Monolithic Transformation

Changing the culture of large organizations, or, what to do when your meatware stinks

September, 2019

@cote

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Build, run, & manage, on kubernete, on any cloud

start.spring.io

spring® by Pivotal

run.pivotal.io

Pivotal **Spring Runtime**

Pivotal **Web Services**

pivotal.io/platform

Pivotal **Function Service**™

Pivotal **Application Service**™

Pivotal **Container Service**™
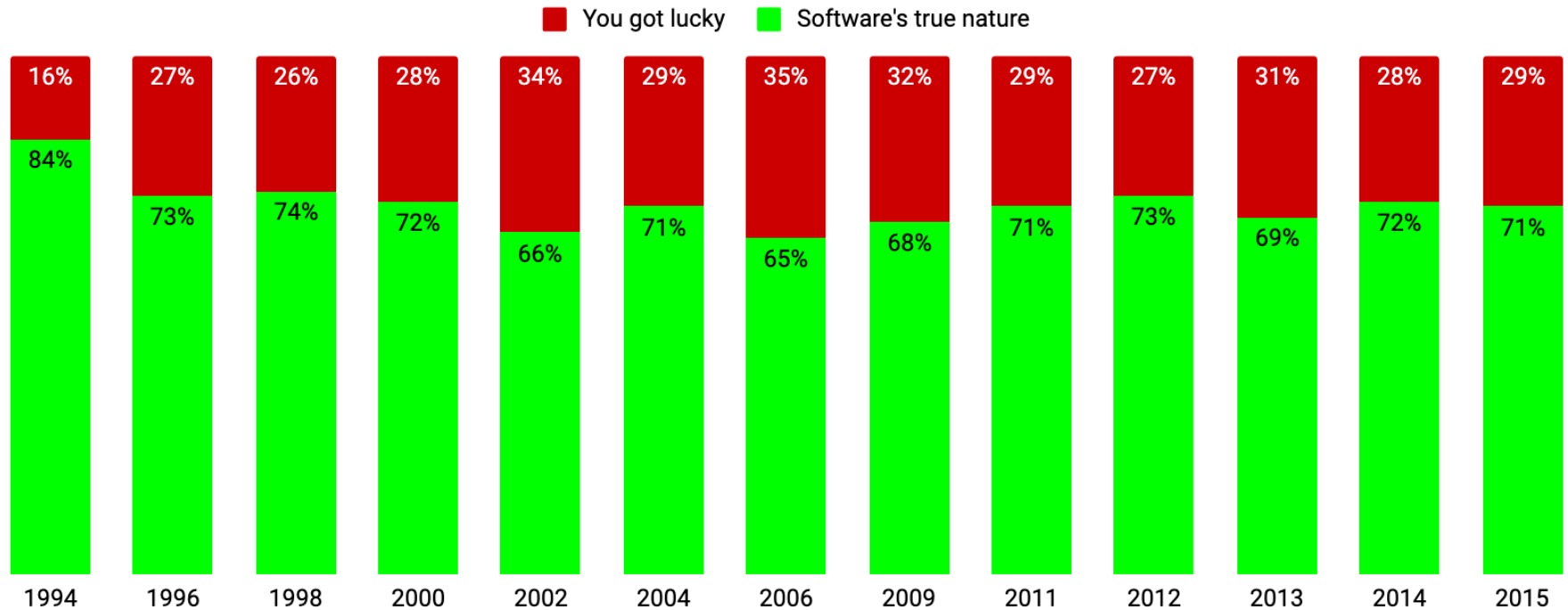
Pivotal **Labs** (Product Design & Development)

AppTX (Modernization)

Platform Ops (SRE)

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# 25 years of failure (@StandishGroup)

Legend: ■ Failed   ■ Challenged   ■ Successful

Year	Failed	Challenged	Successful
1994	31%	53%	16%
1996	40%	33%	27%
1998	28%	46%	26%
2000	23%	49%	28%
2002	15%	51%	34%
2004	18%	53%	29%
2006	19%	46%	35%
2009	24%	44%	32%
2011	22%	49%	29%
2012	17%	56%	27%
2013	19%	50%	31%
2014	17%	55%	28%
2015	19%	52%	29%

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Source: built from excerpts from the 2009 study and 2015 study.
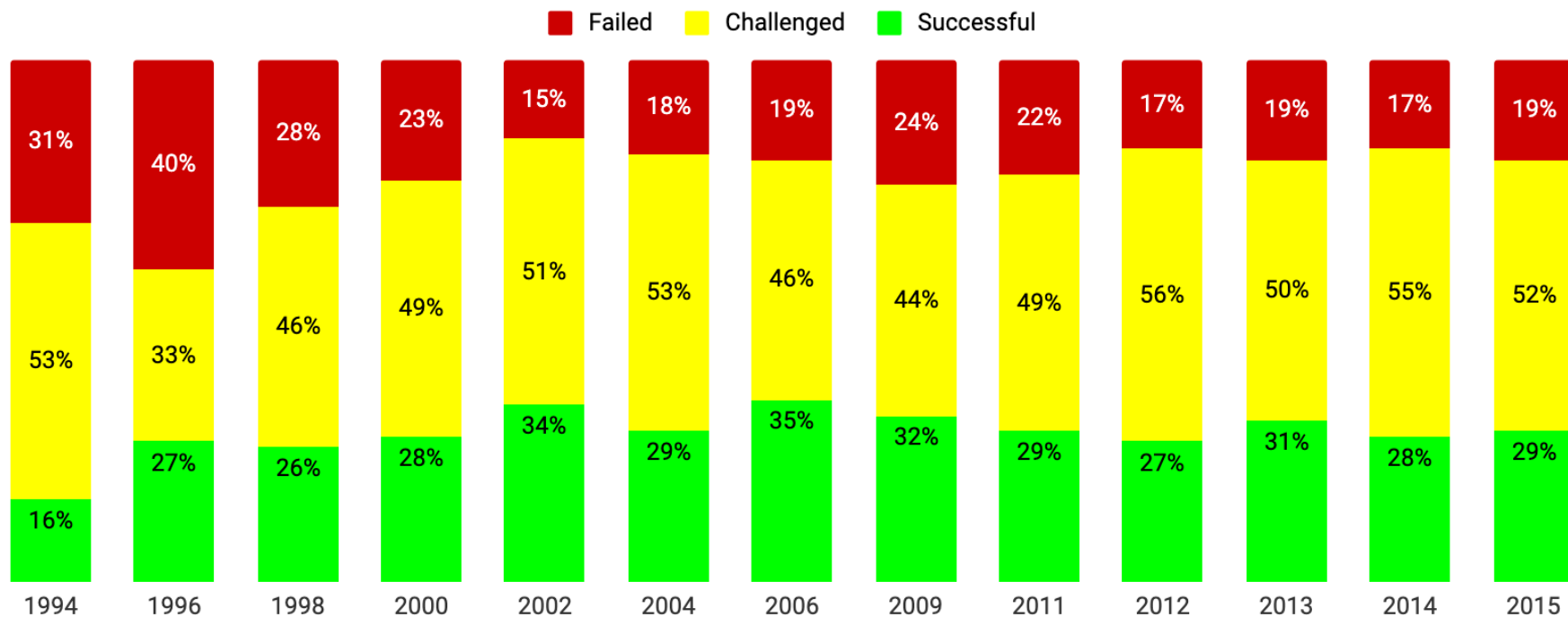
25 years of software's true nature vs "you got lucky" (@StandishGroup)

