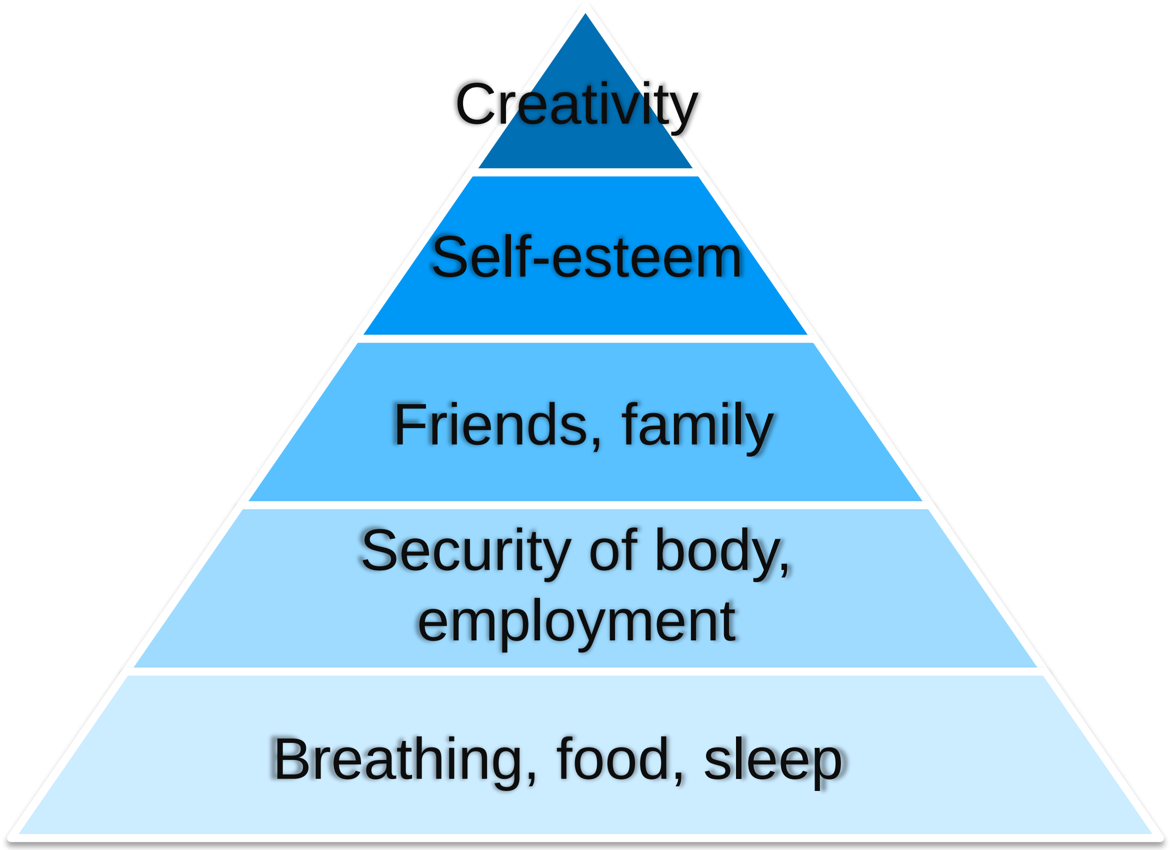
Continuous delivery story with FIFA

Introducing best practices in legacy project

Mirosław Jedynak
Architect @ Making Waves

Maslow’s hierarchy



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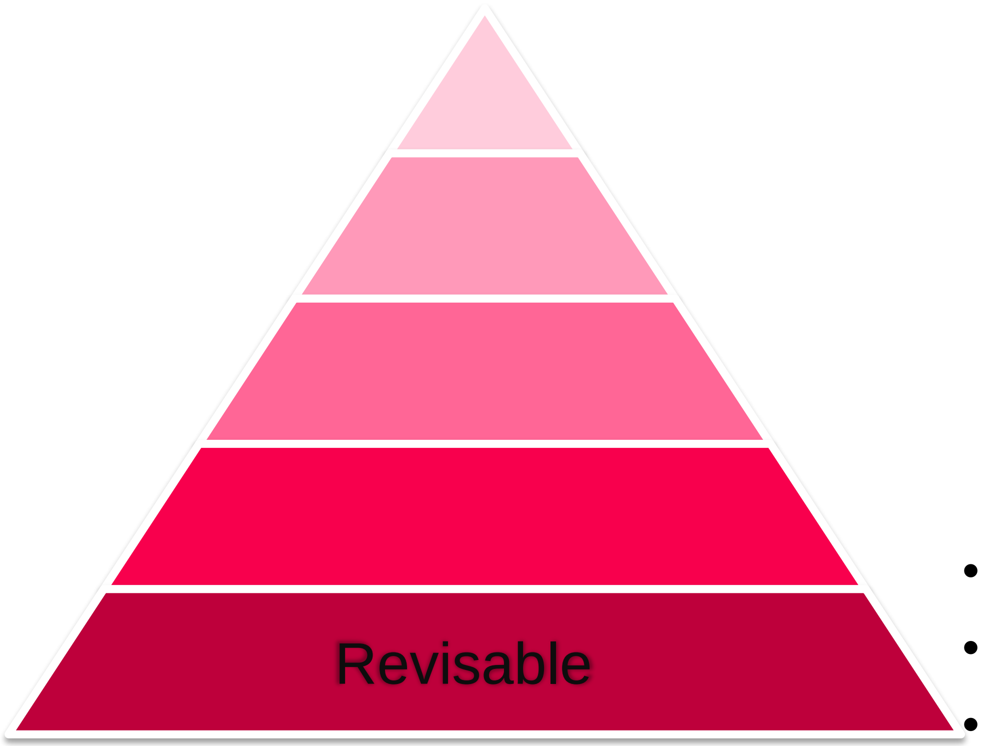
Revisable



- Source control
- Revert, branch and merge
- No zip files/shared disk

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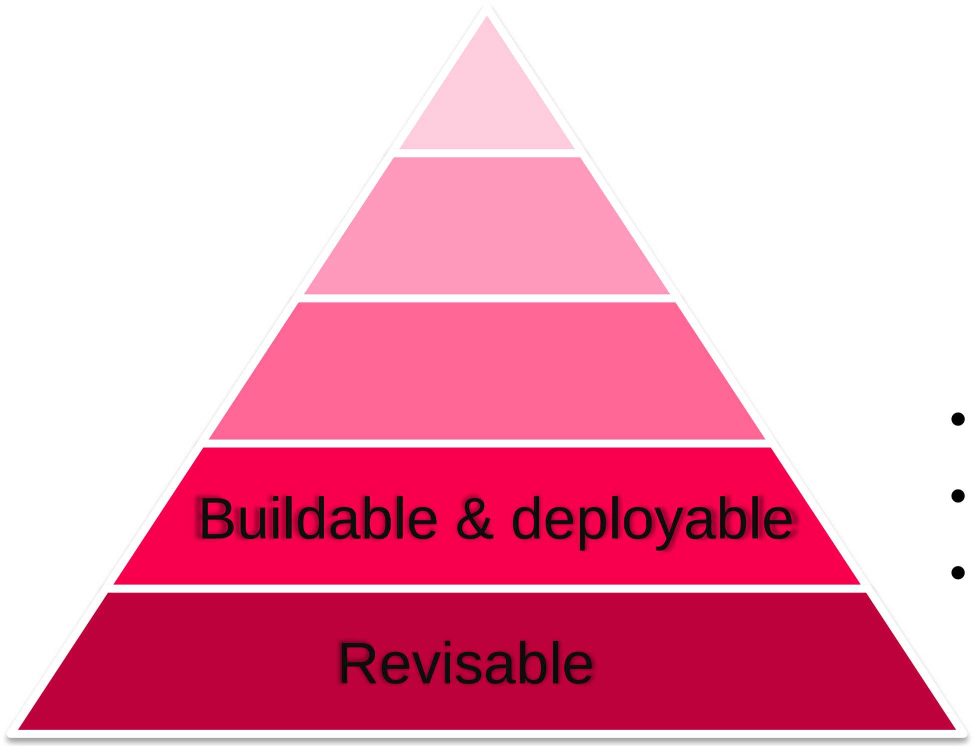
Buildable & deployable



