DevOps & Lean in Legacy Environments

10 Techniques for Flow & Continuous Delivery

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csg
INTERNATIONAL

CSG in NA: Who Are We?

Customer Care and Billing Operations

- ~50M Subscribers across 120 customers
- 100k Call Center Seats
- ~6B External Transactions/month
- 40 Dev. Teams & 1000 Practitioners
- ACP: ~20 Technology Stacks: JS to HLASM
  - Integrated Suite of 50+ applications

Challenges:

- Time to Market & Quality/Release Impact
- Technology Stovepipes
- Role Stovepipes

Print and Mail Factory

- ~70M statements/month
- Lean & Efficient

Challenges

- Continuous Optimization

Release Improvements From Lean & DevOps

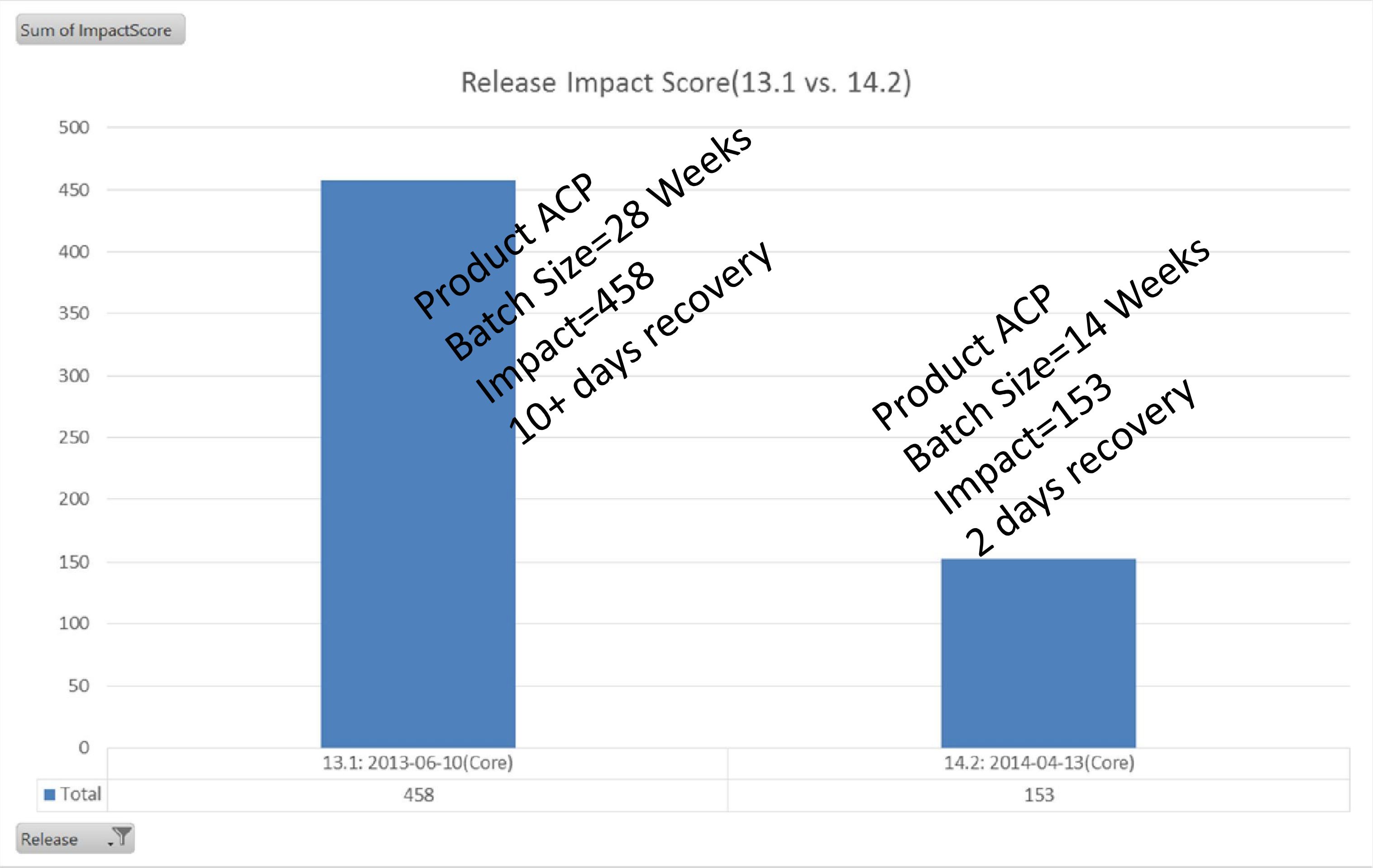
Impact Score:

Critical=4

High=3

Medium=2

Low=1

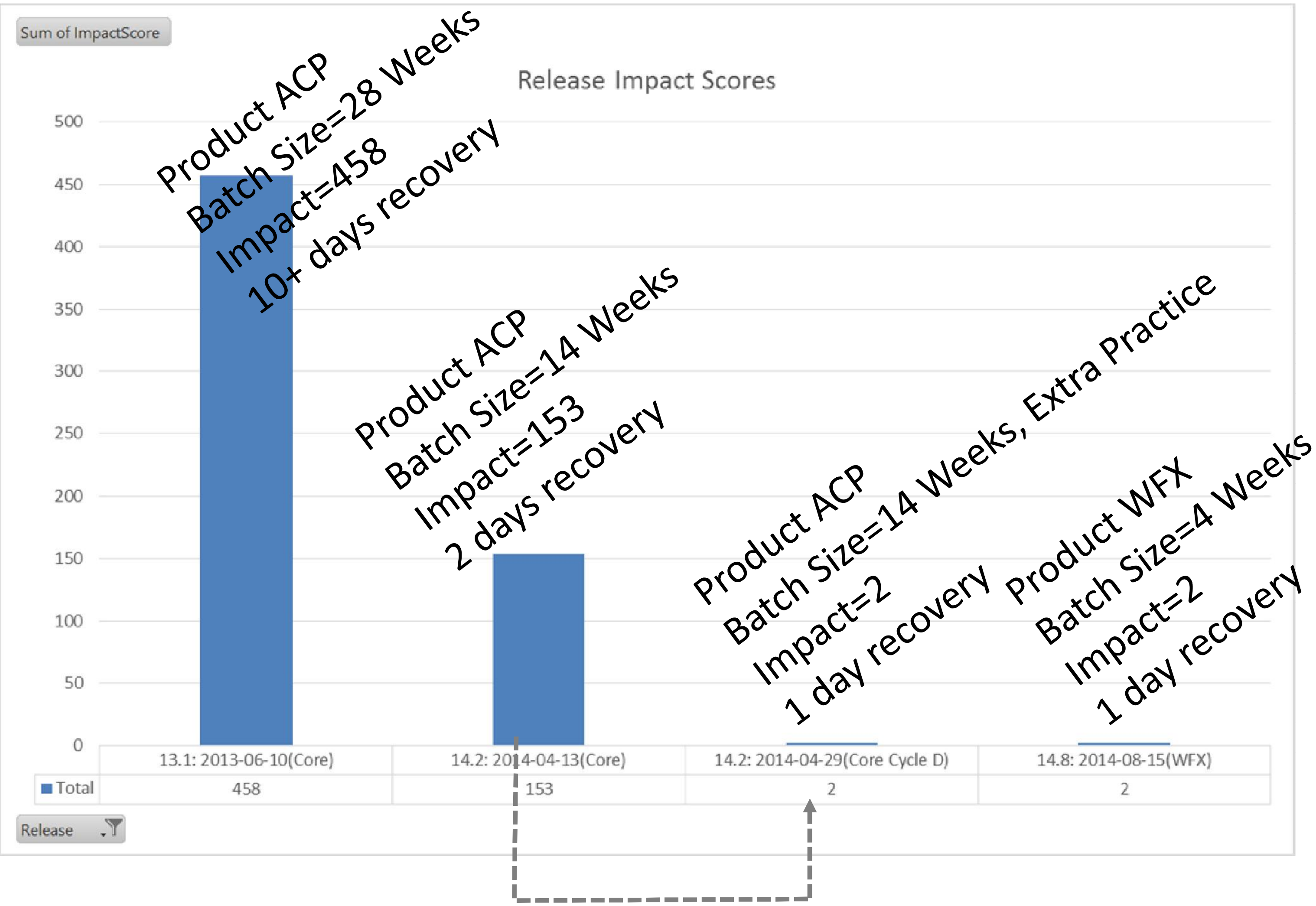


Product ACP
Batch Size=28 Weeks
Impact=458
10+ days recovery

Product ACP
Batch Size=14 Weeks
Impact=153
2 days recovery

Reducing the batch size from 28 to 14 weeks resulted in a 66.6%(3x) improvement
And value is delivered in half the time!

More Practice & Smaller Batches



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1 day recovery

“Same Code(with fixes)” deployed 2nd time…

Goal: Improve Quality & TTM

But, how do we improve quality, reduce batch size & move towards flow when the system is inherently structured to prevent this?

System Constraints

1. Structure
2. Stovepipes & Handoffs
3. Technology Variance
4. Defects & Quality
5. Low Automation
6. Fragility

Techniques to Address

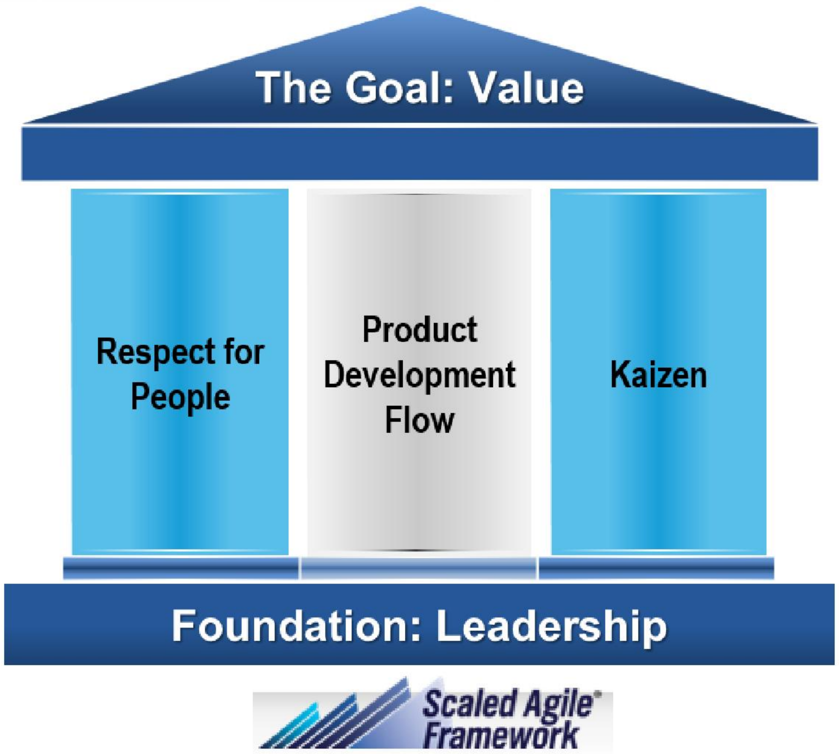
1. Accelerate Learning & Lean Thinking
2. Inverse Taylor Maneuver
3. Inverse Conway Maneuver
4. Shared Service Continuous Delivery
5. Environment Congruency & Practice
6. Application Telemetry
7. Visualize Your Work
8. Work Release & WIP Limits
9. Cadence & Synchronization
10. Reduce Batch Size

3 year journey!

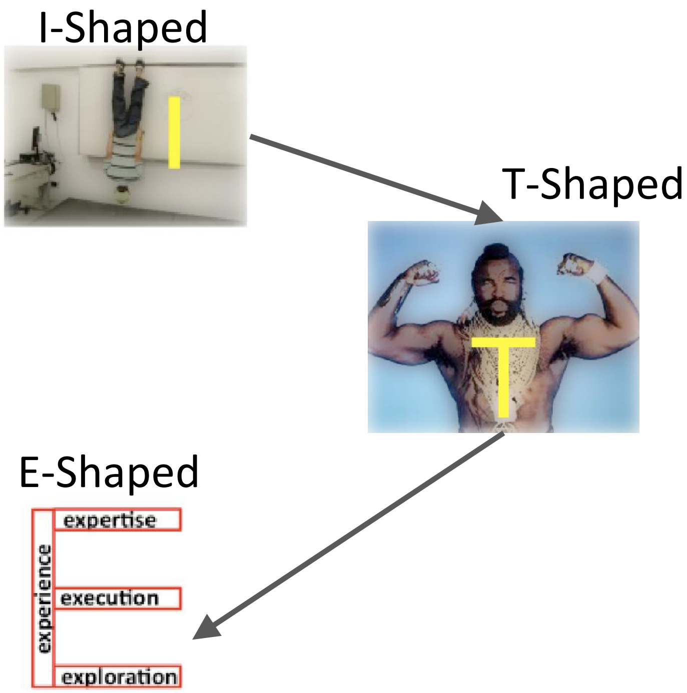
1. Accelerate Learning & Lean Thinking

People First: Build a culture of Learning and Self Improvement by embracing Lean & Systems Thinking.

