

Mobile Transformation

CTRIP's Journey

Eric Ye @ ctrip.com

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Ctrip - The Biggest OTA Platform of China



Hotel

Flight

Train

Monetary

Group
Tour

CTM

Travel
Guide

Online Hotel Booking Share

72%+

Countries and Regions Coverage

200+

Hotel Rooms Booking / Day

500K+

Airports Coverage

5000+

Peak Transport Tickets / Day

2Million +

Peak Total Booking / Day

3Million +

Cruise

Bus

Package

Food

Ticket

Car
Rental

Shopping

Coupon

Vacation

Meeting



Online



Offline



Mobile

2011

Problems:

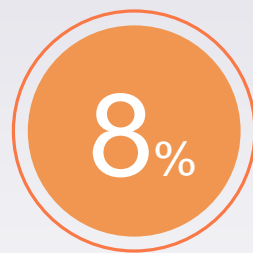
- ❖ Offline: tech and operation
- ❖ Online: peers
- ❖ Mobile: infant
- ❖ Booking tools vs user experience
- ❖ Site scalability



Online



Offline



Mobile

2012

Make Fast Changes:

- Open API
- Architecture 2.0
- Re-design Web UI 2.0
- Drive Traffic (SEO/SEM/...)
- Make product search fast
- Speed up Web Page

45%

Online

30%

Offline

25%

Mobile

2013

Mobilize Resources for App:

- Open API everywhere
- App catch up with web
- Create centralized mobile BU
- Make 1-stop travel App



Encountered Problems ...

- Added 10+ new business lines
- App Lagged behind web functions
- Each BU fight for mobile resources
- App payment sucked
- Dev Infrastructure was at bottleneck

Strategy Shift:

- Decentralize mobile BU ...



2014



Online



Offline



Mobile

- Train 92%
- Hotel 45%



2014

Multi-front Challenges solved:

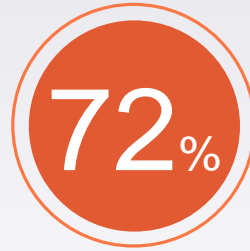
- Re-organization
- PD must learn App fast
- Decouple everything (details later)
- Not to miss a single App release



Online



Offline



Mobile

 A large blue circle containing the year "2015".

2015

From OTA to MTA
(Mobile Travel Agency)



