

测试之旅2018-北京站

QA与OPS通力合作打造反脆弱的软件系统

ThoughtWorks资深QA 林冰玉

ABOUT ME

10

16

QA

QA Community

BQConf中国软件质量大会

ThoughtWorks®



AGENDA



QA & Ops

★ 软件系统的脆弱性与应对方案(5 slides)

★ 日志处理的常见误区与改进(4 slides)

★ 项目上有关日志处理的故事(18 slides)

软件系统的脆弱性与应对方案

软件系统的生态环境日益复杂



软件系统的脆弱性

软件系统

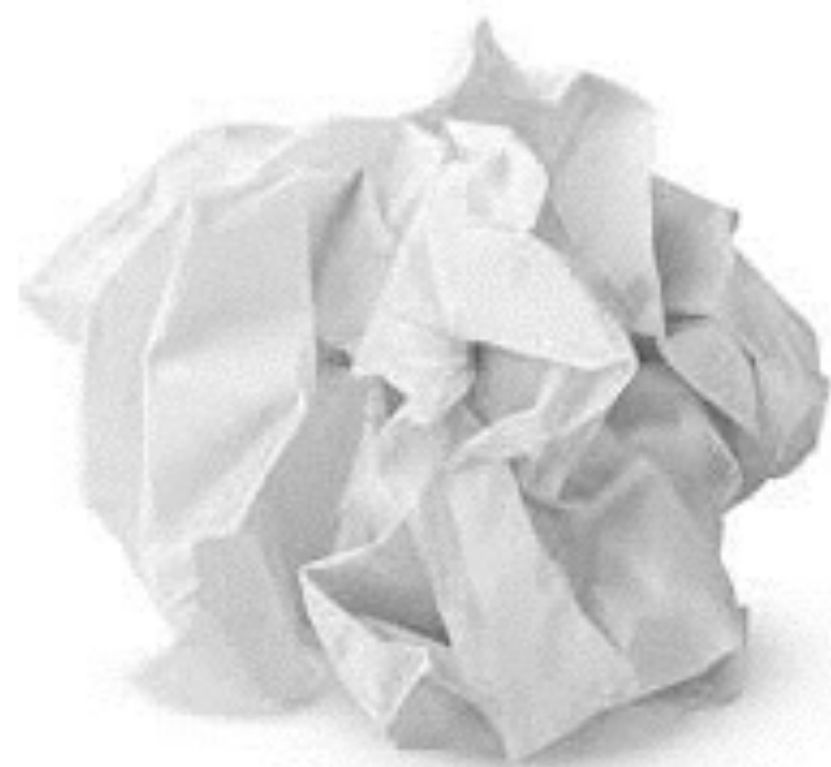
- ☆ 不是100%健康
- ☆ 可靠性、稳定性成本较高
- ☆ 太多的不确定性

