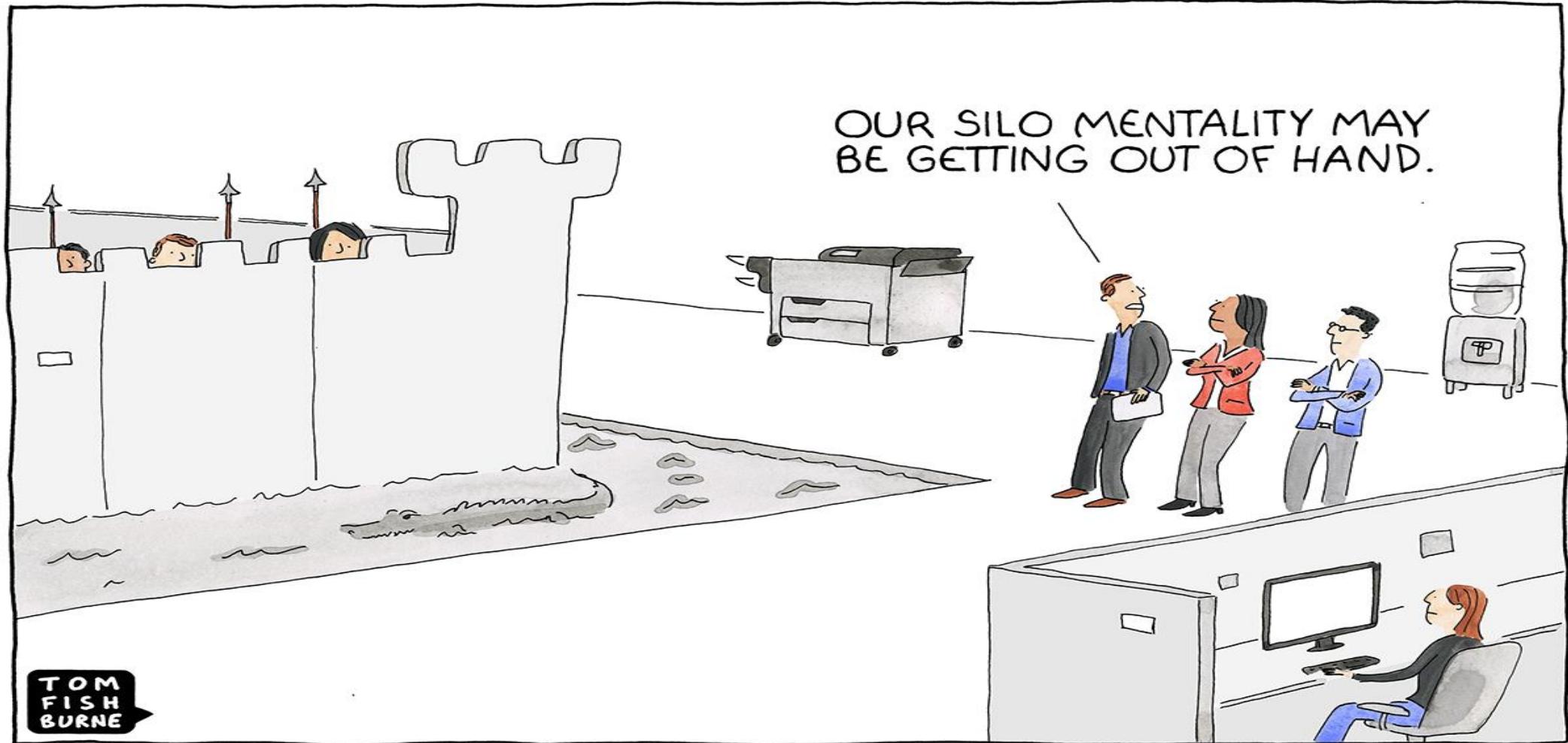


Culture



© marketoonist.com

The DevOps promise...



ACCELERATE
software delivery



BALANCE
speed, cost,
quality
and risk



REDUCE
time
to customer
feedback

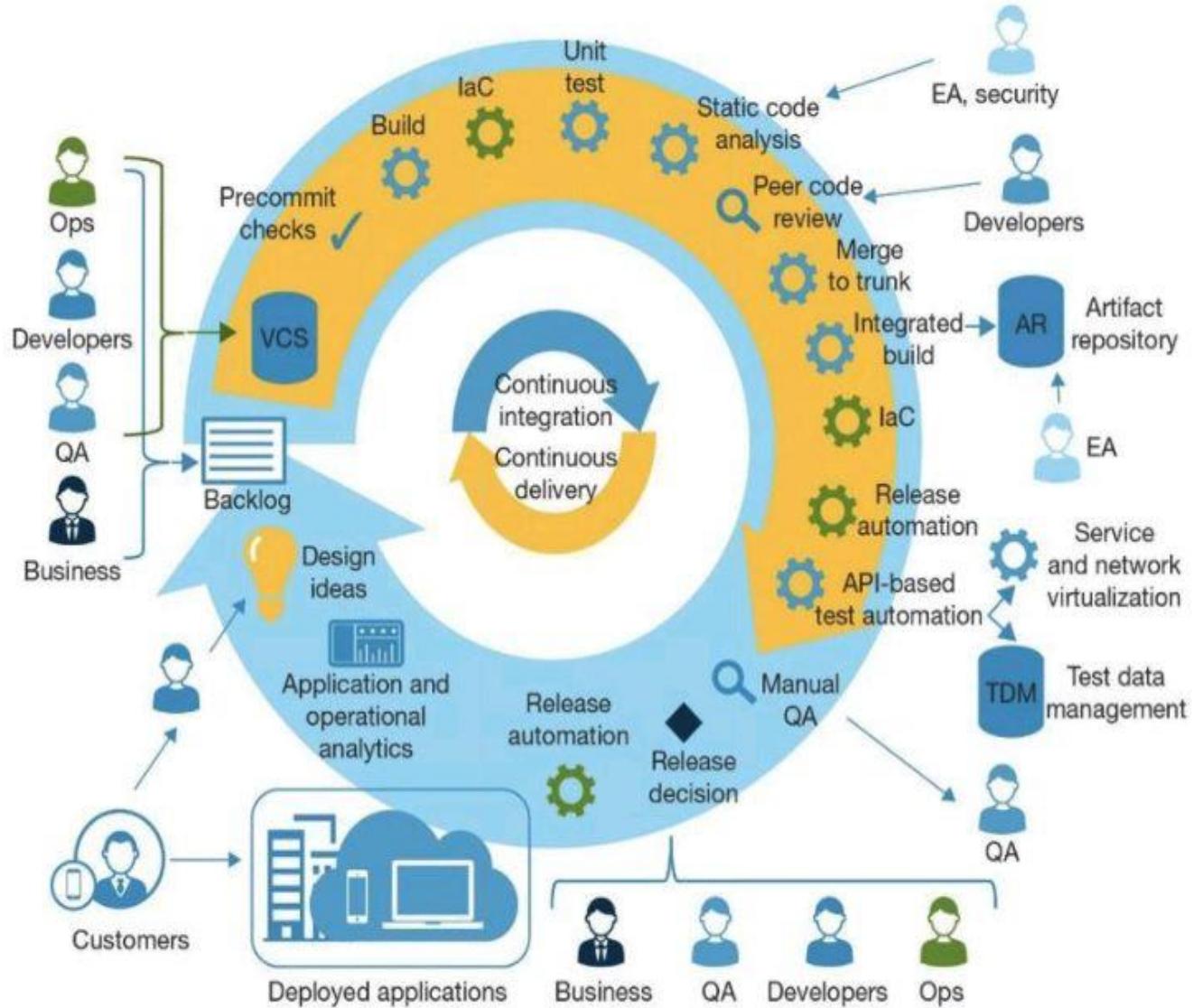
What is DevOps?

DevOps means people, process, and the right tools working together to make the value delivery lifecycle faster and more predictable.



DevOps

Automate each step in the software delivery pipeline



DevOps



Business



Agile Development

- Iterative Development
- Scrum, Sprint, Stories
- Velocity

Business
Agility



Developers
(application)



DevOps

- Continuous Integration
- Continuous Deployment
- IT Automation
- Application Management

IT Agility



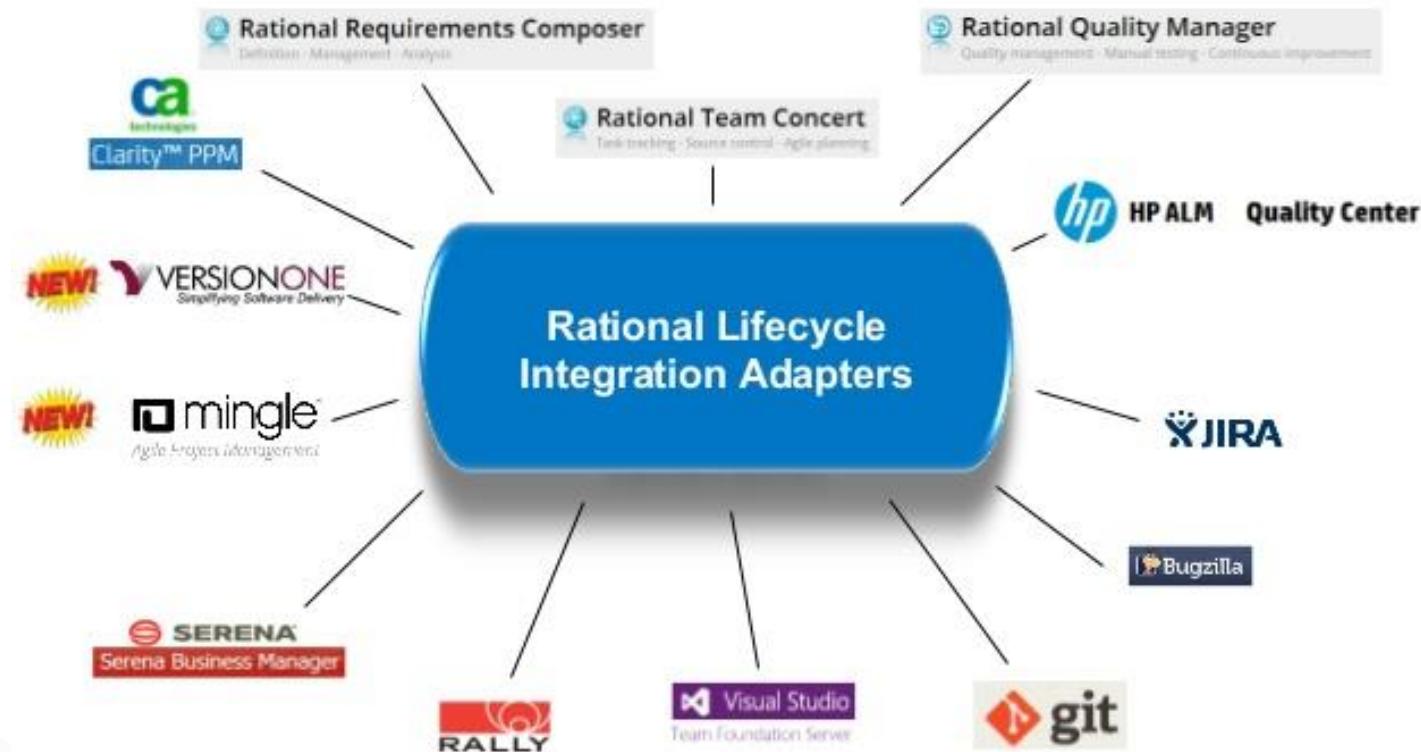
IT Operations



IBM DevOps Tooling

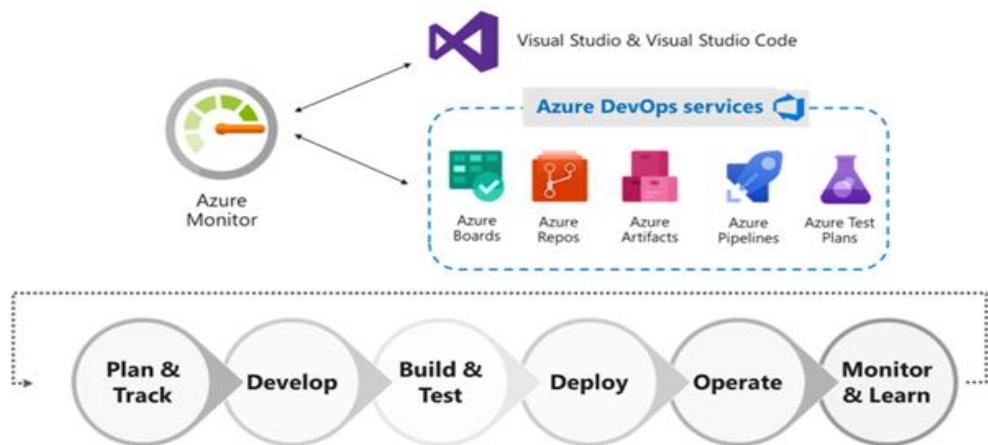
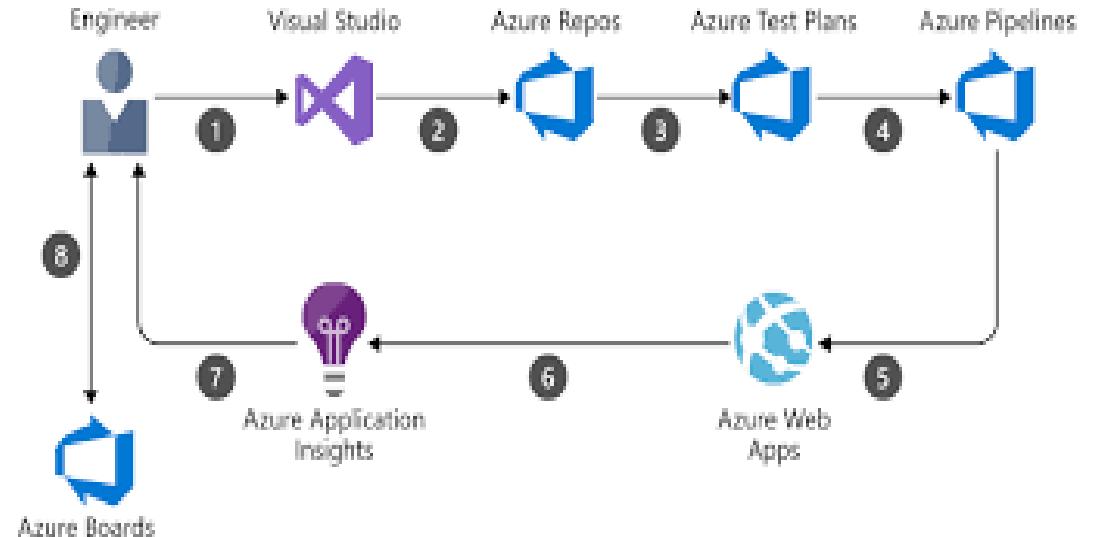


Announcing IBM Rational Lifecycle Integration Adapters v1.1.2
Integrating Rational products with 3rd-party tools

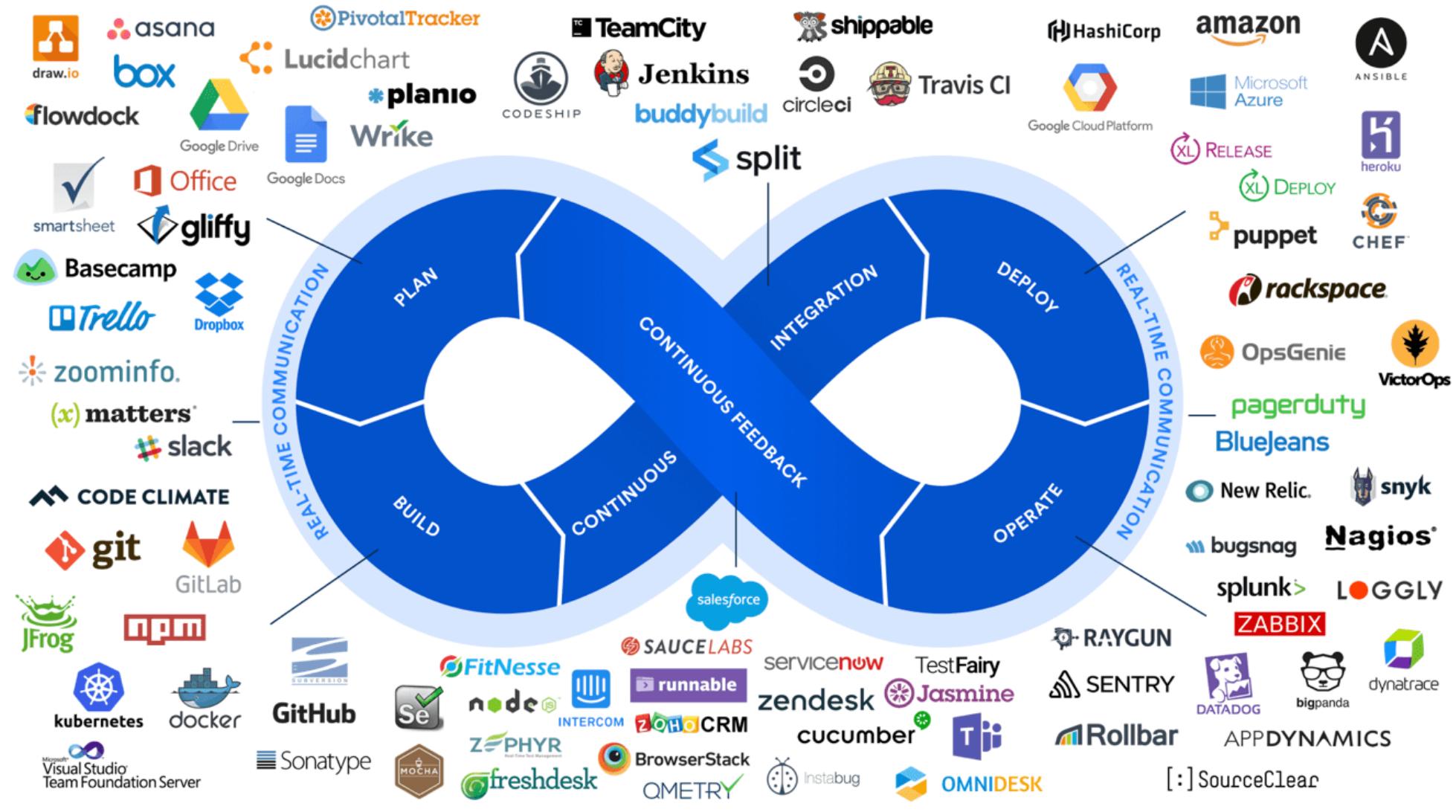


What about Azure DevOps?

