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# Value Stream Architecture

Dr. Mik Kersten (Tasktop CEO) & Carmen DeArdo (Nationwide Technology Director)

Image Source: BMW Group



#68 ON THE  
FORTUNE  
500 LIST



We are a strong mutual company built to serve our members.



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is on your side

# 43

of the  
Fortune  
100



# 11

of the top 25  
world banks



# 4

of the top 10  
US insurers

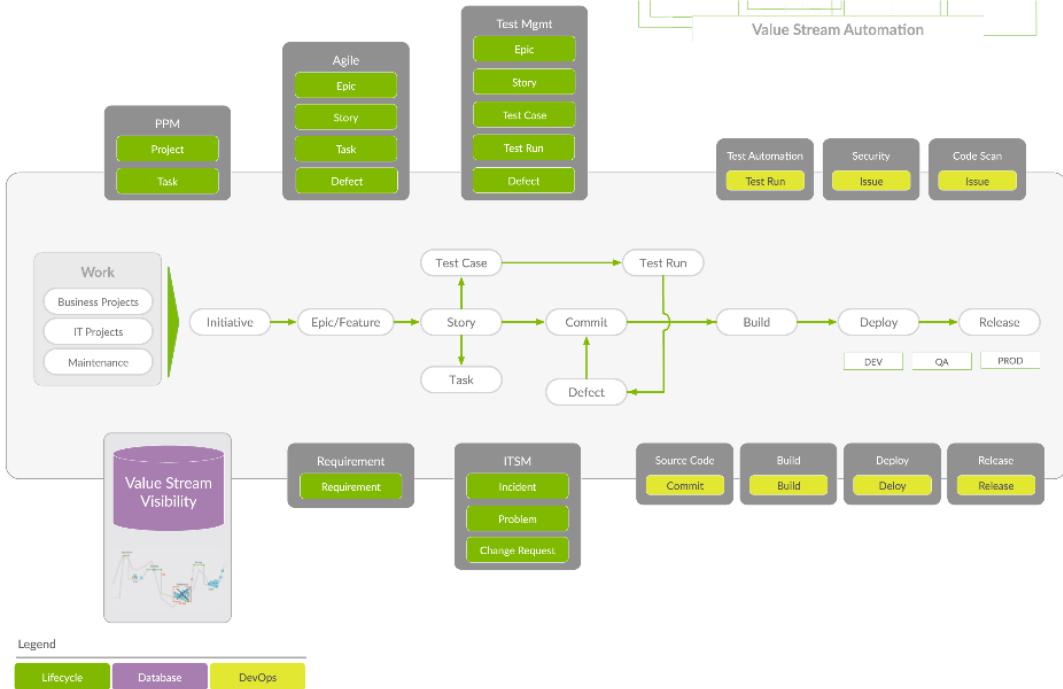


# 6

of the top 6  
health plans



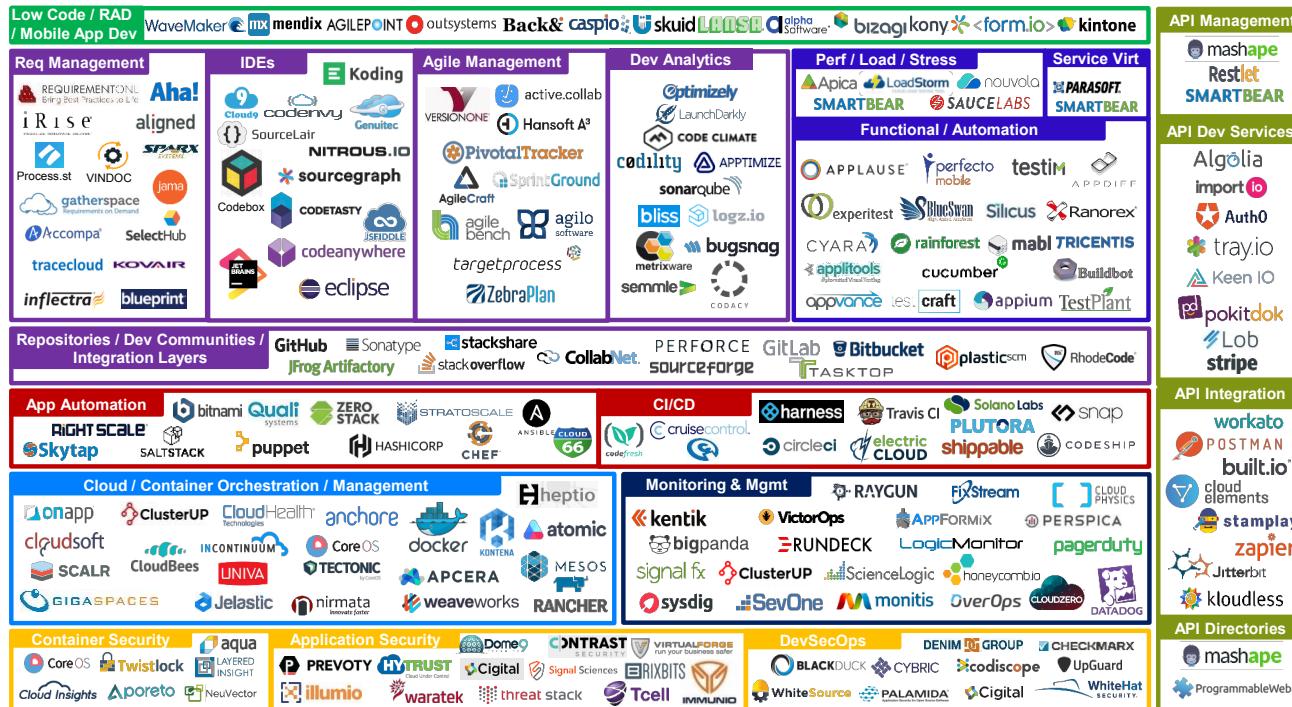
## Value Stream Integration



## Unbundling of a Bank



# GrowthPoint Technology Partners DevOps Startup Landscape Map



## Development

API

1

n

Lo

Code/Rapid/Mobile Dev

Te

## Deployment

yment

### Monitoring

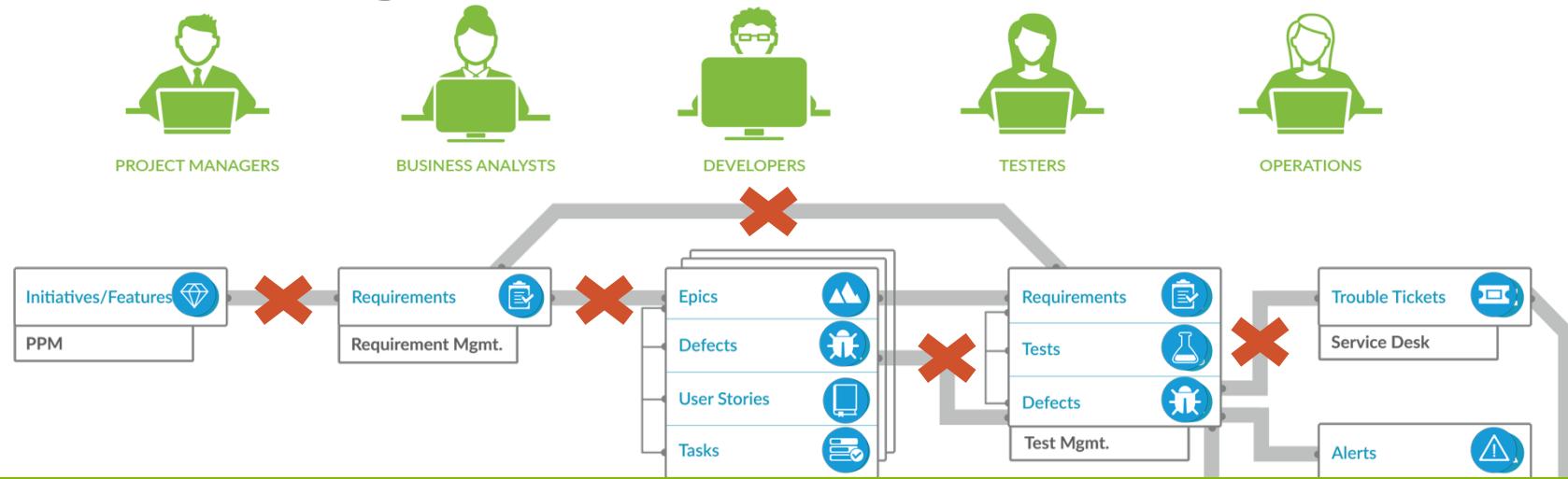
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# Fragmented Value Streams

