

客户端QA测试效率工具

赵晔



酒店旅游事业群 | 测试组

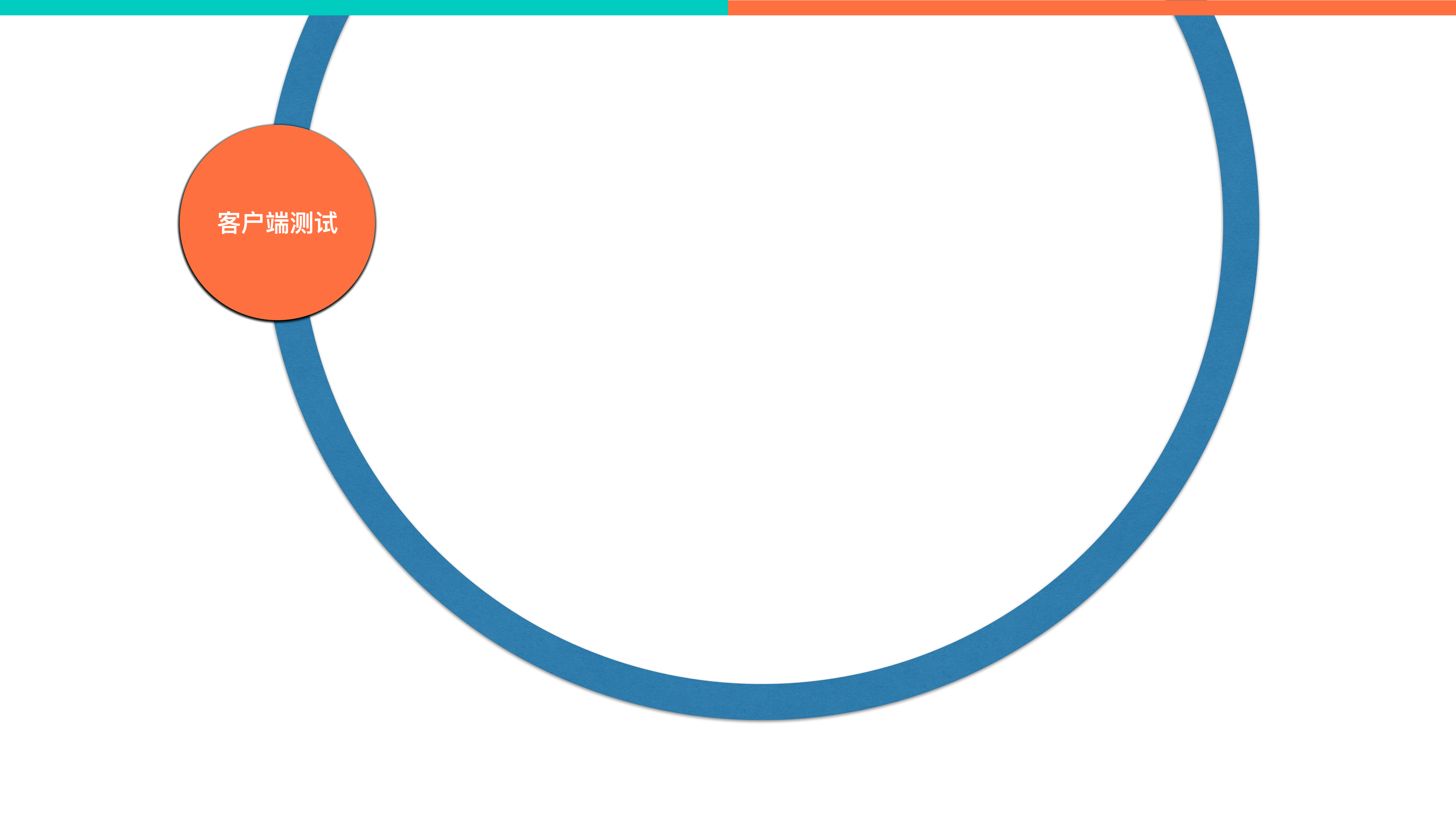


赵晔

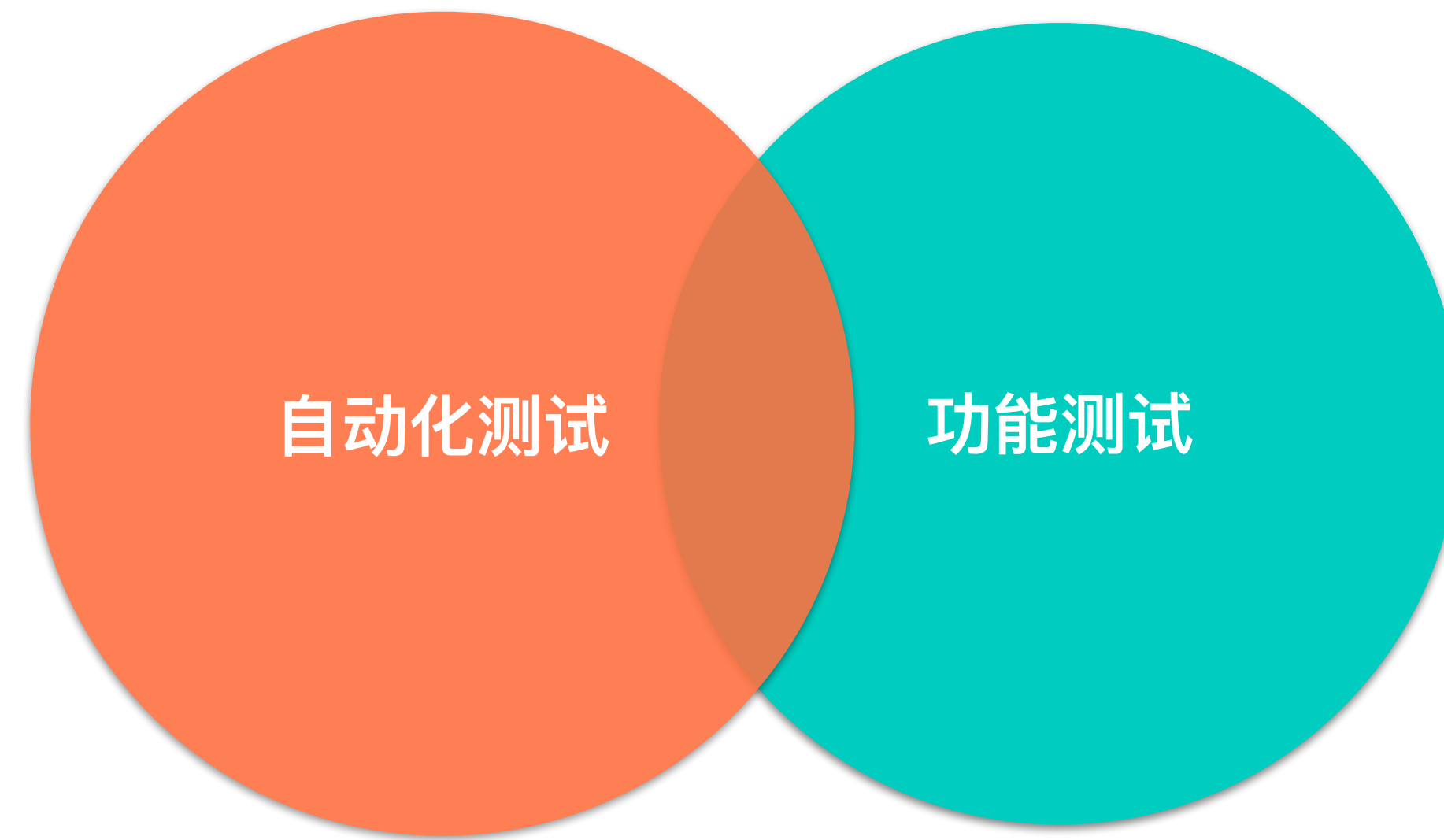
美团点评

酒店旅游测试组

客户端测试开发架构师



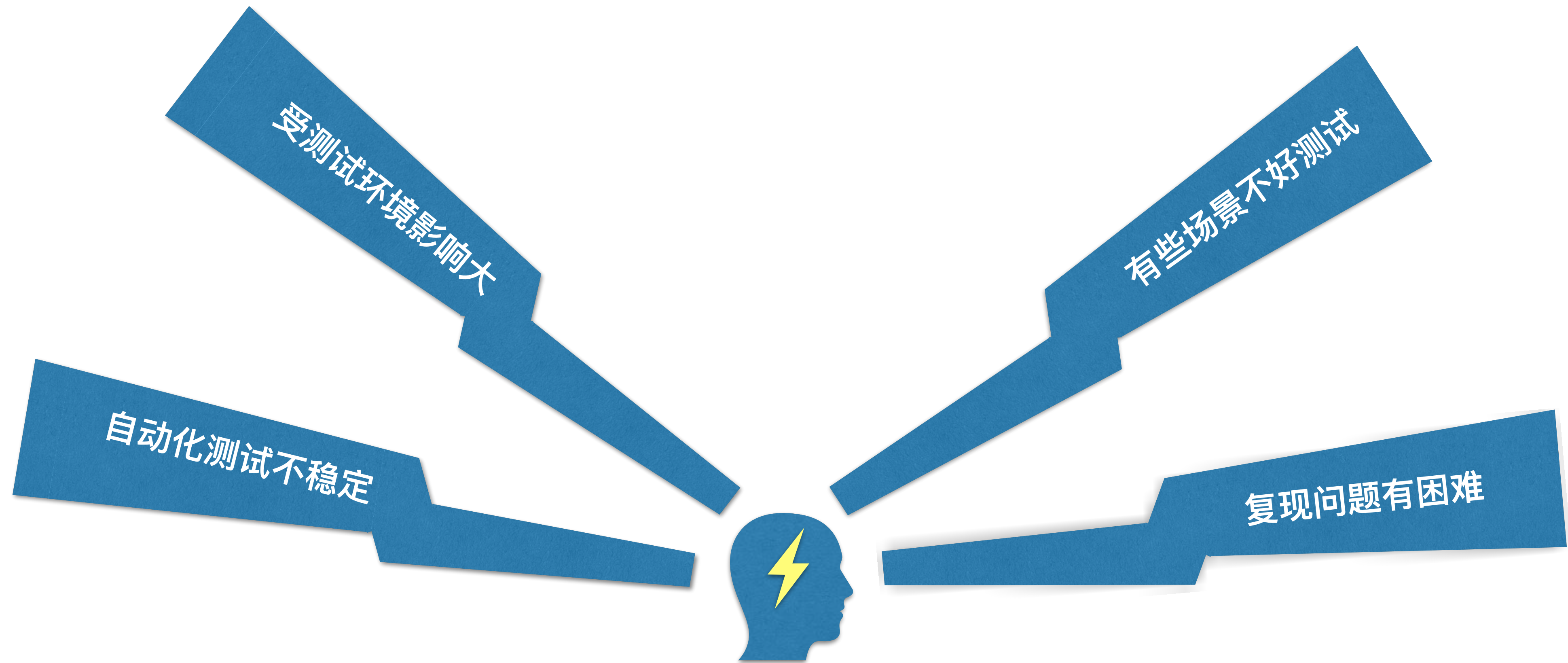
客户端测试



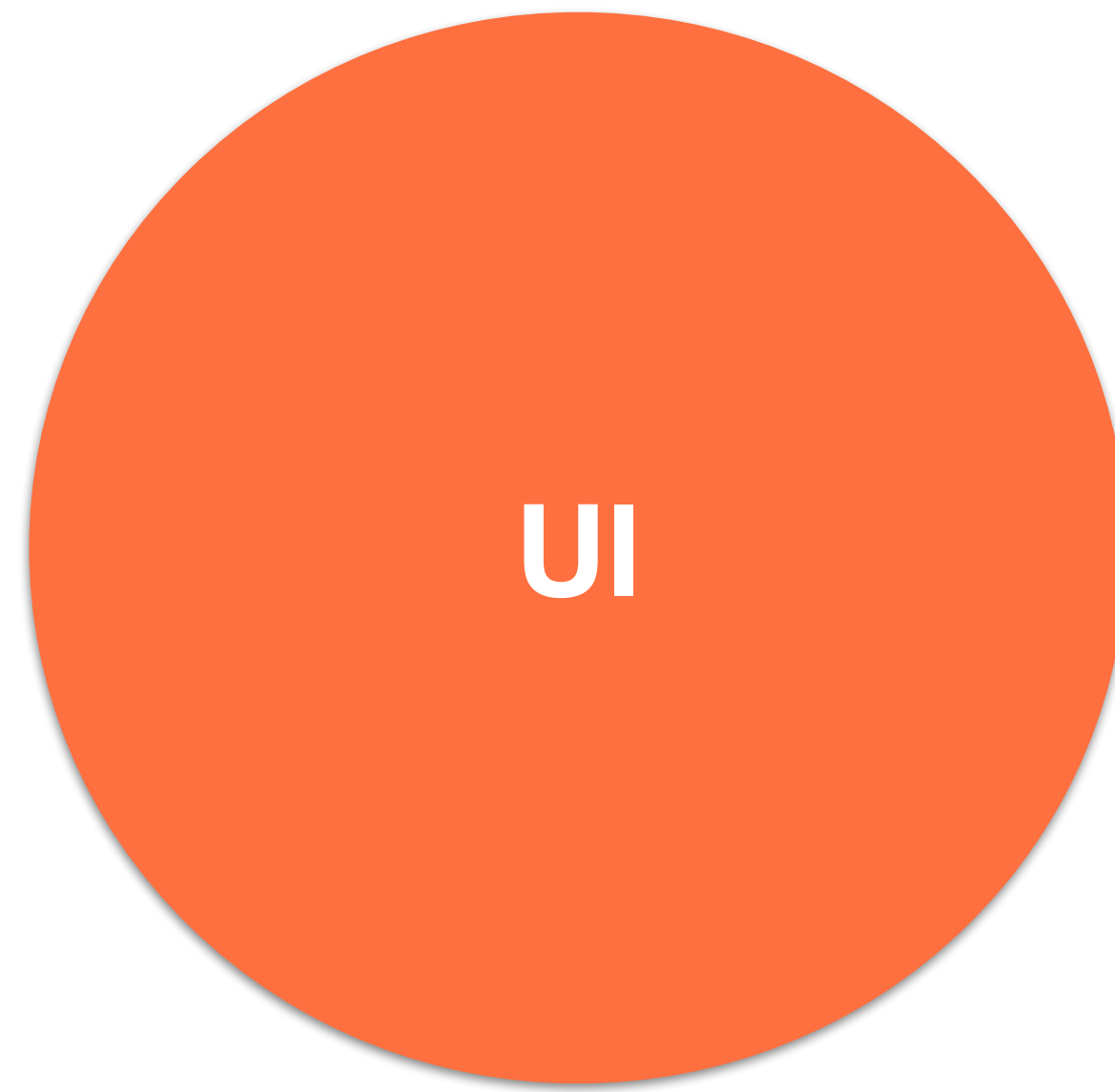
问题



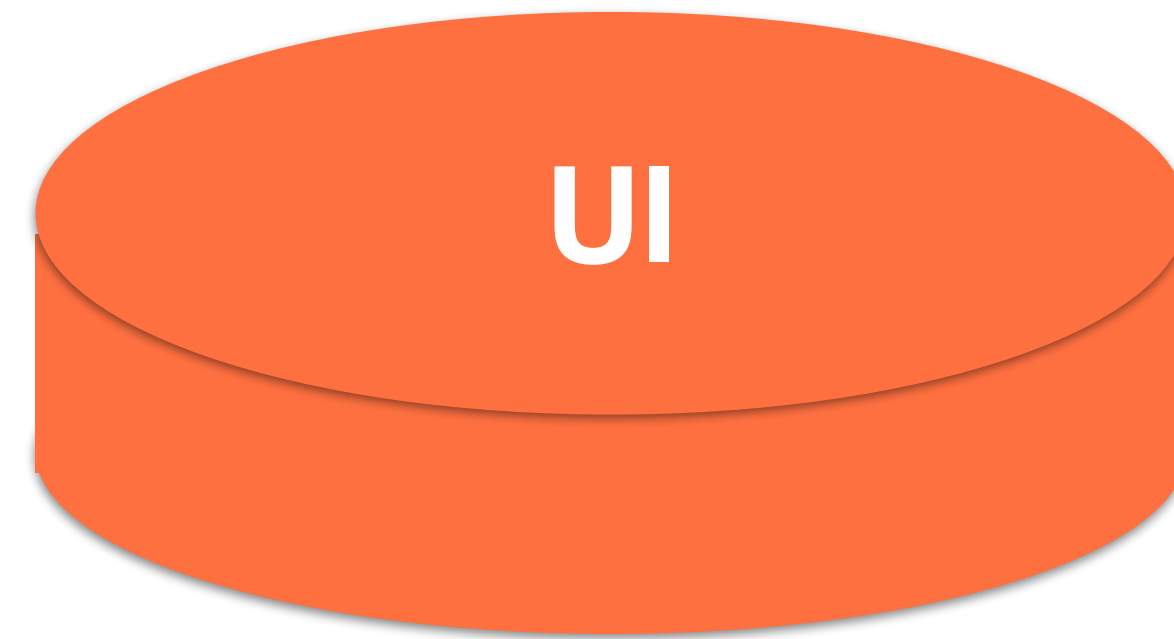
问题



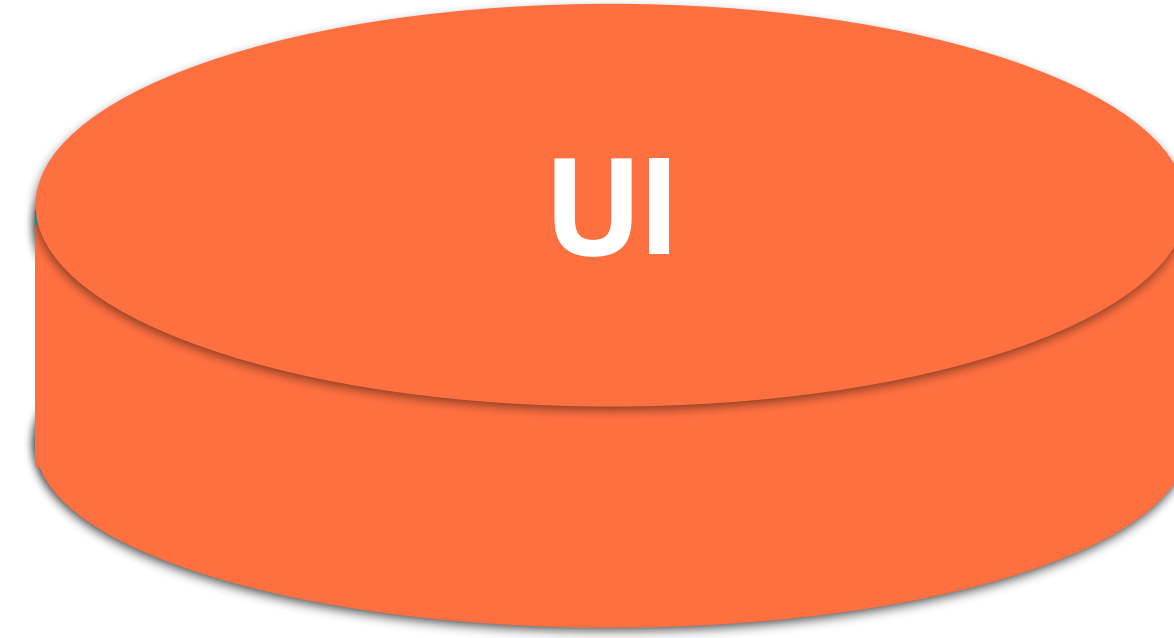
如何完全的控制APP



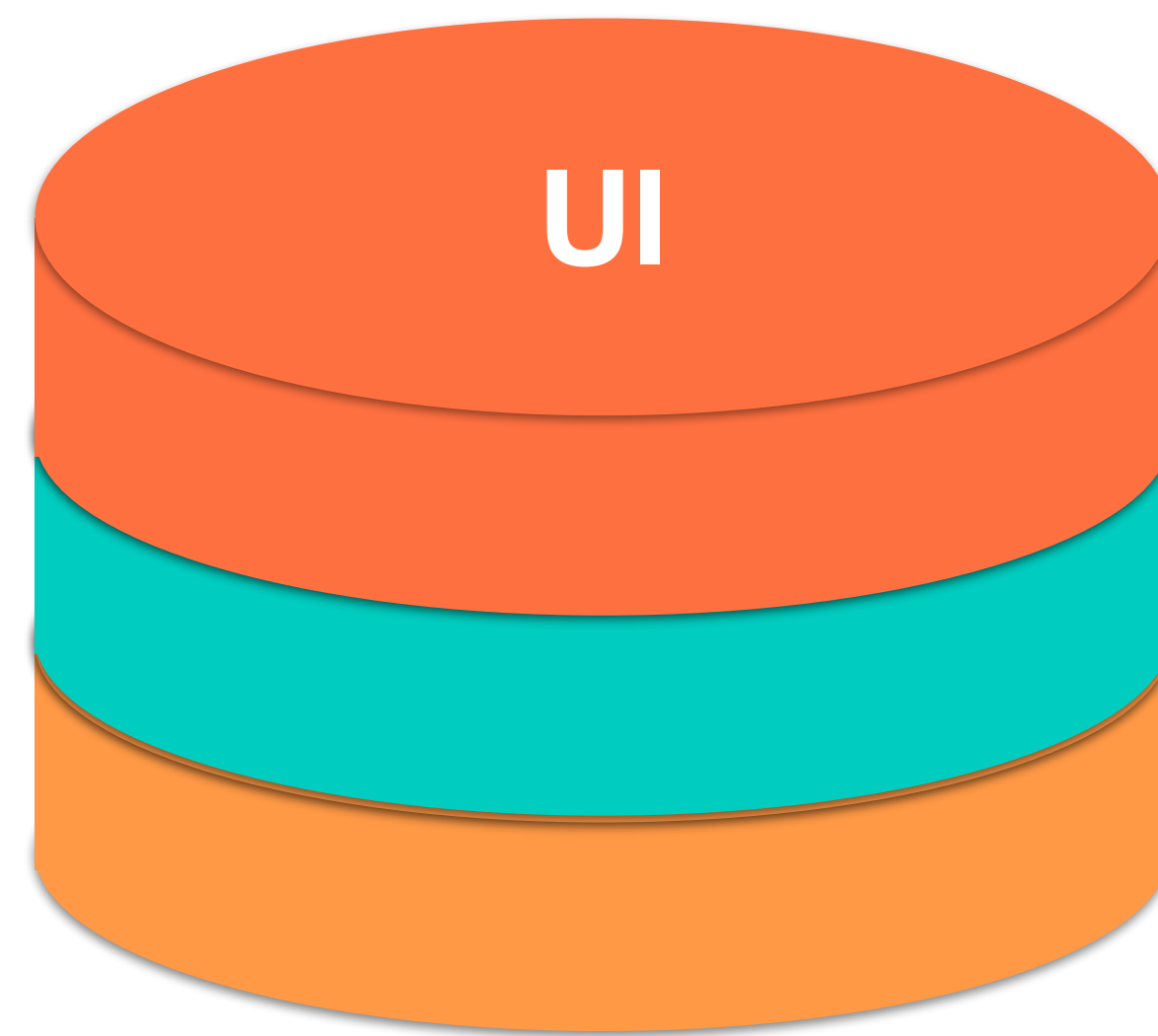
如何完全的控制APP



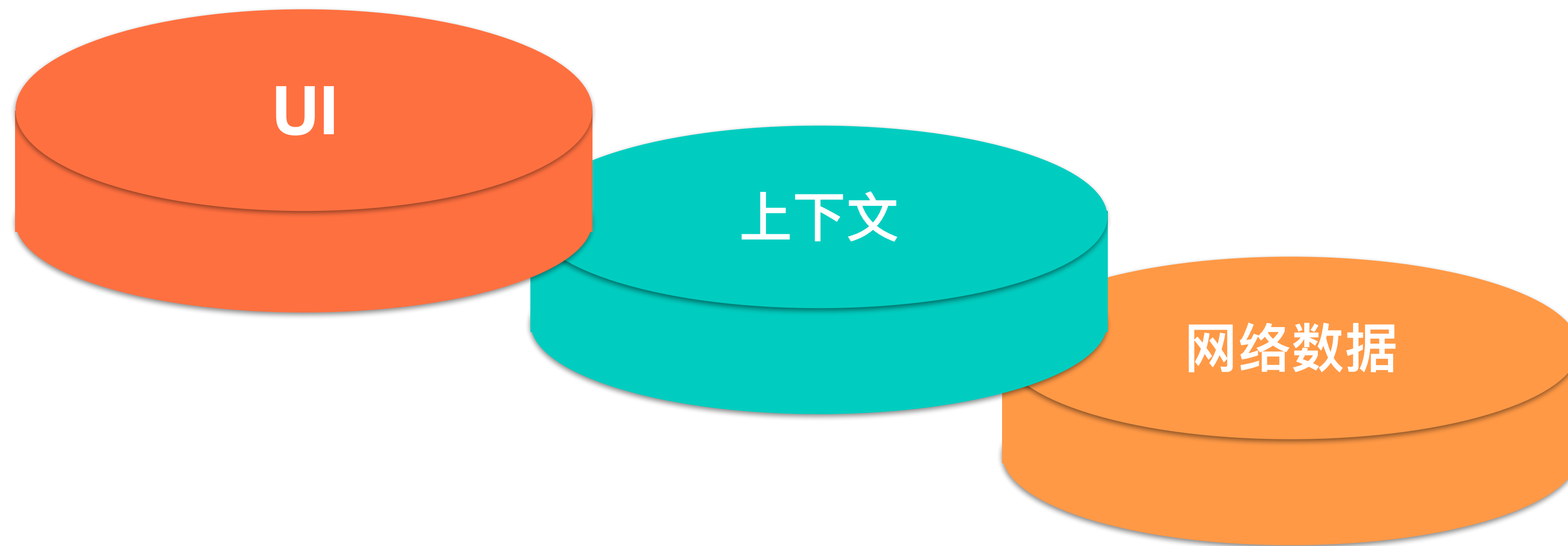
如何完全的控制APP



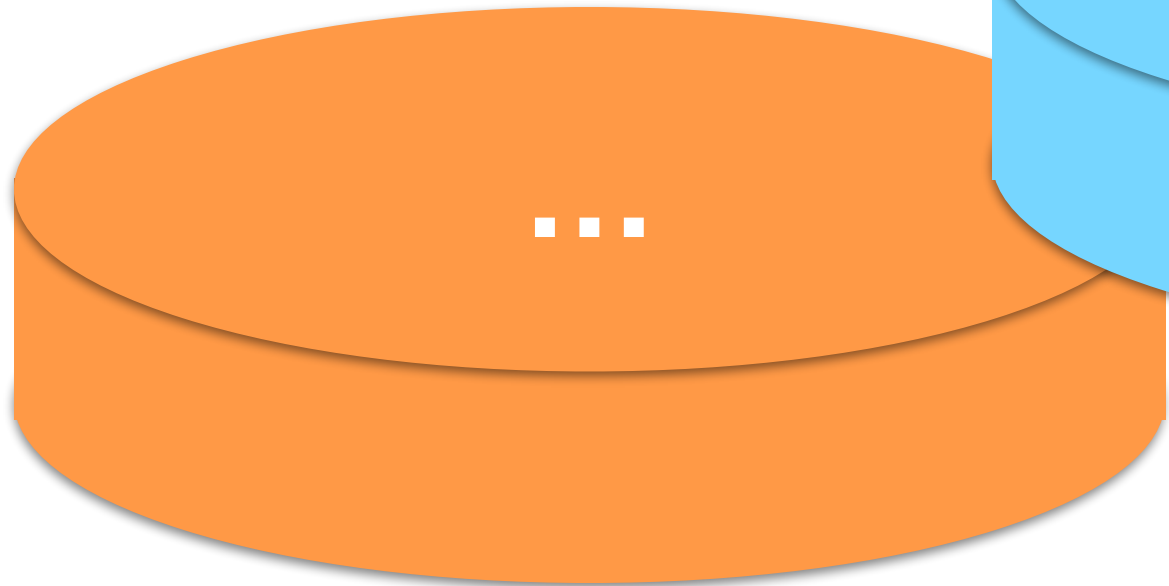
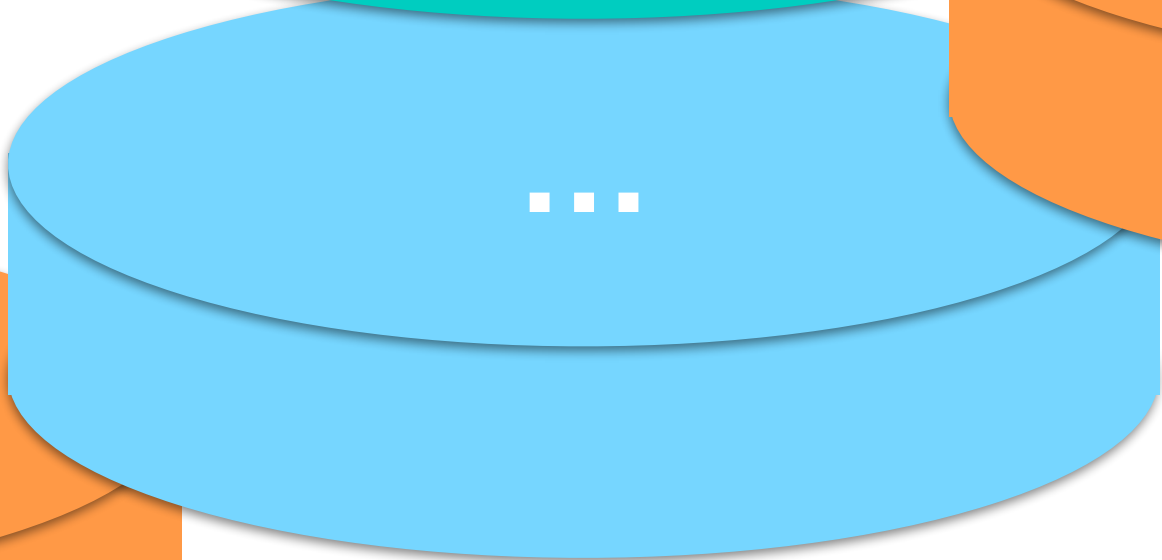
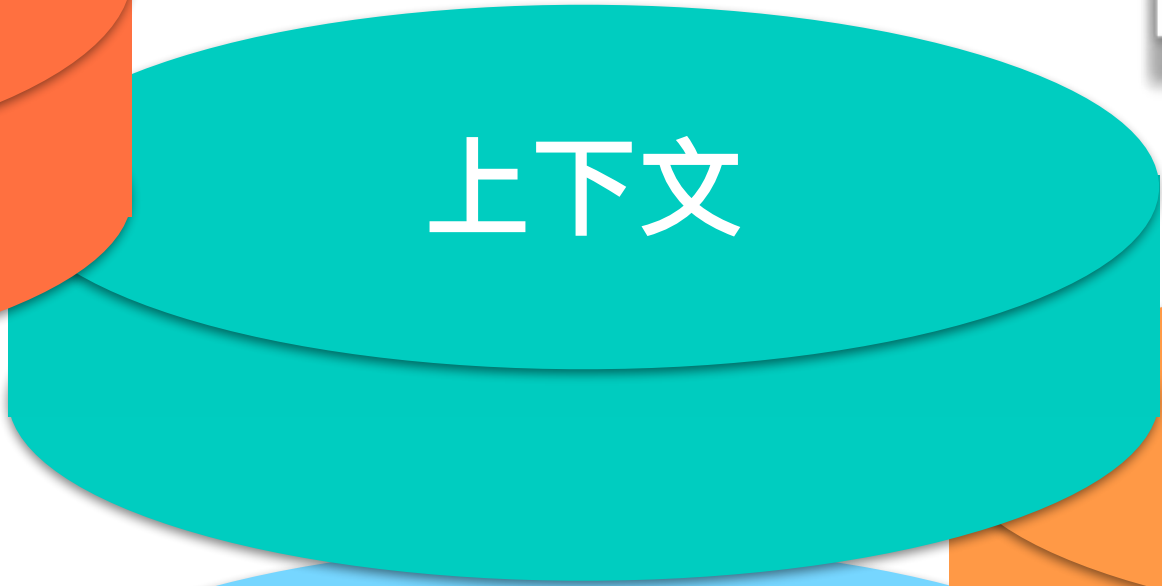
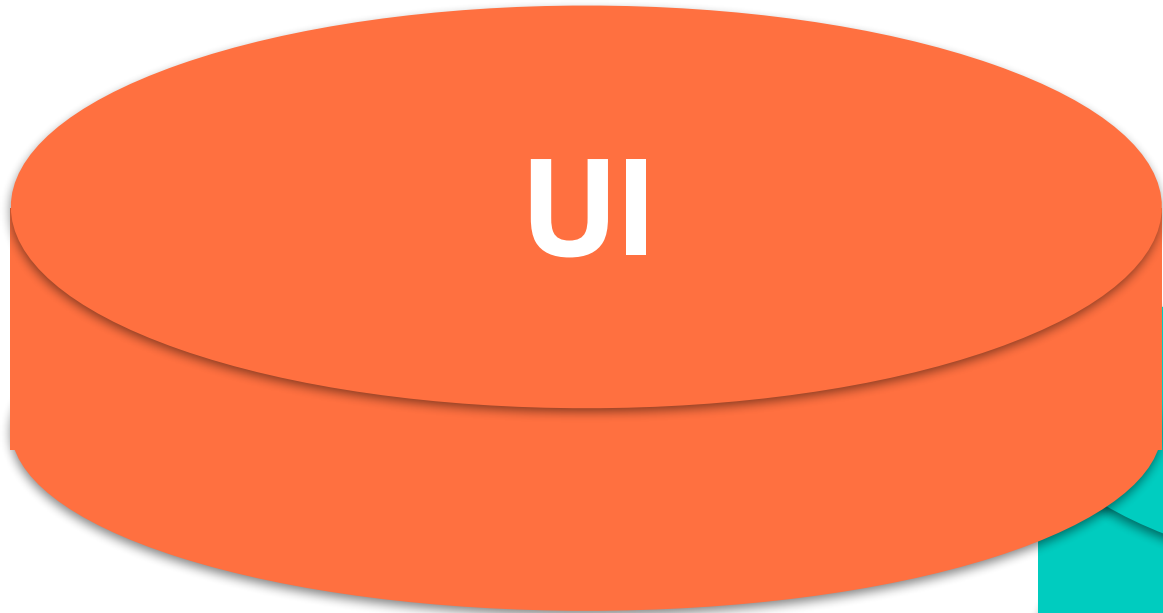
如何完全的控制APP



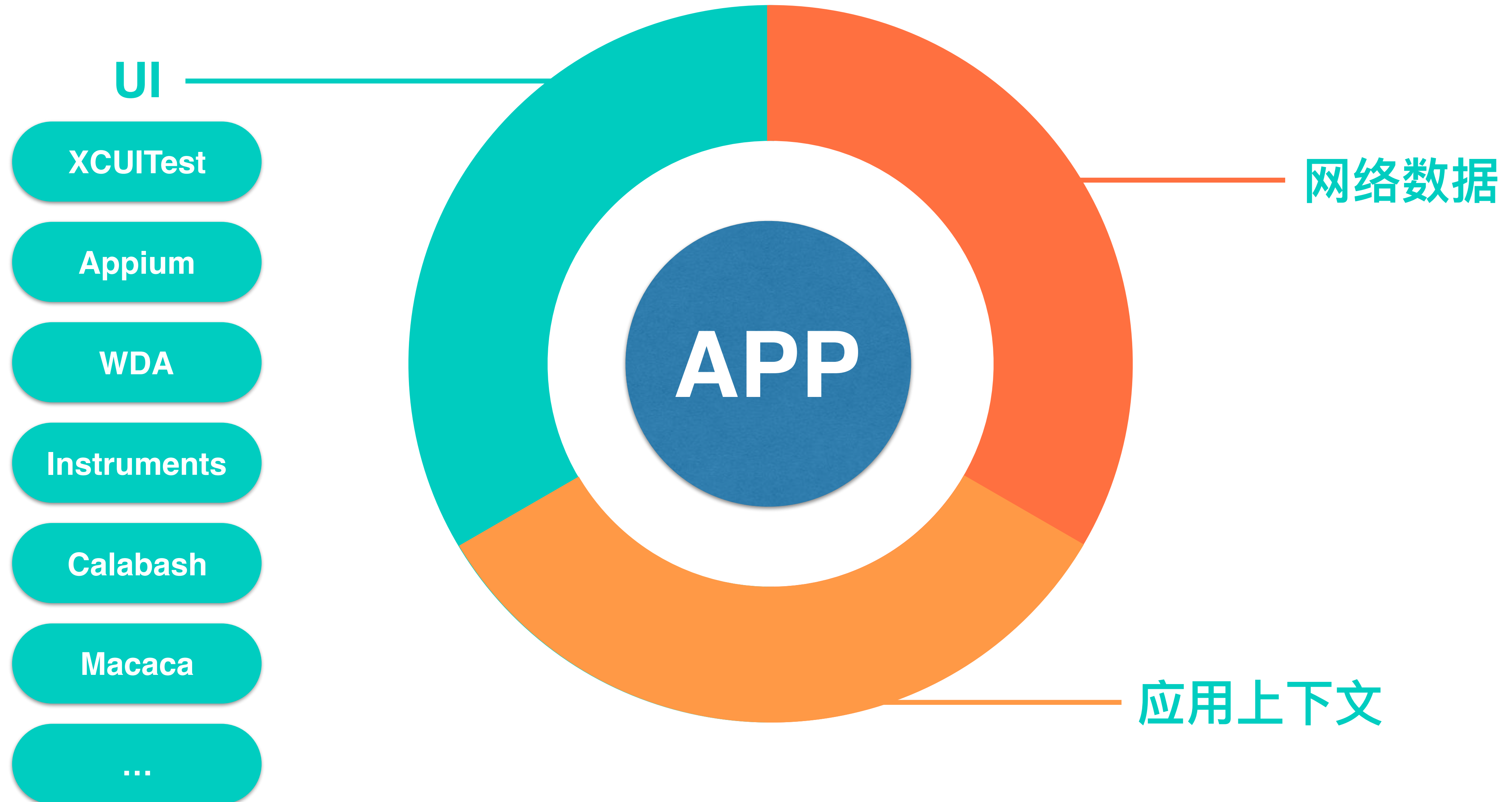
如何完全的控制APP



如何完全的控制APP



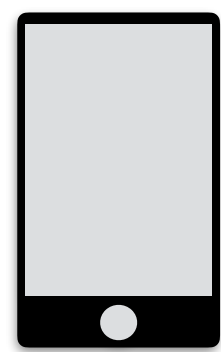
