

ARUP

ORAT

(Operational Readiness, Activation and Transition)





*The Arup ORAT team brought structure to the chaos that evolves when many stakeholders all need to deliver a multitude of tasks to achieve a common goal.*

Guy Thompson, Executive General Manager Assets & Capital Projects,  
Perth Airport Pty Ltd



# Introduction

## What is ORAT?

### Operational Readiness, Activation and Transition Turning a building into a business

The opening of a new airport should be an occasion of pride and celebration. Anything less than a successful opening can send all the wrong messages, invite corporate embarrassment and potentially tarnish reputations.

With the acute attention of the media and the reliance of the travelling public to seamlessly get to their destination on the day, there's just one chance to 'get it right'.

And 'getting it right' is the greatest endorsement of commitment and capability for any sponsor

The process of taking a newly constructed building and turning it into a fully functioning airport that operates business as usual from Day One needs to be carefully and sensitively managed. Operational readiness requires the full range of delivery elements (for example, stakeholder engagement, change management and governance). Crucially, the way in which these interact and complement each other during an airport or terminal opening is critical and the determinant of success. Getting this balance right poses significant challenges.

### Arup's approach to ORAT

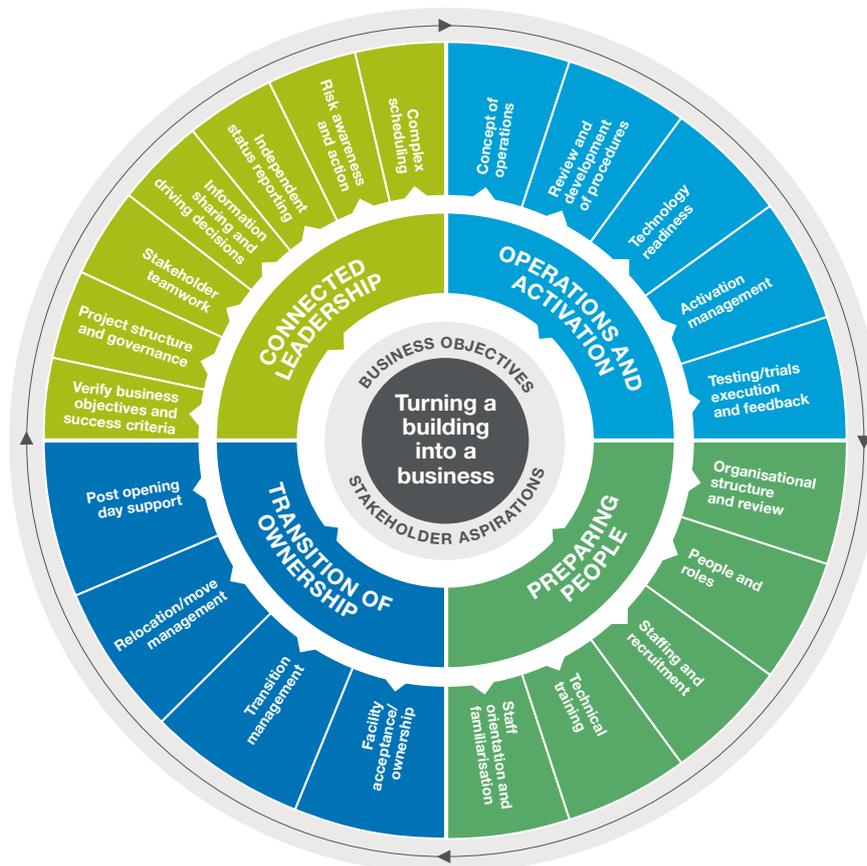
Arup has over 50 years experience working in global aviation and understands what it takes to be world class. Through our work on the design, construction and opening of airports – including JFK Terminal 4, Toronto Terminal 1, JFK Terminal 5, Dubai Terminal 3 and Perth Terminal 2 – we have gained an in-depth knowledge of the interface between the built environment and aviation operations.

We concentrate on complete readiness, not just operational readiness. Our approach is all encompassing and includes preparations to open, operate, manage and maintain a new service. This approach facilitates the opportunity to make progressive changes and adjustments ahead of the formal opening to assure success.



