

Mobile Development

with Git, Gerrit & Jenkins

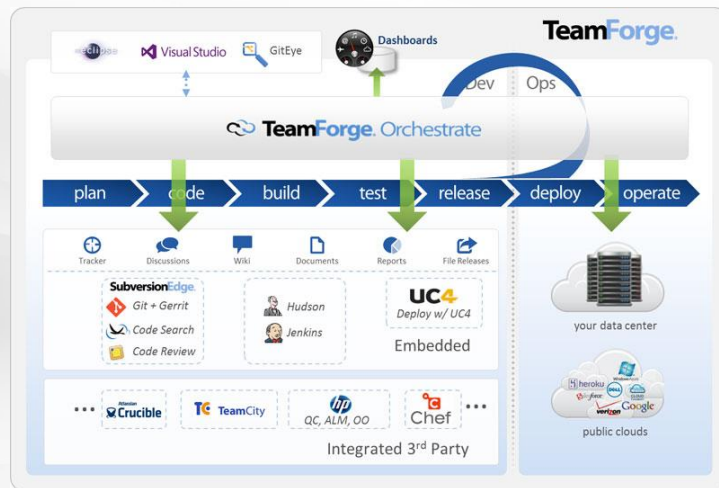
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About CollabNet

- Founded in 1999 (San Francisco) with Open Source roots
- ALM “leader” per Gartner, Forrester, Info-Tech (2012)
- 10,000+ customers
- **NEW:** TeamForge 7 with Orchestrate (manages Git, SVN, Jenkins, ...)
- Learn more at www.collab.net/teamforge7



About the Speaker



Luca Milanesio

Luca Milanesio is Director and cofounder of GerritForge LLP, the leading Git and Gerrit competence center for the Enterprise and key technology partner of CollabNet Inc. His background includes 20 years of experience in development management, software configuration management and software development lifecycle in large Enterprises worldwide. Just prior to GerritForge LLP, Luca was Technical Director and Senior Product of the Security and Compliance platform for Electronic Payments at Primeur in Italy and UK. Since starting GerritForge LLP, Luca contributed to the Gerrit community and allowed the introduction of Enterprise code-review workflow in large Enterprises worldwide. Thanks to GerritForge LLP and CollabNet Inc. TeamForge is now the most advanced ALM platform with integrated Git support and Code-Review for the Enterprise.

Agenda

- Introduction and concepts
- The Android development success
- Git, Gerrit and the Android Open Source Project (AOSP)
- Mobile ALM and Continuous Delivery for Android
- Mobile ALM steps
- Jenkins as Android Integration engine
- Android Delivery beyond development

Introduction and Concepts

- Git
 - Most popular emerging distributed SCM
- Jenkins
 - Most popular open source Continuous Integration
- Gerrit Code Review
 - Widely used code-review based on Git
- CollabNet® TeamForge®
 - Orchestrates the software delivery lifecycle, integrates Git, Gerrit, Jenkins and more.

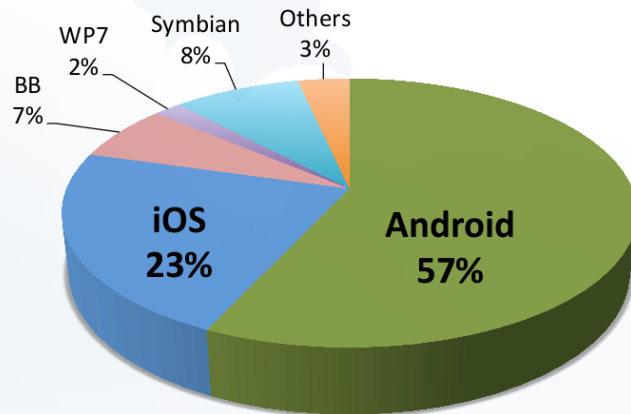


Android in numbers

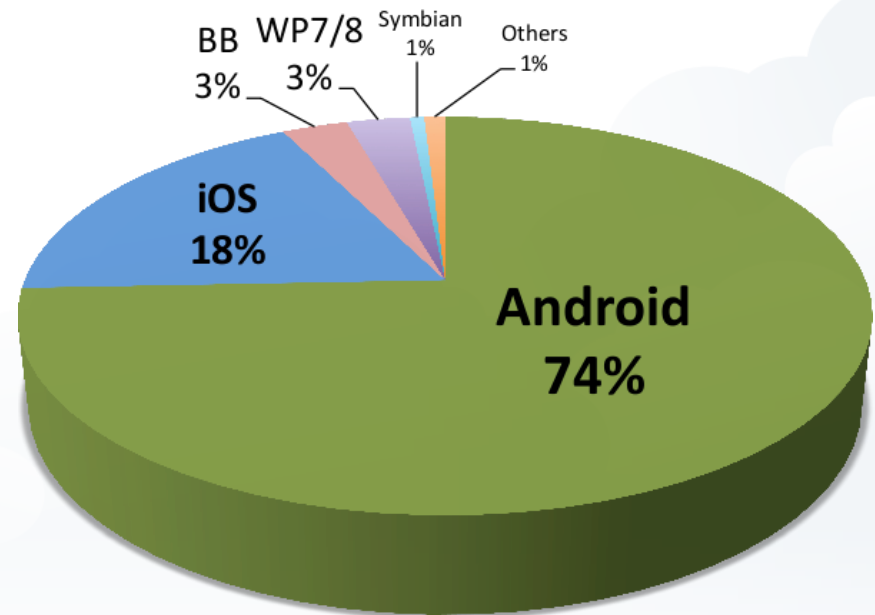
- Launch date: October 2008 (less than **5 years ago**)
- **> 850,000 Apps** / 40 BN Downloads

