Native Software Build System
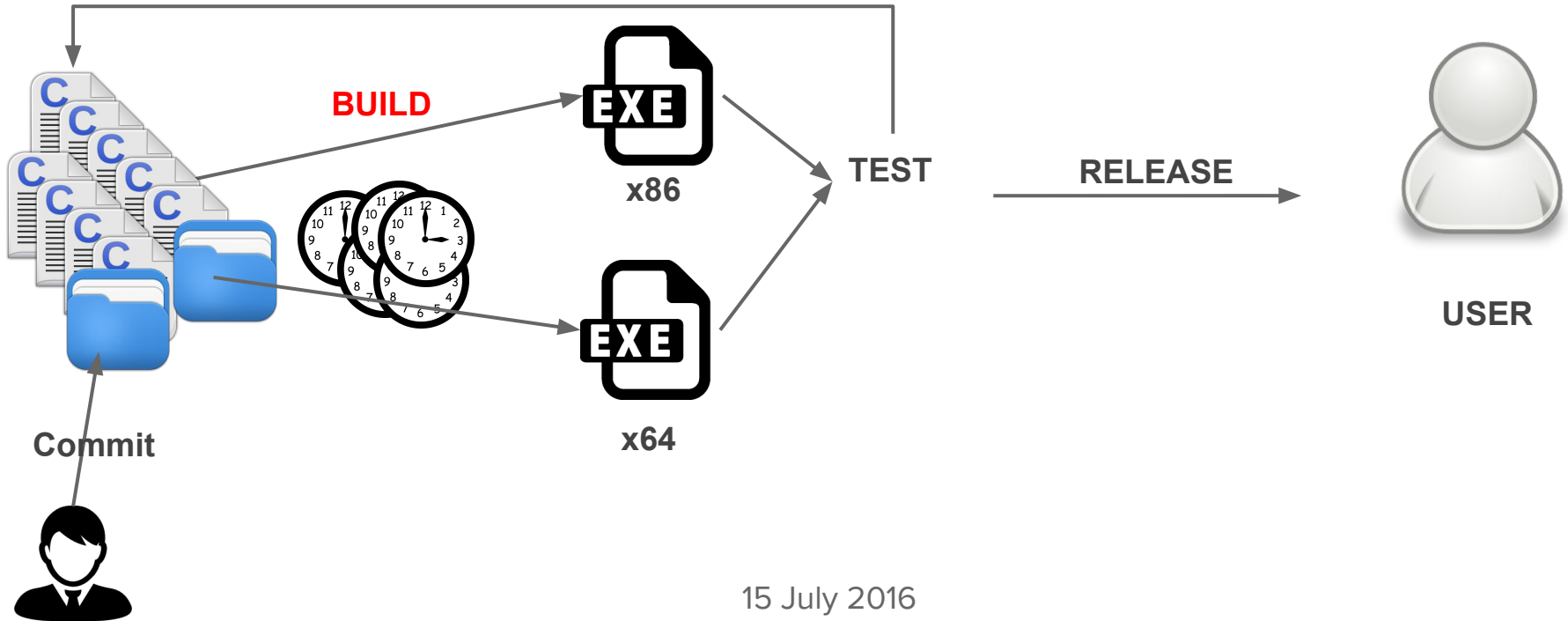
Caixa Mágica/Aptoide Summer 2016 Internship