Find a Lean Framework

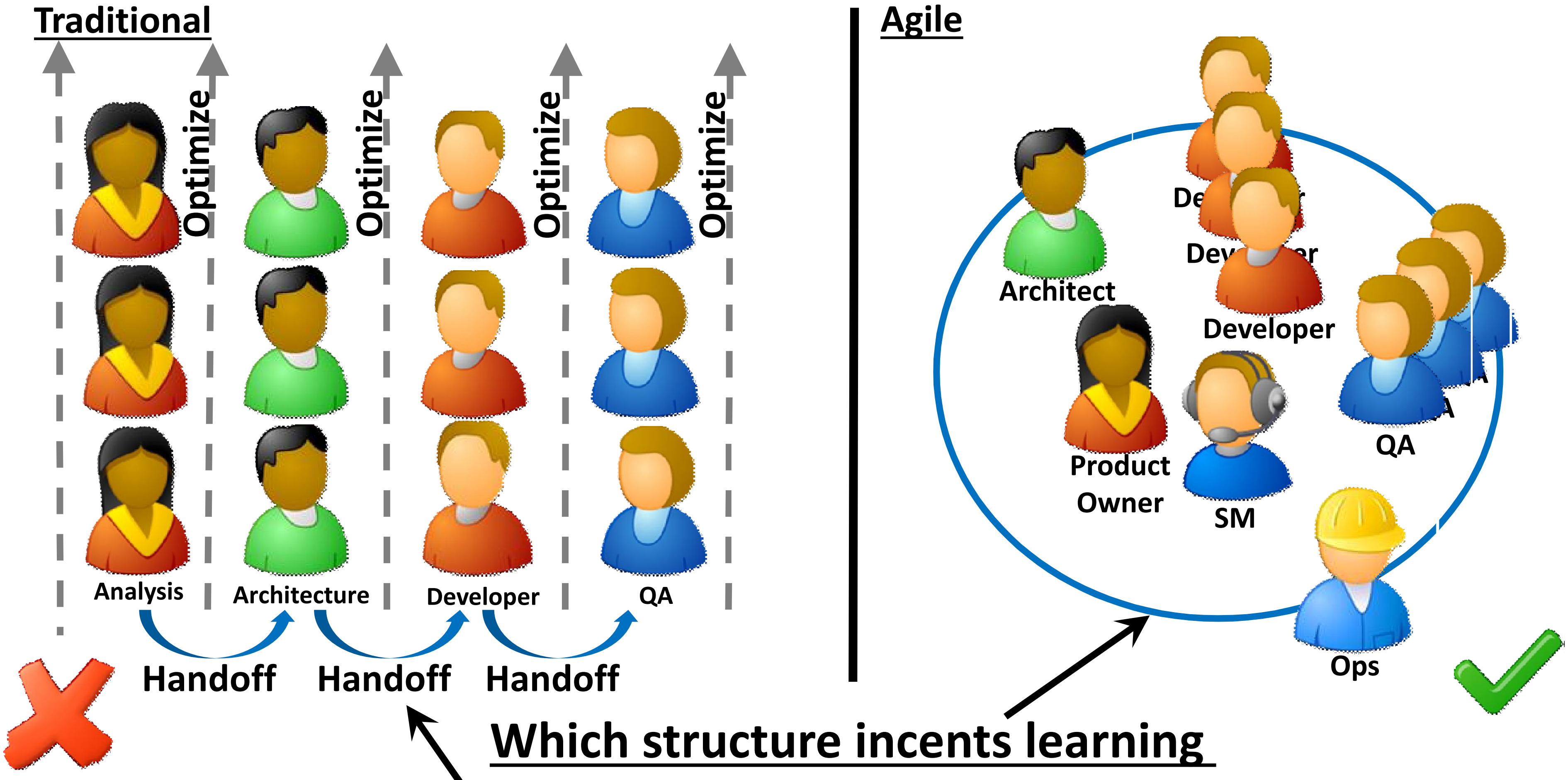


Encourage Cross Training



2. Inverse Taylor Maneuver

Structure & responsibility will enforce behavior and prevents learning.

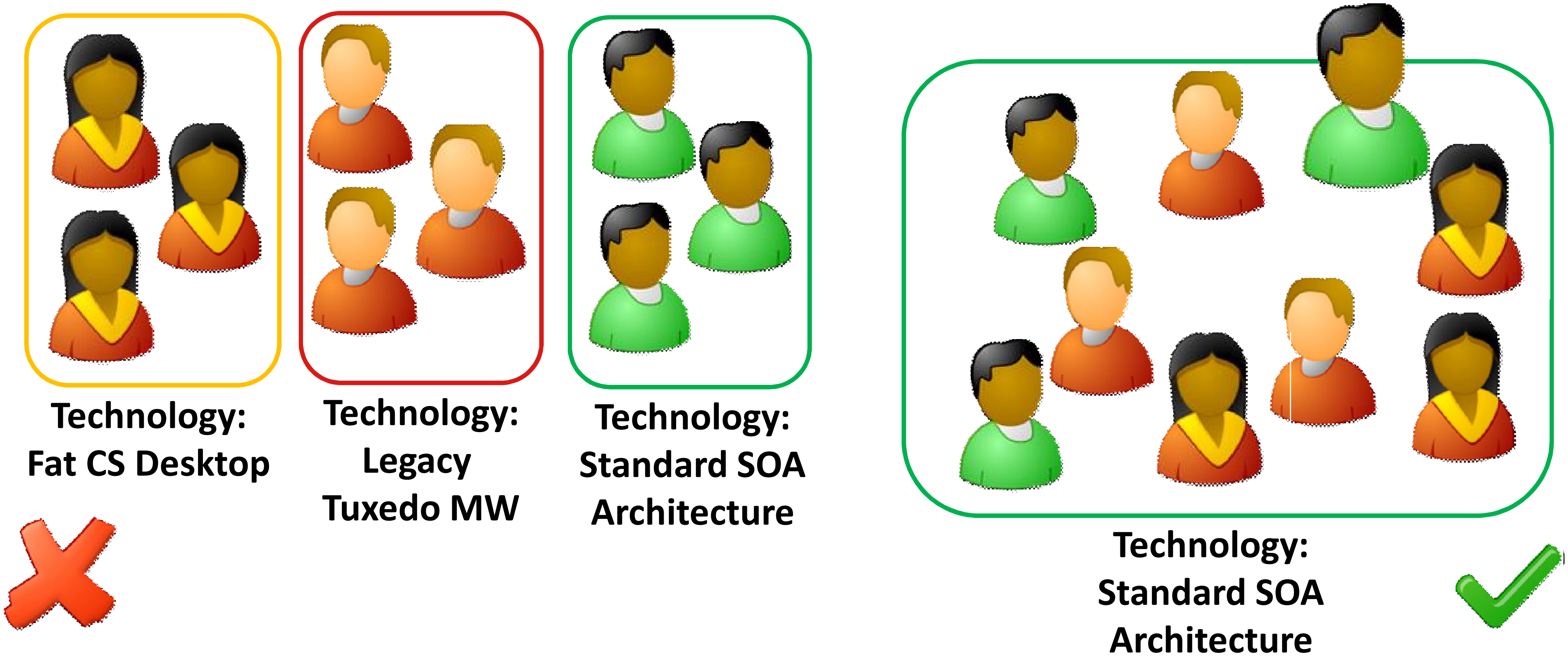


Which structure incents learning and removes queues?

