JCrypTool

The cryptography e-learning platform.

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Agenda

JCrypTool Basics

JCrypTool 1.0

Outlook

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Outlook

JCrypTool Basics

Based on Eclipse Rich Client Platform (RCP) and Java

- Available for all major platforms in 64bit - Linux, macOS, Windows
- Transparent for the developer (in theory)
- Common limitations of the Eclipse IDE, look & feel is challenging for non-developers

Platform independent plug-ins

- Completely extensible with plug-ins (everything is a plug-in)
- Learn and develop cryptography - everyone can develop an own plug-in
- High barriers to entry for developers - Eclipse RCP is not that common any more

Complete Extensibility with Plug-ins

Core

- More than **20** core plug-ins
- Providing common functionality like editors (text and hex), views (log, keystore, file and algorithm navigators, …), keystore services (BouncyCastle and FlexiProvider)
- Fall-through hierarchy of crypto providers
- Multi-language support (currently German and English)

Crypto

- More than **60** crypto plug-ins
- Analysis, classic and modern algorithms, games and visualizations
- From relatively simple algorithms to complex visualizations

Facts and Figures

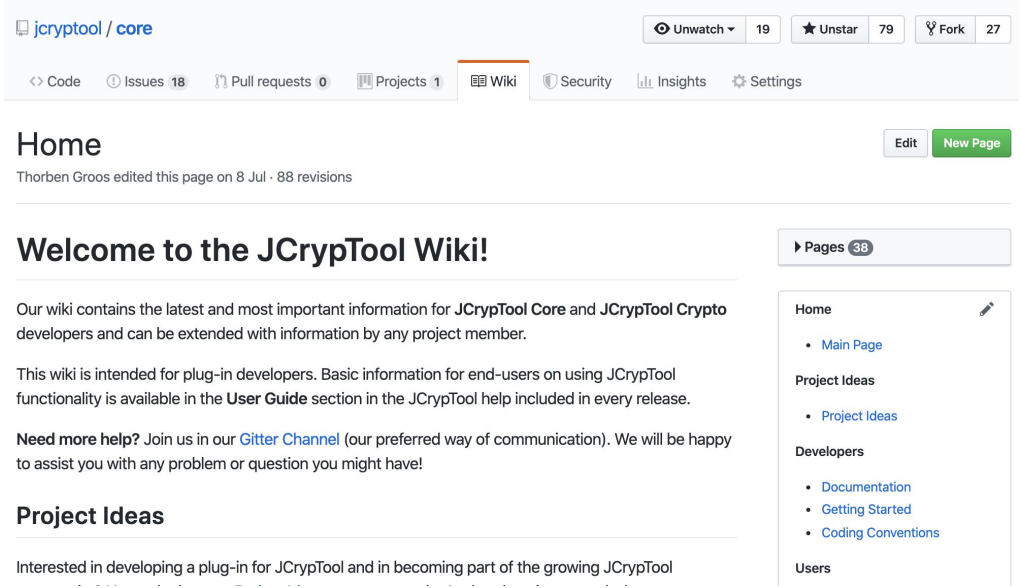
Keeping everything up-to-date (technologies and tools)

- Started on SourceForge (SVN), moved to GitHub (Git)
- Release builds on TravisCI - fully automated weekly builds
- Updating:
  - Eclipse RCP is relatively easy - we switch to every new version
  - Java is (now) more challenging - moving away from Java 8 now

More than 50 contributors

- From one-time contributors, students and student teams to regulars
- Divided into core and crypto teams - with read only or write access

Attracting Developers



More than 25 source **code forks**

Public **wiki** with getting started guides, technology information, some common requirements, style guides, and release planning

