Continuous Delivery

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About us

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Some Facts

- 1.3 billion people are using Nokia devices worldwide
- Devices sold in 220 countries/territories
- Symbian available in 180 languages

- Since the start of this talk:
  - 1K+ Nokia devices were made and sold (13/sec)
  - 15M+ phone calls were made using Nokia phones
  - 3M+ text messages were sent using Nokia phones

Maps Infrastructure

- Yahoo
- Microsoft
- Sina and Tencent

Agenda

- Introduction to Continuous Delivery
- The problem of delivering software
- Impact on development
- Continuous Integration
- Deployment Pipelines
- How are we doing it
- Summary

What is Continuous Delivery?

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Why Continuous Delivery?

- Twelve Principles behind the Agile Manifesto: “Our highest priority is to satisfy the customer through early and continuous *delivery* of valuable software”
- Consumer feedback
- Small Releases reduce risk
- Improves! Testing processes

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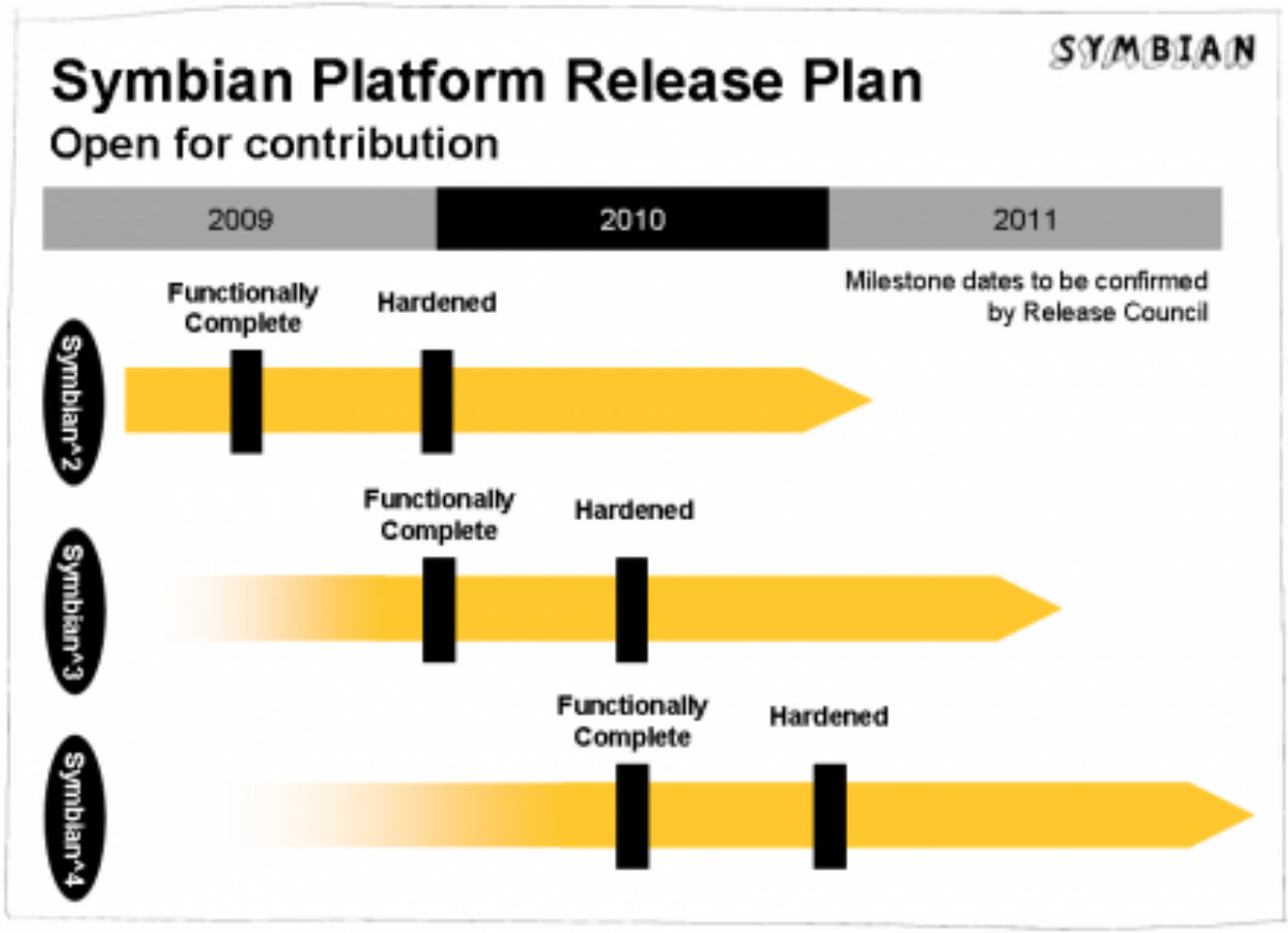
Traditional Release Processes