(Source: http://en.wikipedia.org/wiki/Google_Play)

1Q12 SmartPhones Units sold



1Q13 SmartPhone Units sold



Source:
<http://www.gartner.com/newsroom/id/2482816>

Reasons behind the success

#1



open source
initiative

#2



#3



Developers
Community
contribution

Tools that made Android king



- Branch / merge for OEMs
- Distributed = scalable



gerrit

Gerrit Code Review

- Private vs. Public branches
- Open review to everyone

repo COMMAND OPTIONS

- Manage multiple Git repo
- Simplify workflow



Git and Android

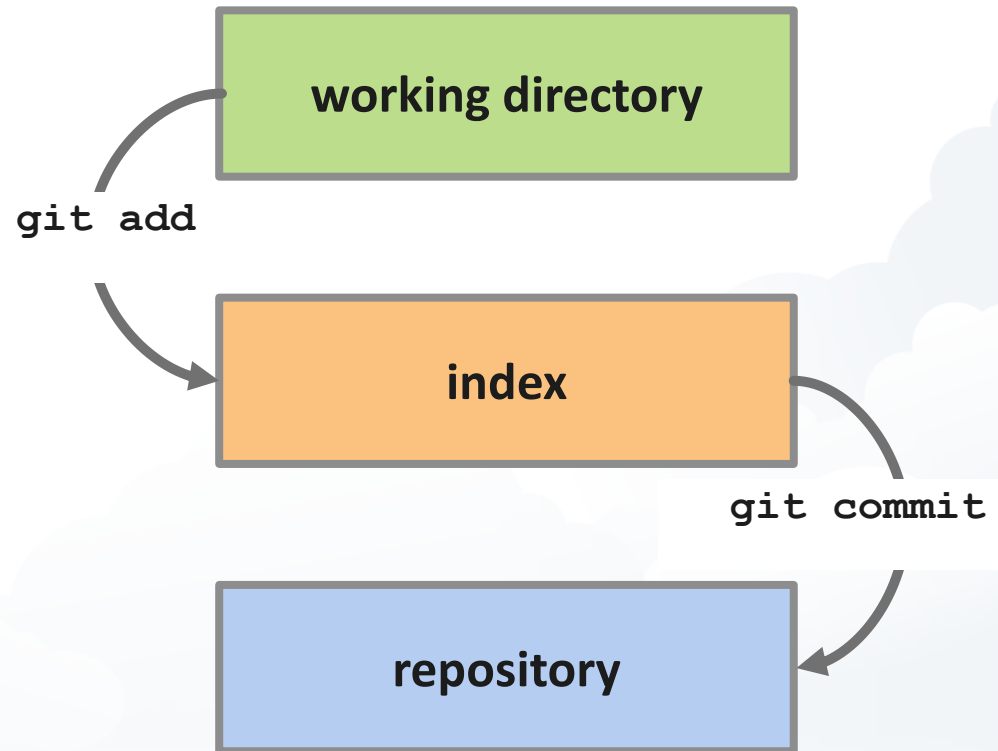
Why **Git is perfect** for Android development ?

1. Android Development cheat-sheet

- TOPIC branches
- Superior merge

2. Development goes off-shore

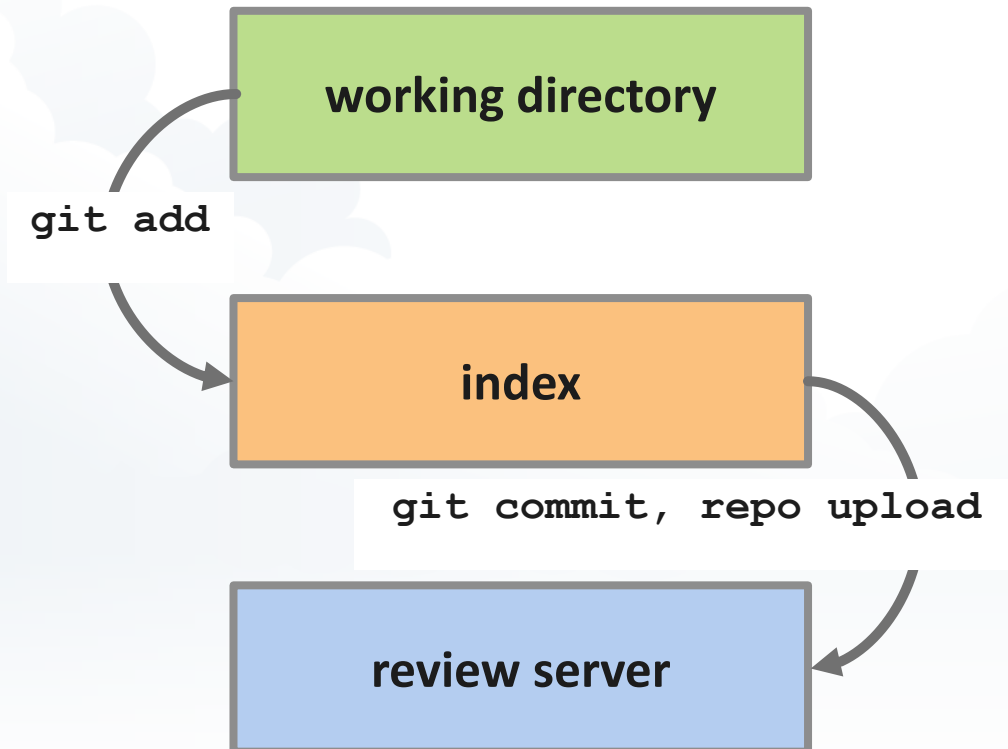
- Distributed
- Pull model = secure



Gerrit and Android

Why on earth **Gerrit become popular** with Android ?

