

AMERICAS

AECOM

Return to Service

AVIATION

Assisting our airport clients with their safe return to operations through the implementation of programs and initiatives designed to support a phased Return to Service.

ADDRESSING THE CHALLENGES OF OUR **NEW NORMAL**

Introduction

Airports are facing unprecedented challenges due to the coronavirus pandemic. Across the world, air travel is down 90% and thousands of commercial aircraft are sitting idle. A successful return to service (R2S) for airports will rely heavily on their ability to rapidly adapt to a “new normal” and implement effective strategies to safeguard the health and welfare of travelers and airport staff.

Difficult choices will have to be made—where, when and how will non-essential air travel resume, and at what passenger volumes? How will industry directives and regulations be incorporated to modify passenger processing operations, guide updates to existing facilities and influence the design of new airports? And how will these protocols and enhancements be communicated to encourage public trust and foster confidence in the safety of resuming air travel?

AECOM has the expertise and technologies to help you identify and implement the short, medium and long-term strategies needed for safely returning to operations. Our professionals can quickly analyze your operations and passenger data to help understand your current situation and enable making critical decisions with confidence. We employ comprehensive modeling and scenario-planning tools that test “what if” assumptions to inform essential strategies and immediate actions, and longer-term solutions for service planning and infrastructure design. Our aviation professionals can also help you find, apply for and oversee grant funding and financing to help mitigate the impacts of lost revenue.

As the path forward becomes clear, we have the tools to help you clearly and openly communicate the actions you’ve taken to ensure passenger and workforce safety, while also strengthening airport resiliency in the face of future shocks and stressors. When air travel picks up, our team will deliver the on-going monitoring and adjustments needed to support your future operations and safeguard a progressive return to full service.

AIRPORT RETURN TO SERVICE: A PHASED APPROACH TO IMPLEMENTATION

Airport R2S will be a multi-faceted event, and certain to be influenced by a number of factors including evolving guidelines and directives to be issued by multiple agencies, airline decisions about their flight schedules and occupancy loads, and passenger concerns about their safety and health. Given this, we recommend a phased approach to R2S implementation, customized to meet the unique challenges facing each airport.

In Phase 1 our team can help address immediate, real-time safety needs and things like collecting and analyzing important data from a number of airport sources. Phase 2 focuses on making informed decisions about near-term and long-term strategies. Phase 3 places these long-term strategies into action. Taken together, this phased approach provides an expedient and structured return to service that minimizes risk and is highly adaptable to meet future changes in the aviation industry.

A Phased Implementation Approach

Phase 1: 0 to 3 months

During the initial period of Phase 1, emergency plans, airport protocols, procedures for cleaning and other pandemic-related passenger and staff protection should be updated, based on the then-current guidelines and directives as issued by governing agencies. AECOM has industrial hygienists and safety and emergency response personnel who can assist in any/all these areas. Passenger and scenario modeling will also be important to help understand the impacts of new requirements for social distancing or medically pre-screening passengers, staff and construction workers. Our simulation and modeling tools (detailed on page 6) can help quickly analyze and run scenarios on a large number of variables, to help airports make more informed decisions. Other Phase 1 services areas we can assist with include:

- Return-to-Service planning
- Re-mapping terminal/passenger processing
- Operations review to determine impacts
- Temporary screening/quarantine facilities
- Short-term checkpoint reconfiguration
- Assess use of new technologies
- Workforce protection vs operations resources
- New communication protocols with travelers
- FIS/Customs & Border Protection reconfiguration
- Cleaning/sterilization (airports and airplanes)

Phase 2: 3 to 12 months

As we move in to Phase 2 we expect industry and regulatory guidelines to stabilize, allowing for more definitive planning and implementation. Continued modeling will allow for efficient, incremental increases in passenger traffic and related airport services. We can provide assistance in a number of service areas, including:

- Holdroom seating reconfiguration
- Security checkpoint efficiency maximization
- HVAC system improvements
- Concessions/amenities reconfiguration
- Off-site/remote check-in and screening facilities
- Grant applications/funding management
- Airport fees & charges analysis
- CIP planning & prioritization