- Able to compile code
- Built automatically
- Deploy as easily as you can build it

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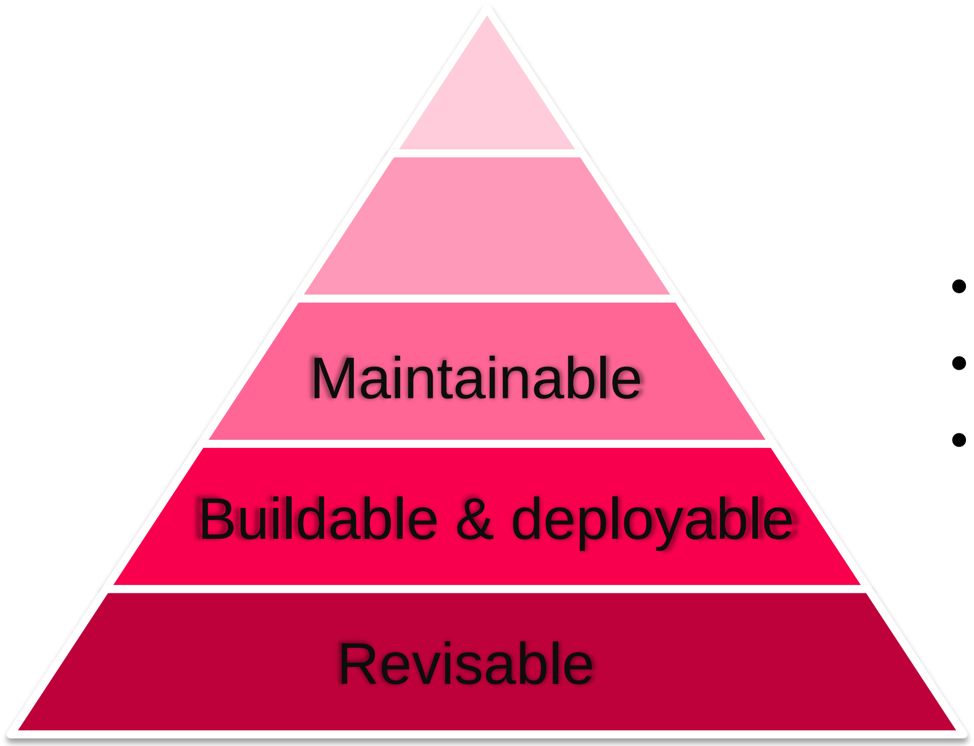
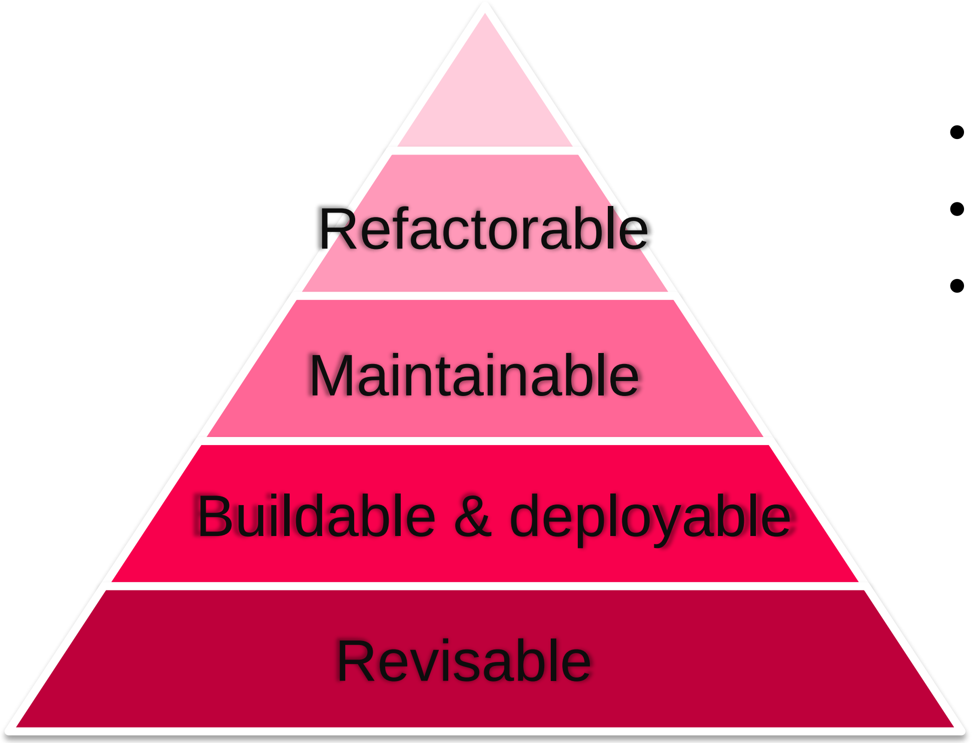
Maintainable



- Able to fix bugs
- Verify them
- Any tests at all?