Intern: Henrique Alves
Mentor: André Guerreiro

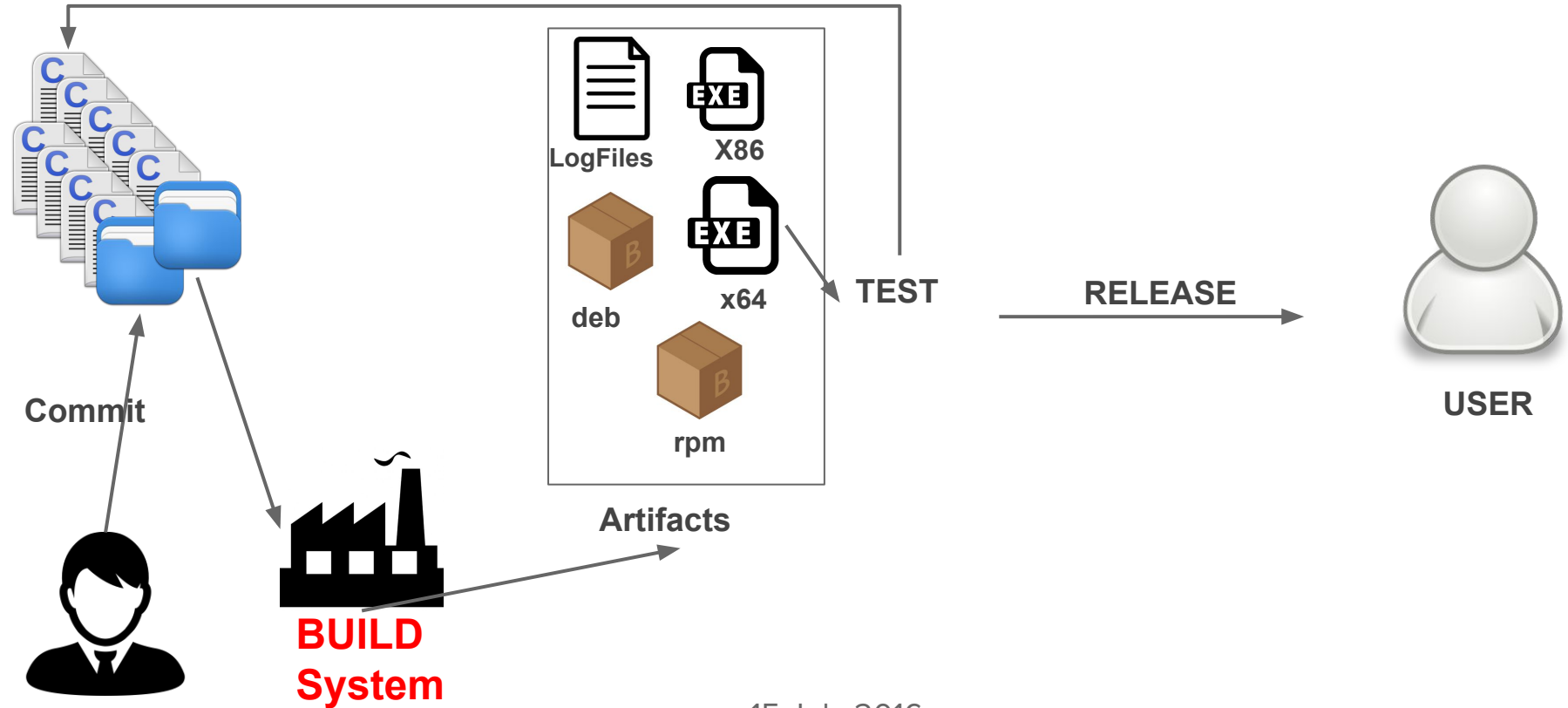15 July 2016

What is the purpose of a Software Build System?

