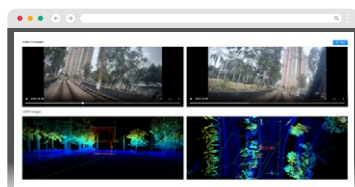




## 樹木入侵監測系統 Tree Intrusion Monitoring System (TrIMS)

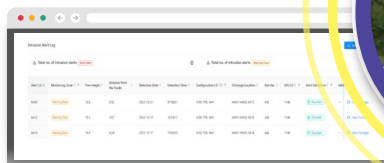
Railway  
Vanguard  
Circle  
智取世界圈



Intrusion Footage



Overview



Intrusion Log

TrIMS 使用介面 - 應用以來發出逾六百個預警，協助同事規劃樹木修剪工作

TrIMS User Interface - Issued over 600 tree intrusion alarms since started application, and facilitated maintenance team to prioritize tree pruning work



TrIMS 車載設備 - 在載客輕鐵上安裝光學雷達，使輕鐵在接載乘客的同時，自動收集沿線樹木高度、外形及與輕鐵行駛範圍的距離等數據作持續監察  
Trainborne Equipment of TrIMS - Installed LiDAR on LRVs to collect data continuous automatic tree monitoring while carrying passengers during traffic hours.



### 提案摘要 Project Summaries

輕鐵網絡周邊約有4400棵樹木，由於這些樹木可侵入軌道範圍，持續對輕鐵運作構成潛在風險。現時樹木管理主要依賴目視巡查，但難以準確判斷樹木與輕鐵的距離，且無法頻繁巡查整個網絡。

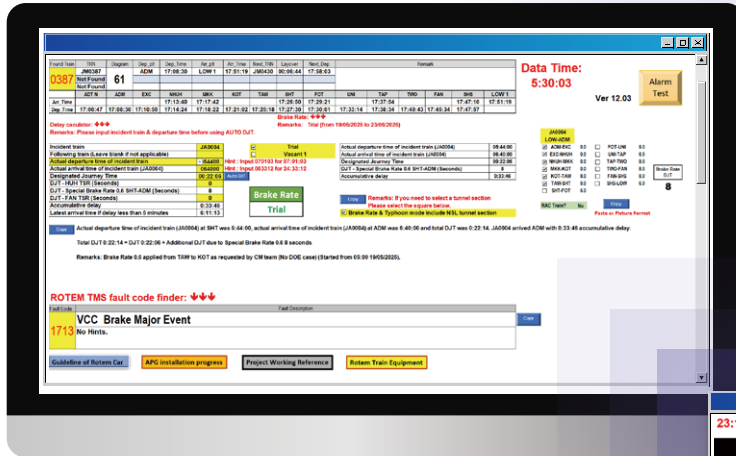
為此，我們創新開發了TrIMS系統。系統運用激光雷達和數據分析技術，以更頻繁、自動化、高效且精確的方式監測樹木侵入情況。維護團隊可透過 TrIMS 獲得更全面的樹木侵入資料，能精準規劃樹木修剪工作的優次，並實現遠程監測，從而確保輕鐵營運的安全。

The Light Rail (LR) network, with approximate 4,400 trees nearby, constantly faces the risk of tree intrusion. Under the existing tree management regime, the maintenance team relies on routine cab riding or patrol inspections to assess tree conditions. However, this method has clear limitations: it's hard for humans to accurately determine a tree's safe distance from the LR, and frequent, network-wide measurements are impractical due to resource constraints.

To overcome these challenges, we developed TrIMS. This innovative system leverages LiDAR and data analysis technologies to provide an efficient and precise way to monitor tree intrusion. TrIMS also enables continuous, automatic monitoring during traffic hours. By offering a more holistic view of tree intrusion, TrIMS empowers the maintenance team to prioritize tree pruning work more effectively and to remotely monitor tree conditions, ensuring operations safety of LR.



# 提升東鐵綫車務控制的效率 Enhancing Efficiency of Operations Control for EAL

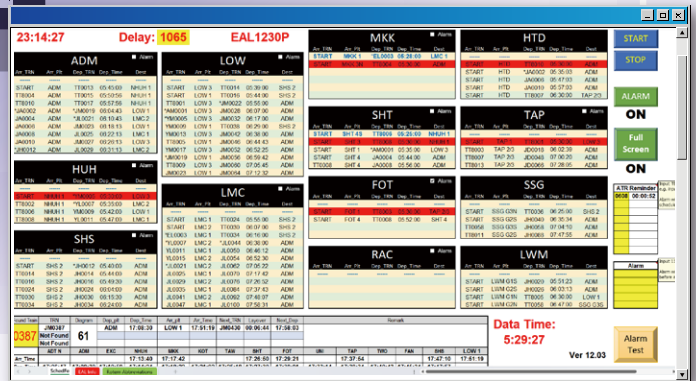


計算列車延誤時，只需輸入車次，開出和到達時間，計算器就會自動算出結果，並可複製資料。下方的列車故障搜尋器，輸入代碼即可查詢故障詳情和處理提示。

When calculating any train delays, simply input the train number, the departure and arrival times for auto-calculated results. Copy function included. The system also features a train fault finder. Input a fault code here for full details and handling hints.