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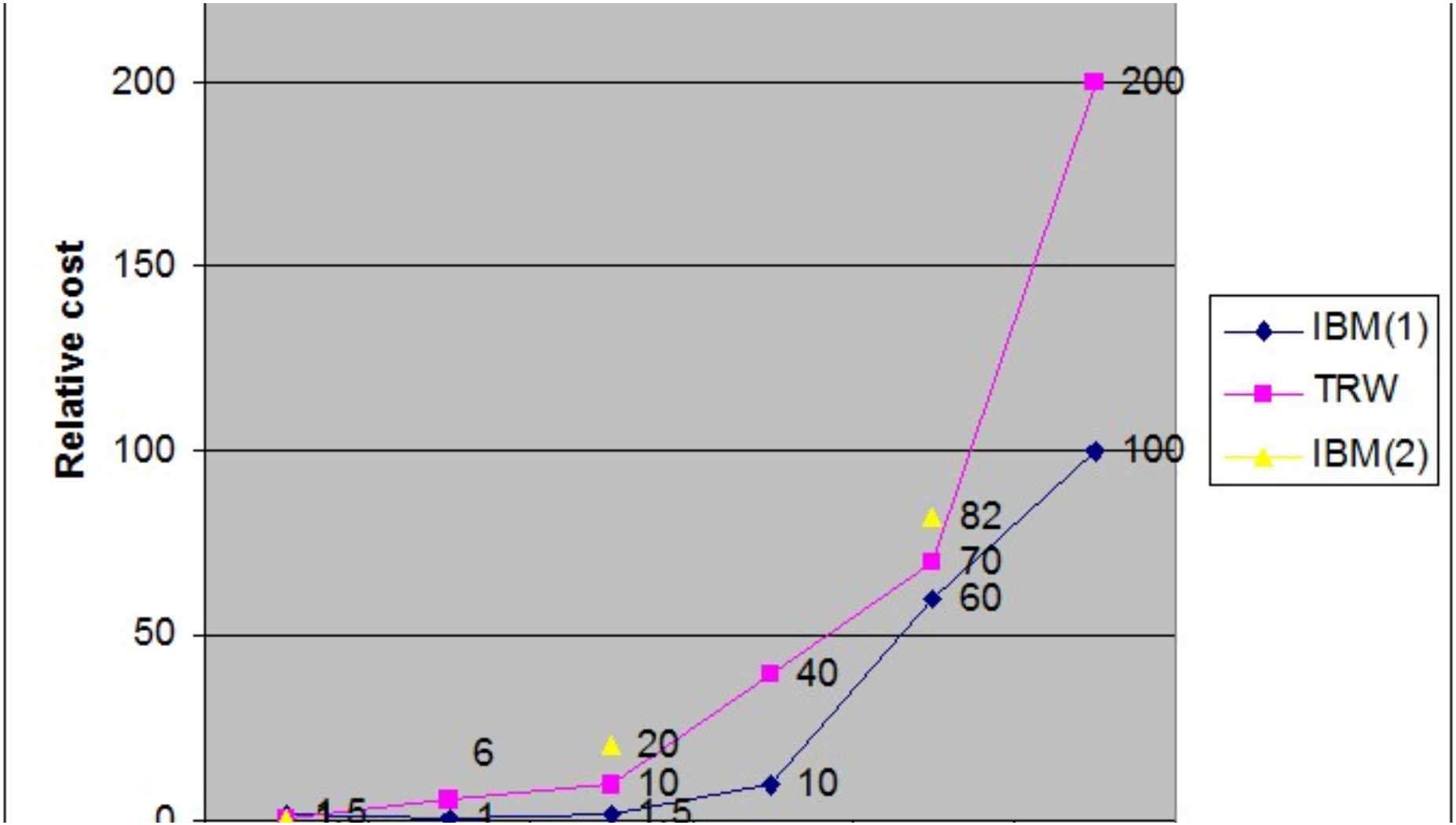
Cost of defects



Discussion about Continuous Delivery

- “I like that idea - Just point the Apache or IIS config at your dev directory and call it a day. Every Ctrl-S is a deploy.“

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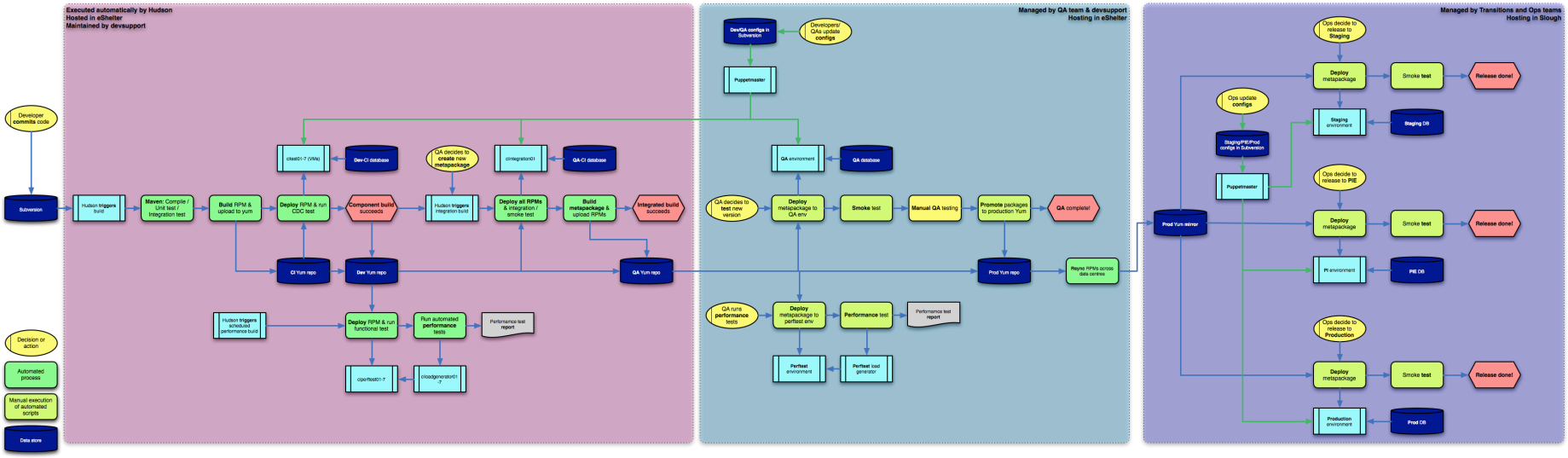
Nokia Build Pipeline



