



Intel's Journey to Large Scale DevOps Transformation

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About Me

Sherry Chang



Biography

- Chief Architect, DevOps & Continuous Delivery
 - Working at Intel IT
- 20+ Years in Software Development
- ITIL V2 Certified
- Certified Scrum Master
- BBA, Management Information Systems
 - University of Texas at Austin



2015 Intel IT Vital Statistics



>6,065 IT employees

50 global IT sites

>106,000 Intel employees¹

170 Intel sites in 66 Countries

61 Data Centers

(91 Data Centers in 2010)

80% of servers virtualized

(42% virtualized in 2010)

>119,000+ Devices

100% of laptops encrypted

100% of laptops with SSD's

>53,700 handheld devices

164 mobile applications developed

Source: Information provided by Intel IT as of Jan 2015

¹Total employee count does not include wholly owned subsidiaries that Intel IT does not directly support

Our Challenges



1300+ Applications



Large Workforce to Retrain



Huge Legacy Base



Retooling



Processes



Culture



Our Approach

Spreading the Seeds

Community
of Practice

Hackathon

Internal
Open Source

Social
Collaboration

Training





Making it Easy

Technology Roadmap

Easy Self-Service

Streamline Processes

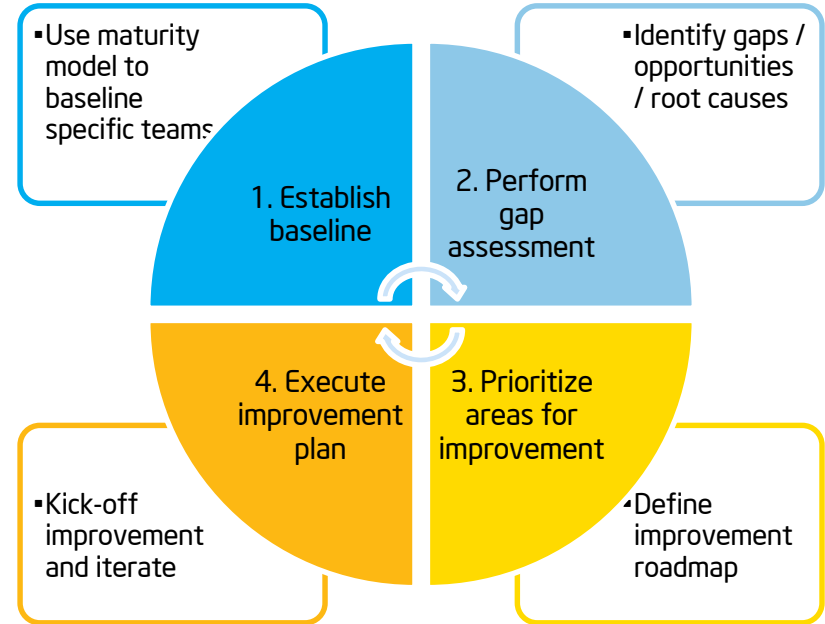
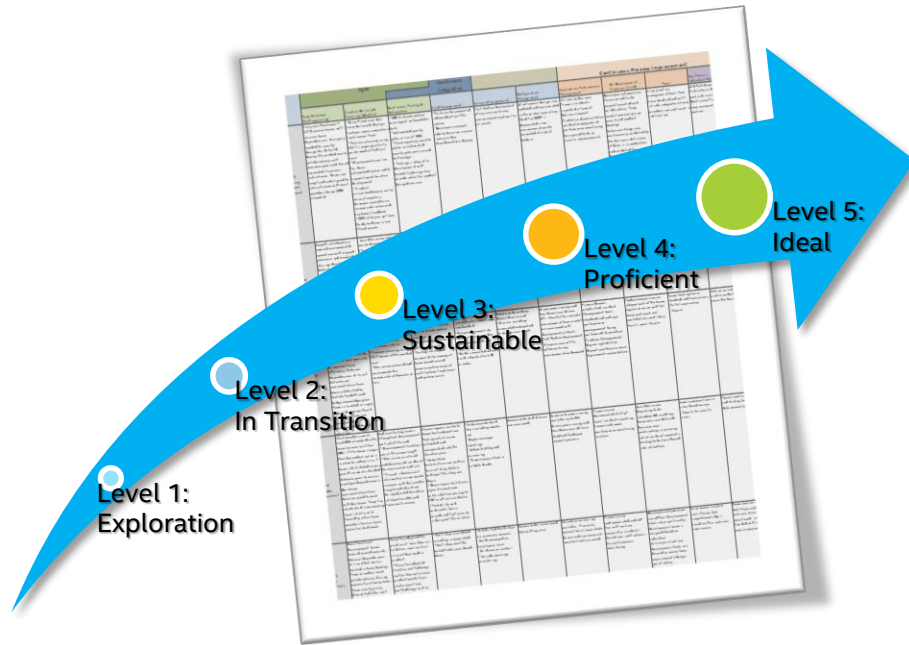
Continuous Improvement Large Scale



