Apache ServiceComb (Incubating) Community Roadmap

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Open Source Capability Center, Central Software Institute, 2012 Laboratories
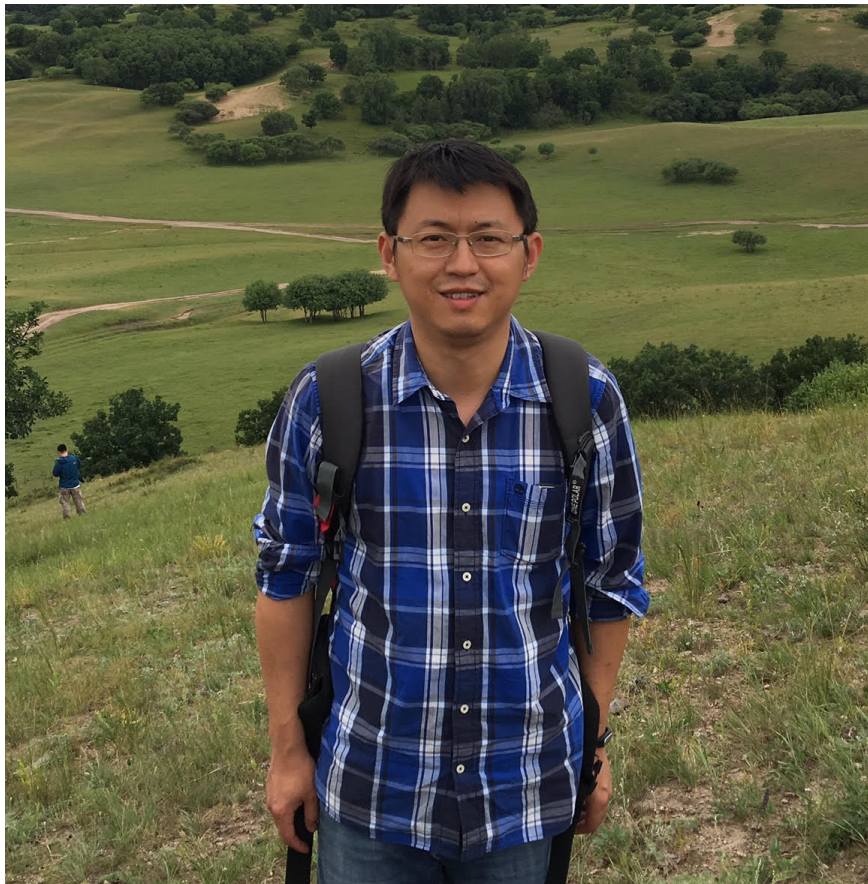
2018-10-12

HUAWEI

Biography

Huawei open-source technology expert

Apache ServiceComb project initiator

Apache member

Participated in the development of multiple Apache projects. Worked as the member and committer of Apache Camel, Apache CXF, Apache ServiceMix, and Apache RocketMQ PMC.

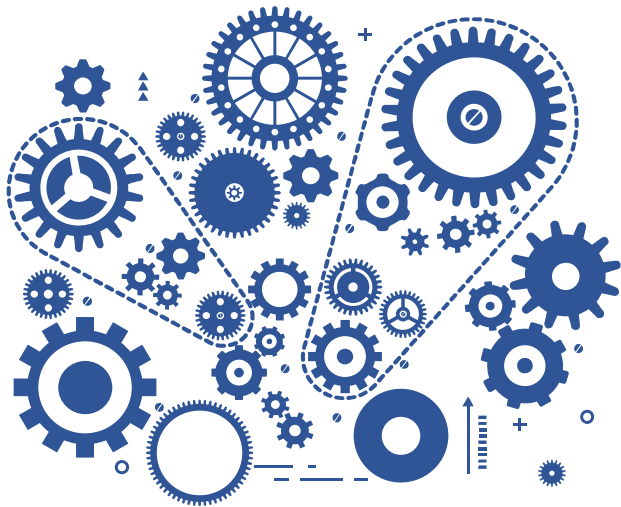Previously worked at Red Hat, IONA, and Travelsky.

Contents

- Challenges to Microservice Development

- ServiceComb Project Introduction

- ServiceComb Community Development History

- Latest ServiceComb Roadmap

Challenges to Microservice Architectures
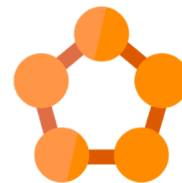
- Problems in distributed systems
  - Service registration and discovery
  - Fault tolerance and fallbreak
  - Flow control and fallback

