PAMS

Prodigy Alarm Management System for

London City Airport

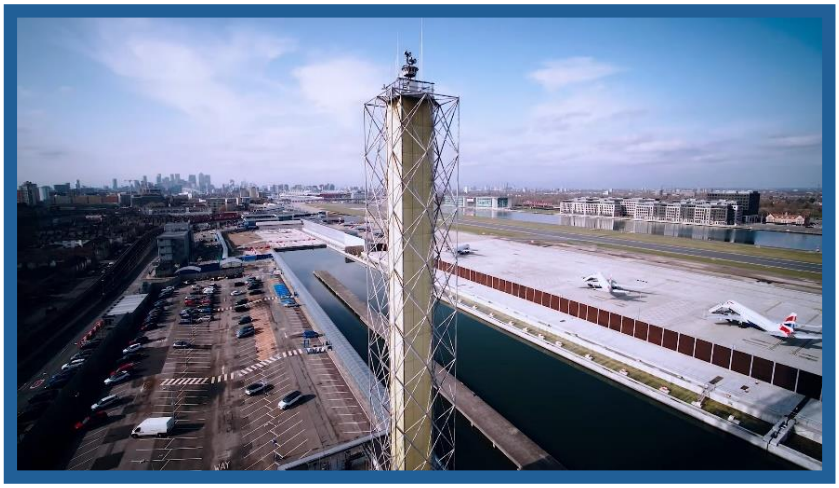
The first major international airport in the world to be fully controlled by a remote digital air traffic control tower

PAMS was specified to handle remote alarm management as part of the £350M redevelopment of the airport and implementation of a Digital Tower

Overview

London City Airport, situated close to the Canary Wharf financial centre, handled over 5 million passengers in 2019. It has become the first major international airport in the world to be fully controlled by a remote digital air traffic control tower, with air traffic controllers based 115km away at NATS' Control Centre in Swanwick, UK.

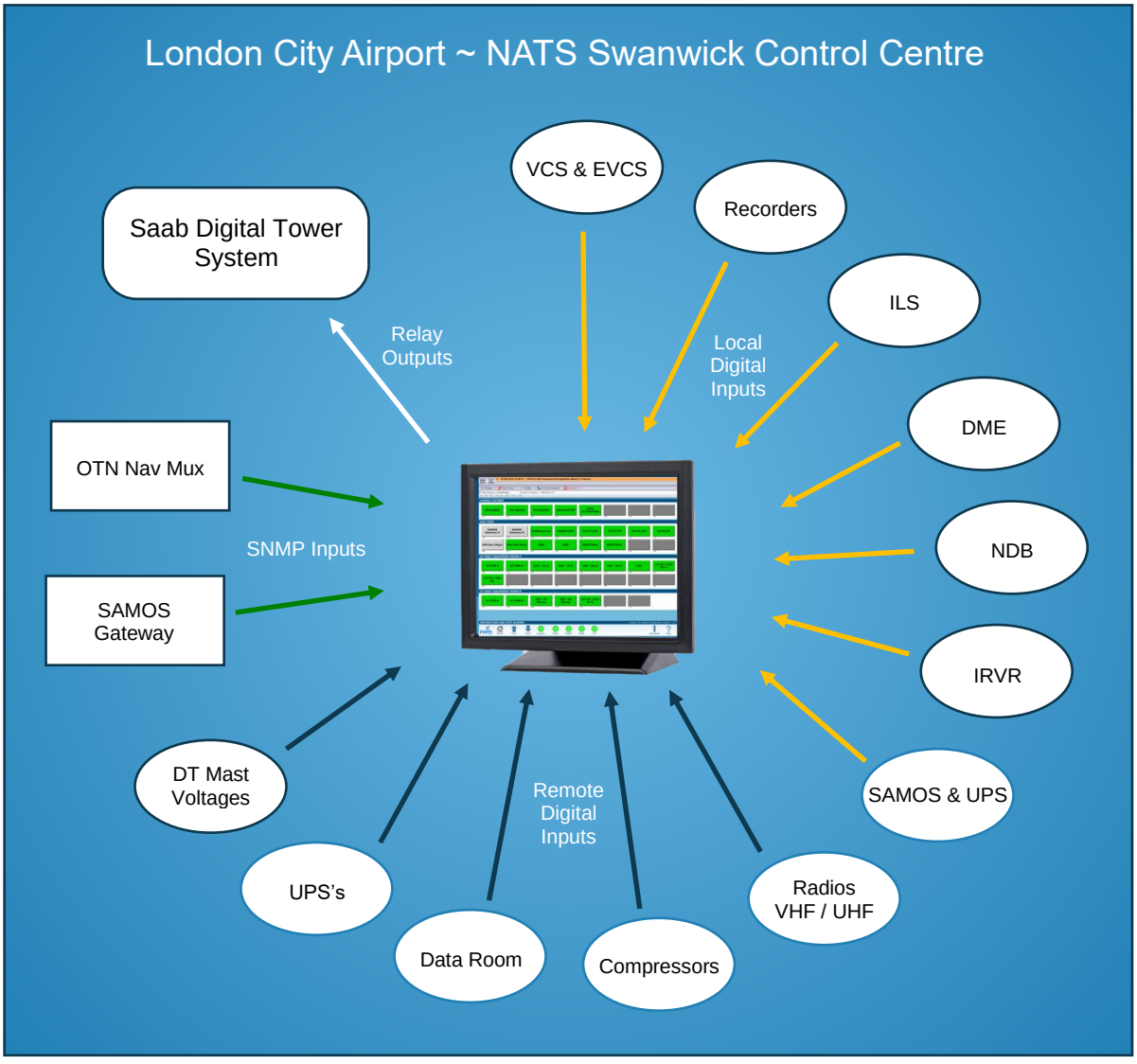
NATS specified PAMS for the alarm management due to its proven reliable service in major UK airports. PAMS is crucial to safe running of Remote Towers through instantaneous notification, distribution and management of ground based system alarms to both VCR and ATE.