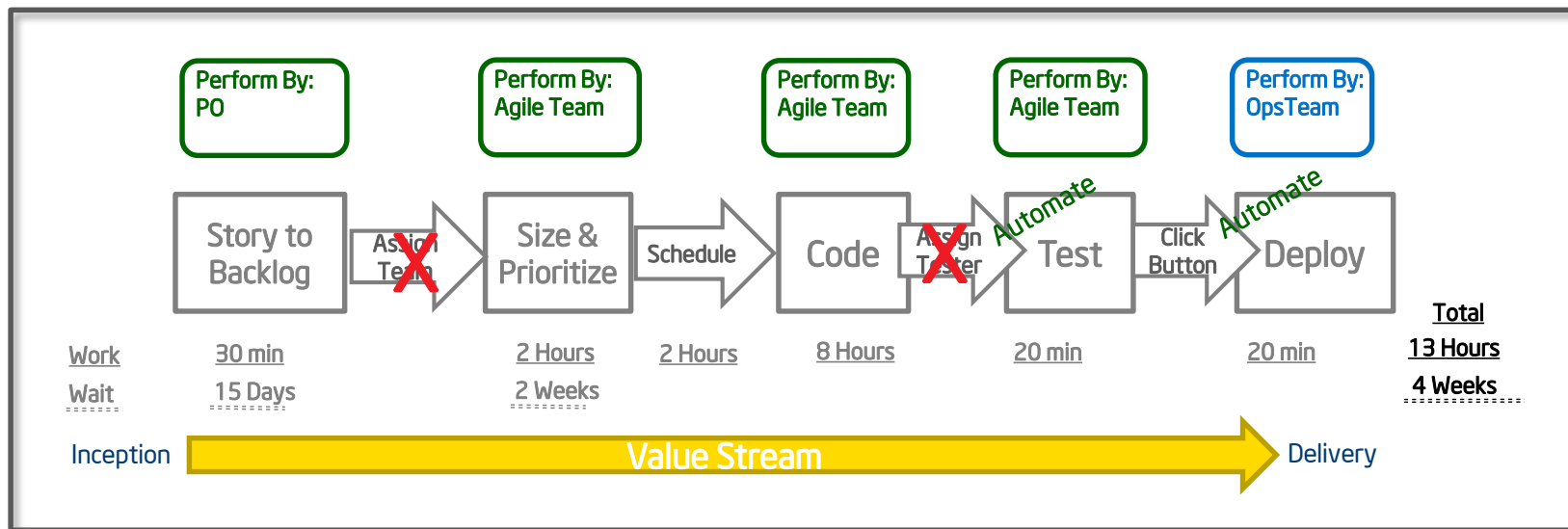
DevOps Maturity Model

DevOps									
Continuous Delivery						Continuous Process Improvement			
Agile			Continuous Integration						
Team Structure	Iterative Delivery & Adaptive Planning	Continuous Testing & Automation	Build Management	Version Management	Configuration Management	Application Performance Management	SW Development Processes (Fluid)	Tools	Key Process Indicators/Metrics
<ul style="list-style-type: none"> • Cross-functional team design • Geographical distribution. • Autonomy • Self-Organization 	<ul style="list-style-type: none"> • Incremental product delivery • Customer, Ops feedback loops • Agile portfolio mgt • MVP planning 	<ul style="list-style-type: none"> • Continuous testing • Test-first approach • Test automation 	Automating <ul style="list-style-type: none"> • Deployment • Build • Test Execution 	All deployment artifacts under source control: <ul style="list-style-type: none"> • Environment artifacts • App Code • Binary • Test Scripts 	<ul style="list-style-type: none"> • Enforcing state and creation of environment with one click automation • Versioned configuration manifest 	<ul style="list-style-type: none"> • Usage & performance monitoring feedback loop to Design/Dev • Predictive & preventative IM • Business value / ROI validation via usage stats 	<ul style="list-style-type: none"> • People-oriented process • Empirical / Inspect & Adapt • Maximize feedback • Learning organization 	<ul style="list-style-type: none"> • Version Mgt • Build Mgt • Test Automation • Config Mgt 	<ul style="list-style-type: none"> • Velocity • MTTR • Cycle time • Fragmentation • Code Complexity