- O&M problems
  - Dynamic configuration management
  - System monitoring
  - Route management
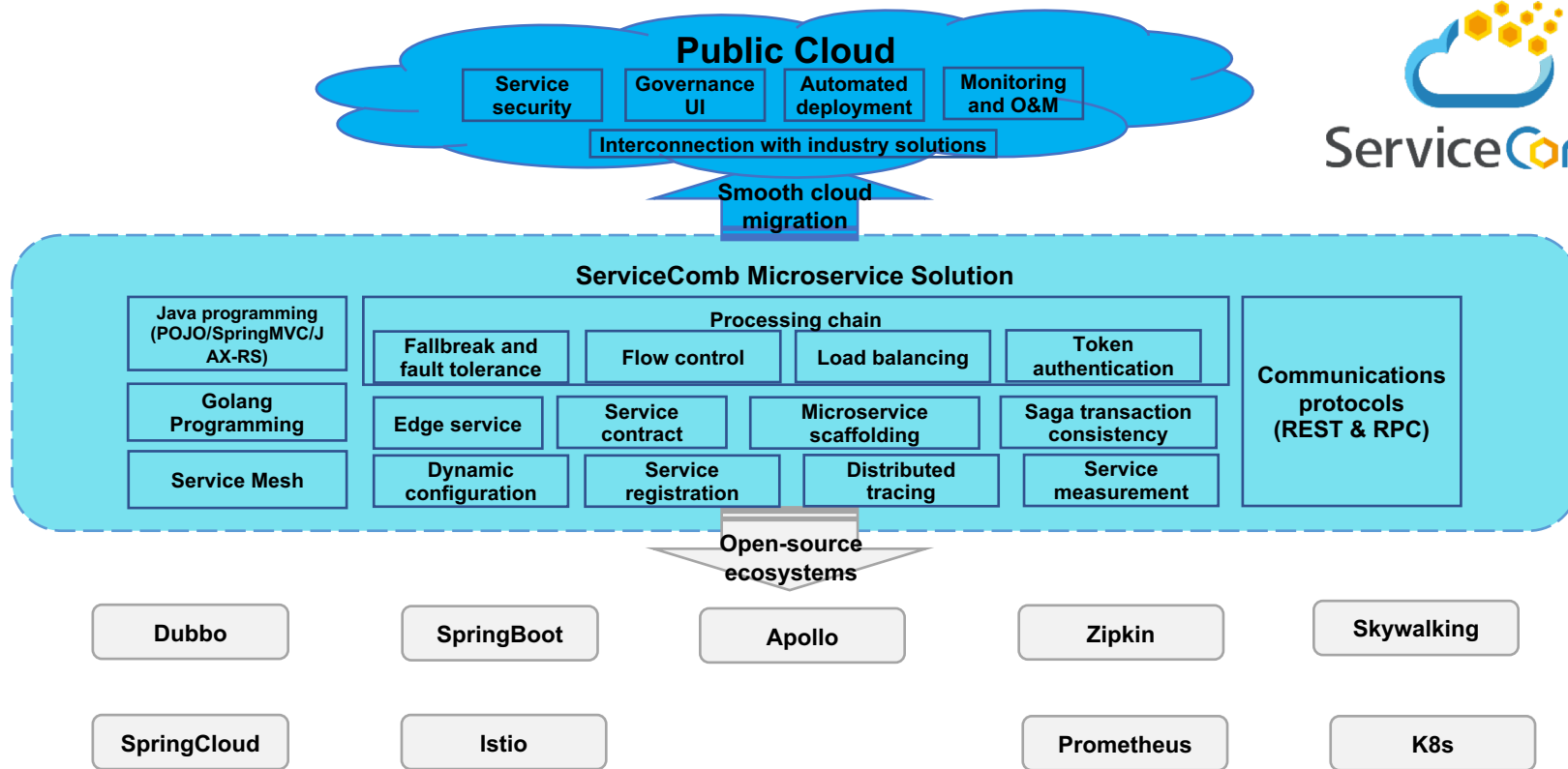
Current Microservice Framework

Service framework

Service Mesh

Huawei Confidential

ServiceComb: Open-Stack Microservice Solution

Public Cloud

- Service security
- Governance UI
- Automated deployment
- Monitoring and O&M

Interconnection with industry solutions

Smooth cloud migration

ServiceComb Microservice Solution

Java programming (POJO/SpringMVC/JAX-RS)	Processing chain				Communications protocols (REST & RPC)

Processing chain:
- Fallbreak and fault tolerance
- Flow control
- Load balancing
- Token authentication
- Edge service
- Service contract
- Microservice scaffolding
- Saga transaction consistency
- Dynamic configuration
- Service registration
- Distributed tracing
- Service measurement

Left column:
- Java programming (POJO/SpringMVC/JAX-RS)
- Golang Programming
- Service Mesh

Right column:
- Communications protocols (REST & RPC)

Open-source ecosystems

- Dubbo
- SpringBoot
- Apollo
- Zipkin
- Skywalking
- SpringCloud
- Istio
- Prometheus
- K8s

ServiceComb

ServiceComb Project Introduction

- Java Chassis
  - A high-performance microservice framework that provides functions such as service registration discovery, dynamic configuration management, flow control, fallback, fault tolerance, and fallbreak

- Service Center
  - A high-performance and high availability service registration center based on ETCD

- Saga
  - A solution to eventual consistency of microservice transactions
  - Provides a centralized transaction coordinator that coordinates transaction invoking between microservices to ensure final transaction consistency.