Source: built from excerpts from the 2009 study and 2015 study.

Shift from *Service* Delivery to *Product* Delivery
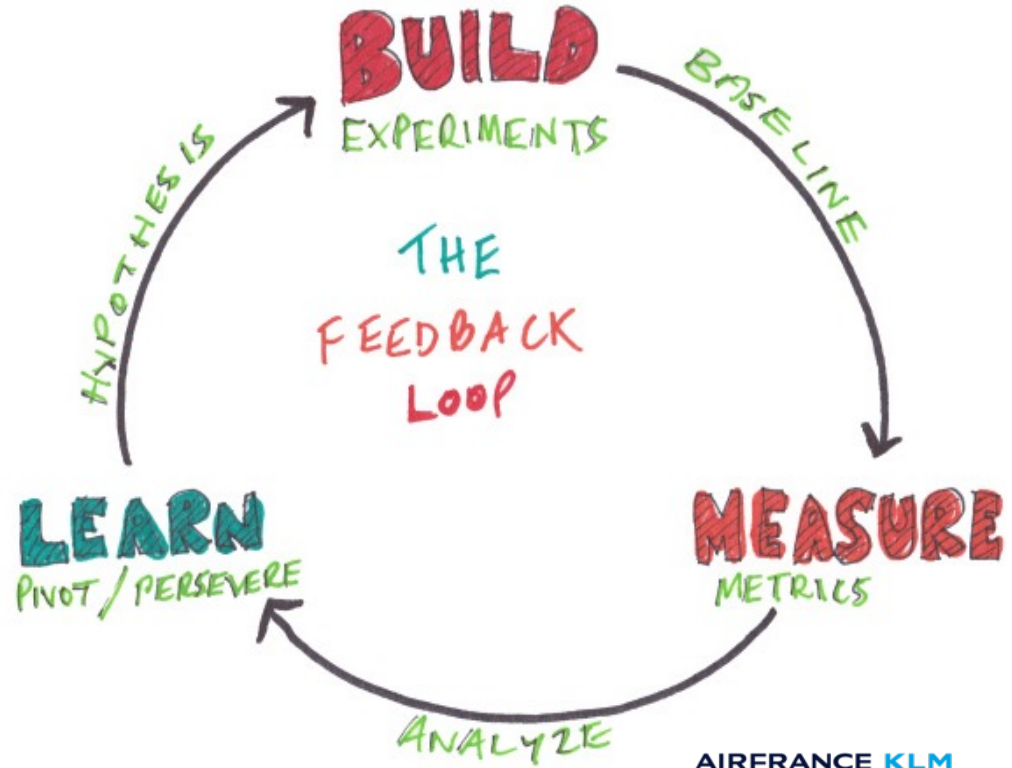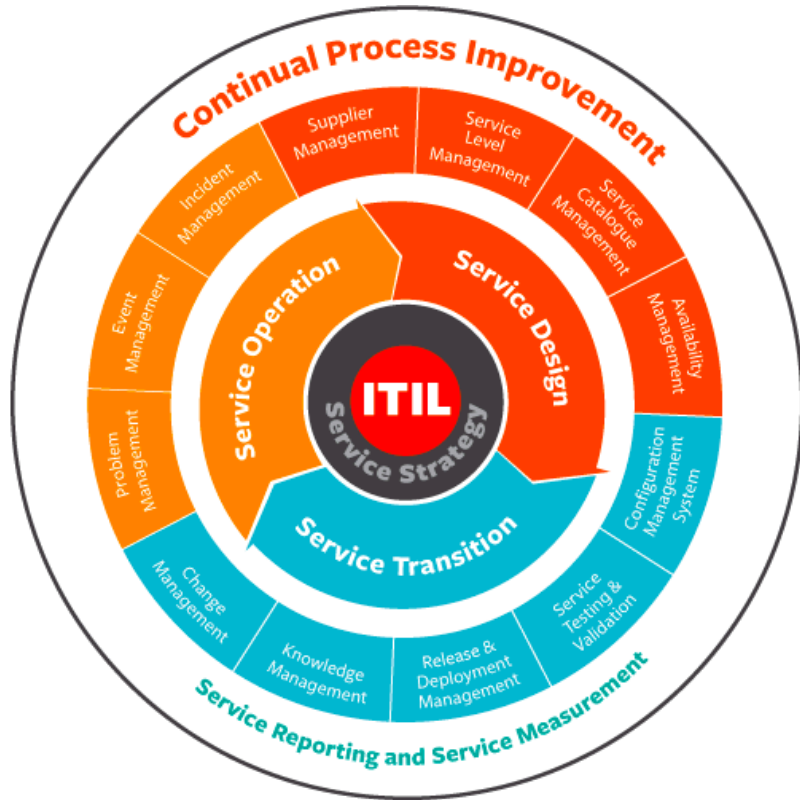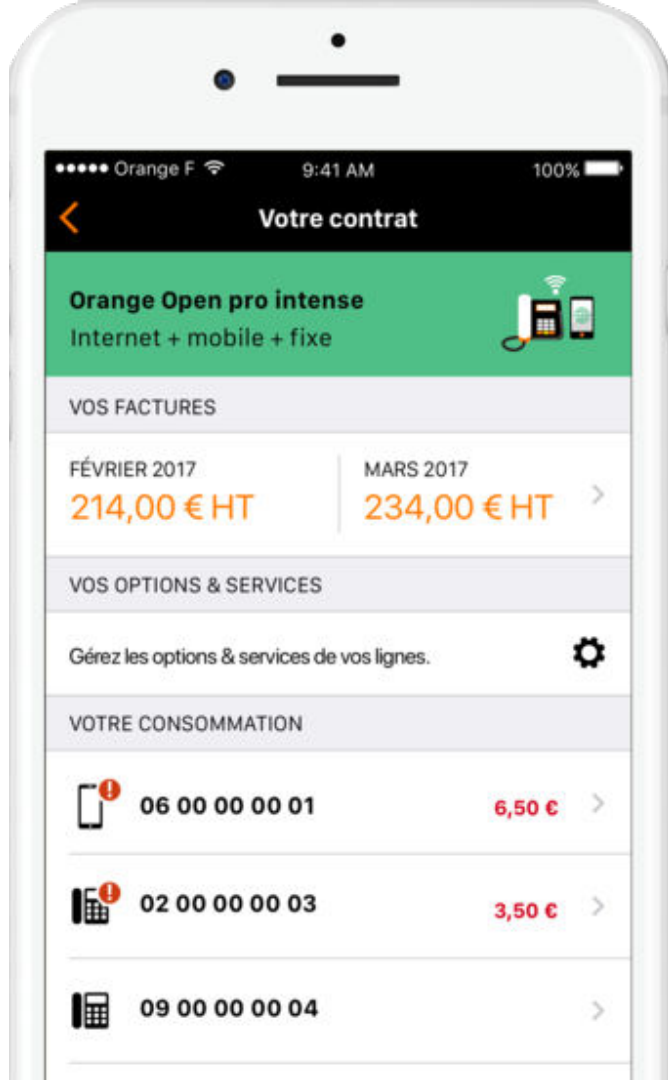
"The Business"