Team Improvement Kata – DevOps Maturity Assessment

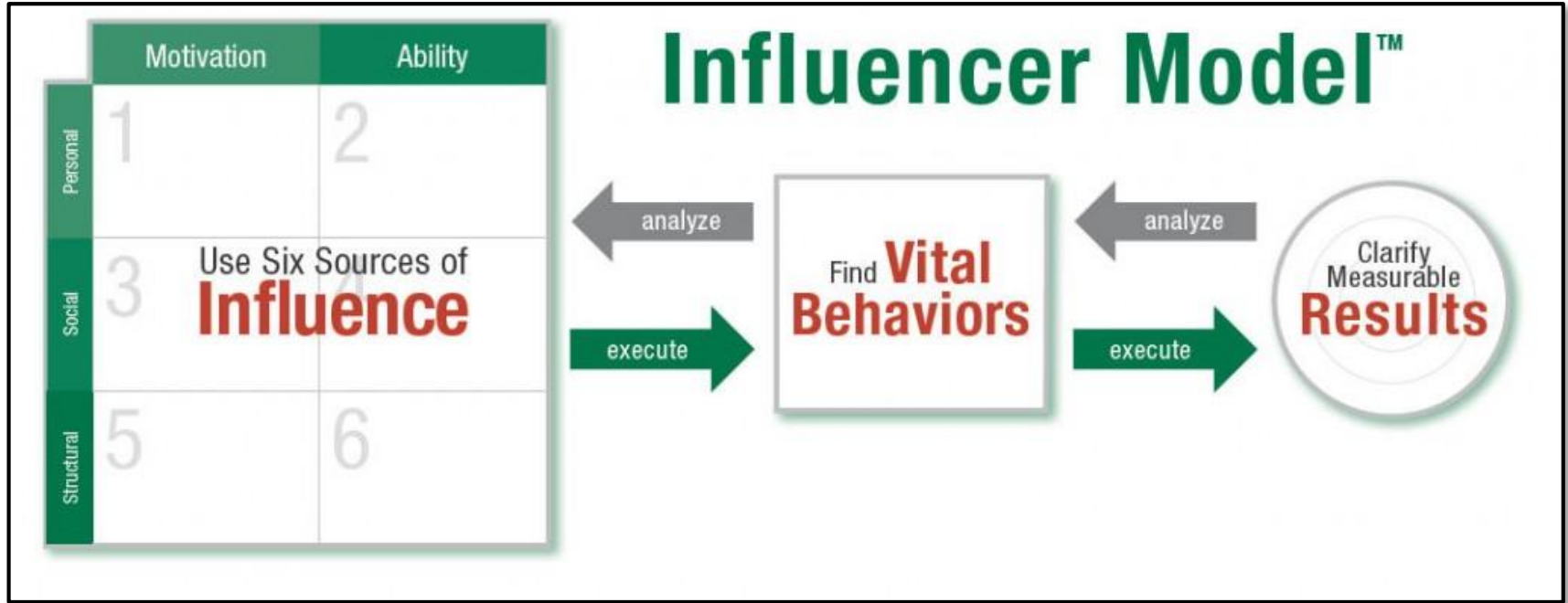


Team Improvement Kata – Kaizen



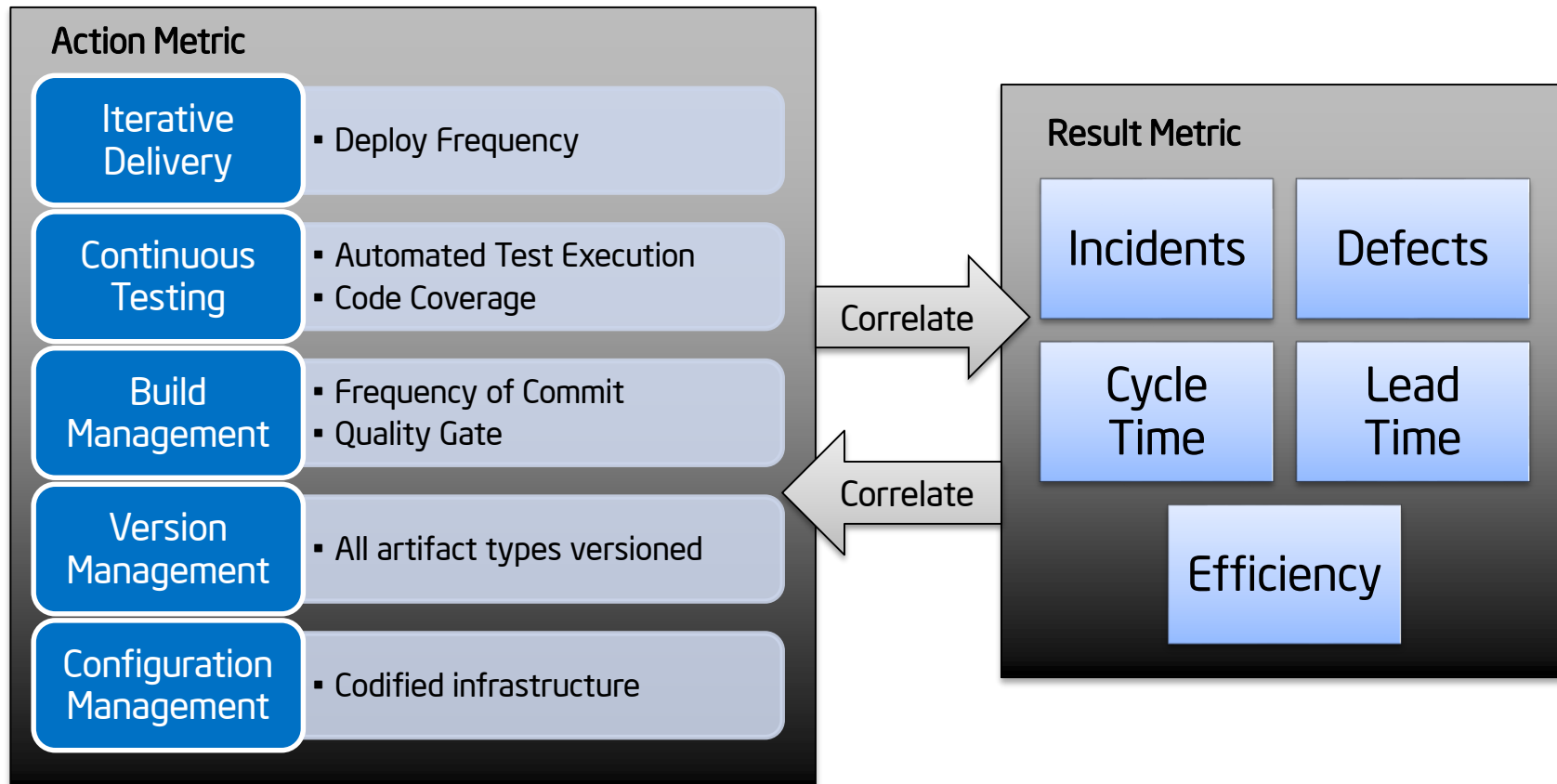
- Identify End-to-End **Value Stream (VS)**, so “local” optimization is avoided
- Identify the waste and document problems in the whole value chain
- Developed a solid business case for the key problems and their solutions
- Leverage the results from the Initial Maturity Assessment and take them into consideration when selecting the process or a family of processes you want to focus on