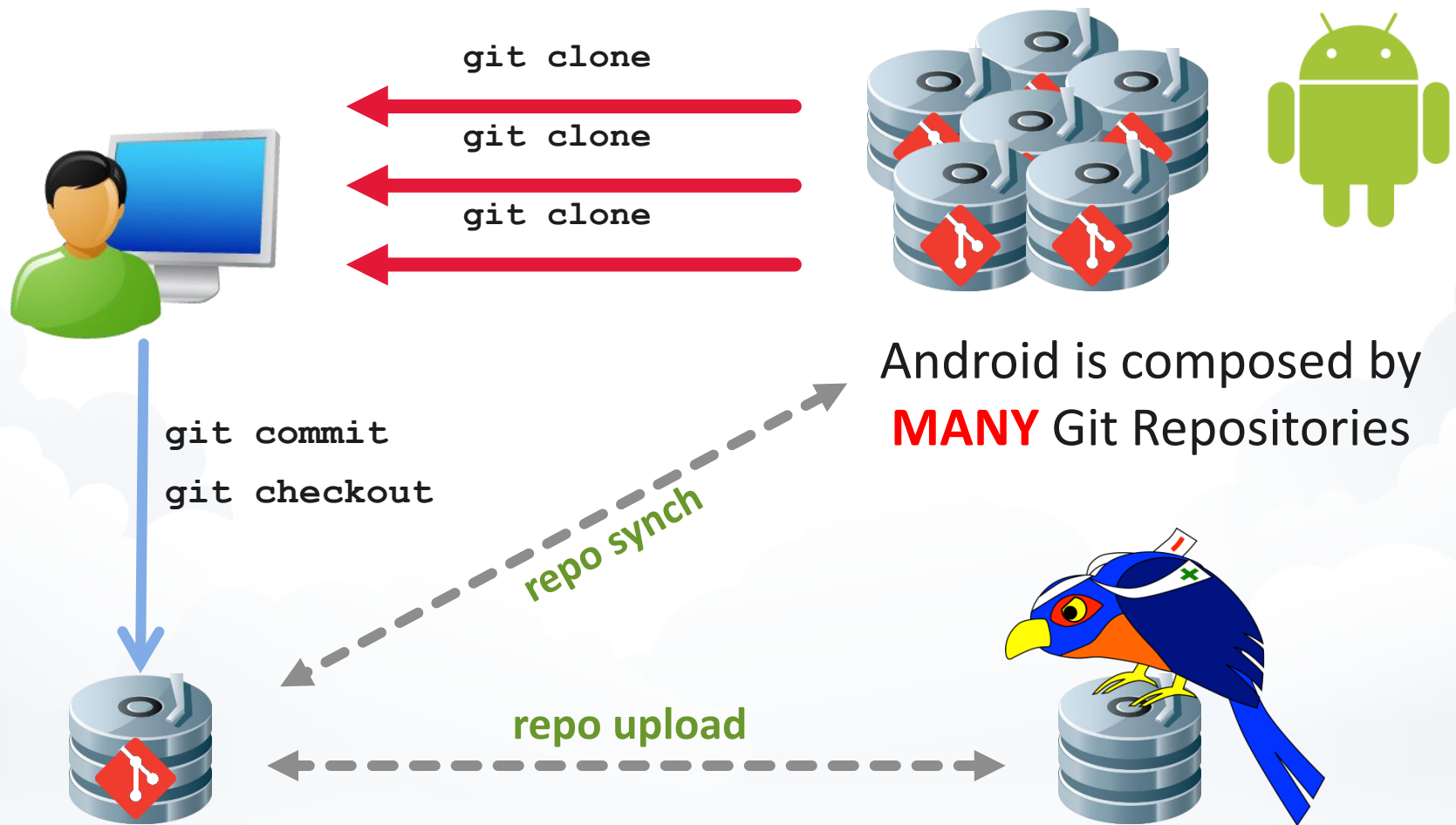
- Google cheat-sheet uses a "review server"
- Android needed to be Open and Collaborative



Benefits

- Get Android source for developing
- Get bug-fix free !
- Build Android eco-system
- Code Review as center of idea/code/test flow

Why "repo tool" and Android ?



Poll: SCMs used for your Mobile Development ?

1. Git
2. Subversion
3. Perforce
4. Mercurial
5. Others

Agile lifecycle in Mobile Development

Git + Gerrit + repo = problem solved ?



Time-to-market

Lead time to MVP ?
(Minimum Viable Product)



Fast feedback

Intuitive UX ?

Do people use it ? Like it ?



Continuous-Beta delivery

Reaction time vs. bugs ?

Can deliver one
feature only ?

A/B experiments ?

