

DevOps as a Service

PwC India's Capabilities in orchestrating Development + QA + Operations seamlessly

*PwC's DevOps
Technology practice helps
companies keep their release
cycle in sync with release plan*

July 2016

Table of Content

| | | | |
|--|-----------|---------------------------|-----------|
| <i>DevOps – Why, What, How & Who?</i> | <i>01</i> | <i>SAP DevOps Model</i> | <i>19</i> |
| <i>Traditional Software Release Flow</i> | <i>02</i> | <i>The DevOps Toolbox</i> | <i>20</i> |
| <i>The Seamless DevOps Flow</i> | <i>03</i> | <i>DevOps Methodology</i> | <i>21</i> |
| <i>DevOps Value Proposition</i> | <i>04</i> | <i>Our Experiences</i> | <i>22</i> |
| <i>DevOps – Some Key takeaways</i> | <i>05</i> | <i>Our Team</i> | <i>24</i> |
| <i>The DevOps ROI</i> | <i>06</i> | | |
| <i>PwC Assessment Methodology</i> | <i>07</i> | | |
| <i>Formative Inspection of DevOps Maturity</i> | <i>08</i> | | |
| <i>DevOps Adoption Roadmap</i> | <i>09</i> | | |
| <i>Engagement Models</i> | <i>10</i> | | |
| <i>Continuous Integration & Testing Activities</i> | <i>11</i> | | |
| <i>Continuous Delivery & Deployment Activities</i> | <i>15</i> | | |
| <i>Continuous Operations & Monitoring Activities</i> | <i>17</i> | | |

DevOps – Why, What, How and Who?



Why

Increase business benefits by reducing the transaction cost associated with delivering incremental change.



What

Clarity, Consistency and Collaboration to understand the changes that each release brings to the IT and customer environments.



How

Methodology and tools that continue to evolve.