Refactorable



- Follow conventions
- Refactor without fear
- Automated unit tests

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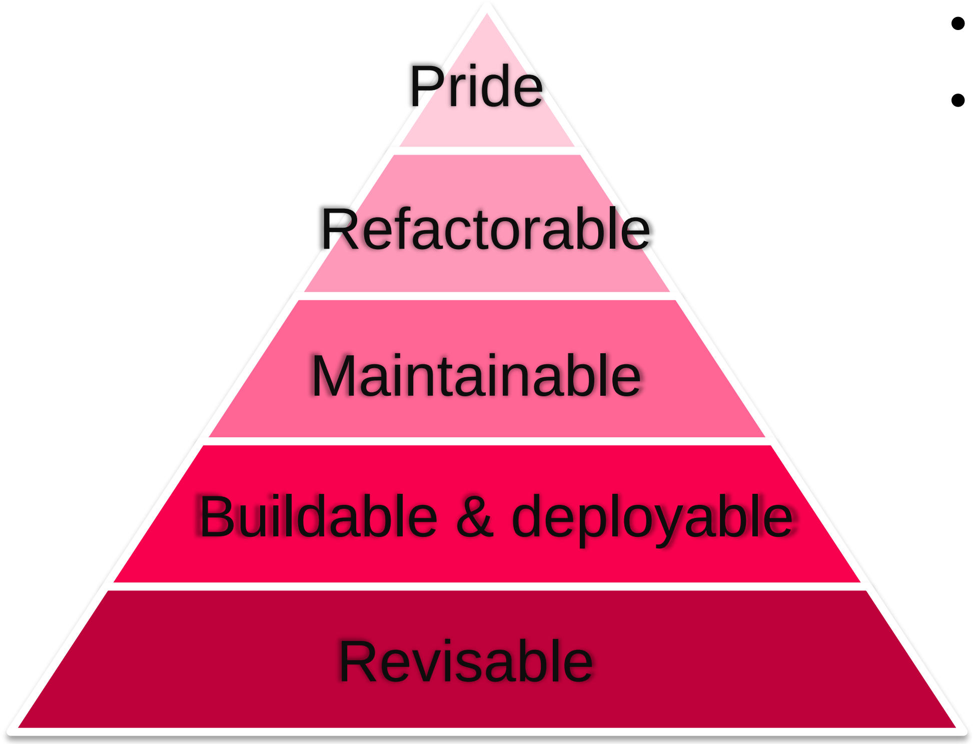
Pride



- *„It's clear to me"*
- *„Ok, John was here"*

source: www.wesport.org.uk

Day 0
Inherited project evaluation

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Clever solutions

Code duplication

Day 1

Transfer source control

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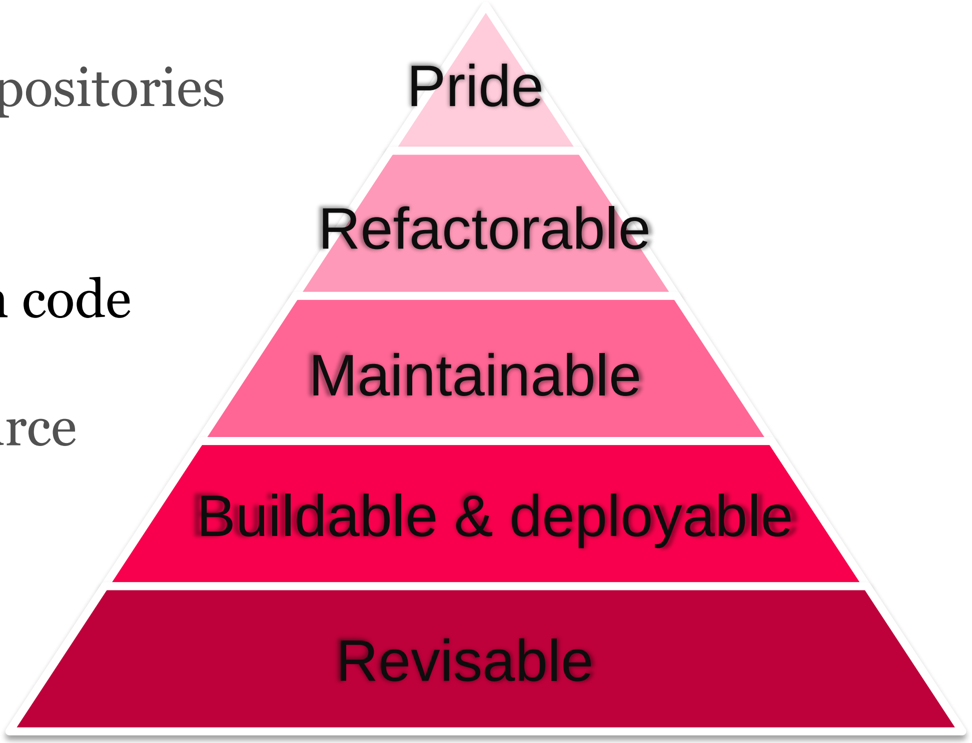
Revisable at FIFA

- Multiple SVN repositories
  - Code duplication between repositories
  - Missing revisions
- Sometimes challenging to obtain code deployed to production
  - Assemblies without clear source
  - Not versioned
- Changes directly on production
  - In markup (aspx)
  - In assemblies



Day 2

Automate build

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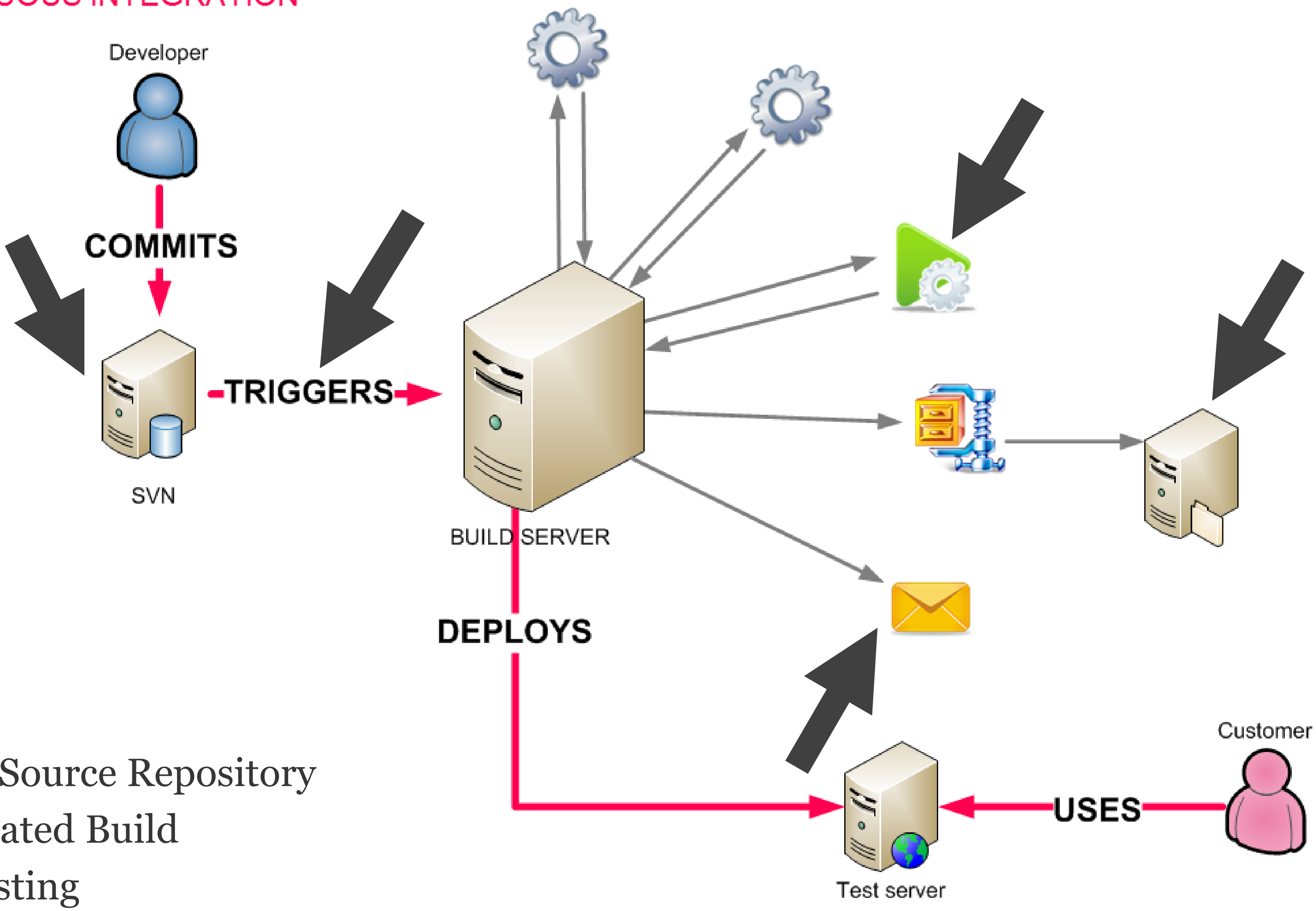
practice where team members integrate their work frequently, usually at least daily - leading to multiple integrations per day