The screenshot shows the Azure DevOps Boards interface. On the left, a sidebar navigation includes: Overview, Boards (selected), Work Items, Boards, Backlogs, Sprints, Queries, Plans, Repos, Pipelines, Test Plans, and Artifacts. The main area displays a Kanban board titled 'FabrikamFiber Board'. It has columns for New, Active (5/5), Staging (15/5), Deployed (3/2), and a search bar at the top. The board contains several items, each with a title, description, assignee, and status. Examples include 'Home page (selected room)' by Carlos Slattery in the Active column, and 'Mobile (Spike)' by Celeste Burton in the Deployed column.



DevOps Tooling

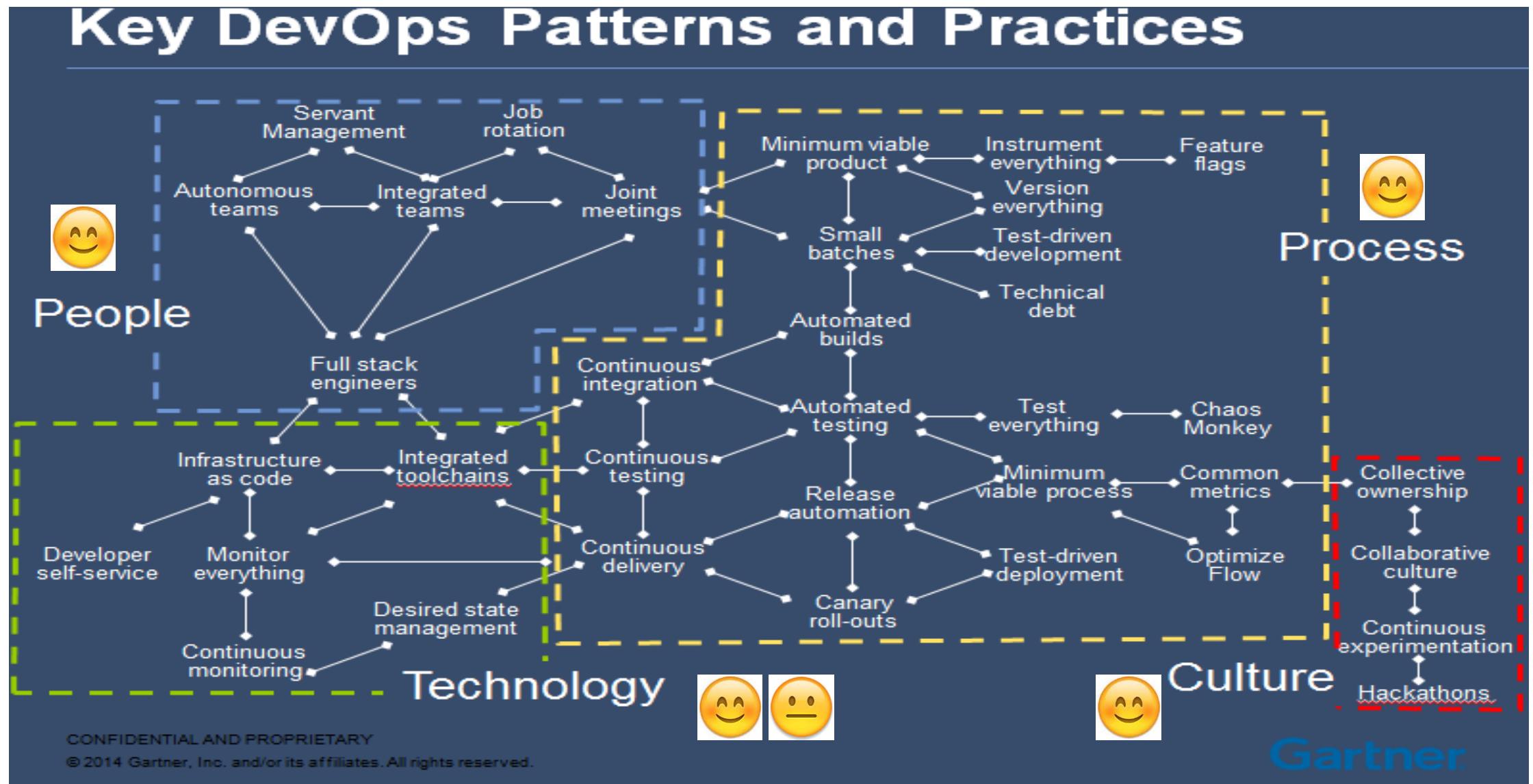


XebiaLabs Periodic Table

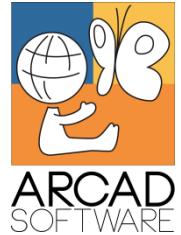
| 1 | Os | PERIODIC TABLE OF DEVOPS TOOLS (V3) | | | | | | | | | | | | | | | | | | 2 | En | | | | | | | | | | | | |
|----|-------------|-------------------------------------|-----------|----|---------------------|----|----------------------|----|------------------------|----|------------|------------|-----------------------|-------|-------|----|-----------|-----|---------|-----|------------|------------|-----------------|-----------|----------|----------|-----------|----|----|------------|--|----|--------|
| Gl | GitLab | Open Source | | | | | Source Control Mgmt. | | | | | Deployment | | | | | Analytics | | | | | Monitoring | | | | | Security | | | | | Sp | Splunk |
| Gh | GitHub | Fr | Free | Rm | Database Automation | Fm | Freemium | Pd | Continuous Integration | Ka | Containers | Rm | Release Orchestration | Ch | Cloud | Tf | AIOps | Su | Testing | Ju | Monitoring | Ur | Azure Functions | Az | Ld | Gc | OpenShift | Op | Sg | Sumo Logic | | | |
| Sv | Subversion | Db | DBMaestro | En | Enterprise | | | | | | | | | | | | | | | | 5 | En | Aws | Az | Gc | Op | | | | | | | |
| Cw | ISPW | Dp | Delphix | En | Os | Jn | Jenkins | Cs | Fn | Jn | FnNesse | Os | Ju | Ka | Su | Ch | Tf | XLd | En | 30 | En | Dk | Aws | Az | Gc | Op | | | | | | | |
| At | Artifactory | Rg | Redgate | Pd | Rm | Ba | Bamboo | Vs | Se | Jm | JMeter | R | Ja | Si | An | Ru | Oc | Go | En | 49 | Os | Cc | Pr | Al | Os | Ps | | | | | | | |
| Nx | Nexus | Fw | Flyway | Pd | Rm | Tr | Travis CI | Tc | Ga | Tn | TestNG | Os | Tt | Tosca | Pe | Pu | Pa | Cd | Ec | En | 50 | Pd | Ms | Gke | Om | Cp | Cy | It | | | | | |
| Bb | BitBucket | Pf | Perforce | Rm | Pd | Cr | Circle CI | Cb | Cu | Mc | Mocha | Os | Lo | Mf | Sa | Ce | Eb | Ca | Ra | En | 67 | Os | Aks | Rk | Sp | Ir | Mg | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 68 | Pd | Aks | Rkt | Spinnaker | IronJo | Moogsoft | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 69 | Os | Rk | Spinnaker | IronJo | Moogsoft | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 70 | Os | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 71 | Pd | Ae | Cf | Hm | Aw | Ls | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 72 | Pd | Cf | Hm | Aw | Ls | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 73 | Os | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 74 | En | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 75 | Rm | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 76 | Pd | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 77 | Rr | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 78 | Os | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 79 | Os | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 80 | En | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 81 | Os | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 82 | Os | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 83 | En | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 84 | En | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 85 | En | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 86 | Pd | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 87 | Rm | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 88 | Os | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 89 | Os | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 90 | Os | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 91 | En | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 92 | Os | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 93 | Rm | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 94 | En | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 95 | En | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 96 | Rm | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 97 | Os | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 98 | Os | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 99 | Os | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 100 | En | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 101 | En | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 102 | En | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 103 | En | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 104 | Os | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 105 | Os | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 106 | En | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 107 | Pd | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 108 | Rm | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 109 | Rm | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 110 | Rm | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 111 | En | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 112 | En | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 113 | En | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 114 | Pd | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 115 | Pd | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 116 | Os | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 117 | Rm | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 118 | En | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 119 | En | De | Ae | Cf | Hm | Aw | Ls | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 120 | En | De | Ae | Cf | Hm | Aw | Ls | | | | | | |

<https://xebialabs.com/assets/files/infographics/periodic-table-of-devops-tools-v3.pdf>

DevOps Patterns and Best Practice



ARCAD
SOFTWARE



The DevOps Playing Field

The Tools of Ignorance in DevOps on IBM i & multi-platform

Disclaimer-If it ain't broke.....



**The most dangerous phrase
in the language is 'we've
always done it this way.'**

– Grace Hopper



Today's Speaker



Floyd Del Muro

Technology and DevOps Advocate

P: 610-810-4029



ARCAD Software - USA

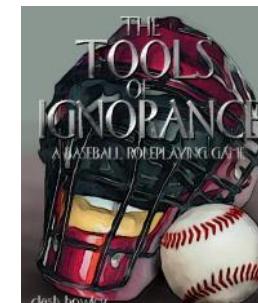
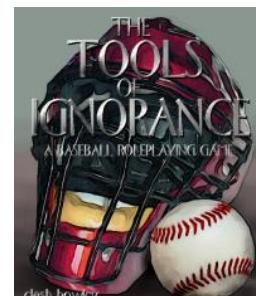
Worldwide: +33 450 578 396

Website: www.arcadsoftware.com



AGENDA

- about DevOps
- the History and facts
 - Faster and with less issues
- Tools, Process and People
- Faster time to production, the business
- Minimize risk and downtime
- Transition to CI/CD on IBMi

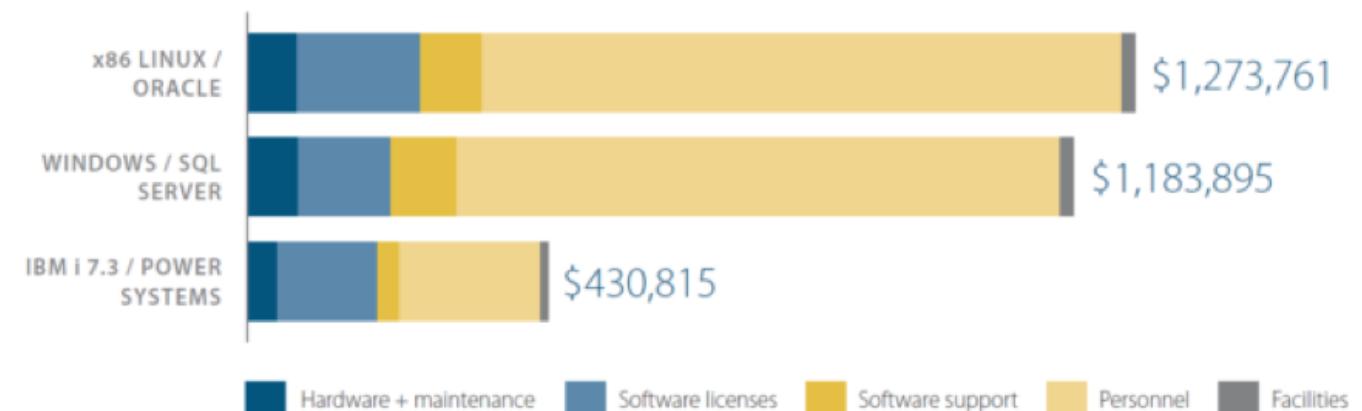


Facts

Characteristics of IBM i (aka iSeries, AS/400)

- Renowned stable, secure, reliable environment
- Highly affordable (the best TCO in the world (*))
- Running business critical applications

FIGURE 1: Three-year Costs by Platform—Averages for All Installations

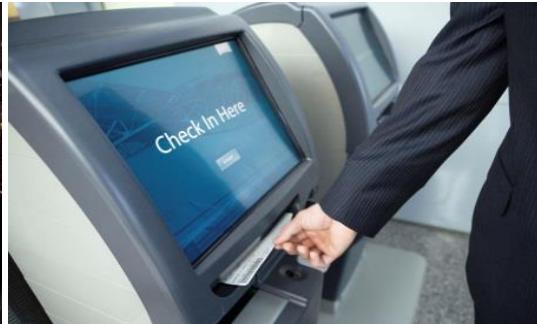


(*) Quark & Lepton 2017

Facts

“Legacy” systems are responsible for >70% of the world’s business transactions

Translation...the world runs on COBOL... and RPG.... and this will not change for the foreseeable future...will it be a bottleneck or an asset?



Facts.

By 2023, 75% of global enterprises will have implemented at least one application release orchestration (ARO) solution, which is a substantial increase from fewer than 20% today.