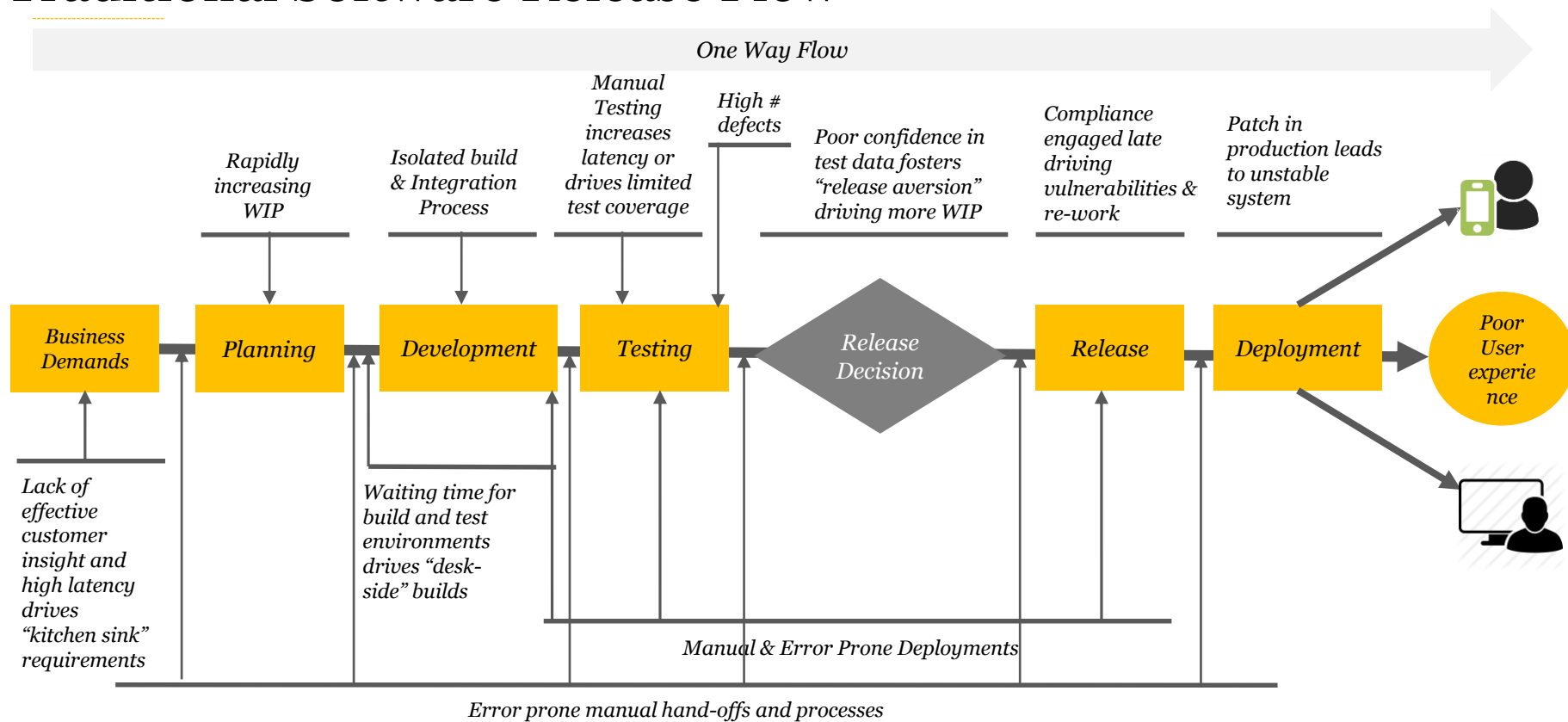


Who

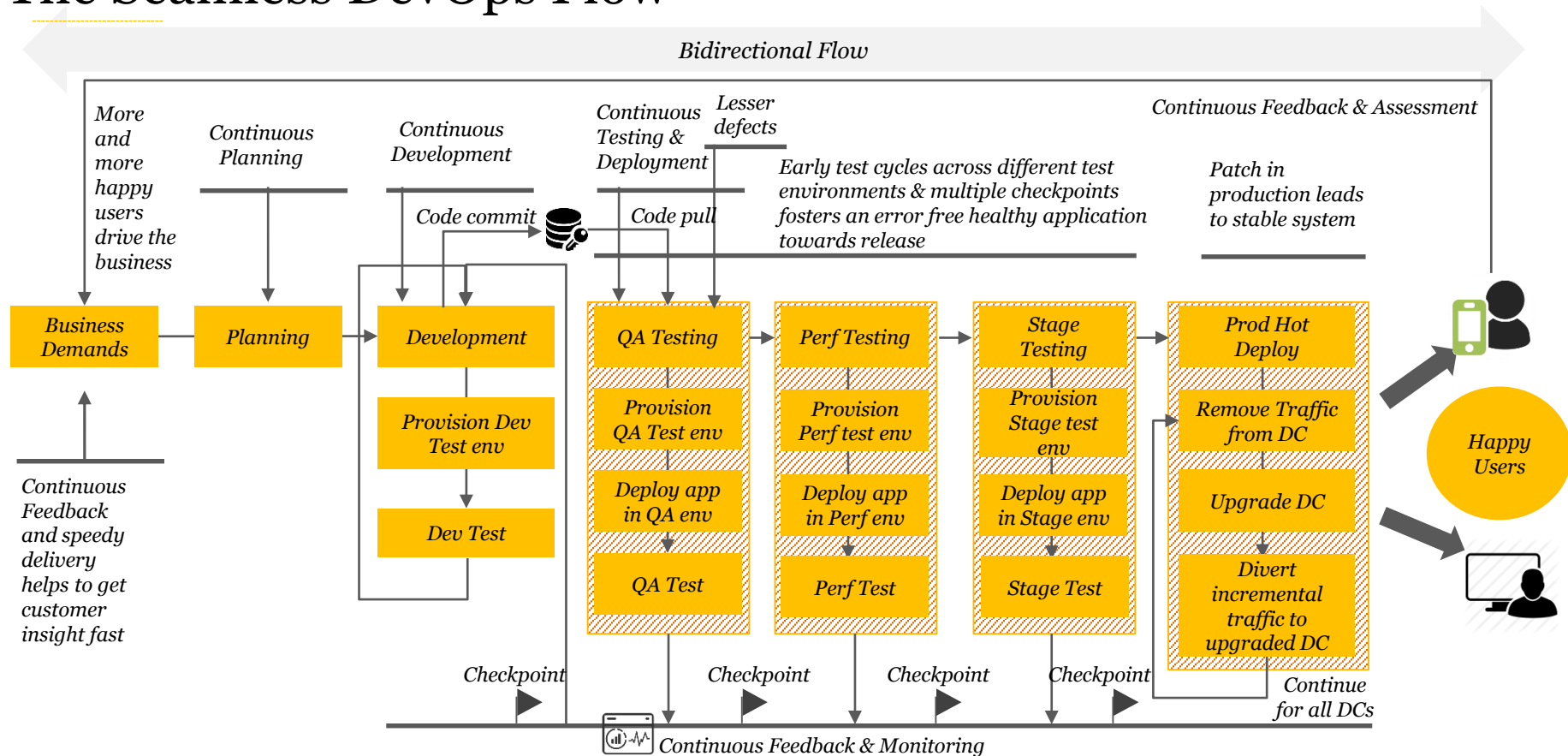
Developers, QA and Operations.

DevOps isn't a tool or product. It's an approach to operations. By uniting development, QA and operations teams to automate and standardize processes for infrastructure deployment, an organization gets faster innovation, accelerated time to market, and improved deployment quality, better operational efficiency and more to focus on core business goals.

Traditional Software Release Flow



The Seamless DevOps Flow

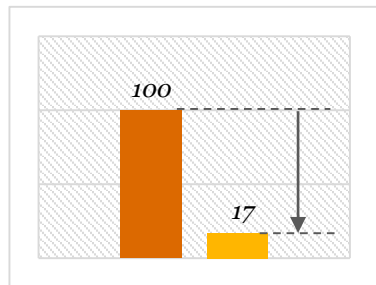


DevOps Value Proposition



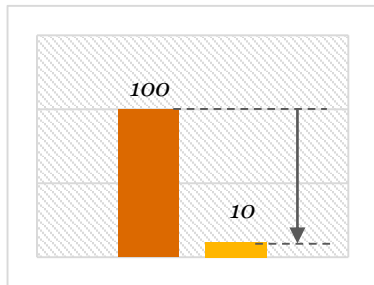
Reduced Time To Market

Average No. of days from code completion to live production



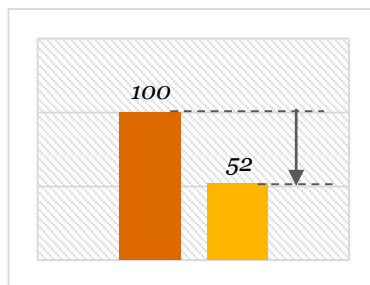
Reduction in cycle time

Number of days to update servers and the IT environment



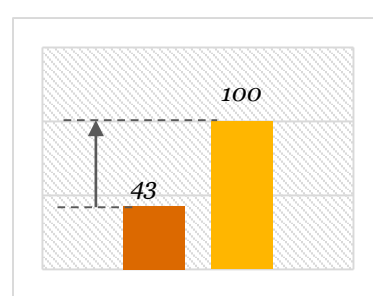
Improvement in productivity

Average No. of devops handoffs per processing activity

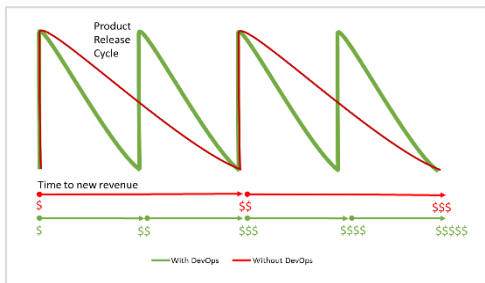


Increased Customer conversion

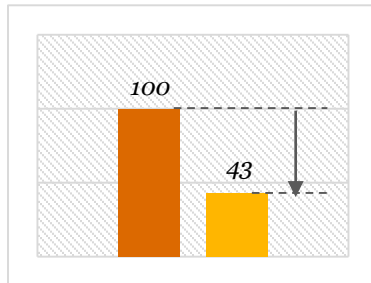
Average no. of customers converted or satisfied after employing devops model



