易宝集团
YEEPAY GROUP

基于ELK的智能监控

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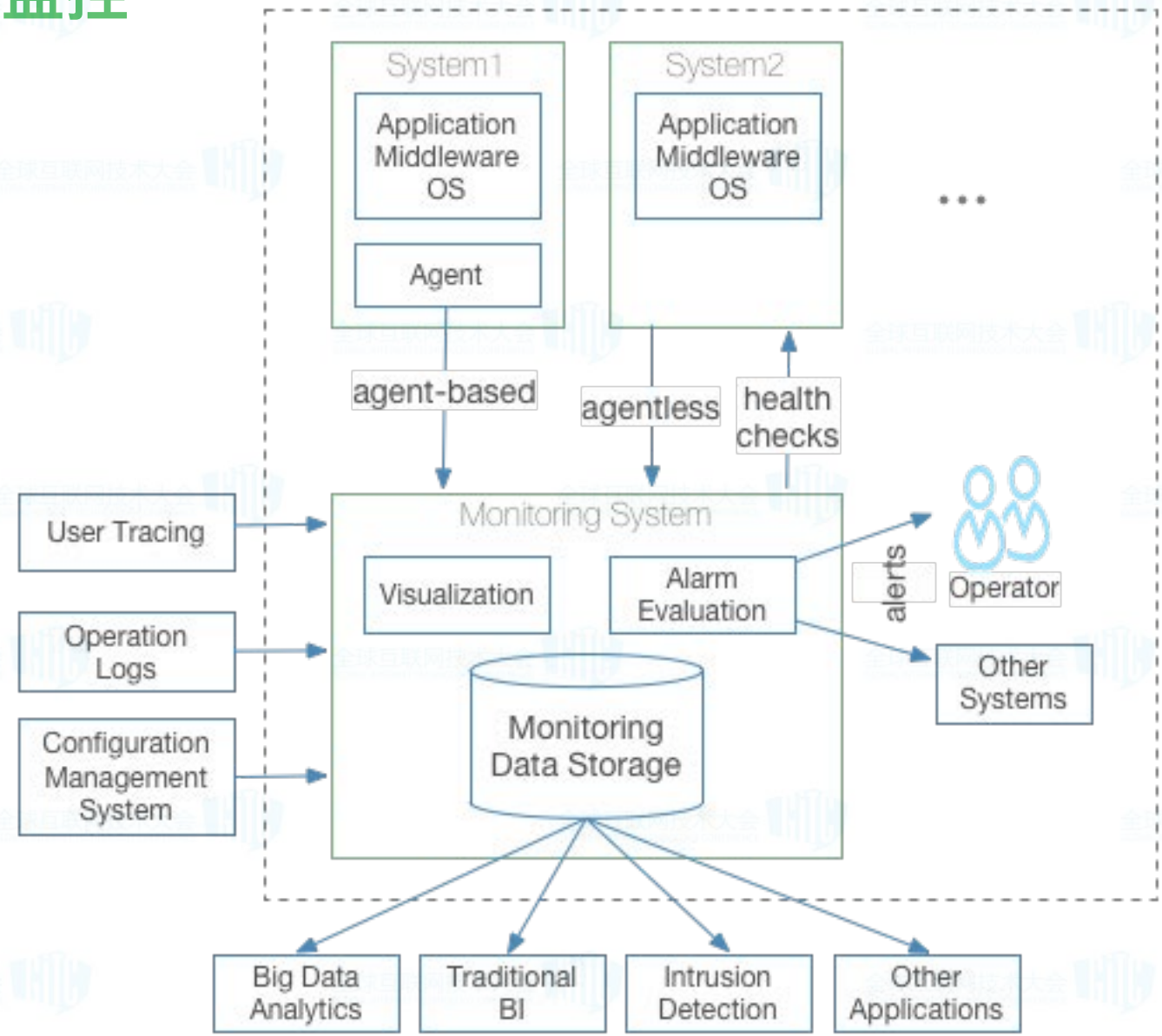
项目背景