Evolution of Software Integration

- Phase 1: Manual Integration done by software engineers (Cowboy coding)
- Phase 2: semi manual integration done by integration teams (StarOffice)
- Phase 3: Continuous Integration
- Phase 4: Continuous Deployment
- Phase 5: Continuous Delivery

Continuous Integration – Reducing Risks

- Lack of deployable software
- “It works on my machine”
- Late Discovery

Continuous Integration

- Don’t check in on broken build
- Commit often – every commit triggers a build
- Always run tests locally before checking in
- Never go home on a broken build
- Test in production clone (incl. DB)
- Keep build fast/visible
- Don’t comment out failing tests

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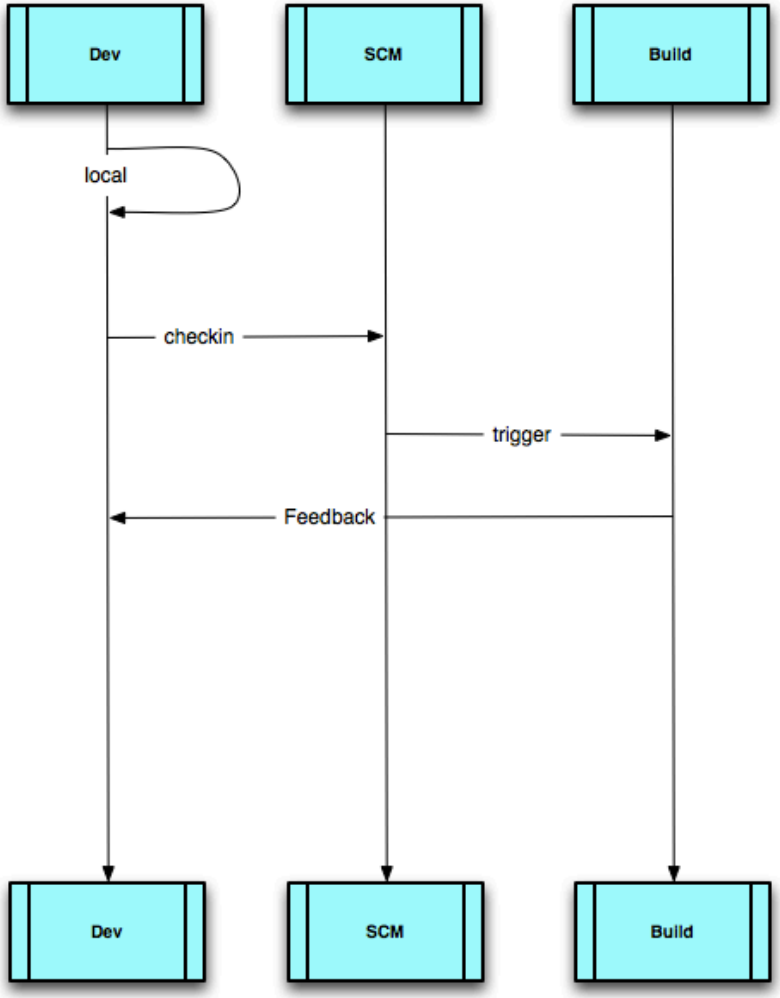
Builds and Testing

- Automate Builds
- Automate Tests – no broken builds!
- Publish latest distributable (deploy mechanism)

Fail Fast Pattern

- The key concept is to *fail early*
- Within the software
- During Build and Testing

Basic Continuous Integration



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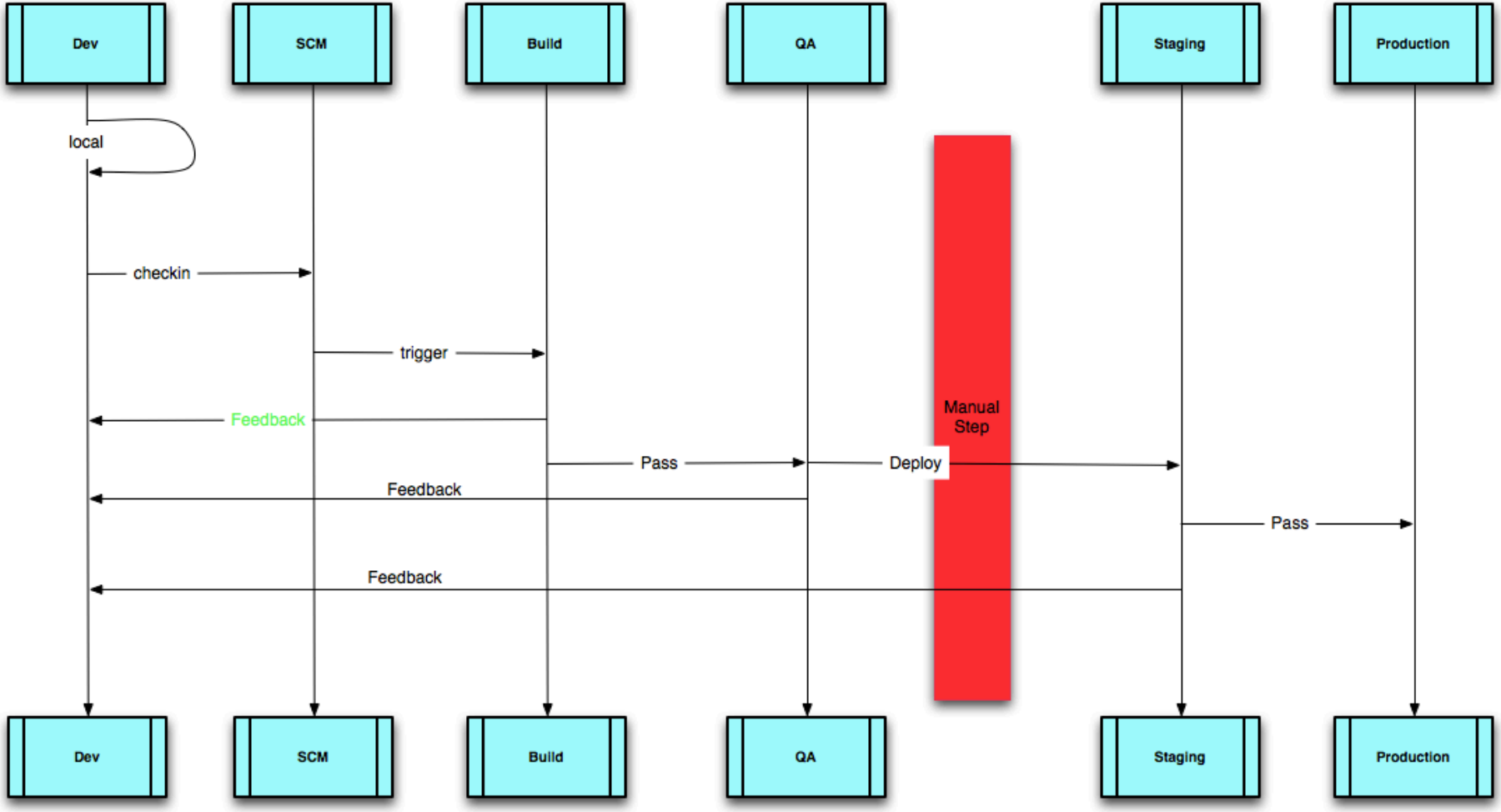
CI extended



