GIAC

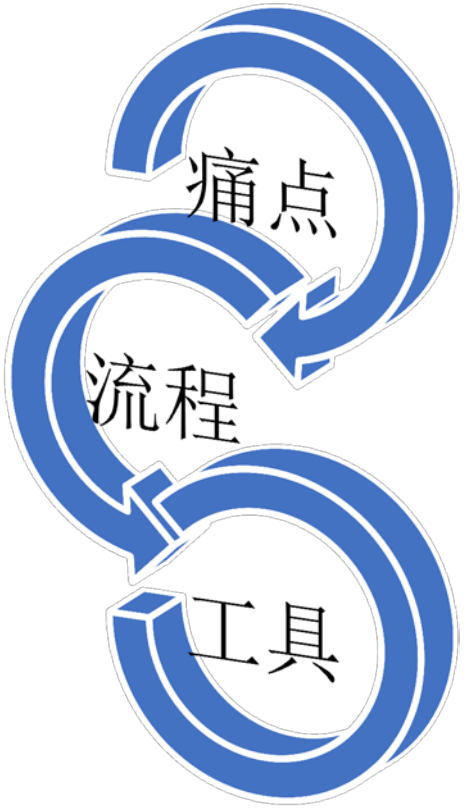
全球互联网架构大会

GLOBAL INTERNET ARCHITECTURE CONFERENCE

大数据测试之“十八”般武器

沈立彬　Splunk 软件测试经理

目标收益



关于大数据

How big is BIG?

关于大数据

“Big Data is the frontier of a firm's ability to store, process, and access (SPA) all the data it needs to operate effectively, make decisions, reduce risks, and serve customers.”

-- Forrester

关于大数据

“Big Data in general is defined as high volume, velocity and variety information assets that demand cost-effective, innovative forms of information processing for enhanced insight and decision making.”

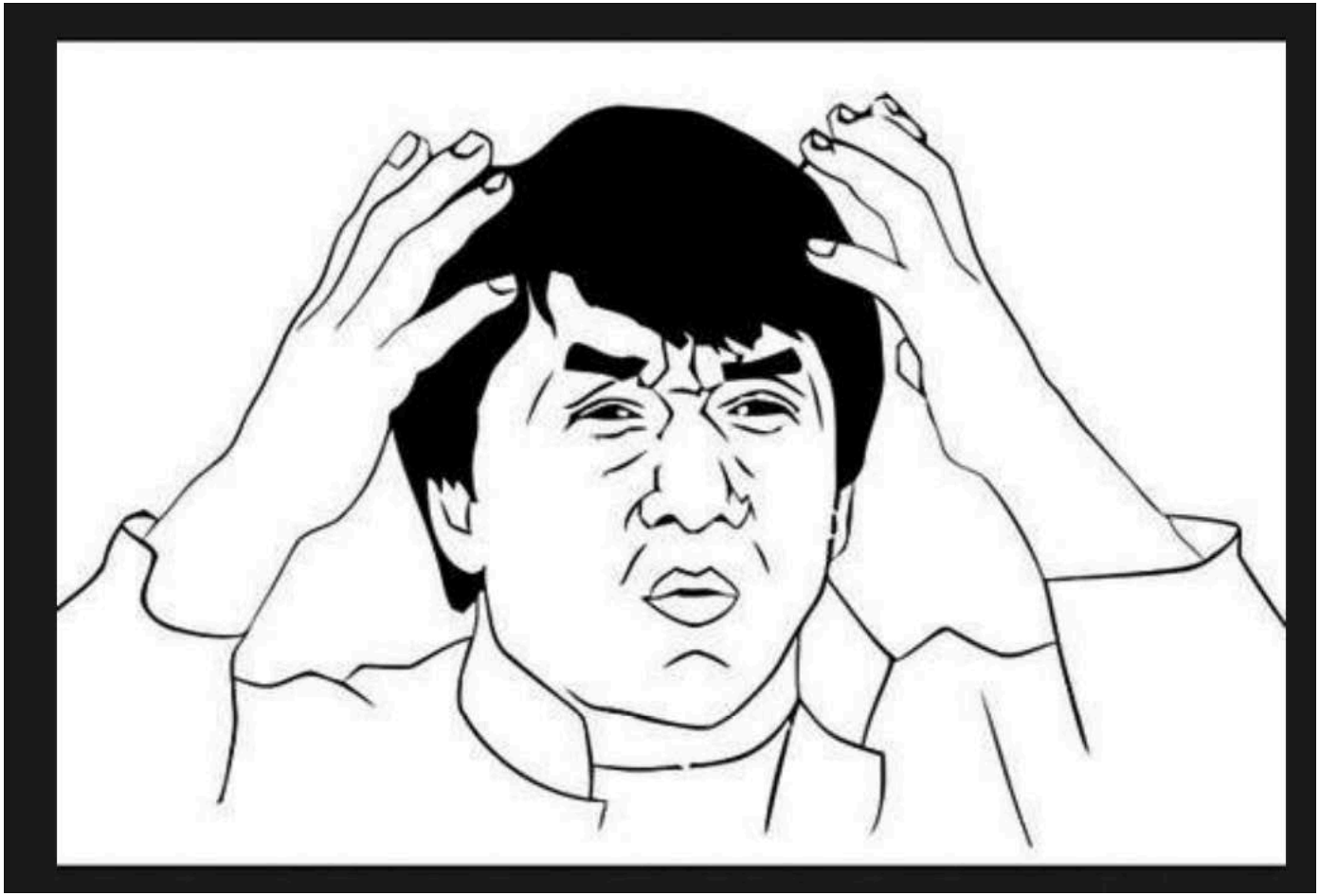
-- Gartner

关于大数据

“Big data is data that exceeds the processing capacity of conventional database systems. The data is too big, moves too fast, or doesn't fit the strictures of your database architectures. To gain value from this data, you must choose an alternative way to process it.”