Org Improvement



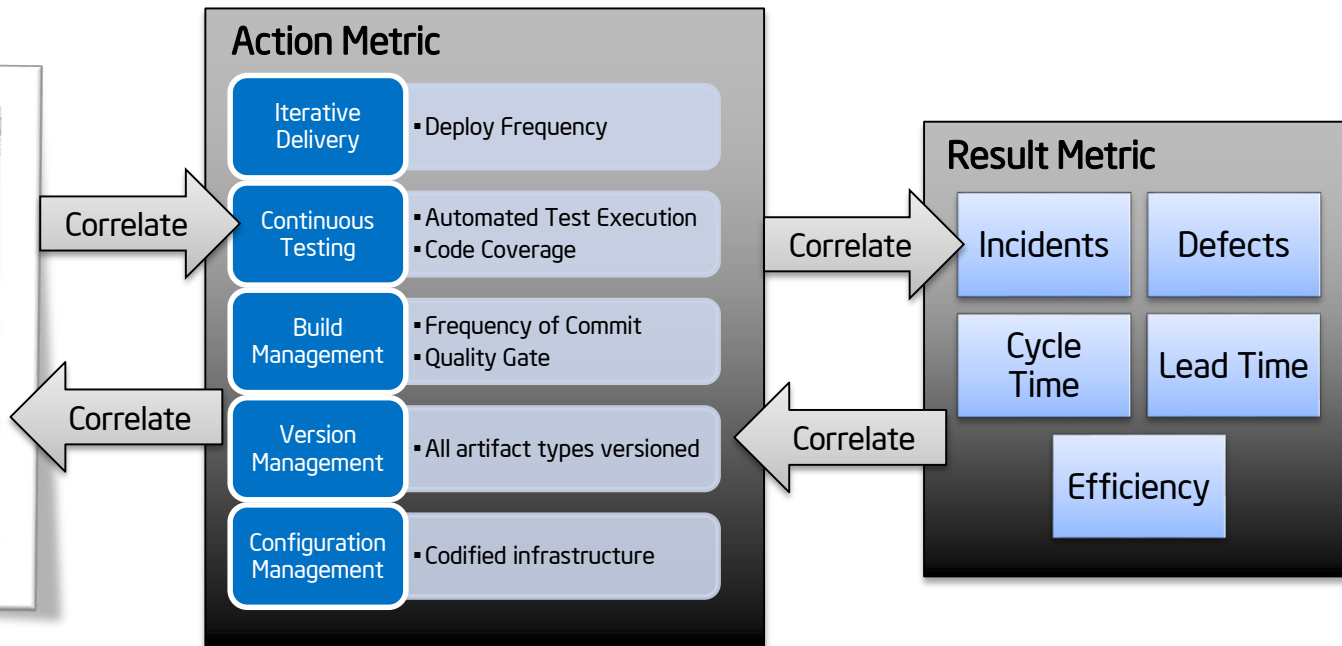
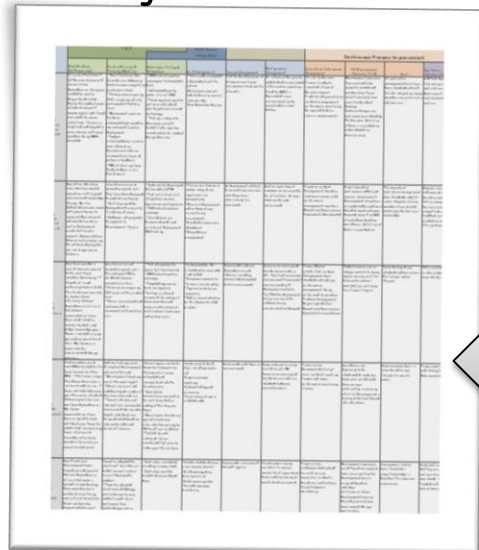
<https://www.vitalsmarts.com/influencer/>

