MOTAC

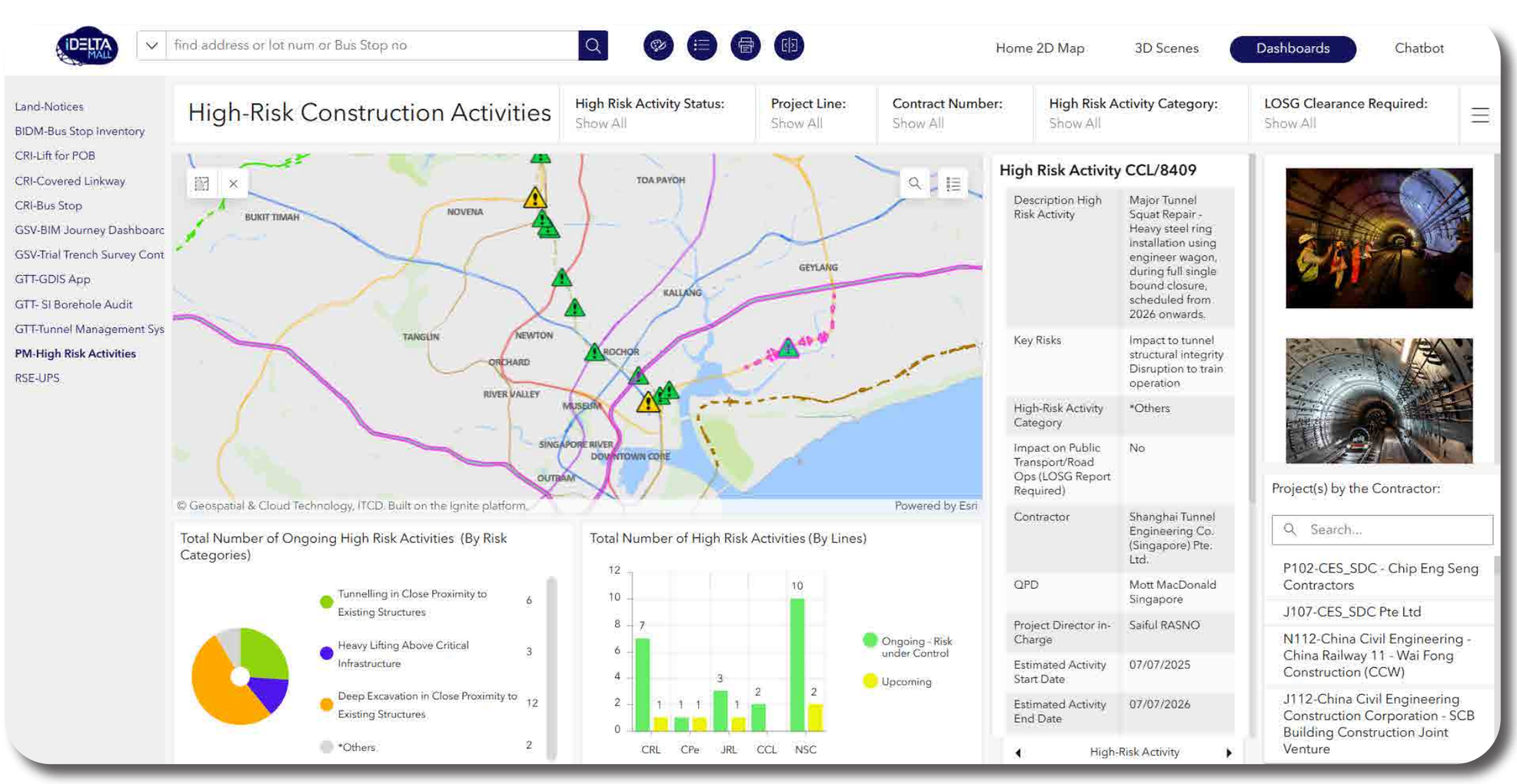
Ministry of Transport Awards Ceremony 2025/26

MINISTER'S INNOVATION AWARD

Land Transport Authority
We Keep Your World Moving

MERIT AWARD

iDELTA MALL: INTEGRATED GEOSPATIAL ENGINEERING PLATFORM



PROJECT TEAM

Land Transport Authority

Dr. Goh Kok Hun
Dr. Kelvin Goh
Yang Xue
Benjamin Leong
Poo Yew Hui
Freddy Ng Wei Siang
Ang Sock Cheng
Lum Lye Kit
Elton Png