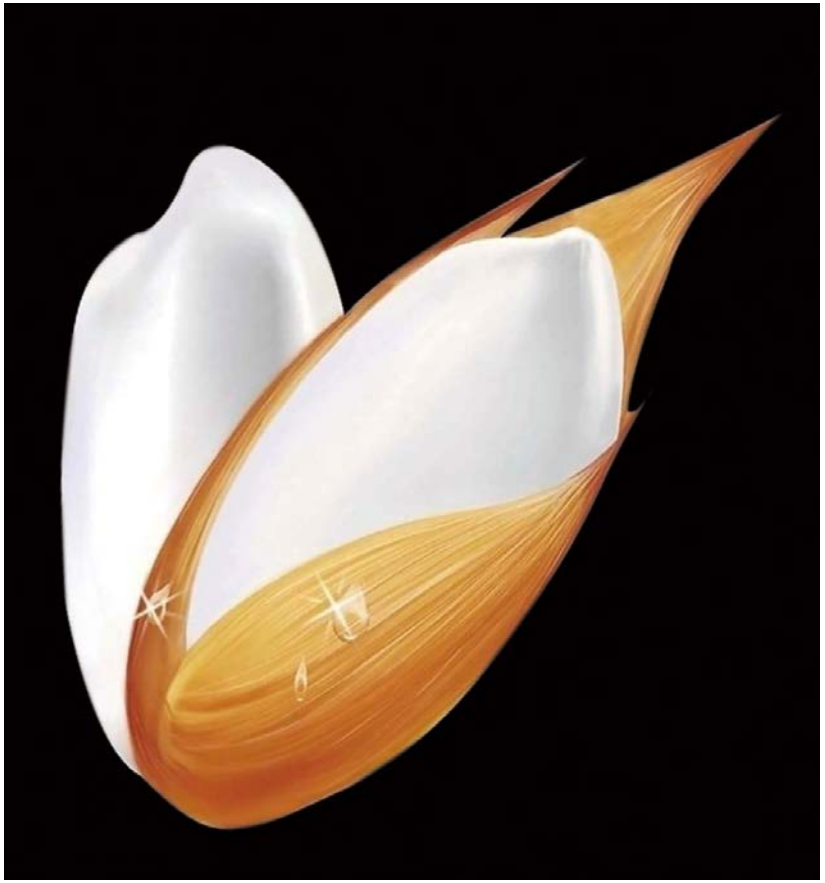
-- O’Reilly

关于大数据



关于大数据

Byte：一粒米



关于大数据

Kilobyte : 一杯米

关于大数据

Megabyte : 8袋米

关于大数据

Gigabyte : 3 卡车米

关于大数据

Terabyte : 2 大船米

关于大数据

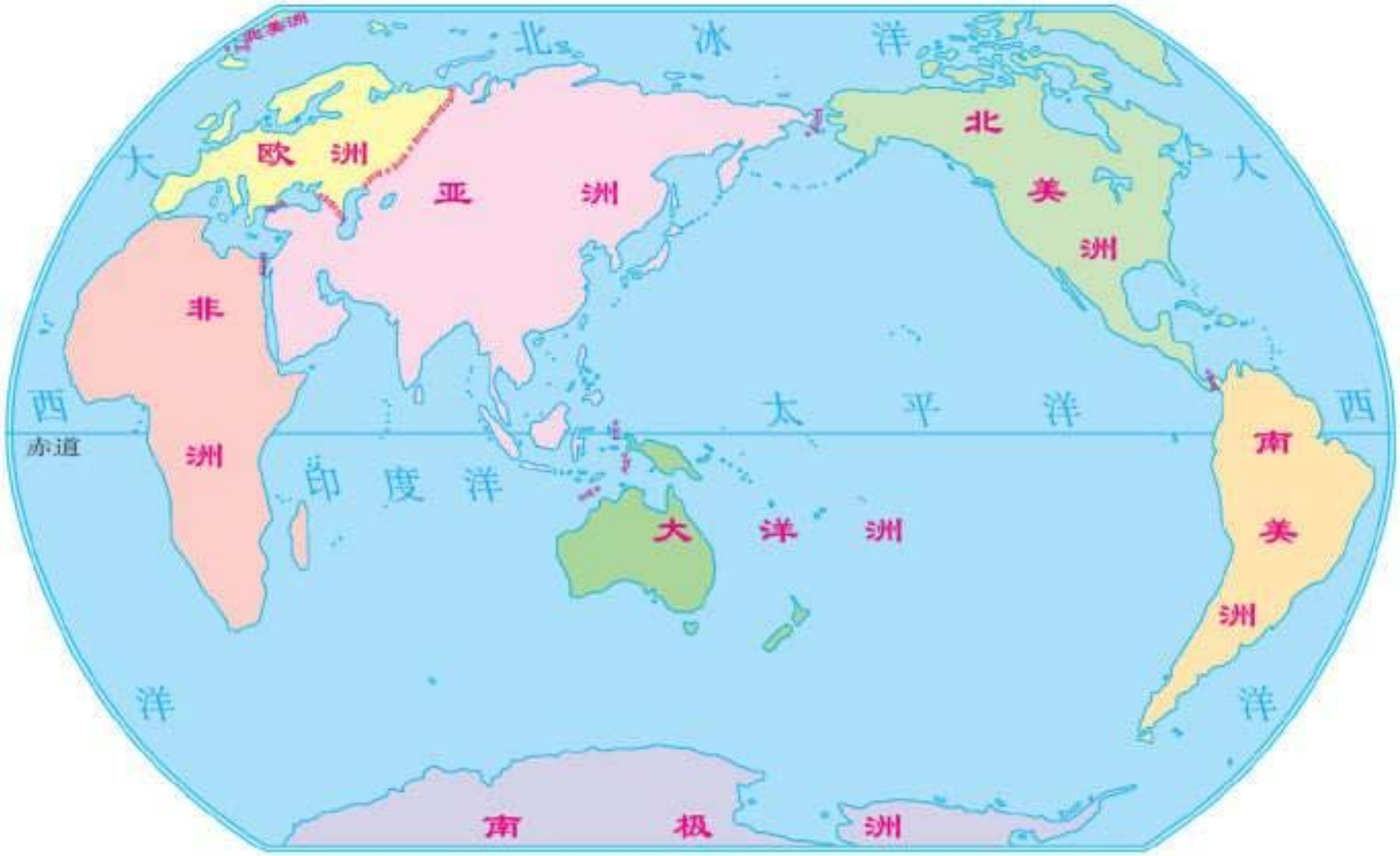
Petabyte：铺满福田区

关于大数据

Exabyte：铺满西北地区

关于大数据

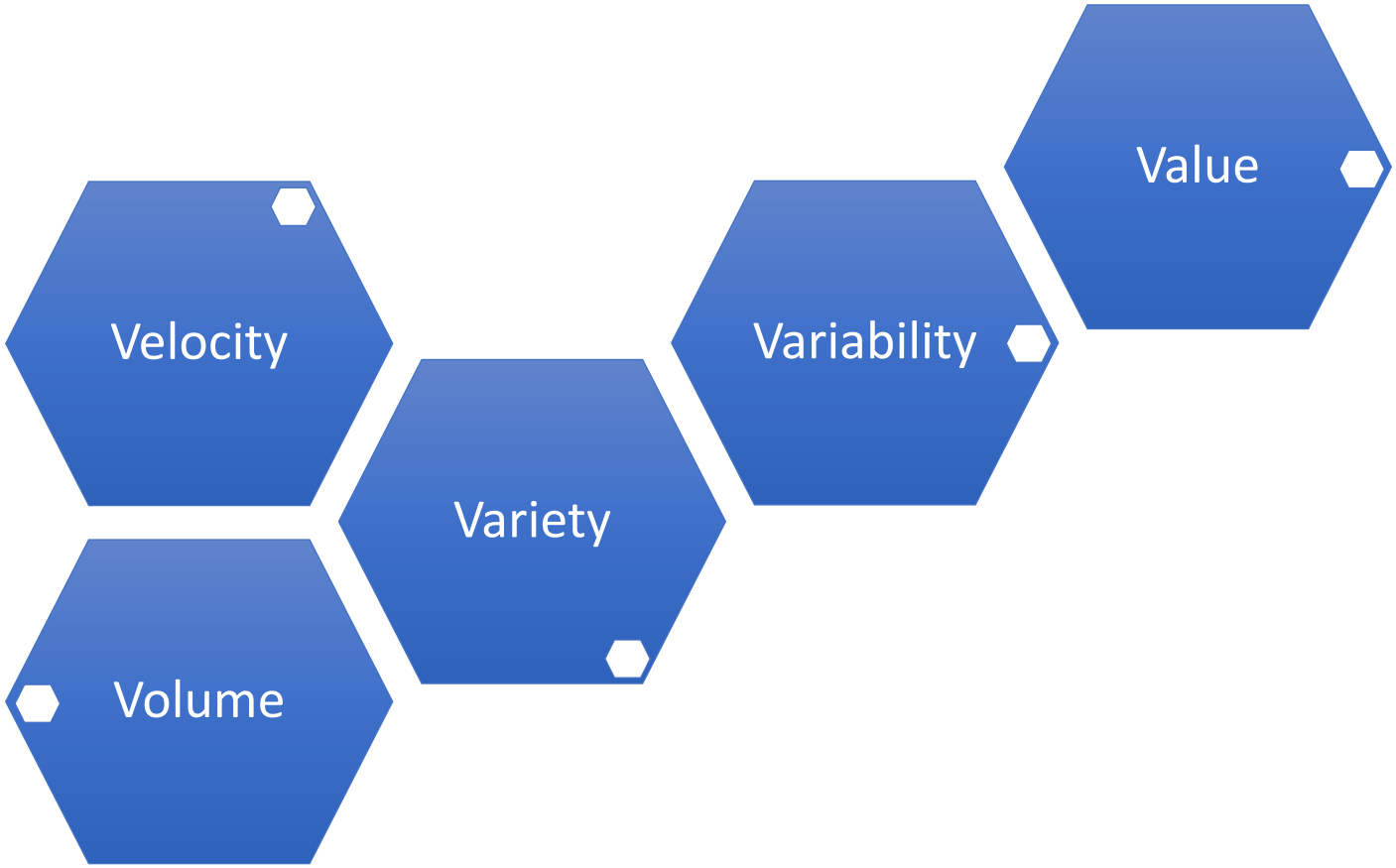
Zettabyte：填满整个太平洋



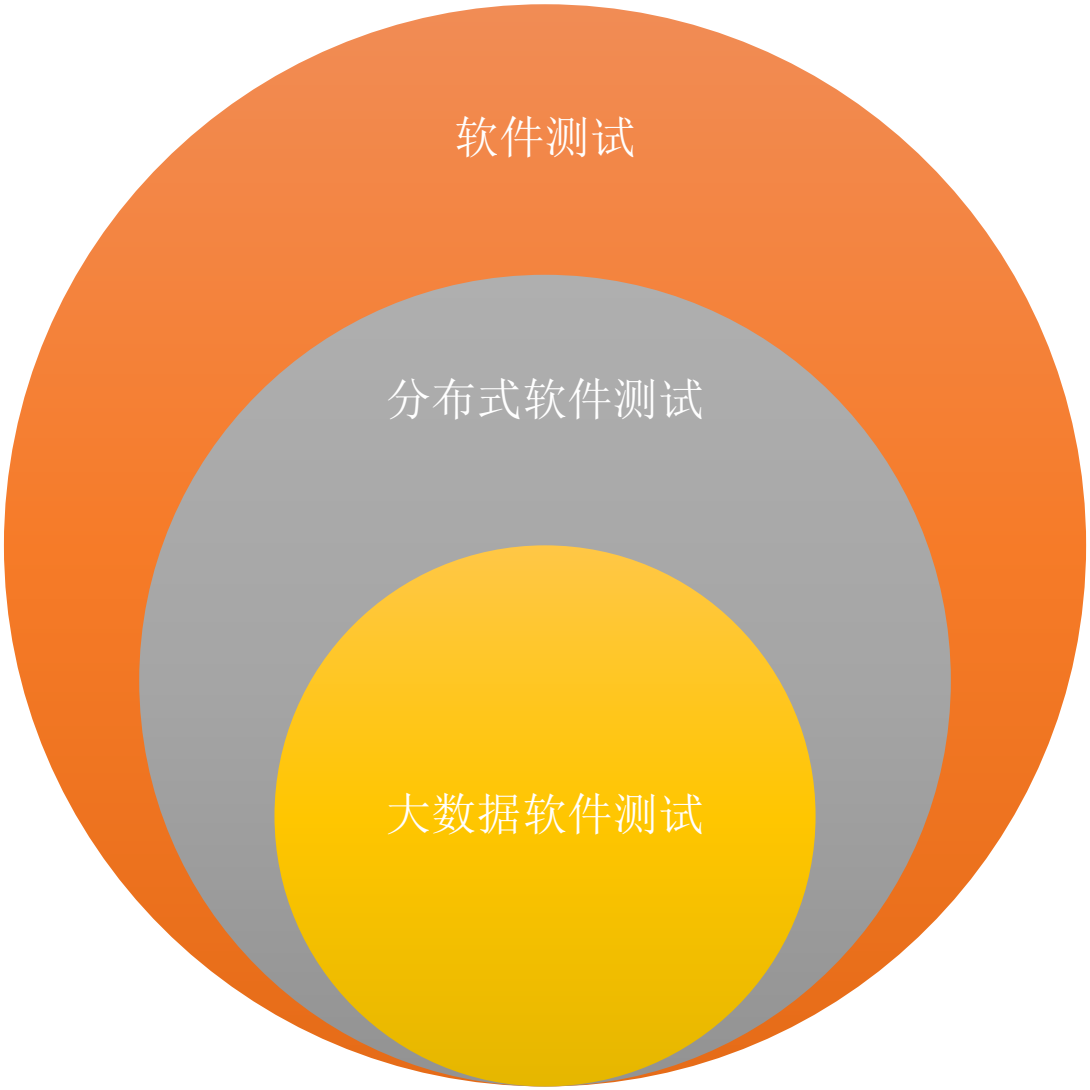
