

摩拜国际化架构演进

Globalization of Smart Bike-sharing Systems

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AiCon

全球人工智能与机器学习技术大会

助力人工智能落地

2018.1.13 - 1.14 北京国际会议中心



扫描关注大会官网

SPEAKER INTRODUCE



范同祥(Frank)

Mobike Chief Architect

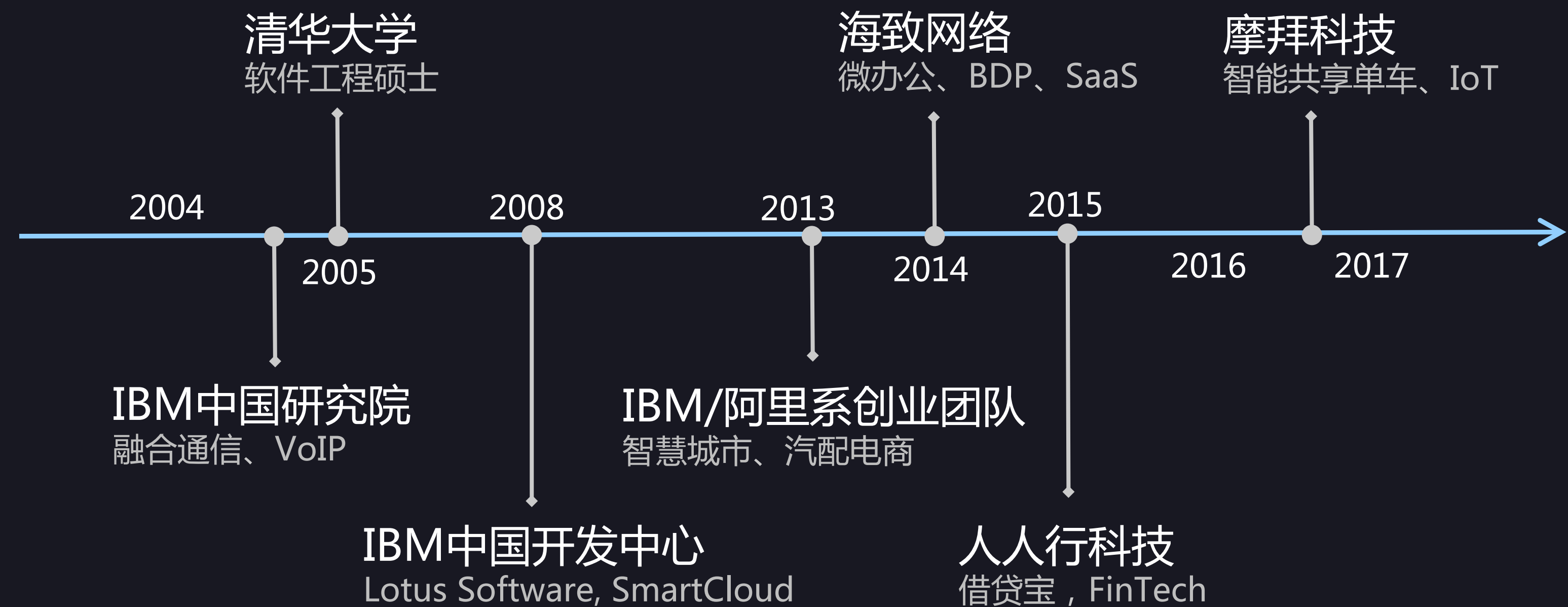


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- Growth and Challenges
- Globalization Guidelines
- Multiple Data Center
- Data Storage & Replication
- Microservices Stack
- Containerization and Orchestration
- DevOps Toolchain and CI/CD Pipelines