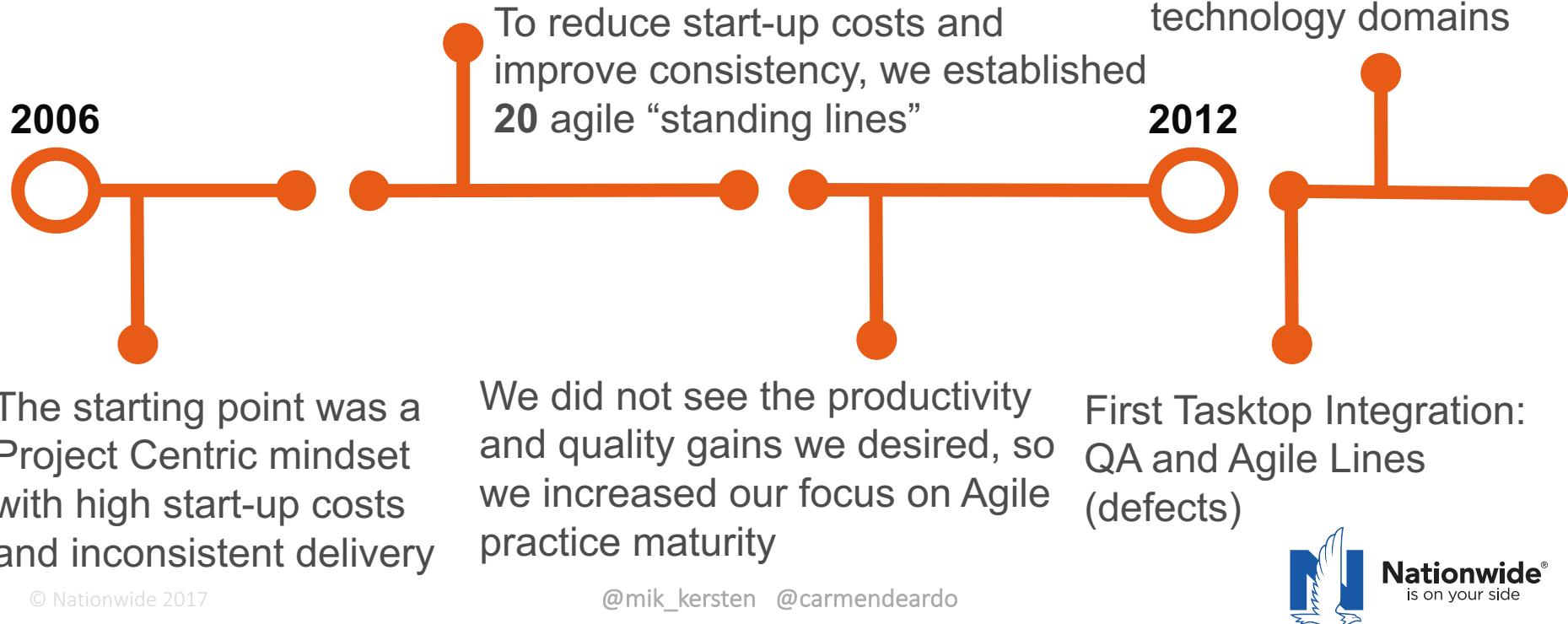


We need a more disciplined and structured way of thinking about software value streams

CI

Release Mgmt.