More challenges



Y2008/2009



2010 ... 2013

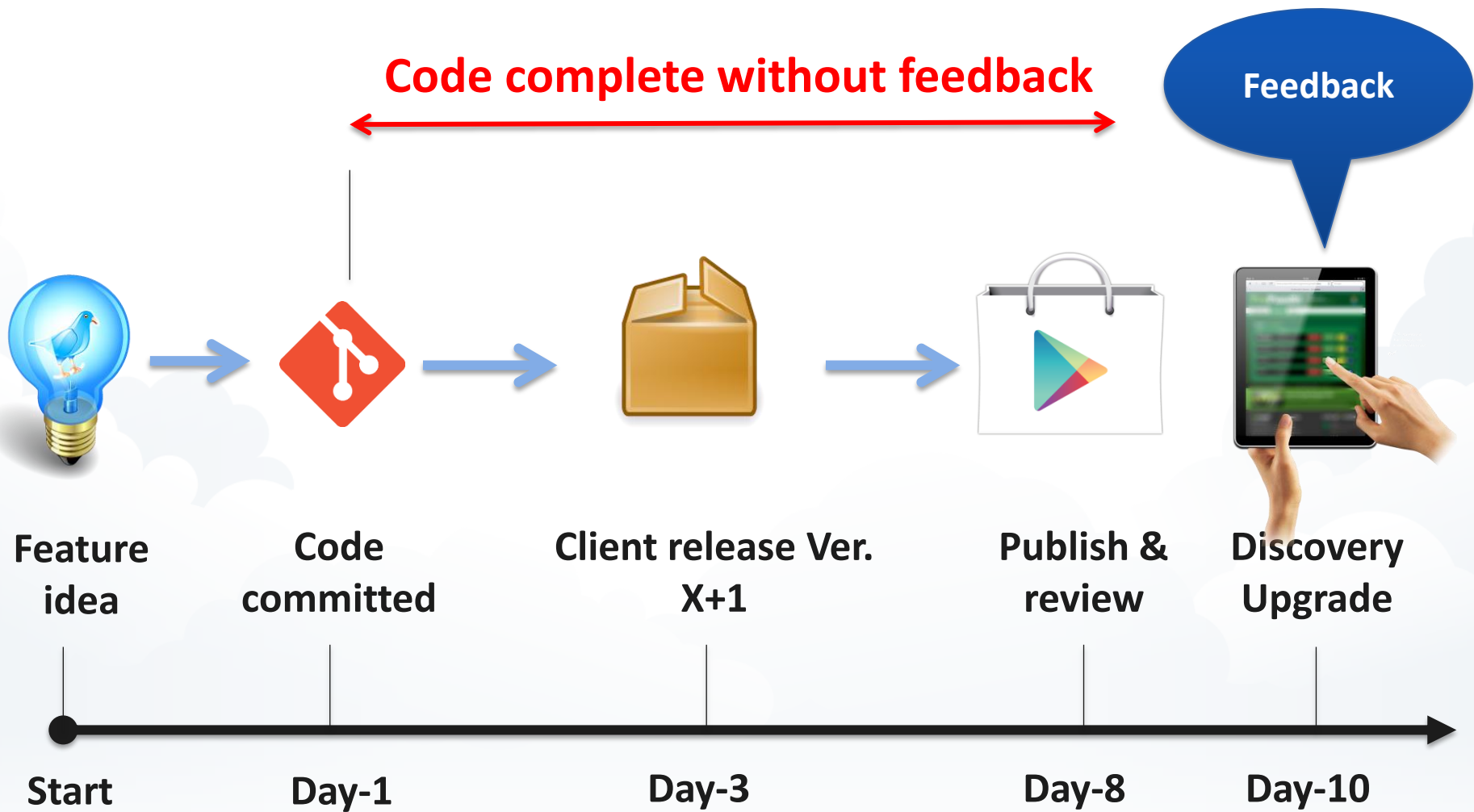


1x OS Version
1x Screen-size
1x Form-factor

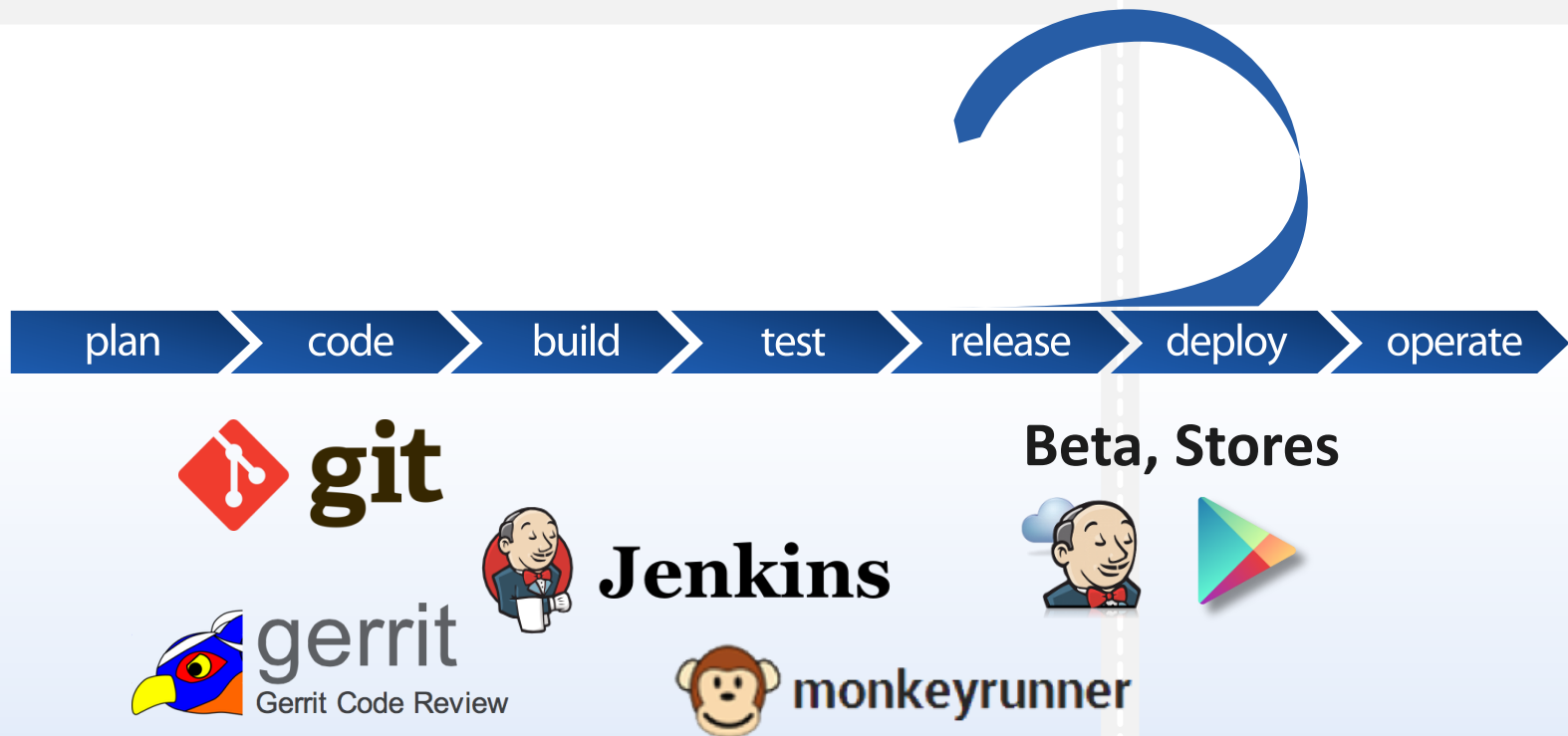


3x Major OS Versions + OEMs customizations
5x Screen-sizes (or more)
4x Pixel densities
4 Form-factors

... and even more challenges !



Tackling the Mobile challenge - ALM



