
SEE THE CAR OF THE FUTURE
AT THE
HILL VALLEY
NEXT
BIG
SOUND
BUILDING NEXT BIG SOUND
A REVISIONIST HISTORY

Things we'll talk about...

NEXT BIG SOUND

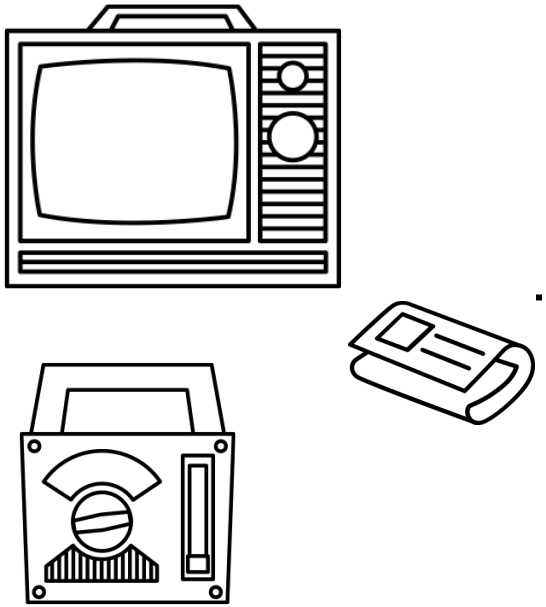
- ❑ WHAT IS NBS?
- ❑ TECH DEBT QUADRANT
- ❑ VERSION CONTROL
- ❑ LANGUAGE CHOICE
- ❑ SECRETS/CONF IN CODE
- ❑ 1 MACHINES VS MANY
- ❑ CRAWLING VS PARSING
- ❑ PACKAGE MANAGERS
- ❑ JENKINS/CI
- ❑ EXTERNALIZABLE APIS
- ❑ BLAMELESS POST-MORTEMS
- ❑ MYSQL AS A QUEUE
- ❑ BUY VS BUILD VS OPEN SRC

NEXT BIG SOUND

- Analytics and Insights for the Music Industry
- “How does a band become famous?” Scrape MySpace to figure it out.
- Acquired by Pandora in 2015
- Service Organization within Pandora
- Team of 25+ Software, Systems, & Data Engineers, Scientists, & Designers

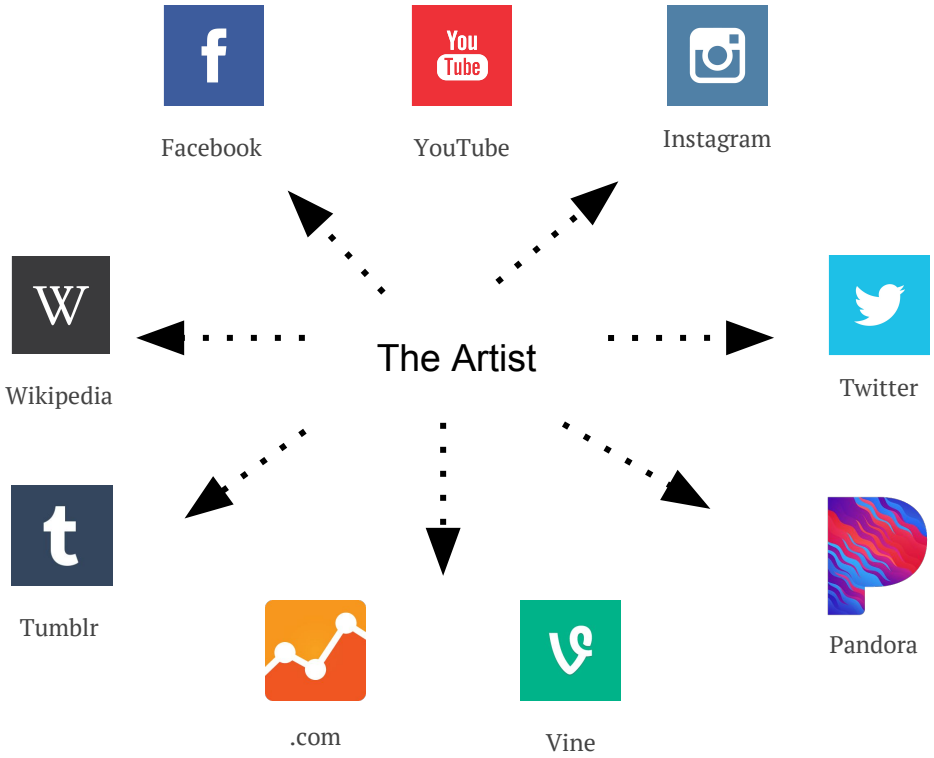
How does a band become famous?

