



Technological Innovation at Alibaba

Alan Qi

Vice President of Ant Financial Service Group

- 11-11 & Alibaba

- Technologies at Alibaba

- Conclusions



What is Singles' day (11-11)?

Black Friday (2014)

1 Country 1 Day

2.3 Billion

Dollar Online GMV

9.1 Billion

Dollar Offline GMV

249M

Online & Offline Customer

27.9%

On Mobile Client

11.11 Shopping Festival (2015)

1 Company 1 Day

14.3 Billion

Dollar Online GMV

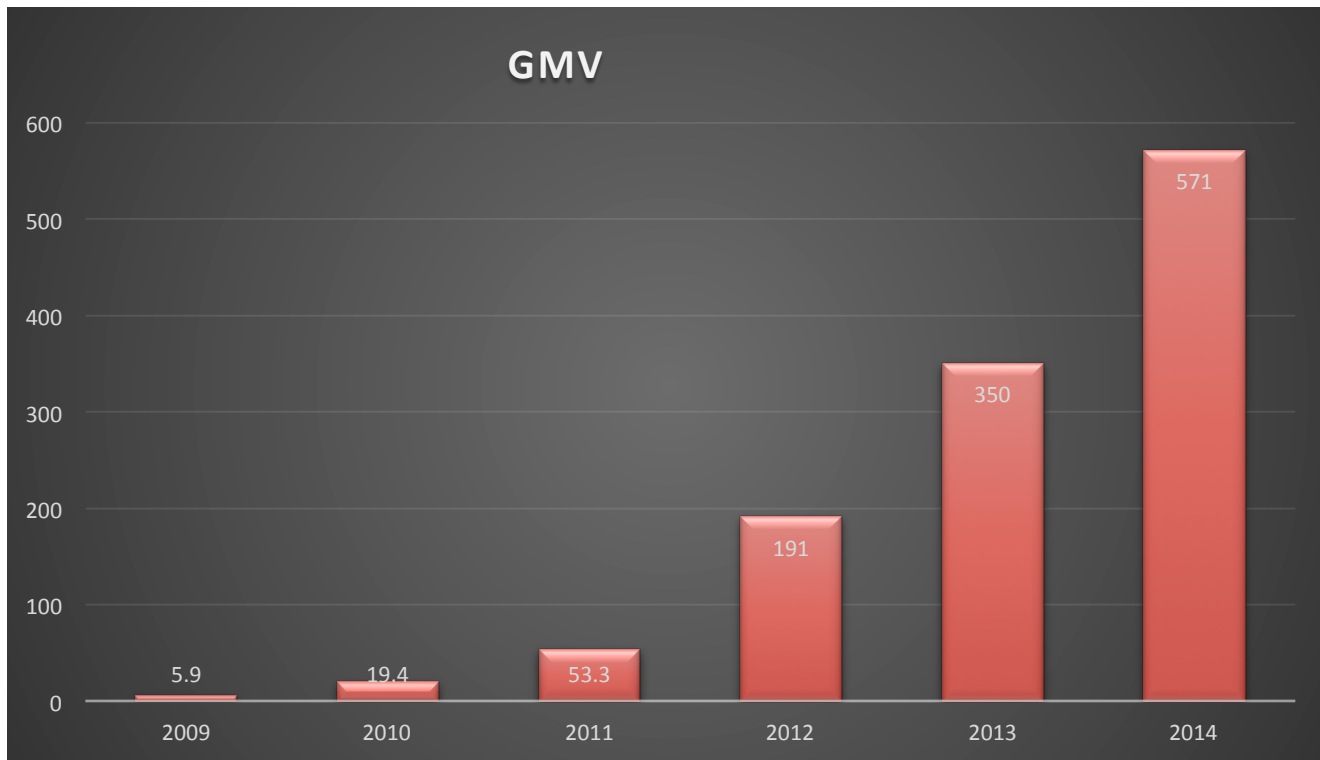
>249M

Online Customer

68%

On Mobile Client

"11-11" sales revenue explodes



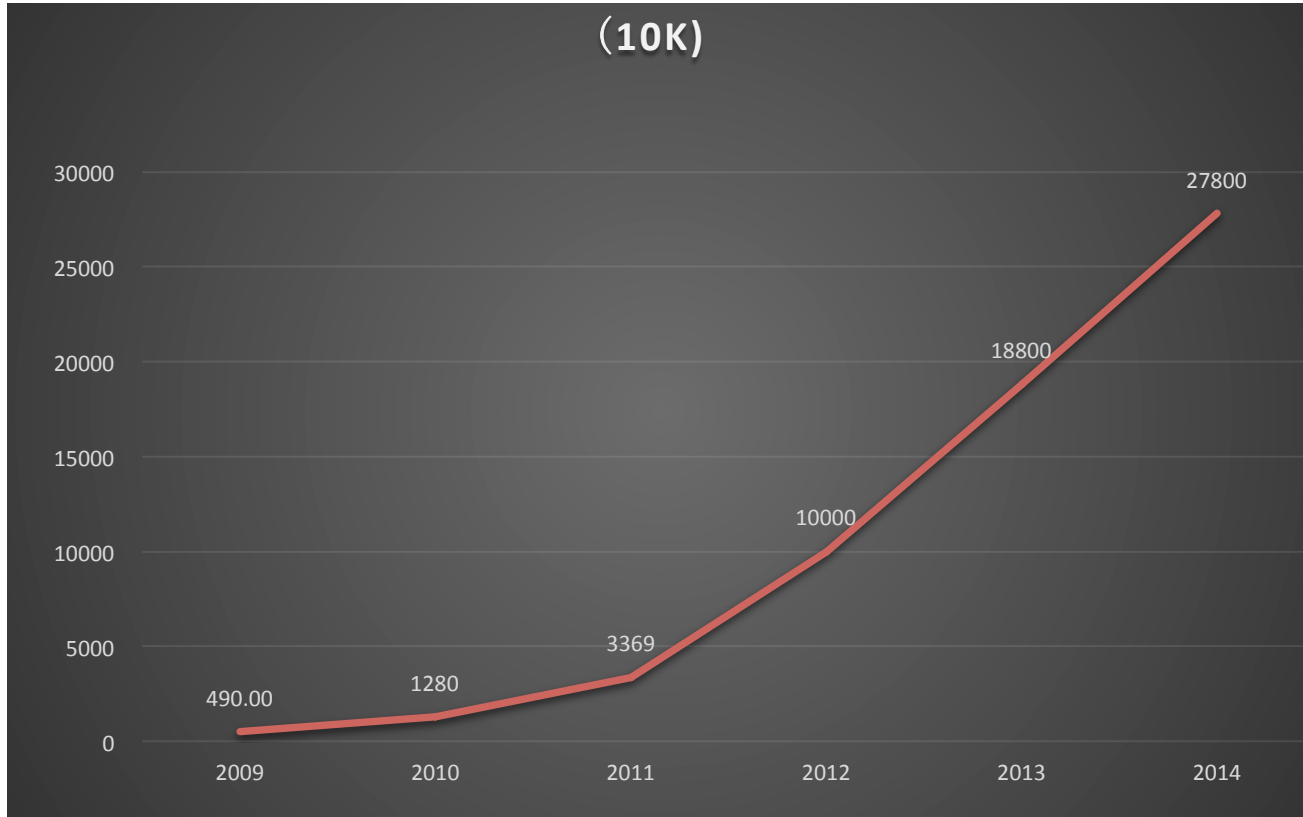
In 7 years, sales revenue increases

154 times

2015/11/11: 91.2 Billion Yuan (14.3 Billion USD)