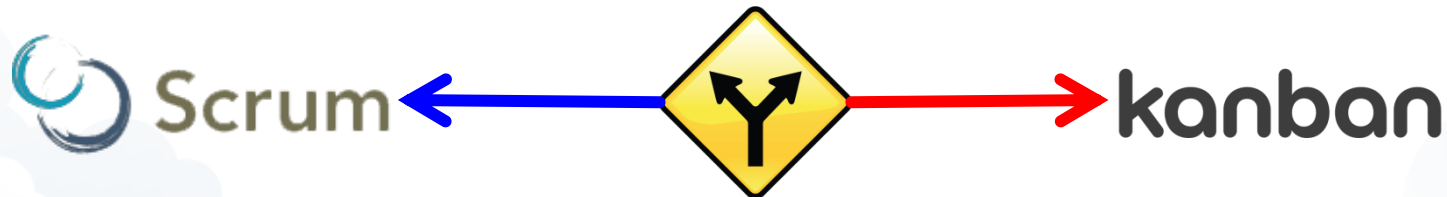
Poll: how often do you release to production ?

1. Weekly
2. Monthly
3. Quarterly
4. For every new feature
5. Others

Lifecycle: from SCRUM to Kanban

**Project
aspiration**

**Users'
real world**



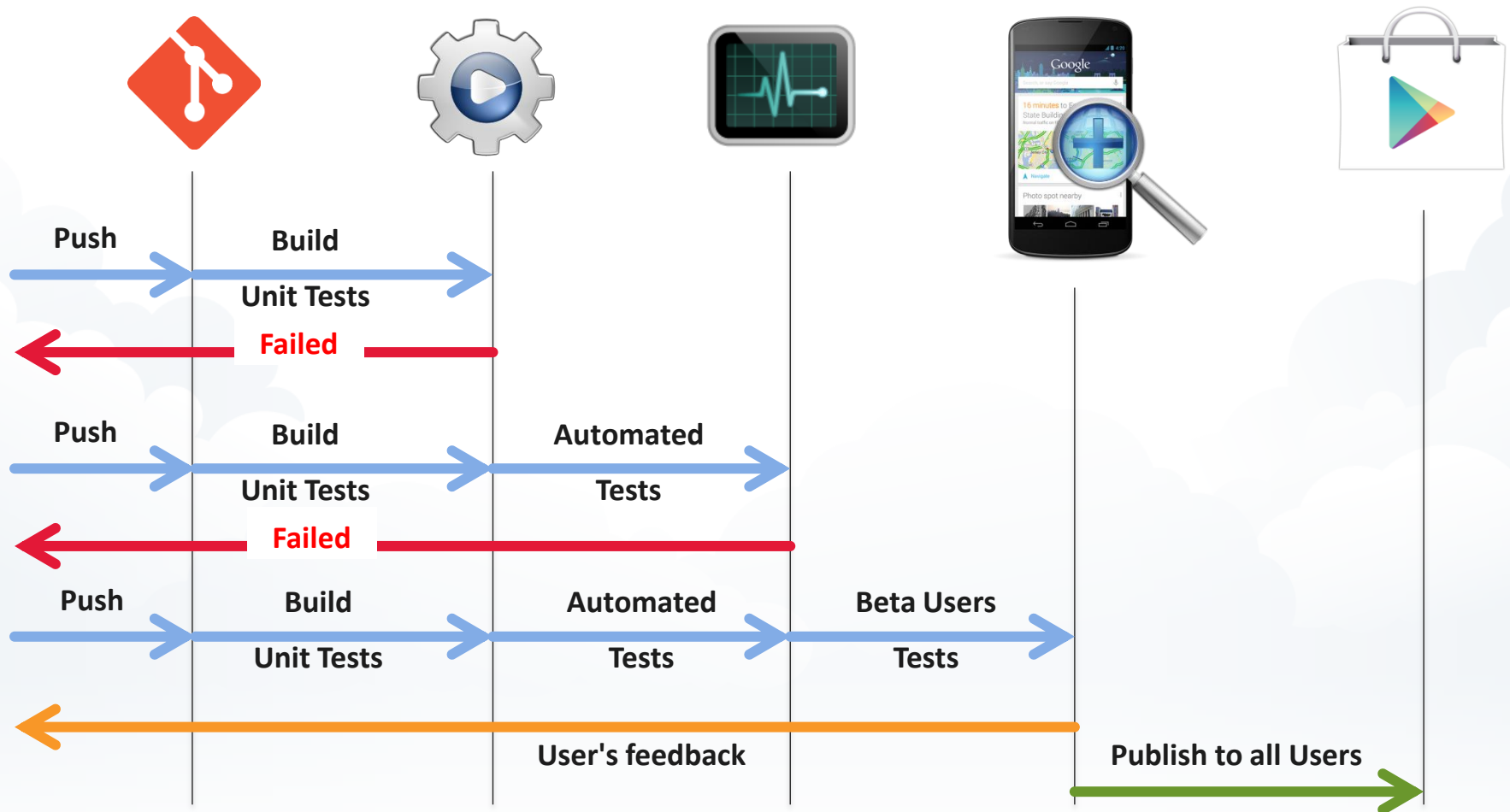
- Prescriptive
- Time-boxed
- Sprints iteration

