

(Constituted in the Republic of Singapore pursuant to a Trust Deed dated 25 August 2005 (as amended))

For Immediate Release

Singapore's first large-scale middleware deployment in a commercial business park to enable seamless robotics operations

Mapletree Pan Asia Commercial Trust, supported by IMDA, invests in robotics middleware for cleaning, surveillance and last mile delivery within Mapletree Business City

Singapore, 2 November 2023 – Mapletree Pan Asia Commercial Trust (“MPACT”), supported by the Infocomm Media Development Authority (“IMDA”) and bringing together industry players, is investing in the deployment of the Robotics Middleware Framework (“RMF”)-based middleware within Mapletree Business City (“MBC”) to power robotics with three different functions – cleaning, surveillance and last mile delivery – progressively over the next two years. The project marks Singapore’s first large-scale RMF-based middleware deployment to bring about robotic interoperability and orchestration in an integrated office and business park complex with 268,600 sqm of lettable area.

The drive to enhance interoperability is part of IMDA’s Digital Connectivity Blueprint, which was launched in June 2023 to ensure that Singapore’s digital infrastructure is future ready. The RMF-based middleware layer plays a key role in enabling physical-digital infrastructure, which facilitates interoperability and enables easier deployment and integration of solutions.

The strategic partnership between IMDA and MPACT will see the commencement of RMF-based middleware implementation at MBC to foster seamless deployment of different robotics use cases.

MBC – An ideal “playground” for the industry to conduct AMR trials

In Singapore, RMF technology is still in its formative stages with limited sites for Autonomous Mobile Robot (“AMR”) industry players to test the technical and operational feasibility of integration with RMF-based middleware. As a pioneering move in a commercial context, MPACT has committed to launching MBC as an experimental space for AMR players. This “playground” not only facilitates AMR players to plug in and connect to the RMF-based middleware for trial

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testing, but also paves the way for the establishment of interoperability standards. Through these trials, the aim is to bolster the RMF-based middleware's efficacy, unlocking its full potential.

Notably, MBC stands out as an ideal "playground" given its expansive size and layout, diverse tenant mix including F&B options. These elements collectively create a multi-faceted environment for robust AMR testing, thus enriching the quality of the trials and amplifying the potential for scalability and interoperability.

The benefits for MPACT and its service providers and tenants include:

- Cleaning operations: Optimising the use of current cleaning AMRs for seamless multi-floor operation in all buildings within the premises, without the need for cleaners to manually move the AMRs across levels. This will free up cleaners for other tasks, leading to overall efficiency gains.
- Surveillance: Surveillance AMRs can complement security guards in patrolling large-scale compounds, resulting in productivity gains. Surveillance AMRs also serve as a deterrent for suspicious activities such as loitering and trespassing, contributing to a safer environment.
- Last-mile delivery: Last mile delivery AMRs can be used for delivering food and parcels, potentially increasing sales for F&B tenants and bringing greater convenience to office tenants.

Mr Leong Der Yao, Assistant Chief Executive, Sector Transformation, IMDA, said, "We look forward to working with MPACT on this exciting first for Singapore and the industry. When deployed, this will be a showcase to the rest of the sector on how RMF-based middleware enables interoperability and orchestration of AMRs to drive digital transformation. This is part of IMDA's larger efforts to play a catalyst role by bringing ecosystem players together to address future demands."

Ms Sharon Lim, Chief Executive Officer of MPACT Management Ltd, the manager of MPACT, said, "We are pleased to partner IMDA on this large-scale middleware deployment in MBC. We see tremendous value in combining expertise from partners across the ecosystem, to adopt the seamless and innovative use of robotics technologies at MBC. In doing so, we hope to improve operational efficiencies and create a differentiated experience for our tenants at MBC as well as across the rest of our portfolio."

RMF promises a cost-effective solution to integrate AMR with building infrastructure

In anticipation of the growing need for interoperability and large-scale autonomy, IMDA will continue to bring ecosystem players together to enhance RMF-based middleware features and develop new capabilities, such as multi-system integration to achieve seamless operation of multiple autonomous systems, and to scale and proliferate the benefits of autonomy.