骑行改变城市

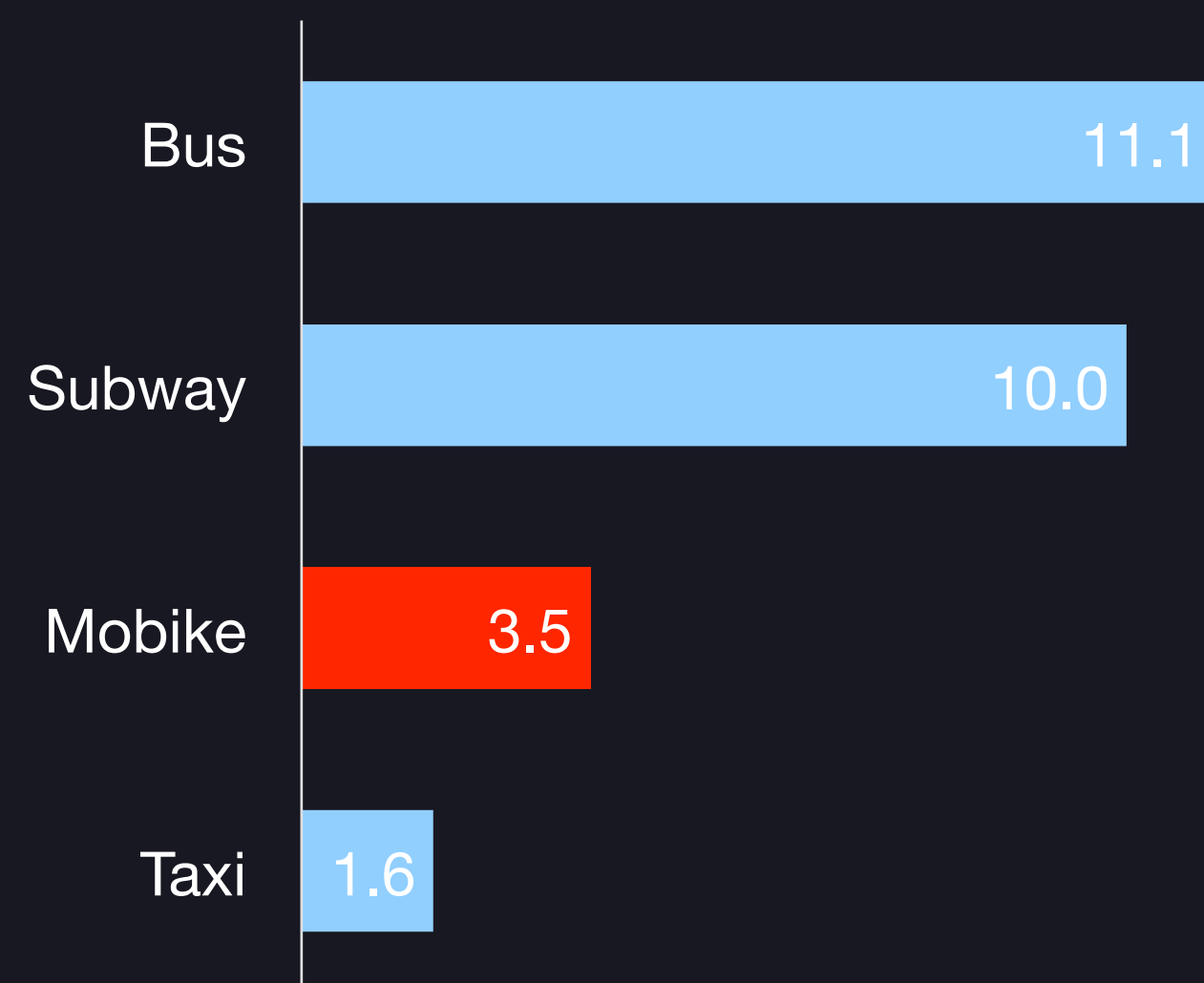


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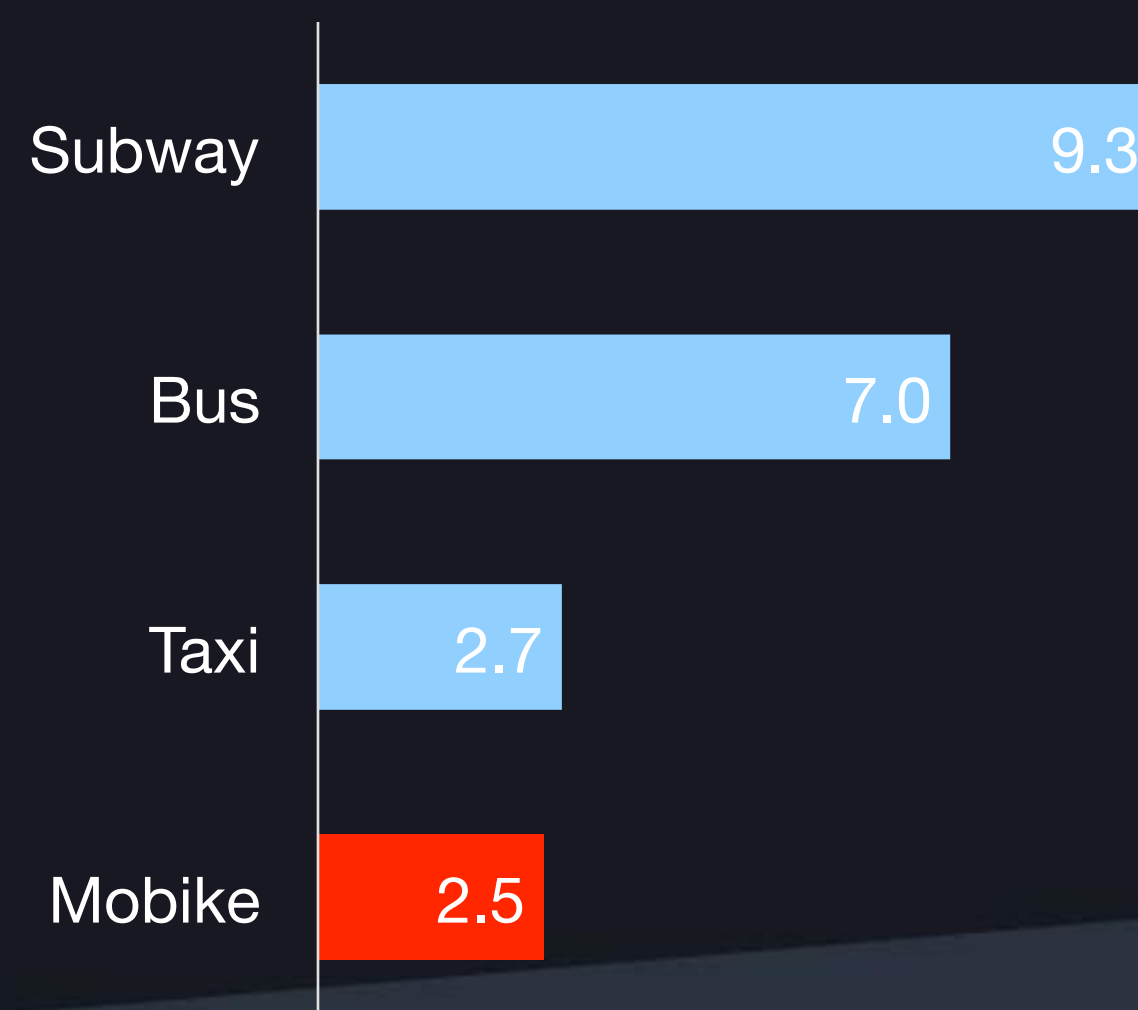