Organize teams to optimize the entire flow of value.

3. Inverse Conway Maneuver

Structure will enforce technology and architecture.



Technology: Fat CS Desktop

✗

Technology: Legacy Tuxedo MW

Technology: Standard SOA Architecture

Technology: Standard SOA Architecture

✓

Change the structure to help create the architecture you want.

4. Shared Service Continuous Delivery

Pave one automated high-way to production so all teams can get there with speed and predictability.

✗

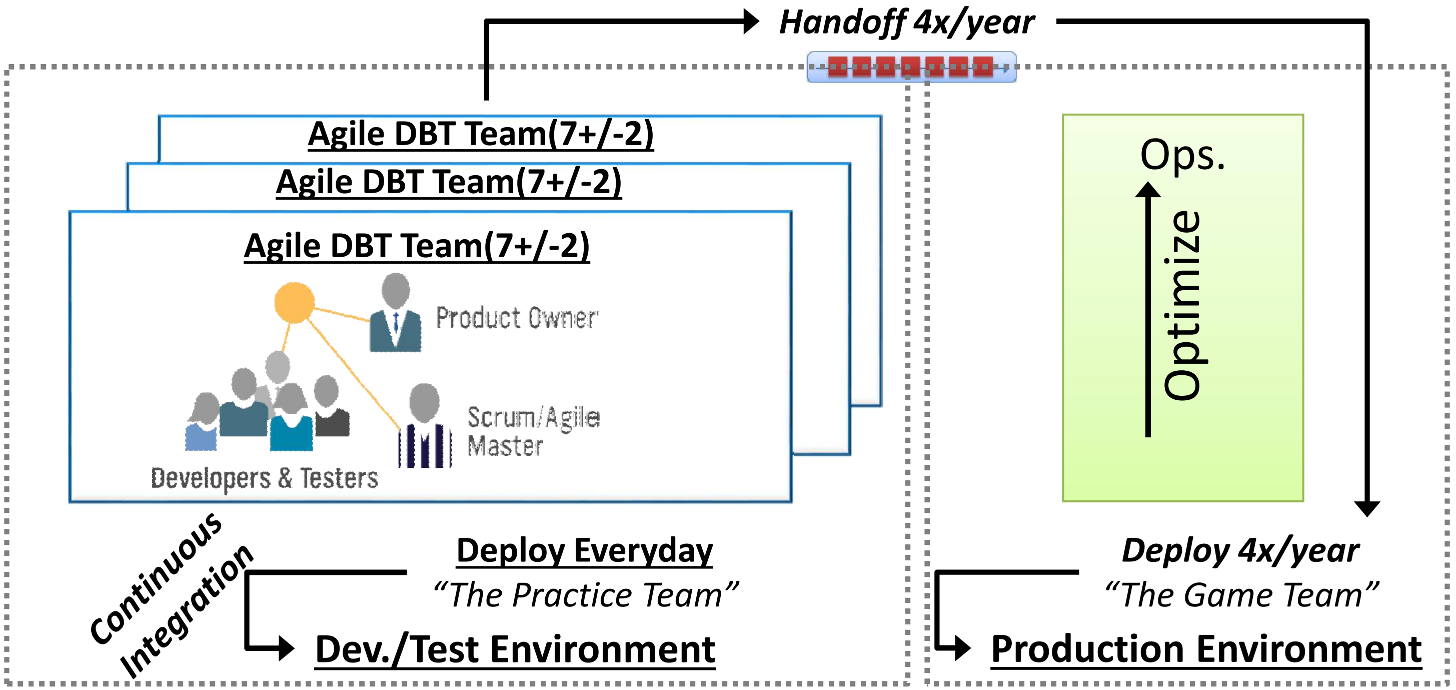
Having many automated roads to production is better than no road or “dirt roads”.

✓

But having one road encourages reuse at scale and enforces consistency by buffering downstream teams from variance.

5a. Environment Congruency & Practice

Separate deployment and operations processes via infrequent handoffs create large batch transfers and high-failure rates.



Do you play the "Game" with a different team than you "Practice" with?

5b. Environment Congruency & Practice

Make environments as close to production as possible and have the same team practice daily.

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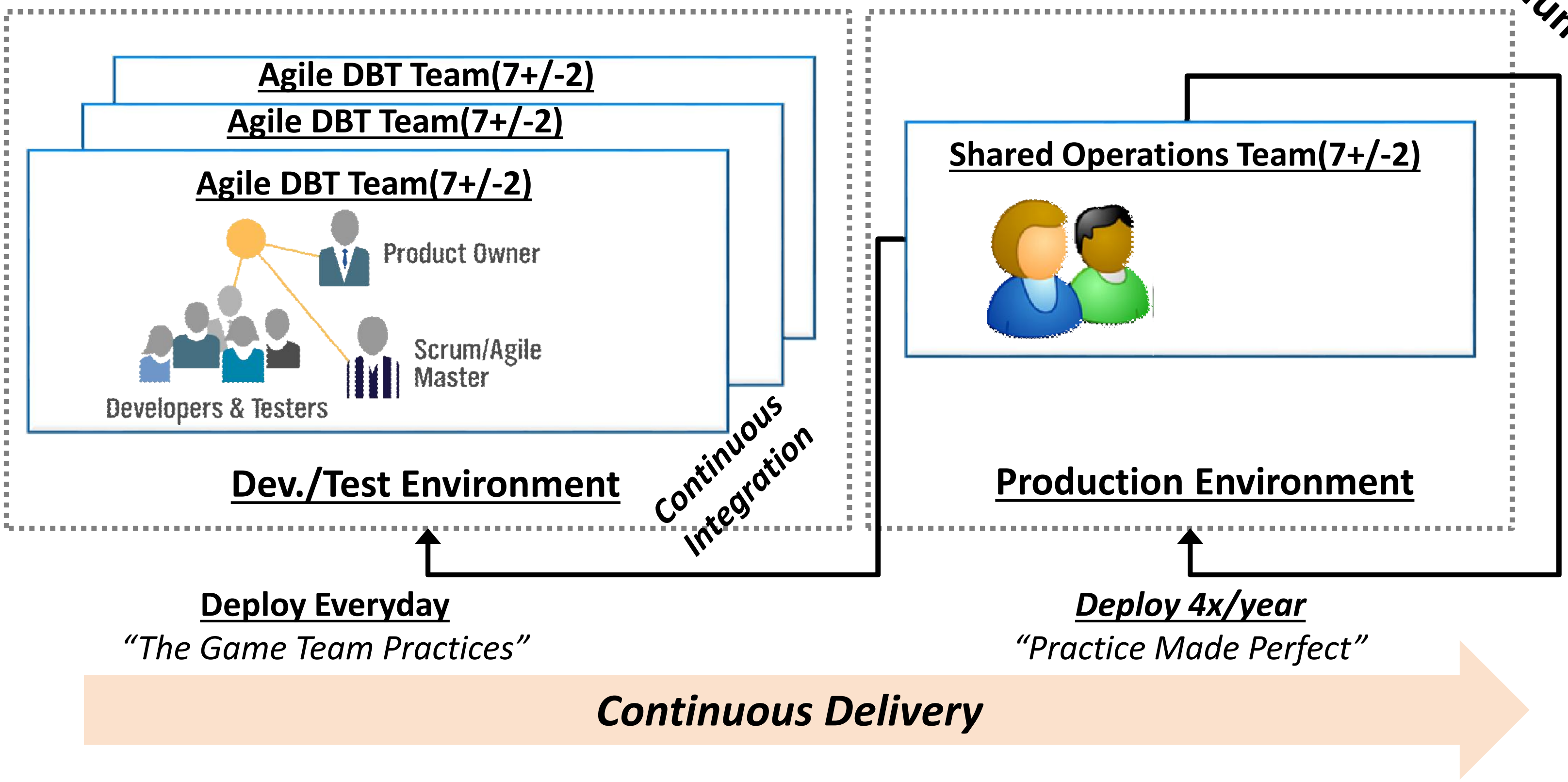
“If it hurts, do it more.” -Jez Humble