Source: Gartner 2018

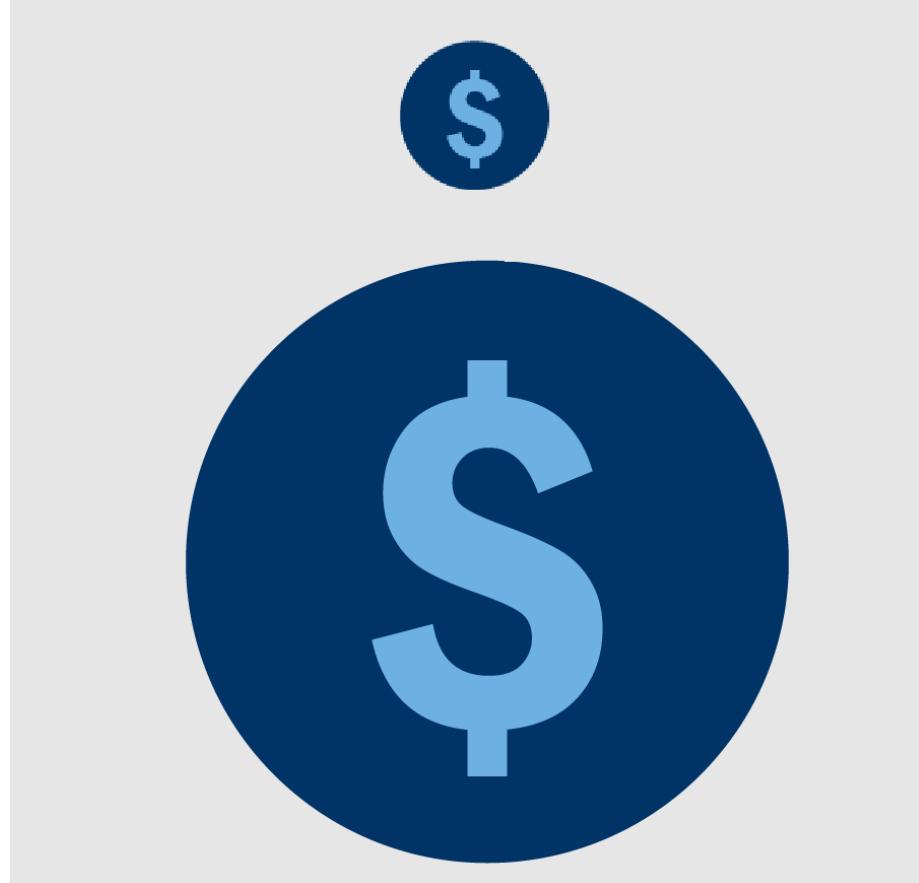


DevOps on Legacy platforms (i and Z) Adoption rate:

- 15% 2017
- 50% by 2020



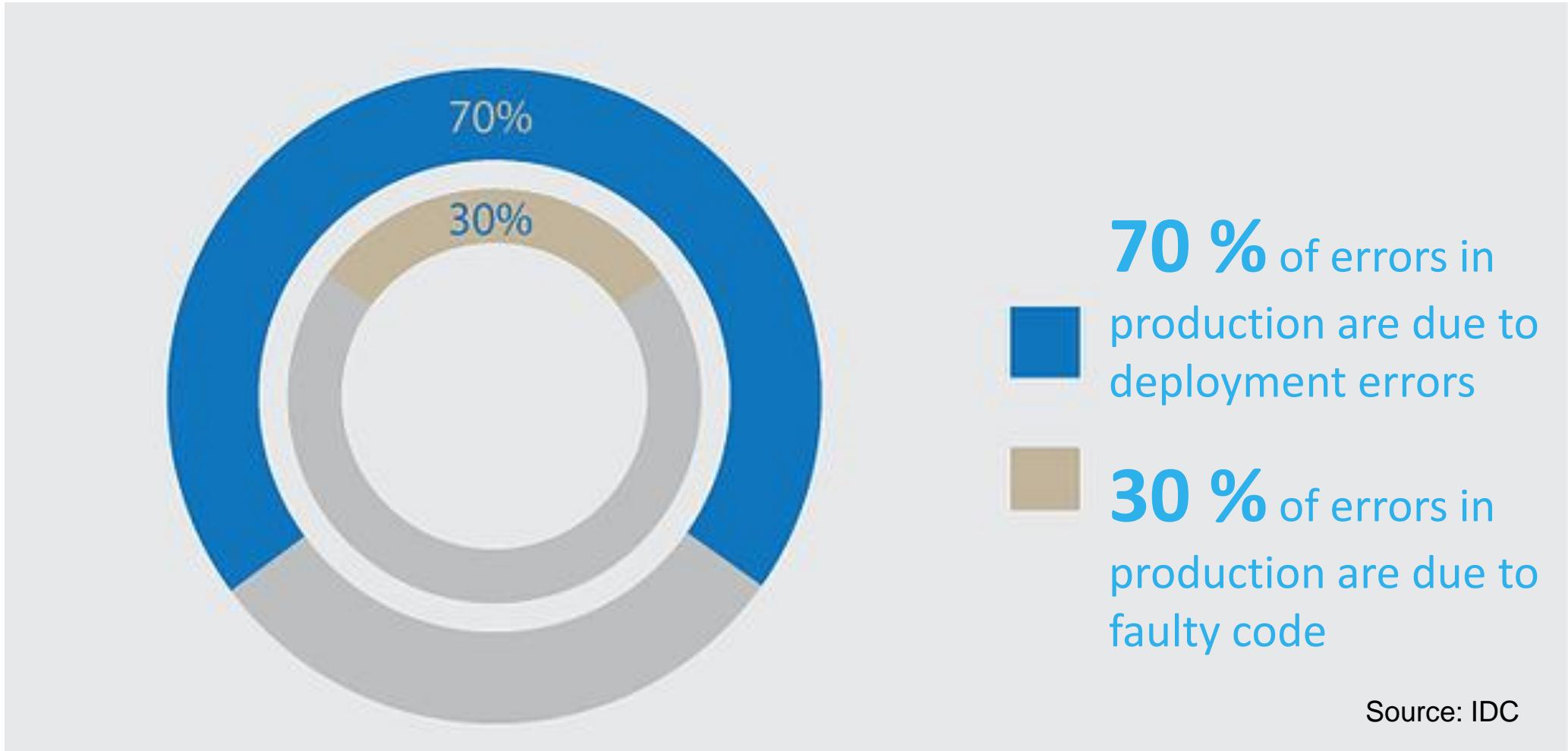
Software vs. Hardware incidents



100 K\$ - Average cost of hardware malfunction per hour

1 M\$ - Average cost of a major incident in a strategic software application in production per hour

Causes of software defect in production



DevOps reduces errors by half



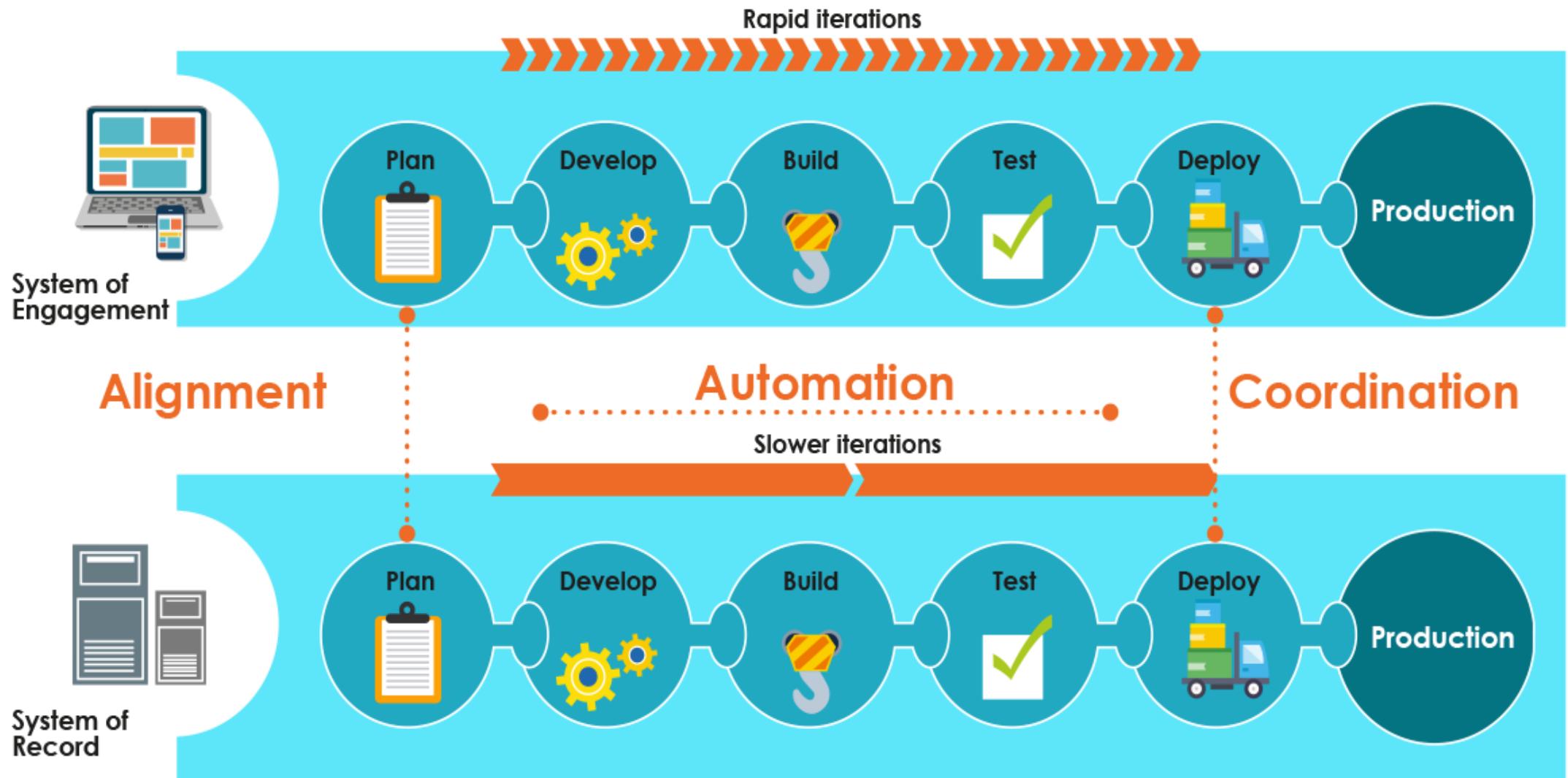
30x increase in the frequency of deployments



50% Less errors during transfers to production

Source: IDC

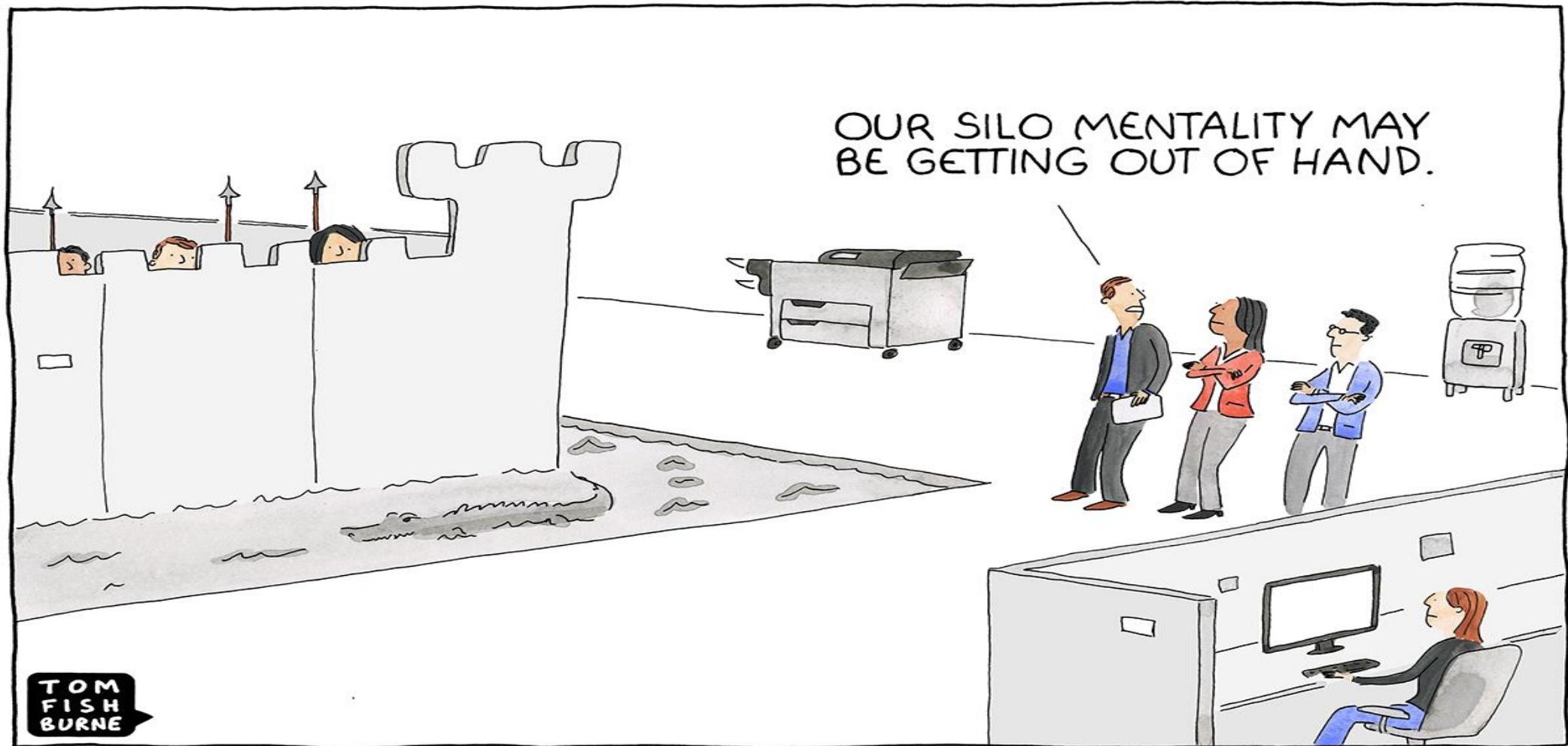
Bimodal IT- Hybrid Development



Bimodal IT

| | System of Record | System of Engagement |
|-----------------|--------------------------|-----------------------------|
| Applications | Legacy/high volume | Modern/small |
| Speed of change | Slow | Rapid |
| Methodology | Waterfall | Agile |
| Skills | Specialized | "Jack of all trades" |
| Collaboration | Silos | Collaborative |
| | Managed by IT department | External ecosystem |

IBM i Culture



© marketoonist.com

Bimodal IT

Larger enterprises often face challenges when extending DevOps enterprise-wide: But not Always!

- Differences in technology cultures between “Systems of Engagement” (SoE) and “Systems of Record” (SoR) reduces DevOps effectiveness overall.
- Each culture has their own tool pipeline with little or no sharing of data. \$\$\$
- Delivery frequency and development speed is often radically different between distributed and legacy teams.

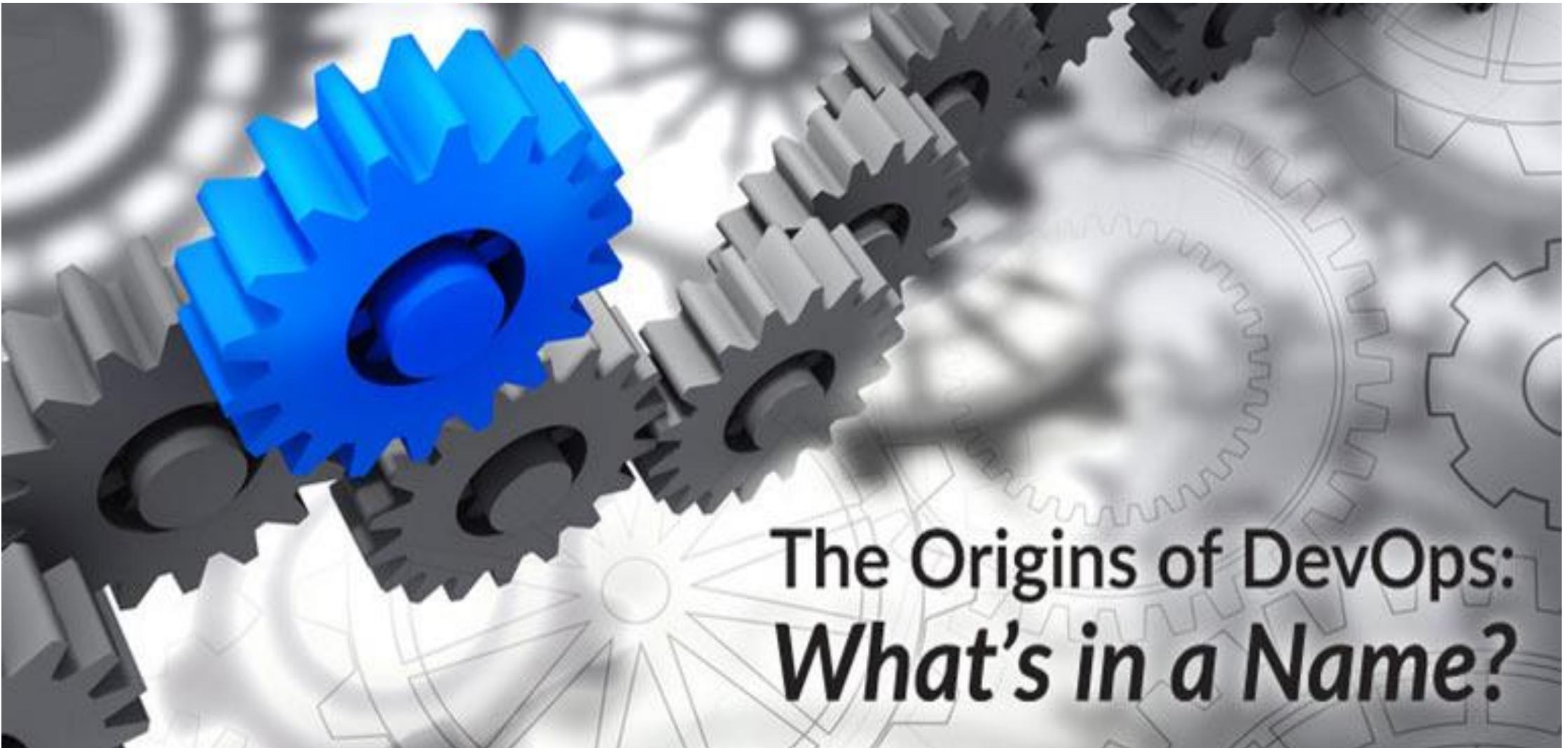
To avoid bottlenecks, DevOps tools must tie ALL these specific technologies together.



