



INSTITUTIONAL ARRANGEMENTS AND GOVERNANCE FOR RAILWAY MANAGEMENT:

THE CASE OF THE PEOPLE'S REPUBLIC OF CHINA

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Regional EST Training Course on "Railways as the Low-Carbon and Sustainable Transport Development Solutions in Achieving Safe, Inclusive, Efficient and Resilient Communities under the 2030 Agenda for Sustainable Development"



HISTORY

- The Pre-centralization Period: 1876-1949
 - Foreign owned and operated, but ultimately rejected
 - Chinese rail built for coal transport
 - 20,000km of rail constructed with scattered ownership and control
- Centralization period: 1949 – 1978
 - Establishment of Ministry of Railways
 - Great Leap Forward – uncoordinated, unsafe, poor quality
 - Centralized and standardized by 1950 with 15 regional administrations, then 29 and finally 14 in 1978
- Reform period: 1978 – Present
 - Multiple attempts and plans to modernize railway management, involve private capital and expand the system to serve the economy

*TODAY'S
SITUATION IN
CHINA'S RAILWAY*



Railway Administration



- Railway Law (1991)
 - Ministry of Rail made policy, MOT had no coordination mandate w/other modes
 - MOR administered and was financially responsible for service and 18 regional authorities (service providers)
 - Service providers were considered government, not SOE
 - Separation of freight and passenger service, but operated by same service providers
 - Served majority of inter-city transport

- The Railway Law: 2015 Revision
- Rail is managed by the Railway management department of the state council, which sets technical standards and overall policy
- Outlines overall policy for railway construction
 - Local railways must satisfy national rail development planning
 - Rail development in urban areas will be registered in urban land use plans, local governments will assist in land acquisition
 - Trans and inter-modal interactions are defined and cooperation encouraged
 - Does not specifically define ownership structure



http://www.npc.gov.cn/wxzl/gongbao/2015-07/03/content_1942881.htm

Railway 13th 5-year plan

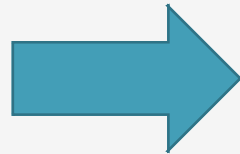
Budget: ~USD 560bn over 5 years

- 5 year plans outline development and spending targets for all major branches of government and state-owned sectors
- 2016-2020 period:
 - Expand high speed rail to 30,000 km, 65% of passenger trips on HSR
 - 150,000 km total rail length by 2020
 - Hasten development of western and central rail lines
 - Undertake development of regional inter-city lines and agglomerations such as the Beijing-Tianjin-Hebei Region, Yangtze River Delta and Pearl River Delta
 - Advance international rail interconnectivity for Belt and Road development (OBOR)
 - Highlights key integrated rail-sea port projects
 - Emphasizes the role of Yunnan in the China-Myanmar Economic Corridor and China-Laos Economic Corridor
 - Strengthen online services: 80% of tickets made available online

Policy vs Operation

2013

Ministry of Railways
dissolved



China Railway
Company
(Ministry Level)

