ORAT
Bridging the gap between construction and successful airport operations using Operational Readiness, Activation and Transition (ORAT) services
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SEAMLESS TRANSITION FROM PROJECT DELIVERY TO OPERATIONS

WHAT IS ORAT?

Operational Readiness, Activation and Transition (ORAT) is the integrated approach to managing the transition of a new airport service or facility from project delivery into active operations.

ORAT is a recognised and proven risk mitigation technique that increases opportunities for a seamless transition of new airport projects, services, and facilities from construction to active operations.

An ORAT approach combines the operational goals of airport owners, operators, and aviation partners into a single program — integrating project delivery and operational readiness activities into one plan to ensure that an organisation maximizes the potential and return on their investment from day one.

ORAT is a project and programme delivery methodology which provides a standard and structured approach for managing multi-stakeholder, cross-functional projects and programs.
Untaking the development of a new airport or a major airport expansion will create numerous challenges for the airport owner, operator and its aviation partners.

All stakeholders need to collaborate to visualise and plan for how the airport’s operations will change, so that they are aligned to the new working environment and are prepared to perform from day one.

Major airport projects are further compounded with the risks involved in the transition from construction to operations which must be meticulously managed.

If these risks are not effectively managed the airport owner can face the negative impacts of a failed or problematic opening, which can potentially lead to loss of business and damage to the airport’s reputation.

Problems associated with airport openings can be directly linked to a lack of formal ORAT processes. AECOM’s ORAT approach integrates the owner, operator, construction delivery, and operational stakeholder plans, providing a holistic and structured approach for dealing with the challenges of managing the many risks involved.

“Drawing on our experience from airport projects around the world, AECOM’s ORAT approach reduces overall time to market and ensures a predictable and sustainable outcome, with effective and efficient operations. We encourage, and help implement, early adoption of ORAT services within the planning phase of projects so that operational objectives are defined as early as possible — keeping projects on track for successful openings.”
Our ORAT approach focuses on creating both the environment for success through connected leadership and governance, and the structure for success by adopting a proven ORAT framework and approach.

We coordinate cross-functional teams of internal and external stakeholders, managing project delivery through operational and functional single point-of-contact resources.

Connecting different stakeholder groups, our ORAT teams continually plan, act, check and revise stakeholder readiness activities along the project schedule. This helps achieve safe, secure, smooth and sustainable airport operations from the opening date.

By harnessing the project knowledge we’ve gained from working on airports across the world, we eliminate common ORAT implementation issues and bridge the gap from construction completion to a functional airport.

Our experienced ORAT leaders help airports deliver successful openings by facilitating executive buy-in, ensuring enough resources are accounted for, enhancing communication, and delivering effective planning and stakeholder engagement services.

We have a track record of delivering successful ORAT projects which have provided a safe, sustainable, and smooth transition from project completion through to facility operations. Our approach combines strategies, people, processes, facilities, systems, products, and services into one single plan.

To mitigate common ORAT issues, we have developed OREx — an advanced information management tool which leverages technology to support operational readiness. The OREx platform helps us manage large, complex projects, allowing users to track critical issues and overall progress throughout a project (see page 14).
INTEGRATING ORAT THROUGH PROJECT DESIGN, DEVELOPMENT, AND DELIVERY

For us, ORAT starts at the very beginning of a project, as early engagement of ORAT services helps overcome the challenges of delivering successful airport openings. We help integrate ORAT throughout the entire lifecycle of an airport project — through design, development and delivery stages, and advocate early engagement to ensure operational objectives are considered and defined at the master planning phase.

Our approach overlaps ORAT processes with the typical project delivery cycle from planning through to completion. This helps identify scope gaps early, align business and project priorities, improve communication among stakeholders, and prepare the airport operator for acceptance and operation of a new facility.

While early engagement of ORAT services at the planning stage is our ideal approach to ensuring successful airport openings, we also have the capability and experience of delivering ORAT services at later stages of a project’s lifecycle, helping keep an airport opening on track even when ORAT wasn’t initially considered at the outset.