BUILD

EXE
x86

EXE
x64

TEST

RELEASE

USER

Commit

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Solution: Automate Build

Commit

LogFiles

X86

deb

EXE

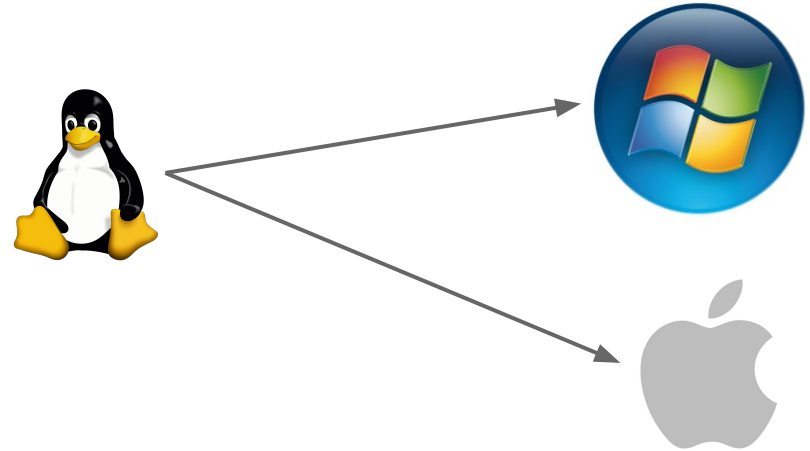x64

rpm

Artifacts

TEST

RELEASE

USER

BUILD
System

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Problems associated to the Build System

- Which programming language is used in the source code?

- Which is the host OS for compilation?

- What about the target OS?

- Which Compiler to Use?

- **Dependencies**? Static or Dynamic Libraries?

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Native Build vs Cross-Platform Build ?

- Harder Configuration
- Unavailable toolchain build
- Libraries
- Testing

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Goals

- Implementation of a build system and testing for native projects in Windows/Linux/MacOS;

- Automated Build triggered by commits to the SVN or GIT;

- Uploading result of builds to a Central Repository;

- Notification by e-mail when there's errors in the process of building;

- Display/Save logs builds in a web interface or send by e-mail.

Continuous Integration Software

- Open Build Service (OBS)
  - Middleware do Cartão de Cidadão(CaixaMágica), Tizen, VideoLAN
- BuildBot
  - Chromium, WebKit, Firefox
- Jenkins
  - Ebay, Netflix.
  - Implemented in Java
- Appveyor - Free for Open Source Projects
- TeamCity(JetBrains) - Free till 20 build configurations

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Example Middleware do Cartão de Cidadão(OBS)

Source Files

Show 25 ▼ entries

Search: [ ]