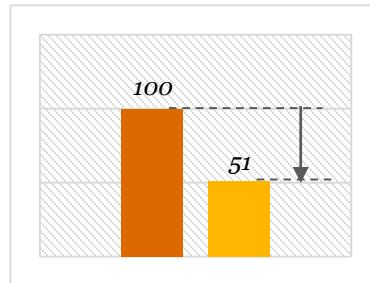
Proportional Revenue Acceleration



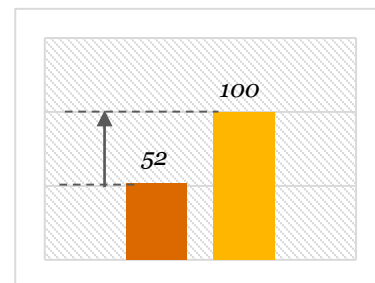
Reduced IT infrastructure spend



Reduced application downtime/failure rates



Increased Collaboration



Pre-transformation



Post-transformation

DevOps – Some Key takeaways

High Performing IT organizations
report experiencing



*200x more frequent
deployments*



*24x faster recovery
from failures*



*3x lower change
failure rate*



*2,555x shorter lead
times*

High Performers Spend



22%

Less time on unplanned
work and rework

High Performers Spend

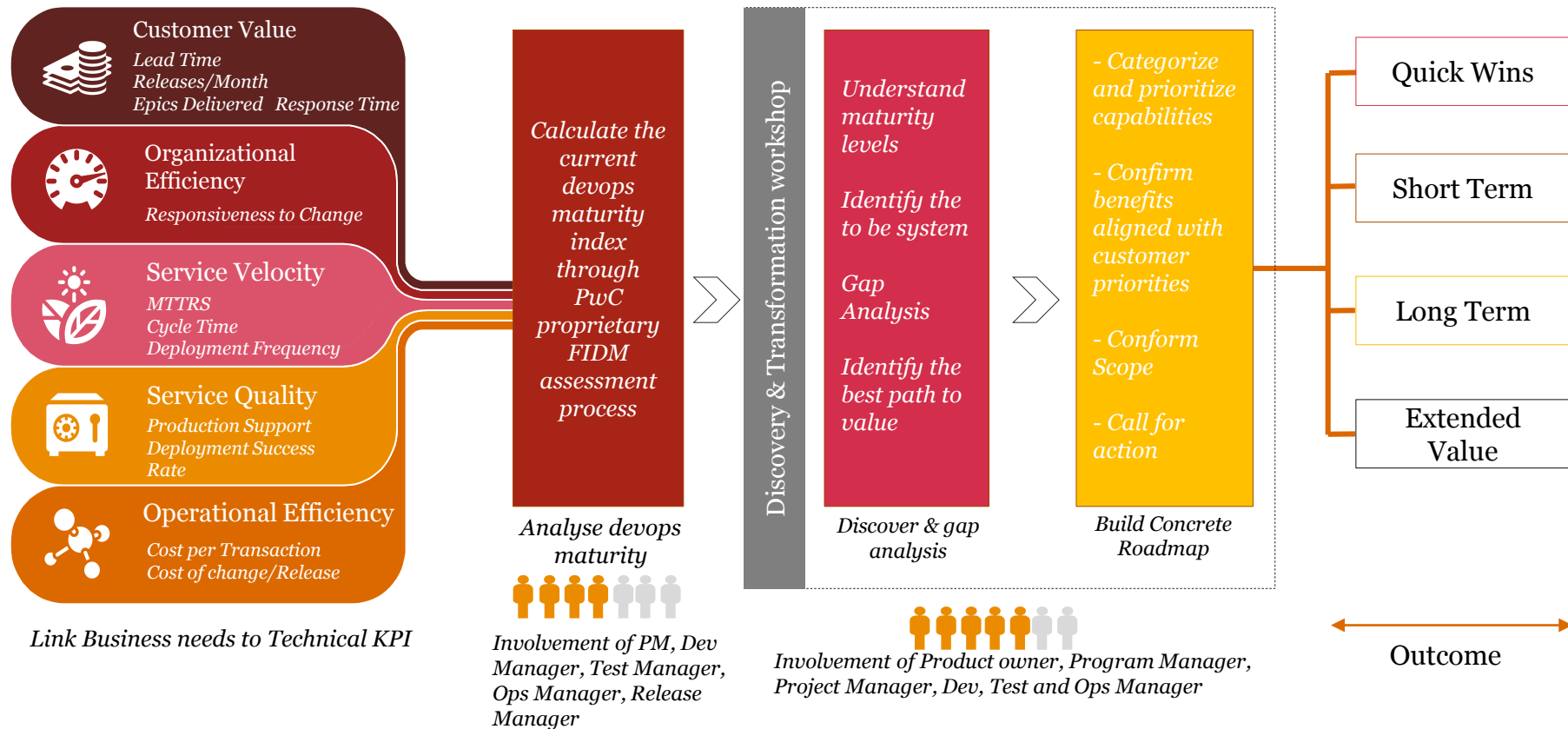


50%

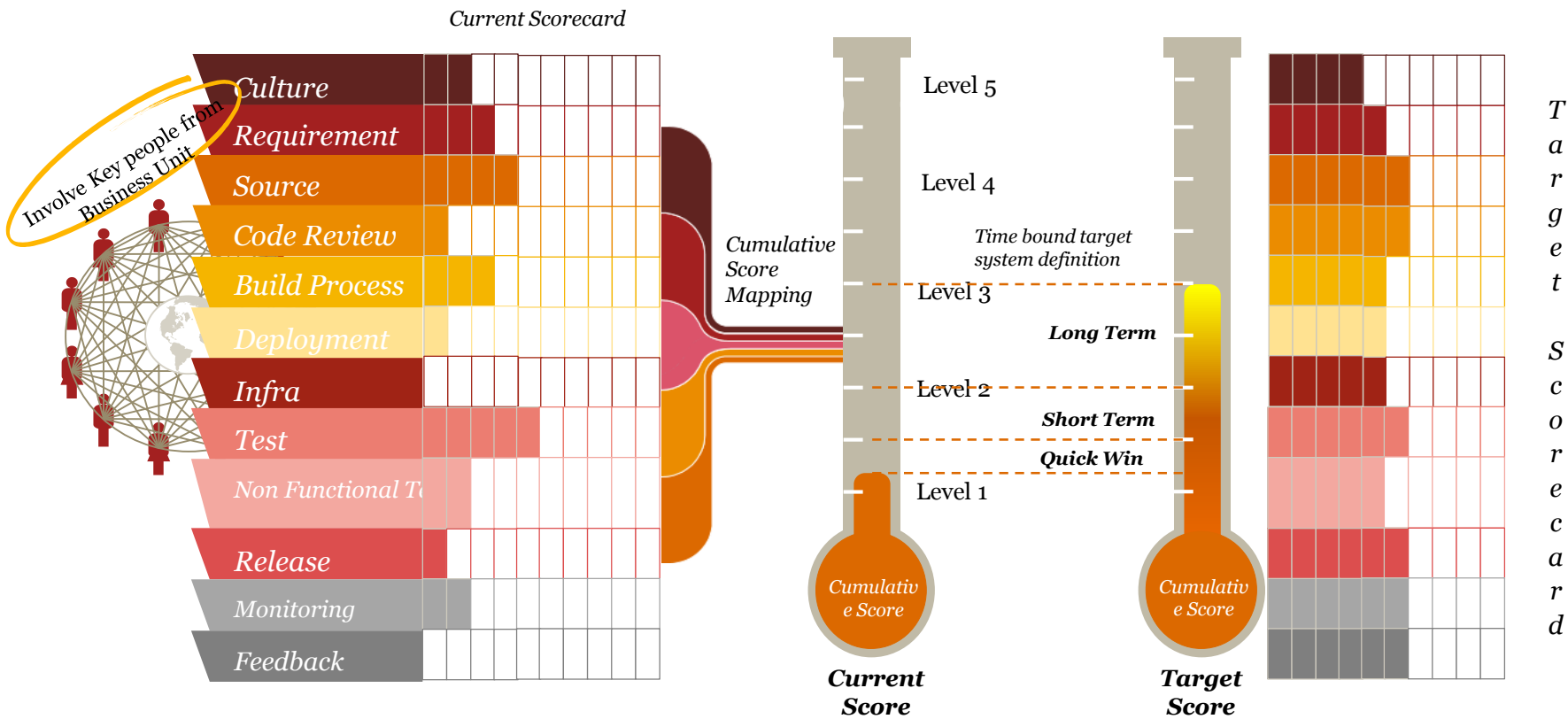
Less time remediating
security issues

*Data Sources: 2016 State of DevOps Report presented
by Puppet + DORA (DevOps Research & Assessment)*

