Practice Sharing: Hybrid Deployment of Service Mesh-based Microservices and Those Based on a Traditional Architecture

ServiceComb-based Microservice Practice of MedSci

Miao Yanjie
Chief Architect, MedSci

APACHE INCUBATOR ServiceComb PODLING

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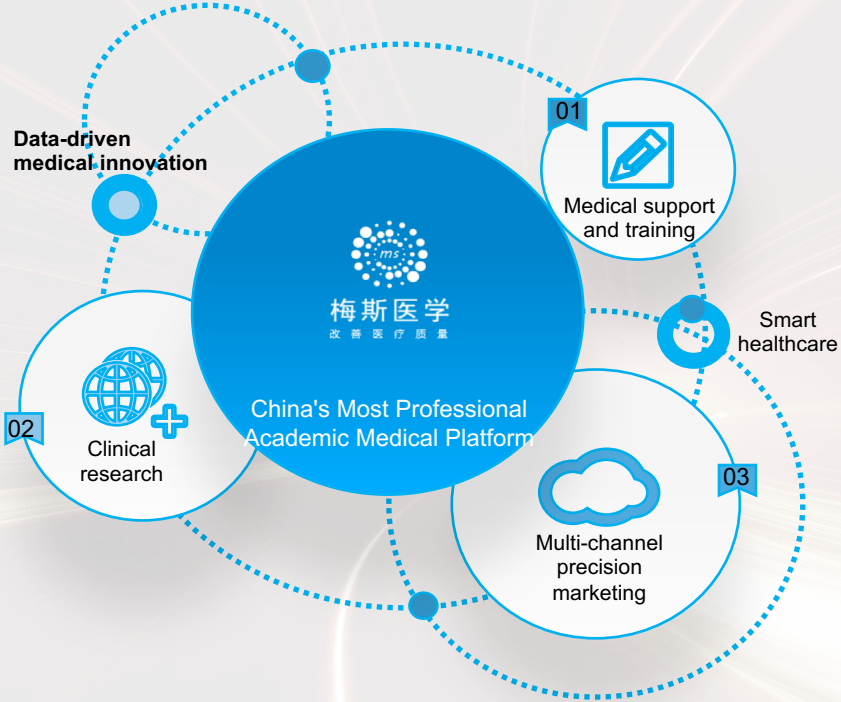
About MedSci



2	Two network platforms, covering all users in the medical and life science fields
14	14 years in the medical field, dedicated to improving the quality of healthcare
40	40+ full-time Dr of Medicine team members; 300+ academic team members outside China
70	1.45 million doctors registered with MedSci, 70% popularity of doctors in class-III hospitals
2	Average daily PV volume on the entire network 1.3 million, ranking second in the industry
30,000	Annual conference training covering 30,000 professionals

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iDrugSafety

iDrugSafety® is a professional electronic information system for pharmacovigilance (PV). It was launched by Shanghai MedSci Pharmaceutical Technology Co., Ltd. and is targeted for the life science field in China. It aims to help pharmaceutical enterprises to make faster and better safety decisions and provide E2E safety solutions for users. iDrugSafety offers a product lifecycle security information database for pharmaceutical enterprises, and integrates clinical research and post-IPO product security data, helping the enterprises build a product big data system.

This system helps pharmaceutical enterprises standardize report processing processes, **while also improving report processing efficiency by more than 80% by using new technologies such as microservices and AI.**

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iDrugSafety Competitiveness Analysis

	Traditional CRO	IT Company	**MedSci**	
Quality	✓	✗	✓	MedSci is the only IT company in China that uses the ISO-certified professional medicine. The system developed by MedSci complies with the domestic and international design standards.
Cost	✗	✓	✓	MedSci uses AI to reduce labor costs and improve efficiency.
Specifications	✓	✗	✓	MedSci has professional teams that are responsible for interpreting laws and regulations and gaining insights into industry dynamics to develop systems that meet the specifications.
System Functions Development Capability	✗	✓	✓✓	MedSci is the only Chinese IT company that provides mature, verified, and fully-connected medical systems, and has powerful system customization development capabilities.
Related Project Experience	✓	✗	✓✓	MedSci has rich experience in system launching and operation and ensures quick project implementation.