如何完全的控制APP

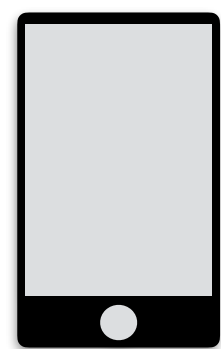


控制网络数据的解决方案

Lyrebird

网络请求**监控**及**模拟**工具。





Lyrebird



Lyrebird 特点

- 数据完全可控(MOCK)
- 支持录制回放数据
- 使用JSON存储数据
- 支持API控制
- UI简单易用
- 一键安装

Lyrebird 实时数据查看界面

L

☰

☑

☁

Help

⏻

🔄

Activated Data: Test

🔍

☐	Src	Status	Host	Path
☐	mock	200	qa.sankuai.com	/
☐	mock	200	qa.sankuai.com	/
☐	mock	200	qa.sankuai.com	/
☐	mock	200	qa.sankuai.com	/
☐	mock	200	qa.sankuai.com	/
☐	proxy	200	qa.sankuai.com	/
☐	proxy	200	qa.sankuai.com	/
☐	proxy	200	qa.sankuai.com	/
☐	proxy	200	qa.sankuai.com	/
☐	proxy	200	qa.sankuai.com	/
☐	proxy	200	qa.sankuai.com	/
☐	proxy	200	qa.sankuai.com	/
☐	proxy	200	qa.sankuai.com	/
☐	proxy	200	qa.sankuai.com	/
☐	proxy	200	qa.sankuai.com	/

