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THALES

Factsheet
Thales in Singapore

Thales in Singapore:

- Present in Singapore since 1973
- Over 2,100 employees of close to 30 different nationalities
- 4 sites in Singapore

Highlights

Aerospace

- Avionics production centre for Airbus and Boeing aircraft.
- Avionics equipment and inflight entertainment supplied to major airlines in the region, including Air Asia, Lion Air, Garuda Indonesia, Malaysian Airlines and Philippine Airlines among other regional carriers.
- Largest avionics repair facility for the Group with an estimated 40,000 pieces repaired per year.
- Thales' AVANT inflight entertainment system flies aboard Singapore Airlines' medium-haul A350s, supported by Thales' FlytCARE maintenance services.
- Changi Airport, the busiest hub in South East Asia, uses the Thales LORADS III Air Traffic Management (ATM) solution.
- Joint AIR Lab with Civil Aviation Authority of Singapore (CAAS) co-located at Thales Digital Factory to collaborate on open ATM architecture and accelerate ATM innovation.

Transportation

- Completely resignalled SMRT's oldest MRT lines (North-South and East-West lines) which are now running on Communications-Based-Train-Control (CBTC) Signalling.
- Joint CBTC Simulation Facility set up with LTA and SMRT located at Bishan Depot.
- Completed delivery of signalling solutions for Canberra MRT station, Singapore's newest MRT station on the North-South Line.
- Revenue collection systems provided for the Singapore MRT's North-East and Circle lines.
- Thales ticketing solutions equip 50% of the Singapore MRT.
- Provided the first Operation Control Centre for the MRT's North-East line.
- Regional Integration Centre for Tramway and Communications in Singapore, with LRT solutions provided to the Taiwanese cities of Danhai, Kaohsiung and Ankeng – managed out of Singapore.

Defence & Security

- Thales provides the Singapore Armed Forces with equipment in air defence, commnications and naval sensors.
- The Singapore Navy's RSS Formidable frigates are equipped with Thales' Herakles radars.
- Thales provides the 24/7 airport apron surveillance system at Singapore Changi Airport, comprising 301 video-surveillance cameras and 27 control stations.
- Thales operates a cybersecurity consulting practice in Singapore with CREST-certified consultants engaged in cybersecurity risk assessments and penetration testing.

Digital Identity & Security

- Largest multi-product manufacturing facility for the Group in Singapore, exporting micro-modules, banking cards, inlay antennas and passport datapages to over 100 countries.
- Authentication solutions to secure Singpass.
- Biometric passports and systems to Immigration and Checkpoints Authority.

Thales in Singapore – Factsheet

Thales established its presence in Singapore in 1973 to support the expansion of aerospace-related activities in the Asia-Pacific region. Throughout the last four decades, the company grew from strength to strength and is today involved in the primary businesses of Aerospace (including Air Traffic Management), Defence & Security, Ground Transportation and Digital Identity & Security.

Thales today employs over 2,100 people in Singapore across all its business areas, with 4 sites across the country [21 and 28 Changi North Rise; 12 Ayer Rajah Crescent and Digital Factory @ 8 Cross Street]. In Changi, Thales has built strong industrial capability in avionics production and Maintenance, Repair and Overhaul (MRO) to support the aerospace industry and regional airlines from Singapore, including Singapore Airlines, Air Asia and Garuda Indonesia.

In recent years, Thales has also enhanced its competencies in the field of ground transportation with significant resignalling projects for the Singapore MRT, while establishing the Group's largest signalling simulation facility jointly with the Land Transport Authority (LTA) and SMRT, located onsite at SMRT's Bishan Depot. Singapore also houses the Regional Integration Centre for Tramways, driving projects for countries like Taiwan from Singapore. Thales continues to be a strong contributor and solutions provider to the Singaporean Defence and Security ecosystem.

The acquisition of Gemalto on 2nd April 2019 brought Thales an unrivalled portfolio of solutions based on technologies such as biometrics, data protection and cybersecurity that support global banks, telecommunications providers, and government and enterprise customers. Among these are GovTech and the Immigration and Checkpoints Authority (ICA), who have respectively leveraged Thales' authentication solutions for Singpass, and biometric passports and systems.With a strong commitment to research and technology, Singapore houses Centres of Excellence (CoE) in radars, naval drones and space, as well as the regional Innovation Hub and Digital Factory, which engage customers and partners in user-centred innovation.