MOTAC

Ministry of Transport Awards Ceremony 2025/26

MINISTER'S INNOVATION AWARD

Land Transport Authority
We Keep Your World Moving

MERIT AWARD

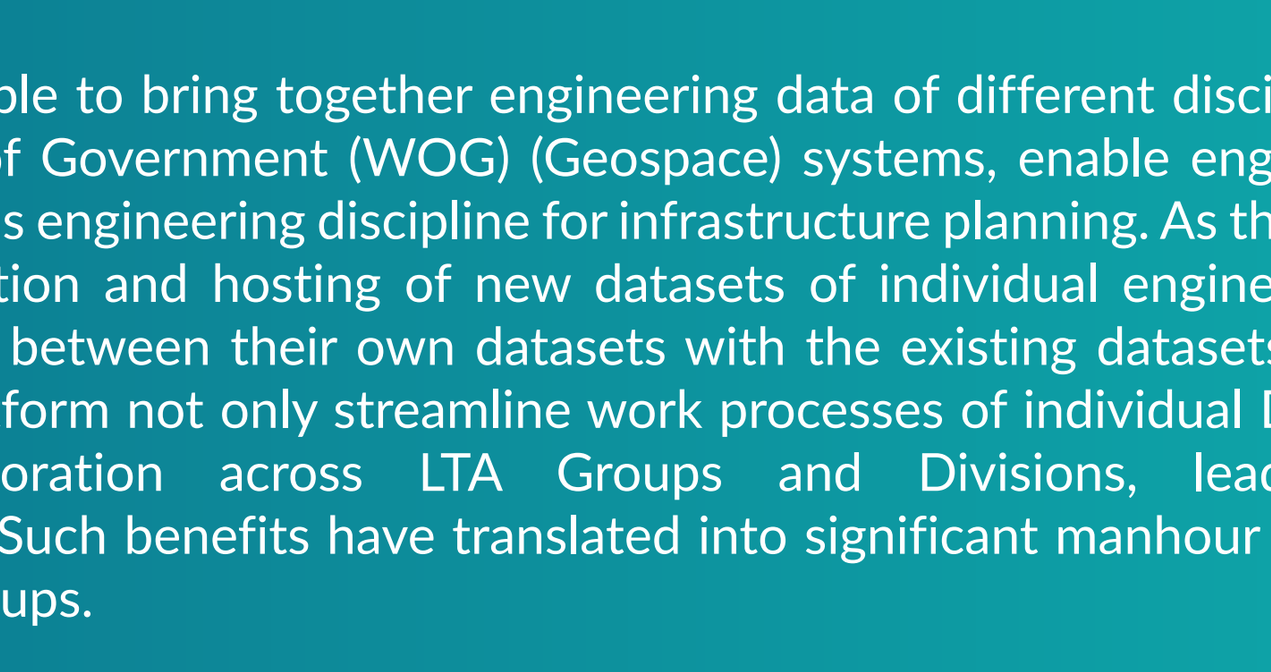
iDELTA MALL: INTEGRATED GEOSPATIAL ENGINEERING PLATFORM

IMPETUS FOR PROJECT

iDELTA Mall is an online Geographic Information System (GIS) platform developed to address the challenge of managing fragmented engineering data within LTA. Before its implementation, engineering data was scattered across multiple sources within LTA and across agencies, resulting in time-consuming searches and duplicate data purchases. Given LTA's role in managing numerous concurrent infrastructure projects, ready access to engineering information is crucial for timely assessment and analysis.

The platform is able to bring together engineering data of different discipline from existing LTA and Whole of Government (WOG) (Geospace) systems, enable engineers to correlate data across various engineering discipline for infrastructure planning. As the platform can also support the creation and hosting of new datasets of individual engineer, they can make further discovery between their own datasets with the existing datasets for infrastructure planning This platform not only streamline work processes of individual Division, but it also enhances collaboration across LTA Groups and Divisions, leading to efficient decision-making. Such benefits have translated into significant manhour savings across LTA Divisions and Groups.

