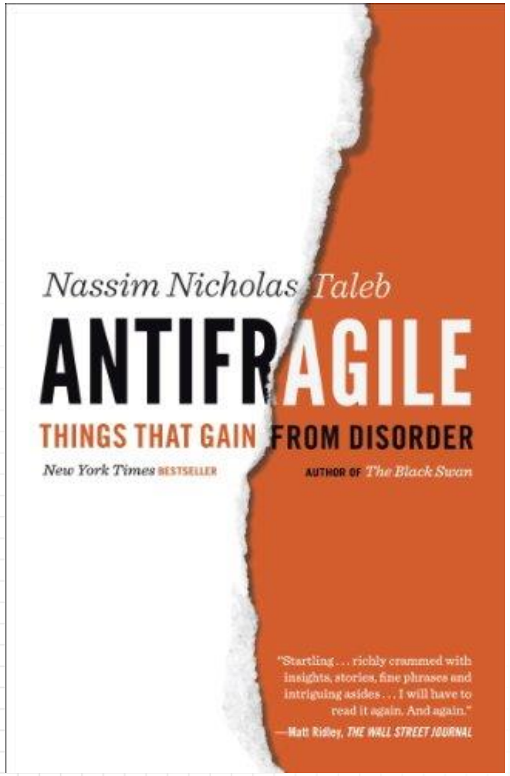
Key References and Books To Live By

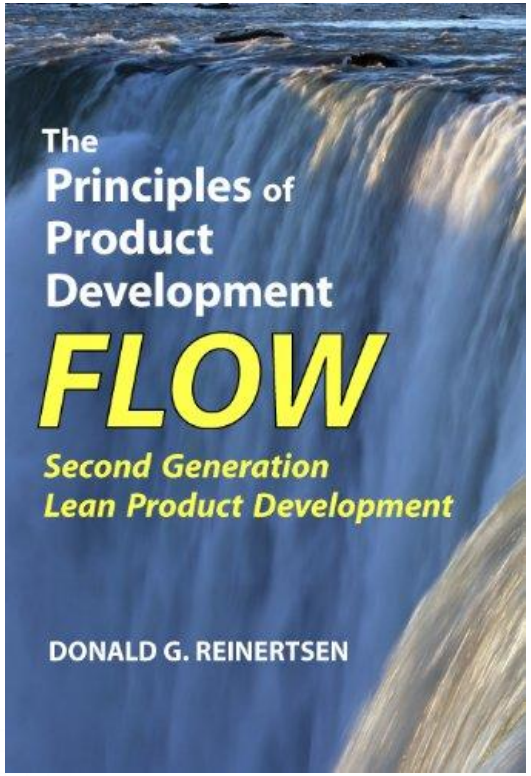

SCRUM
The Art of Doing Twice the Work in Half the Time
JEFF SUTHERLAND
Co-creator of Scrum
J.J. SUTHERLAND

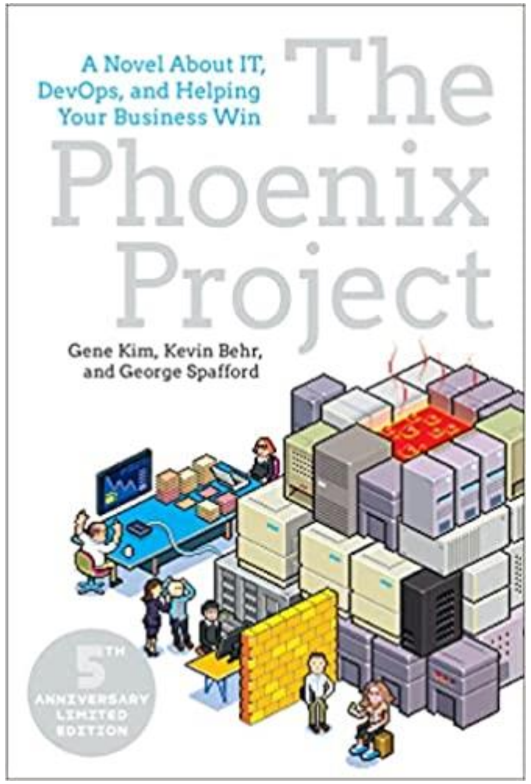

TEAM
TOPOLOGIES
ORGANIZING BUSINESS AND TECHNOLOGY TEAMS FOR FAST FLOW
Foreword by
RUTH MALAN
MATTHEW SKELTON
and MANUEL PAIS