Measurable Results



Measurable Results

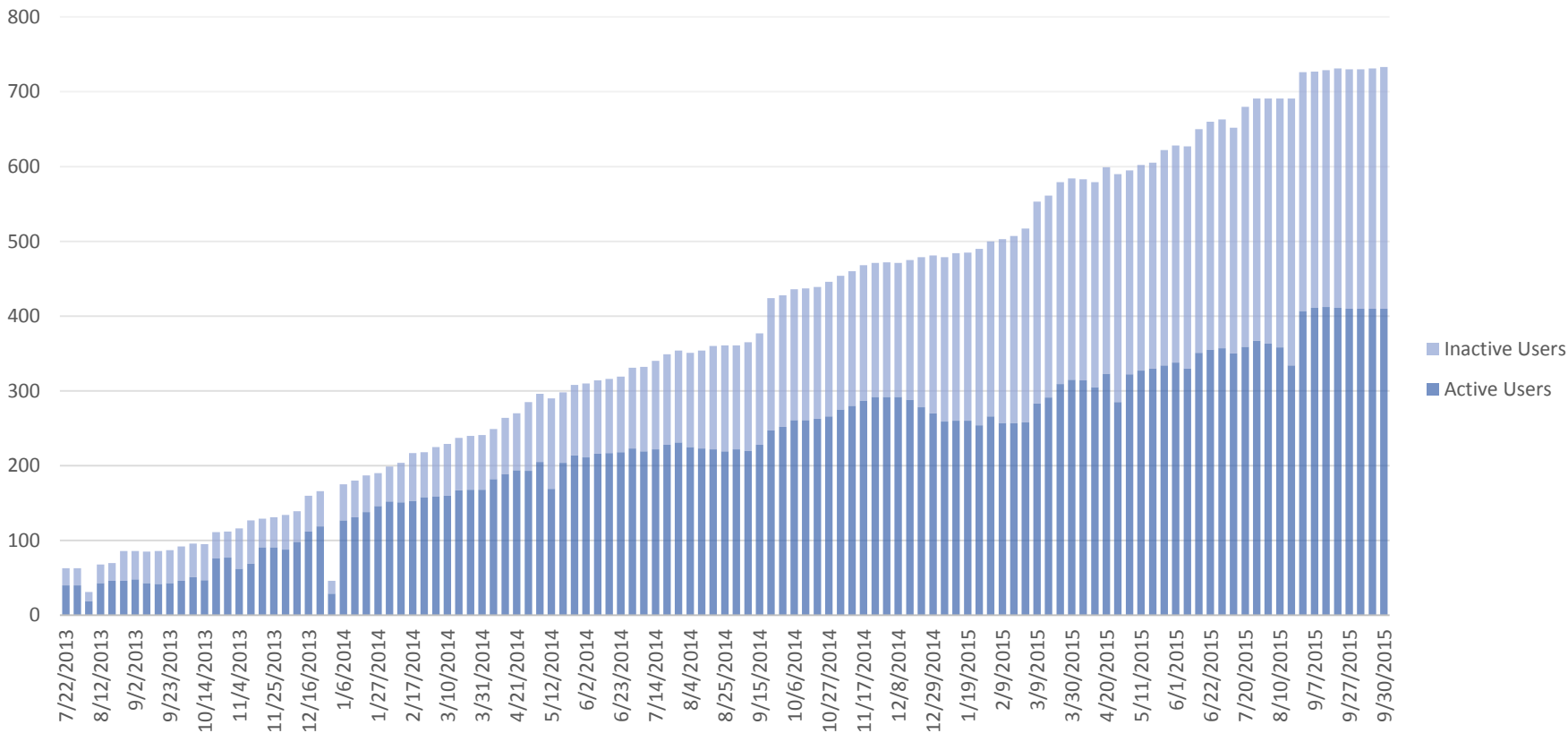
Maturity Model