Gitter channel

Public **issue tracker** for core and crypto

Approaching release 1.0.0 -- more on that by Thorben Groos

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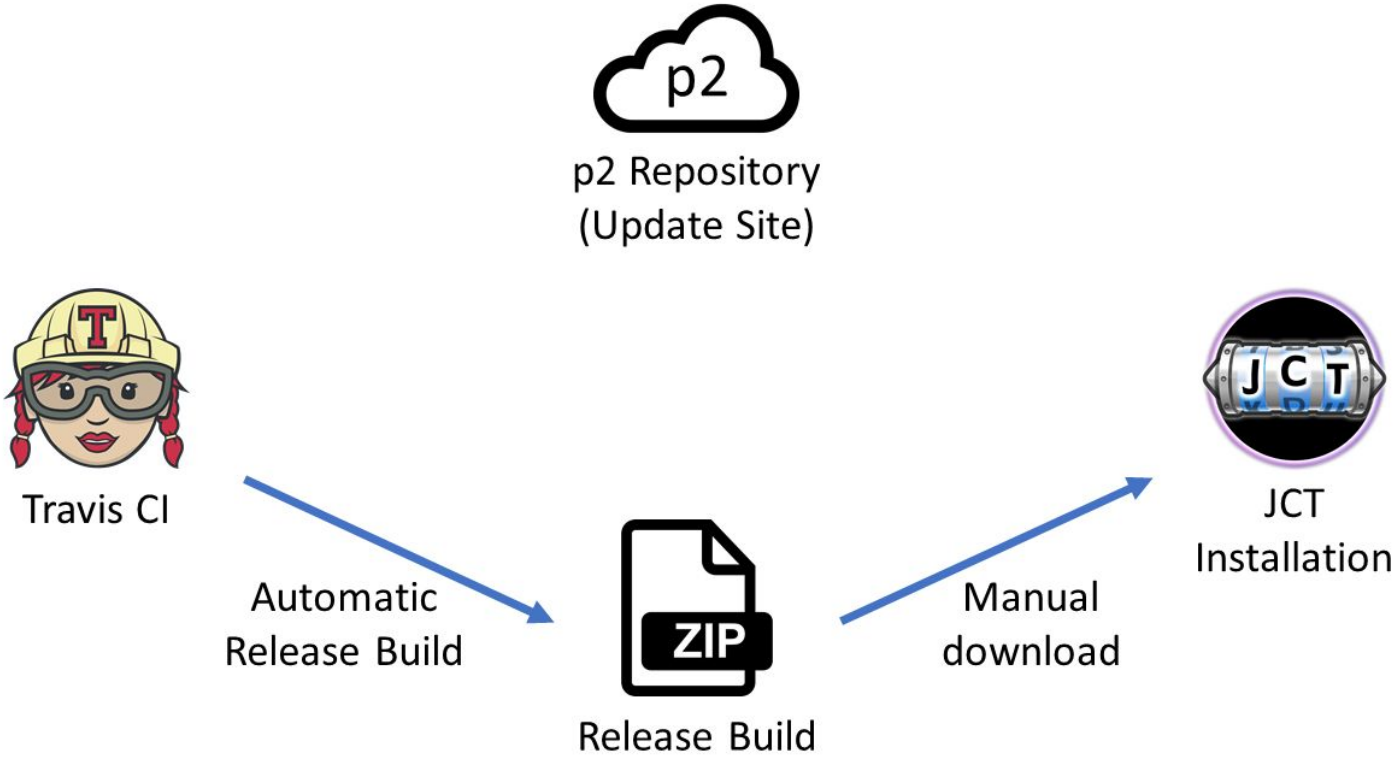
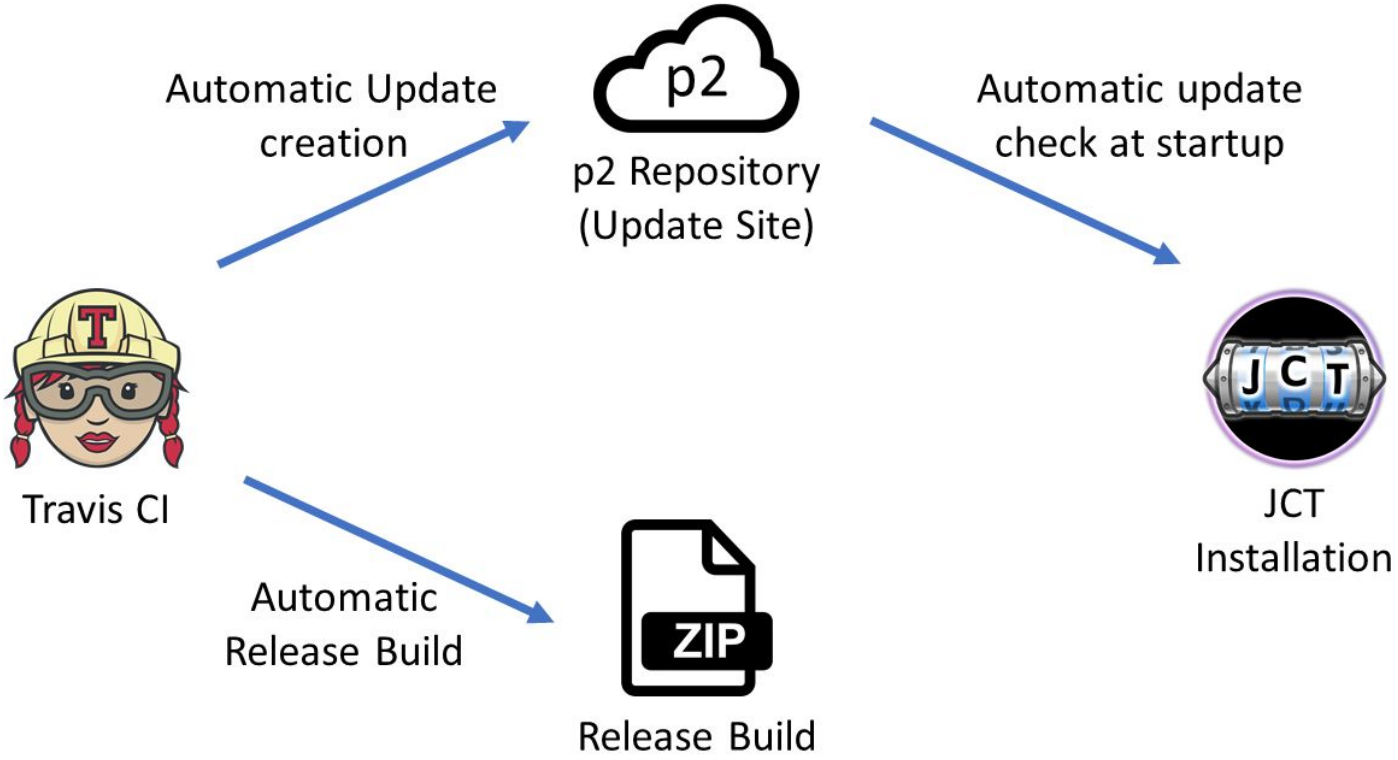
What’s new in JCrypTool 1.0