Unit: 0.1 Billion Yuan

"11-11" number of orders explodes



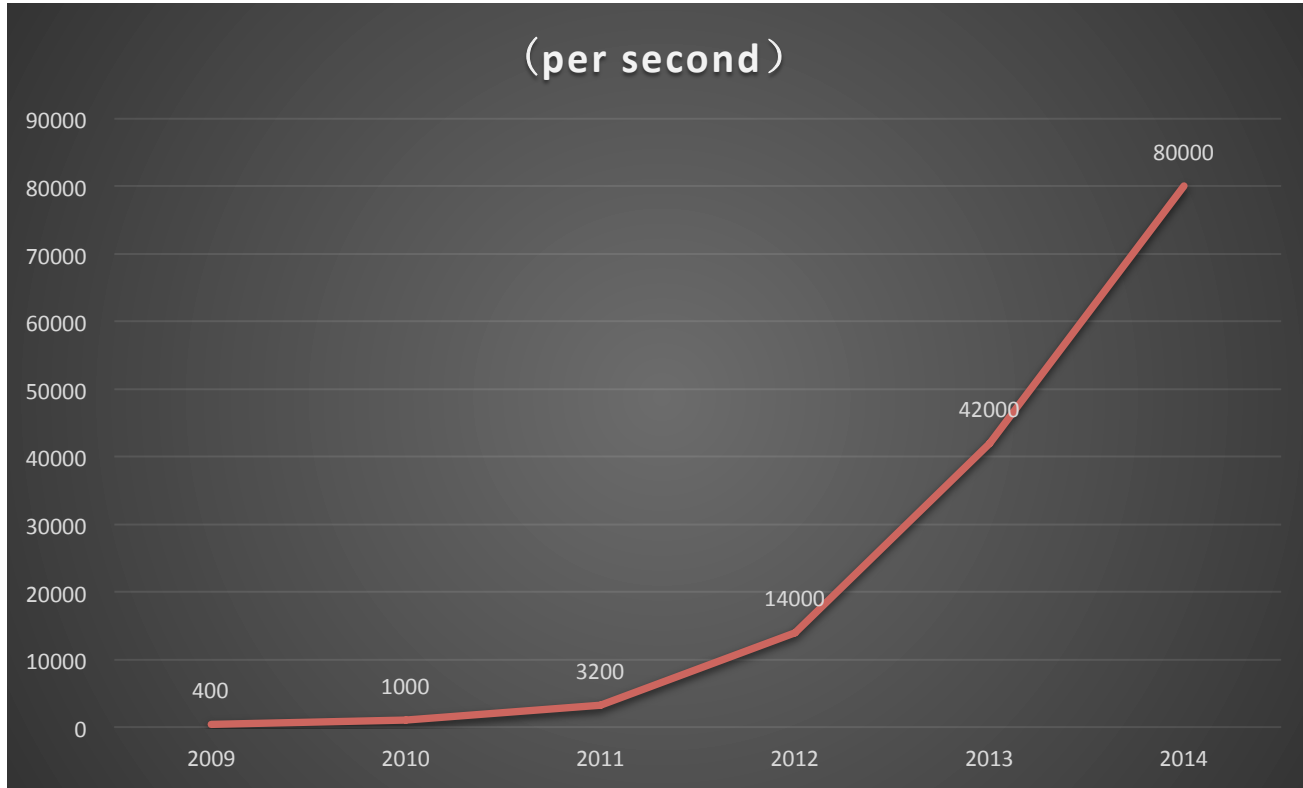
In 6 years, number of orders increases

57 times

2014/11/11
Total orders: 278 Millions



"11-11" order peak value explodes



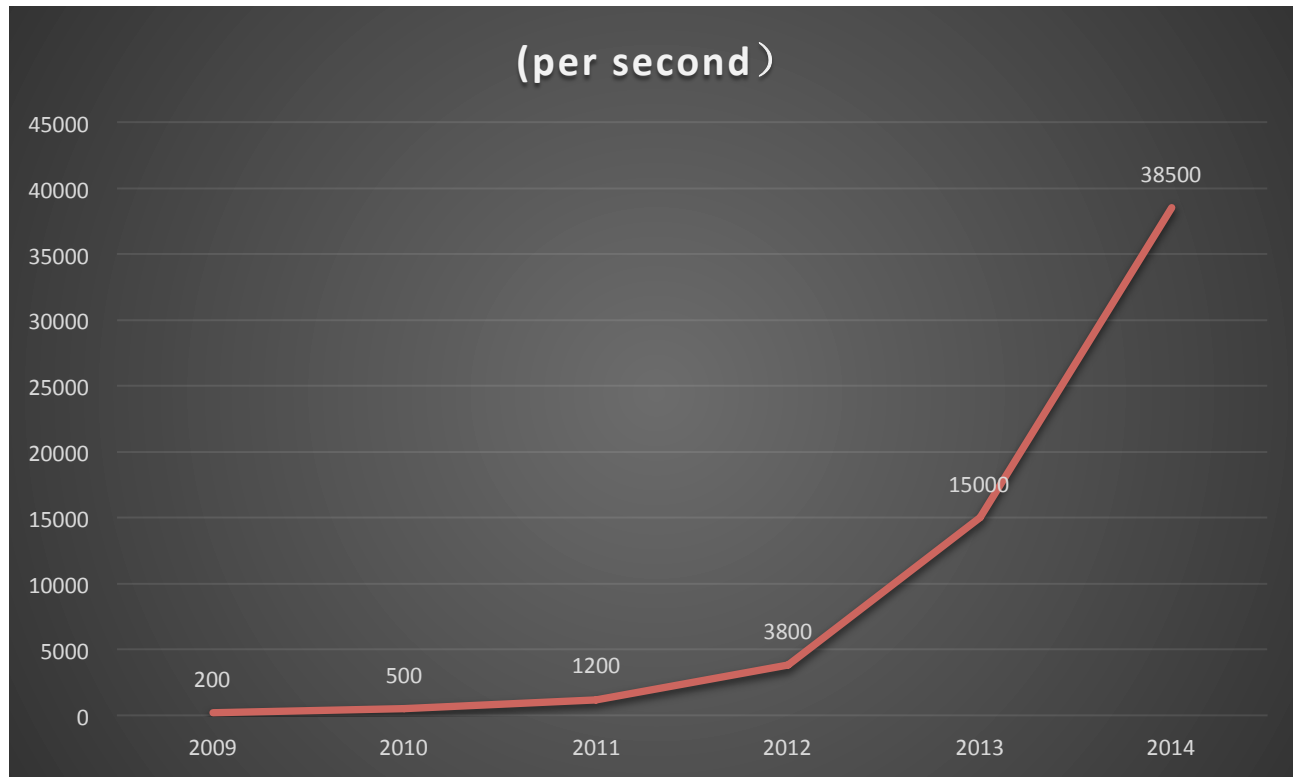
In 6 years, order peak values increases

200 times

2014/11/11
Order peak value: 80K per sec.



"11-11" transaction peak value explodes



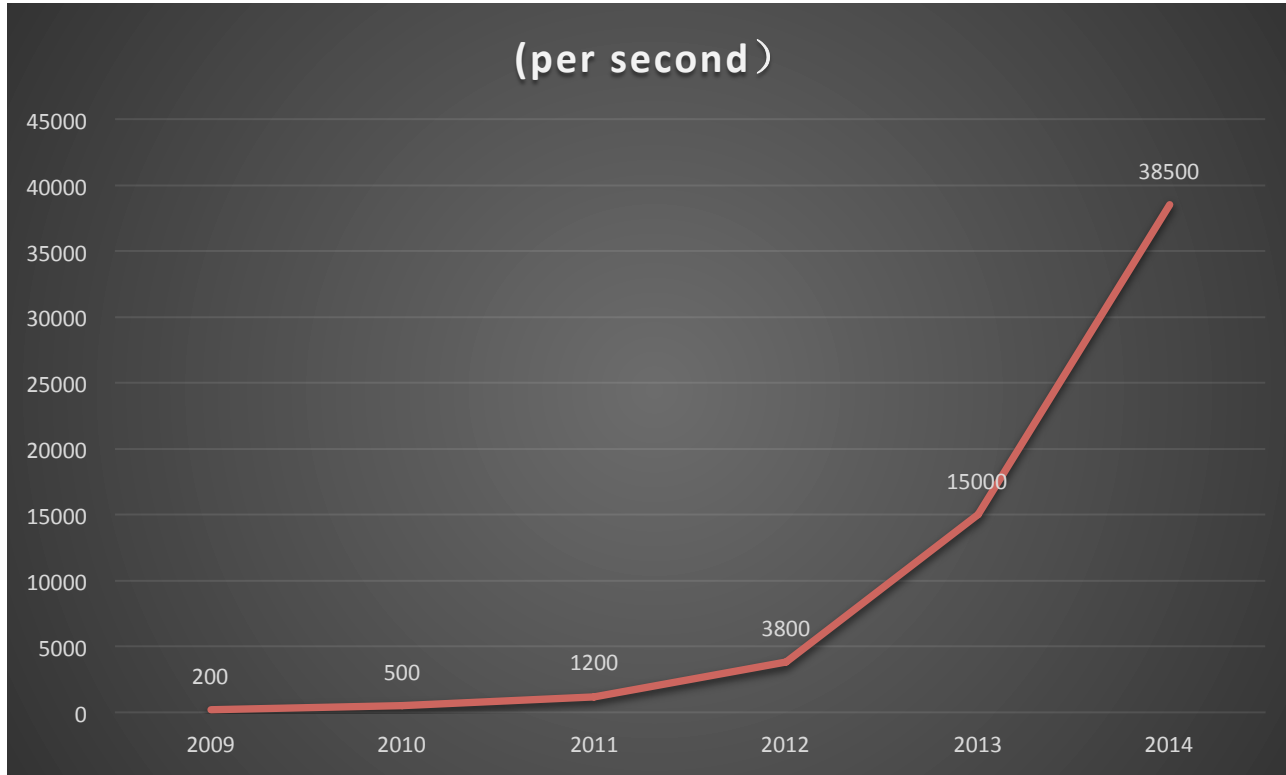
In 6 years, transaction peak values increases

193 times

2014/11/11
Alipay: 38.5K per sec.



"11-11" transaction peak value explodes



In 7 years, transaction peak values increases

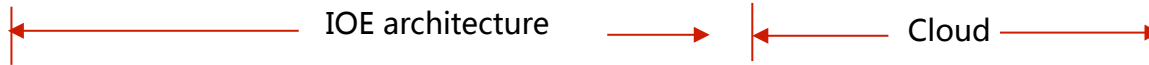
430 times

2015/11/11
Alipay: 85.9K per sec.