质量保障

- ☆ 不可预测性无法回归
- ☆ 要测试必须探索
- ☆ 预生产环境不够用



脆弱的反面是什么



软件系统的反脆弱性

Techniques

QA in production

生产环境下的QA



测试



监控预警



用户反馈

日志信息

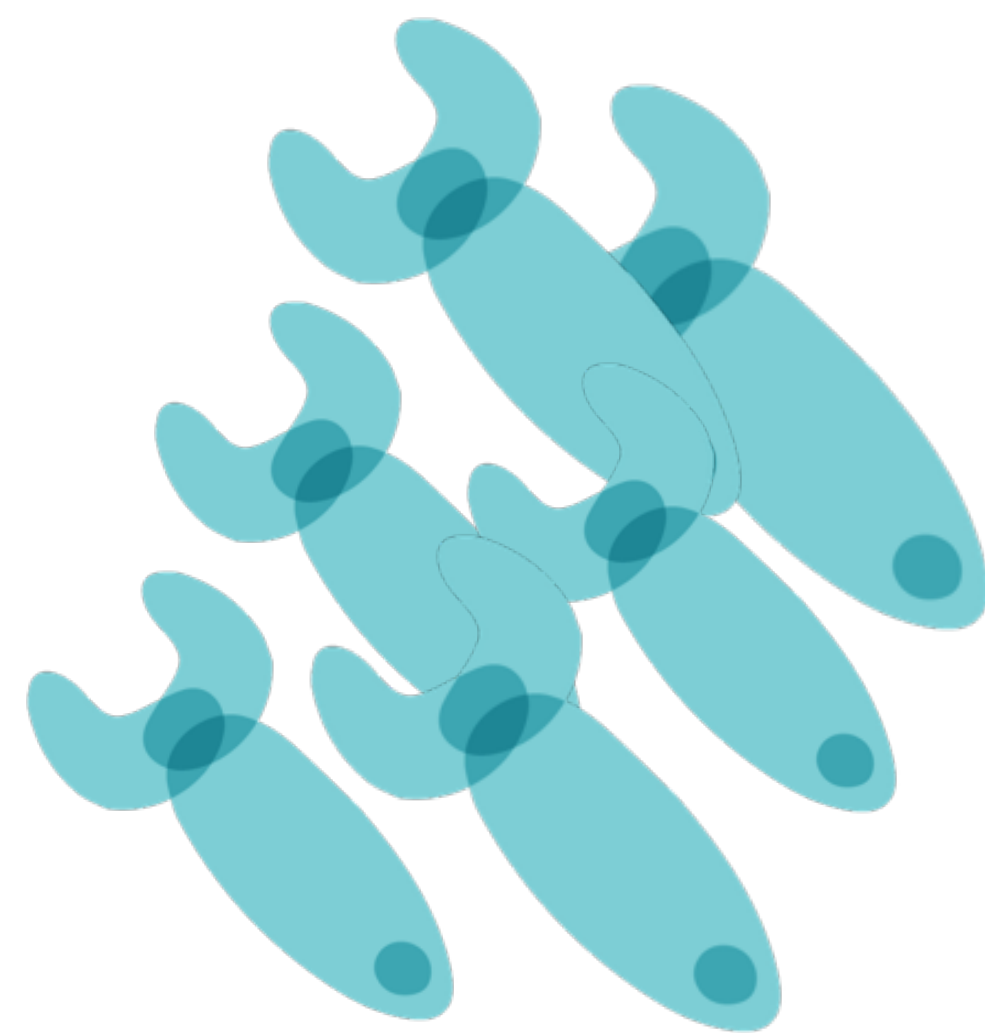


日志处理的常见误区与改进

关于日志处理



Ops

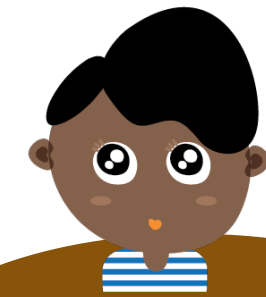


工具、技术



稳定性

OPS处理日志的局限性

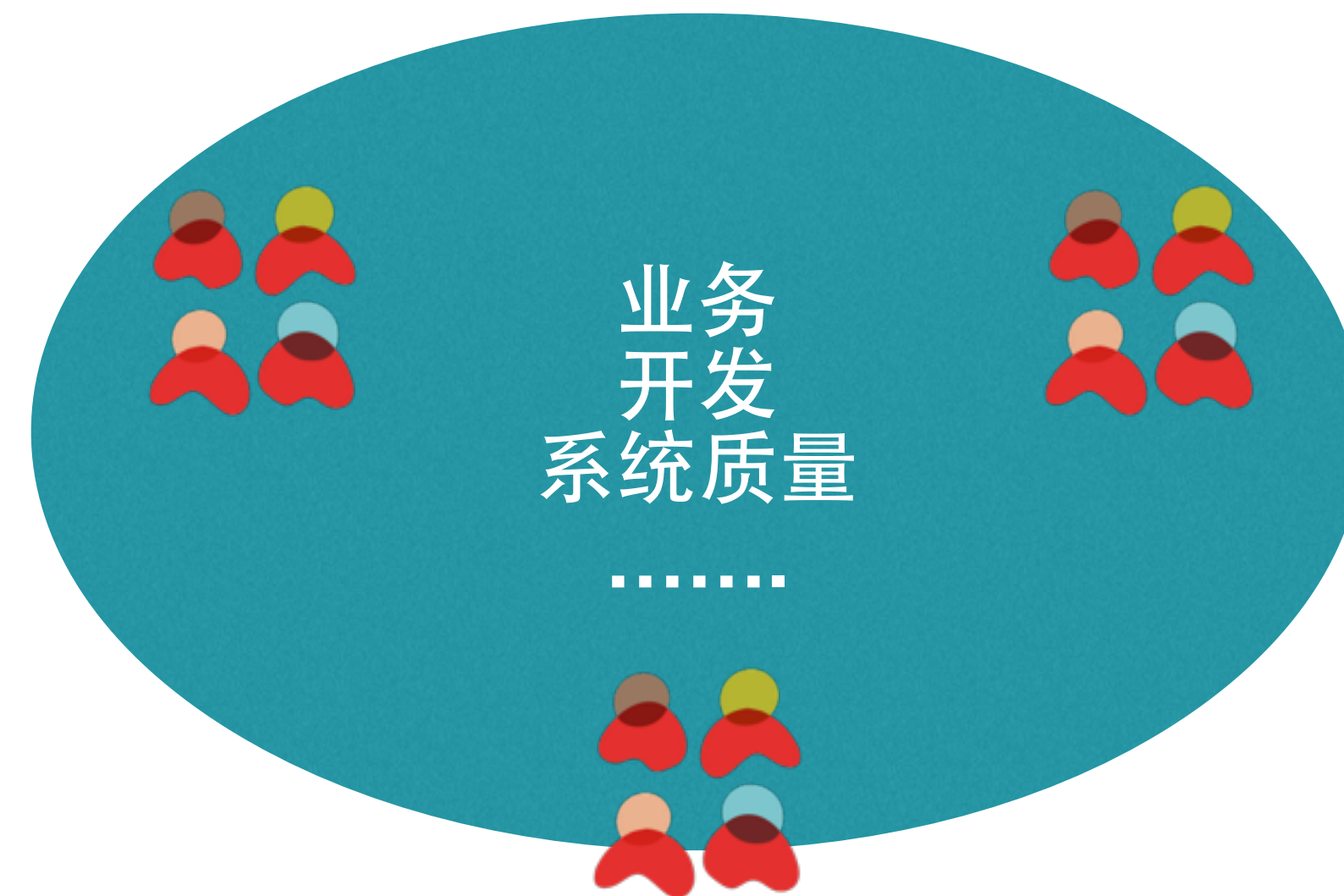


日志处理

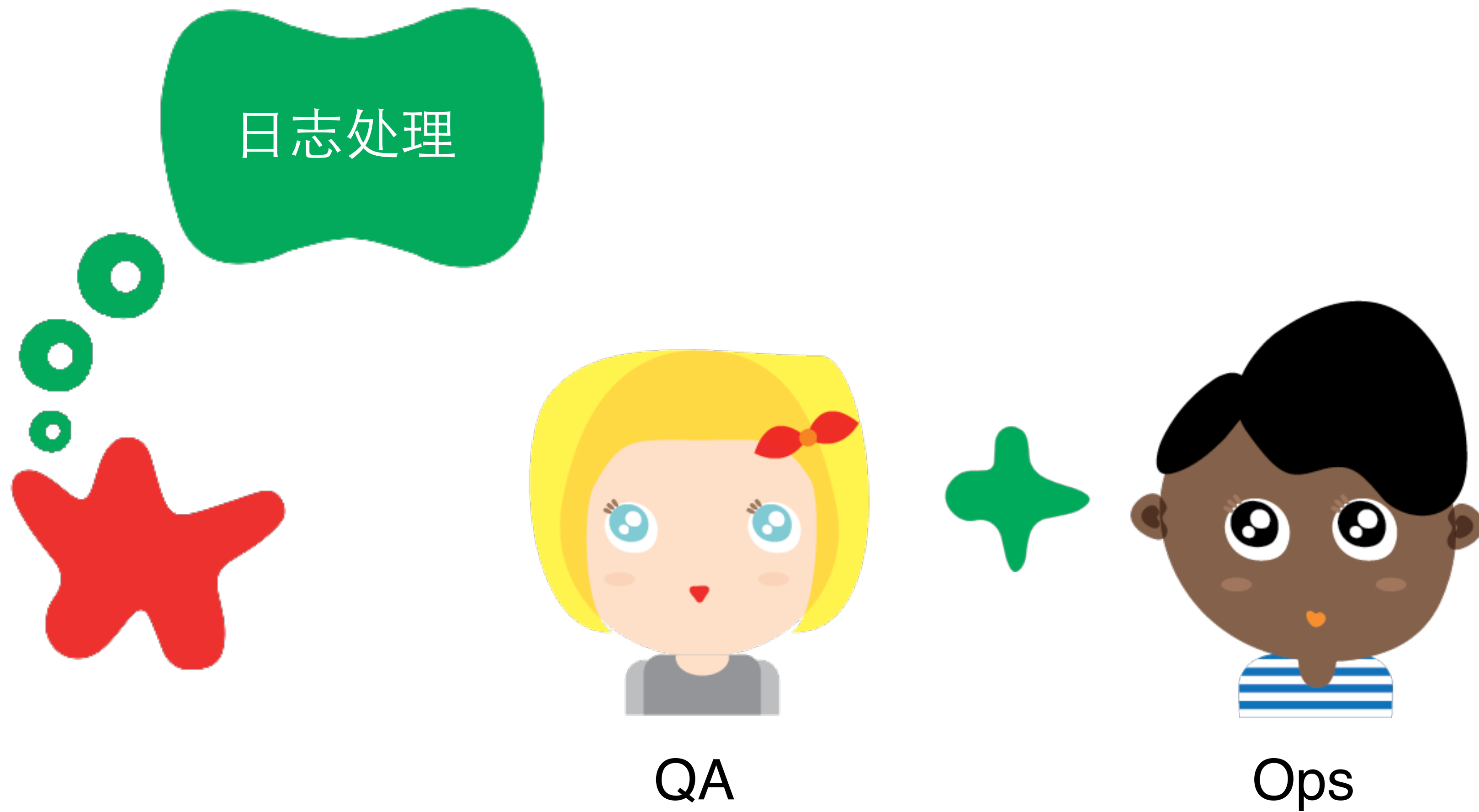
可能遗漏高风险日志

分析和信息共享不够

系统整体质量的关注



如果QA参与日志处理?