Request

RequestBody

Response

ResponseBody

1

{

2

"data": null,

3

"headers": {

4

"Accept": "*/*",

5

"Host": "localhost",

6

"Lyrebird.Device.Ip": "::ffff:127.0.0.1",

7

"Proxy-Connection": "Keep-Alive",

8

"User-Agent": "curl/7.54.0"

9

},

10

"method": "GET",

11

"url": "http://qa.sankuai.com/"

12

}

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Version 0.13.3

Lyrebird Mock数据管理界面

L

☰

☑

☁

Help

DataGroup: Test

NewGroup

DeleteGroup

NewData

DeleteData

☐	Path	Host
☐	/ui/user	www.baidu.com
☐	/ui/main	www.baidu.com
☐	/ui/user	www.baidu.com
☐	/	www.meituan.com
☐	/	qa.sankuai.com

Rule

Request

RequestBody

Response

ResponseBody

1

2

3

4

5

6

7

8

9

10

11

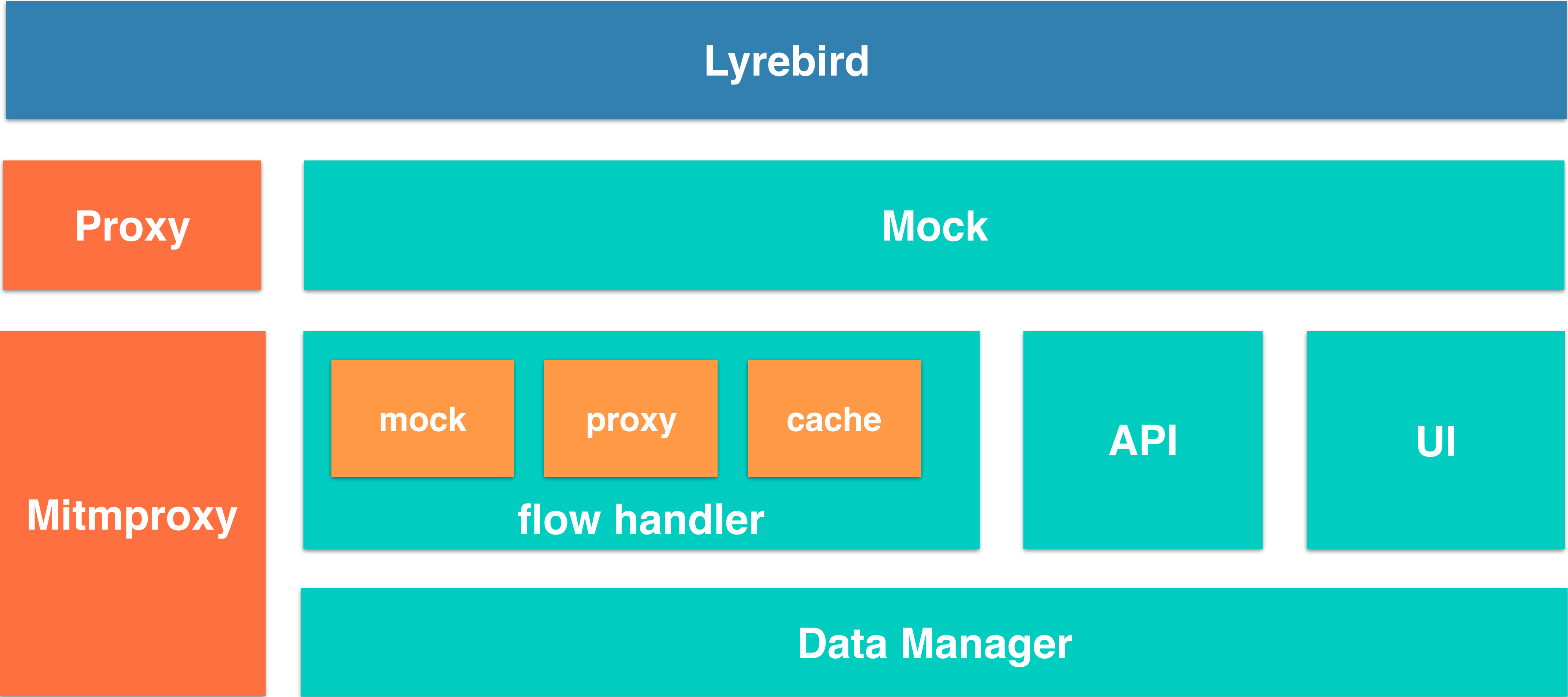
12

13

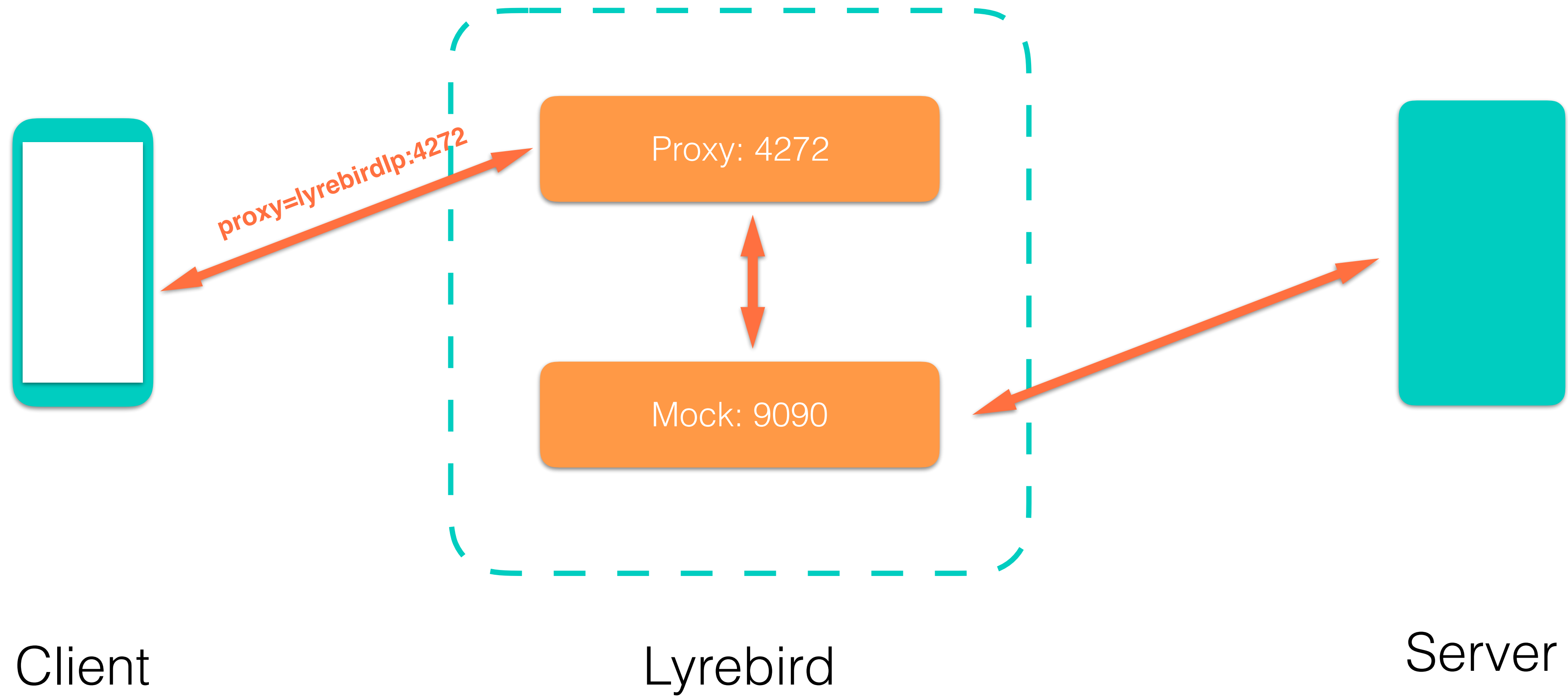
```
{
  "headers": {
    "Accept": "*/*",
    "Accept-Encoding": "gzip, deflate",
    "Connection": "keep-alive",
    "Content-Length": "2",
    "Content-Type": "application/json",
    "Host": "localhost:9090",
    "User-Agent": "python-requests/2.19.1"
  },
  "method": "POST",
  "url": "https://www.baidu.com/ui/user"
}
```