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Build/Deployment Pipelines

- Long Builds
- Every Build contains lots of changes?

Build/Deployment Pipelines

- Also called “staged build”

- Build separated into different stages

Impact on development

- What needs to be changed to continuously deliver?

- ???

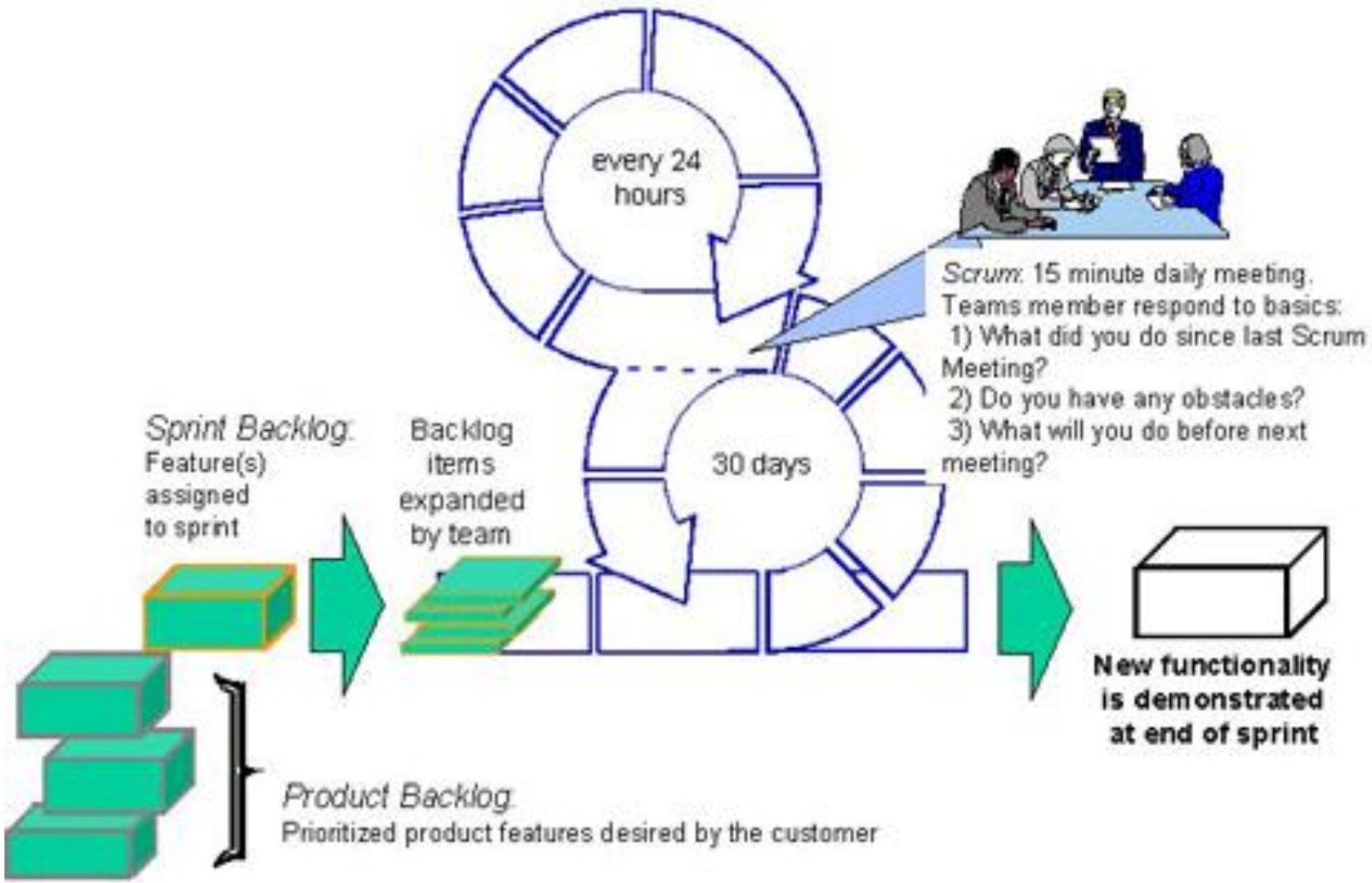
First step in a project

- Deploy an application doing just “System.out.println (“Hello World”) to production

Process

- Which process is the right one?