The project was developed entirely in-house by LTA's Land Division under Infrastructure, Design & Engineering (IDE) Group with no funding required from LTA/MOT. iDELTA Mall supports LTA's digitalisation and environmental sustainability initiatives.



Interface of iDELTA Mall

MOTAC

Ministry of Transport Awards Ceremony 2025/26

MINISTER'S INNOVATION AWARD

Land Transport Authority
We Keep Your World Moving

MERIT AWARD

iDELTA MALL: INTEGRATED GEOSPATIAL ENGINEERING PLATFORM

IMPETUS FOR PROJECT

Statement of Need:

LTA's engineering data was fragmented across multiple sources, causing time-consuming searches, duplicate purchases, and preventing cross-disciplinary collaboration for infrastructure planning across the entire project life cycle. With numerous concurrent projects requiring timely assessment, engineers could not easily correlate critical information across different engineering domains. iDELTA Mall addresses this by providing a unified Geographic Information System (GIS) platform that enables seamless data correlation, collaborative decision-making, and transforms fragmented workflows into efficient processes delivering substantial manhour savings.

MOTAC

Ministry of Transport Awards Ceremony 2025/26

MINISTER'S INNOVATION AWARD

Land Transport Authority
We Keep Your World Moving

MERIT AWARD

iDELTA MALL: INTEGRATED GEOSPATIAL ENGINEERING PLATFORM

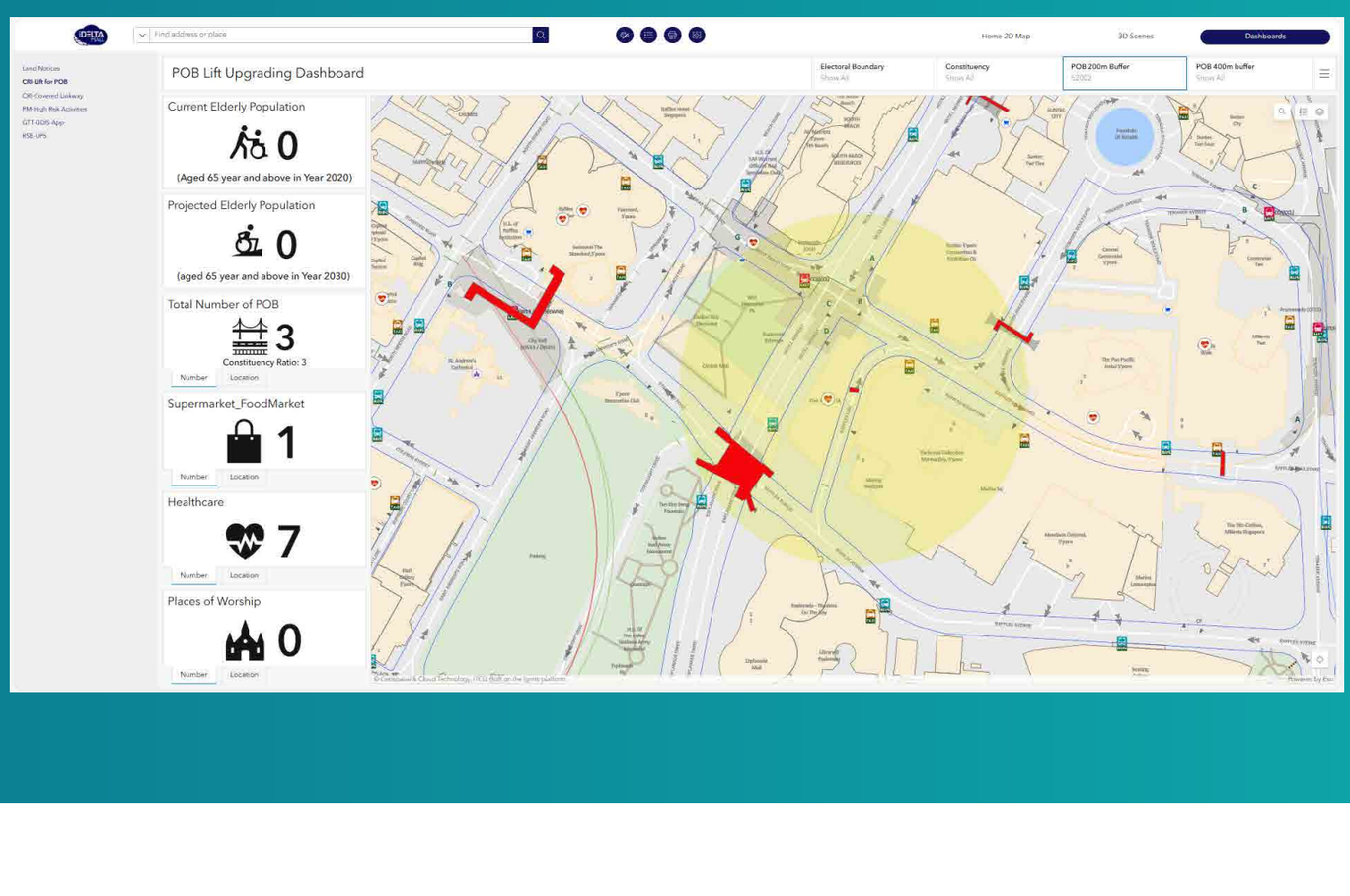
EXTENT OF INNOVATIVENESS