Ownership,
operation,
implementation

State Council
of the PRC

Policy and
Regulations

Ministry of
Transportation

National
Administration
of Railways



BUSINESS SITUATION

China Railway

A solely state-owned enterprise

The main artery of the national economy

MAIN BUSINESS

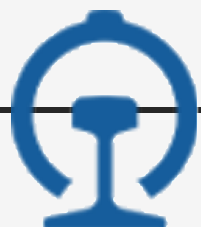
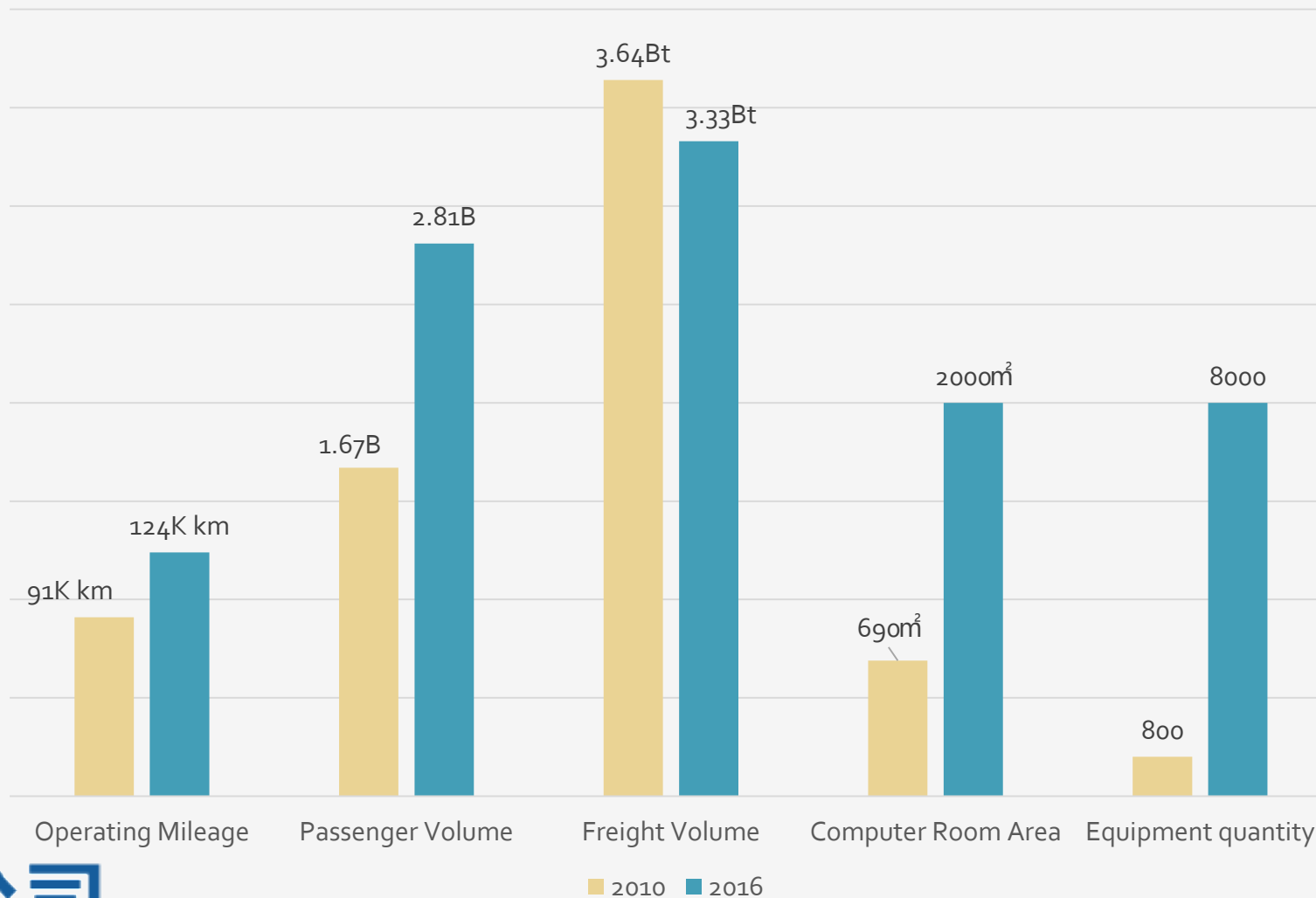
Passenger and freight transport service

BUSINESS FEATURE

Large scale, wide coverage, uninterrupted

ENTERPRISE GOAL

A world-class modern logistics enterprise



中国铁路总公司
CHINA RAILWAY

RAILWAY NETWORK PLANNING IN CHINA



图例

- ★ 首都
- 省会
- 城镇
- 国界
- - 省界
- 国际铁路
- 既有高速铁路通道
- 既有高速铁路线、城际铁路
- 既有普通铁路
- 规划高速铁路通道
- 规划区际连接线、城际铁路
- 规划普通铁路
- 规划研究线路
- 既有铁路扩能改造
- 既有铁路电气化改造