Save

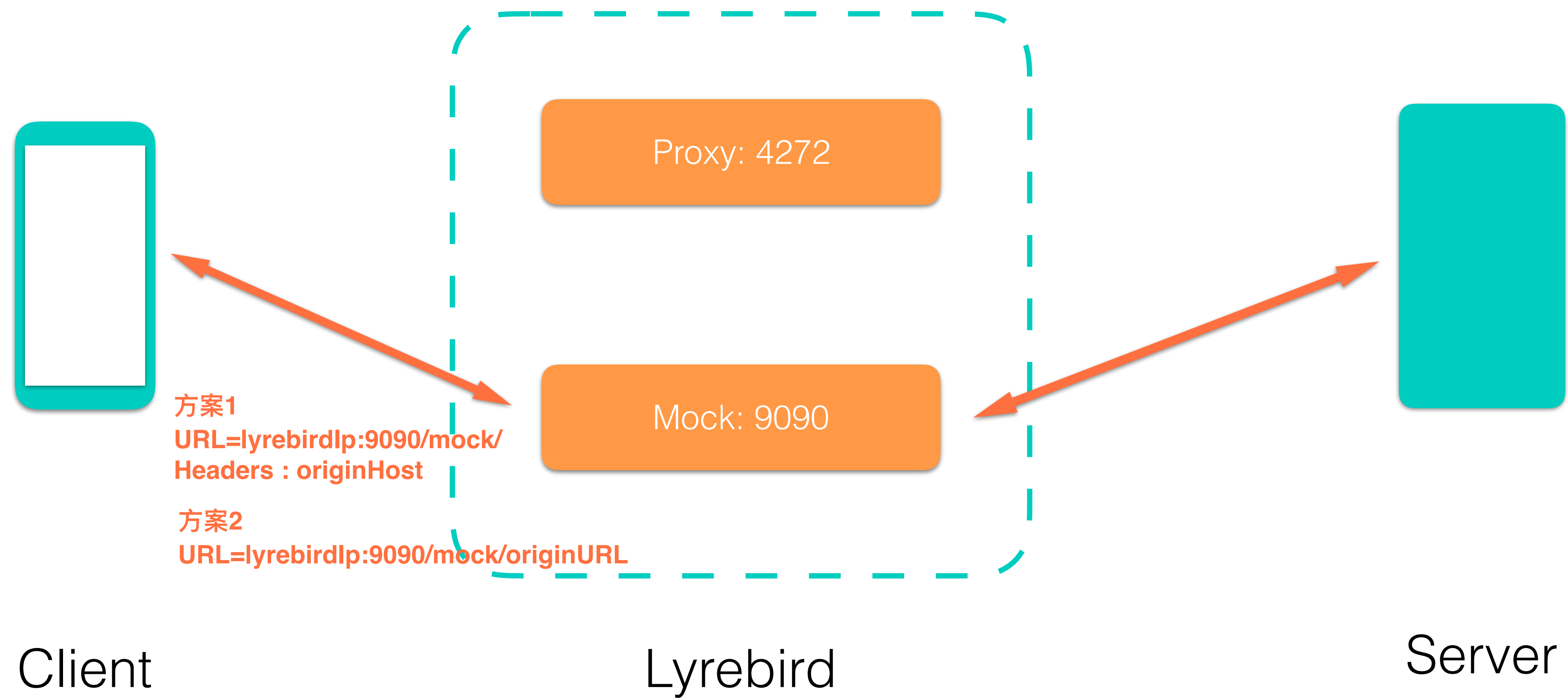
Lyrebird 系统架构



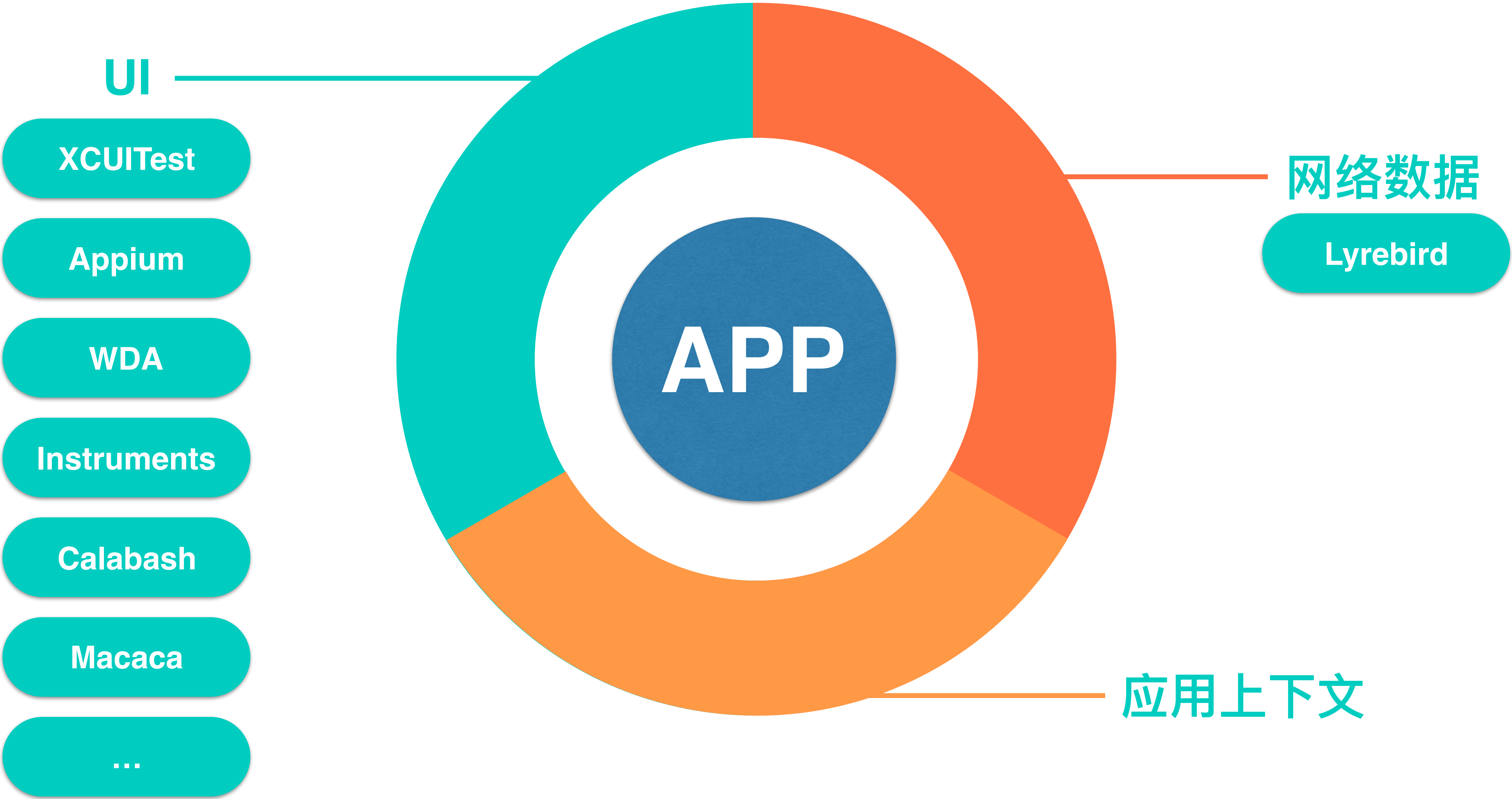
接入方式：通过代理接入



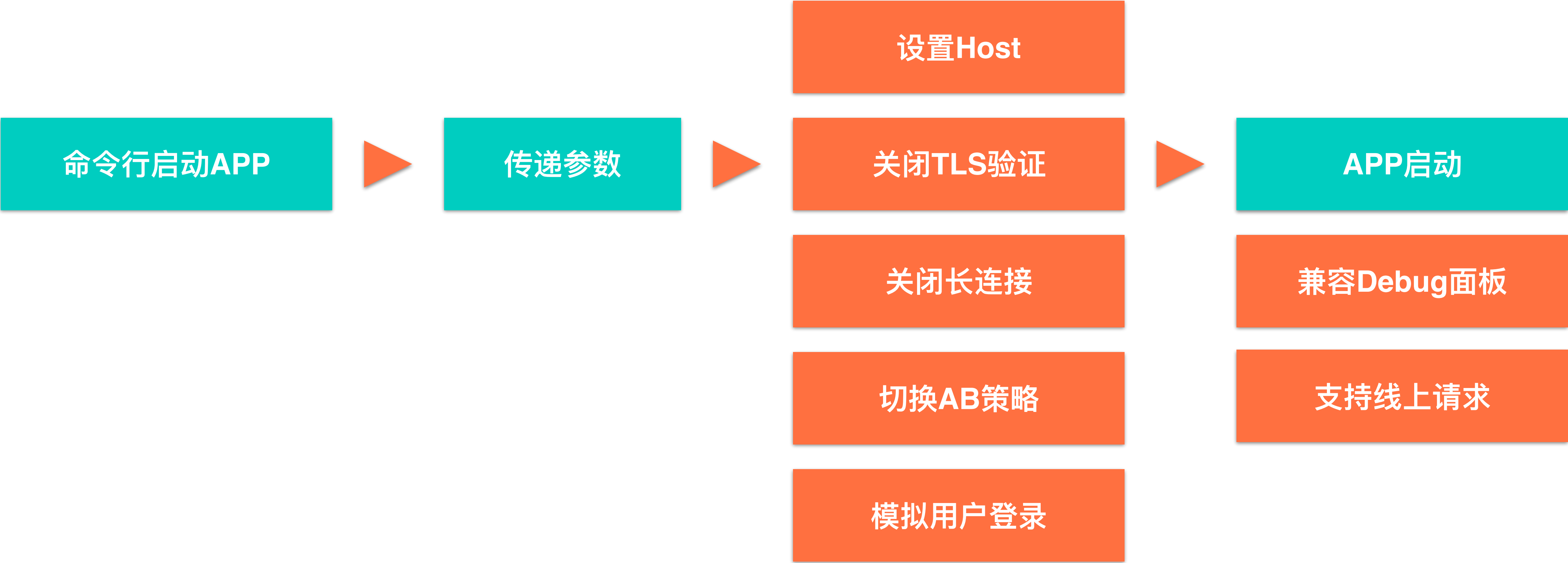
接入方式：直连接入



如何完全的控制APP

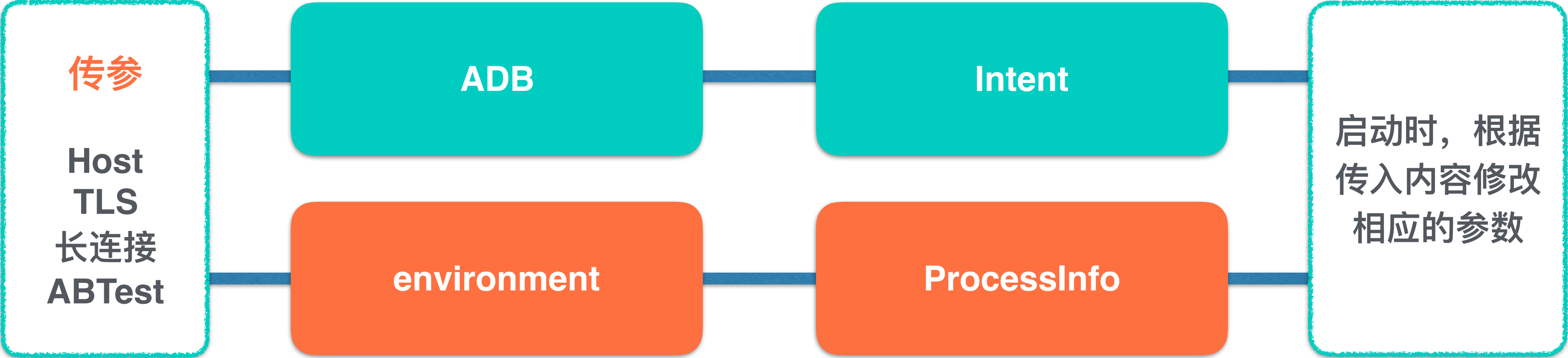


启动传参-控制应用上下文的解决方案



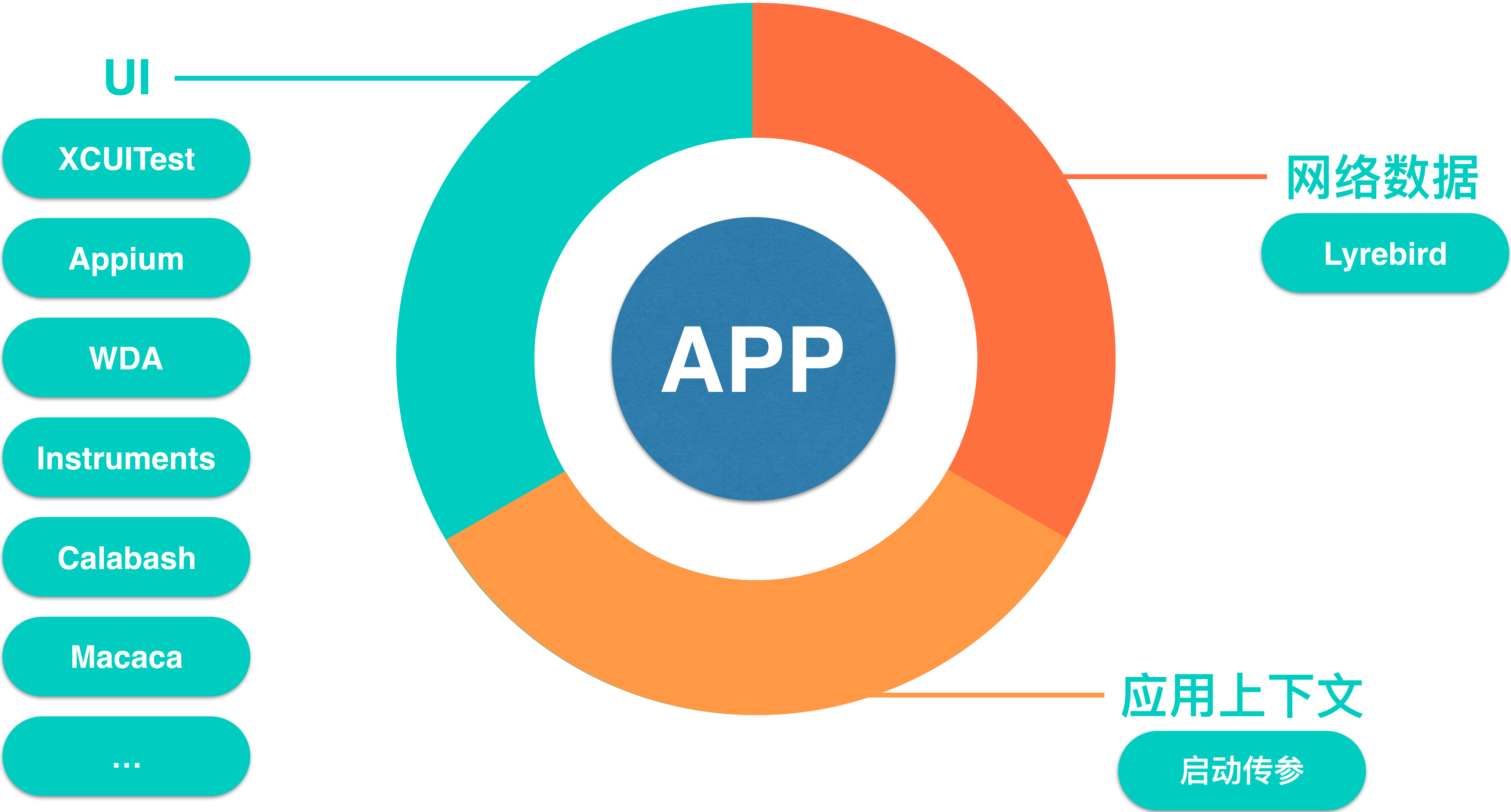
启动传参-控制应用上下文的解决方案

Android



iOS

如何完全的控制APP



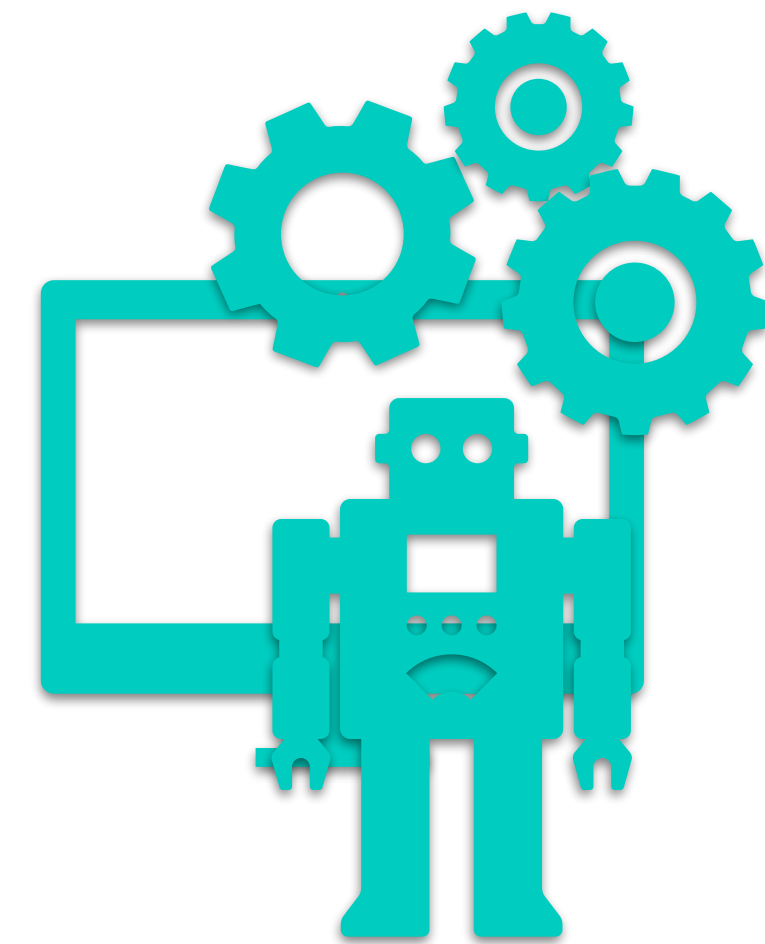
使用情况



手工测试



开发调试



自动化测试

使用情况

客户端UI自动化：使用启动传参+Lyrebird mock数据

酒旅客户端UI自动化接入Lyrebird作为mock服务器：
基本消除了由于数据变动造成的case执行不稳定问题，
同时简化了case编写工作，
自动化case的工作更多的聚焦在如何设计测试场景上。

