

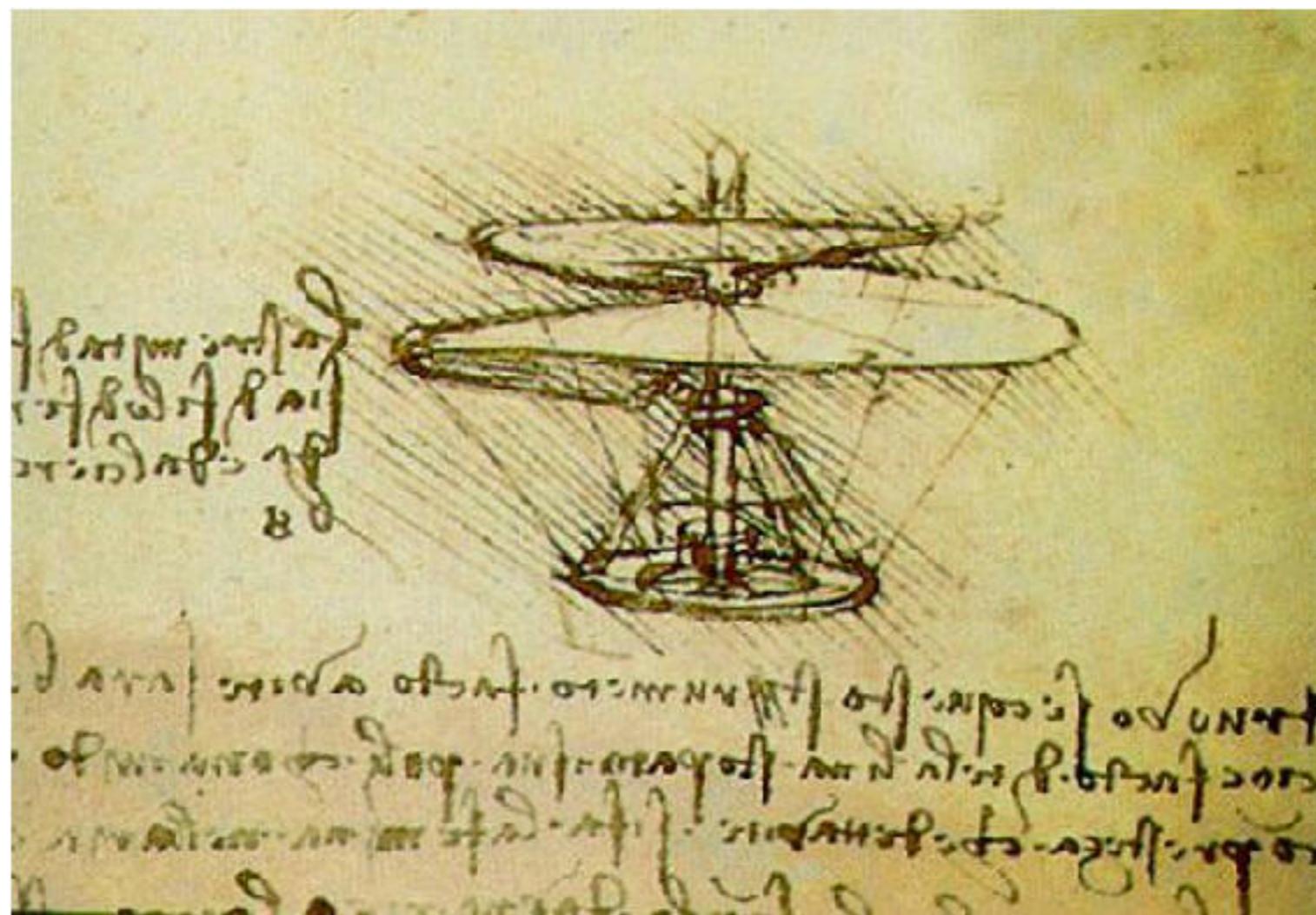
MARK SCHEEL (@5280MARK)

PROFESSIONAL ANDROID BUILD TOOLS

LEONARDO DA VINCI

“The noblest pleasure is the joy of understanding.”

“There are three classes of people: those who see, those who see when they are shown, those who do not see.”



