Transforming Software and Product Delivery for Innovation@Speed

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Three market shifts are re-shaping today’s business imperatives

Cloud

Feedback, Balance, Speed

Engagement

Data

The world demands faster cycles of innovation, you need to accelerate customer feedback, balancing speed with confidence.
DevOps has strong momentum

2013 was the year in which the word DevOps was etched into our brains in the IT world... it’s an important evolution for enterprise IT. At its core, it’s about the need for continuous, rapid delivery of modern applications.

- Forrester (Feb ’14)

66% of 1300 large organizations surveyed across 21 countries have adopted or have plans to adopt DevOps

- Vanson Bourne (Sep ‘13)

Number of DevOps engineer jobs in the UK triples in the past 2 years – ITProPortal, March 2014

DevOps is the #3 best skill to have on a resume (only behind Security Architect and Salesforce Architect) – Business Insider, March. 2014

Google Trends ‘DevOps’ - 50% growth from March ‘13 to March ‘14
DevOps and Continuous Engineering
Efficiency and Effectiveness

Deliver@SPEED

Lean transformation across the enterprise.

Value@SPEED

Steering with continuous feedback.

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Feedback cycles are context dependent

Bringing together the people, processes, and tools across the entire software delivery lifecycle – spanning mobile to mainframe platforms.

- Systems of Engagement (SoE) Apps: Rapid Releases
- Systems of Record (SoR) Apps: Fewer Releases
- Web Apps: Frequent Releases

Integration Test → AppStore → Production Environment
Two Models of Development of Next Generation Solutions

- We will apply DevOps models of Solution Development to two distinct kinds of Application or Solution models
  - **Legacy Solutions** – Updates to solutions already in place, or some new development under constraints that require traditional models
  - **Next Gen Solutions** – Greenfield solutions developed without traditional constraints

- In both cases there is value in applying DevOps models, techniques, and capabilities to enhance products

![Diagram showing the intersection of Legacy Solutions and Next Gen Solutions with DevOps benefits]
IBM DevOps point of view
Enterprise capability for continuous software delivery that enables organizations to seize market opportunities and reduce time to customer feedback

- Accelerate software delivery – for faster time to value
- Balance speed, cost, quality and risk – for increased capacity to innovate
- Reduce time to customer feedback – for improved customer experience
Improve Efficiencies through Lean Adoption

- **Ineffective**
  - Steer: Process-based
  - Develop/Test: Process-heavy
  - Deploy: Manual
  - Operate: Silo-ed

- **Leaner**
  - Steer: Product-based
  - Develop/Test: Agile
  - Deploy: Automated
  - Operate: Collaborative

- **Leaner and Smarter**
  - Steer: Optimizing
  - Develop/Test: More Predictable
  - Deploy: More Transparent
  - Operate: More Continuous

**Efficiency**
- Productive
- Waste

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Improve Effectiveness with Continuous Feedback

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Feedback cycles
Customer success stories

- Quality improved by 50% over three years
- End user downtime reduced by 70%

- Reduced by 25 percent new product development time and associated costs
- Won 10% more competitive tenders

- Software releases reduced by 99%
- Cost avoidance of more than USD2.3 M per year.
Success Story: Totals for Deployments
Across integration testing, UAT, pre-production, and production

<table>
<thead>
<tr>
<th>Complexity</th>
<th>Current Times</th>
<th>Target Times</th>
<th>Realized Target Times</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>35</td>
<td>15</td>
<td>5</td>
</tr>
<tr>
<td>Medium</td>
<td>75</td>
<td>40</td>
<td>15</td>
</tr>
<tr>
<td>High</td>
<td>225</td>
<td>125</td>
<td>25</td>
</tr>
</tbody>
</table>

