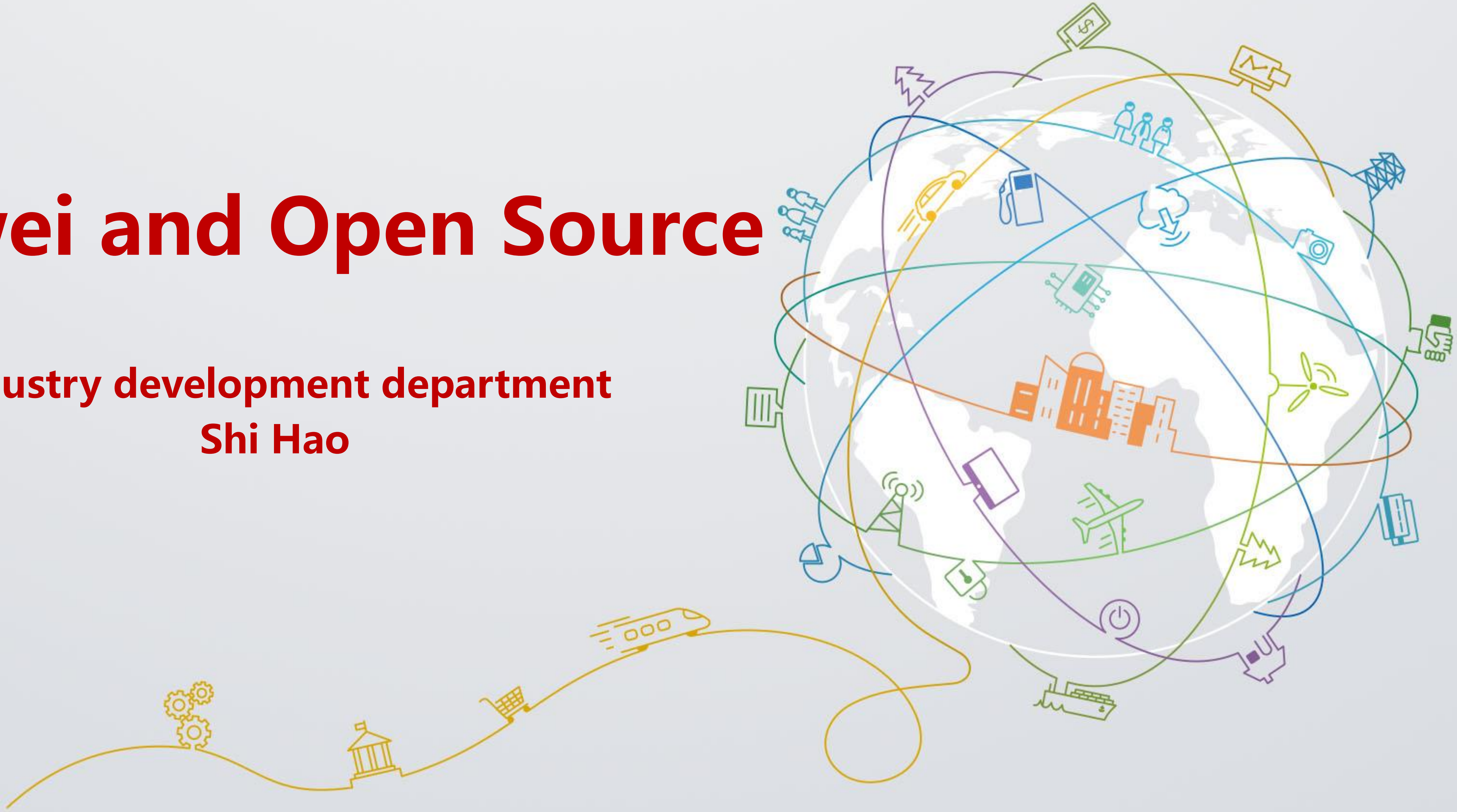
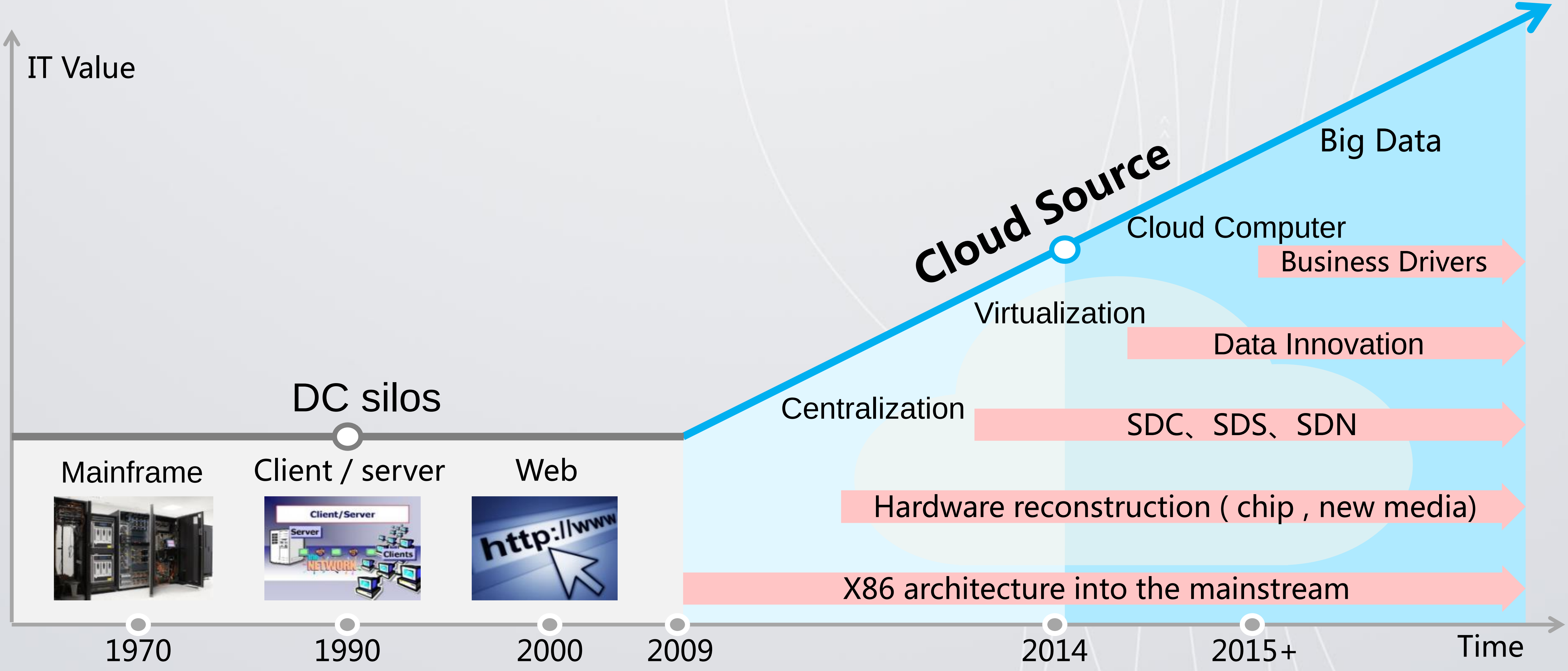
Huawei and Open Source