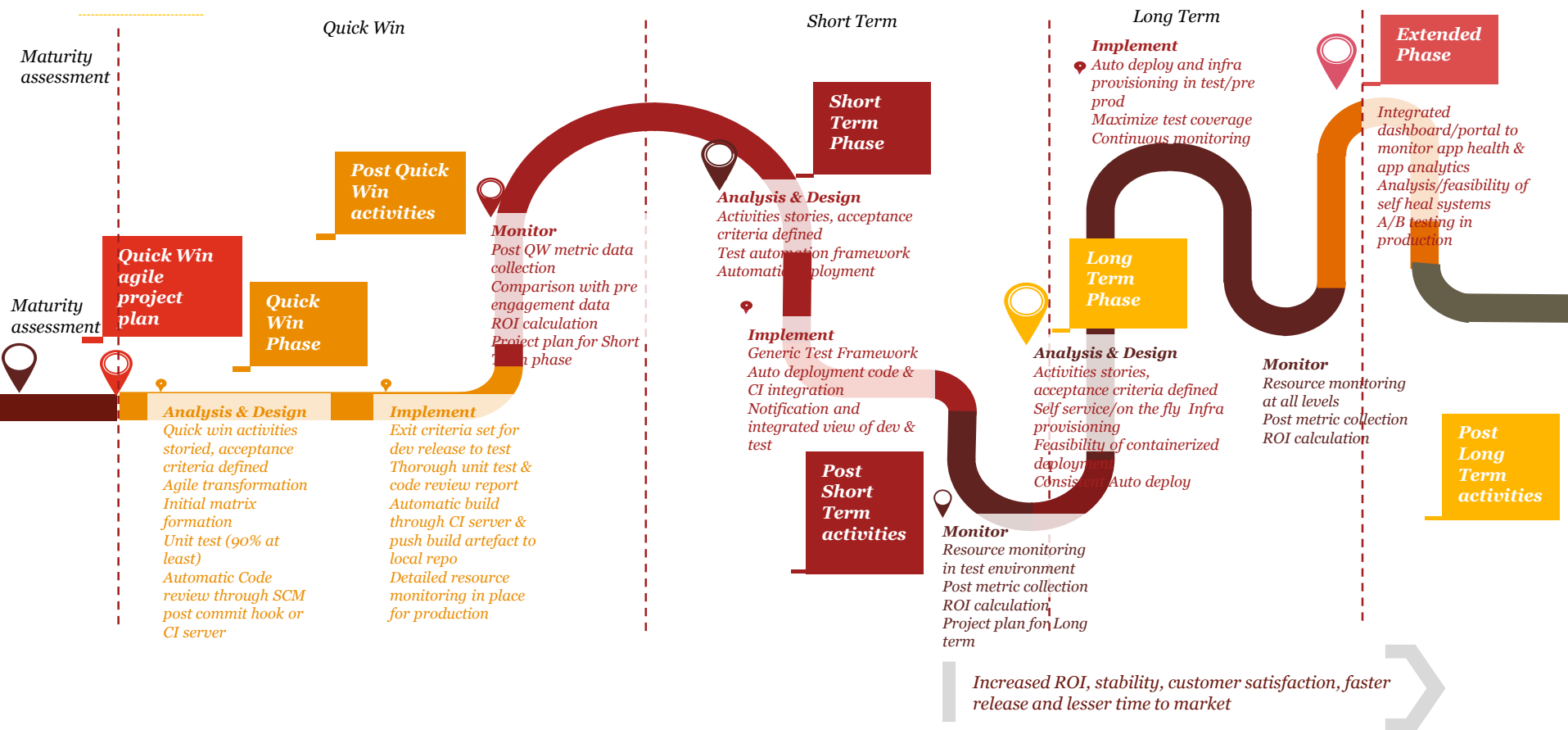
DevOps Assessment Methodology



Formative Inspection of DevOps Maturity

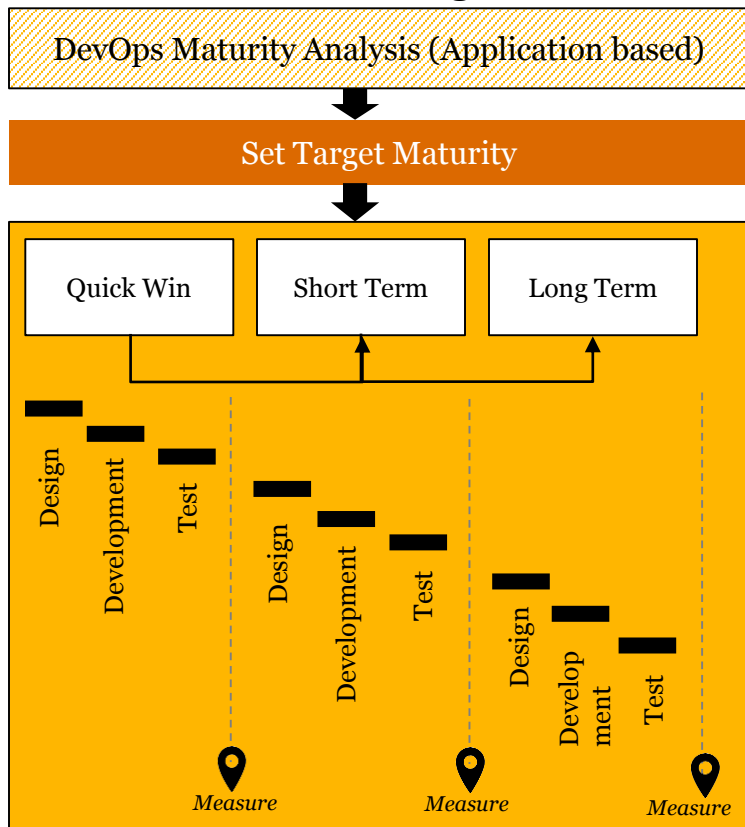


DevOps Adoption Roadmap

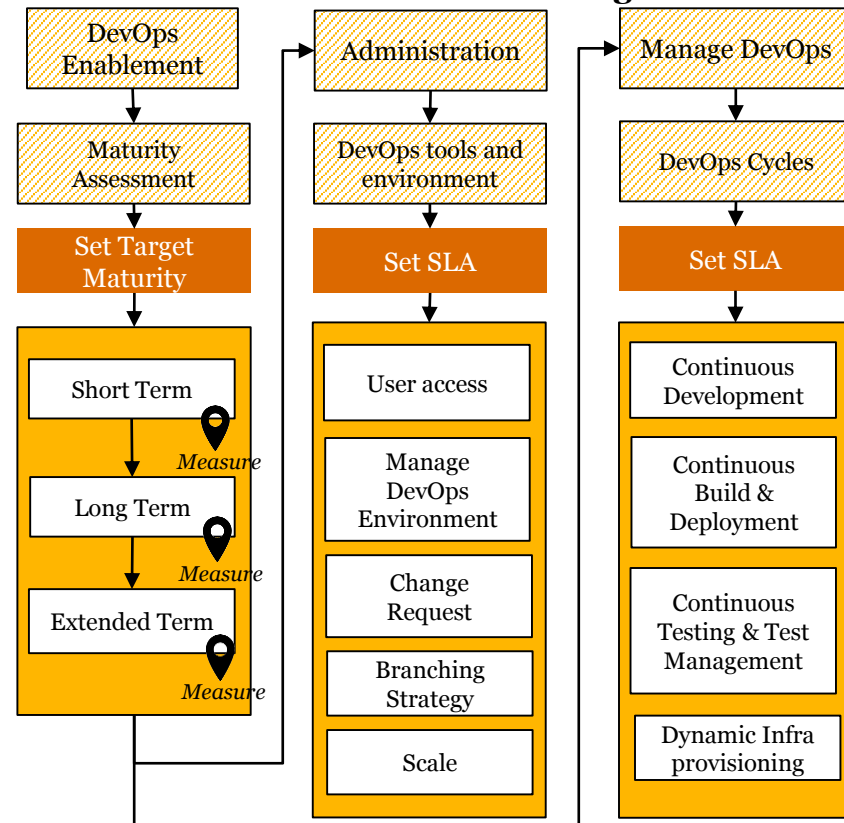


Engagement Models

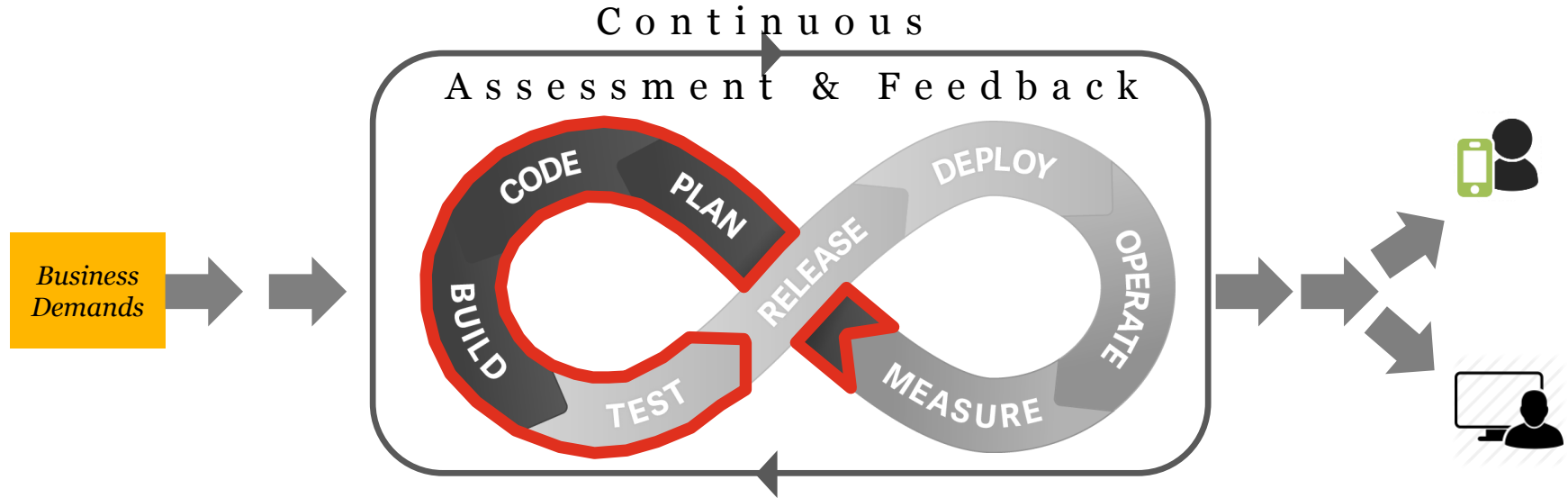