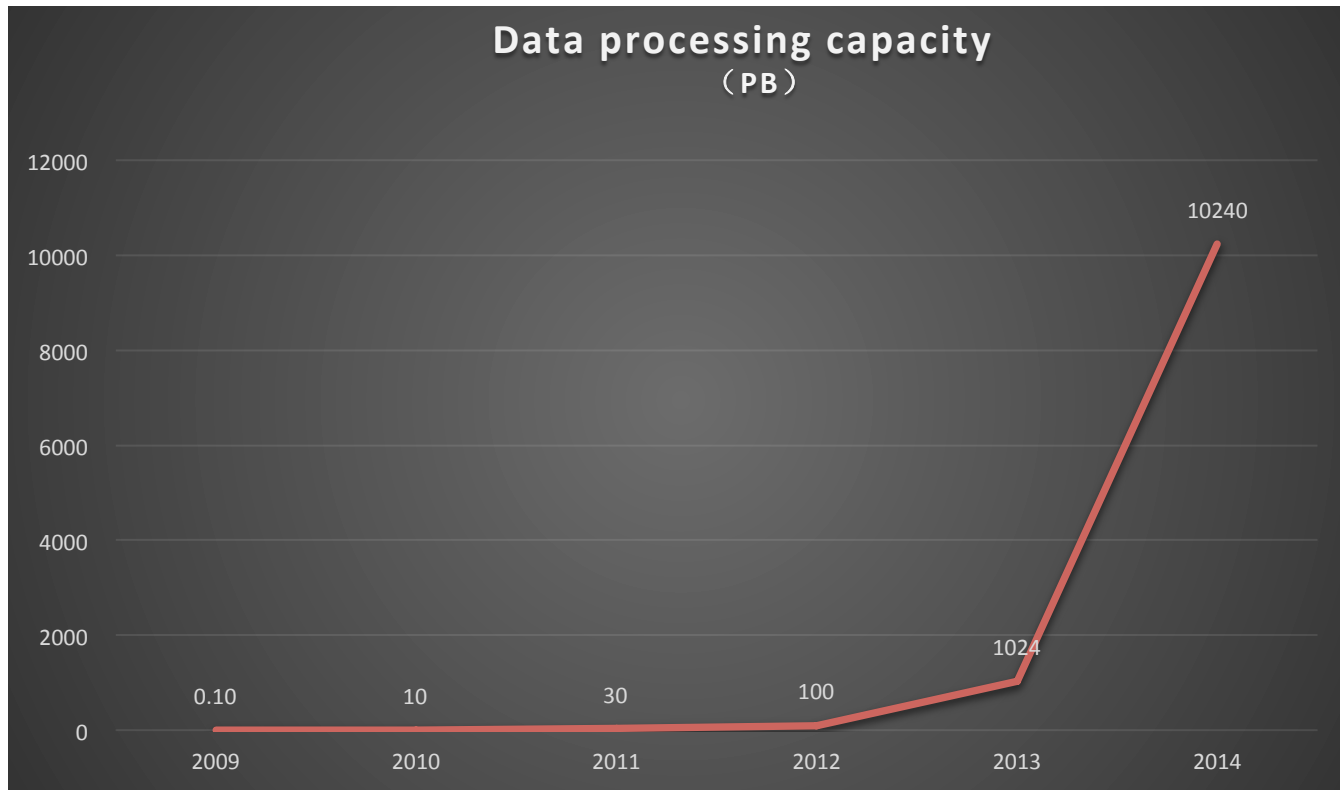
Visa: 56K per sec. in lab
14K per sec in real

Master: 40K per sec. in lab

Alipay: Strongest processing power among all payment systems



Capacity of processing financial big data explodes



In 6 years, data processing capacity increases

**100K
times**

2014/11/11 :
Total processed data :
100PB

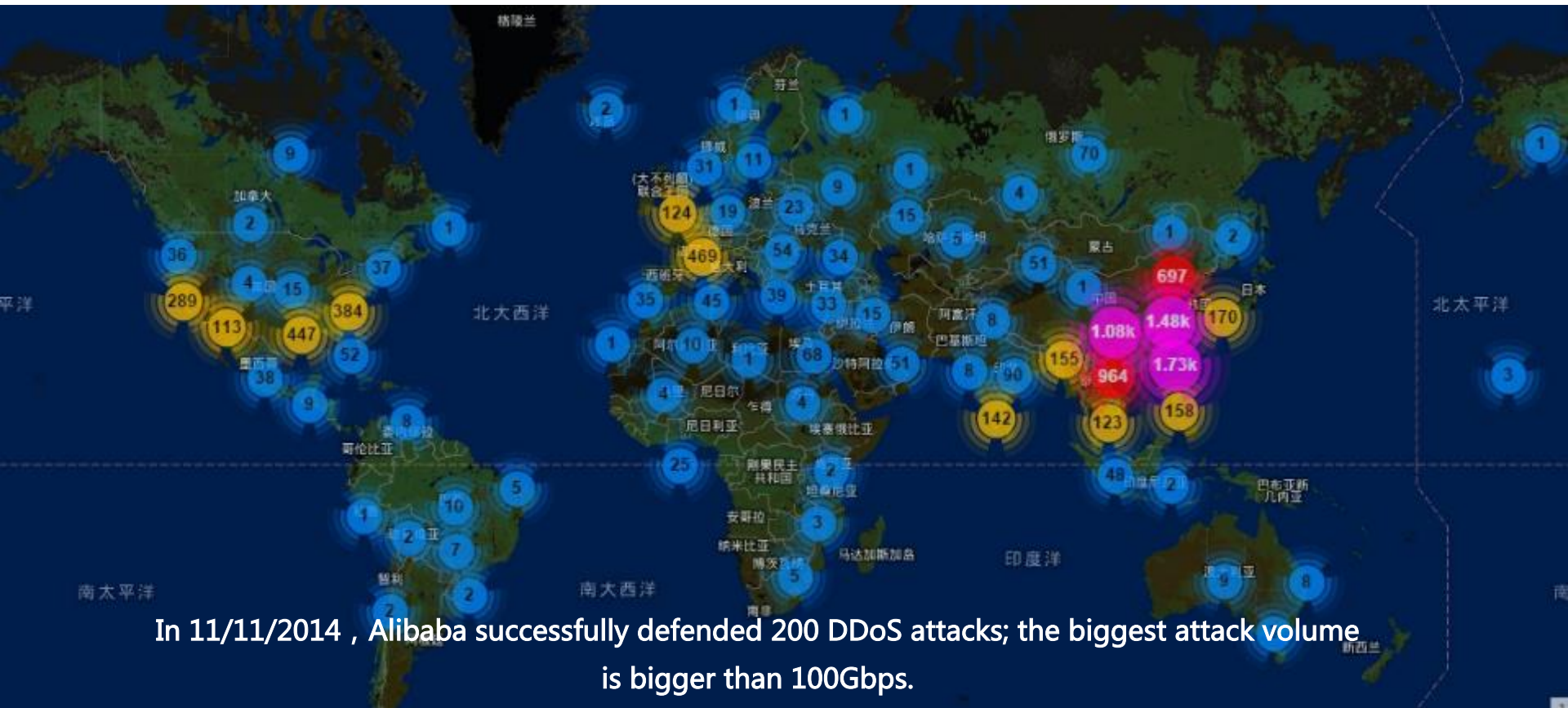
Oracle RAC
data

Single BU
data

Hadoop
Alibaba
Group

ODPS
Data from
Ecosystems

“11-11” needs information security



In 11/11/2014 , Alibaba successfully defended 200 DDoS attacks; the biggest attack volume is bigger than 100Gbps.



The company behind 11-11?

Alibaba History



Alibaba founded in Jack Ma's apartment in Hangzhou

1999

Company breaks even

2002



RMB1M profit daily; Alipay is launched

2004



Alibaba.com lists in HK

2007



Alibaba Cloud Computing is founded

2009

Taobao is re-organized into Taobao Marketplace, Tmall.com and eTao

2011



CAINIAO 菜鸟

Alibaba Group is reorganized into 25 business units; announces a plan to set up Small and Micro Financial Services Group; leads the formation of Cainiao

2013

Alibaba announced "Hangzhou +Beijing" dual-center strategy

2015

2001

Alibaba.com surpasses 1M registered users

2003

RMB1M revenue daily; Taobao is founded



2005

RMB1M tax paid daily; Acquired China Yahoo!



