

A decorative header at the top of the slide features four overlapping spheres: a green one on the left, and blue, red, and yellow ones on the right. A thin black horizontal line is positioned below the spheres.

# The 10 Commandments of Release Engineering

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# Overview

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- This talk is really about "Build & Release", not just "Release"
- Focus is on server-side software
- The commandments are solutions to requirements
- Ideas apply to software products for both internal and external customers
- Ideas presented are my own, not necessarily Google's



# Background

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- Release processes are usually an afterthought
- Most build systems do the minimum required to "get it done"
- Release processes should be treated as products in their own right
- There is often a big disjoint between the developer writing the code and the system admin who installs it

# Build & Release Steps

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- Check out the code from the source code repository
- Compile and/or process the code
- Package the results
- Analyze the results of each step and report accordingly
- Perform post-build tests based on the results of the analysis step

# Build & Release Process Features

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- Repeatable
- Tracking of changes and the ability to understand what is in a new version of the product or product component
- An identification mechanism (e.g. build ID) that uniquely identifies what is contained in a package or product
- Implementation and enforcement of policy and procedures
- Management of upgrades and patch releases



# I - Thou shalt use a source code control system.

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- **Everything** needed to build should be under source control
  - source code
  - build files
  - build tools

Repeatability is a virtue.



# Reproducible Build Environment

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- Operating System
- Compilers
- Build tools

# II - Thou shalt use the right tool(s) for the job.

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Complex projects may require multiple build tools

Examples:

- make for C and C++ - the dependency checking is crucial
- ant for java
- scripting languages (bash, python, etc.)

Unnecessary complexity is a sin.





# III - Thou shalt write portable and low-maintenance build files

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- Plan to support multiple architectures and OS versions
- Use centralized Makefiles for definitions common to Makefiles
  - Compiler options will change between architectures
  - Editing hundreds of files for a single change is no fun
- Provide template files so developers can easily create new build files

# IV - Thou shalt use a build process that is repeatable

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And automated...

And unattended...

And repeatable...

- Identify your customers:
  - QA
  - Developers
  - Management
  - External customers
- Leverage open source tools like Hudson and Cruise Control
- Adopt a continuous build policy



# V - Thou shalt use a unique build ID

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- Generated at build time
- Should provide enough information so the build can be uniquely identified and reproduced
- Examples:
  - Date
  - Repository revision
  - Release version
- Should be easily obtainable
  - Included in packaging
  - Embedded in binaries



# VI - Thou shalt use a package manager

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- Auditing
- Installation/upgrade/removal
- Package summary (who, what, when, etc.)
- Manifest (ok, `tar -tf` gives you that.)
- Can leverage installation/upgrade/removal capabilities
- Built-in version tracking

`tar` is not a package manager...



# VII - Thou shalt design an upgrade process before releasing version 1.0

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- Packaging decisions can affect the ability to upgrade

# VIII - Thou shalt provide a detailed log of what thou hath done to my machine

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- Installing/Patching/Upgrading/Removing the software should provide a detailed log of what is happening
- Ideally there should be a "do nothing" option so I can see what is going to happen first

IX - Thou shalt provide a complete  
install/upgrade/patch/uninstall process

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# X - System Admin: Thou shalt apply these laws to thyself

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- All of these commandments can be **applied** to system customizations