Thales' gates and revenue collection systems facilitate the Singapore MRT. (Credit – Thales)

Research, Technology & Innovation

Thales is committed to furthering Singapore's goal as a regional innovation hub.

Research & Technology (R&T) centre: As one of the five Corporate labs for the Group in the world, the R&T Centre complements and leverages on Singapore's strong eco-system of research and development. The centre develops cutting-edge technical solutions to meet local requirements and consequently enhance Thales' product portfolios. As the Singapore-based platform for localising Thales technologies, the centre facilitates the transfer of technical knowledge from Thales' global network to Singapore and serves as an effective interface between Thales experts, Singapore researchers and end-users.

Thales Research & Technology Centre, designing critical information systems. (Credit – Thales)

Innovation Hub: Thales inaugurated an Innovation Hub in 2014 to engage customers and partners in user-centred innovation, enabling cross-functional collaborations in co-designing, prototyping and testing new concepts. Design Thinking workshops are conducted with customers across areas ranging from defence and maritime security, to aerospace, air traffic management and smart cities.

Thales Innovation Hub, Singapore, in action with customers. (Credit – Thales)

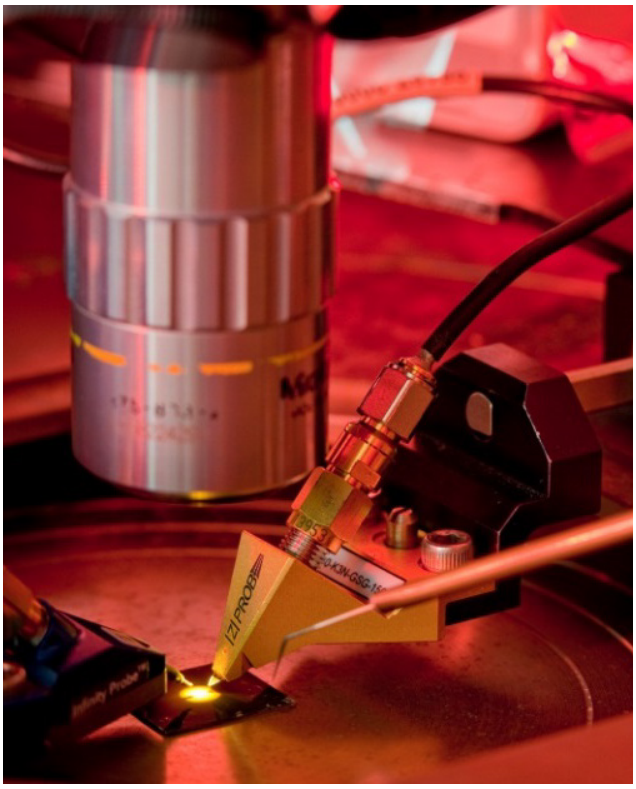
Digital Factory in Singapore: In November 2018, Thales Digital Factory expanded to Singapore, its third location after Paris and Montreal, to accelerate innovation and digital transformation for the Group and its' customers in the region. With experts in digital technologies (Internet of Things, Big Data, Artificial Intelligence, Cybersecurity) and skilled in agile working methods (LEAN, design thinking), the Digital Factory works to develop Minimum Viable Products (MVPs) in close collaboration with future users. Digital Factory in Singapore represents an investment of 20 Million Euros for the Group over 5 years. Since its inception, three MVPs have been cultivated locally, including COMPASS, an MVP which leverages machine learning for signalling systems, used in testing and commissioning.

Thales Digital Factory, Singapore, housing a team of 30 experts. (Credit – Thales)

Local cooperation

Thales further establishes its local presence with close collaboration with partners and customers. The Group has established joint labs and developed several strategic academic partnerships in Singapore as testament to its commitment to building Singapore's future.

CINTRA: In 2009, Thales established a joint research laboratory with the Nanyang Technological University (NTU) and the French National Centre of Scientific Research (CNRS). Named CINTRA (CNRS International – NTU – Thales Research Alliance), the lab fosters research in nanotechnologies for electronics, photonics, and related applications. The lab was renewed for a third tenure in 2018 and celebrates its tenth anniversary in 2019.