Bus , Metro and now Mobike, are the three key transportation systems of the city

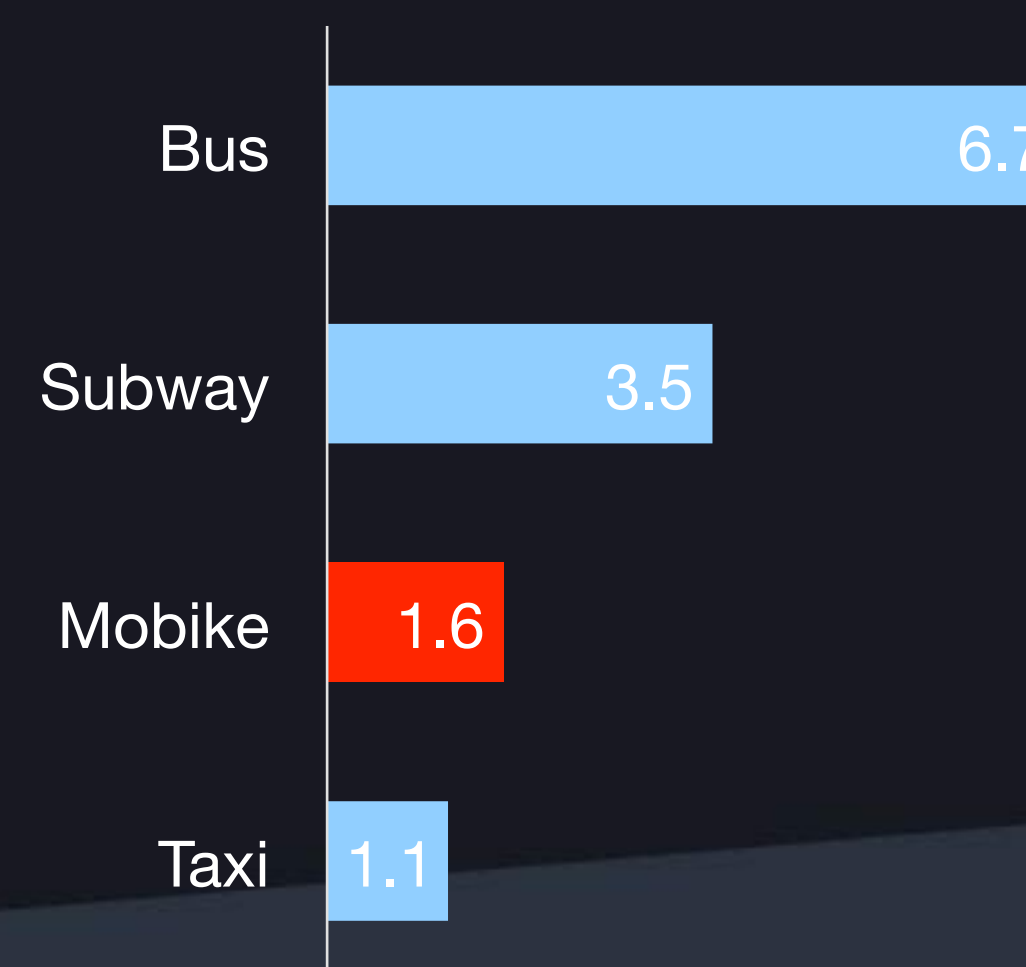
北京
Beijing



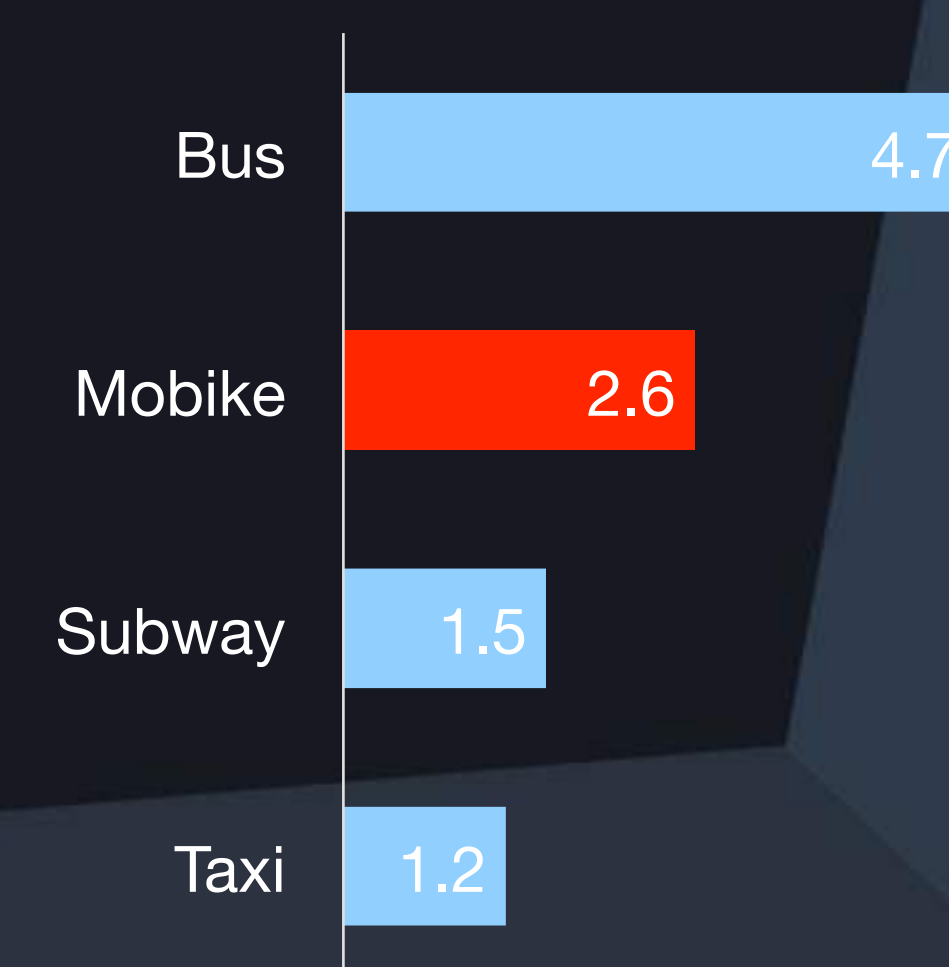
上海
Shanghai



深圳
Shenzhen



成都
Chengdu



国际化进程

200 cities globally

in 20 months

200 million

registered users

30 million

orders daily

>7 million

smart Mobikes
in mobile network

>30TB of data

挑战与架构目标

- 系统复杂度不断地提升
- 开发迭代频率越来越快
- 产品质量要求越来越高
- 管理成本和费用成倍增加



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国际化需求



GDPR - General Data Protection Regulation

- Released in April 2016, enforce Since **May 25, 2018**
- It' s GLOBAL in reach! ALL organizations processing information about European data subjects must comply.
- Fines of up to 4% of annual revenue or 20 millions €.
- GDPR includes 11 Chapter with 99 Article VS 网络安全法 7章 , 79条.
- No Technical measures, but requirement.
- GDPR FAQ

技术路线与原则

- 立足当下：快、糙、猛
- 着眼未来：寻求系统性解决方案
- 目标驱动：多、快、好、省
- 自下而上：苦练基本功
- 追求卓越：工程师文化

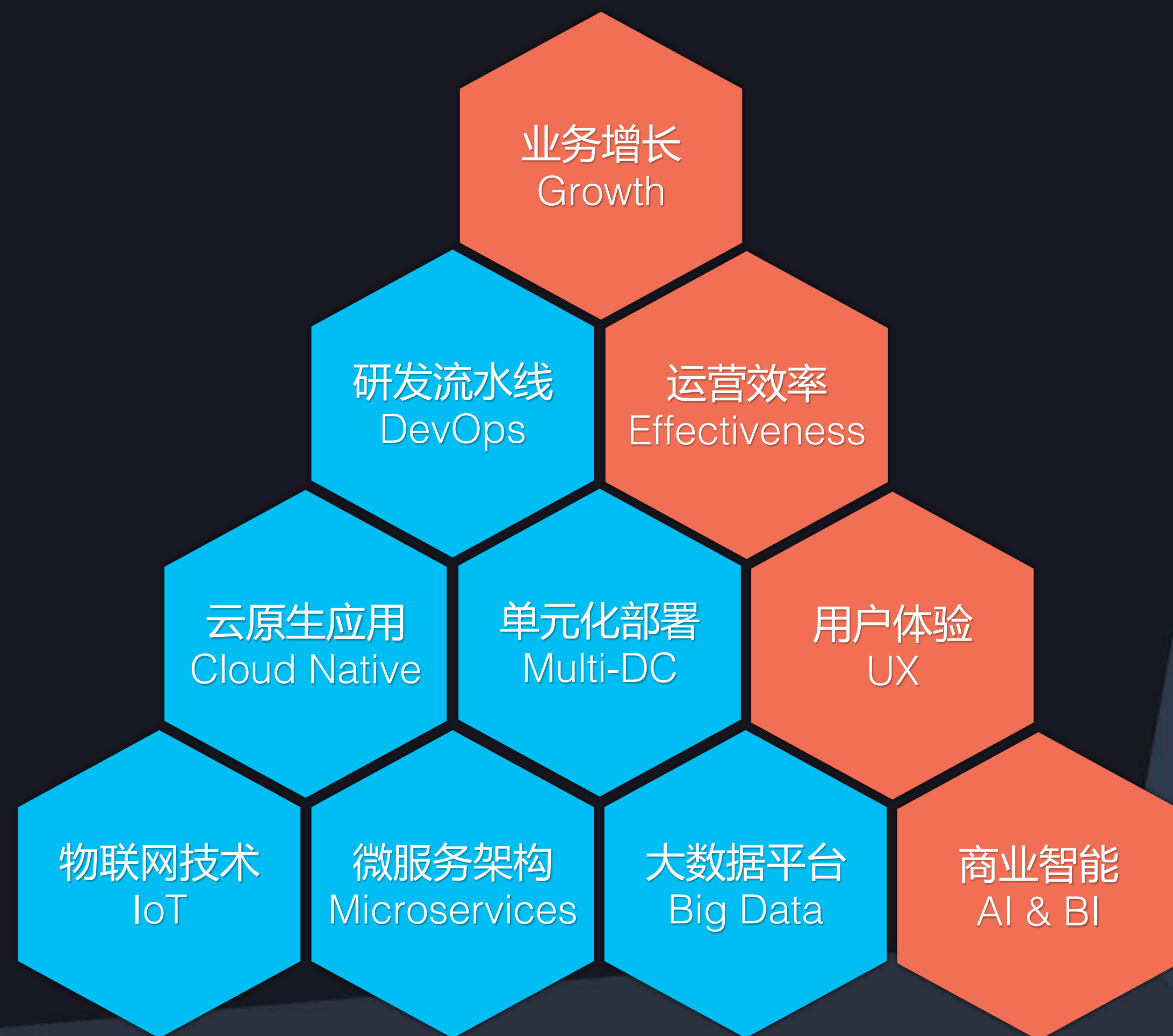


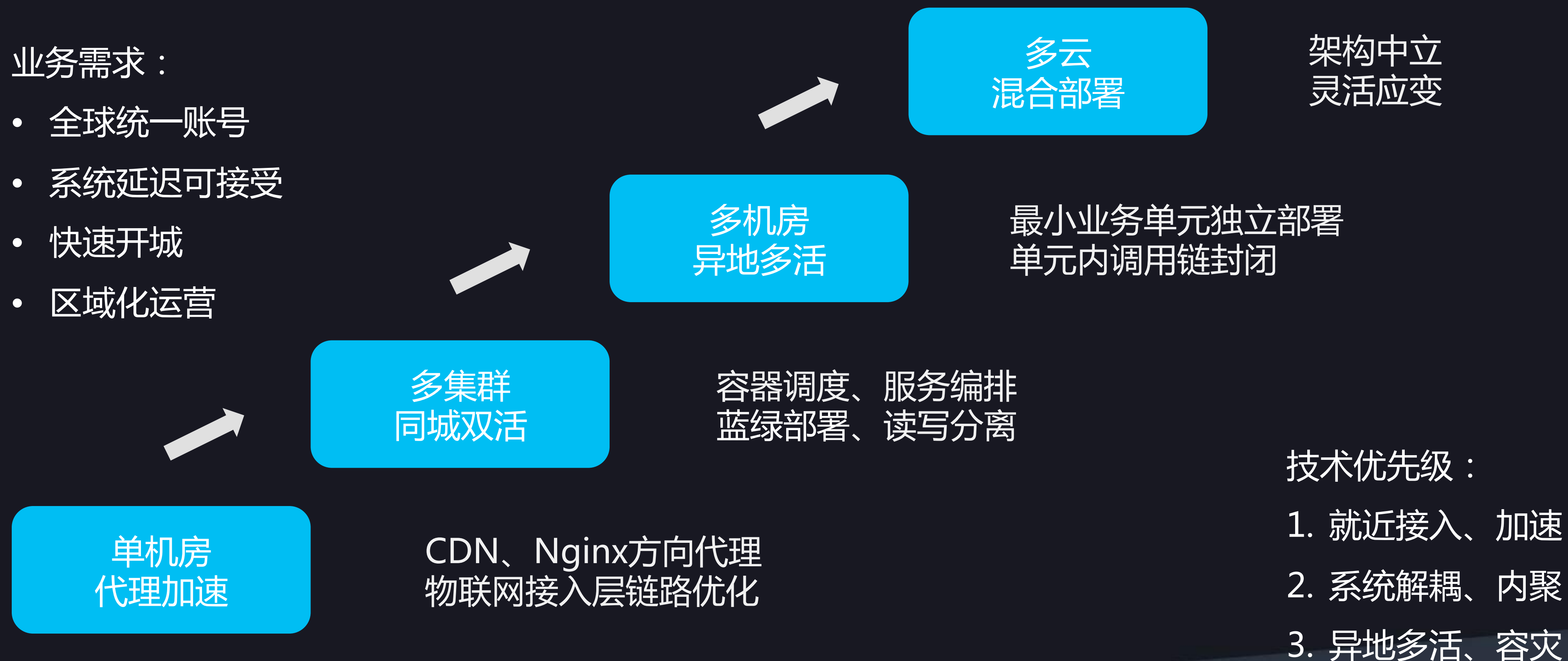
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部署架构演化

