# An explorative study seeking to understand the relationship between the stakeholder engagement process and next generation air traffic management

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## Abstract

**Dissertation title:** An explorative study seeking to understand the relationship between the stakeholder engagement process and next generation air traffic management.

**Purpose/Purpose Statement:** The purpose of the study is to understand and explore how a stakeholder engagement process provides Dublin ATC with a platform to collaborate with stakeholders, working towards the delivery on its commitments under the SESAR JU framework. The research study objectives are; To test the existing models of stakeholder engagement within the specific context of air traffic management. To explore the factors which impact on stakeholder engagement from a multi stakeholder perspective. To propose a revised conceptual model based on the findings of the research which better explains stakeholder engagement with the complex environment of air traffic management.

**Design/Methodology/Approach:** A qualitative study was undertaken using a mono-method with interviews of a semi-structured nature, mainly online (Microsoft, TEAMs) and one face to face due COVID-19 social restrictions. Sampling was of a purposive nature using five senior managers with excess of 20 years' experience using thematic methods to analyse the data.

**Applicability**: This study has practical implications at an organisational, European and International level to address capacity and environmental constraints in air traffic management.

**Originality/Value**: This study extends the work of Sequeira and Warner (2007) and Jeffery (2009) and expands and develops the area of a stakeholder engagement process in air traffic management (ATM). This research study has enhanced and developed a robust framework fit for the purpose of providing a platform to collaborate with stakeholders working towards the delivery of Dublin Air Traffic Controls commitments to SESAR JU in ATM.



**Keywords:** Air Traffic Management (ATM), Collaboration, SESAR, Stakeholder Engagement

# Declaration Form

## National College of Ireland
**Research Students Declaration Form**

***(Thesis/Author Declaration Form)***

**Name:** Robbie Hughes

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**Degree for which thesis is submitted:** Master of Business Administration

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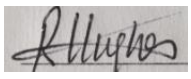
Signature of research student: 

Date: 19th August 2020

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*Note:* The figure number signifies the chapter number

## List of Abbreviations

| | |
|---|---|
| ACDM | Airport Collaborative Decision Making |
| AOC | Airport Operators Committee |
| ANSP | Air Navigation Service Provider |
| ASMGCS | Advanced Service Movements Guidance Control Surveillance |
| ATC | Air Traffic Control |
| ATCO | Air Traffic Control Officer |
| ATFCM | Air Traffic Flow and Capacity Management |
| ATFM | Air Traffic Flow Management |
| ATM | Air Traffic Management |
| ATS | Air Traffic Services |
| CAR | Commission for Aviation Regulation |
| CCO | Continuous Climb Operations |
| CDM | Collaborative Decision Making |
| CDA | Continuous Descent Arrival |
| DAOPG | Dublin Airport Operations Planning Group |
| EASA | European Aviation Safety Agency |
| EFS | Electronic Flight Strip |
| EU | European Union |
| ICAO | International Civil Aviation Organisation |
| IAA | Irish Aviation Authority |
| IATS | Integrated Air Traffic Control Suite |
| LRST | Local Runway Safety Team |
| NATS | National Air Traffic Services (UK) |

| | |
|---|---|
| NM | Network Manager |
| NTPR | New Tower Parallel Runway |
| OTP | On-Time Performance |
| RP | Reference Periods |
| RPAS | Remote Piloted Aircraft Systems |
| RVM | Restriction Violation Monitoring |
| SES | Single European Skies |
| SESAR | Single European Skies ATM and Research |
| SMU | Safety Management Unit |
| SRD | Safety Regulatory Division |
| SMU | Safety Management Unit |
| SWIM | System-wide Information Management |

# 1. Chapter One - Introduction

This research project focuses on stakeholder engagement in air traffic management (ATM). It specifically explores and endeavours to understand how the stakeholder management process can provide a platform for collaboration in an effort to combat the capacity and environmental issues of today but to provide the next generation air traffic management system for the future. The research will endeavour to advance understanding of stakeholder engagement for a complex environment such as air traffic management. The author will explore the literature and undertake research in an effort to enable an engagement platform with the objectives of SESAR JU in mind. The Single European Skies overall objectives are to provide an air traffic management system with adequate safety and capacity for the ATM user of today and the new ATM users of the future in a cost and efficient and environmentally friendly way (SESAR, 2020).

## 1.1 Research study structure

This research project focuses on stakeholder engagement in air traffic management (ATM). It specifically explores and endeavours to understand how the stakeholder management process (Jeffery, 2009) can provide a platform for collaboration in an effort to combat the capacity and environmental issues of today yet providing next generation air traffic management for the future. The research will endeavour to advance understanding of stakeholder engagement for a complex environment such as air traffic management. The author will explore the literature and undertake research in an effort to enable an engagement platform to achieve the objectives of SESAR JU. The Single European Skies overall objectives are to provide an air traffic management system with adequate safety and capacity for the ATM user of today and the new ATM users of the future in a cost and efficient and environmentally friendly way (SESAR, 2020).

The research project provides eight chapters, with an associated reference list and appendices.

In chapter one, Introduction, the author introduces the focus and direction of the study providing the reader with a sense of purpose. The author attempts to set out a high-level synopsis of each subsequent chapters providing the reader with a clear pathway of what to expect in the following chapters.

In chapter two, the author provides context to the reader and establishes a perspective around air traffic management. The chapter will describe the various European aviation bodies, namely; SESAR JU, Eurocontrol, The European Union Safety Agency (EASA) and a local organisational perspective (IAA). The author aims to provide the reader with an overview of the various types of delays attributed in ATM and reasons why the ATM system requires continuous innovation in technology and processes for sustainability according to SESAR (2019). The reader, at the end of this chapter, will have a better understanding and appreciation of ATM.

In chapter three, literature review, the researcher will seek to understand how stakeholder engagement will play a significant role in reforming air traffic management by building relationships, alliances and collaboration to cope with sustained growth in air traffic in a cost-effective and environmentally way. Stakeholders are described by Donaldson and Preston (1995) as people or organisations with genuine concerns in an organisation, or anybody who can affect or is affected by their objectives.

In chapter four, the author will outline the thesis purpose, aims and provides primary objectives for this research project.

In chapter five, research methodology sets out the motivation for the study. The chapter will provide a description of the philosophical approach and methodology path taken in this study. The author will present the sampling strategy and research measurement tools in the form of research instruments used in the study, followed by data analysis. This section will outline the deductive approach undertaken as suggested by Yin (2016), leading to the ethical reflections where the author will assert a strong sense of ethics as emphasised by Bryman and Bell (2011). The chapter will conclude with a summary conclusion reflecting the said elements before leading to the research findings and analysis.

In chapter six, research findings, the researcher will outline the framework to which the study will be conducted as described in the literature by Sequeira and Warner (2007); Jeffery (2009). The framework consists of a seven-stage stakeholder engagement process where the author will create sub-themes out of which the research questions for the interviews will be formed. Each participant will be coded using a unique coding formula. The findings and analysis chapter will provide the basis for the following chapter, research discussion.

In chapter seven, the discussions chapter will allow the author to debate the findings and analysis detailed in chapter six, drawing insights with support from the literature review as will be detailed in chapter three. The discussion of the findings and analysis will be debated relative to the thesis objectives while drawing on the literature for support and highlighting any outlier issues discovered.

In chapter eight, the researcher will draw on key insights from the research study in an effort to provide a robust stakeholder engagement process for next generation ATM. The chapter will also outline limitations discovered as part of this study, noting COVID-19 as a limiting factor in a reduced sample size. However, as Yin (2016) argues, a research study gains value even with a single participant. Bias is always a factor in qualitative research, noting the researcher should be cognisant of such according to Tracy (2020). The researcher using the framework as described by Sequeira and Warner (2007) and Jeffery (2009) will limit bias in this study. Future research directions will suggest specific future areas of researcher for students and academics. The researcher will recommend a number of progressive suggestions providing the company with potential competitive advantages (Porter, 2008) while attempting to address solutions for a progressive and sustainable stakeholder engagement process. The final chapter concludes with a reflection on learning. The author will reflect on any academic challenges encountered during the research study.

The following chapter will provide the reader with perspective and appreciation in a complex environment in air traffic management (ATM) context for this study.

# 2. Chapter two | Air Traffic Management in context

## 2.1. Introduction

The researcher will provide context to the reader and establishes a perspective around Air Traffic Management. This chapter will briefly discuss and explain the various EU's aviation governing bodies, namely: SESAR JU, Eurocontrol, European Union Safety Agency (EASA) and the IAA from a local perspective. The reader will appreciate how the agencies are interlinked in an effort to provide a sustainable Air Traffic Management (ATM) system for the future. The researcher will provide the reader with an overview of various types of delays attributed in ATM and reasons why the ATM system requires continuous innovation in technology and processes for sustainability (SESAR, 2019). The IAA is the national air navigation service provider (ANSP), insights into their role in developing a sustainable ATM for the future will be provided by the researcher and the part the stakeholder engagement process offers. The final section describes and illustrated the impact of COVID-19 on the aviation industry.

The reader at the end of this chapter will have a better understanding and appreciation of the thesis purpose statement as follows; The research seeks to understand and explore how a stakeholder engagement process provides Dublin ATC with a platform to collaborate with stakeholders, working towards the delivery on its commitments under SESAR JU stewardship.

> "Air Traffic Management (ATM) means the aggregation of the airborne and ground-based functions (air traffic services, airspace management and air traffic flow management) required to ensure the safe and efficient movement of aircraft during all phases of operations" (EUROCONTROL ATM Lexicon, 2016).

## 2.2. SESAR JU

The Single European Skies ATM and Research (SESAR) typically referred to as Single European Skies (SES) program was founded in 2007 according to Guillermet and Massimo (2015) under the directive of the European Union (EU) and Eurocontrol to modernise and harmonise ATM systems in Europe.

The EU's main objective, according to SESAR (2020), is to reform Air Traffic Management to cope with a sustained air traffic growth in the safest, cost and flight-efficient and environmentally friendly way. SESAR 2020 is a research programme run by SESAR JU created to provide solutions in four primary areas, airport operations, air traffic services, network operations and technology developments.

## 2.3. Eurocontrol

The European Organisation for Safety of Air Navigation commonly known as Eurocontrol, founded in 1960 with 41 member states charged with the responsibility to attain safety and continuous air traffic management (ATM) across Europe (EUROCONTROL, 2020a). Furthermore, Eurocontrol acts as an advisor to SESAR; their scope reaches to service provision, research, performance enhancements operations, project execution and harmonisation with key aviation stakeholders at various levels. Brenner (2015) describes Eurocontrol as having a large part in stakeholder engagement, a facilitator to project development and sharing of best practices. Two more recent examples in Dublin are Airport collaborative decision making (ACDM) and Point Merge. The IAA is actively involved in a host of various innovative concepts in a continuing effort to be a world leader in air navigation (Irish Aviation Authority (IAA), 2020b).

Network management (NM) is a service provision function assigned to Eurocontrol by the EU evolving from its previous function of the Central Flow Management Unit (CFMU). NM plays a vital role in the management and streamlining air traffic flow management operations in Europe by collaborating with the various stakeholders namely; Air Navigation Service Providers (ANSPs) and Military in coordinating the best use of airspace capacity. NM collaborates with the airlines and handling agents with regards flight planning and congestion/capacity restricted regulations and areas. NM on a daily basis is collaborating with its stakeholder from an operational perspective, resolving and establishing the most efficient use of airspace available. The ANSP is the air traffic services provider, according to Eurocontrol (2020). Brennan (2018) notes the Network Manager is the most visible section of Eurocontrol feeding into the Single European Skies, focussing on a pan-European, network aspect to ATM.

## 2.4. EASA

The European Union Aviation Safety Agency established 2002 in an effort to address the changing aviation environment by the EU as described by Brenner (2015). EASA (2020) declares the responsibility of establishing rules, procedures and standards for safety and environmental matter of civil aviation is EASA.

## 2.5. Appreciating delays in Air Traffic Management

EUROCONTROLTV (2018) outlines there are many factors attributed to ATFM (air traffic flow management) delays in Air Traffic Management (ATM). The main delays are attributed to Enroute, Airport, Weather, Staffing, Industrial Action, and Airline associated delays. Flight delays are defined as any flight departing or arriving more than fifteen minutes behind schedule, as noted by Eurocontrol and FAA (2019).

### 2.5.1. Enroute delays

Enroute delays are transit delays; they are the largest contributory factor when discussing delays in the European ATM Network. Enroute delays are typically related to capacity and demand, congested skies. The Network Manager (NM) in Eurocontrol as indicated by Eurocontrol and FAA (2019) has two primary objectives; protect air traffic control from over delivery or overload and optimise the available capacity.

Capacity is the number of flights that can be handled safely and efficiently in a sector over a sixty-minute period, according to Freer, Jenks, and Jencks (2014). The air navigation service provider (ANSP) determines the capacity. Demand is the number of flights that expect to fly in a sector during a sixty-minute period. The demand is based on the number of flight plans filed as outlined by Eurocontrol and FAA (2019).

### 2.5.2. Airport delays

The main delays attributed to airport capacity, according to EUROCONTROLTV (2018) are infrastructure constraints, weather, and airport incident or an aircraft emergency blocking a runway. Wu and Caves (2002) sighted the necessity for improved techniques, interoperability and integration of airport systems, airports and ATFM (air traffic flow management).

There is a continuous balance between the cost of investment in new technologies and a willingness of all stakeholders to create a shared vision for the future as described by Sultana (2019) furthermore the future research on ATFM should focus on system integration of Enroute air traffic flow management with local air traffic units and airports. Since Wu and Caves (2002) sighted such, there has been big strides, contrary to Michael O'Leary's belief on RTÉ NEWS (2019). Michael O'Leary on RTÉ NEWS (2019) claims progression in aviation has stalled and urges a more progression and solutions-driven approach in ATM.

Bates (2019) argues the recent investment at Dublin airports in A-CDM, a SESAR initiative aimed at improving air traffic flow and capacity management by optimising airspace and airports provides a reducing in delays through greater transparency, predictability and better punctuality. Airport Collaboration Decision making stakeholders consist of airports, handling agents, airlines, ANSP and the Network Manager (NM). The system operates on the readiness of aircraft in the turnaround and departure phase of flight according to Mueller and Chatterji (2002). There are currently twenty-nine European airports, including Dublin that are known as A-CDM airports. The system provides more transparency and predictability in the Network leading to efficiency, less fuel burn and is a better planning decision-making tool as noted by Bates (2019).

### 2.5.3. Adverse Weather delays

The weather generates on average twenty-five per cent of all Enroute and Airport delays, according to Peregrine (2019). The weather in 2018 was worse across mainland Europe with a lot of convective activity. Peregrine (2019) suggested the weather disruption can be better managed with advanced planning and improved situational awareness, signalling plan before the weather arrives. The delayed action according to Peregrine (2019) of the service providers compounds the congestion problem advocating weather requires a proactive management approach and sighted a NASA slogan 'If you fail to plan, you plan to fail'. Depending on the type of weather expected, various scenarios can be planned, e.g. non-convective weather or any kind of convective weather can define the impact according to Pepper, Mills and Wojcik (2003).

### 2.5.4. Industrial Action delays

When air passengers are about to experience disruption due to industrial action, it is a topic of conversation and covered by all media particular when airline has to cancel flights as described by EUROCONTROLTV (2018). EUROCONTROLTV (2018) is advocating there is pre-warning given where contingency procedures can be applied, unlike the weather. Industrial action in Europe is typically related to proposed changes to terms and condition of employment (Spero, 2018). An abnormal number of industrial relations stoppages occurred in 2018 in Greece, Italy and France. The French contributed to twenty-day of stoppages in 2018 amounting to 1.2 million minutes of delay. Italy contributed to sixteen hours equal to forty-thousand minutes of delays and Greece amounted to six hours equal to five-thousand minutes of delays in the Network as outlined by EUROCONTROLTV (2019). The stoppage is political and localised Industrial relations matters; they cause a lot of stress and strain on the stakeholders, according to EUROCONTROLTV (2018).

### 2.5.5. Other delays

Airport ground handling as claimed by Wu and Caves, (2002) is a cause of delays. The literature suggests studies have indicated a requirement for increased apron capacity to address the issues. Ground service performance efficiencies vary across various airlines. In 2020 there are twenty-nine A-CDM airports and more in the pipeline, addressing transparency and providing greater predictability in the Network according to EUROCONTROLTV (2019).

## 2.6. ATM in context

Passengers experienced more than 135,000 minutes of daily flight delays in July 2018, equating to 94 days' worth of delays every day. Flight delays more than doubled in 2018 from the previous year, with 19.1 million minutes as indicated by Poole, Director General of CANSO (Spero, 2019). Airlines and Air Traffic Control failed to hit EU performance targets according to Eurocontrol, the International Organisation for the Safety of Air Navigation (Spero, 2018). Spero (2018) and Poole (2019) describe the main reasons for the European air traffic control system has not made progress is due to the delays and disruption caused by staff shortages, industrial action, lack of capacity and a fragmented national system.

Canso is a global voice, representing 85 per cent of ATM worldwide; it aims to improve Air Navigation Services (ANS) (Spero, 2019). Airline reputational damage and compensation costs are growing, putting further pressure on the need for European wide legislative reform as suggested by Kingston (2019). There were 11.2 million flights in European airspace in 2019 according to Eurocontrol. By 2040 the forecast predicts 16.2 million flights in the European region, a 53 per cent increase compared to 2019, a 1.9 per cent per year increase. If stakeholders do nothing, 160 million passengers will not be able to fly by 2040, according to Sultana (2019). Furthermore, Sultana (2019) and CANSO (2019) noted the delays of 2040 could be mitigated against, through collaboration with our stakeholders providing a sustainable ATM network fit for the future.