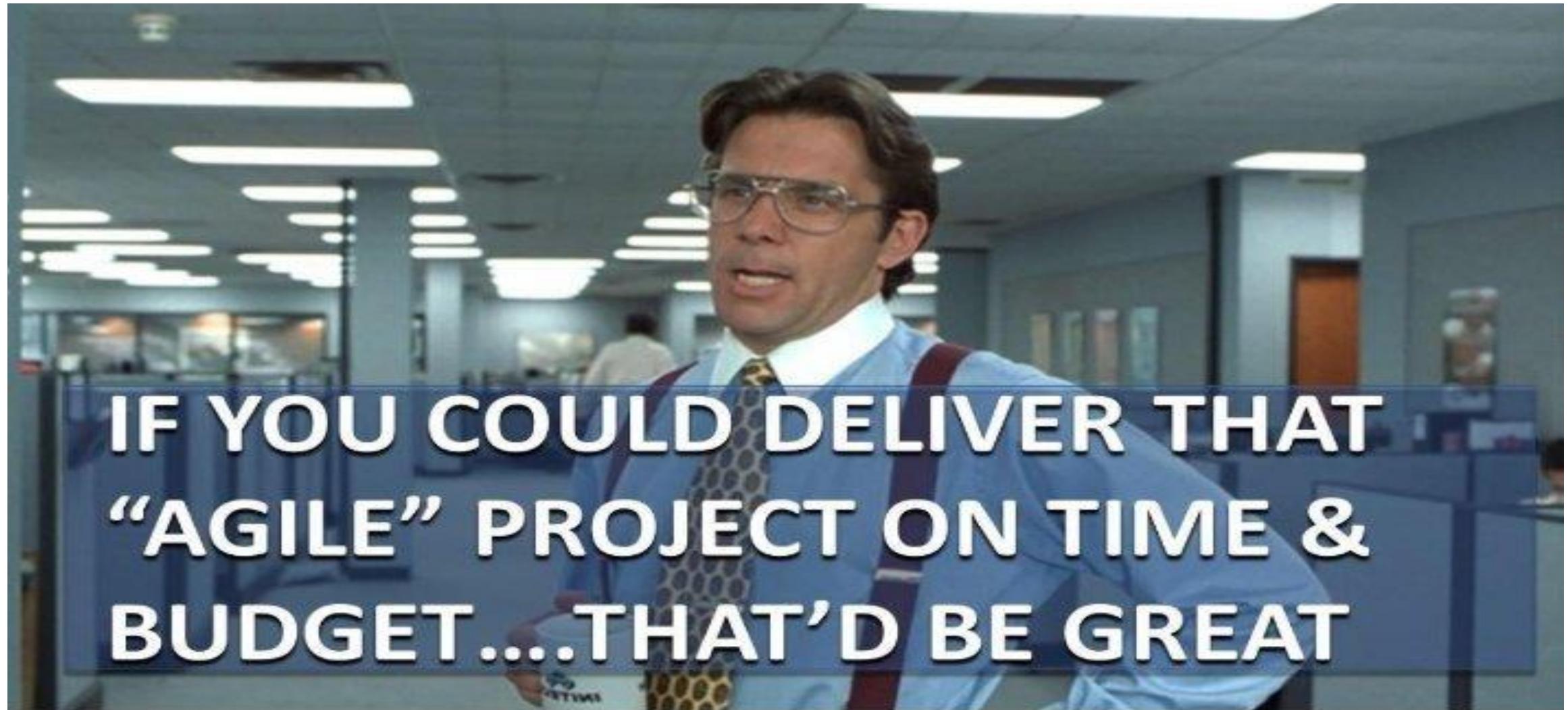
DevOps History and Concepts

Becoming Agile...

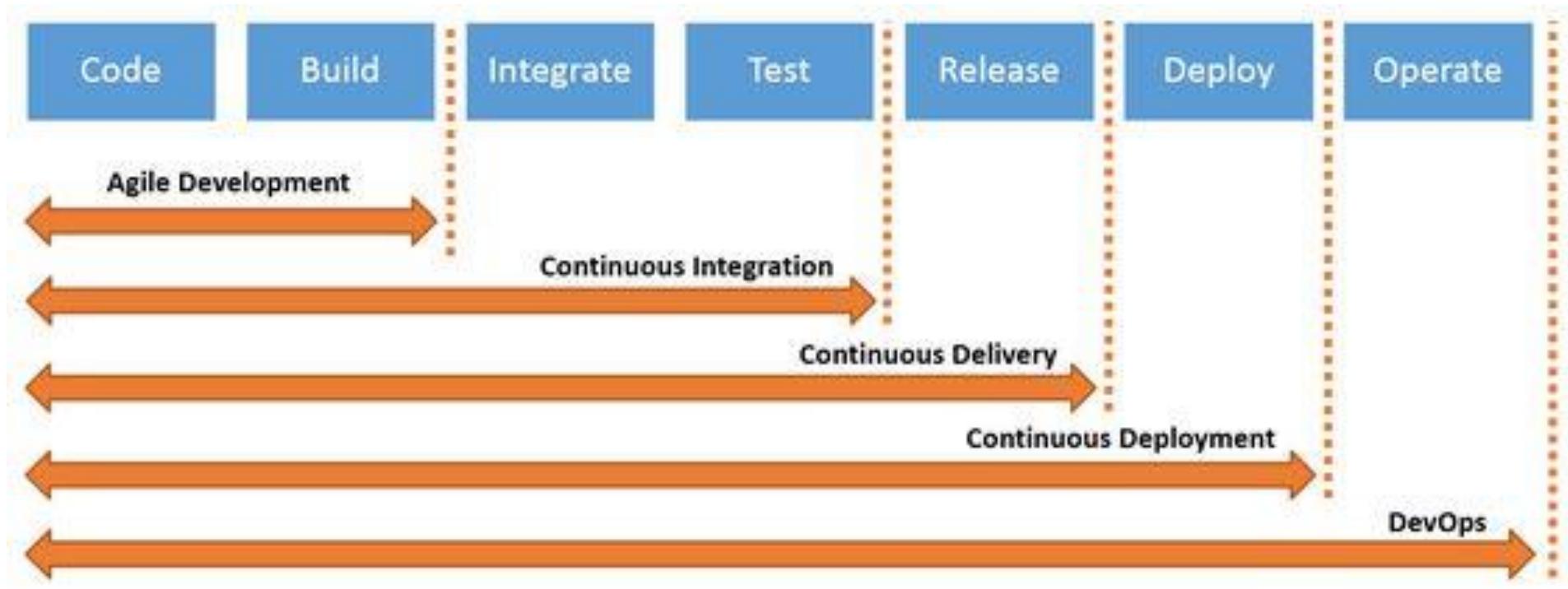
Lean Manufacturing of Software



Agile vs DevOps



Agile vs DevOps and More



Agile vs DevOps and More

PROJECT EXECUTION METHODOLOGIES – THE CHANGE

WATERFALL



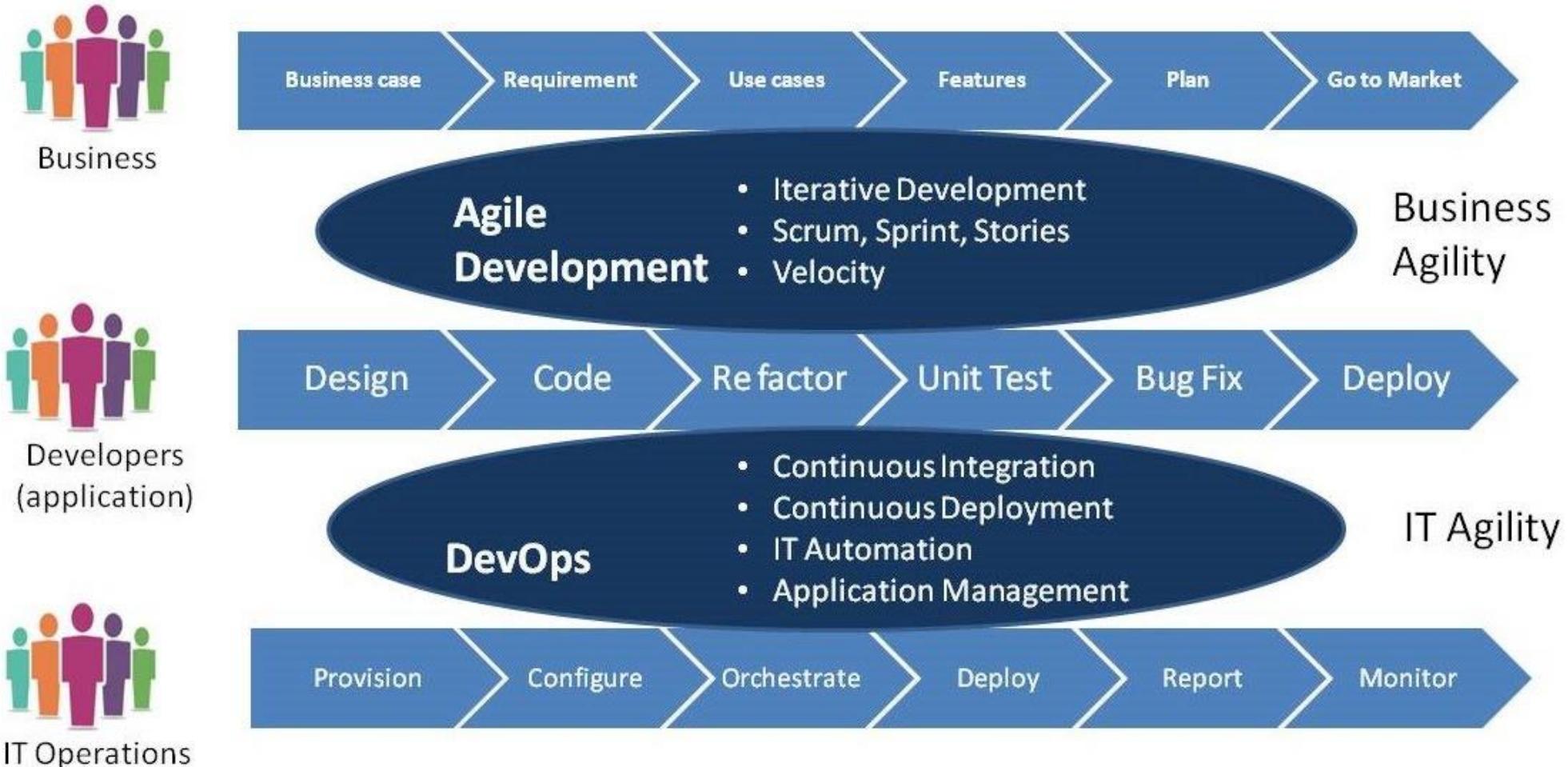
AGILE



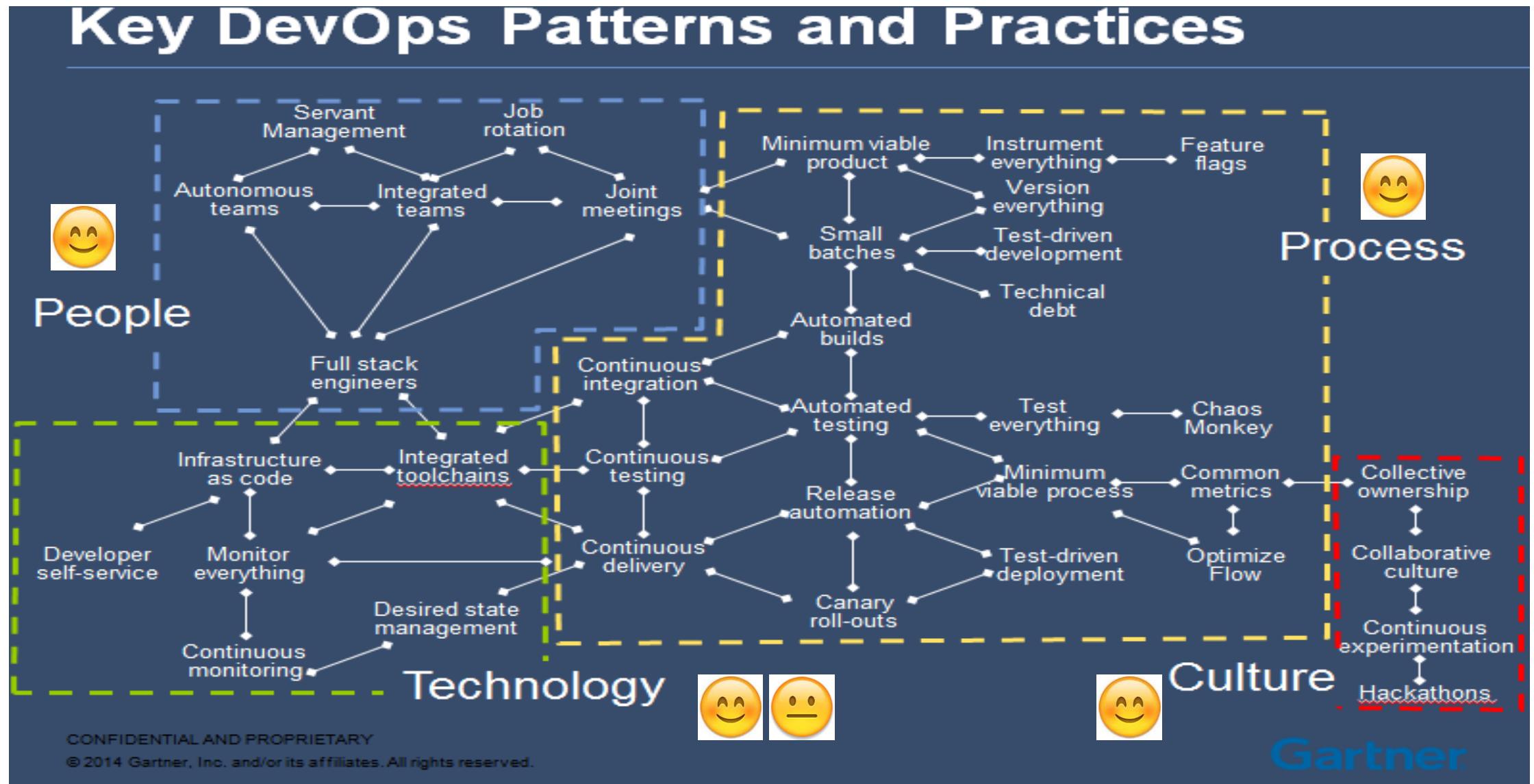
DEVOPS



DevOps with the Business



DevOps Patterns and Best Practice



Legend



Yes!