One App for Mainstream OS/Devices

iPhone

iPad

Android Phone

Android Tablet

Windows Phone

Reduced

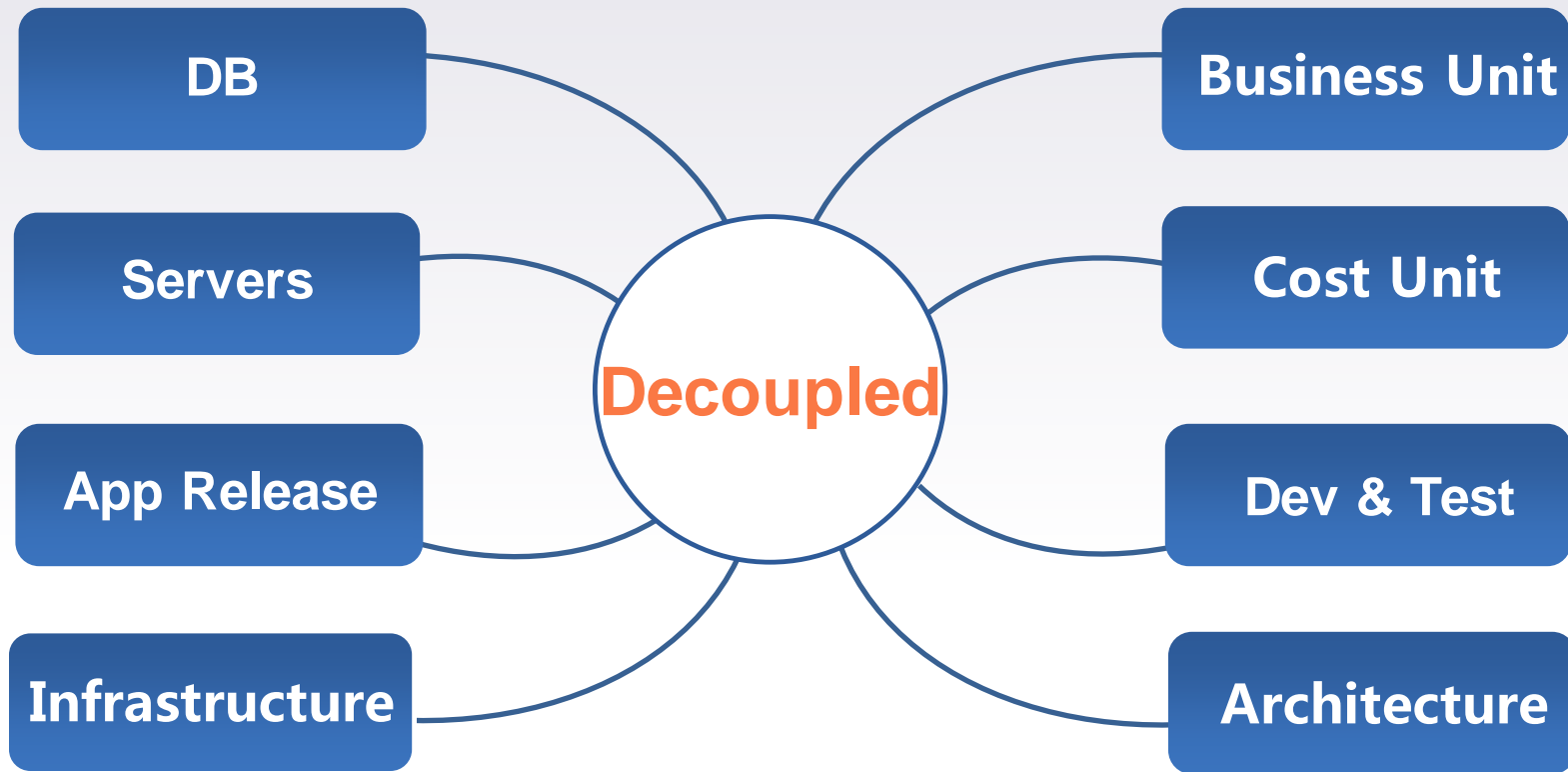
iOS



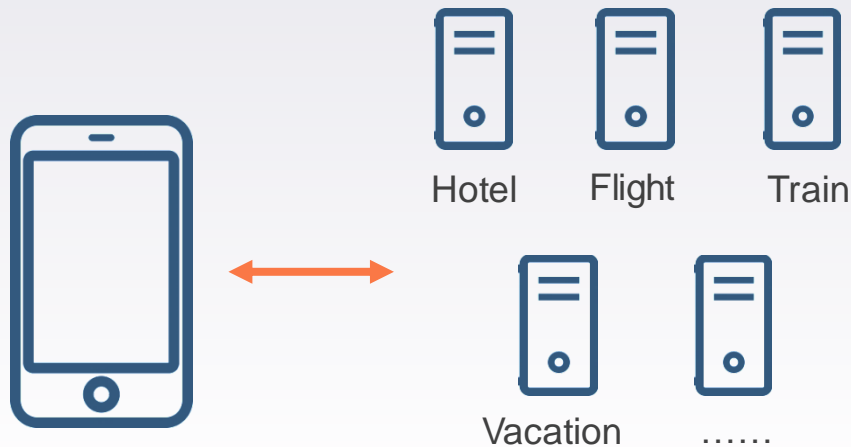
Before

Now

Everything Decoupled



App Architecture: Monolithic

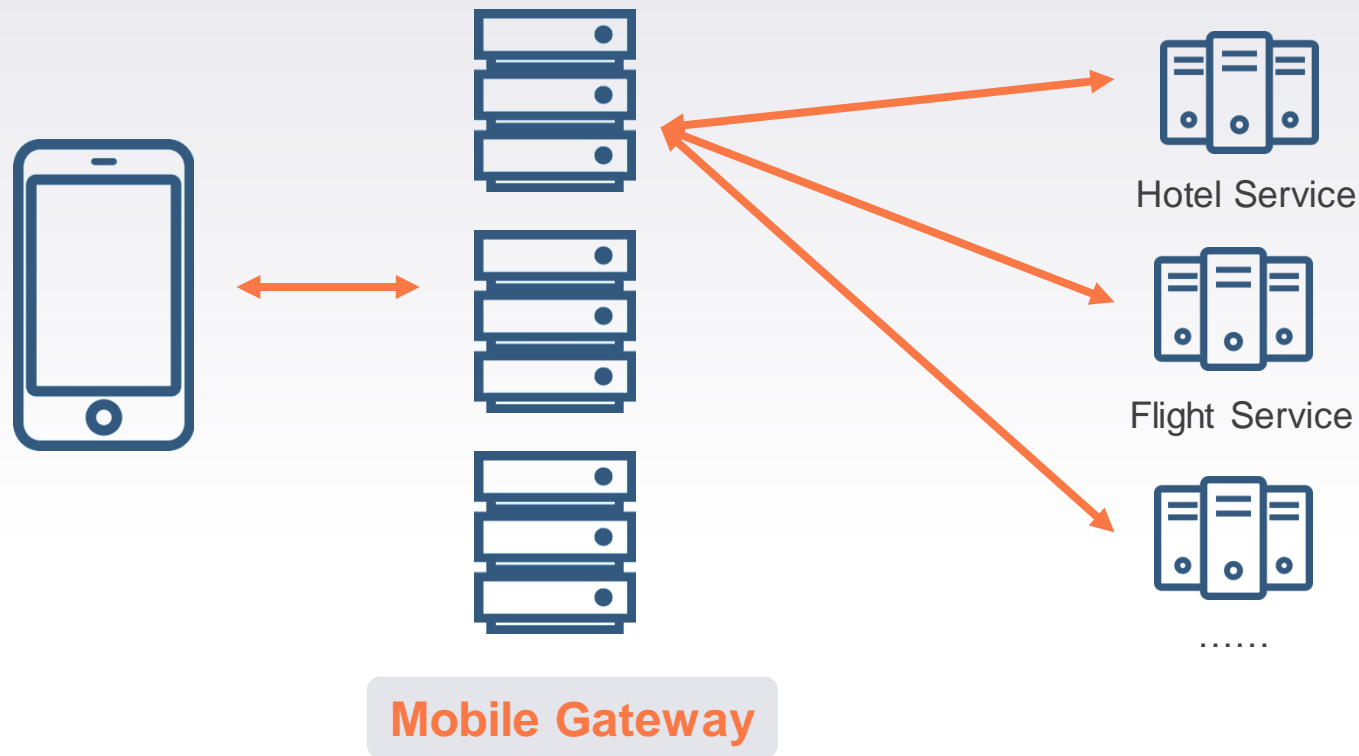


Monolithic Services

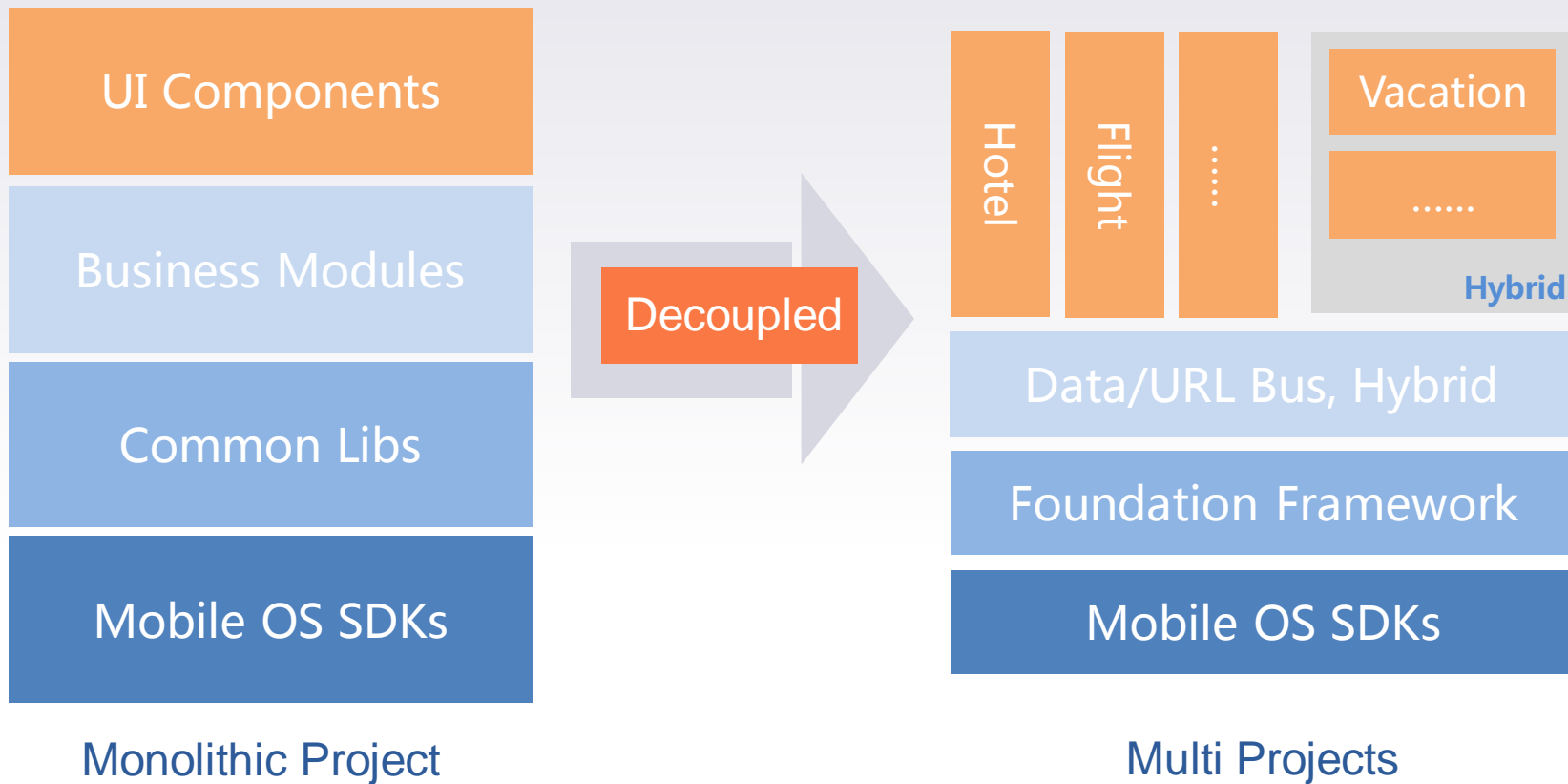
Problems seen in 2013:

- Totally coupled (monolithic)
- SPOF
- Lacked of LB routing
- No App monitoring
- Less secure