Corporate strategy, revenue goals, mission, etc.

Leadership, EAs, etc.

Culture, process, methodology, governance, compensation, etc.

Product teams

Design Will users like this?	Design Will users like this?	Design Will users like this?	Design Will users like this?	Design Will users like this?
Development Can we build this? — Product — Product Management Will this help the business?	Development Can we build this? — Product — Product Management Will this help the business?	Development Can we build this? — Product — Product Management Will this help the business?	Development Can we build this? — Product — Product Management Will this help the business?	Development Can we build this? — Product — Product Management Will this help the business?
Mobile payments	Mortgage application	Mortgage approval	Bill pay	Transfers

Pivotal **Cloud Foundry**®

Platform Engineers

Private or public IaaS

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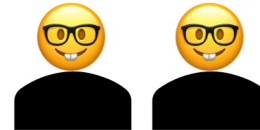
"The code to accomplish these tasks might be dozens of lines of JavaScript, which would be a trivial amount of development compared to what it takes to set up the servers with the proper environment to run the code."
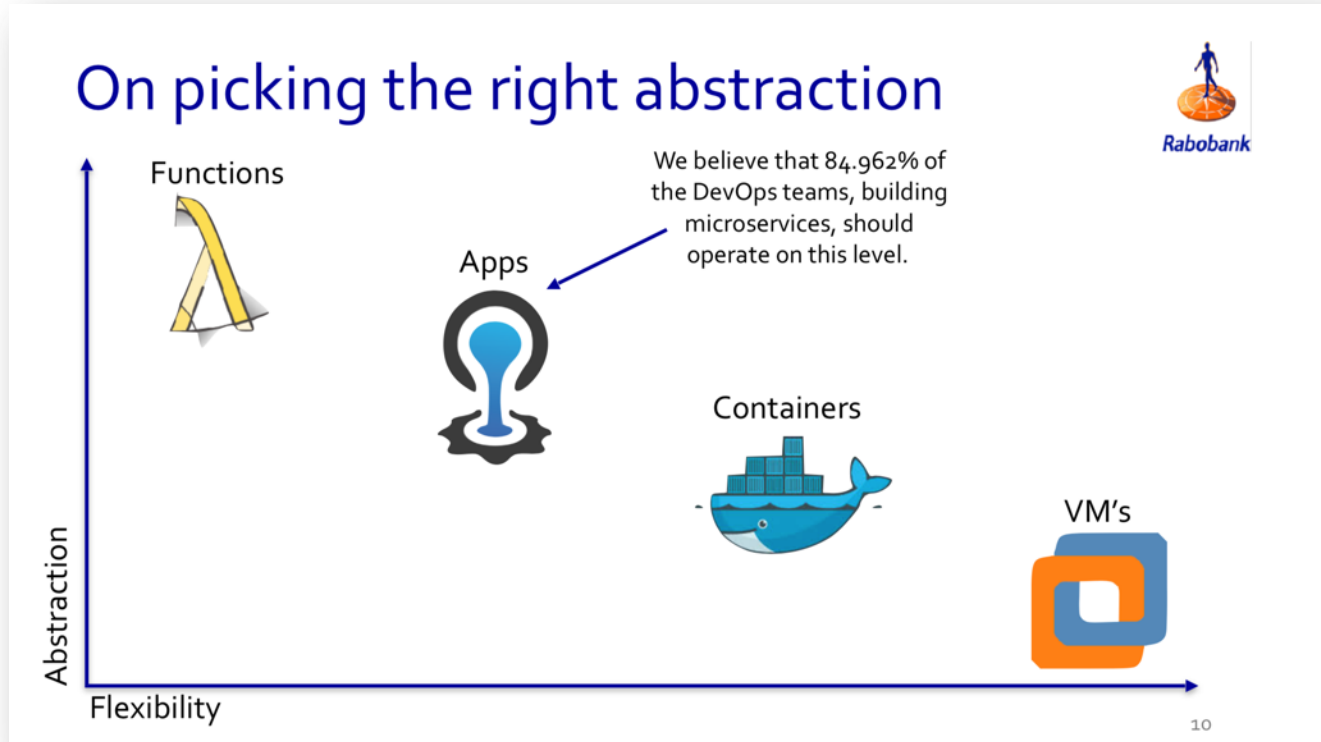
Product management for ops

..developer should have to do the least amount of work possible to deploy to the platform.