QA的优势

质量反馈

- ☆ 关注整体质量
- ☆ 掌握质量状态
- ☆ 反馈质量信息

分析优化

- ☆ 质量倡导者
- ☆ 善于发现问题
- ☆ 持续改进意愿强烈

业务敏感度

- ☆ 熟悉系统状态
- ☆ 用户角度思考
- ☆ 业务风险敏感
- ☆ 优化业务价值

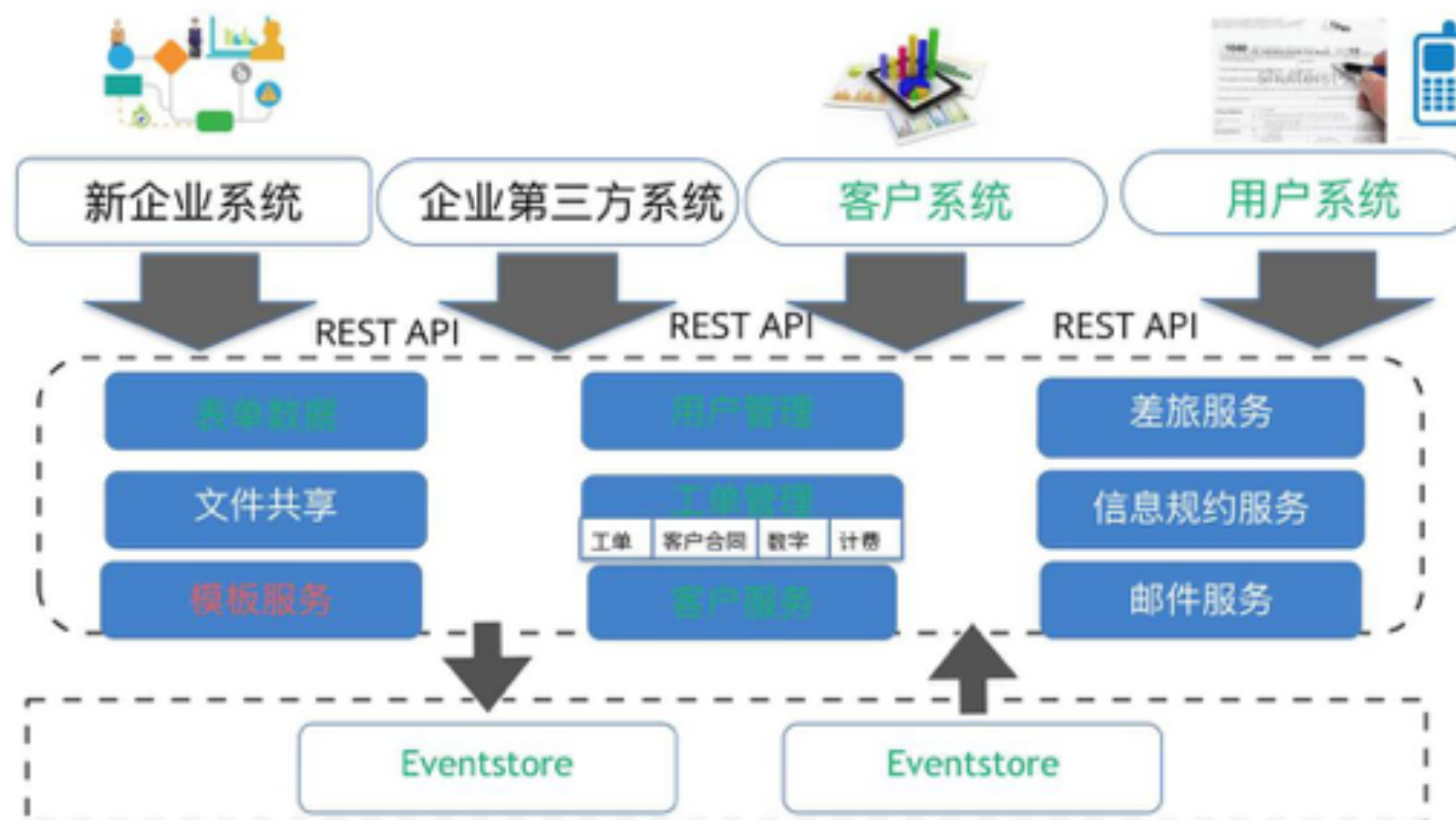
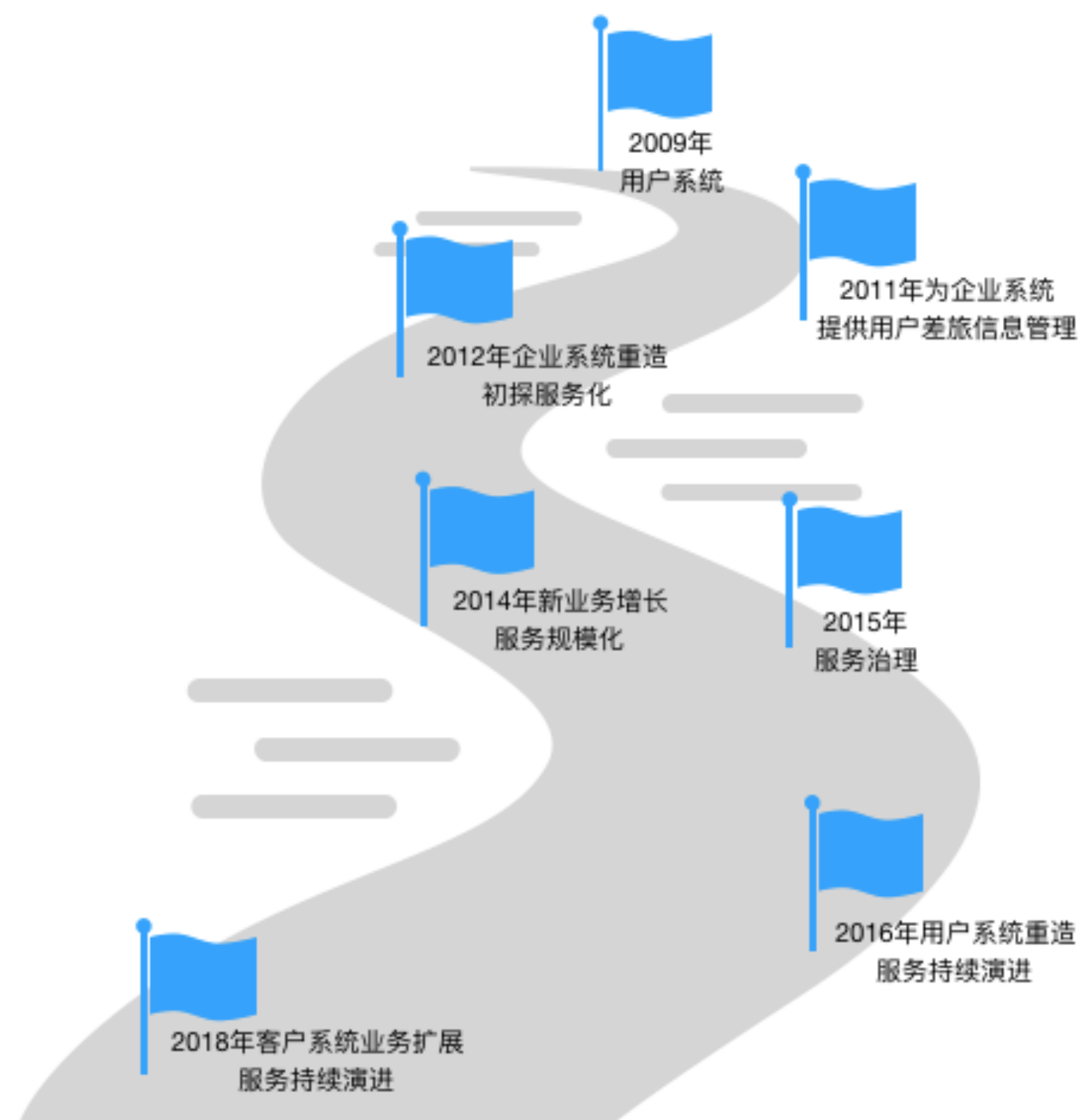
项目上有关日志处理的故事