- ...

App Architecture: Microservices



Mobile APP Code: Modularized



Benefits of App Being Decoupled

01 Faster parallel development

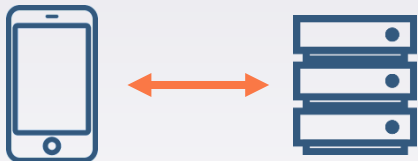
02 Automate App integration testing

03 Faster App booting

04 Enable hot fixes

05 Increase function resiliency

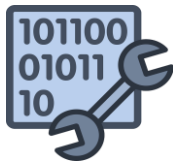
App Networking Performs Fast and Reliable



- ❑ Use TCP and HTTP for App
- ❑ Fine-tune TCP for 2G/3G/4G/WIFI
- ❑ Tune retry logic at phase of connection/write/read



- ❑ Use IP list to avoid DNS failure and DNS hijacking
- ❑ Elect IP by its performance



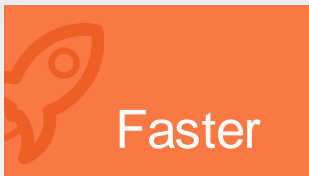
- ❑ Reduce payload by protobuf & gzip

Mobile Networking Reliability

Achieved End-to-End Service Success Rate of **99.7%**



Make App Perform Better



- ❑ App booting: load initial data & modules (only needed)
- ❑ Data prefetching: initiate requests before page transition
- ❑ Picture prefetching, compression and multi-level caching