..just push from the CI tool without worrying about change tickets, security scanning, or approvals because it all happened through automation.

..Operational readiness, compliance, logging, monitoring, paging and notifications, etc. should all be automatic.

..Developers want to focus on delivering value as much as anyone else in the company. Get them out of administrivia. I assure you that they will buy into an opinionated pattern if it means more time solving problems for customers.

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First, choose, govern, and garden the right platform

On picking the right abstraction

Functions

Apps

We believe that 84.962% of the DevOps teams, building microservices, should operate on this level.

Containers

VM's

Abstraction

Flexibility

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Rabobank

Source: "Migrating Rabobank Online from Monoliths to Microservices with Pivotal Cloud Foundry," Vincent Oostindië, Rabobank.

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>pfs create {myfunction}

FUNCTIONS API

>cf bind {myservice}

>cf push {mycode}

APPLICATIONS API

Reactive Stream & Events, Less Code, Auto Run & Wire

Service Broker, Marketplace

Day2 Microservice (Blue/Green, Discover, Break, Config)

Loggregator, Metrics, Trace, Self Healing, Auto Scale

Encrypt, Isolation Segments, Orgs/Spaces, Audit, RBAC

>kubectl run {myimage}

CONTAINERS API

Buildpacks, Api Gateway, Routing/LB, Service Mesh, C2C

Orchestration, Registry, Multi-cluster, Management, Conformance, Tenancy, API Based

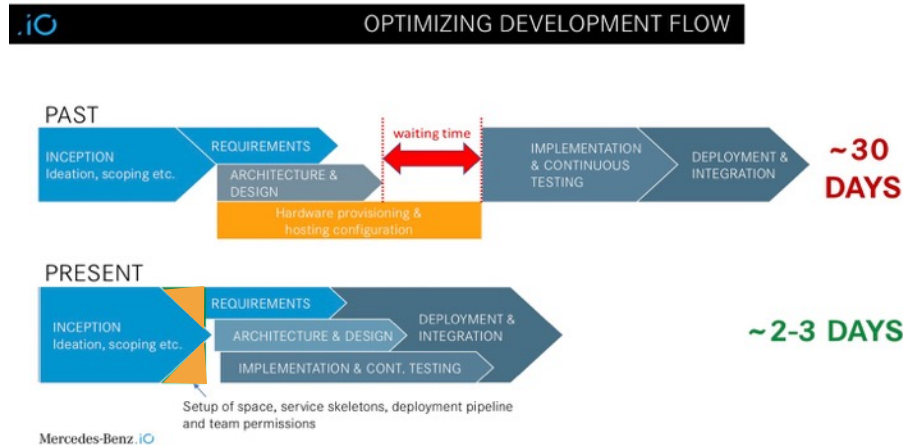| Platform-as-a-Product (Pipelines, Healthwatch)	VMs & Storage as API (Cloud Provider Interface)	Embedded OS (Windows & Linux)	Network as API (Micro Segments)	Continuously Secured (Rotate, Repair, Repave)

VMware   AWS   Google   Azure

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Eliminating toil to free up time for product development, speed up developers

Functions

- Removes toil with automation & programming

- Stands up & manages the platform

- Creates shared services/middleware/etc.

Insane staff efficiency

- T-Mobile USA: 8 ops to 300 developers, 11k containers.

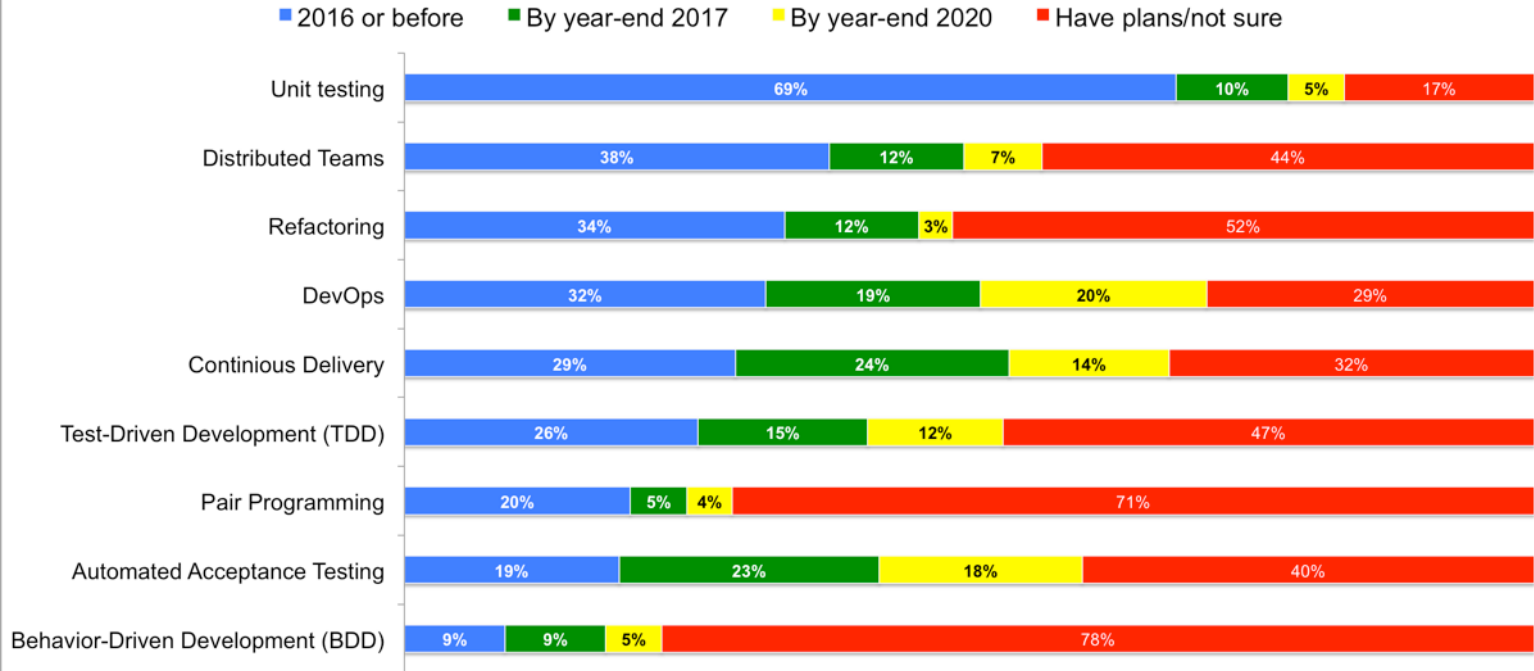- Dick's Sporting Goods: 6 ops to 120 devs.