## 2.7. Irish Aviation Authority

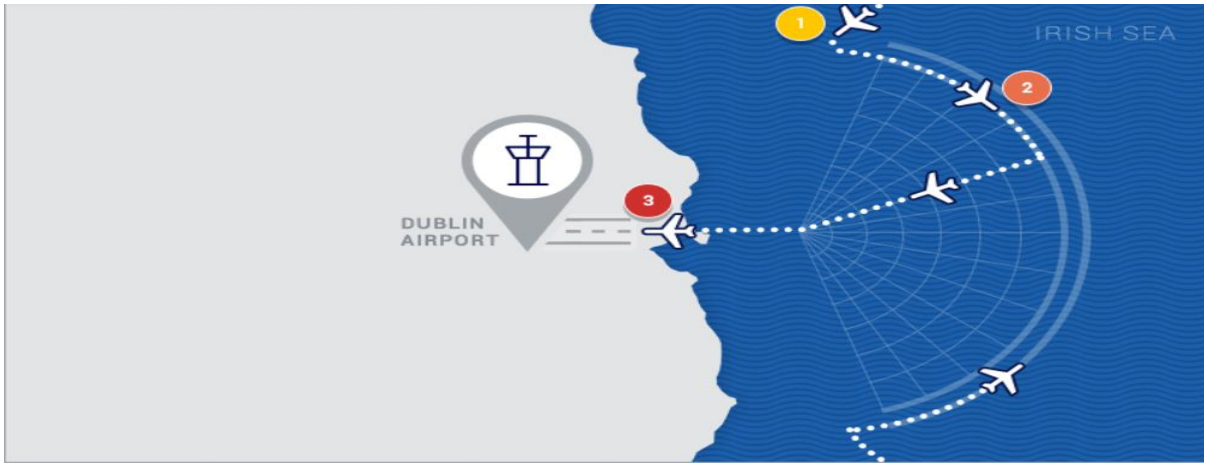
The Irish Aviation Authority (IAA) is a financially independent commercial semi-state organisation; Safety is the number one priority. The IAA provides three primary services, provision of air traffic services in Irish controlled airspace, which is 451,000 square kilometres, the regulation of the civil aviation industry in Ireland and the oversight of aviation security in Ireland. 650 staff are employed across six locations in Ireland. Irish controlled airspace acts as a gateway between American and Europe. Shannon Air Traffic Control handle 90 per cent of all traffic on the North Atlantic using the most advanced technology in the world. On average, 1,500 flights fly through the airspace daily, 75 per cent of revenue. The IAA continues to be one of the most competitive ANSPs in Europe, providing a reliable and safe service (Irish Aviation Authority (IAA), 2020a).

> “Our vision is to be a world-leading air navigation service provider and a best in class aviation safety regulator, enabled by fostering a culture of innovation and service excellence across our activities” (IAA, 2020). Furthermore “Innovation lies at the heart of our business; We are constantly searching for new ways to provide enhanced levels of safety and efficiency through innovation”(IAA, 2020c).

The IAA are innovative in their approach to Air Traffic Management (ATM) in technological advances and alliances with its stakeholders, as noted from the participants and their website. The IAA and Dublin ATC are very proactive on stakeholder engagement; they honour 'service excellence' across their activities, an IAA value. The IAA has been and continues to take initiatives by adopting concepts that provide greater efficiency and transparency to their customers and the Network. The following two examples provide the reader with some further context into ATM, also indicating the importance of the stakeholder engagement process in ATM. The Stakeholder engagement process provides Dublin ATC with a platform to collaborate with stakeholders to deliver on SESAR concepts for a sustainable ATM system for the future.

### 2.7.1. Dublin Point Merge

A SESAR lead project providing for continuous aircraft descent approaches providing significant fuel saving and CO2 emissions. The point merge arcs are used for sequencing aircraft to land; the arcs are more effective than traditional air holding. On final approach, aircraft make fuel-efficient continuous descent approach to the runway (Irish Aviation Authority (IAA), 2020b). Point Merge required significant engagement with various stakeholder not only airlines, the airport and military, all other airspace users (general aviation customers) as there was an airspace redesign required as noted by IAA (2020b).




Source: (Irish Aviation Authority (IAA), 2020b) Figure 2.7.1.1 - Dublin Point Merge – Runway 28

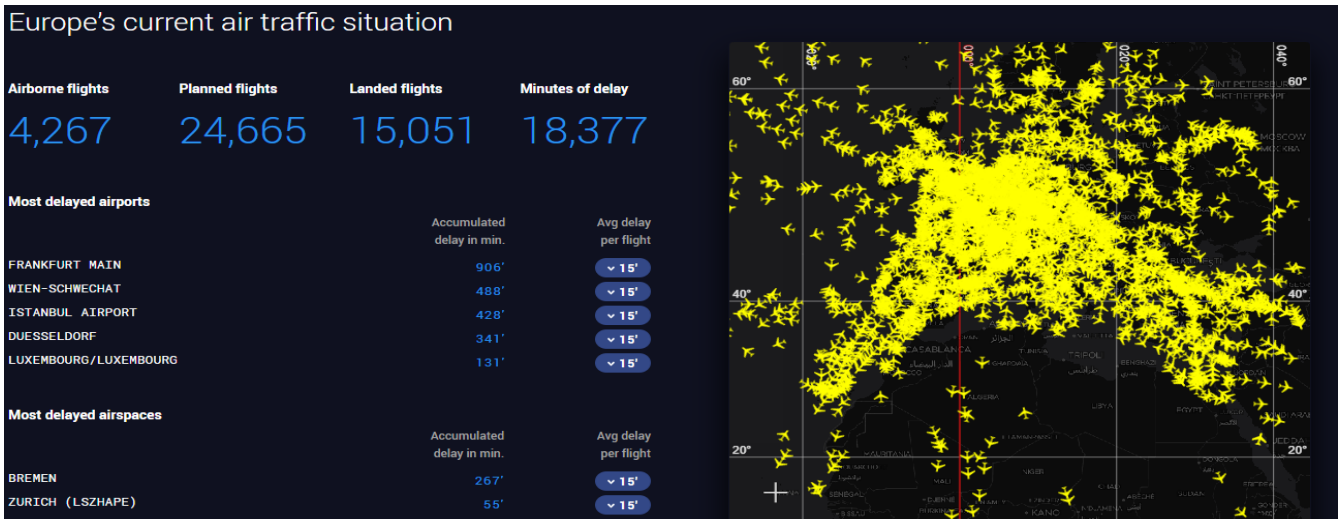
### 2.7.2. Airport Collaborative Decision Making (A-CDM)

The primary delays at airports are due to congestion from infrastructure issues, weather or incidents at the airport, according to EUROCONTROLTV (2018). There has been a necessity for integration of airport systems into the broader air traffic flow management infrastructure as argued by Wu and Caves (2002) for better transparency and predictability in the Network. Katsaros and Psaraki-kalouptsidi (2011) outline the A-CDM concept enhances efficiency through airline operators by improved collaboration and information sharing between stakeholders. The concept allows for tactical demand and capacity controls through the pre-departure sequencing tool, according to Katsaros and Psaraki-kalouptsidi (2011). Eurocontrol (2020a), emphasis the successful implementation of A-CDM in airports is through collaboration of the various stakeholders (airport operators, aircraft operators, handing agency, air traffic control and the network manager working collaboratively with the exchange of accurate and timely data. A-CDM primarily focuses on aircraft turnaround and pre-departure phases of flight.

## 2.8. COVID-19

Since starting the research, a worldwide pandemic has devasted the aviation industry. The year 2020 was forecasted to be the busiest year based on aircraft movements in European airspace, according to EUROCONTROLTV (2019) until the world was struct by COVID-19. Below illustrates a screengrab of the traffic levels in the winter, Sunday 26th January 2020 at 18:09 local time.

26th January 2020 (Sunday) at 18:09 local time




Source: (EUROCONTROL, 2020a) Figure 2.8.1 Europe's current air traffic situation

9th August 2020 (Sunday) at 18:09 local time


Source: (EUROCONTROL, 2020a) Figure 2.8.2 Europe's current air traffic situation

The table below depicts the difference between the European ATM system on Sunday 9th August 2020 (summer schedule) operating at 36 per cent of the January (winter schedule) levels this year. This is a massive impact to the aviation community.

| | Total Flights | Airborne Flights | Landed Flights | Planned Flights | Delays |
|---|---|---|---|---|---|
| **26th Jan 2020** | - | 4267 | 15,051 | 24,665 | 18,377 |
| **9th Aug 2020** | 15,703 | 2,484 | 6,711 | 6,508 | 815 |
| | | | | 36 per cent | |

Source: (EUROCONTROL, 2020a) Table 2.8.3 Air Traffic planned movements

## 2.9. Conclusion

The ATM context chapter provided the reader with a perspective and context from both a European agency and national air traffic management level. The high-level aspect provided the reader with a broader contextual perspective facing the industry. It became clear from the research how the various agencies were interwoven, each playing their respective roles in the delivery and future delivery of air traffic management. The IAA is an innovative and progressive air navigation service provider (ANSP); the researcher provided examples indicative of such. There were many other; however, the researcher used two to illustrate how the industry is reliant on a sustainable mutual stakeholder engagement process, now and into the future.

The researcher provided a breakdown on the various elements of flight delays indicative of a requirement for further investment in technology and processes for the ability to cope with ever-increasing congested airspace. According to EUROCONTROLTV (2019), summer 2020 was predicted to surpass previous records regarding flights in European airspace; however, with COVID-19, this has not come to pass. The Aviation community has been dealt with a devasting blow as illustrations above. There has been a rich debate as to the recovery in the aviation industry. Many industry experts believe any normal levels of traffic are unlikely to return before 2023 or 2024, according to O'Halloran (2020).

The next chapter, chapter three, is the literature review, the researcher will provide a comprehensive review of the literature surrounding the stakeholder engagement process. The literature review will provide a foundation not just for the discussion chapter but rather the research framework, which is utilised in this research project. The literature will provide evidence to why the stakeholder engagement process is vital for a sustainable ATM for the future.

# 3. Chapter three | Literature Review

## 3.1. Introduction

"A stakeholder is a group or individual who can affect or is affected by, the achievement of a corporation's purpose" (Freeman, 2010, p.vi).

The research will seek to understand how stakeholder engagement will play a significant role in reforming air traffic management by building relationships, alliances and collaboration to cope with sustained growth in air traffic in a cost-effective and environmentally way.

Stakeholders are described by Donaldson and Preston (1995) as people or organisations with genuine concerns in an organisation, or anybody who can affect or is affected by their objectives furthermore Clarkson (1995) differentiates between stakeholders as either primary or secondary. A primary stakeholder is vital for organisational survival claims, Sequeira and Warner (2007), while secondary stakeholders are defined as influencers or are influenced by the organisation. Identifying the stakeholder status permits the organisation to engage using business strategies that best align and manages the relationship to achieve organisational objectives, according to Clarkson (1995).

Stephenson, Lohmann and Spasojevic (2018) acknowledge stakeholder relationships are a critical factor in the development of an ATM system while also noting efficiencies are realised during collaborative efforts and engagement with wide-ranging stakeholders. This work is consistent with the works of SESAR when the IAA (2018a) and Brennan (2018) state SES legislation is the main driver behind many of the international alliances. The IAA has seven strategic alliances, as outlined by IAA (2018a). On September 11th, 2019 a declaration was signed forming part of a high-level conference on the future of Single European Skies (SES) by twenty stakeholder groups representative of the Air Traffic Management Industry according to SESAR (2019). The stakeholders signalled the necessity for digital transformation in the ATM industry as outlined by SESAR (2019); furthermore, the stakeholders agreed to strengthen collaborative efforts to fully implement SES initiatives. The declaration is in recognition and frustration with congestion and lack of capacity on the ground and in the air no withstanding the increased emissions and also described by Spero (2018) and Poole (2019) in the ATM context chapter, chapter 2.

Irish Aviation Authority (2015) claim the stakeholder engagement process is fundamental and mandatory in many of the IAA activities, particularly in ATM development from a national and international level context.

For stakeholder engagement to be effective, it must develop relationships that can add to core competencies, differentiating it from other organisations in the marketplace (Clarke, 2010). The organisation must allot time and effort to develop the relationship, according to Savage et al. (2010) which competitors may find challenging. Stakeholder engagement is critically different, as described by Jeffery (2009) than stakeholder management. It requires the organisation to listen and converse matters affecting the stakeholder, which may conflict as noted by Philips, Freeman and Wicks (2014) with the organisation's aims and objectives. Managing stakeholder engagement requires leadership, well-developed communications and diplomacy skills as claimed by Yukl (2013) and consistency with the works Katsaros and Psaraki-kalouptsidi (2011). Kim and Mauborgne (2015) maintain that proactively engaging with stakeholders is repaid by increasing their competitive advantage over time. Albers, Koch and Ruff (2005) and Malina, Albers and Kroll (2012) argue the preferred engagement approach between airports and airlines is a cooperative relationship, they establish sustainable benefits through leveraged efficiencies, and such agreement includes strategic alliances aligning with findings of SESAR (2019).

In the context of this literature review, stakeholder engagement will be used as a parasol concept to include stakeholder dialogue, stakeholder consultation and participation. As with any business process, stakeholder engagement is a process that involving a systematic, logical and a practical approach as described by Jeffery (2009). To appreciate the background to stakeholder engagement the research seeks to understand the theory behind it and how it was developed over time to become a vital strategic force as claimed by Clarkson (1995) for organisational advancement.

## 3.2. Stakeholder Theory

Stakeholder theory was not established by academia however according to Bowie (2012) it established itself from management practice and later literature was formed around the practical management approach to business. Bowie (2012) proclaims stakeholder theory is centred around the following attributes; value creation Bendell and Huvaj (2018) for stakeholders; management theory enforcing normative behaviour and standards. The theory rejects the notion of distinct differences between organisational and ethical issues as claimed by Hartman and Stafford (2003). It is not surprising how deep-rooted stakeholder theory was and is in the development of theoretical business practices as noted by Grama-Vigouroux et al. (2019) including strategic management, marketing, accounting & finance and in general business. Morsing and Schultz (2006) outline building stakeholder relationships is suggested as a source of competitive advantage providing the organisation with strength and advantage over others; a theory also argued by Porter (2008).

### 3.2.1. Stakeholder Theory and Corporate Social Responsibility (CSR)

Bowie (2012) express reservations about the use of CSR in the development of stakeholder theory. On the plus side, CSR takes the normative component of stakeholder theory which is consistent with Uzoma Ihugba (2012). Furthermore, on the negative side, CSR could be read as a component that is not a strategic element and interrupted as an add on or afterthought giving back to society. Jeffery (2009), on the other hand, reports that stakeholder engagement plays a significant role in an organisation's social responsibility.

Bendell and Huvaj (2018) claim organisations cannot be serious about corporate responsibility if it does not partake in stakeholder engagement. Furthermore, corporate responsibility is the suppressing of negativity towards environmental and social impact; therefore, according to Jeffery (2009). Stakeholder engagement is a core skill and activity to be effective towards the environment and social impact. When organisations do not meaningfully engage in corporate responsibility, they can be publicly shamed.

The following examples in the case of Thomas Cook promising its shareholders it would outline its carbon footprint after being shamed by the Guardian newspaper in 2008 and; the whistle-blower on British Petroleum (BP) in the Financial Times in 2006 causing public embarrassment as illustrated by Jeffery (2009). Bowie (2012) argue academics and business leaders embracing CSR should be making it central to value creation supported by Morsing and Schultz (2006) for the organisation and not as an addon. Furthermore, Hartman and Stafford (2003) suggest while making value creation central Clarkson (1995) emphasise avoiding the CSR communication trap by close collaboration with stakeholders on socially related issues.

### 3.2.2. Unanswered stakeholder's theory questions

There were two main questions that the literature had not addressed adequately as outlined by Bowie (2012); Who are the central stakeholders and How are their interests managed. Bowie (2012) argue by adopting a two-dimensional method of pragmatism through epistemological (credible, dependable data) on a subject and normative (does it help and enhance our business) would address the questions left unanswered. Who are the central stakeholders.? Ordinarily, that would include employees, managers, owners of the organisation, in a grander scheme, we could determine our suppliers and customers or those that are directly involved in the operation of the organisation. For example, Dublin Airport Authority (DAA), the airlines, the Network Manager would be central for the IAA to run its business; the government are a shareholder and a stakeholder in the organisation. When Identifying key stakeholders, Bowie (2012) suggests, look at the issues involved and take a pragmatic approach. The second question, how to manage the stakeholder's interests. According to Bowie (2012), create as much wealth as thinkable for the stakeholder without negotiating your needs away.

## 3.3. Engaging Stakeholders

Chang (2019) describes identifying key stakeholders early and engaging with them can provide essential buy-in ensuring committed partnerships which will pay dividends. In the case of the Michigan Department of Health and Human Service (MDHHS) when they needed to reform accessing public benefits through the lengthy bureaucratic process, which proved advantageous when they engaged and included their stakeholders. Bessant and Tidd (2015) argue engaging stakeholders early and directly avoids conflict or at least identifies conflict areas, and resolution is collaboratively achieved endorsing levels of trust.

Menozzi, Kostov, Sogari, Aprpia, Moyankova and Mora (2017) claim stakeholder engagement is an iterative process; it should be conducted like any other business strategy inclusive of planning, preparation, implementation, analysis, reporting, evaluation, monitoring & control according to Jeffery (2009). The collaborative approach allows for the exchange of data to make better-informed decisions based on markets and performance. The literature claims, with increased collaborative decision making (CDM) between airlines and Air Navigation Service Providers (ANSPs) it would create improvements and better Air Traffic Flow Management (ATFM) solutions. Auerbach and Koch (2007) and Murça (2018) argue CDM is a means to cope with punctuality challenges at crowded airports and can lead to an increase in capacity without significant investments in airport or airspace infrastructure.

The stakeholder engagement process if structured well can lead to a higher degree of trust and sharing which allows for freedom to develop new processes and procedures as described by Jeffery (2009), however, if poorly conducted without robust structures according to Donaldson and Preston (1995) may lead to a breakdown in relations, mistrust, fragmentation and reduce performance Philips et al. (2014) while making future engagement much more difficult. Sequeira and Warner (2007) claim that stakeholders get the best of the engagement process when the establishment of some essential characteristics are agreed while; Jeffery (2009) and Bowie (2012) further claim for the process to be successful it must be built on a shared vision, values and the use of best practice.

