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Extremely fast builds with Gradle 3
Cédric Champeau

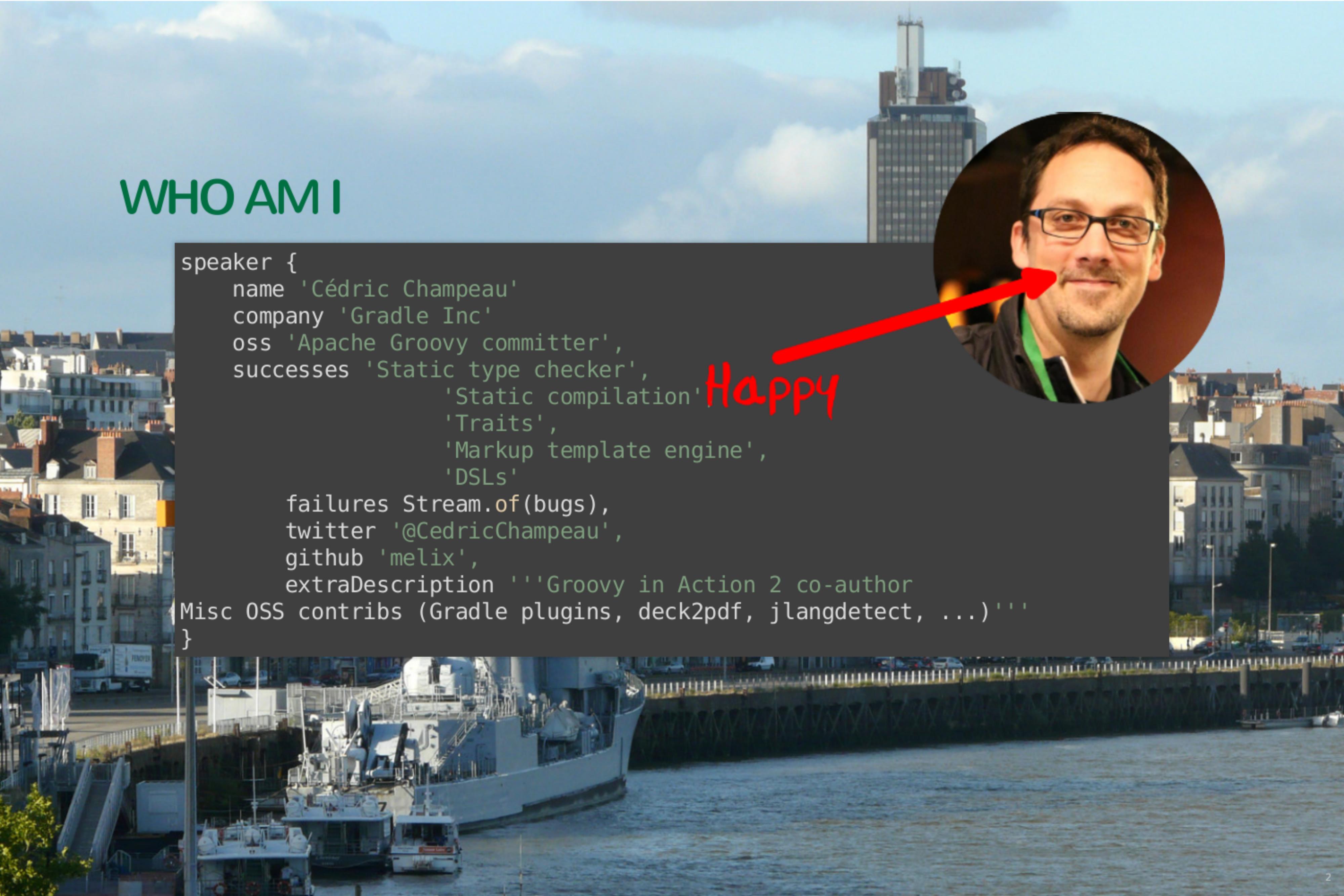
2016

Cédric Champeau (@CedricChampeau), Gradle

WHO AM I

```
speaker {  
    name 'Cédric Champeau'  
    company 'Gradle Inc'  
    oss 'Apache Groovy committer',  
    successes 'Static type checker',  
              'Static compilation'  
              'Traits',  
              'Markup template engine',  
              'DSLs'  
    failures Stream.of(bugs),  
    twitter '@CedricChampeau',  
    github 'melix',  
    extraDescription '''Groovy in Action 2 co-author  
Misc OSS contribs (Gradle plugins, deck2pdf, jlangdetect, ...)'''  
}
```

Happy



AGENDA

- The Gradle Daemon
- Profiling
- Incremental builds
- Incremental compilation
- Continuous builds
- Composite builds
- Task output cache

WHAT IS GRADLE?