- Adaptive
- WIP boxed
- Features iteration

Kanban is a Scrum sprint made of one feature

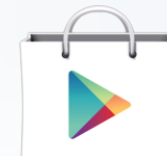
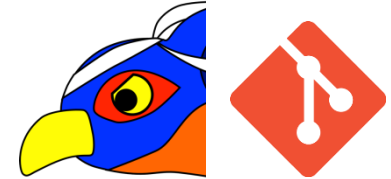
Continuous delivery for Mobile ?

Shortening the loop with Kanban-style delivery



Mobile ALM in a real-life example

1. Get Android source using repo tool
2. Create a new project in Git using Gerrit
3. Start a new Android project with ADT / AS
4. Configure Jenkins for Building and unit-test
5. Using Beta-testing distribution with Jenkins
6. Public and manage feedback loop



Mobile ALM (1) – New Project setup

- Get Android source

```
repo init -u  
repo sync development
```

... have Android at your fingertip !

- Start a new project

- Using ADT (Android Development Tool): Ant-style Project
- Using AS (Android Studio): Gradle-style Project

- Push to Git

Local Git repo

```
repo sync MyApp  
git add . && git commit -m "Initial commit"
```

Push to remote

```
repo update MyApp
```

repo COMMAND OPTIONS



Mobile ALM (2) – Build and automate

Build on Jenkins

- Git + Gradle plugin
- Archive `**/*-debug-*.apk`



Invoke Gradle script

☐ Invoke Gradle

☒ Use Gradle Wrapper

Make gradlew executable ☒

From Root Build Script Dir ☐

Build step description

Switches

Tasks

Test with [Monkeyrunner](#)

- Develop Python test scripts
- Run with Android emulator + Monkey runner plugin



Android monkey test: Succeeded after 5,000 events



Android monkey test: Crashed after 4,997 of 5,000 events

Acceptance test on real devices
(i.e. Test-cloud services on real handsets)

Mobile ALM (3) – Beta testing and feedback

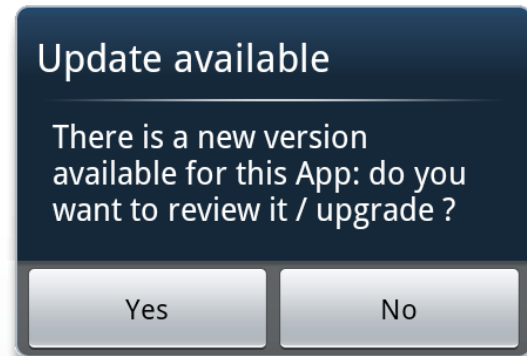
Get **early adopters** on-board !

- Select A/B users for Beta-testing
- Experiment new features



Feedback is the driver

- Engage for updates
- Show off your features
- Ask for rating, problems and ideas



Integrate with your **Application Lifecycle**

- Choose Mobile-enabled ALMs
- Bring feedback to Developers



Poll: how do you release on Android ?

1. Build from AS/ADT or Eclipse
2. Manual scripts using Ant / Gradle
3. Jenkins
4. Other continuous integration tool

Enable Jenkins with Android plugins

Updates	Available	Installed	Advanced
Enabled	No		
<input checked="" type="checkbox"/>	Android Emulator Plugin	Starts an Android emulator with given properties before a build, then shuts it down after.	
	Ant Plugin		
	CollabNet Plugins	This plugin includes integrations for code review, document uploader, authentication/authorization, and Project Build Library.	
<input checked="" type="checkbox"/>	Gerrit Trigger	This plugin integrates with Gerrit code review.	
<input checked="" type="checkbox"/>	Git Client Plugin		
<input checked="" type="checkbox"/>	Git Plugin	This plugin integrates GIT with Jenkins.	
<input checked="" type="checkbox"/>	Jenkins Gradle plugin	This plugin allows Jenkins to invoke Gradle build scripts directly.	
	Jenkins promoted builds plugin	This plugin implements a "promoted build" feature that can be marked as "promoted" when it passes certain criteria.	