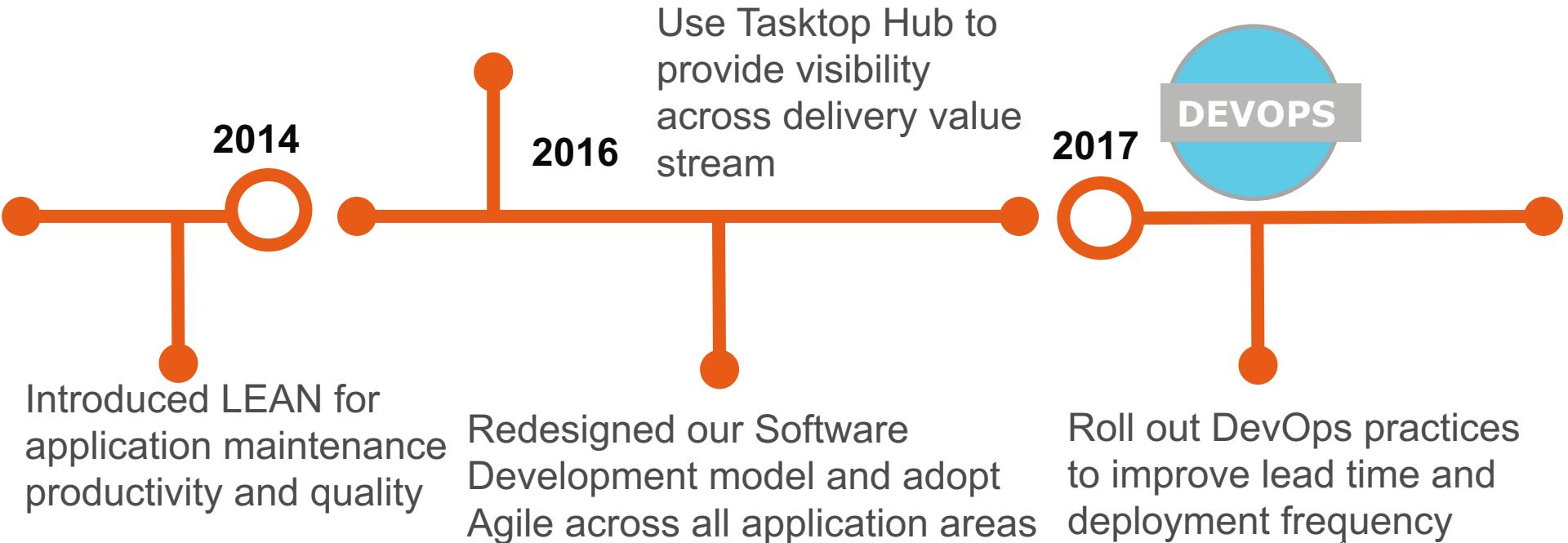
# Our AGILE Journey Began in 2006





LEAN

## AGILE and LEAN provided Productivity and Quality Improvements, DevOps needed to drive Speed



# Results



## PRODUCTIVITY

55% Top Quartile  
compared to industry



## PREDICTABILITY

On-time delivery over 90%



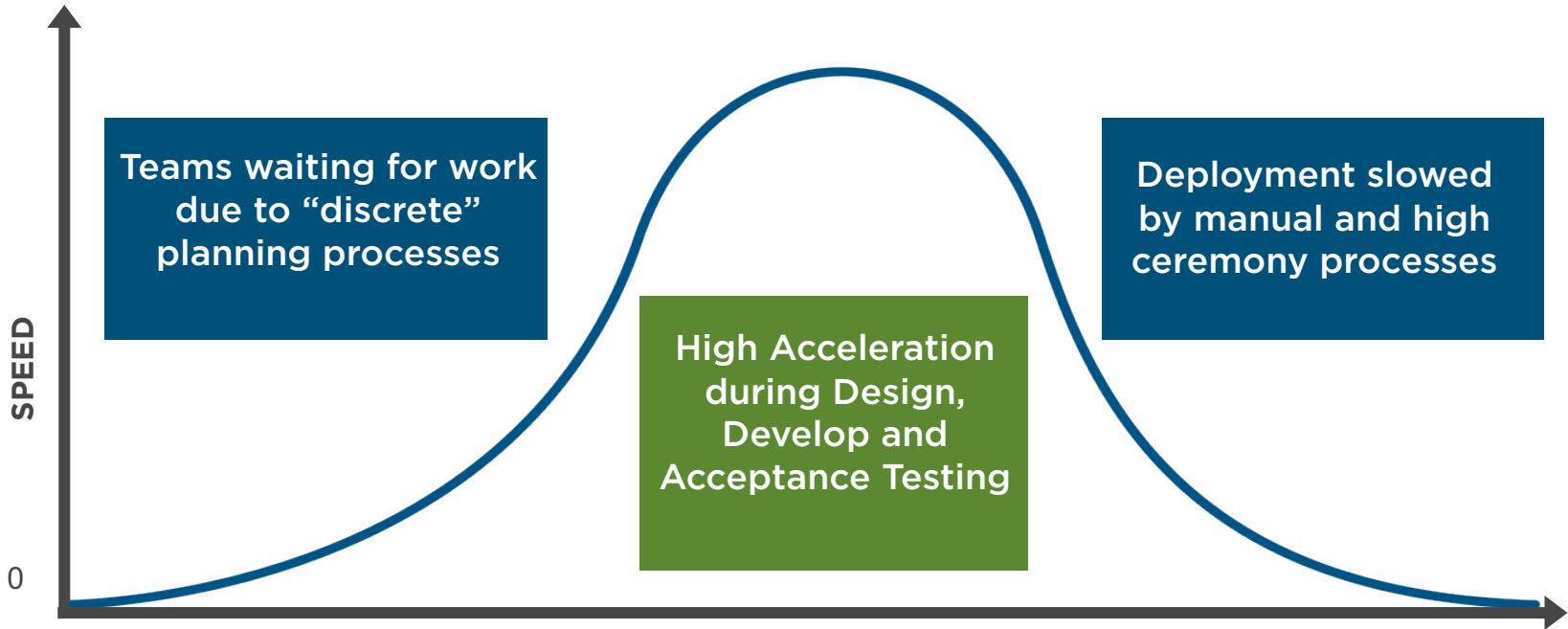
## QUALITY

88% releases went into  
production with **ZERO** defects

\$25M+

Economic value  
annually

# Need to Increase Speed Across the Value Stream



# DevOps Compass Points to Business Success

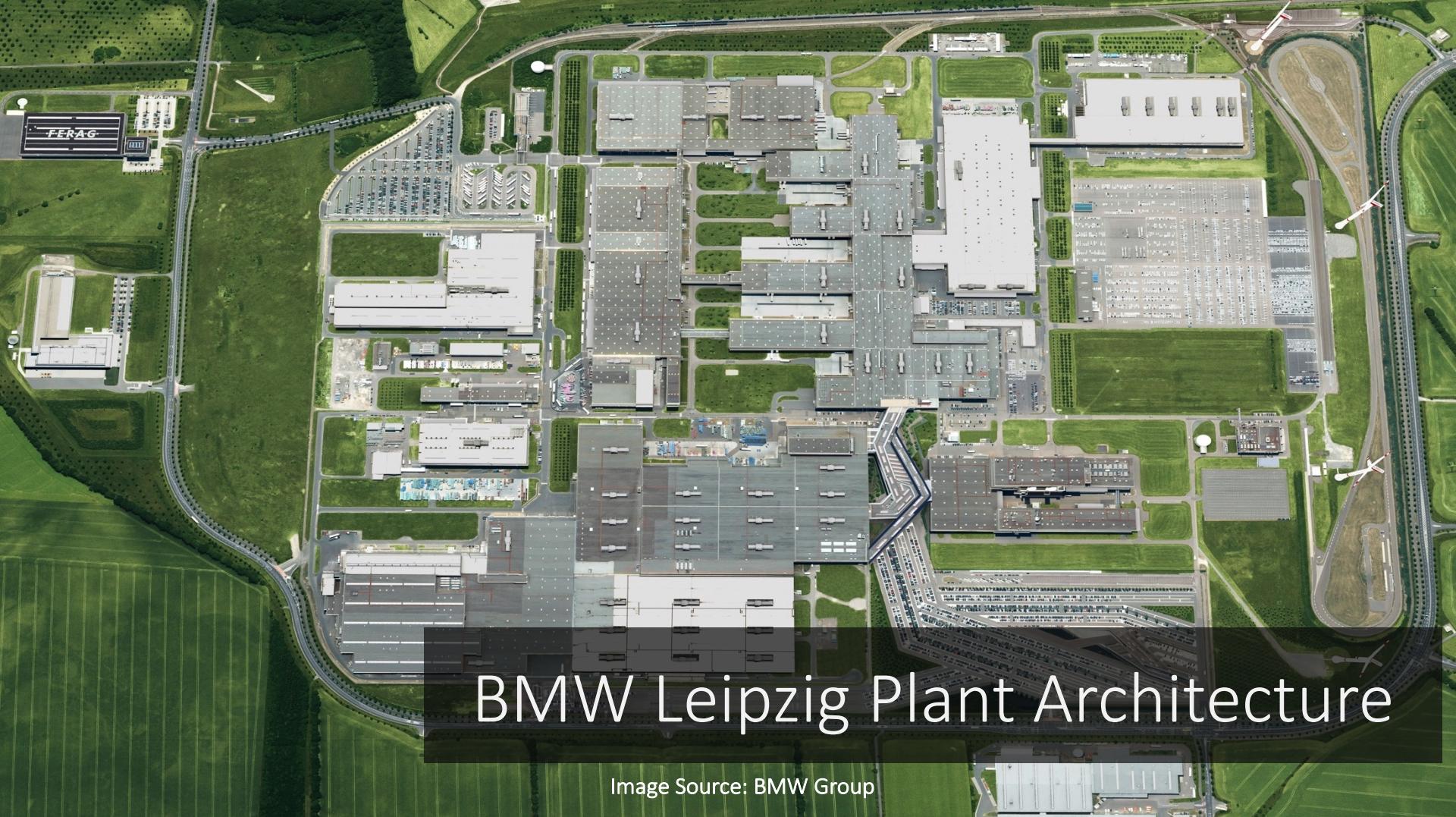


- **Change** our goals from cost and support efficiency to optimizing the developer experience
- **Architect** for results like lead time and deployment frequency
- **Organize** to support horizontal systems thinking across the value stream