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iDrugSafety Development Requirements

满足法规要求

- SAE报告导出
- 国家市场监督管理局报告导入
- 支持标准数据直报
- 符合NMPA/FDA/EMA法规要求

AI智能化

- 整合商业智能系统支持自定义表单，辅助决策
- PSUR报告自动生成
- SAE报告自动生成
- 个例中英智能翻译
- NMPA反馈报告自动生成

符合国际标准

- ICH E2B数据交互标准
- 21 CFR 系统基础标准
- 支持MedDRA, WHODRUG等国际标准医学/药物编码
- 获得GAMP5，CMM3系统验证
- 标准报告导出

灵活配置

- 模块灵活配置
- 工作流可根据企业SOP灵活配置
- 支持云服务和本地部署
- 多种微服务配合主系统提高PV效率

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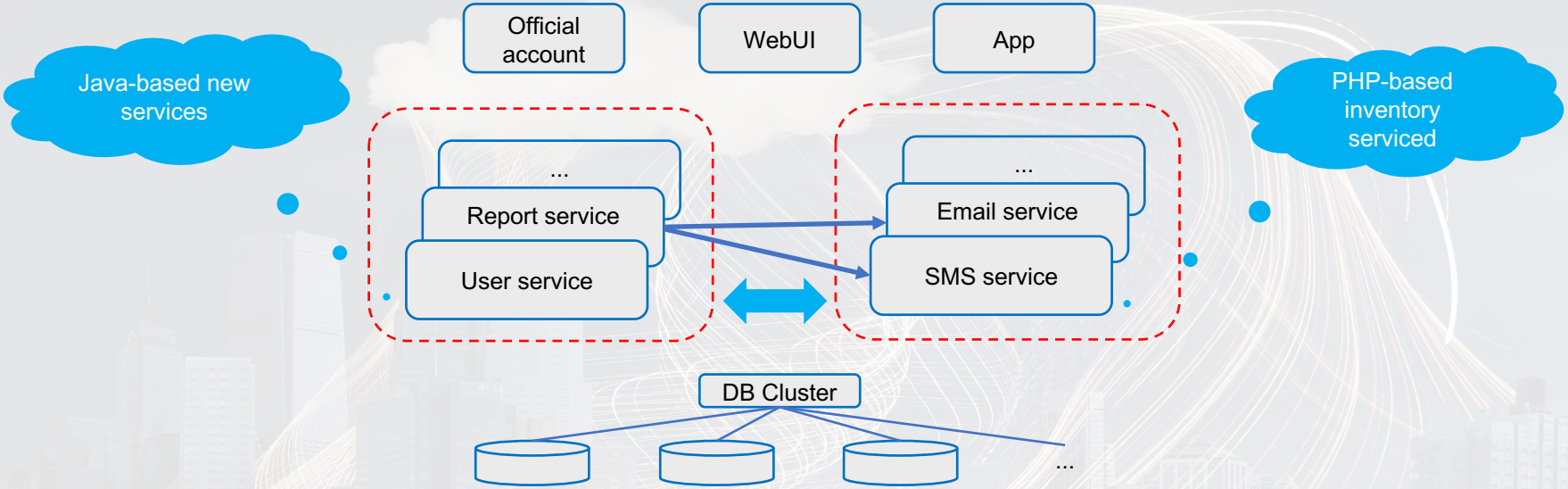
iDrugSafety Traditional Architecture Overview



- For inventory services and core services based on PHP, Huawei has years of accumulation on PHP technologies.
- For new services developed based on Java, the development period must be short and the services must be launched to the market as soon as possible.
- For inventory services, the architecture evolution must be stable without any code modification. For new services, the new architecture to be used must deliver high performance in service governance and monitoring.