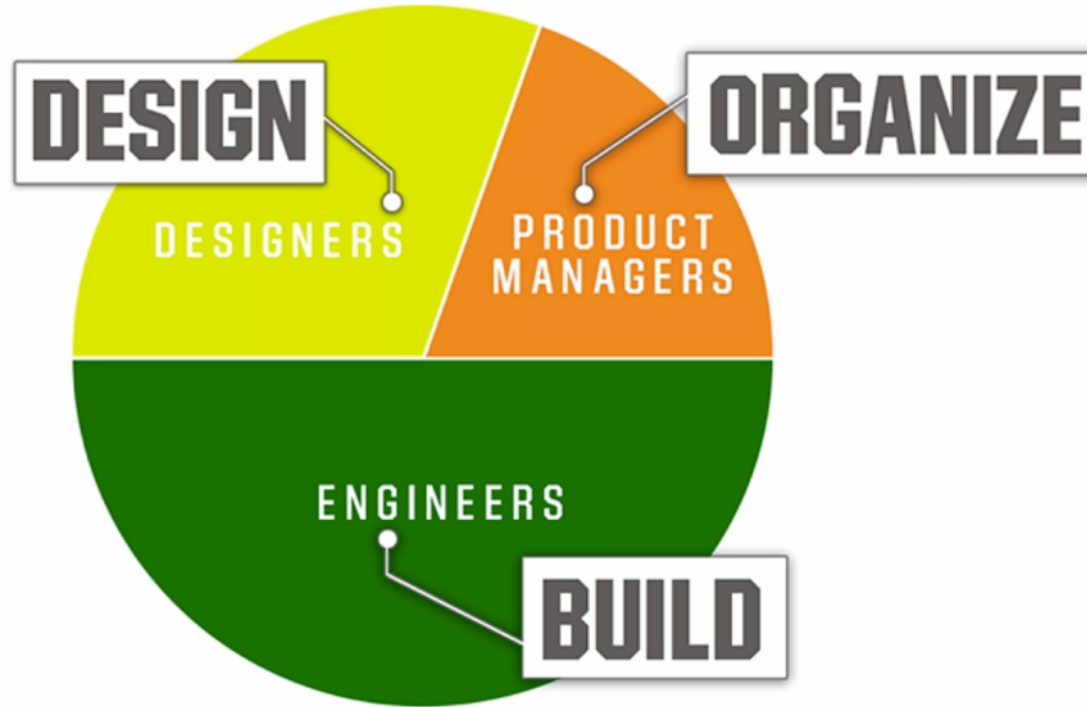- Well Fargo: repaves production every 3 days
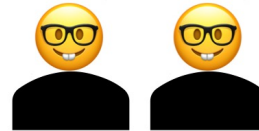
25+ years later, agile practices are still not standard

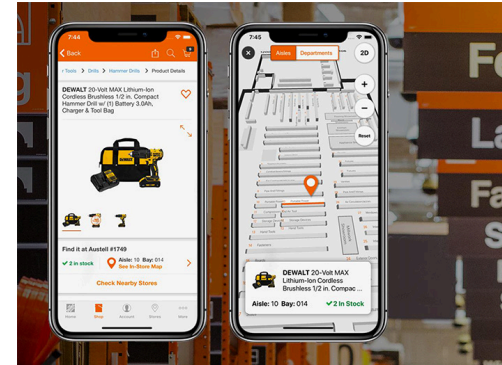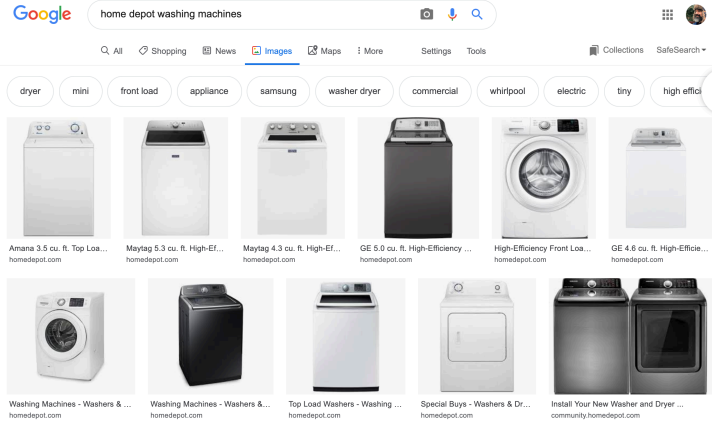**When did or will your organization begin to use each of the following agile enterprise practices?**

Base: n=176 Gartner Research Members, survey conducted Oct. 2016

- ■ 2016 or before
- ■ By year-end 2017
- ■ By year-end 2020
- ■ Have plans/not sure

Practice	2016 or before	By year-end 2017	By year-end 2020	Have plans/not sure
Unit testing	69%	10%	5%	17%
Distributed Teams	38%	12%	7%	44%
Refactoring	34%	12%	3%	52%
DevOps	32%	19%	20%	29%
Continious Delivery	29%	24%	14%	32%
Test-Driven Development (TDD)	26%	15%	12%	47%
Pair Programming	20%	5%	4%	71%
Automated Acceptance Testing	19%	23%	18%	40%
Behavior-Driven Development (BDD)	9%	9%	5%	78%

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Product-centric, balanced, autonomous teams

Source: "Developer & Culture Transformation," Jason Williams, Dick's Sporting Goods, s1p 2018.