业务需求：

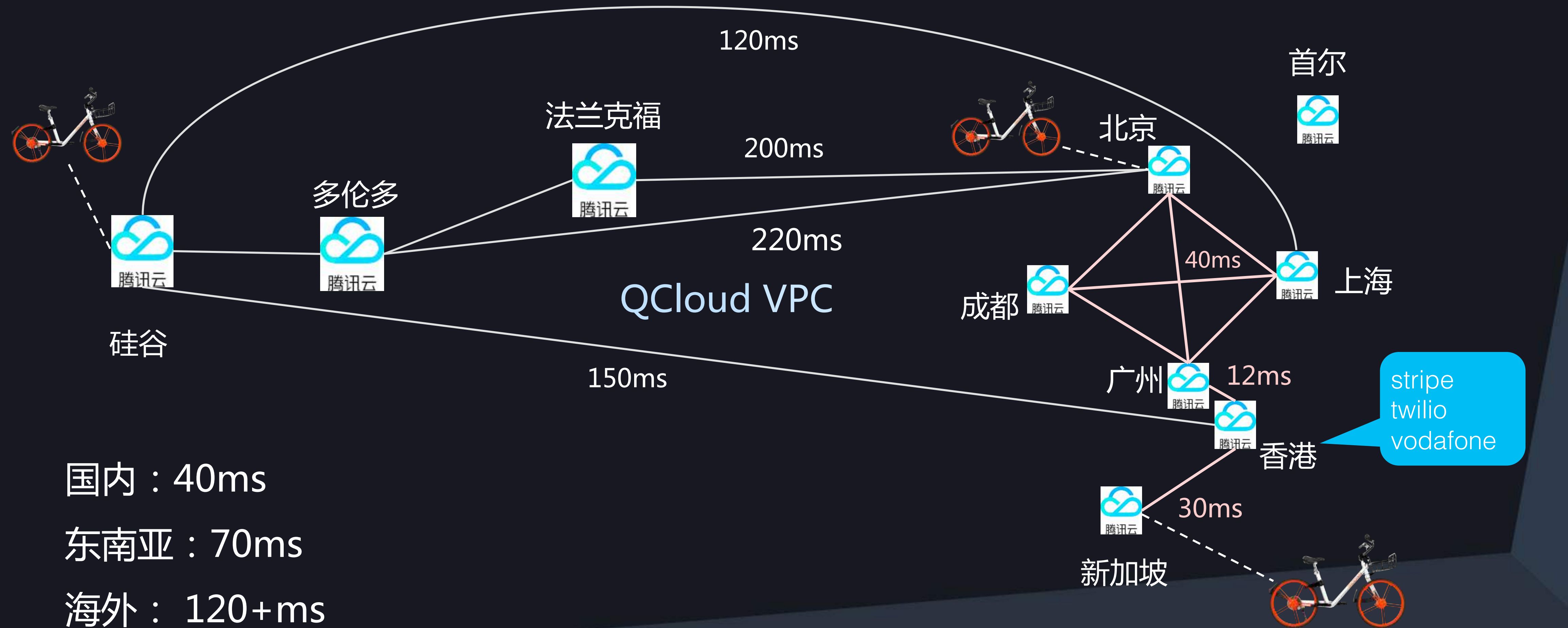
- 全球统一账号
- 系统延迟可接受
- 快速开城
- 区域化运营



技术优先级：

1. 就近接入、加速
2. 系统解耦、内聚
3. 异地多活、容灾

网络链路优化



国内：40ms
东南亚：70ms
海外：120+ms

多级群、同城双活

同城双可用区

接入层路由、流量调度

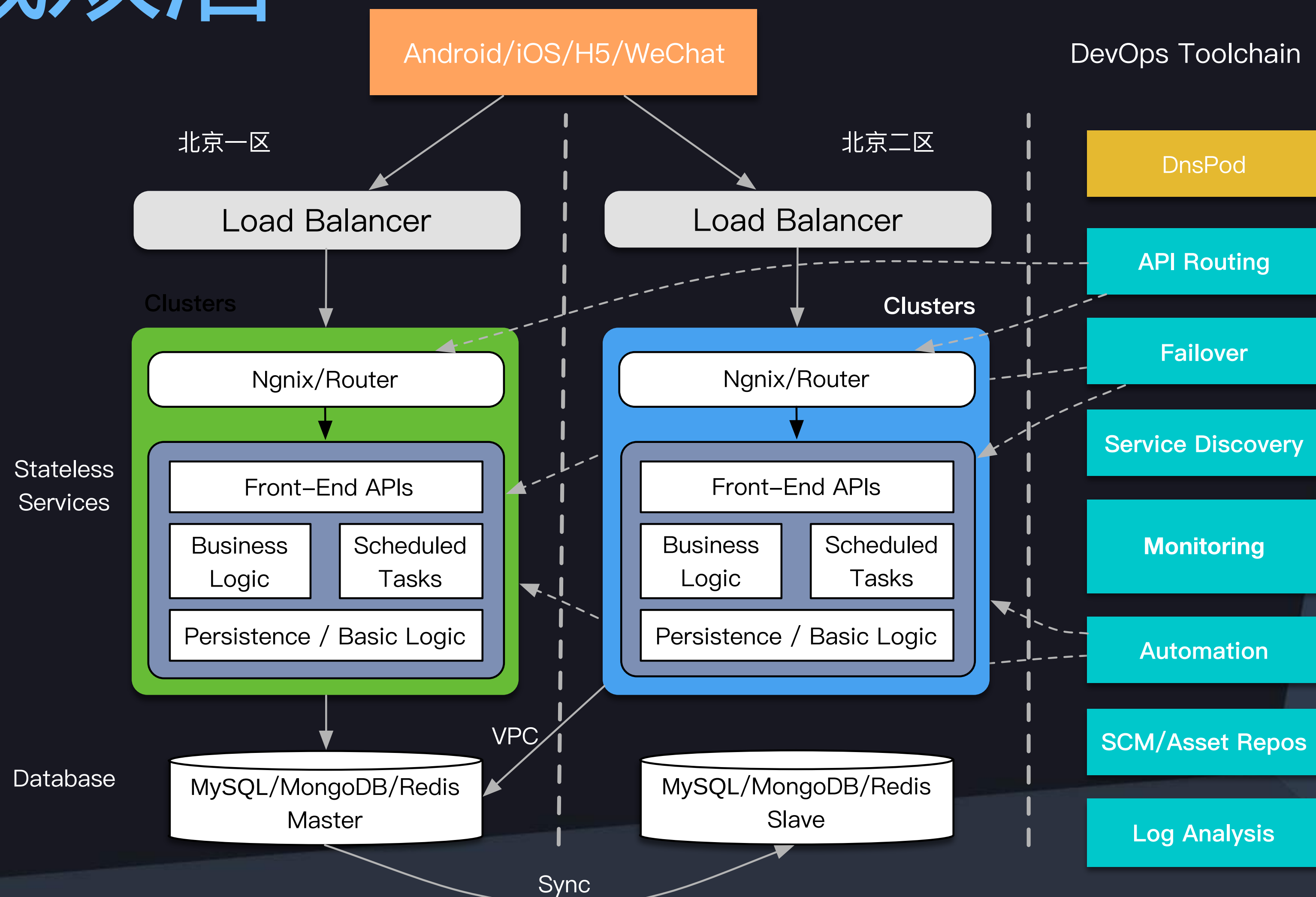