###我们的方法

我们的方法是将ORAT流程与典型的项目交付周期重叠，从规划到完成。这有助于及早识别范围差距，将业务和项目优先级对齐，提高各相关方之间的沟通，并为接受和操作新设施的机场运营商做好准备。

虽然在规划阶段早期参与ORAT服务是我们理想的保障机场顺畅开业的方法，但我们也有能力在项目生命周期的后期阶段提供ORAT服务，以帮助保持机场开业的顺利进行，即使在ORAT服务最初未被考虑的情况下也不例外。

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**Operational Planning**

<table>
<thead>
<tr>
<th>Master Planning</th>
<th>Design</th>
<th>Delivery</th>
<th>Handover</th>
<th>Operation &amp; Maintenance</th>
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<tbody>
<tr>
<td>Strategies</td>
<td>Concepts</td>
<td>ORAT Strategy</td>
<td>People</td>
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<td>Orat Strategy</td>
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<td>Product</td>
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<td>Plan of operations</td>
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**Operational Readiness**

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**Activation**

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**Trials**

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**Business Continuity**

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GOVERNANCE
Connected leadership focused on a joint objective
We work with clients to establish a robust and formal ORAT governance structure to manage projects. This helps align project and business priorities to facilitate risk management, issue resolution, and decision making. The framework we use focuses on executive-level governance, as well as management levels and single points of contacts (SPOCs) across stakeholder groups. Our focus cascades down to core work streams and cross functional focus groups to maintain regular and effective communication. Good governance fosters understanding, encourages executive ‘buy in’, minimizes uncertainty and guides senior management and operational stakeholders towards a combined end-goal.
Early adoption of the ORAT approach begins from inception and master planning. Our ORAT team define operational strategies and concepts to influence and align master planning, design, and development stages of projects. We then develop this into a comprehensive Plan of Operations covering every aspect of our client’s Target Operating Model, including product and service performance aspirations. The Plan of Operations forms the plans for business and operational changes required during the operational readiness phase of projects including budgeting, associated resource requirements, and stakeholder implications.
OPERATIONAL READINESS
Preparing for day one, people, and processes

Operational readiness focuses on the execution of the Operational Readiness Plan in close collaboration with stakeholders. Our ORAT team work with clients to manage stakeholders to execute operational plans in close coordination with the overall project. This ensures stakeholder readiness to operate, enabling the operational trials and ultimately the airport opening. We have a keen focus on both strategic and tactical change management covering changes to the airports operating model, management of operations and standard operating procedures, as well as ensuring people readiness through training and familiarisation.
OUR ORAT SERVICES

ACTIVATION

Handover and acceptance, transition of operational responsibility

We prepare the owner and operator for the acceptance and operation of the new facilities and systems and focus on the transition of responsibility and ownership from construction to operations. Our ORAT team work with aviation clients to ensure a clear handover process and that facilities and systems are configured for day one operations. We ensure that support and maintenance responsibilities are clearly defined, and in place, for active operations.
TRIALS
First of type, basic, intermediate, disruption and emergency, and advanced trials

Operational trials demonstrate that a new or modified facility is ready for operations. Trials are intended to emulate actual operating conditions that show the full integration of systems and facilities with operational procedures and staff. Trials are progressive both in scale and complexity, ensuring that every aspect of new operations is thoroughly proven before opening. Carrying out trials helps engage stakeholders and build momentum and confidence towards live operations.
TRANSITION

Opening strategy and transition logistics

An opening strategy and transition plan define the most appropriate route for the airport to commence active operations. This must be carefully planned and co-ordinated with the owner, operators, maintainers, and stakeholders to minimise the potential for interruptions to operations, reductions to airport capacity, and to ensure a smooth and trouble-free transition.
OUR ORAT SERVICES

BUSINESS CONTINUITY
Operational support through transition and early phases of operations

The early days of operations carry the most risk to operational and business continuity. Our aviation experts ensure that our clients and their stakeholders have the support needed to manage the transitional period, as well as the early days of airport operations. We support operations and help build confidence and efficiencies during early operations.
LEVERAGING TECHNOLOGY TO SUPPORT OPERATIONAL READINESS

OPERATIONAL READINESS EXCELLENCE (OREx)

OREx is our advanced information management platform for ORAT. Through collaboration with AECOM’s Global Aviation team, we developed an effective management tool for ORAT by leveraging decades of aviation experience.