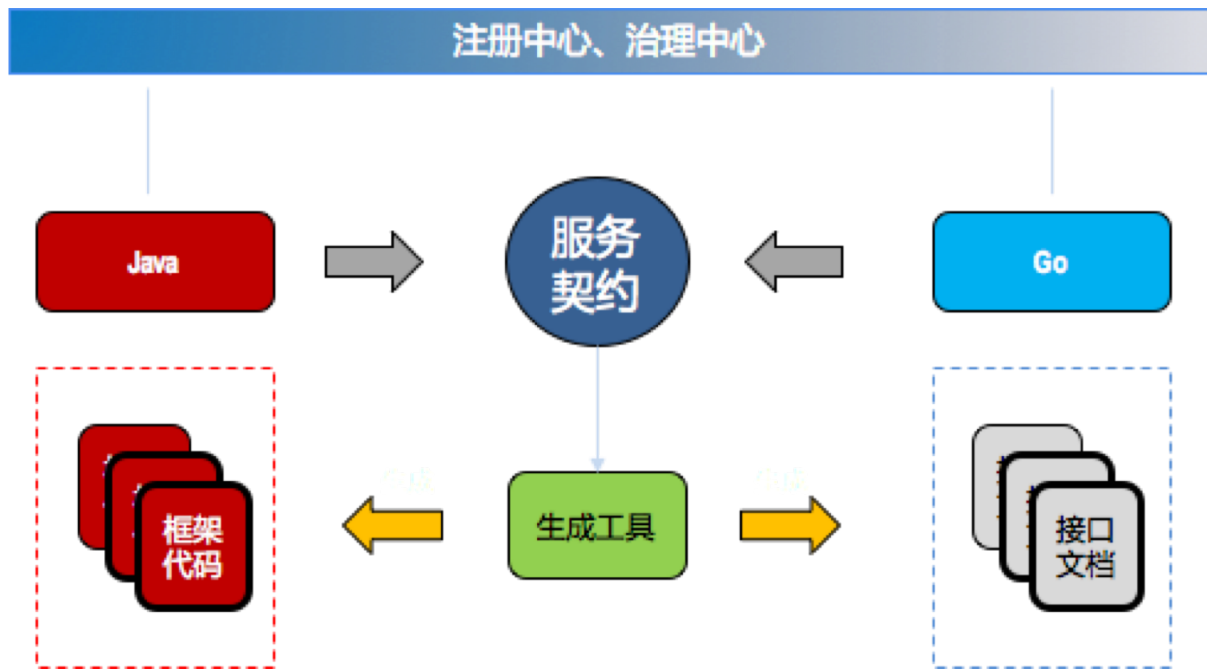https://github.com/apache?q=incubator-servicecomb

ServiceComb Java Chassis Architecture
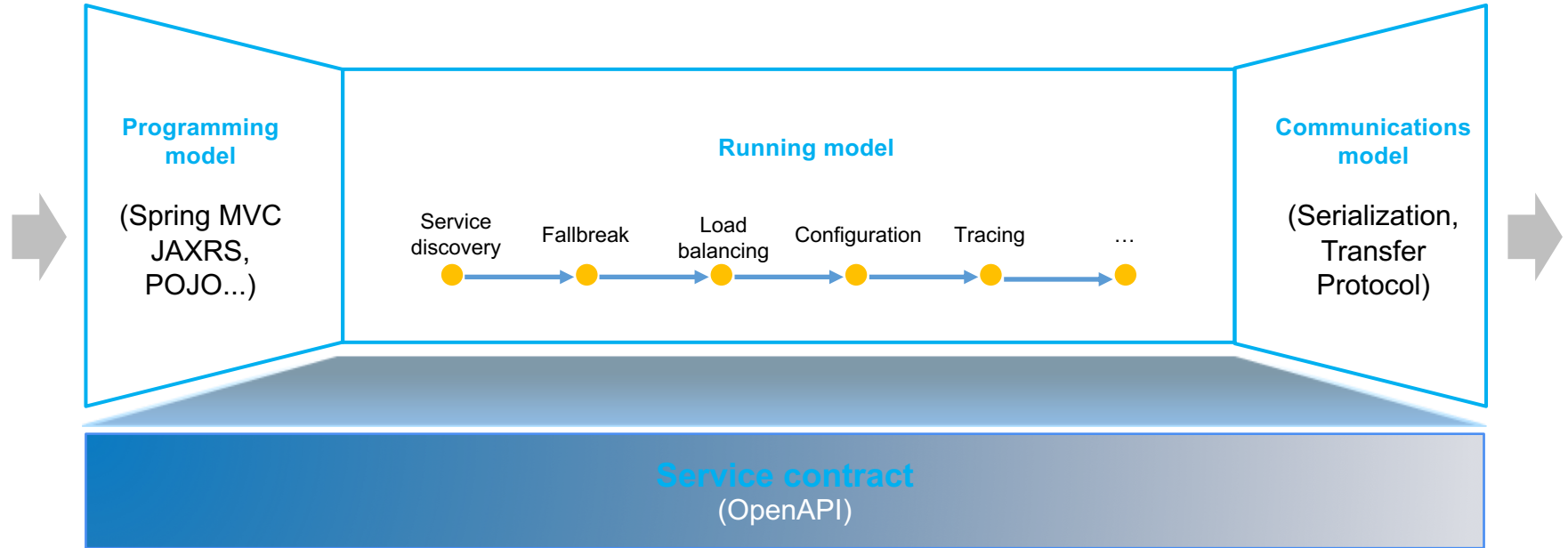
# Development and O&M Based on Service Contracts

Support for Asynchronization

- Provides the asynchronous kernel based on Vertx.