Continuous Integration

CONTINUOUS INTEGRATION



Single Source Repository

Automated Build

Self-testing

Easy to get the latest executable

Day 3

Establish internal test environment

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Testing - inheritance

- Manual test suite
  - Army of testers

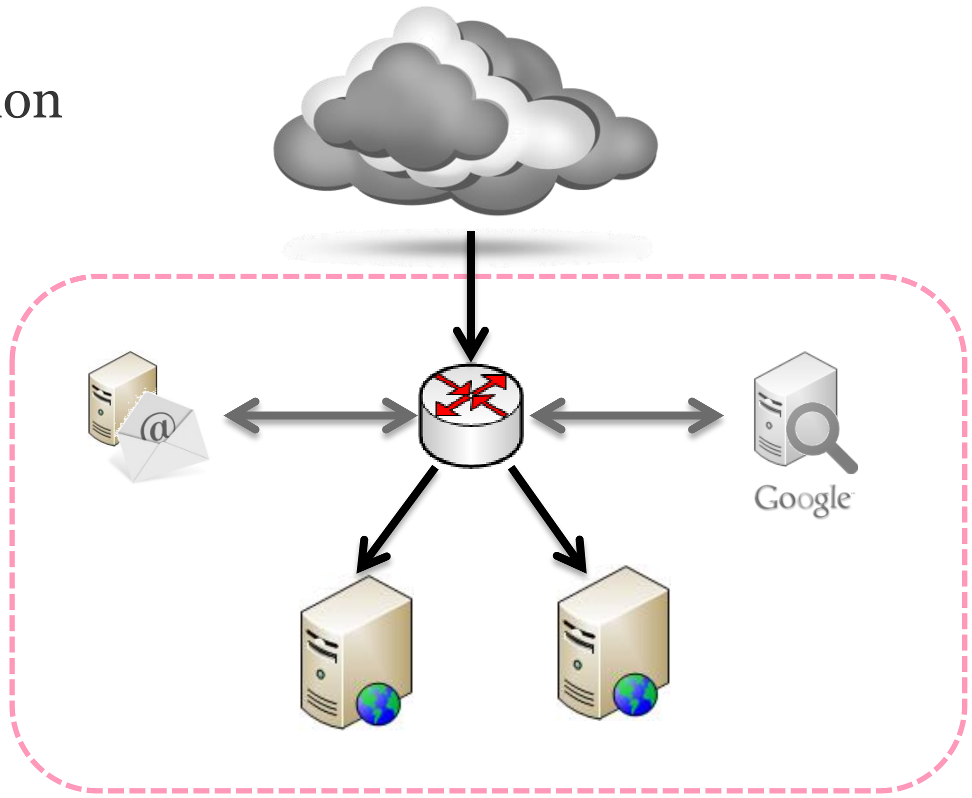
  - Functionality exploration
  - Regression
  - Input for automation

Testing - improvements

- Unit tests
  - Hard to introduce
- Functional acceptance tests
  - UI tests
  - Fragile
- Smoke tests
  - Useful when automating deployment

Testing environment

- Similar to production
  - Operating system/IIS version
  - Load balancer
- Isolated
- Mocked external systems



How long would it take in your organization to deploy a change that involves just a single line of code?

How long would it take to set up production environment when your data center blows up?

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Project goal:

shorten release cycle

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a set of practices and principles aimed at building, testing and releasing software faster and more frequently.

Continuous Delivery

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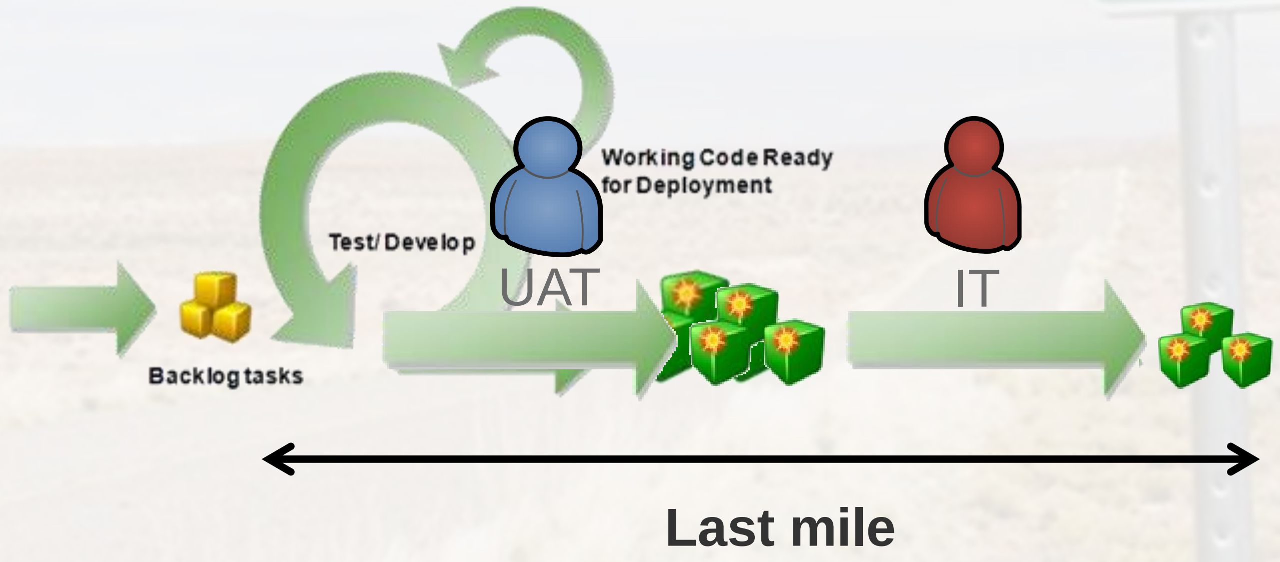
Last mile