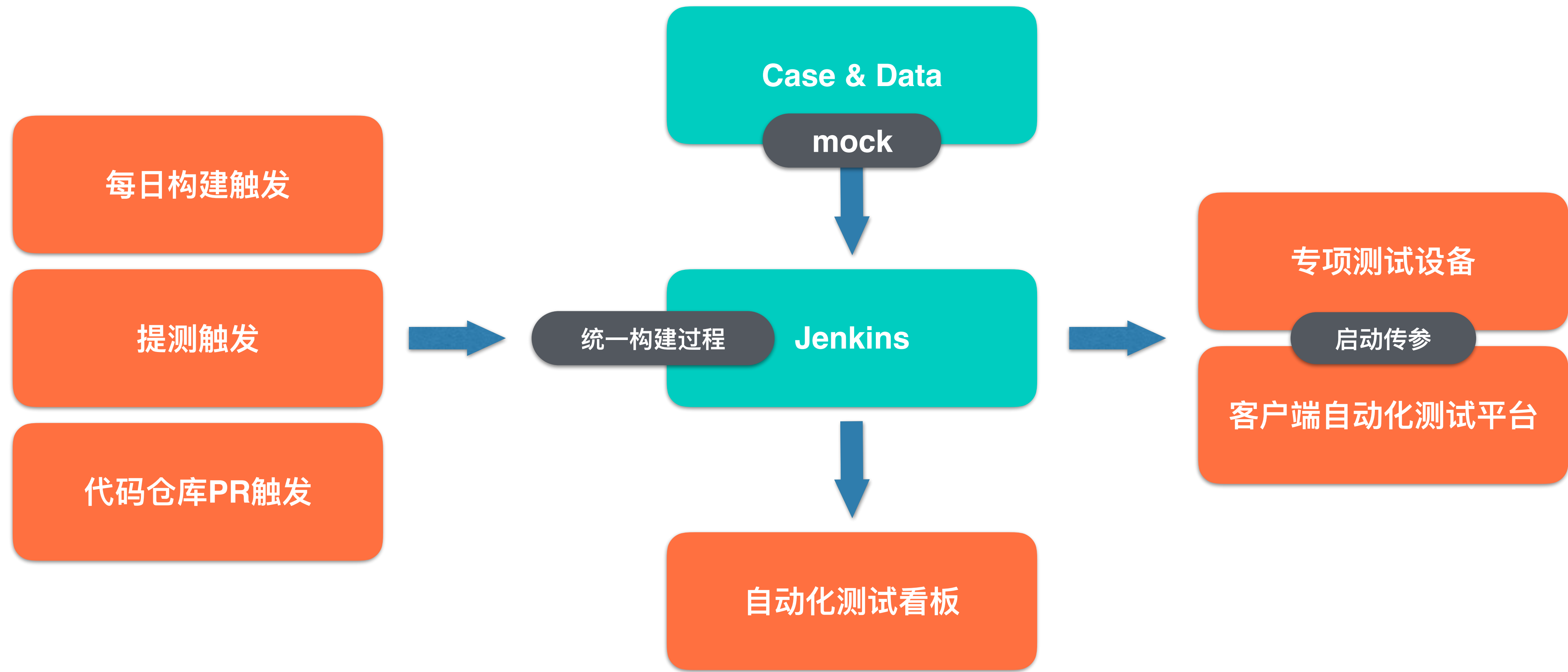
服务端：mock HTTP 接口，用于开发自测和自动化测试；支持泳道部署。

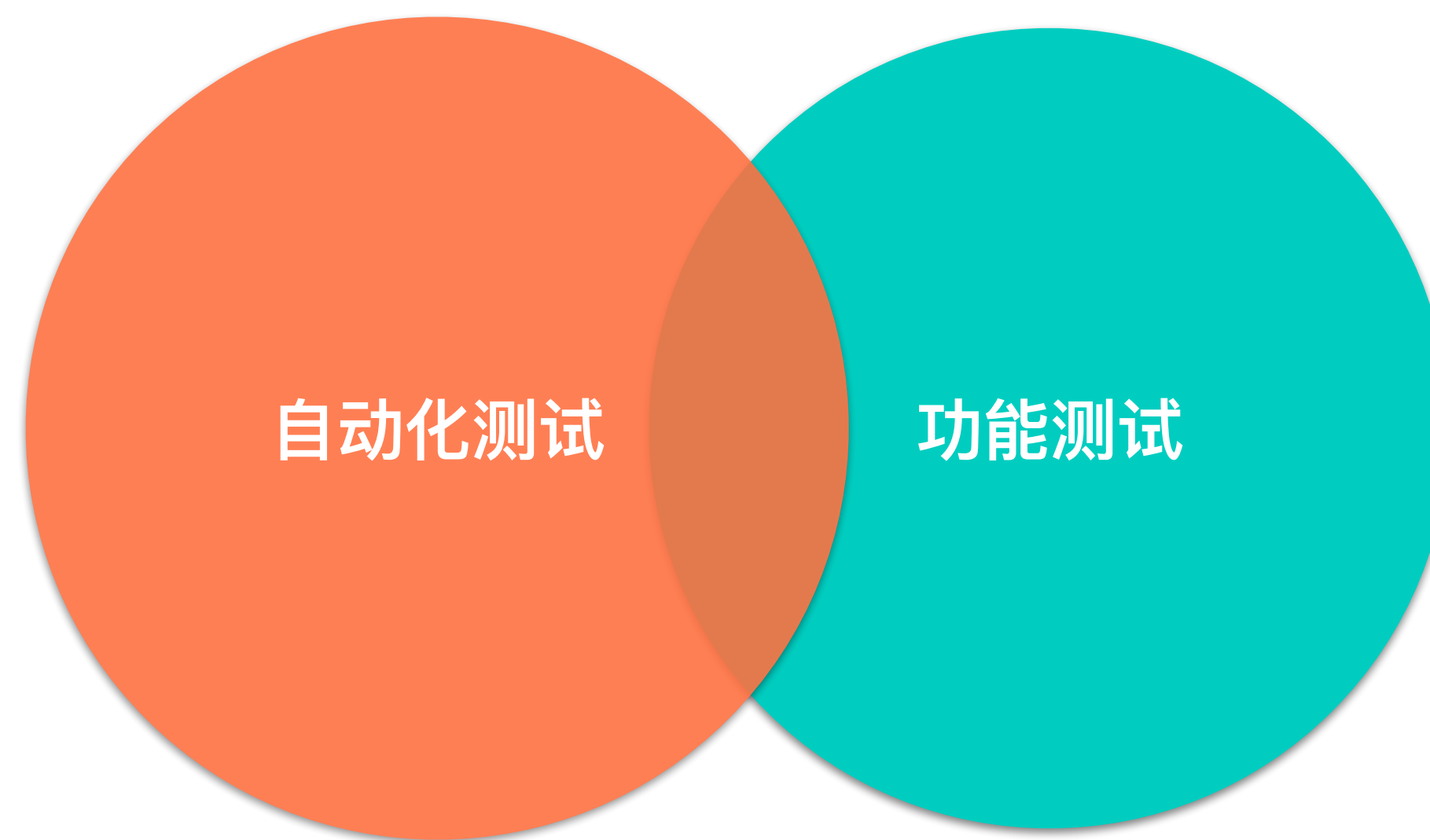
机票环境mock航司接口，降低调试成本，提前发现和修复问题

自动化：目前旗舰店就用来构造变舱变价；人工：用于构造航司异常场景覆盖测试

海外酒店在测试环境中接入对第三方接口进行mock，用于自动化测试和异常环境模拟

使用情况 - 客户端持续集成

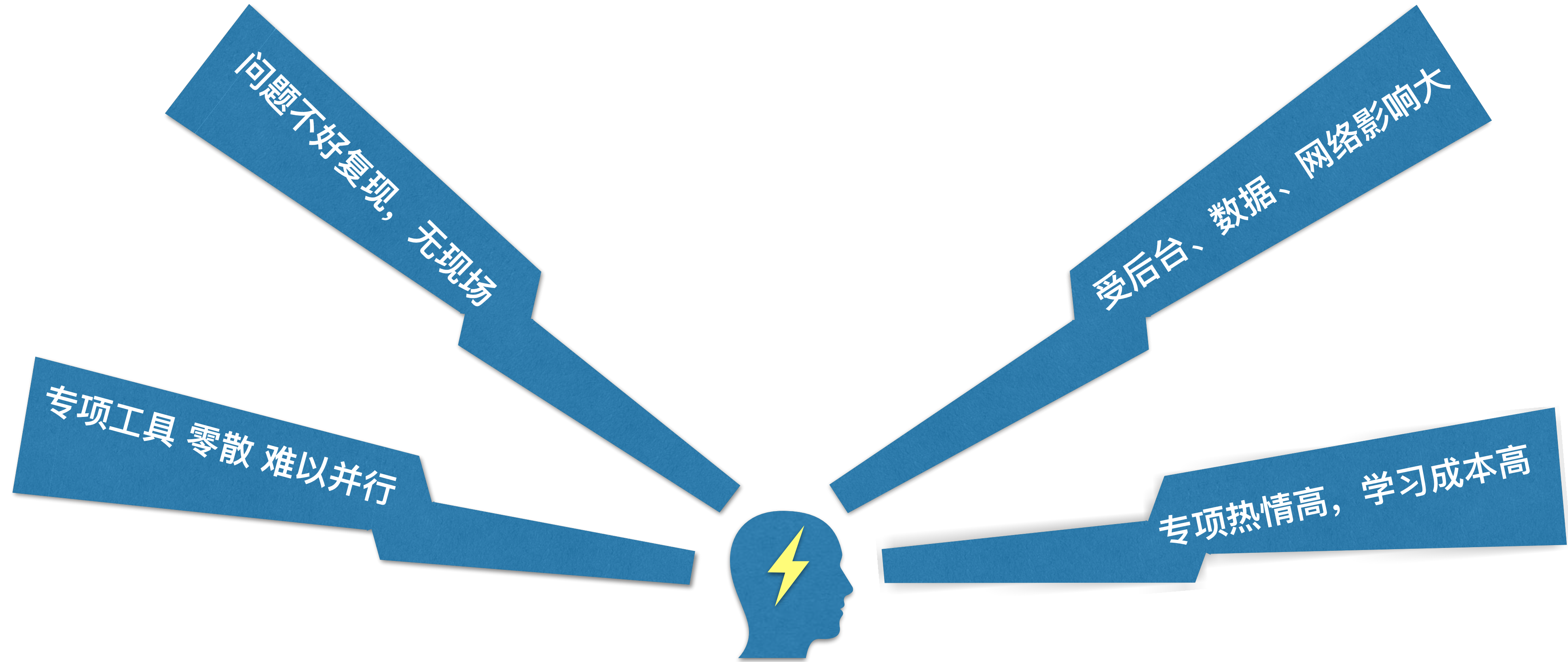




问题



问题



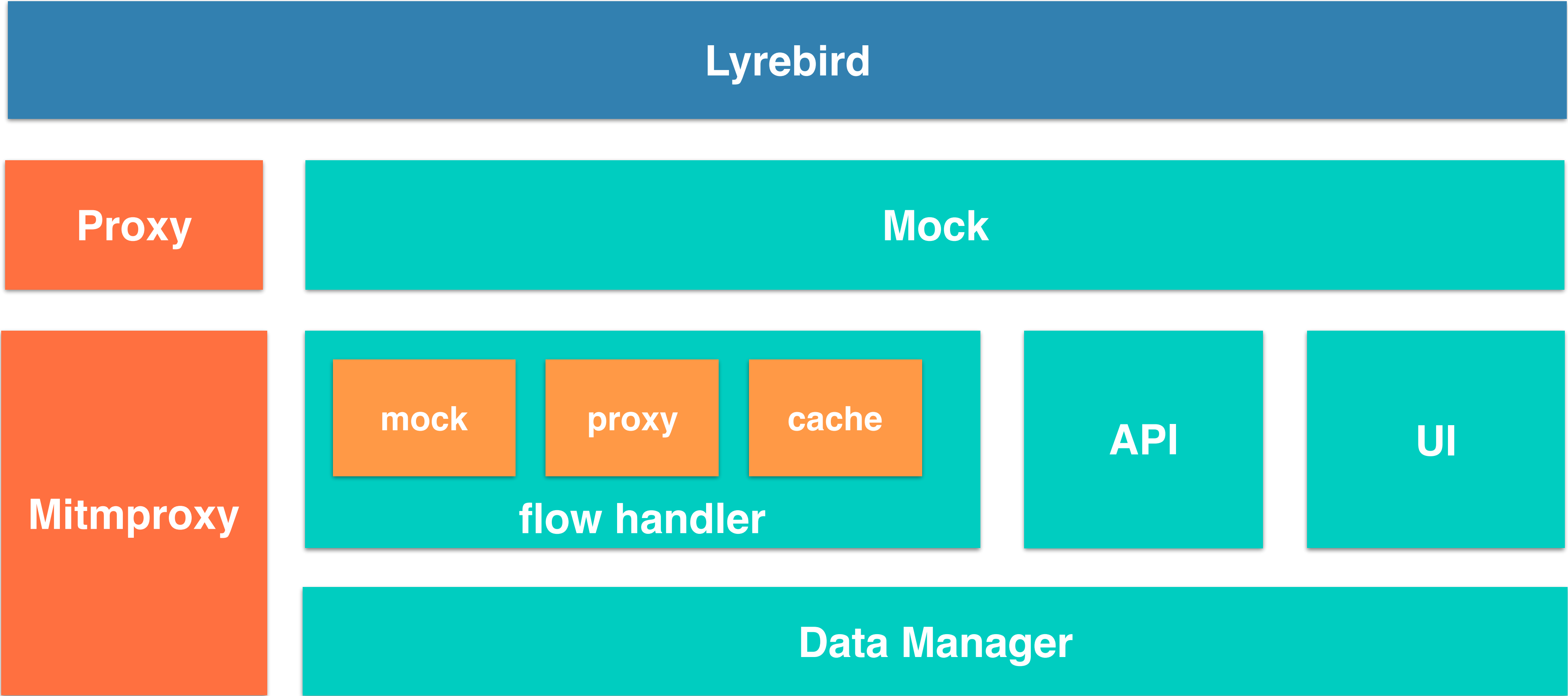
Lyrebird插件化支持

开放数据流，为用户提供自定义数据流处理逻辑及UI的功能

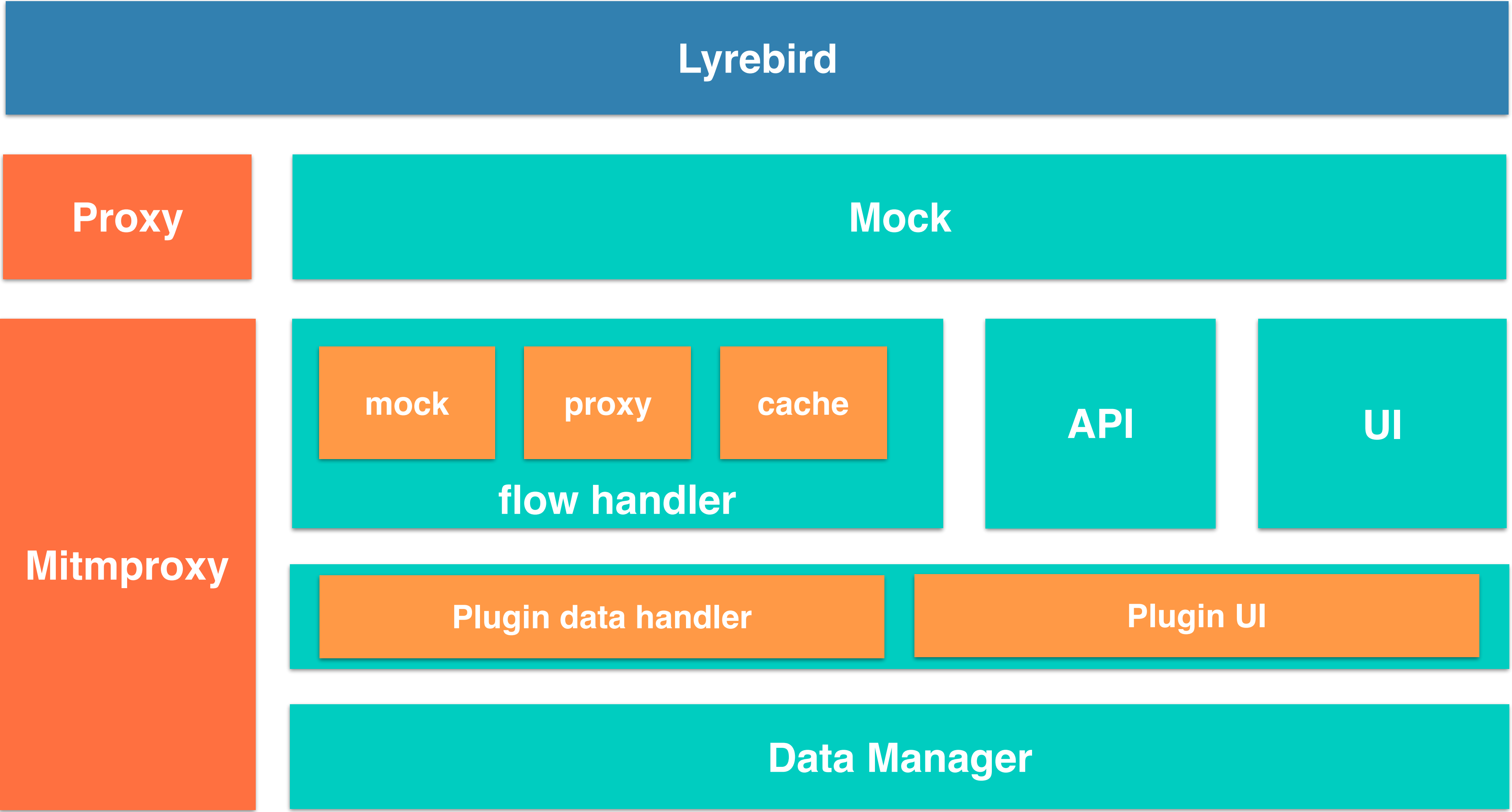
特点

- 数据流处理能力（网络、性能、埋点...）
- 可快速构建插件UI的框架
- 结构灵活，按需组合
- 简化开发工作
- 给有技术热情的同学提供了施展的平台

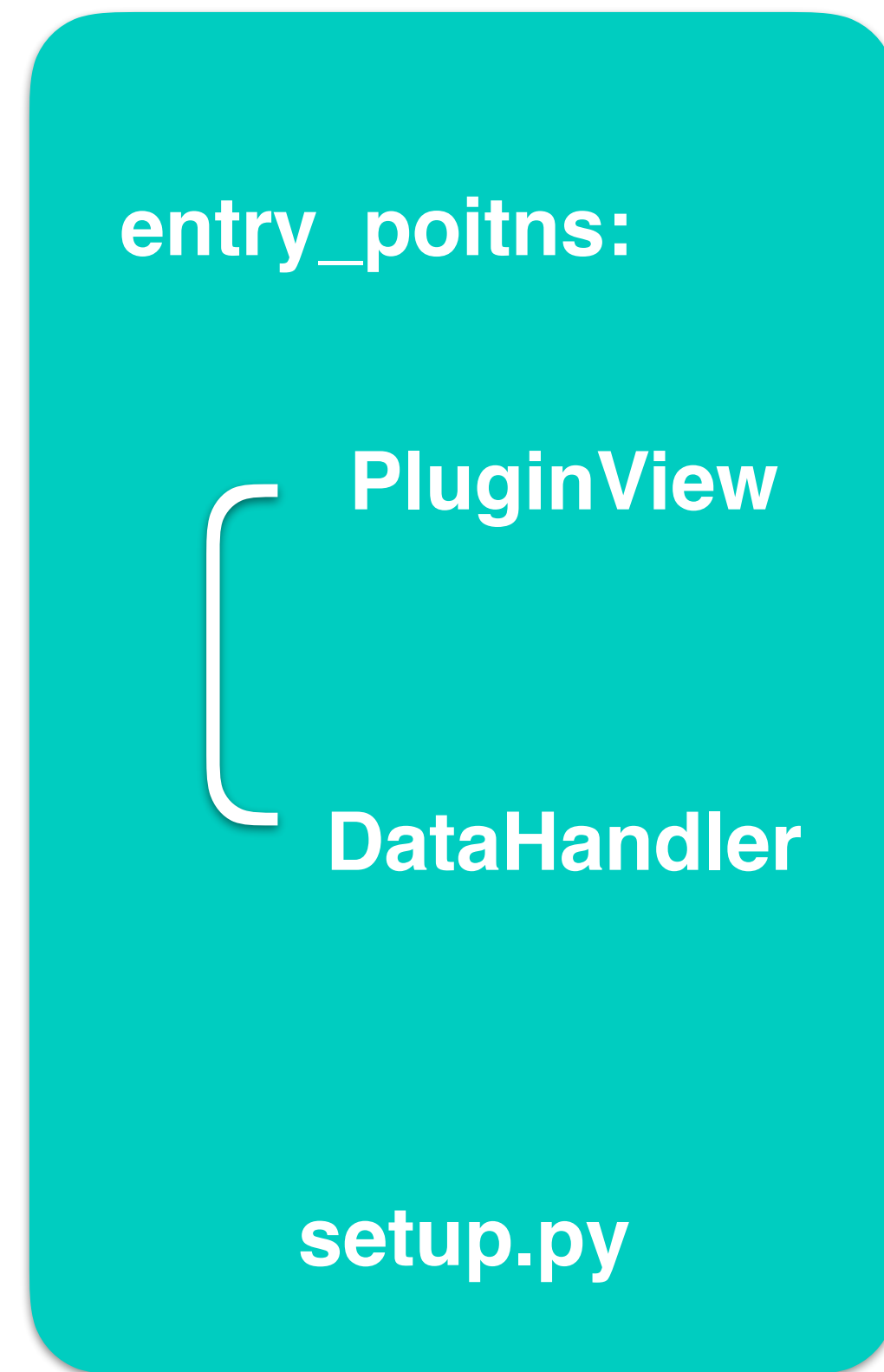
Lyrebird 系统架构



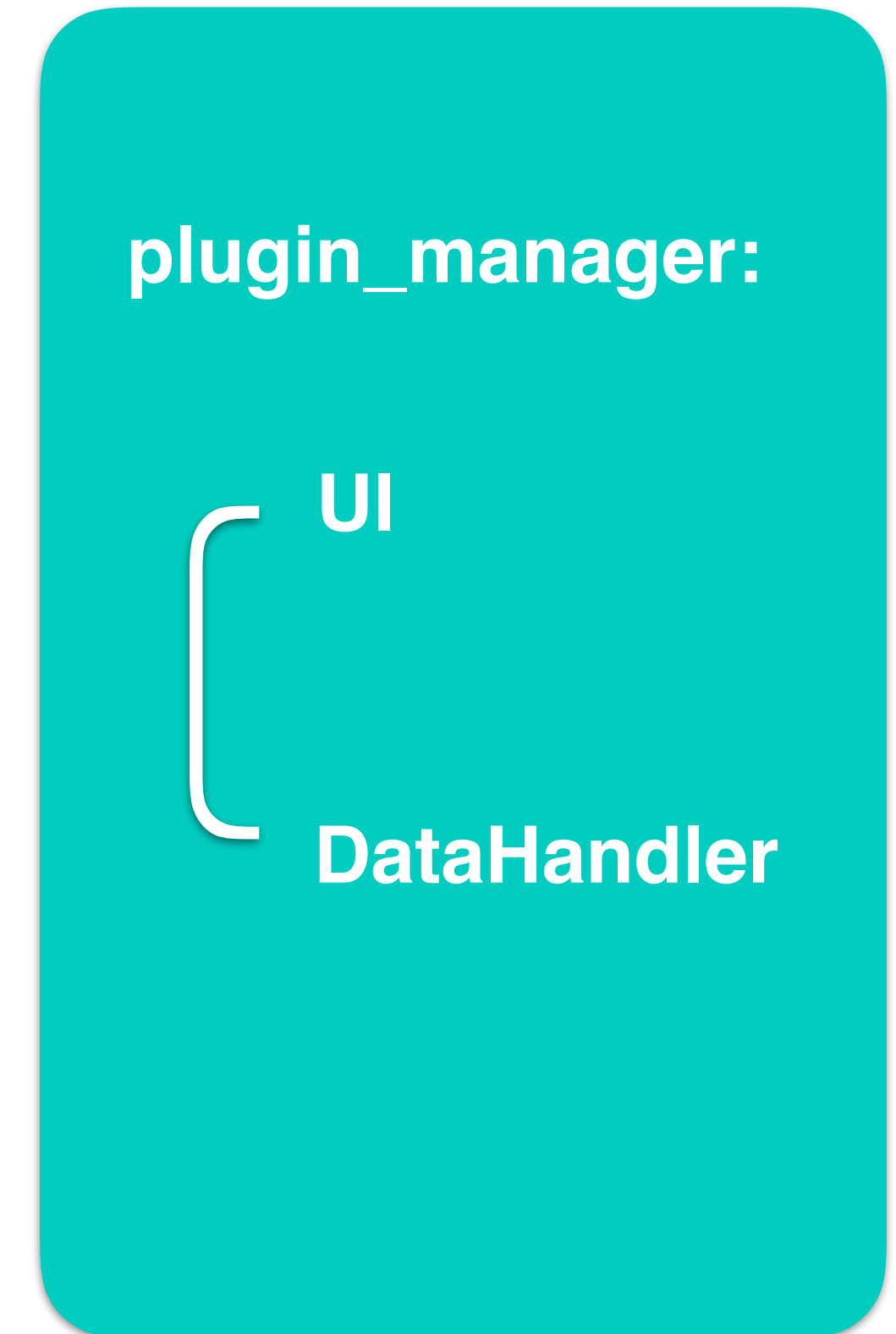
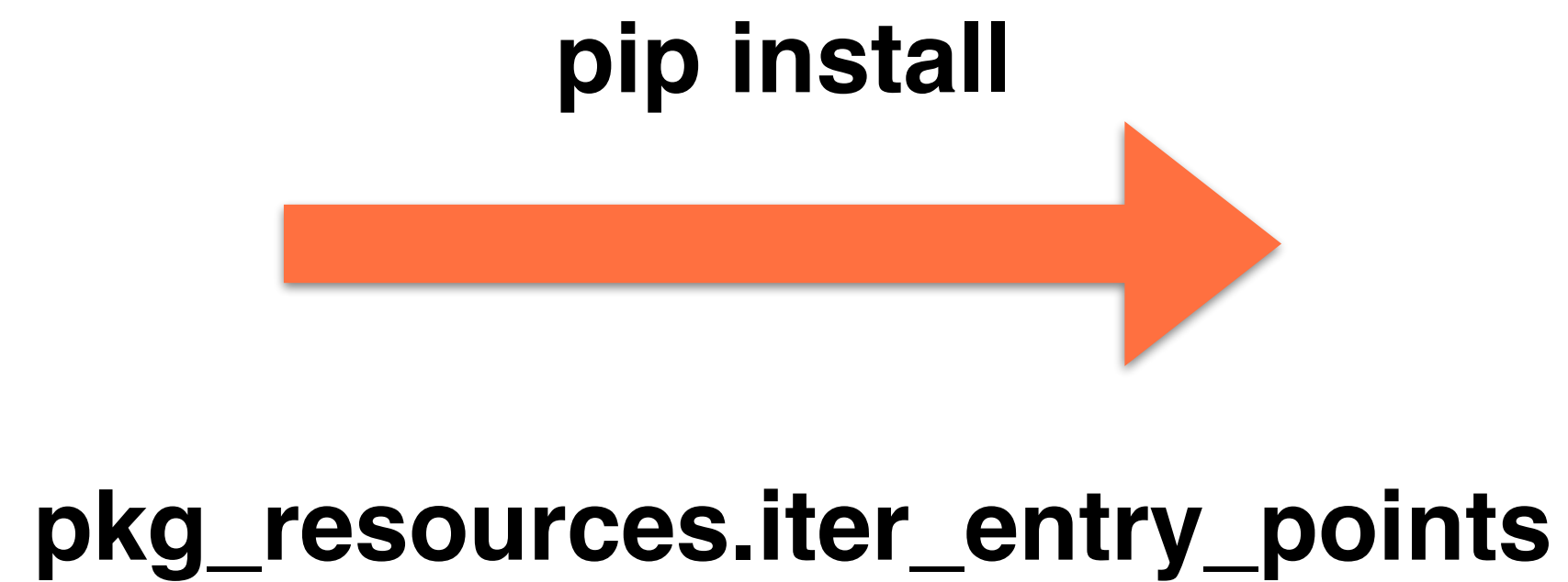
Lyrebird 系统架构



插件实现



Plugin



Lyrebird

数据处理链

Lyrebird

Request



mock



proxy



cache



Response



...