- Completely available in German and English
- 2 new plug-ins: SPHINCS+ Signature visualization and Grille analysis
- New update process
- JCrypTool - JRE - Bundle
- GUI improvements and bug fixes

Update Process - conventional



Update Process - via a provisioning platform (p2)



JCrypTool-JRE-Bundle

- Migrating from Java 8 to Java 11
- We ship a Java 11 JRE with JCrypTool 1.0

Advantage: No installed JRE is needed anymore to run JCrypTool

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Outlook

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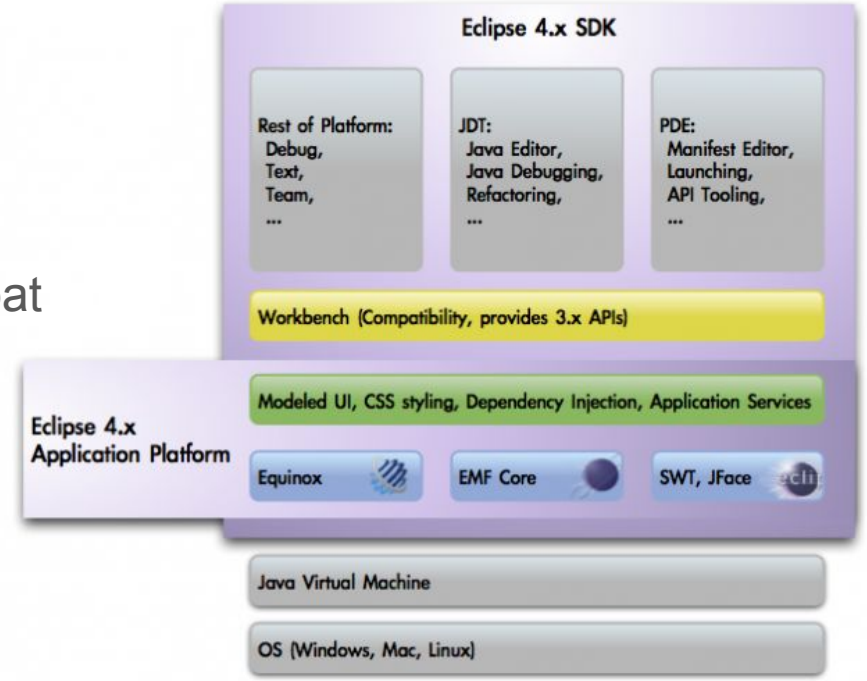
1. Eclipse E4 Migration
2. BouncyCastle und JCrypTool
3. Build process improvements

Eclipse 4 (e4) Migration

- Future-proof JCrypTool
- Currently: compatibility layer
- Multi-stage migration:
  - core
  - common prototypes & own compat
  - batch



BouncyCastle and JCT

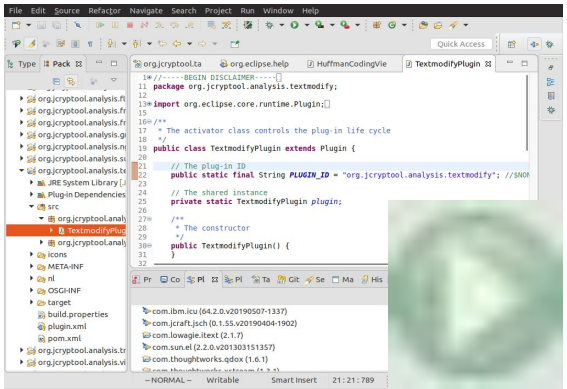
- BouncyCastle: APIs for cryptography
  https://www.bouncycastle.org
- Many modern algorithms included
- Challenge: Generic UI model
- Goal: JCT as GUI for BouncyCastle

Build Process

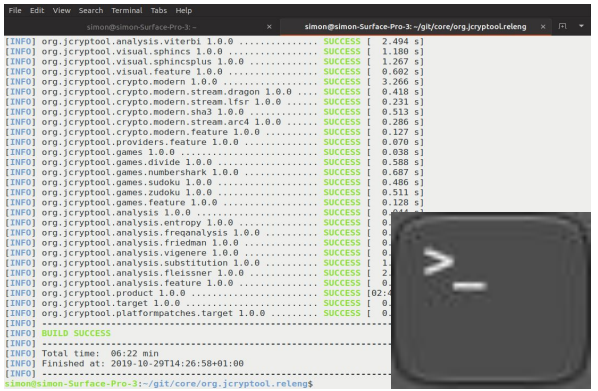
“Developer Build” is not “Release Build” !

Target Platform

Developer Build (Eclipse PDE)



Release Build (Maven/Tycho)



Build Process - New Possibilities

Through a new experimental project...
https://github.com/simlei/org.jcryptool.thirdparty

- Depend on libraries from Maven Central
  - <dependency>{group:id:version}</dependency>
- Load off heavy features (e.g. JRE)
- Patch the eclipse platform!

Outlook

- **Big future projects**: E4 migration, BouncyCastle UI
- **Stable infrastructure** through further improving our build process

Thank you

https://github.com/jcryptool