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GROUND TRANSPORTATION SYSTEMS
Transforming mobility
Countries, cities and transport operators rely on Thales’ ground transportation solutions to adapt to rapid urbanisation and meet new mobility demands – locally, between cities and across national frontiers.

Our expertise in signalling, communications, fare collection and cybersecurity gives people and goods the connected journey they need to move safely and efficiently.

And no matter how challenging the project, we stay by your side, committed to helping you creating the digital railways of the future – whatever it takes.

**A WORLDWIDE PRESENCE**

in rail technology since 1950

more than 100 customers

in more than 50 countries

**AREAS OF EXPERTISE**

- Signalling
- Communications & Supervision
- Fare Collection
- Services
- Digitalisation
- Cybersecurity

**SALES GROWTH**

<table>
<thead>
<tr>
<th>Year</th>
<th>Sales (€bn)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>1.4bn</td>
</tr>
<tr>
<td>2015</td>
<td>1.5bn</td>
</tr>
<tr>
<td>2016</td>
<td>1.6bn</td>
</tr>
<tr>
<td>2017</td>
<td>1.7bn</td>
</tr>
</tbody>
</table>
PARTNERING WITH YOU

WHY CHOOSE THALES?

1. TOTAL FLEXIBILITY: Thales equips trains from any rolling stock manufacturer.
2. BROWNFIELD TO GREENFIELD: from network modernisation to the development of new lines.
3. AN END-TO-END SUPPLIER: from stand-alone equipment to integrated turnkey projects.
4. A GLOBAL PARTNER: with teams worldwide, help is always close at hand.
5. DIGITAL BY NATURE: from IoT to autonomy, we enable the transition to a more sustainable world.
6. DEDICATED TO DELIVERY: no matter how complex the project, Thales gets the job done.
7. LONG TERM: pioneers in railways systems for 50 years and for years to come.

OUR CUSTOMERS
- Transport authorities
- Transport operators
- Rail infrastructure owners
- EPCs
- Consultants

THE MARKETS WE SERVE
- Main Line Rail
- Metro
- Tramway and Light Rail Transit
- Bus
- Road

CLOSE TO YOU
DEDICATED TEAMS IN 52 COUNTRIES

25 TRANSPORT R&D AND INTEGRATION CENTRES WORLDWIDE
OUR SOLUTIONS

SUPPORTING YOUR DIGITAL TRANSITION

Thales couples expertise in digital technology with a deep understanding of rail operations – a combination that makes us unique in the transport marketplace. Here are some examples:

INTERNET OF THINGS
Our cloud-based predictive maintenance service detects signs of trouble in assets and prescribes corrective action – before anything goes wrong.

ARTIFICIAL INTELLIGENCE
Our research into artificial intelligence in control centres and trains paves the way for rail autonomy.

BIG DATA
We’re helping to boost passenger satisfaction with big data tools such as passenger journey analytics to monitor and manage overcrowding.

CYBERSECURITY
Your infrastructure is critical infrastructure. That’s why our solutions are cybersecured by design, from signalling to fare collection systems.

SIGNALLING SYSTEMS
- Train control systems: ETCS L1, L2, L3
- Train control systems (attended or driverless): CBTC
- Route control systems: electronic interlocking
- Field equipment: Lite4ce™ acter digital axle counters, point machines and signals
- LRT & Tramway management control systems
- Traffic management systems
- Driver advisory systems

COMMUNICATIONS AND SUPERVISION SYSTEMS
- Integrated Operation Control Centres
- Telecom solutions: network backbone and radio
- Passenger information and connectivity
- Security and video surveillance
- SCADA for fixed assets and traction power
- Digital Services

REVENUE COLLECTION SYSTEMS
- Open multimodal fare collection systems
- Ticketing inspection and validation equipment
- Innovative ticket validation with contactless bank cards or smartphones
- From field equipment to cloud-native back-office solutions
- All-inclusive ticketing with road tolls and car park payments
As part of the Thales Group, we have access to innovative technologies from across five key industrial sectors: transport, aerospace, space, defence and security.

We draw on these capabilities to ensure the safety, efficiency and best performance of your transport networks.

When you choose Thales, you are choosing a partner with extensive expertise in managing complex projects across different domains worldwide – and the dedication to make sure you succeed.

Global technology leader in 5 MARKETS

Financial strength

Mastery of civil and military technologies

Global presence in 56 countries

Environmentally responsible and ethically driven

65,000 Employees

€15,8bn Revenues in 2017
### Metro and Urban Solutions

#### Train Control (CBTC and Tramway)
- Brazil: Santos
- Canada: Edmonton, Ottawa, Toronto, Vancouver
- Chile: Santiago
- China: Beijing, Guangzhou, Hefei, Nanjing, Shanghai, Shenzhen, Shijiazhuang, Songjiang, Wuhan
- France: Paris
- Hong Kong
- India: Hyderabad
- Italy: Cosenza
- Malaysia: Kuala Lumpur
- Qatar: Doha
- Saudi Arabia: Mecca
- Singapore
- South Korea: Busan, Incheon, Seoul
- Taiwan: Ankeng, Danhai, Kaohsiung
- Turkey: Istanbul
- UAE: Dubai
- UK: London
- USA: Detroit, Jacksonville, Las Vegas, Morgantown, Newark, New York, Orlando, San Francisco, Tampa, Washington