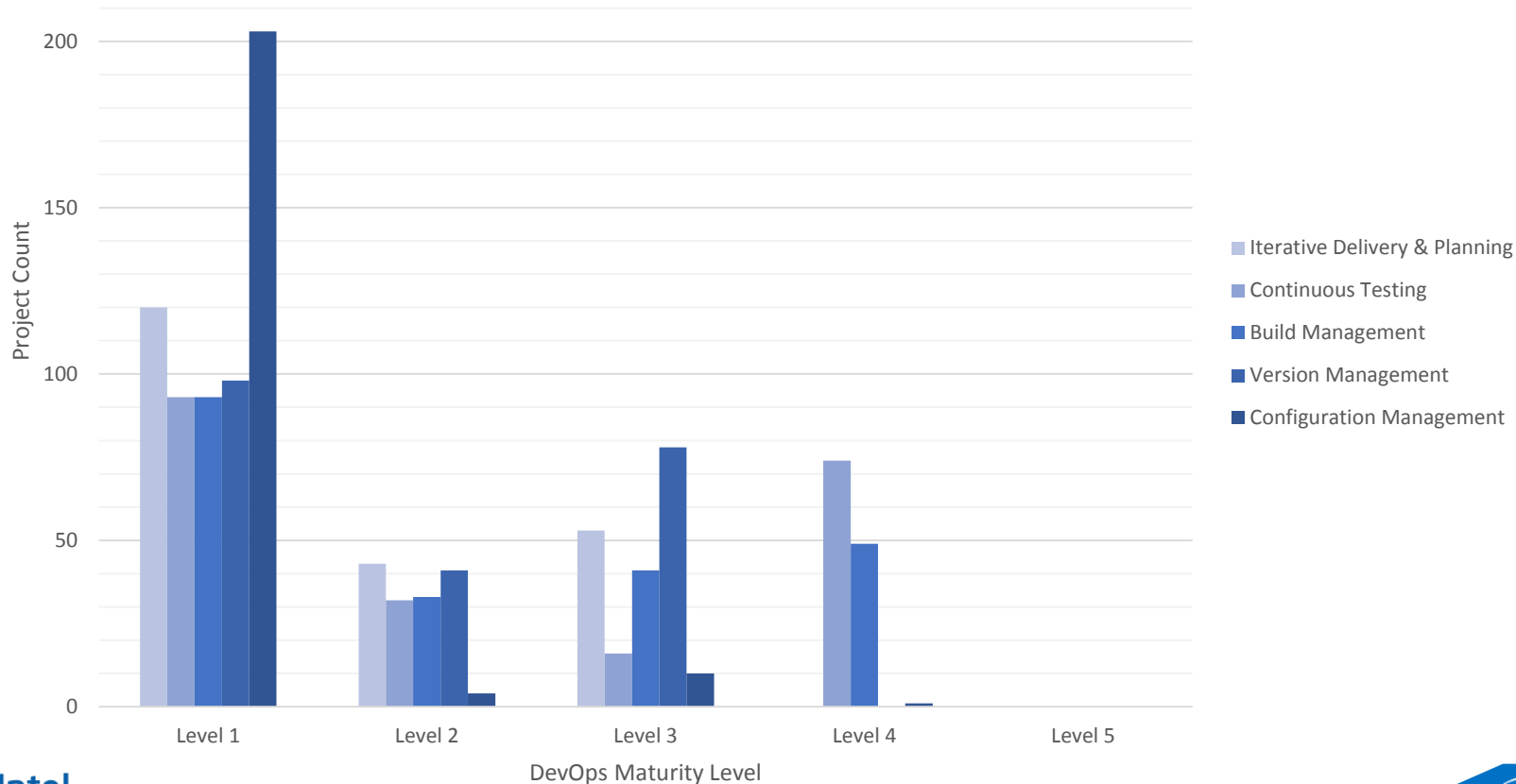


Results

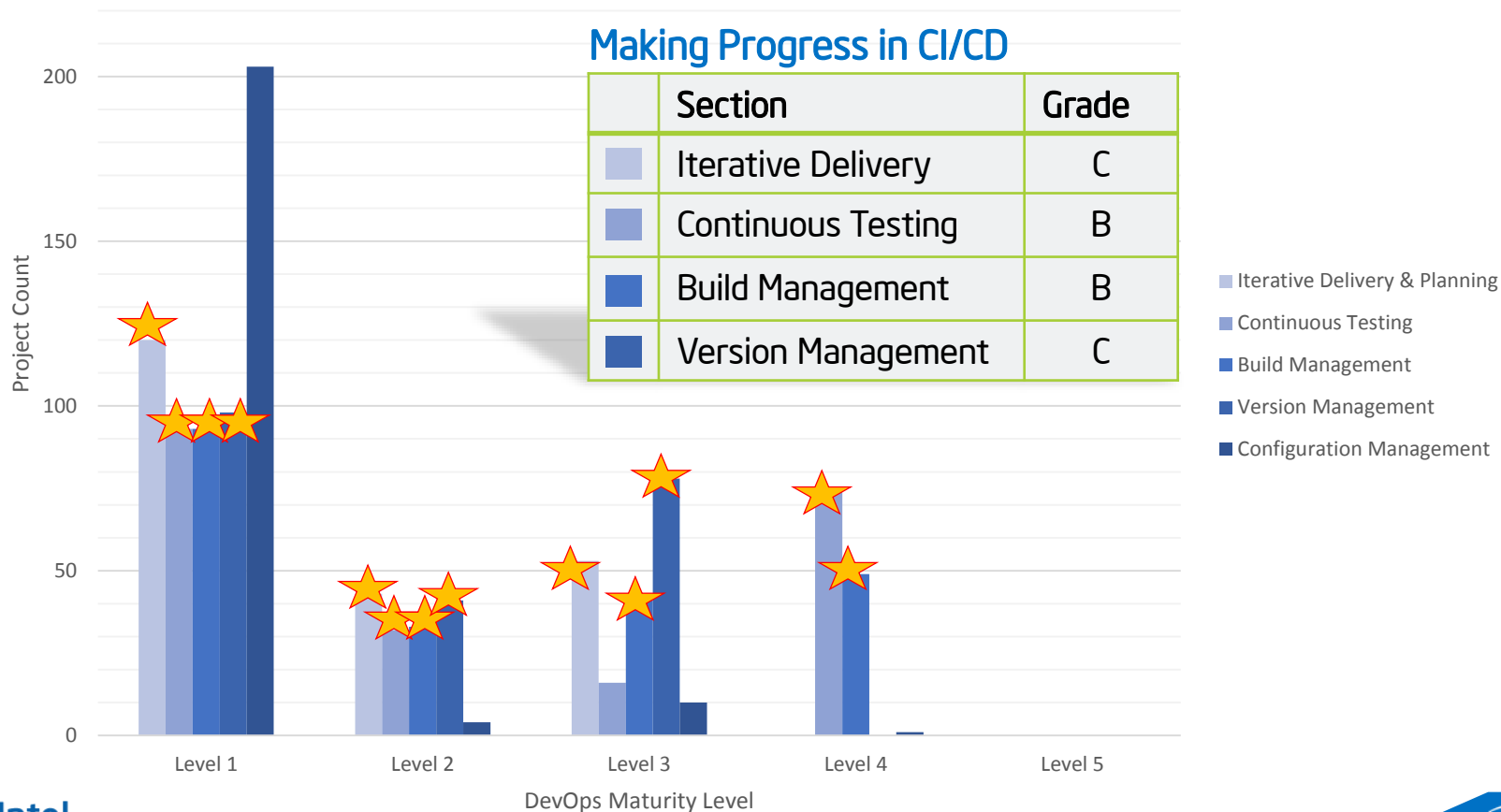
Continuous Integration Tools User Counts