Agile DBT Team(7+/-2)

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Product Owner

Scrum/Agile Master

Developers & Testers

Dev./Test Environment

Continuous Integration

Shared Operations Team(7+/-2)

Production Environment

Deploy Everyday

“The Game Team Practices”

Deploy 4x/year

“Practice Made Perfect”

Continuous Delivery

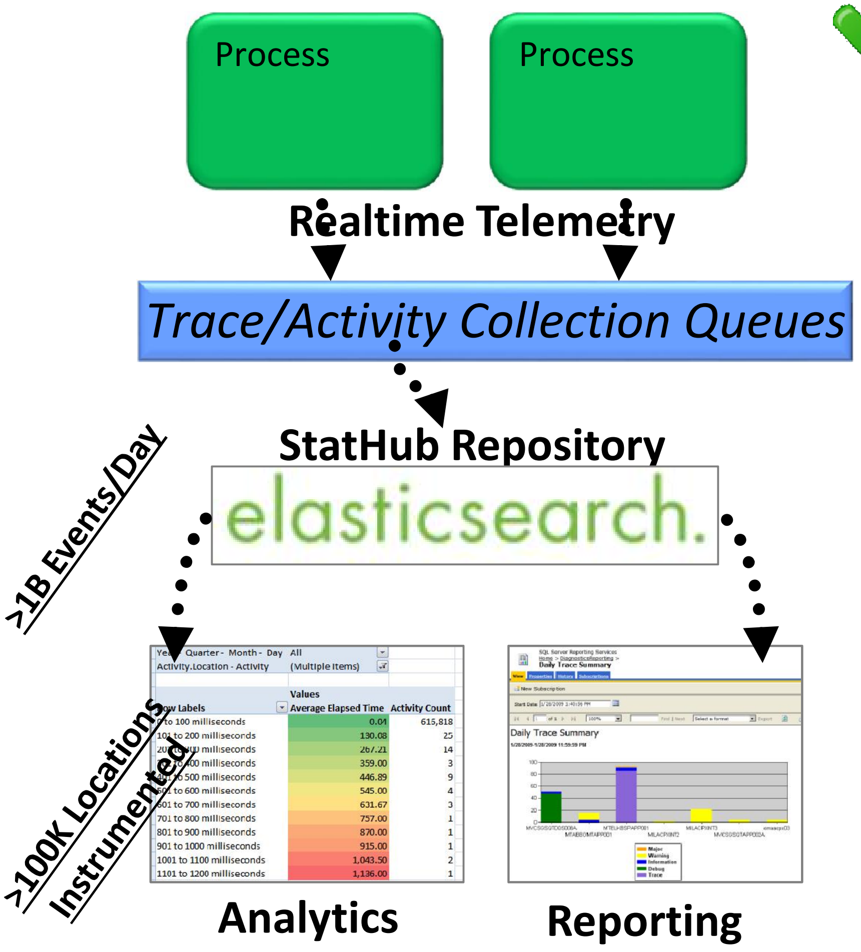
We let our teams practice at least 70 times before “Game Day”….

6. Application Telemetry

Build or embed deep telemetry into your application. Telemetry allows the teams to learn and greatly reduces TTR when there are issues.

NASA doesn't launch a rocket without millions of automated sensors reporting the status of this valuable asset.

Why don't we take the same care with software?



Year - Quarter - Month - Day	All	
Activity.Location - Activity	(Multiple Items)	
	Values	
Row Labels	Average Elapsed Time	Activity Count
0 to 100 milliseconds	0.04	615,818
101 to 200 milliseconds	130.08	25
201 to 300 milliseconds	267.21	14
301 to 400 milliseconds	359.00	3
401 to 500 milliseconds	446.89	9
501 to 600 milliseconds	545.00	4
601 to 700 milliseconds	631.67	3
701 to 800 milliseconds	757.00	1
801 to 900 milliseconds	870.00	1
901 to 1000 milliseconds	915.00	1
1001 to 1100 milliseconds	1,043.50	2
1101 to 1200 milliseconds	1,136.00	1