Maybe

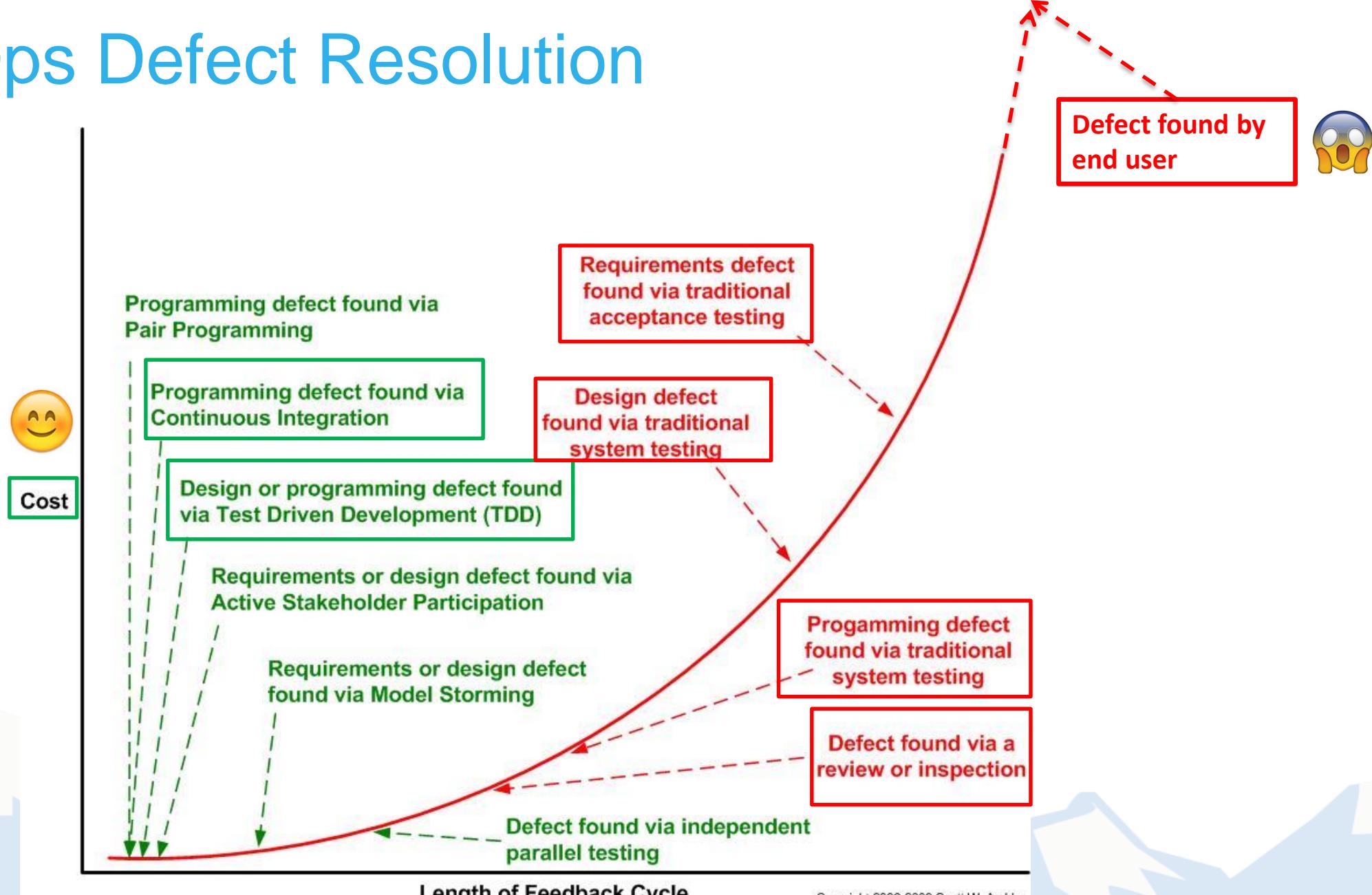


No

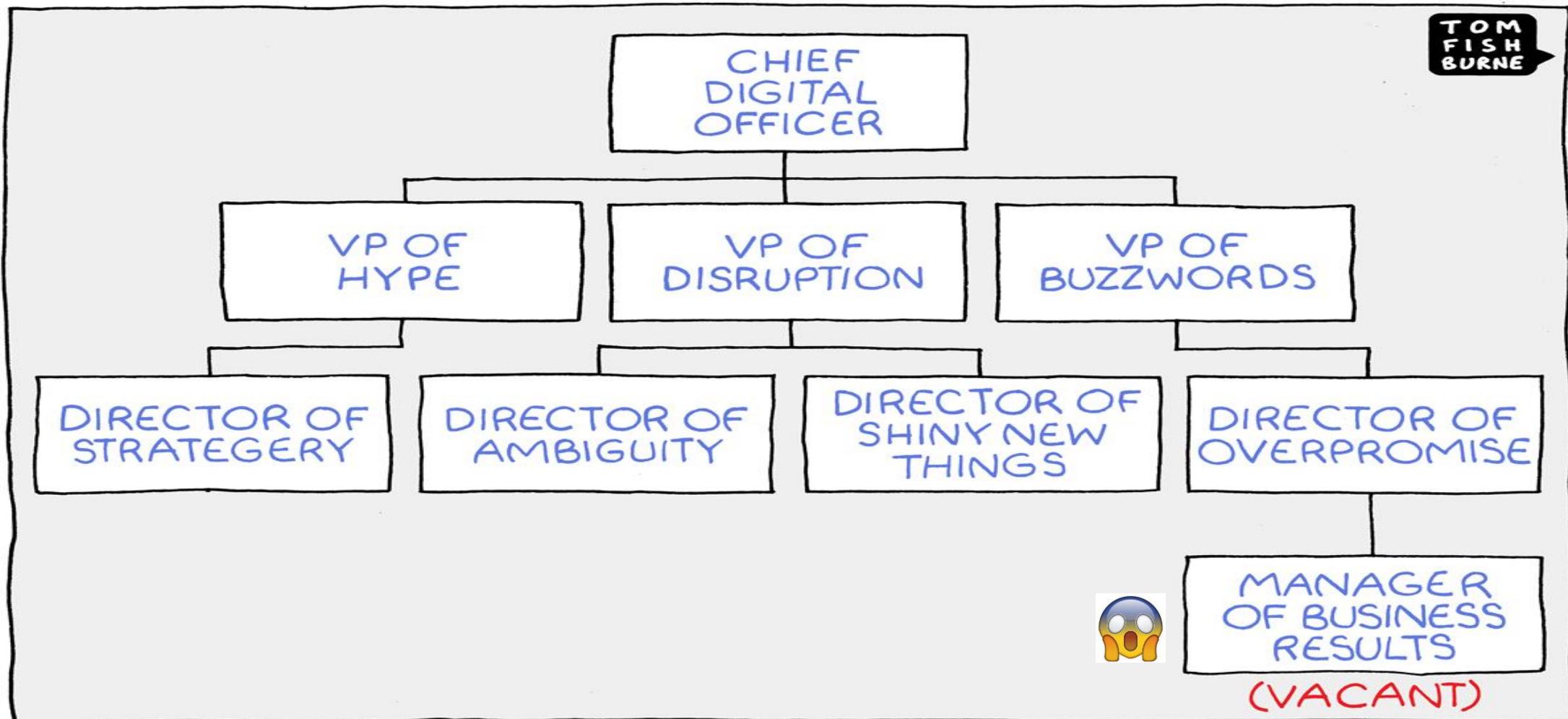


OMG No!

DevOps Defect Resolution



Business Challenges on IBM i IT - DT



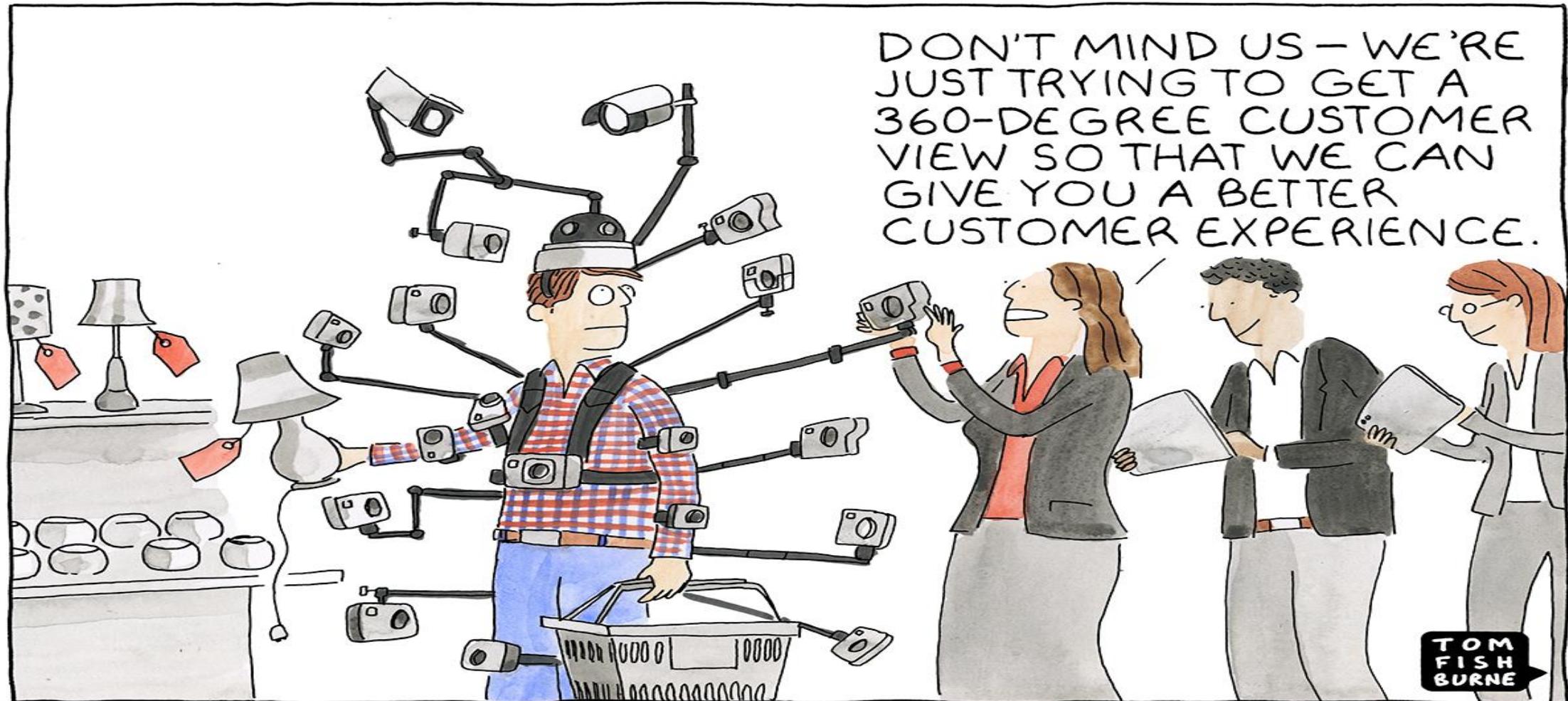
© marketoonist.com

Challenges on IBM i - DT



© marketoonist.com

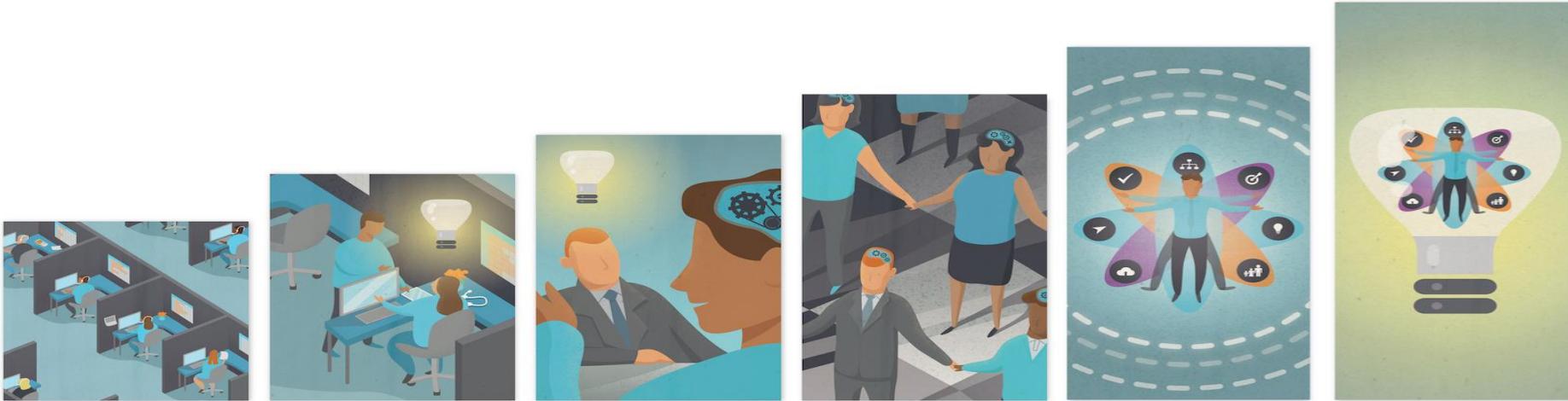
Challenges on IBM i - DT



© marketoonist.com

Challenges on IBM i - DT

THE SIX STAGES OF DIGITAL TRANSFORMATION



BUSINESS AS USUAL:

Organizations operate with a familiar legacy perspective of customers, processes, metrics, business models, and technology, believing that it remains the solution to digital relevance.

PRESENT AND ACTIVE:

Pockets of experimentation are driving digital literacy and creativity, albeit disparately, throughout the organization while aiming to improve and amplify specific touchpoints and processes.

FORMALIZED:

Experimentation becomes intentional while executing at more promising and capable levels. Initiatives become bolder and, as a result, change agents seek executive support for new resources and technology.

STRATEGIC:

Individual groups recognize the strength in collaboration as their research, work, and shared insights contribute to new strategic roadmaps that plan for digital transformation ownership, efforts, and investments.

CONVERGED:

A dedicated digital transformation team forms to guide strategy and operations based on business and customer-centric goals. The new infrastructure of the organization takes shape as roles, expertise, models, processes, and systems to support transformation are solidified.

INNOVATIVE AND ADAPTIVE:

Digital transformation becomes a way of business as executives and strategists recognize that change is constant. A new ecosystem is established to identify and act upon technology and market trends in pilot and, eventually, at scale.

ALTIMETER[®]
©Prophet

Do not under estimate the impact and value of DevOps

About DevOps Research and Assessment



DevOps Research and Assessment (DORA), founded by Dr. Nicole Forsgren, Jez Humble, and Gene Kim, conducts research into understanding high performance in the context of software development and the factors that predict it. DORA's research over four years and more than 30,000 data points serves as the basis for a set of evidence-based tools for evaluating and benchmarking technology organizations and identifying the key capabilities to accelerate their technology transformation journey.