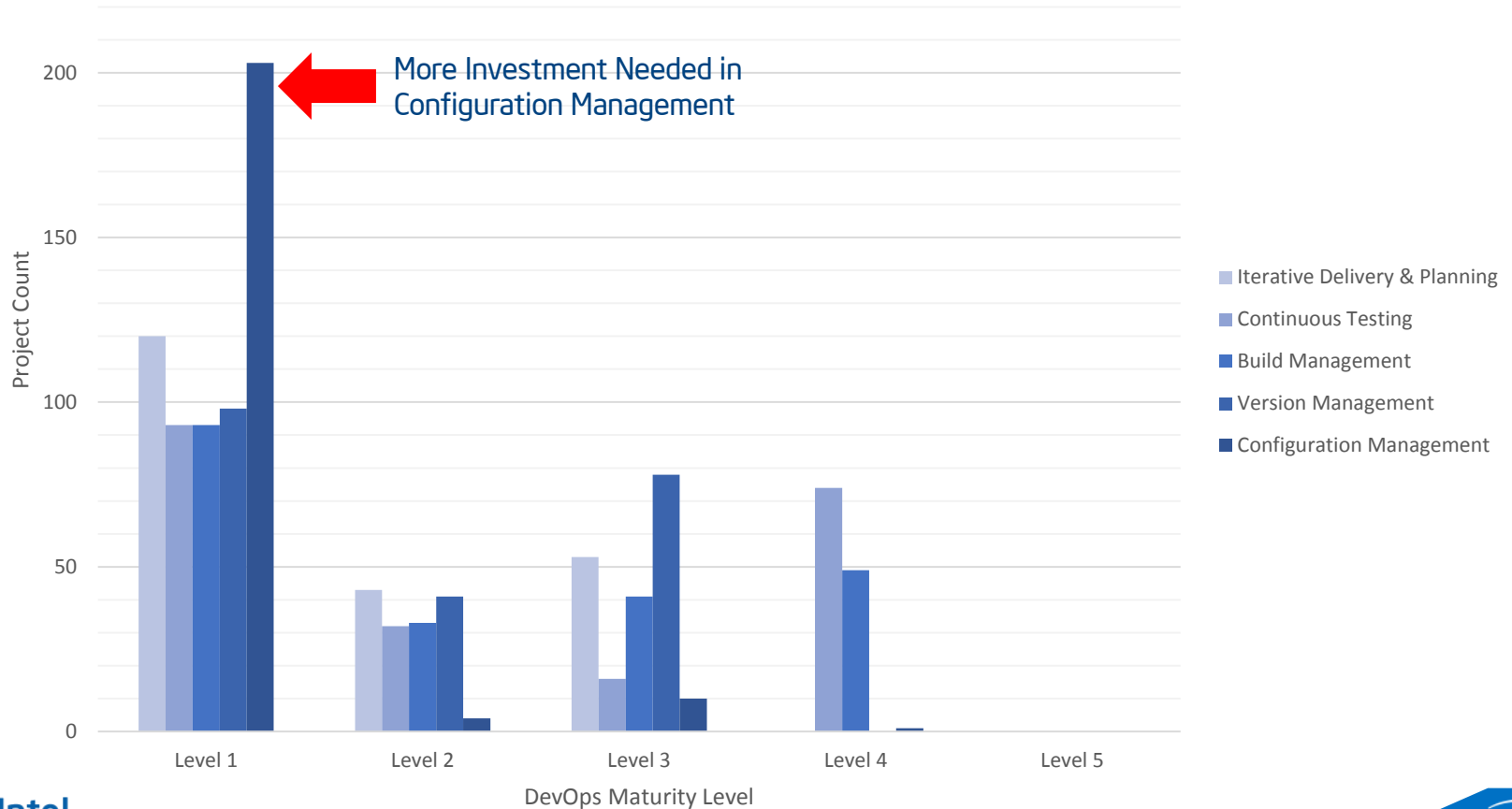
Projects Maturity Snapshot (from CI Tool)



