SWANSON RINK

Denver International Airport **Modernizing Aviation ICT Infrastructure**

Integration of High-Demand Telecom, Security, and Passenger Experience Systems

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DENVER INTERNATIONAL AIRPORT

Modernizing Aviation ICT Infrastructure: Integration of High-Demand Telecom, Security, and Passenger Experience Systems

As part of a multi-phased **$2.1 billion modernization effort**, Swanson Rink provided a comprehensive overhaul of the Information and Communications Technology (ICT) and telecom infrastructure within the Denver International Airport Great Hall. The engineering solution focused on scaling systems to meet increasing passenger demand while simultaneously hardening security protocols. Key outcomes included the first full-scale deployment of automated screening lanes, consolidated security management, and enhanced digital experience within the terminal.

The iconic Great Hall of Denver International Airport's Jeppesen Terminal serves as the central circulatory hub for one of the nation's busiest airports. To maintain operational efficiency amidst rising passenger volumes and evolving Transportation Security Administration (TSA) systems, a multi-phased renovation was initiated. Swanson Rink was tasked with providing the modernization and upgrades of the critical ICT and telecom backbone that supports every facet of the airport's modern operations—from security throughput to real-time flight data dissemination.

The Challenge Legacy airport infrastructures often suffer from "siloed" systems where security, audiovisual, and building management operate on disparate networks, leading to multiple operational challenges including:

Operational Latency
Delayed flight and baggage information updates affecting passenger flow and negatively impacting customer experience.

Security Bottlenecks
Inefficient TSA checkpoints that cannot accommodate next generation automated screening technology.

Inadequate Coverage
Dead zones in WiFi and emergency communication systems within high-traffic areas like the Great Hall.

Scalability Constraints
Insufficient technical space to house the expanding hardware requirements for modern security and ICT systems.

The Solution Swanson Rink utilized a unified "umbrella" architecture, pulling Electrical Power Management Systems (EPMS), Building Automation Systems (BAS), and ICT systems under a single management framework while maintaining strict Sensitive Secure Information (SSI) protocols.

System Scope & Components

AV & Dynamic Displays
Swanson Rink provided design for the integration of high-performance servers feeding the large-scale, dynamic LED displays including: Flight Information Displays (FIDS), Baggage Information Displays (BIDS), and Gate Information Displays (GIDS) as well as airport marketing and advertising. This included coordinating the interconnection between video panels and video controller servers.

Security Infrastructure
Developed the criteria for TSA cabling and infrastructure support to accommodate upgraded TSA screening equipment as well as allowing for system-wide remote screening while comprehensively integrating access control, CCTV, and intrusion detection equipment into the Security Screening Checkpoints.

Communication Backbone
Implemented structured cabling (copper and fiber optic), data outlet layouts, LiDAR system rough-ins and optimized pathway routing. Improved TSA and airport communication room layouts and rack elevations for critical technical space expansion.

Emergency Systems
Streamlined the infrastructure for Public Announcement (PA) and Emergency Communication Systems (ECS), courtesy and technical telephone systems, improving overall performance and reliability.

Technical Evaluation

Automated Security Deployment
Swanson Rink executed the first full-scale deployment of an automated screening lane and the passenger screening system. This required developing custom criteria for TSA cabling and infrastructure support, ensuring seamless integration between checkpoint equipment and remote screening facilities.

Intelligent Exit Lane Control
The implementation of the Concourse A bridge access and Employee Access Portals utilized seamless exit lane control system to improve the transition between the terminal and the secure area, significantly enhancing perimeter integrity while optimizing passenger flow.

Self-Bag Drop Integration
A total of 86 self-bag drop systems were integrated for use by United, Southwest and Frontier Airlines. To optimize resources, these systems were intelligently "piggybacked" onto the existing structured cabling infrastructure without compromising bandwidth or security.

Business Benefits & ROI

- **Enhanced Capacity**
  A more efficient Great Hall layout increased the technical space for Airport and TSA Communication rooms, allowing for future technological expansion.
- **Improved Passenger Experience**
  Streamlined queuing layouts and enhanced flight/baggage displays resulted in smoother passenger flow and reduced anxiety.
- **Security Coverage**
  Updated CCTV, ECS, and WiFi systems eliminated previous coverage gaps, ensuring 100% visibility in critical areas.
- **Operational Efficiency**
  Consolidation of EPMS, BAS, and ICT systems reduced maintenance overhead and simplified system monitoring.

The modernization of the Great Hall represents a benchmark in aviation engineering. By successfully integrating complex security infrastructure with passenger-facing technology, Swanson Rink has delivered a functional embellishment of the Great Hall that is more secure, more efficient, and fully prepared for the experiential demands and security requirements of modern travel.

FOR MORE INFORMATION

Matt Sproles, Aviation Director, has more than 15 years of experience in airport systems, and regularly shares his expertise to improve the aviation industry. Contact him at 303-839-2955.