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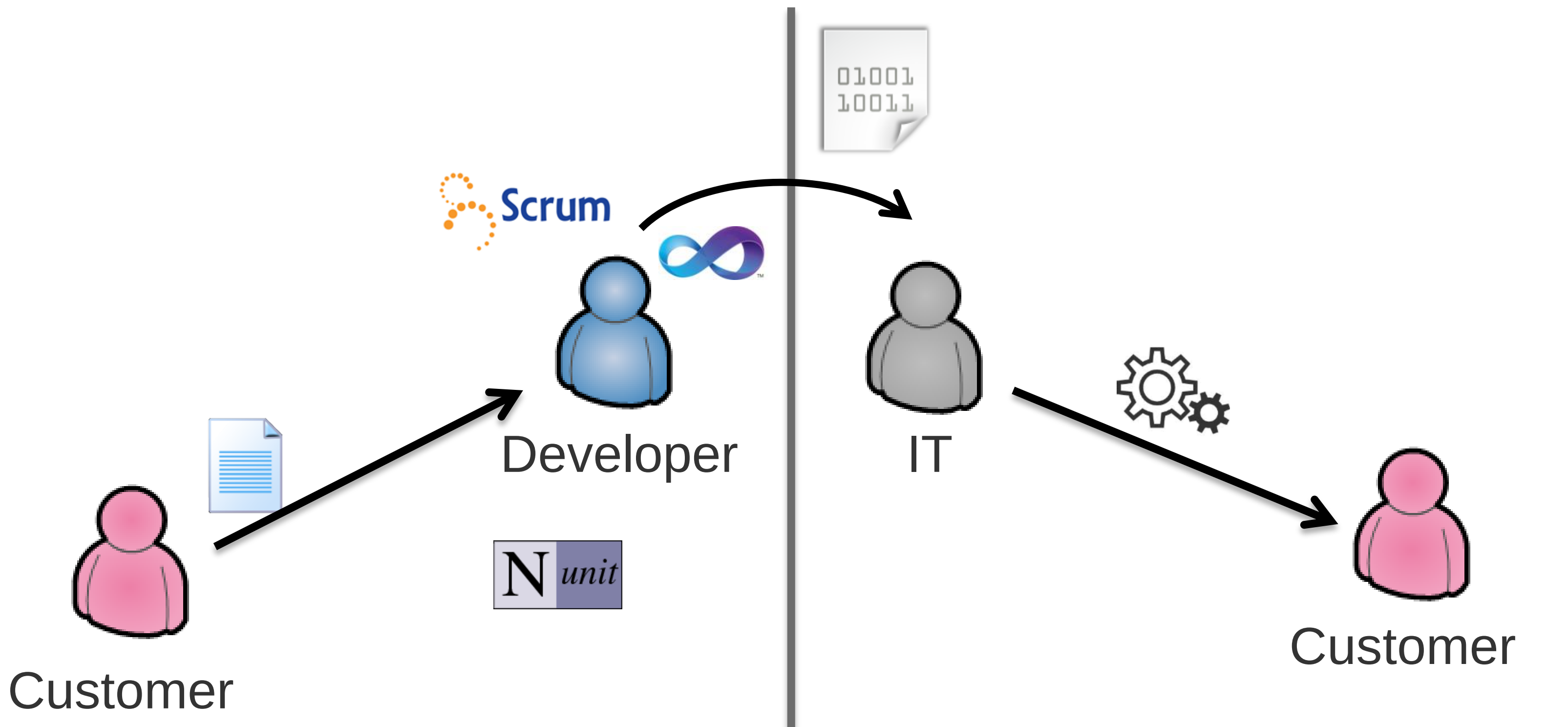
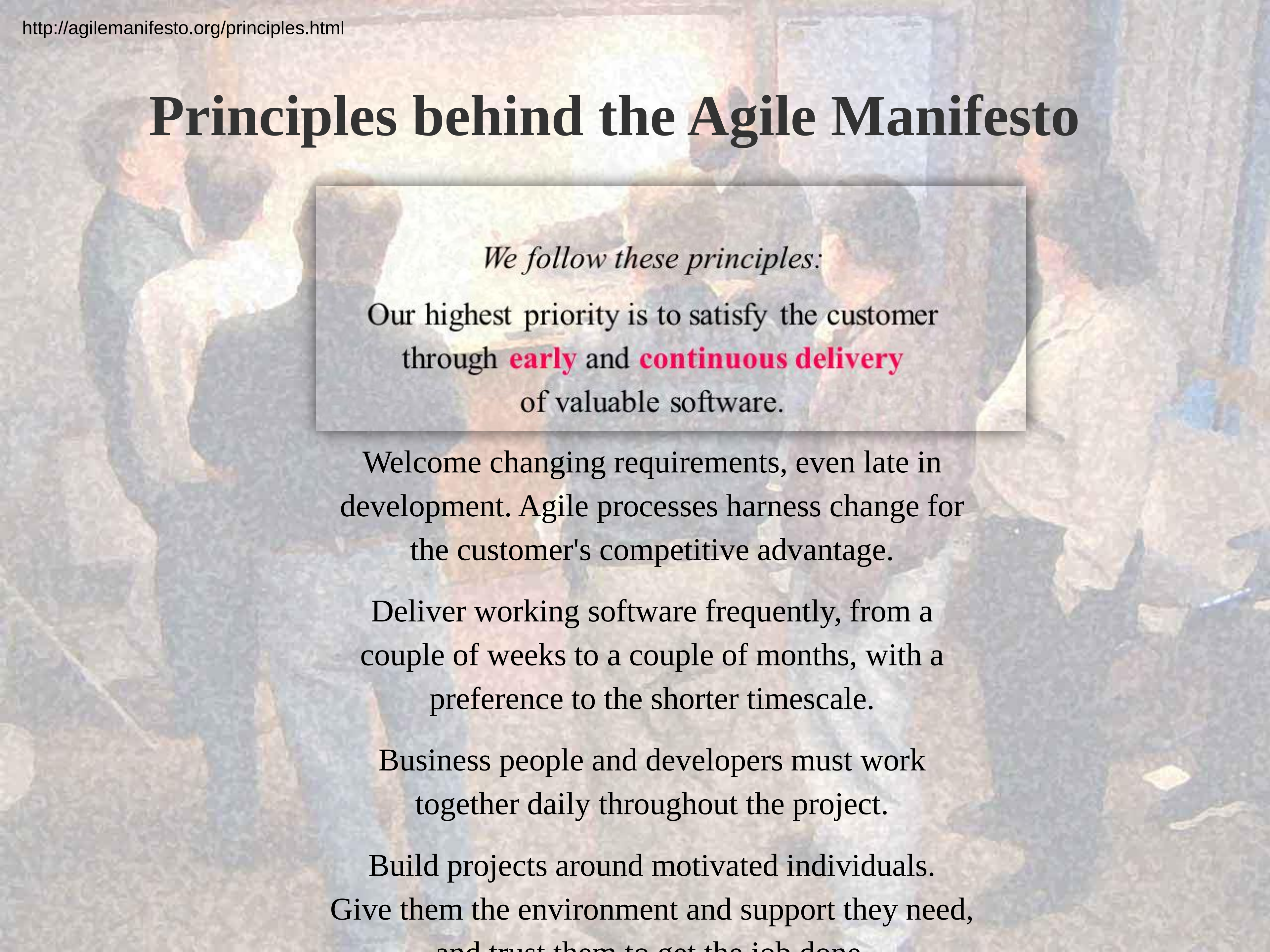