**True North:**

**Reduced lead time for changes**

**Business enabling responsiveness**



# BMW Leipzig Plant Architecture

Image Source: BMW Group

# Business value flow at BMW

Quality cars that deliver “sheer driving pleasure”

Designed in yearly cycles, delivered every 70s

Creative and manufacturing process are decoupled

# Business value flow in IT

New features that deliver success and delight

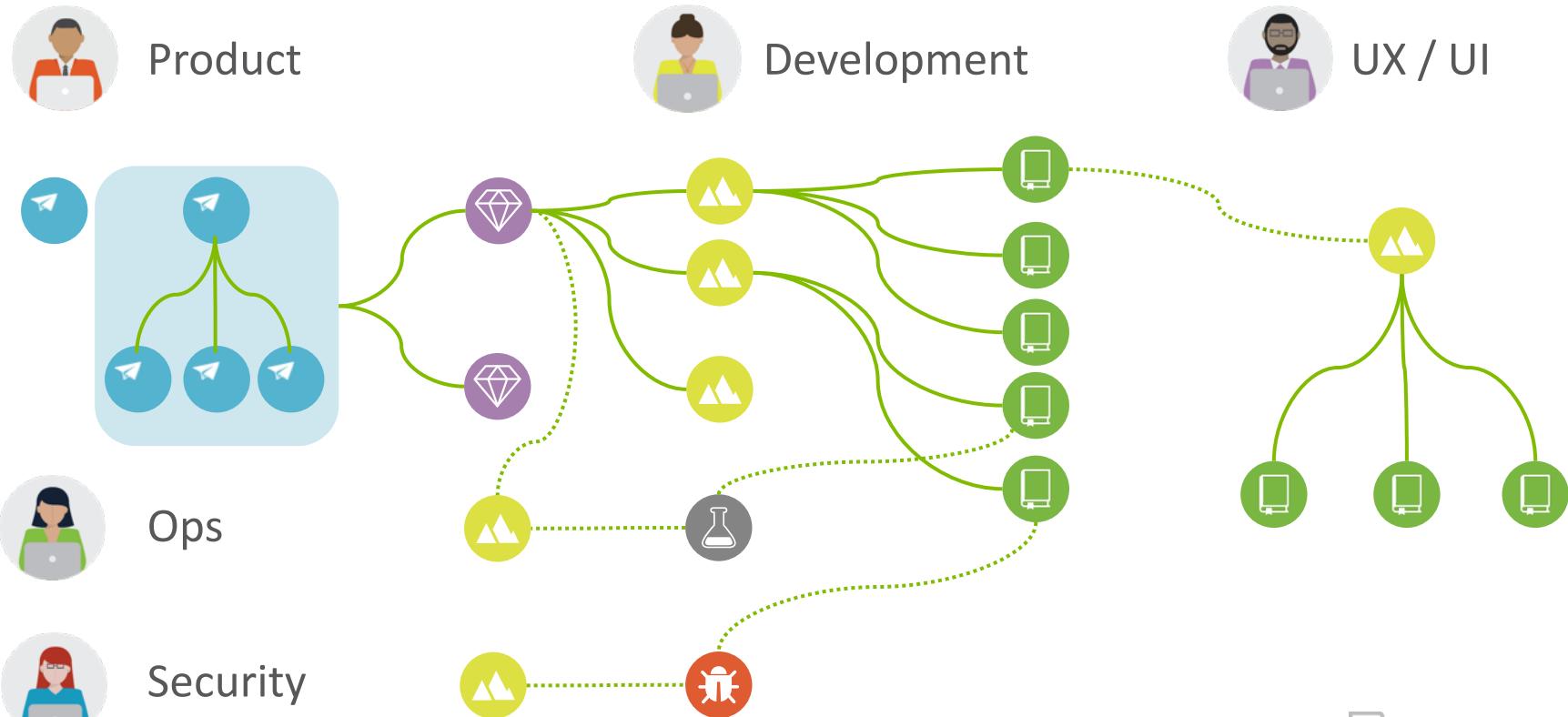
Designed and delivered every 2-week sprint

Creative and manufacturing process are coupled

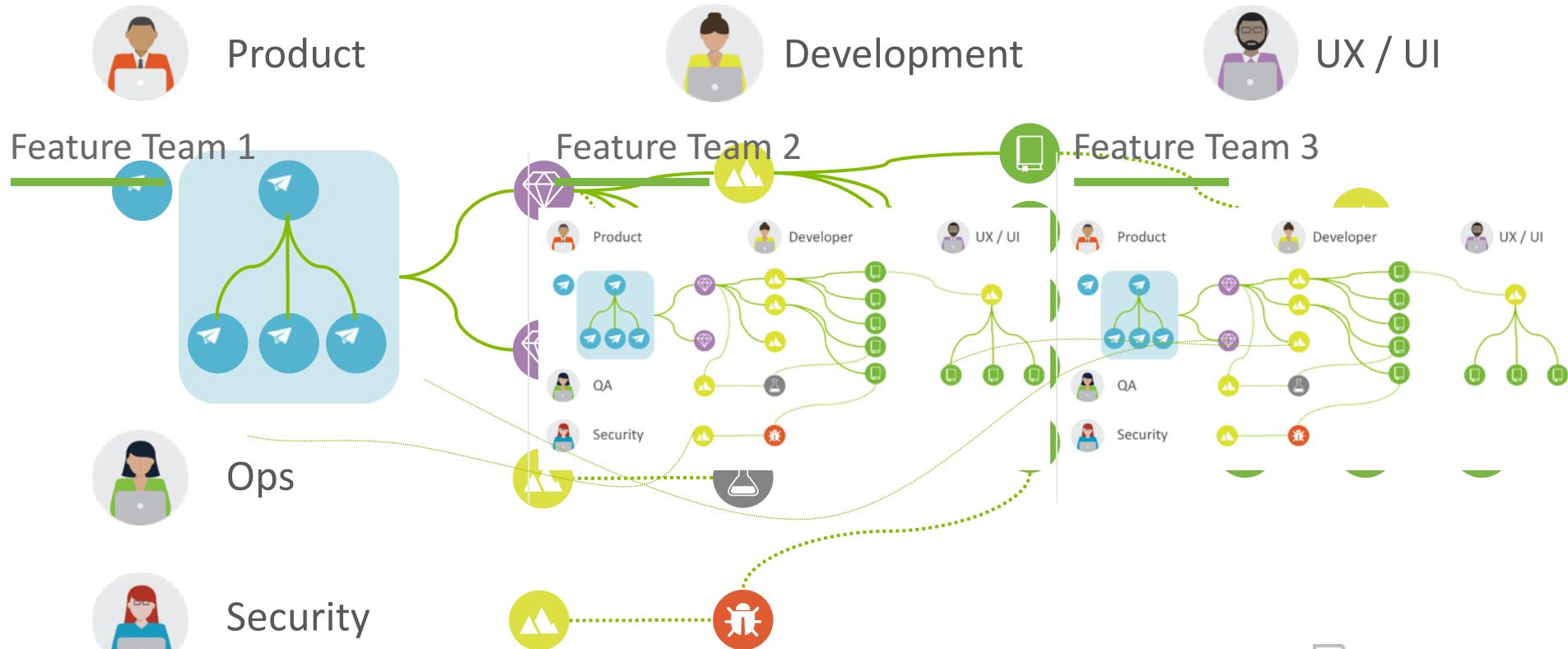


What if we could take an fMRI of the organization?