iDELTA Mall goes beyond traditional GIS platforms by unifying workflows across the entire project life cycle—planning, design, construction, and operations & maintenance—into one integrated environment. By embedding geospatial insights directly into daily tasks, it replaces fragmented, manual processes with streamlined, data-driven, and real-time operations. This represents a step-change in how engineering work is carried out, delivering greater clarity, speed, and confidence in decision-making. Key innovation includes:

1. Data-Driven Spatial Analysis: Supports Infrastructure Planning

Customised dashboards allow smart spatial analysis, transforming commuter infrastructure planning by automatically identifying existing and planned commuter infrastructures within a specified radius and instant proximity analysis to key amenities such as schools, transport nodes, demographic profile and catchment areas. This transforms what was previously a multi-day process requiring extensive manual coordination across divisions into an efficient, data-driven decision-making tool. Engineers can now assess proposals within minutes by accessing comprehensive information about existing infrastructure, planned developments, and surrounding amenities through a single platform.

<u>Assessment for Road Commuter Infrastructure Development: Pedestrian Overhead Bridge (POB) Lift Prioritisation</u>



OVERVIEW | IMPETUS | INNOVATION | IMPACT | POTENTIAL

MINISTER'S INNOVATION AWARD

Land Transport Authority
We Keep Your World Moving

MERIT AWARD

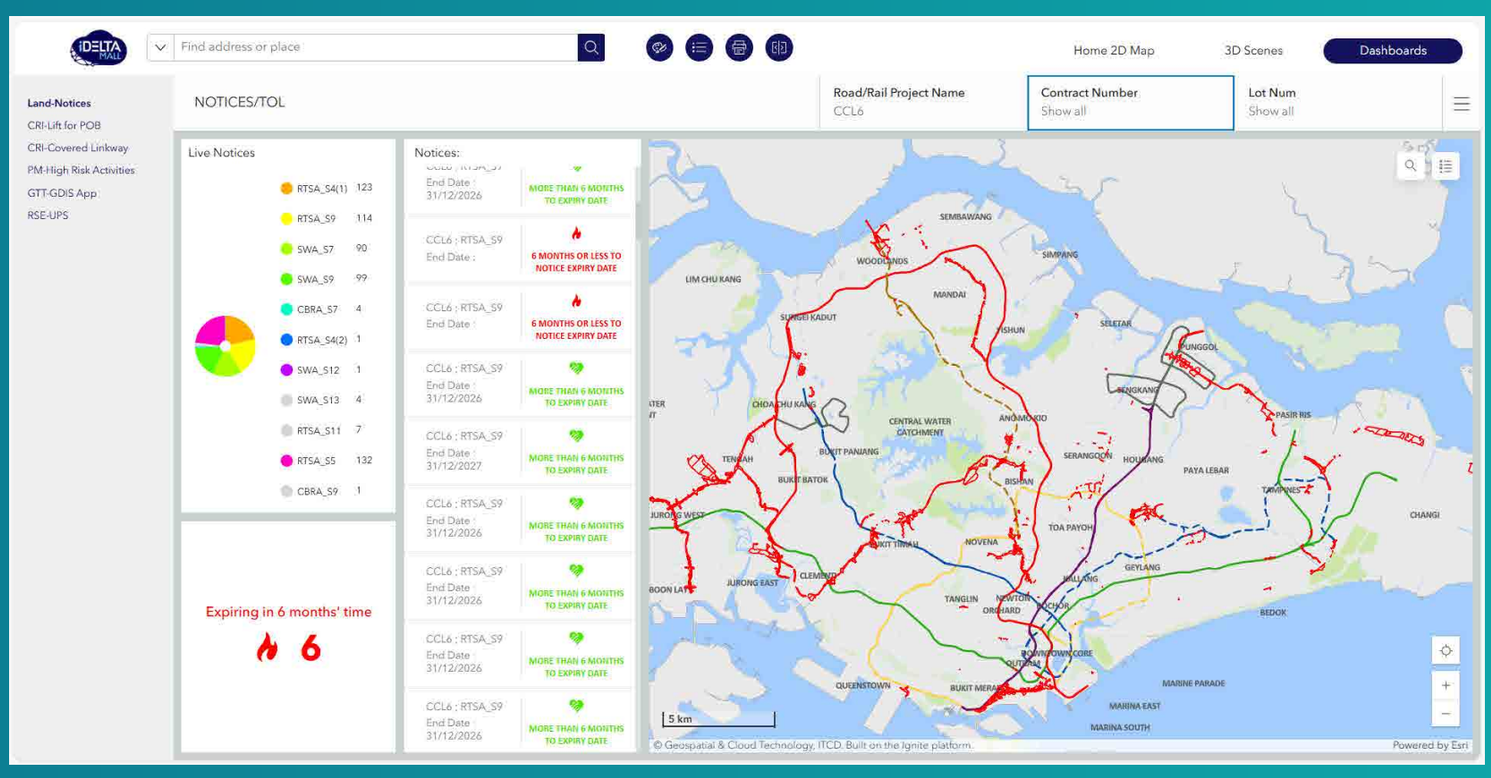
iDELTA MALL: INTEGRATED GEOSPATIAL ENGINEERING PLATFORM