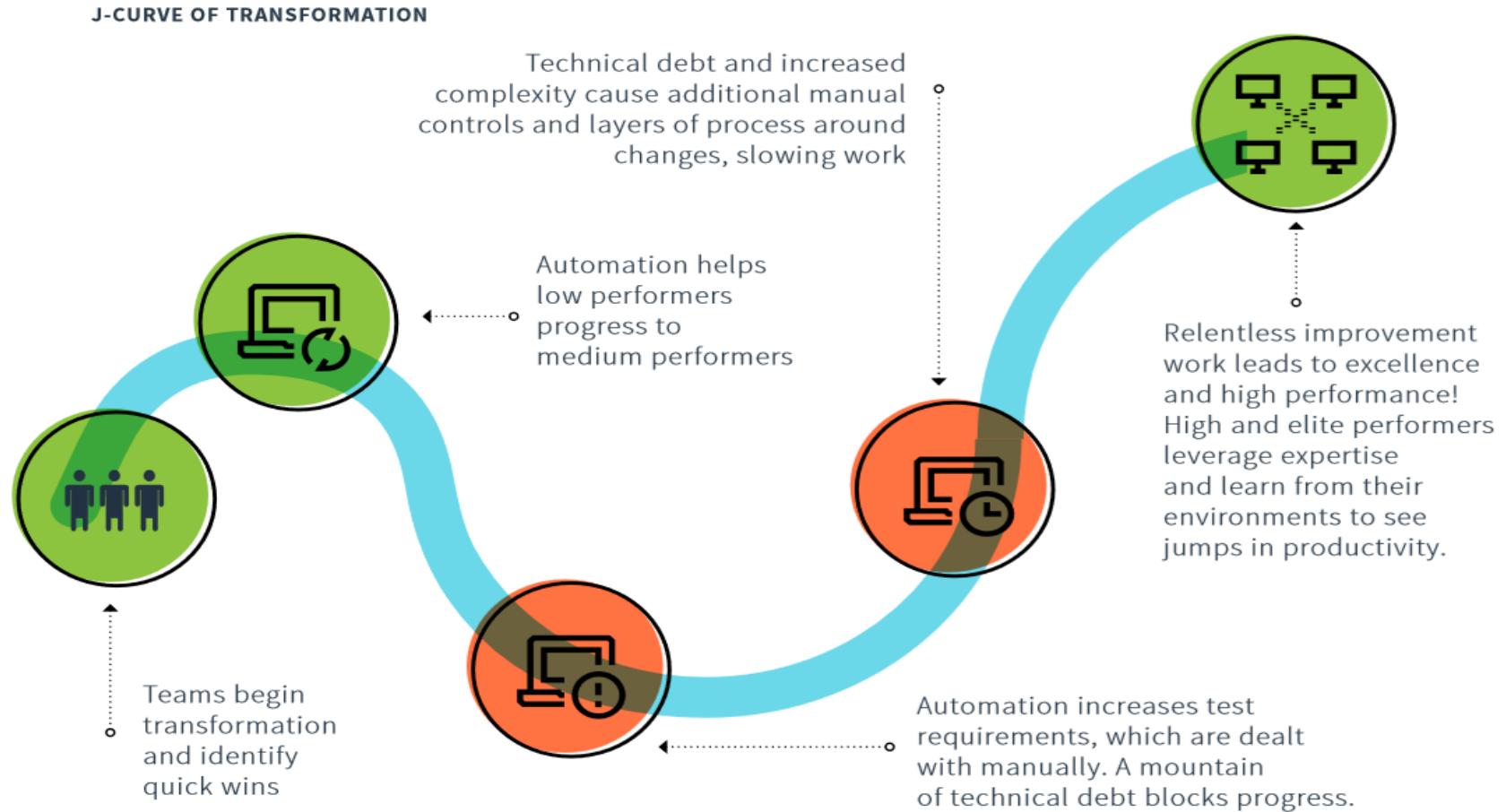
Learn more at devops-research.com.

DORA State of DevOps 2018

COMPARING THE ELITE GROUP AGAINST THE LOW PERFORMERS, WE FIND THAT **ELITE PERFORMERS HAVE...**

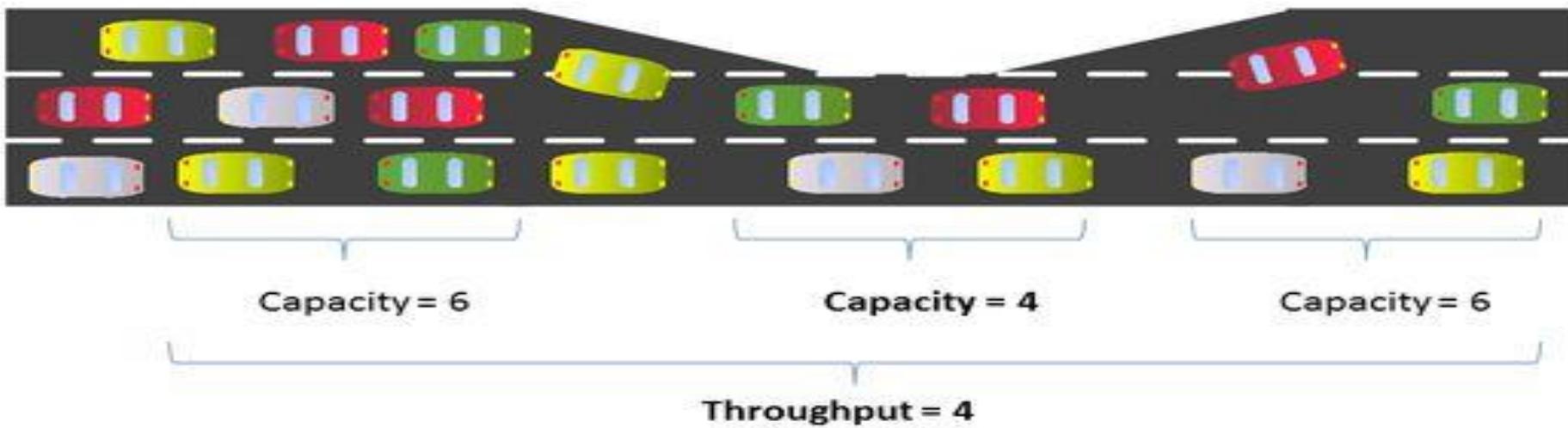


DevOps Not a Perfect Science



Challenges on IBM i – Agile vs DevOps

You can't go faster than your bottleneck



Created by Håkan Forss @hakanforss <http://hakanforss.wordpress.com>





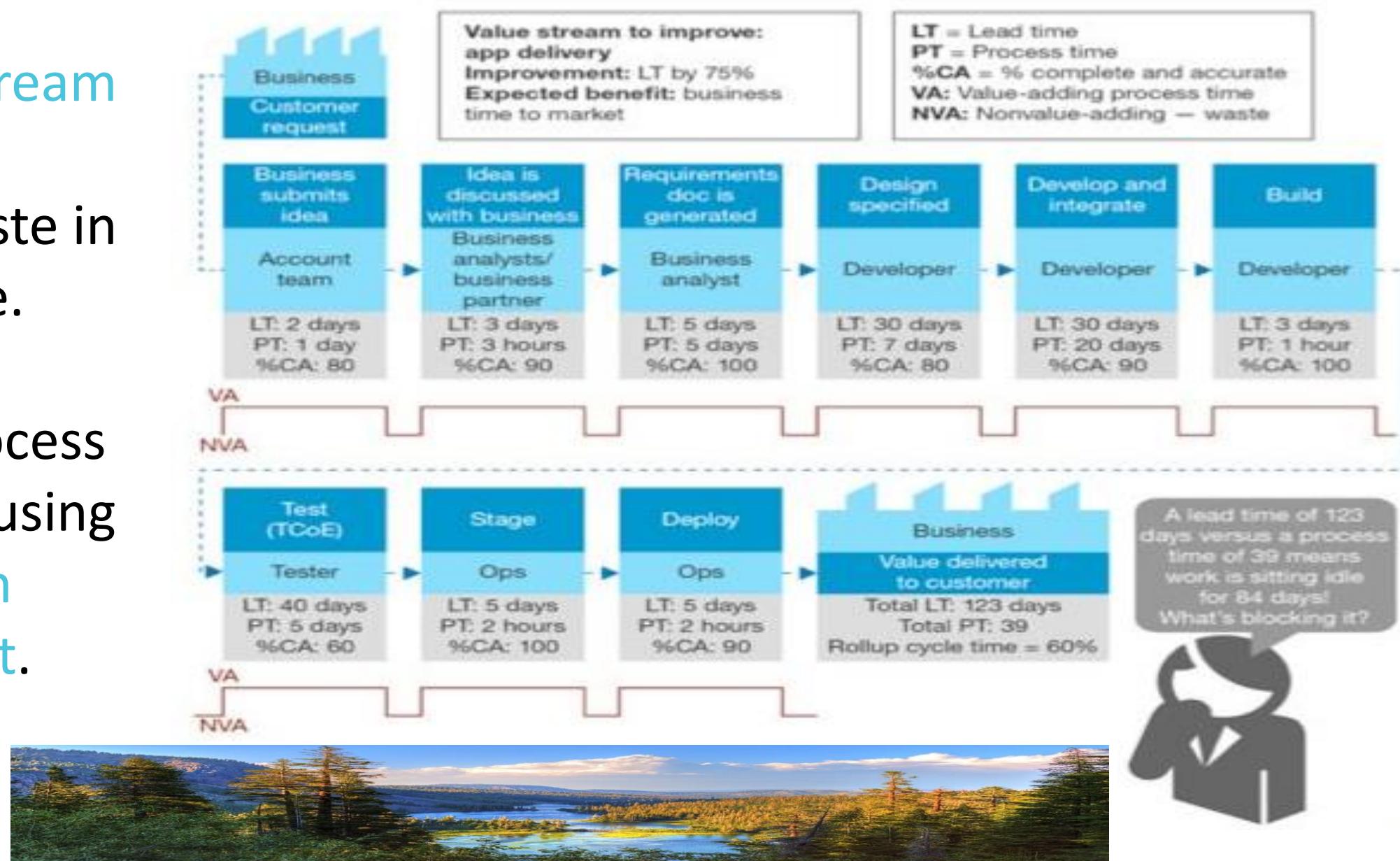
DevOps People, Process and Tools

Becoming Agile...

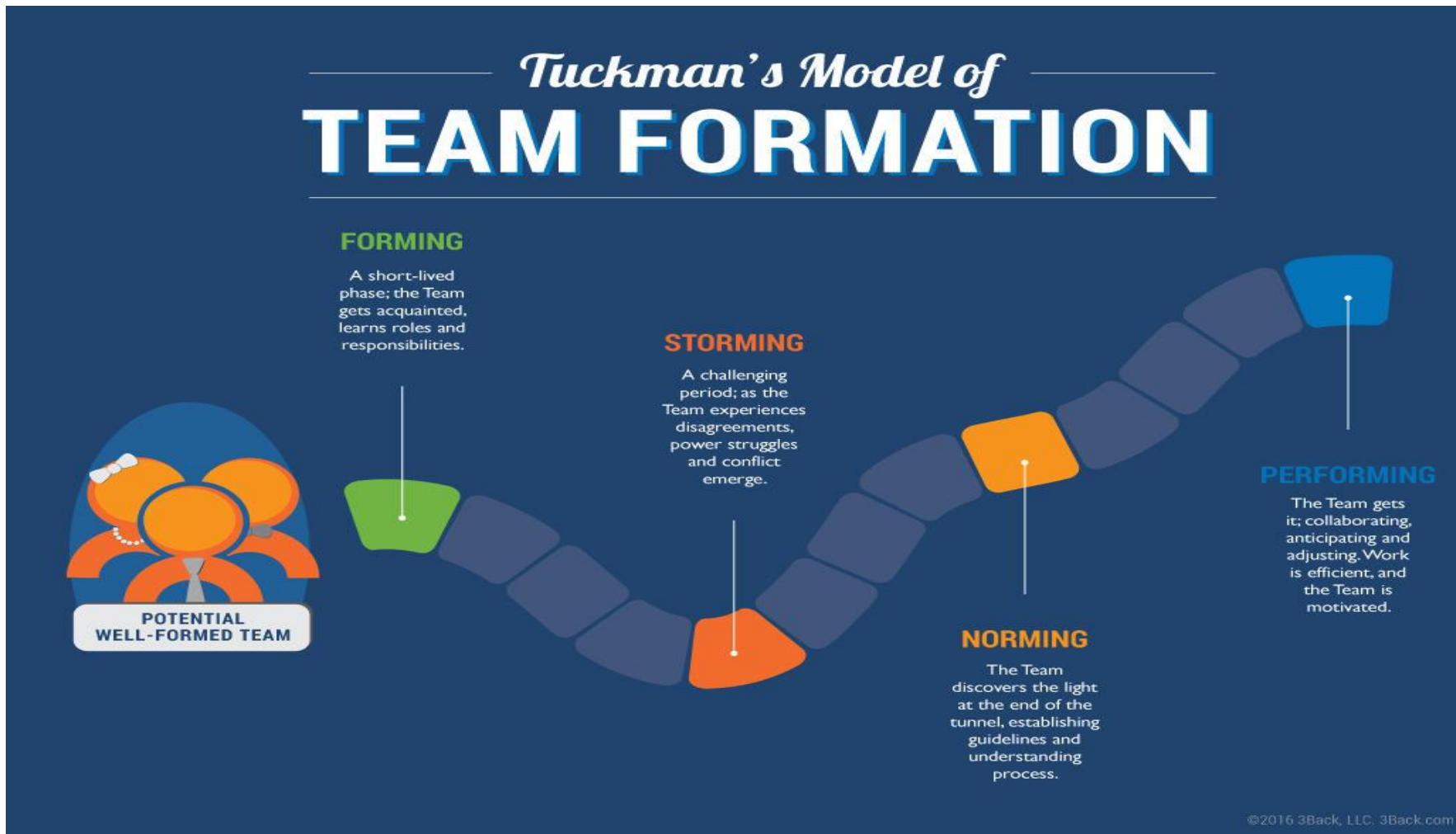
DevOps – Value Stream Mapping

Use Value Stream Mapping to Uncover Waste in your pipeline.

Prioritize process automation using Value Stream Management.



Starting Lineup



Build a tower-Build a team

The **Challenge**



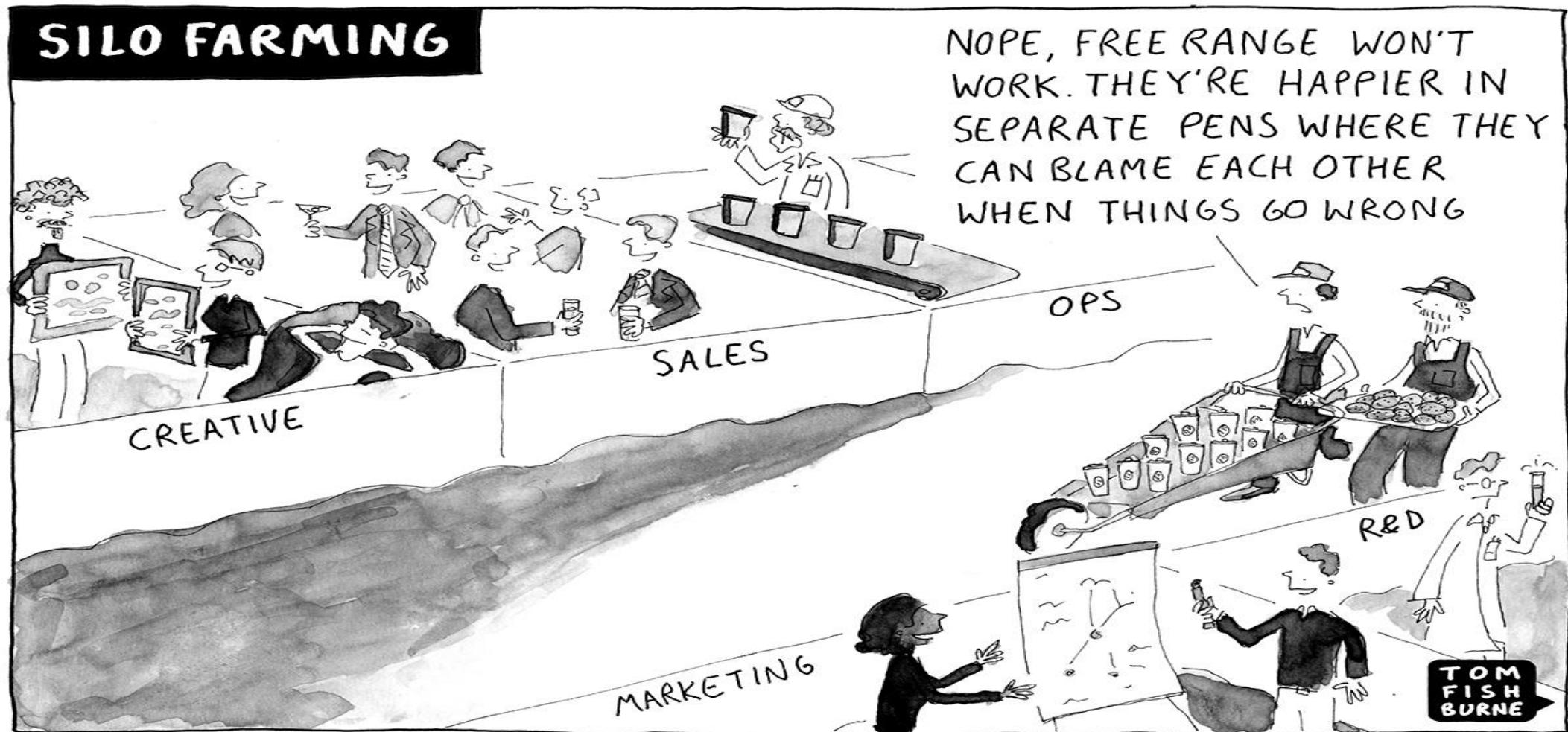
Eighteen Minutes
Teams of Four
Tallest Freestanding Structure