新介面的時間表將按始發站重新排列，並自動根據系統時間更新。列車開出前三十秒會有提示。只要輸入車次最後四個數字，就能查看該車次的詳細資料。

The new Human-Machine Interface re-arranges train schedules by terminus and automatically updates with the system time. A notification will appear 30 seconds before a train's departure. Simply enter the last four digits of train number in the designated area to view detailed information.



## 提案摘要 Project Summaries

行車控制主任需運用不同的工具，使日常車務運作維持順暢，其職責包括密切監察列車時間表以確保服務準時、依照既定程序處理列車事故、事故後計算列車延誤，以及向鐵道車輛維修部的同事匯報列車故障以便跟進。每項工作都爭分奪秒而且不得有誤。

透過重新整合現有工具至新設計的界面，並引入自動化功能，提升行車控制主任的車務工作效率，減低人為失誤的風險，更貼近同事工作的實際需要，同時節省開發的成本。

Traffic Controllers utilize various tools to maintain smooth traffic operations. Their duties involve meticulously adhering to timetables for service punctuality, managing train-related incidents per established protocols, calculating delays and reporting faults to the Rolling Stock Rapid Response Unit for follow up. These tasks are highly time-sensitive and allowing no margin for error.

We have redesigned the Human-Machine Interface to integrate diverse tools into a single interface with automations. This innovation significantly boosts Traffic Controllers' efficiency and minimizes human error risks. The new interface is tailored to meet the practical needs of Traffic Controllers, thereby optimizing overall costs for additional interventions.

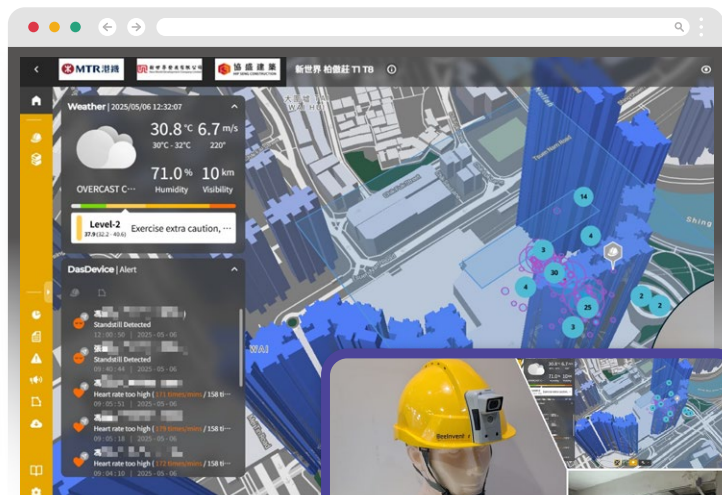


臻善圈得獎提案摘要創意大獎 Project Summaries of WIT Innovative Project Award Winners

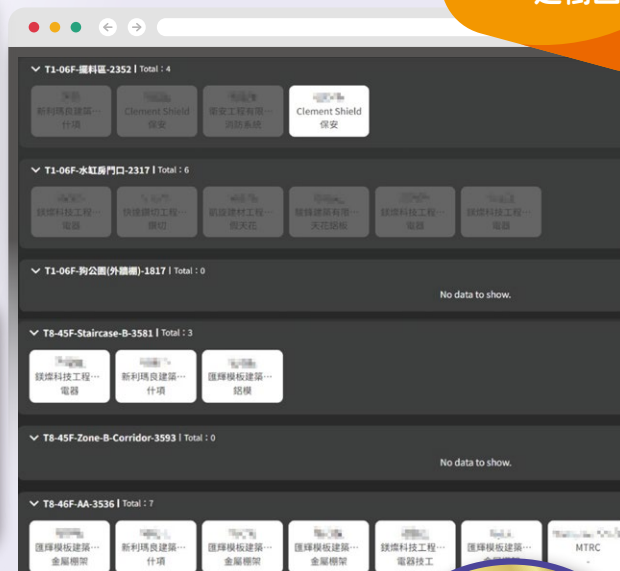
## 物聯網智能安全帽連雲端平台

DHAT's I.T.! - DasLoop HAT

Contribution Circle  
建樹圈



物聯網智能安全帽連雲端平台 - 實時監察工友狀態，保障工友安全  
“DasLoop HAT” platform - provide real-time monitoring and protection of workers.