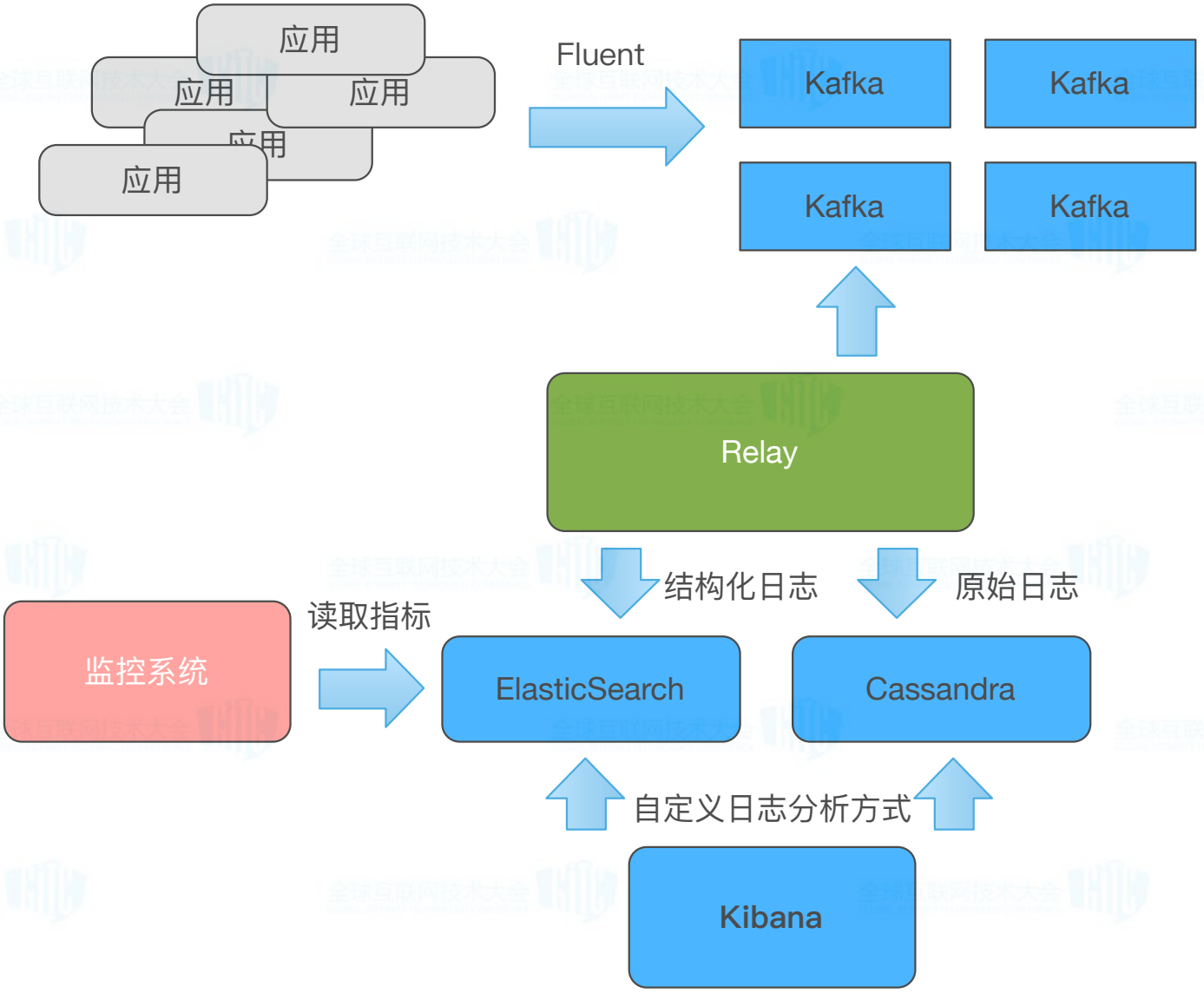
- 原有监控指标分散、相互割裂
- 产品运营和开发人员无法参与到监控数据的分析和规则的设定（DevOps）
- 正在建设日志中心（Centralized Logging），需要实际的应用来展现日志中心的能力

关于监控



图片来自《DevOps, A software Architect's Perspective》

基于ELK的实现


应用
应用
应用
应用
Fluent
Kafka
Kafka
Kafka
Kafka
Relay
结构化日志
原始日志
监控系统
读取指标
ElasticSearch
Cassandra
自定义日志分析方式
Kibana

期望的使用方式

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提取所需的日志

配置图形

生成监控指标

配置报警规则

将所配图形组合到一个仪表盘中，对比查看

Kibana与监控系统互通

将filter或filter的一部分用通配符替换

Query Search

```
{"index":"nopay-monitor-*","query":{"query_string":{"query":"*","analyze_wildcard":true}},
"filter":[],"size":0}
```

