



ICAO Aerodromes Operations and Planning Sub-Group

APPLICATION OF DIGITAL TOWER & SURVEILLANCE TECHNOLOGY

For Apron Efficiency at Hong Kong International Airport

Presented by
Airport Authority Hong Kong

Next-generation Digital Airport

Leveraging a diverse spectrum of mature technologies & innovations to enable increased operational integration between HKIA & our business partners on multiple facets of airport management

01

Airport
Operations

02

Capacity
Management

03

Stakeholder
Management



Digital Apron & Tower Management Systems (DATMS)



民航處
CIVIL AVIATION
DEPARTMENT

Joint Development of DATMS by CAD & AAHK



Installation of optical sensors (video cameras) at the aerodrome

+

Augmented Visual Presentation with essential flight information & real-time operations data

01

Digital Apron Management System (DAMS)



02

Digital Tower Facilities (DTF)

Mock-up of DATMS

Mock-up panoramic stitched view of North Runway (07L/25R) & South Runway (07R/25L) on video wall panels of DATMS installed at Integrated Airport Centre of HKIA



Benefits of DATMS



Enhance visibility on runway & apron traffic –

Especially under constraints of limited direct line-of-sight, at night time & adverse weather conditions

Facilitate monitoring & control of aircraft movements –

With essential flight data tagged on each aircraft under Augmented Visual Presentation

Enable predictive alerting to continuously monitor KPIs & enhance airport's contingency response –

Through real-time digital tracking of events & objects

Assist post-incident investigations –

With real-time recording on runway & apron operations

Consolidate aerodrome control positions –

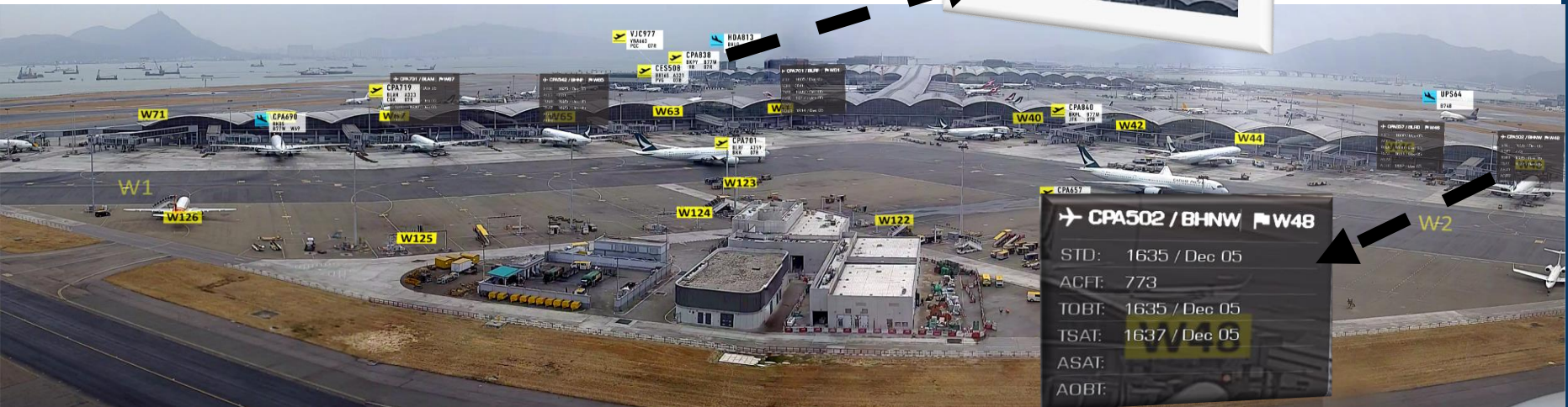
By consolidating of various ATC Towers into designated control positions to rationalize manpower demand, subject to relevant safety assessment

Functionalities Developed under DAMS

Functionality 1

Automated Alerts

Round-the-clock monitoring of KPIs & facilities' health status through data integration with various AA's technological platforms & operational database.



Functionalities Developed under DAMS



Functionality 2

Smart Control

Control of vehicle stop signs installed along back-of-stand roads to stop vehicle traffic before aircraft enters a parking stand, by tracking aircraft positions and predicting their routes using ground radar & video analytics.