### 3.3.1. Common Values & Vision

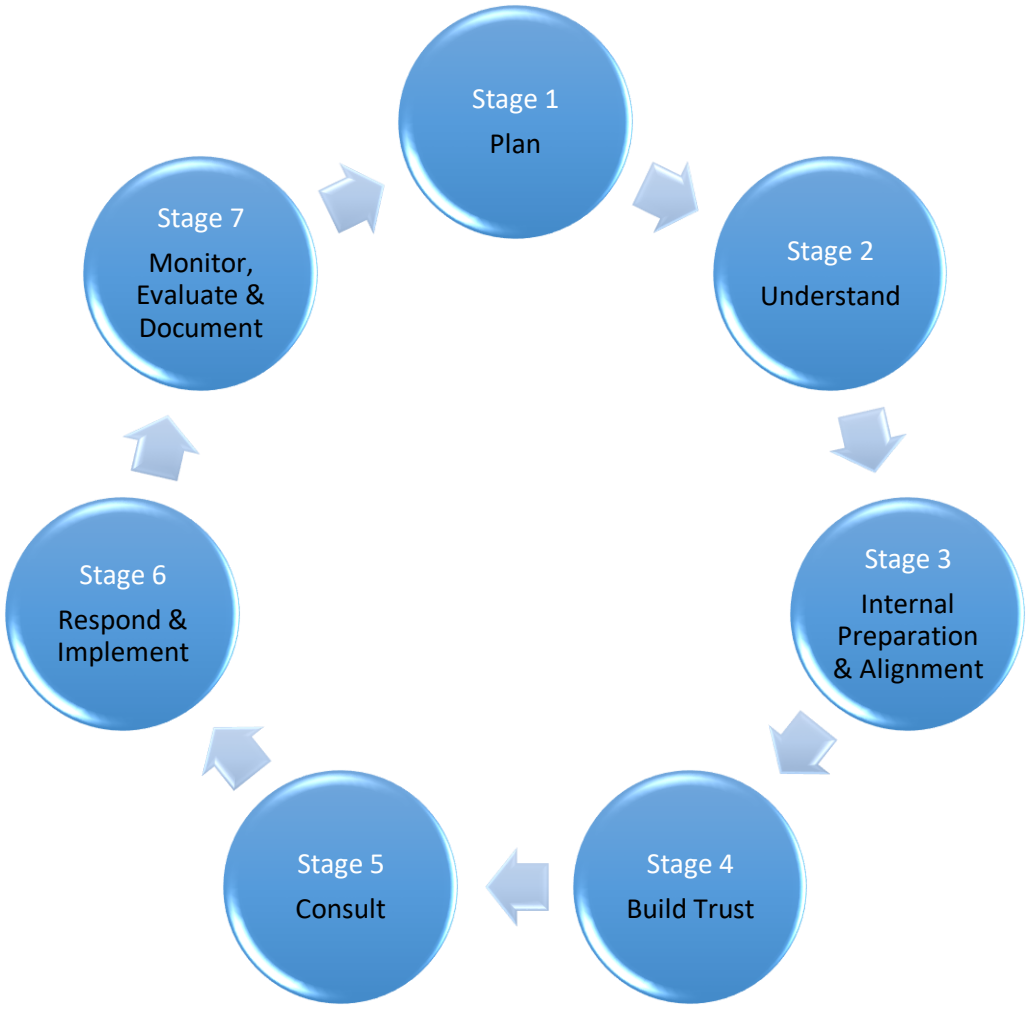
Jeffery (2009) argue shared values and vision should be mutually understanding of some common views, such as, communication is a two-way street, all sides can expressed and exchange views and information, willingness to listen to others which is consistent with the work of Bowie (2012). Sequeira and Warner (2007) describes stakeholders should be representative of all stakeholders in the process, long term commitment from all parties and any commitments are achievable and actioned in good faith and the awareness of the advantages of working together as outlined by Grama-Vigouroux, Saidi, Berthinier-Poncet, Vanhaverbeke and Madanamoothoo (2019).

### 3.3.2. Best practice of stakeholder implementation

Grama-Vigouroux et al. (2019) argue best practice involves; the identification of critical issues, scope the landscape, decision making based on timely data, the processes and procedures are based on mutual understanding as noted by Wondirad, Tolkach and King (2020) and any conflict issues shall be dealt with in a democratic and fair manner (Menozzi et al. 2017). The process should be transparent in order to build relationships according to Uzoma Ihugba (2012) and trust required for a long-term sustainable stakeholder engagement process as portrayed by de Gooyert et al. (2017). The items mentioned common value and vision and best practice are not exhaustive, the process is one of an iterative process according to Jeffery (2009) and Bowie (2012) the process continues to evolve and develop.

## 3.4. The stakeholder engagement process

Jeffery (2009) outlines a seven-stage process of stakeholder engagement, as indicated in the diagram below.




Source: Jeffery (2009) Figure 3.4.1 Seven stakeholder engagement process

The stakeholder engagement process, as described, is a process of reprisal; it is evolving; therefore, it is not linear as claimed by Jeffery (2009) and indicative of a learning organisation according to Grama-Vigouroux et al. (2019).

### 3.4.1. Organisational questions during the planning

There are various questions an organisation may ask itself before it commits to the stakeholder engagement process, as illustrated by Sequeira and Warner (2007). What is to be achieved; What level of resources will be required; What engagement experience does the organisation have; What are the time scales and What are the obstacles; What if any legal obligations are there? The questions outlined will be synthesised throughout the next seven stages.

### 3.4.2. Stage one – The Planning phase

Jeffery (2009), when discussing stakeholder engagement describes the process as having a meaningful engagement, outlining the willingness to listen according to Uzoma Ihugba (2012) and entering the process for the better of all stakeholders and not for a selfish gain. Stage one is planning; Tangri (2018) asks what the objectives and reasons for engaging in the process are. What are the various levels of engagement the organisation wishes to enter into are, will it be local national or international stakeholder engagement? If the organisation is new to the process, they may want to start locally as described by Sequeira and Warner (2007) or with a significant stakeholder before broadening the engagement process. There are a cost and commitment involved as noted by Bendell and Huvaj (2018) so consideration must be given before entering into stakeholder engagement as outlined by Sequeira and Warner (2007) and Jeffery (2009). Tangri (2018) describes stakeholder engagement when planning to build the new parallel runway in Brisbane was vital. A new runway impacts every facet of society, according to Tangri (2018); therefore, the process should account for each stakeholder group.

### 3.4.3. Stage two – Understanding the stakeholder's Wants and Needs

To gain a better understanding of the stakeholders Wants and Needs it is best to segment the stakeholder according to the Michell, Agle and Wood (1997) model with three attributes, Power, Legitimacy and Urgency. When a stakeholder can influence and control the resources it is said, according to Michell et al. (1997) to have power; it has legitimacy when it considers the thoughts and principles of society.

A stakeholders sensitivity to executive response time is categorised by Michell et al. (1997) as urgency. Jeffery (2009) outlines another perspective to be considered on the stakeholders Wants and Needs when discussing the SWANS (Stakeholder Wants and Needs) and OWANS (Organisations Wants and Needs) perspective called the performance prism. Chang (2019) believes organisations should be mindful that not all stakeholders choose or know what is theoretically best for them.

| | The Performance Prism |
|---|---|
| **SWANS** | List various stakeholder Wants and Needs |
| **Strategies** | Outline strategies to be used to fulfil the Wants and Needs of the stakeholders |
| **Processes** | Outline the processes required to enable the strategies |
| **Capabilities** | What skills are required to operate the processes |
| **OWANS** | Outline organisational Wants and Needs from the stakeholders |

Source: Jeffery (2009) Table 3.4.3.1 The performance prism

On completion of the exercise outlined in the performance prism, the organisation should prioritise their stakeholders wants and needs, according to Ghalem et al. (2018). And investigate what are the expectations and their decision-making process, seek a thorough analysis on their mission and policies as noted by (Clarkson, 1995) and this will ensure a successful engagement process leading to the organisations Wants and Needs to be fulfilled according to Jeffery (2009).

### 3.4.4. Stage three – Internal Preparation and Alignment

The alignment and preparation phase of the process can reap the most significant benefits for the organisation and stakeholders Sequeira and Warner (2007) assuming there are common wants and needs. Starting with common wants and needs, provides the engagement process with a positive and firm footing, as outlined by Jeffery (2009). Freeman (2015) and Jeffery (2009) lean on the literature pointing to the importance of internal buy-in from the top-down, aligning corporate responsibility departments throughout the organisation in preparation for a well communicative stakeholder engagement process clearly outlining the vision (Kotter, 1995).

Providing a sustainable, coordinated approach according to Sequeira and Warner (2007) suggests the establishment of a stakeholder engagement team. The team would ensure communication and concerns of all departments are upheld and supported, adequate resources and training is provided and reports to the executive team on activities and developments. Bowie (2012) emphasises building a sustainable stakeholder engagement process must be embedded in the culture of the organisation notwithstanding the organisational core mission, and vision must be front and centre (Jeffery, 2009). The more prepared the organisation is before the engagement process, the more likely of success. Amaeshi and Crane (2006) identify commonalities and shared interests will help build rapport and trust with stakeholders; this may also assist in times apparent or conflicting issues (Sequeira and Warner, 2007).

### 3.4.5. Stage four – Building Trust

Trust, mutual respect and understanding are attributes built over time as described by Danks, Rao and Allen (2017) without them; meaningful engagement does not last (Freeman, 2015). The literature indicated the stakeholder engagement process is occurring earlier than previous. Evidence has proven as suggested by Sequeira and Warner (2007) and consistent with the work of Danks, Rao and Allen (2017) that relationships and trust take time and early engagement gets the buy-in and sharing of objectives between the stakeholder and the organisation.

Sequeira and Warner (2007) advocate greater transparency in dealing with its stakeholders; it can be difficult to gain trust; however, broken or mistrust is so much more challenging to correct. Unfilled promises Jeffery (2009) and communication breakdown or absence of communication will lead to stakeholder scepticism weakening the engagement process as described by Philips et al. (2014). Trust is vital to the stakeholder engagement process as it results in information sharing (sometimes sensitive) leading to vulnerability. When creating a high-performance culture in ATM, Kaliprasad (2006) argues vulnerabilities should be recognised, interrupted, designed and embedded, reasons for all parties to value trust. It is only through developing the relationships, and common trust with all parties where a greater understanding of how actions and activities may impact each other.

Jeffery (2009) illustrates a series of actions that help the stakeholder engagement process-built trust amongst the parties, making the organisation and stakeholders accountable as noted by Clarkson (1995), making commitments to develop, plan and engage with the community.

### 3.4.6. Stage five – Consultation

Jeffery (2009), outlines the importance of having all stakeholders that are impacted by the organisation's activities represented. The consultative process should be Representative, Responsive; Context focused, Complete, Realistic and Material. *Representation* of the stakeholders should be all-inclusive; all stakeholders' interests and representatives should be acknowledged and heard. During the preparation phase, stakeholder concerns and expectation would have been identified according to Noort, Readers, Shorrock and Kirwan *(*2016). The organisational *responsive* is to that fact responsive to the stakeholder concerns and not solely for the organisations' objectives as alluded by Jeffery (2009). The data and any analysis should be transparent, indicative of motives and principles of the organisation giving *context* in the nature of engagement principles while providing this information it should be *complete* providing a historical picture so the stakeholder can reflect and make a judgement. Sequeira and Warner (2007) emphasise both stakeholders, and the organisation must be *realistic* in their expectation of the engagement process; all parties are engaging in good faith; however, it is proclaimed that recognition of what is on the table and what is not is a sign of strength in the process and can only bolster the relationships as it provides clear and defined boundaries. And finally, Jeffery (2009) concludes the consultative process should produce *material* that dovetails the stakeholder engagement process with pre-existing activities supportive of that initiative.

Sequeira and Warner (2007) present a series of consultative methods, namely; stakeholder panels, workshops, focus groups, interviews, town hall meetings and surveys. When the organisation has decided who are the affected stakeholders, Jeffery (2009) emphasis the need to record and track the data collection and distribution, a system that is reliable, monitors progress and prioritise activities. This system provides authenticity while progress can be tracked, and the engagement process can identify efficiencies and effectiveness, enabling key performance Indicator (KPIs) according to Tangri, (2018).

The creation of KPIs as suggested by Jeffery (2009) includes making a list of questions encompasses important stakeholder topics followed by a methodical prioritised list of topics of concerns starting with the organisation followed by the stakeholders.

#### 3.4.6.1. Questions for stakeholders relating to scope and topics of importance

| Information | Suggested Questions |
|---|---|
| **Stakeholders organisation** | ✈ Describe your organisation?<br>✈ Outline your objectives.<br>✈ Explain the operation. |
| **Organisational rapport** | ✈ Describe how you relate to the organisation. If so, why?<br>✈ Describe the outcome of the interaction |
| **Elaborate on information (positive or negative)** | ✈ Describe the case of the issue?<br>✈ What exacerbation the problem?<br>✈ Describe the development of the issue<br>✈ Over what period has the issue manifested<br>✈ Explain any other element attributable issue |
| **Stakeholder Interests** | ✈ Describe any positive and negative issues relating to the organisational operations<br>✈ Describe what could be done to render the issues outlined |
| **Relationship between issue and organisation** | ✈ Explain when you became mindful of the problem<br>✈ Explain what changes or actions are required to address the problem |
| **Problem status** | ✈ Does the organisation need to priorities the problem, and if so, why?<br>✈ Does rendering the problem have a knock on to the organisation's operation? |
| **Likely resolutions** | ✈ Describe how the organisation could address such problems going forward<br>✈ What role if any does the stakeholder play in resolving the problem<br>✈ Should there be an intermediary to resolve the problem? |

Source: Jeffery (2009)

Table 3.4.6.1 Questions for stakeholders relating to scope and topics of importance

### 3.4.6.2. Priorities Issues (organisational & stakeholder)

| Organisation issues | Issues I | Stakeholder issues | Issues I |
|---|---|---|---|
| Increase Safety | | ✈ Increase/decrease quality of life, e.g. air pollution or noise | |
| Increase Capacity | | ✈ Increase/decrease sustainability of stakeholder forum | |
| Enhance environmental issues | | ✈ Enhance environmental issues | |
| Improve efficiencies & compliance matrix | | ✈ Increase/decrease efficiencies and compliance matrix | |
| Improve relations and dynamics with regulators | | ✈ Improve relations and dynamics with regulators | |
| Improve corporate reputation | | ✈ Improve corporate relations | |
| Build awareness of the organisation | | ✈ Support in the development of facilities to enhance capacity and throughput | |

Source: Jeffery (2009) Table 3.4.6.2 Organisational and stakeholder priorities

The tables above provides examples as suggest by Sequeira and Warner (2007) forming part of the consultation process when establishing a sustainable stakeholder engagement process. The process suggested in the consultative phase provides a better understanding and appreciation of the organisation and stakeholder objectives and priorities, as noted by Freeman (2015). The questions and priority table provide a structured mechanism to allow for a meaningful stakeholder engagement process.

### 3.4.7. Stage six – Respond and Implement

Once the consultation process has taken place, stakeholders are anxious to know how their concerns will be addressed, according to Jeffery (2009). Once the organisation has decided on the proposed course of action for each concern by each of the stakeholders, it should be formulated and made clear how and when the actions will be addressed openly and transparently, activating social accountability (Dobbin and Kalev, 2016).

Sequeira and Warner (2007) illustrate an example of how an organisation can progress stakeholder issues in a systematic way.

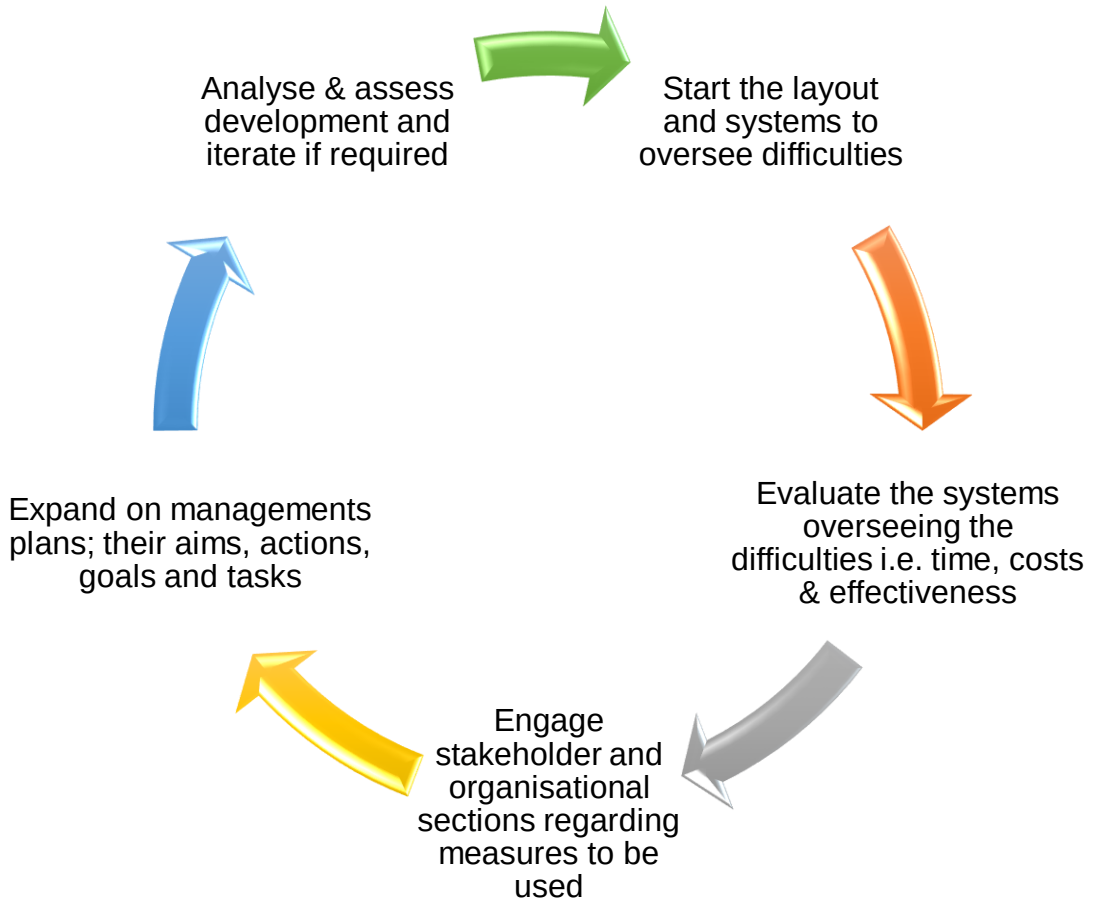



Figure 3.4.7.1 Implementing course of action to identified issues

How the organisation processes and deals with differences between it and its stakeholder/s is critical to the stakeholder engagement process, it must be dealt with delicately in a timely and just way as described by Jeffery (2009) and Dobbin and Kalev (2016).

### 3.4.8. Stage seven – Monitor, Appraise & Document

The importance of tracking, recording activities and evaluation of the effectiveness of the engagement progress is vital according to Sequeira and Warner (2007). The use of recognised knowledge management systems is advised and suggests the use of these systems for the purposes of stakeholder engagement, as noted by Jeffery (2009). The system is particularly important, according to Menozzi *et al. (*2017) when resolving issues, how they were resolved, reporting to internal, external and outside third parties. It is critical for organisations to be able to quantify all element of the engagement process with efficiencies, costs and time to resolve issues, furthermore, Sequeira and Warner (2007) suggests an annual stakeholder satisfaction survey to accessing the stakeholder engagement process.