MEDIA CONSUMPTION IS NOW FRAGMENTED



Facebook
YouTube
Twitter
Wikipedia
Instagram
Pandora
Tumblr
.com
Vine

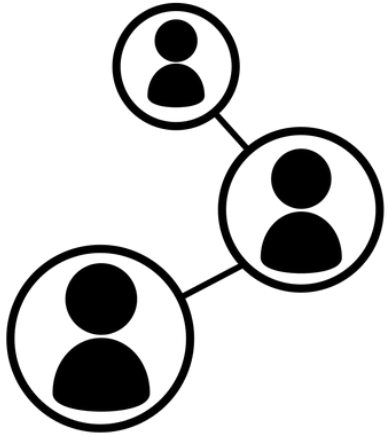
ARTISTS & MUSIC DRIVE A LOT OF THIS CONSUMPTION



UNDERLYING PRINCIPLE AND PURPOSE

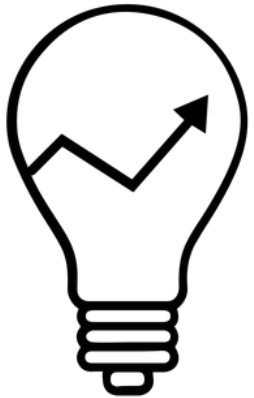
Where People are Spending Their Time and Attention

MEASURE



Which Social Signals Lead Sales

ANALYZE



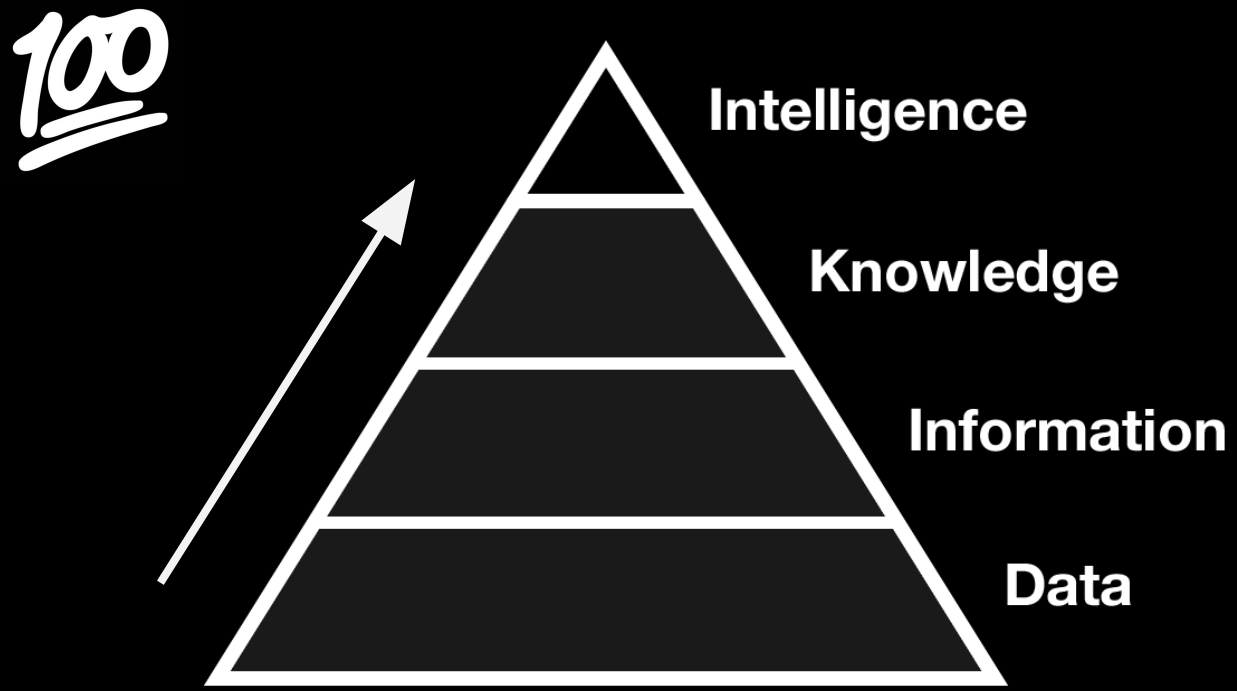
Which Marketing Levers Drive Social and Sales