- Supports synchronous invoking mode while delivering high performance.

- Separates communication threads from service processing threads.

- Controls the operation-level thread pool and supports the isolation warehouse.

- Supports multiple asynchronous programming interfaces.
    - CompletableFuture
    - RxJava
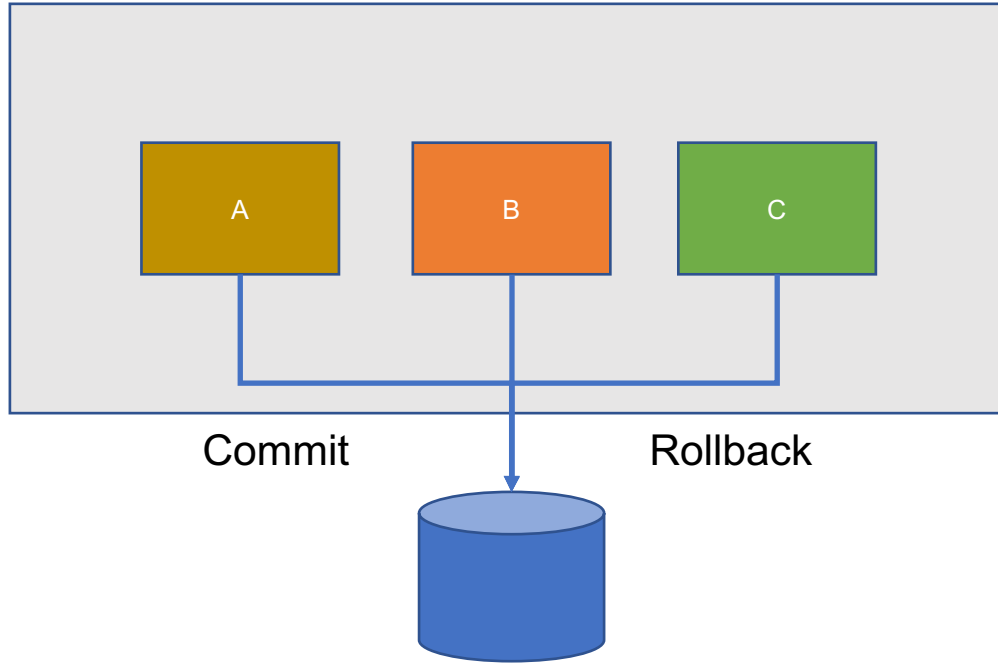   - Reactive Stream
    - ...
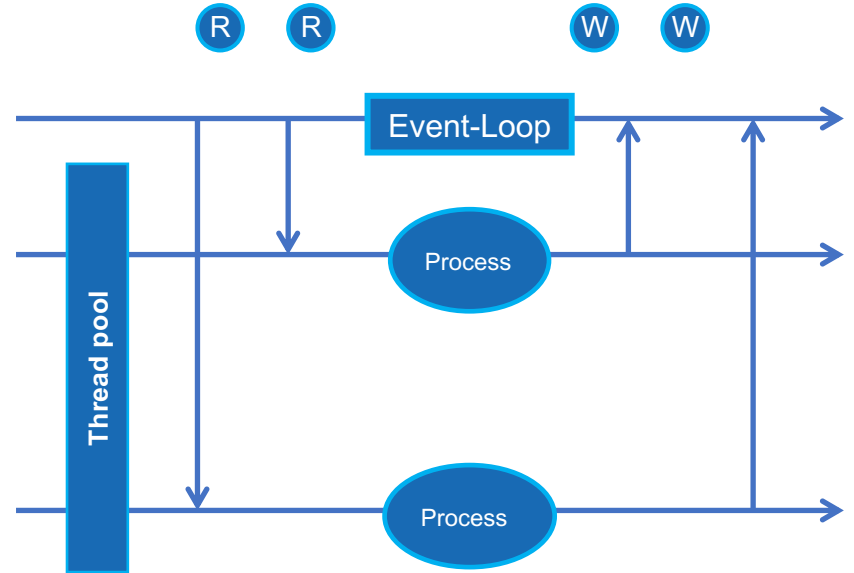
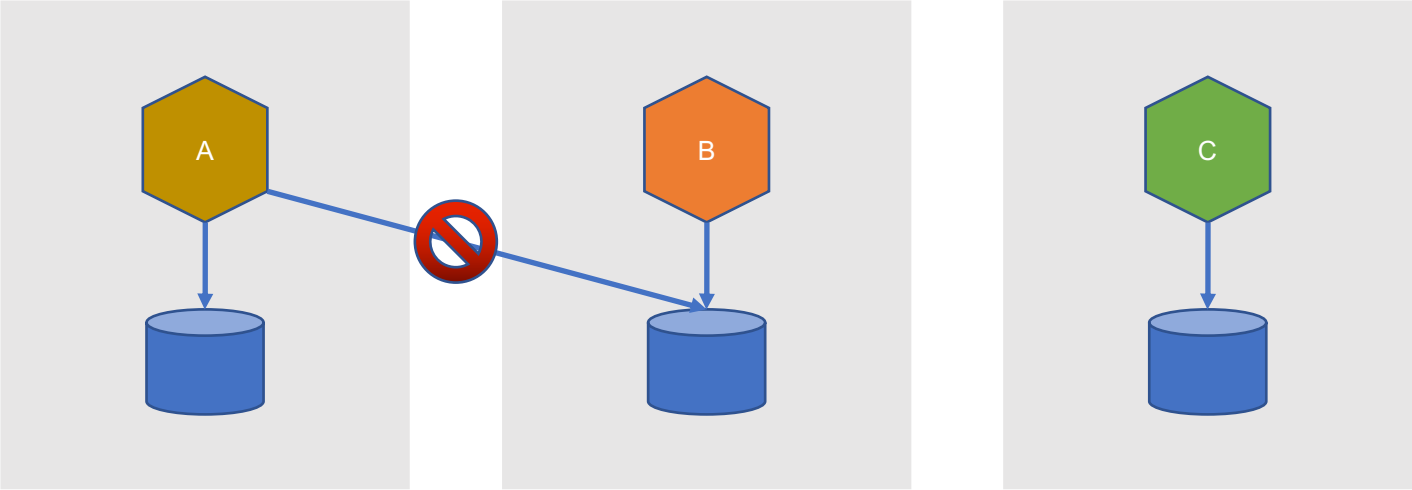# Distributed Service Call Tracing