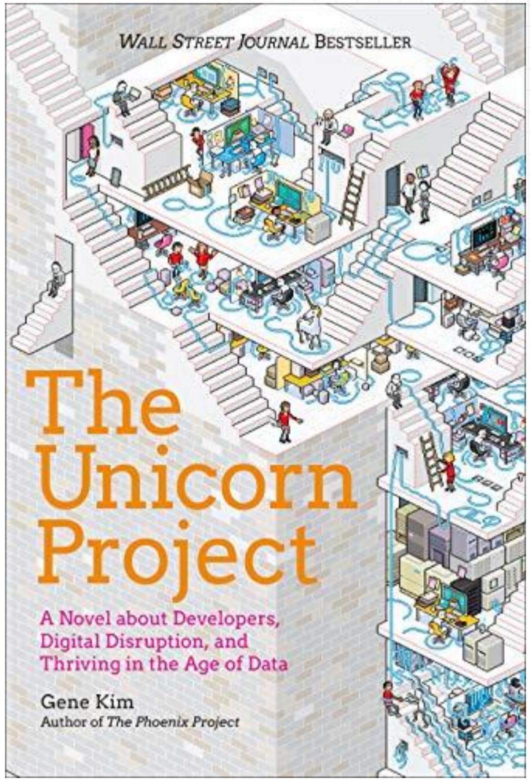

"This is no ordinary book about product development. Sure, it draws on the wisdom of such great philosophers as John Cleese, Inigo Montoya, and Tom and Jerry. But it also makes a compelling case that none of us can design anything without revealing our values."
—DANIEL H. PINK
F.I.R.E.
HOW FAST, INEXPENSIVE, RESTRAINED, AND ELEGANT METHODS IGNITE INNOVATION
DAN WARD

Key References and Books To Live By Part Deux

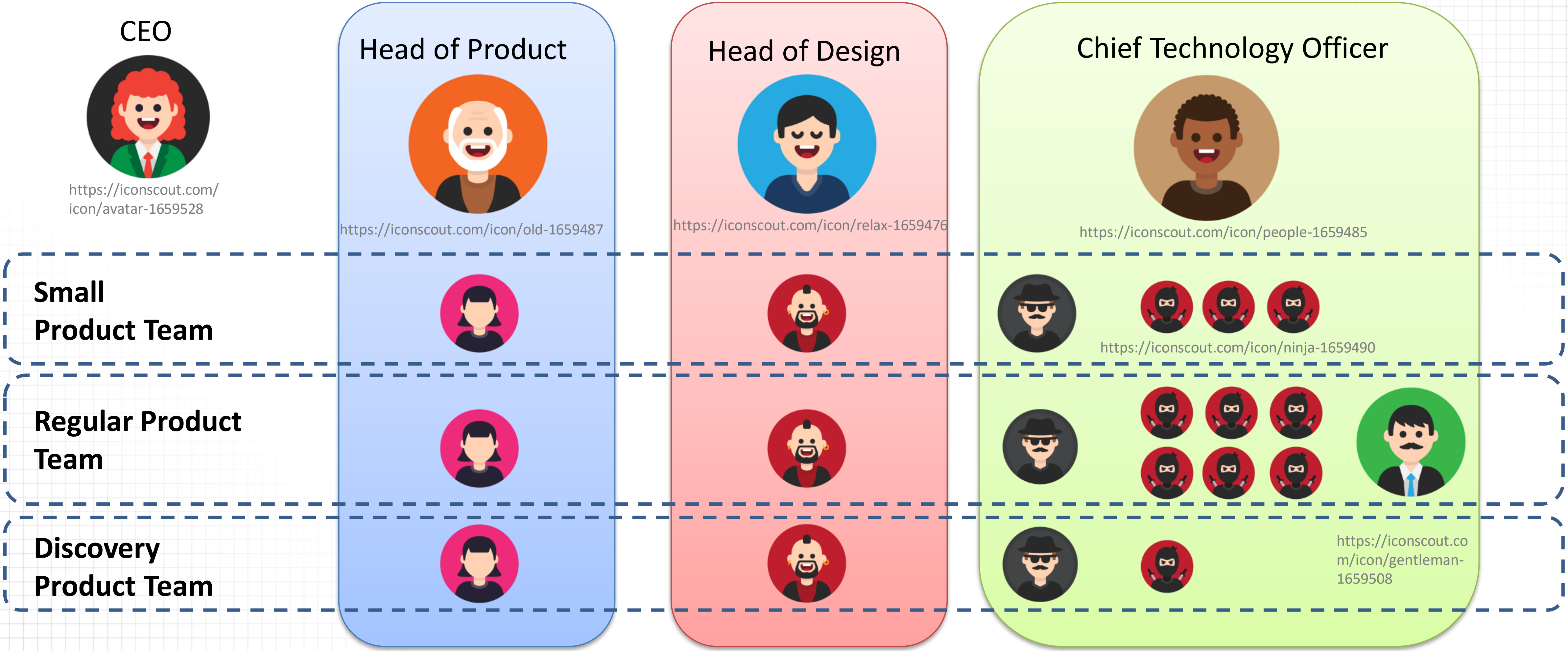

Nassim Nicholas Taleb
ANTIFRAGILE
THINGS THAT GAIN FROM DISORDER
New York Times BESTSELLER
AUTHOR OF The Black Swan
"Startling . . . richly crammed with insights, stories, fine phrases and intriguing asides . . . I will have to read it again. And again."
—Matt Ridley, THE WALL STREET JOURNAL