比例尺 1:8000000



2008: 4 VERTICAL 4 HORIZONTAL

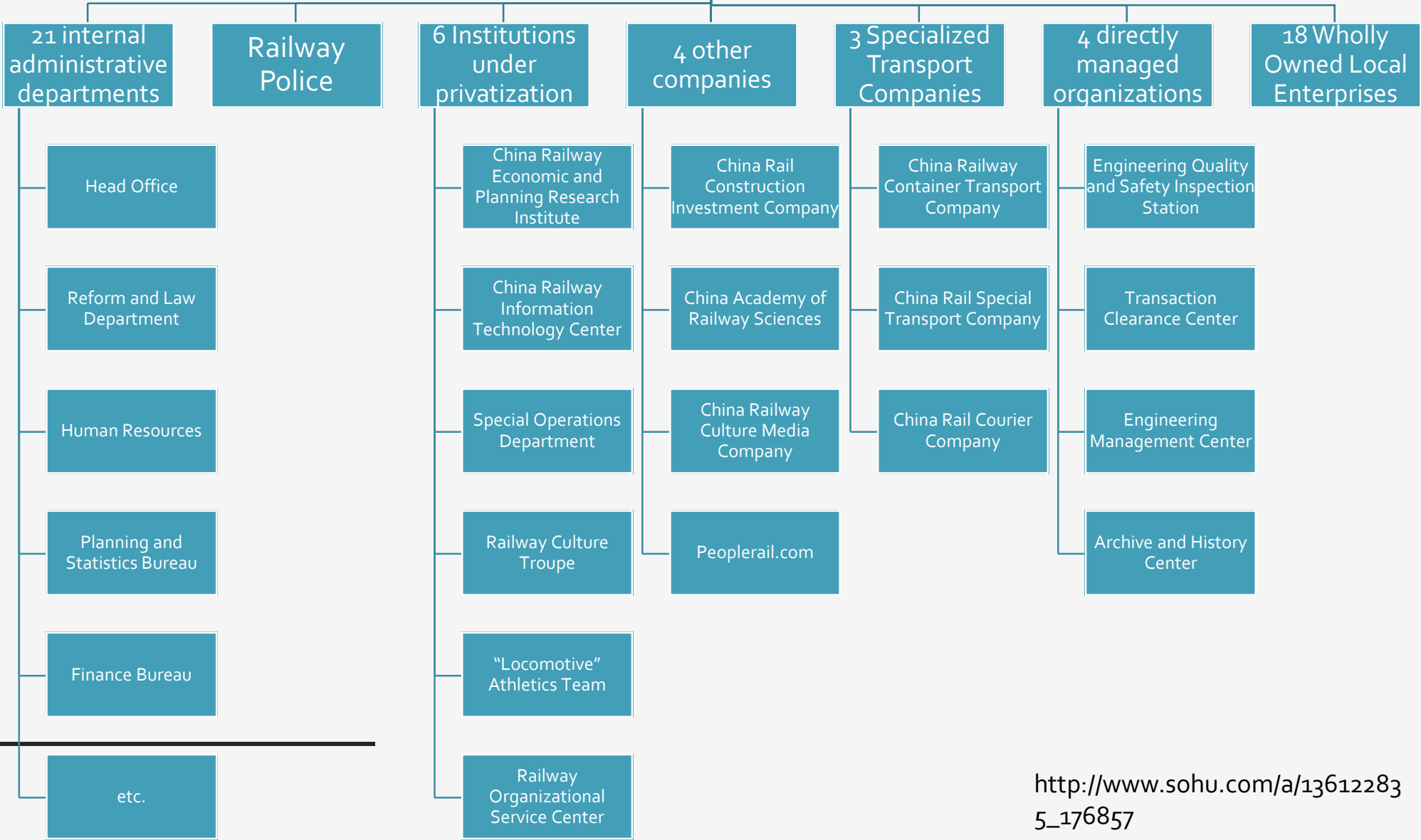
2016: 8 VERTICAL 8 HORIZONTAL

南海诸岛
比例尺 1:8000000

China Railway Company
(Ministry-Level SOE)



Numerous Communist Party Parallel Organizations



National Administration of Railways

- Formulate laws, regulations and provisions for supervision and administration
 - Supervise and ensure safety
 - Standardize railway transportation, engineering quality and market order
- Supervise transport and service quality, railway companies
 - Monitor and analyze operational conditions
 - International communications



国家铁路局

National Railway Administration of the People's Republic of China



7 regional management authorities: Shenyang, Shanghai, Guangzhou, Chengdu, Wuhan, Xi'an, Lanzhou

Includes: Information Center, Safety Technology Center, Equipment Technology Center, Engineering Quality Supervision Center, Market Testing and Evaluation Center, Academy of Planning and Standardization, etc.

NEW ATTEMPT AT REFORM

[Photo](#) by [MBxd1](#) / [CC BY-SA 3.0](#)



Debt and Innovation Requirements

- China Railway Company inherited USD 428 billion in debt from Ministry of Railways, which expanded to USD 725 billion by end of 2016, assets of ~USD895 billion
- 2018 Reform plan:
 - Seek private investment for non-transport related businesses
 - Seek mixed investment for 18 regional rail operators
 - Seek private investment for three specialized transport companies
- Aims to separate infrastructure business from operational business
- Internet companies (Alibaba, Tencent) invited to invest in intelligent railway services: cashless travel, facial-recognition, logistics and supply-chain services
- Forms of investment: asset securitization, private capital investment, equity investment in private firms and shareholder opportunities for employees.
- PPP structure investment obtained for the Hangzhou-Shaoxing-Taizhou rail line (First PPP investment in “reform period”)
- Local government ownership of the Jinan-Qingdao high-speed railway (first case of local government ownership)
- CRC has a land quota of 600,000 hectares, 30,000ha of which can be developed
- However, investors may find themselves voiceless in projects due to heavily centralized planning



