Leading a Journey to Better Quality

By Maryam Umar

Mar 2020
Agenda

What problem are we trying to solve?

How to get started on improving quality?

Selecting metrics

Evolving metrics based on what we learn
Our clients are unhappy

We don’t catch issues early

Our releases are delayed

Please fix Quality
STRESS
Does not happen with the QA team only

Need a top-down approach to echo the practice

How do we know where we are with Quality?
Quality BINGO!
Action Plan

*Leading Quality - Ronald Cummings-John, Owais Peer
Visualise the Problem

Overview

Create a Vision Statement
- What is the motto to get there?

Identify the Stakeholders
- Who are the people who can assist in reaching the goal?

Identify the Areas
- What areas do we want to improve Quality in?

Define Metrics
Assuring Quality enables teams to drive for customer satisfaction at a sustainable pace.
Who are your Stakeholders?

- CEO/CTO
- Tech leads
- Testing team
- Incident Management
- Release Management

Questions to ask:

- How do you know quality was bad?
- Escaped defects?
- What’s your code coverage like?
- Do you have the right processes in place?
## Software Delivery Performance

<table>
<thead>
<tr>
<th>Aspect of Software Delivery Performance*</th>
<th>Elite</th>
<th>High</th>
<th>Medium</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deployment frequency</td>
<td>On-demand (multiple deploys per day)</td>
<td>Between once per day and once per week</td>
<td>Between once per week and once per month</td>
<td>Between once per month and once every six months</td>
</tr>
<tr>
<td>Lead time for changes</td>
<td>Less than one day</td>
<td>Between one day and one week</td>
<td>Between one week and one month</td>
<td>Between one month and six months</td>
</tr>
<tr>
<td>Time to restore service</td>
<td>Less than one hour</td>
<td>Less than one day</td>
<td>Less than one day</td>
<td>Between one week and one month</td>
</tr>
<tr>
<td>Change failure rate</td>
<td>0-15%&lt;sup&gt;b,c&lt;/sup&gt;</td>
<td>0-15%&lt;sup&gt;b,d&lt;/sup&gt;</td>
<td>0-15%&lt;sup&gt;c,d&lt;/sup&gt;</td>
<td>46-60%</td>
</tr>
</tbody>
</table>

*For the primary application or service you work on, how often does your organization deploy code to production or release it to end users?

https://cloud.google.com/devops/state-of-devops/
Areas to improve

Hiring

Releases

Test Automation

Product Quality

Process Quality
Releases

- Create visibility landscape for releases
- Monitor issues found post-release vs pre-release
  - How good is your regression cycle?
- Release notes
  - Changes
  - Known issues; when to expect fixes
- How easy is it to create deployables?
- How quickly can you deploy?
The following releases are supported:

- 1.6.0
- 1.5.0, 1.5.2, 1.5.4
- 1.4.4

These are no longer in use by any client: 1.4.0, 1.4.1, 1.4.3, 1.3.0, 1.2.0, 1.1.0, 1.1.1, 1.1.2

<table>
<thead>
<tr>
<th>Staging</th>
<th>Staging deployment date</th>
<th>Preprod</th>
<th>Preprod deployment date</th>
<th>Client Infrastructure</th>
<th>Client infrastructure deployment date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.7.0 RC5</td>
<td>06 Jan 2020</td>
<td>1.5.0</td>
<td>01 Nov 2019</td>
<td>1.6.0</td>
<td>02 Dec 2019</td>
</tr>
<tr>
<td>1.7.0 RC5</td>
<td>06 Jan 2020</td>
<td>1.5.4</td>
<td>28 Nov 2019</td>
<td>1.6.0</td>
<td>02 Dec 2019</td>
</tr>
<tr>
<td>1.7.0 RC5</td>
<td>06 Jan 2020</td>
<td>1.6.0</td>
<td>02 Dec 2019</td>
<td>1.6.1</td>
<td>12 Dec 2019</td>
</tr>
<tr>
<td>1.7.0 RC5</td>
<td>06 Jan 2020</td>
<td>1.6.0</td>
<td>02 Dec 2019</td>
<td>1.6.0</td>
<td>02 Dec 2019</td>
</tr>
<tr>
<td>1.5.1</td>
<td>08 Nov 2019</td>
<td>1.6.0</td>
<td>02 Dec 2019</td>
<td>1.6.0</td>
<td>02 Dec 2019</td>
</tr>
<tr>
<td>2020.02</td>
<td>07 Jan 2020</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Current Release Status: GREEN
Selecting metrics
THE SCIENCE OF DEVOPS

ACCELERATE

Building and Scaling High Performing Technology Organizations

Nicole Forsgren, PhD
Jez Humble and Gene Kim
<table>
<thead>
<tr>
<th>Metrics</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTTG</td>
</tr>
<tr>
<td>Build Time</td>
</tr>
<tr>
<td>Deploy Time</td>
</tr>
<tr>
<td>Build Failures</td>
</tr>
<tr>
<td>Test Coverage</td>
</tr>
<tr>
<td>PR review</td>
</tr>
<tr>
<td>PR commit rate per Sprint</td>
</tr>
<tr>
<td>Average Time in Status</td>
</tr>
<tr>
<td>QA Kick-back</td>
</tr>
<tr>
<td>%age of Flaky tests</td>
</tr>
</tbody>
</table>
## Product Quality (contd.)

**Metrics**

<table>
<thead>
<tr>
<th>Defects found in Sprint vs Escaped Defects</th>
<th>Defects found via Automation or via Exploratory testing per Feature</th>
<th>Bug resolution time per Severity level</th>
<th>Team Feedback</th>
</tr>
</thead>
</table>

@maryamumar
- Processed 1,229 builds
  - First time > 1000 / day
  - Average time enqueued -> complete: 9 minutes
## Time from check-in to deployed in test environment

<table>
<thead>
<tr>
<th>Time</th>
<th>Median</th>
<th>90th percentile</th>
<th>95th percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 month ago</td>
<td>~40m</td>
<td>~1h45m</td>
<td>2h+</td>
</tr>
<tr>
<td>Now</td>
<td>5m22s</td>
<td>20m27s</td>
<td>26m32s</td>
</tr>
</tbody>
</table>

## Test greenness

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Postmerge dev</td>
<td>297 / 453</td>
<td>(65.6%)</td>
</tr>
<tr>
<td>Postmerge staging</td>
<td>399 / 450</td>
<td>(88.7%)</td>
</tr>
<tr>
<td>Postmerge preprod</td>
<td>102 / 290</td>
<td>(35.2%)</td>
</tr>
</tbody>
</table>
Regression testing progress
This graph shows the percentage of tests automated over time from the regression test suite.
SATs vs Defects per Team

- Accounts: 2,023
- Workflows: 1,071
- Payments: 772
- TAC: 544
- XPL: 464
- Contracts: 120
Psychological safety

“Wherever there is fear, you will get wrong figures”

— W Edwards Deming
How to make metrics safe

- Teams involved in creating vision
- Consult with teams when deciding what to measure
- Testing team makes quality visible
- Let teams set their own targets
- Regular retrospectives on what is being measured
Conclusion

- Quality is subjective - what to focus on depends on many factors
- Start by creating a vision, selecting some metrics, and measuring
- What you measure will evolve, and will determine what teams work on
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