2008

Tmall.com is introduced



2010

AliExpress is launched; Juhuasuan and eTao are introduced



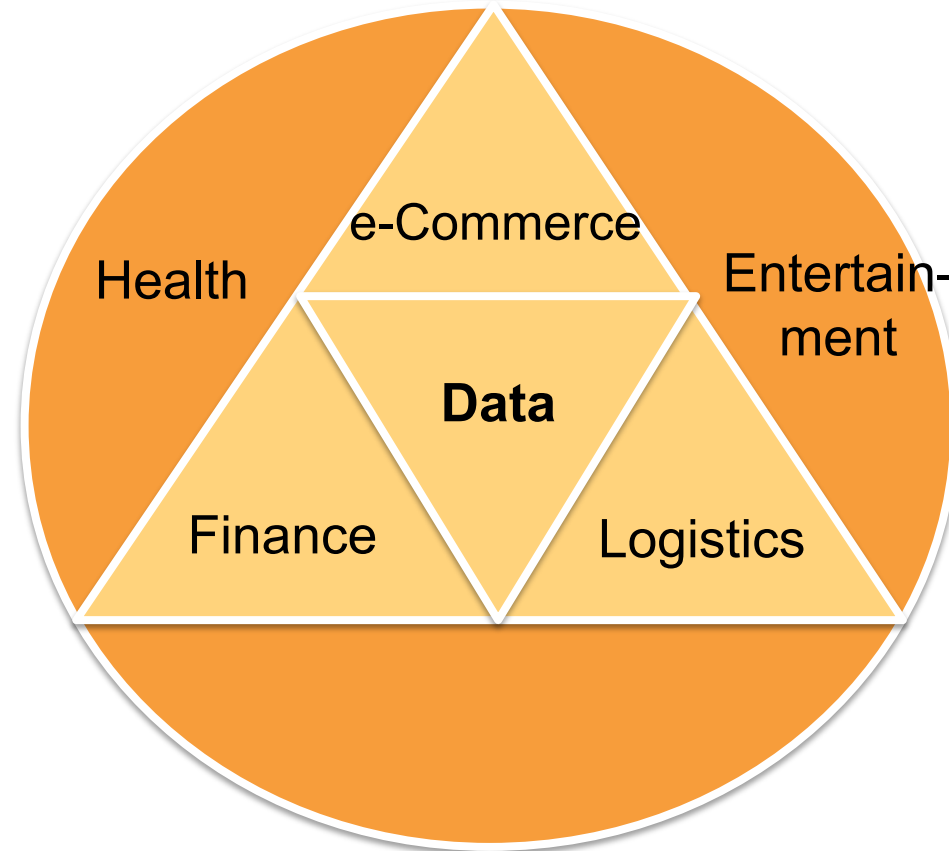
2012

Alibaba Group establishes the Alibaba Foundation with a sizeable fund dedicated to social causes

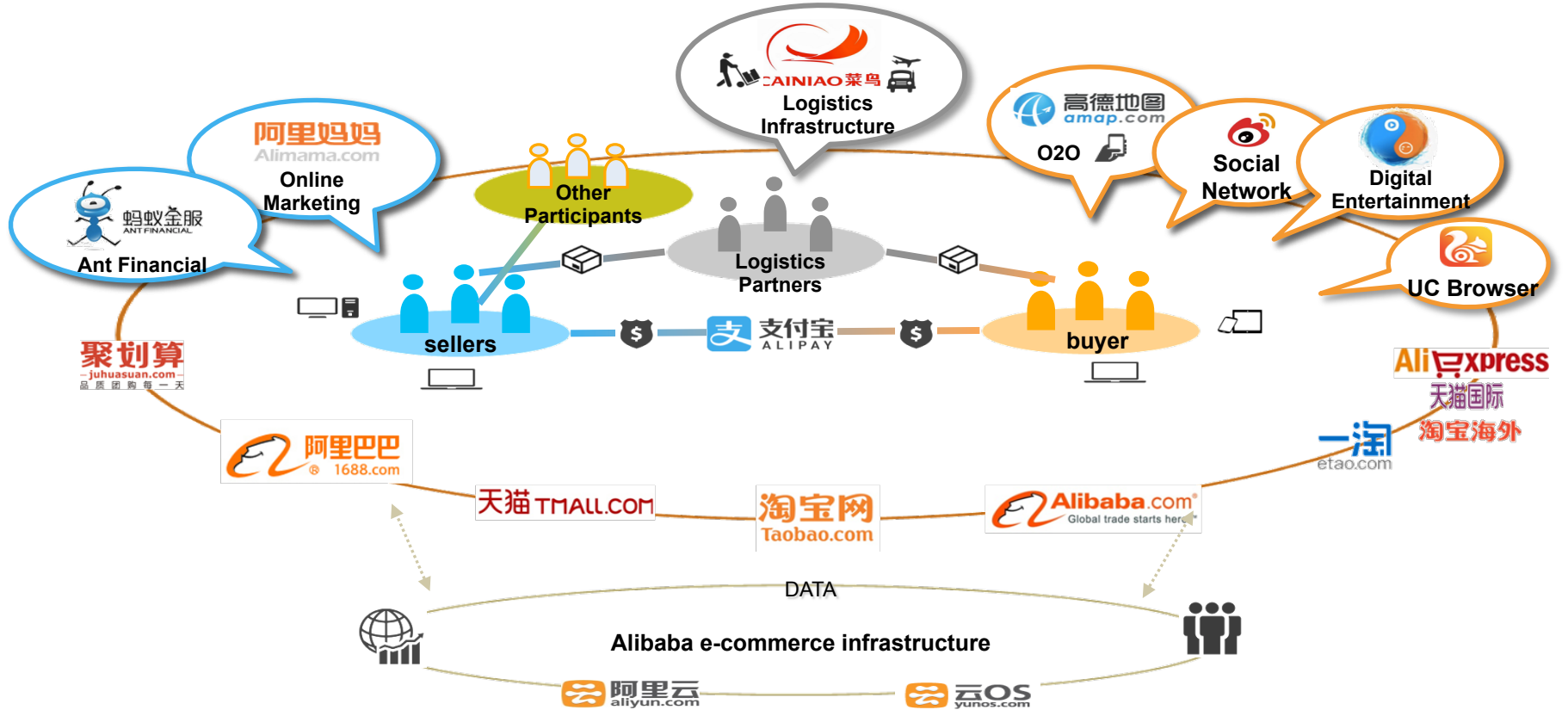


2014

September 19th: Alibaba Group's IPO (Nasdaq: BABA)



Alibaba Ecosystem



Technologies at Alibaba

Key Technologies

Deep user profiling & interest mining to better connect advertisers to their target audience

Large-scale real-time “search by image” technology that powers r camera-based product search

Dynamic restoration & deployment ability of mobile clients

Super-large scale learning from data with billions of attributes and billions of samples



9 large data centers.
Active-active data centers across multiple cities technology

Break 4 world records on Sort Benchmark 2015.
3 time faster than Apache Spark

A secure e-commerce ecosystem for online transactions, data exchanges, cloud computing and mobile interactions.

Ten billion level RPC and message processing capability

存

High hardware cost

IOE (IBM servers, Oracle databases and EMC storage): expensive for scalability. **In a few years, the hardware cost could have bankrupted the whole company!**

通

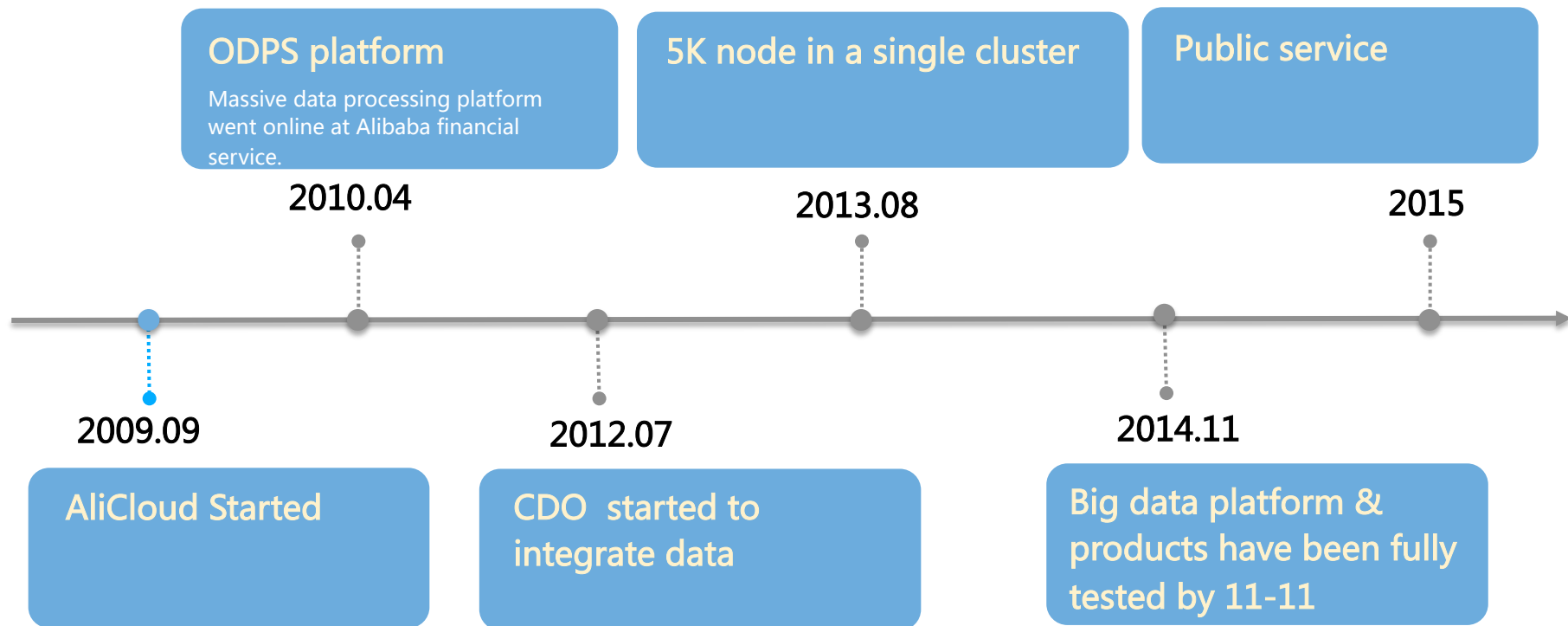
Data islands

Data from different business units are located in different clusters. Extremely hard to share data with each other!

用

No common data standard for usage

Due to isolated storage, data are moved between clusters with repeated storage and computations.