RECOMMEND

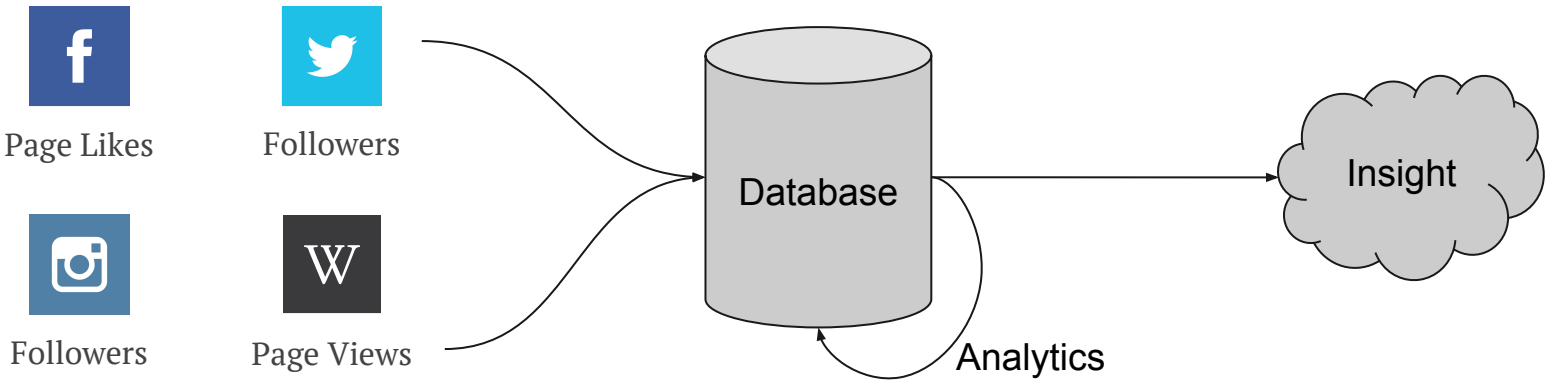
CUSTOMERS: 1,000'S OF MUSIC COMPANIES INCLUDING