Results were as high as 5 times better than the target business case (ROI)!!
## Where do you start: DevOps Adoption Roadmap

| **What are we trying to achieve?** | • Define measurable target outcomes  
| | • Look across silos and include all stakeholders |
| **Where are we now?** | • What do you measure? What don’t you measure?  
| | • Where is the waste, overhead, rework?  
| | • What are the root causes?  
| | • What practices do we follow |
| **What are the priorities?** | • Cycle times, speed  
| | • Quality  
| | • Effectiveness, feedback loops, value delivered  
| | • Efficiency, productivity |
| **What Initiatives do we deploy first?** | • Look for volunteers (buy-in), avoid top-down mandates  
| | • Incremental, measurable improvements  
| | • Measure outcomes, not compliance |

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Business Priorities  
Lean Assessment  
Risks and Opportunities  
Adoption Plans
Continuous Engineering Is A Game Changing Capability

“Turn Insight into Outcomes”
Unlocking Engineering Knowledge

“Measure twice, cut once”
Continuous Verification

“Don’t reinvent the wheel”
Strategic Reuse

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Continuous Engineering Adoption Model

Foundation
- Data
- Experience
- Copies

Developing
- Information
- Feedback
- Configuration

Advanced
- Insight
- Optimization
- Product Line Engineering

Unlocking Engineering Knowledge
Continous Verification
Strategic Reuse

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Customer success stories

**NuScale Power**
- Transparency in compliance, traceability and change management
- Helps to assure design and integration points and to ensure compliance with licensing and regulatory commitments.

**BOSCH**
- Long-term initiative of a standards-based platform for end-to-end efficiency and strategic reuse of automotive engineering artifacts.
- Helps meet evolving safety and maturity standards such as: ISO26262, ASPICE, AUTOSAR.

**MBDA**
- Reduces typical system design time speeding time to market, increasing customer satisfaction
- Speeds identification of design incompatibilities helping avoid critical programming delays

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Announcing: Bluemix

• Run apps in any language
• Built on open standards
• Provides integration services to your systems of record
• Designed for mobile
• Provides DevOps services for integrated dev experience
Composing an application as opposed to traditional writing of an application

1. Create app
2. Add database service
3. Extract social media data into database
4. Add social analytics service
5. Secure the service
6. Add Monitoring service instance

TASK:
Create a secure application that analyses sentiment about certain topics in social media
Pre-integrated Services from Bluemix

**Mobile**
Data api + app management + quality assurance

**Big Data & Analytics**
From in-memory data store to predictive analytics

**DevOps Services**
Integrated developer experience for mobile and cloud apps

**Integration Services**
Access to systems of records and enterprise data

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Catalog of Services & SDKs

Build new mobile and cloud apps using IBM and 3rd party services
DevOps Services for Bluemix, powered by IBM DevOps Services

Open, integrated rapid development experience that scales

- Integrated developer experience
- End-to-end DevOps solution in the cloud for developing applications
- Integrated task tracking, agile planning, and source control
  - Quickly and easily deploy your applications in the cloud with auto deploy
  - Complementary mobile quality and application performance monitoring
- Use your favorite tools or work from the Web IDE
  - Scalable and enterprise-ready
  - Runs on SoftLayer infrastructure
Gartner Market Share and Magic Quadrant Evaluations

IBM named #1 as the Worldwide Market-Share Leader for Application Development based on total software revenue for 2013:


IBM Software and Systems Delivery receives “Positive” rating in Vendor Rating: IBM


IBM in the Magic Quadrants and MarketScope:


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Other Analyst Evaluations

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IBM is a Leader:


IBM is a Leader:


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Magic Quadrant for Integrated Software Quality Suites

Figure 1. Magic Quadrant for Integrated Software Quality Suites

Source: Gartner (August 2014)
A Global Team of IBM Software Developers

US 20,000
Canada 3,100
Latin America 600
EMEA 7,100
AP 11,800
Total 42,600
There are many challenges to a transformation like this….