Dozens of business units
Hundreds of PB data
Thousands of engineers

Cloud Computing & Infrastructure

08/27/2010

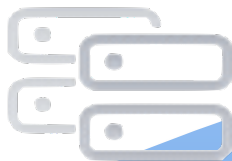
Apsaras became the platform of four applications: Search, Mail, Image Storage, AliFinance



09/10/2009

Aliyun.com Inc established

飞天



08/15/2013

5000-node Asparas cluster went into production



07/28/2011

Aliyun.com went online, releasing 1st cloud service: ECS

5K

07/2014

Launched ODPS, which is capable of processing 100 petabytes of data in six hours.

10/15/2015

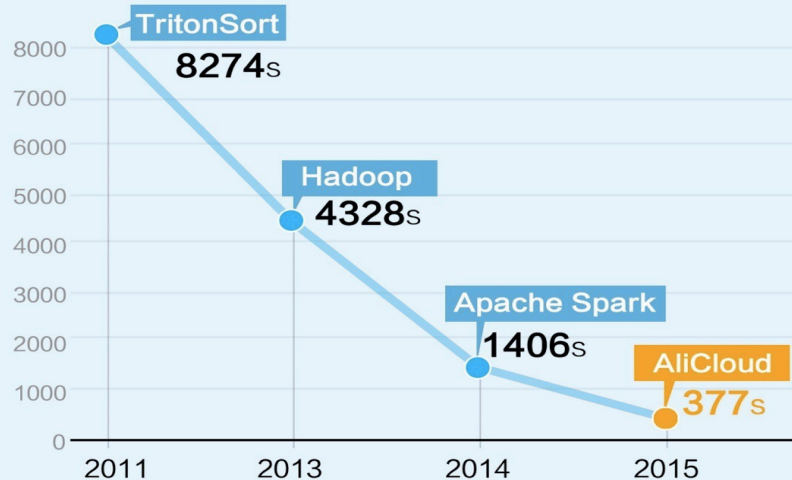
Achieved ITU Telecom World Entrepreneurship Award for excellence in providing and promoting innovative ICT solutions with social impact



- Break **4 world records** on Sort Benchmark 2015
- Sort 100 TB of data in 377 seconds, **3 times faster** than the record set by Apache Spark in 2014

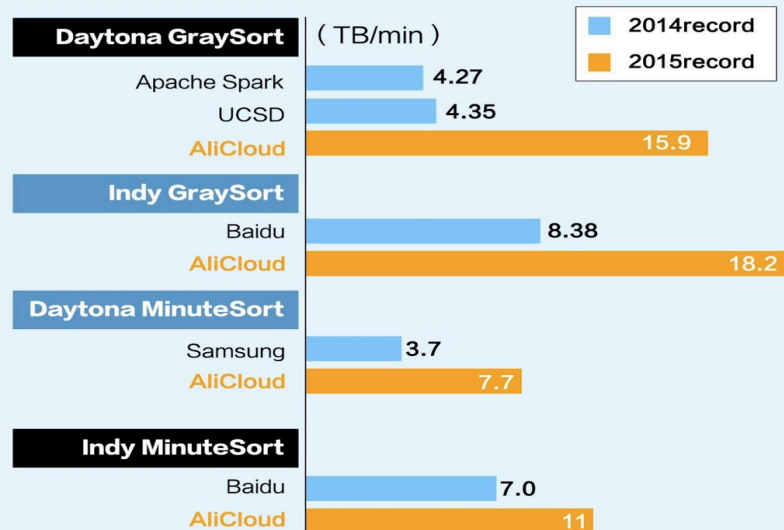
Top Results

(time taken to process 100 terrabytes of data)

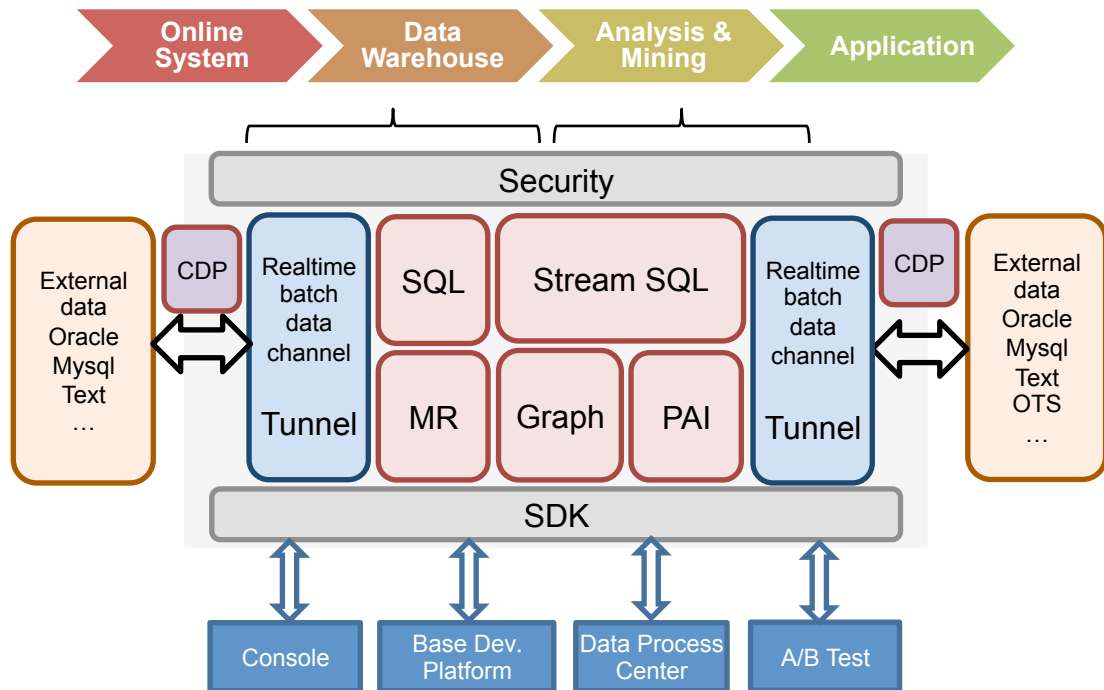


Source: <http://sortbenchmark.org/>

Sort Benchmark's world records



Capable of processing **100 petabytes** of data in **6** hours.



Distributed



Safety



Easy to Use



Authorization and Access





中国铁路客户服务中心

www.12306.cn是中国铁路客户服务中心唯一网站，截至目前，没有授权其他网站。

2013年3月17日 星期日

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站车风采



动车组席位

更多>>>

最新动态

为保障您顺畅购票，请下载安装**根证书**。

- 关于银行系统升级暂停售票电子支付业务的通知 (2013-03-15)
- 关于调整部分车站互联网、电话订票起售时间的公告 (2013-01-24)
- 铁路旅客服务质量网上调查问卷 (2013-01-16)
- 铁路旅客服务质量网上调查问卷第三次抽奖结果 (2013-01-11)
- 青藏铁路公司关于加开3月21、23日西宁西—拉萨K9615次旅客列.. (2013-03-14)
- 青藏铁路公司关于加开西宁西—拉萨旅客列车的通知 (2013-03-13)
- 成都铁路局关于部分列车停运的公告 (2013-03-11)

更多>>>

中国铁路货运 电子商务平台



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购票 / 预约

退票

余票查询

验客列车时刻表查询

验货列车时刻表查询

全文搜索: 请输入搜索条件

铁路客运 法律法规及规范性文件

铁路货运 法律法规及规范性文件

网上购票常见问题 | **铁路常识** | **货运网上受理常见问题**

- 在互联网购买了儿童票，如何在售票窗口换取纸质车票？
- 注册用户时，系统提示身份信息重复怎么办？
- 购买实名制车票后丢失了怎么办？

快运货物班列 预订服务

货运站查询信息

货运运费查询

货运业务咨询

相关链接

CNTV: online resource integration for CCTV (biggest TV station in China) and online service. Cost saving: >50%



CNTV 中国网络电视台

玩游戏 看民俗 赢大奖

活动时间：2011年1月19日-2月17日

活动流程

新用户请先注册, 登录后方可参与游戏。CNTV肩负对央视众多频道内容资源进行整合和转换通过互联网提供在线服务

登录 > 答题 > 邀请 > 抽奖

登录

密码

注册 忘记密码 **登录**

1+1双人大礼包!

如果您邀请的站外好友中奖, 您将得到与他一样的奖品1份!