关于大数据

Yottabyte：装满整个地球的大米

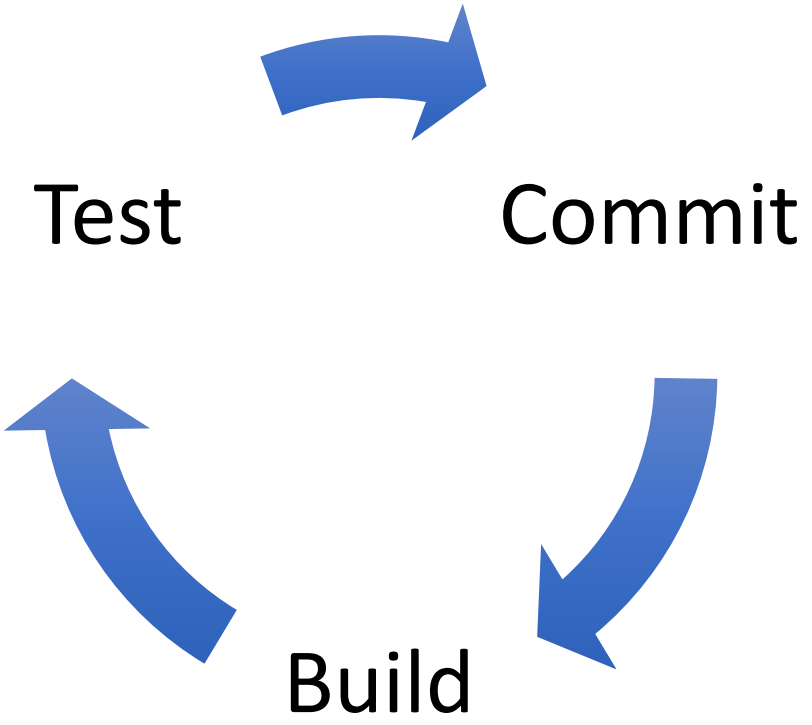
大数据



大数据测试



持续集成需求

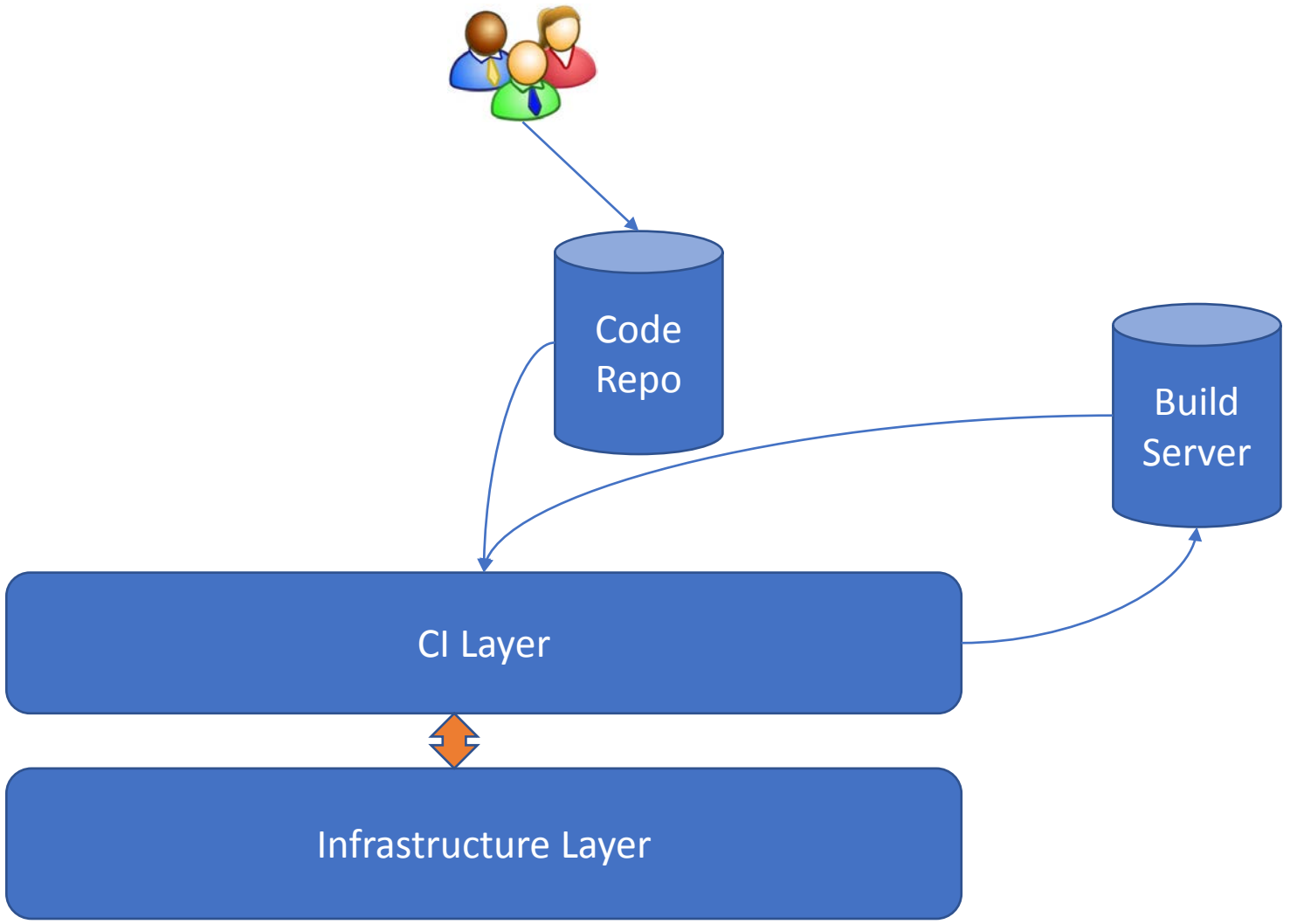


- **多**: 有限时间内没有老板嫌执行的测试少
- **快**: 固定测试用例数量下，没有老板嫌测试时间短
- **好**: 测试用例执行结果越稳定越好
- **省**: 固定测试用例，有限时间内，执行测试所需资源越省越好

高并发测试需求

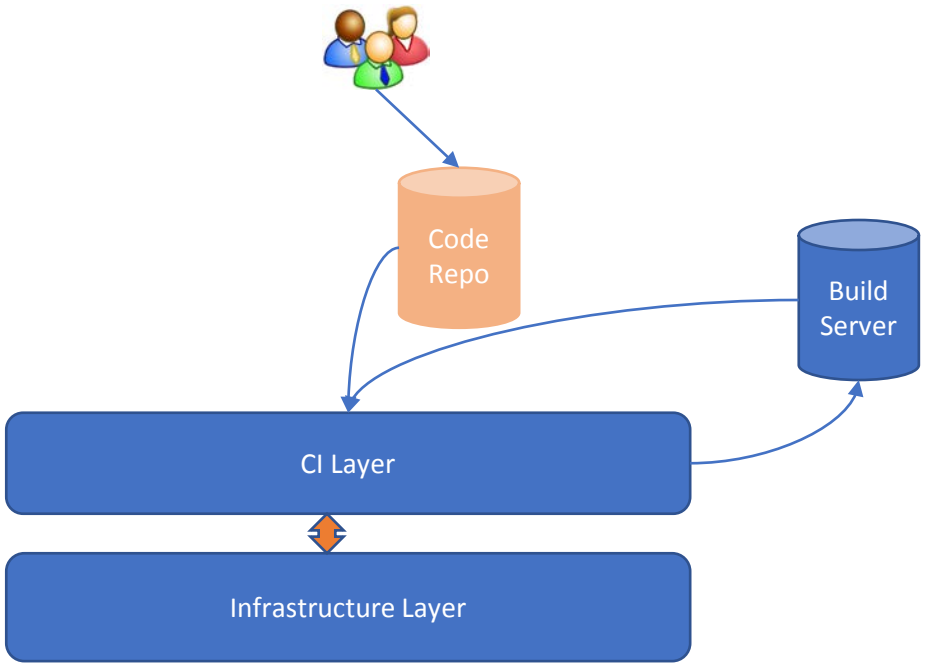
- 不同小组的测试执行需求
- 多平台测试需求
- 快速发布需求
- 测试结果分析需求