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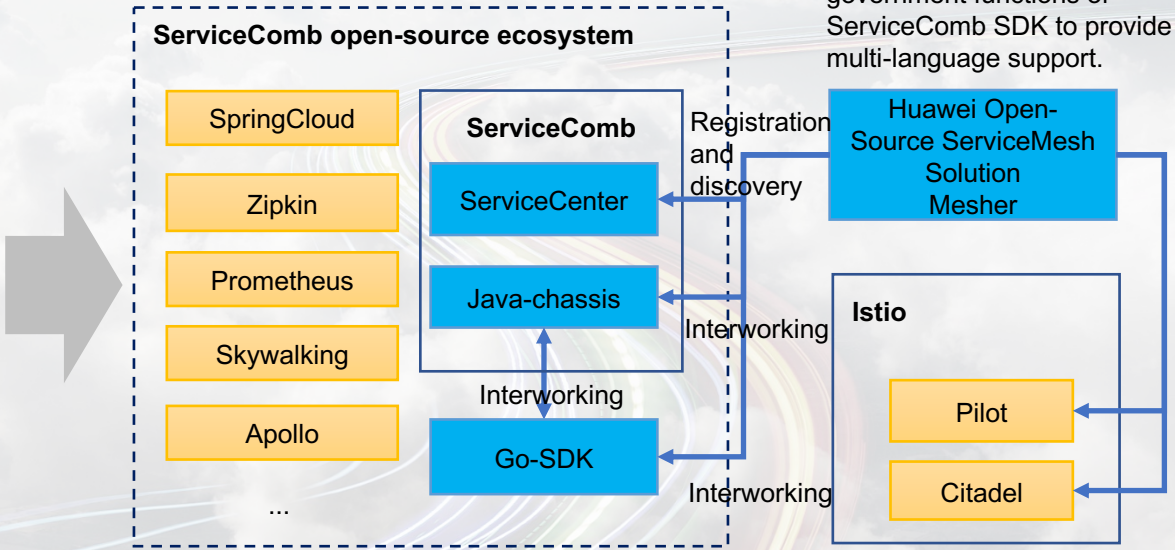
iDrugSafety Microservice Selection

Principles

- The architecture is stable and can be evolved.
- Multiple languages are supported. The hybrid deployment of Service Mesh-based microservices and those bases on a traditional architecture is supported.
- There are many successful commercial use cases.
- No commercial lock-in exists. Enterprises can take the full control.
- A complete ecological stack is available, covering mainstream open-source microservice O&M and security domains.
- Learning costs are low. Users with the basic knowledge of programming languages can quickly get started.



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iDrugSafety Microservice-based Reconstruction Evaluation

- For new services based on Java, choose ServiceComb SDK to implement microservice-based reconstruction.
  - ✓ There are successful business practices in the industry. In Huawei consumer cloud service I/O-intensive scenarios, using the Reactive full-asynchronous mode increases the QPS by two times, reduces the delay by 45%, saves a large number of hardware resources, and supports stable running of large applications with 400,000,000+ users, 1,80,000,000+ daily active users, and 80,000,000+ photos (daily increase).
  - ✓ During the customer service upgrade, ServiceComb ensures the dark launch of new services through dynamic routing. Even if a fault occurs during the upgrade, the service can be rolled back quickly with the minimum impact on user services.
  - ✓ The out-of-the-box capability ensures quick establishment of the system and reduces trial-and-error costs.
  - ✓ Service code can be monitored. The framework supports the collection of information about the service running status.
  - ✓ ServiceComb supports hybrid deployment and collaborative governance of traditional intrusive microservices and ServiceMesh-based non-intrusive microservices.
- For inventory services based on PHP, choose Huawei's commercial and open-source ServiceMesh solution Mesher to implement microservice-based reconstruction.
  - ✓ Mesher is a cross-language microservice governance solution. Its governance capability is equivalent to and interworks with that of the ServiceComb SDK. Mesher provides centralized configuration/governance.
  - ✓ Fpr multi-language support, there is no need to provide a service governance solution for each language, which is suitable for the PV system.
  - ✓ Mesher reduces trial-and-error costs. PHP does not need to develop service governance again.