**Complexity Challenges**
- More granular service functionality in composite business applications
  - Large number of projects and assets including custom, outsourced and packaged

**Team Challenges**
- Geographically dispersed teams that often include business partners
  - Effective cross-organizational visibility and synchronization, sharing becomes an imperative

**Process Challenges**
- Need for market experimentation
- Blind adherence to process insensitive to potential business trade-offs
  - Need for agility *at scale*

**Tools Challenges**
- Lack of standards impacts ability to integrate, collaborate and optimize across teams and assumptions
- Frequent asset updates and changing interdependencies
Success Story: Transforming STG Development with DevOps

Leveraging DevOps Methodology to Transform STG Development

- **Integration Testing** went from once per cycle (2 months) to **Daily**
  - Cycle time from **build** to internal consumer was 14 days of manual effort. Now it’s **3 hours**
  - **Deployment** time decreased from 5 hours to **5 minutes**

Continuous Integration & Continuous Delivery to OpenStack Clients External, Internal, & Community

- Open Beta deliveries to external clients every **6 weeks**
- **Daily** deliveries to internal IBM community building OpenStack-based solutions for GTS, SWG, STG, etc.
- **Continuous Integration** for IBM contributions via OpenStack Community (e.g. PowerKVM & DB2 in process)
Success Story: Watson Core

*Path to Continuous Delivery*

- Agile Transformation
  - From multi-sprint releases to delivering every sprint
- Continuous Integration
  - Jenkins-based solution to build and test at the changeset level
- Daily Regression
  - Automated deployment & testing of each daily build (long running tests)
- Code Reviews
  - Standard practice, though not enforced by current build system
- Weekly Quality Reports
  - Provide data & subjective view of current quality
- System Test
  - From multiple weekend games to weekly multi-day workload testing

http://www.bloorresearch.com/blog/the-norfolk-punt/2014/1/ibm-watson-gets-devops/
How IBM Rational On-Prem Products have improved!

<table>
<thead>
<tr>
<th>Lifecycle Measurements</th>
<th>2008</th>
<th>2010</th>
<th>2012 – 2014</th>
<th>Total Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Initiation</td>
<td>30 days</td>
<td>10 days</td>
<td>2 days</td>
<td>28 days</td>
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<tr>
<td>Groomed Backlog</td>
<td>90 days</td>
<td>45 days</td>
<td>On-going</td>
<td>89 days</td>
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<tr>
<td>Overall Time To Development</td>
<td>120 days</td>
<td>55 days</td>
<td>3 days</td>
<td>117 days</td>
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<tr>
<td>Composite Build Time</td>
<td>36 hours</td>
<td>12 hours</td>
<td>5 hours</td>
<td>700 %</td>
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<tr>
<td>BVT Availability</td>
<td>N / A</td>
<td>18 hours</td>
<td>&lt; 1 hour</td>
<td>17 hours</td>
</tr>
<tr>
<td>Iteration Test Time</td>
<td>5 days</td>
<td>2 days</td>
<td>14 hours</td>
<td>4 days</td>
</tr>
<tr>
<td>Total Deployment Time</td>
<td>2 days</td>
<td>8 hours</td>
<td>4 hours -&gt; 20 minutes</td>
<td>2 days</td>
</tr>
<tr>
<td>Overall Time To Production</td>
<td>9 days</td>
<td>3 days</td>
<td>2 days</td>
<td>7 days</td>
</tr>
<tr>
<td>Time Between Releases</td>
<td>12 Months</td>
<td>12 Months</td>
<td>3 Months</td>
<td>9 Months</td>
</tr>
<tr>
<td>Innovation / Maintenance</td>
<td>58% / 42%</td>
<td>64% / 36%</td>
<td>78% / 22%</td>
<td>+20% / -20%</td>
</tr>
</tbody>
</table>

Double-digit revenue growth, increased client adoption, improved client satisfaction
Take Action Now!

- Develop an end-to-end strategy for Innovation@Speed through DevOps and Continuous Engineering
  - The DevOps adoption model is a good starting point
- Adopt mobile-first design thinking, and cloud-centric architectures for Systems of Interaction
- Start incrementally on business-critical projects
- Measure and reduce waste: overhead, rework and duplication
- IBM can support you in your journey
THANK YOU