NEXT BIG SOUND

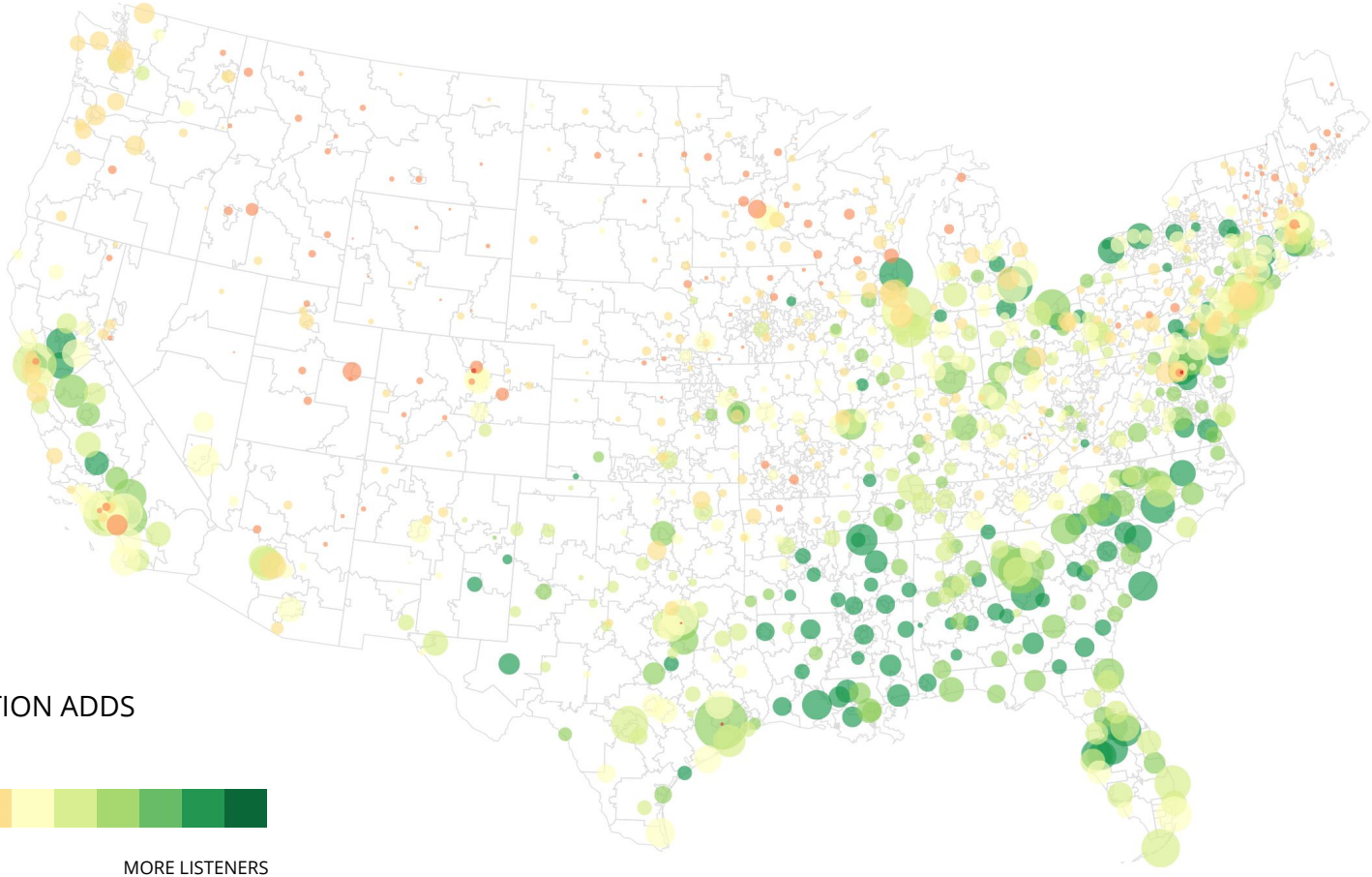
NEXT BIG SOUND



FROM RAW DATA TO INSIGHTS



NEXT BIG SOUND



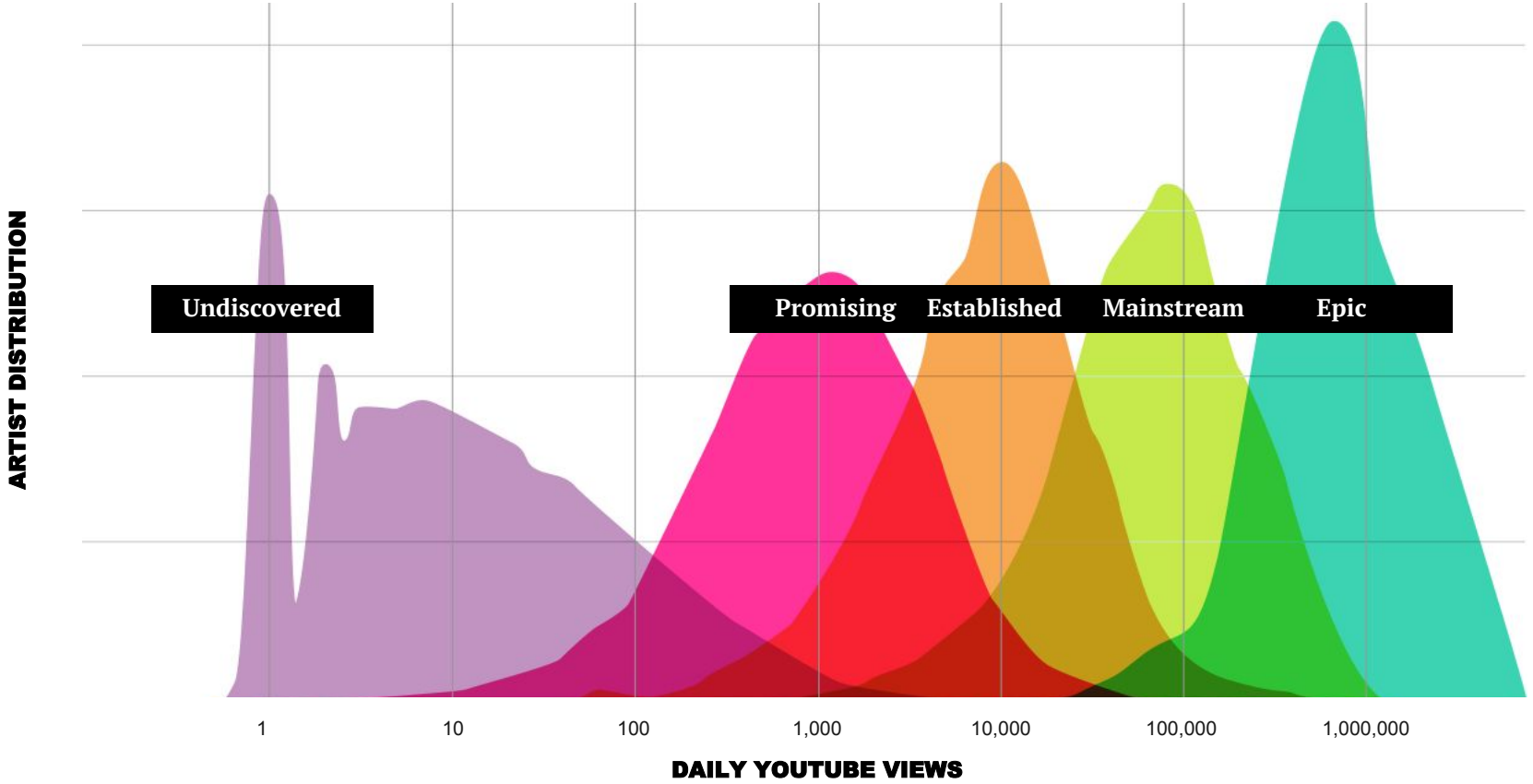
FETTY WAP
PANDORA STATION ADDS

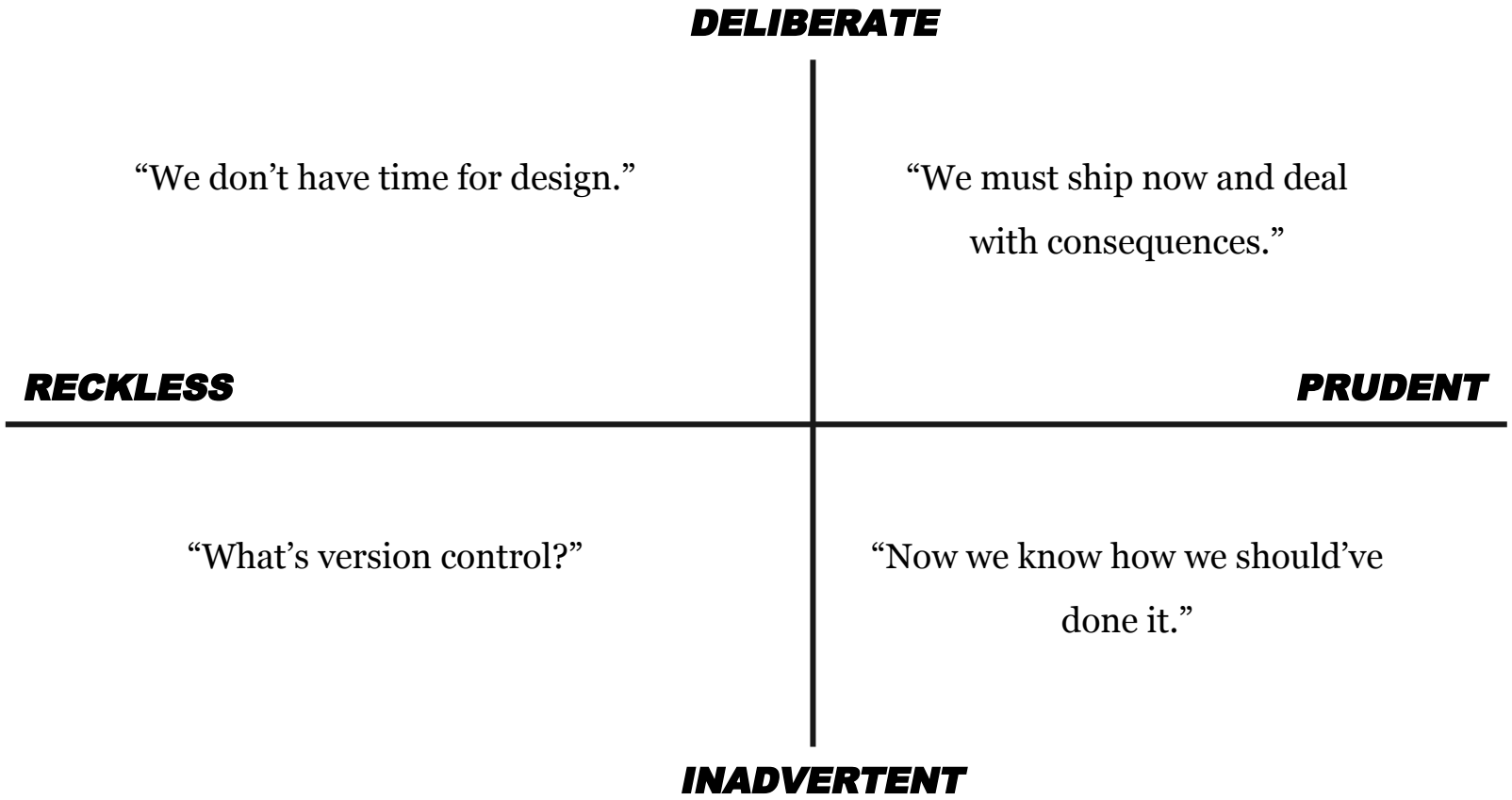
FEWER LISTENERS PER POPULATION

MORE LISTENERS PER POPULATION

How did I perform last week on Twitter?

POWERED BY RIGOROUS DATA SCIENCE





Source: Technical Debt Quadrant by Martin Fowler

VERSION CONTROL

NEXT BIG SOUND

- Had no idea what Git was
- Editing files directly on the server
- One dev environment
- No history of changes
- No ability to rollback
- Overwrote each other's code all the time
- git commit -am "not has hard as it looks; takes a little getting used to"
- Glitch.com

"Hey Walter, are you in this file right now?"