Industry development department
Shi Hao



ICT industry trend


Client/Server
Server
NETWORK
Clients
http://www

IT Value

DC silos

Mainframe

Client / server

Web

Cloud Source

Big Data

Cloud Computer

Business Drivers

Virtualization

Data Innovation

Centralization

SDC、SDS、SDN

Hardware reconstruction (chip , new media)

X86 architecture into the mainstream

1970

1990

2000

2009

2014

2015+

Time

Open source software trends

1： Internet, cloud computing push

facebook
Memcached
HipHop for PHP
Cassandra
Haystack
Scribe
BIG PIPE
hadoop
Thrift
Varnish

2：Component → Platform

spring
CLOUD FOUNDRY

3： Extend to Hardware, Telecom，M2M etc.

NGINX http server
openstack CLOUD SOFTWARE
open source initiative
→
Project Clearwater
open epc Fraunhofer FOKUS
OPEN DAYLIGHT
OpenBTS
OPEN
open source hardware

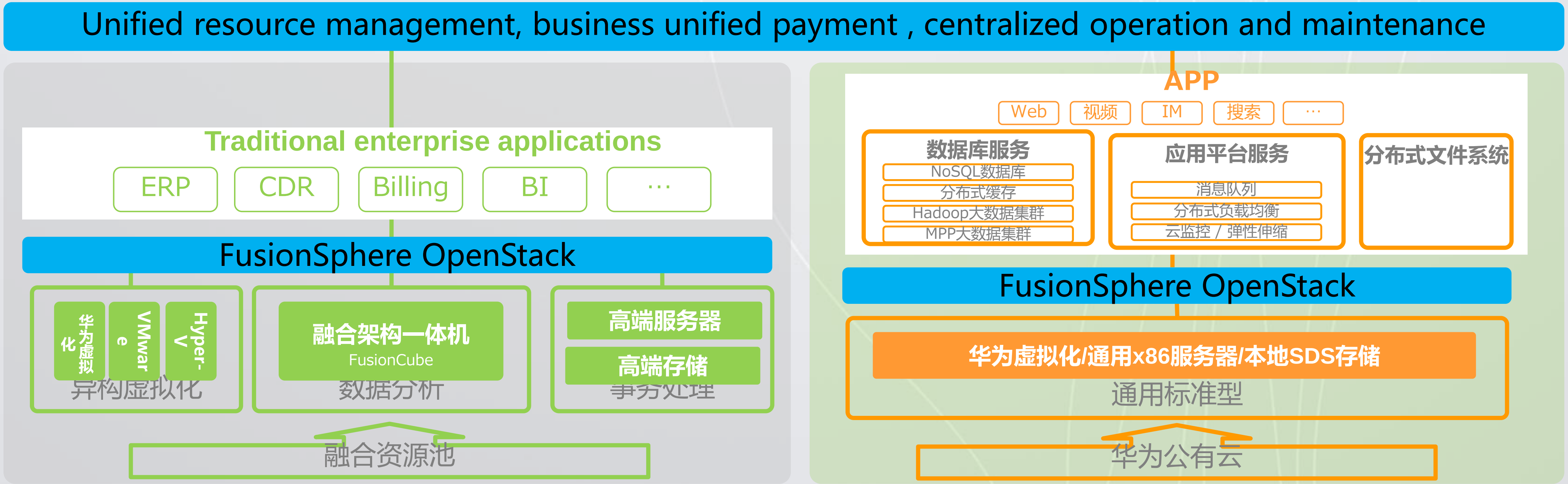
4：Work like company

openstack CLOUD SOFTWARE
OPEN DAYLIGHT

5：Standard battle field

ETSI a partner in 3GPP A GLOBAL INITIATIVE
IETF
→
Quantum
Virtual Networks for Openstack
openstack
ONF OPEN NETWORKING FOUNDATION
WebRTC

The future of enterprise DC evolution



Unified resource management, business unified payment , centralized operation and maintenance