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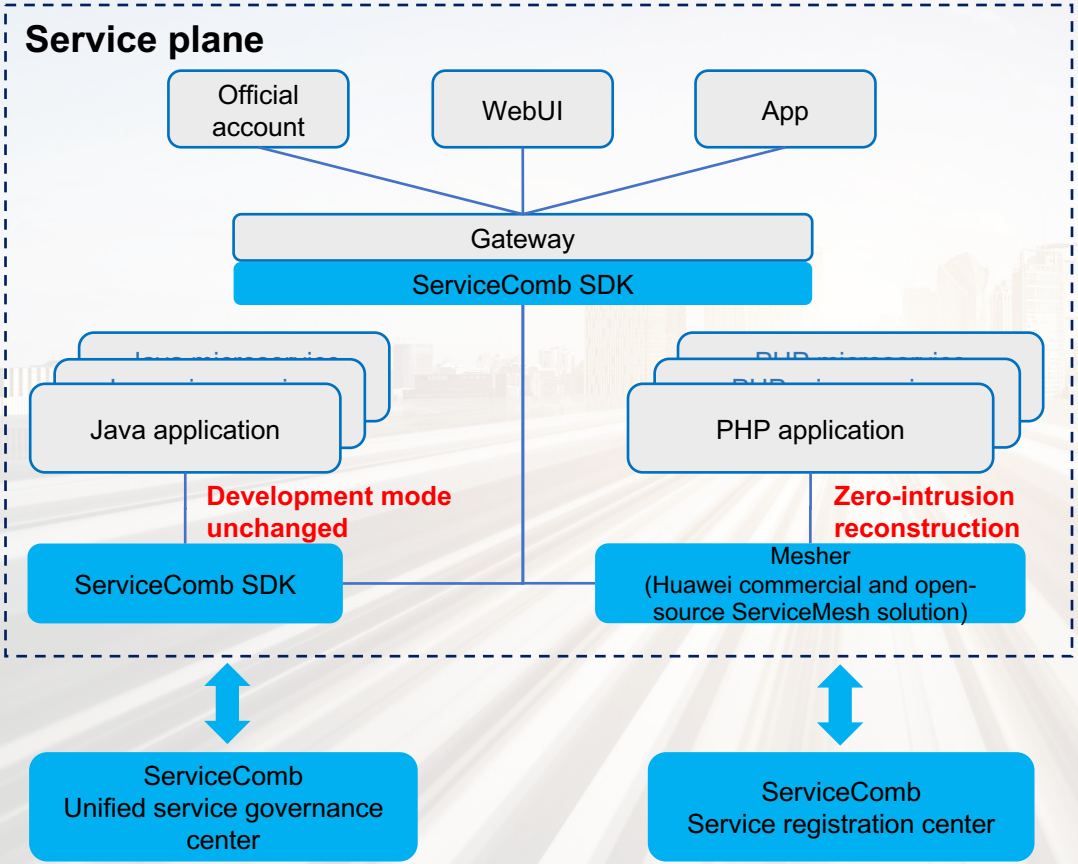
iDrugSafety Microservice-based Reconstruction



- Support for multiple development languages
  - ✓ Perfect solution to the coexistence of Java and PHP
- Coexistence of microservices based on new and traditional architectures
  - ✓ Hybrid deployment and collaborative governance
- Various monitoring and O&M functions
  - ✓ Refined microservice monitoring and O&M on the service plane
- Zero reconstruction on legacy applications
  - ✓ Code zero-intrusion, low cost, and no impact on existing services

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Benefits of Microservices

- PHP resources (such as some basic services) are integrated to achieve quick development and ensure project completion in time.
- ServiceComb provides many best practices, such as microservice monitoring and distributed call chain tracking.
- The Go language is supported so that more solutions can be provided.

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Thank you.

ServiceComb official website: http://servicecomb.incubator.apache.org/

Getter: https://gitter.im/ServiceCombUsers/Lobby

How to join the ServiceComb community:

http://servicecomb.incubator.apache.org/cn/docs/join_the_community/

MedSci official website: http://www.medsci.cn/

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