# The Arup ORAT Methodology

Arup's ORAT methodology is modular, completely flexible and allows clients to select services that complement their own in-house capabilities.







*Arup worked with the Greater Toronto Airports Authority to develop truly innovative TCAT processes and tools to help bring all phases of the new terminal, with all of its sophisticated and complex systems interfaces, to life.*

Lloyd A. McCoomb, Chief Executive Officer,  
Greater Toronto Airports Authority

### Connected Leadership

Collaboration and communication are key components to any successful project. The Connected Leadership module provides proven tracking and reporting techniques that ensure real-time access to information and knowledge.

### Operations and Activation

In order for the airport or new terminal to operate effectively, the right systems and procedures must be in place. The Operations and Activation module aligns people and technology to deliver desired outcomes.

### Preparing People

In order for the new facility to operate effectively, staff must be confident in their roles and be able to respond to any situation. The Preparing People module is focused on ensuring staff have a detailed understanding of the facility and systems.

### Transition of Ownership

The handover of ownership and provision of comprehensive documentation is susceptible to being rushed in the final phases of a project. The Transition of Ownership module provides a structured approach for transition into, and acceptance of, the new facility.

## The ORAT programme sequence

The following is a simplified flow diagram showing key activities and their relationship to the four Arup modules.





## Connected Leadership

Connected Leadership establishes effective communication channels between multiple and diverse stakeholders. Arup delivers significant value throughout the life of an ORAT project by benevolently guiding stakeholders towards a common end-goal whilst satisfying individual stakeholders' needs. Supporting this are Arup's proven, fully scalable tools for progress tracking and status reporting which provide a mechanism to share important and relevant information in a timely manner.

### Verification of business objectives and success criteria

Arup focuses on the early identification of all stakeholders and their individual goals and business objectives. We work to align these goals and objectives in the pursuit of the common aim of a successful Airport Opening Day, measuring and reporting on progress throughout.

### Project structure and governance

We establish a structure and governance that provides comprehensive but relevant representation, effective reporting and rapid issue resolution and escalation, where needed, which helps maintain ongoing stakeholder participation.

### Stakeholder teamwork

Stakeholders are required to nominate a single point of contact (SPOC) dedicated to the ORAT project. Through direct involvement with ORAT activities, the wider airport community is continually informed of progress, facilitating engagement and vesting stakeholder interest in the successful opening of the facility.

### Independent status reporting

The Arup ORAT methodology relies on being able to provide an accurate and unbiased 'snapshot' of overall progress throughout the life of a project. As an independent consultant, we are ideally positioned to report on both construction and stakeholder readiness. We have reporting tools that present complex information in simplified and meaningful format to aid clarity and stakeholder understanding.

### Risk awareness and action

Identifying risks is an essential first step toward mitigating undesirable outcomes. Once identified, we apply the tools and resources necessary to track, manage and mitigate these risks.

### Complex scheduling

Our ORAT planners consolidate information on construction, recruitment, training, trials, stakeholder operations, issues resolution and transition into an overall ORAT schedule. This schedule informs the optimum opening day for the airport or terminal based on the ORAT principles of "Minimum Requirements" and overall "State of Readiness", thus overcoming the potential compromises and sub-par outcomes that can characterise an immovable fixed date.

*The task was sensibly broken down into a sequential structured approach which enabled discipline to be maintained in a less confrontational way during a very stressful time for all involved.*

Guy Thompson, Executive General Manager Assets & Capital Projects, Perth Airport Pty Ltd

### Terminal 2, Perth Airport, WA, Australia

Terminal 2 (T2) is the first new terminal to be built at Perth Airport in 26 years and it marks a critical milestone in the Airport’s redevelopment program.

Working closely with Operations, the Major Projects team, the airlines and ground handlers, the building contractor and the systems integrators, Arup meticulously planned and delivered a coordinated programme of trials designed to progressively test building functions. This culminated in the Advanced Trial which simulated the complete ‘end to end’ customer experience from forecourt set down to boarding based on the peak load of a normal day. Over 250 volunteers from the public participated giving an overwhelmingly favourable response to the new facility.