SQL Server Reporting Services
Home > DiagnosticsReporting >
Daily Trace Summary

View | Properties | History | Subscriptions

New Subscription

Start Date: 1/28/2009 1:40:56 PM

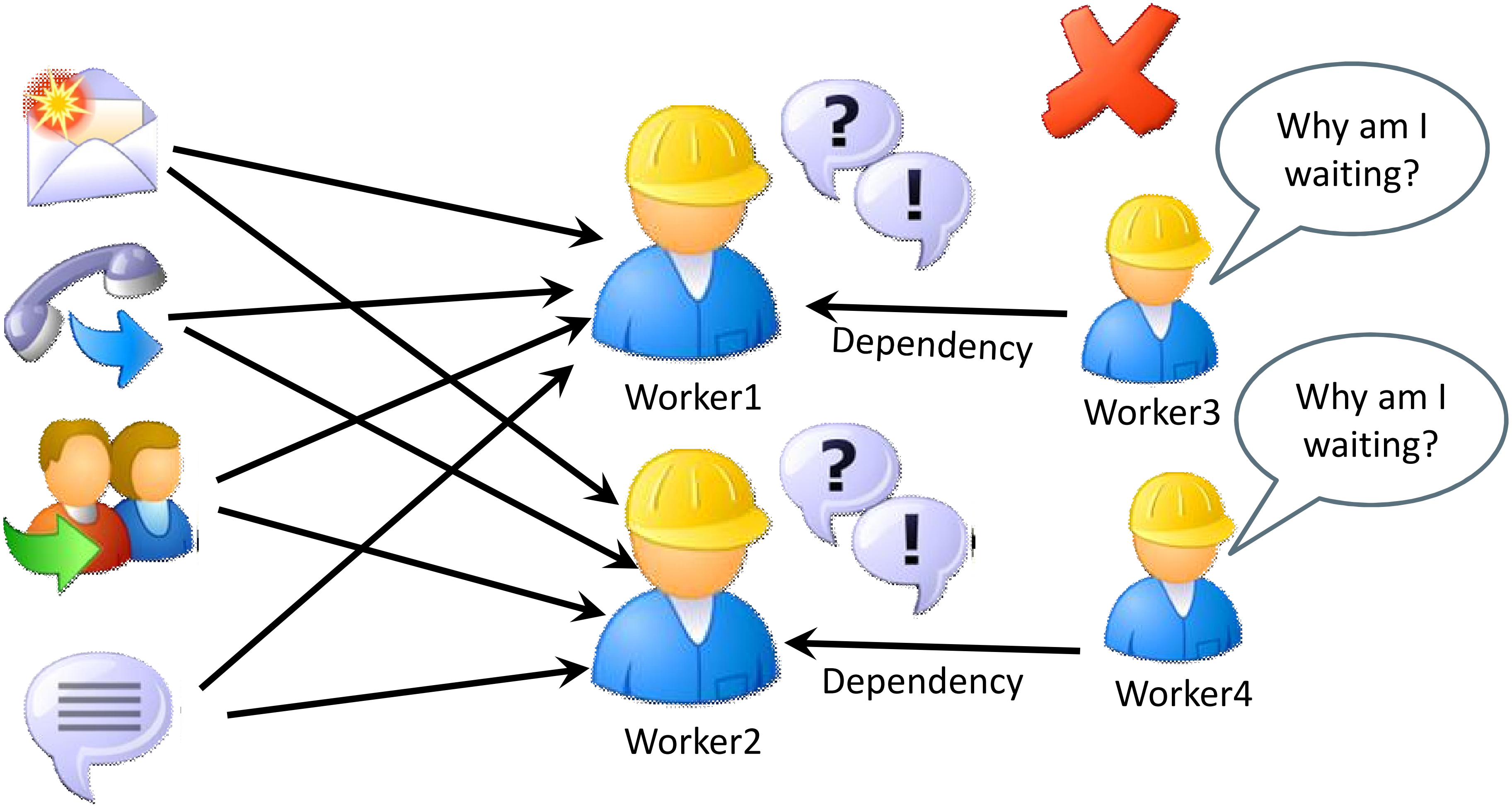
1 of 5 | 100% | Find | Next | Select a format | Export

Daily Trace Summary

1/28/2009-1/28/2009 11:59:59 PM

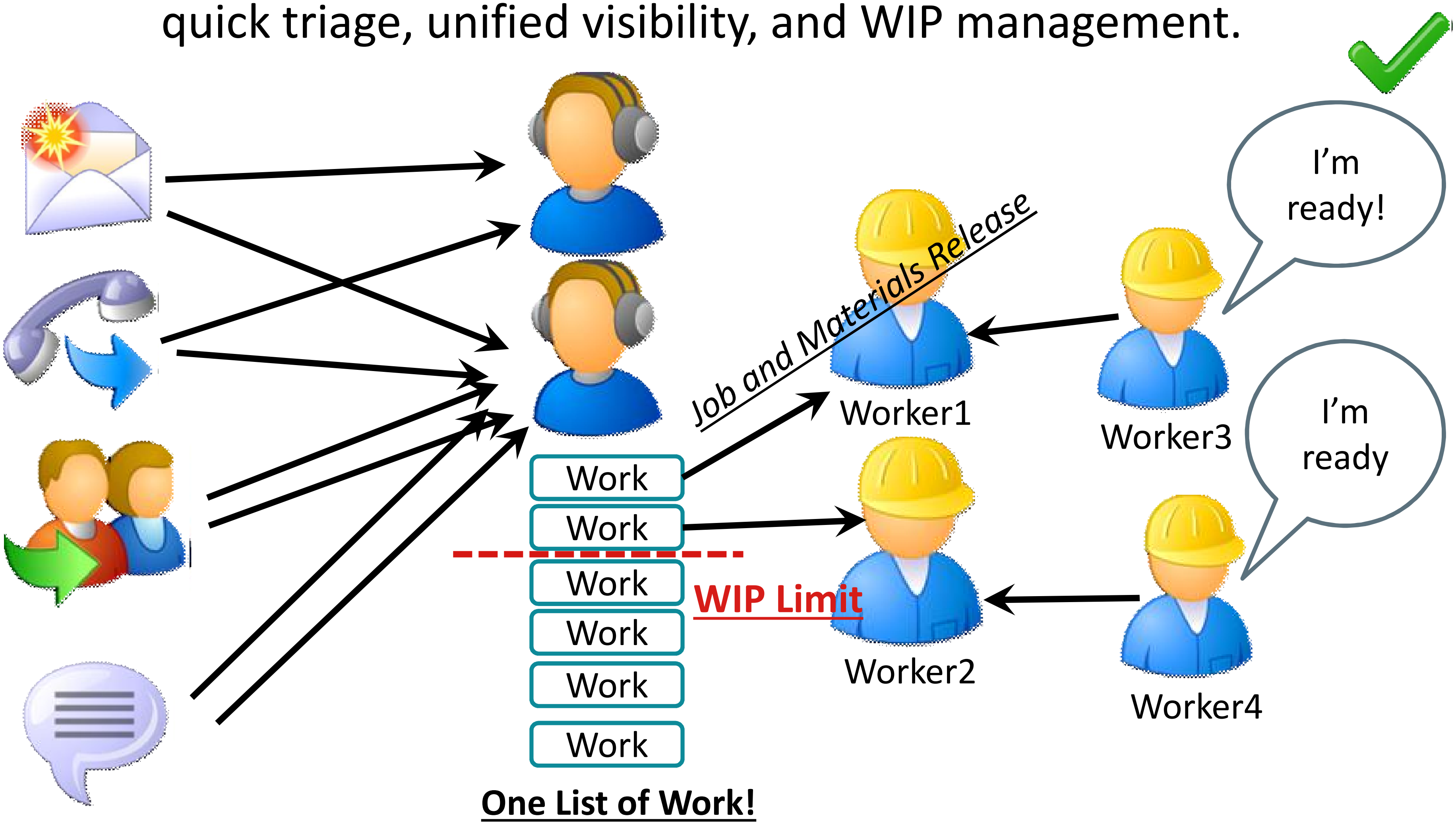
7. Make All Work Visible

Haphazard and chaotic work intake processes invite context switching and high WIP(Work in Process) levels.