Traditional enterprise applications

ERP

CDR

Billing

BI

…

FusionSphere OpenStack

华为虚拟化

VMware

Hyper-V

异构虚拟化

融合架构一体机

FusionCube

数据分析

高端服务器

高端存储

事务处理

融合资源池

APP

Web

视频

IM

搜索

…

数据库服务

NoSQL数据库

分布式缓存

Hadoop大数据集群

MPP大数据集群

应用平台服务

消息队列

分布式负载均衡

云监控 / 弹性伸缩

分布式文件系统

FusionSphere OpenStack

华为虚拟化/通用x86服务器/本地SDS存储

通用标准型

华为公有云

Legacy with traditional business

Legacy with existing hardware

critical biz Operation

Self- management

Cloud

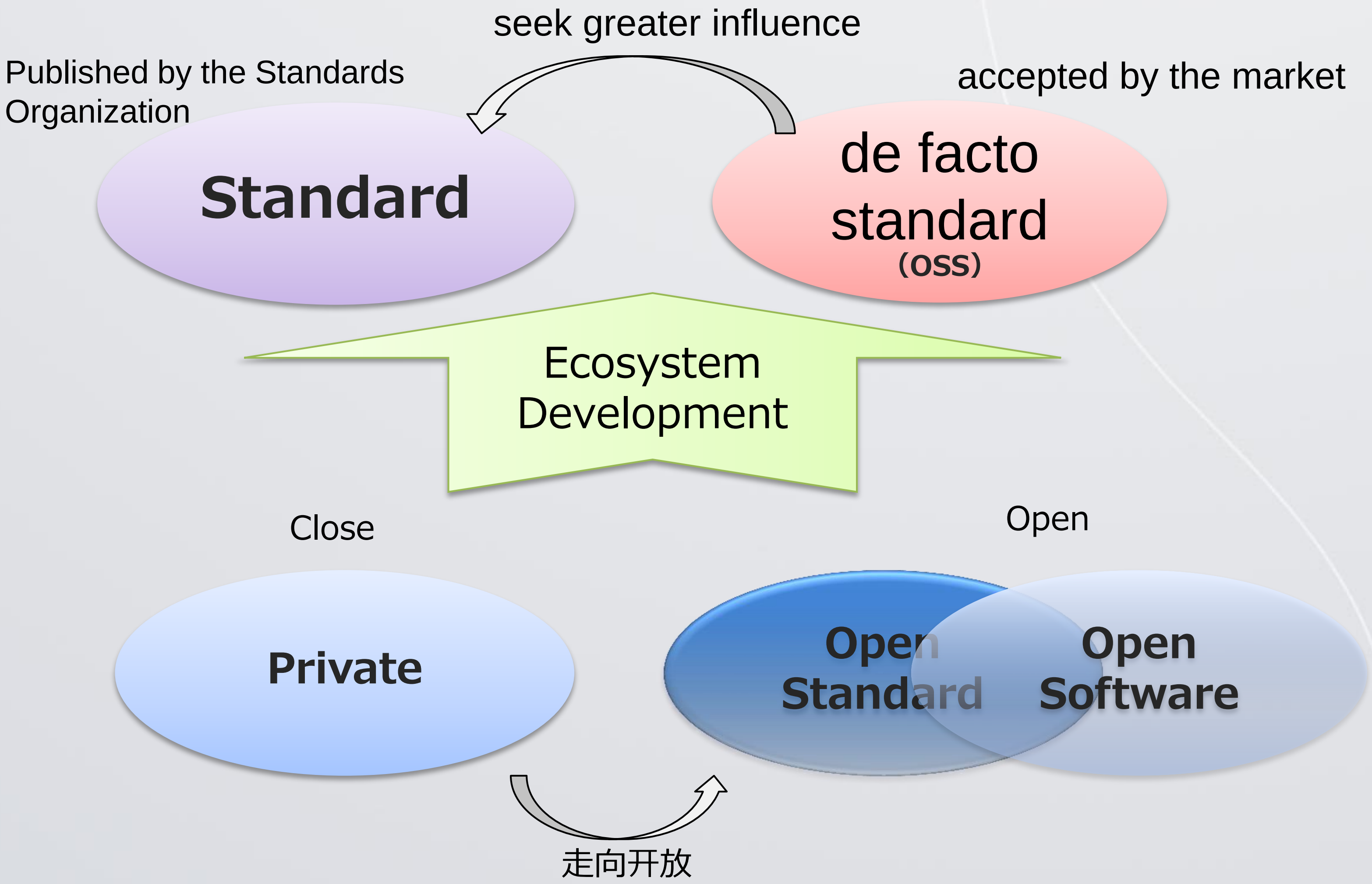
Pool resources

scalability

Distributed arch’

Cent’ Management

Open Source and standard linkage



seek greater influence

Published by the Standards Organization

accepted by the market

Standard

de facto standard
(OSS)

Ecosystem Development

Close

Open

Private

Open Standard

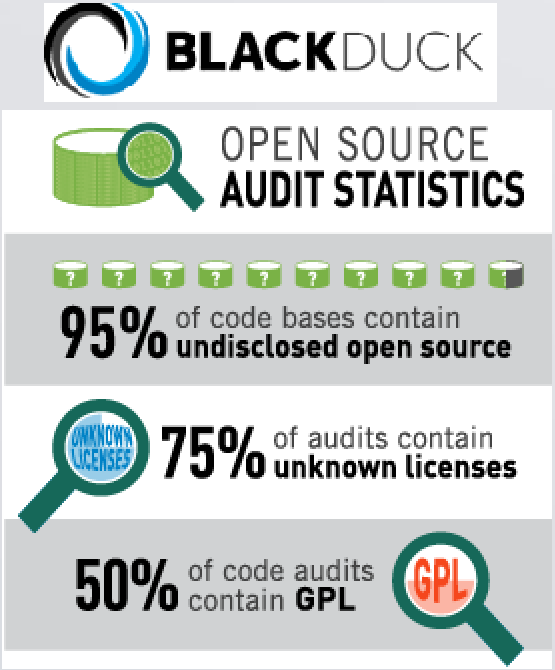
Open Software

走向开放

with the integration of IT / CT technology, both open source and standard learn from each other in their development