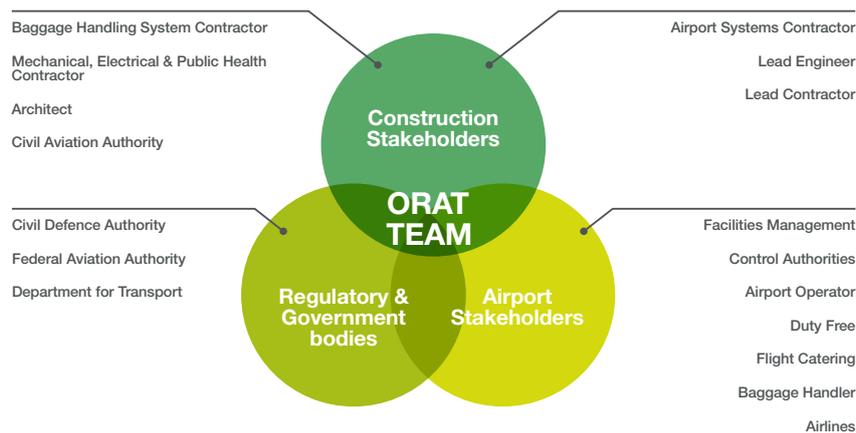
Two weeks after the Advanced Trial, Terminal T2 opened as planned and the first aircraft, a late addition due to the impact of Cyclone Rusty on the northern mining communities, departed on time for its destination.

### Stakeholder Engagement: Getting everyone round the table

Participation by all stakeholders involved in, or affected by, an airport or terminal development at all stages of delivery offers real benefits. Arup identifies and engages stakeholders early to ensure that needs are established from inception.

This gives the team the opportunity to optimise the design of the facility to best test the needs of the owner and end-users, eliminate surprises later in the project and build confidence in the lead up to Airport Opening Day.

#### Unified stakeholder groups



#### Approach to stakeholder engagement



## Operations and Activation

Operations and Activation focuses on interrogating technical systems to ensure that they meet their intended need, providing an effective framework to support staff operations and methodically trialling every component of the system.

This process reveals any issues or deficiencies in the systems providing opportunity for corrective action to be effected prior to Airport Opening Day.

### Plan of Operations

Fundamental to a successful ORAT project is the development of a Plan of Operations for every stakeholder. Arup has considerable experience working with airport operators and their stakeholders on all areas of operations and draws ORAT team members directly from airport operational environments.

### Review and development of operating procedures

In addition to a high level Plan of Operations, Arup has the technical expertise to assist clients develop and refine their Standard Operating Procedures (SOPs) and Irregular Operating Procedures (IOPs). These are essential for new airport certification processes.