Scrum and Continuous Delivery



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The last mile

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How to work?

- Branches <–> Feature Flags
- Continuous Integration
- Build
- Deploy Mechanism
- Environments

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Feature Flags

```
<% if test_tag?("sharethis") %>
  <script type="text/javascript”
                src="http://s7.addthis.com/js/250/
addthis_widget.js">
  </script>
<% end %>
```

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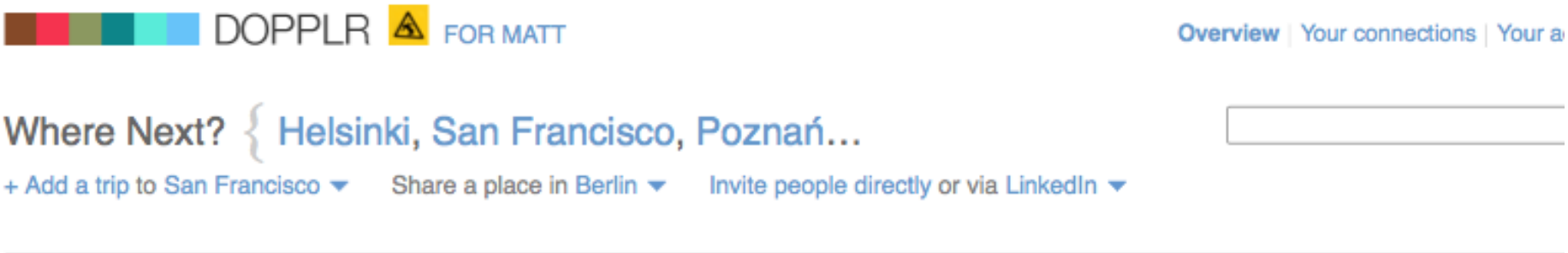
Feature Flags – Control Panel



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Everything in Continuous Delivery?

- Database changes?
- Architectural changes?
- New Features?

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Database Changes ?

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Architectural changes?

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New Features ?

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Attitude change for developers

- Throw it over the wall attitude or “the QA will find my mistakes anyway” is gone
- Developers are responsible for the quality of their code
- Every commit will be live very soon!
- Strong cooperation between developers and ops

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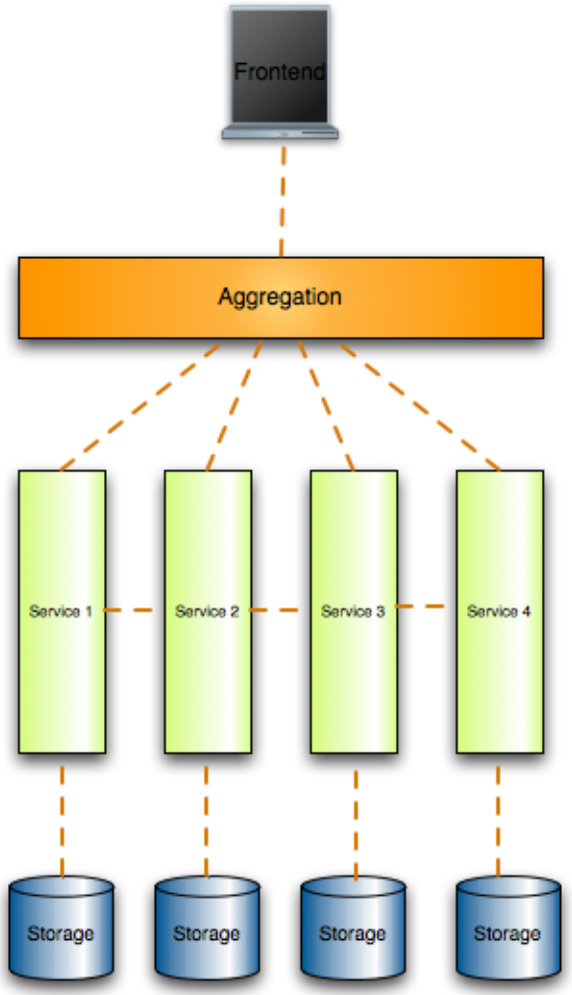
How are we doing it?