Huawei OSS Management Policy

Concept	Plan	Dev	Test	Release	Lifecycle
•Selection	•Apply OSS	•Bug fix with community •Security test		•Certification •Security Audit	•Security Hold


BLACKDUCK

OPEN SOURCE AUDIT STATISTICS

95% of code bases contain undisclosed open source

75% of audits contain unknown licenses

50% of code audits contain GPL

Integrate

CERT organizations

CERT Software Engineering Institute Carnegie Mellon

US-CERT UNITED STATES COMPUTER EMERGENCY READINESS TEAM

JPCERT/CC Japan Computer Emergency Response Team Coordination Center JPCERTコーディネーションセンター

CNCERT/CC

Cert AUSTRALIA

Industry organizations

National Vulnerability Database a comprehensive cyber vulnerability resource

ICASI

FIRST Improving Security Together

(ISC)²

ISSA Information Systems Security Association

ISACA Trust in, and value from, information systems

Sponsor

- ☐ Linux Foundation CII projects
- ☐ OpenSSL open source project

Platinum Sponsor

CORE INFRASTRUCTURE INITIATIVE

OpenSSL Cryptography and SSL/TLS Toolkit

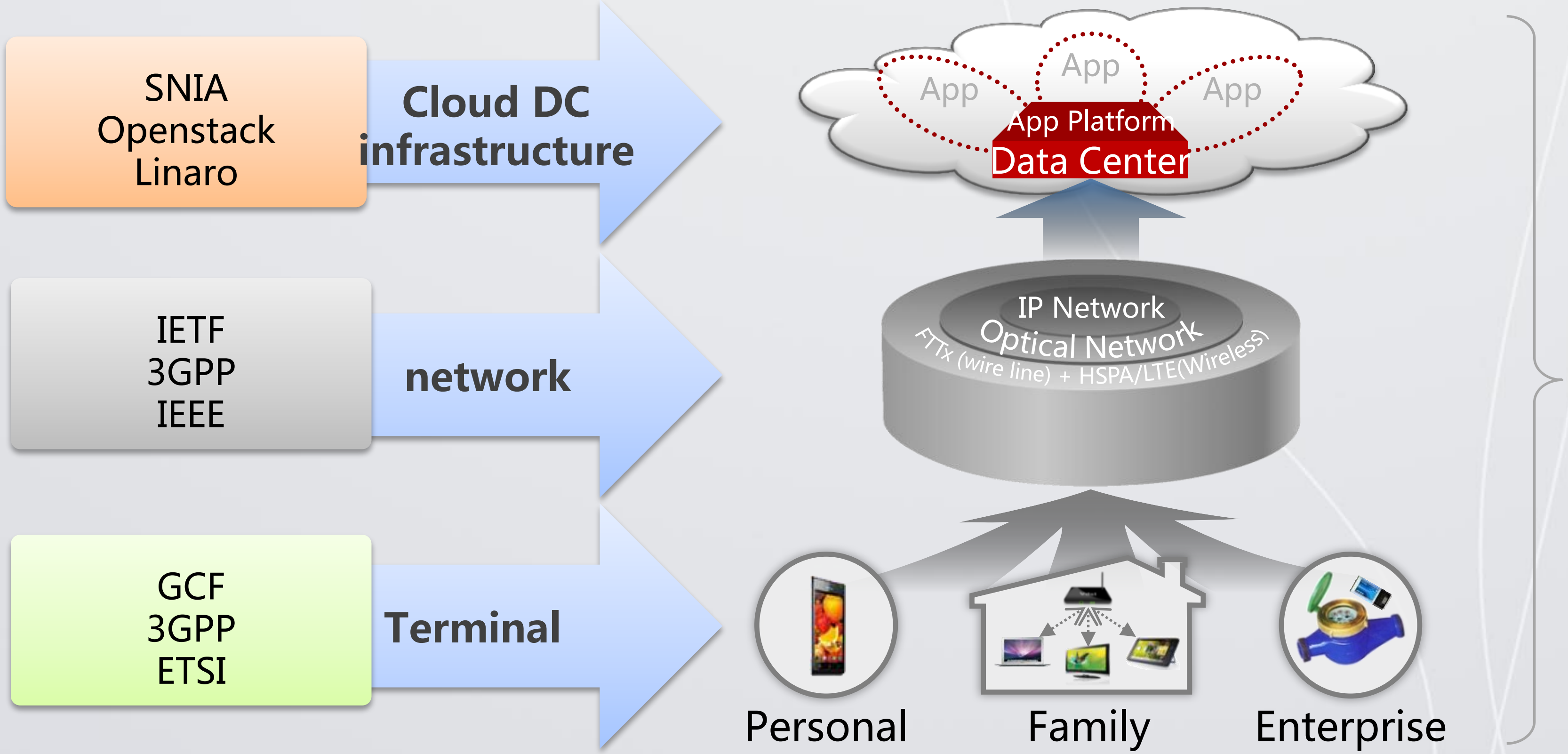
Cooperation

- ☐ OSVDB vulnerability database construction projects
- ☐ P1's safety test project

OSVDB

P1 Security Priority One Security

Focus on data pipeline for open source and standards



SNIA
Openstack
Linaro

Cloud DC infrastructure

IETF
3GPP
IEEE

network

GCF
3GPP
ETSI

Terminal

App
App
App
App Platform
Data Center
IP Network
Optical Network
FTTx (wire line) + HSPA/LTE(Wireless)
Personal
Family
Enterprise