项目背景



- ☆ 离岸交付
- ☆ 敏捷开发，4~5周一次发布
- ☆ 企业系统+客户系统+用户系统
- ☆ 用户遍及全球
- ☆ 项目已经历9年

业务和架构的演进



生产环境缺陷和错误日志暴增

```
> 10/17/18 4:43:01.434 AM ERROR 2018-10-17 03:43:01,434 626093253ms svn-indater ExecuteArchive - Sh
o a repository at URL 'https://
hive': could not connect to server (
--- End of inner exception stack trace ---
at S
dieResult(S
text client, S
on error, C
at S
args args, S
at S
args args)
Show all 9 lines
host =
source =
sourcetype = applic

> 10/17/18 4:42:58.997 AM ERROR 2018-10-17 03:42:58,997 816ms svn- Execute - Sh
o a repository at URL '
/svn/Igde': could not connect to server (ht
- End of inner exception stack trace ---
at Sha
Context client, SvnException error, C
at S
args args, S
at S
args args)
Show all 9 lines
host = 816
source = D:\pwc-ugr
sourcetype = applic

> 10/17/18 4:42:58.000 AM 10/17/2018 03:42:58||Error||Prod||The controller for path '/f/' was not fou
:
StackTrace:
at System.Web.Mvc.DefaultControllerFactory.GetControllerInstance(RequestC
at System.Web.Mvc.DefaultControllerFactory.CreateController(RequestC
at System.Web.Mvc.DefaultControllerFactory.BeginProcessRequest(HttpContext, IControl
at System.Web.Mvc.DefaultControllerFactory.BeginProcessRequest(HttpContext, AsyncCa
Show all 15 lines
host =
source = D:\pwc-ugr
sourcetype = Error-377

> 10/17/18 4:42:58.000 AM 10/17/2018 03:42:58||Error||Prod||The controller for path '/f/' was not fou
in HttpContext:
StackTrace:
at System.Web.Mvc.DefaultControllerFactory.GetControllerInstance(RequestC
at System.Web.Mvc.DefaultControllerFactory.CreateController(RequestC
at System.Web.Mvc.DefaultControllerFactory.BeginProcessRequest(HttpContext, IControl
at System.Web.Mvc.DefaultControllerFactory.BeginProcessRequest(HttpContext, AsyncCa
Show all 15 lines
host =
source = D:\pwc-ugr
sourcetype = Error-377

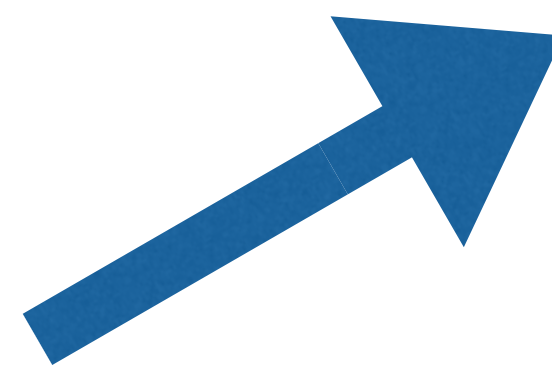
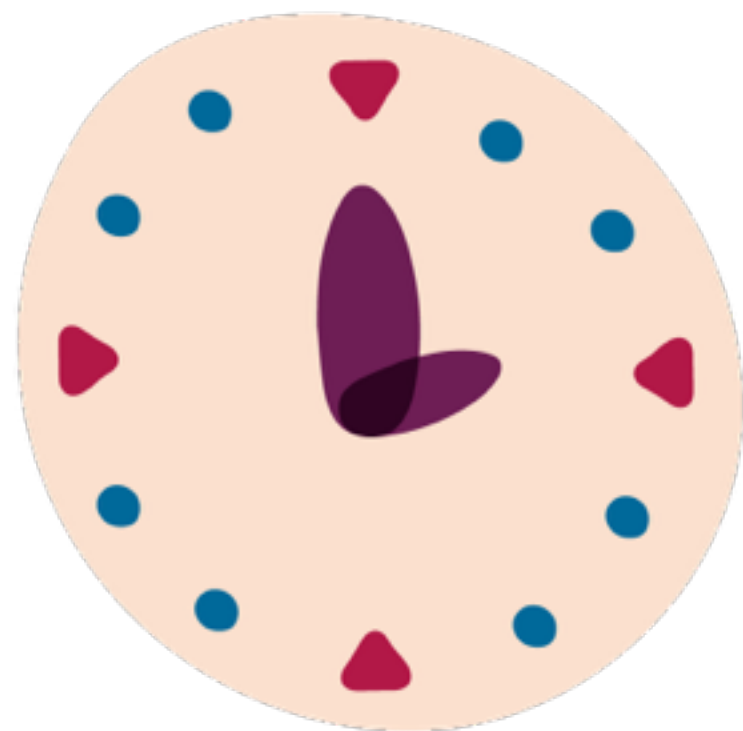
> 10/17/18 4:42:58.000 AM 10/17/2018 03:42:58||Error||Prod||The controller for path '/f/' was not fou
er. in HttpContext:
StackTrace:
at System.Web.Mvc.DefaultControllerFactory.GetControllerInstance(RequestC
at System.Web.Mvc.DefaultControllerFactory.CreateController(RequestC
at System.Web.Mvc.DefaultControllerFactory.BeginProcessRequest(HttpContext, IControl
```

- ☆ 生产环境缺陷在测试环境无法重现，无法做到提前预防
- ☆ 大量错误日志涌现，给团队带来恐慌



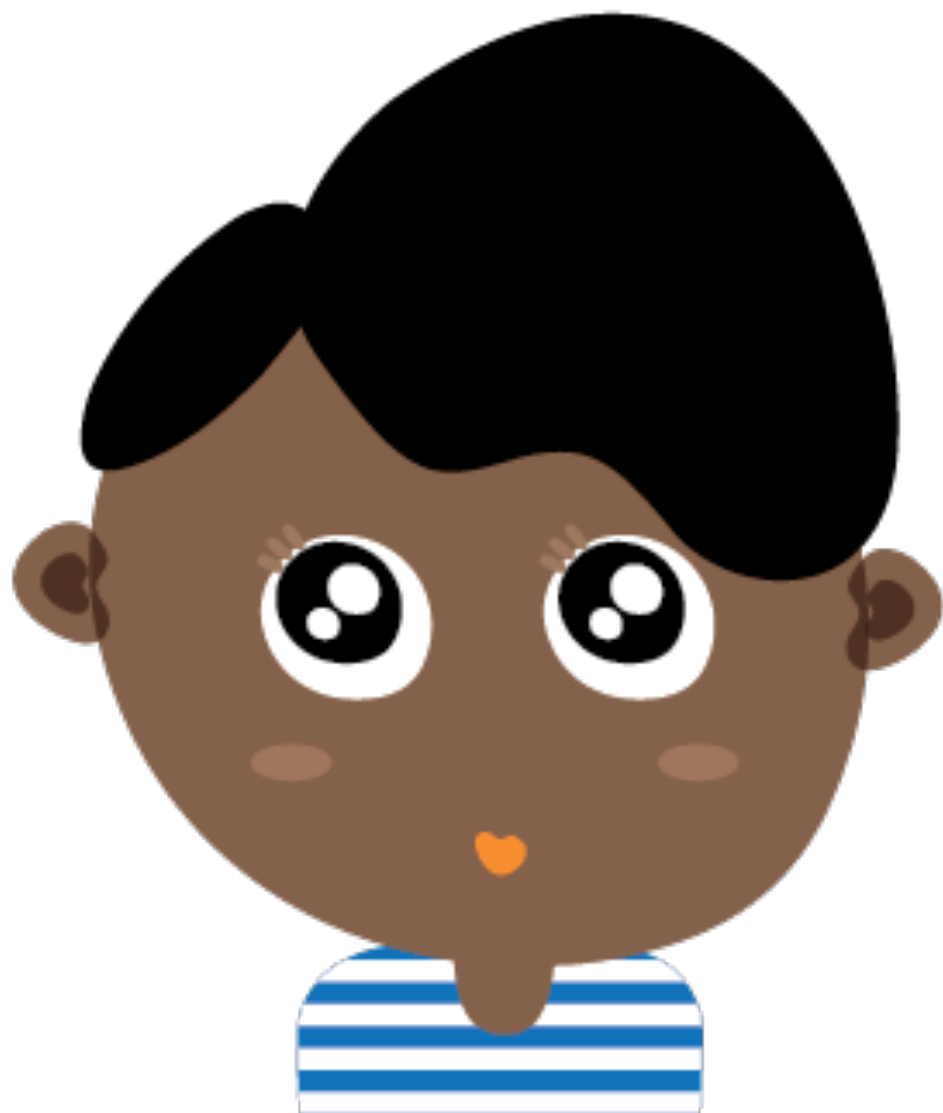
日志处理迫在眉睫

It's time!