Architecture



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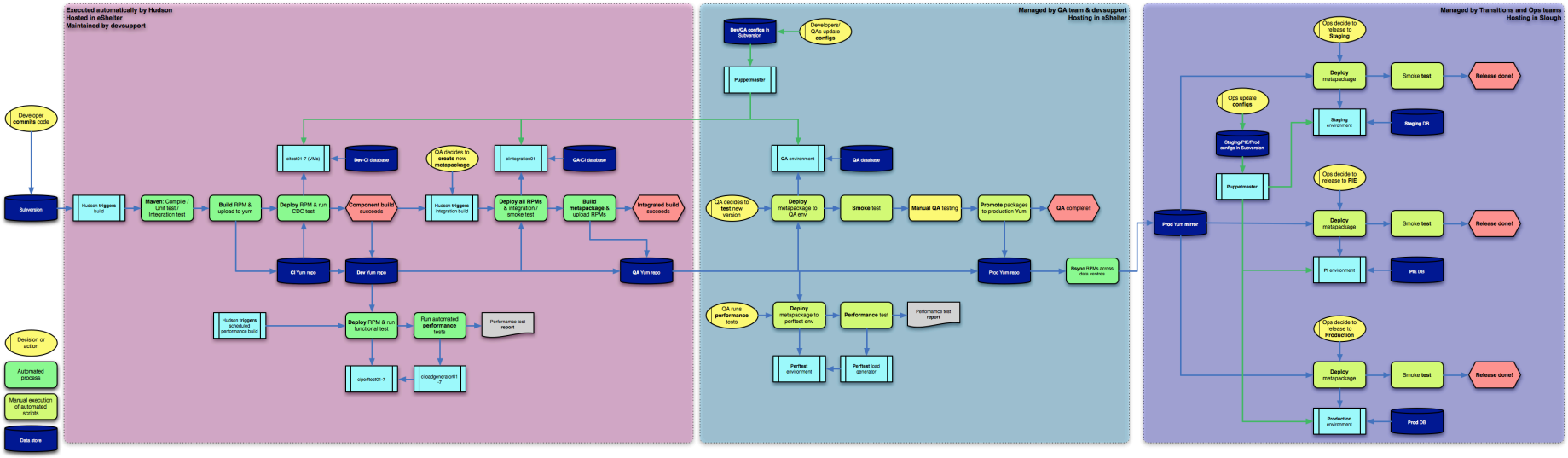
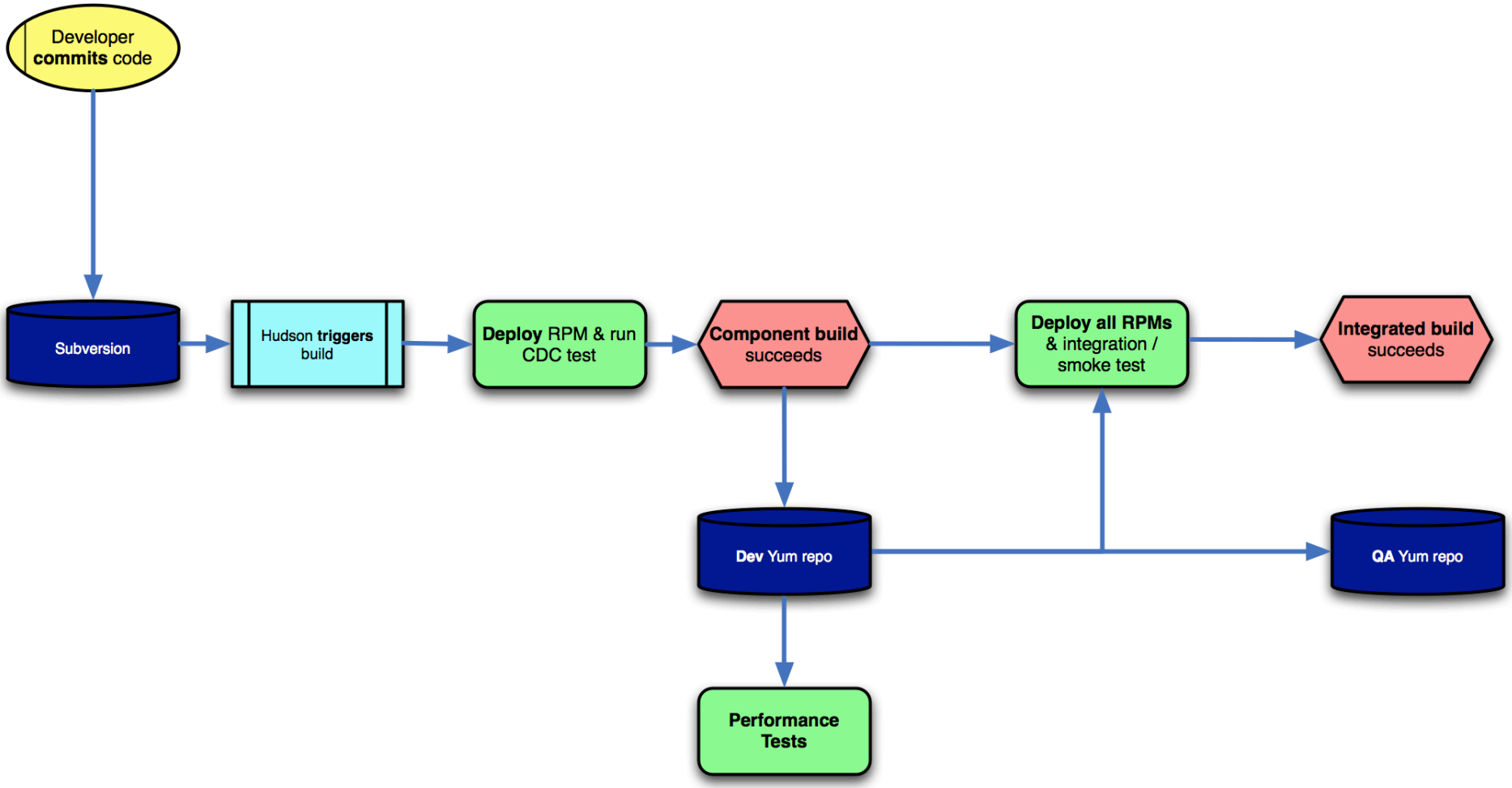
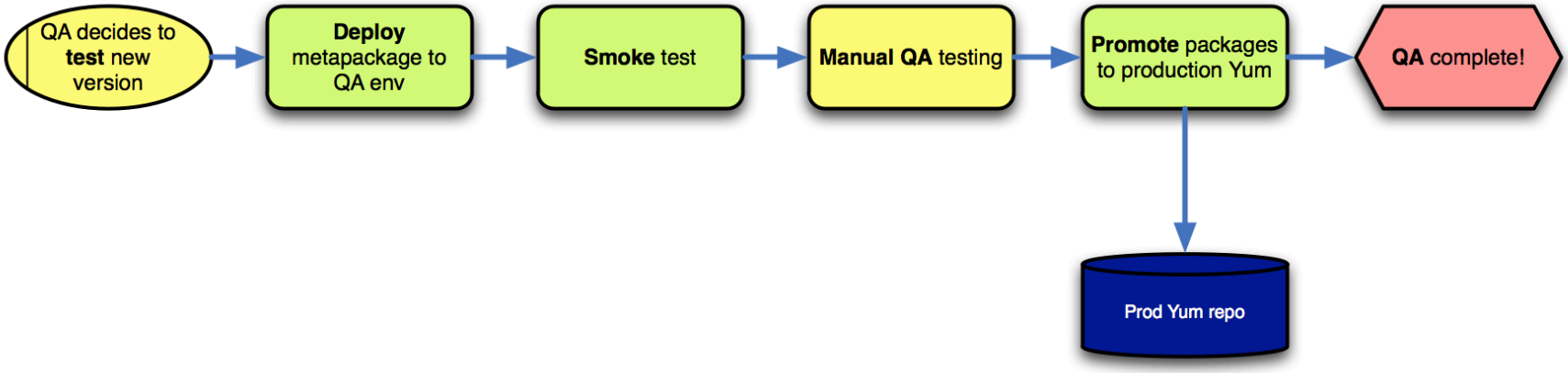
Nokia Build Pipeline