基本研发工作流

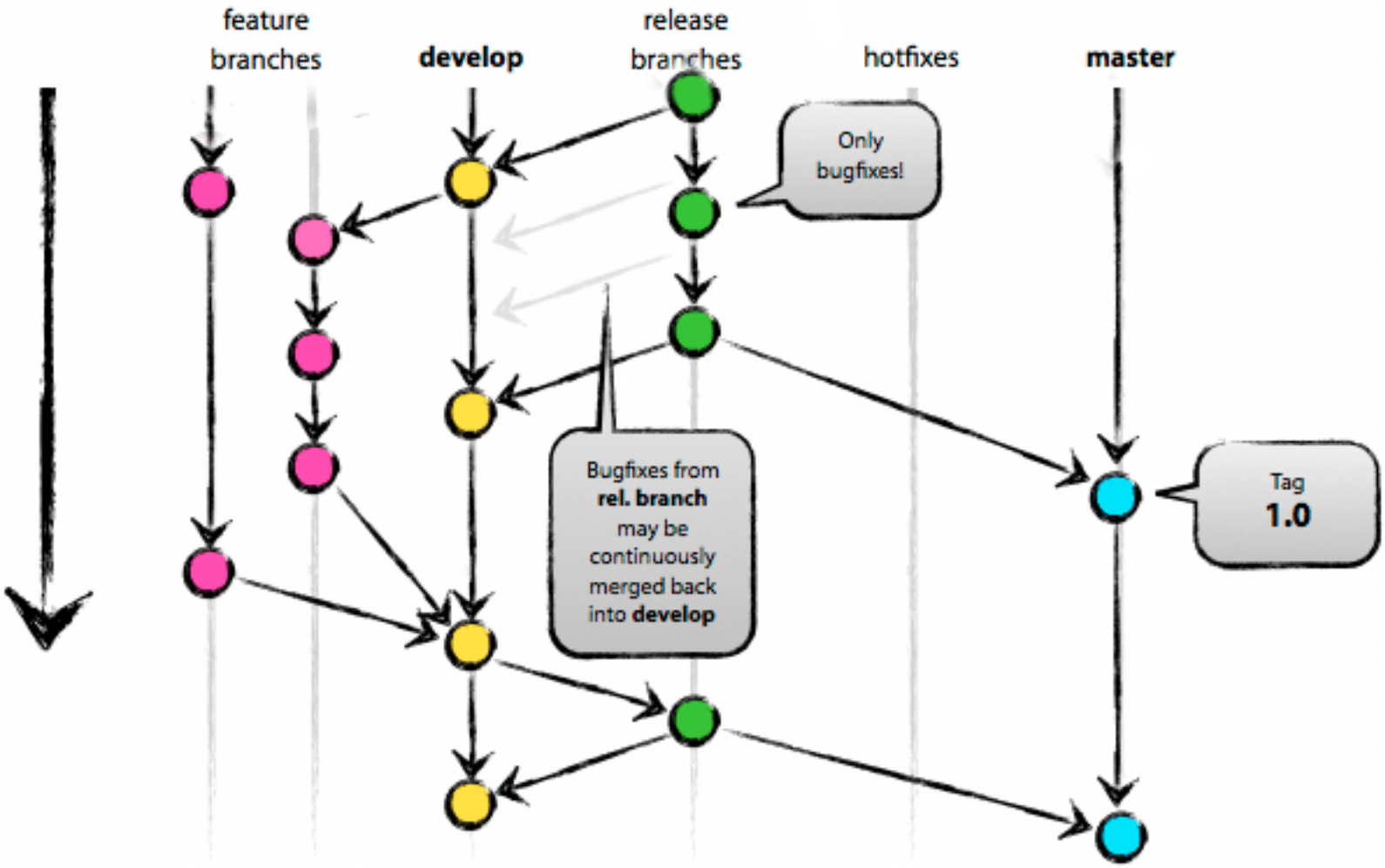


基本研发工作流

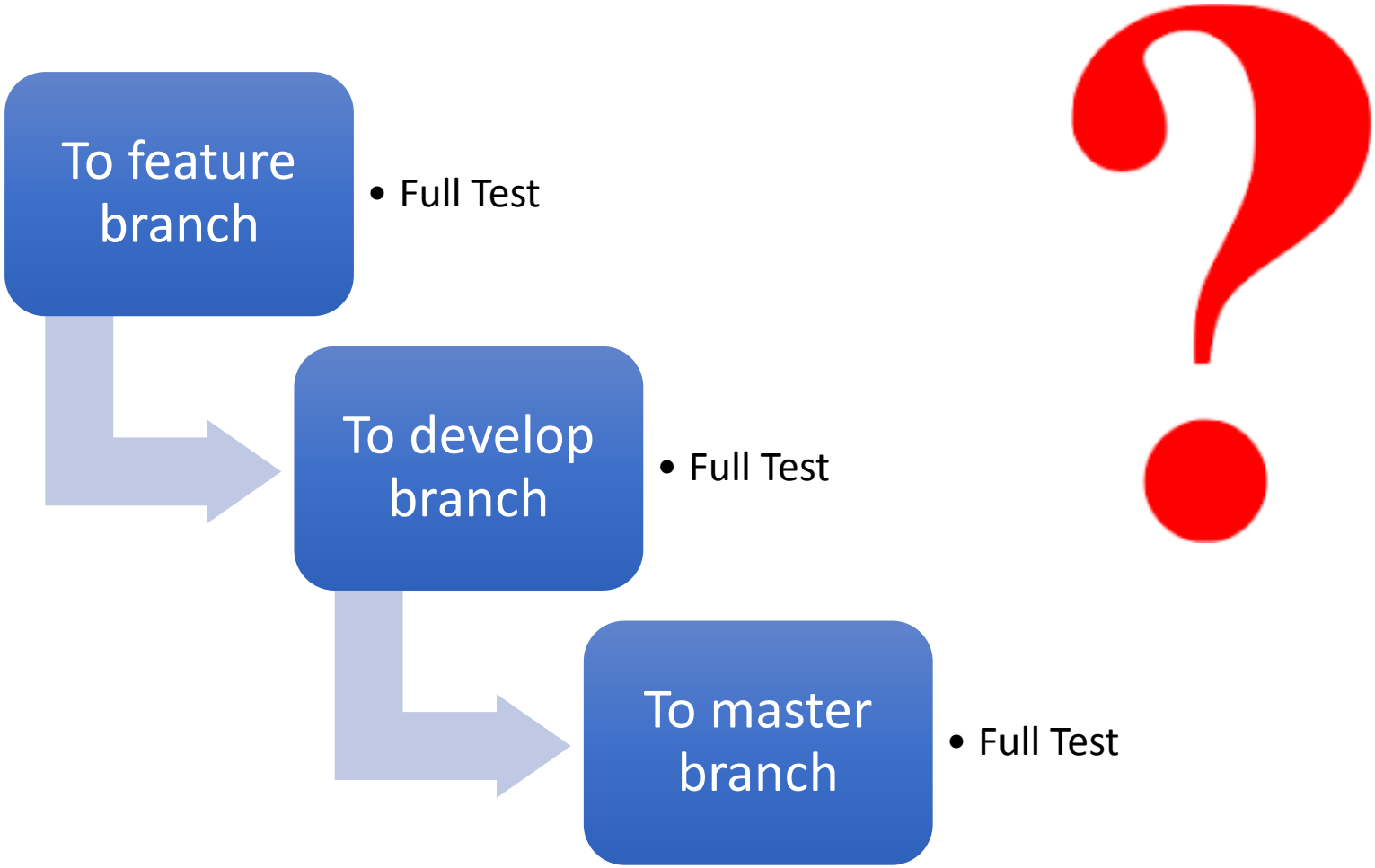
- 产品代码
- 测试代码
  - 测试辅助库
  - 测试框架
  - 测试用例
  - 测试数据 (optional)



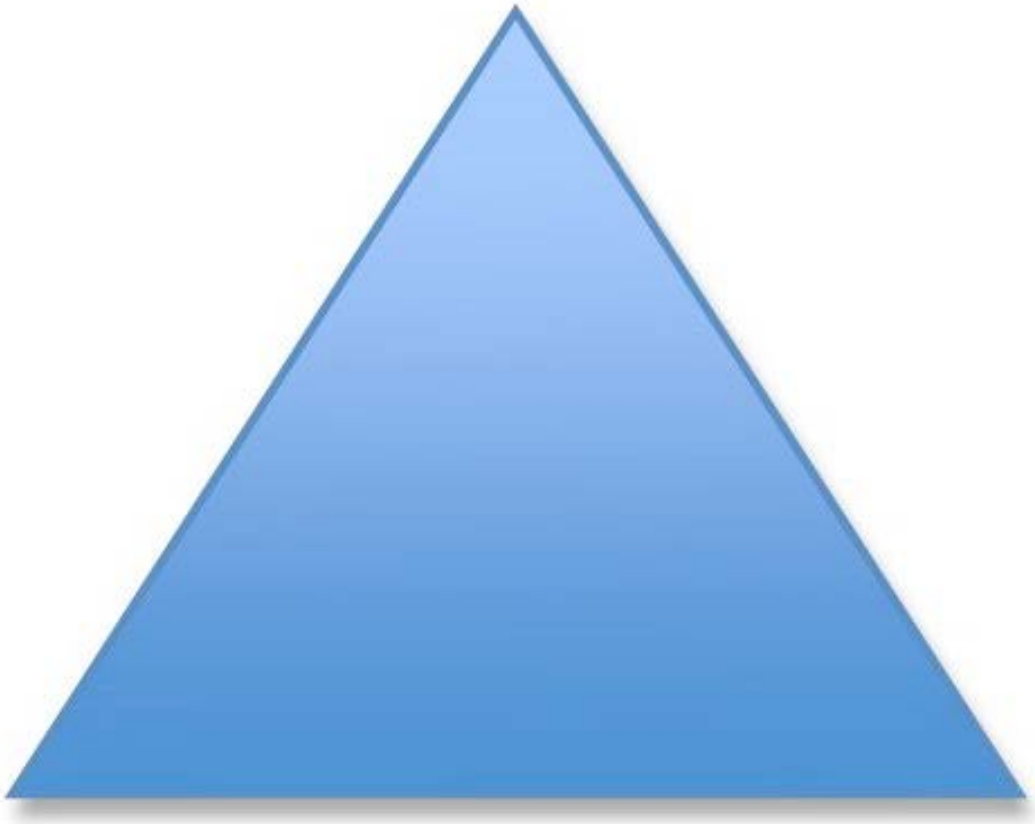
GitFlow


feature branches
develop
release branches
hotfixes
master
Only bugfixes!
Bugfixes from rel. branch may be continuously merged back into develop
Tag 1.0

全测试


To feature branch
• Full Test
To develop branch
• Full Test
To master branch
• Full Test