Cloud Period 2010- future

Mainframe Period

1990-2000

- TMS system was built based on IBM mainframe from 1992
- Research of replacing mainframes by minicomputers began in 2008
- IBM mainframe retired in 2012

Minicomputer Period

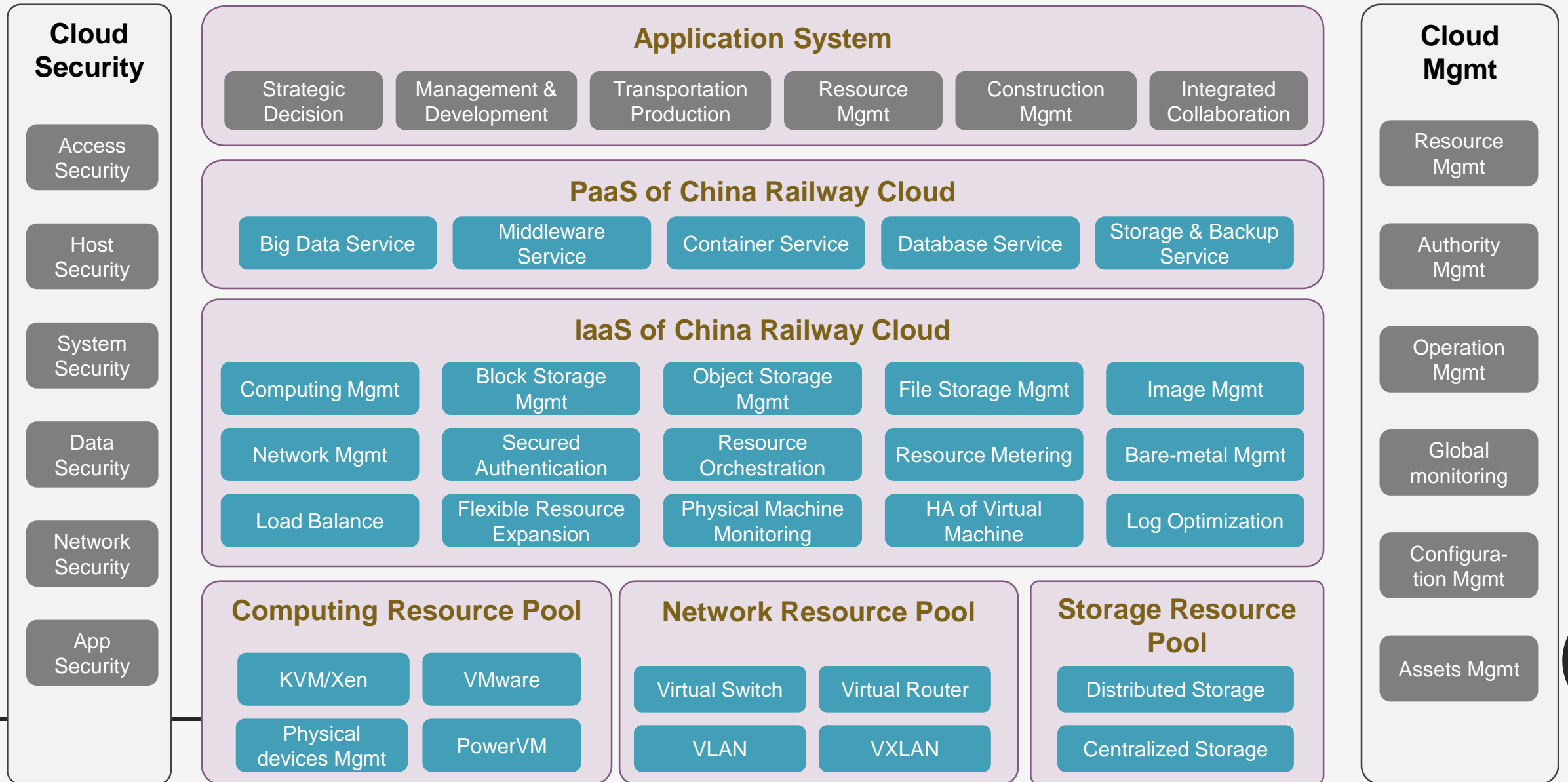
2000-2010

- Began experimenting of RSIC based minicomputer from 1995
- Large-scale use from 2000
- Virtualization technologies based on minicomputer began in 2007
- X86 servers were tried in mission critical systems instead of minicomputers in 2012