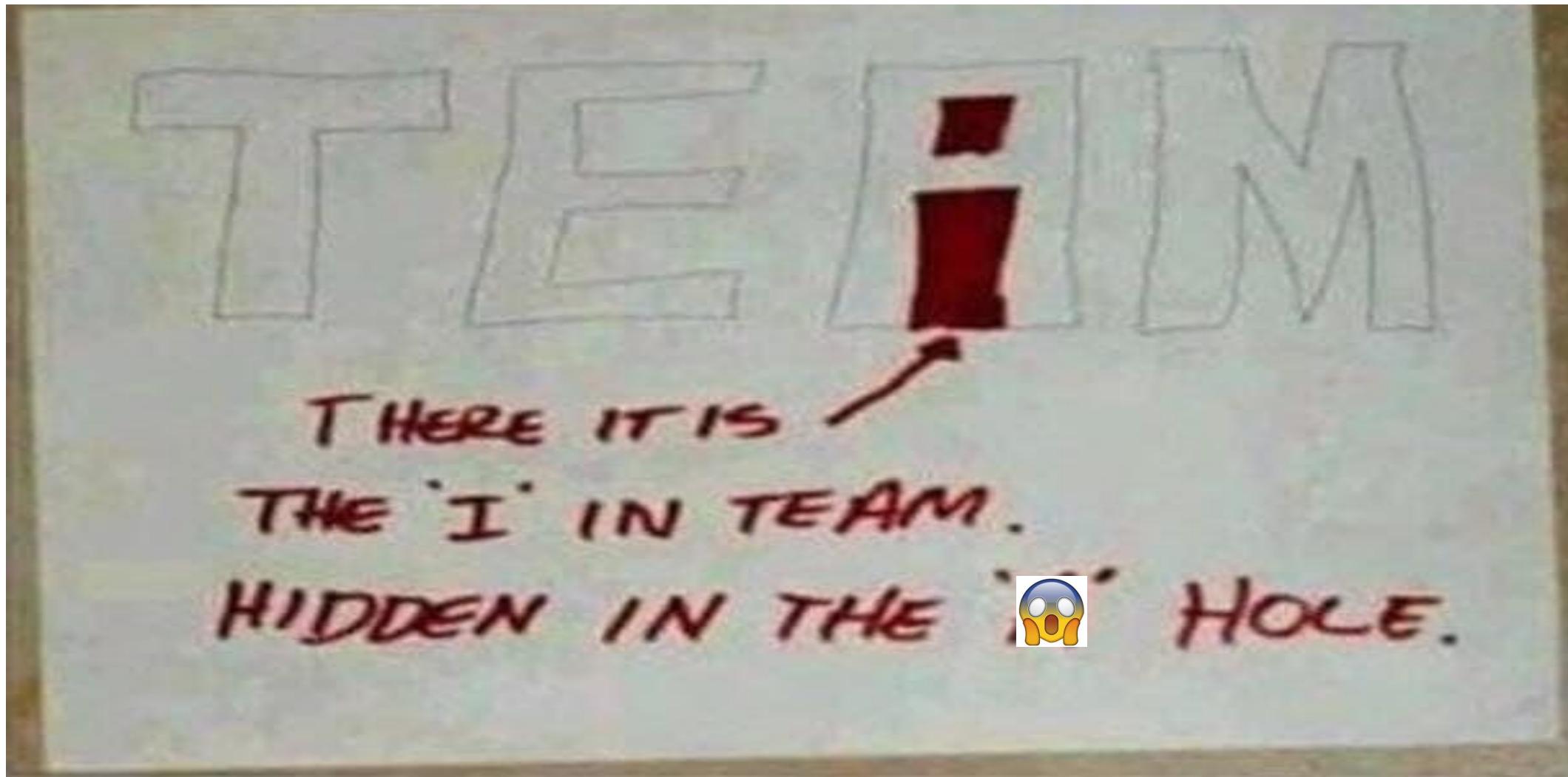
20 sticks of spaghetti + one yard tape + one yard string + one marshmallow



IBM i Transformational Change



TP AS/400 Slide - There is an "i" in team





DevOps Tools of Ignorance

Becoming Agile...

The DevOps promise...



ACCELERATE
software
delivery



BALANCE
speed, cost,
quality
and risk



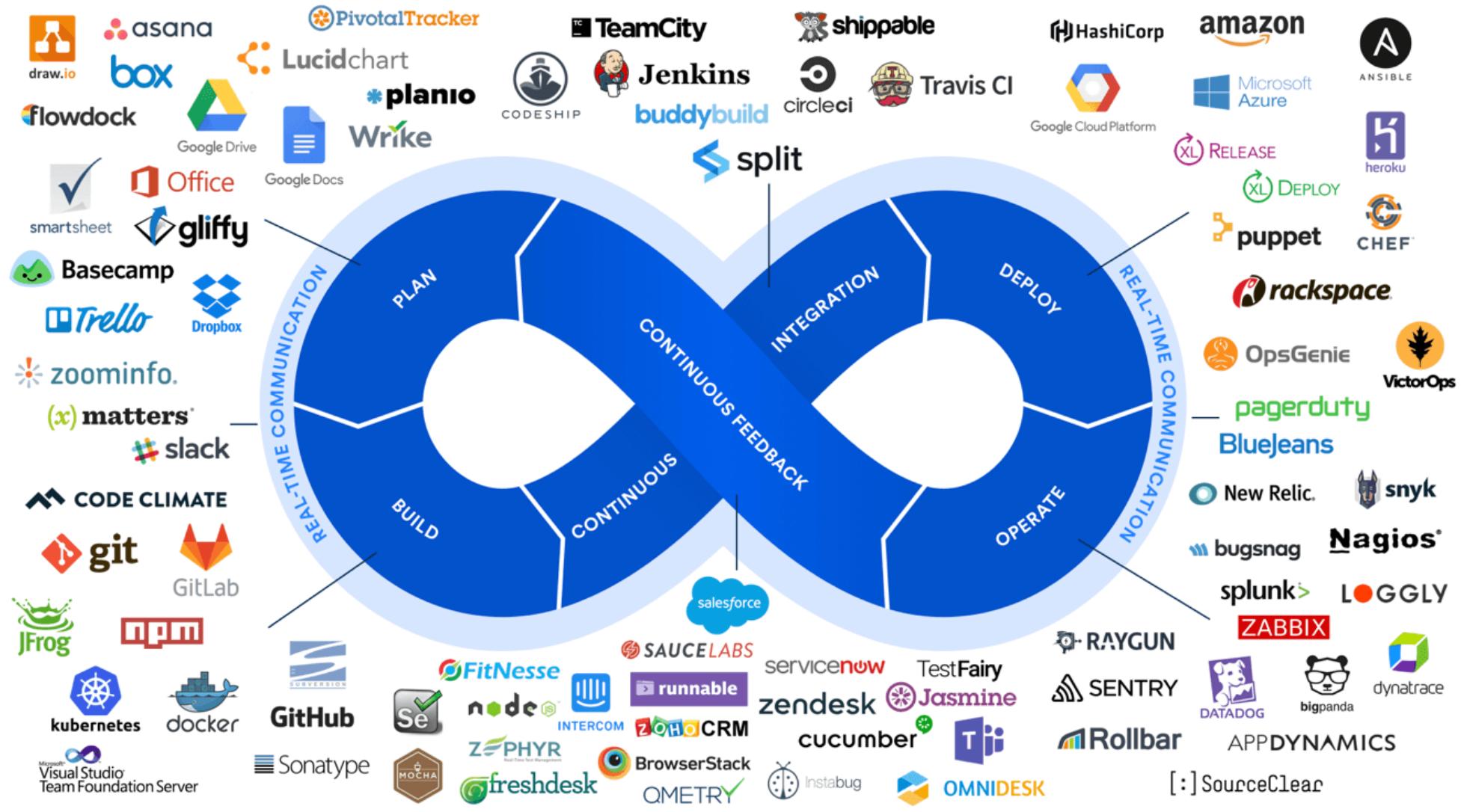
REDUCE
time
to customer
feedback

What is DevOps?

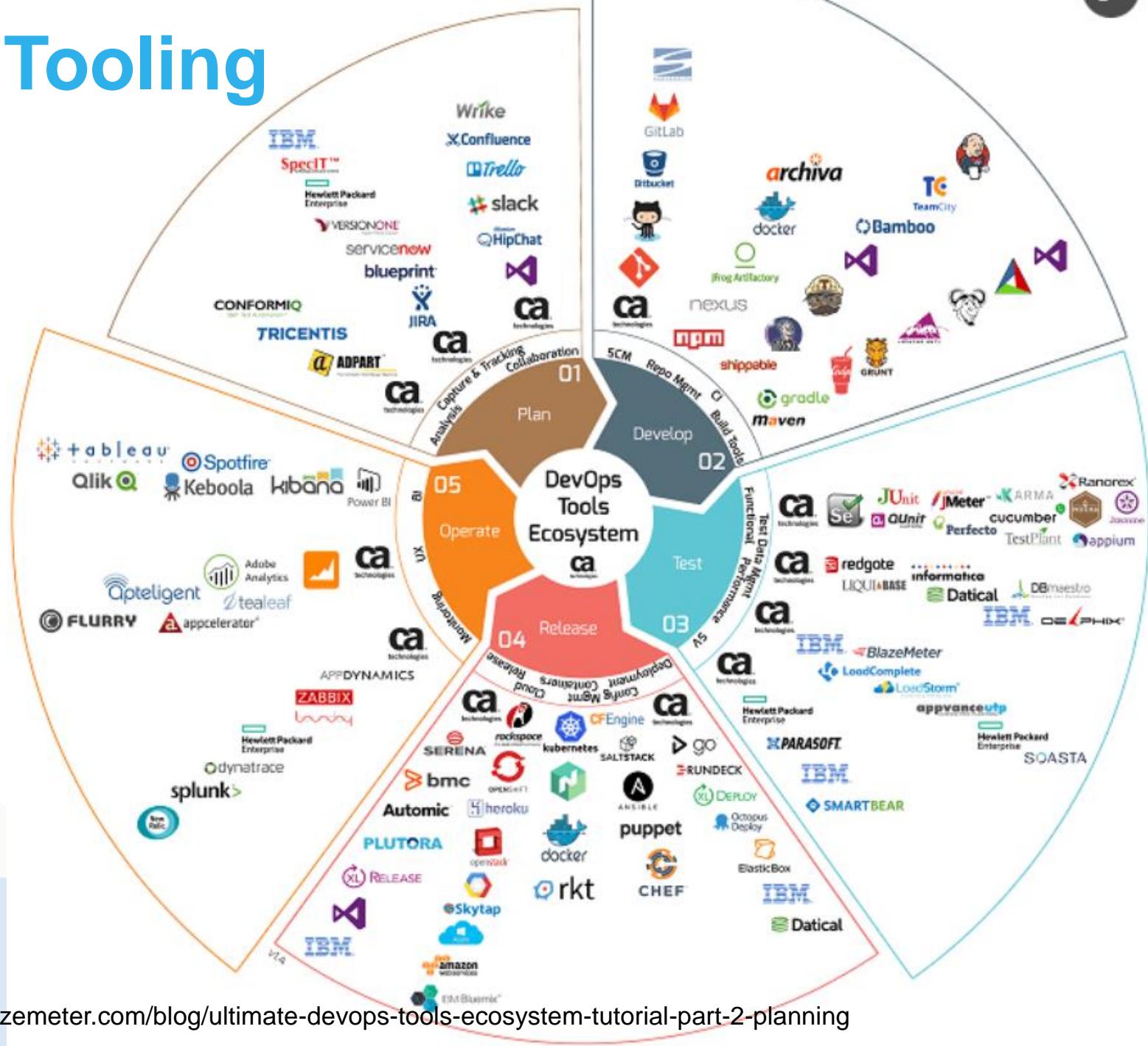
DevOps means people, process, and the right tools working together to make the delivery lifecycle faster and more predictable.



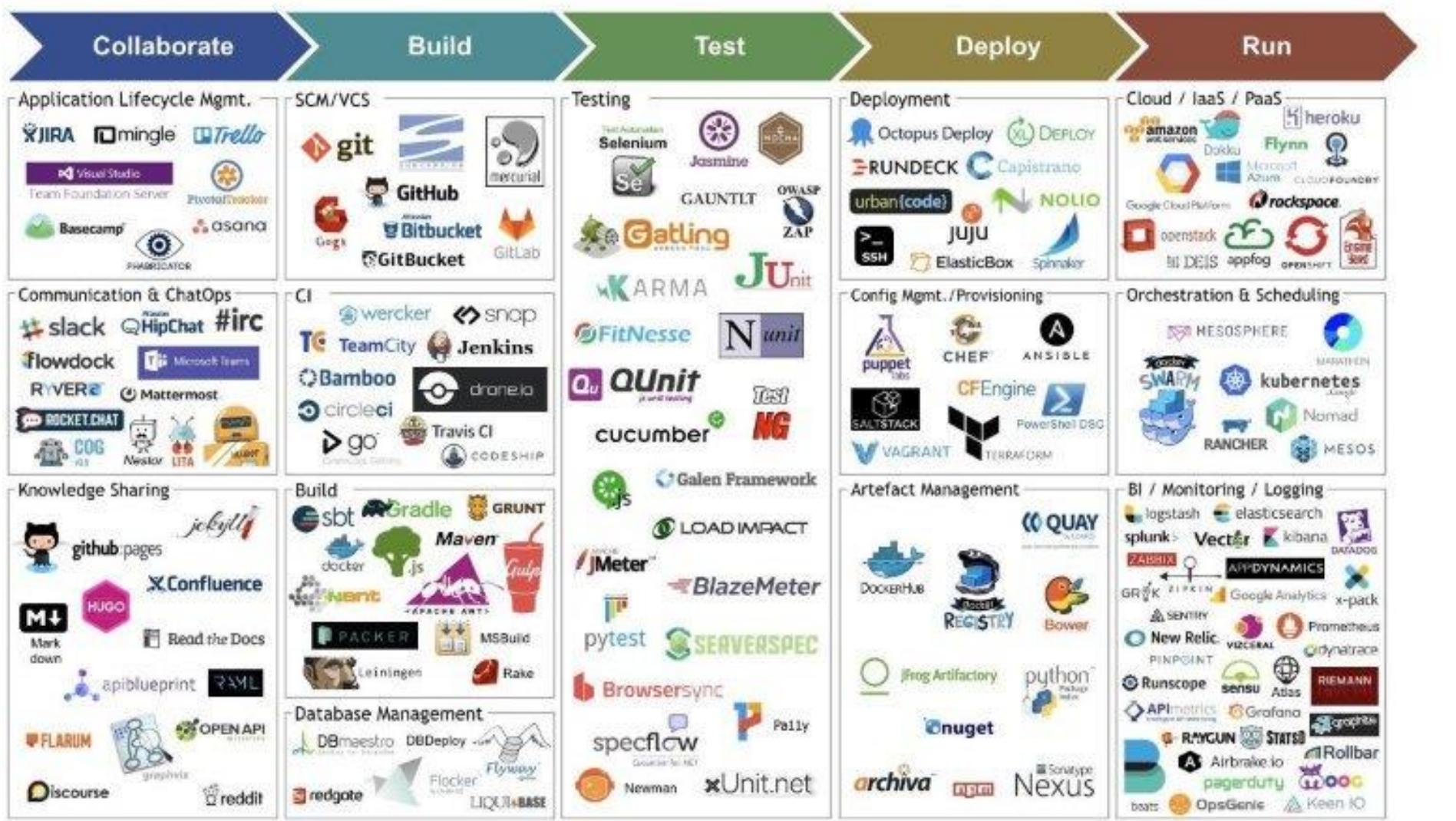
DevOps Tooling



DevOps Tooling



DevOps Tooling



DevOps Tooling

DevOps Enabler Tools v2 (Caution!!!! : Consider only after DevOps mindset is established)

Infra-as-code



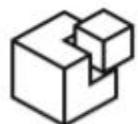
ANSIBLE



puppet



CHEF™



SALTSTACK

CI/CD



Jenkins



shippable



Bamboo



TeamCity

Test Automation



Cucumber



appium



APACHE JMeter™

Container



docker



Rocket



unik



docker SWARM

Orchestration



kubernetes



MESOS



MARATHON



Elastic Beanstalk

Deployment



Octopus



vamp



DBmaestro DevOps for Database



AWS Lambda



DATADOG

Measurement



New Relic



elasticsearch.