集群内部署全部微服务

数据访问层

DBProxy

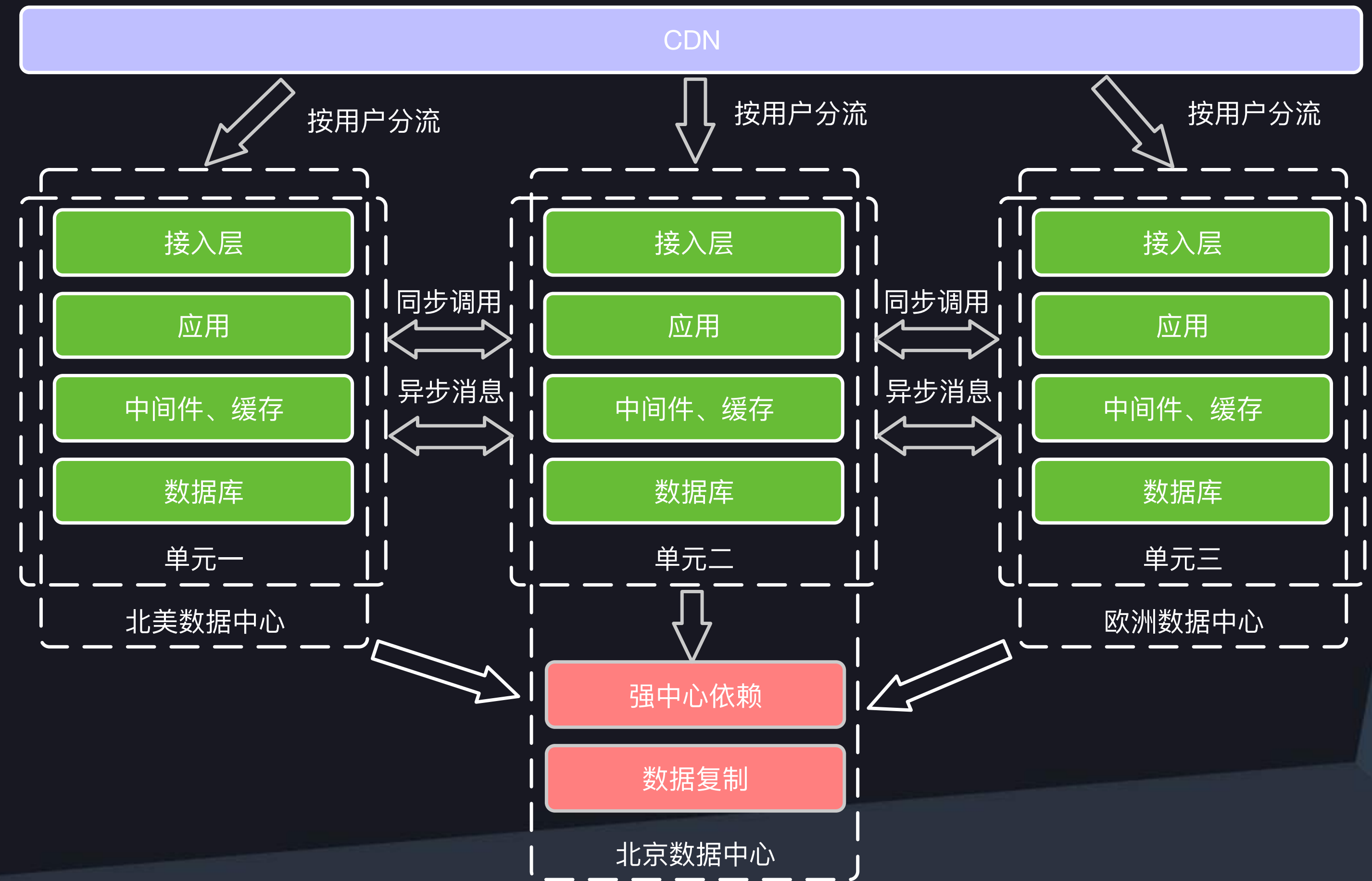
黑石物理机+虚拟云主机

蓝绿部署



多机房、异地多活

- 单元化部署
- 物理距离决定难度
- 单一维度拆分
- 单元化改造
- 数据特点决定



业务数据特点

Global DB

- 用户归属地信息
- 用户骑行状态
- 账户余额

多活DB

- 骑行记录
- 车辆位置
- 钱包明细

非多活DB

- 车辆运维管理