邀请好友 本次活动奖品由悦己SELF网提供

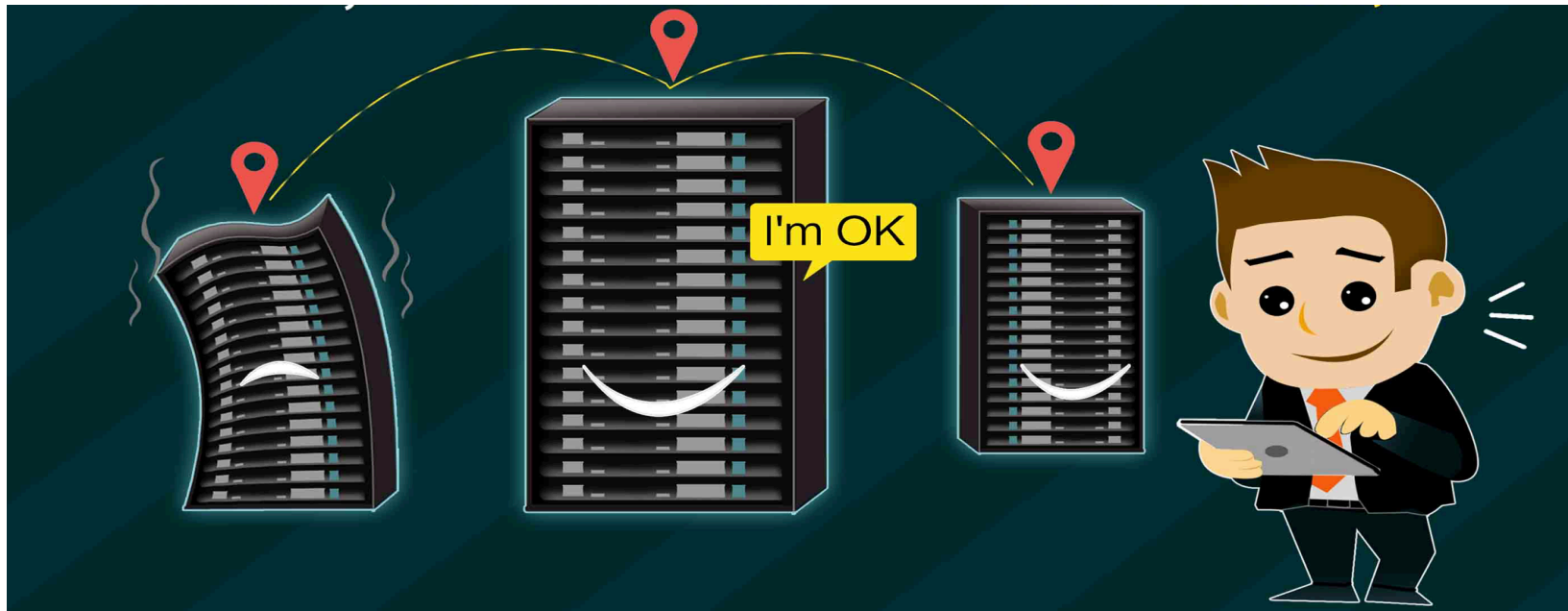
一等奖: 1名
苹果 (Apple) iPad MB29
2CH/A 9.7英寸平板电脑

合作伙伴

- 悦己SELF网
- 酷狗音乐
- PPTV 一起看新鲜!
- 酷六网
- 木蚂蚁应用市场 MUMAYI.COM
- 暴风影音

Active-active data centers across multiple cities

We can distribute network traffic between our Shanghai, Hangzhou and Shenzhen data center without any interruption.



9 large data centers in China Mainland, Hong Kong, Singapore and America.



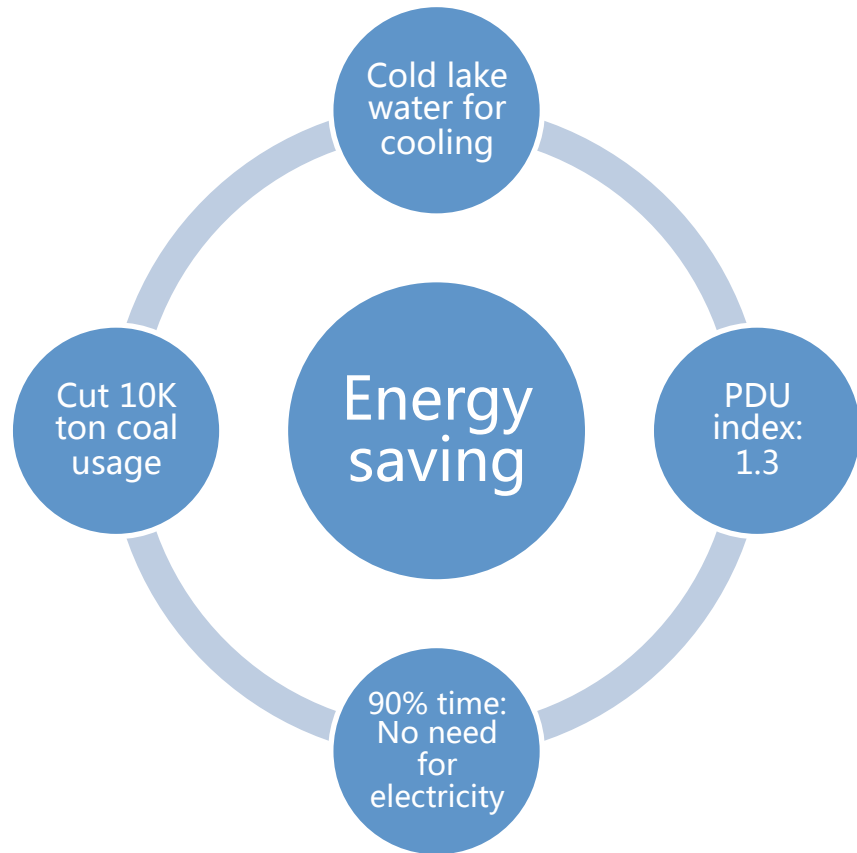


- **Zhang Bei: Strong wind, averaged temperature < 37 degree F.**
- **Deploy solar energy, wind power and cold water cooling solutions: 100% green**
- **Estimated at least 45% energy saving for cooling.**

Green Data Center: Thousand Island Lake

千岛湖数据中心全景

阿里云新一代绿色数据中心，设计年均 PUE 低于 1.3



- Intercept 3 million deceptive transaction requests every day (user identification, etc.).
- Totally successful defense of DDoS attack : **546,859GB**
- Totally successful defense of attack since 2014: **9,383,772,384** times
- Dec. 20th, 2014, Defeated a DDoS attack , which lasted **14 hours** and peak traffic reached **453.8 Gb per second**



Big Data & Machine Learning



在线客服

推荐指数: ★★★★★

适用人群: 喜欢使用在线交流方式的用户

[立即使用 >](#)