EXTENT OF INNOVATIVENESS

2. Geospatial Management System: Dynamic Tracking and Visualisation Capability

The real-time tracking system leverages advanced GIS capabilities to transform regulatory notice management through spatial visualisation. Previously, officers had to manually search through records and coordinate with multiple colleagues to locate specific notices. Through iDELTA Mall, notices are now spatially referenced and instantly visualisable, with filtering and query capabilities. Officers are able to quickly identify notice expiry dates and served areas, facilitating timely follow-up actions.

Tracking Regulatory Notices served by LTA Island wide



3. Geospatial Project Risk Management: Tracking of High-Risk Construction Activities

The High-Risk Construction Activities (HRA) Dashboard replaces LTA's manual email and Excel-based reporting system with a centralised platform providing near real-time updates of all high-risk construction activities across LTA rail and major road projects. The dashboard enables real-time field updates via mobile devices, allowing project teams to carry out real-time updating of information directly from construction sites using personal devices. The solution transforms how management traditionally receive critical information. They can now have immediate access to near real-time information which enables them to make timely and informed decisions.

MINISTER'S INNOVATION AWARD

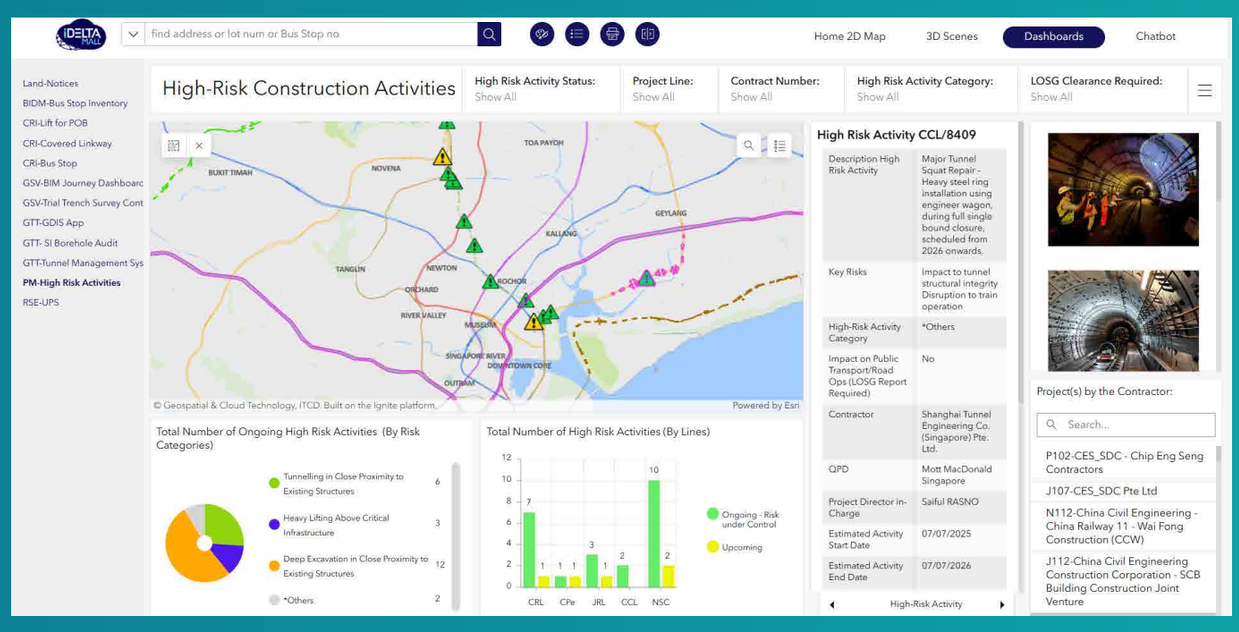
Land Transport Authority
We Keep Your World Moving

MERIT AWARD

iDELTA MALL: INTEGRATED GEOSPATIAL ENGINEERING PLATFORM

EXTENT OF INNOVATIVENESS

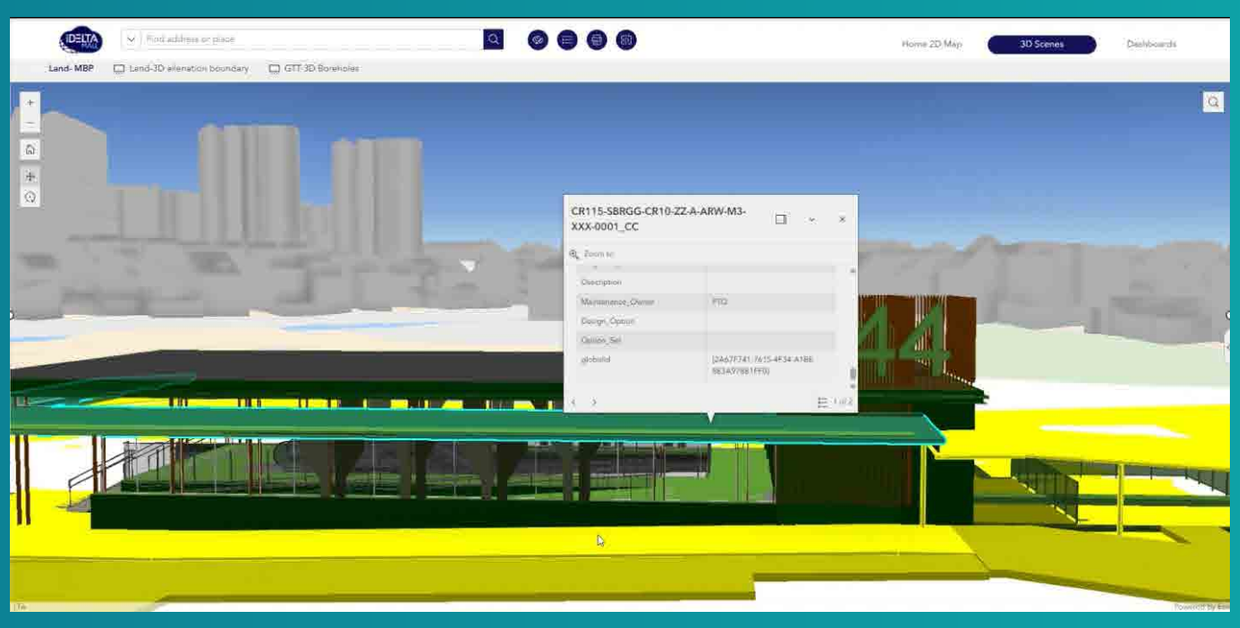
Dashboard to Track of High-Risk Construction Activities



4. Incorporating 3D BIM Models

Integrating maintenance boundary and maintenance responsibility information for railway structures and commuter facilities with 3D BIM models - replacing traditional 2D plans. With interactive visualisation tools, iDELTA Mall enables engineers to instantly view maintenance boundaries and responsibility details of every railway structure from any angle that were previously only available as annotated descriptions on 2D maps which often led to ambiguity, subjective interpretations and disputes.