8. Work Release & WIP Limits

An intake buffer and process can take many forms but allows a quick triage, unified visibility, and WIP management.



Print Center: Work Visibility Example

Job and Materials Release

Treat virtualized work with the same care that manufacturing treats physical work.
Do you know how your work comes in and is scheduled?

Print Center: Continuous Delivery with Robots

How do you get your code in production?

9. Cadence & Synchronization

If you don't force cadence and synchronization in your processes and resources, nature will do it for you.

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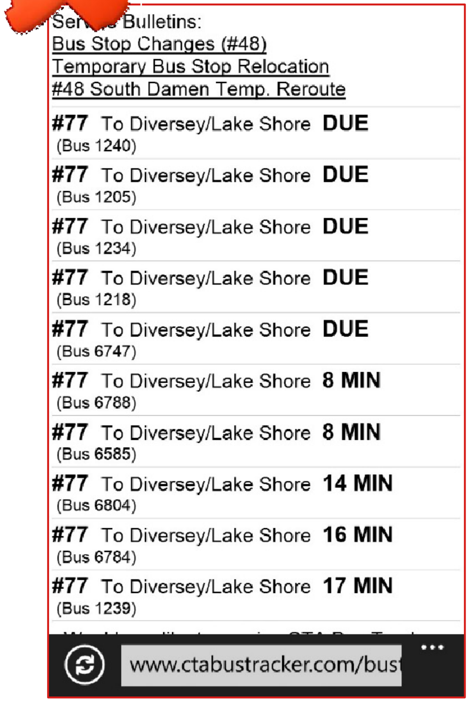
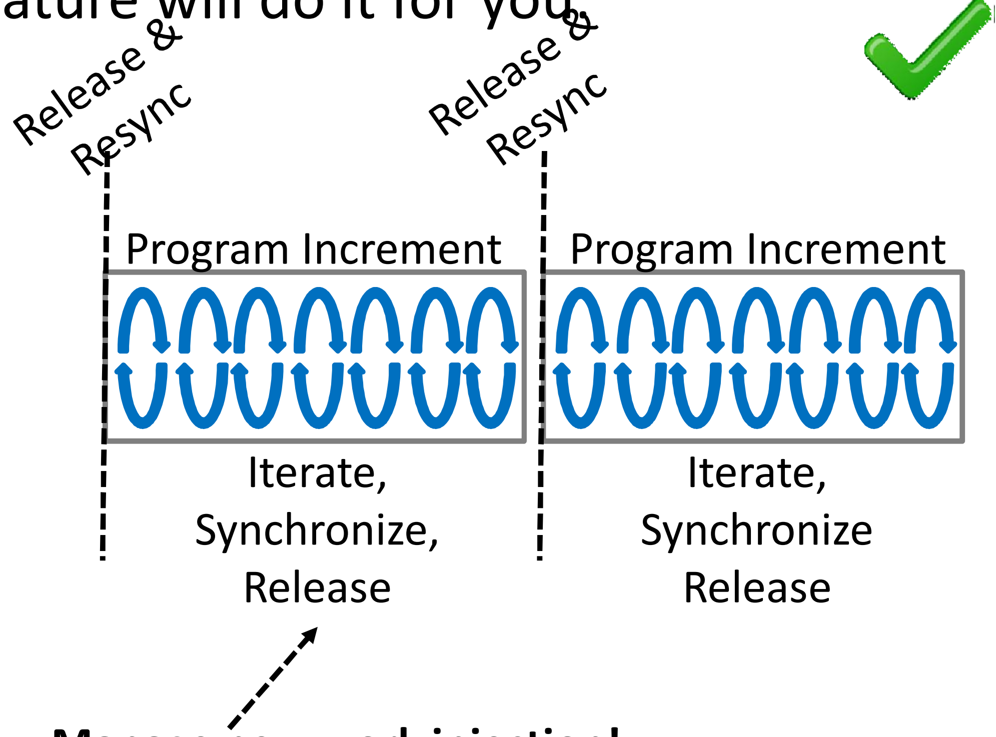


Service Bulletins:
Bus Stop Changes (#48)
Temporary Bus Stop Relocation
#48 South Damen Temp. Reroute

#77	To Diversey/Lake Shore (Bus 1240)	DUE
#77	To Diversey/Lake Shore (Bus 1205)	DUE
#77	To Diversey/Lake Shore (Bus 1234)	DUE
#77	To Diversey/Lake Shore (Bus 1218)	DUE
#77	To Diversey/Lake Shore (Bus 6747)	DUE
#77	To Diversey/Lake Shore (Bus 6788)	8 MIN
#77	To Diversey/Lake Shore (Bus 6585)	8 MIN
#77	To Diversey/Lake Shore (Bus 6804)	14 MIN
#77	To Diversey/Lake Shore (Bus 6784)	16 MIN
#77	To Diversey/Lake Shore (Bus 1239)	17 MIN