Touching washing machines, finding toilets

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"The Business"

Corporate strategy, revenue goals, mission, etc.

Leadership, EAs, etc.
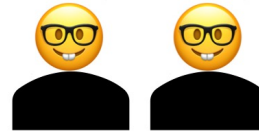
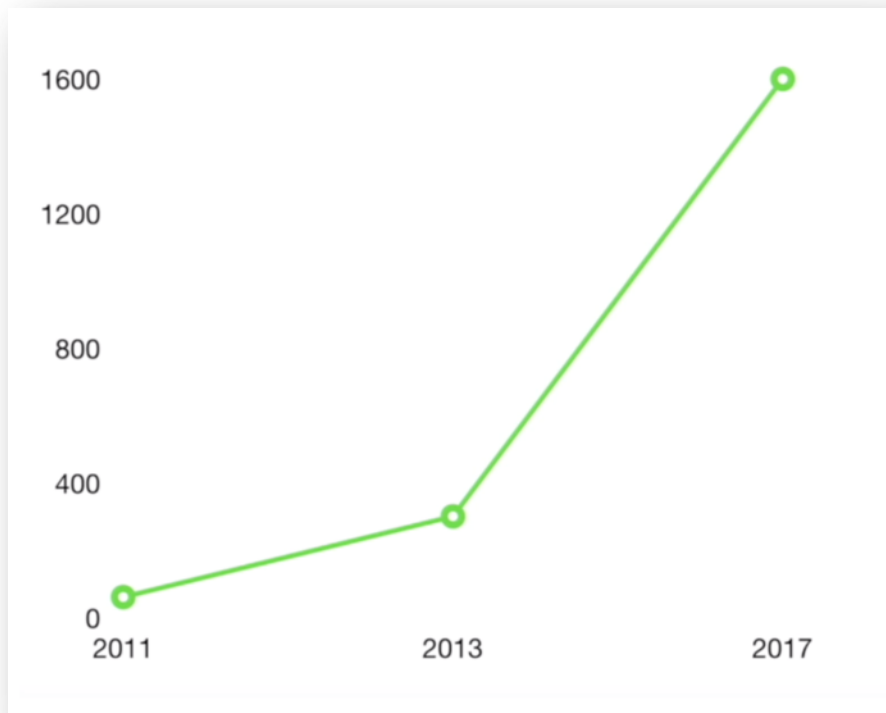Culture, process, methodology, governance, compensation, etc.

Product teams

Design
Will users like this?

Product

Development
Can we build this?

Product Management
Will this help the business?

Mobile payments

Design
Will users like this?

Product

Development
Can we build this?

Product Management
Will this help the business?

Mortgage application

Design
Will users like this?

Product

Development
Can we build this?

Product Management
Will this help the business?

Mortgage approval

Design
Will users like this?

Product

Development
Can we build this?

Product Management
Will this help the business?

Bill pay

Design
Will users like this?

Product

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Will this help the business?

Transfers

Pivotal **Cloud Foundry**

Platform Engineers

Private or public IaaS

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Management
& org. transformation

Tech staff growth

"J.P. Morgan CFO Marianne Lake said the US bank now employs **40,000 technologists**. That's an **increase of 10,000 in two years** (in a 2013 investor letter, JPM said it employed 30,000 technologists). **18,000 of those 40,000 are developers**, said Lake."

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"We believe that we need to reimagine banking to make banking simple, seamless, as well as invisible to allow our customers to **live more bank less**."

Siew Choo Soh, DBS Bank

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Transform by doing, then cloning & seeding

HEATMAP OF DEVOPS TRANSFORMATION STRATEGIES BY PERFORMANCE PROFILE

|	Low	Medium	High	Elite
Training Center	27%	21%	18%	14%
Center of Excellence	34%	34%	20%	24%
Proof of Concept but Stall	41%	32%	20%	16%
Proof of Concept as a Template	16%	29%	29%	30%
Proof of Concept as a Seed	21%	24%	29%	30%
Communities of Practice	24%	51%	47%	57%
Big Bang	19%	19%	11%	9%
Bottom-up or Grassroots	29%	39%	46%	46%
Mashup	46%	42%	34%	38%

Further analysis of just high and elite performers shows the following use profiles:

- 46% - Communities of Practice, Grassroots, and PoCs

- 23% - Grassroots efforts and Communities of Practice

- 22% - all by Big Bang and DOJOs, but inc. PoC but stall

- 9% Centers of Excellence, Communities of Practice, and Training Centers

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Changing is often too hard, so create a new organization
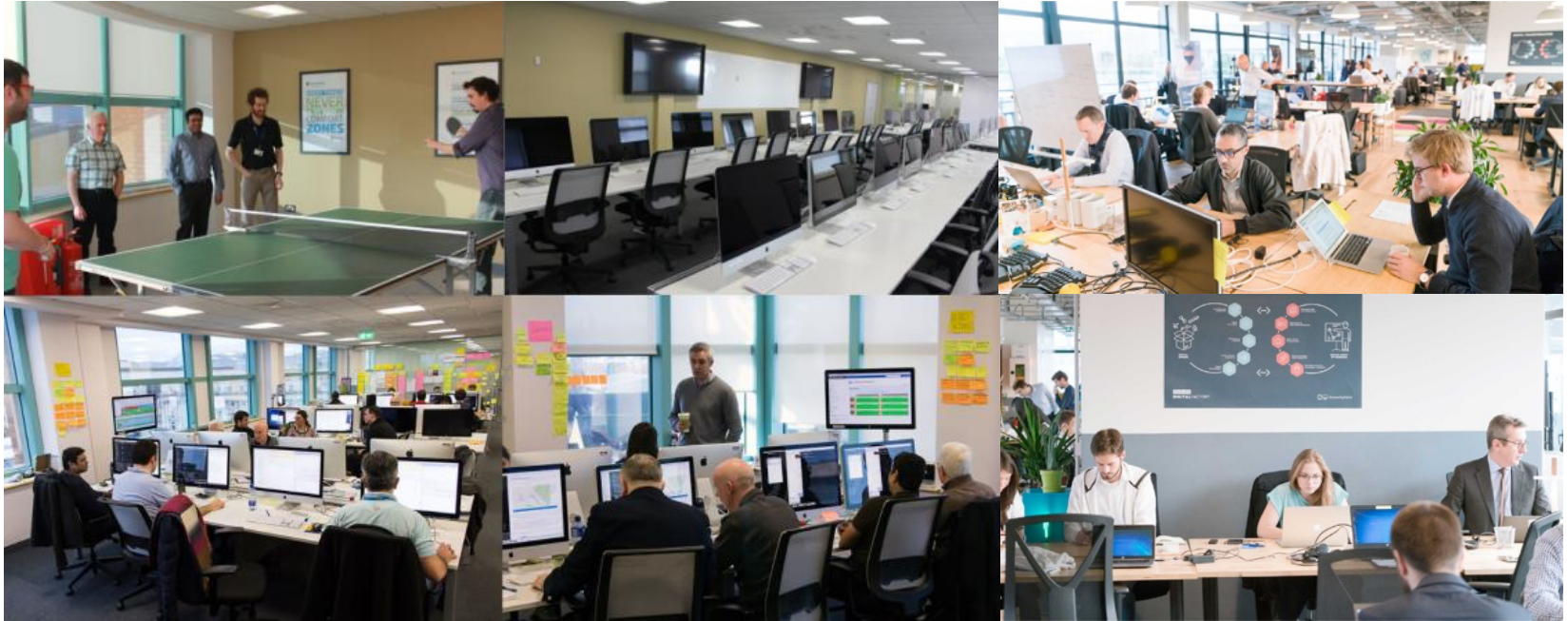
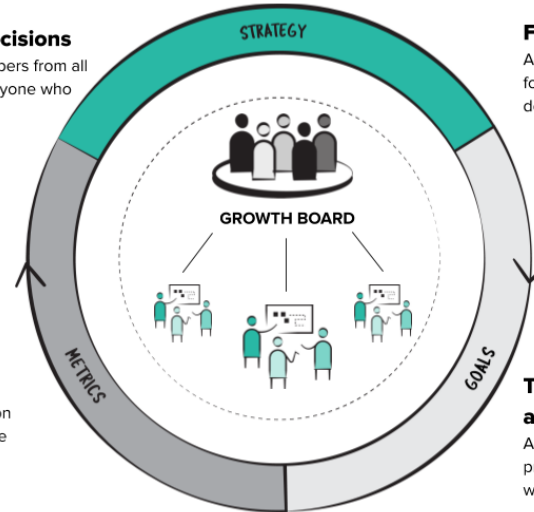# Use a systematic, small batch strategy & finance process
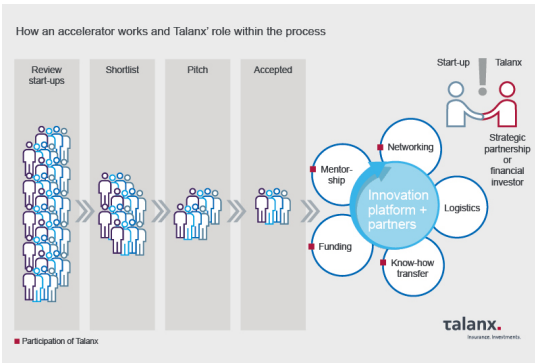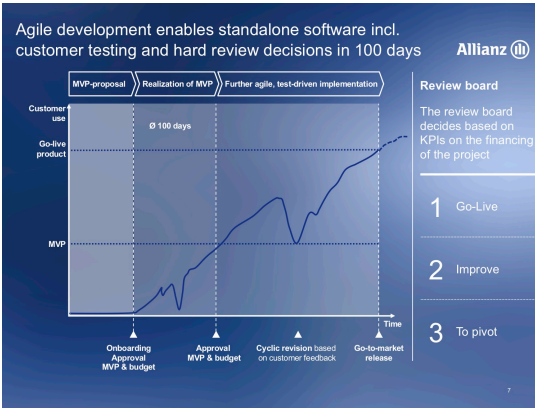
Cross-functional decisions
Board should include members from all key stakeholder groups: anyone who can affect the decision

Focused on value
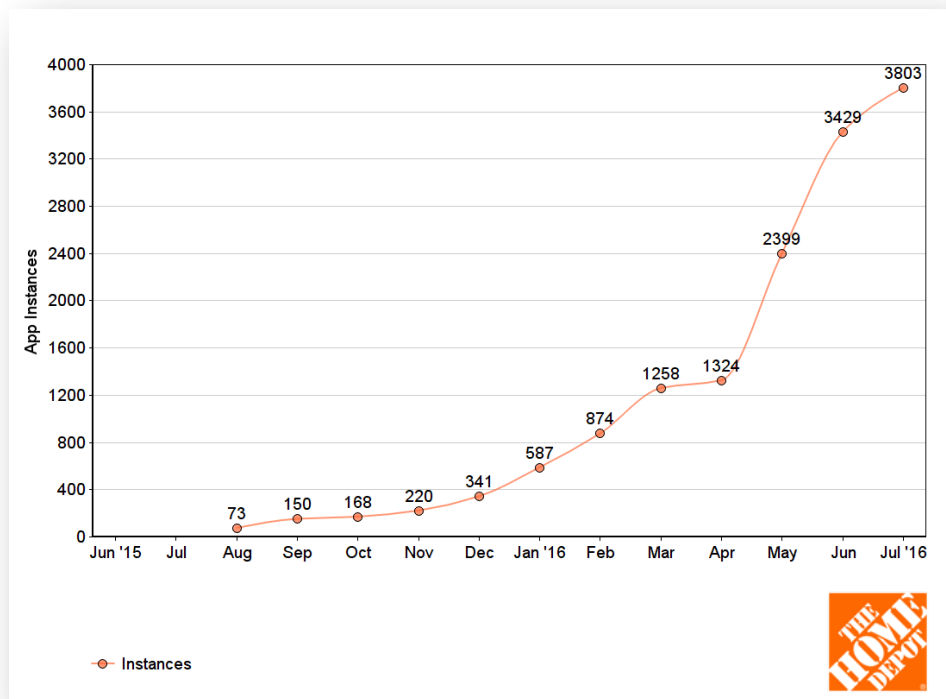A single problem area or goal focuses the growth board's decisions

Informed by data
Team presentations focus on evidence, learnings, provide context for conversation

Tackles the riskiest assumptions
Are these even the right problems to solve? How would we know?