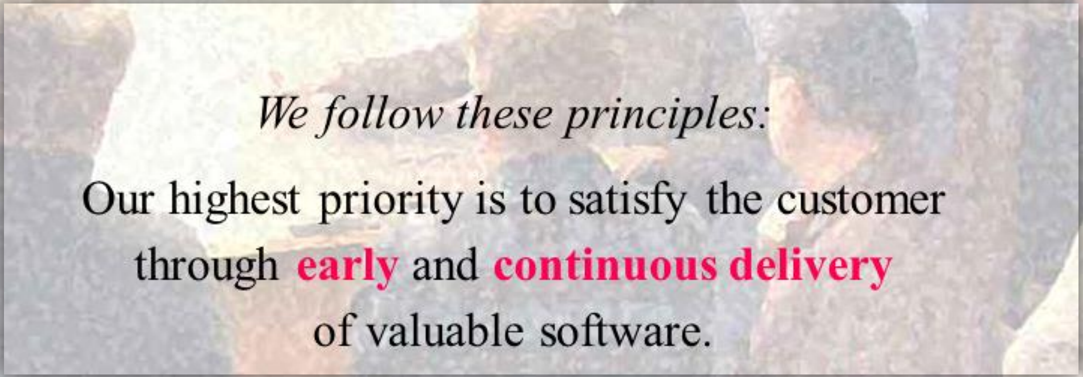
Focus of last 10 years

Focus of
continuous delivery

http://agilemanifesto.org/principles.html

Principles behind the Agile Manifesto





We follow these principles:

Our highest priority is to satisfy the customer through **early** and **continuous delivery** of valuable software.

Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.

Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.

Business people and developers must work together daily throughout the project.

Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done.

Day 4

Convince customer – business value

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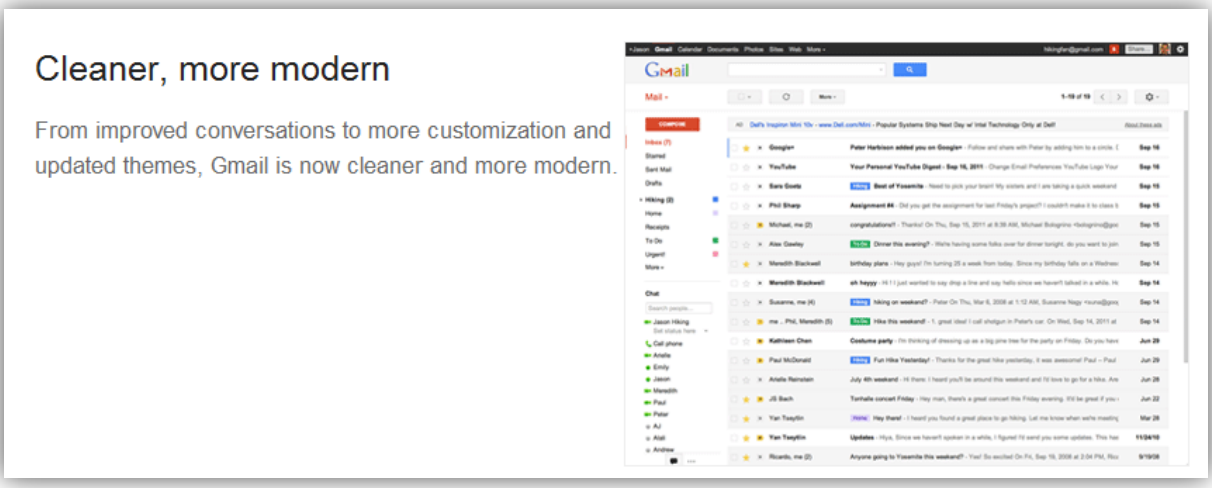
Business value

- Feedback from users
  - Competitive advantage
  - Fail fast and early



Cleaner, more modern

From improved conversations to more customization and updated themes, Gmail is now cleaner and more modern.

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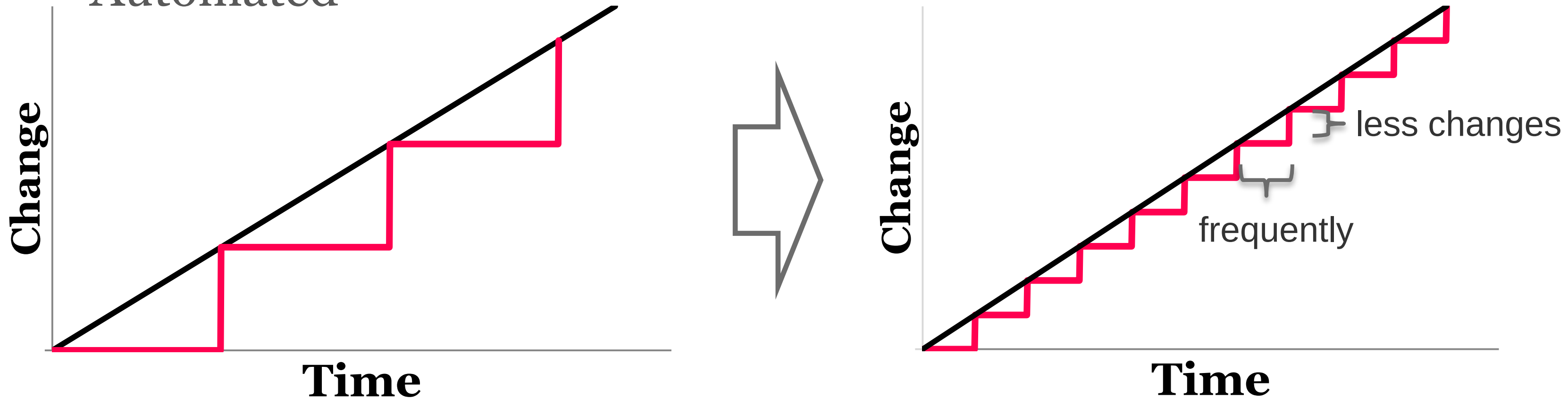
Business value

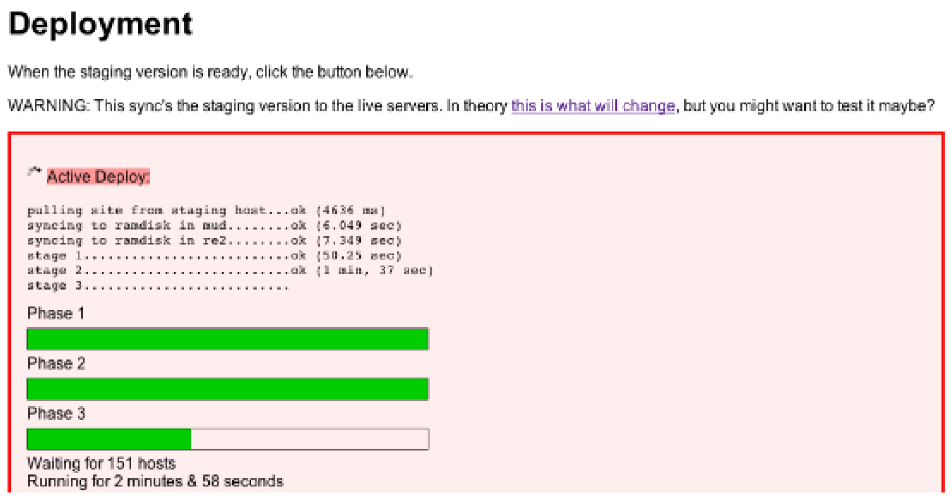
- Feedback from users
  - Competitive advantage
  - Fail fast and early
- Reduced risks of release
  - Automated



Business value

- Feedback from users
  - Competitive advantage
  - Fail fast and early
- Reduced risks of release
  - Automated
- Real progress
  - Definition of done
- Quicker return of investment

Examples



Deployment

When the staging version is ready, click the button below.