初期被动分析

初期被动分析



Ops

splunk> App: Search & ... Messages Settings Activity Help Find

Search Pivot Reports Alerts Dashboards Search & Reporting

New Search Save As Close

index=* host=" | top punct 搜索条件 Last 7 days

108 events (6/6/16 5:00:00.000 AM to 6/13/16 5:21:55.000 AM) Job Smart Mode

Events Patterns Statistics (4) Visualizations

20 Per Page Format Preview

| punct | count | percent |
|------------------------------------|-------|-----------|
| //_:: \\- [-]::_____ | 8 | 57.142857 |
| //_:: \\- _____ | 2 | 14.285714 |
| //_:: \\- _____ = | 2 | 14.285714 |
| //_:: \\- _::=--_//_--_[-]=--_ | 2 | 14.285714 |

20 Per Page Format Preview

punct

//_::|||\\-||[-]::_____

//_::|||\\-|||_____||

//_::|||\\-|||_____|=||

//_::|||\\-|||_::=--_//_--_[-]=--_||

展开每条结果

View events

Other events

Exclude from results

New search

6/13/16 6:01:00.062 AM 2016/06/13 06:01:00.062 AM [Error] ... insert duplicate key row in object '...'. The statement has been terminated. host = ... source = ...

6/13/16 6:01:00.047 AM 2016/06/13 06:01:00.047 AM [Error] ... handler sync error: Cannot insert duplicate key row in object '...' with unique index '...'. The duplicate key value is (...). The statement has been terminated. source = ...

6/13/16 6:00:00.406 AM 2016/06/13 06:00:00.406 AM [Error] ... handler sync error: Cannot insert duplicate key row in object '...' with unique index '...'. The duplicate key value is (...). The statement has been terminated. source = ...

详细错误信息

SPLUNK PUNCT介绍

PUNCT

Punctuation, 标点

第一行

2018/10/23 05:51:43.154||Error||Domain\XxxxSvc-QA||No row with the given identifier exists[Xxxx.Model.Models.ABCDStatement#74f5e429-5b87b-454f-982e-0f87fe4e1de9]||NHibernate.ObjectNotFoundException: No row with the given identifier exists[Xxxx.Model.Models.ABCDStatement#74f5e429-5b87b-454f-982e-0f87fe4e1de9]

at NHibernate.Impl.SessionFactoryImpl.DefaultEntityNotFoundDelegate.HandleEntityNotFound(String entityName, Object id)
at NHibernate.Proxy.AbstractLazyInitializer.CheckTargetState()
at NHibernate.Proxy.DefaultLazyInitializer.Intercept(InvocationInfo info)

//_::|||\-||_____ [...#----]||.:_____ [...#----]

instance, Object[] methodParameters)

at System.Web.Http.Controllers.ReflectedHttpActionDescriptor.ExecuteAsync(HttpControllerContext controllerContext, IDictionary`2 arguments, CancellationToken cancellationToken)