Close-up on a component developed at the CINTRA laboratory. (Credit – Thales)

S4TIN: In 2015, Thales extended its relationship with NTU in an alliance with the University and Thales Alenia Space. The collaboration saw the creation of a second joint laboratory, S4TIN (Smart Small Satellite Systems –Thales In NTU), working to develop new concepts and technologies for systems used on micro and nano-satellites.

Memorandums of Understanding (MoU): Thales has signed MoUs for academic cooperation with institutes of higher learning including with Ngee Ann Polytechnic and Republic Polytechnic.

Thales also sponsors academic prizes with Temasek Polytechnic and Nanyang Polytechnic. In 2014, Thales forged a partnership with the Singapore University of Technology & Design (SUTD) to strengthen its capabilities at the Innovation Hub, by hosting interns from SUTD and participating in the university's Capstone Programme, an integrated design project for senior year undergraduate students. Through involvement with aspiring engineers, Thales aims to attain fresh perspectives on innovation challenges and grow the pool of design-conscious engineering talents in Singapore.

Nurturing and recruiting new talent through internship programmes. (Credit – Thales)

Communication based train control (CBTC) Signalling simulation facility: In 2017 Thales established a joint LTA-SMRT-Thales CBTC signalling simulation facility at SMRT's Bishan depot. Set in a controlled environment, the facility is dedicated to testing scenarios and harnessing digital solutions which are tailored to the environmental and infrastructural conditions of the rail network in Singapore.

Since 2019, Thales has been part of the **Singapore Aerospace Programme** under the aegis of the Agency for Science, Technology and Research (A*STAR), Singapore's lead public sector agency for economic-oriented research. Through this collaboration, parties will team up to develop new technologies, applications and capabilities to solve avionics-related problem statements, furthering Singapore's recognition as a global aerospace nation.

Joint AIR Lab with Civil Aviation Authority of Singapore (CAAS): In 2019, the Civil Aviation Authority of Singapore (CAAS) and Thales announced the establishment of a S$30 million Joint Aviation Innovation Research lab (AIR Lab) in Singapore to drive innovation in new ATM technologies. Officially inaugurated in February 2020, the AIR Lab is situated with the Thales Digital Factory to work on an Open ATM System Architecture for Singapore.

Industry focus

Aerospace

Thales is recognised as a key partner for aerospace solutions, providing avionics and in-flight entertainment systems on-board world-renowned airlines in Asia-Pacific. The avionics business started in Singapore in the early 1980s to support the expansion of the Airbus Group in Asia-Pacific. As the main entry point and hub for Asia-Pacific today, aerospace activities in Singapore include Maintenance, Repair and Overhaul (MRO) for commercial avionics and In-Flight Entertainment (IFE) equipment, and production for commercial avionics.

Avionics Production: The avionics production facility in Singapore manufactures key systems for the Airbus A320, A330, A350 families and Boeing B787 fleets, including flight control computers, displays and electrical systems. This equipment is supplied to customers worldwide from Singapore.

Avionics Services: Thales Avionics suite of Avionics (Topflight Flight Management System -FMS, Low range radio altimeter-LRRA, Satellite communication, Traffic and Collision Avoidance systems-TCAS, Terrain Traffic Transponder Collision Avoidance system –T3CAS) has been widely selected and trusted by carriers around the world. The notable selections in the region include the group's largest selection campaign of 234 A320 in 2015 by Lion Air Group and subsequently 304 A320 in 2017 by AirAsia group.

Avionics and IFE Maintenance, Repair and Overhaul (MRO): From Singapore, Thales provides a wide range of support and services for avionics in the regional civil aerospace market, from maintenance services and parts distribution to standard exchanges, access to spares pools, pre-owned equipment trading and full component availability packages.

Thales provides a wide range of support and services for avionics in the regional civil aerospace market from Singapore. (Credit - Thales)

Thales manufactures key systems such as flight control computers, displays and electrical system for the Airbus A350 fleet from Singapore. (Credit - Airbus)

In 2017, with rapidly increasing repair volumes, Thales' expanded its avionics facility in Changi North Rise, consolidating all avionics production and Maintenance, Repair and Overhaul (MRO) activities under one roof for better synergies and process optimisation. Annually, over 40,000 pieces of equipment are repaired in the Singapore facility, making Singapore the **Group's largest centre for avionics maintenance and repair services worldwide.**

In addition to providing repair operations, Thales also began providing a Customer Support Centre (CSC) and repair operations for Diehl Aerospace's Singaporean subsidiary. The CSC has been operational since 1st January 2017 at the expanded Thales facility in Changi North Rise.