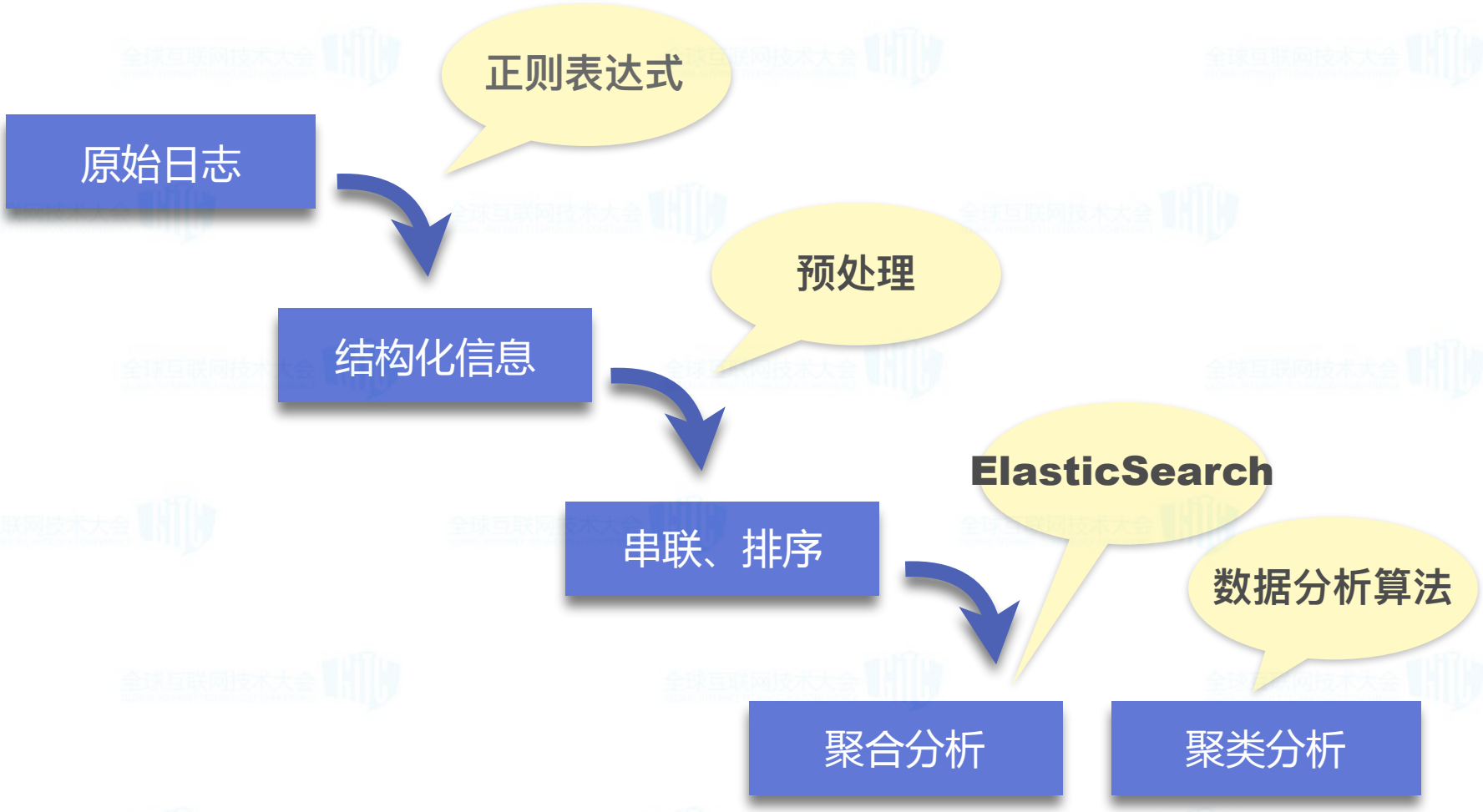
visState

```
[{"id":"1","type":"sum","schema":"metric","params":{"field":"isReq"}},
{"id":"2","type":"sum","schema":"metric","params":{"field":"realSuccess"}},
{"id":"3","type":"date_histogram","schema":"segment",.....
```

aggDSL

```
{"3":{"date_histogram":{"field":"TIME","interval":"1m","pre_zone":"+08:00",
"pre_zone_adjust_large_interval":true,"min_doc_count":1,
"extended_bounds":{"min":1452130064252,"max":1452133664252}},
"aggs":{"4":{"filters":{"filters":{"eventType:\"bankChannelSuccess\" AND customerNumber:\"@@\"
AND bankCode:\"HX\"":{"query":{"query_string":{"query":"eventType:\"bankChannelSuccess\"
AND customerNumber:\"@@\" AND bankCode:\"HX\"",
"analyze_wildcard":true}}}}},"aggs":{"1":{"sum":{"field":"isReq"}},
```