It uses a comprehensive approach that focuses on delivering assets from construction as well as the activities needed for an operational facility. OREx is easily tailored to a client’s specific project needs.

Using OREx creates multiple advantages. The platform helps efficiently utilize work breakdown structures to manage large and complex projects, and increase team accountability. It can track critical issues and overall progress as well as tracking actual versus scheduled performance. OREx helps identify change events and integrate them into projects.

Our team of professionals help mitigate common ORAT issues and highlight the solution to a successful ORAT program. Using OREx, we can deliver a vast range of benefits including:

- Secure, enterprise-grade infrastructure
- Management of large, complex projects
- Provide real-time monitoring and reporting on all systems and processes required under ORAT
- Early identification of critical issues, missing scope, or actions
- Provide real-time management and distribution of required actions
- Facilitates critical decision-making on a timely basis
- Improve stakeholder coordination and communication
- Schedule ORAT activities
- Track and resolve new facility issues in an operational environment
- Increased stakeholder engagement and ownership of process
- Reduced time from construction completion to an operational facility
DELIVERING SUCCESSFUL AIRPORT OPENINGS ACROSS THE WORLD

Our experience is drawn from airport projects from around the world. We’ve assembled a team of experts in the field of ORAT that are flexible to meeting the need for ORAT services globally.

SAN
SAN DIEGO INTERNATIONAL AIRPORT
SAN DIEGO, US

We’ve provided program and construction management services for San Diego Airport since 2006 and successfully completed several major projects. As a stakeholder on the Activation Team, we provide ORAT services for the aviation department.

The Activation Team helped deliver the following project at SAN

- **Green Build**
  - $820 million LEED (Leadership in Energy and Environmental Design) rating
  - Platinum terminal expansion

- **Rental car centre**
  - $316 million, 2.1 million square foot facility

- **Parking plaza**
  - $127 million 2,900 parking space garage

- **Flight information service project**
  - $229 million project to convert six existing gates to international swing gates and provide 1,000 PAX per hour processing capacity
As program manager of the FLL Terminal 4 replacement project, we developed the commissioning guideline and performed as a stakeholder in the ORAT process as an extension of the client staff.

The ORAT process supported the successful delivery of a complex phasing project to replace an existing 10-gate facility with a new 14-gate concourse, while maintaining airport operations. Additional projects include Federal Inspection Services and a Checked Baggage Inspection System.

We also implemented OREx (see page 14) to manage the client’s complex transition from temporary off-site administrative offices to a consolidated office building located on top of the new 14-gate Concourse H.

**Fast facts**

<table>
<thead>
<tr>
<th>Project value</th>
<th>$1.3 billion</th>
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<tbody>
<tr>
<td>Area</td>
<td>483,000 square feet</td>
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<tr>
<td>Highlights</td>
<td>12 international swing gates, 2 domestic gates, SSCP, Checked Baggage Inspection System, 2000 PAX/hr Federal Inspection Services, runway, 60,000 SF aviation department offices</td>
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</table>
Providing extensive ORAT services for Wichita National Airport’s new terminal, we implemented a two-pronged approach using both a Transition team and a Construction Logistics team to ensure a successful opening.

Our Transition team worked with all the future building occupants — such as airlines, concessionaries, maintenance, police, operations, to develop lists of operational requirements and physical movements.

The Construction Logistics team held bi-weekly stakeholder meetings to determine a list of items occurring over the few months prior to activation.

The project transitioned into the new terminal from the old terminal in an overnight move. We set up a command / call centre in the new terminal and staffed it 24 hours a day after opening for a period of five days to take care of the many different questions and minor building problems.