Demo

WHAT IS GRADLE?

- A build tool
- Cloud Services

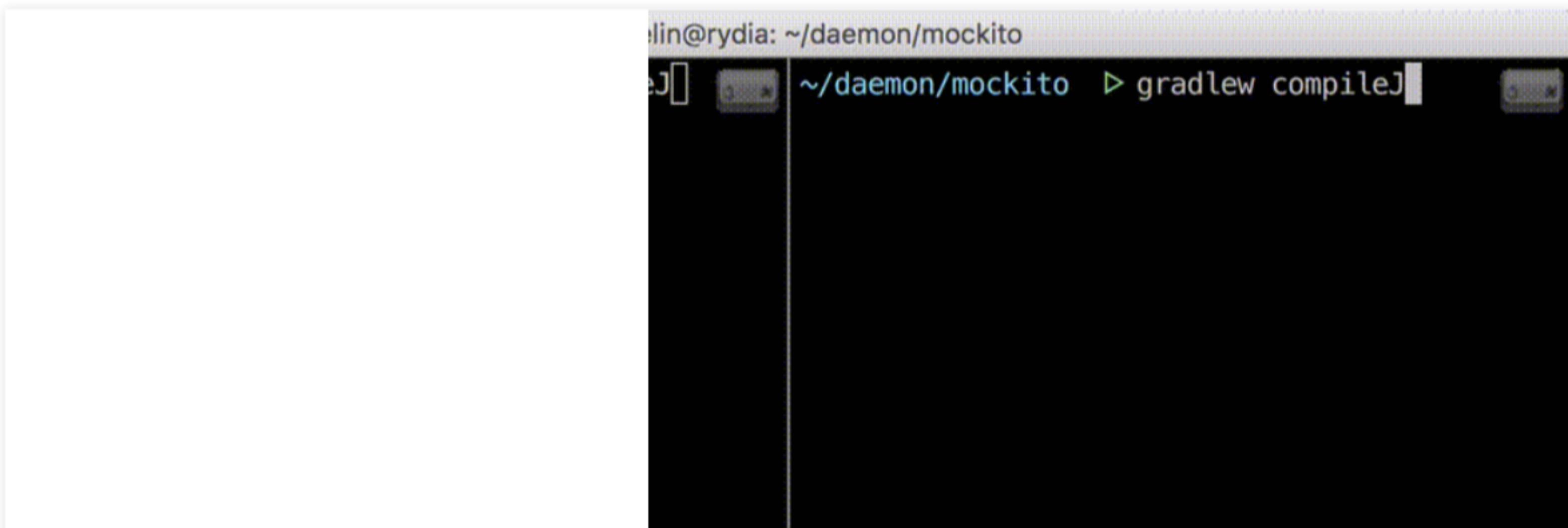
THE GRADLE DAEMON

- Long-lived background process
- Listens and executes build actions
- Faster startup / execution
- Enabled by default since 3.0

THE GRADLE DAEMON

THE GRADLE DAEMON

WARM DAEMON



A screenshot of a terminal window titled "lin@rydia: ~/daemon/mockito". The window shows a command line interface with the following text:
~/daemon/mockito > gradlew compile
The terminal has a dark background and light-colored text. The title bar is white with black text.