### Technology readiness

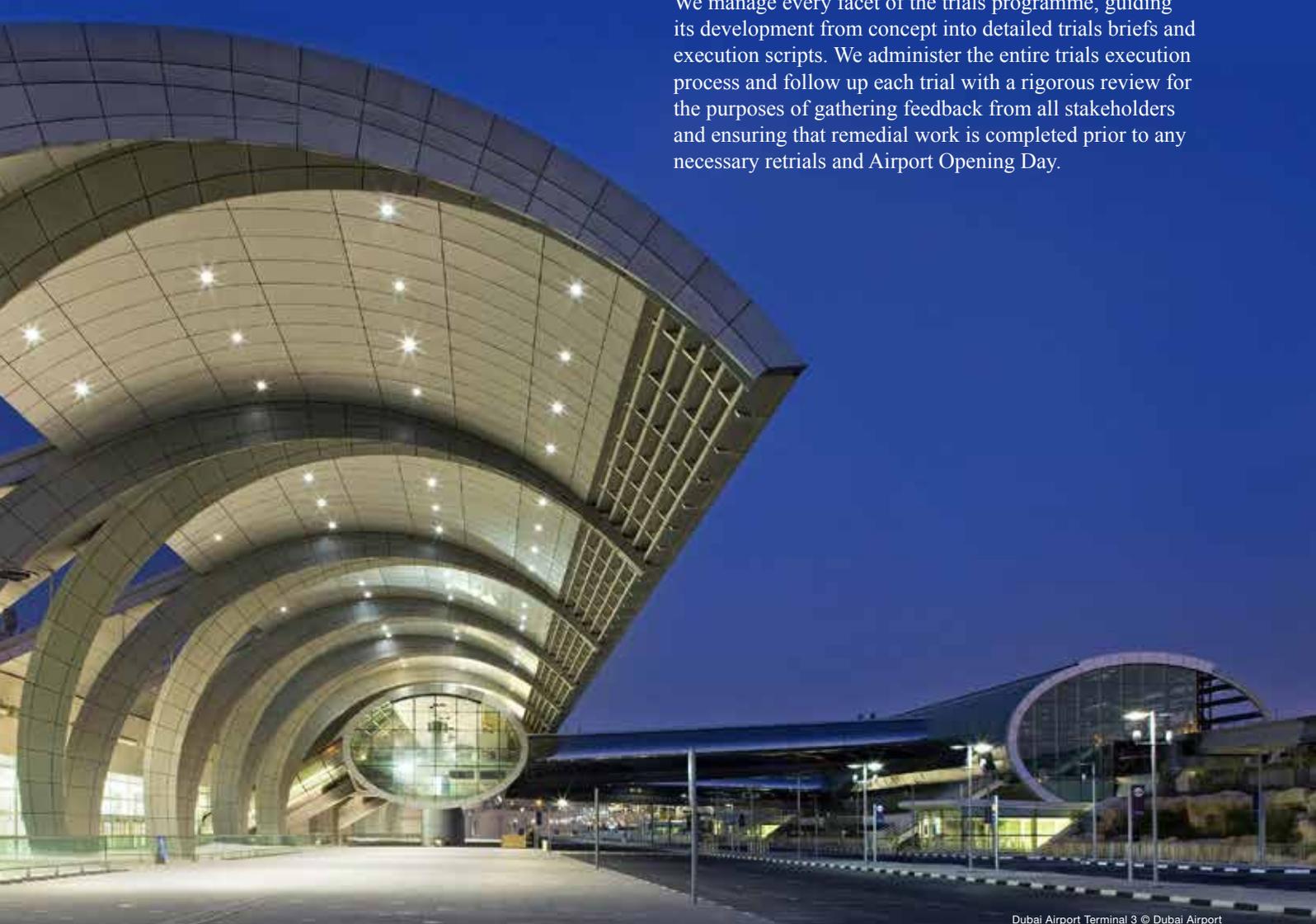
Effectiveness of airport technology is critical to ensuring safety whilst maintaining operational continuity. Arup has skilled subject matter experts (SMEs) capable of attending to complex IT issues, providing technical input for trials development, supplying on-site support for IT technical trials and leading IT focus groups and integration teams.

### Activation management

A new airport facility will depend upon many building and technology systems that need to be carefully tested, commissioned, activated and turned over (TCAT). Arup has developed a comprehensive set of commissioning tools to ensure equipment is thoroughly tested and approved prior to handover.

### Testing/trials execution and feedback

We manage every facet of the trials programme, guiding its development from concept into detailed trials briefs and execution scripts. We administer the entire trials execution process and follow up each trial with a rigorous review for the purposes of gathering feedback from all stakeholders and ensuring that remedial work is completed prior to any necessary retrials and Airport Opening Day.



*The Arup ORAT process has proved to be both robust and practical. It has enabled us to achieve a common process by which everyone has the visibility of critical issues and the means to deal with them in a timely, controlled manner.*

Paul Griffiths, Chief Executive, Dubai Airports

### Terminal 3 Dubai Airport, UAE

The Arup Operational Readiness and Airport Transition (ORAT) team managed every step of Emirates' and Dubai Airport's move into the terminal. Specialist airport technology systems and control rooms were commissioned and tested, and the team engaged with all stakeholders to implement appropriate training, ensuring staff were familiar with an operational environment prior to launch.