#### Communications & Supervision
- Australia: Sydney
- Azerbaijan: Baku
- Belgium: Brussels
- Brazil: Santos, São Paulo
- Canada: Edmonton, Montreal, Ottawa
- Chile: Santiago
- China: Beijing, Chongqing, Guangzhou, Shenzhen, Songjiang, Tianjin
- Denmark: Copenhagen
- Dominican Republic: Santo Domingo
- Egypt: Cairo
- France: Lyon, Marseille, Nantes, Paris
- Germany: Munich
- Greece: Athens, Thessaloniki
- Hong Kong
- India: Bangalore, Delhi, Hyderabad, Jaipur, Mumbai
- Ireland: Dublin
- Italy: Brescia, Florence, Palermo
- Japan: Tokyo
- Malaysia: Kuala Lumpur
- Mexico: Mexico City, Toluca
- Norway: Bergen
- Panama: Panama City
- Portugal: Lisbon
- Qatar: Doha, Lusail
- Saudi Arabia: Mecca
- Singapore
- Spain: Alicante, Bilbao, Madrid
- Taiwan: Ankeng, Danhai
- Turkey: Istanbul
- UAE: Dubai
- UK: Croydon, London, Manchester
- USA: Morgantown
- Vietnam: Hanoi

#### Fares Collection
- Algeria: Algiers
- Canada: Toronto
- China: Beijing, Nanjing, Shenzhen
- Dominican Republic: Santo Domingo
- Egypt: Cairo
- France: Bordeaux, Strasbourg
- India: Delhi
- Italy: Naples, Turin
- Mexico: Mexico City
- New Zealand: Auckland
- Norway: Oslo
- Portugal: Lisbon
- Qatar: Doha
- Singapore
- Spain: Gran Canaria
- Taiwan: Taipei
- Thailand: Bangkok
- UAE: Dubai
- USA: Morgantown
- Venezuela: Caracas

#### Route Control
- Azerbaijan: Baku
- Canada: Toronto, Montreal
- Portugal: Oporto

#### Services
- Algeria: Algiers
- Australia: Sydney
- Belgium: Brussels
- Canada: Ottawa, Toronto, Vancouver
- Chile: Santiago
- Dominican Republic: Santo Domingo
- Egypt: Cairo
- France: Bordeaux, Strasbourg
- India: Delhi
- Italy: Naples, Turin
- Mexico: Mexico City
- New Zealand: Auckland
- Norway: Oslo
- Portugal: Lisbon
- Qatar: Doha
- Singapore
- Spain: Gran Canaria
- Taiwan: Taipei
- Thailand: Bangkok
- UAE: Dubai
- USA: Morgantown
- Venezuela: Caracas

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*Did you know that 86 metro lines in more than 40 major cities depend on Thales SelTrac™ CBTC systems.*
Egyptian National Railways is embarking on an ambitious programme to modernise its rail network. Signalling upgrades are a key part of this programme: high-performance signalling makes it possible to improve safety, capacity and reliability at the same time.

Modernisation of the 208km Cairo-Alexandria corridor – Egypt’s busiest line – highlights what can be achieved. Thales’ signalling upgrade has made it possible to increase train speeds by 20km/h to 160km/h and has reduced the time interval between trains from 10 minutes to 5, boosting the frequency of services. The solution includes electronic interlocking, wayside equipment, telecommunications and a Centralised Traffic Control system.
MODERNISING THE LONDON UNDERGROUND

LONDON
To help transport operator TfL (Transport for London) cater for rising demand, Thales is implementing SelTrac™ CBTC signalling across the District, Circle, Hammersmith & City and Metropolitan lines – four of London’s busiest routes. The upgrade will mean faster and more frequent journeys for millions of passengers, with capacity up by a third. The main benefits will be delivered by 2022, when the frequency of trains at peak periods will increase to 32 trains per hour in central London.

IN OPERATION SINCE 1863

One of the world’s busiest metros

Jubilee and Northern lines already in service

SUPPORTING CHINA’S METRO EXPANSION

CHINA
China is the world’s biggest urban rail market. It’s also one of the fastest growing, with 8,500km of new lines planned in 40 cities. Thales is supporting this expansion through Thales SAIC Transport (TST) – a joint venture with Shanghai Electric dedicated to urban rail signalling. Since its foundation in 2010, TST has put 630km of lines into service with SelTrac™ CBTC. A further eight lines go into operation in 2017.

SelTrac™ CBTC 630km of lines in service

8 LINES into operation in 2017

WINNING HEARTS AND MINDS IN DUBAI

DUBAI
The Dubai Metro in the United Arab Emirates is the centrepiece of a successful programme to combat congestion and boost productivity in one of the world’s fastest-growing cities. Thales implemented a complete technology package to deliver a world-class passenger experience: the solution includes SelTrac™ CBTC for reliable driverless operations, easy multimodal ticketing and passenger information. Wi-Fi is provided on trains, so passengers can make the most of their journeys.

1% increase in ridership in 2016

Driverless operation

BREAKING NEW GROUND IN TAIWAN

TAIWAN
Taiwan’s 1ST TRAMWAY
Kaohsiung is Taiwan’s second largest city and its LRT (Light Rail Transit) system provides an attractive and reliable alternative to journeys by road. Work on extending the LRT to better serve Kaohsiung’s nearly 2.8 million citizens is now underway. Thales is providing the customer, China Steel Corporation, with a signalling solution that includes the supply of interlocking systems, Traffic Light Priority systems and Automatic Vehicle Localisation Systems (AVLS).

8 LINES into operation in 2017

Modern safety-critical systems

Reliable journeys for passengers

1ST METRO IN THE GULF REGION

18
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