



Now & Future of Taiwan High Speed Rail (THSR)

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Now

Future



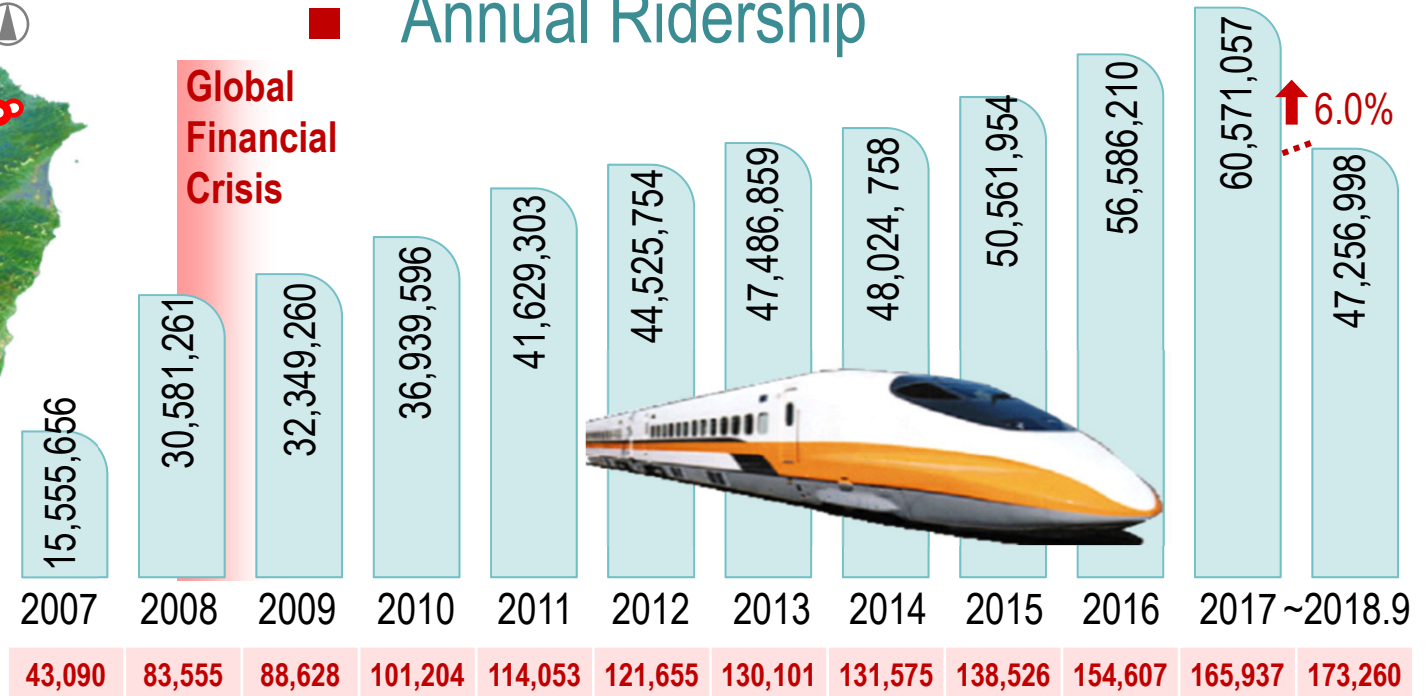
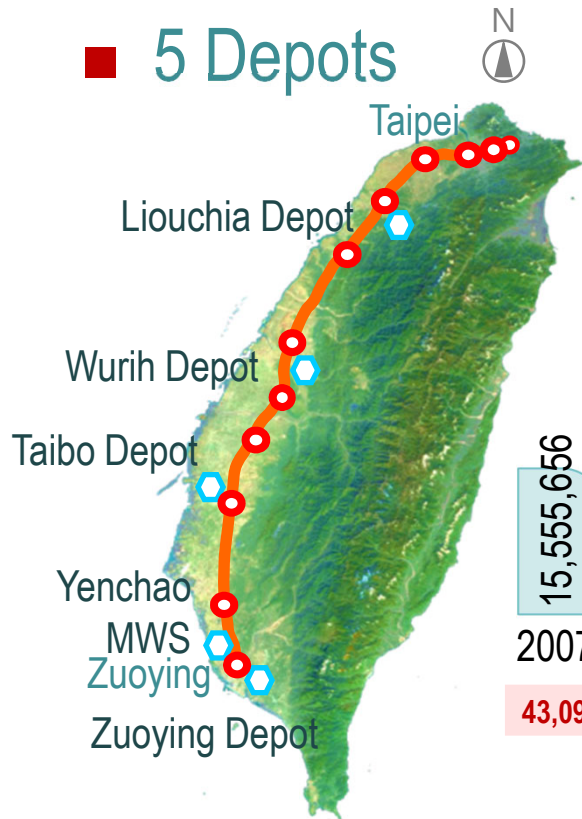
NOW & Future