# Cross-functional Feature Team



# Feature Teams





## ↔ Integration Landscape

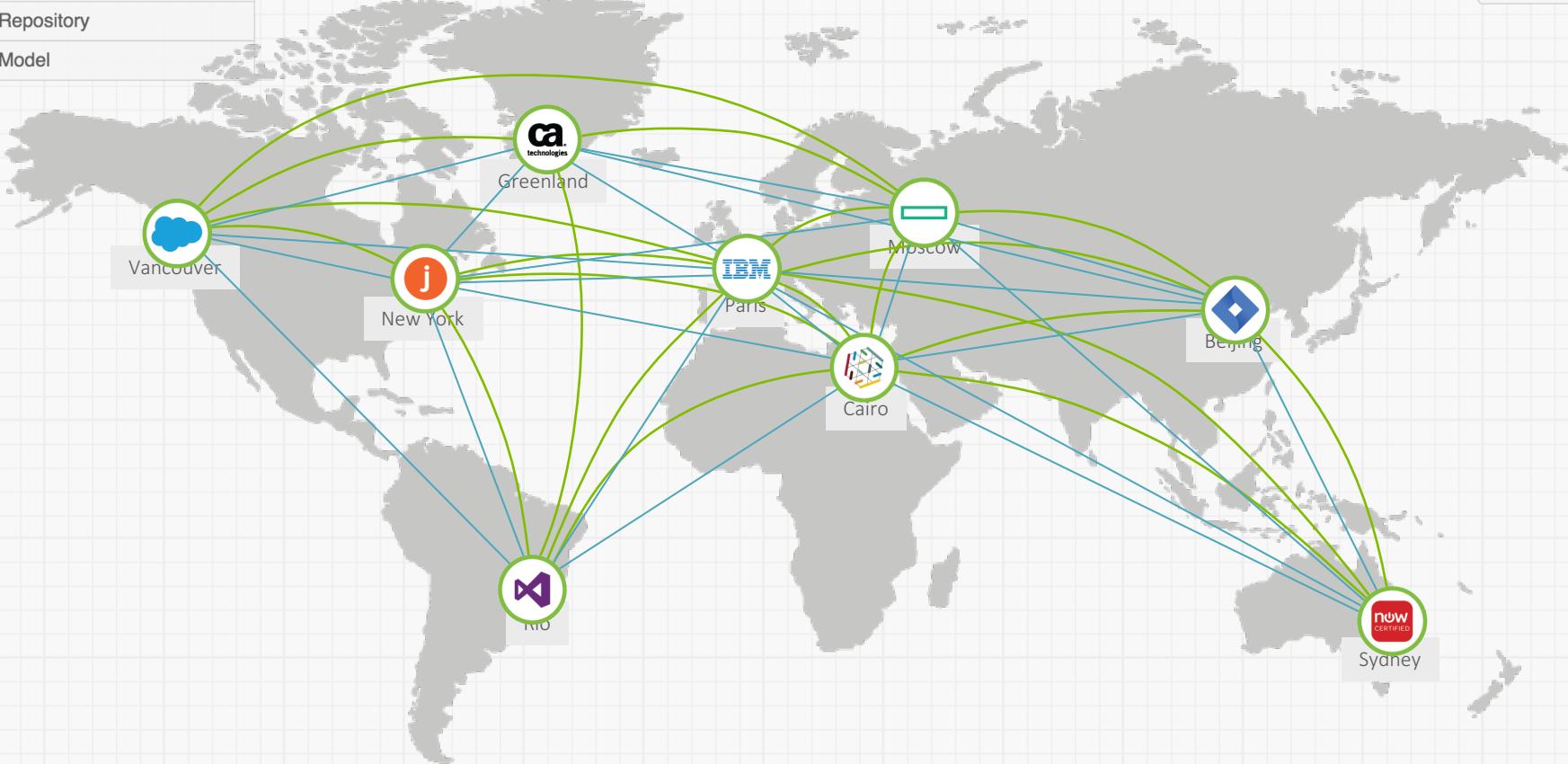
View your organization's integration landscape to get an overview of artifact types flowing between your repositories via integrations.

Filter [Reset Filter](#)

Repository Model

Display Settings  Show All Models  Show All Artifact Types

[Reset Layout](#)



# Optimizing for linear flow

Design for repeatability, minimize creative work

## This doesn't work for software

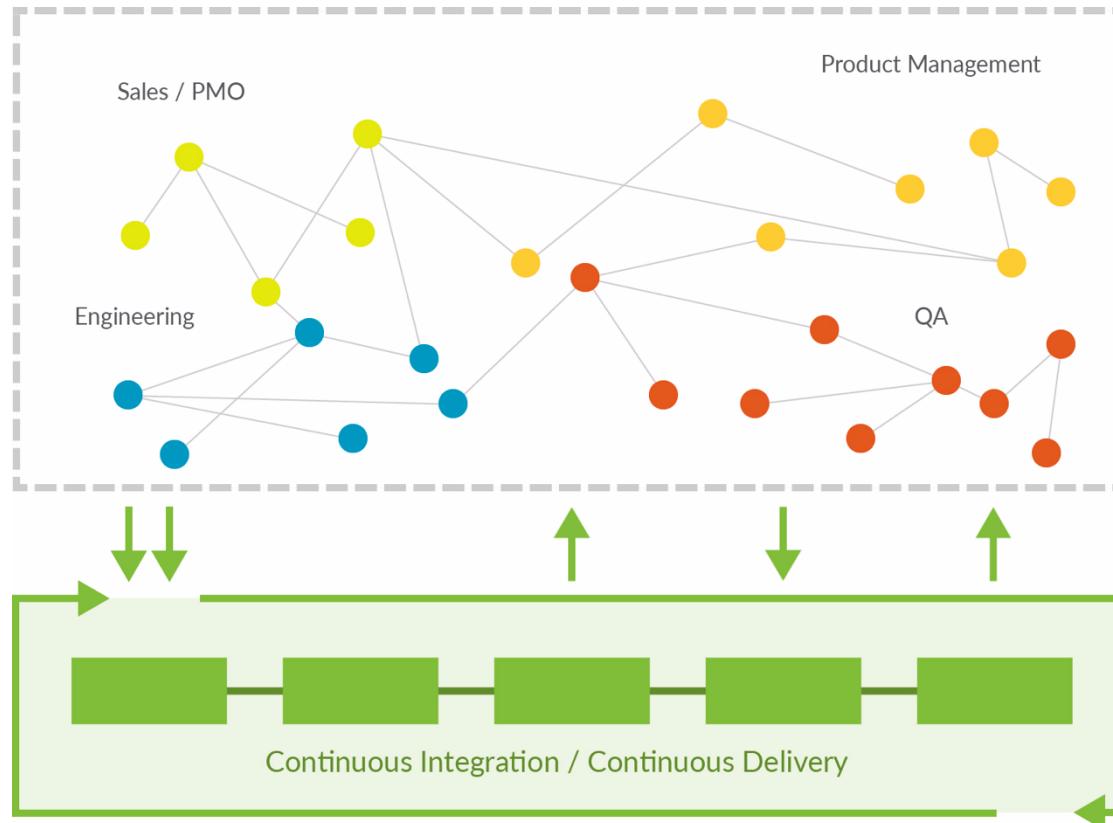
Waterfall and RUP are tried to make things linear