Data storage and processing

Data transmission and distribution

Data presentation and create

Through the open source community for industry development

Application level

Less community involvement for application

Code -level applications

Component -level applications

Software-level applications

Enhanced level

software enhancements

Enhanced software platform

Linux

Enhanced differentiation

NKE

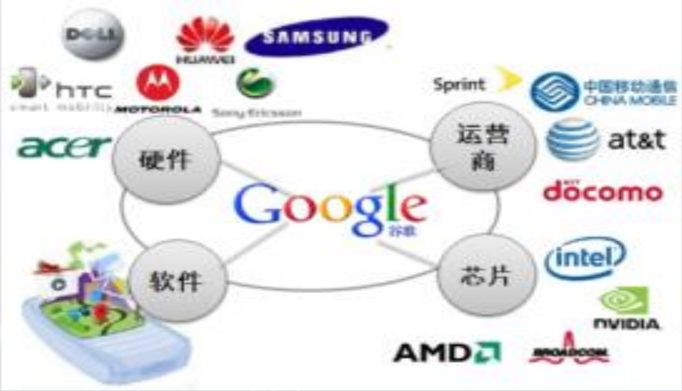
I/O Kit

基于FreeBSD增强

Commercial level

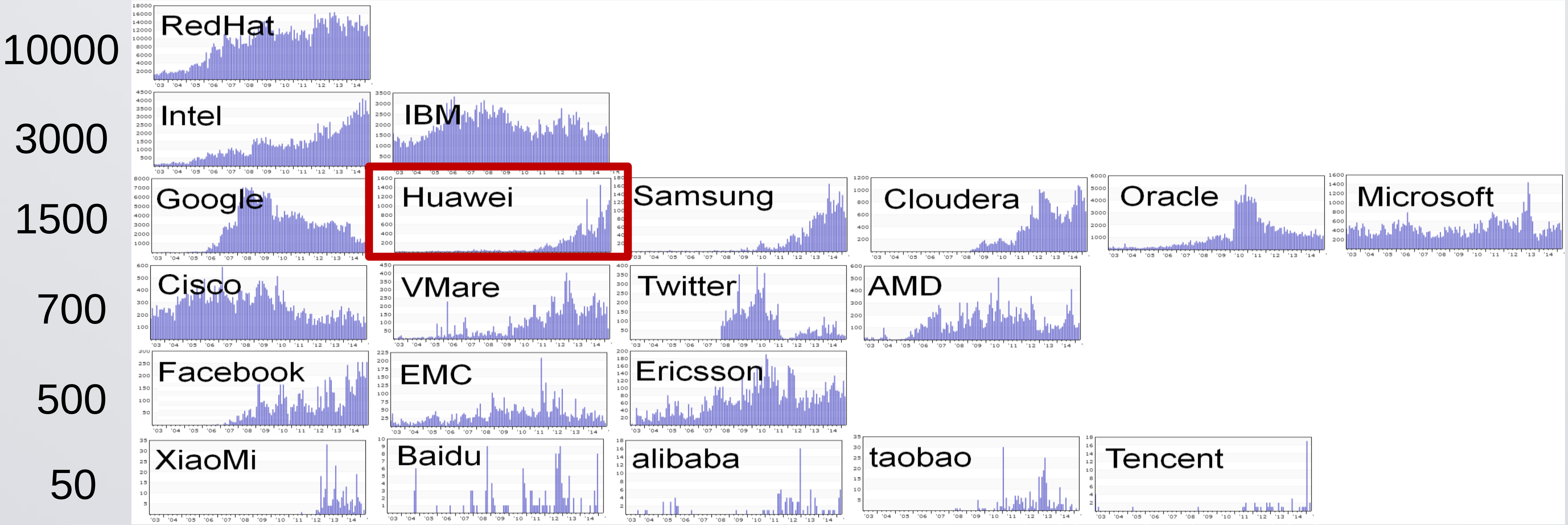
Focus on Ecosystem

Industry development


DELL
HUAWEI
SAMSUNG
htc
MOTOROLA
Sony Ericsson
Sprint
中国移动通信 CHINA MOBILE
acer
硬件
运营商
at&t
Google 谷歌
docomo
软件
芯片
intel
NVIDIA
AMD
BROADCOM

Actively participate in the open source community and code contribution

Linux、Apache、Eclipse、Postgresql、Mozilla、Android、OpenStack、php、Ruby、Google Code



Data from: markmail.org , 03/25/2015

As a core member to participate and contribute several open source community

OSS Foundation	Member Level	Huawei Contribution
CLOUD FOUNDRY	Gold Member	Top 3
hadoop	Sliver Member	Top 4
Spark	Sliver Member	Top 4
THE LINUX FOUNDATION	Platinum Member	Top 20 in Kernel. LTS Maintainer of Kernel Version 3.4.
openstack OpenStack	Gold Member	TOP5 in Liberty version
OPEN CONTAINER PROJECT	Founding Member	Top 5 in Docker
OPEN DAYLIGHT	Sliver Member	Contribute Asia Pacific Laboratory
Linaro	Core Member	Leader of the foundation Seats in Board & TSC
OPEN Compute Project	Sliver Member	In 2011，Huawei Joined