Current Performance 1/2

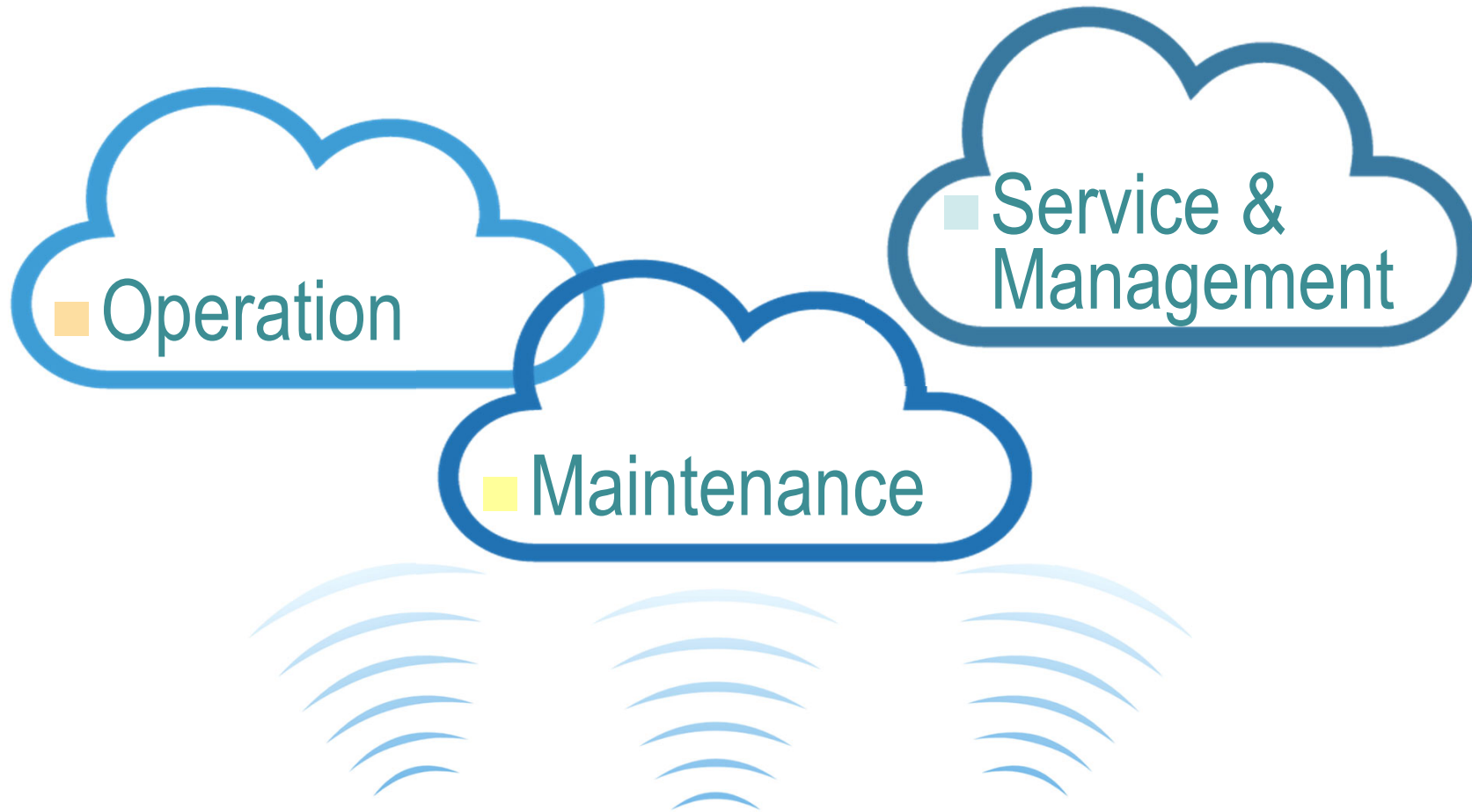


- 2007.1.5 Open
- Route Length 350km
- 12 Stations
- 5 Depots
- Total Ridership 512,068,666 (Over 500million)
- Annual Ridership



■ Average Daily Ridership

Current Performance 2/2



More Reliable, Efficient, Innovative

For Operation - TCS



- Hardware (Server, CPU, Power-Supply, LAN Monitor...etc.).
- Software (Control System).
- More Reliable and Efficient.



**Aging Facilities
Upgrade**



**Hardware &
Software**



**O&M Efficiency &
Reliability**

For Operation - Staff Rostering System



- More logical calculation.
- More efficient and time saving.
- Decreasing planning workload.



Staff Roster System



System Upgrade



Efficient Manpower Utilization

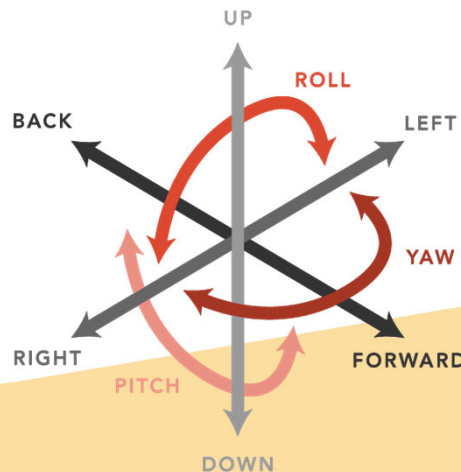


For Operation - Driving Simulator

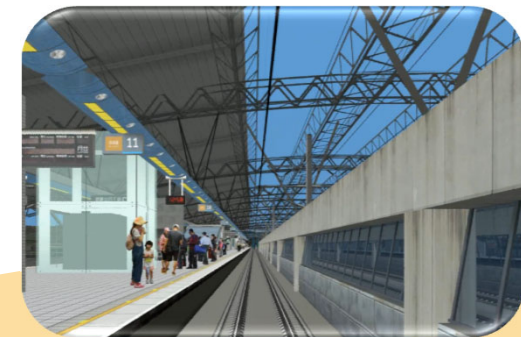
- 6 Degrees of Freedom Motion.
- Training Facilities integrated. (Cocks, Distribution Panel...etc.)
- Realistic Display.



New Simulator



6 Degrees of Freedom Motion...



Realistic Virtual Vision & Scenario

For Maintenance - Electronic Labs & Turnout Maintenance Section



- Building up self-maintenance abilities.
- Reinforcing maintenance training.
- Lower cost and reliable operation.



Electronic Labs & Turnout Maintenance Section



Self-Maintenance Ability Development



Ex. PCB, Turnout Maintenance

For Maintenance - CRP

(Control and Relay Panel)

- New power system technology and facilities upgrade.
- Protection Relay, Open-system structure...etc.
- JRC technical support.



CRP Replacement



Co-work with JRC



Improving System Efficiency



For Maintenance - C-DAS

(Connected-Driver Advisory System)

- For drivers, driver supervisors and controllers.
- Data of Main Line, Gradient, Curvature, Running Profile, Wind Speed, Wind Direction.
- Energy Saving Efforts.