THE SIKORSKY CHALLENGE

- 1980
- Igor I. Sikorsky
- Human Powered Helicopter Competition
- Flight duration: 60 seconds
- Flight altitude: 3 meters (9.8 feet)
- Flight precision: within 10 meter square box (33 feet)
- \$250,00 prize



VAGRANT

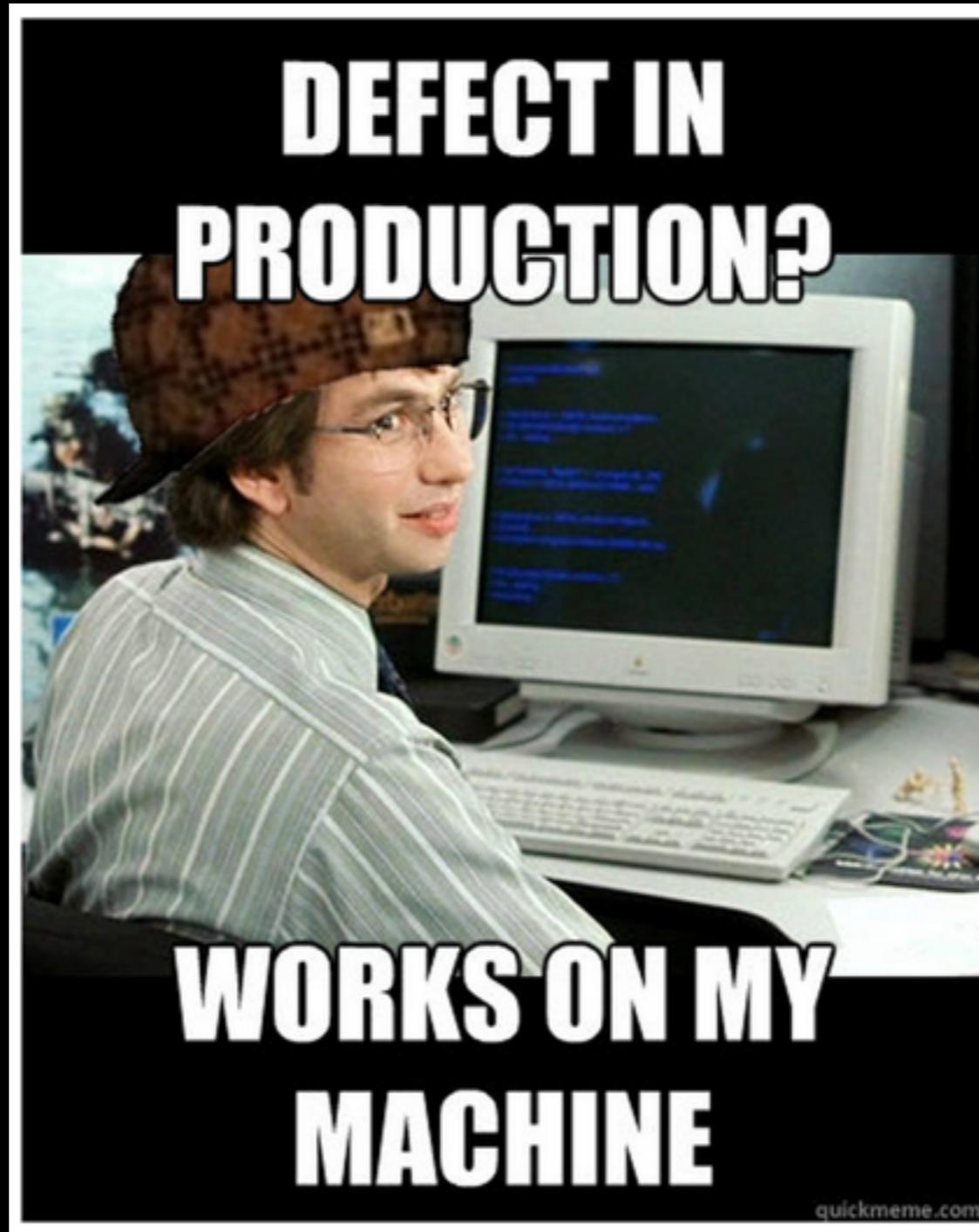
VAGRANT

- Vagrant is software that creates and configures virtual development environments
- Virtual Box, and now VmWare, KVM and Amazon EC2
- Written in Ruby by Mitchell Mashimoto
- November 2014 added Docker support