## 3.5. Towards meaningful engagement

Stakeholder engagement is much deeper and inclusive than stakeholder management according to Jeffery (2009), the following attributes are consistent with meeting meaningful stakeholder engagement; It is a full consultative process with the expectation of a reciprocal exchange of data, analysis and viewpoints according to Lohmann and Vianna (2016). Bendell and Huvaj (2018) add the adherence and preparedness to change behaviours and various elements of the business such as staffing and training, while measures should be clear and explicit, clearly defined with forecasted results and implications Freeman (2015). An appreciation that business is different in how they are run, their culture and structure as defended by Menozzi *et al. (*2017). Vladimirova (2019) highlights an awareness of the political and environmental impact of their business is part of meaningful engagement. Sequeira and Warner (2007) emphasis the benefits of stakeholder engagement along with Jeffery (2009), it enhances an organisations reputation as an organisation in terms of business and regulation; helps mitigate against risk, enhanced safety and efficiency. Co-creation of processes and procedures, enabling a greater scope for efficiencies between stakeholders allows for better decision making with greater transparency in the operation. The sentiments outlined are echoed throughout the European ATM Master Plan 2020 and adds only through enhanced collaboration between all ATM stakeholders can the master plan ideologies be achieved (SESAR Joint Undertaking, 2020).

## 3.6. Recommendations towards meaningful stakeholder engagement

Jeffery (2009) and Sequeira and Warner (2007) provide strategies and elements to be addressed to maximise a meaningful stakeholder engagement process in each of the four organisational segments. Stephenson et al. (2018) endorse a top-down commitment to indicate to the staff that stakeholder engagement is not just buzz word but policy that is demonstrated and used daily while endorsing stakeholder engagement needs to become policy for both staff and stakeholders alike to validate the legitimacy of the process (SESAR Joint Undertaking, 2020). Allow management the freedom to develop stakeholder relations free from blame, giving autonomy demonstrating a shift and buy-in into the process; furthermore, Jeffery (2009) argues this should be publicly supported by the chef giving credibility. Groysberg et al. (2018) highlight cultural norms as behaviours and attitudes what are determined as accepted or rejected in the environment.

Peter Kearney, the IAA CEO, advocates the aviation industry, which is progressive by its design, a culture of innovation that is welcomed and valued in the IAA (Irish Aviation Authority (IAA), 2018b). An organisations culture can improve performance as argued by Groysberg et al. (2018), firstly leaders must recognise their culture. The aspirational culture can be defined and finally the mastering of central change practices of communicating of the new culture, leadership alignment, communication and design as outlined above. Culture and organisational change are threaded throughout the thesis, as they are an integral part of the stakeholder engagement process. Successful leaders embrace their culture and use it as a fundamental management tool, according to Groysberg et al. (2018). During 2014 the IAA implemented a 'Just Culture' process, it is custom and practice for ATM occurrences investigation and seen as best practice in standards of excellence by Eurocontrol and CANSO as described by IAA (2016) further evidence of a commitment to safety.

### 3.6.1. Organisational Structure

Groysberg et al. *(*2018) recommend top management endorse and demonstrate the engagement process owning the concept, giving evidence of its long-term value and success implications for the organisation. Designated personnel should be nominated as stakeholder engagement expertise that will impart the skills and knowledge required for staff members. Stakeholder engagement is a strategic function Sequeira and Warner (2007) that feeds all operational areas of the business and should not be misinterpreted as a communication function from corporate affairs rather the Chef executive. Freeman (2015) suggested as a strategic function; managers should be tasked to strategically engage with its stakeholder while promoting excellence. It is recognised that the organisation's staff should also engage with stakeholders to enhance relations and can bring significant value to the organisation according to Stephenson et al. (2018) while Tangri (2018) suggests the organisation should build a whole encompassing workforce around stakeholder engagement, this will further demonstrate to stakeholders, the commitment of the organisation and encourage concrete relations as it did during the planning and delivering of the new parallel runway in Brisbane.

### 3.6.2. Organisational Human Resources

Grama-Vigouroux et al. (2019) propose organisations should endeavour to promote diversity, which will bring another perspective to stakeholder engagement also, seek talent with alternative backgrounds which can build on stakeholder relations. Through managing personal performance, organisations should be building on the skills of its workforce particular in the area of engagement and team building as argued by Macleod and Clarke (2009) furthermore it is vital for organisations to encourage, reward and push for development in the areas of Innovation and creativity (Grayson et al. 2008). Goleman (2017) further argues emotional intelligence is an area if the organisation does not have that skills, they should consider it as this is recognised in the literature as a positive way to engage its workforce but its stakeholder alike. Recruitment or secondment from your stakeholder/s can help with understanding of stakeholder and their priorities as emphasised by Sequeira and Warner (2007) they also acknowledge building and developing a stakeholder engagement capacity mechanism can be also used to mitigate risk.

### 3.6.3. Organisational Learning (creativity, innovation, culture)

All staff should be given an adequate briefing on what the organisation is trying to achieve with stakeholder engagement and further training to those mainly involved in the engagement area, as claimed by Jeffery (2009). Bowie (2012) advocates stakeholder engagement like all strategic management initiatives should balance between the science and the art of management, which helps with the sustainability and development of the process. From time to time, practice becomes the norm ahead of policy, a review of the practice and policy requires regular updating.

Building on the stakeholder engagement process can be achieved with continuous training, recruitment focused on stakeholder engagement and documenting the positives and negatives for training and the evaluation process Sequeira and Warner (2007). Stakeholder priorities, their Wants and Needs can change over time due to geopolitical, political and their organisational environment as pointed out by Chang (2019). Tangri (2018) argues the importance of capturing knowledge, learning and sharing the knowledge throughout the organisation is vital to ensure a learning organisation.

## 3.7. Literature review conclusion

The literature review has attempted to provide an in-depth study of the stakeholder engagement process. Chang (2019) describes identifying key stakeholders early and engaging with them can provide crucial buy-in safeguarding committed partnerships which will pay dividend, which is consistent with the work of Bessant and Tidd (2015) engaging stakeholders early and directly avoids conflict or at least identifies conflict areas and resolutions are collaboratively achieved endorsing levels of trust. Menozzi et al. (2017) claim stakeholder engagement is an iterative process again consistent with the work of Donaldson and Preston (1995) requiring continuous communication and transparency without which breakdown in relations and mistrust can prevail leading to according to Philips et al. (2014) making future engagement more difficult. Sequeira and Warner (2007) claim that stakeholders get the best of the engagement process when the establishment of some basic characteristics are agreed while; Jeffery (2009) and Bowie (2012) further claim for the process to be successful it must be built on a shared vision, values and the use of best practice.

Best practice comes from the identification of critical issues, scope the environment, decision making based on timely data while the structure is surrounded by a shared vision, values and trust with the ability of mutual lean in approach. The literature review was further developed using the literature and framework from Sequeira and Warner (2007) and Jeffery (2009) in a seven stages stakeholder engagement process.

The seven stages were developed in their various phases namely; planning, understanding the stakeholders wants and needs, internal preparation and alignment, building trust, consultation, respond and implement and monitor, appraise and document. While the seven stages provided the framework as outlined by Sequeira and Warner (2007) and Jeffery (2009), Stephenson et al. (2018) endorse a top-down commitment to indicate to the staff that stakeholder engagement is not just buzz word but policy that is demonstrated and used daily while endorsing stakeholder engagement needs to become policy for both staff and stakeholders alike to validate the legitimacy of the process (SESAR Joint Undertaking, 2020). Tangri (2018) argues the importance of capturing knowledge, learning and sharing the knowledge throughout the organisation is crucial to ensure a learning organisation and in keeping with the SESAR JU ethos for next generation ATM.

The following chapter outlines a purpose statement, aims and objectives a structure to which the study will conform to.

# 4. Chapter four | Research Purpose and Aims

The primary objective of this study was to appreciate and explore how a stakeholder engagement process can facilitate an Air Traffic Management system fit for the future. Furthermore, the chapter will outline the research purpose statement, research aims and objectives.

## 4.1 Research Purpose

The research seeks to understand and explore how a stakeholder engagement process provides Dublin ATC with a platform to collaborate with stakeholders, working towards the delivery on its commitments under the SESAR JU framework.

## 4.2 Research Aims

The explorative research is seeking to understand how the relationship between the stakeholder engagement process and next generation air traffic management evolves. The research will be conducted using semi-structured interviews and comparison with the literature around a stakeholder engagement process.

## 4.3 Research Objectives

4.3.1 To test the existing models of stakeholder engagement within the specific context of air traffic management.

4.3.2 To explore the factors which impact on stakeholder engagement from a multi-stakeholder perspective.

4.3.3 To propose a revised conceptual model based on the findings of the research, which better explains stakeholder engagement with the complex environment of air traffic management.

The following chapter research methodology will provide the motivation for the research, a description of the philosophical approach, methodology path, a sampling strategy, measurement tools, research instruments, data analysis and an ethical reflection.

# 5 Chapter five | Research Methodology

## 5.1 Introduction and framework

The motivation for this research study is to explore and understand the relationship between the stakeholder engagement process and next generation air traffic management. The research methodology chapter initially outlines the research aims and objectives for the study, followed by a description of the philosophical approach and methodology path. The author presents the sampling strategy and the research measurement tools in the form of research instruments used in the study. The chapter outlines a synopsis of the data analysis leading to an ethical reflection, and a chapter is summarised with a conclusion.

## 5.2 Research Aim and Objectives

This research aims to explore how the relationship between the stakeholder engagement process and next generation air traffic management evolves over time. The research will be conducted using semi-structured interviews and compare such with the literature around a stakeholder engagement process.

To accomplish this, the author must achieve the objectives set heretofore;

5.2.1 To test the existing models of stakeholder engagement within the specific context of air traffic management.

5.2.2 To explore the factors which impact on stakeholder engagement from a multi-stakeholder perspective.

5.2.3 To propose a revised conceptual model based on the findings of the research, which better explains stakeholder engagement with the complex environment of air traffic management.

This research study extends the work of Sequeira and Warner (2007) and Jeffery (2009) on the stakeholder engagement process while exploring the relationship and understanding of that relationship between the stakeholder engagement process and next generation air traffic management. The research seeks to understand how the stakeholder engagement process provides solutions to already identified areas of concern such as capacity constraints and environmental impacts in the European air traffic management network. The author will aim to apply and examine the issues through the objectives set out above.

## 5.3 Philosophy Approach

Research philosophy as argued by Saunders et al. (2016) highlights how knowledge is progressed and the means of this development, furthermore, the literature acknowledges the philosophy adoption process is derived from personal beliefs and values and how they see their environment. Saunders et al. (2016) work is consistent with the earlier work of Collis and Hussey (2014). "A research paradigm is a framework that guides how research should be conducted based upon people's philosophies and their assumptions about the world and the nature of knowledge" (Collis and Hussey, 2014, p.43). Based on that paradigm, as described by Creswell (2014), the researcher also acknowledges, our experiences form our interpretation of the environmental and influences how research should be conducted. The purpose, "Is to create new, richer understanding and interpretations of social worlds and contexts" (Saunders et al. 2016, p.140). Therefore, the researcher lays in the interpretivist philosophy category concerned with seeking to understand the viewpoints of those involved in a stakeholder engagement process as a means to collaborate on the delivery of solutions in Air Traffic Management under the SESAR JU framework.

Acknowledging the limitations and the approach being restrictive as suggested by Saunders et al. (2016), the researcher used the deductive approach to analyse the data. It was the belief of the researcher that this was the most advantageous method to achieve the research objectives linking the research data with existing literature and is consistent with other research in this area Sequeira and Warner (2007) and Jeffery (2009). Furthermore, the researcher decided upon taking a qualitative research approach to extract the data from the participant to the researcher.

## 5.4 Methodology choice

The researcher adopted a methodological approach consistent with the philosophy discussed, which aligns with a qualitative methodology being adopted in this research. The qualitative research enables the author to explore the seven stages associated with the stakeholder engagement process in air traffic management to complete the four research objectives. The author considered a quantitative approach however in considering such in the opinion of the researcher the statistical data would not have provided enough depth required to address the research question in this investigative study (Bryman and Bell, 2011). Saunders et al. (2016) describe how qualitative research allows for explanations to be evaluated and clarified in an effort to adequately answer the research question.

The research was conducted using a cross-sectional, mono method approach, consistent with the work of Bryman and Bell (2011). The semi-structured interviews, interpretivist in nature, allows for varying experiences and interpretations during the process. The researcher sought to explore how the interviewees answered and explained their answers allowing their experiences, feelings and the rich information flow (Yin, 2009). These, according to the researcher, are reasons for adopting a qualitative methodology of semi-structured interviews. The researcher acknowledges this process is time-consuming and according to Bryman and Bell (2011) and Saunders et al. (2016) with varying data, widespread and intricate. The information-rich data as described by Yin (2009) outweigh any downside of this research method and is consistent with research conducted by Sequeira and Warner (2007) and Jeffery (2009) for which this research study is based upon. Therefore, the qualitative research identified by the researcher has been justified.

## 5.5 Sampling Strategy

The purpose of judgemental (purposive) sampling is to sample participants in a strategic manner providing some differences in terms of key characteristics, according to Bryman and Bell, (2011). This is consistent with work by Yin (2009); however, Yin (2009) argues in all circumstances the objective should be the "emphasis on information-rich sources" (Yin, 2009, p.94). The participants have been chosen for this research as they are all deeply involved in the stakeholder engagement process. The participants use the engagement process as a platform to collaborate with stakeholders regularly, around the area of Air Traffic Management, working towards the delivery on its commitments under the SESAR JU framework. The participants chosen for this research have vast knowledge and experience in Air Traffic control and Air Traffic Management, particularly in Dublin. This is the reason for selecting the participants in this study.

Participant one, three, four and five are known to the researcher from working in the same organisation. However, participant four is contracting to the IAA as a network manager expert, after retirement from Eurocontrol. Participant two is external to the organisation and not known by the researcher; however, heavily involved in the stakeholder engagement process and involved in various segments around Air Traffic Management from an airport authority perspective.

The criteria used to identify the various participants was their 20 years' experience. Their knowledge provides rich data from their respective fields (hard and soft skills) for example air traffic control, air traffic management, emotional intelligence and leadership skills but also and importantly their role in the stakeholder engagement process in Dublin and experience from aboard. The participants are experts in their fields, and their role in the stakeholder engagement process formed the basis for identification for the study. The participant's ability to ensure the stakeholder engagement process is used to its full potential ensuring all seven stages of the stakeholder engagement process provides the stage to collaborate with the view of fulfilling and delivery on its obligations to SESAR JU framework.

The justification used for the criteria employed in this study is also consistent with that employed in the studies conducted Sequeira and Warner (2007) and Jeffery (2009) and Freeman (2015).

The research did not seek to specifically consider demographics within the sample, as the criteria considered was based on exposure to stakeholder engagement and their relevance and experience in Air Traffic Management. Demographic information was not collected as it would not have enriched the study at hand. The interviewees are all professionals in specialised roles living in Dublin and Limerick. Bryman and Bell (2011) lay claim that demographic considerations are not always relevant in each research study; this would be the case in this research study.

The author approached eight participants in total, during a Network Management (NM) forum in Brussel on 29th and 30th January 2020. An annual two-day forum of stakeholders in Europe, consisting mainly of Airlines, ANSPs, Airports and Handling agents. The event addresses critical challenges of the European ATM network, and this year also focussed on 'Partnering for Operational Excellence' discussed in the ATM context chapter. The event afforded the researcher an ideal opportunity to network with this study in mind. The researcher spoke to many at the forum however approached three particular participants, working in Network Management (NM) in Brussels and asked would they be willing to partake in a research study on the stakeholder engagement process in Air Traffic Management. All three participants accepted the offer to participate in the study as the researcher was expected to attend a meeting in May 2020. It was an ideal time to interview while in Brussels. The meeting was subsequentially cancelled due to COVD-19 travel & work restrictions. COVID-19 brought with it quarantine and work restrictions across Europe the researcher was unable to contact the participants and arrange an online meeting. The participants would have added a particular richness that the researcher was looking forward to exploring from a Network Management and stakeholder engagement perspective. It is clear, therefore, that the sampling criteria employed in this study were appropriate and consistent with the work of Yin (2009) in finding information-rich sources.

The researcher approached each of the participants a little differently depending on the relationship and location of the participant. The participants that work in the same facility as the researcher at Dublin Airport allowed the researcher to call to their office and asked if they would be willing to participate in the research study. The researcher gave a brief outline of the study and asked if they would be willing to partake in the study, and the author would provide more details in an information letter on email. As seen in Appendix I., The participants that the researcher was less familiar were contacted by text message, making it easier for the participant to refuse if uncomfortable. The text message is consistent with the work of Tracy (2020) when describing methodological significant, when “Approached in a new, creative and insightful way” (Tracy, 2020, p.282). The text messages were followed by an email outlining what was already spoken about providing assurances and context to the participant about the study. The information letter was also attached to the email.

The participants were sent an information letter delineating the nature of the study, as suggested by Tracy (2020). The letter outlined a purpose statement (Tracy, 2020, p.94), the approximate duration of the semi-structured interview, their ability to withdraw from the process at any time without question, the area of focus, a request for their participation in the study and finally the researcher's contact details, email and a contact phone number.

On the day of the interview, the participant was handed or emailed (Saunders et al. (2016, P. 247) a consent form. The form contained a purpose statement, reason for undertaking the study, a statement stating that signing the consent form did not waiver legal rights: permission requesting the participant's consent and awareness of the interview recording for accuracy. The participant's anonymity and confidentiality would be protected using guidelines provided by NCI and Data Protection Act 2018. The participants were made aware; the data would be destroyed once the NCI permitted to do so. Finally, the researcher's contact details, email and phone number were given to the participants for any clarification required.

Securing agreement with the participants varied; some of the participants work at the same facility as the author. This allowed the author to make contact with the participant in a less formal manner. The researcher outlined reasons for the study, what the study entailed and how the interview would be conducted.

The researcher then asked would the participant be willing to participate in the study. The researcher informed participants that a follow up with an information letter would be sent as part of the protocol. The participants not known to the researcher, took between three to ten days to reply. COVID-19 has caused some issues with regards to communication and delayed responses. The air transport industry continues to go through severe disruption due to COVID-19 and travel restriction. Many in the aviation industry are on reduced hours, reduced pay hence the delay in receiving replies.

Each participant signed and returned a completed consent form. Each participant was asked to read the form, and if in agreement, to sign it, outlining their ability to withdraw from the interview at any time without question. Four of the five interviews were conducted on Microsoft TEAMS (online) due to COVID-19. The researcher received hard and soft copies and provided a copy to the one participant where the interview was in person.

At the end of each interview, the researcher gave the participant an opportunity to elaborate or to add anything in relation to gaps that may have missed or areas they feel may have been relevant in their opinion and experience around the area of stakeholder engagement. The researcher did not offer a copy of the transcripts to the participants to review. However, one participant asked to view a copy of the thesis, which was agreed.

There were no follow up interviews required for clarification or additional information required, although the researcher had sought a follow up in the event of clarification or additional information being required for the study. This request was included as part of the Informed Consent form.

The researcher did not have to seek any special permissions to enter or access the participants. The researcher has full access to all areas of the organisation's premises.