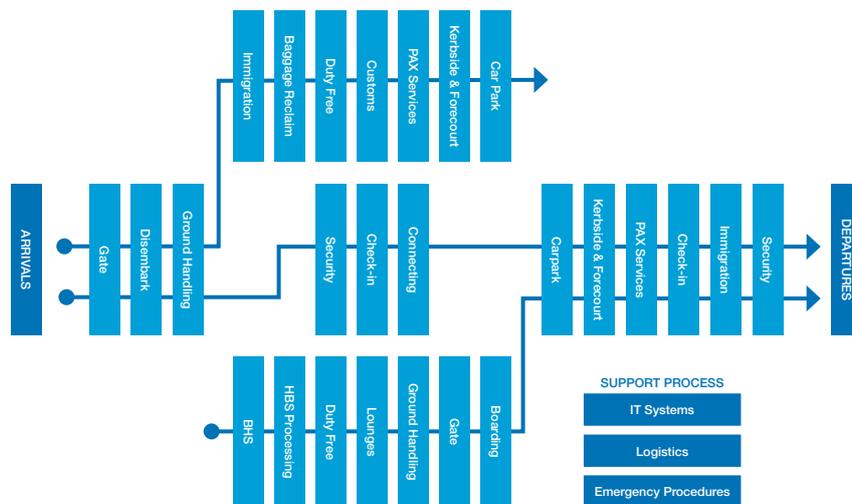
They monitored interoperability between multiple systems, identifying and resolving any technical issues, managed the trials, and steered the strategy and sequence of the airport opening. The ORAT programme not only provided an excellent platform for the stakeholders to prepare for opening but also identified operational opportunities for improvement and corrective actions.

### Testing Commissioning Activation and Turnover (TCAT)

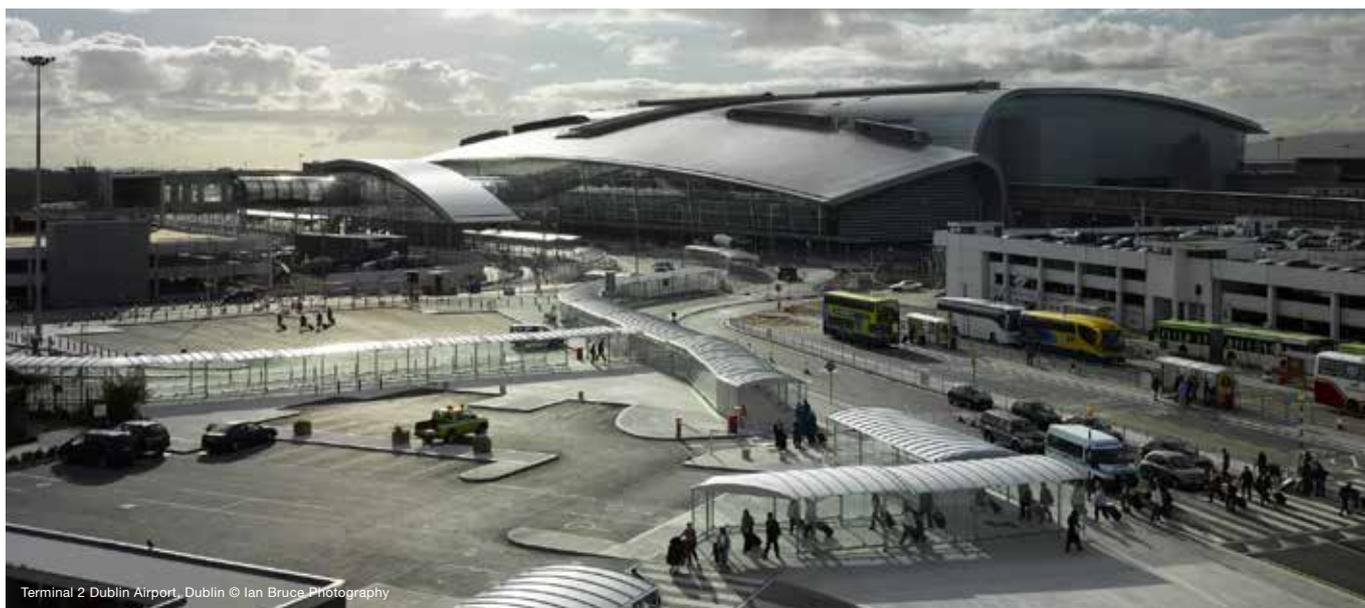
Arup's extensive TCAT experience allows the actual progress of building completion against reported status to be maintained and assessed. With a strong engineering heritage, Arup has the skills required to witness systems testing, review commissioning schedules and monitor systems integration. Arup's TCAT tools allow for a smooth transition between different stages of construction and provide the owner of the facility with knowledge of each system and its operations.