VAGRANT

- Recipe is called “Vagrantfile”
- You can create reproducible and portable environments, excellent for experimentation AND sharing
- A single file defines the machine, can be checked into source control
- No more “works on my machine”

VAGRANT



VAGRANT

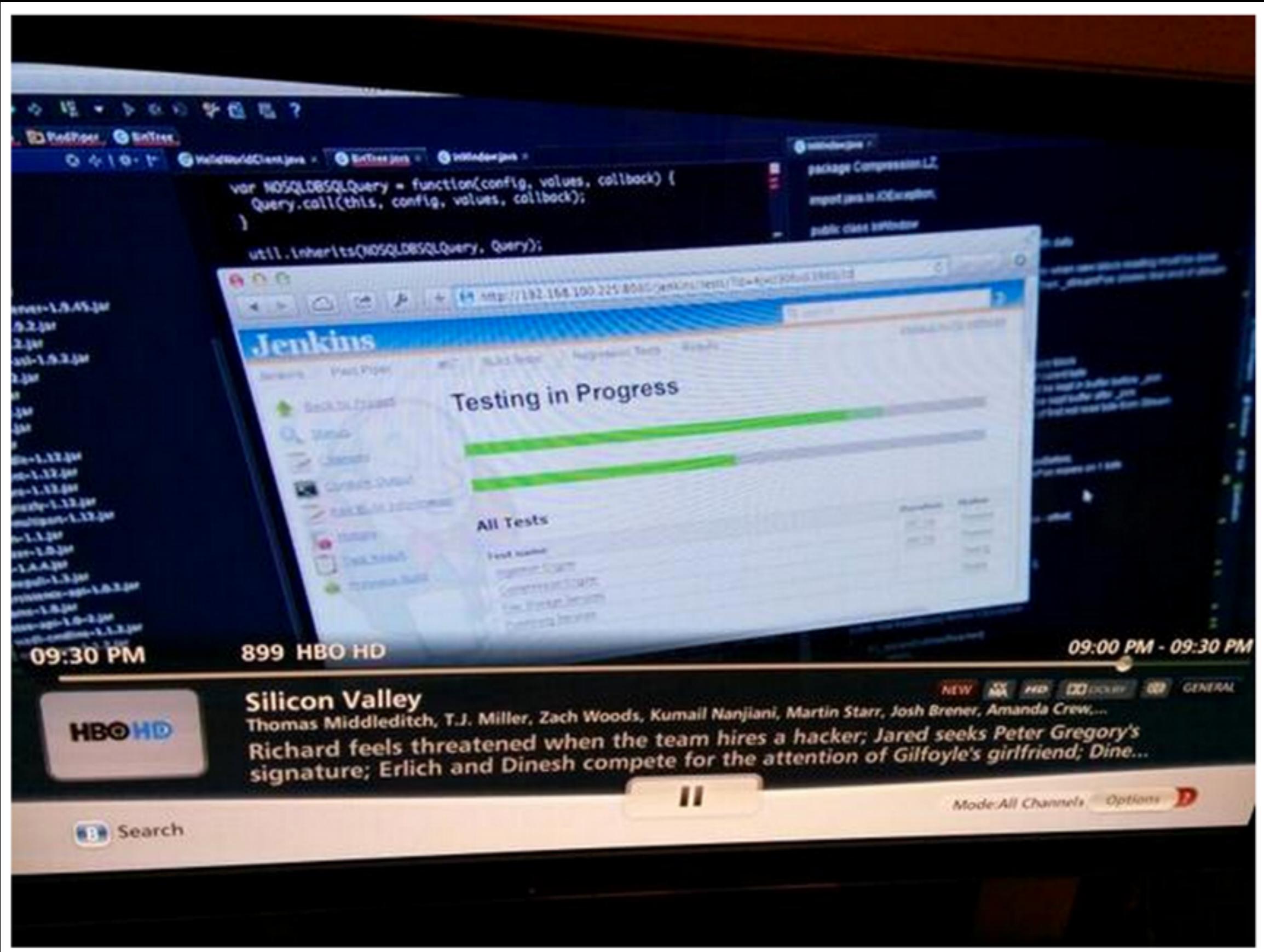
- Learn more at vagrantup.com
- \$ vagrant up
- \$ vagrant ssh
- \$ vagrant halt
- \$ vagrant destroy