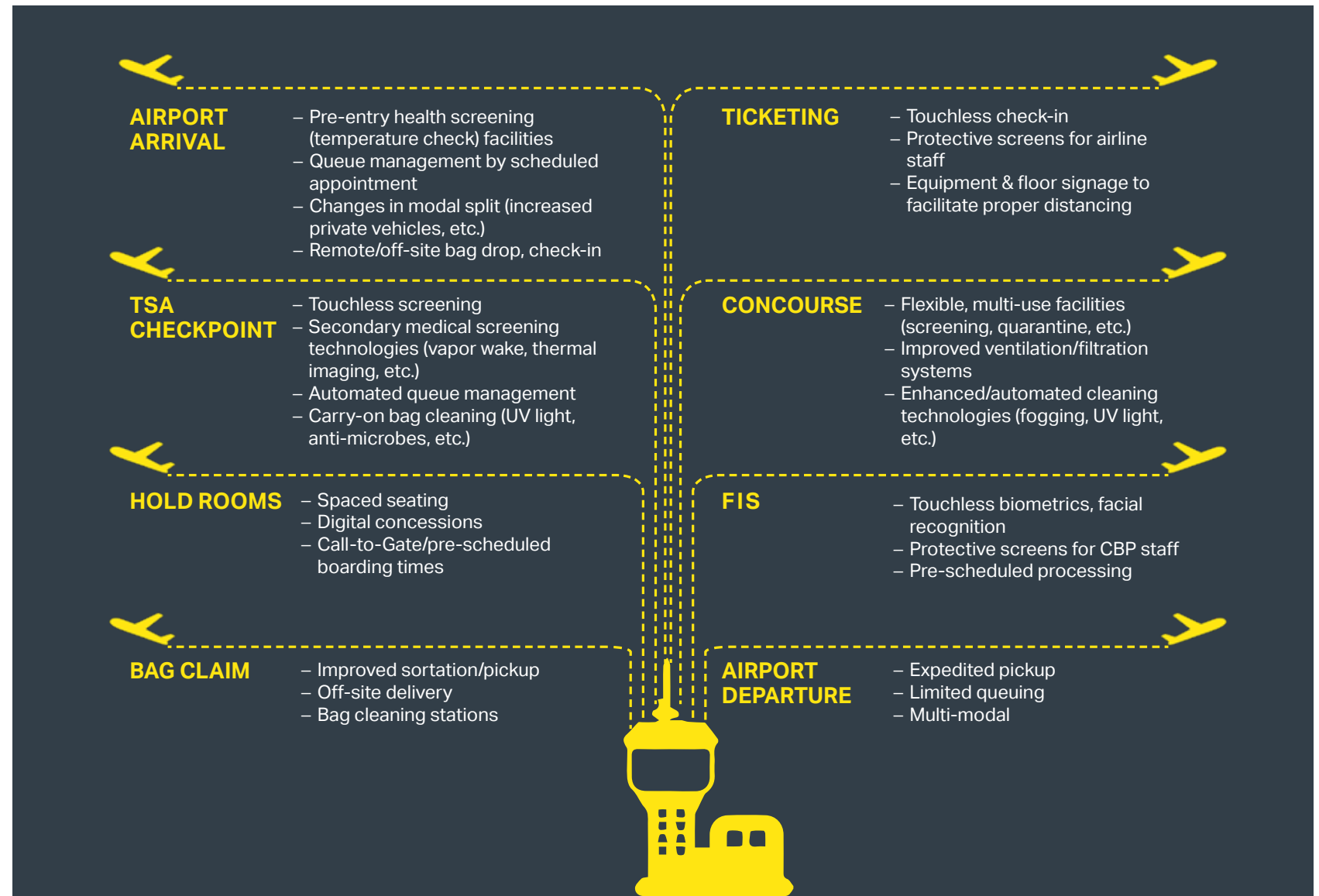
Phase 3: 12+ months

Long-term, new facilities can be planned, designed and built with the “new normal” clearly defined and understood. Existing facilities can be more permanently remodeled, taking in to consideration new technologies that will streamline passenger processing and enhance the traveler’s experience throughout the airport. Our subject matter experts can assist you with:

- New facility planning/design
- Touchless passenger processing
- Facial/optical recognition, biometrics, etc.
- Compliance with new guidelines (TSA, FAA, etc.)
- Flexible queuing spaces
- Automated sanitation systems
- Improved parking facilities
- Baggage cleaning/sanitization

Improving the Passenger Experience

With change comes substantial opportunity for improvements. Through an increased use of technology and more efficient approaches to the most common passenger touchpoints, we can assist with these elements of the passenger experience.



TOOLS AND TECHNOLOGY TO SUPPORT BUSINESS OPERATIONS

Comprehensive Airport Simulation Technology (CAST) Applied For Social Distancing

CAST is a scalable and modular aviation software solution, comprised of simulation, allocation and optimization systems for passenger, vehicle and aircraft traffic as well as process models for landside, terminal, airside and airspace. To help better understand the most efficient ways to process passengers as a result of the coronavirus, CAST will help model passenger wait times, queue length, hourly throughput, and determine facility and passenger processing capacity based on changeable queueing distances and a variable set of assumptions. This analysis is invaluable in helping to:

- Assess impacts of social distancing on passenger flow;
- Balance safe return to operation with reduced operating costs;
- Accelerate decision-making;
- Balance planned infrastructure to the expected demand; and
- Maximize efficiency for smooth, safe and punctual operations.