- Supports standard distributed call tracing (Zipkin V1 and V2).

- Supports the extension of customized call tracing by using @span.

Distributed Transaction Consistency

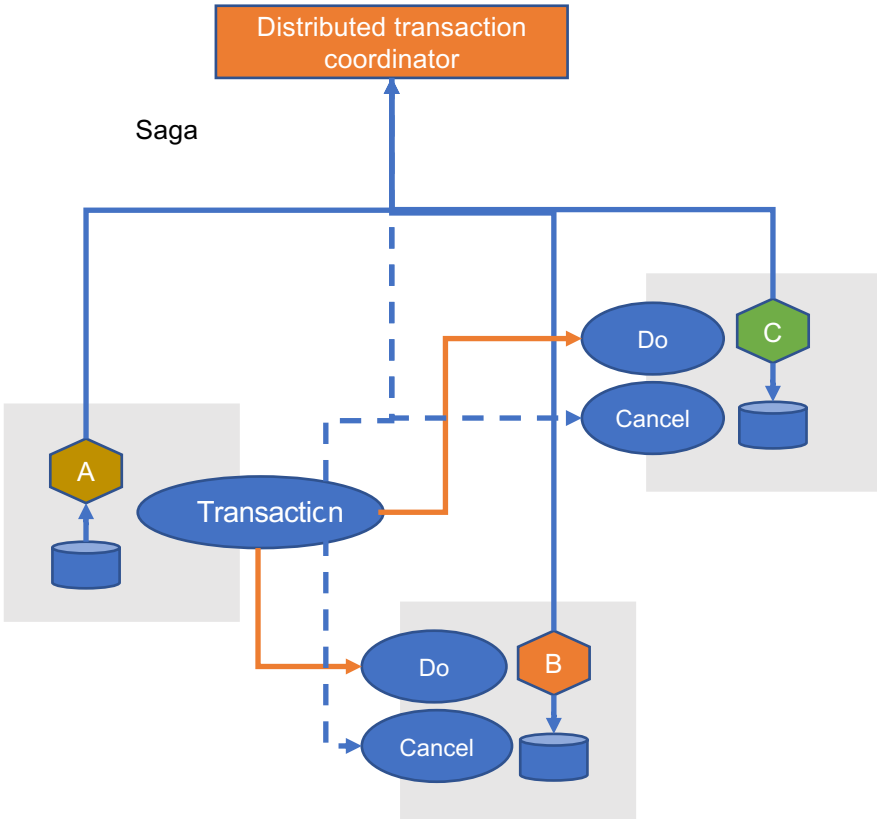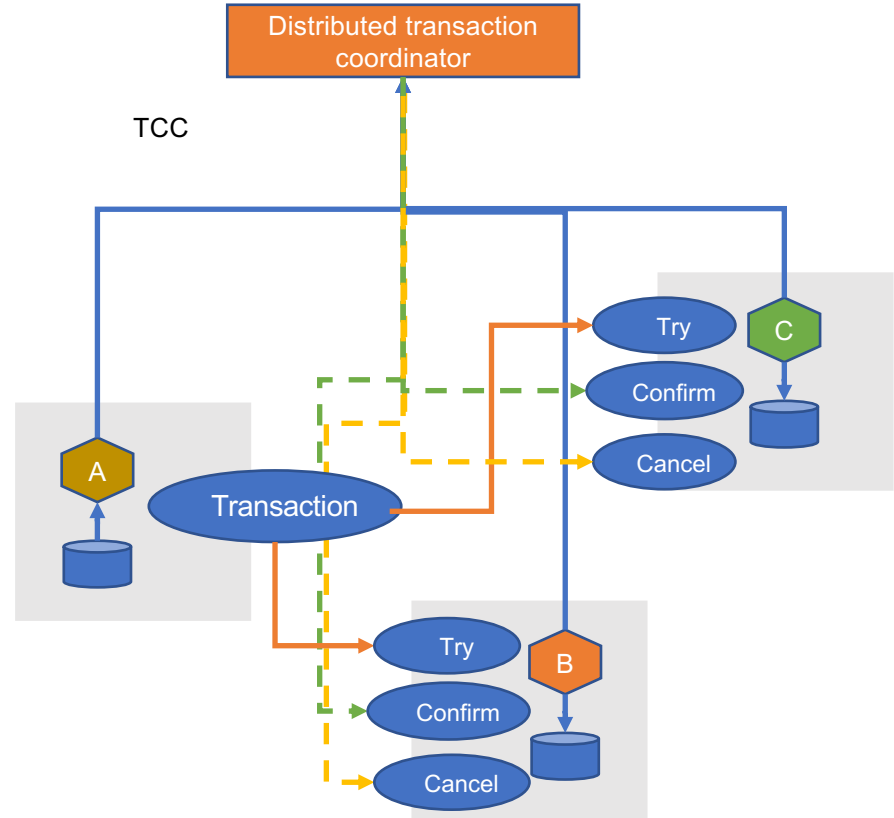Commit   Rollback
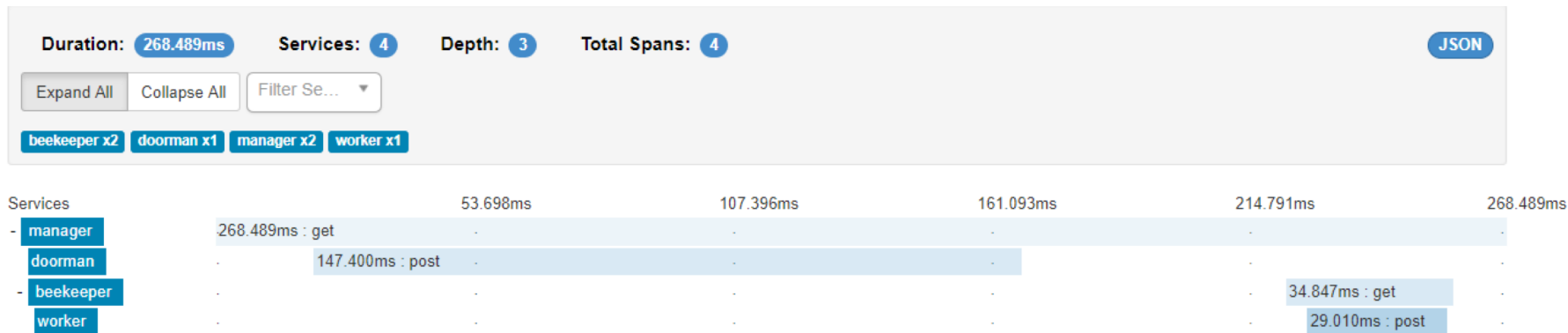
Distributed Transaction Consistency