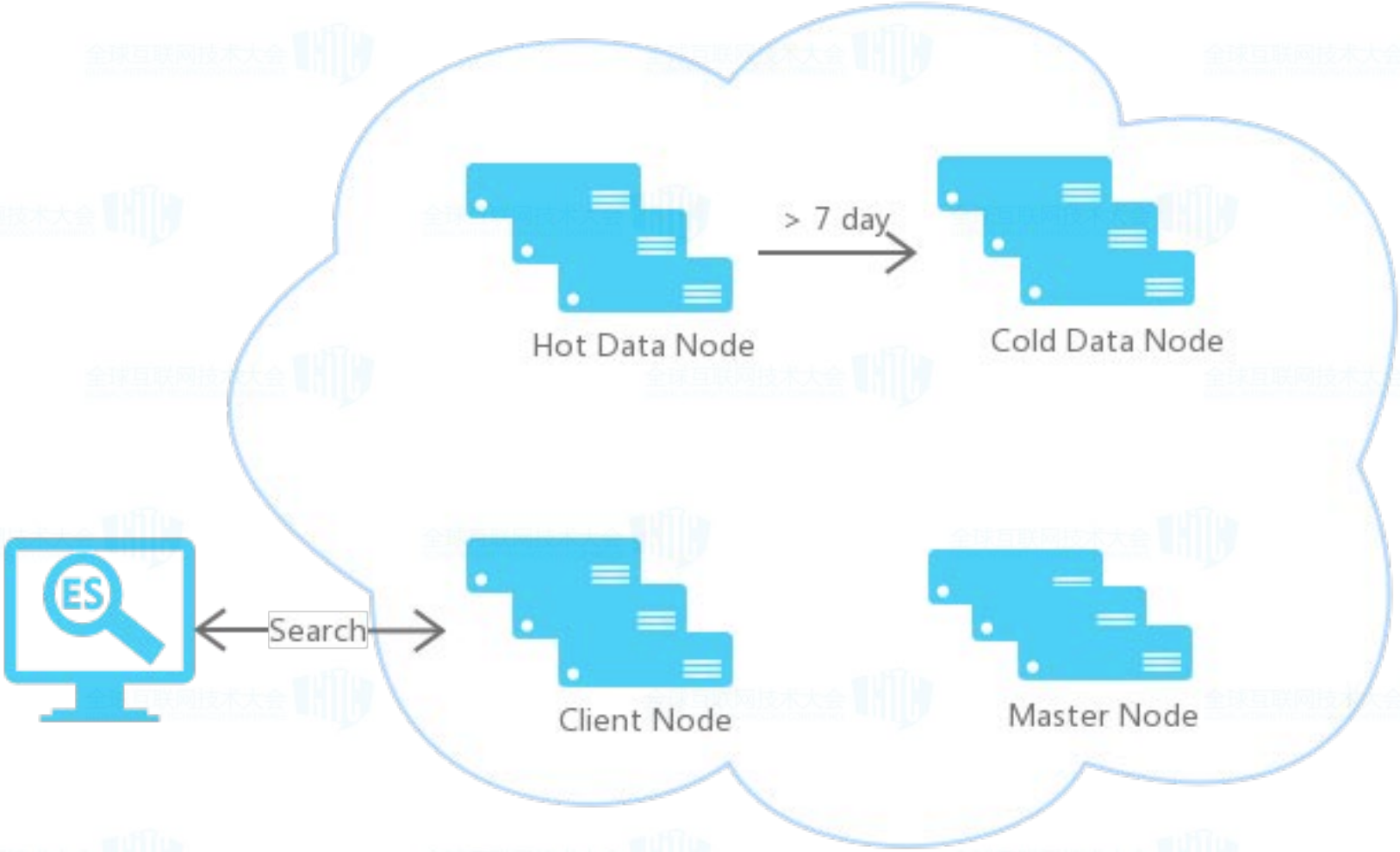
自主分析



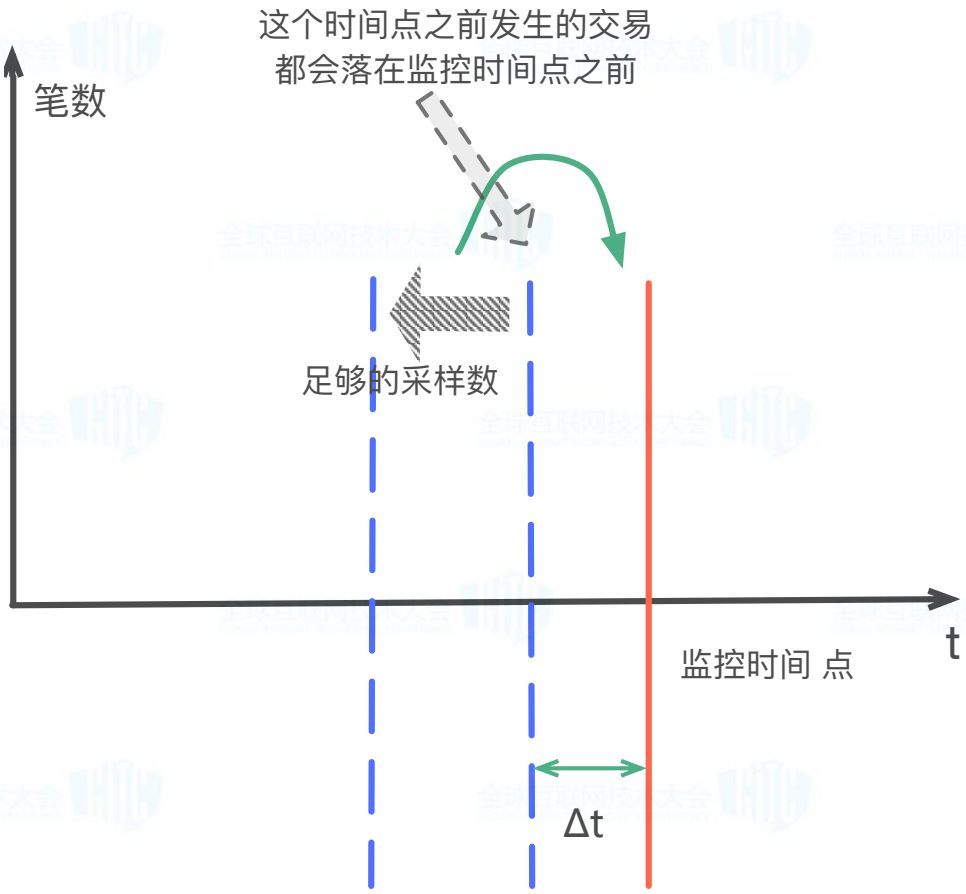
稳定的日志同步-I


同步
网关
kafka队列
kafka队列
kafka队列
Fluent4j
Fluent4j
Fluent4j
横向扩展