The Principles of Product Development
FLOW
Second Generation Lean Product Development
DONALD G. REINERTSEN


A Novel About IT, DevOps, and Helping Your Business Win
The Phoenix Project
Gene Kim, Kevin Behr, and George Spafford
5TH ANNIVERSARY LIMITED EDITION


WALL STREET JOURNAL BESTSELLER
The Unicorn Project
A Novel about Developers, Digital Disruption, and Thriving in the Age of Data
Gene Kim
Author of The Phoenix Project

Product Teams Are Usually Matrixed



CEO

https://iconscout.com/icon/avatar-1659528

Head of Product

https://iconscout.com/icon/old-1659487

Head of Design

https://iconscout.com/icon/relax-1659476

Chief Technology Officer

https://iconscout.com/icon/people-1659485

Small Product Team

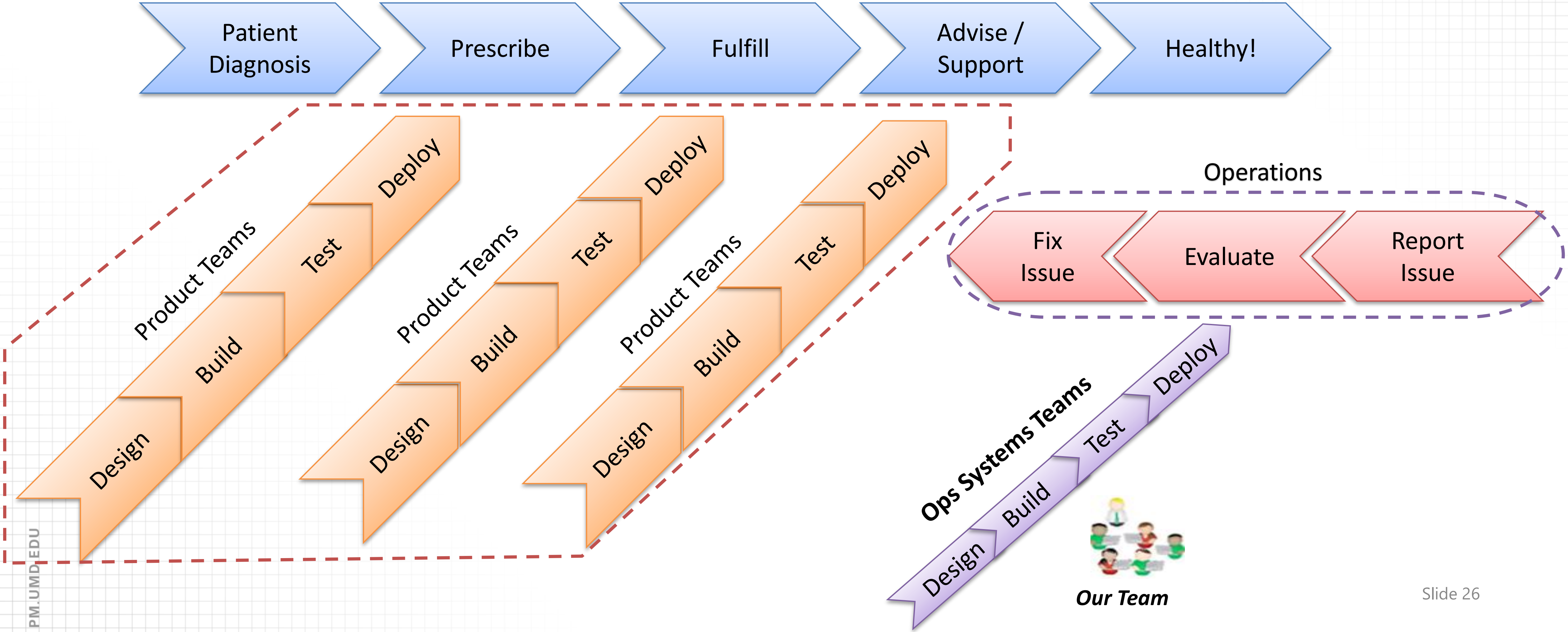
https://iconscout.com/icon/ninja-1659490

Regular Product Team

Discovery Product Team

https://iconscout.com/icon/gentleman-1659508

Teams are aligned to Customer Experience



Patient Diagnosis
Prescribe
Fulfill
Advise / Support
Healthy!