CHOOSING LANGUAGES

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- Based on what you know
- Based on what you like
- Based on what will help you hire
- Based on what is right for the job
- Based on what is easy to read/configure/update

SECRETS/CONFIGURATION IN CODE

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- This is actual code that was checked in and running in production ->
- Zero failover built in
- What happens if your github gets hacked?
- Environment/Configuration files
- Service Discovery - Consul
- Secrets Management - Vault

```
function getMysQLConfig() {
    //mydb003
    return array(
        'host' => '10.123.14.50',
        'user' => 'mysql_java',
        'pass' => 'MWU0N0MTFiYjk4'
    );
}
```

1 MACHINE VS MANY

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- Usually, your application starts by running on one machine
- At scale, a web-app may need multiple machines to support load and/or add redundancy if one of your machines die (yes, that happens sometimes)
- Things to consider:
  - User session handling
  - Using a queue

In school, your application needs to run once and show correct output. In the real-world, your application needs to run 24/7/365

MYSQL AS A QUEUE - SIMILAR TO CHOOSING A LANGUAGE

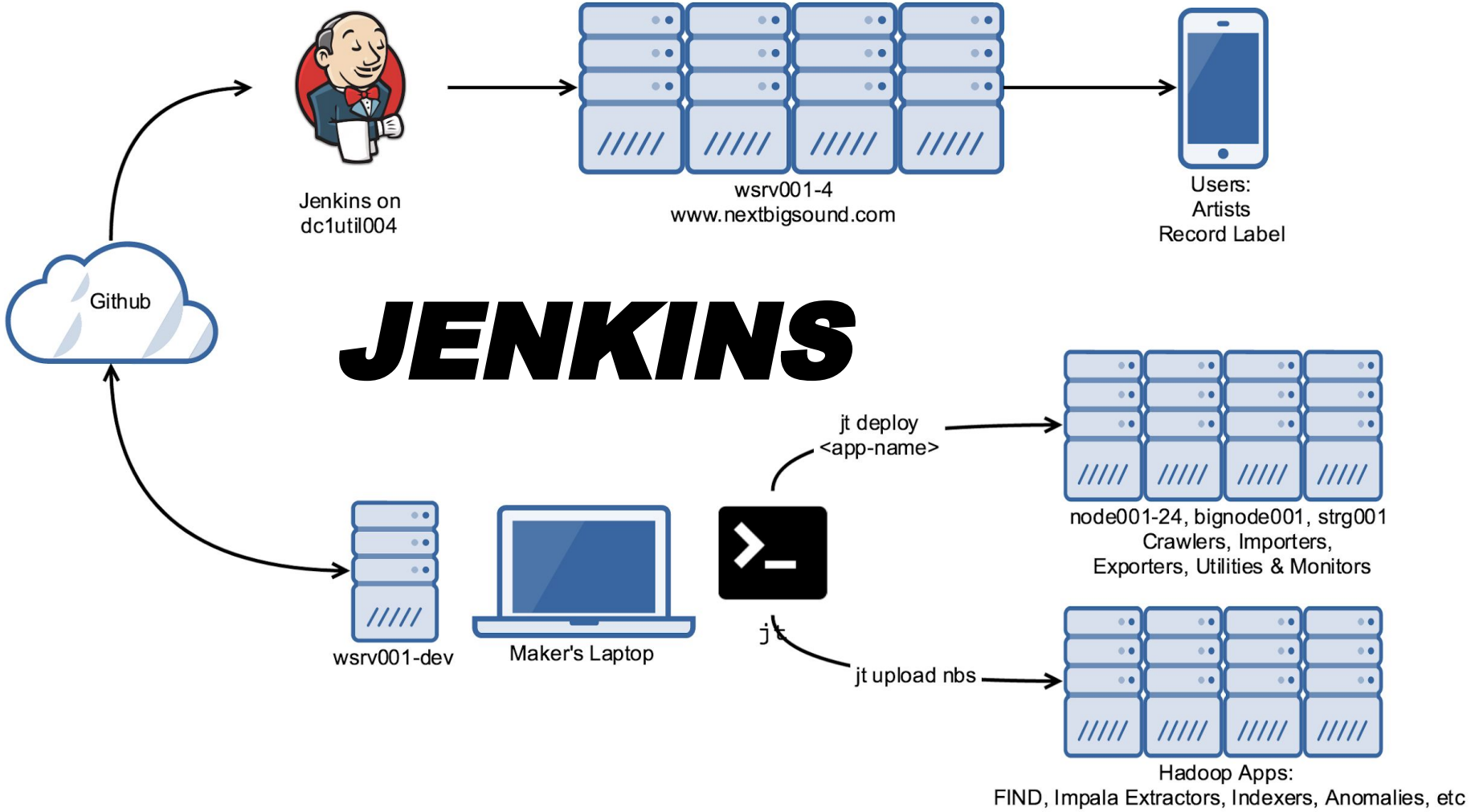
NEXT BIG SOUND

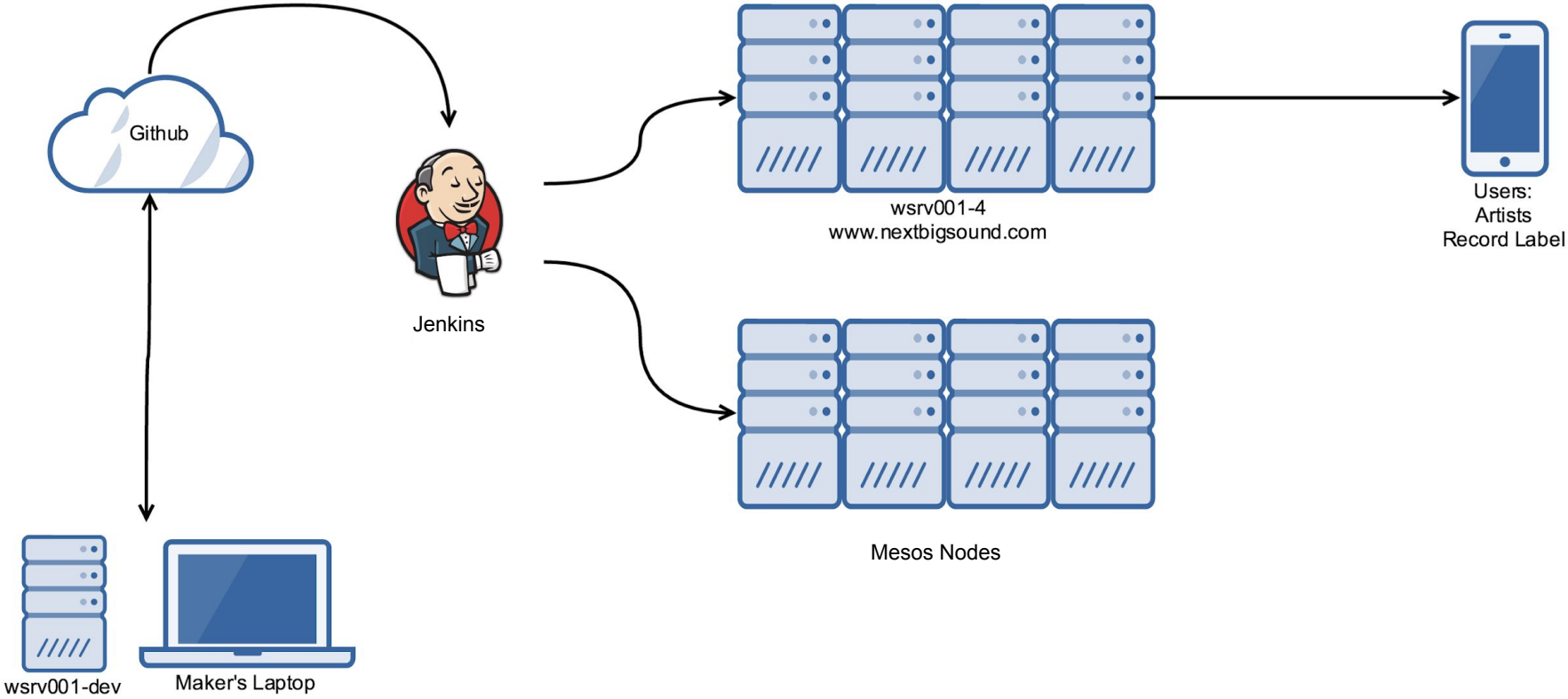
- Based on what you know
- Based on what you like
- Works until it doesn’t, and then it’s really painful to switch
- Use appropriate tech for appropriate problem

PACKAGE MANAGER

NEXT BIG SOUND

- Bottom right of tech debt quadrant
- Open source libraries are great!
- There's a right way to import them into your project
- Have spent many, many hours undoing this work and refactoring our codebase
- Especially helpful as your team gets bigger
- Upgrading software is a real thing; use a package manager
- Javascript: npm, yarn; PHP: composer; Python: pip; Java: Gradle, Maven


Jenkins on
dc1util004
wsrv001-4
www.nextbigsound.com
Users:
Artists
Record Label
Github
JENKINS
jt deploy
<app-name>
node001-24, bignode001, strg001
Crawlers, Importers,
Exporters, Utilities & Monitors
wsrv001-dev
Maker's Laptop
jt
jt upload nbs
Hadoop Apps:
FIND, Impala Extractors, Indexers, Anomalies, etc