Target Based Services



Managed Services



Continuous Integration & Testing Activities

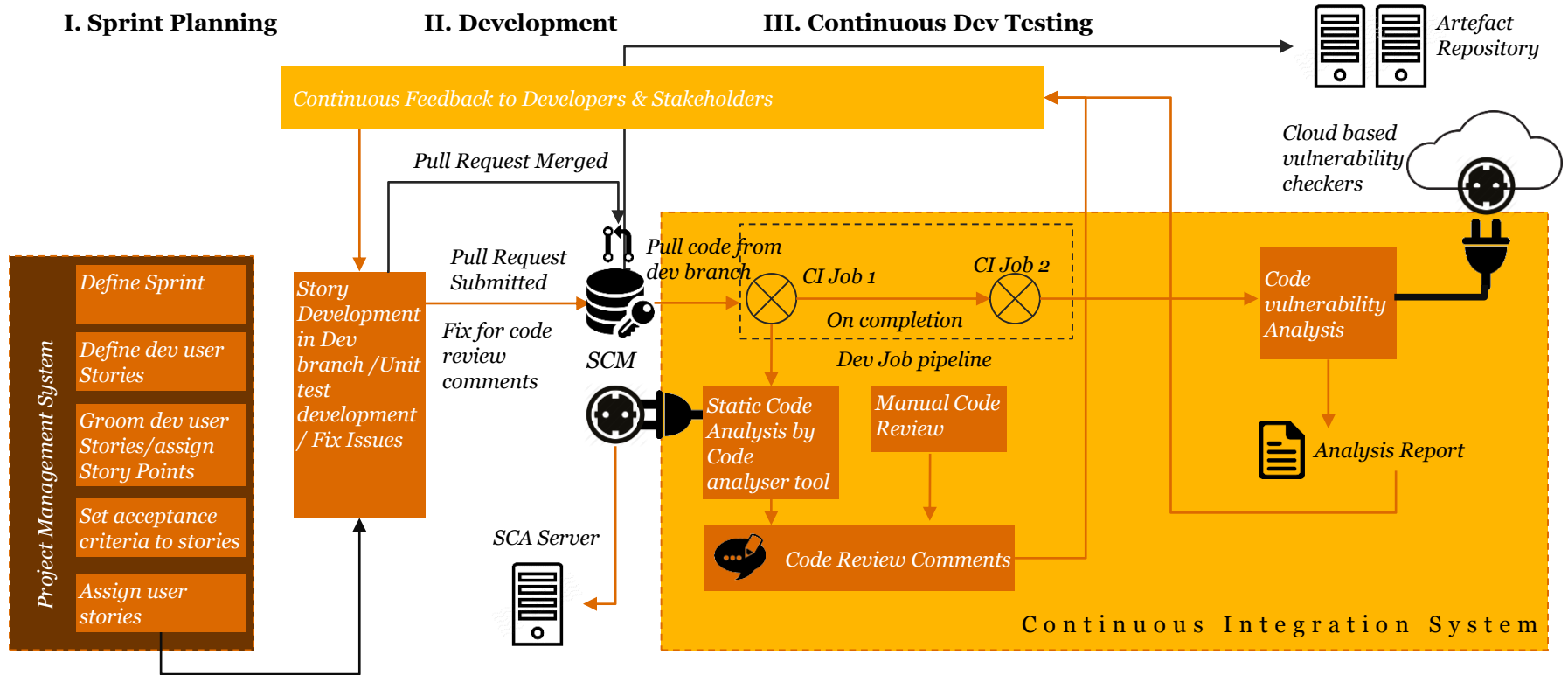


- *Development in Sprints*
- *Define sprint*
- *Define User Stories*
- *Grooming of the stories*
- *Design & Development*
- *Unit Test Development*