In 2018, Thales was successfully engaged by Airbus as a subcontractor for repairs of avionics components in the Asia-Pacific region, with all repairs being carried out from the Thales regional MRO hub in Singapore.

In-flight Entertainment:

In 2016, Singapore Airlines selected Thales' AVANT In-Flight Entertainment system and Ka-band connectivity solution for its fleet of A350 XWB aircraft configured for medium-haul operations. The fleet is equipped with Thales' latest AVANT monitors and the integration of Ka-band connectivity to the in-flight system. Ka-band connectivity provides passengers with the fastest airborne internet speeds that correspond to stringent passenger experience guidelines set by Singapore Airlines.

In 2018, the partnership between Thales and Singapore Airlines was strengthened with SIA's selection of Thales' FlytCARE maintenance services for the medium-haul A350 XWB fleet. Thales will service and support the in-flight entertainment and connectivity systems through a turn-key maintenance programme in an agreement with Singapore Airlines Engineering Company (SIAEC).

Singapore Airlines' medium-haul A350 XWB aircraft with Thales' AVANT IFE system on-board made its inaugural debut on a flight from Adelaide to Singapore on 17th December 2018.

Since 2019, Thales and SIA have partnered to closely collaborate in the areas of digital innovation.

Air Traffic Management:

Thales has delivered sophisticated Air Traffic Management (ATM) systems to the Civil Aviation Authority of Singapore (CAAS). In 2014, Singapore inaugurated the new Singapore Air Traffic Control Centre (SATCC), which uses Thales' LORADS III as a key Air Traffic Management system.

In 2018, Thales signed a Memorandum of Understanding with CAAS to strengthen collaboration between the two organisations. The collaboration marks a joint effort to explore how digital trends will impact the local ecosystem, its operational concepts, technology platforms and collaboration models. The collaboration was further reinforced with an agreement signed in March 2019 for CAAS and Thales to work together over the next 20 months to design and develop an Open ATM System architecture to accelerate ATM innovations. In September 2019, CAAS and Thales announced the set up of a joint Aviation Innovation Research (AIR Lab) co-located with Thales Digital Factory. The AIR Lab was inaugurated in February 2020.

Thales ATM systems play a key role in Changi Airport's Singapore Air Traffic Control Centre. (Credit – Jewel Changi Airport)

Transportation

Thales has in recent years reinforced its position as a market leader in the fields of ticketing, communication and signalling solutions in Singapore.

In 2011, the Land Transport Authority (LTA) selected Thales' revenue collection systems for the Downtown Line and for the upgrade of its SCADA system on the North-East Line for the Singapore Mass Rapid Transit (MRT) system. Thales had previously supplied revenue collection for the North-East and Circle lines.

In 2012, Thales was awarded one major re-signalling upgrade contract for the North-South (NS) and East-West (EW) Lines as well as a contract to deploy a signalling system for the Tuas West Extension. The 30-year old legacy signalling system on the NSEW lines was successfully upgraded to Communications-Based-Train Control (CBTC) signalling, on-schedule, with the North-South Line put into revenue operation in May 2017; the Tuas-West Extension a month later in June 2017; and the East-West line in May 2018. A new distributed train supervision architecture managing operations on both lines was also introduced, enabling seamless transfer from one line to another. This not only enhanced signalling system reliability, but also passenger experience as commuters experienced shorter waiting times between trains."

Thales operates a CBTC Simulation Facility with the Singapore Land Transport Authority and Singapore MRT. (Credit - Thales)

In April 2018, Thales opened and currently operates a CBTC Simulation Facility, together with LTA & SMRT, located at SMRT's Bishan Depot. The facility is designed to simulate the reliability and robustness of Thales' signalling system, using different test scenarios that emulate the environmental and infrastructural conditions of Singapore's rail network.

In 2019, Thales delivered, ahead of schedule, signalling solutions to Canberra MRT station, Singapore's newest MRT station serving 17,000 households, built on the existing North-South Line.

Regional Integration Centre for Tramway and Railway Communications:

In January 2015, Thales was awarded a contract for the design and manufacturing for signalling, communications and an Operational Control Centre (OCC) for Taiwan's Light Rail Transit (LRT) project in the city of Danhai.