电话客服

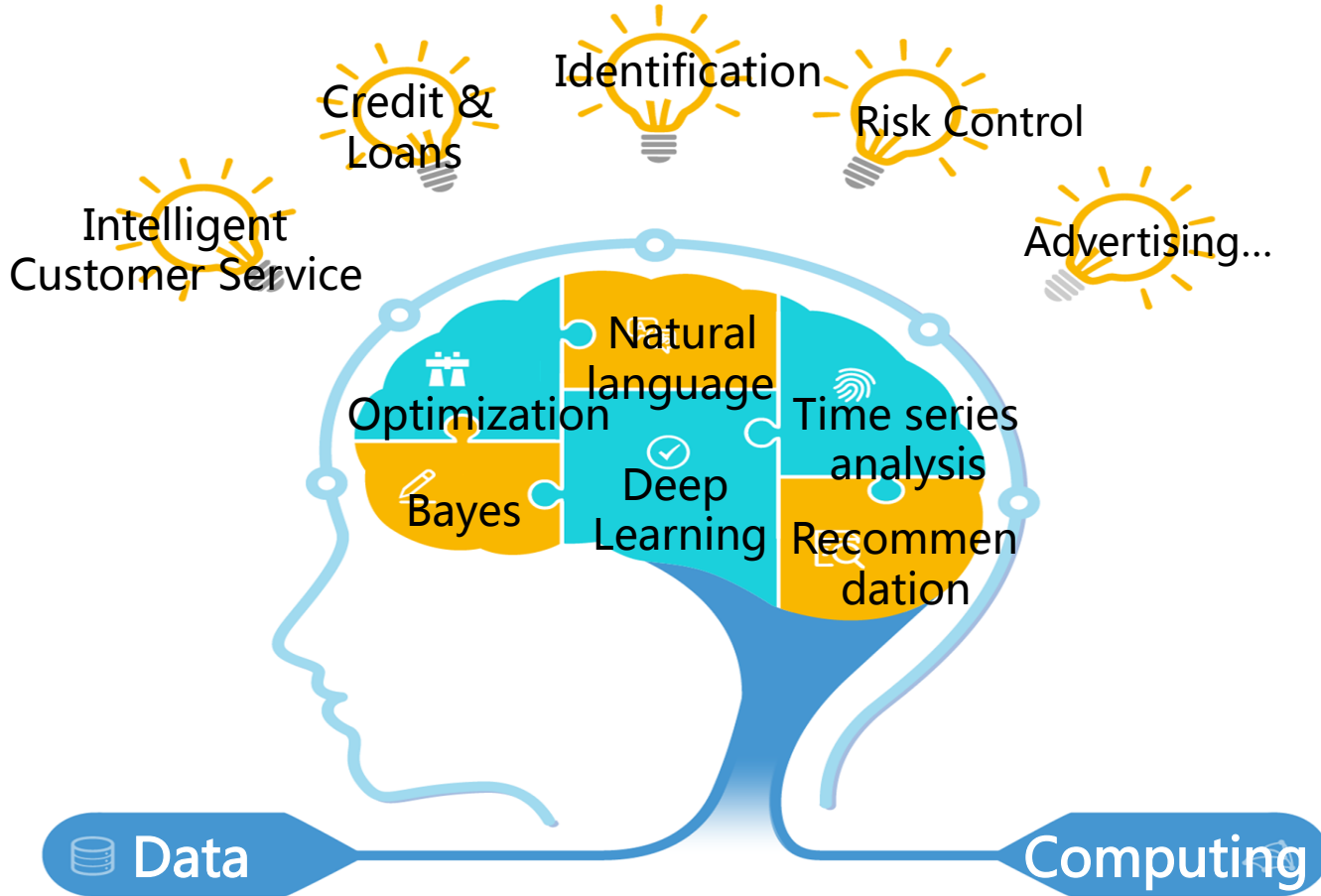
推荐指数: ★★

适用人群: 喜欢使用电话方式解决问题的用户

 数字代表按键，如3代表3号键。客服主要服务时间：9:00—24:00

On 11/11/2015

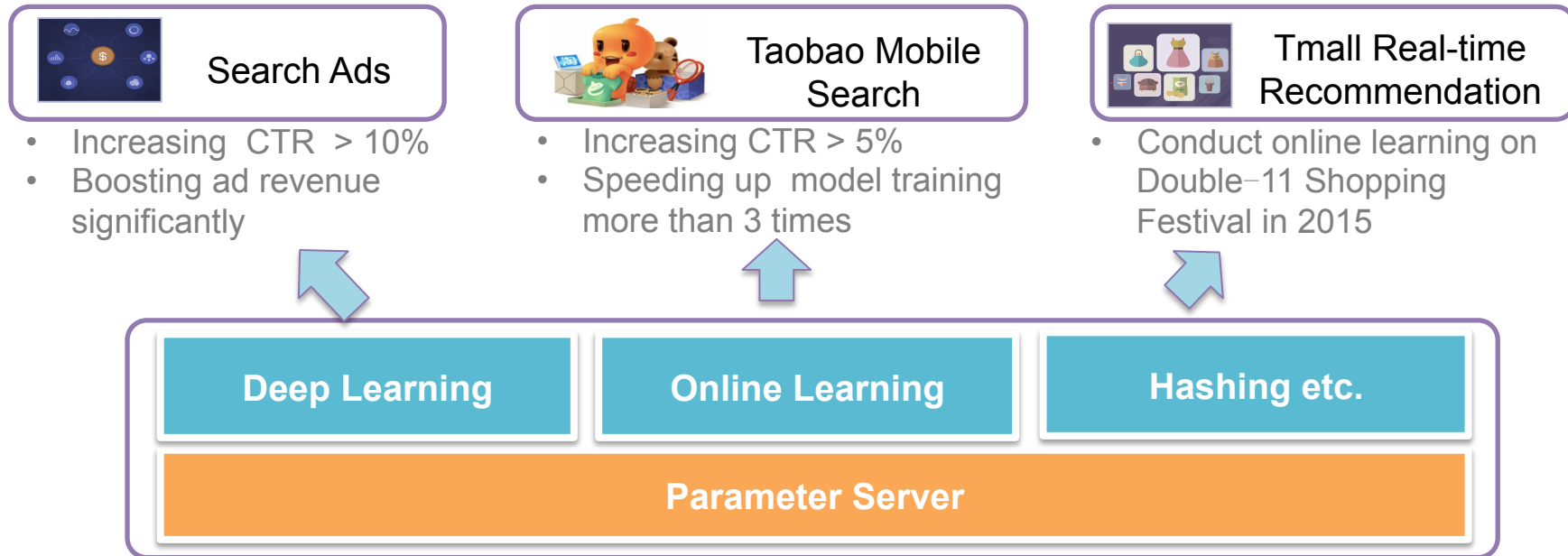
- **Total service volume: > 10 Millions**
- **> 95%: supported by intelligent robots**
- **< 5% : supported by human**
- **>98% phone call: went through**



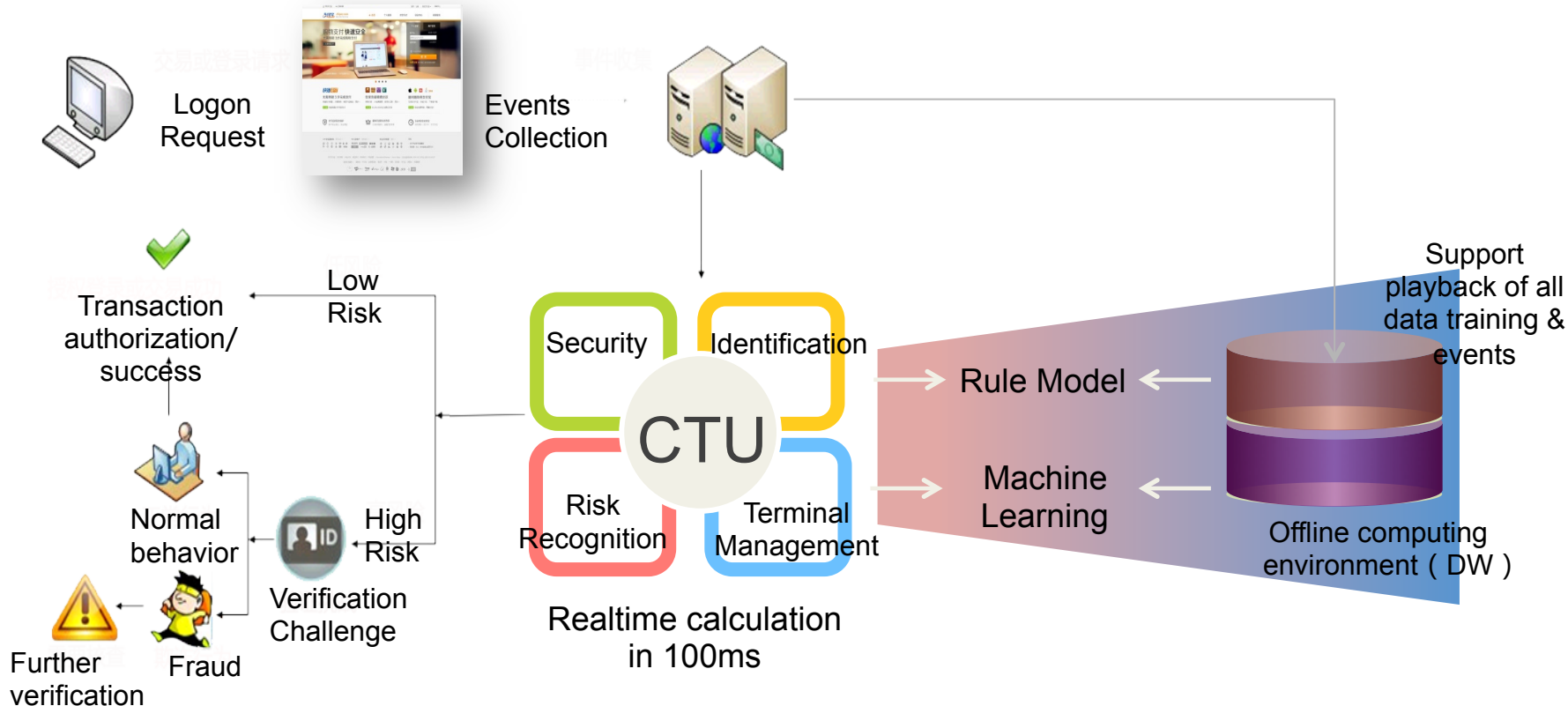


- Speech recognition
- Deep Learning for problem identification & QA
- Natural language processing
- Knowledge base construction

Large-scale Machine Learning



Risk Control (CTU)



- Using big data technologies to discover risks and identify abnormal behaviors.



- Address challenges for small and medium enterprises to meet their financial need:
 - Small loans
 - Tedious loan approval procedure
 - Low approval rate
 - Long cycle

Farmers need loans for tractors

- 10 millions plus loans
 - 90 billion+ RMB portfolio
 - Over 300 thousand enterprises
- No human intervention based on machine learning methods
 - Default rate way less than traditional banks