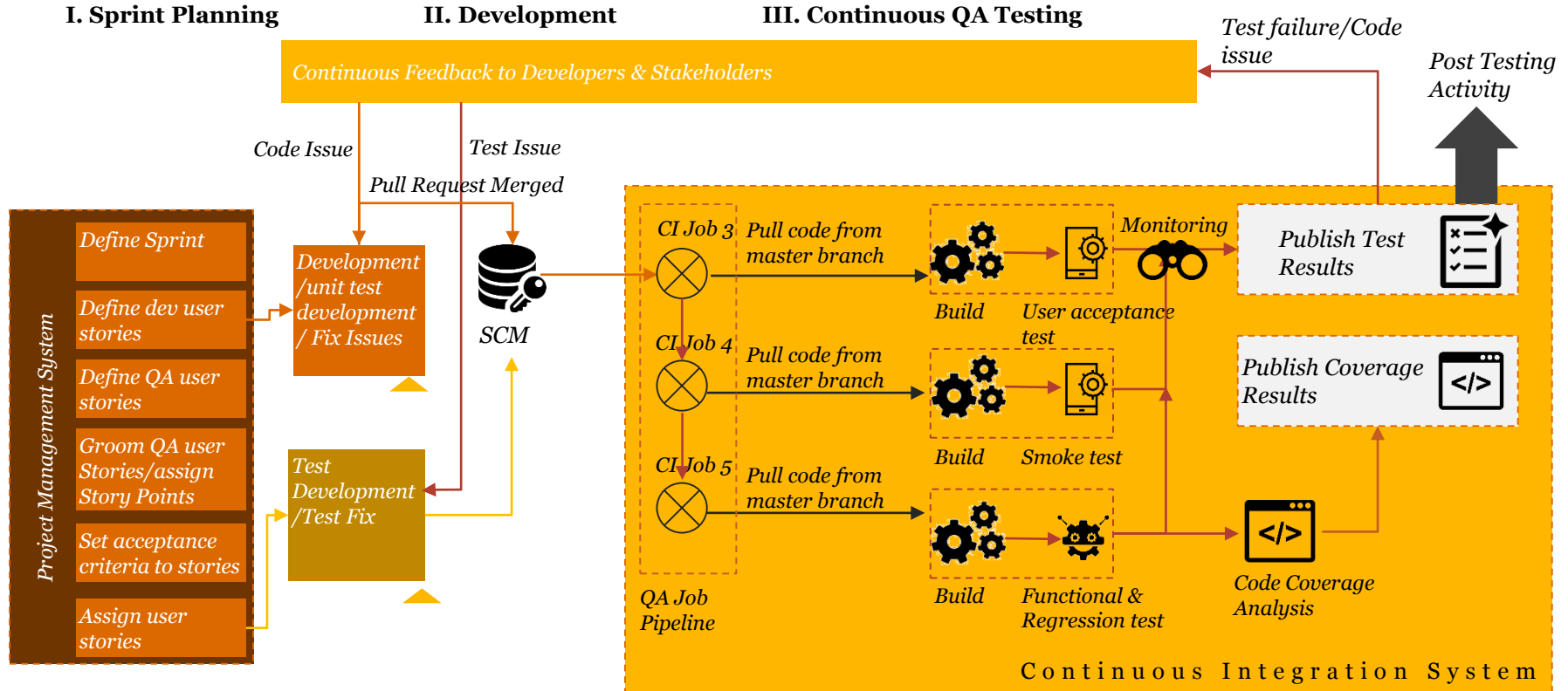
- *Code Review*
- *Static Code Analysis*
- *Code Check-in*
- *Automated Test Development*
- *Test Execution in CI system*
- *Test Monitoring*

- *Test Reports*
- *Notification & Escalation*
- *Continuous feedback of test results to developers*
- *Rapid push of fix*
- *Rapid revalidation after fix*

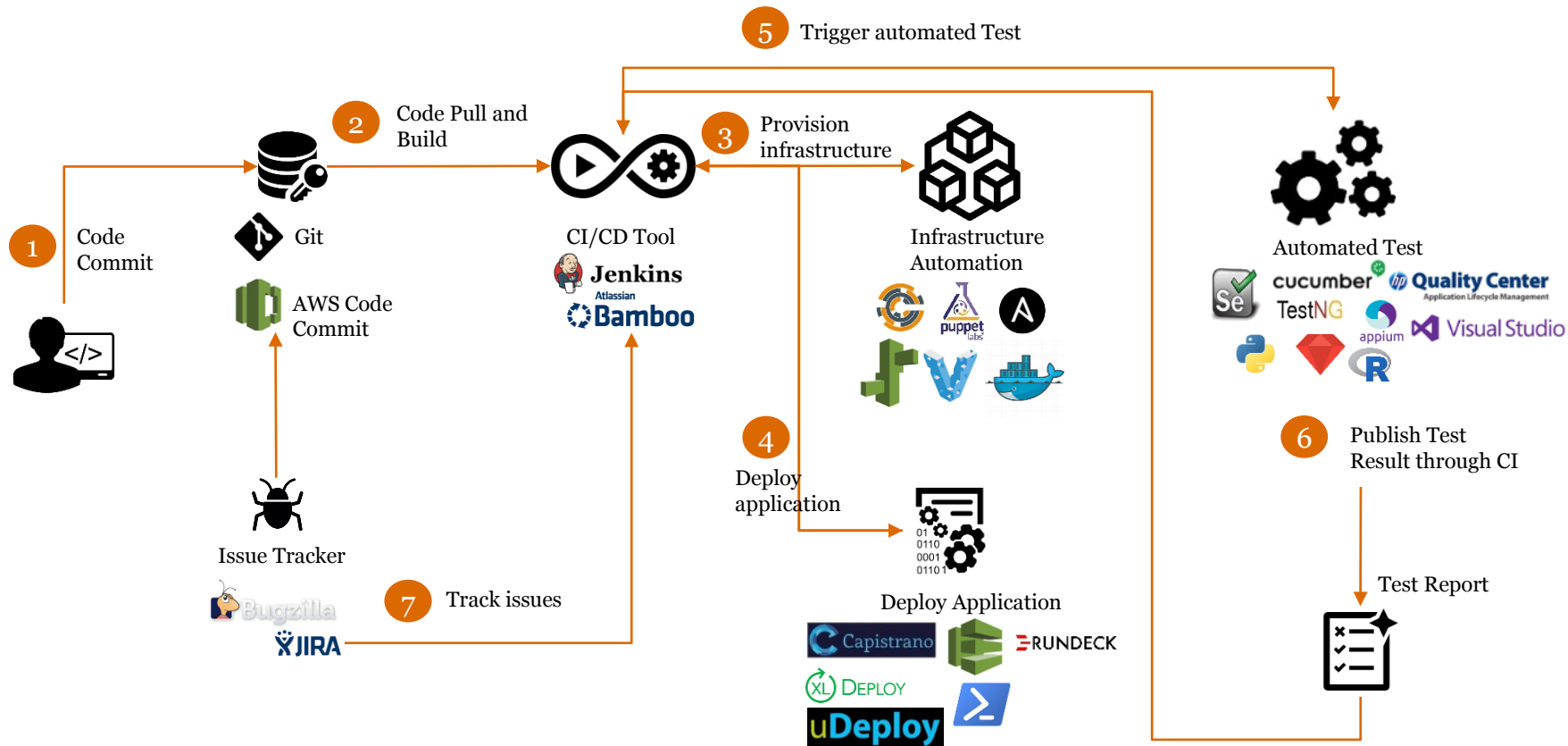
Continuous Integration & Testing – Process Flow in Dev env