www.ctabustracker.com/bust

✓



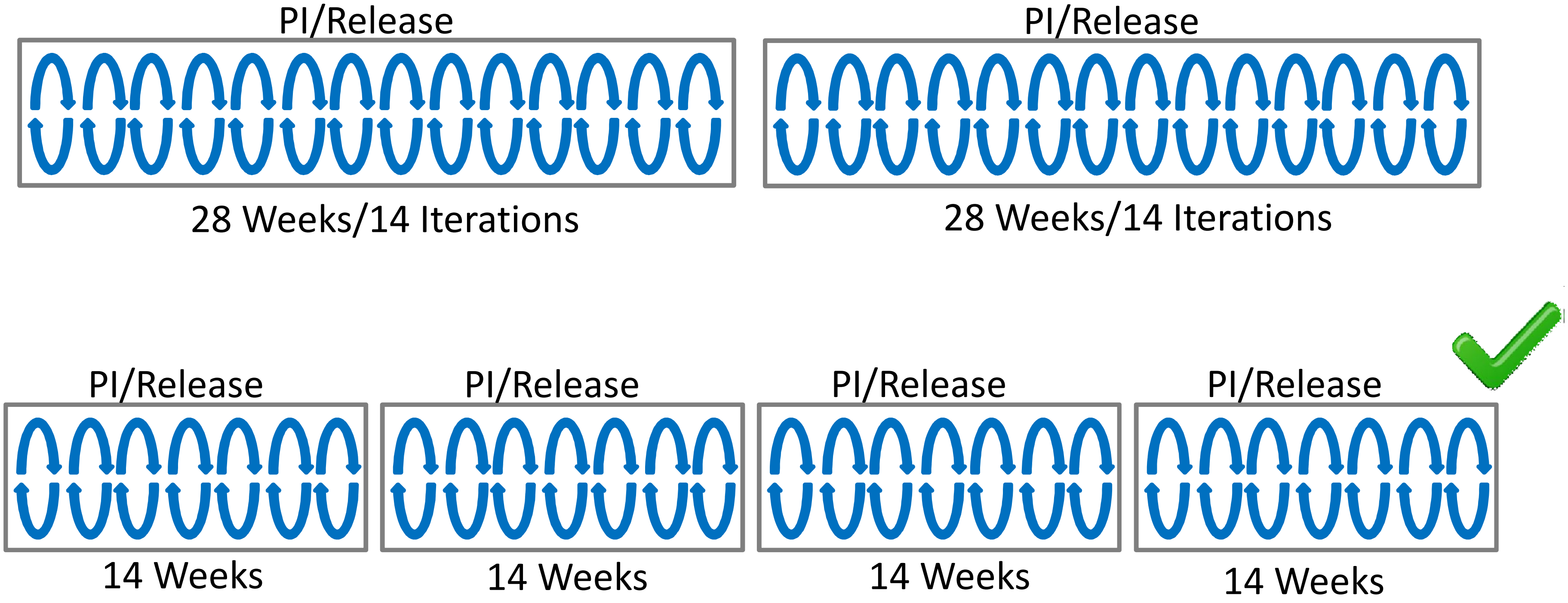
Manage new work injection!

Make unpredictable events like release planning predictable across teams. Synchronize start and finish times to create a pull effect and prevent hidden work from creating problems.

10. Reduce Batch Size

Once you have Learning, Infrastructure & Process in place:

Reduce Batch Size



PI/Release

28 Weeks/14 Iterations

PI/Release

28 Weeks/14 Iterations

PI/Release

14 Weeks

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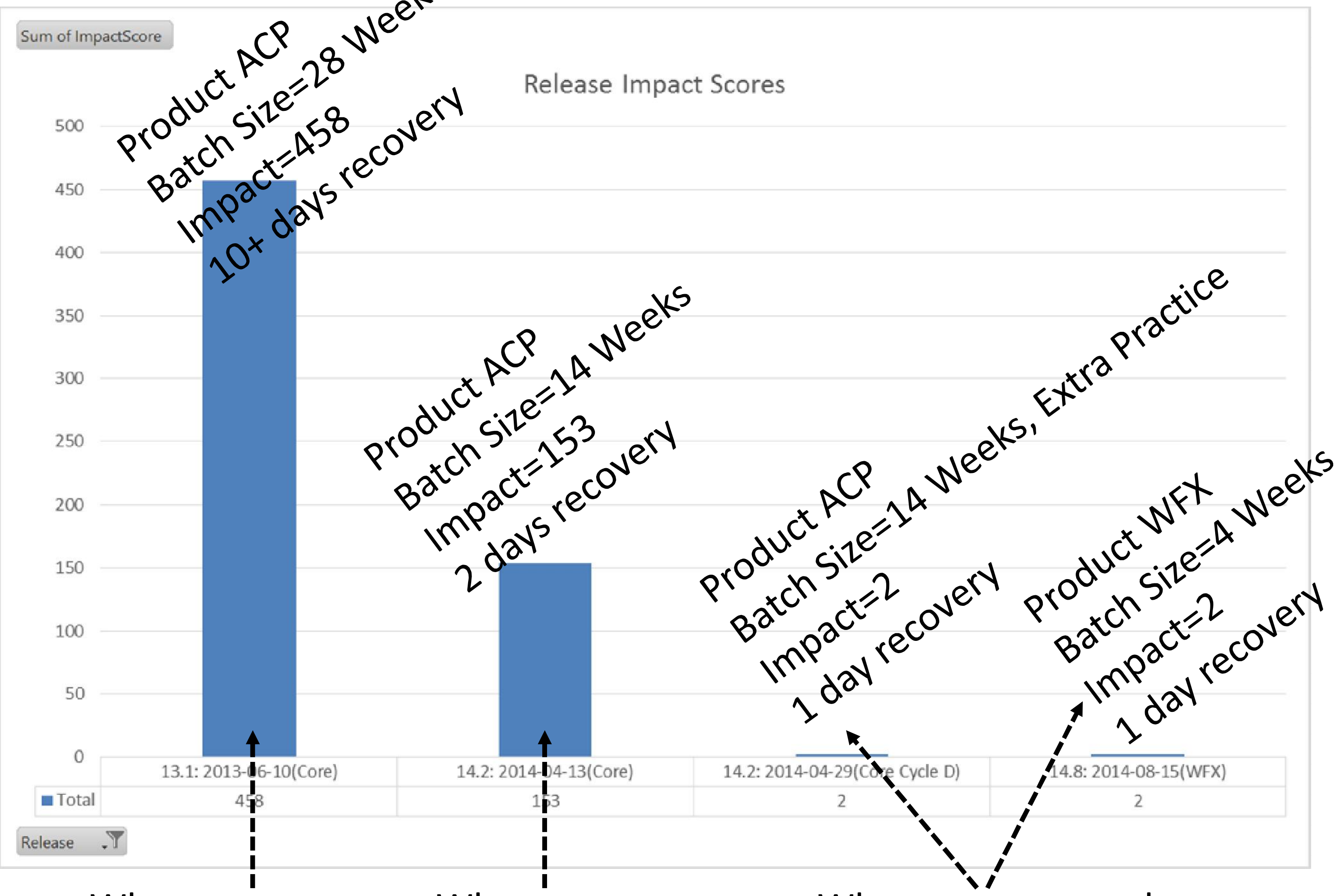
PI/Release

14 Weeks

Smaller/fewer things go through the system faster with less impact.

More Practice & Smaller Batches



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Where we were.

Where we are.

Where we want to be.

10 Techniques to Take Home

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Credits

- The Phoenix Project, Gene Kim, Kevin Behr, George Spofford
- Continuous Delivery, Jez Humble
- Scaled Agile Framework: www.scaledagileframework.com
- The Fifth Discipline, Peter Senge
- Martin Fowler, Technology Radar(Inverse Conway Maneuver)
- Cultural Cartography(I,T,E Shaped Resources): http://culturecartography.wordpress.com/2012/07/26/business-trend-e-shaped-people-not-t-shaped/
- Kevin Behr, Seven Traits Similar to DevOps: http://www.kevinbehr.com/kevins-blog

How can you help me?

- Problem Areas
  - Standardizing applications at scale
    - Proving the business case/savings
    - Making progress quickly….
  - Balancing standards with innovation