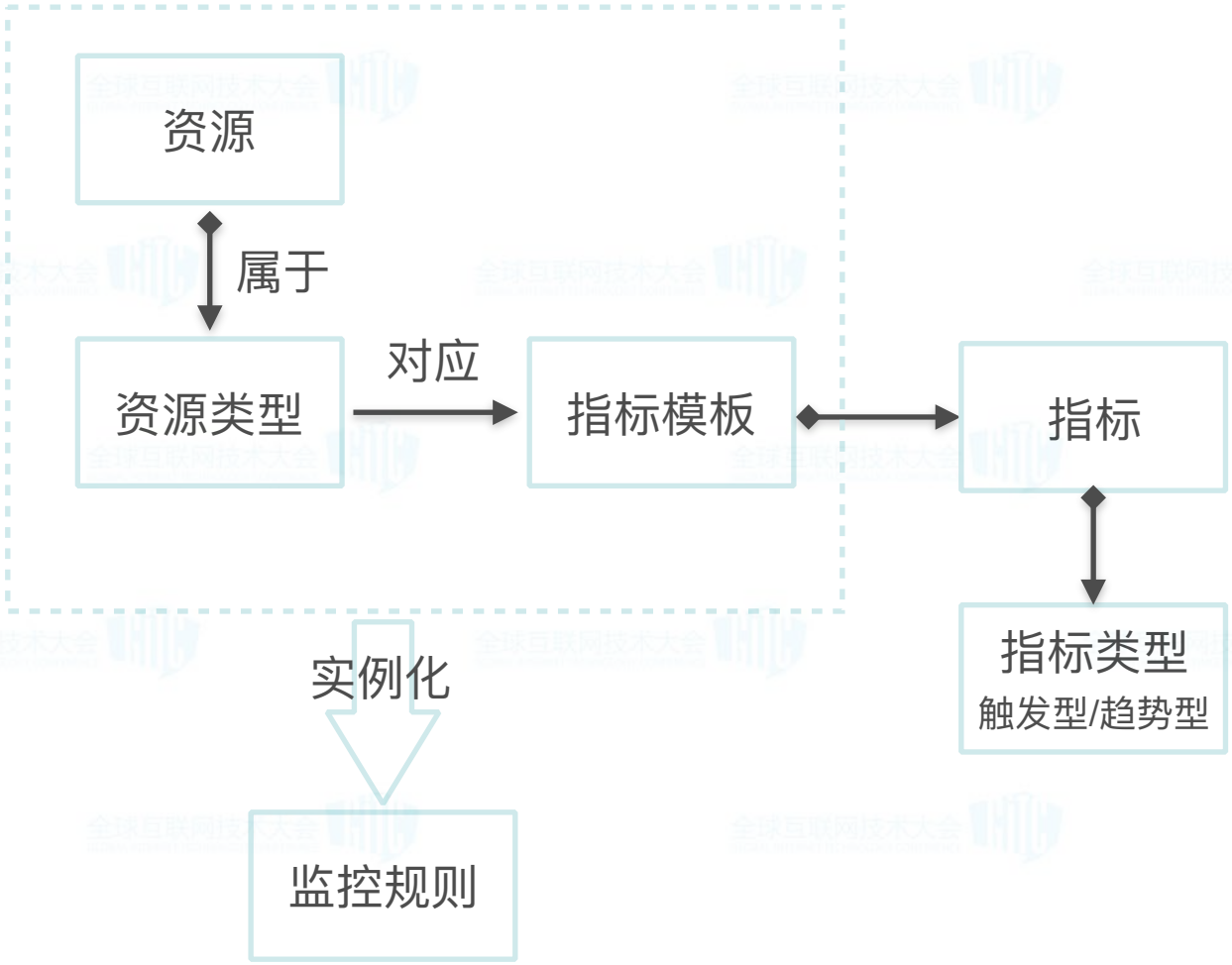
稳定的日志同步-II


> 7 day
Hot Data Node
Cold Data Node
ES
Search
Client Node
Master Node

业务事件串联



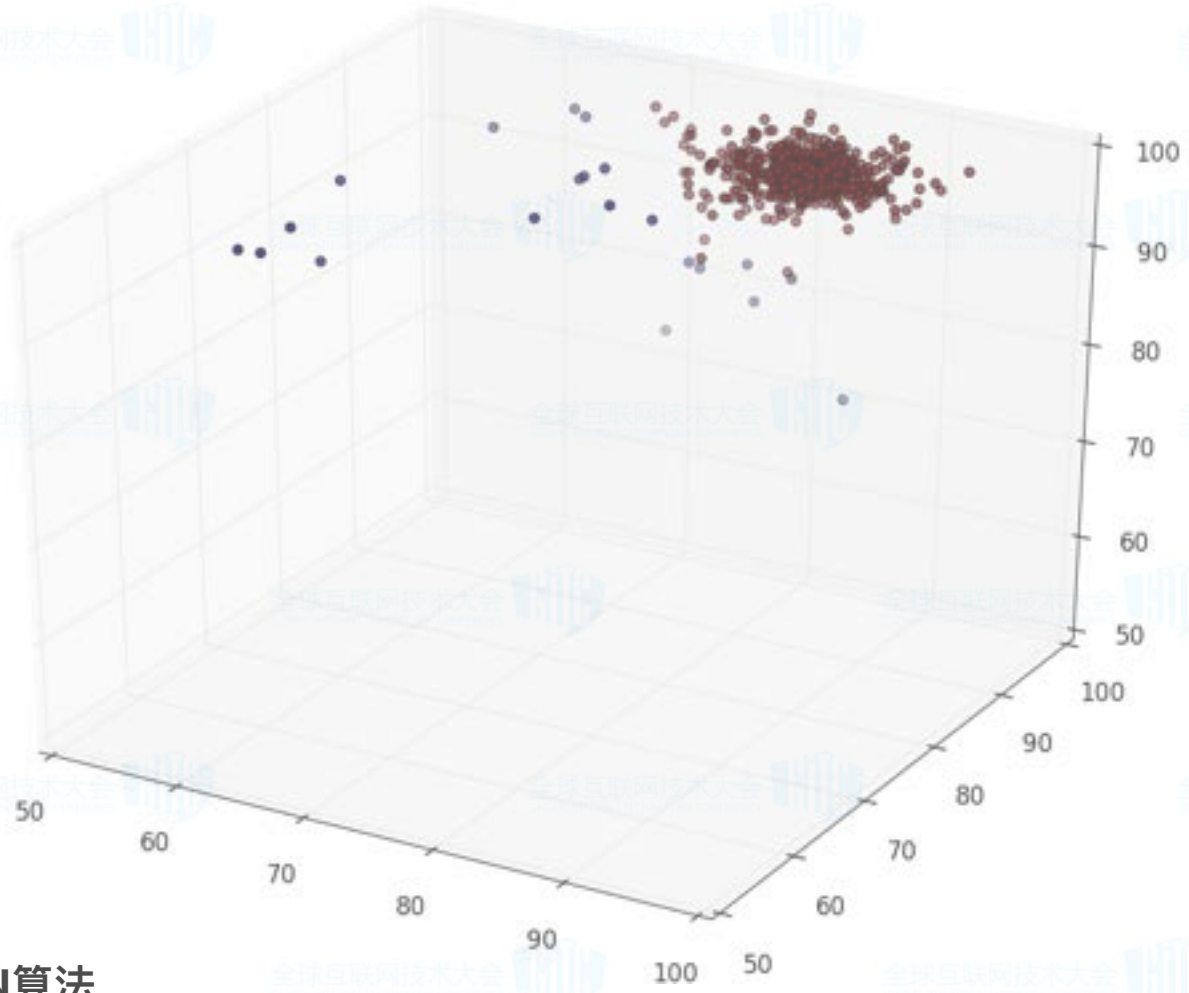