**Fast facts**

- **Scale**: Capacity to support two million passengers per year. Design supports future expansion for 2.4 million passengers
- **Investment**: $160 million
- **Built-up area**: 275,000 square feet
- **No. of gates**: 12
- **Baggage**: Expanded baggage handling systems with three carousels
- **No. of security lines**: 4
- **Car parking spaces**: 1,600 over four levels designed for horizontal expansion
- **Sustainability**: Designed and constructed in accordance with Leadership in Energy and Environmental Design (LEED) Gold certification
The $2.4 billion Harvey Milk Terminal 1 project consists of a new check-in hall, Boarding Area B (BAB) supporting 25 gates, a new consolidated security checkpoint and baggage handling system. Construction is divided into two projects: BAB and Harvey Milk Terminal 1 Center (T1C). This is an operating terminal with construction being performed in phases, while maintaining flight operations.

As Construction Manager for T1C, we are working in conjunction with the project team, and have created a manual that defines the steps and processes to perform commissioning and ORAT. The manual will act as a guidance document for use on current and future projects at SFO to create an exceptional project outcome.

We developed a structured process with documented planning, governance, resolution structure, goals, metrics and reporting to ensure a successful terminal opening. An important factor of our success was the Stakeholder Engagement Process (SEP) groups which were made up of key airport stakeholders with vested interests in particular systems or operations. Working collaboratively with design builders and SEPs, we had 36 systems for which we coordinated the operational planning, training, familiarization, operational readiness trials and post-opening issue resolution.

The four-year timeline for the project:

- **2019**: Nine gates open in BAB, new consolidated security checkpoint opens; T1C partially opens
- **2020**: Nine more gates open in BAB (18 gates total), entire south check-in lobby
- **2021**: International connector open, seven additional gates (25 gates total), swing gates open
- **2023**: BAB and T1C fully operational

SFO SAN FRANCISCO INTERNATIONAL AIRPORT
HARVEY MILK TERMINAL 1
SAN FRANCISCO, US

The four-year timeline for the project
The $138 million Terminal 3 Boarding Area E (BAE) project included a building expansion and remodel to the concourse floor area. The additional square footage helped expand hold rooms and provide appropriate seat counts for the aircraft fleet mix, as well as revenue-generating concession space and additional passenger amenities. The project improved the many terminal systems and building components that had reached the end of their useful life and enhanced security by improving access control, paging, fire protection and fire alarm systems, and IP-based CCTV systems.

We helped develop and execute the ORAT program to test if existing procedures worked well for the new facilities. This provided an opportunity to test the new operational procedures and assess whether they can run more efficiently and effectively, as well as ensuring that staff were prepared to manage the new facility.

Operational readiness trials were performed on all major systems that impact public customer service activities. The trials ranged from extensive testing and operation of integrated systems such as the baggage handling system and flight information system, to simple systems such as water fountains and courtesy phones. The goal was to anticipate, to the greatest extent possible, the needs and requirements of the traveling public.

Planning was developed through developing Quick Response Teams (QRT) of key airport stakeholders with vested interests in specific systems or operations. Working collaboratively with design builders and QRTs, we developed the activation procedures, and helped coordinate the operational planning, training, trials, passenger simulation and post-opening issue resolution alongside the QRTs.

The project was opened to travellers on January 28, 2014.

**Fast facts**

- **Scale**: Capacity to serve 10,000 passengers per year
- **Investment**: $138 million
- **Built-up area**: 6,317 sqm
- **No. of gates**: 10
- **Retail**: 12 sqm
- **Sustainability**: LEED Gold Certification due to sustainable features such as 400Hz aircraft ground power; pre-conditioned air system; minor fuel system modifications; clerestory throughout the terminal; improved heating; ventilation and air conditioning (HVAC) systems.
The Midfield Terminal Complex (MTC) expansion program includes a new terminal building that will increase capacity and operational efficiency to process 30 million passengers per annum and 65 aircrafts, including multiple Airbus A380s. The passenger facilities will include over 27,500 sqm of airline hospitality lounges, a transit hotel, heritage and culture museum, in addition to car parks, landside and airside roads and ancillary buildings.

As the Construction Management Agent for MTC, we developed an ORAT trials strategy, approach and plan that is aligned to key construction and systems readiness milestones, which enables the progressive build-up of trials scope, scale and complexity — ensuring all aspects of operations are thoroughly proven leading up to the airport opening date.