**Smart
Driving, Learning,
Analytics, Integration,
Coordination**



**Data Thru
Management Cloud**

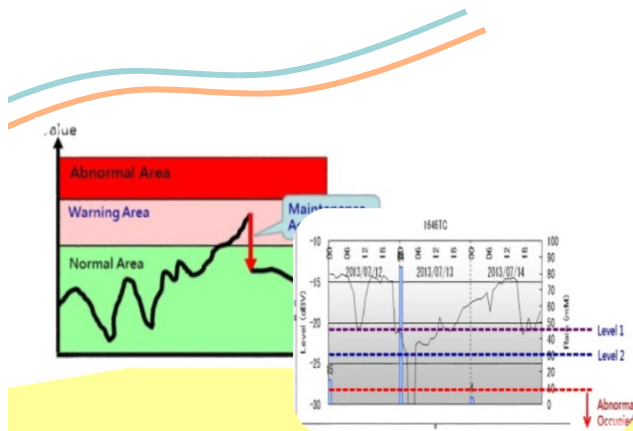
C-DAS R&D



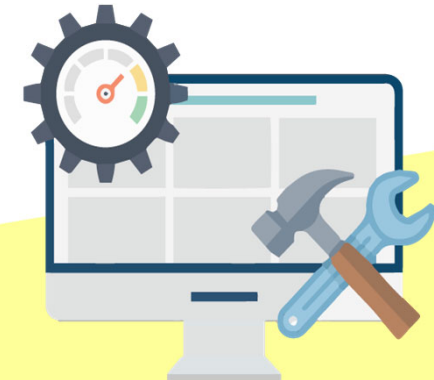
For Maintenance - EARS

(railway Event message digitalization & Automatic Reporting System)

- Real-time message on TETRA and T-talk.
- Shorten tools-preparation and rescue time.
- Data collection (IoT, Big data, AI) for CBM.



**Alarm info, Data
IoT, Big Data, AI**



Realize CBM



For Maintenance - EMI Solution

(ElectroMagnetic Interference)

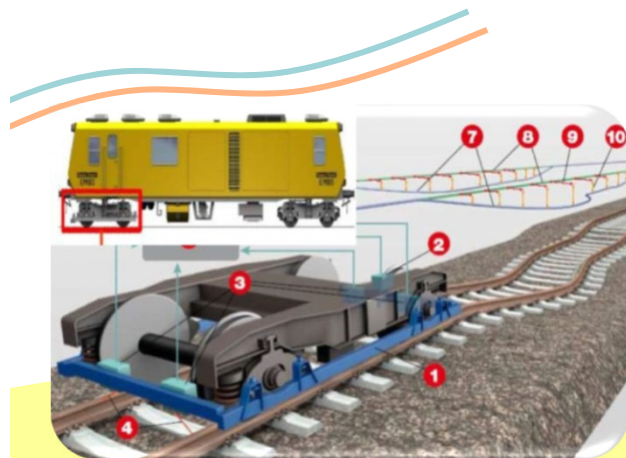
- ElectroMagnetic Interference in 700T driving cab.
- Same with JR 700 series.
- Come from Auxiliary Power Supply wire.



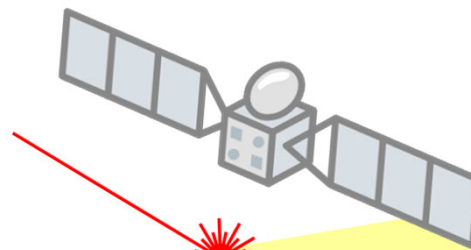
For Maintenance - Track Inspection System



- Equipment on EM120 work.
- Laser inspection and GPS technology.
- Exact inspection record.



Track Inspection System



Using Laser & GPS Technology

**Track Gauge,
Cross Level, Vertical,
Curvature...
Check Improvement**



For Service & Management

- Free Wi-Fi system introduced for station and train-set.
- Laying LCX in tunnel and increasing base station.
- With AR and VOD business model.

iTaiwan WiFi
2017.8 launched

4G-LTE
Via Base Station & LCX

**Free Wi-Fi,
AR, VOD...**

For Service & Management - PIDS



- New software and layout design.(Stop Station Visualization.)
- New Display hardware.
- Centralize control and monitor.



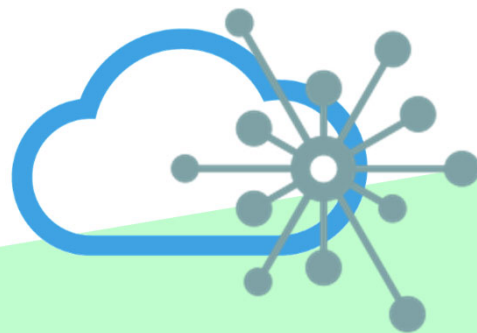
For Service & Management - Clouds



- Clouds for SMART HSR establishment.
- For Passenger Service.
- For Operation Management.