Jenkins

JENKINS

- Java based, forked from Hudson after Oracle drama
- Continuous Integration software
- Monitors execution of builds
- Makes it easy for anyone to make a build, turn source into product



JENKINS

- Pro Tip: Install in a container, avoid service sludge
- Pro Tip: Name your jobs consistently
- Pro Tip: Clean your workspace!
- Pro Tip: Have a process for broken builds

I DON'T KNOW WHO YOU ARE,
BUT IF YOU BROKE THE BUILD



I WILL FIND YOU, AND I WILL
KILL YOU

JENKINS

- Jenkins builds can be triggered by a commit or many other triggers (cron, etc)
- Consistently and repeatedly build your project the same way
- Started by Kohsuke Kawaguchi

JENKINS

- Plugin Support
 - Publish to Play Store (Google Publish)
 - Git
 - Gradle
 - Credentials Binding (secrets)
 - Findbugs
 - Android emulator
 - Android Lint
 - Checkstyle
 - DRY
 - PMD - like findbugs, analyzes byte code for potential glitches
 - Warnings - Displays compiler warnings
 - Static Code Analysis - Compiles many of above and puts into a graph

JENKINS

- Slaves - can be docker instances
- Master Slave model allows many builds from one master
- Slaves can be local, remote, containers etc

JENKINS





DOCKER

- Initially written in Go by Solomon Hykes
- Docker automates the deployment of applications inside software containers, by providing an additional layer of abstraction and automation of operating-system-level virtualization on Linux.
- Docker uses resource isolation features of the Linux kernel such as cgroups and kernel namespaces to allow independent "containers" to run within a single Linux instance, avoiding the overhead of starting and maintaining virtual machines

DOCKER

- Build, Ship, Run
- Make your SysAdmin or Ops guy happy
- Great for apps with distributed resources

DOCKER



```
FROM ubuntu:precise
RUN echo deb http://archive.ubuntu.com/ubuntu/ precise main universe > /etc/apt/sources.list.d/precise.list
RUN apt-get update -q
RUN apt-get install -qy openvpn iptables socat curl
ADD ./bin /usr/local/sbin
VOLUME /etc/openvpn
EXPOSE 443/tcp 1194/udp 8080/tcp
CMD run
```

DOCKER

- Won't run on Mac out of the box, OS X doesn't support system-level virtualization even though BSD has jails
- boot2docker or run inside vagrant Ubuntu
- Google notes
- Learn more - docker.com



GRADLE

- Build Automation
- Convention over configuration
- Another way of saying developers like lazy
- Supports modern software development

A photograph of Samuel L. Jackson as Jules Winnfield from Pulp Fiction. He has curly hair and a mustache, looking intensely at the camera. He is holding a silver revolver in his right hand, pointing it towards the left side of the frame. The background is dark and textured.