Paas

Big Data

OS

Cloud

Hardware

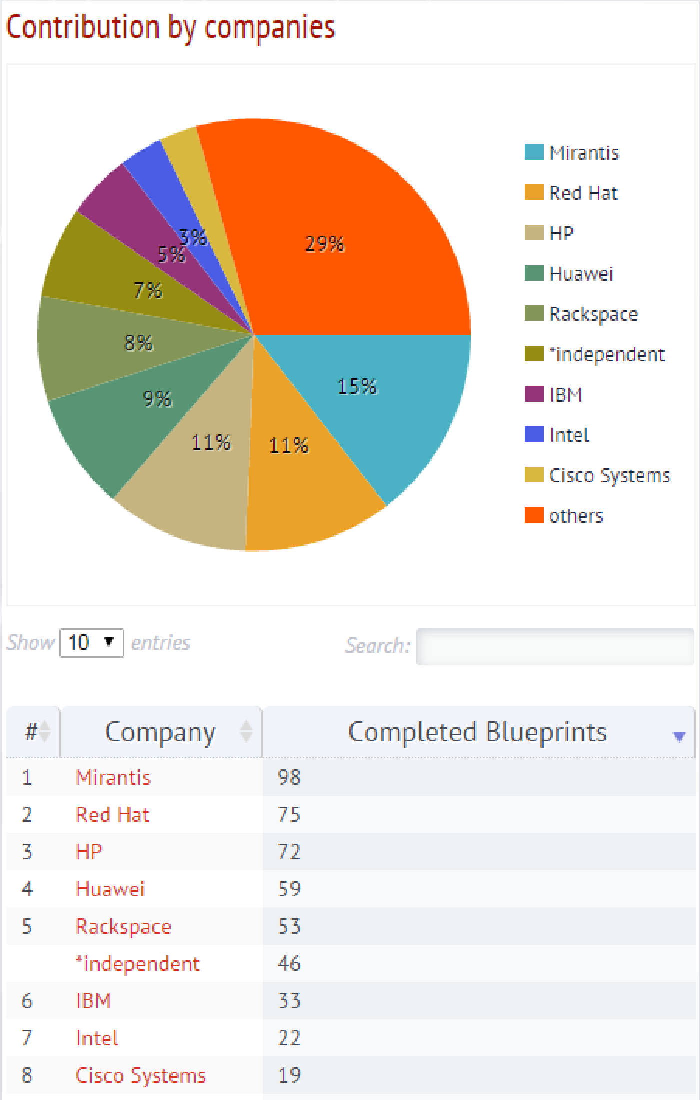
Contribution to OpenStack

Huawei incubator projects and new features (blueprints)

1. Initiated two framework incubator projects oriented to cloud data center and NFV scenarios: Compass (management automation) and OpenStack Cascading.
2. Streamlined over 500+ IT/ICT features for cloud data center and NFV scenarios, submitted 400+ blueprints to the community, among which 100+ ones have been implemented.
3. Worked with Red Hat to promote more than 10 carrier-focused NFV features, including NUMA affinity, VM NIC bandwidth scheduling, and CPU binding, in the community.

Community Contribution Ranking (Liberty Version)

- Blueprints: 59 (ranked 4)
- Resolved Bugs: 290 (ranked 6)
- Code Lines: 154618 (ranked 7)
- Commits: 915 (ranked 6)
- Reviews: 6363 (ranked 6)