Our ORAT strategy is built on a trial methodology that introduced what could be done during construction to gradually increase confidence and capabilities. The methodology starts with the unit’s ‘Demonstration’ phase, which focuses on product and linking systems to areas, followed by the ‘Strips’ phase, which connects the operation processes together from facility; process, system and people. Finally, after the construction completion will be the ‘Volume’ phase where the trial will verify the end-to-end passenger journey by emulating day of operations.

### Fast facts

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<th><strong>Scale</strong></th>
<th>Capacity to support 84 million passengers per year. 11,000 per peak hour.</th>
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<tbody>
<tr>
<td><strong>Investment</strong></td>
<td>19.1 Billion AED</td>
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<tr>
<td><strong>Built-up area</strong></td>
<td>750,000 sqm</td>
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<tr>
<td><strong>Stands</strong></td>
<td>65 with 106 passenger loading bridges</td>
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<tr>
<td><strong>Baggage</strong></td>
<td>28km of conveyors capable of 19,200 bags per hour</td>
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<tr>
<td><strong>Retail</strong></td>
<td>35,000 sqm</td>
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</tbody>
</table>
To support and work towards a successful opening in Saudi Arabia’s largest and busiest airport, we are working with the General Authority of Civil Aviation (GACA) to provide ORAT and operational support services for the New Terminal 1 at King Abdulaziz International Airport (KAIA) in Jeddah.

The mega project consists of a new 810,000 square meter terminal building that will serve 30 million passengers per year. The terminal includes an advanced baggage handling system, over 28,000 square meters of retail/food and beverage space, and an advanced airport people mover system. Additionally, a range of support facilities will help service the new terminal, including a new air traffic control tower, fuel farm, load centres, data centres, multi-story car park with 8200 car park spaces, landside and airside fire stations, and more.

We’ve delivered ORAT and operational support services for the phased opening of the new terminal. The AECOM team, alongside expert sub-consultants in the industry, has helped bridge the gap between construction completion and operations to provide a successful transfer in flight operations and activation of airport terminal facilities.

We have implemented a holistic ORAT approach within the new terminal which includes working closely with the client and the many stakeholders to assure the readiness and functionality of all facilities, infrastructure and systems, along with a focused approach on human resources such as familiarization and training of staff, and the overall identification of manpower requirements and planning.

In addition, we mobilized several key experts in various operational areas to supplement KAIA during and after the opening of each phase including within the airside, terminal and landside operations. The full opening is planned for the first quarter of 2020 in line with the construction completion schedule.

### Fast facts

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<tr>
<td>Built-up area</td>
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<td>Gates</td>
<td>46 gates equipped with 94 aerobridges</td>
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<td>Check-in counters</td>
<td>240</td>
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<td>Immigration counters</td>
<td>128</td>
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<td>Security lanes</td>
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<td>Car parking spaces</td>
<td>8,200</td>
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<tr>
<td>Additional features</td>
<td>Advanced baggage handling system (BHS) and advanced airport people mover (APM)</td>
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<tr>
<td>Support facilities</td>
<td>Air traffic control tower, fuel farm, load centres, data centres, fire stations</td>
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**JED KING ABDULAZIZ INTERNATIONAL AIRPORT NEW TERMINAL 1 JEDDAH, KINGDOM OF SAUDI ARABIA**
To discuss how our ORAT services can support your airport project, please contact:

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Call back  
If you would like to speak to a member of our team, please submit your name, contact details and query and we will contact you within 48 hours to discuss how we can help.
About AECOM

AECOM (NYSE:ACM) is the world's premier infrastructure firm, delivering professional services across 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 2018. See how we deliver what others can only imagine at aecom.com and @AECOM.

Airports and connecting transportation links are vital to the continued growth and economic prosperity of cities, regions and countries. With demand for air travel set to double over the next two decades, airports around the world need to modernize and expand to be ready.

AECOM is a global provider of technical services to airport owners, investors, airlines and aviation clients, leading and supporting programs for airports of all sizes and forms. Building on our global network of expertise and local knowledge, AECOM’s multidisciplined, skilled professionals are experienced in delivering integrated, collaborative aviation solutions across projects and continents, from finance and analysis to master planning, program management, design and construction services.