埋点校验



API覆盖率

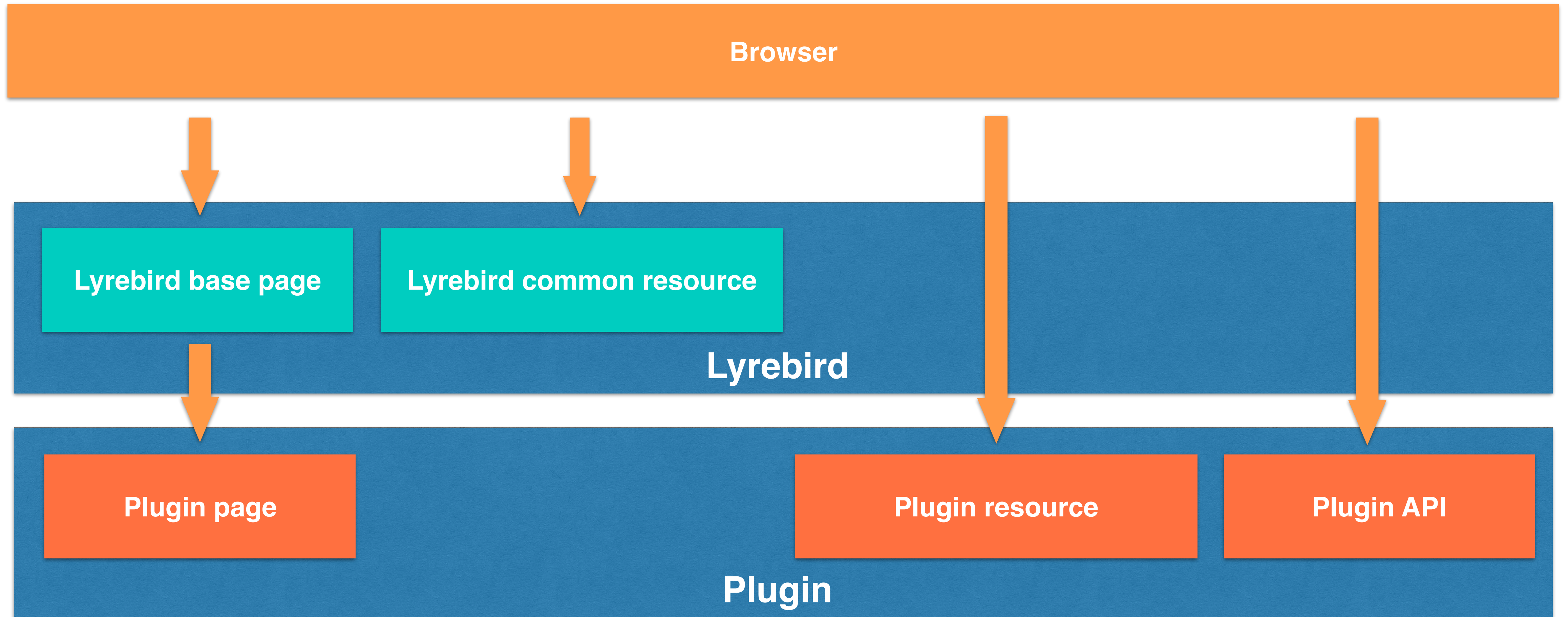


Page分析

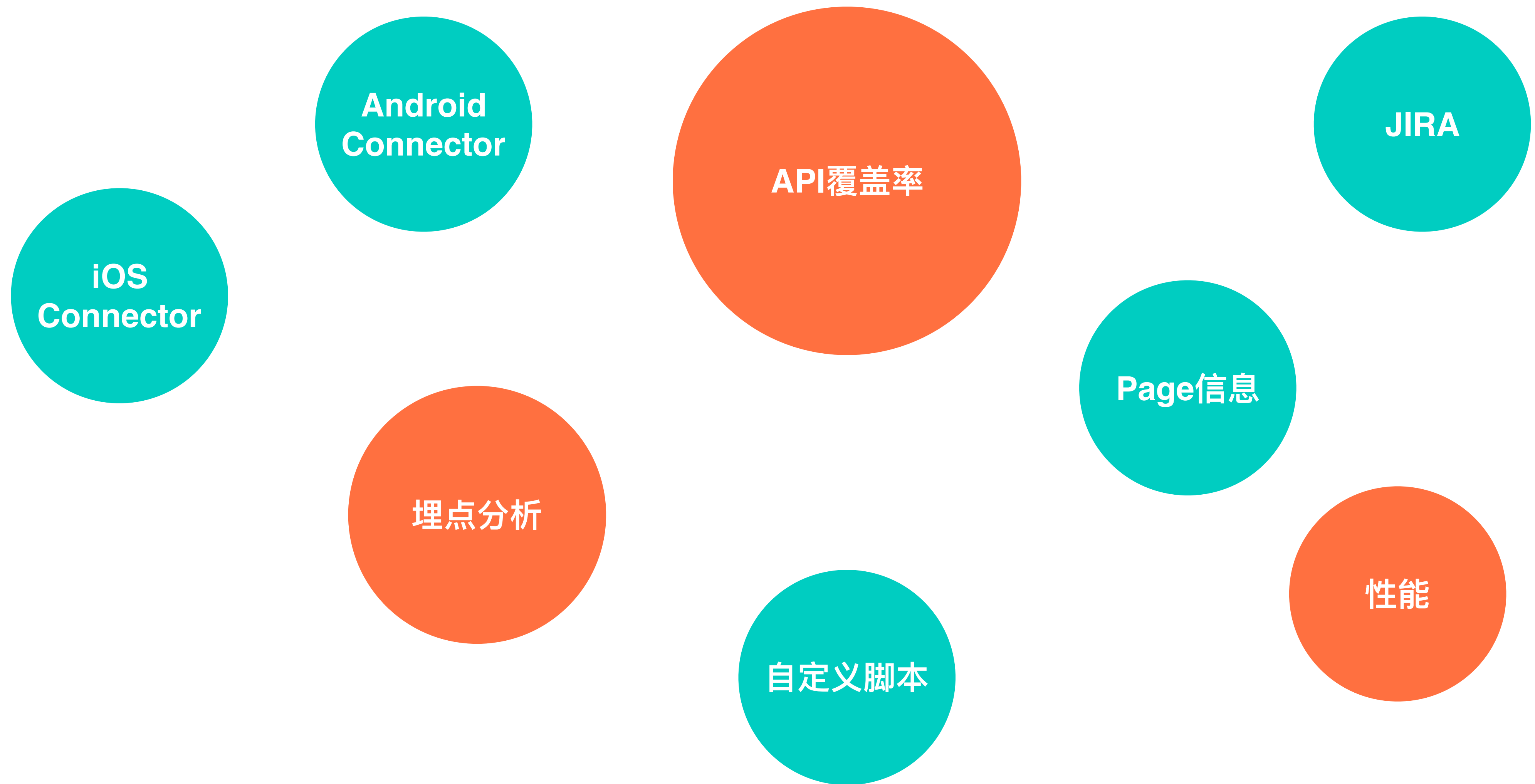
App

Plugins

UI机制



Plugins



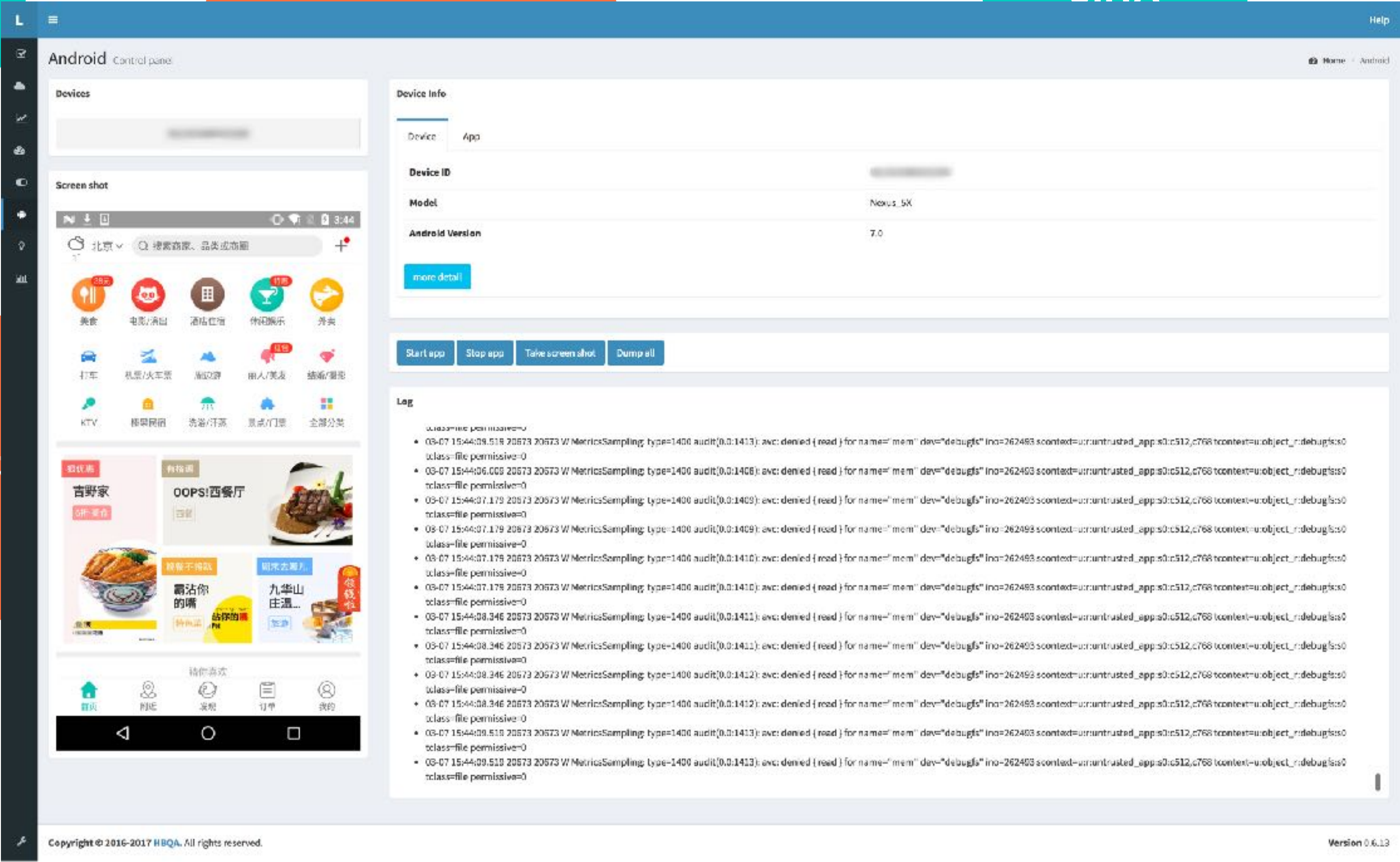
Plugins

Android
Connector

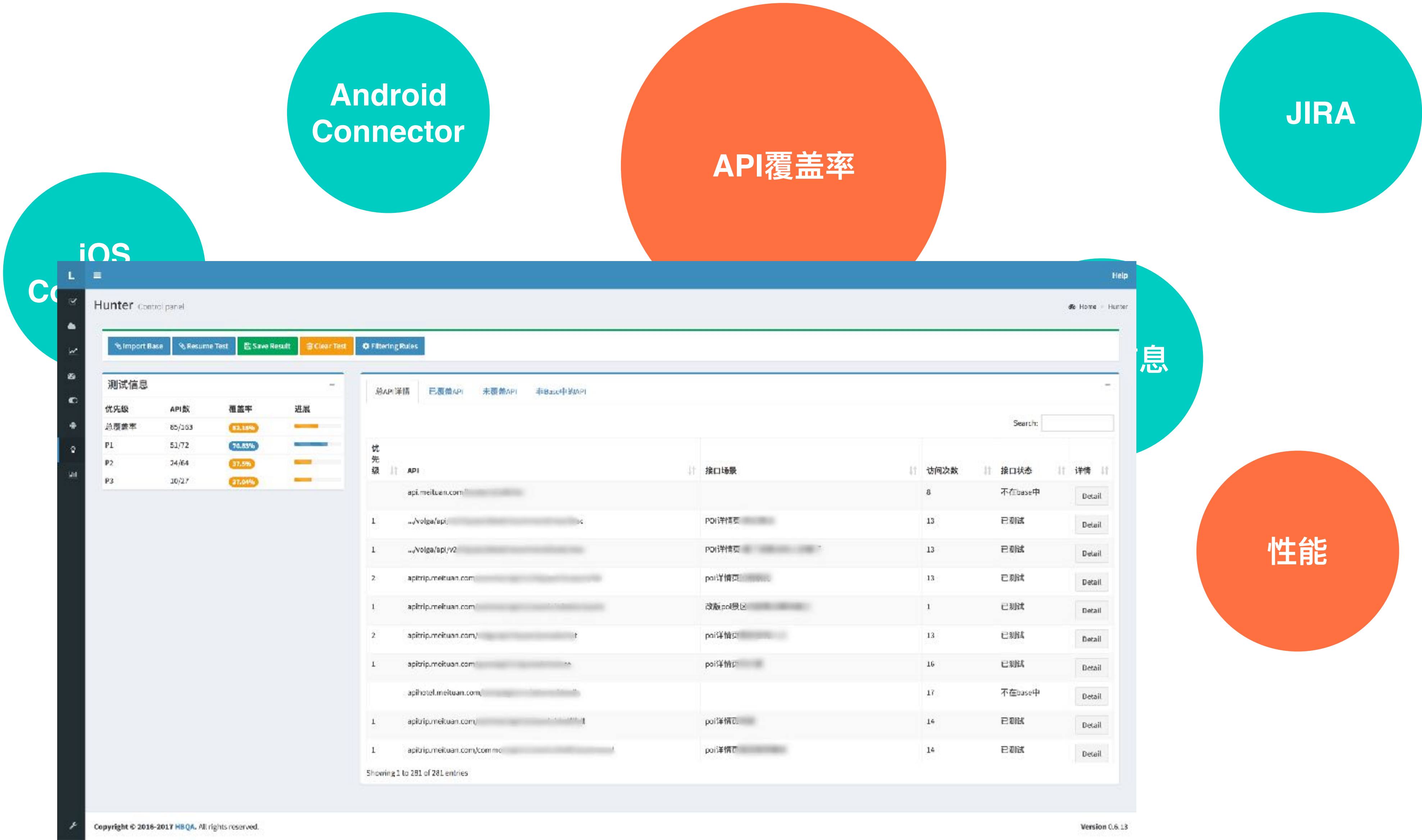
iOS
Connector

埋点分

JIRA



Plugins



Plugins

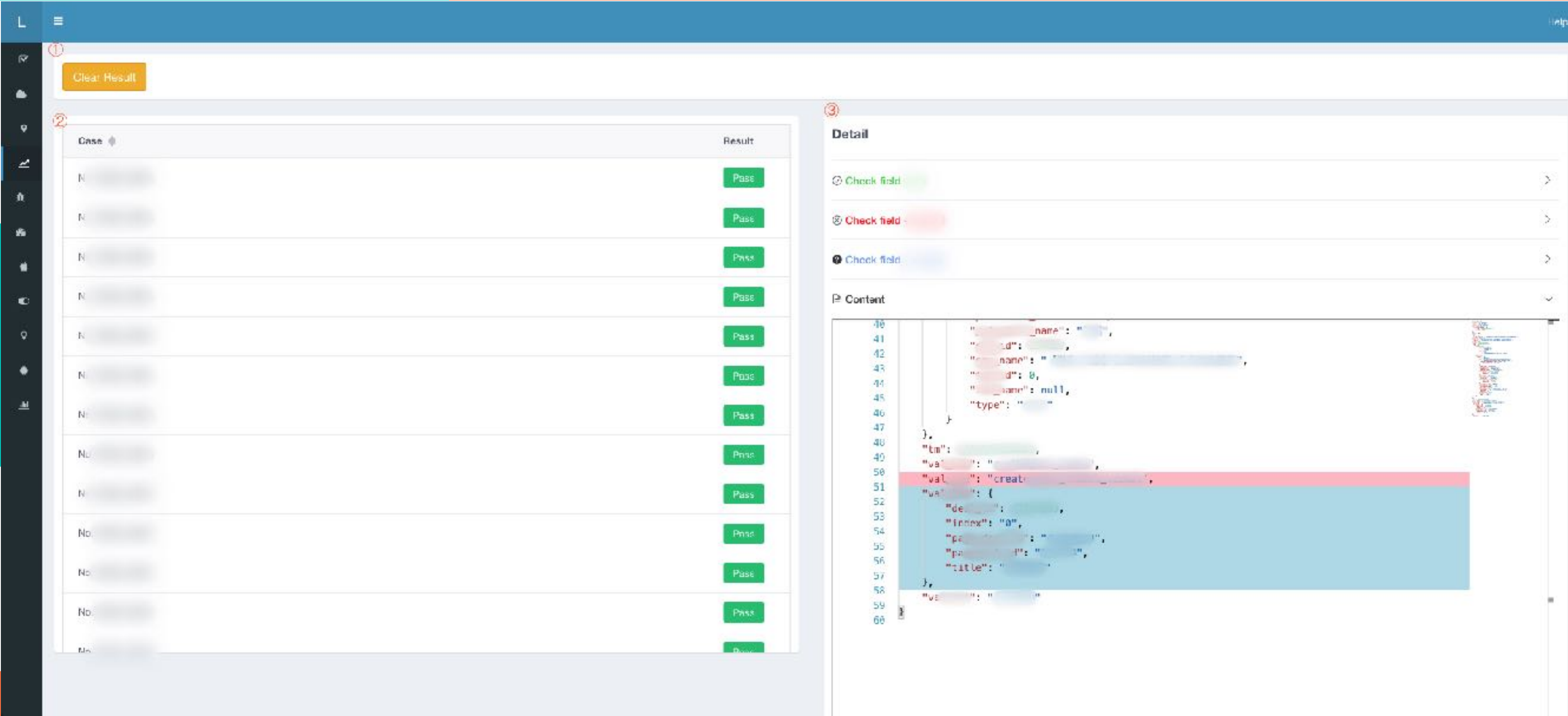
iOS
Connector

An
Con

埋点分析

自定义脚本

性能



Plugins

Android

JIRA

性能

[illegible]

Plugins

Android
Connector



JIRA

Start APPClearSave

Current Page: com.meituan.android.hotel.search.HotelSearchResultActivity

Operating Record

id	page	urlscheme	time	action
8	com.meituan.android.hotel.search.HotelSearchResultActivity	imeituan://www.meituan.com/hotel/search	2018/9/14 15:39:37	Jump to
7	com.meituan.android.hotel.reuse.detail.HotelPoiDetailActivity	imeituan://www.meituan.com/hotel/poi	2018/9/14 15:42:27	Jump to
6	com.meituan.android.hotel.search.HotelSearchResultActivity	imeituan://www.meituan.com/hotel/search	2018/9/14 15:42:20	Jump to
5	com.meituan.android.hotel.reuse.homespage.HotelPoiListFrontActivity	imeituan://www.meituan.com/hotel/homespage	2018/9/14 15:42:15	Jump to
4	com.meituan.android.hotel.reuse.homespage.HotelPoiListFrontActivity	imeituan://www.meituan.com/hotel/homespage	2018/9/14 15:37:53	Jump to
3	com.meituan.android.pt.homespage.activity.MainActivity		2018/9/14 15:42:07	
2	com.meituan.android.pt.homespage.activity.Welcome		2018/9/14 15:26:33	
1	com.meituan.android.pt.homespage.activity.Welcome		2018/9/14 15:42:05	