WARNING: This sync's the staging version to the live servers. In theory this is what will change, but you might want to test it maybe?

Active Deploy:

```
pulling site from staging host...ok (4636 ms)
syncing to ramdisk in mud........ok (6.049 sec)
syncing to ramdisk in re2........ok (7.349 sec)
stage 1..........................ok (50.25 sec)
stage 2..........................ok (1 min, 37 sec)
stage 3..........................
```

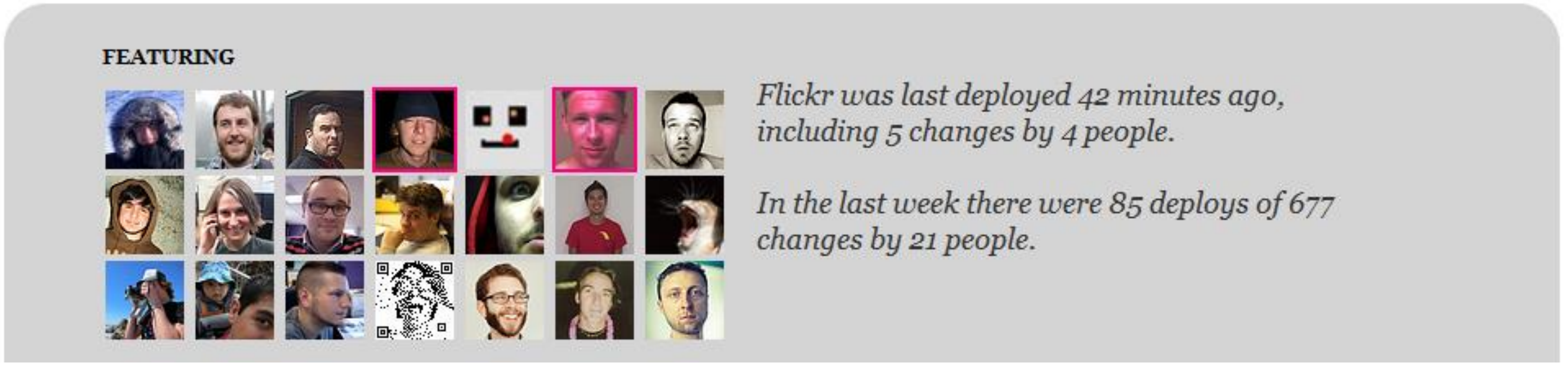
Phase 1

Phase 2

Phase 3

Waiting for 151 hosts
Running for 2 minutes & 58 seconds

Waiting for 151 hosts



FEATURING

Flickr was last deployed 42 minutes ago, including 5 changes by 4 people.

In the last week there were 85 deploys of 677 changes by 21 people.

Examples

flickr™

stackoverflow

Google

Most software developed by large teams spends a significant proportion of its development time in an unusable state.

Waterfall

Black art

„All hands on board”

„We deploy on Saturday”

Deployment – bad parts

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Day 5

Design deployment pipeline

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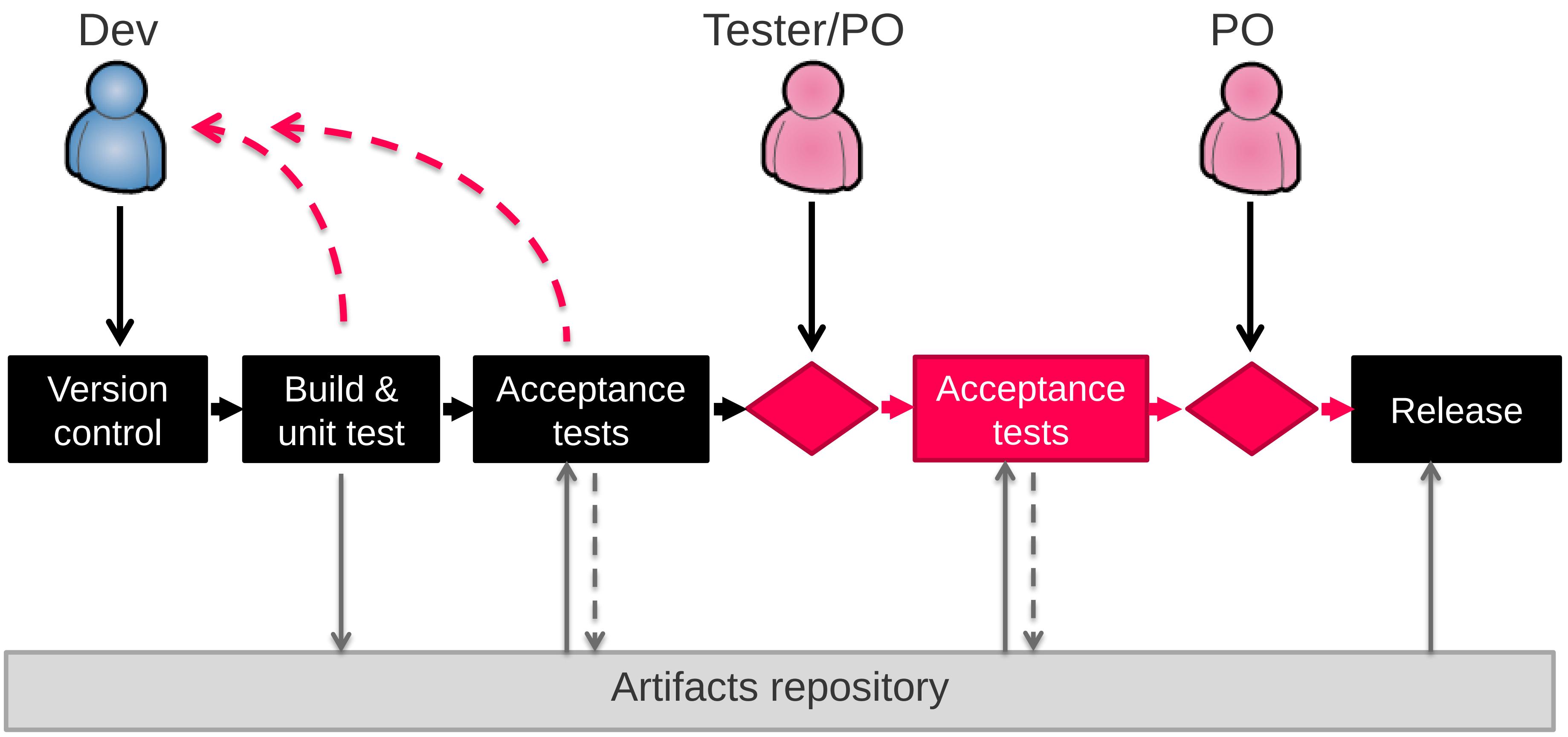
Deployment pipeline