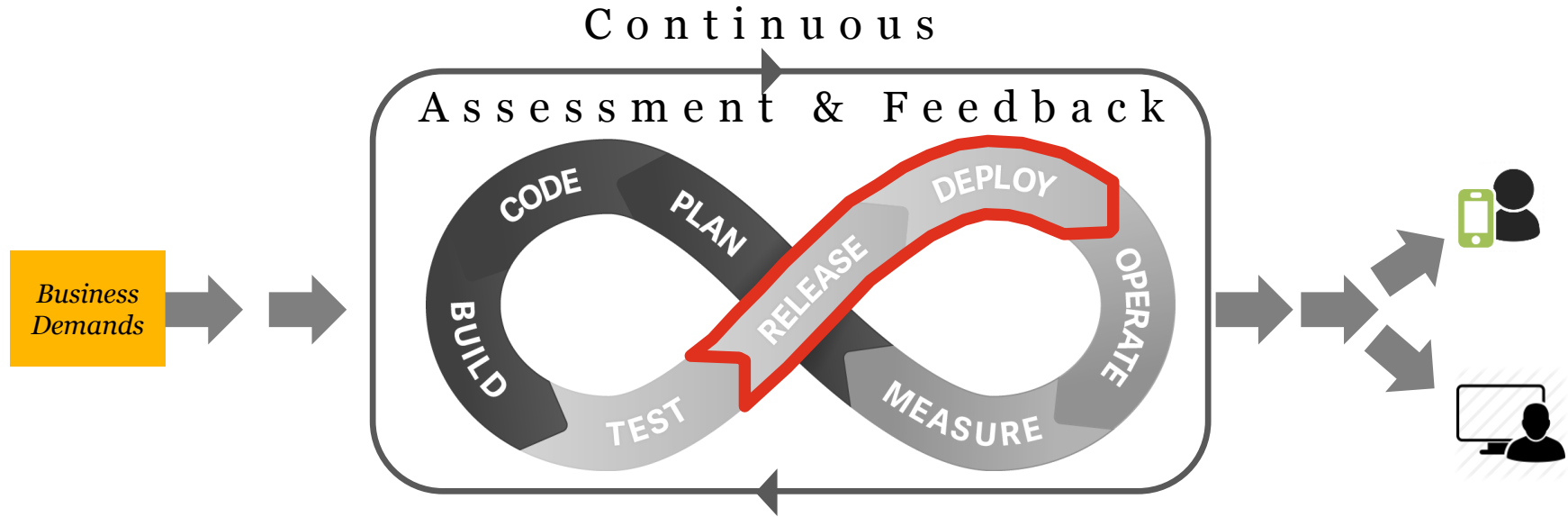
Continuous Integration & Testing – Process Flow in QA env



CI/CD Workflow



Continuous Delivery & Deployment Activities



- Continuous Infrastructure Management
- Centralized Configuration Management
- Infrastructure as code

- Infrastructure Automation
- Infrastructure Monitoring
- Deployment Automation
- Continuous Delivery pipelines
- Promotion process for release candidate

- Custom dashboard for cross team visibility
- Agile infrastructure
- Log Management

Continuous Delivery & Deployment – Process Flow

I. Deployment

II. Delivery

III. Release

Continuous Feedback to Developers & Stakeholders



SCM



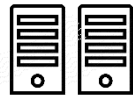
Build



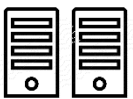
Provision Test Infrastructure



Deploy app to test environment



Configuration Management



Artefact Repository

Provision Performance Infrastructure



No



Defect ?

Automated Test Execution

Deploy app to perf environment

Performance Monitoring & Engineering



Provision Stage Infrastructure



Deploy app to stage environment

Perform testing on stage environment

All traffic on DC1



Load Balancer

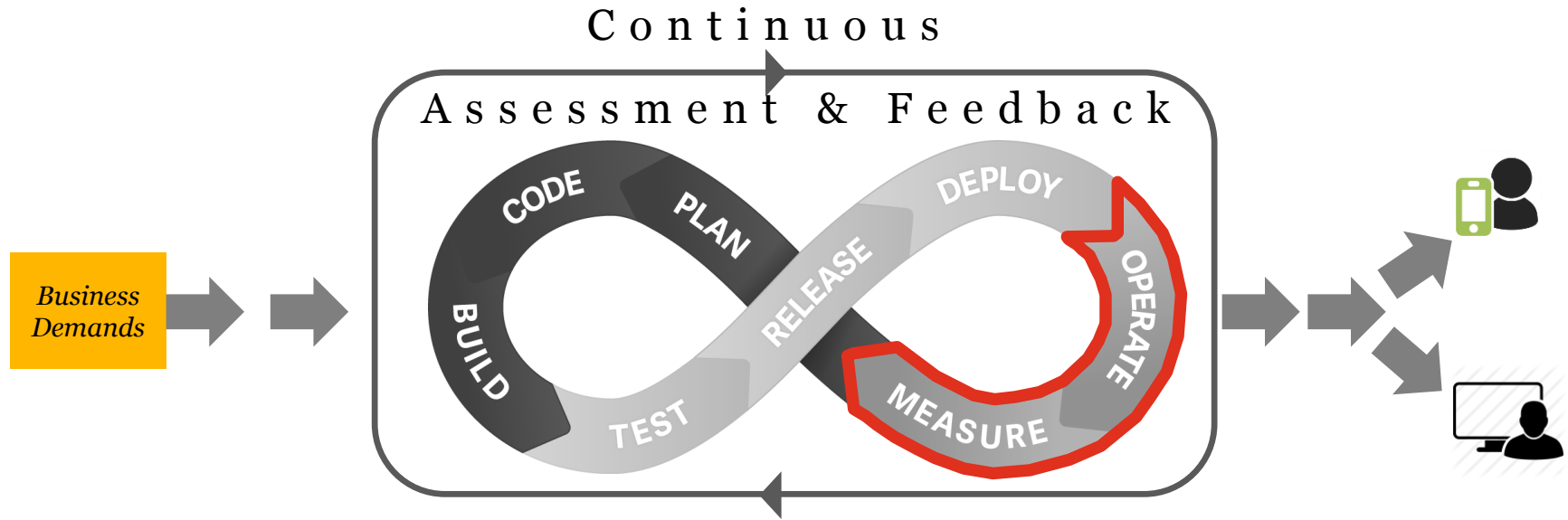
Hot deployment in DC2



Rollback on failure

Continuous Integration System

Continuous Operations & Monitoring Activities



- Continuous operations through development, testing and deployment
- Continuous monitoring of code, business features & infrastructure
- Monitoring tests
- Monitoring of business critical transactions up to database level
- Monitoring traffic
- Monitoring network
- Monitoring production DCs
- Monitoring system resources
- Monitoring cloud services
- Monitoring logs