3D Visualisation of Maintenance Boundary and Responsibility of Railway Structures and Railway Commuter Infrastructures



MOTAC

Ministry of Transport Awards Ceremony 2025/26

MINISTER'S INNOVATION AWARD

Land Transport Authority
We Keep Your World Moving

MERIT AWARD

iDELTA MALL: INTEGRATED GEOSPATIAL ENGINEERING PLATFORM

EXTENT OF INNOVATIVENESS

All the above features address long-standing operational inefficiencies that were previously accepted as unavoidable due to data segregation. iDELTA Mall significantly transform the work processes across all levels in the organisation.

The platform was fully conceptualised and developed in-house by Land Division team with support from LTA IT Division, this arrangement allows maximum flexibility for customisation including development of customised icons/widgets and increase speed of scaling up.

Innovation Highlights:

iDELTA Mall transforms engineering operations by embedding geospatial insights directly into daily workflows. Unlike traditional GIS platforms that focus mainly on map visualisation, iDELTA Mall unifies workflows across the entire project life cycle—from planning and design to construction and operations & maintenance—within a single, integrated decision-support environment. Key innovation in use cases across project life cycle includes:

1) Automated Spatial Analysis – Dashboards instantly identify infrastructure and nearby amenities, cutting multi-day manual processes down to minutes.

2) Dynamic Regulatory Management – Notices are spatially referenced and searchable, enabling fast tracking of expiry dates, served areas, and follow-up actions.

3) Real-Time Risk Tracking – A centralised dashboard with mobile updates gives near real-time visibility of high-risk construction activities, enabling timely decisions.

4) 3D BIM Integration – Replaces 2D maps with interactive 3D models that clearly show maintenance boundaries and responsibilities, eliminating ambiguity and disputes.

MINISTER'S INNOVATION AWARD

Land Transport Authority
We Keep Your World Moving

MERIT AWARD

iDELTA MALL: INTEGRATED GEOSPATIAL ENGINEERING PLATFORM

IMPACT AND VALUE-CREATION

Impact/Outcome
iDELTA Mall has delivered measurable and transformative efficiency gains across diverse use cases. By digitising workflows, automating spatial analysis, and enabling real-time updates, the platform has turned previously manual, time-intensive tasks into streamlined processes that free up significant manhours for higher-value work. The quantifiable impact/outcome achieved from the use cases shared are as follows:

Use case 1 - Pedestrian Overhead Bridge (POB) Lift Prioritisation
Reduced assessment time from 6 manhours to 0.6 manhour per assessment, representing 90%-time savings.

Use case 2 - Tracking Regulatory Notices served by LTA Island wide
Reduced processing time from 1.08 to 0.26 manhours for Land officers and from 1.62 to 0.26 manhours for Project officers, achieving 80% total manhour reduction and saving 43.6 manhours monthly.

Use case 3 - High-Risk Construction Activities Dashboard
Reduced workflow time by 92%, from 26 man-days to 2.1 man-days per reporting cycle, saving 48 man-days monthly across ~100 contracts.

Use case 4 - 3D Visualisation of Maintenance Boundaries and Responsibilities
Reduced workflow time by 80%, from 2.2 man-days to 0.4 man-day per request, saving 18 man-days monthly based on an average of 10 requests.

Collectively, these outcomes demonstrate how iDELTA Mall is not only saving hundreds of manhours monthly, but also building organisational capacity to handle complex engineering, planning, and compliance tasks with greater speed, accuracy, and confidence. Developed fully in-house, the platform ensures maximum flexibility for customisation, rapid scaling, and continuous improvement—delivering sustainable long-term value without reliance on external vendors.