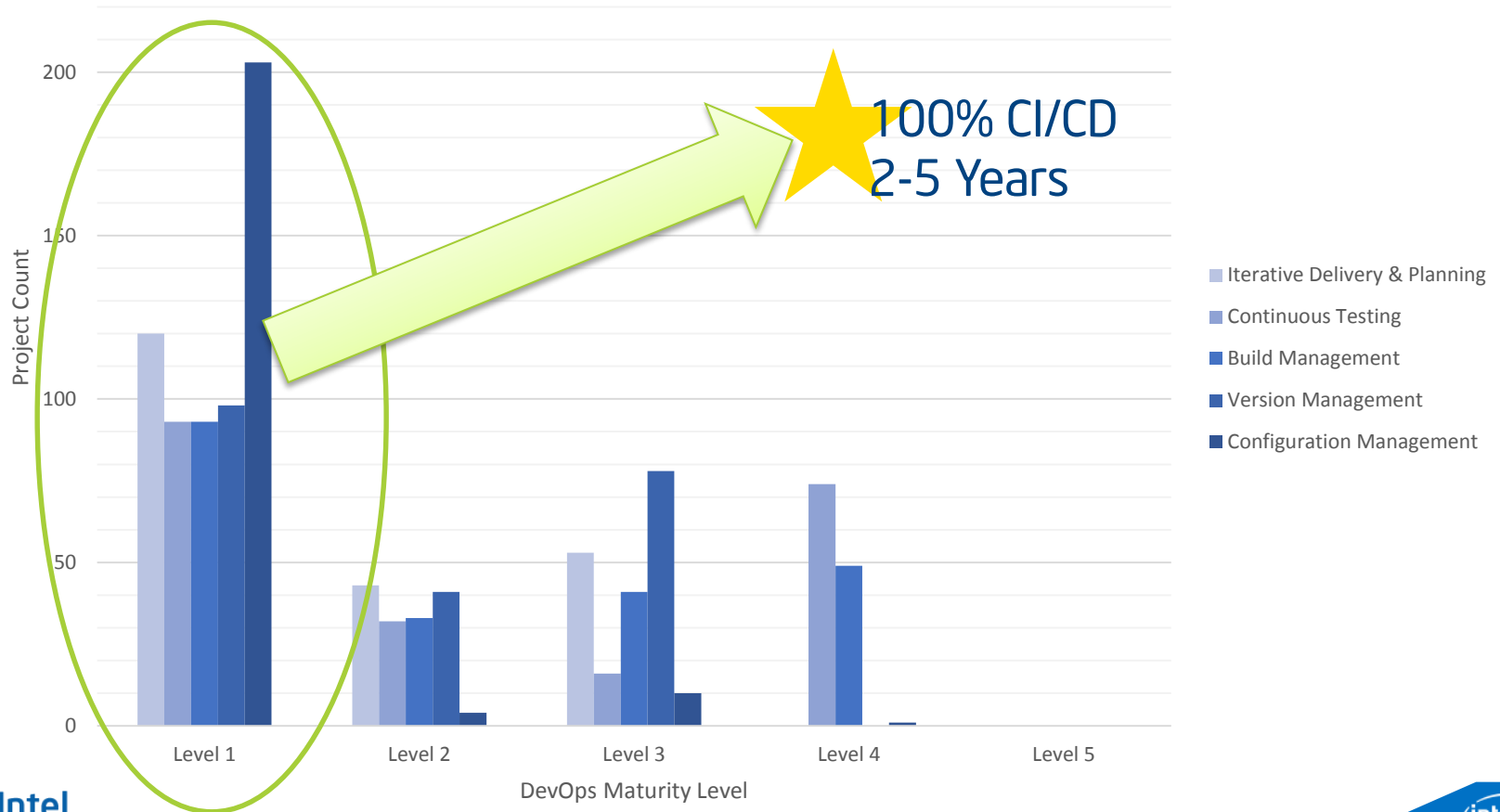
Org Maturity Level Assessment



Future Target



Future Target



Takeaways

Key to Success for Large Scale Transformation -- Organization Improvement Kata

Develop Measurement

Development Plan to Identify and Change Vital Behaviors

Measure Impact of Every Actions and Investments



Wish List

Tools

- Better End to End Integration
- Incorporate more machine learning in testing tools
- Security Scanning Tools

More Tips & Collateral on

- Engaging The Majority & The Laggard