Implementation

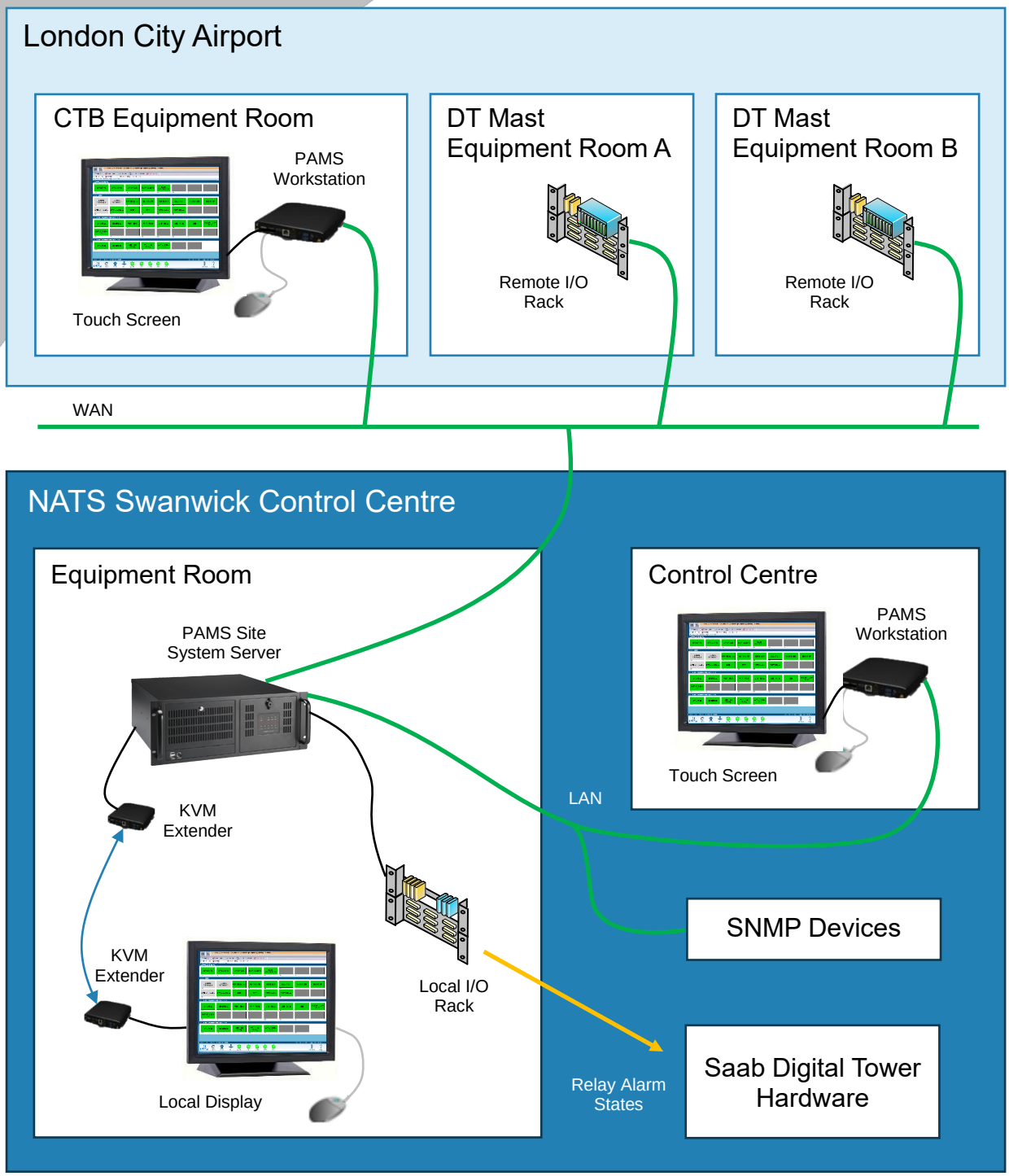
PAMS technology enables the remote monitoring of multiple locations over any distance. This means that it can be used for main or contingency towers, remote digital towers for single airports like LCY or for monitoring multiple airports at a central or distributed locations.