Data Dashboards

AECOM integrates customized dashboards to assist airports with return to service planning. Dashboards can help an airport compare pre-virus service levels with potential return to service profiles. Dashboards provide an effective way to present complex, rapidly changing data in a way that is easily understood and communicated to stakeholders. Dashboard data analytics can consolidate multiple enterprise data sources:

- historical passenger and operations data;
- activity forecasts;
- flight schedules;
- parking activity;
- SSCP processing rates; and
- Real-time time data sources.



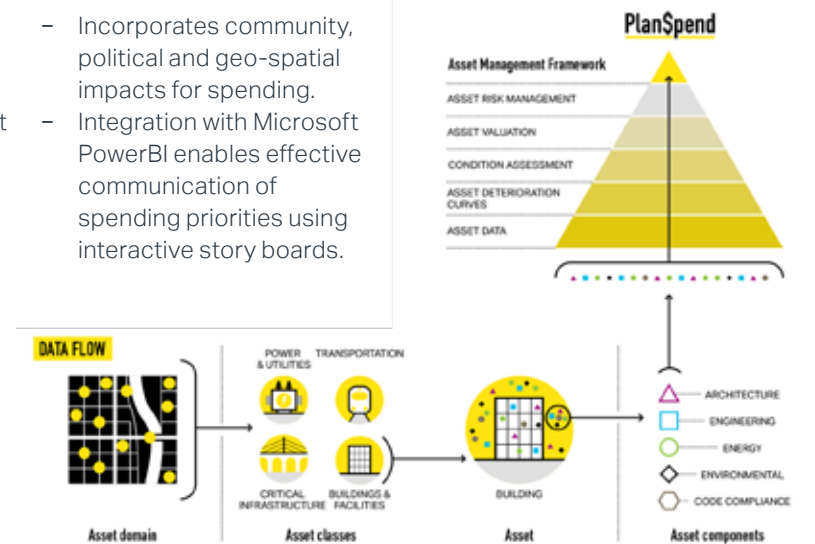
PLAN\$PEND – Assessing R2S Impacts On Capital Spending

Quality data provides the foundation for making informed and justifiable capital expenditures as an organization assesses R2S alternative scenarios. Traditional capital planning decision-making requires comprehensive knowledge of an asset’s condition, expected and remaining useful estimates, accurate cost, and demand forecasts.

Plan\$pend provides the platform for information consolidation and a process to evaluate alternative funding scenarios to optimize capital spending, facility operations and maintenance management activities.

Key features include:

- Software-as-a-Service (SaaS) subscription, hosted on an encrypted, private cloud.
- Customized to your existing asset portfolio, component hierarchy and legacy data.
- Handles projects which mitigate physical needs and new capacity projects.
- Leverages maintenance management and legacy project data to evaluate impacts of proposed capital expenditures.
- Incorporates community, political and geo-spatial impacts for spending.
- Integration with Microsoft PowerBI enables effective communication of spending priorities using interactive story boards.



EXPERIENCE WHEN IT MATTERS MOST

From infrastructure master plans during normal business operations to industry-changing security measures post-9/11, our broad range of experience and technical expertise means we provide our clients with solutions that matter.

Post-9/11 Services - Transportation Security Administration (TSA)

In response to sweeping changes to the aviation industry following the 9/11 attack, AECOM legacy firm DMJM Aviation assisted in the design, facility modifications, and installation and maintenance of explosives detection systems at 438 airports nationwide. As a subconsultant to the Boeing Company, AECOM was able to accomplish what appeared to be a nearly impossible task under very difficult circumstances and time constraints. Our team was responsible for:

- site assessment and survey to gather all data required, including a comprehensive survey of airline ticket counters, baggage check-in areas and procedures, baggage makeup areas, baggage conveyors, and baggage claim devices;
- field verification of electrical and communications infrastructure



- needed to plan electrical designs for the new equipment;
- Reviewing baggage flow modeling and developing screening concepts at each airport; and
- developing design documents and field changes for each airport. As an example of the fast turnaround times required for this project, AECOM produced design documents for the MIA, FLL and SJU airports in less than 2 weeks.

Security Upgrades - Logan International Airport (BOS)

Following the events of 9/11, BOS selected AECOM to execute an aggressive short-term program to enhance security initiatives at the airport. We provided a wide range of A/E services which included expansion and redesign of existing security checkpoints. Our work at BOS' Pier B, Terminal C was done in concert with the TSA's development of new screening protocols and checkpoint plan geometry development. This checkpoint, based upon a test-case at Baltimore/Washington Airport, was the first to fully implement the new protocols, metrics, and passenger screening equipment. Other projects



included implementation of upgrades to Customs and International inspection services, Access Control improvements, new CCTV locations, and the planning, programming and design of new offices for security badging, fingerprinting, parking violations and State Police facilities.