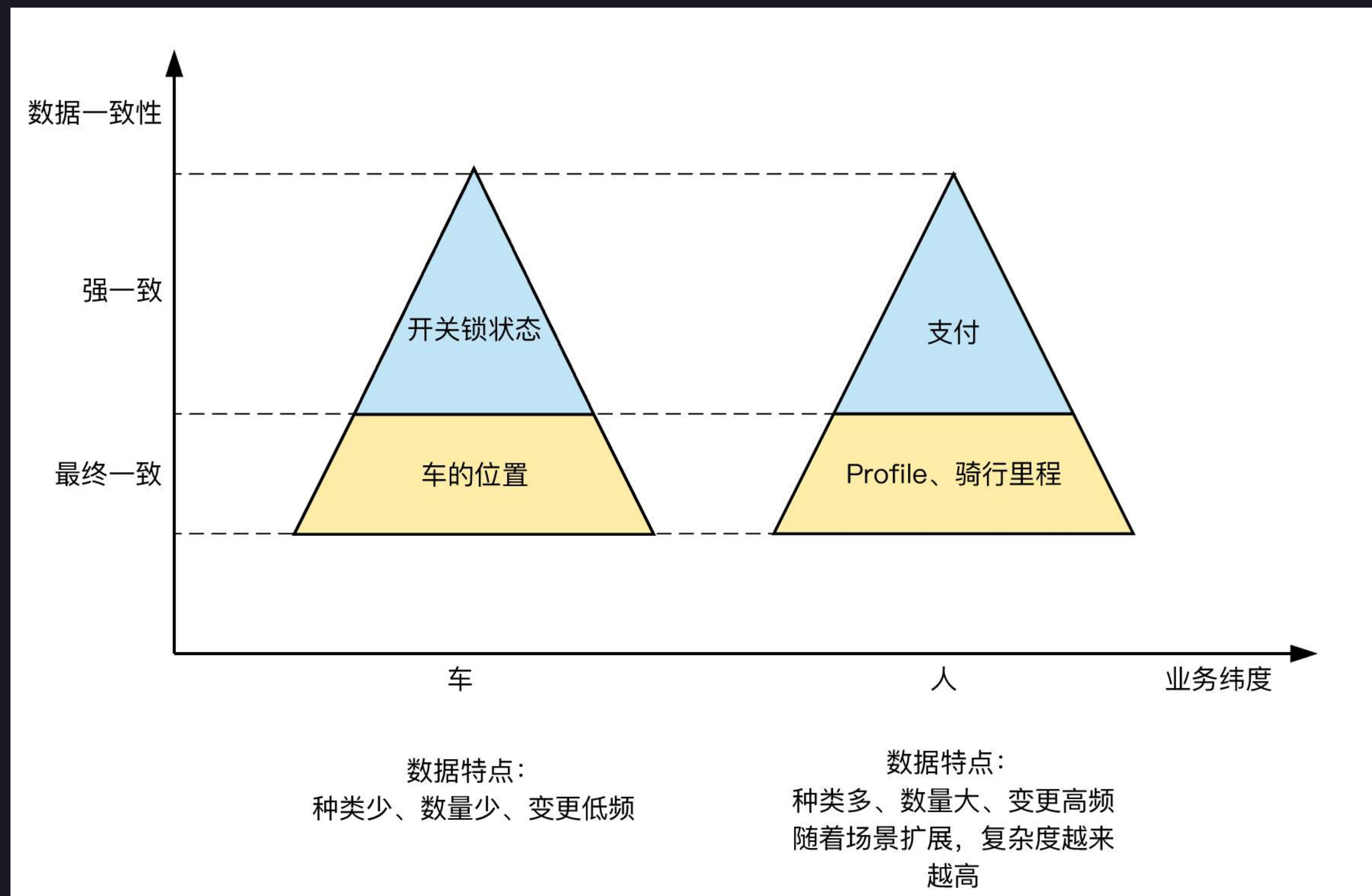
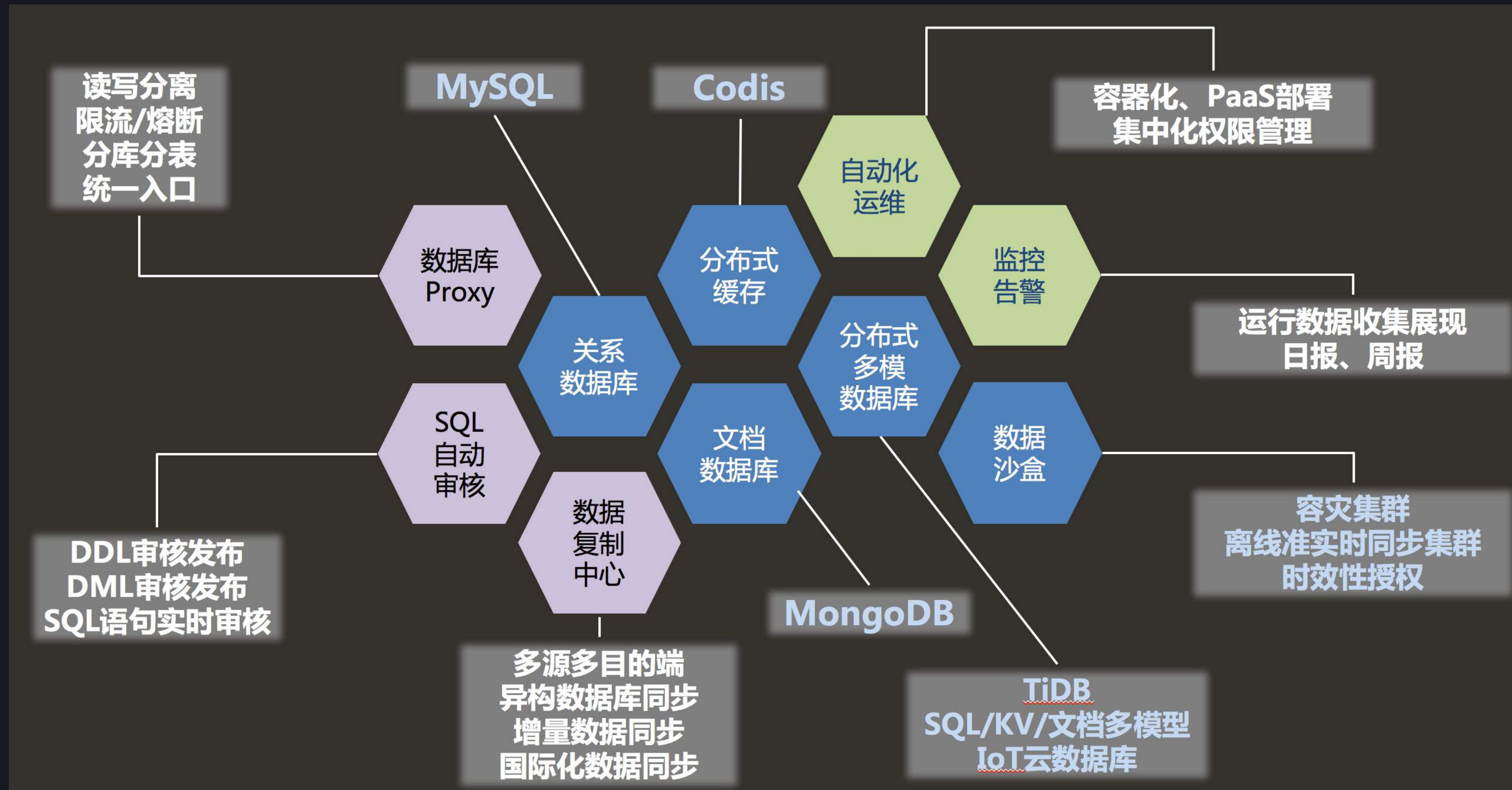


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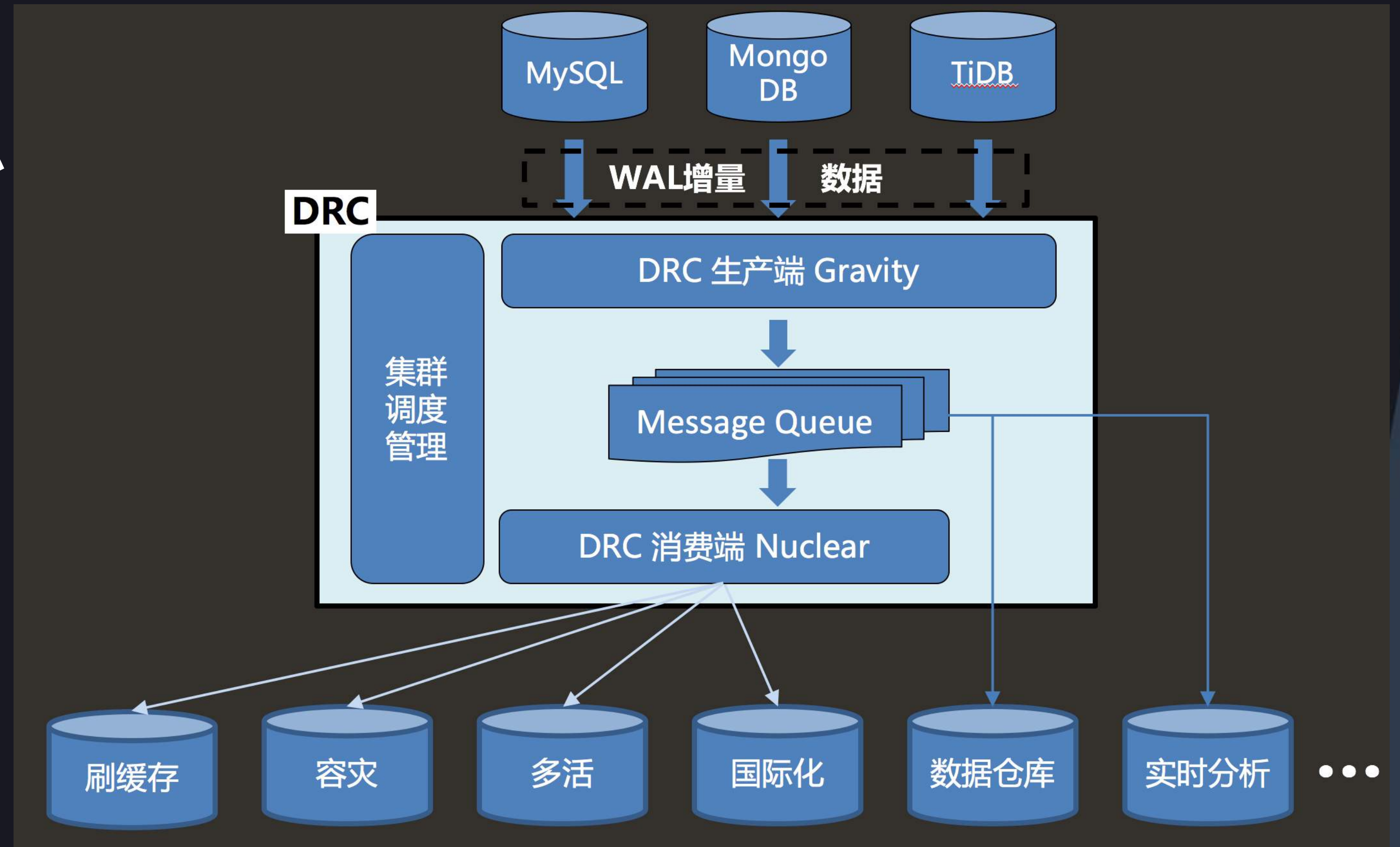
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摩拜数据库生态体系



