



四十五年齊臻善 創新蛻變展佳績

Continuous improvement for 45 years Innovate, Transform for greater success

## 臻善圈 決賽隊伍 提案摘要

## PROJECT SUMMARIES OF WIT FINALISTS



### 月台人工智能圈 Platform AI

### 人群流動分析 People Movement Analytics

成立日期  
Date of Team Formation 09/2022

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#### 問題剖析

- 人群管理——大量乘客使用 MTM 列車網絡往返墨爾本的體育和其他文化活動的場地。為維持安全及高效的管理，車站需要嚴陣以待來應對活動結束後的人潮。
- 擅闖人士管理——之前曾發現有擅闖人士經由我們的月台進入路軌範圍。他們可能對鐵路運作的安全構成重大影響，並經常為乘客造成不必要的延誤。
- 列車運行——列車因等候疏導人潮而增加在車站停留的時間，對網路表現與服務準時度產生影響。

#### 改善方法

- 在車站以 LiDAR 感應器探測月台上乘客的密度並監察人群的大小，為車站職員提供即時反饋。
- 給車站職員提供使用者介面顯示器（如平板電腦等），讓他們掌握月台擠迫度的訊息。此資料將與現有人群管理控制及與當地和中央控制中心人員的通訊結合，令人群管理的決策更快捷有效。
- 於新系統設立自動警報，當發現有任何經月台進入路軌範圍的擅闖人士，該系統會即時向當地和中央控制中心通報。

#### 總結成果

##### 有形得益

- 適時及高效地應用「Block & Hold」程序，將月台的總容納人數控制於 90-95 %
- 當特別活動列車列次滿載或乘客停止登車時，會及時安排列車離站
- 改善乘客分佈，減少列車在下午繁忙時段的停留時間
- 減少月台上的乘客和避免乘客遭列車側鏡撞擊的事故
- 加快處理進入軌道的擅闖人士
- 提升服務的可靠性和準時度

##### 無形得益

- 車站職員和授權人員於大型活動後進行人群管理時，能更加齊心協力
- 為實現墨爾本都會列車「We Move Melbourne」的目標注入動力，亦提升了乘客體驗，為城市舉辦各種特別活動帶來支援



## Problem Analysis

- Crowd Management – Large crowds of passengers utilize the MTM train network to get to and from sporting and other cultural events in Melbourne. These large crowds require significant efforts to support safe and efficient management through our stations after the events are finished.
- Trespasser Management – Trespassers have been previously identified accessing the rail corridor via our platforms. These trespassers can have significant impact on the safe operation of our rail network and regularly result in unnecessary delays to our passengers.
- Train Operations – Extended dwell times at stations while clearing crowds has an impact on network performance and service punctuality.



## Improvement Methods

- Utilisation of LiDAR sensors at stations to capture passenger density on platform and monitor crowd sizes to provide real time feedback to station staff.
- Staff to be supplied with a user interface display such as a tablet to provide information on platform crowding. This data is to be combined with existing crowd management controls and communication with staff in local and central control centres to enable improved crowd management decision making.
- Automated alarms to be established within the new system to immediately communicate to local and central control rooms of any trespassers accessing the rail corridor via the platform.



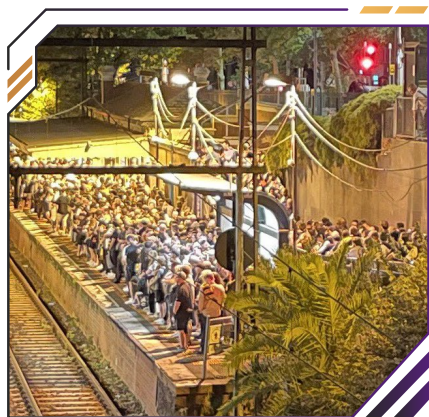
## Summary of Achievements

### Tangible Benefits

- Timely and efficient application of the 'Block & Hold' process through 90-95% utilization of platform crowd capacity
- Timely departure of special event trains when full or passengers ceased boarding
- Reduced dwell during the PM Peak through improved passenger distribution
- Reduction of on platform passenger and mirror strikes
- Reduced time of trespasser on track
- Reliability and punctuality improvements

### Intangible Benefits

- Increased collaboration between Station staff and Authorised Officers while managing post event crowds at stations
- Support MTMs purpose "We Move Melbourne" and create great passenger experiences while supporting special events



在體育和其他活動結束後，在重要地點管理人群的情況。

Managing crowds at key locations after sporting and other events.



在月台的試驗地點上安裝的 LiDAR 感測器。

LiDAR sensor on the platform at a trial location.



列治文 (Richmond) 站的車站管理人員以試用介面監察月台在足球比賽後的擠迫情況。

Station controller at Richmond Station utilizing the trial interface to monitor crowding on the platform after a football match.