Functionalities of DTF

Functionalities

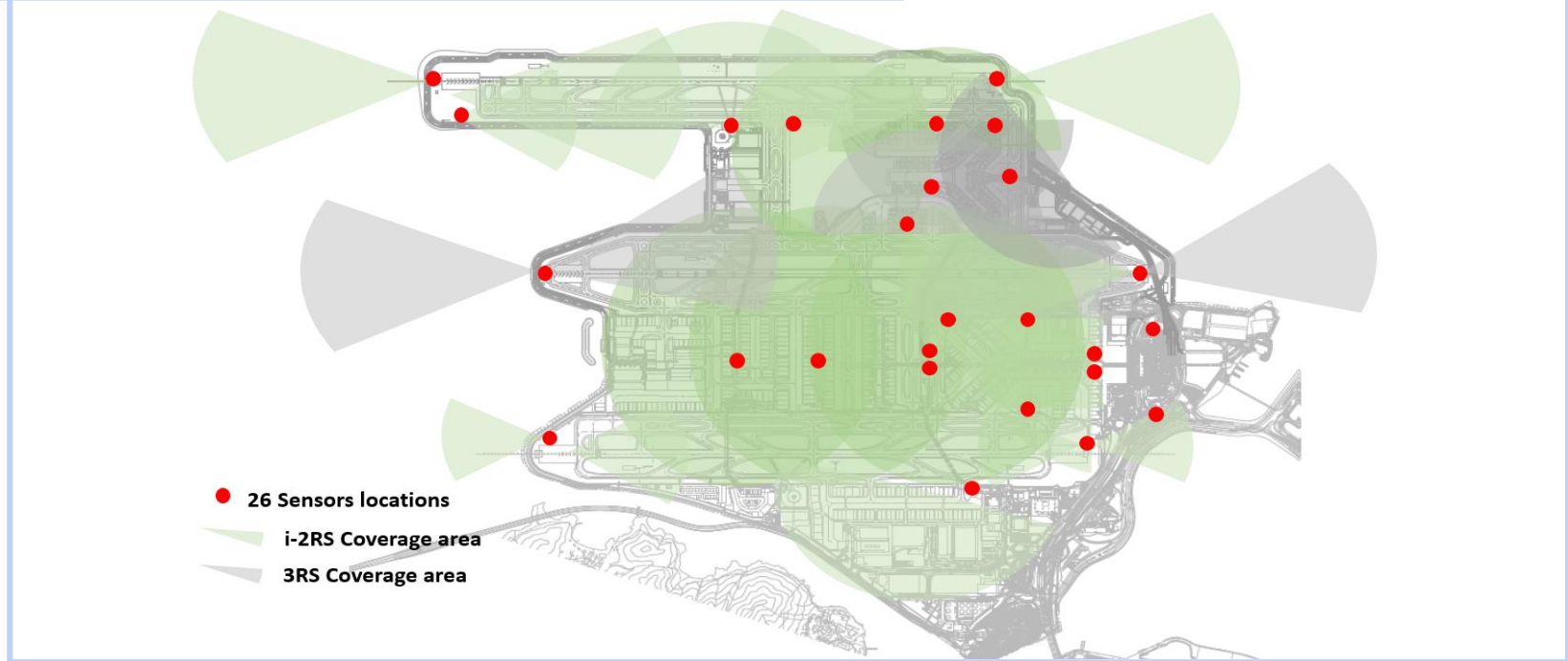
- Provide safe & efficient air traffic control services with visual augmentation, situational awareness enhancement & early alert of conflicting situations.
- Address limitations of traditional ATC sighting in all weathers & day-light conditions.



Digital Apron & Tower Working Group (DATWG)

DATWG was formed to group together the expertise & experiences of CAD & AA for preliminary design of DATMS (e.g. sensor locations, supporting structure etc.)

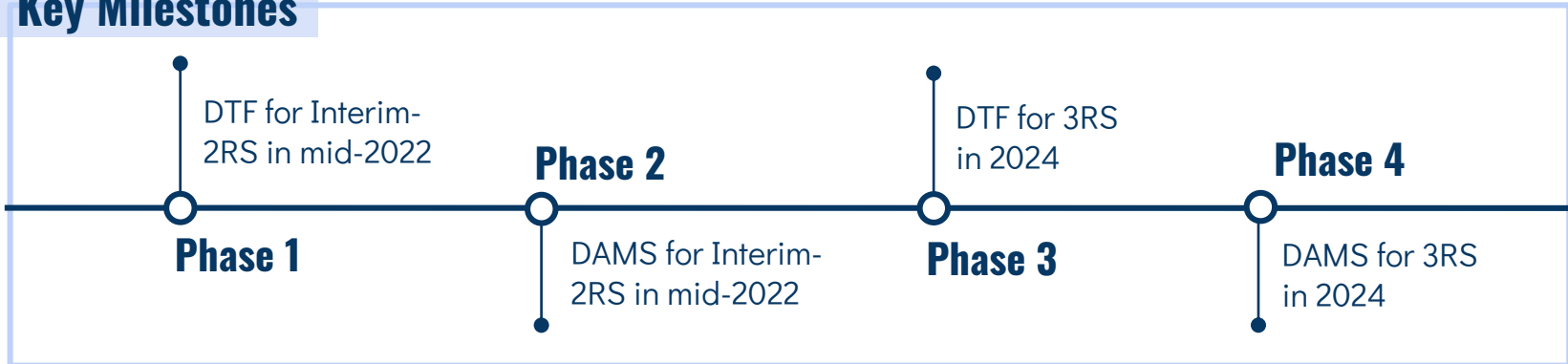
Indicative Locations for Installation of Sensors



Tender Process & Programme of DATMS

- The selection of supplier went through World Trade Organization GPA Open Tender Exercise in Q3 2020, with financial & technical consideration on tenderer's experiences on digital tower application, ability to meet the construction timeline, ease of expandability etc.
- The design, supply, installation & implementation project was awarded in Jan 2021.

Key Milestones



Target Goals

To build a closely knitted network for enabling more informed decisions -

Enhance
operational
safety

01

02

03

Enhance
operational
efficiency

Optimize capacity
for the future

THANK
YOU