SAY AGILE

ONE MORE TIME

GRADLE

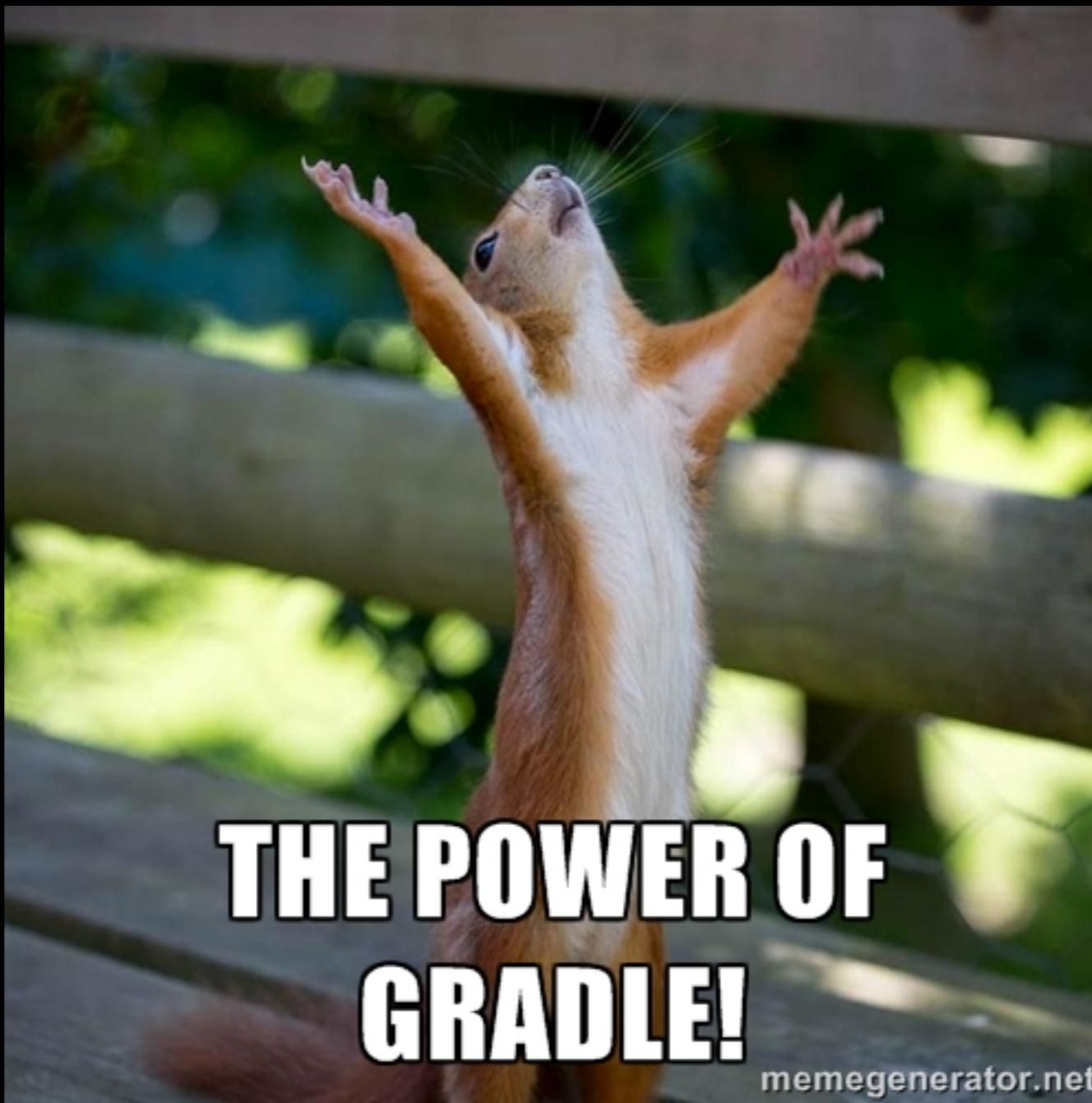
- large diverse software stacks
- dependency challenges
- legacy code
- multiple testing strategies
- integrate early and often

GRADLE

- Hans Dockter wrote in Java and Groovy (8+ y/o)
- Hans is speaking tomorrow afternoon
- Evolution of JVM tools, builds and surpasses Ant and Maven (xml - yuck)
- Declarative modeling of problem domain
- Domain Specific Language (DSL) - Java or Groovy

GRADLE

- Build scripts are shorter and more readable
- The Gradle daemon supports faster build starts , supports many builds per day
- Expert at dependency management, maven and ivy compatible, supports external libraries as well as modules