Github
Jenkins
wsrv001-4
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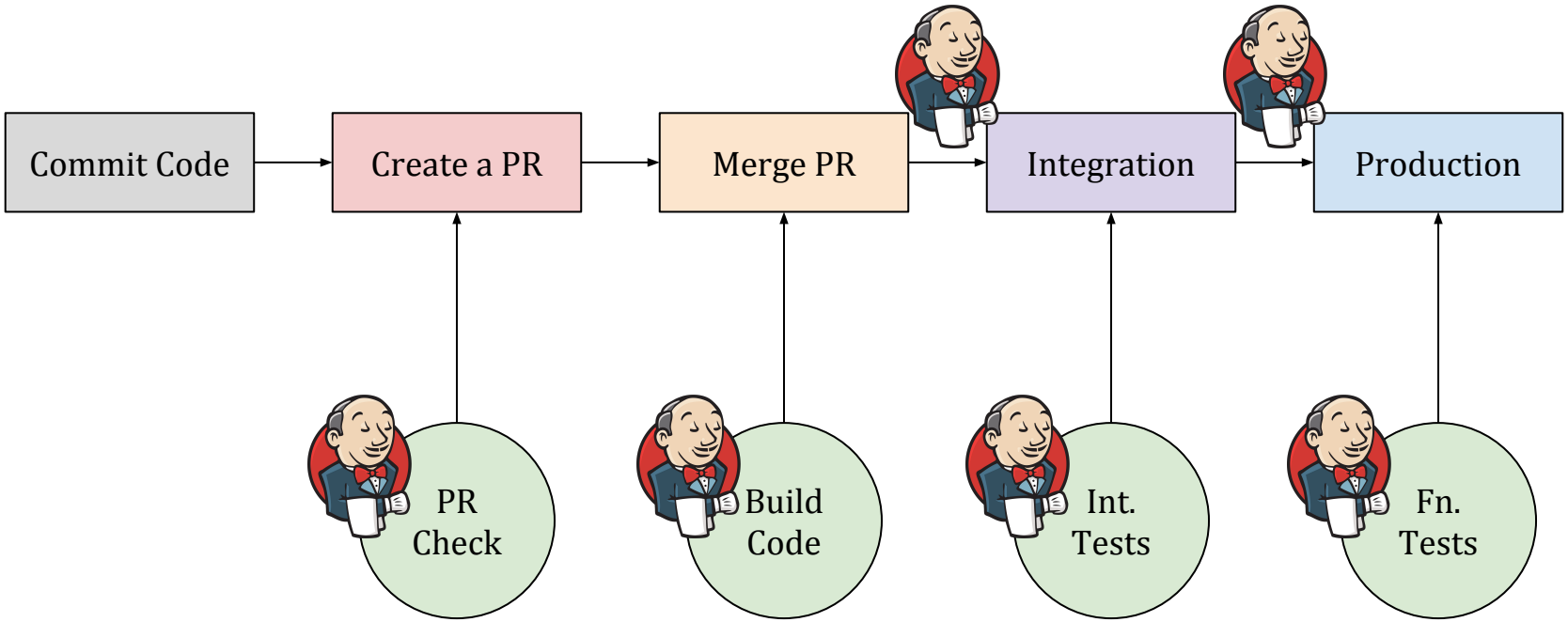
Users:
Artists
Record Label
Mesos Nodes
wsrv001-dev
Maker's Laptop

WEB WORKFLOW



EXTERNALIZABLE APIS

NEXT BIG SOUND

- If you're going to build an API, be brave enough to use it yourself
- Build APIs first - become a service to yourself and others from day 1
- Adding new clients should be simple
- Clients should be lightweight
- Improves data confidence

"All service interfaces, without exception, must be designed from the ground up to be externalizable. That is to say, the team must plan and design to be able to expose the interface to developers in the outside world. No exceptions."

BUILD VS BUY VS OPEN SOURCE

NEXT BIG SOUND

- Building software is extremely expensive
- Third parties that are dedicated to providing one piece of software are more focused.
- Switching software can be expensive too
- We built a ton of things we never had to. Don’t be us.
- What is your strength? Focus on this.
- Today:
  - Firebase, Tableau, Google, Github, Glitch, ElasticSearch, MemSQL, AWS, Run.sh

BLAMELESS POST-MORTEMS

NEXT BIG SOUND

- Murphy's Law: "Anything that can go wrong will go wrong"
- The point of a traditional post mortem is to find exactly who is at fault. The point of the blameless post-mortem is to learn.
- Failure and success never really rest with a single individual
- Change is a byproduct of aliveness within the organization.

"Human error is a symptom—never the cause—of trouble deeper within the system"

THANK YOU

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