MINISTER'S INNOVATION AWARD

Land Transport Authority
We Keep Your World Moving

MERIT AWARD

iDELTA MALL: INTEGRATED GEOSPATIAL ENGINEERING PLATFORM

IMPACT AND VALUE-CREATION

These results are based on just a few initial use cases; as more workflows are integrated, the cumulative savings and efficiency gains will grow substantially across the organisation. Beyond efficiency, the results validate iDELTA Mall as a strategic enabler of smarter, data-driven operations, paving the way for broader adoption and new applications across the organisation.

Value-creation/Human-centricity:
iDELTA Mall is designed to address pain points across the entire project life cycle—from planning and design to construction and operations & maintenance. By replacing fragmented datasets, manual coordination, and ambiguous 2D records with intuitive geospatial workflows, it provides clarity, shortens decision cycles, and ensures staff at all levels have timely access to the right information. Engineers gain precision through 3D visualisations, planners benefit from instant spatial analysis, and managers have real-time visibility of risks—enabling faster, more confident decisions and driving greater efficiency across the organisation. Reflecting this value, user adoption has grown by 125%—from 104 users in January 2025 to 234 users by August 2025—demonstrating strong buy-in across the Design and Civil Construction Groups. With this momentum, iDELTA Mall opens up endless possibilities for innovation, scalability, and new applications across the organisation.

Outcome:
iDELTA Mall is delivering transformative efficiency gains, saving hundreds of manhours monthly and achieving up to 90% workflow time reductions across key use cases. Developed fully in-house, it provides flexibility for customisation, rapid scaling, and sustainable long-term value. With user adoption growing 125% in under a year, iDELTA Mall has proven its impact and is paving the way to scale across the organisation—transforming how engineering teams plan, design, build, and maintain infrastructure, with endless possibilities for future innovation.

MINISTER'S INNOVATION AWARD

Land Transport Authority
We Keep Your World Moving

MERIT AWARD

iDELTA MALL: INTEGRATED GEOSPATIAL ENGINEERING PLATFORM

FEASIBILITY AND SCALABILITY

Feasibility

Built on standard GIS frameworks and LTA's Ignite platform, iDELTA Mall has already proven feasibility through live deployment and strong uptake, with user adoption growing 125% in just seven months. Developed fully in-house using readily available geospatial technologies, the platform requires no specialised hardware and scales smoothly with existing resources. Enhancements are already underway—for example, enriching datasets to power a chatbot that can respond to project schedule and timeline queries—demonstrating how generative AI can be embedded seamlessly. Looking ahead, opportunities such as integrating IoT (e.g. real-time field sensors) and linking BIM models (3D models of building and infrastructure designs) with geospatial context (GeoBIM) to better plan, design and project management within their surroundings, as well as developing digital twins (virtual replicas of infrastructure) that enable real-time monitoring and lifecycle management of LTA assets during operation and maintenance stage—will further extend iDELTA Mall's value.

Scalability

Because iDELTA Mall's datasets are primarily geospatial, they can be easily shared and adapted across government agencies, enabling richer insights, better decision-making, and smoother inter-agency coordination. The same spatial analysis methodology, for instance, could support aviation (airport land-use planning), land transport (road–rail–bus integration), and maritime (port connectivity and coastal development). Importantly, LTA is already exploring with Singapore Land Authority (SLA) the digitalisation of their approval process for regulatory notices through iDELTA Mall—showing strong potential for cross-agency workflow integration.

Within LTA, vertical scaling is also advancing, with iDELTA Mall progressively integrating more use cases across planning, design, construction, and operations, moving towards becoming the central engineering data platform for all engineering groups.

MINISTER'S INNOVATION AWARD

Land Transport Authority
We Keep Your World Moving

MERIT AWARD

iDELTA MALL: INTEGRATED GEOSPATIAL ENGINEERING PLATFORM

FEASIBILITY AND SCALABILITY

Potential of Project:

iDELTA Mall has proven practical execution through successful in-house deployment on LTA's Ignite platform, with user adoption growing 125% in seven months with the potential to serve up to staff strength of 1,500 across design and construction Group. Its geospatial foundation and use of readily available technologies make it highly adaptable, both for scaling across more LTA engineering groups and for cross-agency applications. Early exploration with the Singapore Land Authority (SLA) on digitalising regulatory approvals highlights its potential for broader adoption. With planned enhancements such as AI-powered chatbots, IoT integration, and GeoBIM/digital twin capabilities, iDELTA Mall is positioned for sustainable growth within LTA and scalable extension across agencies.