TIME

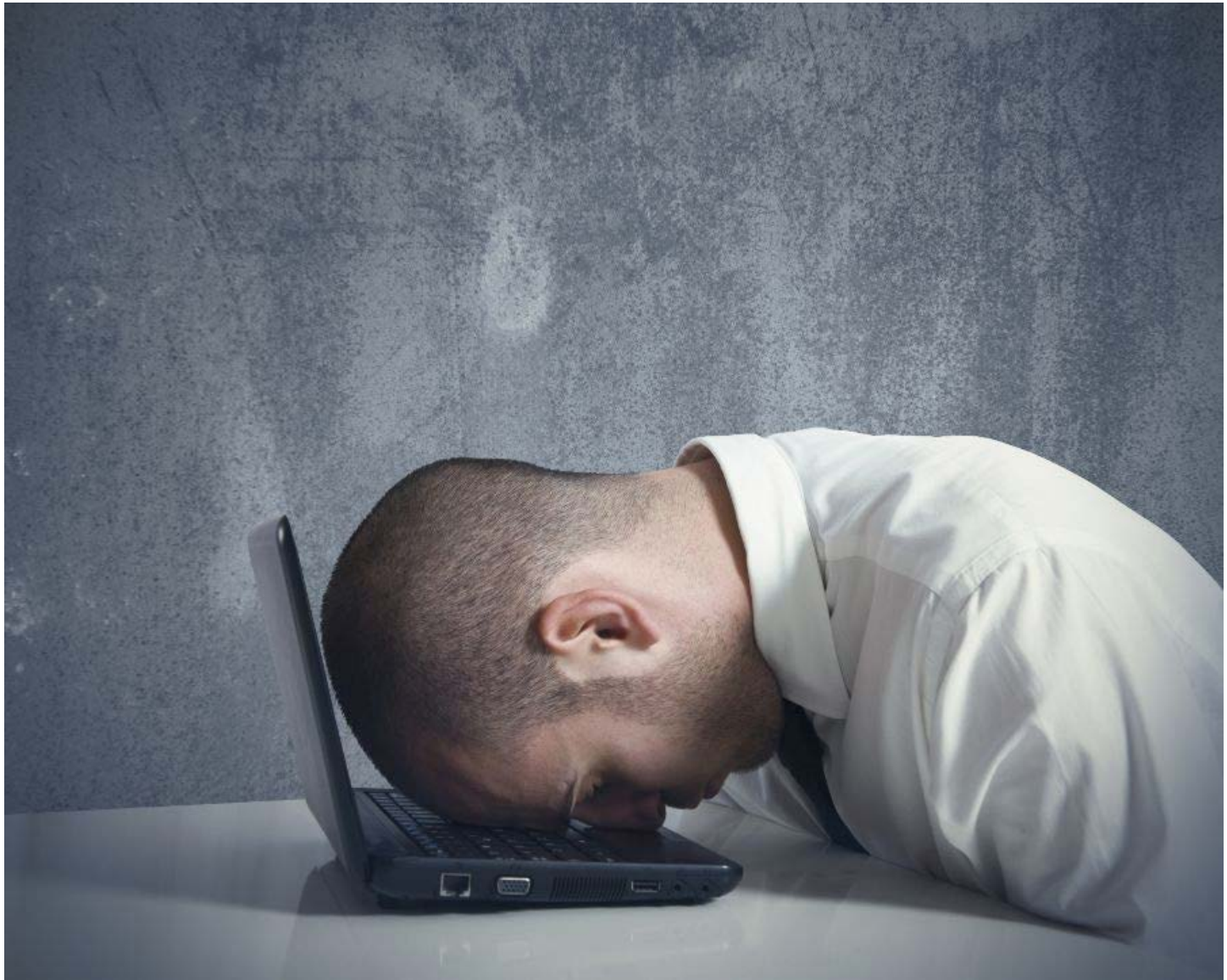


COST

QUALITY

Is that all?

自动化之不稳定性



Flaky Test

Google Testing Blog: Flaky Tests at Google and How We Mitigate Them
https://testing.googleblog.com/2016/.../flaky-tests-at-google-and-how-we.ht... ▾ 翻译此页
2016年5月27日 - by John Micco At Google, we run a very large corpus of tests continuously to validate our code submissions. Everyone from developers to ...

Flaky tests · nodejs/node Wiki · GitHub
https://github.com/nodejs/node/wiki/Flaky-tests ▾ 翻译此页
2017年12月20日 - Flaky tests are tests that fail intermittently. This can happen if there is an underlying bug that only happens intermittently. Or it could also happen ...

Flaky Test Handler Plugin - Jenkins - Jenkins Wiki
https://wiki.jenkins.io/display/JENKINS/Flaky+Test+Handler+Plugin ▾ 翻译此页
2014年11月15日 - This plugin is used to provide various support for handling flaky tests. It currently supports for Git and Maven. It includes support for the latest ...

How to Deal With and Eliminate Flaky Tests - Semaphore
https://semaphoreci.com/.../how-to-deal-with-and-eliminate-flaky-tests ▾ 翻译此页
2015年5月27日 - Randomly failing tests are the hardest to debug. Here's a system you can use to fix them and keep your test suite healthy.

What Flaky Tests Can Tell You | StickyMinds
https://www.stickyminds.com/article/what-flaky-tests-can-tell-you ▾ 翻译此页
2016年1月25日 - Flaky tests pass or fail unexpectedly for reasons that appear random. It can be easy to use flaky tests to discredit automated end-to-end testing, ...

Flaky Tests (And How To Avoid Them) – Salesforce Engineering
https://engineering.salesforce.com/flaky-tests-and-how-to-avoid-them-25b84... ▾ 翻译此页
2016年9月20日 - Flaky tests. You may not have heard that term, but you have probably experienced the pain. A “flaky” test is one that has a non-deterministic ...

Flaky Test

```
1 @Test
2 public void testRsReportsWrongServerName() throws Exception {
3   MiniHBaseCluster cluster = TEST_UTIL.getHBaseCluster();
4   MiniHBaseClusterRegionServer firstServer =
5     (MiniHBaseClusterRegionServer)cluster.getRegionServer(0);
6   HServerInfo hsi = firstServer.getServerInfo();
7   firstServer.setHServerInfo(...);
8
9   // Sleep while the region server pings back
10  Thread.sleep(2000);
11  assertTrue(firstServer.isOnline());
12  assertEquals(2,cluster.getLiveRegionServerThreads().size());
13  ... // similarly for secondServer
14 }
```

Flaky Test 处理

上游处理

- 代码优化
- 代码隔离

下游处理

- 动态诊断
- 结果剔除

Is that all again?