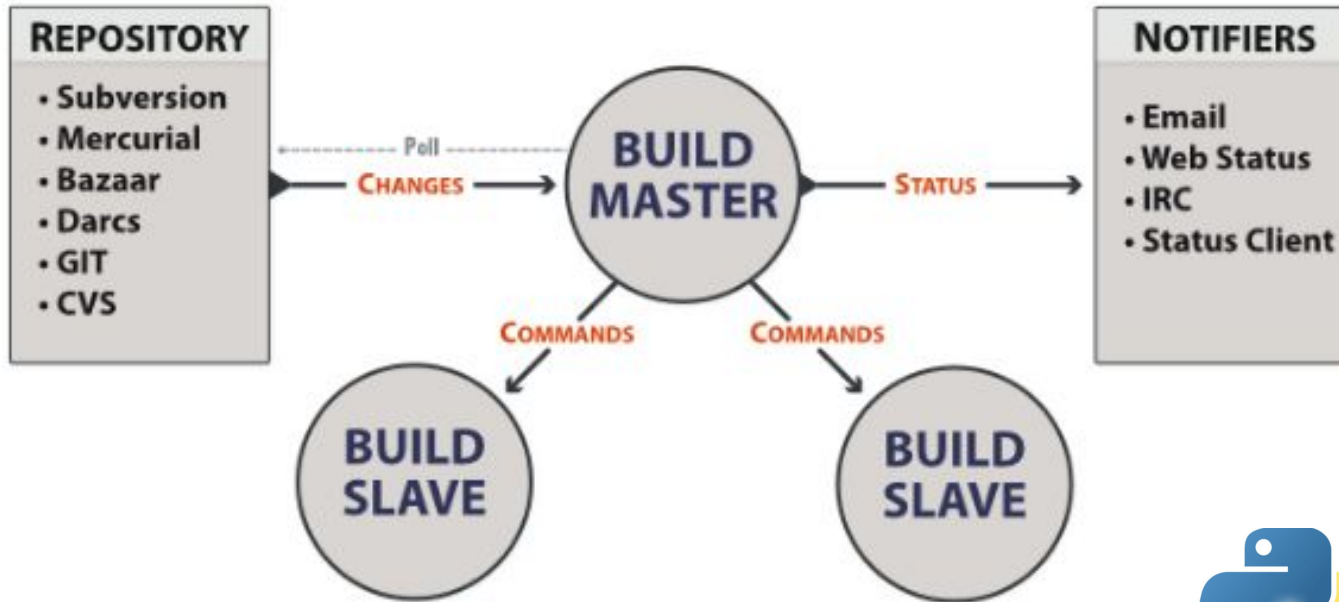| Filename ▲	Size	Changed	Actions
0001-diff-r3593.patch	4.9 KB	almost 2 years ago	
0002-diff-r3602.patch	381 Bytes	almost 2 years ago	
fix_mdv_build.patch	4.46 KB	over 4 years ago	
mimetype-ccsigned.xml	319 Bytes	over 1 year ago	
pteid-dss.desktop	567 Bytes	3 days ago	
pteid-mime.xml	361 Bytes	over 1 year ago	
pteid-mw-gui.desktop	393 Bytes	almost 2 years ago	
pteid-mw.spec	21.7 KB	8 months ago	
pteid-mw_2.3.0svn3715-3.debian.tar.gz	5.31 KB	over 1 year ago	
pteid-mw_2.3.0svn3867-2.debian.tar.gz	7.9 KB	8 months ago	
pteid-mw_2.3.0svn3867-2.dsc	1.17 KB	8 months ago	
pteid-mw_2.3.0svn3867.orig.tar.bz2	17.7 MB	8 months ago	
pteid-scalable.svg	7.19 KB	over 1 year ago	
pteid-signature.png	3.53 KB	over 1 year ago	
pteidgui-revert-pdf-signature.patch	2.31 KB	almost 4 years ago	
use_qt4.patch	992 Bytes	over 4 years ago	

Showing 1 to 16 of 16 entries

◀ Previous   Next ▶

Build Results   Rpmlint Results

CentOS_7	x86_64	succeeded
Debian_7.0	i586	succeeded
	x86_64	succeeded
Debian_8.0	i586	succeeded
	x86_64	succeeded
Fedora_21	i586	succeeded
	x86_64	succeeded
Fedora_22	i586	succeeded
	x86_64	succeeded
Fedora_23	i586	succeeded
	x86_64	succeeded
openSUSE_13.2	i586	succeeded
	x86_64	succeeded

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Example: Buildbot - Overall Architecture

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Road-Map

Phase 1 - Analysis and Planning [July 12 to July 19] (1 Week)

- **Mentor meeting and goals definition;**
- **Study the different architectures of software build system available;**
- **Setting up SVN;**
- **Project Planning;**
- **Initial Presentation.**

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Road-Map

Phase 2 - Design [July 20 to July 28] (1 week)

- **Set up work environment;**
- **Select Architecture for Implementation;**
- **Learn Native compiling in different OS;**
- **Learn details to set up Slave Builders;**
- **Improv skills to implement the design.**

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Road-Map

Phase 3 - Implementation [July 29 to August 31(5 weeks)

- **Software Build Development;**
- **Build "Dummy" project:**
- **Build triggered by commits from a Version Control System;**
- **Uploading result of builds to a Central Repository(Release);**
- **Notification by e-mail when there's errors in the process of building;**
- **Display/Save logs builds in a web interface or send by e-mail.**

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Road-Map

Phase 4 - Tests and Documentation [September 1 to September 9] (1 week)

- **Functionality Tests**
- **Improvement of design and accessibility**
- **Final Presentation**

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Thank You...

Questions?

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