**THE POWER OF
GRADLE!**

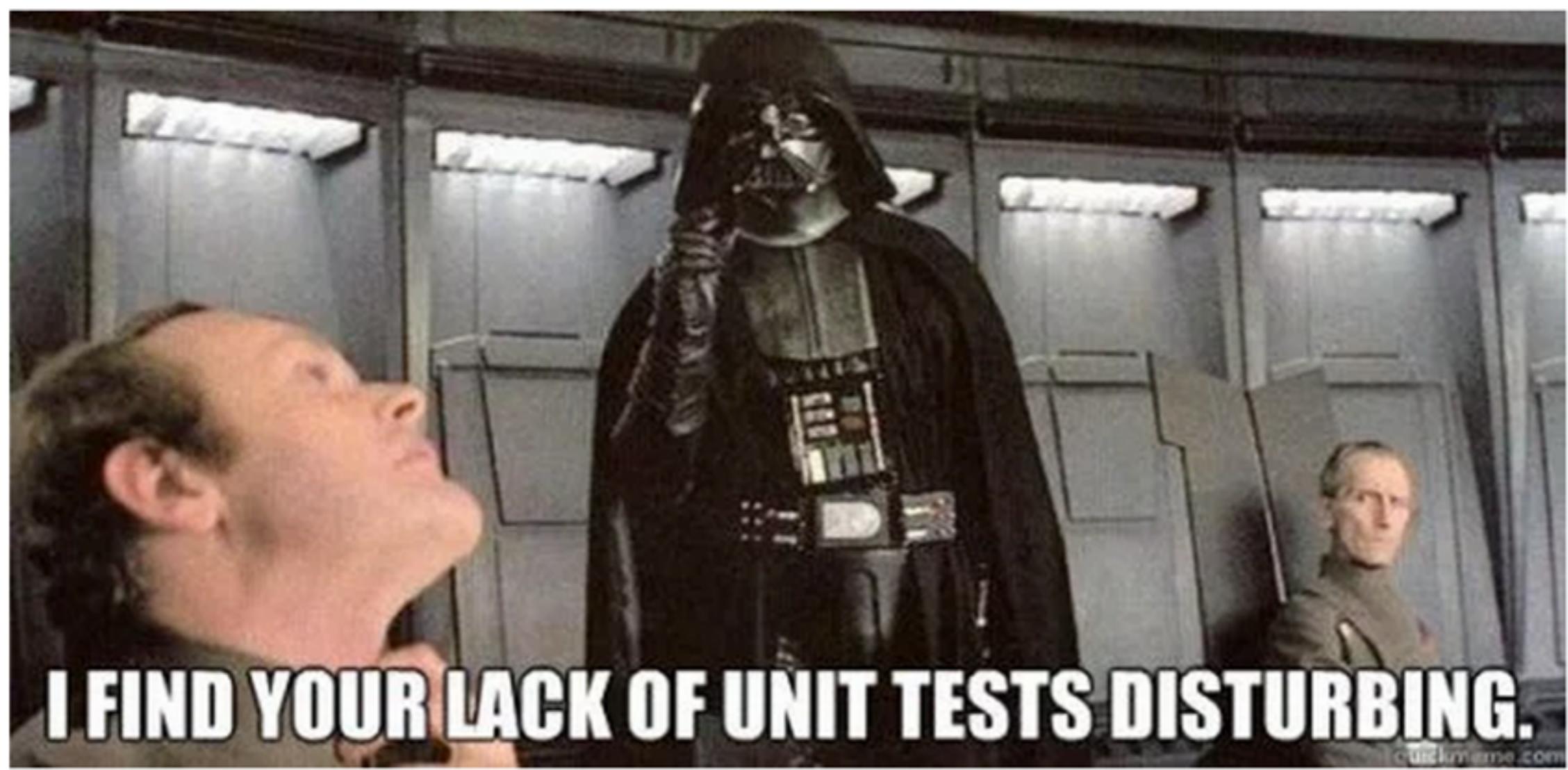
memegenerator.net

VAGRANT AND DOCKER

- Mac is host
- It has Vagrant inside of it
- inside of Vagrant /vagrant maps to host folder where Vagrantfile is
- Can map from inside Docker to /vagrant with commands like:
 - `docker run -v $WORKSPACE:/host:rw android_test_image bash -c "sh ./create-orders-json.sh && cp /usr/src/app/order.json /host"`

MORE TOOLS

- Espresso for integration testing
- Google Cloud Test Lab and AWS Device Farm
- TestFairy
- Alpha and Beta Release channels



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END TO END

- Consistent repeatable systems
- Building software regularly
- Saving artifacts of build process for postmortems
- Regular testing reports, unit and integration
- And regularly deploy to testers



**99 little bugs in the code.
99 little bugs in the code.
Take one down, patch it around.**

127 little bugs in the code...

HIGH RISK HIGH REWARD

- Sikorsky prize

- University of Toronto team
- 5 day stadium rental
- Last possible attempt



MARK SCHEEL

- @5280mark on Twitter
- iTriage App
- Colorado
- Survey