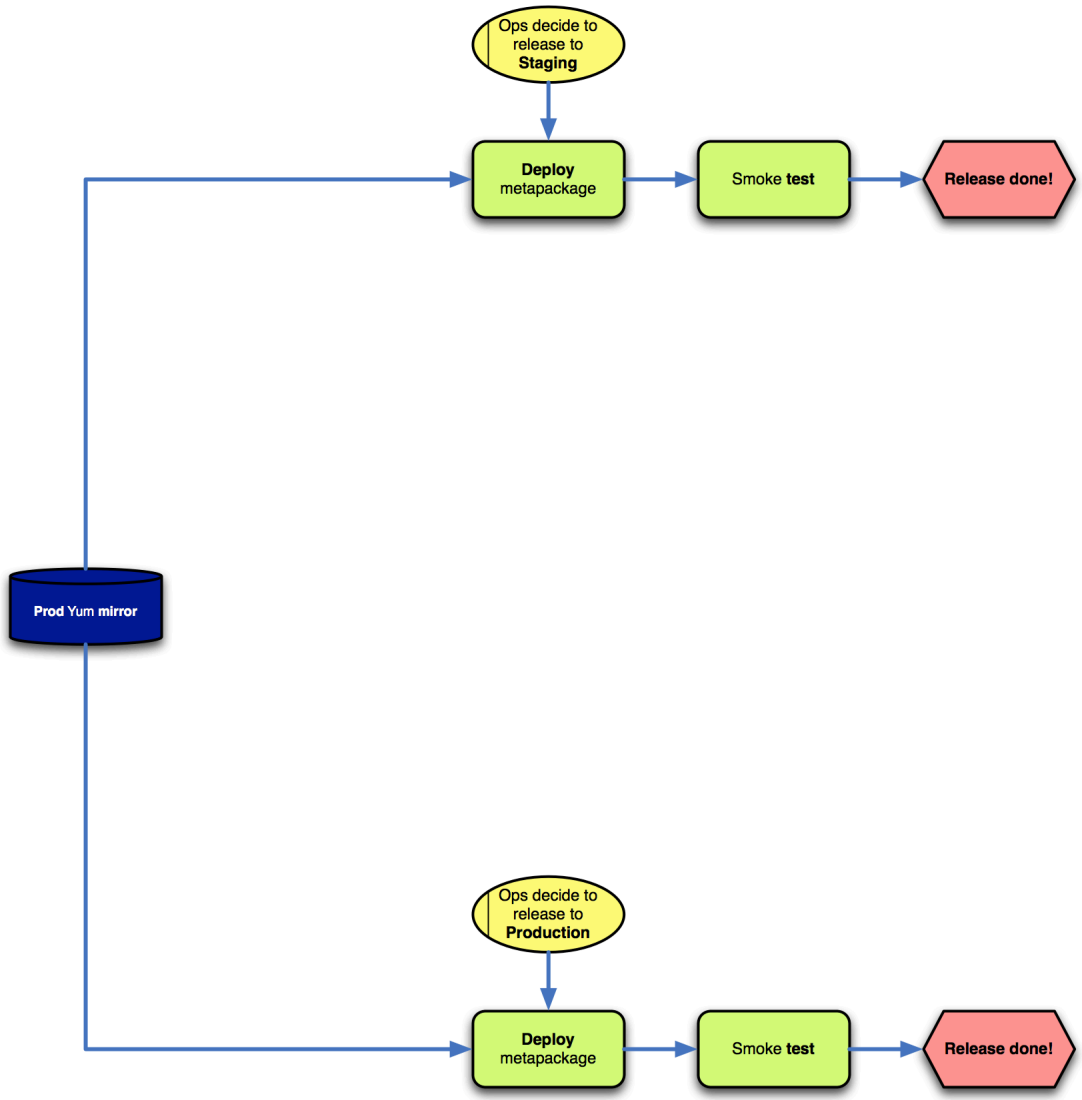
Dev Part


Developer **commits** code
Subversion
Hudson **triggers** build
Deploy RPM & run CDC test
Component build succeeds
Deploy all RPMs & integration / smoke test
Integrated build succeeds
Dev Yum repo
QA Yum repo
Performance Tests