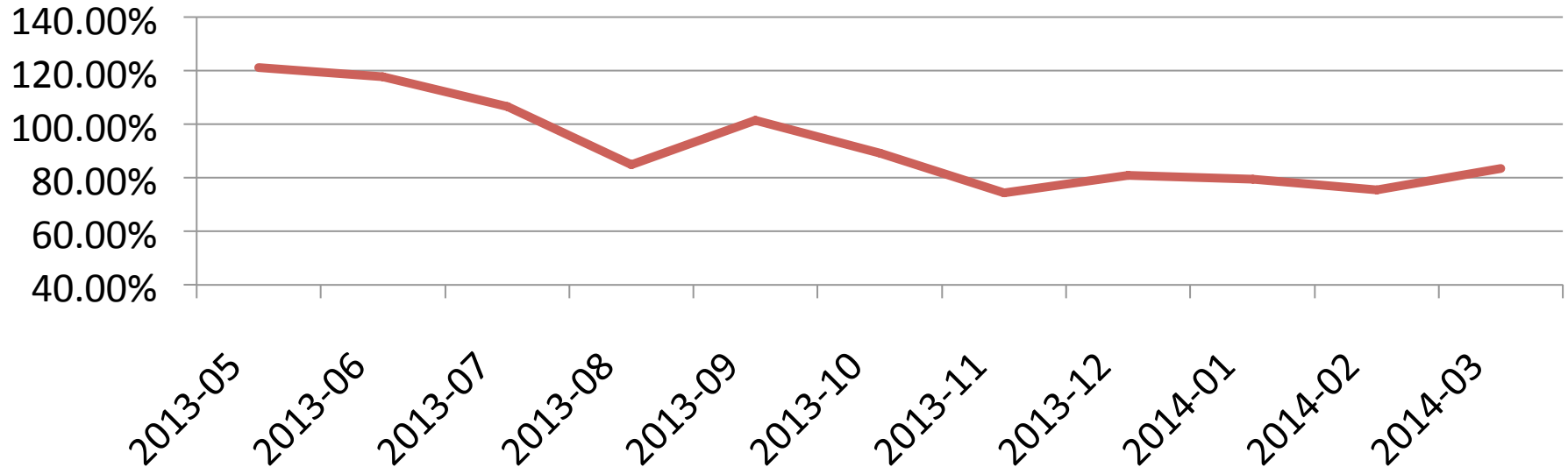
Microloans for rural areas in China

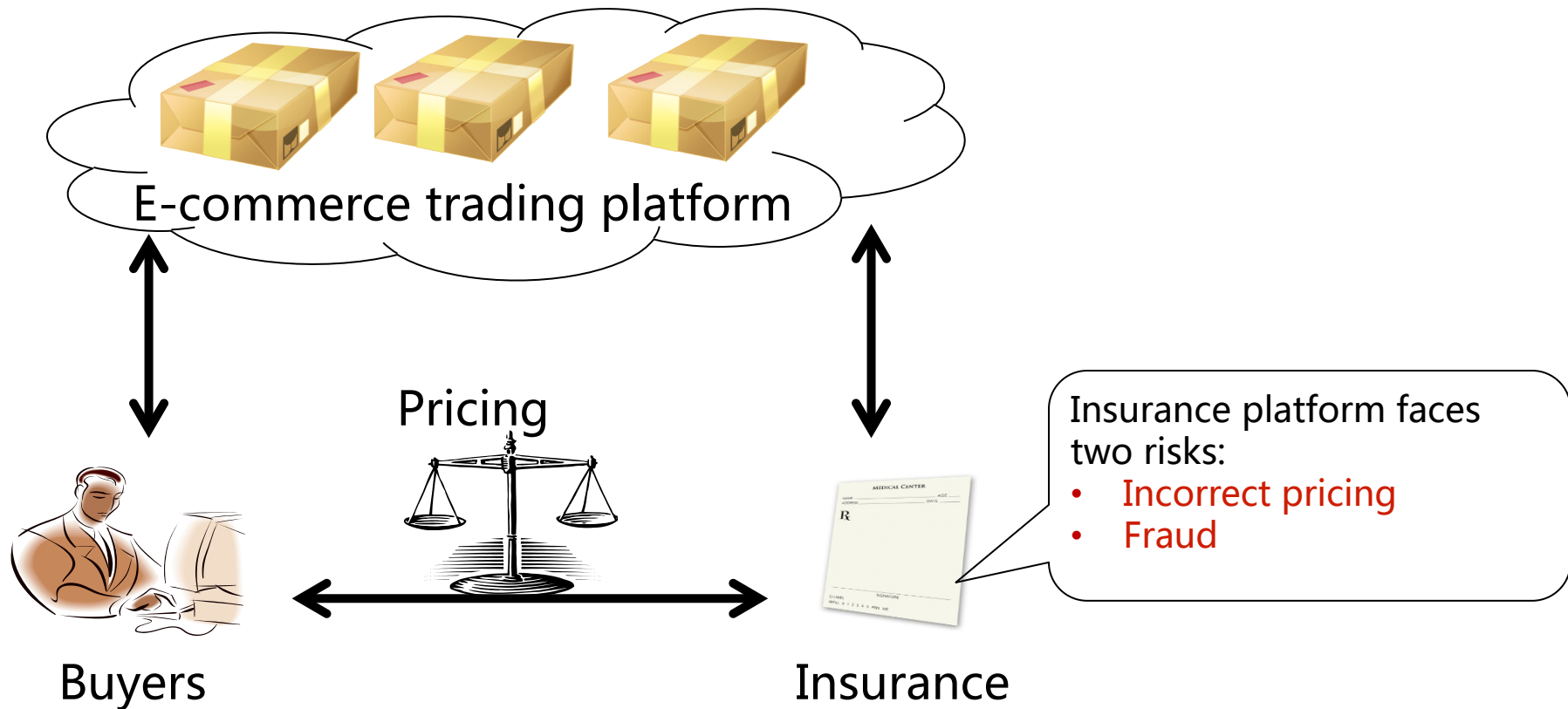


180 Thousand loans for small and medium enterprises in rural areas, in total 17.8 Billion Yuan (~2.8 Billion USD)

- Insurance contracts has year-on-year growth rate of 100%.
- Over 1 billion contracts in 2013
- Record-breaking over 100 million contracts one day on November 11, 2013

Overall rate of compensation

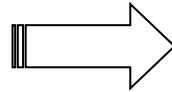




Fixed rate

- Uniform 5% fixed rate

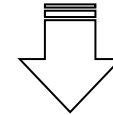
Simple



Actuarial approach

- Solely based on historical data and demographics

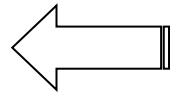
Easy to explain



Model driven pricing

- Pricing model based on a few parameters

Improved accuracy

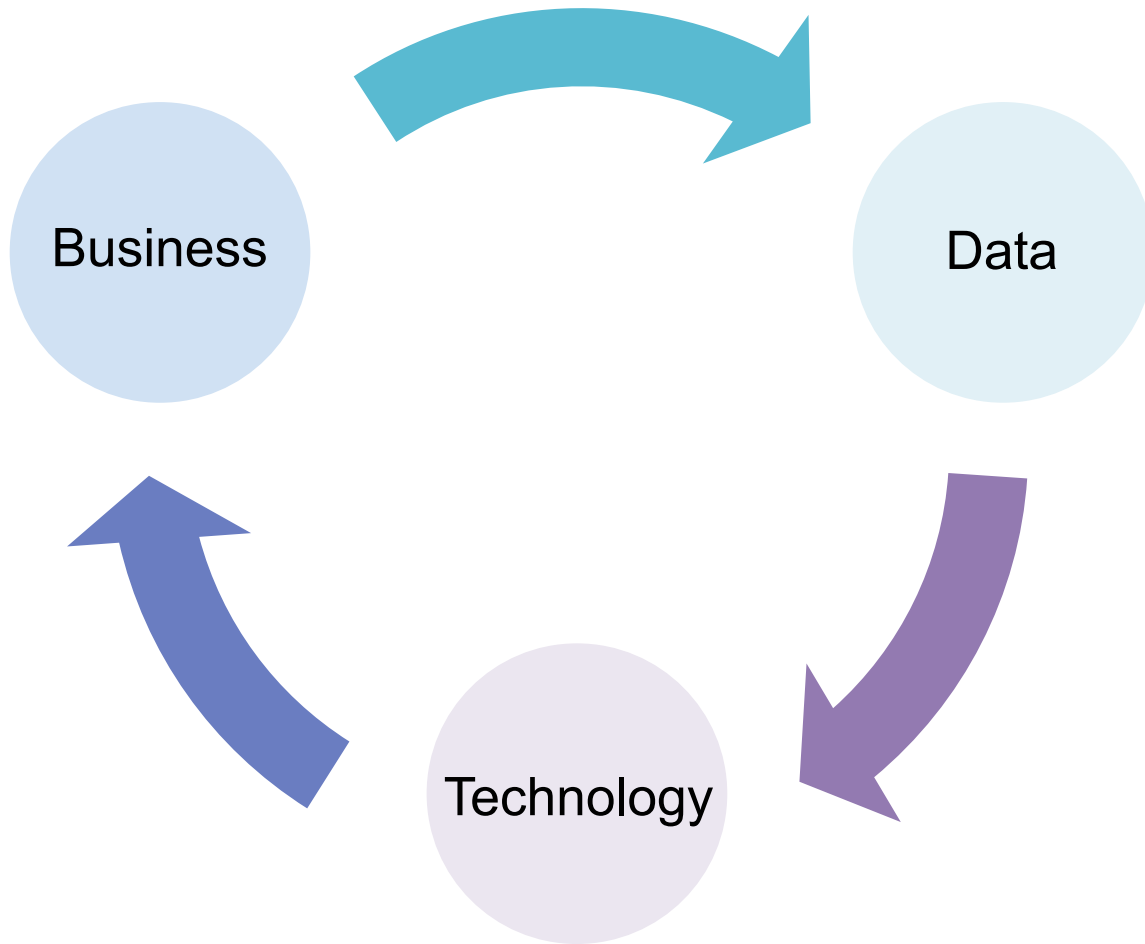


Dynamic pricing based on big data

- Millions of features, real time pricing
- Machine learned models

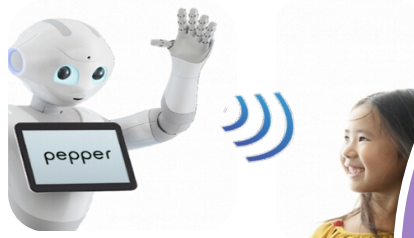
High accuracy

Conclusions



Technology Expands Business Boundary

- Enable devices to think & learn like human-being.



Artificial
Intelligence

- Secure communication & high-performance computation.



Quantum
Comm. &
Comp.



Software
Defined
Network

- New network framework providing an innovation solution for network virtualization.

Smart City



- Future cities fusion of cloud comp., big data analysis, mobile Internet and social networks.



THANK YOU