开发写测试

All tests need pass

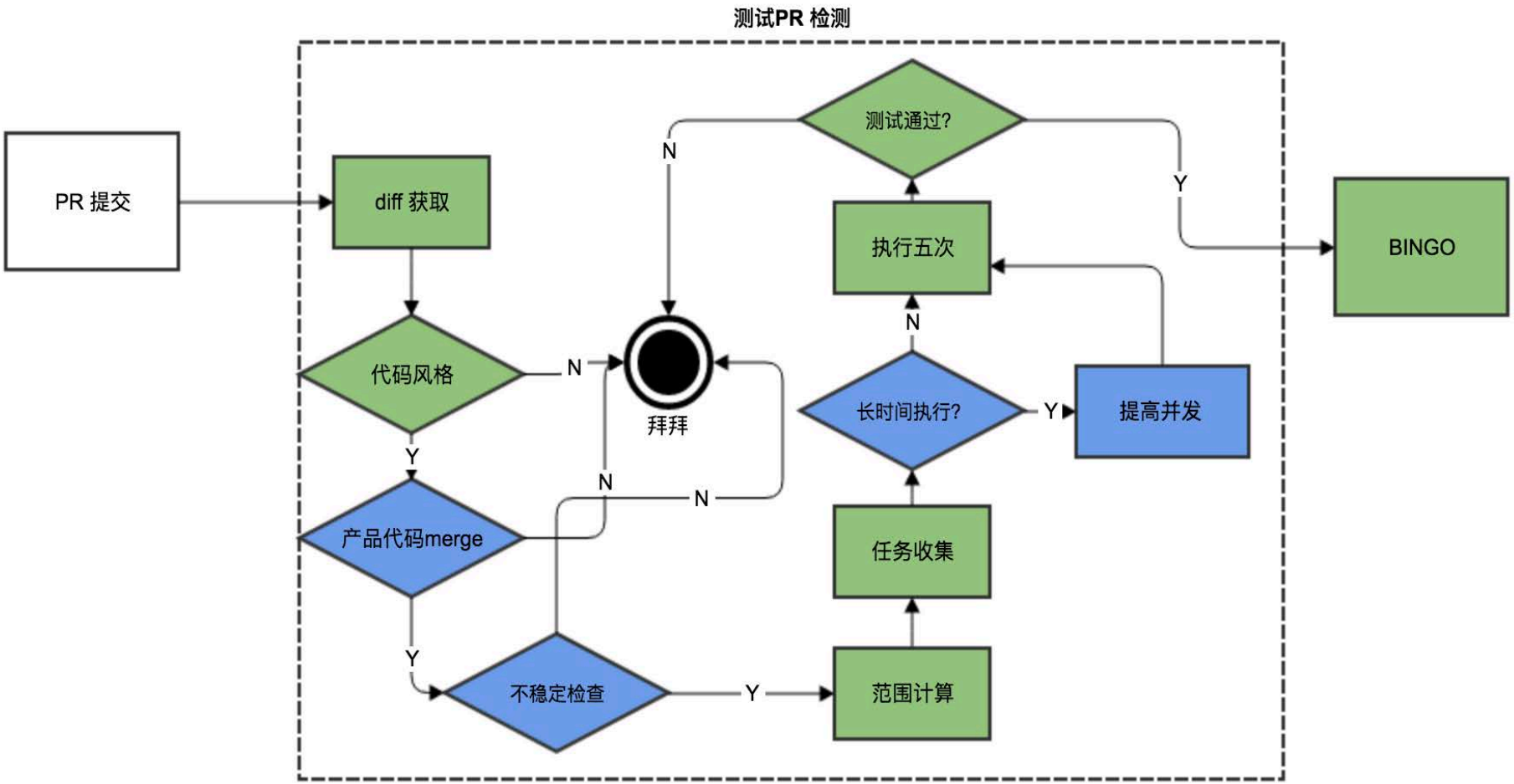
Less cases

Le
failu

开发写测试

Code Coverage

太多测试问题


测试PR 检测
PR 提交
diff 获取
代码风格
N
Y
产品代码merge
N
N
Y
不稳定检查
Y
拜拜
测试通过?
N
Y
执行五次
BINGO
N
长时间执行?
Y
提高并发
任务收集
范围计算