**Clouds for
Passenger Service &
Operation Management**



**IoT
Transmission**



**Big Data
Collection**

Recognition



- ITS R&D results are recognized by ITS Awards in Domestic and International.



ITS World Congress Hall of Fame Industry Award in 2016



**ITS Taiwan Award
2013~2015, 2017**

- ① Smart Train Operations
- ② Smart Safety & Emergency Management
- ③ Smart Ticketing Services
- ④ Smart Passenger Services
- ⑤ Integrated i-Traveling Information



Other Efforts - IPO

- IPO in 2016 and soon to be added into several significant index.
- High appraisal for management, performance.



2633(TW)



2018/8/23 Add to FTSE4Good Emerging Index

2017/7/18 Add to TWSE Corporate Governance 100 Index

2017/7/2 Add to FTSE TWSE Taiwan 50 Index

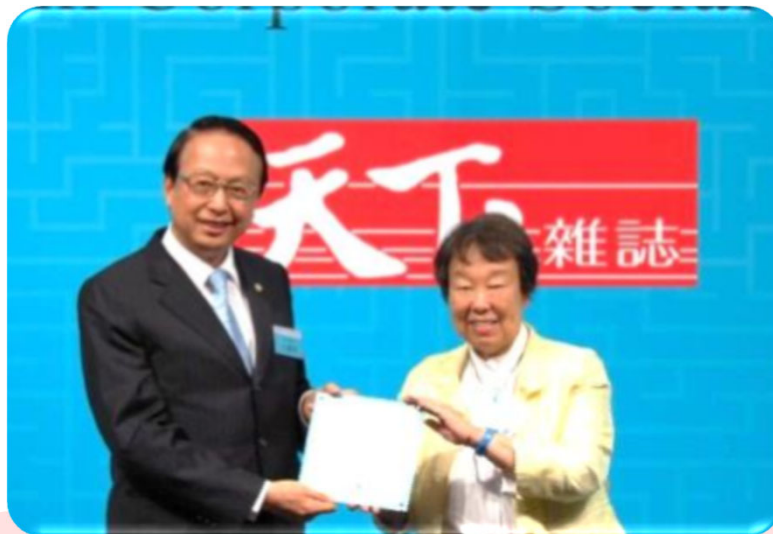
2017/5/16 Add to MSCI Taiwan Index

2016/10/27 IPO on TWSE (Taiwan Stock Exchange)



Other Efforts - CSR

- THSRC Corporate Social Responsibility performance is well recognized in 2018 by famous business magazine in Taiwan.



**Excellence in CSR Award
held by CommonWealth Magazine**

**Excellence in CSR Ceremony
2018**



Other Efforts - CSR

- Achieving sustainable corporate social responsibility.
- Support for underprivileged student and groups.
- Disaster relief assistance.
- Art performance sponsor.



Scholarship Project



Relief Assistance



Art Performance Sponsor

Other Efforts - International Exchange



- In-depth International Exchange with relevant industries.



**UIC Meeting
2015 @Tokyo**



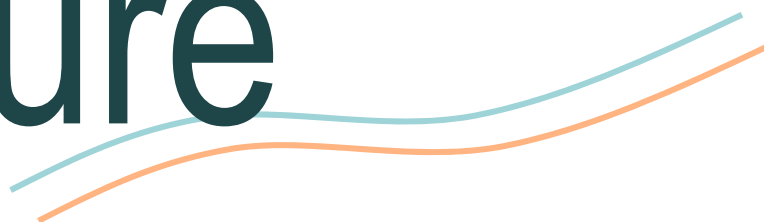
**IHRA Meeting
2016 @ Taipei**



**IHRA Meeting
2018 @ New Delhi**



Now & Future



Future Challenges



- Challenges need to overcome in the future.
- ITS R&D is necessary.