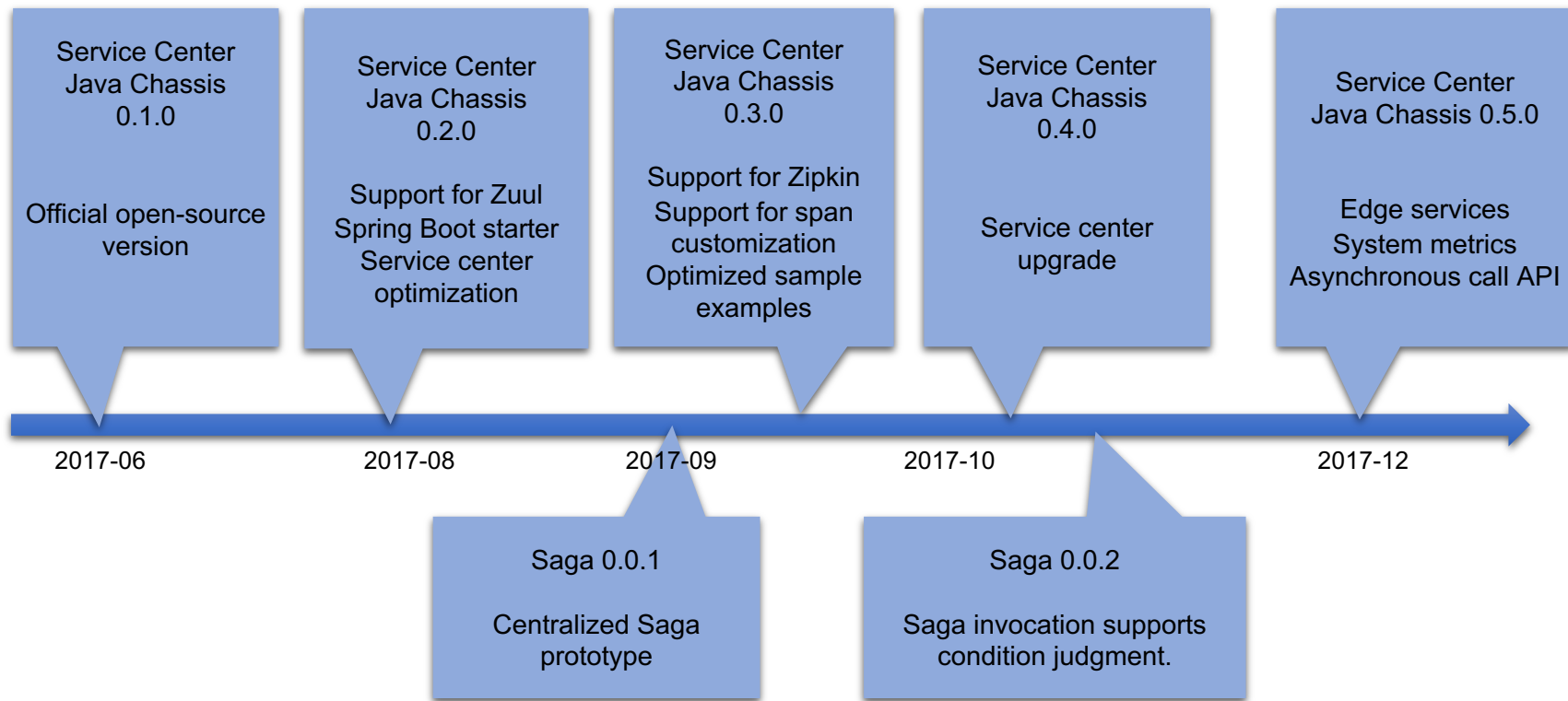# Solution for Eventual Consistency of Distribution Transactions

ServiceComb Development Roadmap

http://www.aleanjourney.com/2016/05/5-steps-for-creating-lean-roadmap.html

ServiceComb (Before Apache Incubating)