Terminal Modernization Program, Philadelphia International Airport (PHL)

American Airlines (AA) is the hub airline at PHL. Through the years AA has experienced steady growth which has led to multiple operations: international operations in Terminals A-West and A-East; mainline operations in Terminal B/C; and regional express operations in Terminal F. Spreading their operation across multiple terminals was not ideal resulting in lower level of customer service. AA engaged AECOM to undertake a Terminal Modernization Program that would streamline their operation and enhance the passenger experience without adversely impacting airport and airline operations. Key project goals included:

- Define the Terminal Development goals and objectives
- Detailed programming to ensure right-sizing for all airport facilities
- Passenger and airfield traffic modeling and analysis



- Concept and cost estimate refinement as appropriate
- Financial feasibility with other airport Capital Improvement needs
- Realistic phasing approach, adjustable based on passenger volume
- Internal and external stakeholder engagement to build consensus
- Incorporate responsible, sustainable design where applicable

Grant Application Support - DFW International Airport (DFW)

Under a 5-year PM/CM services contract, AECOM is assisting in developing a Landside Infrastructure Master Plan to identify and prioritize infrastructure needs over the next twenty years. This effort includes an in-depth analysis of existing conditions and scenario planning to determine an optimal configuration for roadways, transit, utilities, parking and associated infrastructure. A key goal is to determine how best to rebuild aging infrastructure in a cost-effective way while bringing in the latest best practices in innovation and technology. As part of this effort, our team is providing strategic grant support to identify potential candidate projects for inclusion in grant applications. This effort has included an analysis of various grant programs



at the federal level- from infrastructure to technology. As an example, our team is currently supporting DFW with an application to the Better Utilizing Investments to Leverage Development (BUILD) Transportation Discretionary Grants program. Our services include overall strategic guidance, development of grant narrative and a Benefit-Costs Analysis.

OUR EXPERTS ARE READY



Elliott Lindgren MBA, BSc
Planning

Elliott has provided master planning and planning support service to more than a dozen U.S. airports, including SAN, LAX, PHL, JFK, LGA and EWR.



Lincoln James, BA, MSc
Grant Management

Lincoln specializes in the development and support of grant applications for public sector clients. He has managed, authored, and/or supported numerous successful grant applications worth +\$130M in discretionary funding.



Carmen Au, PE
Passenger Modeling and Circulation

Carmen specializes in terminal circulation/simulation analysis and passenger modeling. She has worked at PHL, BUR, DFW, LIM and HKG, among others.



Aretin Altmann, MBA, BSc
Terminal & Facility Design

Aretin has extensive experience in architecture and engineering design, and he has managed multiple airport terminal projects from regional small hubs to mega hubs handling more than 75 MPP.



Michael Clements, MBA, PE, LEED AP
Building Engineering

Michael is an internationally recognized subject matter expert in critical containment (clean, quarantine, and biocontainment) facilities, including SOPs, HVAC, Effluent Decontamination, Space Sterilization, and Pressure Control.



Brian Reeve, PE
Technology & Systems Integration

Brian specializes in technology systems for airport environments. His technical experience includes work on a wide range of software platforms and managing the successful deployment of dozens of systems.



Ryan Evers
Baggage Handling Systems

Ryan is a BHS expert, with extensive experience in design, procurement, installation, and commissioning. He has worked at DFW, DEN, LAX, RDU, AUS, FLL, SNA and LIM, among others.



Kim Norberg, BFA
Wayfinding & Signage

Kim is highly-experienced in designing and implementing airport wayfinding systems that are aesthetically pleasing, highly functional and complementary to their environments.



Aly Macgregor, PE, MSc
Sustainability

Aly's expertise includes sustainable design, LEED, value engineering, advanced MEP design, high-performance buildings, commissioning, energy master planning and smart buildings/smart city strategy.



Veronica Siranosian, AICP, LEED GA
Mobility Solutions

Veronica's expertise includes planning for the use of digital and innovative solutions to address transportation safety, efficiency, mobility, and equity.

About AECOM

AECOM is the world's premier infrastructure firm, delivering professional services throughout the project lifecycle – from planning, design and engineering to consulting and construction management. We partner with our clients in the public and private sectors to solve their most complex challenges and build legacies for generations to come. On projects spanning transportation, buildings, water, governments, energy and the environment, our teams are driven by a common purpose to deliver a better world. AECOM is a *Fortune 500* firm with revenue of approximately \$20.2 billion during fiscal year 2019. See how we deliver what others can only imagine at www.aecom.com and @AECOM.

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