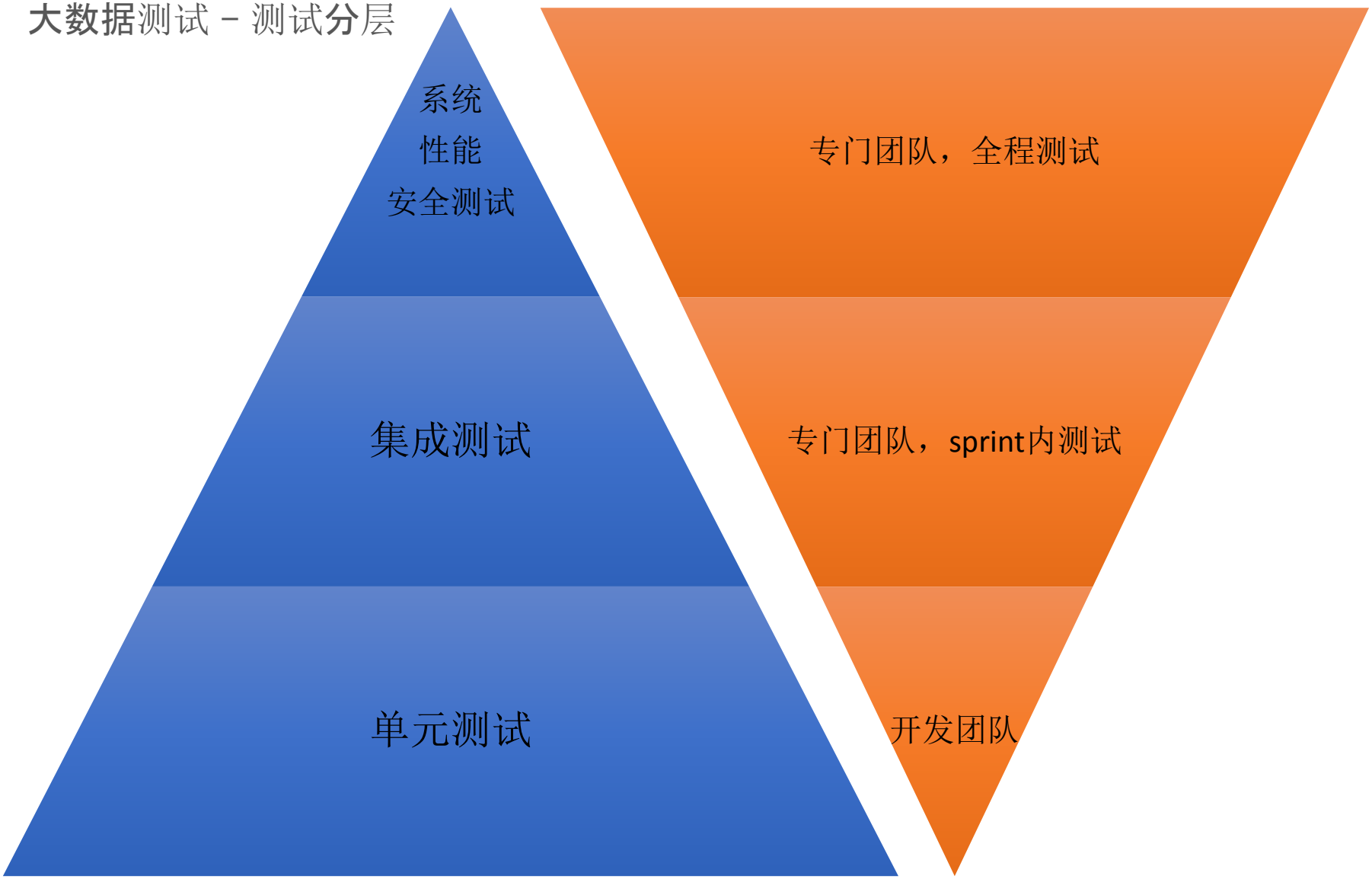
Dev PR Validation

Full Test

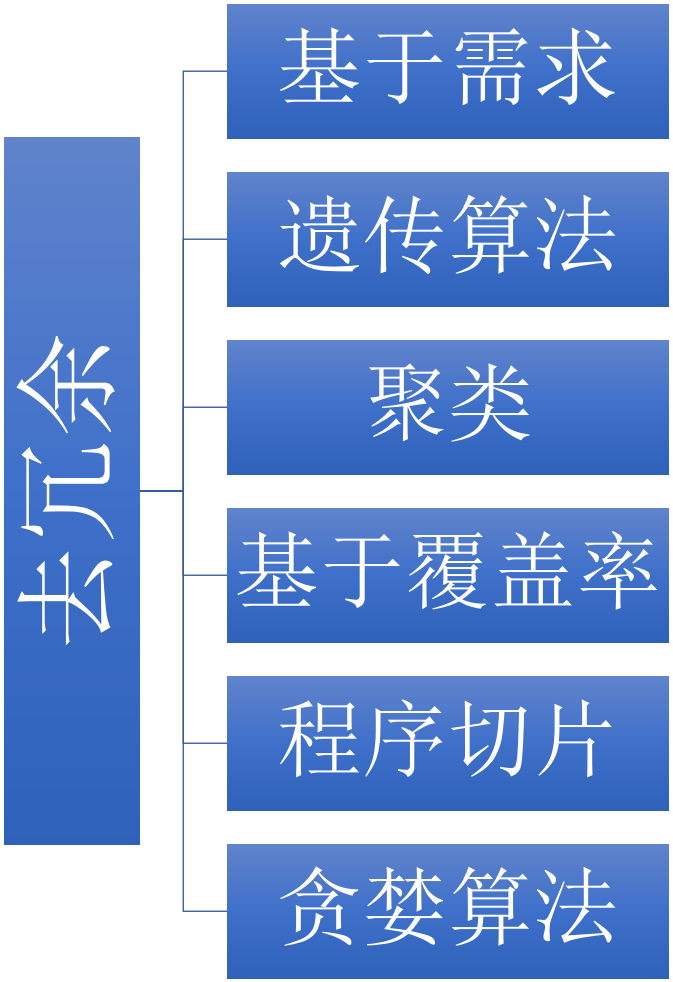
- 没人分析
- 只跑不看
- 资源浪费

少 merge → 风险靠后

大数据测试 – 测试分层



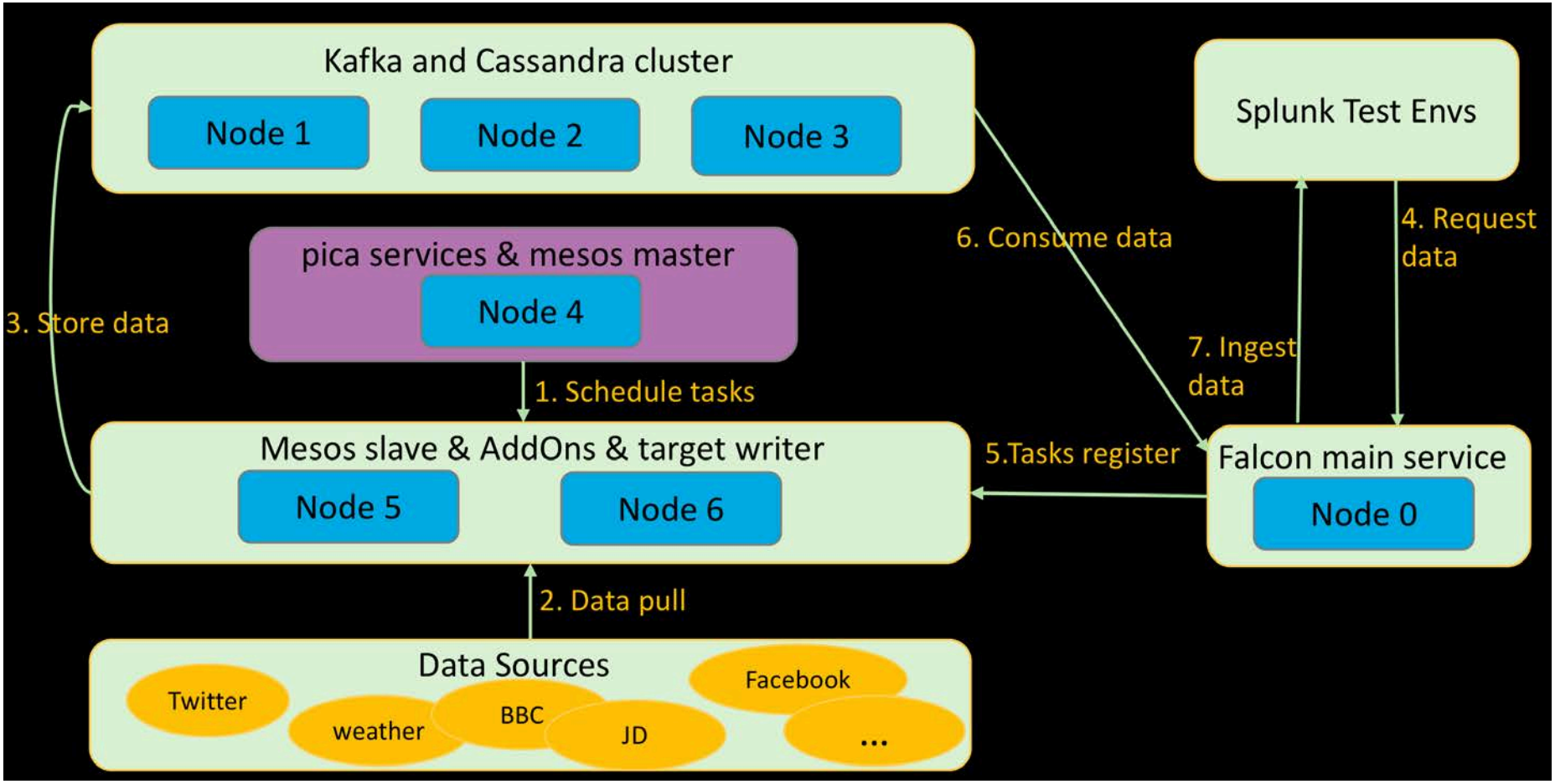
测试去冗余



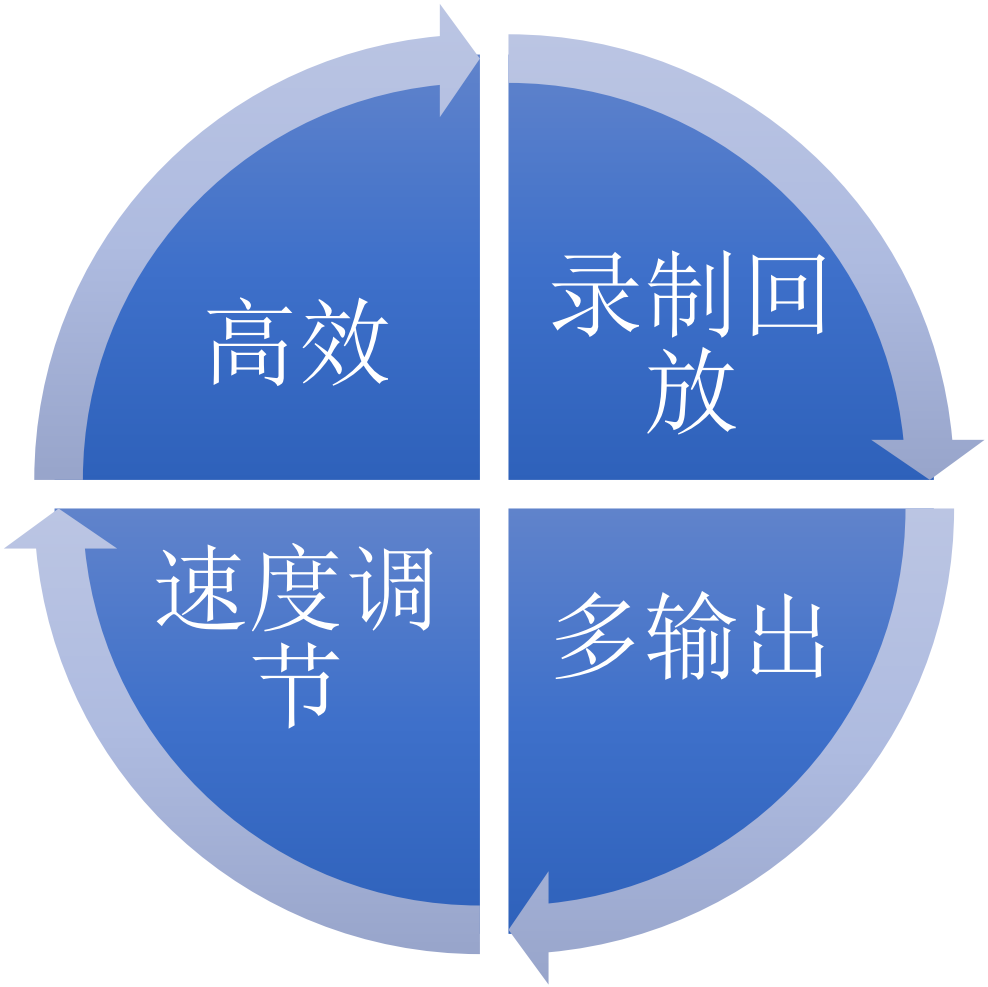
测试环**境准**备

- 测试机器
  - 实例化
  - 部署
- 测试数据
  - 数据生成
  - 数据注入
  - 外部依赖
- 测试监控
  - 机器异常检测
  - SUT异常检测
  - 外部依赖异常检测
- 测试结果汇总

海量数据生成 – 爬取


Kafka and Cassandra cluster
Node 1
Node 2
Node 3
Splunk Test Envs
6. Consume data
4. Request data
pica services & mesos master
Node 4
3. Store data
7. Ingest data
1. Schedule tasks
Mesos slave & AddOns & target writer
Node 5
Node 6
5.Tasks register
Falcon main service
Node 0
2. Data pull
Data Sources
Twitter
weather
BBC
JD
Facebook
...

海量数据生成 -基于样本生成



数据生成

- **Generatedata.com**
- **Yan Data Ellan**
- **Spawner Data Generator**
- **IBM DB2 Test Database Generator**
- **GS Data Generator**
- **EMS Data Generator**
- **Upscene Advanced Data Generator**
- **Datanamic Data Generator MultiDB**
- **ApexSQL Generate**
- **Mockaroo**
- **dbForge Test Data Generator**
- **GEDIS Studio**
- **Visual Studio (Premium) Data Generator**
- **Redgate SQL Data Generator**
- **DTM Data Generator**

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