- Aging Population
- Declining Birth Rate



- Labor Shortage
- Decrease Ridership

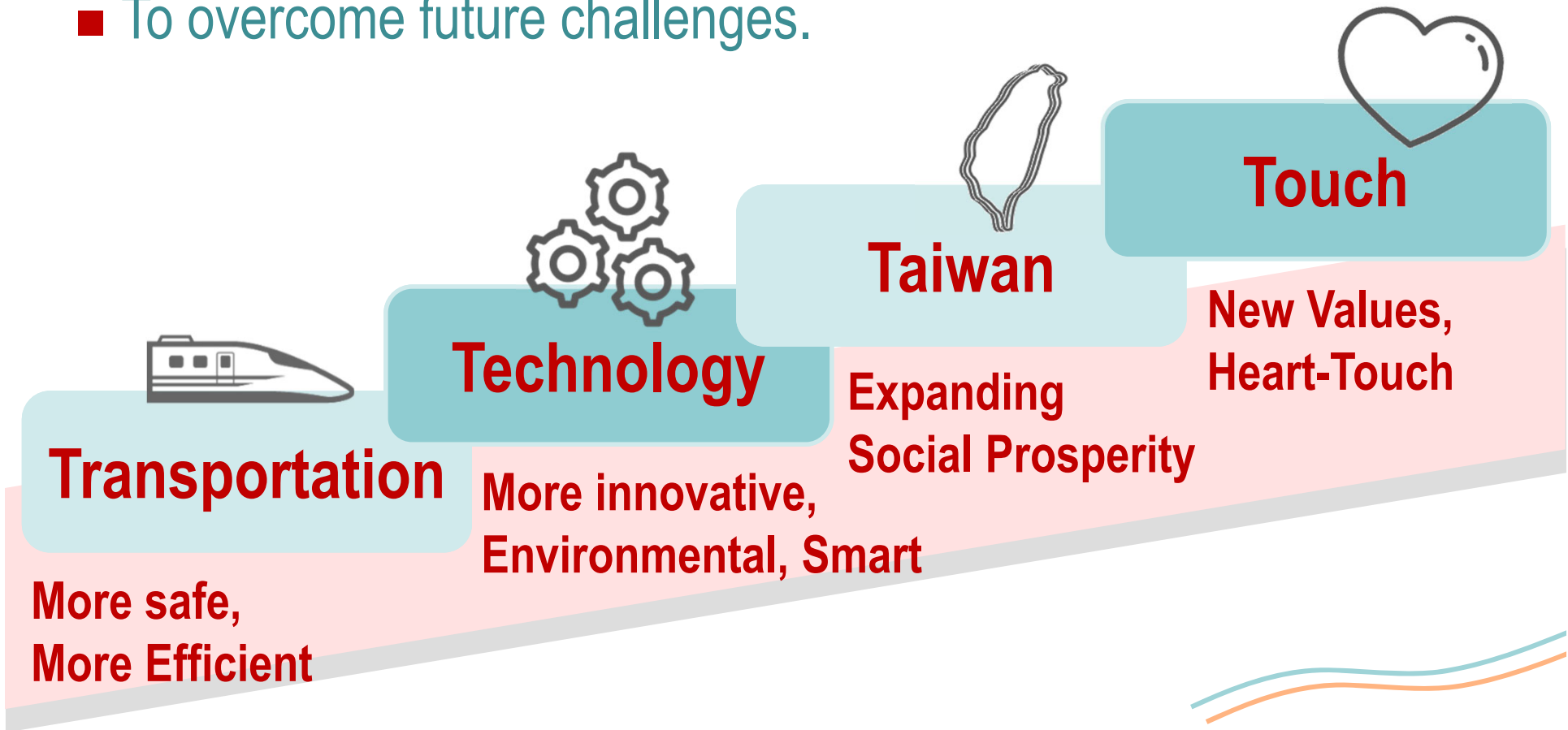


- IoT. Big Data.
- AI. Cloud

Future Vision



- 4T is THSRC main target for long-term development.
- To overcome future challenges.



Future Vision



- Appreciate for the long-term assistance from JR.
- THSRC is an highly-efficient and well service showcase already.
- Overseas railway business for O&M supporting and consulting.



Operation Knowhow



Maintenance Knowhow



Focus on Overseas Business



***THSRC seeks to be a platform
for progress and life improvement.***



Thanks for your attention