### Trials Programme Development

Arup designs robust trials that test systems, examine processes and simulate real life scenarios, both individually and as part of an end-to-end process. Stakeholders have direct input into trials development and dedicated working groups are established to guide this process. A well designed trials programme ensures that, at Airport Opening Day, management and operational staff have confidence in the work they are undertaking, are familiar with their surroundings and are capable of providing the service that the facility demands, delivered in a safe environment for both public and staff.



Example of an operational trials scope covering arriving and departing passengers



## Preparing People

Preparing People is one of the most important stages of an ORAT project. The new facility relies upon people to function and a mismatch between people, processes, environment and technology can be costly. Typically, a new airport or terminal will have around 30 to 50 new systems which presents a significant challenge. Arup provides a comprehensive set of services to ensure the organisation, and the individuals within it, are completely familiar with these by Airport Opening Day.

### **Organisational structure and review**

Arup has the necessary skills and experience to review and improve organisational structures so that these support the agreed business objectives.

### **People and roles**

Arup analyses the job roles required in the new facility and develops job descriptions and competency frameworks. We then facilitate employee selection by establishing assessment centres.

### **Staffing and recruitment**

To expand the organisation and populate new facilities, we work to establish appropriate staffing levels for all stakeholders, setting recruitment targets, aiding in the recruitment process and tracking progress in the lead up to Airport Opening Day.

### **Technical training**

Through the stakeholders, Arup assists in the important facilitation of on-the-job training across all aviation disciplines, including airside operations and airport safety. This type of training is critical to promoting ongoing quality and improvement.

### **Staff orientation and familiarisation**

Arup's ORAT team members assist in facilitating the development of orientation and familiarisation training courses that cover both generic facility spaces, functions and systems and individual stakeholder requirements.

*The operational demands of Terminal 2 were such that several innovative and novel concepts had to be developed to facilitate a robust and secure working environment.*

## Terminal 2, Dublin Airport, Ireland

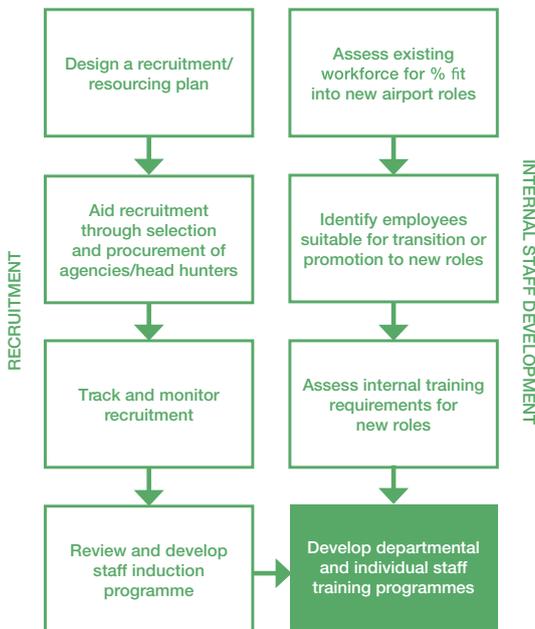
As lead consultants on Dublin Airport's T2, Arup provided planning, design and project management consultancy.

The master plan for Terminal 2 established high level design aspirations and principles with the aim of delivering visual coherence and establishing the most effective use of all the facilities for passengers and staff alike and delivering a high quality environment that respects and elevates the public realm.

During the construction period the workforce on site at the peak was over 2500 and over 10,000,000 construction man hours were achieved during the build programme. Able to accommodate up 15m passengers per year, the terminal has been designed around the needs of customers at what is now the tenth largest airport in Europe for international traffic.

## Staff Recruitment and Development

Arup places significant emphasis on using existing resources wherever possible. We ensure that skills that already exist 'in house' are identified and developed to their full potential. However, external recruitment is often inevitable with any significant expansion and we are also able to facilitate and track this process from start to finish.