## 5.6 Pilot study

During preparation for the interviews and in light of the pandemic, the researcher was concerned with the logistics of face to face interviews. There was uncertainty as to the willingness of the participants to consent to face to face interview. The researcher conducted three test runs setting up Microsoft TEAMs in anticipation of this scenario, ensuring the link was sent and inviting the participant to mitigate against any technical difficulties.

The researcher offered the option to take the interviews over Microsoft Teams in cases where the participant was uncomfortable with face to face in light of the COVID-19. The informed consent letter would be emailed and signed. A copy sent back to me via email providing a signed soft copy.

The first interview was the researchers first, and the last face to face interview as it turned out due to COVID-19 restrictions. The researcher was concerned with the time approximation outlined in the information letter, noting approximately thirty minutes. The pilot interview lasted fifth five minutes. In an effort to reduce the length of the interviews and not lose any pertinent data, the researcher rephased six questions into three questions saving some interview time.

The subsequent interviews took on average, forty-five minutes each. The interview duration was a concern to the author as the specified time was approximate thirty-minutes, as indicated on the information sheet. The researcher made a judgement call throughout the interviews based on the characteristics of qualitative research and nature of semi-structured interviews, consistent with the work of Yin (2016), Saunders et al. (2016) and Tracy (2020). The researcher sought rich information flow Yin (2016) and used gentle yet firms in interview techniques in pursuit of richer data and a time-saving effort.

## 5.7 Instrumentation

Semi-structured interviews were the research instrument of choice by the author; the interviews lasting upwards of sixty minutes in duration. Appendix IV outlines the semi-structured interview questions. The research questions were derived from the seven stages of the stakeholder engagement process and associated literature, as outlined by Sequeira and Warner (2007) and Jeffery (2009). The researcher broken down the essence of the literature into varies questions which formed the basis for the research questions as illustrated below on Table 5.7.1.

| No | Stage / Theme | Sub-theme / Research questions |
|---|---|---|
| 1 | **Stage 1 - Planning**<br>Meaningful stakeholder engagement, as suggested in the literature, is a willingness to listen and enter the process not just for organisational gains. | a) What are the organisational challenges that a stakeholder engagement process can resolve?<br>b) What are the objectives or purpose of the stakeholder's engagement process in your organisation from your perspective?<br>c) How does this process add value to your organisation? |
| 2 | **Stage 2 - Understanding Wants & Needs**<br>Identifying & understanding the Wants and Needs of all parties in the process | a) How are your Wants and Needs heard in the process?<br>b) How are the Wants and Needs prioritised?<br>c) Where costs are incurred during the process, how are they distributed?<br>d) What are your expectations from the stakeholder engagement process?<br>e) Do you establish Key Performance Indicator (KPIs) as part of a Stakeholder engagement process? |
| 3 | **Stage 3 - Internal preparation and Alignment**<br>According to the literature, this stage can result in significant benefits assuming there are common Wants and Needs between the organisation and stakeholders. | a) How are issues or concerns communicated to stakeholders?<br>b) How are your Wants and Needs aligned with those of the stakeholders?<br>c) What are the most effective ways, in your opinion, to overcome difficult challenges between stakeholders?<br>d) How would you describe your organisation's stakeholder policies or guidelines? |

| | | |
|---|---|---|
| 4 | **Stage 4 - Building Trust**<br>The literature suggests building mutual respect, rapport and trust attributes built over time can be achieved by commonalities and shared interest. | a) What is the most effective way of building trust and respect with stakeholders in your experience?<br>b) Could you provide an example of when you knew trust was established with a stakeholder?<br>c) Have you noticed when trust has been established, there is more information sharing?<br>d) Transparency is the key to building trust, would you agree? |
| 5 | **Stage 5 - Consultation**<br>Consultation includes being Representative, Responsive, Context focused, Complete, Realistic and Material. | a) How do you ensure that all stakeholders are included/represented?<br>b) What methods of engagement are used in the engagement process?<br>c) What would be the most common?<br>d) How do you ensure all concerns organisational and stakeholder are addressed?<br>e) Would you say all concerns are 'context-focused' and 'realistic'?<br>f) Could you give an example an unrealistic expectation?<br>g) How would you indicate that the issue or works have been resolved or completed? |
| 6 | **Stage 6 - Respond and Implement**<br>The literature suggests after consultation with the stakeholders the organisation would formulate a plan to deal with issues raised in an open and transparent manner | a) How does the organisation deal with issues raised by its stakeholders?<br>b) Could you give an example of when there was a conflict of interest between a stakeholder and the organisation? And How was it resolved? |

| | | |
|---|---|---|
| 7 | **Stage 7 - Monitor, Appraise & Document**<br>The literature recommends having a system to document, monitor and appraise the stakeholder engagement process, allowing for analysis and changes in the development of a progressive, sustainable stakeholder engagement process. | a) How are the meetings and activities documented, monitored or evaluation in the organisation?<br><br>b) Would the organisation consider or see benefits using a system for documenting, monitoring and evaluation the stakeholder engagement process?<br><br>c) How is the flow of information relayed from stakeholder meetings to operational or organisational departments? |
| 8 | **General question** | a) Would you agree that the stakeholder engagement process strengthens the organisations' reputation and mitigates against risk, enhancing safety and efficiency? |

Table 5.7.1 Table representative of themes and sub-themes

There were seven stages (themes) in the literature, which formed the framework for this research project structure. The number of questions depended on the data included in the literature, ranged from two to five questions in each stage, with a total of twenty-nine questions inclusive of main and sub-questions.

The data collection involved the face to face interview data recorded using the researchers iPhone and transferred onto a memory stick with secure password protection held in a safe. The iPhone has two-factor authentication providing a high level of security and is appropriate for the participant anonymity and confidentiality.

The researcher considered other data collection methods. An alternative recording device would be a digital recorder; however, this electronic device is not security protected, offering a significantly reduced level of protection of the data and the participant's anonymity and confidentiality. Using handwritten notes during an interview would not suffice as it would interfere with the fluency of the interview and clarification and additional information would most definitely be subsequently required. The protection of handwritten data would not be as secure as a password protected device. The iPhone is the most convenient yet providing adequate security.

As stated, the data was collected by the researcher on their personal iPhone. However, the researcher was at all times aware of introducing potential bias into the study. To mitigate this, the researcher adopted the framework set out by literature by Sequeira and Warner (2007) and Jeffery (2009) and the seven-stage. The core of each stage in the framework facilitated the formation of the questions used for the interview. The questions were constructed in a manner that they could be posed to anyone in the organisation or a stakeholder of the organisation in a position and experience of stakeholder engagement. The interviews were semi-structured permitted the participants to freely shift around the questions providing further mitigation against bias yet providing a degree of richness to the research.

There was a technical difficulty experienced during interview one, participant one where the device did not record for a short period during the process. The researcher recognises a minor limitation and bias in participant one's interview; however, to limit such bias, the researcher sought clarification from the participate in the area where the technical difficulties arose.

Due to COVID-19 work and social restrictions, four of the five interviews were conducted online using Microsoft TEAMS; they were recorded once approval was secured by the participants. The data pertaining to the participant's anonymity has been removed from all documentation. The information sheet and consent forms are both available in Appendix I and Appendix II.

Table 5.7.2 - Literature review data gathering spreadsheet

| Literature Review | | | | |
|---|---|---|---|---|
| No. | Article Title | Abstract / Key words | Year | Author |
| 1 | A collaborative appraisal framework to evaluate transport policies for improving air quality in city centres | Stakeholder engagement, Stakeholder, Participation, Pollutants, Policy | 2019 | Soria-Lara, Julio A. |
| 2 | A Common Approach to Safety Performance Measurement | Measure of Safety Performance, Collaboration, | 2010 | |
| 3 | A framework for stakeholder engagement during systematic reviews and maps in environmental management | | 2017 | Haddaway, N. R. |
| 4 | A machine learning approach to air traffic interdependency modelling and its application to trajectory prediction | ATM, ATC, ANN, CONFLICT , MACHINE LEARNING; VERTICAL PRO | 2019 | Eduardo, Christian |
| 5 | A New Mindset for Corporate Sustainability | | 2008 | Grayson |
| 6 | A stakeholder engagement approach for identifying future research directions in the evaluation of current and emerging applications of GMOs | Stakeholder Engagement Approach, GMOs, Environment, Socio-economic, Human and animal health workshop | 2017 | Menozzi, Davide |
| 7 | A STAKEHOLDER FRAMEWORK FOR ANALYZING AND EVALUATING CORPORATE SOCIAL PERFORMANCE | Stakeholder issue & groups 10 yrs research - Corporations mgmt relationships with stakeholder grps. Distinguish social issues and stakeholder issues. Primary & Secondary Stakeholders, Stakeholder relationships. Defining Stakeholder and stakeholder groups. Evaluating Corporate performance. | 1995 | Clarkson Max B. E. |
| 8 | Air traffic chief warns of worsening European flight delays | Increased delays | 2019 | Spero, Josh |
| 9 | Air traffic control issues cost EU economy€17.6 billion in 2018 - airline body | EU cost implications | 2019 | RTE |
| 10 | Air Traffic Management Performance framework Case Study: Morocco | ATFM Performance measurement, ATM system, CANSO, KPA, ICAO, ANSP | 2018 | Ghalem A. |
| 11 | Air Traffic Management Performance framework Case Study: Morocco | Stakeholder expectations, Performance, Key Performance Areas, ATC, ATM | 2018 | |
| 12 | Airport Incentive Programmes : A European Perspective | Airport Incentive programmes, Strategic focus, Strategic postsure, relationship specific | 2012 | Malina, Robert |
| 13 | Analysis of aircraft arrival and departure delay | | 2002 | Mueller, Eric R |
| 14 | Artificial Intelligence - New Era (Magazine) | | 2017 | Yadav, A. |
| 15 | Artificial Intelligence - The Next Digital Frontier | AI - next digital frontier, better performance through data, digital transformation | 2019 | Holoda, Šimon |

| | Article Title | Abstract / Key words | Year | Author |
|---|---|---|---|---|
| 16 | Artificial Intelligence a New Era for Aviation | AI, Forecasting, Intelligence, Predictability, improved accuracy, speed of existing tasks (30k fpls), EU aviation artificial intelligence high level group (practical solutions to use AI in ATM) | 2019 | Pasquini, Lucia |
| 17 | ARTIFICIAL INTELLIGENCE THE NEXT DIGITAL FRONTIER ? | | 2017 | |
| 18 | Avionics and ATC Technology for Mission Control | Stakeholder groups, | 2015 | Balmus, Elena |
| 19 | Comparing consultation on investment and technology decisions in air traffic management in Australia and the UK | Air Traffic Management, Industry consultation, Stakeholders, | 2012 | Margaret Arblaster |
| 20 | Comparing consultation on investment and technology decisions in air traffic management in Australia and the UK | ATM, Industry Consultation, Stakeholder, Change | 2012 | Arblaster, Margaret |
| 21 | Cooperative approaches to managing air traffic efficiently — the airline perspective | Collaborative decision making, Collaborative solutionsOn-time performance, Air service deployment | 2007 | Auerbach, Stefan |
| 22 | Coordinated Capacity and Demand Management in a Redesigned ATM Value Chain | atm, nm, sesar 2020, atm value chain, ansp | 2017 | Jovanovi, Radosav |
| 23 | Corporate social responsibility communication: stakeholder information, response and involvement strategies | CSR communication, stakeholder, Stakeholder theory, | 2006 | Morsing, Mette |
| 24 | Corporate social strategy stakeholder engagement and competitive advantage (Book) | Stakeholder Engagment and Competitive Advantage, superio profits, sustainbility | 2011 | Bryan Hustsen & David Bruce Allen |
| 25 | CSR stakeholder engagement and Nigerian tobacco manufacturing sub-sector | | 2012 | Bethel Uzoma Ihugba |
| 26 | Defining and Measuring Aircraft Delay and Airport Capacity Thresholds | | 2014 | Freer, Hilary |
| 27 | Demystifying AI: What digital transformation leaders can teach you about realistic artificial intelligence | AI, transfomational leadership, management skills, polls and surveys | 2019 | Brock, Jürgen Kai Uwe |
| 28 | Development of a methodology for understanding and enhancing safety culture in AIr Traffic Management | Safety culture, ATC, Measurement toolkit | 2012 | |
| 29 | Digital transformation of ATM - improving EUROCONTROL Network Manager B2B | Digital Transformation of ATM | 2019 | |
| 30 | Does stakeholder engagement through corporate social and environmental behaviors affect innovation? | Stakeholder engagement, Innovation, CSR, Env behavour | 2018 | Bari L. Bendell |
| 31 | Engaging for Success: enhancing performance through employee engagement | Enhancing performance though employee engagement | 2009 | Macleod, David |

| | Article Title | Abstract / Key words | Year | Author |
|---|---|---|---|---|
| 32 | Eurocontrol Network Manager User Forum 2019 | | 2019 | Kingston, Geoff |
| 33 | EUROCONTROL Seven-Year Forecast February 2019 | ATM data, | 2019 | Eurocontrol |
| 34 | Eurocontrol, Network Manager Forum 2019 | Weather, aviation performance | 2019 | Peregrine, Chris |
| 36 | Europe's airline strikes highlight need for reform | Need for reform | 2018 | Spero, Josh |
| 37 | EUROPEAN ATM MASTER PLAN Excutive view | | 2019 | SESAR |
| 38 | Fit for the Future | Sustainability, Technology, Operations | 2019 | CANSO |
| 39 | Flight and passenger efficiency-fairness trade-off for ATFM delay assignment | | 2020 | Montlaur, A. |
| 40 | From closed to open A comparative stakeholder approach for developing open innovation activities in SMEs | | | |
| 41 | From theory to practice: Lessons learned in the application of the ATMapproach to developing logic models | Stakeholders Key stakeholder, Creating Stakeholder buyin, Relationships, Change, Creativity | 2006 | Ralph Renger a |
| 42 | HOW INFORMATION TECHNOLOGY STRATEGY AND INVESTMENTS INFLUENCE FIRM PERFORMANCE: CONJECTURE AND EMPIRICAL EVIDENCE | Cost reduction, Strategic emphasis, | 2008 | Pati, G. S. |
| 43 | ICAO PERFORMANCE MEASUREMENT AND STAKEHOLDERS' ENGAGEMENT | Stakeholder Engagement, Performance, KPIs, | 2019 | ICAO |
| 44 | Improving Forecast accuracy through the intelligent application of AI | AI, Forecasting, Intelligence, Predictability, improved accuracy, speed of existing tasks (30k fpls), EU aviation artificial intelligence high level group (practical solutions to use AI in ATM) | 2019 | Marsh, David |
| 45 | Innovation & Entreprenurship | Stakeholder Innovation, stakeholder expectation, Trust, relationship, Culture, Change, sustainability led innovation, All things Innovation, Creativity, enabling creativity, Entrepreneurial creativity, | 2015 | Besset and Tidd |
| 46 | Innovation and learning in high-reliability organizations: A case study of United States and Russian nuclear attack submarines, 1970-2000 | High reliability, Innovation, stakeholder, Performance measures / differences, learning culture, culture of reliability, relationships | 2008 | Bierly, Paul E. |
| 47 | INNOVATION PIPELINE About the SESAR Joint Undertaking | Innovation, | 2018 | SESAR |
| 48 | Journal of Air Transport Management Air route suspension : The role of stakeholder engagement and aviation and non-aviation factors | Stakeholder | 2016 | Lohmann, Gui |

| | Article Title | Abstract / Key words | Year | Author |
|---|---|---|---|---|
| 49 | Journal of Air Transport Management An efficient hybrid approach for resolving the aircraft routing and rescheduling problem | | 2018 | Kammoun, Mohamed Ali |
| 50 | Journal of Air Transport Management Collaborative air traffic flow management : Incorporating airline preferences in rerouting decisions | | 2018 | Condé, Mayara |
| 51 | Journal of Air Transport Management Examining the impact of risk perceptions on intentions to travel by air : A comparison of full - service carriers and low-cost carriers | | 2018 | Cho, Sang-hee |
| 52 | Journal of Air Transport Management Global decision support for airport performance and e ffi ciency assessment | | 2018 | Baltazar, Maria Emília |
| 53 | Leading Change: Why Transformation Efforts Fail | Leading Change - Culture, Vision, Communictaions, Simplicity, Teams | 2007 | Kotter, John P. |
| 54 | LEAN IMPACT | Stakeholder Engagement pg124/125 , Eyelliance, Innovation engagement, | 2019 | ANN MEI CHANG |
| 55 | Linking business strategy to technology strategies; a prerequisite to the R&D priorities determination | Competitive advantage | | Vernet, Michel |
| 56 | Management of airside delays | | 2009 | Janic, Milan |
| 57 | Measuring Culture of Innovation: A Validation Study of the Innovation Quotient Instrument (Part One) | Culture, Innovation | 2017 | Danks, Shelby Rao, Jay Allen, Jeff M |
| 58 | Network Manager User Forum 2019 | | 2019 | Sultana, Joe |
| 59 | Online communities and firm advantages | | 2019 | Fisher, Greg |
| 61 | Organizational adoption of digital information and technology: a theoretical review | | 2017 | Molinillo, Sebastian |
| 62 | Part Two: Formulating Blue Ocean Strategy | Stakeholder | | Kim, Chan W Mauborgne, Rene |
| 63 | Performance Review Report (PPR) 2018 | Performance Report - big document, ATM AFTM | 2018 | Eurocontrol |
| 64 | Predictability and Uncertainty in Air Traffic Flow Management | ATM predictability, ATFM | 2003 | Pepper, Jw |
| 65 | Research note: How information technology strategy and investments influence firms performance: Conjecture and Empirical Evidence | Strategy & Investment influeence Performance | 2016 | Mithas, Sunil |

| | Article Title | Abstract / Key words | Year | Author |
|---|---|---|---|---|
| 66 | Research review of air traffic management | | 2002 | Wu, Cheng-Lung Caves, Robert E. |
| 67 | Reviewing the role of stakeholders in Operational Research: A stakeholder theory perspective | Stakeholder theory | 2017 | de Gooyert, Vincent |
| 68 | Single European Sky vision: Increase capacity 3 times, reduction of ATM cost by half and ensuring improvement of safety by 10 times – how to satisfy this goal in safety area | Stakeholder requirements, safety Culture, Just Culture | 2017 | Maria Kovacova |
| 69 | Social Embeddedness for Sustainability in the Aviation Sector | | 2018 | Payán-sánchez, Belén |
| 70 | Stakeholder collaboration as a major factor for sustainable ecotourism development in developing countries | Stakeholder collaboration for sustainability, | 2020 | Amare WONDIRAD |
| 71 | Stakeholder Collaboration: Implications for Stakeholder Theory and Practice | Stakeholders, Competitive advantage, Collaboration, Game Theory | 2011 | Grant T. Savage • Michele D. Bunn • |
| 72 | Stakeholder Engagement : A Good Practice Handbook for Companies Doing Business in Emerging Markets | Stakeholder Engagement, Principles, practices, Effective Stakeholder, cycle, concept, | 2007 | Debra Sequeira |
| 73 | Stakeholder Engagement : A Mechanism for Sustainable Aviation | Stakeholder | 2006 | Amaeshi, Kenneth M |
| 74 | Stakeholder engagement in co creation process for innovation A systematic literature review and case study | Stakeholder engagement, open innovation, co creation, wine industry | 2019 | Sandra Maria Correia Loureiro |
| 75 | Stakeholder engagement in the development of international air services: A case study on Adelaide Airport | Stakeholder | 2018 | Stephenson, Caitlin |
| 76 | Stakeholder Engagement: A Mechanism for Sustainable Aviation | Economic Development and Environment degradation, support airport companies formulating, implementing strategies for airport deveopment and framework | | |
| 77 | Stakeholder Engagement: A Road Map to Meaninful Engagement | Stakeholder Engagement, Roadmap to SE, Engaging Stakeholders | 2009 | Jeffery N |