URLScheme parameters

All data

Page信息

性能

Plugins

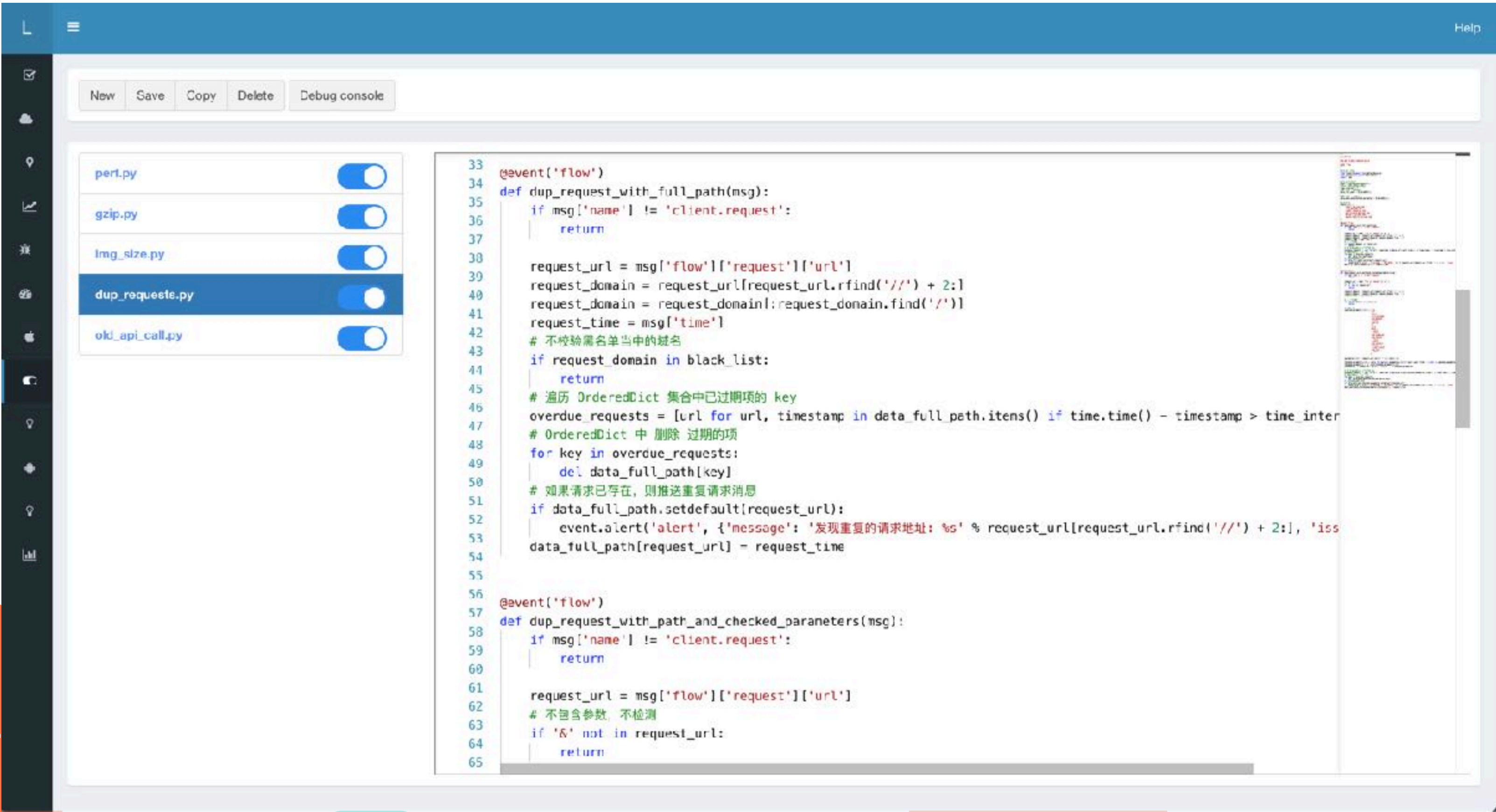
iOS
Connector

Android
Connector

埋点分析

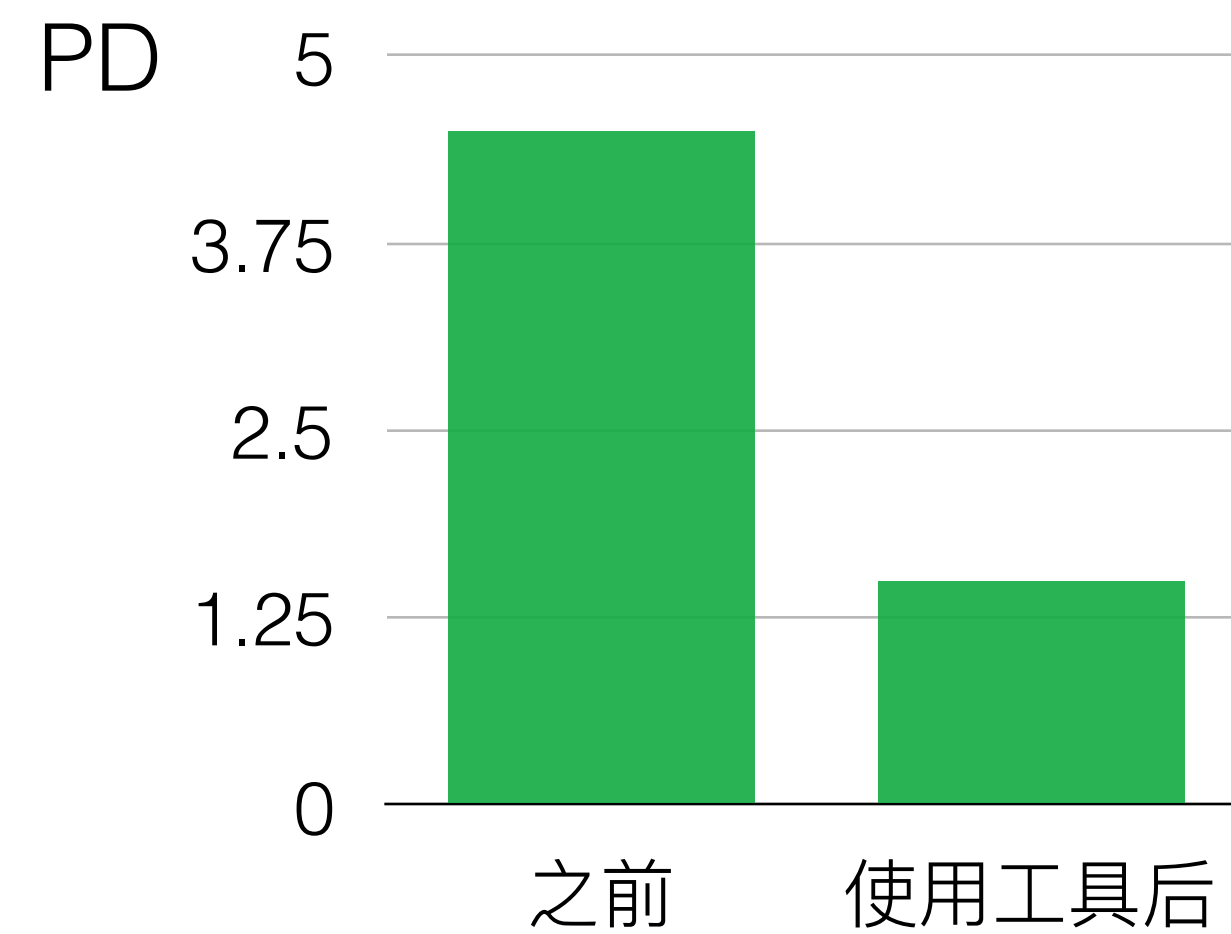
自定义脚本

性能



埋点测试工具-使用情况

新需求埋点手工测试



耗时由**4.5pd**缩短到**1.5pd**，节省了**3pd**

发现问题 10

bid缺失

cid埋错

埋点缺失

API覆盖率插件-使用情况

客户端手工测试

发现问题 **26**

双端接口不一致
仍调用废弃接口

可以清晰的知道测试 够不够 超不超



记录人机交互的过程数据

分析数据没有保存起来

同时使用多个插件试，查阅数据不便



Overbridge - 控制台

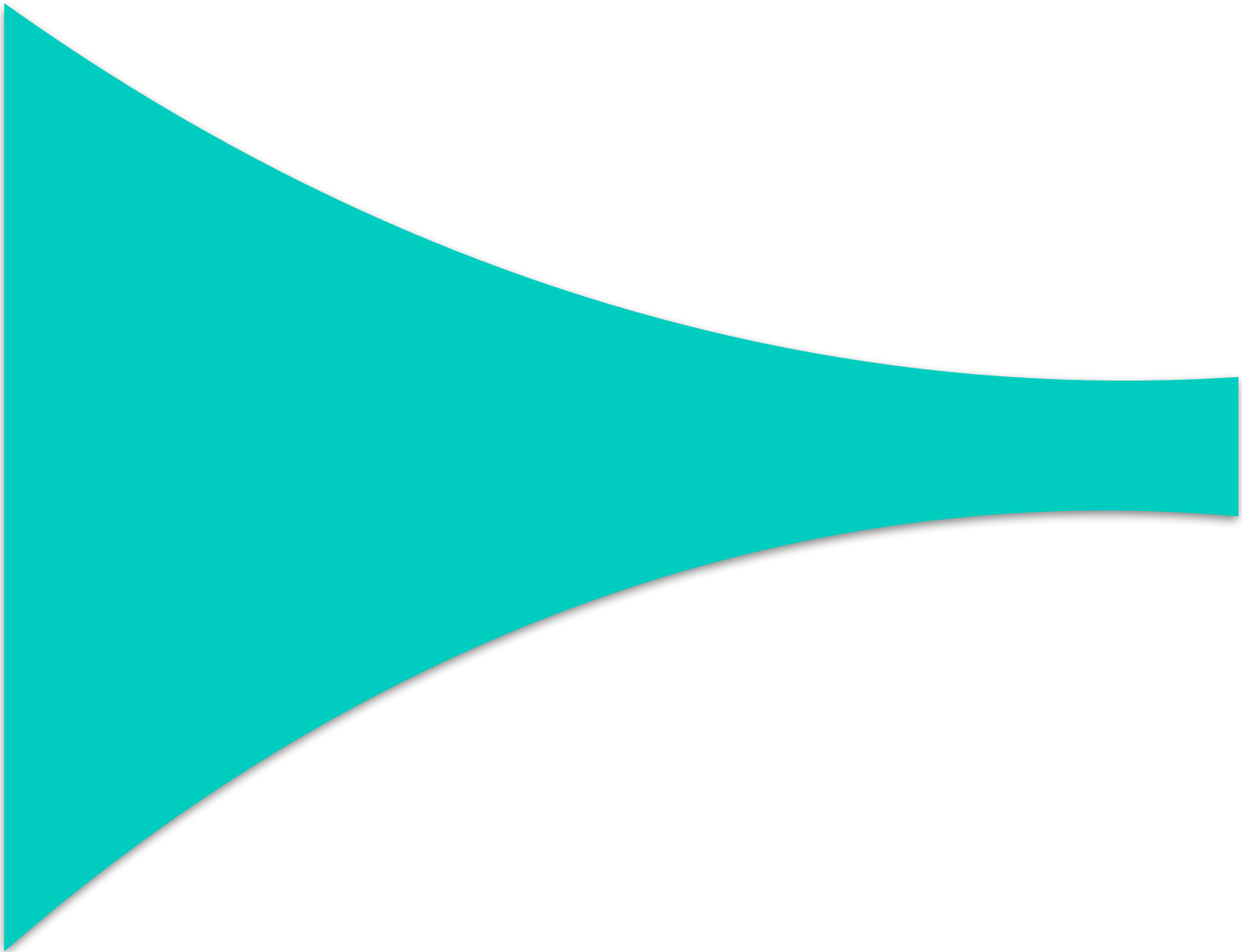
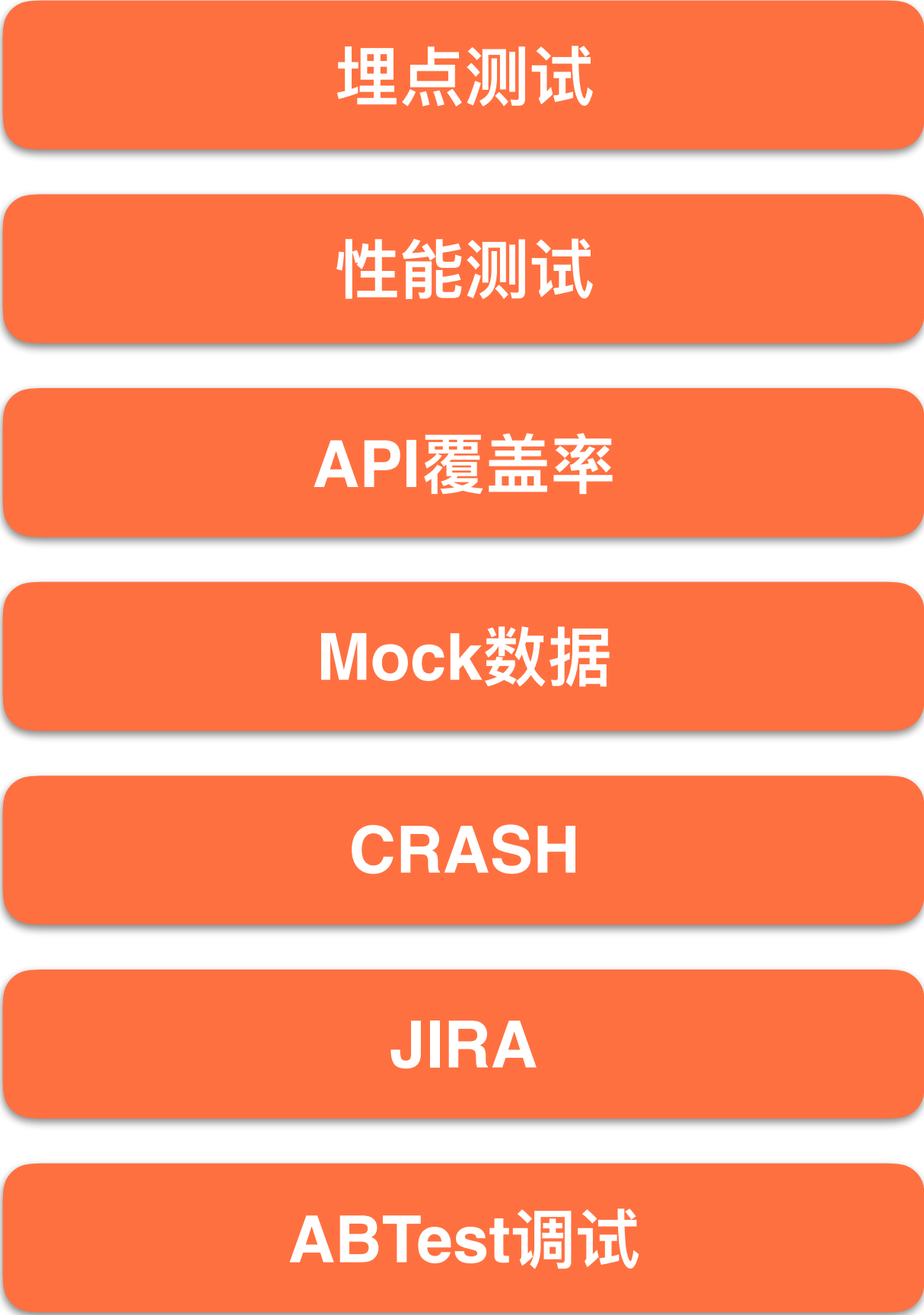
完整的测试过程中**人机交互数据记录**及**分析**的控制台

实时查看移动设备测试情况，并支持一键提交BUG

灵感



Overbridge



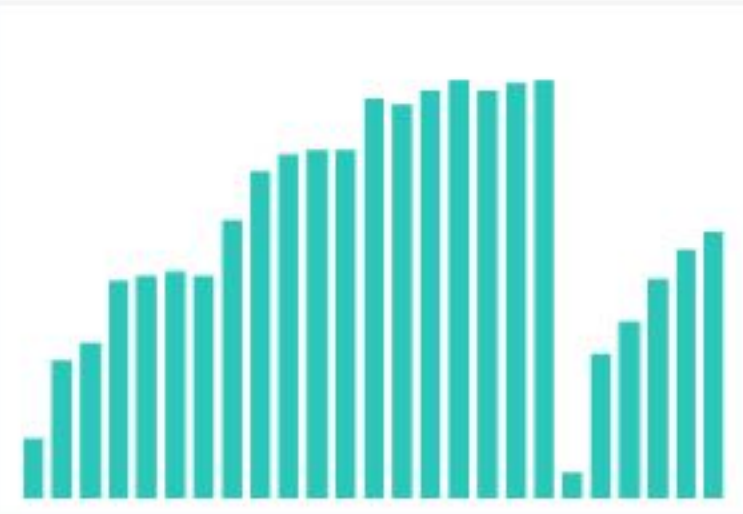
Overbridge Control panel

Home > Overbridge

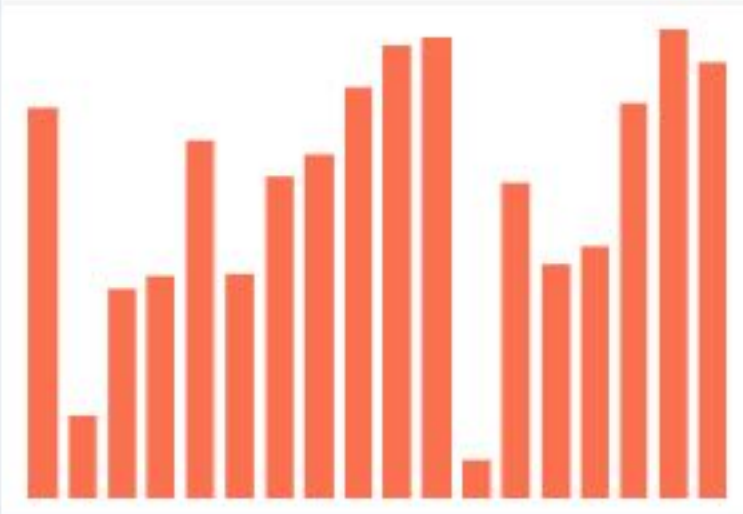
CPU



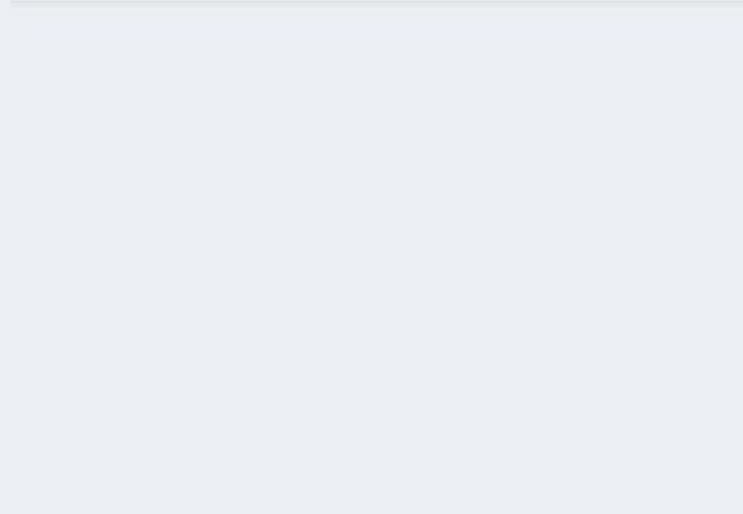
MEM



FPS



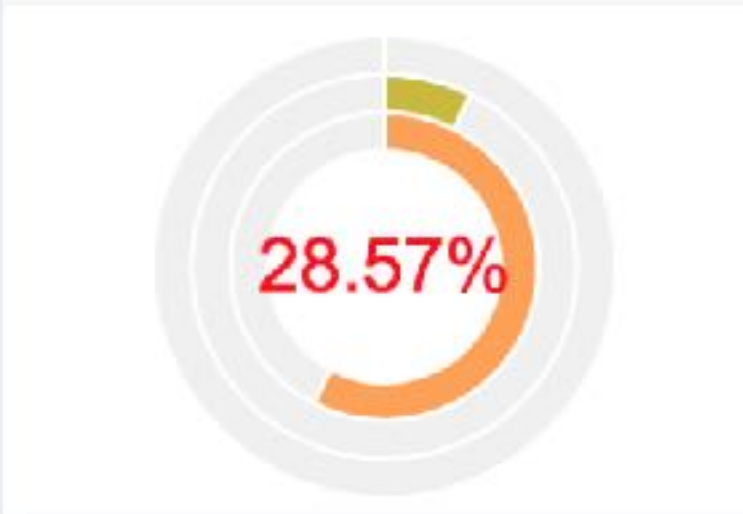
Time



Traffic



Coverage



Inspector

Code	Method	Host	Path
------	--------	------	------

200	POST	report.meituan.com	/
200	POST	catdot.dianping.com	/
200	POST	catdot.dianping.com	/
200	POST	report.meituan.com	/
200	POST	frep.meituan.net	/
200	POST	frep.meituan.net	/
200	POST	report.meituan.com	/
404	GET	awp-assets.meituan.net	/
200	POST	catdot.dianping.com	/
200	GET	apitrip.meituan.com	/
200	POST	apitrip.meituan.com	/
200	POST	report.meituan.com	/

Showing 1 to 577 of 577 entries

Request	ReqBody	Response	RespBody
---------	---------	----------	----------

```
{
  url: http://catdot.dianping
  method: "POST",
  - headers: {
    Accept-Encoding: "gzip",
    Connection: "Keep-Alive",
    Content-Length: "662",
    Content-Type: "application/x-www-form-urlencoded",
    Host: "localhost",
    User-Agent: "Dalvik/2.1.0 (Linux; U; Android
```

Track

bid	cid
	酒店-前置筛选页-国内
	com.meituan.android
	com.meituan.android
	com.meituan.android

Showing 1 to 76 of 76 entries

Device info

Device App

- Model - Nexus_5X
- UDID -
- Version - 7.0

RestartApp

Bug it!