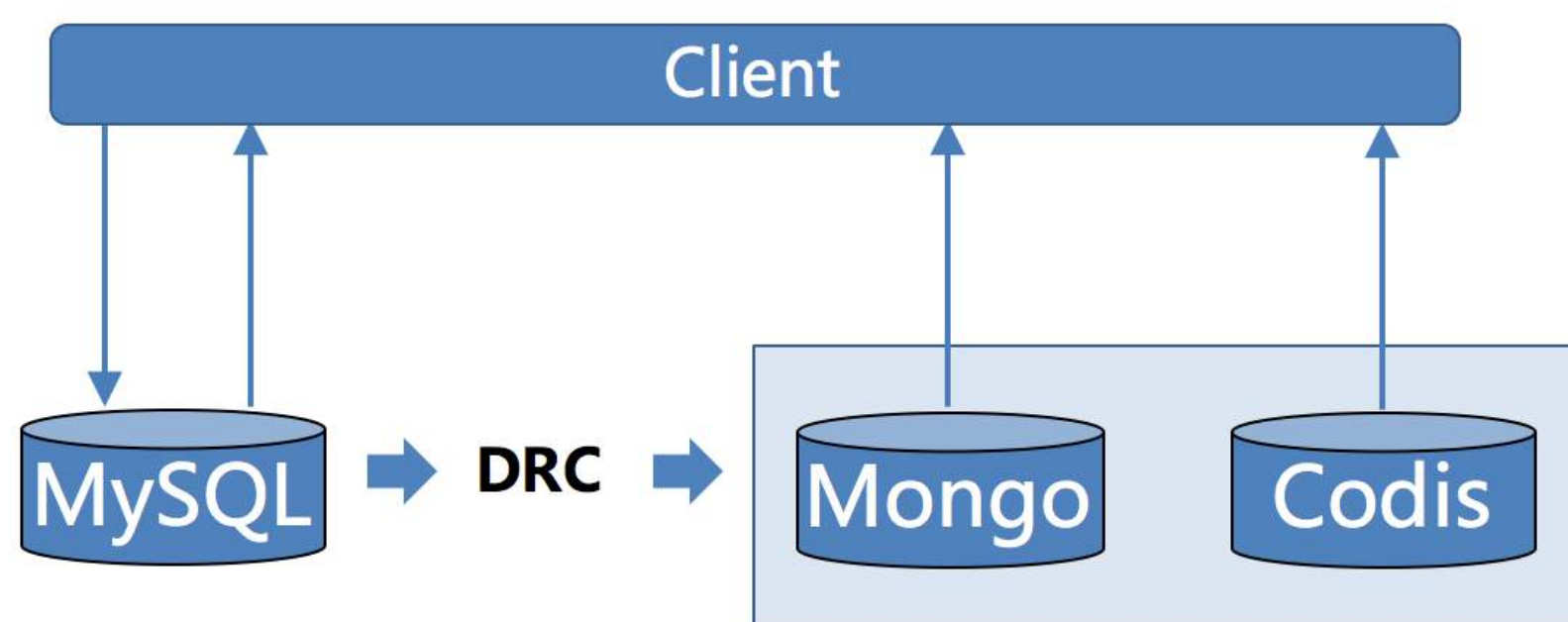
DRC架构

- DRC : (增量)数据复制中心
- PaaS化部署
- 多源多目的端支持
- 异构数据库间同步
- 脚本化配置
- 容灾同步
- 多活双向同步
- 跨国数据中心同步
- 离线分析同步