QA Part


QA decides to **test** new version
Deploy metapackage to QA env
Smoke test
Manual QA testing
Promote packages to production Yum
QA complete!
Prod Yum repo

Staging/Production Part



Testing in Continuous Integration

- Important: Builds are working and don’t take too much time
- Selenium Tests (Frontend Automation) – only core use cases

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Testing on QA Environment

- Loadtests
- Manual Tests
- Complete Frontend Automation

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QA Roles

- Backend Teams have software engineers as test automation specialists
- They also work on acceptance criteria and verify stories
- Test Integration group (Loadtesting, resp. for environments)
- FE teams have manual testers

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Device and Localisation Testing

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Deployment/Monitoring

- Code is deployed to small fraction of live servers
- Live Monitoring
- Rollback mechanism (databases and code)

Who is doing CD?

Who could use Continuous Delivery?

- Consumer facing applications – constant innovation expected
- Obviously Continuous Deployment should be possible (no device software) – rollback option

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Who should be cautious about Continuous Delivery?

- Revenue & security critical projects
- In general: Software were a simple rollback does not solve all issued
- Software in maintenance mode

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Summary

- Use Continuous Delivery as a vision for your development processes

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Thanks!

Q&A

Links

- http://www.slideshare.net/ChristopherRead/continuous-integration-build-pipelines-and-continuous-deployment
- http://www.developsense.com/blog/2009/03/50-deployments-day-and-perpetual-beta/
- http://blog.lastinfirstout.net/2009/03/continuous-deployment-debate.html
- http://www.startuplessonslearned.com/2009/06/why-continuous-deployment.html

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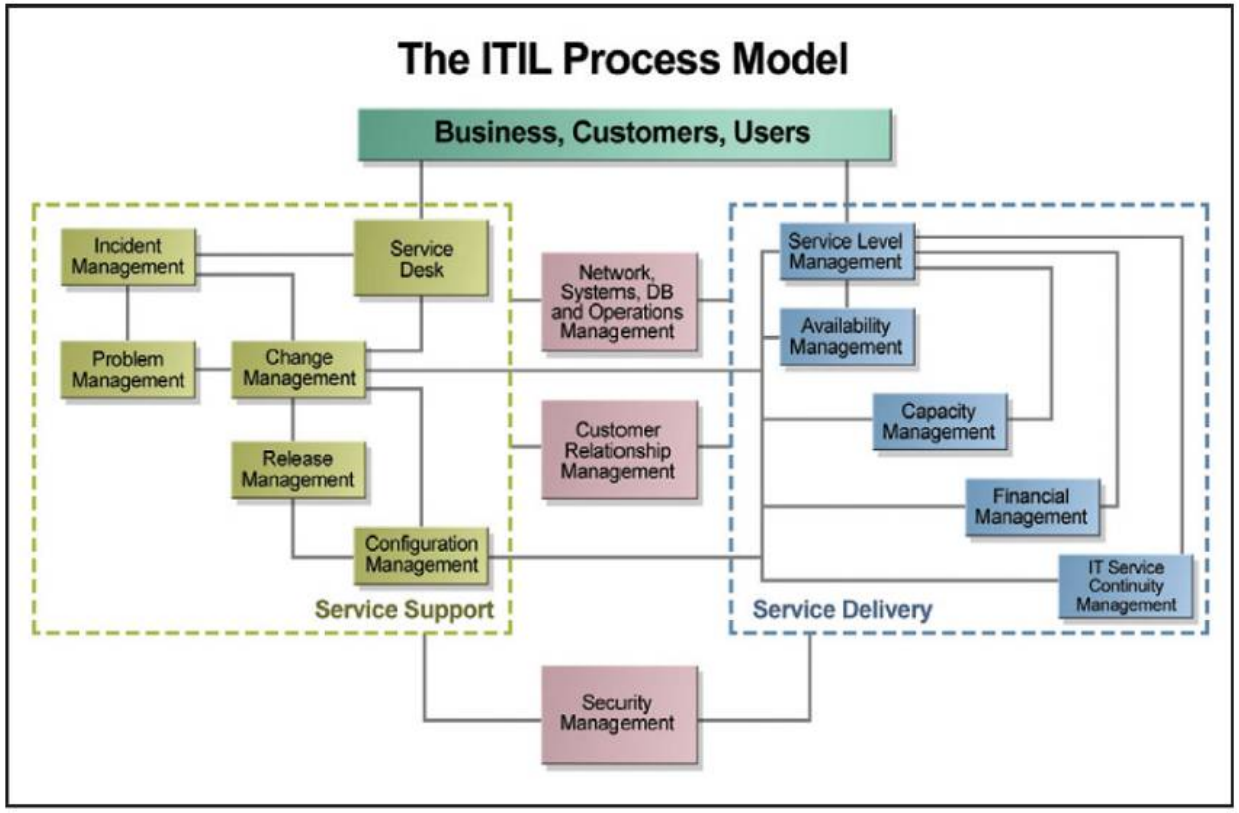
ITIL and Continuous Delivery



Additional Reference: ITIL Version 2, Office of Government Commerce [representing Her Majesty's Stationary Office] © Crown Copyright.

Testing at IMVU

- Two well known testers got suspicious about the testing at IMVU and made a quick test
- They found a lot of bugs
- Response:
- “prioritize determining what the customer actually wants at almost any cost”
- 20% of dev resources -> CD process

Role of an agile tester

- Test automation engineer
- More responsibility for QA for devs
- Devops

The road to Continuous Delivery

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