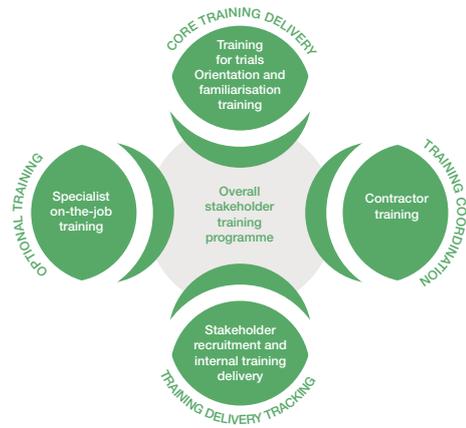


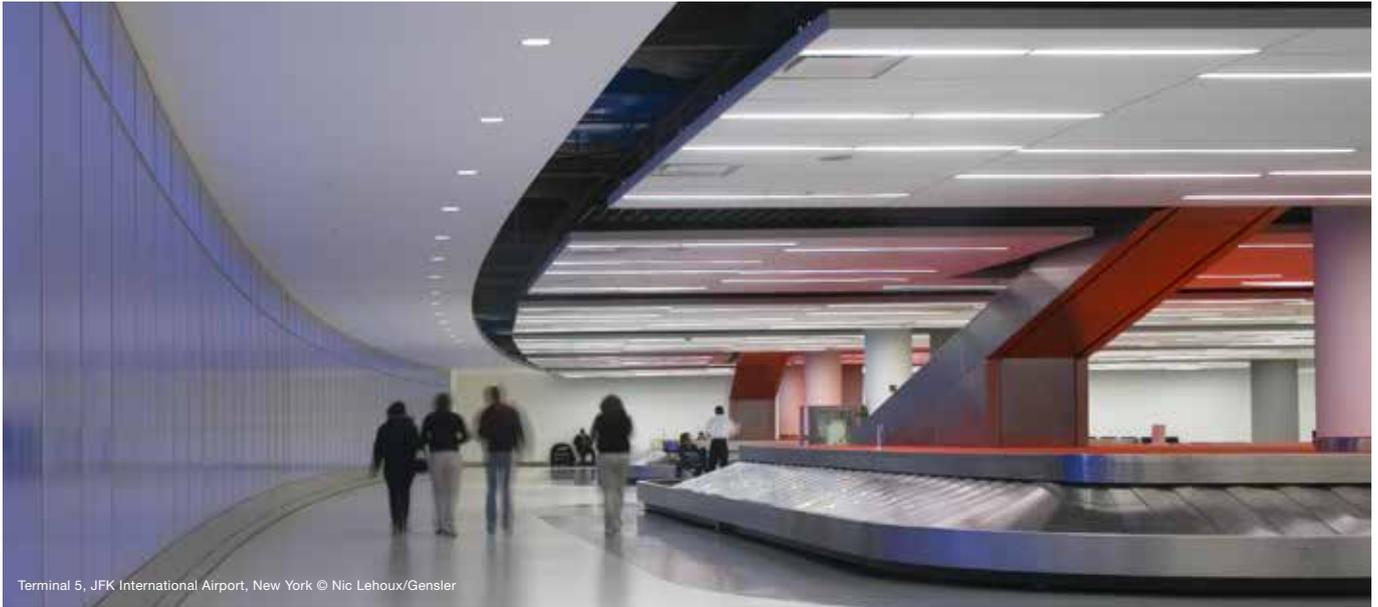
## Training Coordination

We facilitate a complete spectrum of training services throughout an ORAT project, including everything from basic facility orientation to specialised operational systems and safety training.

Our focus is on fully analysing the training requirements of all stakeholders based on the stakeholders' stated requirement to ensure they not only receive the procured contractor training but also any additional training required for staff to be fully competent in their operational roles.

Through our relationships with past clients we are able to facilitate scalable training packages that consist of in-class instruction and hands-on experience.





## Transition of Ownership

Transition of Ownership has to be carefully planned and coordinated with the owners, operators, maintainers and end-users. This ensures that the facility originally specified is actually handed over and that the process of transition is seamless and trouble free. Arup is able to devise the most appropriate transition and opening strategy that focuses on readiness, avoiding the compromises that typify the arbitrary nomination of an opening date.

### Facility acceptance/ownership

Arup takes a systematic and timely approach to facility acceptance. We ensure that stakeholders are fully aware of the facilities that they will occupy and, for which, they will assume responsibility at the agreed time.