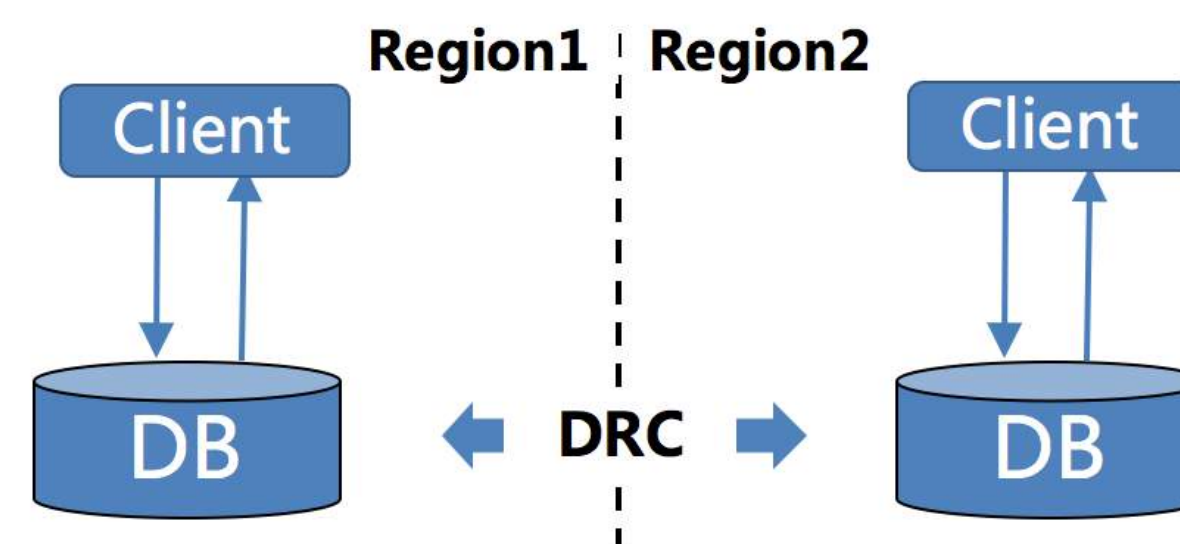


DRC应用场景

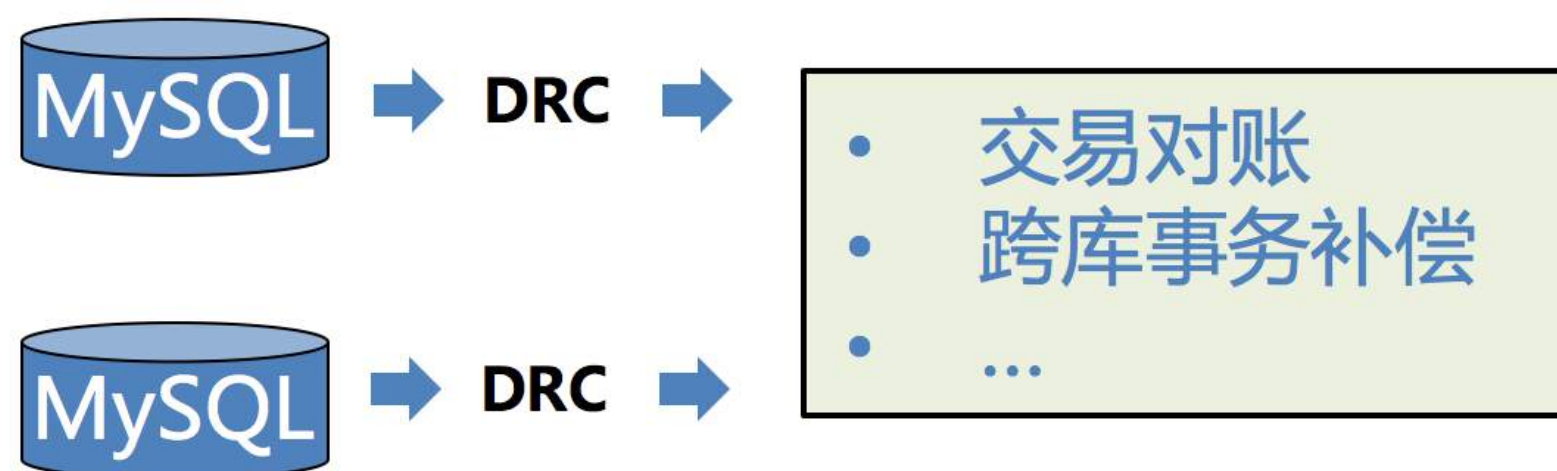
异构数据库同步



跨Region容灾/多活/国际化



业务订阅增量数据



离线分析

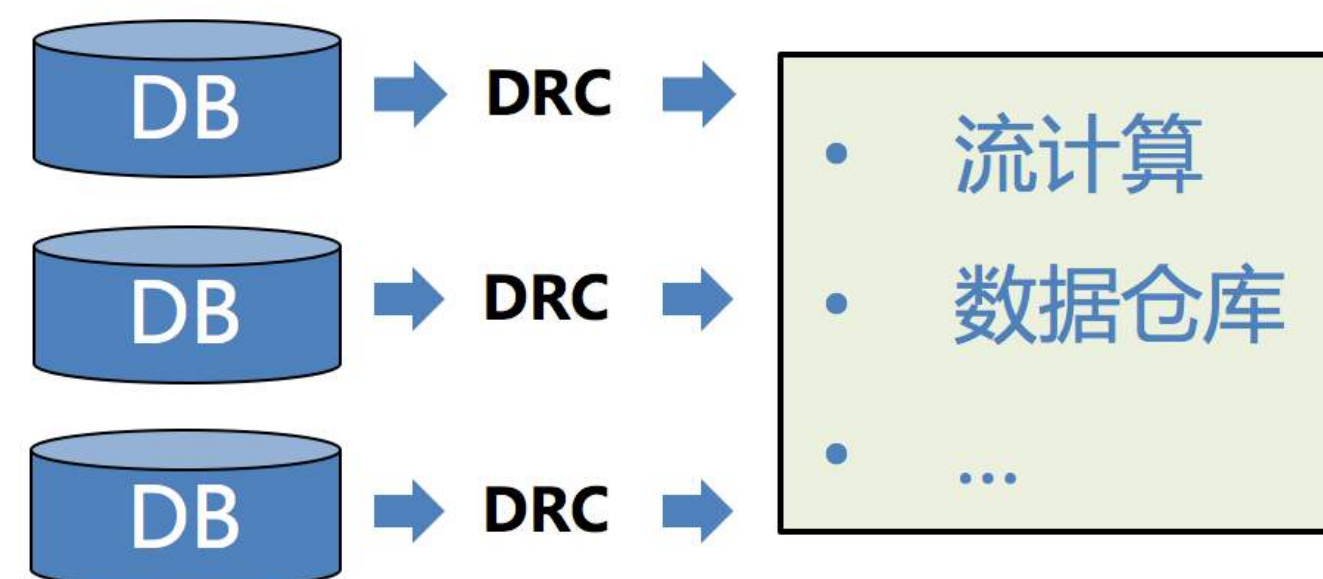
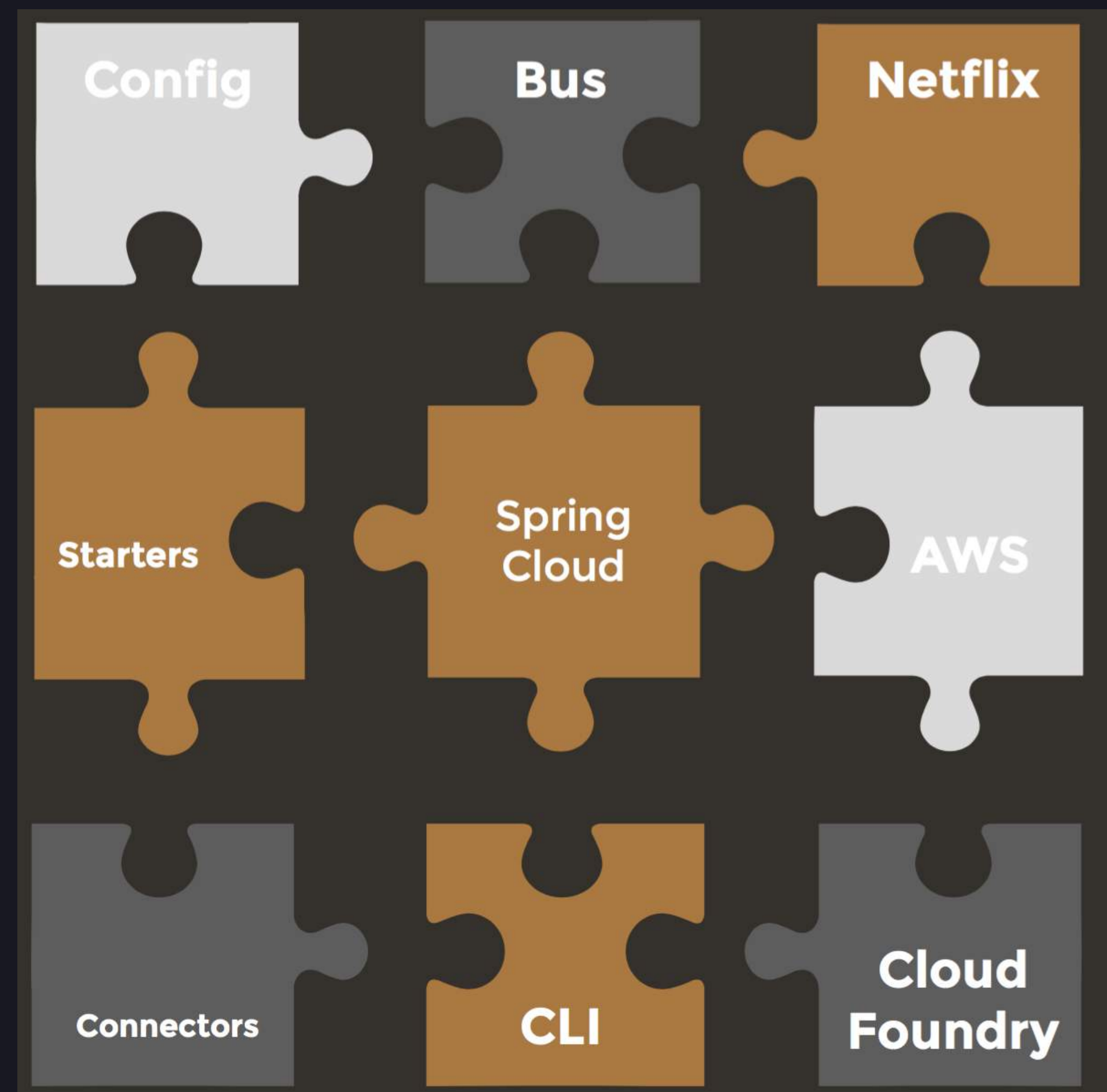


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Spring Cloud

- A complete set of tools for building distributed systemsCloud native application framework
- Battle-tested Netflix OSS
- Easy for customization
- Easy to migrate from Spring 3.0
- Revolutionary Spring Boot
- Java developer-friendly



Netflix OSS in Production

- 100s of microservices
- 1000s of daily production changes
- 10,000s of instances
- 100,000s of customer interactions per minute
- 1,000,000s of customers
- 1,000,000,000s of metrics
- 10,000,000,000 hours of streamed
- 10s of operations engineers

Hystrix

Circuit Breaker

Turbine

Stream Aggregator

Eureka

Service Registry

Ribbon

Load Balancer

Zuul

Edge Service

Feign

HTTP Communication

API Gateway - Zuul

- Authentication
- Rate-Limiting
- Logging
- Caching
- Transformation
- Web Application Firewall
- Anti-Fraud