| | Article Title | Abstract / Key words | Year | Author |
|---|---|---|---|---|
| 78 | Stakeholder Theory: The State of the Art Book Reviews | Stakeholder theory, stakeholder approach | 2010 | R. Edward Freeman, Jeffrey S. Harrison, Andrew C. Wicks, Bidhan L. Parmar, and Simone de Colle |
| 79 | STAM-based methodology to prevent concurrence events in a Multi-Airport System ( MAS ) | ATM, Decision making tools, Dynamica demand & capactiy, STAM | 2019 | Schefers, Nina |
| 80 | Stimulating the Potential: Creative Performance and Communication in Innovation Teams | Communication, Creativity, Performance, Innovation, Teams | 2004 | Kratzer, Jan |
| 81 | Strategic Alliances between Airlines and Airports - Theoretical Assessment and Practical Evidence | Strategic Alliances - Theory and Practical | 2005 | Albers, Sascha |
| 82 | Strategic Management: A stakeholder approach | Stakeholder | 2010 | Freeman |
| 83 | The effectiveness of teamwork training on teamwork behaviors and team performance: A systematic review and meta-analysis of controlled intervention | Teamwork, Performance | 2017 | McEwan, D., Ruissen, G. R., Eys, M. A., Zumbo, B. D. and Beauchamp, M. R. |
| 84 | The Future of Open Innovation | Collaboration, Collaborative, Innovation, | 2017 | Henry Chesbrough |
| 85 | The Human Factor II: Creating a High Performance Culture in an Organization | High Performance Culture, Organisational Performance, Leadership and Teamwork, Education, Profits. | 2006 | Kaliprasad, Minnesh |
| 86 | The impact of the 2008 fi nancial crisis on innovation : A dominant design perspective | Innoation, Financial Crisis, Gloablization, Science-based Industries, Dominant design, relationships | 2020 | Brem, Alexander |
| 87 | The Role of the Air Traffic Controller in Future Air Traffic Management : An Empirical Study of Active Control versus Passive Monitoring | ATM, Active Control, Passive Monitoring | 2001 | Metzger, Ulla |

| | Article Title | Abstract / Key words | Year | Author |
|---|---|---|---|---|
| 88 | The Stakeholder Approach Revisited | Stakeholder Approach, Stakeholders, Stakeholder Management, Strategic Mgmt, Social responsibillity, business ethics | 2004 | E Freeman |
| 89 | THE STAKEHOLDER THEORY OF THE CORPORATION: CONCEPTS, EVIDENCE, AND IMPLICATION | Stakeholder theory | 1995 | THOMAS DONALDSON Georgetown University LEE E. PRESTON University oi Maryland |
| 90 | Towards a Sh& European Sky: Initiatives by the European Commission to Reform Air Traffic Management | Stakeholder, Safety Culture | 2014 | ICAO |
| 91 | TOWARDS A THEORY OF STAKEHOLDER IDENTIFICATION AND SALIENCE: DEFINING THE PRINCIPLE OF WHO AND WHAT REALLY COUNTS | | 1997 | Michell, Ronald K |
| 92 | Unfolding Stakeholder Thinking Theory, Responsibility, and Engagement | Stakeholder Theory, Thinking, engagement, responsibility | 2003 | Andriof, Jorg |
| 93 | US & EU expand aviation safety and ATM modernisation cooperation | US /EU joint agreeement expanding aviation safety and ATM harmonisation of ATM technologies, standards and procedures. US NextGen and SESAR in EU, from development to deployment | 2018 | The journal for civil aviation traninging |
| 94 | US STAKEHOLDER ENGAGEMENT STRATEGY | Stakeholder engagement strategy, icao | 2019 | ICAO |
| 95 | Vulnerability of the European air transport network to major airport closures from the perspective of passenger delays: Ranking the most critical airports | Passenger Delays | 2017 | Voltes-Dorta, Augusto |
| 96 | Vulnerability of the European air transport network to major airport closures from the perspective of passenger delays: Ranking the most critical airports | Vulnerability of E air transport, Delays, | 2017 | Voltes-Dorta, Augusto |
| 97 | What Leaders Really Do | Leadership, Culture | 1990 | Kotter, John P. |
| 98 | WHAT STAKEHOLDER THEORY IS NOT | Stakeholder theory, stakeholder management, change, relationships | 2003 | Robert Phillips, R. Edward Freeman, Wicks, Andrew |
| 99 | Why should anyone work here? | | 2015 | Goffee, Rob. Jones, Gareth. |

## 5.8 Data Analysis

A deductive approach was undertaken in this study as suggested by Yin (2016) allowing the author to construct a skeleton structure from table 5.7.2, taken from theoretical propositions to organise, direct and analyse the data. The themes or stages, as suggested in this study and sub-themes are derived from the works of Sequeira and Warner (2007) and Jeffery (2009). The framework facilitated the author to start, direct and analysis the data.

Saunders et al. (2016) suggested the data from the interview should be analysed in numerous stages using thematic analysis. The methodology process included; familiarity with the data, coding the data, theme searching, relationship recognition, theme refining and proposition testing.

The data analysis followed the steps as outlined by Yin (2016) in relation to analysing qualitative data. The process included;

Stage 1 - Data familiarisation involved the author fully transcribing the interview data reading and re-reading. It was at this stage the author repeatedly listened back to the recordings taking separate notes noting specific times and references to the themes and sub-themes.

*Note:* the full transcript and with time notation is available upon request.

Stage 2 – The codes were obtained from existing themes constructed from the literature by Sequeira and Warner (2007) and Jeffery (2009). The codes were applied to the relevant elements of data in every transcript; they were hierarchically categorised. These codes were assigned to the interview transcripts. The units of data were in the form of sentences. There was an interrelationship between categories where there was more than one category in the units of data.

Stage 3 - Themes, patterns and relationships were identified from the data. A logical analysis across the codes took place, creating themes that related to the research questions. The researcher firstly decided on the themes to further the analysis. Then the researcher defined the themes and the relationship between them. Some themes were the main themes, and others were secondary-level themes. Outlying information was also gathered and categorised accordingly. Although outliers are often considered as an error or noise, they may carry important information.

Stage 4 - The final step, as suggested by Yin (2016) of the thematic procedure included refining the themes and revising the relationship between them. From this, testable propositions were developed. A coherent analysis was undertaken by the researcher through rigorous testing of the hypotheses against the data and the analysis of the outlying data. The validity of the researcher's conclusions was verified through their ability to withstand the outlying information.

The outlying information helped to refine credible explanations. Outliers, according to Rokach and Oded (2015), can carry important information that may offer a more valid explanation of association. This outlying information helped the researcher to avoid bias and their personal beliefs and expectations; thus, avoiding leading information and misinterpretation of the data.

## 5.9 Ethical Consideration

Bryman and Bell (2011), emphasises the need to assert a strong sense of ethics to research, particularly in the area of qualitative research. The NCI provided a comprehensive set of procedures and guidelines to follow which the researcher followed. The researcher submitted an ethics review form during the research methods stage, which the college has on file and subsequently approved by the ethics committee.

Compliance with the Data Protection Act of 2018 was upheld. The researcher texted, phoned and called into the offices of the participants; however, all received an email requesting with an Information letter outlining their consent and motivation of the study. The information letter can be viewed in Appendix I. The informative sheet outlined the research purpose statement, the reason for the study and the type of interview. The

approximate duration of the interview as specified on the information sheet thirty, minutes; however, it was closer to fifty minutes, and some lasted upwards of sixty minutes. The researcher sought consent to a recording of the interview to accurate transcription. The identity of the participant was explained; they would be identified as participant one or two, and so on. The participants were also advised that signing did not waive their legal rights or releasing the researchers or involved institution(s) from their legal and professional responsibilities.

All interviews were recorded, a combination of audio and audio and video using Microsoft TEAMs application. When the interviews were taking place, Ireland was starting to exit lockdown in light of COVID-19. Four of the five interviews were conducted using TEAMS. Before the interviews took place, the researcher emailed the participant with a consent form, as seen in Appendix II. All participants were adults, therefore not causing any ethical problem or vulnerability issues. Data protection was ensured as all audio and videos files were stored with authenticity passcodes.

The interview transcription was transcribed on the researcher's laptop and the interview notes stored online on a protected drive only accessible by the researcher. As endorsed by Bryman and Bell (2011), all participants anonymity should be protected by a profile and all data captured has been held for the reasons mentioned in this study.

## 5.10 Conclusion

The approach undertaken by the author was the mono-method approach with the aid of semi-structured interviews. The researcher interviewed five senior people using maximum variation sampling, each interviewee with vast experienced in the stakeholder engagement and air traffic management. The interviews were all recorded and fully transcribed. The author was empowered by the use of qualitative research to explore and understand the relationship between the stakeholder engagement process and next generation air traffic management and accomplish the four research objectives of the research study.

As suggested when using thematic analysis by Bryman and Bell (2011) and Saunders et al. (2016), the interview data should be examined in various stages. Searching for and refining themes and sub-themes, relationship recognition, data familiarity and coding all formed the process of the methodology used in this research study. The process and procedures as outlined by the NCI were strictly followed, including compliance with the Data Protection Act 2018 as part of the ethical consideration and guidelines. All data has been retained as indicated in this study, and as described by Bryman and Bell (2011), the anonymity of the interviewee has been protected.

The following chapter, findings and analysis are where the researcher will provide the reader with rich and insightful data relating to the research interviews on stakeholder engagement in air traffic management.

# 6 Chapter six | Research Findings and Analysis

## 6.1 Introduction

The aim of this research was an explorative study seeking to understand the relationship between the stakeholder engagement process and next generation air traffic management at Dublin air traffic control. The stakeholder engagement process was investigated from various viewpoints. The framework to which the study was conducted mainly revolved around the literature by Sequeira and Warner (2007); Jeffery (2009) and Freeman (2015). The seven-stage stakeholder engagement process investigated were; The planning stage; understanding 'wants and needs', Internal preparation and alignment, building trust, consultation, respond and implement, and monitor, evaluate and document.

While researching the stakeholder engagement process, it was a prerequisite to investigate the motivations of the organisation, which is indicative in the sub-theme objectives formulating the research questions. Although there are seven stages/themes, the investigation considers many sub-themes. The semi-structured interview facilitated rich material during the investigation allowing the participants to develop an argument. There were five in-depth interviews conducted all directly related to operations around air traffic management. The data collected from the interview was collated and synthesised to form the research findings and analysis. Participants' unique coding will be referred to as P1, P2, P3, P4 and P5.

## 6.2 Findings of Research

The qualitative research undertaken was developed by using a seven stages (themes) process as discussed, from which the research questions revolved. The first stage in the stakeholder engagement process is planning; however, the literature argues to have a meaningful stakeholder engagement process, the organisation should be willing to listen and not be self-fulfilling. At stage one 'planning' the literature suggests understanding organisational challenges which can be resolved by engaging in this process; however, also to consider the purpose and how it can add value to the organisation.

‘Understanding Wants and Needs’ should be identified according to Ghalem et al. (2018) and Jeffery, (2009) firstly by the organisation and then by the stakeholders. Only then can the stakeholder engagement process priorities ‘wants and needs’ while managing expectations and establishing key performance indicators where required. ‘Internal preparation and alignment’ according to the literature can result in significant benefits assuming there is an alignment of mutual ‘wants and needs’. Communicating with the stakeholders regarding their issues and concerns allows for the alignment of ‘wants and needs’ exploring effective solutions during the stakeholder engagement process. Having policies and procedures is warranted around stakeholder engagement process as described by Jeffery (2009). ‘Building Trust’ is an attribute built over time, establishing effective ways to create trust, information sharing, and transparency are sub-themes within stage four, building trust. Stakeholder ‘consultation’ ensures representation, responsive, context focus, complete, realistic and material while ‘respond and Implement’ describes stakeholder issues and conflict resolution. While in the final stage ‘monitor, appraise and document’ the literature suggests having a system that allows for validation of documentation, monitoring and appraising the stakeholder engagement process for sustainability.

Each stage follows a logical process; however, the researcher offered the participants an option from starting at any stage for a comfort factor for the participants in the initial pilot interview. The stages start from stage one through seven for logical and rational purposes. As expected, additional information materialised, the researcher noted any reoccurring or deemed noteworthy in the context of air traffic management was noted. The stakeholder engagement process diagram is depicted below.

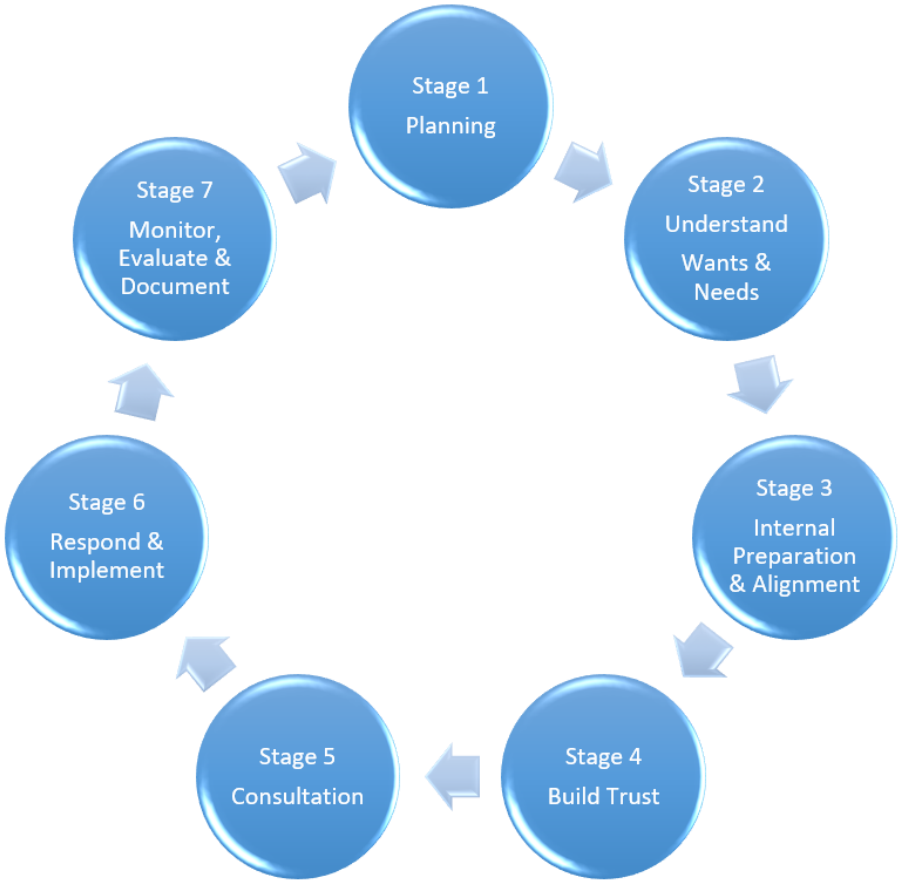



Figure 6.2.1 Seven stage Stakeholder engagement process Source: Jeffery (2009)

## 6.3 Stage one - Planning

Meaningful stakeholder engagement, as suggested in the literature, is a willingness to listen and enter the process not just for organisational gains.

### a. What are the organisational challenges that a stakeholder engagement process can resolve?

P2 highlights the innumerable number of stakeholders at Dublin airport, each with contrasting priorities and different organisational cultures is a challenge. P4 describes with so many different priorities, and objectives necessitate early engagement. "Stakeholders involvement at the very start, the idea of a shared vision of the vision." Furthermore, P4 sighted the Single European Sky (SES), "Did not involve all the stakeholders from the beginning; it was a top-down process." P3 notes, "The challenge is getting to understand the objectives of the stakeholder." There is a recognition from all the participants requiring a meaningful stakeholder engagement process as suggested in the literature by Sequeira and Warner (2007); Jeffery (2009) and Freeman (2015) to achieve their objectives by;

> "Setting up various forums having the right people at forums that can make decisions and if everyone could lean in a little," as described by P2.

*Leaning in* goes a long way to resolve challenges as noted by P2 and P5. These are characteristics with the ethos of listening and a willingness to engage, as described by Jeffery (2009). P1 describes a situation during the revision of low visibility procedures at Dublin airport. P1 would have collaborated with one person on such matters, that changed to three people which in itself became a challenge. The change in personnel from the DAA perspectives was due to organisational growth. To further explain the challenge, one stakeholder proceeded to make changes to documents without regard to air traffic control; this was stopped as it had safety implications. Through collaboration and various stakeholder meetings, it was agreed to split the Dublin airport low visibility directives into three sections; ATC procedures, DAA procedures and common procedures.

The ATC and DAA procedures could be changed as warranted without consultation to their respective procedures; however, the common procedures could not be changed without both parties agreeing. P1 noted, "How lack of planning can impact other stakeholders and have safety implications."

A successful agreement was brought about by meaningful engagement and a “lean in” approach from both parties as described by P1 and P2. In hindsight, if there was, as described in stage three, Internal preparation and alignment, organisation policies or guidelines regarding stakeholder engagement, would this incident have occurred? For further deliberation later in stage three.

### b. What are the objectives or purpose of the stakeholder’s engagement process in your organisation? And c. How does it add value?

Participant 1 through 5, stated to get things done or progression but “firstly listen to what the stakeholders want,” as described by P1 and “that the objectives become collective objectives through collaboration” as noted by P4. P1, P2 and P4 noted that regulation plays a significant part in the purpose of engaging with stakeholders for examples P1 outlined every five years the DAA must meet their stakeholders, rent a function room in the airport hotel for one-week consulting with all their stakeholders. P3 outlines on “many occasions there is a regulatory requirement to engage with the stakeholder” furthermore P3 outlines along with P5 and P1 engaging with stakeholder should “ensure smooth running of a project”. At the same time, P4 states “early engagement with stakeholders avoid disappointment, frustration and wasted money.” If stakeholders are not engaged early something can get missed, noting “early engagement is vital in ATC,” as quoted by P3 and intimated by P4. P2 emphasises the need to satisfy many types of businesses at the airport, for example, quick turnaround, needs of transatlantic traffic and the Stobart operation that feeds into the transatlantic operation. Cargo has become a more significant part in regard to COVID-19 their requirements and the PPE equipment, “services and supplies keeping this country open during the pandemic,” as noted by P2. P2 further emphasise;

> “We are an island nation with a lot of pharmaceutical and technology companies in Ireland often company jets are flown in, and we are very mindful of that, providing good service to that business segment.”