Overly narrow DevOps are doing the same

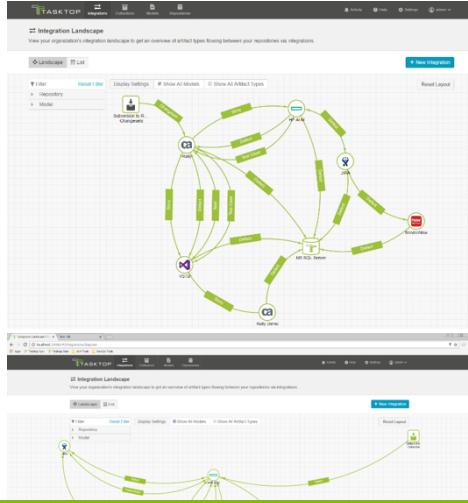


End-to-end software is not a linear manufacturing process, it's a  
**Value Stream Network**

# Value Stream Network



# 300 value streams analyzed



70% integrate 3+ endpoints

40% connect 4 or more tools

66% use 4-8 integration patterns

Your value streams are networks

But most have an ad-hoc architecture



# Value Stream Architecture

Software architecture follows value stream, not vice versa

- APIs to minimize a team's wait times

Or structure follows value stream

- Reverse Conway's law, Feature teams

## Value Stream Architect

- Defines integration and visibility strategy
- Designs end-to-end flow and feedback loops
- Core to your transformation



<https://itrevolution.com/devops-book>



# Framework

## Value Stream Integration

- Every best-of-breed tool is connected for end-to-end flow
- Single standard tool chain, can be specialized for countries, LOBs, investment horizons
- The tool chain becomes modular, supports change and specialization

## Value Stream Visibility

- Real-time view of all business value flows and bottlenecks
- Metrics are connected to business results
- Risk and compliance certification is built into the framework

# Flow Units

Unit	Aka	Pulled by	Description
Feature Story	Requirements, User Stories	User/Customers	New business value added to the application, visible to the customer
Defect Story	Incident, bug	User/Customers	Fixes for quality problems that affect customer experience
Security Story	Vulnerability	Security Officers, Auditors	Fixes for weaknesses, flaws and vectors for exploits
Tech Debt Story	Architecture story	Software Architects, Teams	Improvement to the software architecture, invisible to the customer
Value Stream Story	IT for IT backlog	Value Stream Architects	Improvement to the value stream architecture, invisible to the customer

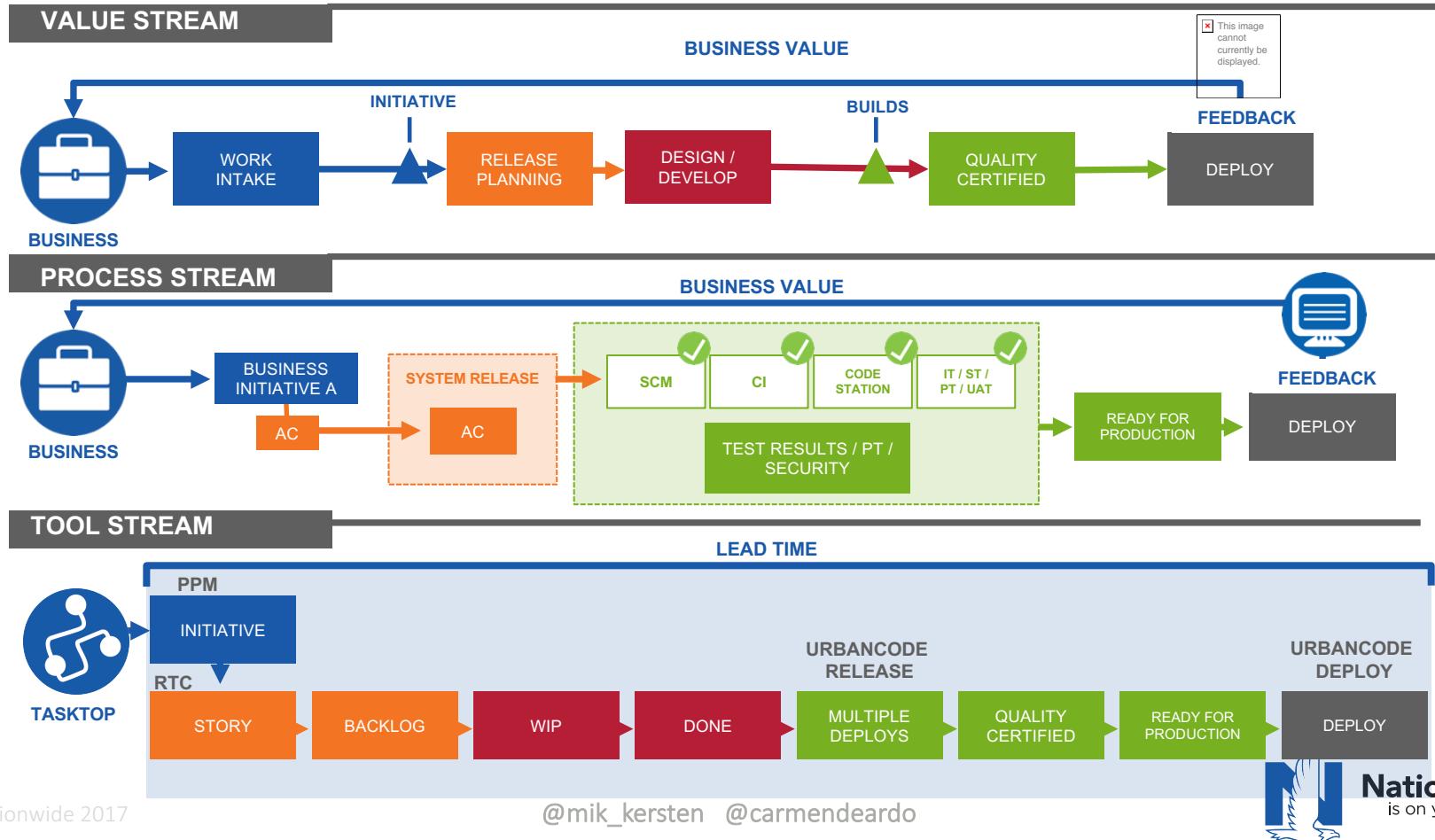
# Flow Measures

Flow Measures	Description	Example
Lead Time	Time from request to delivered artifact running in production	Days from customer requesting a feature to using the requested feature.
Cycle Time	Time from work start to completion	Hours from developer accepting a Feature Story to merging the finished implementation to master.
Process time	Time an artifact is actively worked on	Cumulative days a Feature Story is actively worked on.
Wait time	Time from work request to work start	Time zone delay in hours for an offshore team to start work on a Feature Story.
Utilization	Sum of process times of lead time (%)	Low utilization for a Dev team with an external dependency
Backlog Size	Number of artifacts in the queue at a particular stage of the value stream	The number of Security Stories on an Agile team's backlog.