logstash



Kibana

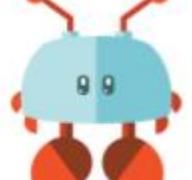


sumologic

ChatOps



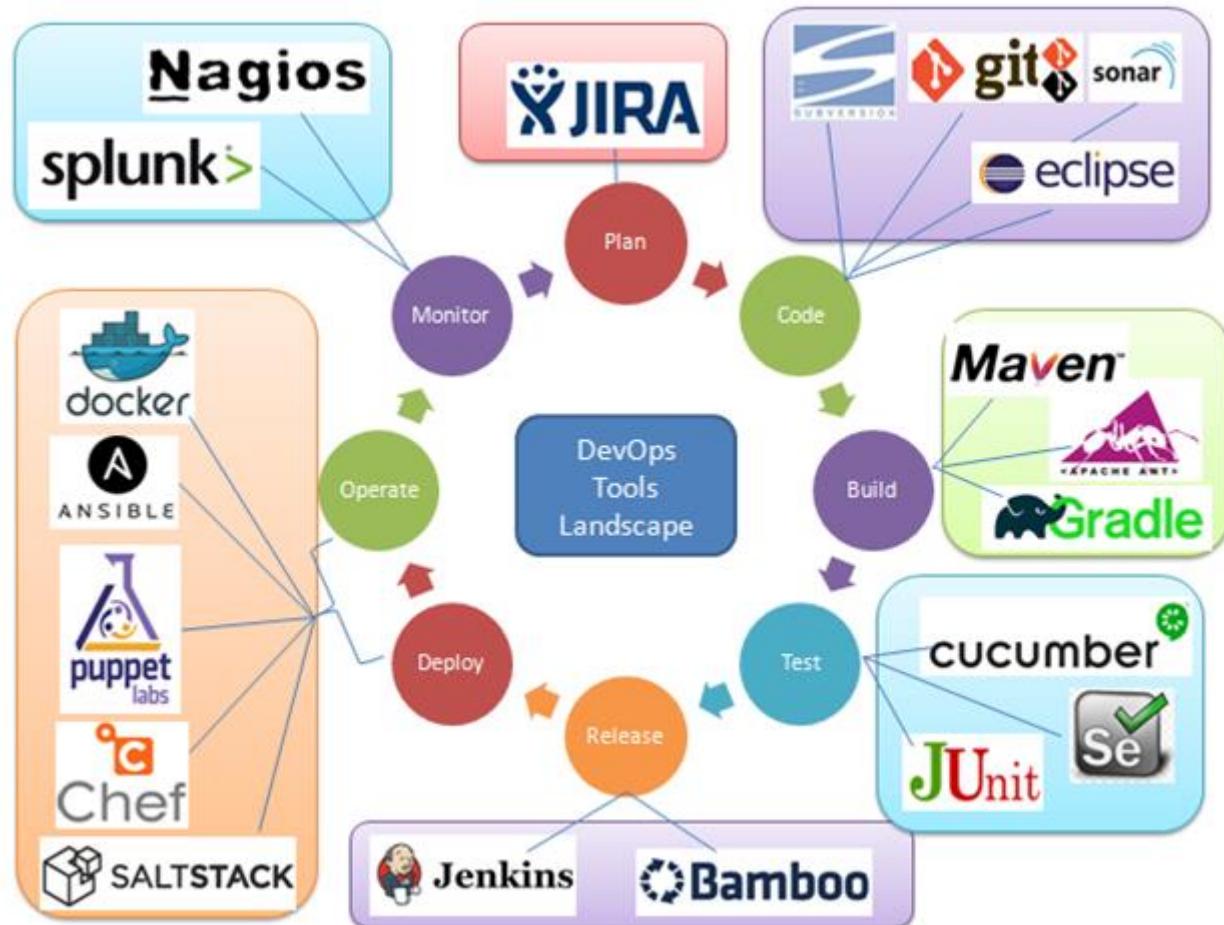
HU-BOT



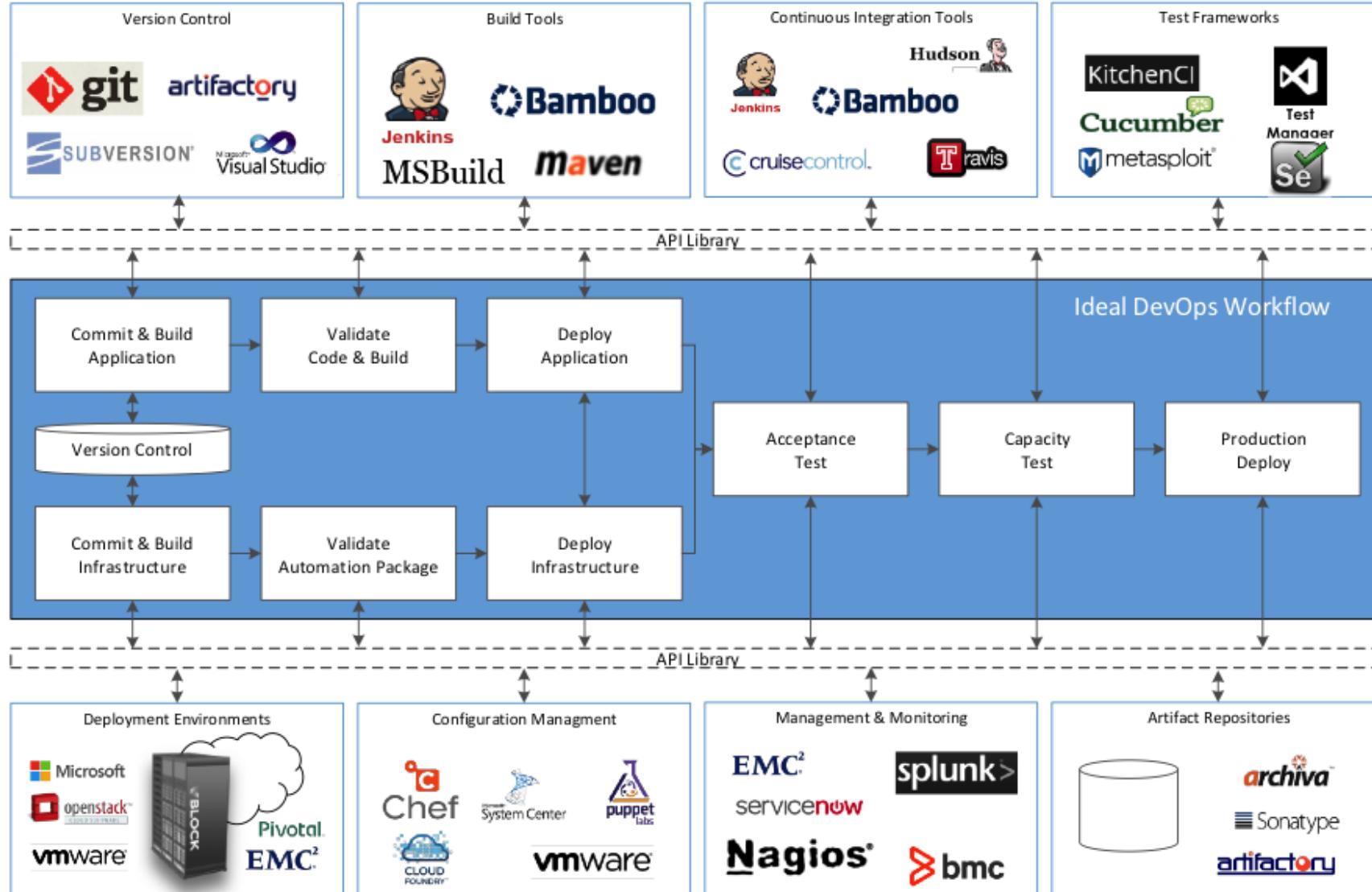
LITA



DevOps Tooling

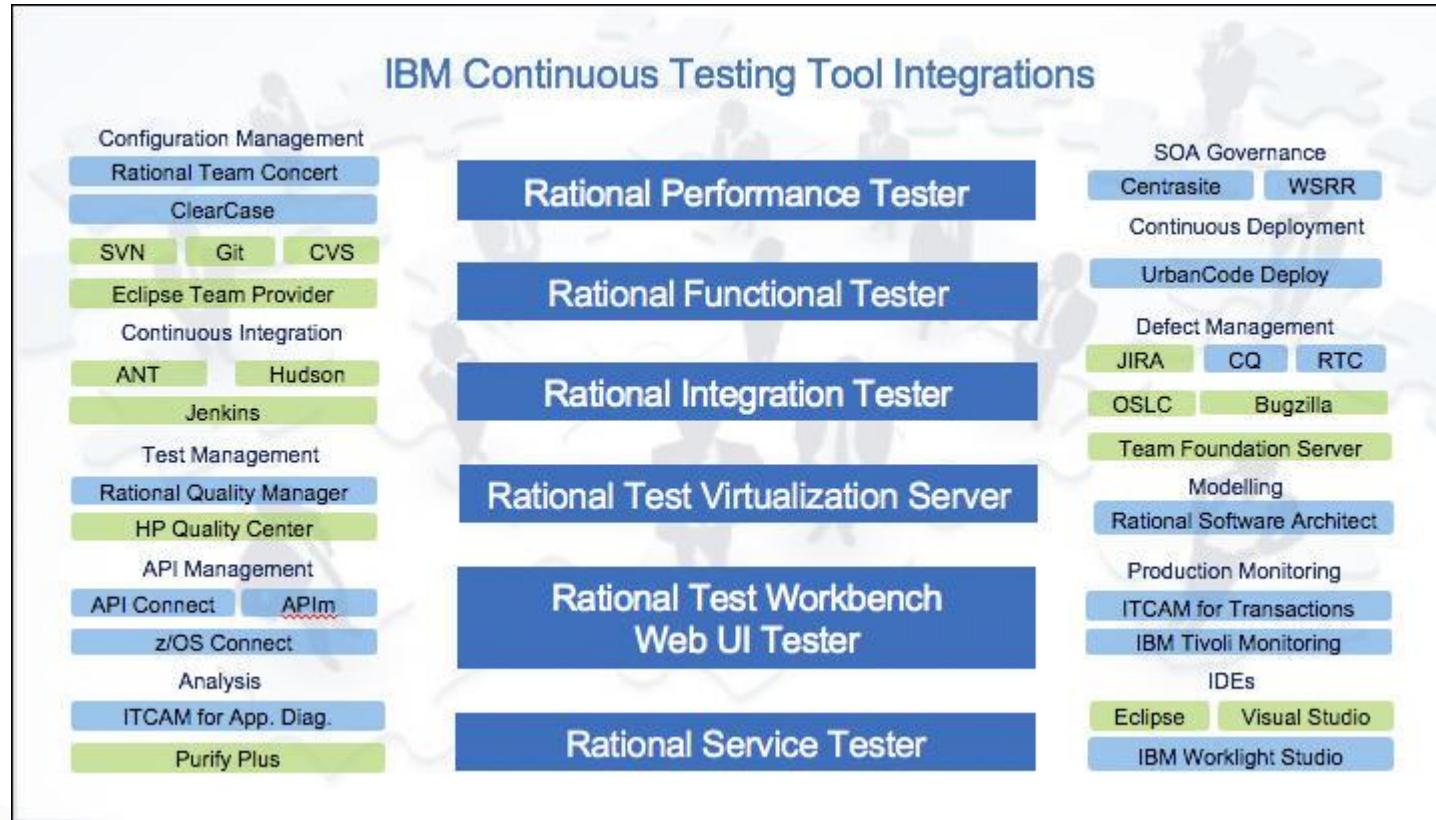


DevOps Tooling



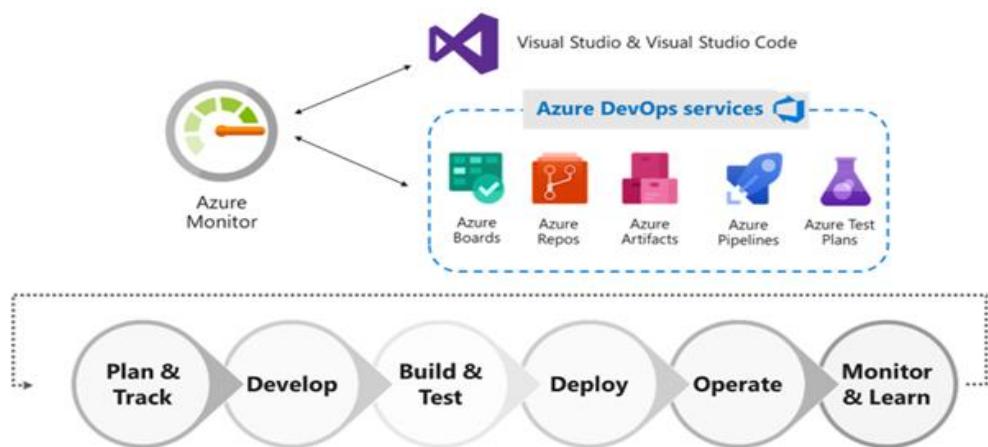
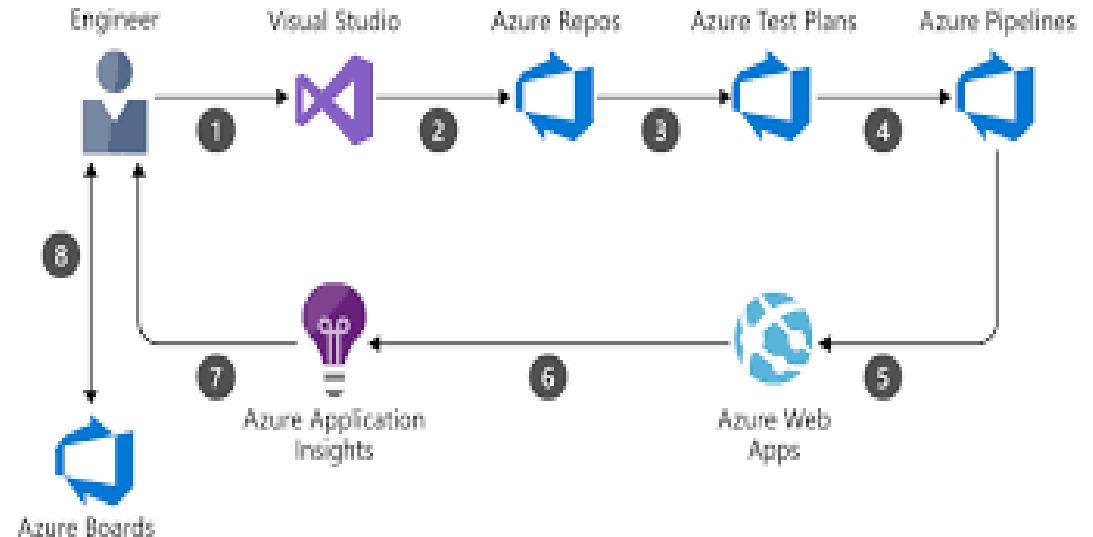
- https://infocus.dellemc.com/bart_driscoll/common-devops-tool-chains-pitfalls

IBM DevOps Tooling



What about Azure DevOps?

The screenshot shows the Azure DevOps Boards interface. On the left, a sidebar navigation includes 'Overview', 'Boards', 'Work Items', 'Backlogs', 'Sprints', 'Queries', 'Plans', 'Repos', 'Pipelines', 'Test Plans', and 'Artifacts'. The main area displays a Kanban board titled 'FabrikamFiber Board' with columns: 'New', 'Active', 'Staging', 'Deployed', and '3/2'. The 'Active' column contains several items, each with a title, description, and assignee. For example, 'Home page (selected room)' is assigned to 'Carlos Slattery'.



DevOps

- DevOps is not tooling
 - DevOps is a changed mind set
 - *How can I quickly, and safely, deliver features to end-users*
 - Developers, end-users and testers are in constant communication
 - Versions are archaic
 - *Feature releases*
 - DevOps require Application ~~Modernization~~ Modularization
 - Object Oriented
 - MVC
 - Scriptable test cases
 - ...but, tools do (often) make things easier...

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Questions

What did you think?