Validate changes
before **Review**

Run **Android emulator** during build
Execute **Monkeyrunner**

Orchestrate with **TeamForge**
Issues planning, Build and
Test feedback loop

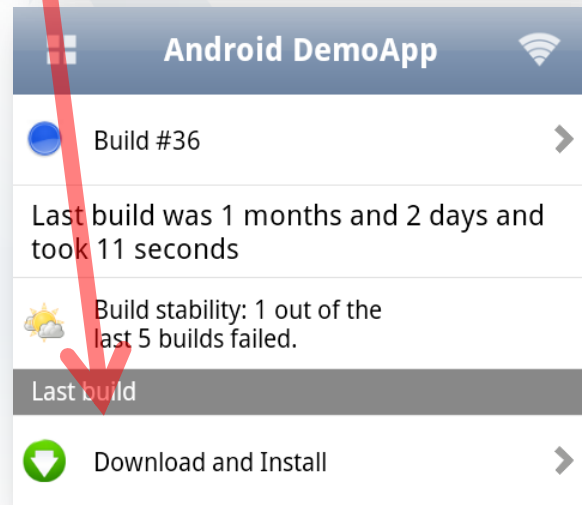
Fetch code from **Git**
Trigger build on changes

Progress
Continuous
Delivery phase

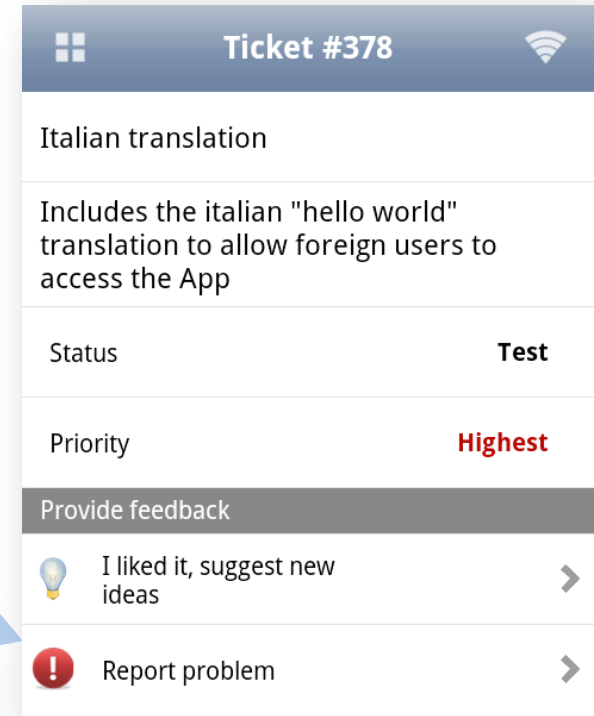
Build Android
Gradle Projects

Use Jenkins for Android Beta installs

Leverage Jenkins from **Android**

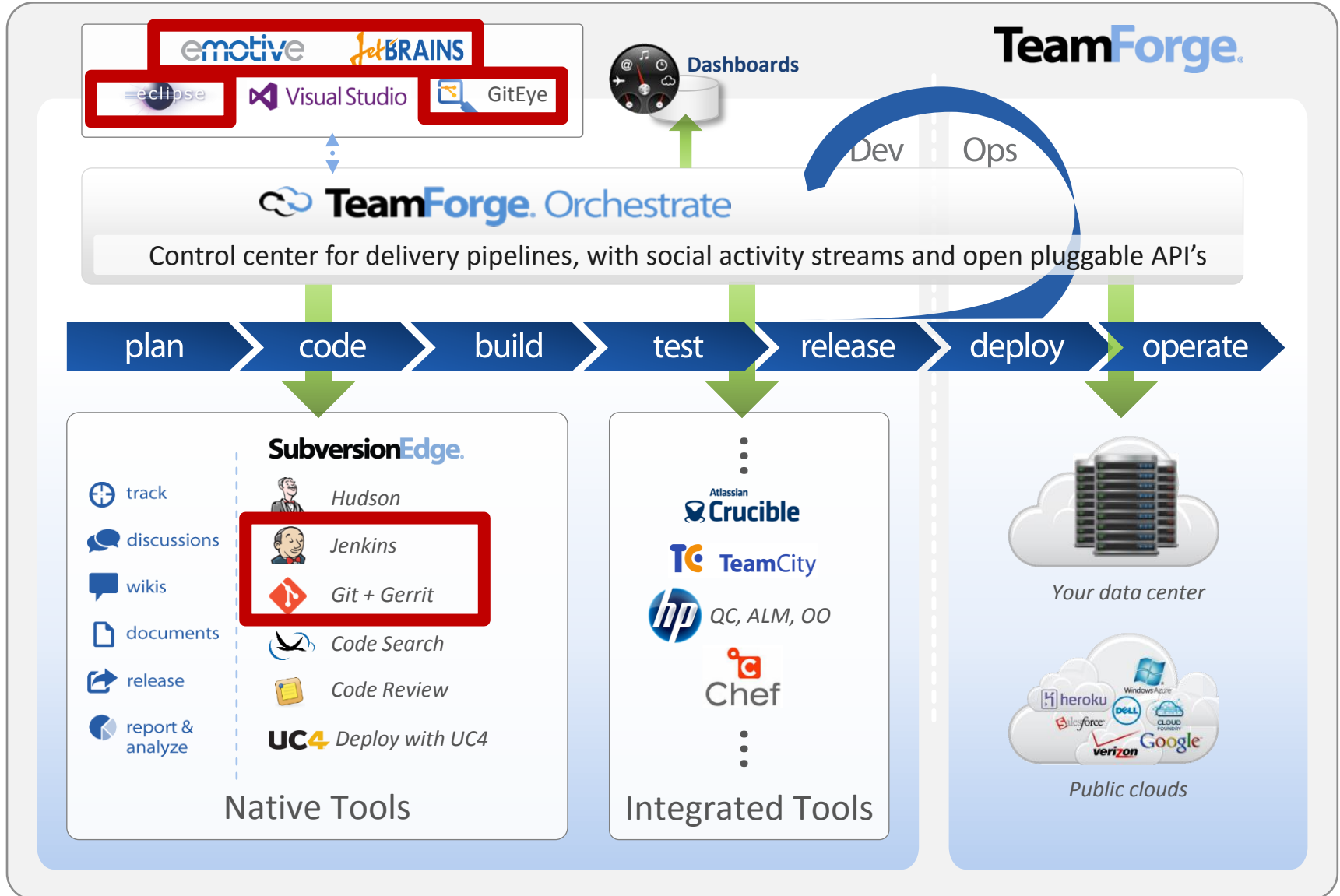


Drive **feedback** back to the Project with **TeamForge**



Deliver **Betas to testers** handsets directly from Jenkins with one TAP

TeamForge = ALM ready for Mobile Development



NEW: TeamForge 7 with Orchestra

The image displays two screenshots of the TeamForge 7 web interface, specifically the Orchestra feature.

Left Screenshot: Associations List

The top navigation bar includes: TeamForge by CollabNet, Projects, My Workspace, Admin, History, More, and a search bar with 'proj1011'. The main menu includes: Project Home, Trackers, Tasks, Source Code, Build & Test, File Releases, Documents, Wiki, Discussions, Reports, Orchestra, Review Board, and Project Admin.

The 'Orchestra' section shows 'Pipelines / Activity Stream'. Under 'ASSOCIATIONS', there is a 'Trace associations' button and a list of items:

- 4 ORC-150 Orc-Crucible
- 4 ORC-143 Orc-Crucible
- 3 2622 Integration Tests
- 3 2642 PSR Tests
- 3 2618 Integration Tests
- 3 2638 PSR Tests
- 3 2588 Integration Tests
- 3 2606 PSR Tests
- 3 2587 Integration Tests
- 3 2605 PSR Tests
- 3 2560 Integration Tests
- 3 2570 PSR Tests
- 3 2559 Integration Tests

Right Screenshot: Review History and Network Diagram

The top navigation bar is identical to the left screenshot.

The 'Orchestra' section shows 'Pipelines / Activity Stream'. The 'REVIEW HISTORY' section shows:

- 05/08/2013 1:00 PM PDT: Status changed
- 05/08/2013 1:00 PM PDT: Status changed
- 05/08/2013 8:57 AM PDT: User epinault reviewed the code
- 05/07/2013 1:14 PM PDT: User kcula reviewed the code
- 05/07/2013 11:03 AM PDT: User mchwahns reviewed the code