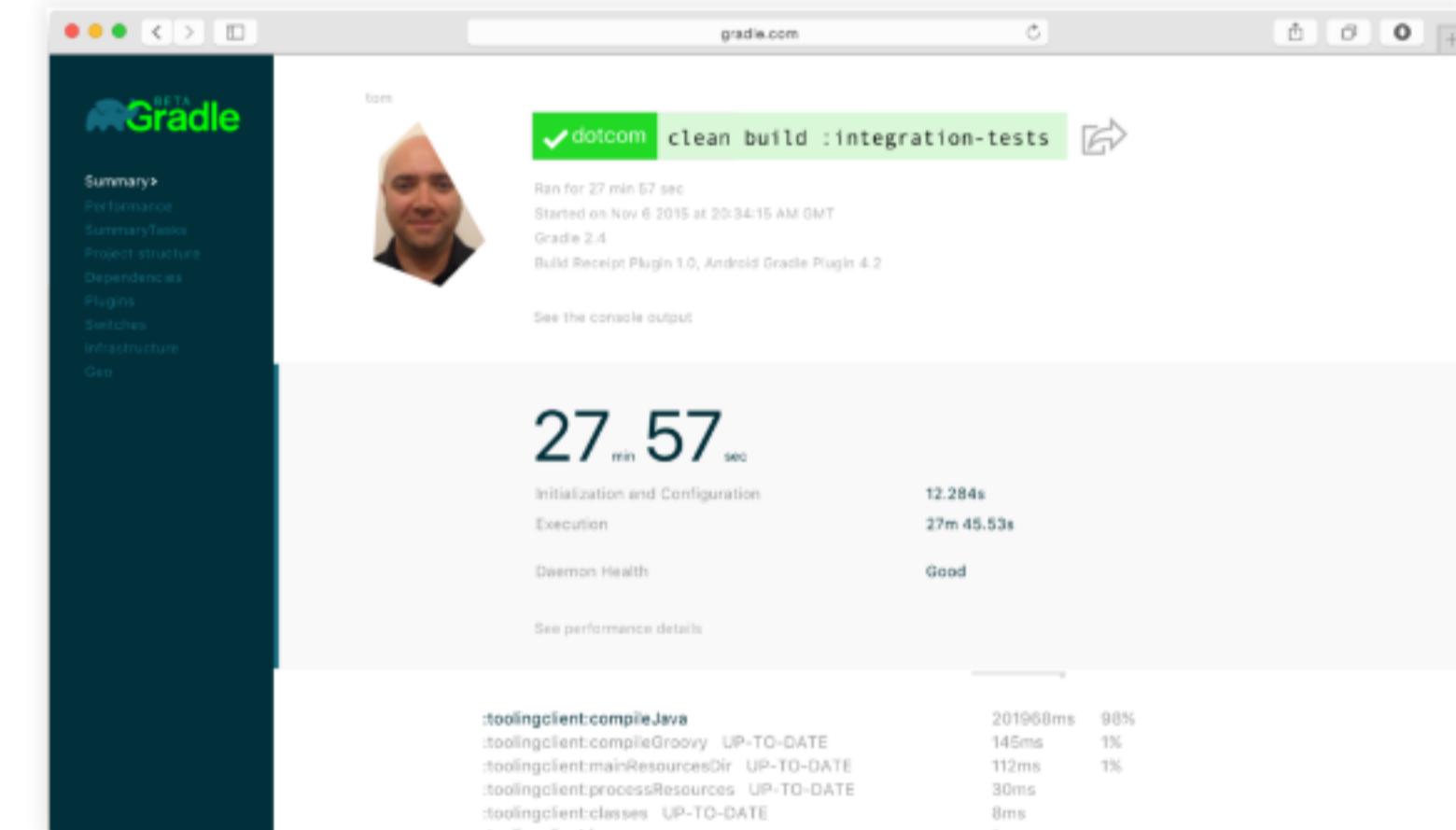
PROFILING A BUILD

gradle --profile

- Generates a report in the build directory
- Limited insight
- Not easily shareable
- But can already give precious information

BUILD SCANS

- First member of the Cloud Services family
- Insights into your build
- View and share via URL
- Debug, optimize and refine
- Analyze all of your builds
- Available for free



BUILD SCAN DEMO

<https://scans.gradle.com/s/cxwz7amaxhcdc>

<https://scans.gradle.com/s/ly5tnqtuqlwe>

<https://scans.gradle.com/s/sample/groovy>

CREATING A BUILD SCAN

APPLY THE BUILD SCAN PLUGIN

```
plugins {  
    id 'com.gradle.build-scan' version '1.2'  
}  
  
buildScan {  
    licenseAgreementUrl = 'https://gradle.com/terms-of-service'  
    licenseAgree = 'yes'  
}
```

RUN THE BUILD

```
./gradlew -Dscan build
```

CLICK ON THE LINK

```
:jrubyPrepareGems  
:asciidoctor UP-TO-DATE
```

```
BUILD SUCCESSFUL
```

```
Total time: 1.132 secs
```

```
Publishing build information...
```

```
https://gradle.com/s/v2f5knnujnsx2
```

INCREMENTAL BUILDS

- Gradle is meant for incremental builds
- clean is a waste of time
- Prepare your builds for incrementalness

EXAMPLE: BUILDING A SHADED JAR

```
task shadedJar(type: ShadedJar) {  
    jarFile = file("$buildDir/libs/shaded.jar")  
    classpath = configurations.runtime  
    mapping = ['org.apache': 'shaded.org.apache']  
}
```

- What are the task inputs?
- What are the task outputs?
- What if one of them changes?