The stakeholder engagement process adds value when early engagement is exercised, and no last-minute surprises is the key to adding value according to P1 and P2 and P3. "Setting the tone of trust and equal partnership adds value" as echoed by P4 who further noted getting the buy-in from all levels of the organisation rather than a top-down process yet acknowledging the "necessity for top-down leadership and vision, provides value."

### 6.3.1 Stage one - Summary - Planning

The participants noted the number of stakeholders in an expansive industry with contrasting priorities and different cultures is a challenge for organisations. The participants described meaningful engagement relies on listening and appreciation of each other's challenges. Progression and alignment of collective objectives are the purposes of engagement as noted. The industry is heavily regulated, whereby stakeholder engagement is a requirement in many cases. The outcome of this engagement sometimes forms part of a regulatory decision according to the participants. The participants emphasise the stakeholder engagement process adds value best when stakeholders are invited at the earliest stages and no late surprises.

## 6.4 Stage two - Understanding Wants and Needs

Identifying and understanding the Wants and Needs of all parties in the process.

### a. How are Wants and Needs heard in the process?

P3 acknowledges that air traffic control are usually the drivers of projects and not always being driven, in that regard their 'Wants and Needs' would be heard at that stage. When conducting meetings, "Stakeholders are asked if their concerns are being addressed," ensuring that there are no surprises as P1 outlined. P4 and P3 believe continuous communication with stakeholders is important recognising any issues early in the engagement process. The Dublin Airport Operations Planning Group (DAOPG) is a monthly Air Traffic Control is driven round table forum with rotating, and shared chairpersons is representative of all operational stakeholders at Dublin airport.

P2 describes this meeting as the forum the DAA discuss; for example, the infrastructure rehabilitation 'wants and needs' over the next eighteen to twenty-four months. Furthermore, P2 stresses rehabilitation works are a 'need' where the infrastructure is reaching the end of its life. P2 listens to the 'needs' of the stakeholders and tries to facilitate the works on Taxiways and Runways at night or off-peak time when less impactful on stakeholders. P2 and P1 describe how building relationships outside of the meetings is critical. "An excellent meeting is where the minutes can be written in advance," according to P2. Going to a monthly meeting like the DAOPG were a detailed work schedule has been agreed by the significant stakeholder's prior the meeting leads to a "very efficient meeting," P2 when considerable work is done outside of these meetings while building relationships as noted by P2, P1 and P5.

### b. How are the Wants and Needs prioritised?

P1 relates 'wants and needs' to safety, where safety requirements are prioritised over business wants and needs. At the same time, P3 describes the prioritising of wants and needs from a business perspective should be through collaboration with stakeholders. P5 notes where constraints and adverse costs exist, they should be as described by P4 analysed in a greater context fitting with ATM development in a stakeholder engagement process.

P2 describes needs when referring to airfield pavement rehabilitation works. A RAG map (red, green and amber) is used to indicate the severity of rehabilitation works on a taxiway or runway, red requires immediate work, amber signifies shelve life eighteen to twenty-four month and green is good. According to P2, based on this RAP map stakeholders at the DAOPG, for example, will have a good idea of when rehabilitation works are required. This impacts air traffic management when it affects runway or significant taxiways adjacent to the runway. Red is an imminent need yet through collaboration and as not to impact operation yet has additional cost implications to the DAA, these essential works are completed at night were possible, indicative of a collaborative effort to maintain airport operations. Airlines are always concerned with their on-time performance (OTP) as indicated by P5 and P3, and any works affecting is a red flag for the operators.

Furthermore, P2 describes ‘wants’ in terms of, for example, runway ‘throughput’ which increases airport slots, increasing the number of aircraft and passengers. P2 would talk to air traffic regarding departure intervals and arrival spacing, improving capacity, which is always good for commercial purpose.

### c. Where costs are incurred during the process, how are they distributed?

P2 stated every five years; the DAA would submit their capital investment program within which they are required to discuss with stakeholders and submit to the regulator.

> “If it affects an airline, we endeavour to collaborate with that airline as part of the regulatory process, for example, Ryanair and terminal one; this would be put into the airport charges,” according to P2.

“Best in class while enhancing capacity projects” as described by P4, P2 and P5 attract European 10T funding for example Airport Collaborative Decision Making (A-CDM) a SESAR and Eurocontrol capacity enhancing initiative in Europe. P3 reports most stakeholders deal with their costs. However, “Sometimes costs are absorbed by stakeholders” according to P3. During significant airspace, for example, change although it reduced aircraft track miles on approach there was additional track miles for a go-around which has a cost implication for airlines which was accepted and absorbed by the airlines. P4 has another viewpoint that European projects sell based on a concept of improved punctuality; it is a generalised thought. There are hidden costs; for example, airlines have to put in new processes as do air traffic and the airport authority. In a larger European context, “the lack of cost transparency results in a lack of buy-in and kickback” from stakeholders as described by P4. P1 and P3 also acknowledging it depends on each project how costs are distributed.

### d. What are your expectations from the stakeholder engagement process?

P4 describes an expectation as a sharing of information and buy-in on the objectives in its infancy. P4 continued to describe a new Dublin ATC performance where;

> "The stakeholders will themselves define the objectives to increase performance, environmental issues and punctuality, getting that buy-in is essential and has enormous potential."

> "Experience has indicated there are better project outcomes when early stakeholder engagement and buy-in from the stakeholders from the outset," as quoted from P3.

P3 and P1 expect smooth project implementation. At the same time, P2 and P5 are hopeful that there are no surprises, describing the process as a journey, the service providers are here for the same purpose "providing the best facilities and experience for the passengers," as described by P2. One of the main objectives for airlines is the on-time performance (OTP) as described by P5 and P1 while in Air Traffic providing a safe and expeditious flow of air traffic while adhering to slot tolerances due to air traffic flow restrictions as noted by P3 and P5.

### e. Do you establish Key Performance Indicator (KPIs) as part of a Stakeholder engagement process?

There is a consensus amongst the participants that there are no KPIs for the stakeholder engagement process, however, they many KPIs from a business performance perspective and Key Safety Indicators (KSIs) as described by P3, P1, and P5 for regulatory adhered. However, P2 describes the slot coordination committee engaging with specific stakeholders in terms of capacity and runways delays; this relates to an operational KPI than a KPI for the stakeholder engagement process.

### 6.4.1 Stage two - Summary - Understanding Wants and Needs

Air Traffic Controls and the DAA are inclined to lead projects, at initial stakeholder engagement meetings organisational wants and needs are heard. In contrast, stakeholder wants, and needs are discussed at or before monthly stakeholder meetings as noted by the participants. The participants noted continuous communication and engagement while building relationships is vital to stakeholder relations. Identifying problems early in the process is key to success. The prioritising of wants and needs is based firstly on safety and then business requirements through engagement and collaboration. How costs are distributed is indicative of the project, sometimes costs are absorbed by the stakeholder or the company while funding is available for capacity enhancing projects endorsed by the Single European Skies ATM and Research (SESAR) subject to specific milestones. Early buy-in and agreement on the objectives by the stakeholder are expectations ensuring smooth project implementation. All participants described how key performance indicators (KPI) are used for business performance; however, not used in relation to the stakeholder engagement process as described by Jeffery, (2009).

## 6.5 Stage thee - Internal preparation and Alignment

According to the literature, this stage can result in significant benefits assuming there are common Wants and Needs between the organisation and stakeholders.

### a. How are issues or concerns communicated to stakeholders?

P1 describes face to face or phone calls where issues would be raised either at Airport Safety meeting or Dublin Airport Operations Planning Group (DAOPG) where concerns are raised by stakeholder and the organisation. P2 describes various forums for that from the airport point of view, DAOPG, Airport operators Committee (AOC) and the Slot coordination committee where the airport's issues are raised. P2 again mentions early engagement, for example, they will be working on the winter operating shortly dealing with snow plans and de-icing and publish this late October, emphasising early engagement is key with no "11$^{th}$-hour surprises." Trust can be lost and very hard to regain, as described by P5.

P3 emphasis the IAA is good at ensuring engagement with stakeholders allowing sufficient communications and decision-making meetings.

### b. How are your Wants and Needs aligned with those of the stakeholders?

P3 describes the IAA being at the “Driving end of projects, so our needs and wants are clear from the outset.” However, P3 and P1 emphasised as a service provider; if the negative impact is foreseen from a project, alternative solutions would be sought to rectify the issue. P5 and P3 seek active feedback from the stakeholders in an effort to smooth project implementation. P4 suggests the process of alignment is very imperfect in the industry. Top-level management would believe stakeholders are all aligned; however, the alignment becomes misaligned at a European level from stage 3, as outlined in the stakeholder engagement process. P2 describes the alignment of ‘wants and needs’ normally occur at various meetings.

Every airline ‘wants and needs’ are different, there is a lot of competitive elements amongst the airlines, for example, wanting their aircraft being overlooked by the airport lounges for branding purposes as noted by P2.

### c. What are the most effective ways, in your opinion, to overcome difficult challenges between stakeholders?

P4 describes working together on a joint task, working towards the same performance measures is most effective, while P1 and P3 emphasise the face to face meetings are the most effective ways to overcome difficulties. Being a service delivery organisation, “If we come up against a brick wall, our position will be to facilitate the customer or offer other solutions,” according to P1. Trust is built up over time; according to P5, the benefits of an initiative would be illustrated as collective benefits for the airport community. P3 further describes if enough resistance forthcoming and an alternative solution was rejected, it would be incumbent on ATC to move our position. P2 describes transparency, building trust and no last-minute changes is the most effective of overcoming challenges; furthermore, P2 states “It is not a one fits all.” If stakeholders according to P2 would lean in a little bit and describes,

> “What is important to the middle eastern carries would not be perhaps as important to a low-cost carrier, and what is precious to a low-cost carrier may not be as important to a middle eastern carrier.”

Understanding the stakeholder's requirements is vital and building a solid relationship provides help overcoming challenges as noted by P2, P3 and P5.

### d. How would you describe your organisation's stakeholder policies or guidelines?

All participants outlined there are no organisational policies or guidelines relating to a stakeholder engagement process, as suggested in the literature, according to Sequeira and Warner, (2007). The researcher notes that all participants in this research are significant players in stakeholder engagement, and each would have a business appreciation for their stakeholders which provides a level of expertise in this area.

P3 describes;

> "My modus operandi is to explain why a project is going ahead, get the buy-in from the stakeholders from an early stage and build on the project through collaboration; this is powerful."

If organisations created policies or guidelines would the issue relating to lack of engagement in the example of the DAA naively changing the low visibility procedures without ATC consultation while having safety implication been averted as outlined in stage one planning by P1. The issue was resolved through collaboration and the establishment of three separate documents as described stage one.

### 6.5.1 Stage 3 - Summary - Internal preparation and Alignment

There are various monthly forums where stakeholders and the organisation can raise concerns or via phone or email prior to face to face meetings according to the participants. Early engagement on issues has been noted by the participants in an effort to avoid late surprises and smooth implementation of the project. At the IAA and DAA are at the driving end of project their wants and needs are clear from the outset however if negative feedback from the stakeholder is forthcoming as a service provider, they find other solutions to satisfy the stakeholders.

Alignment, as suggested by the participants, can be top-down driven; however, sometimes misalignment occurs signally continuous feedback and engagement throughout the process. Building trust and doing what you say will do while working together, partnering with the same performance measure objectives is the most effective way to overcome difficult challenges as noted by the participants. Furthermore, the participants concluded that no policies or guidelines exist in relation to stakeholder engagement, as noted by Sequeira and Warner, (2007).

## 6.6 Stage four - Building Trust

The literature suggests building mutual respect, rapport and trust attributes built over time, can be achieved by commonalities and shared interest.

### a. What is the most effective way of building trust and respect with stakeholders in your experience?

P2 acknowledges people to build trust with people and organisations emphasising there are various levels of trust at different levels in various organisations and with their counterparts. P5 when discussing trust, “If you say you are going to do something, do it.” If trust is broken from the top down it like the game “Jenga” with the blocks, they all come tumbling down according to P2. Continuing to open up dialogue, an example if as stakeholder calls to say they have a problem, “I will say let me look into it. I am not committing anything other than making the calls, try to fix it, but I will phone you tomorrow before midday time. Before midday, I will make that call,” according to P1. P3 and P4 suggest being brutally honest indicates to the stakeholder that they are trustworthy.

### b. Could you provide an example of when you knew trust was established with a stakeholder?

There were three particularly good examples from the participant's response to illustrate this point. P1 outlined, earlier this year an agreement between the IAA, DAA and SAAB (the ATM equipment supplier for the tower) allowed the airfield light system (DAA system) to be integrated into the new air traffic management system in the new control tower.

This was a milestone in itself; however, in light of COVID-19 and the significant impact on air transport, it is likely to be set back several years due cost containment issues. This displayed a level of trust which had not been expressed previously even though both companies have a very good working relationship. P2 outlined the carriers are very commercially sensitive and reluctant to disclose any commercially sensitive information. Airlines go to great costs in conducting research, financial planning and projections; however, on occasions, a carrier may ask if a requirement could be fulfilled without giving to much information to the Airport Authority. A demonstration of a level of trust has been established when one has been trusted with commercially sensitive information.

P3 and P4 describe how at the DAOPG meetings, expressions of trust are shown regularly; for example, aircraft on approach may go around for various reasons. The change in procedure formed part of an airspace change and had adverse effects on one airline more than the others however it was accepted for the overall benefit to the airport community and indicated a level of trust in the stakeholder engagement process.

### c. Have you noticed when trust has been established, there is more information sharing?

Most participants stated that they had definitely noticed when trust was established as expressed by P1 and P5. A significant amount of communication is through phone calls to contacts. On occasion, information is volunteered, and sometimes this information can lead to a resolution to a problem a stakeholder is having as described by P2. The DAOPG is a classic example; it is open and transparent according to P3 and P1. P4 and P5 agree and conclude that evidence of this has been shown in Eurocontrol from the air traffic service providers (ANSPs) as they open up about what the real capacity issues are, indicative of trust according to Rose and Sinclair-Smith (1980).

### d. Transparency is the key to building trust, would you agree?

P2 agrees, however, with a caveat "Do what you say you will do." Since the safety management systems were established everyone is very protective of their data as noted by P1, noting a reluctance to share information in light of the safety management systems (SMS) protecting corporate interests furthermore P1 states that compliance and safety management principles go hand in hand. P3 concurs, and places emphasis on honesty and getting the stakeholders buy-in while noting engagement from the beginning is vital. Interestingly P4 noted that although airlines are commercially sensitive and compete against one another. P4 strongly argues airlines would have a better chance of achieving their respective 'on-time performance' (OTP) jointly rather than trying to outdo each other or without care for the other. P5 believes the airlines if acted cohesively would be better able to meet their OTP and not egocentric according to P5.

### 6.6.1 Stage four - Summary - Building Trust

The literature suggests building mutual respect, rapport and trust attributes built over time can be achieved by commonalities and shared interest. The participants acknowledge building trust and relationship facilitates positive working relationships at various levels in an organisation, continuous dialogue is suggested in building the relationships; however, where trust breaks down, it can cascade throughout the organisations. Some examples of when trust was forthcoming from the participants is indicative of trust, particularly when information flows voluntarily. An example in a stakeholder group environment at the Dublin Airport Operations Planning Group (DAOPG) where stakeholders feel somewhat free to air concerns amongst their stakeholder peers is a positive attribute leading to transparency in the relationships. Furthermore, it was noted the airlines should work collectively in relation to their 'on-time performance' OTP issues for better continuity and better overall OTP.

## 6.7 Stage five - Consultation

Consultation includes being representative, responsive, context-focused, completed, realistic and material.

### a. How do you ensure that all stakeholders are included or represented?

Open invitations to stakeholders at the earliest stage of projects is vital; a prerequisite is for organisations to cast the net very wide as described by P4. There is a recognition that safety regulatory division (SRD) and safety management unit (SMU) according to P4, should be invited into the process early to avoid project delays. Furthermore, recognising EU regulation 2017/373, according to P5, is a huge issue acknowledging some historical, cultural differences between SRD and the air traffic service provider (ANSP). P4 and P5 both conclude seeing these issues with SRD and the ANSP more than experiencing them. However, it reoccurs time and time again. While P2 noted from a regulatory perspective, stakeholders must be represented at least every five years for one week were the DAA presents future plans and developments. P3 places emphasis on the universal email list of stakeholders invited to the Dublin Airport Operations Planning Group (DAOPG) meetings accounting for almost all operational stakeholders at Dublin airport. All the stakeholders regardless of attending, are sent the minutes, action items and agendas. P1 noted at the runway safety team meetings, Irish Airline Pilots Association (IAPA) do not attend however in his experience pilots 'wants and needs' are represented by various airline base captains who do attend.

### b. What methods of engagement are used in the engagement process and?

### c. What would be the most common?

The telephone, email, face to face focus groups, round table and teleconferencing meetings are the most common methods of engagement with the participants. P3 describes a lot of separate workshop groups set up dealing with action items resulting from various set monthly meetings noting the Dublin Airport Operations Planning Group (DAOPG) and the New Tower Parallel Runway (NTPR) meetings.

> "Formalised written communication and processes do not work particularly when round table is not part of it," as argued by P4.

The three most common form of meetings since COVID-19 has been a combination of Microsoft TEAMS, ZOOM and Skype. P5 and P4 highlighting there have been significant positive outcomes to COVID-19 and the way we work, recognising IT has the advantage of monitoring and reporting process however the disadvantage is the face to face chat when a lot of work gets done.

### d. How do you ensure all concerns (organisational or stakeholder) are addressed?

All concerns are addressed either by phone or raised at various meetings according to P1 and P3. While P3 highlights his style is to go around the table actively seeking if stakeholders' concerns are being addressed particularly those less vocal in an attempt to mitigate against last-minute surprises, these sentiments were also echoed by P5. P1 recalls an issued being raised for having instantaneous meteorological wind readouts versus the standard two-minute average. After an investigation by a sub-group, it concluded that after the German aeroplane crash using instant wind readouts, had they continued to use the two-minute average wind readouts. The pilot would not have committed to land the plane and would not have crashed as found in discovery. The findings and recommendations suggested leaving the current practice in place. P2 recognises the minutes of a meeting being a record of a meeting however emphasises;

> "The importance of 'action items', what action was decided, who it has been assigned to, when is it being closed out and are there any difficulties around it."