Following this first success in Taiwan, in January 2017, Thales was awarded a contract for the implementation of a signalling system for the extension of the LRT in Kaohsiung, Taiwan's second largest city. The four and a half-year contract comprises signalling, supply of interlocking systems, Traffic Light Priority systems as well as the Automatic Vehicle Localisation System (AVLS). In September 2017, Thales won its third Taiwanese LRT contract for Ankeng in New Taipei City for signalling, communications and Operation Control Centre (OCC) systems.

Through these projects, Thales in Singapore has been recognised as the Regional Integration Centre for Tramway and Railway Communications, enabling it to extend its transportation footprint in the region with cutting-edge urban transportation technology and integration expertise developed and exported out of Singapore.

Thales supplies signalling, communications and an Operational Control Centre to Taiwan's Danhai Light Rail Transit (LRT). (Credit - Thales)

Defence & Security

Thales has been providing the Singapore Armed Forces with equipment in air defence, communications and naval sensors to keep Singapore safe and secure.

The Singapore Navy's RSS Formidable frigates are equipped with Thales' Herakles radars, a multifunctional system operating in S-band. The solution performs simultaneous long-range air and surface surveillance Thales is also working closely with the Navy in the area of unmanned systems.

On the Homeland Protection front, Thales has been working with the Ministry of Home Affairs (MHA) since 1995. It was awarded significant contracts from the Singapore Police Force and Singapore Civil Defence Force to develop their Operational Command & Control Centres in incident management.

In the field of Critical Infrastructure Protection, Thales was awarded a contract for airport apron surveillance by Changi Airport Group in 2010.

Cybersecurity: Thales operates a cybersecurity consulting practice in Singapore with CREST-certified consultatnts engaged in cybersecurity risk assessments and penetration testing.

Thales continues to work closely with the government of Singapore, lending its expertise to develop cutting-edge defence technologies with its research arms, DSO National Laboratories and the Future Systems & Technology Directorate.

The Republic of Singapore Navy's frigate RSS Formidable (68) is fitted with Thales' Herakles radar. (Credit – US Navy)

Digital Identity & Security

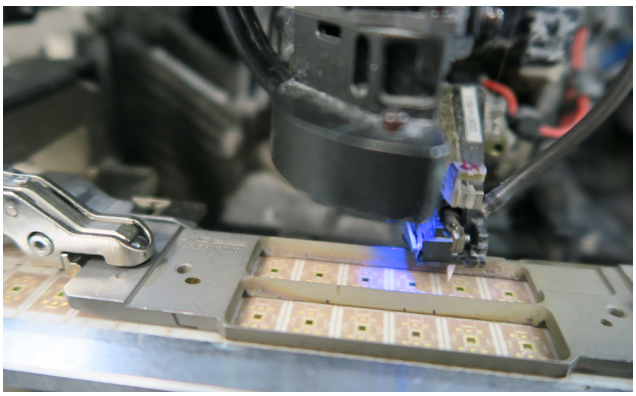
With the acquisition of Gemalto, now known formally as Digital Identity and Security (DIS), Thales expanded its footprint within the field.

The Thales Manufacturing Competence Centre (MCC) at Ayer Rajah Crescent houses the Group's largest and only multi-product manufacturing facility, producing banking cards, micro-modules, radio frequency antennas and passport datapages. Housed in an extensive 21,000m^2 facility at Ayer Rajah Crescent, the MCC operates 24/7, producing one-third of Thales' international banking and payment cards volume as well as passport datapages for more than 500 customers located in over 100 countries worldwide.

In Singapore, Thales maintains a strong commitment to innovation, research and technology. Alongside the MCC, the Engineering Competence Centre (ECC) in Singapore is the largest multi-product R&D centre for DIS, developing cutting-edge technologies locally.

The ECC comprises over 350 engineers engaged in developing products across all of the Digital Identity and Security businesses. The diverse technical expertise at this site has produced cutting-edge technologies in various areas, including biometric card payments, embedded secure elements in mobile devices and automotive solutions such as digital car keys.

In Singapore, Thales provides biometric passports and systems for secure immigration clearance to Singapore's Immigration and Checkpoints Authority. Authentication solutions are used in securing access to government e-services (SingPass), while NFC ticketing solutions make it possible for Singapore's public transit commuters to pay their fare using their mobile devices.



Thales' Manufacturing Competence Centre produces banking cards, micro-modules, radio frequency antennas and passport datapages. (Credit - Thales)

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