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When it hurts,
do it more often

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Day 6

Manage environment configuration

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It’s easier to break system by changing one line of config than one line of code

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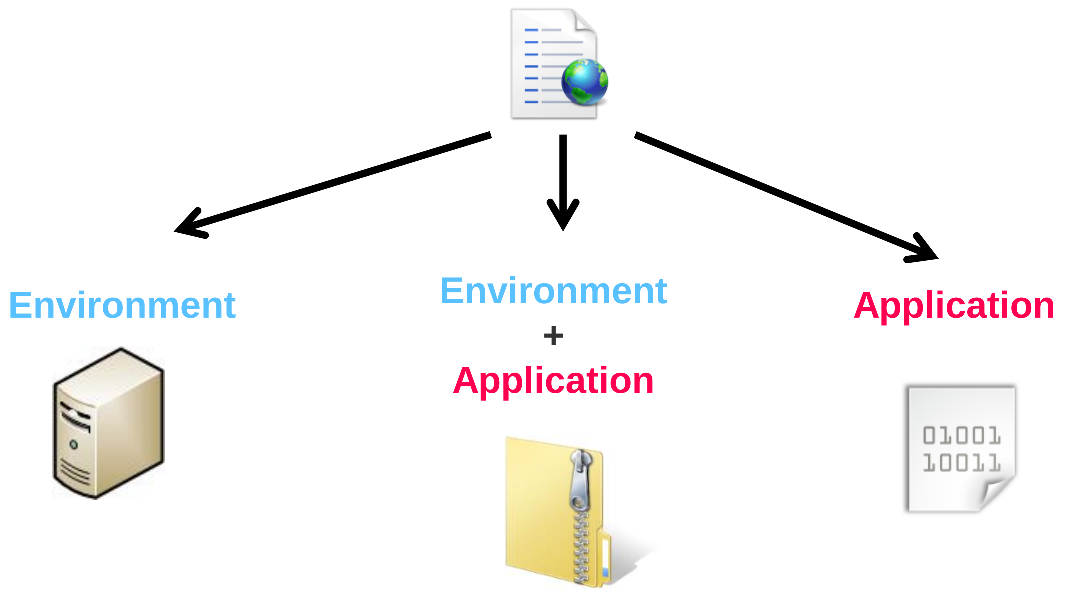
Configuration types



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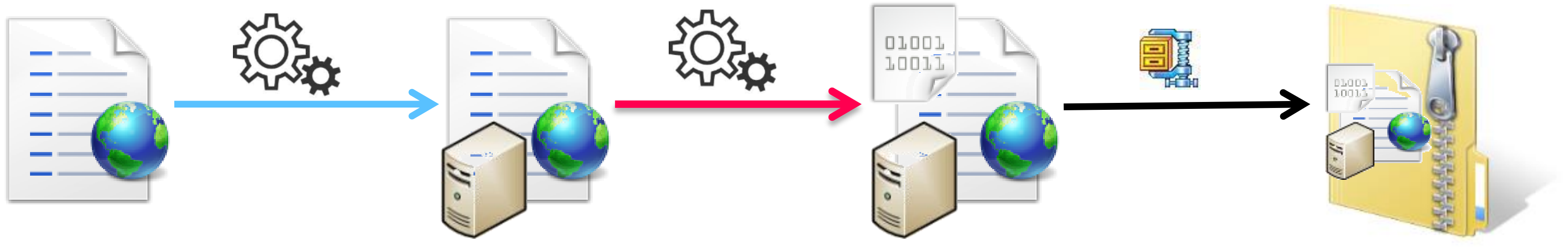
Configuration templating



Configuration template

Environment-specific configuration

Environment &application specific

Deployment package

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Troubles

* Rollback
  * Deploy last good version
  * Rollback scripts less tested than deployment
  * Avoid Fix-forward fire

* Hotfix
  * Follow regular deployment pipeline
  * It is a tested path
  * It has known time of deployment

Day 8

Deploy to production

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Continuous deployment

- Deploy continuoulsy
- After each change

Continuous delivery

- Be production ready
- Release any time

Best practices

How we get there

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Best practices - Summary

- Version everything
- Similar environment

- Automate existing procedure
- Manage configuration

- Most expensive/risky first
- Deploy never easy - try as soon as possible

Doubts/Fears

- Setup time
  - Sum up deployment and fix times
- Replacing software
  - Release to beta environment for early adopters
- Confidence in automation
  - Do it more often

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Q&A

Mirosław Jedynak
m.jedynak@makingwaves.pl

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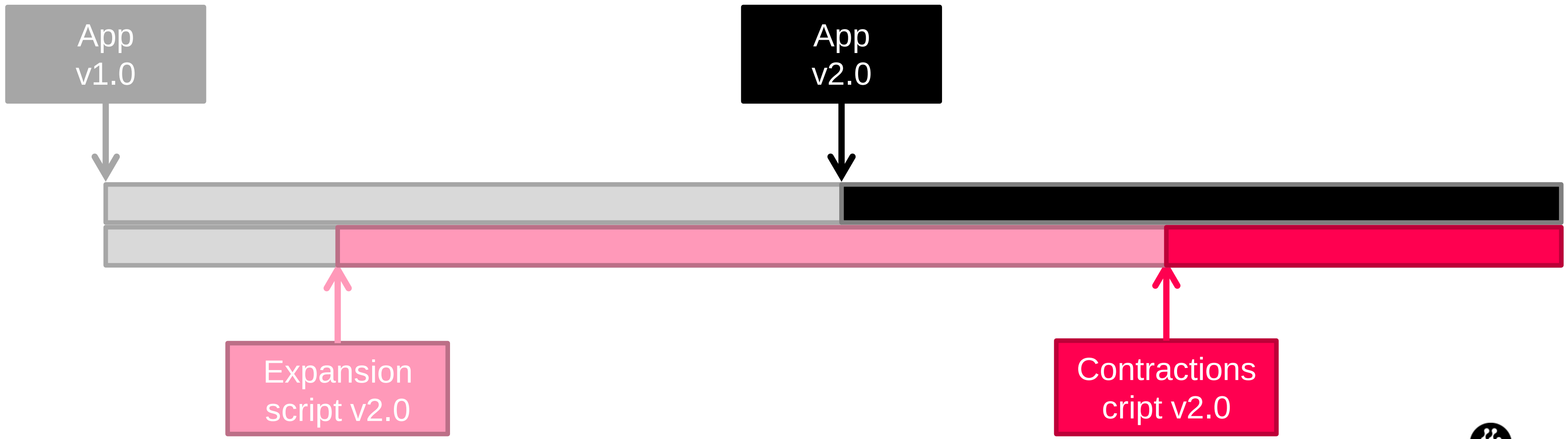
Database deployment

- separate database migrations
  - **expansion scripts** - changes not breaking backwards compatibility with the existing version
  - **contraction scripts** - clean up any database structure that is no longer needed


App v1.0
App v2.0
Expansion script v2.0
Contractions cript v2.0