监控规则领域模型



复合监控

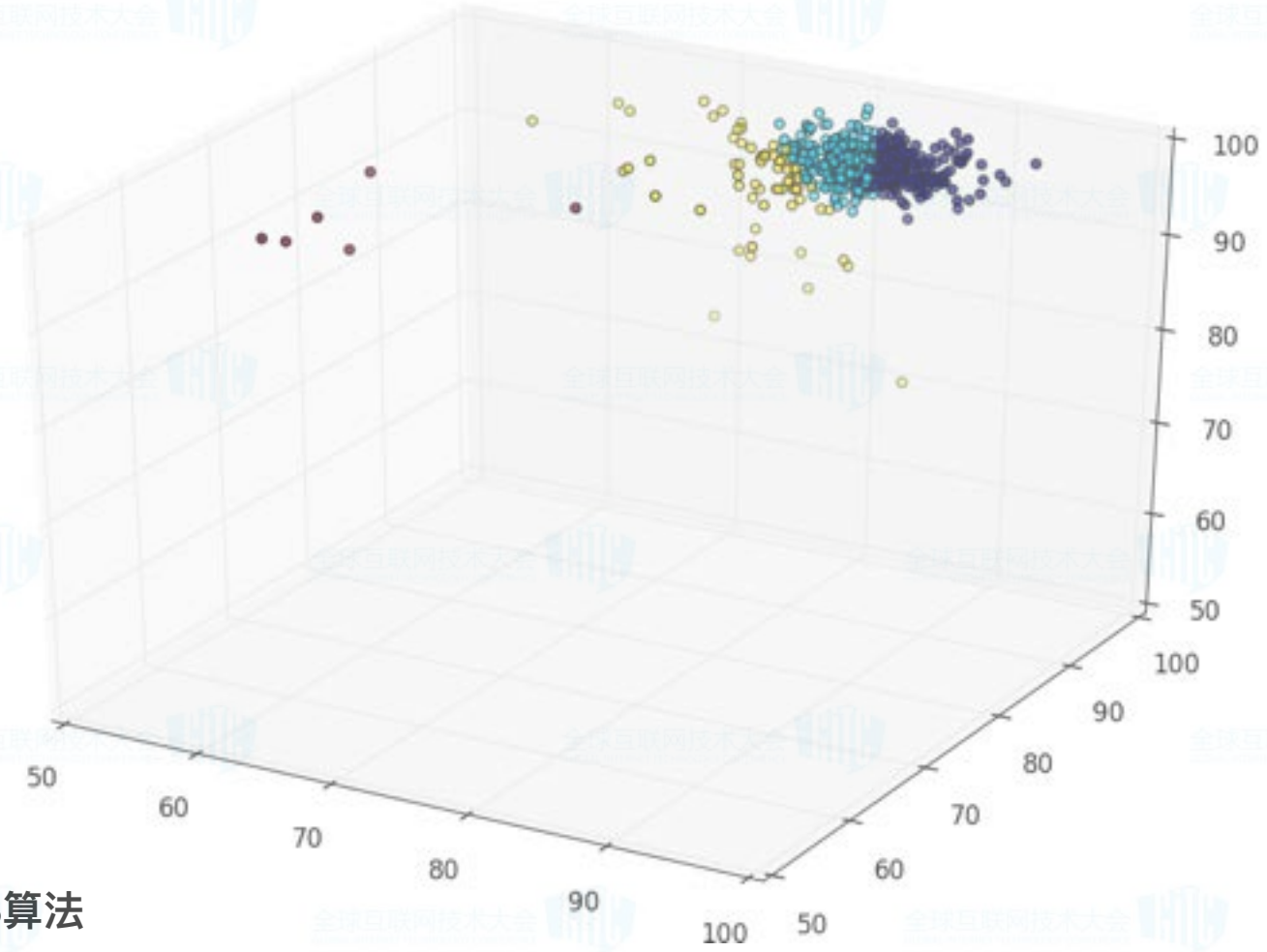
- 横向：连续的成功率的趋势
- 纵向：关联指标变化的相关性分析
- 聚类分析

复合监控——聚类分析



DBSCAN算法

复合监控——聚类分析

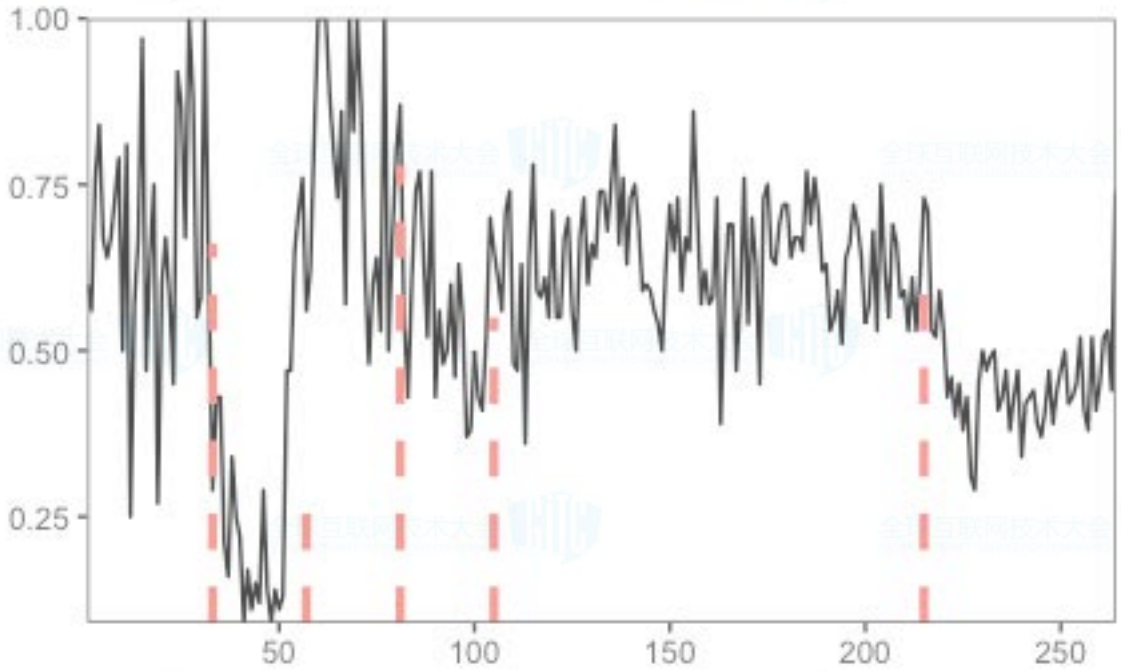