PAMS sits at the heart of the implementation, monitoring the status of everything from radios and ILS, to the fibre network infrastructure. In the event of an issue, the usual reporting through PAMS Workstations and optional beacons is expanded to include the Saab Digital Tower system.



Infrastructure

The PAMS infrastructure consists of a variety of physical elements, with equipment based in a number of locations at both London City and at Swanwick.



The Details

A PAMS Server is located in the Equipment Room at NATS Swanwick. This includes digital input channels for local closed contact (or switched to ground) alarm inputs and digital output channels for closed contact alarm outputs to Saab's SDATS.

The two sites are connected by a private superfast secure fibre network. The PAMS server connects to two remote locations at LCY for closed contact or switched to earth, alarm inputs. SNMP communications is a standard part of PAMS functionality and provides connections to a variety of other local SNMP enabled devices.

Interactions with PAMS are through a local touch screen display for ATE and in some cases, this is re-located to a more convenient location with KVM Extenders and a point-to-point LAN cable connection.

Usually VCR, ACR etc. are usually provided with PAMS Workstations, again with touch screen displays, and in this case PAMS Workstations are located in the Control Centre at Swanwick and the CTB Equipment Room at London City.

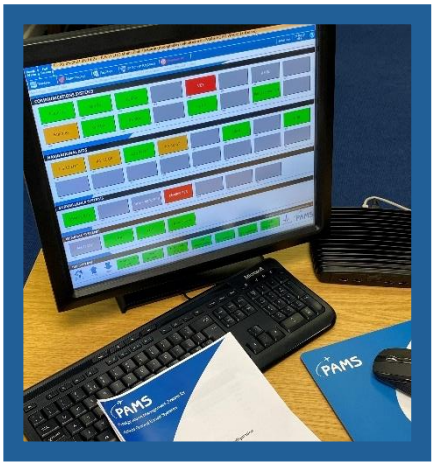
PAMS Workstations are small format, fanless PC which connect through a standard ethernet LAN connection back to the main PAMS server. This approach has the advantage of requiring less space in the equipment room racks and no need for dedicated LAN cabling for KVM Extenders in ATC.

The alarm status of each item of equipment is represented on the displays by interactive buttons with colour and flashing indicating current status, covering operational, warning, alarm, degraded, reverted, etc. states. PAMS provides instantaneous notification and all changes in state are recorded and time stamped to the nearest millisecond.

The PAMS technology was provided with a comprehensive set of documentation, and included extended soak testing of all equipment, running a witnessed FAT (and internal pre-FAT), attending site for a SAT, subsequent training and the ongoing support.

Features

The latest version of PAMS provides a whole host of features including:



- Out of Service / Not Commissioned Alarms
- Operational Readiness Reporting
- Frequency of Issues Tracking
- Maintenance Mode
- Alarm Nag
- Alarm Hysteresis
- Comment Recording
- Rule Based Alarm Outputs
  In the case of SDATS, rules are applied to handle:
  - Alarm Groupings
  - Maintenance Mode Handling
  - Out of Service / Not Commissioned Alarms
  - What is transmitted on from PAMS

Benefits

The implementation of a Digital Tower at London City Airport using Saab Digital Air Traffic Solutions' next generation air traffic control system has allowed the airport to maximise its air traffic capacity with increased information available to the air traffic controllers on the digital window screens.

PAMS technology allows the engineering requirements to be centrally managed with visibility both locally and remotely for ATE and ATC.

Cost Savings

PAMS technology enables the safe running of Remote Digital Towers, which offer a number of benefits compared to conventional air traffic control towers at airports.

The main benefit being cost efficiency with cost savings from the following factors:

- ✓ No need to build and maintain control tower buildings and facilities at the local airports
- ✓ The building and operational costs of a remote tower and facilities are much lower compared to a traditional tower
- ✓ More efficient use of human resources (ATCOs and AFISOs), especially by serving multiple airports with medium to low traffic levels from a centralised location
- ✓ Reduced need to establish and maintain ATM systems locally at the airports. By using data communication networks from the local airport to the remote tower centre, several technical systems can be centralised, hence costs savings are possible. Over 75% of regional airports with fewer than 1 million passengers a year are making a loss. These costs can be shared with considerable cost savings
- ✓ There is also a great potential to better and more cost efficiently serve flights which either are scheduled outside the core opening hours of the airport, or by being able to serve non-scheduled traffic (ambulance flights and search-and-rescue helicopters) with an air traffic service during night time when smaller airports would normally be closed