多樓層儀表板系統  
multi-floor dashboard system

臻善圈  
最具創意提案獎  
MOST  
INNOVATIVE  
PROJECT AWARD



## 提案摘要 Project Summaries

在地盤的趕工文化下，地盤工友為生計而無間斷加班，忽略自身健康，增加安全風險。一旦有緊急情況，傳統監督方式無法即時收到工人求助或掌握工人狀態，導致救援延誤。

因此，團隊引入智能安全帽，結合無死角網絡及雲端平台，主動為工人提供實時監察及保障：

- 實時監察工友的體徵與位置
- 當數據出現異常時，系統會自動向監督人員發出警報
- 工友遇險時，可按安全帽的緊急按鈕即時求助
- 管理者可透過3D模型及團隊共同研發的多樓層儀表板系統掌握及管理所有工友的實時狀態

Under the demanding construction culture, workers endure continuous overtime for their livelihood and neglecting their health, resulting in elevating safety risks. The traditional supervision method failed to instantly receive distress calls or status of workers when an emergency occurs, leading to critical delays in rescue.

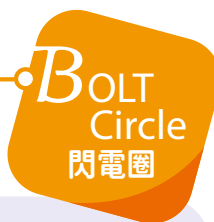
The team introduced “DasLoop HAT”, covering by a seamless network and a cloud platform, to provide real-time monitoring and protection of workers.

- Monitors vital signs and locations of workers in real time
- Automatically alerts supervisors to any anomaly
- Uses dedicated help button of “DasLoop HAT” when workers are in emergency
- 3D models and multi-floor dashboard system could be used to manage the real-time status of all workers



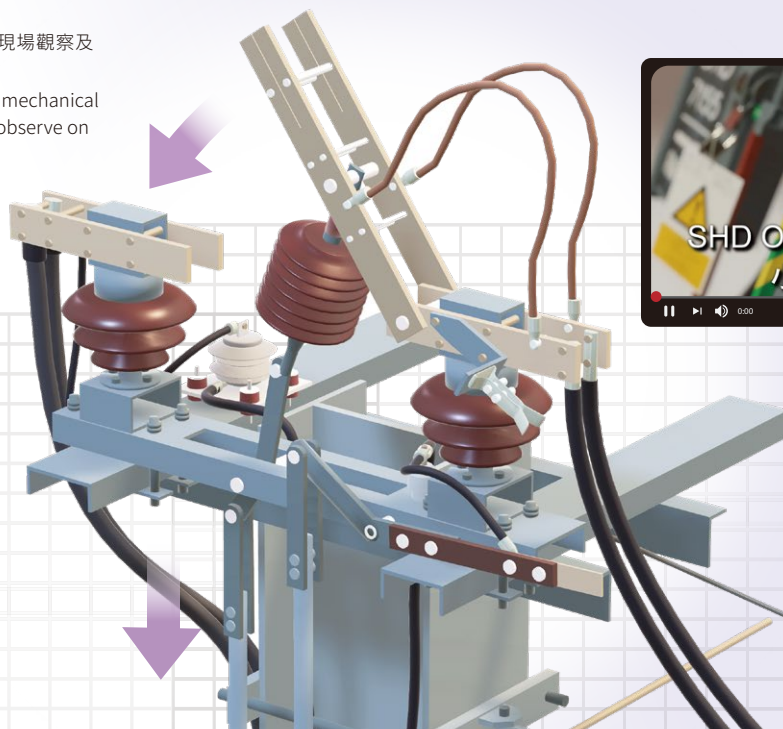
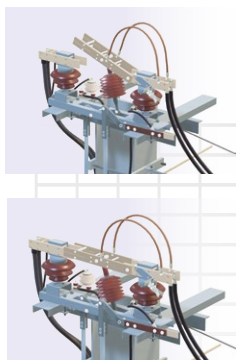
## 在技術培訓應用3D模型與動畫

### 3D Models & Animations in Technical Training



三維模型有效地展示了難以在現場觀察及錄影的機械操作。

3D model effectively illustrates mechanical operations that are difficult to observe on site and capture on video.



三維動畫清晰地捕捉操作的每一個步驟，增強內容並提升學員的視覺記憶。

3D animation clearly captures every step of the operation, enhancing content and boosting visual memory of trainees.



## 提案摘要 Project Summaries

此項目透過調整培訓方法，提升學員參與度並滿足高效學習方案的需求。由於此3D動畫項目為OTD內部開發，開發成本只需約\$33,600，與承辦商估計的二十多萬元相比，成本顯著降低。該項目還帶來了多項無形得益：3D互動模型使複雜的機械操作和流程更易於理解，從而提升員工的學習效率。

另外，項目由內部開發，能夠進一步保護企業的知識產權，有效防止敏感信息外洩，更縮短了開發時間，並提供更大的靈活性，最終減低對承辦商的依賴。

This project focused on adapting training methods by engaging learners and meeting the demand for effective learning solutions. A key success was the in-house development of the 3D animation by OTD. This approach reduced the development cost to just \$33,600, a significant saving when compared with the contractor's estimate of over \$200,000, and demonstrated the efficiency of our internal resources.

The project also delivered several intangible benefits. The interactive 3D models made complex mechanical operations and procedures easier to understand, thereby improving staff learning efficiency. Crucially, the in-house model protected corporate intellectual property by securing designs and maintaining confidentiality, thereby preventing sensitive information leaks. It also shortened development timeline, allowed greater flexibility, and ultimately eliminated our reliance on the contractor.