KMEANS算法

智能监控

- 整体成功率报警，可能是整体出问题了，也可能是各别商户出问题了
- 哪个异常突然增多了

用BreakoutDetection排除单个干扰因素



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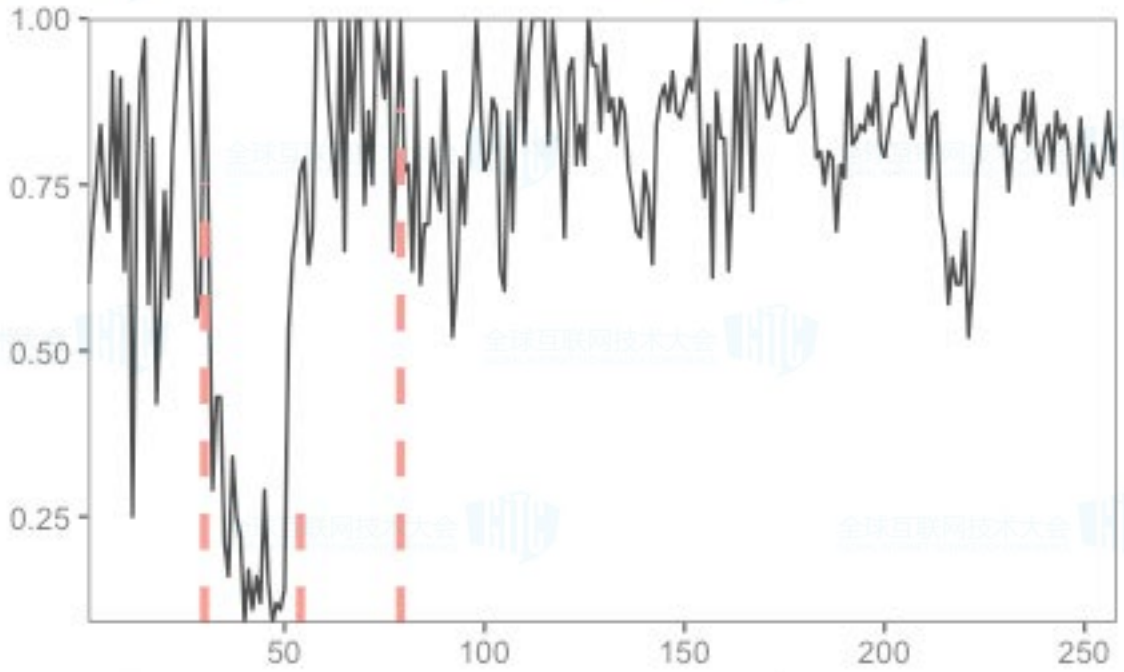

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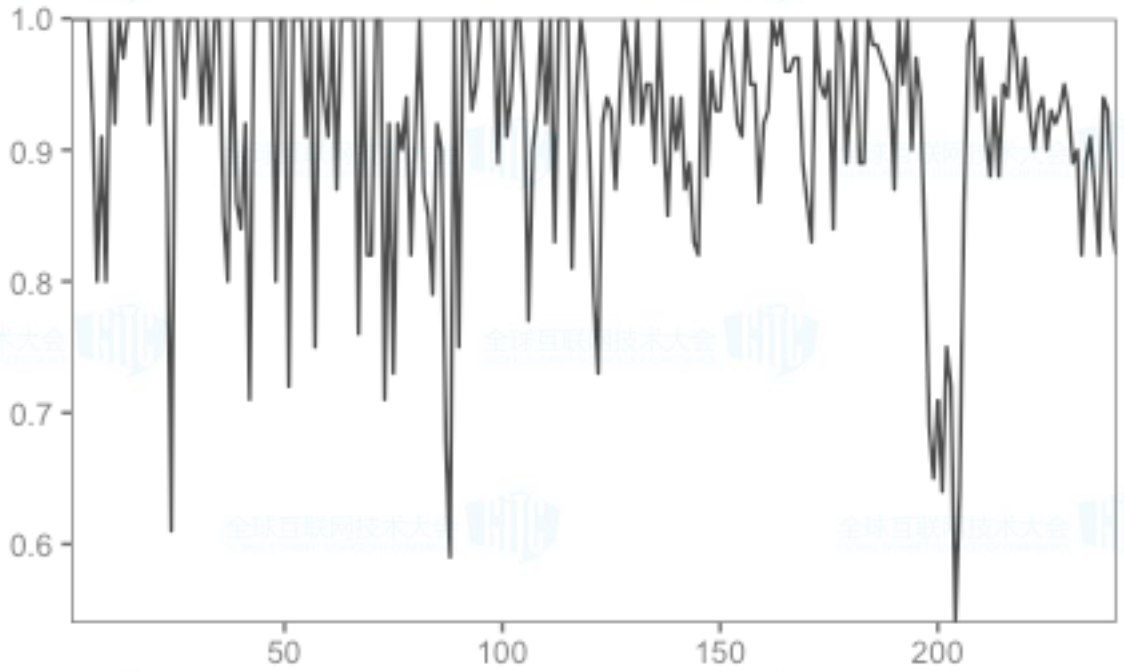

后续要做

- 容量评估经验值
- 智能生成正则表达式

Thank You!