- ❑ Reduce App size with SVG
- ❑ Prune ghost modules



- ❑ App hybrid design - Native & H5 coexist

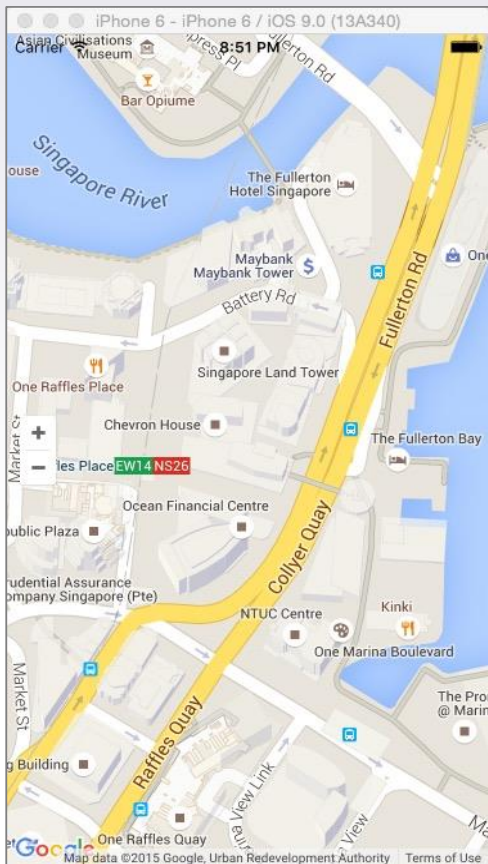
Solutions to Mobile Maps Flaws



Flaws:

- Less accuracy on iOS Map
- Native Android LBS/Map is blocked

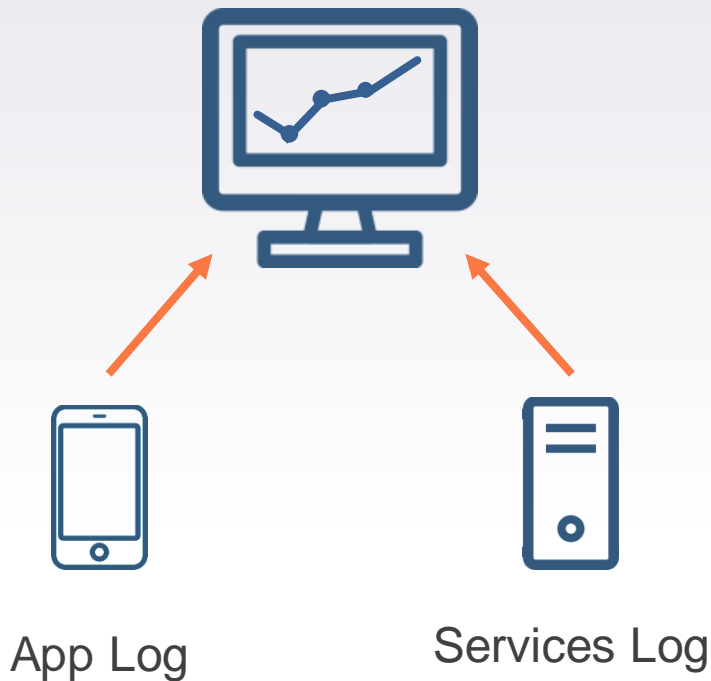
Enhance Mobile LBS/Maps Services



	Android	iOS
China	AMap Google Map/LBS	iOS Map AMap
Oversea	Google Map	iOS Map

Make App developers easy

- Unify LBS for iOS & Android
- Unify city locator
- Unify map services for Google/iOS/AMap



End-to-End Monitoring:

- Service reliability
- Service time
- Networking metrics
- Crashing collection
- Consumption: battery, data
- Boot time
- Page time

More App Technologies ...

App Front

- Adaptive design
- Mobile payment
- 7z-compression
- Watch
- TV
-

App Backend

- Voice search
- Push/Notification
- Proxy service for map
- Anti bot

App for Apple Watch



High-level Transformation Best Practices



1. CTO to be best technological architect
2. Decouple App between domains as much as possible
3. Culture shift - Mobile first, everywhere and everybody
4. Let each PD team builds its winning App
5. App testing CI farm enables fast and quality App releases
6. Visualize and monitor App performance and quality

THANKS