Sources: Talanx, 2016; "The Shift to a New Digital Allianz Germany," Dr. Daniel Poelchau, Allianz, Oct 2016; "Scaling Success With Growth Boards," Amy Herzog, May, 2019

Starting: "pilot low-risk apps, & ramp-up." E.g. store finder.


2016:

130 apps & services, estimated

2019:

4,000 apps & services, estimated

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Sources: Home Depot meetup, Oct 2015; Humana at CF Summit 2015; "Getting started," Coté, Oct 2016; Comcast's Christopher Tretina at SP1 2016; "Cloud-Native at Home Depot, With Tony McCulley"; "Bottom Up Enterprise Transformation," Kyle Campos, CSAA Insurance, CF Summit EU, Oct 2017; "Running the platform at The Home Depot," Tony McCulley interview, June 2019. 2016 estimated apps & services: # of AI's equates to ~130 apps composed on ~900 services; 4k in 2019 from Tony.

Work in Progress

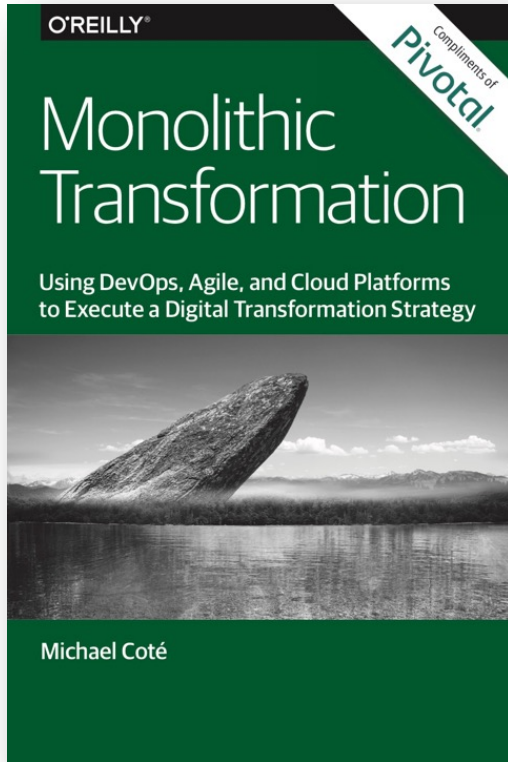# *The Business Bottleneck*: finance, strategy, executives

"The Business" is blocking transformation

Top Three Challenges to Product-Centric Delivery
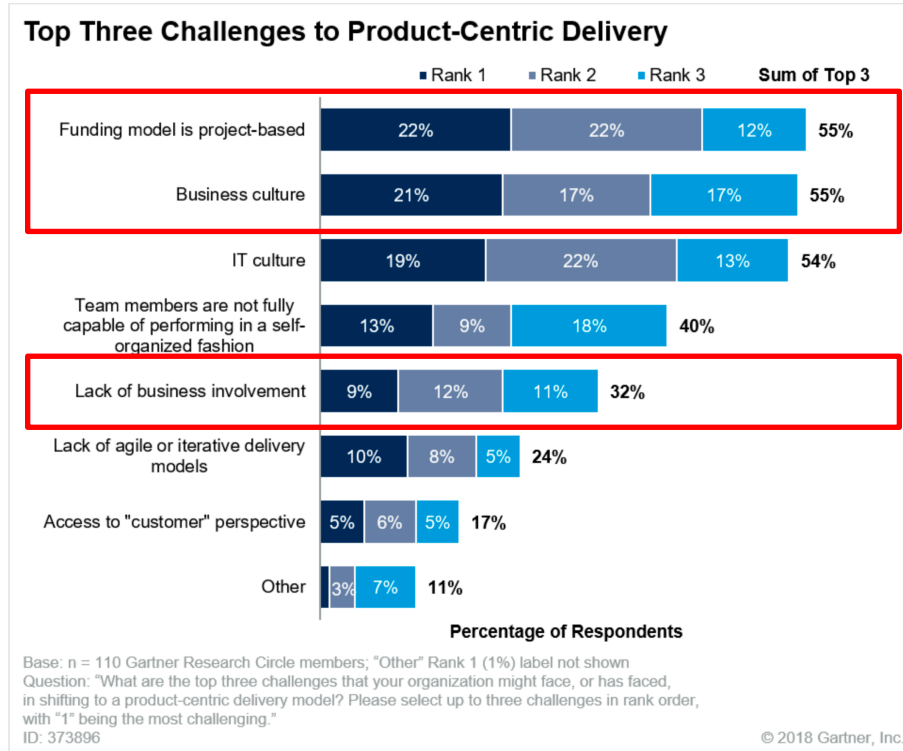
Note: Due to rounding, numbers may not add up precisely to the totals shown.

Source: Gartner (October 2018)

Source: "Survey Analysis: IT Is Moving Quickly From Projects to Products," Bill Swanton, Matthew Hotle, Deacon D.K Wan, Gartner, Oct. 2018.

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More details

- Book (free!): http://cote.io/books
- 90 minute version of this talk, recorded.
- Platform as a Product:
  - Recorded, more detailed presentation.
  - "Why You Should Treat Your Platform as a Product."
- Management:
  - Recorded enterprise architecture talk.
  - Recorded Creating a DevOps Culture talk.
- Strategy, finance, & executives:
  - *The Business Bottleneck* work in progress.

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