The main area displays a network diagram with nodes and connections. A tooltip for '4 ORC-143 Orc-Crucible' is visible.

Learn more: www.collab.net/orchestra

Beyond development

Mobile Applications are KEY to clients' engagement

- **User experience** clean and effective
- **User involvement** in the Delivery Lifecycle
- User **feedback managed in real-time**



Summary

- Android development sits on the shoulders of Git, Gerrit
- Continuous Delivery is perfect for Android
- How to adopt Mobile ALM in simple steps
- Use Jenkins effectively as continuous integration for Android
- What you should do beyond Android development



Learn More

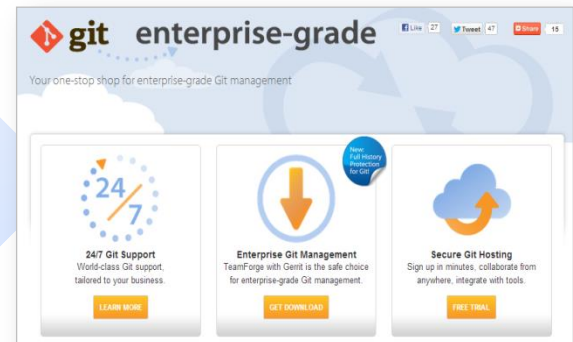
TeamForge 7 with Orchestrate

<http://www.collab.net/teamforge7>



Git / Gerrit – Technical Resources

<http://www.collab.net/git>



GitEye – FREE Git client desktop

<http://www.giteyeapp.com>



Questions?

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About CollabNet

CollabNet is a leading provider of Enterprise Cloud Development and Agile ALM products and services for software-driven organizations. With more than 10,000 global customers, the company provides a suite of platforms and services to address three major trends disrupting the software industry: Agile, DevOps and hybrid cloud development. Its CloudForge™ development-Platform-as-a-Service (dPaaS) enables cloud development through a flexible platform that is team friendly, enterprise ready and integrated to support leading third party tools. The CollabNet TeamForge® ALM, ScrumWorks® Pro project management and SubversionEdge source code management platforms can be deployed separately or together, in the cloud or on-premise. CollabNet complements its technical offerings with industry leading consulting and training services for Agile and cloud development transformations. Many CollabNet customers improve productivity by as much as 70 percent, while reducing costs by 80 percent.

For more information, please visit www.collab.net.



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