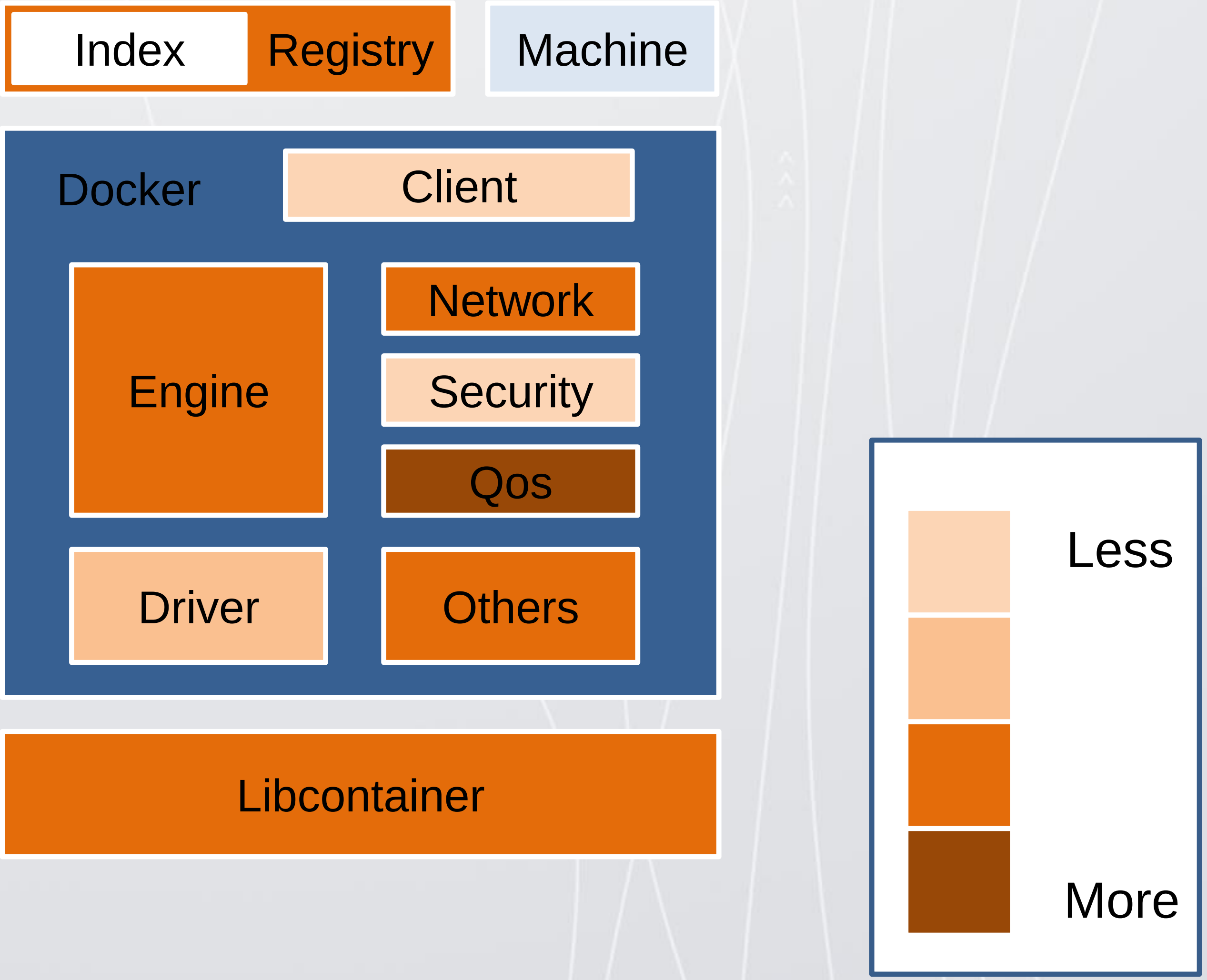
Contribution by companies

29%
15%
11%
11%
9%
8%
7%
5%
3%
Mirantis
Red Hat
HP
Huawei
Rackspace
*independent
IBM
Intel
Cisco Systems
others
Show 10 entries
Search:

#	Company	Completed Blueprints
1	Mirantis	98
2	Red Hat	75
3	HP	72
4	Huawei	59
5	Rackspace	53
	*independent	46
6	IBM	33
7	Intel	22
8	Cisco Systems	19

Contribution to Container

1. Docker
2. IBM
3. **Huawei**
4. Redhat
5. Other


Index
Registry
Machine
Docker
Client
Engine
Network
Security
Qos
Driver
Others
Libcontainer
Less
More

Contribution to Spark/Hadoop

1 Cloudera

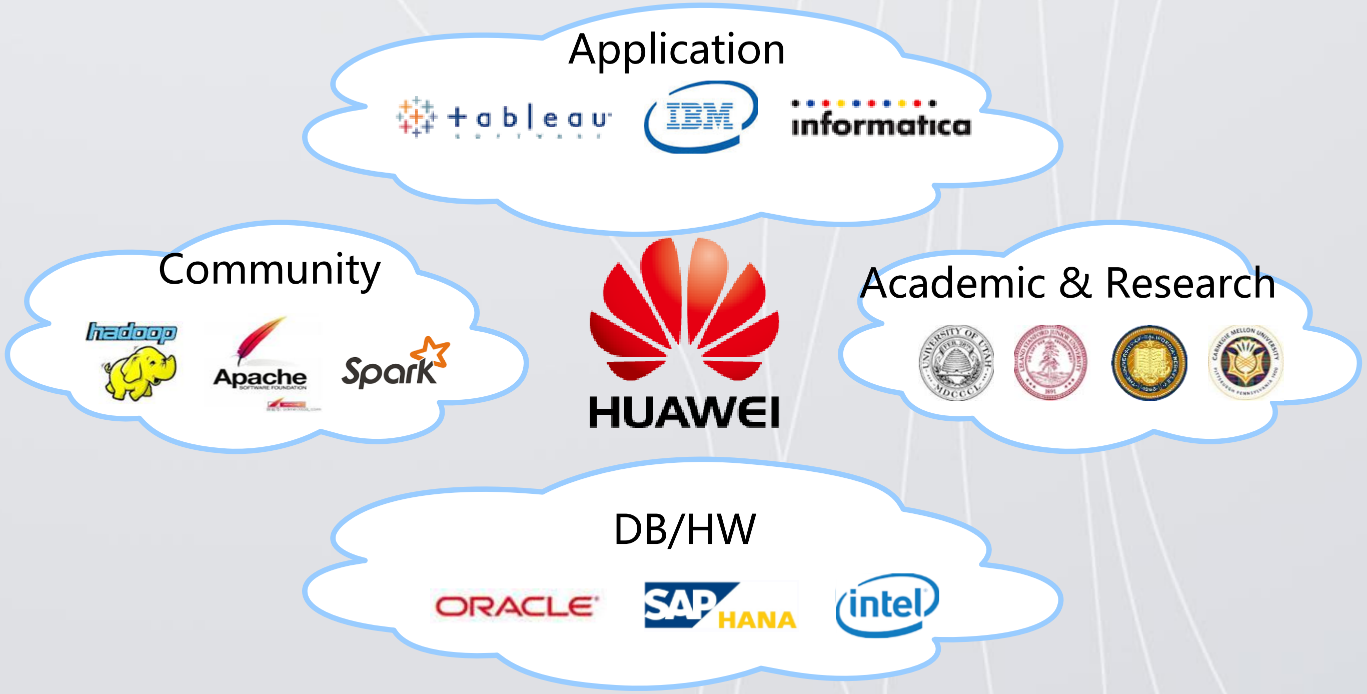
2 Hortonworks

3 Yahoo

4 **Huawei**

5 Intel

1. Authorized Spark Vendor by Databricks
2. Sponsor & Contribute to Apache Hadoop Community
3. Contribute 600+ patchs to build Telco grade Hadoop
4. Investment to enhance Ecosystem
5. Organize Spark Meetup in Silicon Valley & China