* 项目

ProjectKey(必填), eg:

The key cannot be empty

* 问题类型

Select issuetype

* 主题

summary

* 描述

device_info:
udid:
Model: Nexus_5X
Version: 7.0

device_info:
udid:
Model: Nexus_5X

创建

重置

刷新设备

基础信息

设备

Nexus_5X

附件列表



FileName

暂无数据

截图

☐ android_screenshot_ .png

美食



电影/演出



酒店住宿



休闲娱乐



外卖



打车



民宿/公寓



周边游/旅游



丽人/美发



摩拜单车



景点/门票



机票/火车票



闪购



借钱



全部分类

HB-自动化
HB-ATP ▾

待办事项

活动的Sprint

发布版本

报表

问题

模块

Spreadsheet

WBS Gantt-Chart

测试

app:

Package: com.sankuai.meituan

Version: 8.9.2

device:

UDID: emulator-5554

Model: Android_SDK_built_for_x86

Version: 7.0

附件

添加附件或 浏览.



com.sankuai.meituan.info.txt

2018-01-30 17:27485 kB



emulator-5554.info.txt

2018-01-30 17:276 kB



emulator-5554.log

2018-01-30 17:28830 kB



flow.json

2018-01-30 17:278 kB



screenshot.png

2018-01-30 17:28768 kB

开发

创建分支

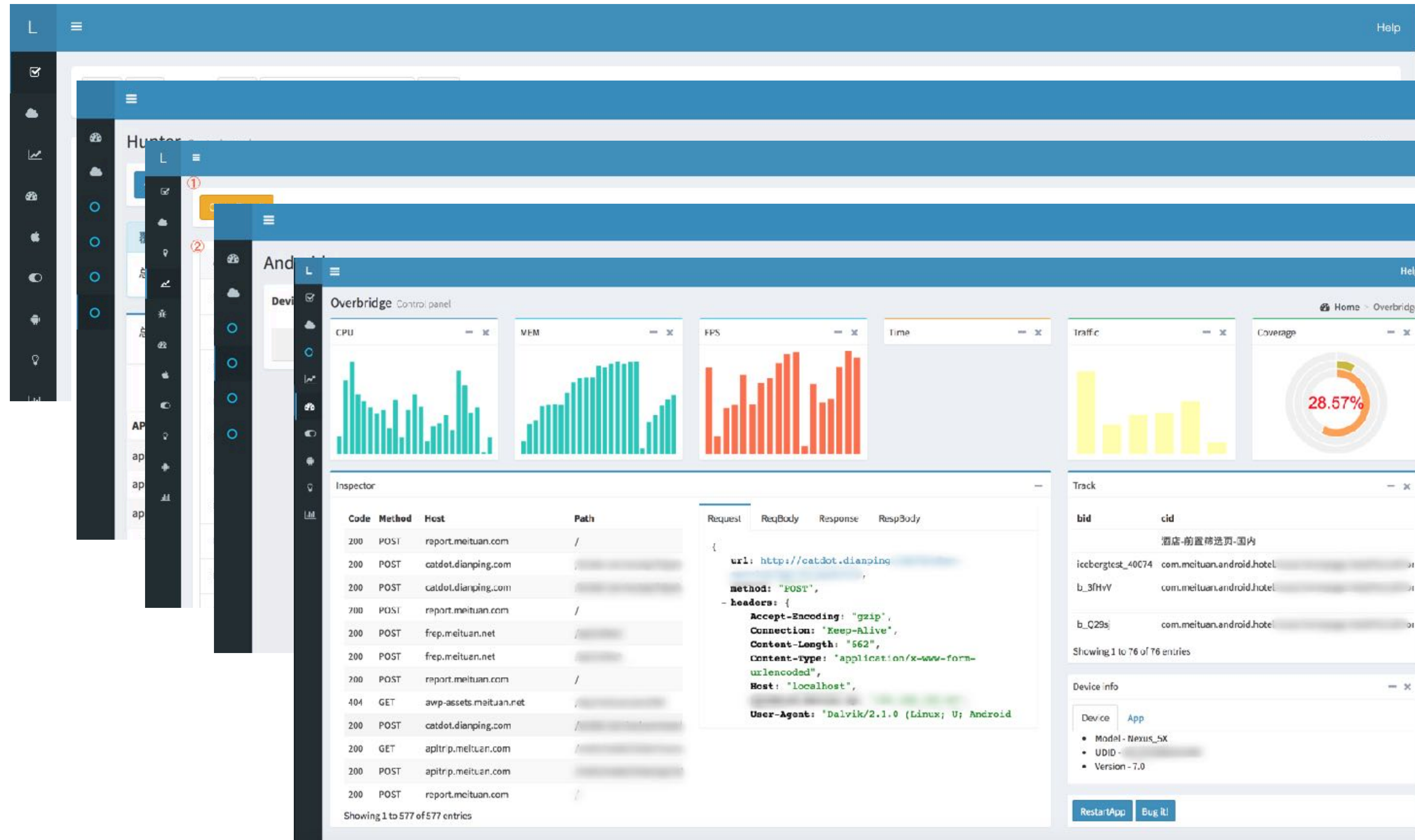
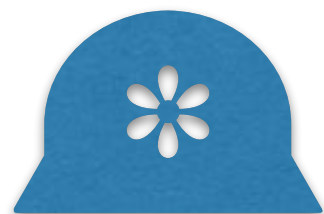
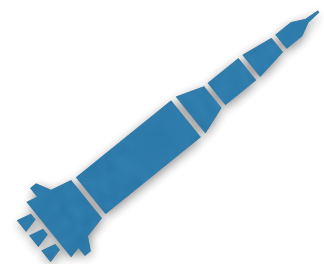
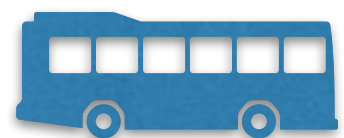
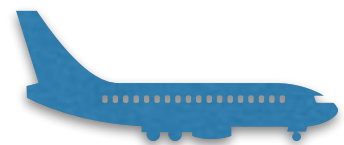
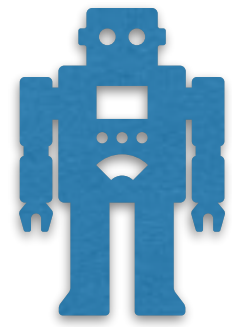
Agile

在敏捷看板中查看

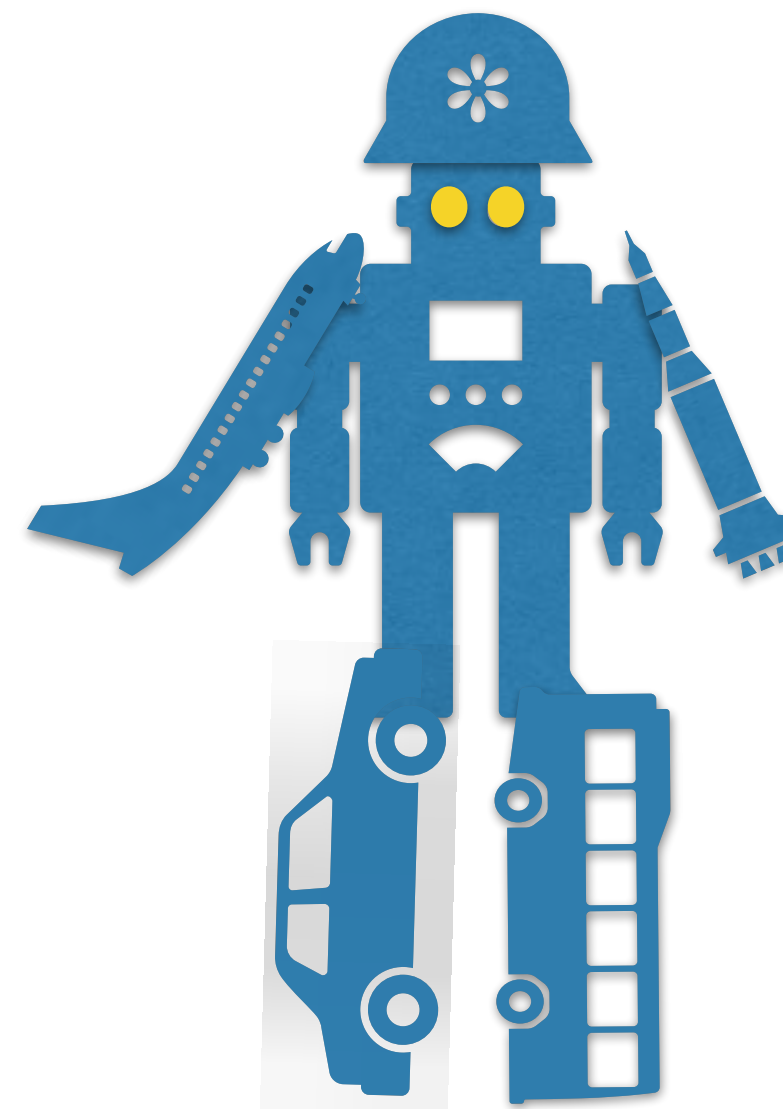
WBS Gantt-Chart

Browse this issue in WBS Gantt-Chart

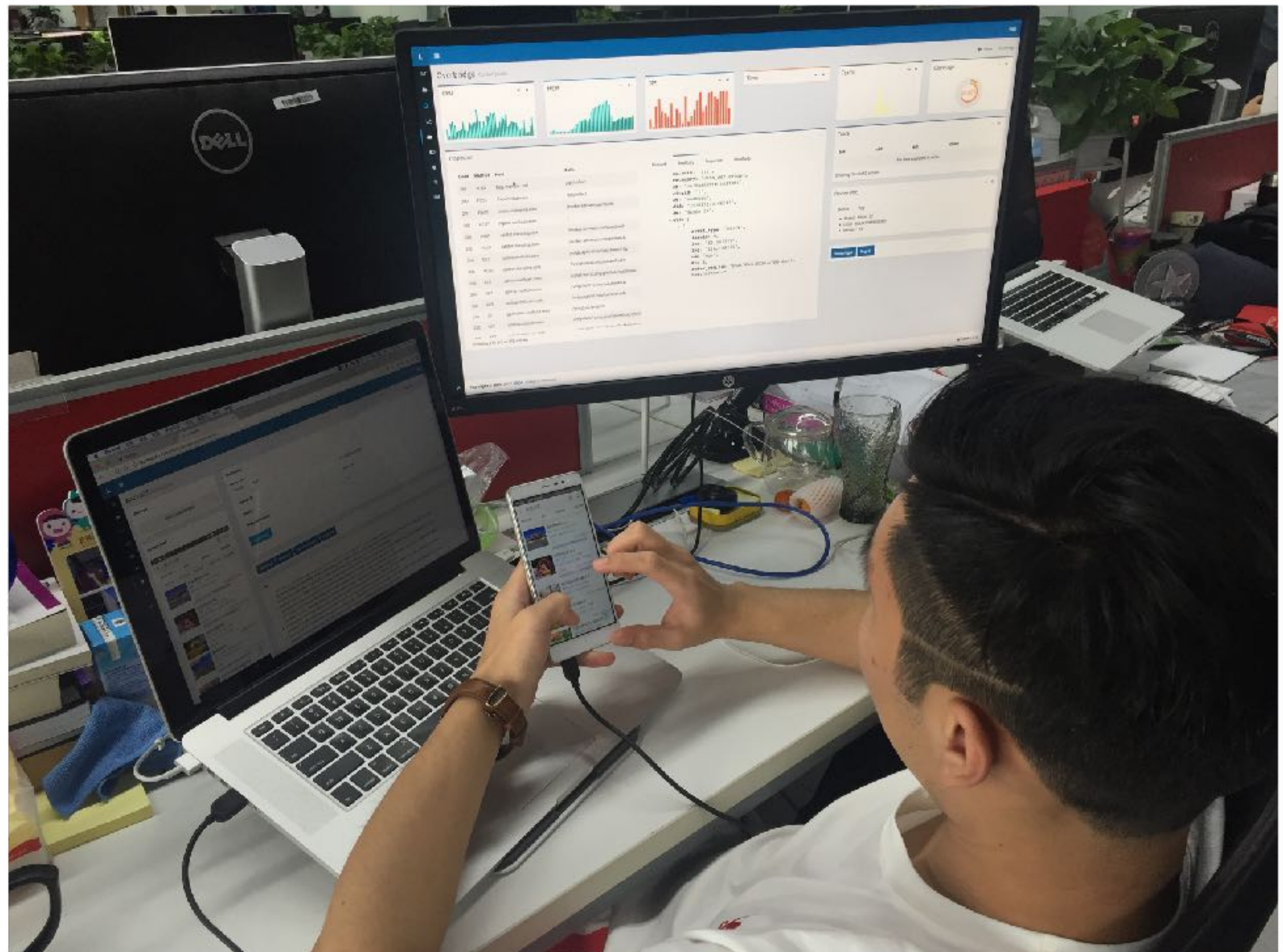
Overbridge



Overbridge



使用情况



数据上报

通过ELK汇总所有使用Overbridge测试产生的数据，从整体上把握当前版本质量情况及测试进度。

reporter: "lyrebird.hunter"

business: "travel"

version_name: "9.1.0"

count_flag: "-1"

Add a filter +

Hunter客户端 iOS API覆盖率

[↗ Hunter客户端 iOS P1覆盖率 ↗](#) [↗ Hunter客户端 iOS P2覆盖率 ↗](#) [↗ Hunter客户端 iOS P3覆盖率 ↗](#)

87.57%

API total coverage

95.95% 77.33% 92.86%

71

P1覆盖的接口总数

58

P2覆盖的接口总数

26

P3覆盖的接口总数



Hunter客户端 Android API覆盖率

[↗ Hunter客户端 Android P1... ↗](#) [↗ Hunter客户端 Android P2... ↗](#) [↗ Hunter客户端 Android P3... ↗](#)

87.01%

API total coverage

97.30% 76.00% 89.29%

72

P1覆盖的接口总数

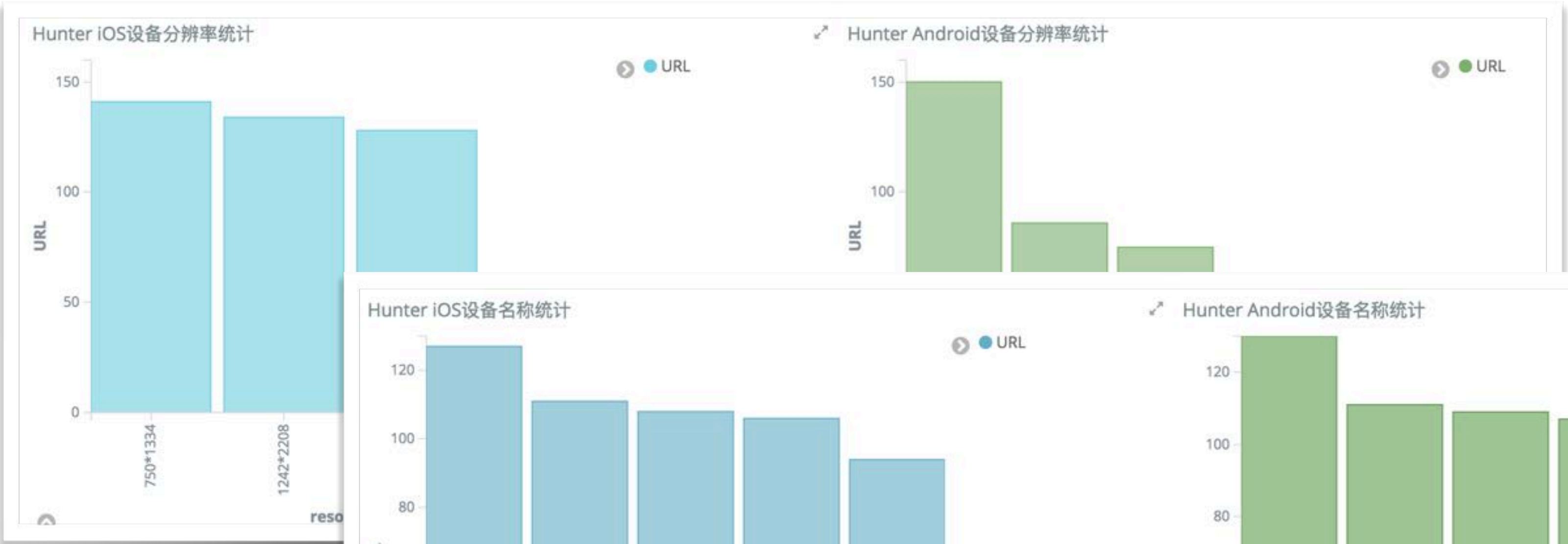
57

P2覆盖的接口总数

25

P3覆盖的接口总数

			sum_count
			119
			136
			119
			119
1	dabao.meituan.com/trippackage/api/v2/deal/{num}/ugc	酒景Deal详情页用户评价	107
1	dabao.meituan.com/trippackage/api/v2/deal/{num}/recommend	酒景Deal详情页别人还看了	113
1	dabao.meituan.com/trippackage/api/v2/deal/{num}/packages	酒景Dea详情页打包产品	123
1	dabao.meituan.com/trippackage/api/v2/deal/{num}/detail	酒景Deal详情页	112
1	dabao.meituan.com/trippackage/api/v2/deal/{num}/calendar	酒景Deal详情页日历	112
1	dabao.meituan.com/trippackage/api/v2/deal/{num}/base	酒景Deal详情页基本信息	113

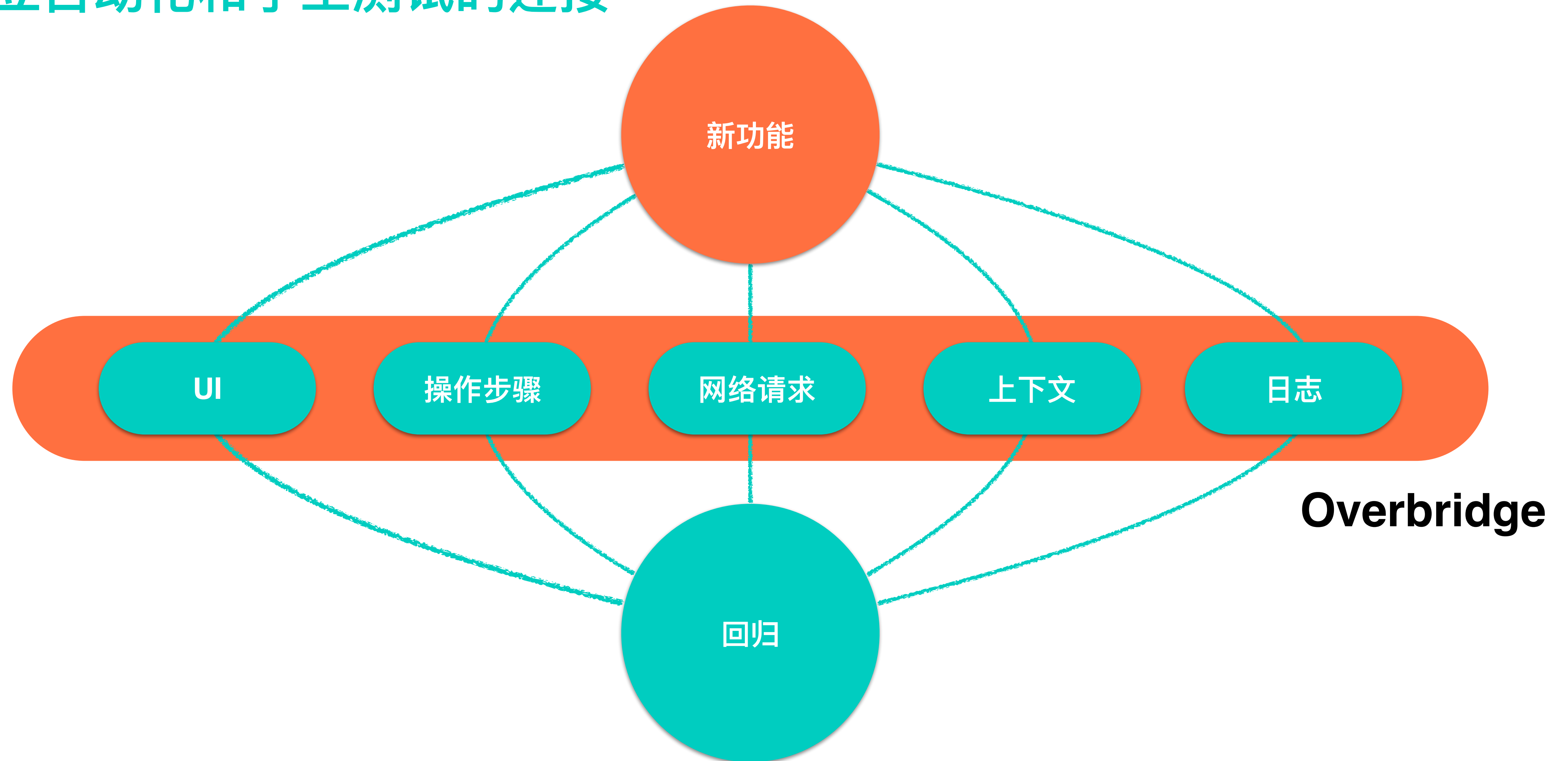


未来的展望

抹除手工测试和自动化测试之间的差异，为客户端智能化奠定基础。

完全控制APP

建立自动化和手工测试的连接




```
$ brew install python3
```

```
$ pip3 install lyrebird
```

```
$ lyrebird
```

开源



Q&A

Thanks

Eat better, Live better.