### Transition management

Our expert planners work with each stakeholder to streamline complex transfer scenarios and ensure that customer service levels are maintained throughout the transition process.

### Relocation/move management

Our ORAT team provides logistical support during stakeholder and airline relocations. This includes providing advice to teams on security procedures, educating staff on access and pass policies and coordinating delivery of goods. We also have extensive experience of airline relocations.

### Post opening day support

Arup continues to provide support beyond Airport Opening Day. We ensure that the tools, skills and documentation are in place to successfully operate, maintain and manage the facility. We promote complete knowledge and skills transfer of ORAT learning prior to project conclusion and, if required, can return to undertake reviews or additional training where necessary.

*Arup's innovative and holistic approach to design and delivery of the new terminal building enabled the client to achieve its goal of creating a low cost terminal.*

### Terminal 5, JFK International Airport, New York

Arup worked with JetBlue to develop a plan for a new 26-gate terminal specifically designed for their low fare operations. The objective of Terminal 5 was to create a new low cost hub that would enable JetBlue to build upon its exemplary reputation for providing superior customer service.

The building was conceived and designed around the customer, not simply around the architectural physics. This non-traditional approach enabled the building to be incredibly efficient in its use of space while delivering a consistently high level of service. To do this, Arup employed customer flow and behavioural models, allowing the team to create a building with a much smaller footprint than a terminal with similar passenger demands. The reduction in building volume used fewer raw materials, less energy and requires significantly less maintenance.

### 90-60-30 Airport Opening Countdown

90-60-30 is a proven process that ensures each Single Point of Contact (SPOC) is reporting regularly on stakeholder progress and that their true state of readiness can be measured.

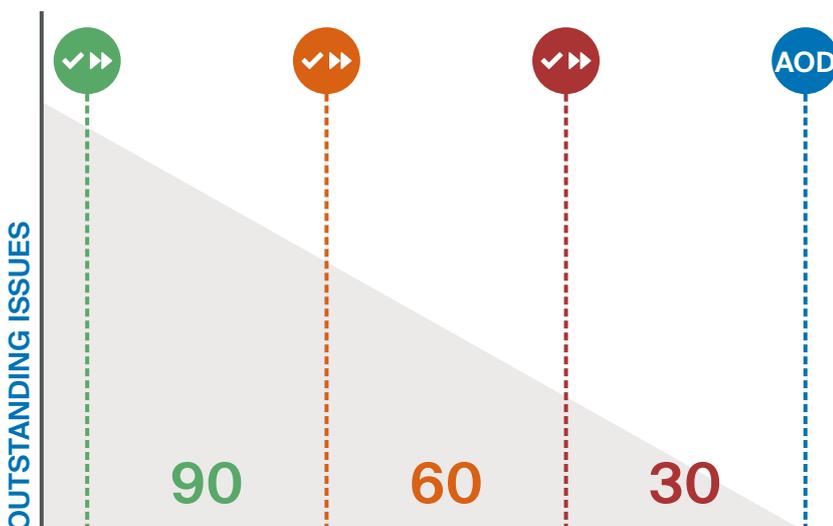
Arup works to ensure that every stakeholder has closed out all pending issues before proceeding to the next stage of the countdown and commits resources to the escalation of problems or the development of alternative solutions.

We are able to accurately measure the most appropriate date for Airport Opening Day and propose options for expediting issue close out to mitigate delays.

### Getting What You Paid For

The handover of such a large number of systems rarely favours the accepting party. Through our in-house suite of facility tracking tools, we are able to coordinate the catalogue of spares, warranties and training and maintenance contracts from the contractor and, if evident, help rectify any shortfalls.

We have previously provided assistance in negotiating new maintenance contracts to supplement operations teams facing recruitment issues and aid in the set-up of document libraries for training and Operation & Maintenance manuals.



## About Arup

Arup is the creative force at the heart of many of the world's most prominent projects in the built environment and across industry. We offer a broad range of professional services that combine to make a real difference to our clients and the communities in which we work.

We are truly global. From 92 offices in 40 countries our 12,000 planners, designers, engineers and consultants deliver innovative projects across the world with creativity and passion

Arup has been involved in aviation for over 50 years. In that time, we have worked on more than 100 airports across the world.

For further information please contact:

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