There is a growing trend of AMR deployment across various sectors such as healthcare, logistics, hospitality as well as environment services to complement the ageing workforce and address manpower needs in Singapore. With this trend, the increasing diversity of robot fleets has given rise to the need for interoperability and orchestration. Currently, AMRs are unable to communicate easily with building infrastructure and with one another. In addition, in situations such as a gridlock, there is no intelligent centralised control to manage and deconflict traffic.

The RMF is an open-source framework which enables interoperability and orchestration among heterogeneous robot fleets and building infrastructure. RMF-based middleware serves as the means to bridge this diversity and provides the foundation for easy plug and play of different types of AMRs to enable seamless deployment at scale. Benefits include robotics deployment for seamless operation without the need for human intervention, resulting in productivity and efficiency gains; avoiding infrastructure modification costs required for the deployment of individual robots; and realisation of potential use cases by using a standardised integration and communication framework.

For more information on IMDA's efforts to foster interoperability through middleware, please visit [Autonomous Mobile Robots](#).

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About Mapletree Pan Asia Commercial Trust

Mapletree Pan Asia Commercial Trust (“MPACT”) is a real estate investment trust (“REIT”) positioned to be the proxy to key gateway markets of Asia. Listed on the Singapore Exchange Securities Limited on 27 April 2011, it made its public market debut as Mapletree Commercial Trust and was subsequently renamed MPACT on 3 August 2022 following the merger with Mapletree North Asia Commercial Trust. Its principal investment objective is to invest on a long-term basis, directly or indirectly, in a diversified portfolio of income-producing real estate used primarily for office and/or retail purposes, as well as real estate-related assets, in the key gateway markets of Asia (including but not limited to Singapore, Hong Kong, China, Japan and South Korea).

MPACT’s portfolio comprises 18 commercial properties across five key gateway markets of Asia – five in Singapore, one in Hong Kong, two in China, nine in Japan and one in South Korea. They have a total lettable area of 11.2 million square feet independently valued at S\$16.6 billion (as at 31 March 2023). For more information, please visit www.mapletrerepact.com.

About the Manager – MPACT Management Ltd.

MPACT is managed by MPACT Management Ltd., a wholly-owned subsidiary of Mapletree Investments Pte Ltd. The Manager’s main responsibility is to manage MPACT’s assets and liabilities for the benefit of Unitholders. The Manager is also responsible for setting the strategic direction of MPACT on the acquisition, divestment and/or enhancement of assets of MPACT in accordance with its stated investment strategy. The Manager’s key objectives are to provide Unitholders of MPACT with an attractive rate of return on their investment through regular and relatively stable distributions and to achieve long-term growth in DPU and net asset value per Unit, with an appropriate capital structure for MPACT.

About the Sponsor – Mapletree Investments Pte Ltd

Headquartered in Singapore, Mapletree is a global real estate development, investment, capital and property management company committed to sustainability. Its strategic focus is to invest in markets and real estate sectors with good growth potential. By combining its key strengths, the Group has established a track record of award-winning projects, and delivers consistent and high returns across real estate asset classes.

The Group manages three Singapore-listed real estate investment trusts (“REITs”) and eight private equity real estate funds, which hold a diverse portfolio of assets in Asia Pacific, Europe, the United Kingdom (“UK”) and the United States (“US”). As at 31 March 2023, Mapletree owns and manages S\$77.4 billion of office, retail, logistics, industrial, data centre, residential and student accommodation properties.

The Group’s assets are located across 13 markets globally, namely Singapore, Australia, Canada, China, Europe, Hong Kong SAR, India, Japan, Malaysia, South Korea, the UK, the US and Vietnam. To support its global operations, Mapletree has established an extensive network of offices in these countries.

For more information, please visit www.mapletree.com.sg.

About Infocomm Media Development Authority

The Infocomm Media Development Authority (“IMDA”) leads Singapore’s digital transformation by developing a vibrant digital economy and an inclusive digital society. As Architects of Singapore’s Digital Future, we foster growth in Infocomm Technology and Media sectors in concert with progressive regulations, harnessing frontier technologies, and developing local talent and digital infrastructure ecosystems to establish Singapore as a digital metropolis.

For more news and information, visit www.imda.gov.sg or follow IMDA on Facebook (IMDAsg) and Twitter (@IMDAsg).

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