结果

分析过程

- ☆ 无法覆盖全部新增日志
- ☆ 关键错误日志遗漏
- ☆ 缺乏总结分析
- ☆ 信息孤岛，没有共享和传承

日志记录

- ☆ 级别定义不清晰
- ☆ 记录信息不够用
- ☆ 记录格式不一致
- ☆ 存储路径不统一

QA的痛点

- ☆ 无法接触生产环境
- ☆ 基础设施不够了解
- ☆ 日志信息理解有难度，不能指导缺陷诊断

主动出击内建日志

结构化日志

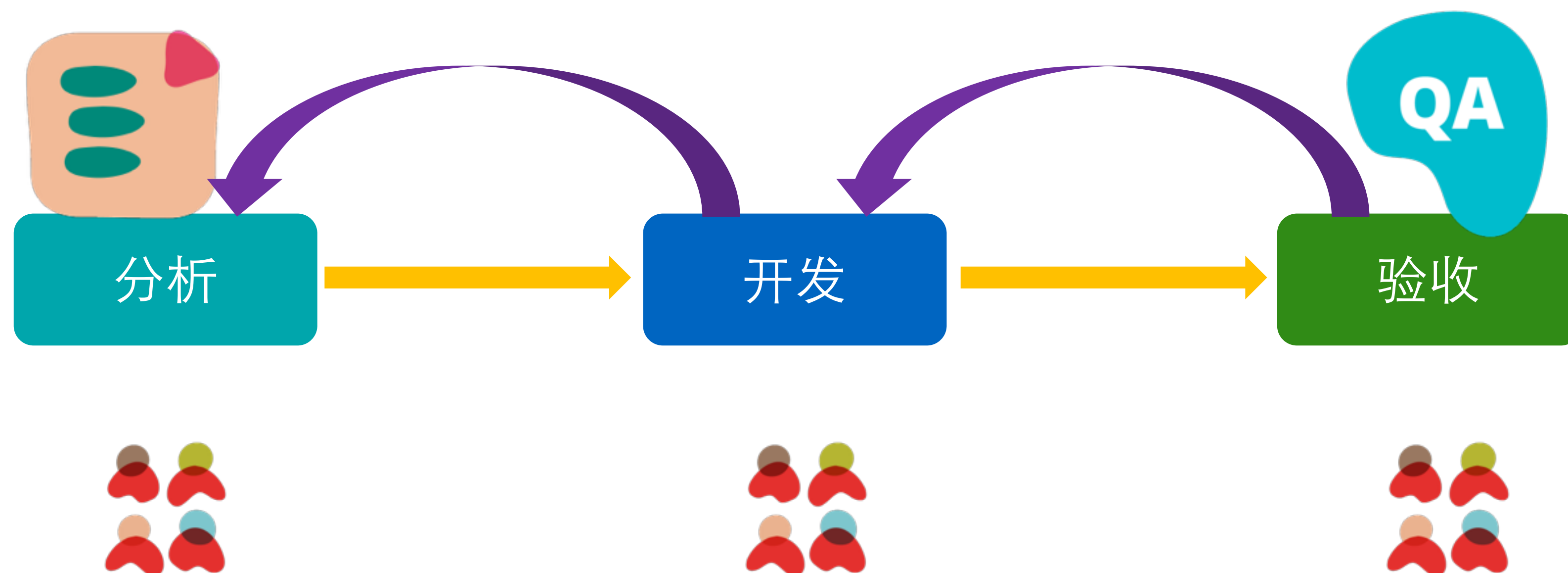
Techniques

Structured logging

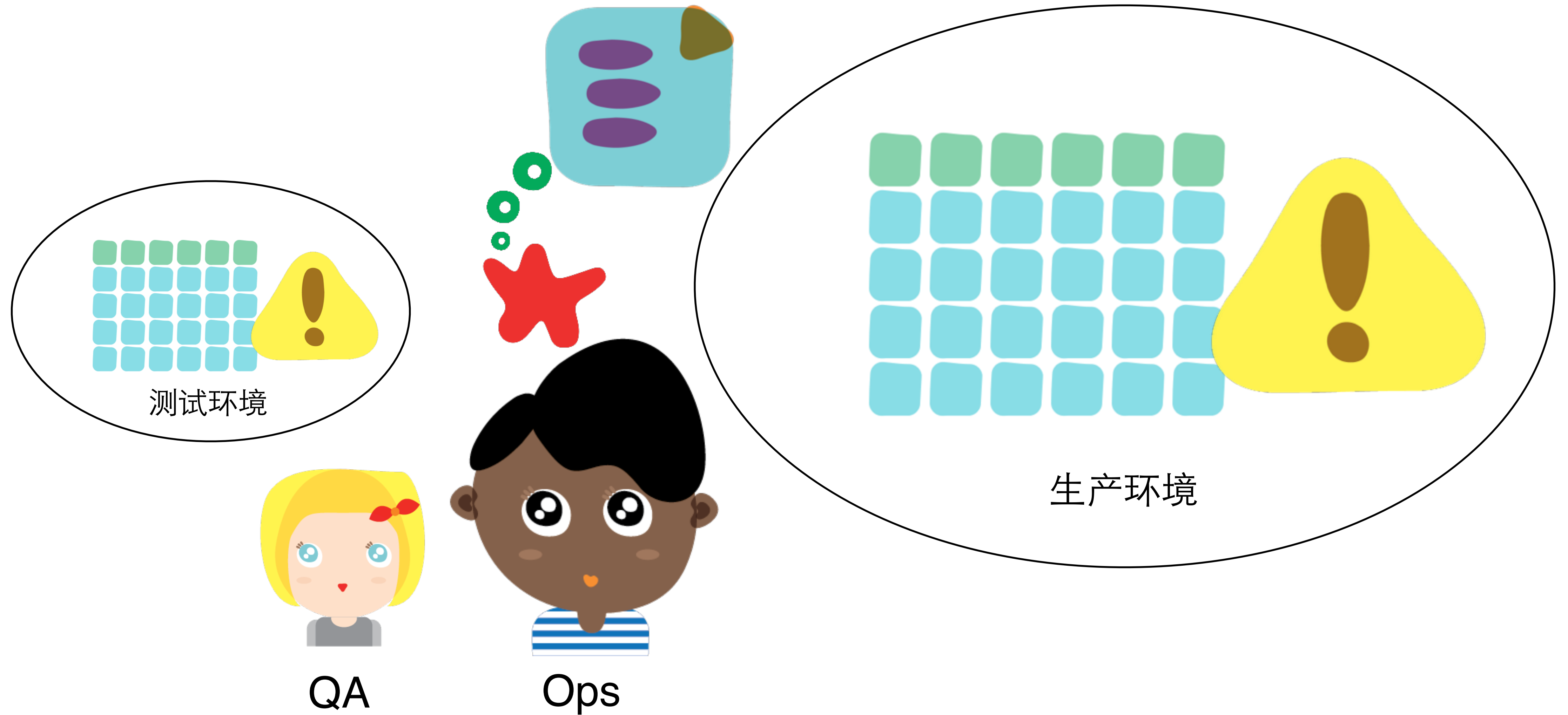


```
{ [-]  
  DataSize: 1  
  Method: POST  
  Milliseconds: 2402  
  Order: 12  
  ReqId:   
  StatusCode: 200  
  Time: 2017-06-02T08:34:18.16883117  
  Transaction:   
  Type: performance  
  Url: https:   
  UserId:   
}
```

内建日志



监控预警



监控预警实例

Dashboards

Dashboards include searches, visualizations, and input controls th

21 Dashboards

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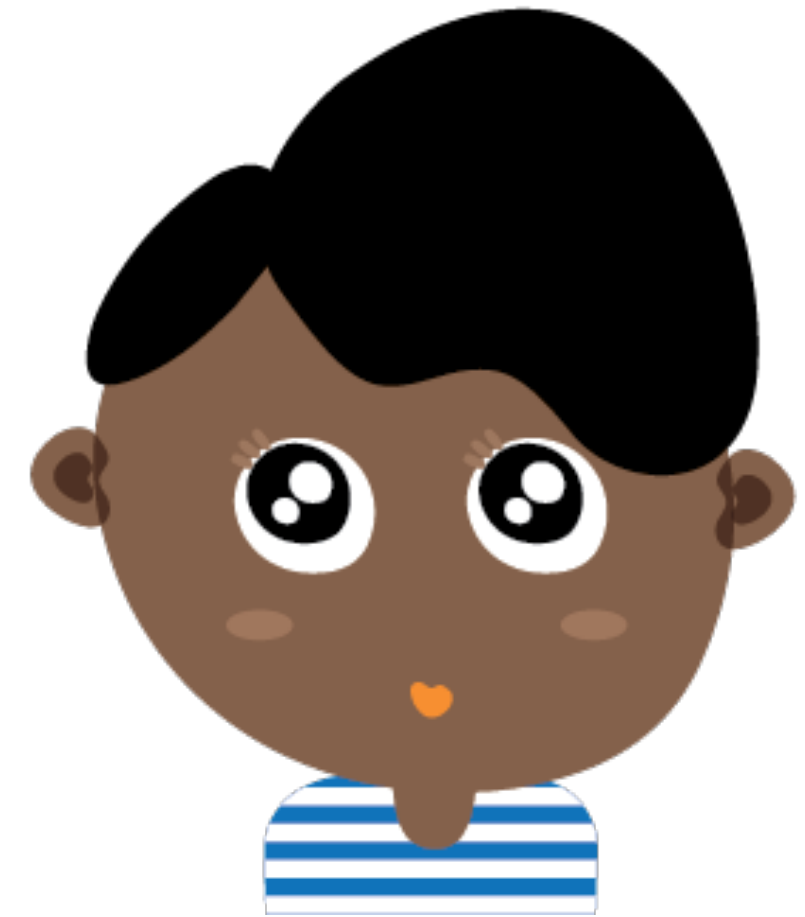
Prod-L

QA与OPS合作

- ★ QA从流程上参与把控，做好日志内建
- ★ 一起识别风险较高的关键特性，帮助Ops理解业务
- ★ Ops设置关键特性对应的Dashboard和Alert
- ★ Ops帮助QA理解基础设施，建立测试环境的监控
- ★ QA负责测试环境日志分析和处理，尽早发现问题