Service Center
Java Chassis
0.1.0

Official open-source
version

Service Center
Java Chassis
0.2.0

Support for Zuul
Spring Boot starter
Service center
optimization

Service Center
Java Chassis
0.3.0

Support for Zipkin
Support for span
customization
Optimized sample
examples

Service Center
Java Chassis
0.4.0

Service center
upgrade

Service Center
Java Chassis 0.5.0

Edge services
System metrics
Asynchronous call API

2017-06   2017-08   2017-09   2017-10   2017-12

Saga 0.0.1

Centralized Saga
prototype

Saga 0.0.2

Saga invocation supports
condition judgment.
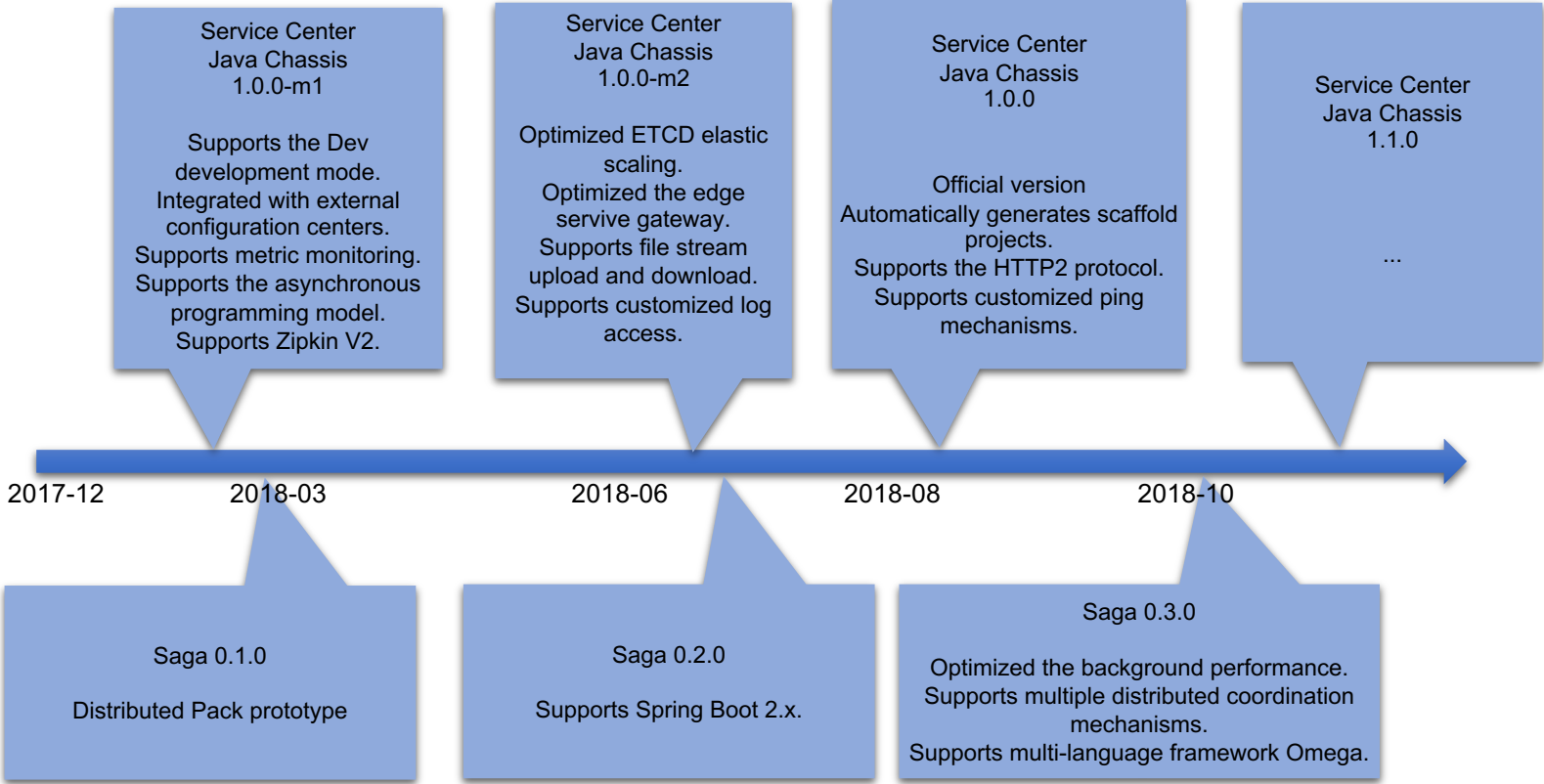
Most developers are Huawei employees; 10 emails per month on Mailing List; 2 external users

ServiceComb (Apache incubating)

Service Center
Java Chassis
1.0.0-m1

Supports the Dev
development mode.
Integrated with external
configuration centers.
Supports metric monitoring.
Supports the asynchronous
programming model.
Supports Zipkin V2.

Service Center
Java Chassis
1.0.0-m2

Optimized ETCD elastic
scaling.
Optimized the edge
servive gateway.
Supports file stream
upload and download.
Supports customized log
access.

Service Center
Java Chassis
1.0.0

Official version
Automatically generates scaffold
projects.
Supports the HTTP2 protocol.
Supports customized ping
mechanisms.

Service Center
Java Chassis
1.1.0

...

2017-12   2018-03   2018-06   2018-08   2018-10

Saga 0.1.0

Distributed Pack prototype

Saga 0.2.0

Supports Spring Boot 2.x.

Saga 0.3.0

Optimized the background performance.
Supports multiple distributed coordination
mechanisms.
Supports multi-language framework Omega.