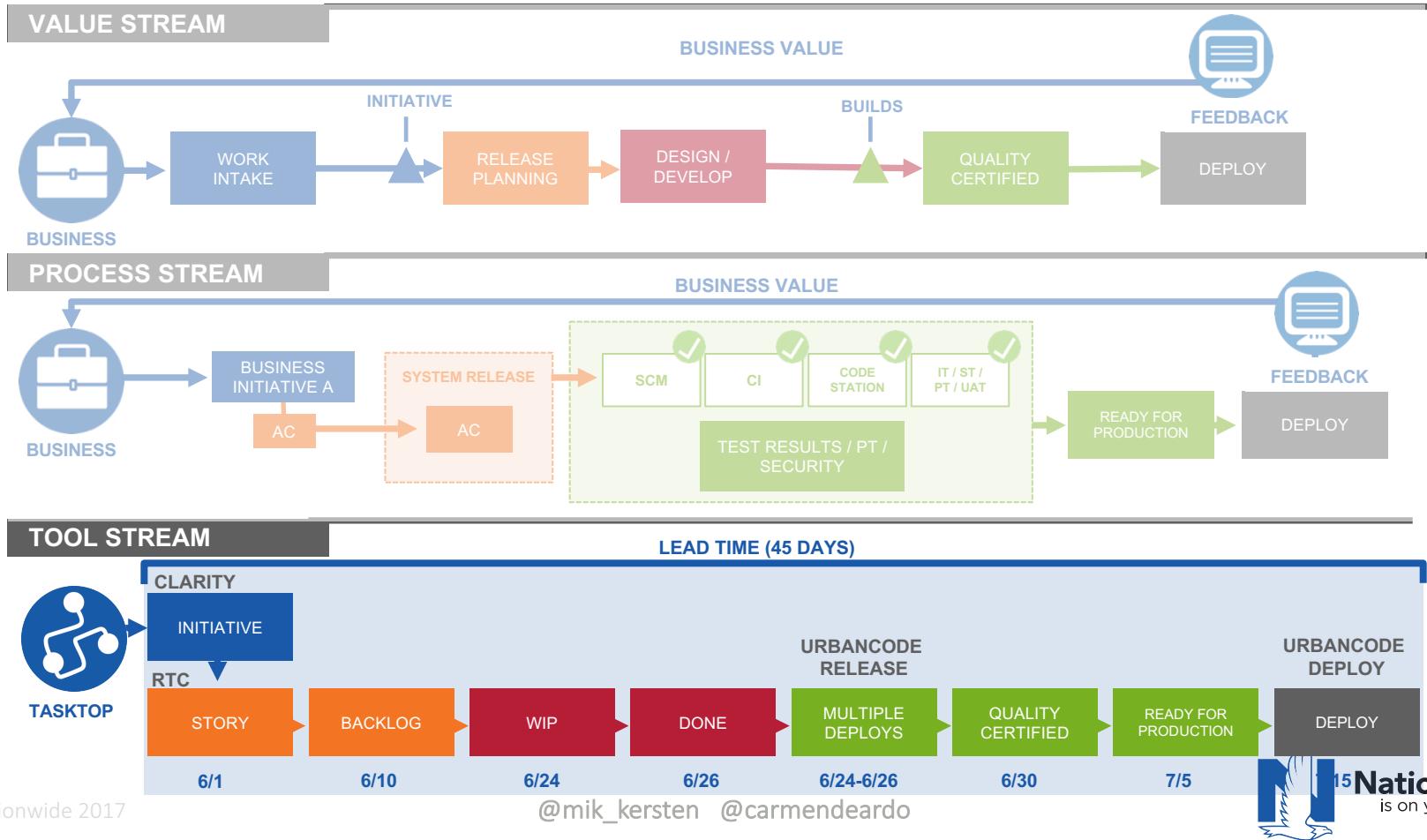
# Example Flow Metrics

Flow Metrics	Type	Description
End-to-end Lead Time	Velocity	Time from customer request to improvement running in production
Mean Time To Repair (MTTR)	Responsiveness	Round-trip time from support ticket, through Defect Story creation, diagnosis, fix through to delivery.
Deployment frequency	Repeatability	Number of deploy per day/week
Flow unit cost	Cost	Cost per flow unit per team
Productivity	Throughput	Number of flow units delivered per team per release.
New Business Value Ratio	Value	Proportion of Artifacts of type Feature Story delivered per release.

# Measuring Lead Time



# Measuring Lead Time





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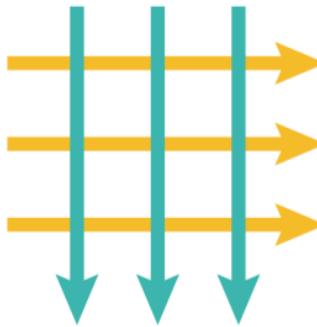


DevOps  
makes our  
lead time small

# Delivery Value Stream Organization Models



Model 1



Model 2



Model 3

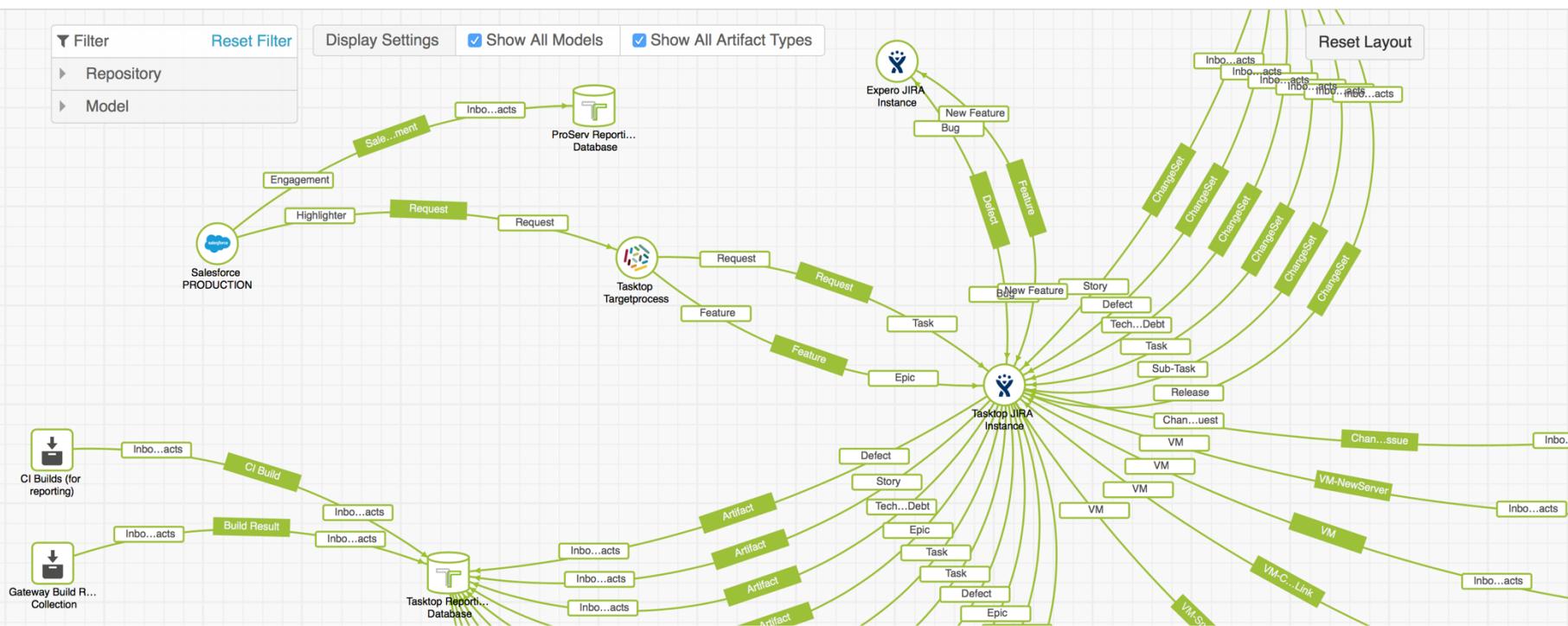
Horizontal planks must be built and supported:

- Architecture
- Product Ownership
- Funding
- Prioritization
- Continuous Improvement

<https://itrevolution.com/book/thinking-environments/>

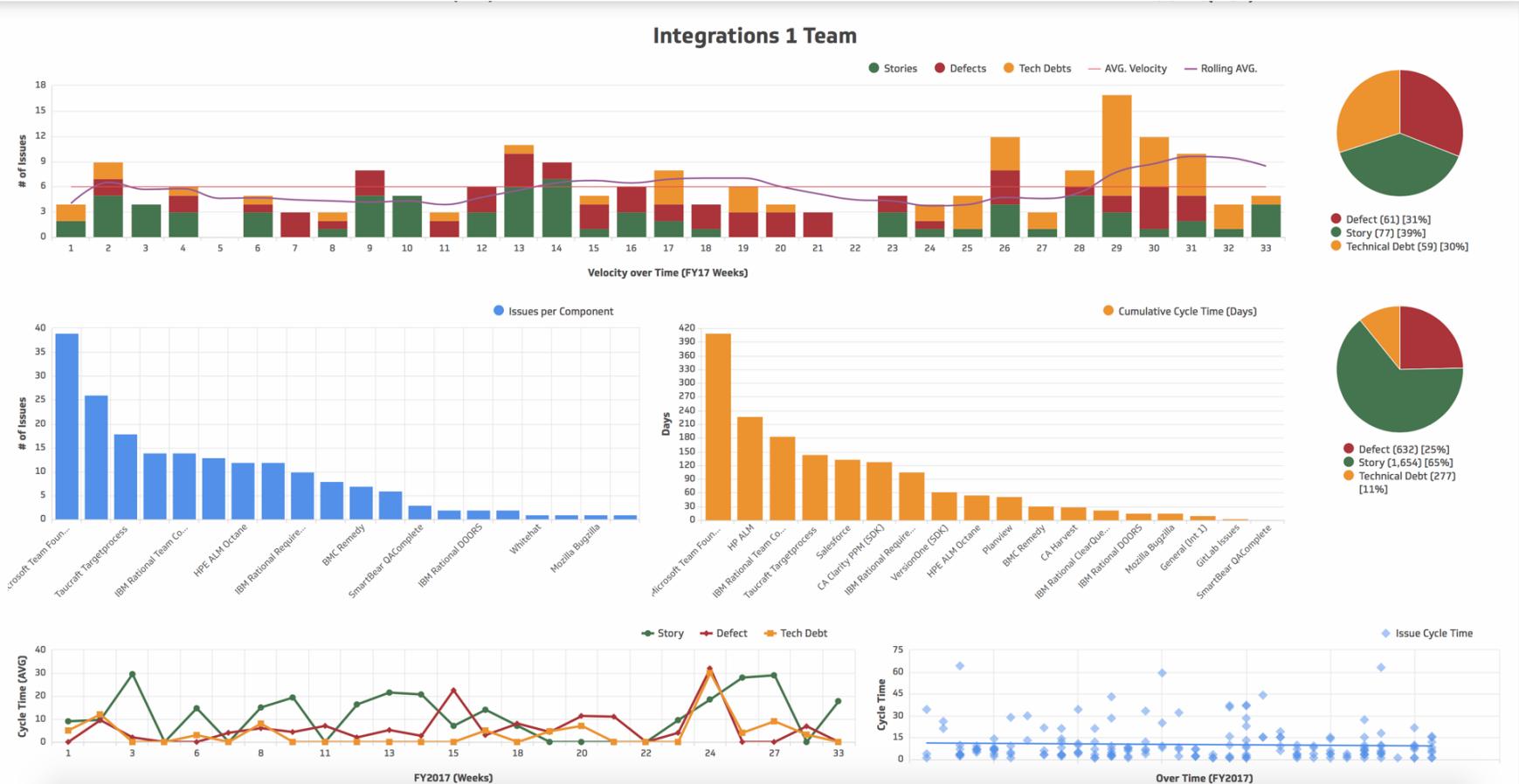
## Integration Landscape

View your organization's integration landscape to get an overview of artifact types flowing between your repositories via integrations.

[Landscape](#)[List](#)[+ New Integration](#)

# Value Stream Visibility

Tasktop Engineering Dashboard

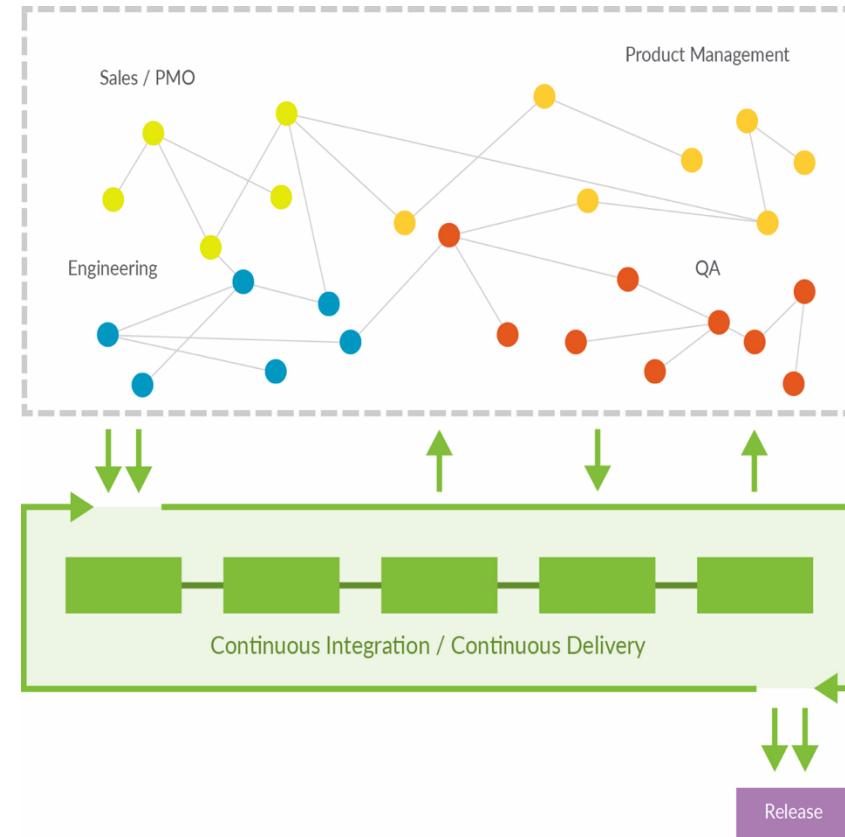


# IT cannot thrive without a connected value stream

No DevOps transformation can succeed at scale without a **connected value stream network**

No IT organization can adapt without accurate **value stream visibility**

**Value Stream Architect** is key to your success





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<http://tasktop.com>

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Image Source: BMW Group