QA



Ops

结果

WELL

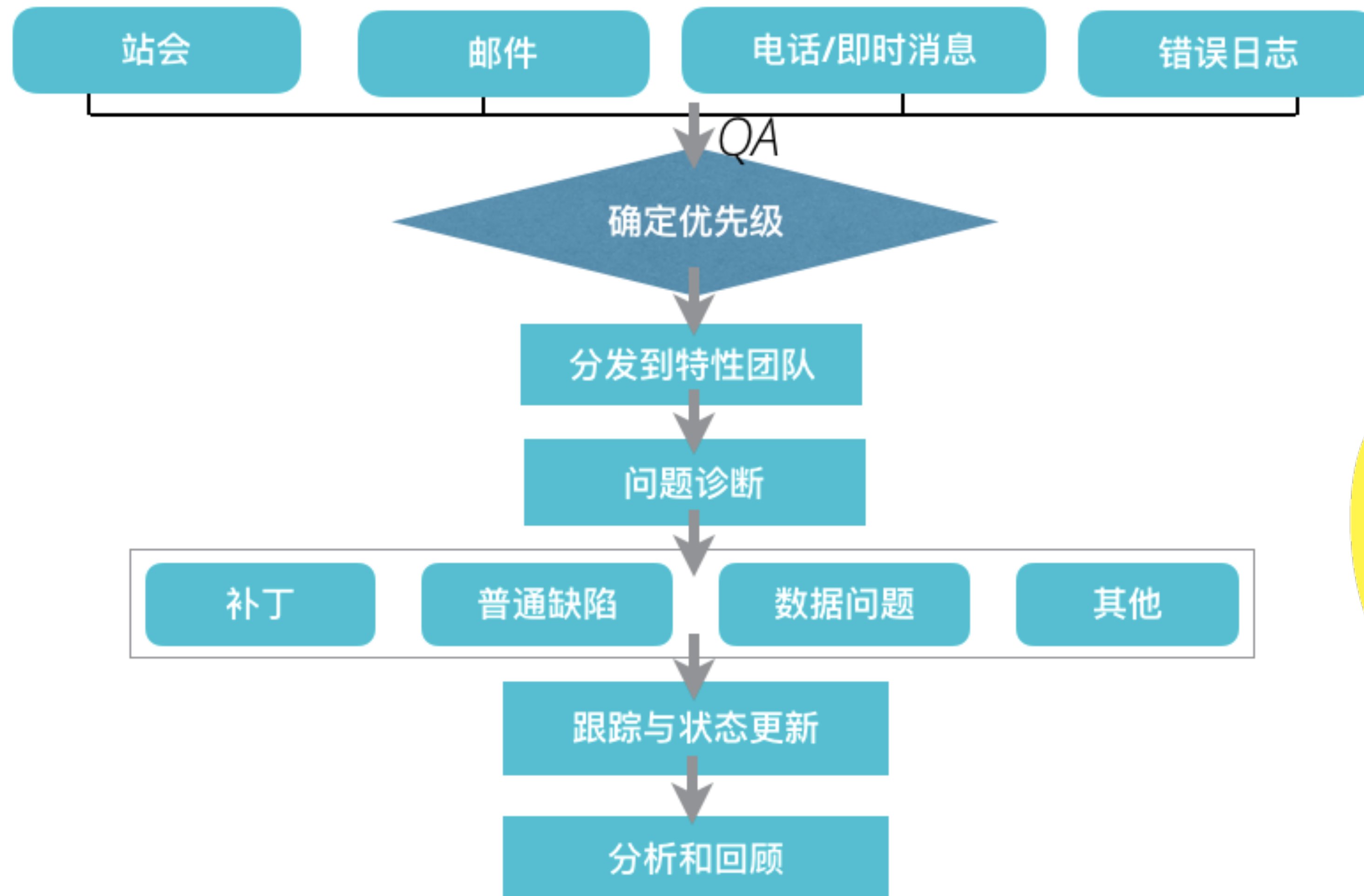
- ☆ 业务优先级
- ☆ 关键特性有监控
- ☆ 日志处理高效
- ☆ 顺利度过忙季