Product Teams
Design
Build
Test
Deploy

Product Teams
Design
Build
Test
Deploy

Product Teams
Design
Build
Test
Deploy

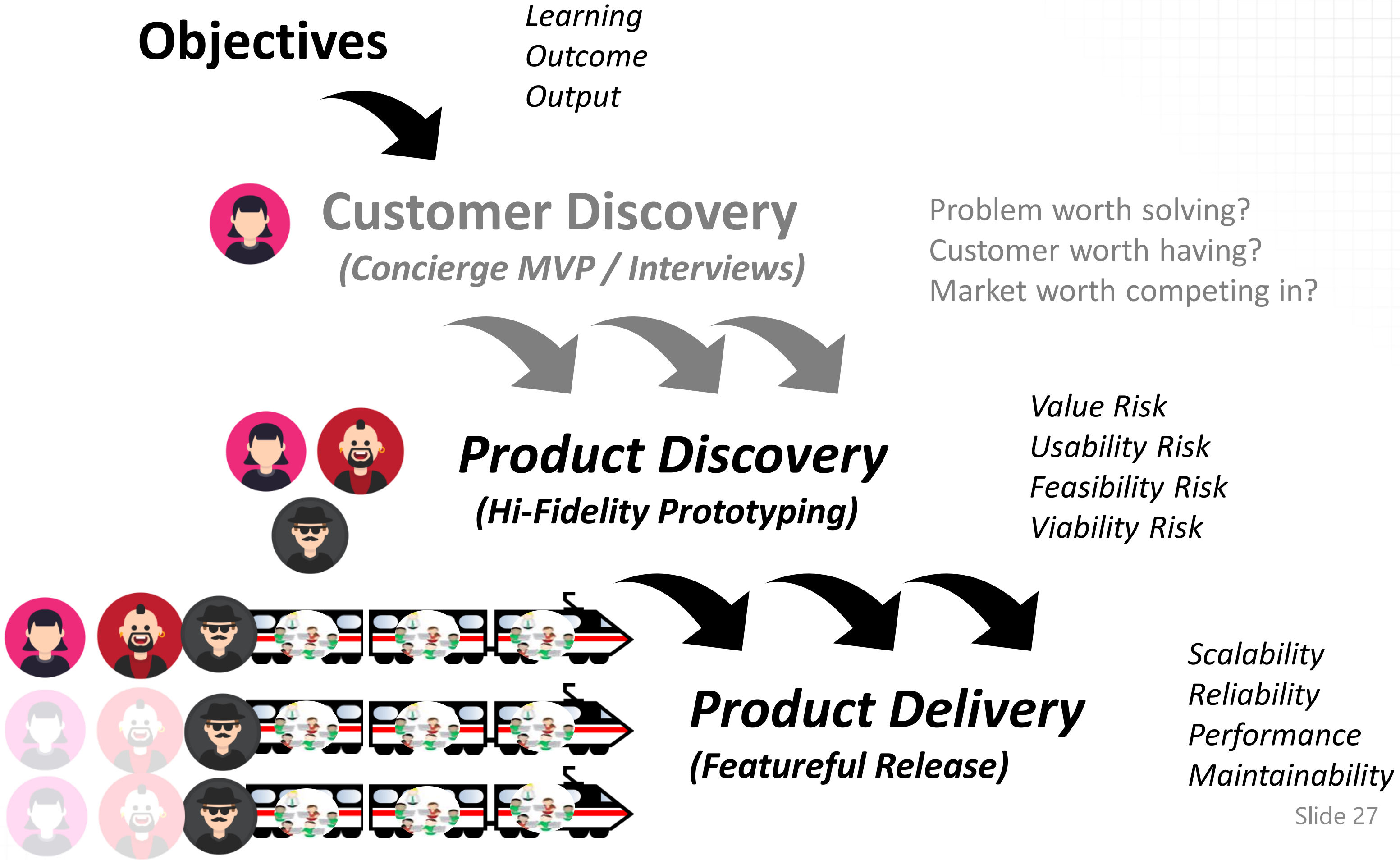
Operations
Fix Issue
Evaluate
Report Issue

Ops Systems Teams
Design
Build
Test
Deploy

Our Team

Annual and Quarterly OKRs Set Direction

- Set Objectives
- Customer Discovery (if needed)
- Product Discovery
- Product Delivery



Objectives

Learning
Outcome
Output

Customer Discovery
(Concierge MVP / Interviews)

Problem worth solving?
Customer worth having?
Market worth competing in?

Product Discovery
(Hi-Fidelity Prototyping)

Value Risk
Usability Risk
Feasibility Risk
Viability Risk

Product Delivery
(Featureful Release)

Scalability
Reliability
Performance
Maintainability