Continuous Operations & Monitoring – Process Flow

Strategy

- Strategic alignment
- Strategy maps
- Value drivers
- Performance measures
- Scenario models
- Stakeholder Management
- Organization structure

Test Monitoring

- Continuous test monitoring while in execution
- Continuous test reporting
- Continuous Code evaluation

Infrastructure Monitoring

- Virtualized servers
- Physical servers
- SAN
- Cloud infra monitoring
- Bandwidth Monitoring
- Stability Monitoring

Plan

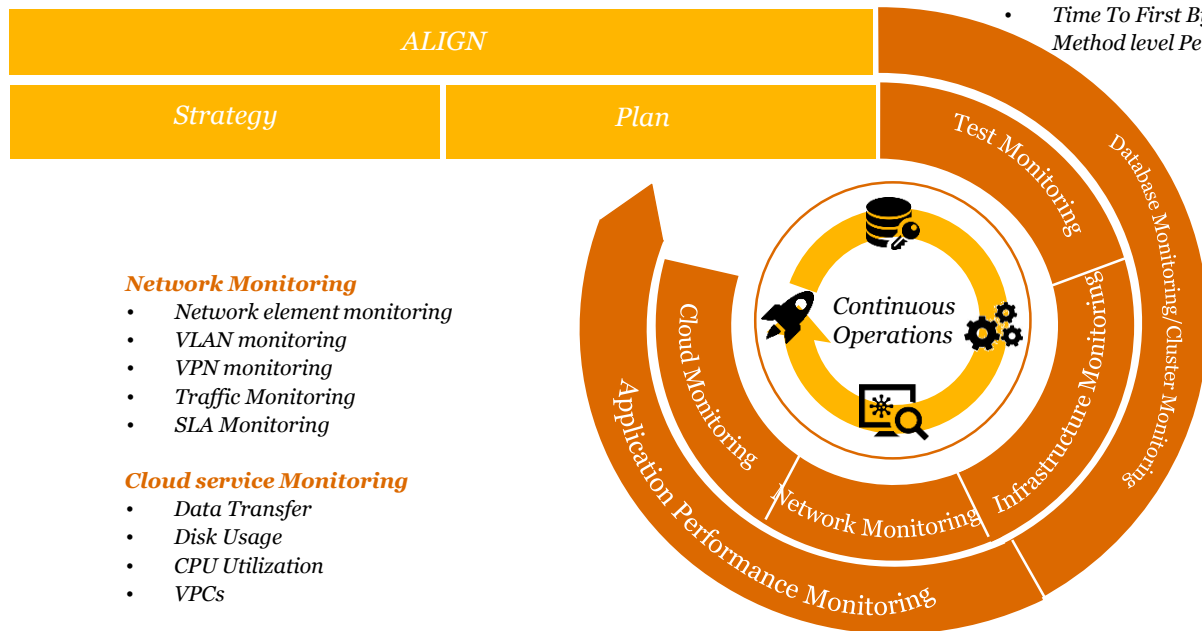
- Target setting
- Business planning
- Operational planning
- Budgeting
- Collaboration
- Accountabilities

Database Monitoring

- Monitor business critical Transaction
- Query Performance
- Query Conflict
- Capacity
- Configuration

Application Performance Monitoring

- CPU, Memory
- Disk I/O, Disk space
- Threads, Heaps
- Response Time
- GC Performance
- Page Load Time/Rendering Time
- Time To First Byte
- Method level Performance































































Network Monitoring

- Network element monitoring
- VLAN monitoring
- VPN monitoring
- Traffic Monitoring
- SLA Monitoring

Cloud service Monitoring

- Data Transfer
- Disk Usage
- CPU Utilization
- VPCs

The DevOps Toolbox

| | | |
|---|--|--|
|  Agile Project Management |  SCM |  App development & build |
|   |     |            |
|  Continuous Integration |  Continuous Quality | |
|     |             | |
|  Infrastructure Automation |  Continuous Deployment |  Continuous Monitoring |
|      |          |       |

Our Experiences

Largest broadcasting and cable company in US

Design and implementation of automatic delivery service integrating CI services and code quality systems.

Client situations

- *Client was looking for a solution of implementing build automation, automatic deployment and delivery integrated with their CI system and code quality process.*
- *Client wanted to have a comprehensive delivery pipeline with very little of manual intervention.*
- *Client wanted to get rid off manual failures and delays due to unstable operating environments and bottleneck in the development, QA and operations.*

Our Approach

- *Analysed the environment and agility index.*
- *Assessed application requirements and collected environment details from the client for designing the target platform.*
- *Defined architecture principles as well as the development of solution design.*
- *Implementation in cycles with review in every phase.*
- *Deployed and tested the solution.*
- *Review and monitoring of the solution.*
- *Address the change management.*

Business Outcome

- *A consolidated agile platform that helped them locating issues much faster and find the resolution early in the software development cycle.*
- *Developers and testers were able to be more agile which results to faster execution of tasks.*
- *Stake holders got more visibility into the delivery pipeline and the underlying bottlenecks that hasten their resolution and faster agile cycles.*
- *Streamlined release cycles and with emphasize on business development.*
- *Improved operational efficiencies and scalability.*

Our Experiences

Large publishing house in India

Design and implementation of a continuous deployment service.

Client situations

- *Client was looking to implement a continuous deployment and delivery system to speedup their development life cycle.*
- *Client wanted a solution for their complex manual deployment across a large number of heterogeneous systems which was tedious, error prone and lengthy.*
- *Client wanted to get rid off manual failures and delays due to unstable operating environments and bottleneck in the development, QA and operations.*

Our Approach

- *Analysed the environment and accessed the systems for imparting automatic deployment.*
- *Assessed application requirements and collected environment details from the client for designing the target platform.*
- *Defined architecture principles with changes of their development procedure and setup systems integrated with CI servers to invoke deployment automatically once the quality checks are passed.*
- *Implementation in cycles with review in every phase.*
- *Deployed and tested the solution.*

Business Outcome

- *A consolidated agile platform that helped them to deploy artefacts automatically once there are some changes across all their operating environments.*
- *Deployment happened to be much faster without any errors that helped them to roll out new releases early.*
- *Stake holders got more visibility into the delivery pipeline.*
- *Streamlined release cycles and with emphasize on business development.*
- *Improved operational efficiencies and scalability.*

Our Team



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Role

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Experience

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Thank You

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