LESS WELL

- ☆ Alert查询信息量过多
- ☆ 定时Alert，邮件噪音
- ☆ 关注意识和积极性下降
- ☆ 不能早于客户发现问题

QA主导进一步优化

优化生产环境支持流程

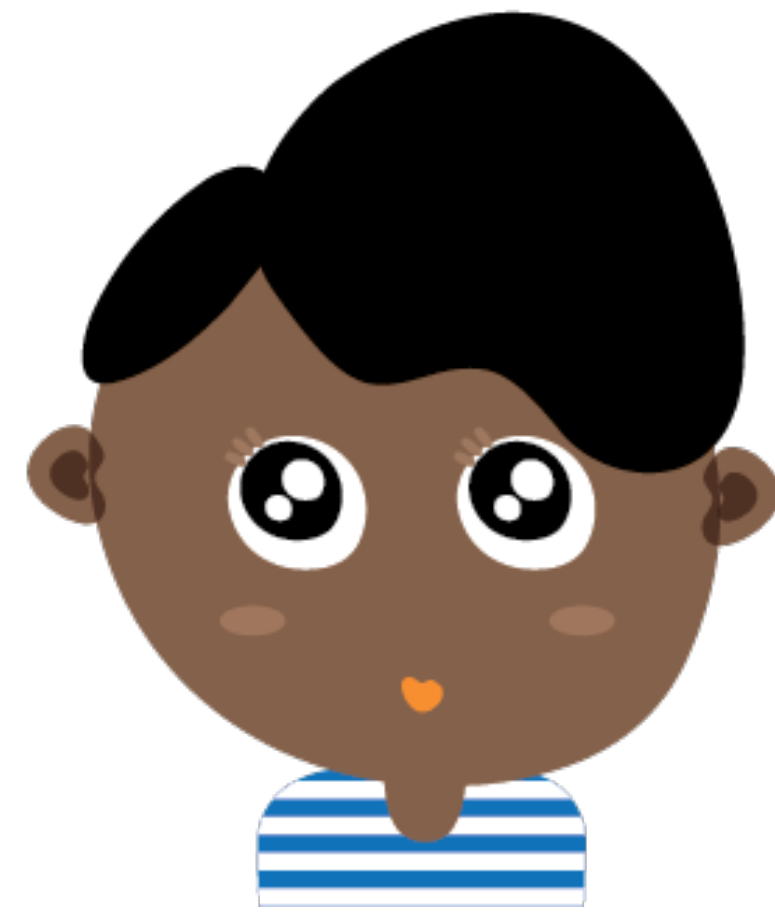


QA

QA承担协调者和分析者角色



QA



Ops

- ★ QA组织痛点收集，推动优化发生

- ★ QA提醒Ops人员查看日志信息

- ★ QA跟Ops人员pair查看、分析日志

- ★ QA定期查看关键特性的错误日志

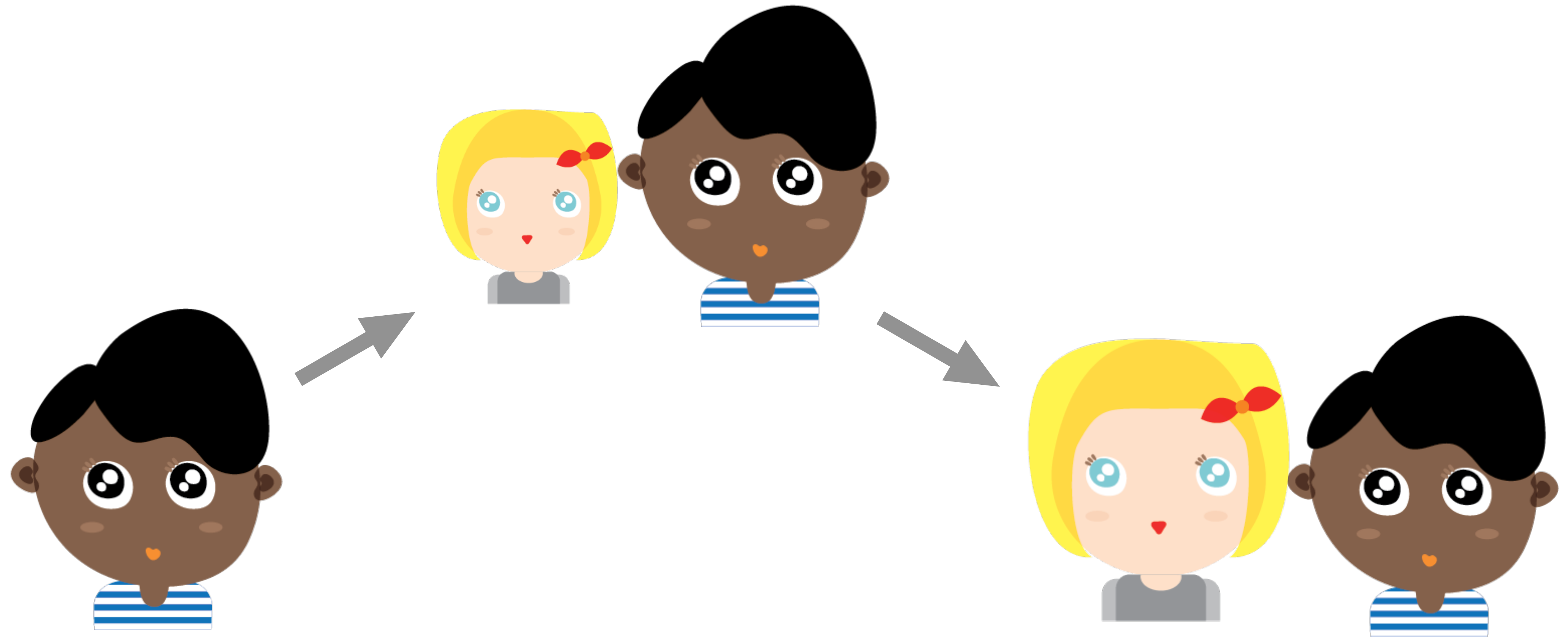
结果



- ☆ 日志处理更高效
- ☆ 生产环境缺陷发现更及时
- ☆ 生产环境的支持收到客户好评
- ☆ 团队工作更开心

项目故事回顾

日志处理演进过程



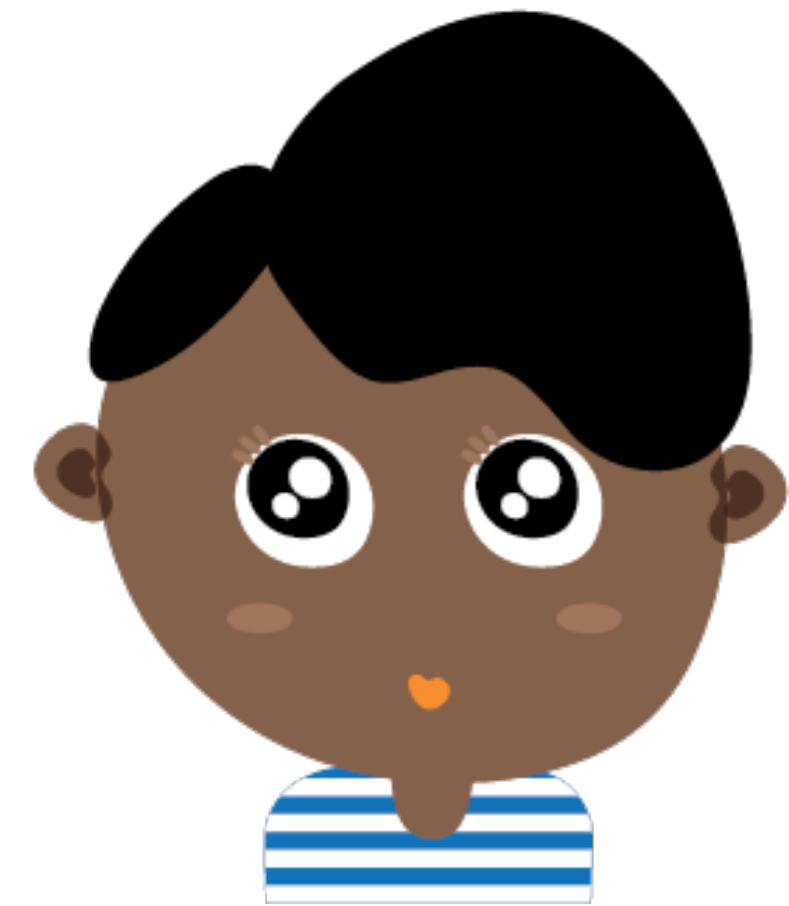
QA + OPS



QA

更好的理解业务、把握质量状态

更好的利用日志信息优化测试和业务



Ops

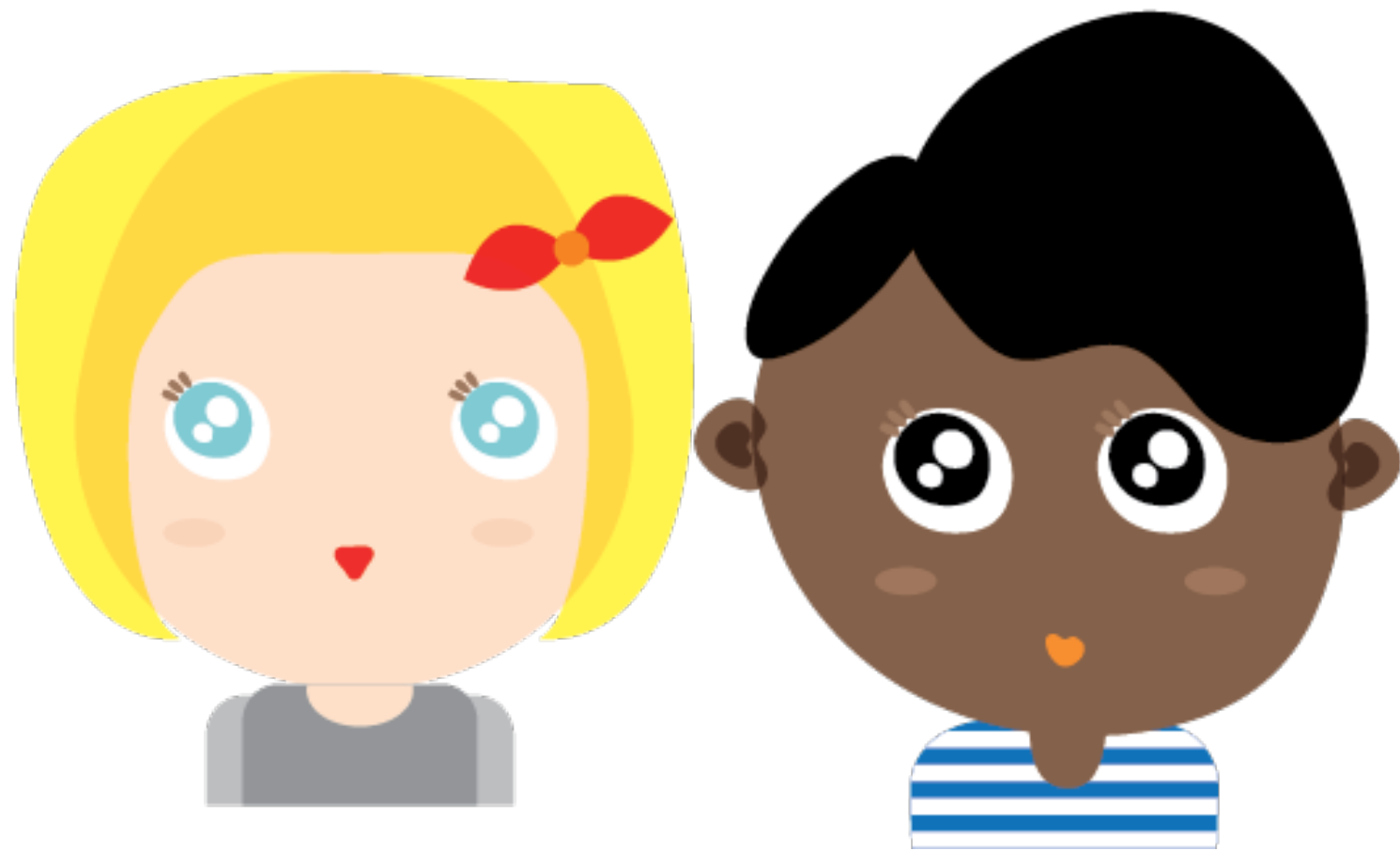
开发过程

日志处理



今天的收获

TAKE AWAY



★ 软件系统的脆弱性与应对方案

★ 日志处理的常见误区与改进

★ 项目上有关日志处理的故事

延伸阅读

- 技术雷达之QA in Production: <https://www.thoughtworks.com/radar/techniques/qa-in-production>
- 技术雷达之结构化日志: <https://www.thoughtworks.com/radar/techniques/structured-logging>
- 生产环境下的QA: <https://insights.thoughtworks.cn/qa-in-production-practice/>
- ThoughtWorks最新技术雷达: <https://www.thoughtworks.com/radar>
- 更多讲师的文章: <https://insights.thoughtworks.cn/author/linbingyu/>



谢谢！