10+ external long-term contributors, 180 mails per month on Mailing List, and 20 external users

ServiceComb Development Roadmap in the Near Future

Asynchronous programming interfaces

Further extension based on Vertx
AsyncRestTemplate
CompletableFuture
RxJava

Service center

Multi-DC support
Support for the hybrid cloud
architecture
Support for both client self-
registration and platform registration

Service Mesh

Multi-language microservice support
Accessing base services
Monitoring management
interconnection

Ecosystem support

Support for Java 9 and 10
Support for Spring Boot 2.0
Scaffold application
Spring development system
convergence

Microservice management

Open-source configuration center
Interconnection with multiple
monitoring systems
Service governance system
integration

Microservice transaction coordinator

Management console
Server HA
Pack supporting multiple
coordination modes
Synchronous and asynchronous
event support

How to Join the ServiceComb Community

- Online
  - Follow the ServiceComb WeChat assistant and join the WeChat group to communicate with others.
  - Official Website: http://servicecomb.incubator.apache.org/
  - Video Lectures: http://www.itdks.com/member/organizer/261
  - Mailing List: dev@servicecomb.apache.org
  - Feedback: https://issues.apache.org/jira/projects/SCB
  - Gitter Address: https://gitter.im/ServiceCombUsers/Lobby
  - Project Address: https://github.com/apache?q=incubator-servicecomb

- Offline
  - Targeted workshop
  - Irregular offline meetup

Thank you.

把数字世界带入每个人、每个家庭、
每个组织，构建万物互联的智能世界。

Bring digital to every person, home and
organization for a fully connected,
intelligent world.