Application

Community

Academic & Research

DB/HW

tableau
IBM
informatica
hadoop
Apache
Spark
HUAWEI
ORACLE
SAP HANA
intel

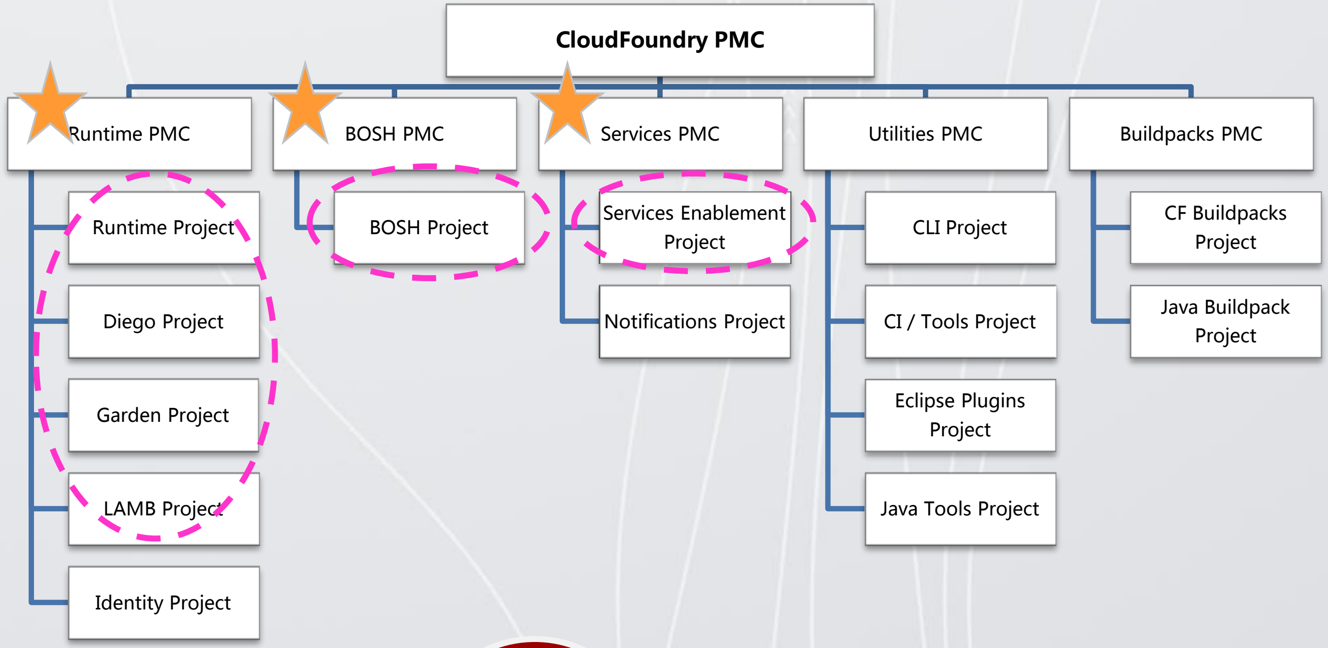
Contribution to CloudFoundry

2015-leading contribution in 8 areas

PMC	FOSS Features
Application Deployment	① BOSH to support TOSCA ② Cluster Management ③ Resource Orchestration ④ Prediction Based Automatic Scale Out ⑤ Full Docker Support
Container Network	⑥ Network Enhancement
Security	⑦ Security Enhancement
Service Enablement	⑧ API Management

2015 – participating in 4 areas

Community Features
① HA v2 – IBM
② APP Placement and HA Resource Pool - Pivotal
③ Router Service - Pivotal
④ CF Monitoring – Pivotal



CloudFoundry PMC

- Runtime PMC
  - Runtime Project
  - Diego Project
  - Garden Project
  - LAMB Project
  - Identity Project
- BOSH PMC
  - BOSH Project
- Services PMC
  - Services Enablement Project
  - Notifications Project
- Utilities PMC
  - CLI Project
  - CI / Tools Project
  - Eclipse Plugins Project
  - Java Tools Project
- Buildpacks PMC
  - CF Buildpacks Project
  - Java Buildpack Project

Top3 Huawei

THANK YOU

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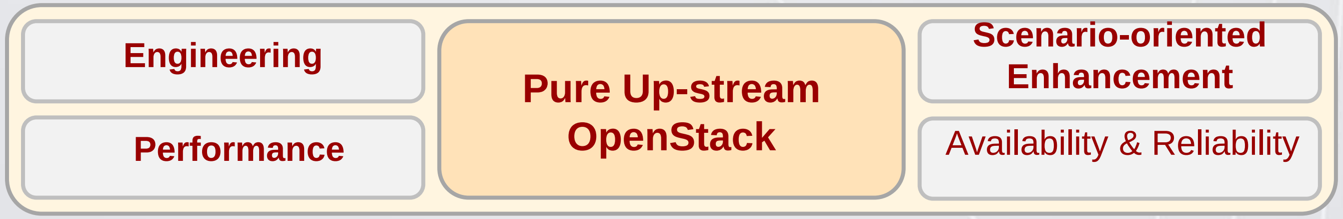
Lead OpenStack to commercial enhancement

Engineering

- Up-stream code functional test, bug fix and patch release
- Integration, verification and certification on plug-ins, drivers and backends (hypervisor, storage, network devices, etc.)
- OpenStack and other software packaging and distribution
- Automatic deployment and upgrade tools

Domain-oriented Enhancement

- NFV-oriented enhancement: Carrier-grade HA, Carrier-grade high throughput and low latency, workload-oriented VM scheduling capability,
- Public cloud oriented enhancement: Automatic operational services, IaaS+ services enabling


Engineering

Performance

Pure Up-stream OpenStack

Scenario-oriented Enhancement

Availability & Reliability

Performance Improvement

- Performance tests and tuning, covering both OpenStack and 3rd party components, e.g. DB, message queue
- Large scale deployment design
- Single OpenStack deployment to support 1000 physical hosts
- OpenStack cascading to support 100,000 physical hosts and 1 million VMs

Availability and Reliability

- HA deployment of controller nodes, load-balancing enabled
- Management data backup, centralized log management
- Automatic failure recovery of system components