DECLARING INPUTS

```
@InputFiles  
FileCollection getClasspath() { ... }  
  
@Input  
Map<String, String> getMapping() { ... }
```

DECLARING OUTPUTS

```
@OutputFile  
File getJarFile() { ... }
```

INCREMENTAL COMPILATION

- Given a set of source files
- Only compile the files which have changed...
- and their dependencies
- Language specific

GRADLE HAS SUPPORT FOR INCREMENTAL COMPILATION OF JAVA

```
compileJava {  
    //enable incremental compilation  
    options.incremental = true  
}
```

CONTINUOUS BUILDS

- Gradle watches for changes in task inputs
- Re-executes tasks as changes occur
- Enabled with -t

```
gradle -t asciidoctor
```

COMPOSITE BUILDS

- Compose various projects as if there were one
 - Each project can live in its own repository
 - Each project has its own Gradle build
 - Composition unites them through dependency resolution
- Split monolithic projects
 - For large multiproject builds, allows splitting them into several pieces
 - Each piece can be versioned independently
 - Developers can choose what subprojects they care about

COMPOSITE BUILDS DEMO

TASK OUTPUT CACHE

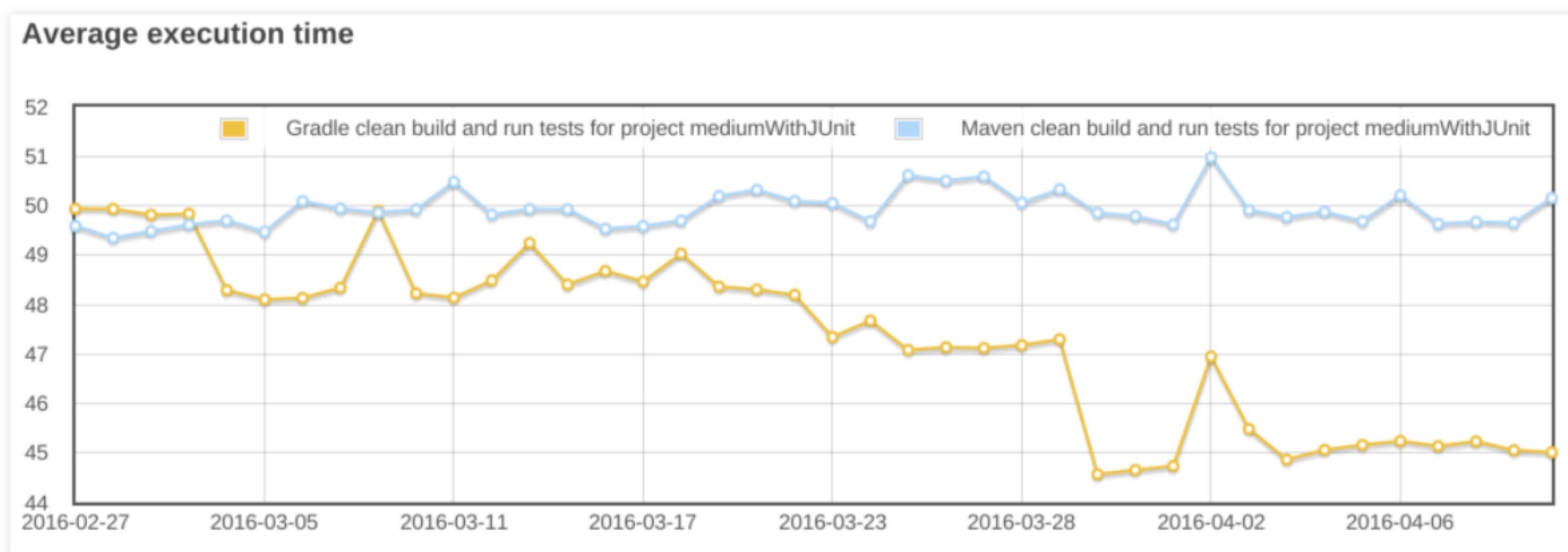
- Avoid doing work even after clean
- Share binaries between projects on a single machine
- Share binaries between projects on a network
- Backend agnostic

TASK OUTPUT CACHE USE CASES

- Long compile tasks
- Bisecting
- Continuous integration
- Greener earth

PERFORMANCE GUIDE

<https://gradle.github.io/performance-guide/>



THANK YOU!

- Slides and code : <https://github.com/melix/parisjug-fast-builds>
- Gradle documentation : <http://gradle.org/documentation/>
- Follow me: [@CedricChampeau](https://twitter.com/CedricChampeau)

Learn more at www.gradle.org



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