- In 2009, attempt to use virtualization technologies based on X86 servers
- Large-scale use from 2011
- Cloud computing research started in 2012
- SRCloud V1.0 release in 2015
- SRCloud was applied in 2016 in the headquarter of China Railway Corporation
- Currently, SRCloud has been applied in several Railway Bureaus since 2016



Overall Architecture of SRCloud Platform

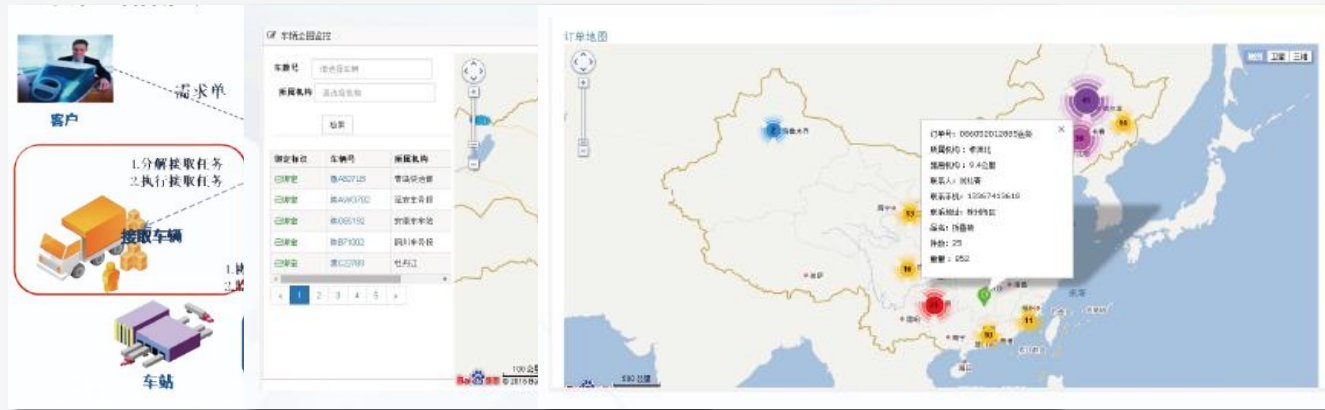


APPLICATION SITUATION



China Railway www.95306.cn

This is a comprehensive website for major freight service, including online freight services hall, bulk cargo trading services, pretty commodities trading services, goods purchasing, investment attraction services, as well as other services covering all regions and cities.



Railway Logistics Distribution and Scheduling System

This is a comprehensive and integrated system to provide full logistics services covering 18 railway bureaus, including bar-code scanning and goods tracking function, enhanced logistics control function, and extended two-way receiving and delivery services, etc.

APPLICATION SITUATION

Railway Train Flow Estimation and Adjustment System

Real time railway train flow estimation and scheduling of empty train allocation. Predict the distribution of traffic flow in the short future of railway network.

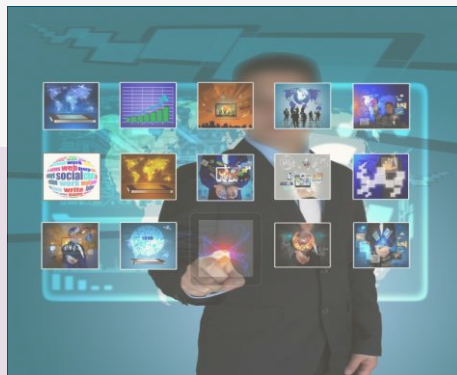


Railway Transportation Information Integration Platform

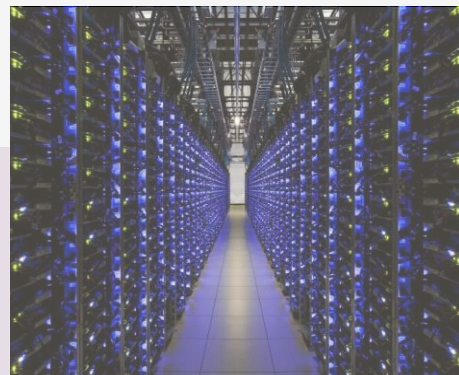
The data of train, vehicles, goods, locomotive and crew member are collected and shared on this platform. It is a comprehensive application with many functions such as data collecting, data processing, data service, statistics, etc.



USER VALUE



FLEXIBLE



EFFICIENT



ECONOMIZE



OPTIMIZED



Large platform

Micro service

Light integration



Decoupling of basic software and hardware, flexible resource sharing, agile application development, continuous application integration, rapid application deployment, automatic operation and maintenance, these are the development trend of large-scale traditional enterprise informatization construction.

Thank you!



Image: Reuters