Action items are addressed and accept there is no place to hide. As suggested early by P4 when identifying stakeholders in stage one of the stakeholder engagement process and casting the net wide, there needs to be an acceptance of the different levels of stakeholders. Not all stakeholders are required to know all the various segments hence the different levels of stakeholders as described by P4 further noting;

> "There needs to be a representative from the IAA and DAA with some form of public statement about the environment, like the new runway will be used in the most environmentally friendly way."

The environment and impact of air travel on the environment is going to play a more significant role going forward, and organisations need to proactively address this with their wider net of stakeholders as described by P4.

### e. Would you say all concerns are 'context-focused' and 'realistic'?

As a group in aviation, we are "realists, pragmatic and safety-driven" as described by P1 while on occasion, unrealistic expectations are expressed from a place of bias, for example, as expressed by P5. There is an agreed policy with the airlines on tailwind and crosswind tolerance on the active runway at Dublin airport before ATC will change the active runway. P1 describes due to some newer aircraft designs and larger aircraft (heavy jets) these aircraft would have a less preferred tolerable to the agreed tailwind and crosswind components resulting in the airline possibly having to reduce capacity (weight on the aircraft) or air hold. This becomes an issue when an operator expresses a preference for a runway change for an individual flight at the behest of the whole operation. Are concerns context focussed as described by Jeffery, (2009)? To put this in context, the summer of 2019 saw regular daily air traffic movement of 850 aircraft.

> "Any unplanned or unscheduled runway change can have significant implications on the operations," as noted by P1.

That individual flight's preference could cost other operators significant addition fuel costs according to P4 with additional track miles to be flown. In general terms and upon reflection of this question, P3 goes on to say "the DAOPG very interestingly has enabled concerns to be more context focused and realistic." This sentiment also echoed by P5 and P3 as we meet regularly, senior people and the stakeholders now know what context is focussed and realistic as described by P5. Furthermore, P4 also agreed with P5 and P3, however, "Short term priorities do become evident," and concludes "Air traffic don't care what runway is used as long as there is a consensus amongst the airlines."

### f. Could you give an example an unrealistic expectation?

Runway 28 is the predominant runway used in Dublin, however with issues relating to crosswind and tailwind components an operator could only operate at 80 per cent capacity which has financial consequences as outlined by P1, P4 and P5 and further described in the previous answer e) above. P3 described rubber removal works on the main runway required a runway walk by the regulator due to runway shelve life. There was an expectation by certain personnel, where runway walks could occur at any time. After further consultation, this would only be accommodated during low levels of traffic as the operation takes precedence over airfield works.

### g. How would you indicate that the issue or works have been resolved or completed?

Most ATC activities are regulated. Records are kept and once agreed with the regulator they are signed off according to P5 and P1. P3 describes for unregulated projects at the end of a project's life cycle, there is a review, and any actions taken are closed at that point, for example at DAOPG, LRST or focus groups. The DAA would take ownership of the site area where works are completed, once documentation has been completed as per contract specifications according to P2. P1 notes airfield works affecting ATC operations would require a temporary work instruction notice. This would detail the commencement of works with expiration dates and times beyond which procedures will not apply. P4 is more critical of a lack of formal review process feeding into the next project being utilised, from project to project.

## 6.7.1 Stage five - Summary - Consultation

Consultation, according to the literature, includes being representative, responsive, context-focused, completed, realistic and material. Open invitation to stakeholders at the earliest stage is vital; continuous communication while casting the net wide provides representation. Noting in many instances, there is a regulatory requirement to engage with the stakeholders as described by the participants. The main method of engagement is telephone, email and face to face meetings; however, since COVID-19, the most common forms of communication is telephone, email, TEAMS and ZOOM according to the participants.

The participants note that responsiveness to concerns of stakeholders are raised before or at meetings, recorded on the minutes and action items were taken against them where appropriate. It was recognised that as a group in aviation there is a tendency to be realists and pragmatic while safety-driven however one particularly forum has according to the participants created a context-focused and realistic environment with the odd exception. Depending on the project if there was a regulatory requirement, there is a process of closure. While at a workshop meeting, an action item would be recorded as open or closed at these forums.

## 6.8 Stage six - Respond and Implement

The literature suggests after consultation with the stakeholders; the organisation would formulate a plan to deal with issues raised in an open and transparent manner.

### a. How does the organisation deal with issues raised by its stakeholders?

P4 describes "The IAA is very open with its stakeholders more than a lot of other European Air Navigation Service Provides," also recognising it is a positive attribute to progress innovation strategies in air traffic management. P1 from a regulatory perspective describes any safety issue is progressed through the safety management unit (SMU) and they oversee and further progress the issue with the aviation regulator. While at a localised level P2 notes;

> "If it is within our gift, we can solve requests very quickly, sometimes issues may have to be escalated to the department of transport or the department of justice with regards emigration complications, it depends on the issues, but there are protocols."

At a local engagement level, P3 and P5 describe any difficulties are raised before or at meetings, any other business (AOB) or an action item in an open and transparent manner as described by Bowie (2012).

b. Could you give an example of when there was a conflict of interest between a stakeholder and the organisation? And How was it resolved?

Taxiway Zulu (Z) was built with little consultation with the stakeholders, a lesson to be learnt as described by P1. It was a size restricted (narrow) taxiway based on aircraft size, it was introduced by the airport authority and did not pass the air traffic providers safety management system. Aircraft would not be cleared by ATC to taxi using taxiway Z; however, the pilot could mistakenly taxi on it being size restricted could cause an incident. The taxiway was then closed for eighteen months, and day markers were placed to indicate to pilots it was closed. ATC developed a system solving its hazard identification, (RVM) Restriction violation monitoring through its advanced surface movement guidance control surveillance (ASMGCS) where an alert would go off in the tower; this resolved the ATC hazard. Taxiway Z was opened; however, pilots were taxiing on the taxiway without instruction by ATC, and the DAA had to close it and engaged with all stakeholders. In collaboration with all the significant stakeholder's taxiway Z was redesign and painted islands and procedures with the stakeholder resolved around the table. The conflict was resolved through a stakeholder engagement process, a lesson for all stakeholders as described by P4 and P5, engage at the onset and the consequences as illustrated by Sequeira and Warner, (2007).

During essential works on the runway 10/28 (reciprocal runways), P2 recounts a runway closure agreement from 7 pm each evening for the summer. It was thought it was agreed, however one carrier (long-range, heavy jet), due to loads and weather they could not take the shorter runway 16.

They could not guarantee if they required the longer runway 10/28 daily. Through engagement and collaboration with the airline, it was agreed that works would not commence until 9 pm. P2 outlined,

> "It is always our view the operation would take primacy over the works", and we will accommodate operators where possible."

TMA 2012 was a redesign of Dublin's airspace providing for more efficient use of airspace. During the implementing of the concept allowed for great efficiency with regards fuel savings on continuous climb operations (CCO) and continuous descent profile (CDO) while streamlining the air traffic.

There was a requirement to apply for an airspace change proposal which would change the classification of the airspace from class G to class C airspace. There was, according to P3, sparked a major conflict with airspace users. It was resolved through dialogue, stakeholder engagement by placing more class G airspace elsewhere. Airspace classification explanation of airspace can be seen in Appendix III.

### 6.8.1 Stage six - Summary - Respond and Implement

The literature suggests after consultation with the stakeholders; the organisation would formulate a plan to deal with issues raised in an open and transparent manner. Openness to discuss issues and concerns provides an opportunity for innovation and creativity, which the IAA openly embrace as recounted by the participants. The participants, while outlining an issue related to regulatory, are progressed through the safety management unit. There is a general recognition amongst the participants where issues can be resolved quickly; they are, it depends on the issue; however, there are protocols. Where a conflict of interest arises according to the participants, best resolutions come form face to face consultation an ability to lean in and engage.

## 6.9 Stage seven - Monitor, Appraise and Document

The literature recommends having a system to document, monitor and appraise the stakeholder engagement process, allowing for analysis and changes in the development of a progressive, sustainable stakeholder engagement process.

### a. How are the meetings and activities documented, monitored or evaluation in the organisation?

When in discussion with the communication for aviation regulator (CAR) or the safety regulatory division (SRD) all communication is through one office ensuring consistency with documentation and one point of contact as characterized by P2, the relationship is built with that office. P5 outlined “A single point of contact is really important,” particularly when dealing with the regulator or impending financial discussions.

The standard system of documenting meetings with stakeholder is through Microsoft Word application for minutes, agenda and action items, where action items must be closed off according to P1, P3 and P4. P3 describes the use of a facilitator in many projects who organises and compiles the documentation further noting from a regulatory perspective full documentation is a regulatory obligation. P4 is more critical of the closing of projects leading into subsequent projects. At the same time, both P4 and P5 agreed there is no formal system in place to record stakeholder engagement outside of the process discussed. P3 is of the opinion that flexibility can be lost with such systems and would be cautious about any flexibility constraints.

b. Would the organisation consider or see benefits using a system for documenting, monitoring and evaluation the stakeholder engagement process?

P2 is critical of cottage industries as they tend to implode while P3 is concerned with balancing it against a reduction in flexibility however P2 insistent on;

> "Ensuring consistency in the message at the operational level at the Dublin Airport Operations Planning Group (DAOPG) and the Airport Operators Committee (AOC) and from a planning perspective, the key is consistency."

P4 argues that Air Navigation Service Providers (ANSPs) and Safety Regulatory Division (SRD) processes require monitoring and shared monitoring of the processes. P4 recommends ANSP projects should consider additional time to satisfy SRD requirement due to project overruns while P1 and P5 propose a more formalised system between the ANSP & SRD.

c. How is the flow of information relayed from stakeholder meetings to operational or organisational departments?

P5, P3 and P2 are of the same opinion that traditional methods of minutes and verbal feedback on pertaining matters to either upstream or downstream satisfies both management and operational requirements whereby both receive the relevant and pertinent information required.

Monthly reports would form part the flow of information upstream in addition to verbal communication and various minutes of meetings as described by P2, P3 and P5. “The minutes should not be used as a banana skin for people,” as noted by P2 whereby a person could be sent the minutes of a meeting but on the periphery and unknowing be tasked without direct communication. P1 and P4 are more critical of the information flow and suggested the organisation is quite departmentalised where information does not flow or free flow. There are weekly and monthly meetings, however, information flow through various departments is recognised generally as departmentalised.

### 6.9.1 Stage seven - Summary - Monitor, Appraise and Document

The literature recommends having a system to document, monitor and appraise the stakeholder engagement process, allowing for analysis and changes in the development of the engagement process. From a DAA perspective, when dealing with the regulator according to the participants, all communication is through a single point of contact in one office, ensuring consistency. However, a highly regulated industry there are process and procedures from the IAA perspective with the regulator. There are no formal tools to monitor appraise and document other than minutes of meetings, agenda items and action items according to the participants however the use of a faciliatory helps convene projects and monthly meeting ensuring consistency as noted by the participants. There appears to be a contrarian view on the flow of information between the participants with some conveying satisfaction while others dissatisfaction, leading to the next question.

## 6.10 General question

### a. Would you agree that the stakeholder engagement process strengthens the organisation's reputation and mitigates against risk, enhancing safety and efficiency?

The IAA is one of the better Air Navigation Service Providers (ANSPs) at stakeholder engagement and is recognised in the industry as engaging amongst its peers and stakeholders as described by P1, P2, P3, P4 and P5. All the participants agree that a stakeholder engagement process mitigates against risk enhances safety and efficiency.

> "The risk in a stakeholder engagement process is not knowing there is an issue if one does not know there is a problem suggests a poor engagement with stakeholders for which the process is trying to avoid," as noted by P3.

Stakeholder engagement is a key enabler for success as described by P1 and P2. Stage one, planning is a vital segment where P4 suggests further emphasis should be placed particularly considering Covid-19 and the crossroads in air transport, emphasising a top-level understanding.

There is a need to be more open, it's a long-term situation and only through a mutual stakeholder engagement process as suggested by Jeffery, (2009) will provide a greater understanding and appreciation of what is ahead in the aviation sector.

### 6.10.1 General question – Summary

The IAA has a reputation amongst its peers and stakeholders to be open, innovative and creative in the air traffic management industry as noted by the participants. The participants describe the risk factor is not knowing where an issue exists, knowing this enables the organisation to be continuously engage and communicate with the stakeholders in an attempt to mitigate against risk. The stakeholder engagement process is an attribute vital for the successful progression in air traffic management, according to the participants.

## 6.11 Findings and Analysis Summary

The participants noted the vast number of stakeholders with contrasting priorities and cultures could be challenging however the ability to listen and appreciate other concerns is key to successful engagement and progression as described by Freeman (2015) and echoed by the participants. Noting the industry is heavily regulated, and engagement is a prerequisite in many cases notwithstanding there is a need to understand the wants and needs of the stakeholders. According to the participants, this is vital, the avenue to appreciate their wants and needs is normally at meetings or before, noting the IAA tends to be a driver of projects, their wants and needs are expressed at this stage. However, the participants described the conflict in this area is best solved by face to face dialogue through 'leaning in' and collaboration. On occasions as a service provider, they may iterate or pivot in favour of the airlines if not a regulatory requirement. Misalignment, as recognised by the participants, can be attributed to a lack of communication and probing throughout the process. Building trust and rapport as stated by Jeffery, (2009) is built over time and appreciated by the participants, building relationships outside of meetings is a necessity but ensuring all stakeholder are represented according to the participant ensuring the net is cast wide with an open invitation. Face to face meeting is the most preferable means of meetings; however, phones calls and email are an everyday tool in the engagement process.

It was also acknowledged by the participants that formal writing with no face to face engagement does not work. In light of COVID-19, the most popular meeting place is over TEAMS, Zoom and Skype as described by the stakeholders. It was acknowledged by the participants the process of stakeholder engagement mitigates against risk and strengthens the organisation's reputation according to the participants also noting although there are not policies or guidelines or formal systems to monitor document or appraise the stakeholder engagement process, it was acknowledged the current system and process is sufficient. Openness and transparency are embraced in ATC; it allows for Innovation and creativity a core value in the IAA; the stakeholder engagement process enables the development of the air traffic management network according to the participants. The following chapter, research discussion will argue research discovered with findings and analysis.

# 7 Chapter seven | Research Discussion

## 7.1 Introduction

The research discussion chapter will debate the research found in the findings and analysis detailed in chapter six and draw insights with support from the literature review, as described in chapter three. The purpose of the research discussion chapter is to appreciate and debate the researcher's findings in the area of stakeholder engagement in air traffic management in light of previously investigated research. A comprehensive discussion of the findings and analysis will be debated relative to thesis objectives while drawing on the literature for support and highlighting any outlier issues discovered.

The research objective seeks to understand and explore how a stakeholder engagement process provides Dublin Air Traffic Control with a platform to collaborate with stakeholders, working towards the delivery on its commitments under the SESAR JU framework.

## 7.2 Discussion

The structure identified by the researcher in the literature review chapter was further developed into seven themes, and sub-themes forming the questions for the semi-structured interview know as stages in the stakeholder engagement process. The researcher has kept the various stages intact for the research discussion chapter. The researcher attempted to merger numerous sub-themes under multiple headings while blending both the findings and literature yet debating key results and highlighting new insights in the summaries.

## 7.3 Stage one - Planning

Sequeira and Warner (2007) argue when planning a stakeholder engagement process, various considerations should be considered, such as, what are the obstacles; what are the aims; what if any legal obligations are there. P3 argues more often; there is a regulatory requirement, Eurocontrol (2019), to engage with stakeholders from an air traffic control perspective. P1 explains a lack of planning can impact other stakeholders and have safety implications in their experience.

During a recent review of the low visibility procedures at Dublin airport, an issue arose, however, resolved through face to face and a *leaning in* (P2) approach as described in the findings and analysis chapter. The participants stated early engagement with stakeholders should safeguard a smooth path forward. At the same time, P4 and Vladimirova (2019) reaffirmed stating, early engagement avoids disappointment, frustration, and penalising costs and essentially buy-in from stakeholders. If stakeholders are not fully invested early, problems manifest. Early engagement is critical in ATC as described by P3 and Stephenson et al. (2018). As outlined by Sequeira and Warner (2007), what are the obstacles; P2 describes the vast number of stakeholders concerning the DAA with varying priorities and different cultures can be challenging. Building trust, Mithas et al. (2019) was an essential challenge as described by P5, ensuring business continuity while endeavouring to identify any shortcomings earlier before issues escalate. P3 describes their challenges in air traffic control is an appreciation and understanding of the stakeholder objectives.

Tangri (2018) discusses stakeholder objectives, what reasons are there for engaging in the process. Furthermore, what are the various levels of engagement the organisation wishes to enter into, will it be local, national or international. Jeffery (2009) and Bowie (2012) argue for the process to be successful, it must be constructed based on shared values, vision, and best practice. P4 agrees with the literature while arguing the need to be involved at the beginning of the shared vision.

The participants describe how regulation plays a significant part in the process of engaging with stakeholders; for example, P1 describes every five years the DAA must meet all stakeholders, taking into consideration all the stakeholder concerns. Documenting these concerns forms part of regulatory submissions. The main objective of stakeholder engagement, as stated and agreed by all participants, is for progression. The participants argue progress occurs when objectives are aligned and buy-in from the stakeholders are present. The goals become collective, as described by Tangri (2018). The participants describe the establishment of various forums, having the right people at meetings that can make decisions. If stakeholders could *lean in* as noted by Philips et al. (2014), and P2 aiding the alignment of stakeholder objectives (de Gooyert et al. 2017).

Flexibility goes a long way to resolve challenges as noted by the participants and in keeping with an ethos of a willingness to engage as described the work of Jeffery (2009). The stakeholder engagement process adds value when there is early engagement and no last-minute surprises; this is key to adding value as offering strong support from the participants. P2 recommends setting the tone of trust, and equal partnership adds value. P4 claims getting the buy-in from all levels of the organisation leads to sustainable stakeholder engagement which is consistent with the work of Amaeshi and Crane (2006).

### 7.3.1 Stage one – discussion summary - Planning

Stakeholder engagement can be challenging from an organisational perspective with different priorities and cultural differences, as described by the participants. Furthermore, the participants acknowledge the regulatory obligations to engage with stakeholders in most of their activities. The participants outline a lack of planning can impact other stakeholders having safety implications from their perspective. It is clear from the findings chapter that there is strong support for the need to engage early, establish buy-in in order for a project implementation to be successful. This is consistent with the work of Vladimirova (2019) and Stephenson et al. (2018). Establishing mutual objectives and shared values at the beginning is essential for successful stakeholder engagement outcomes, as argued by Jeffery (2009), Bowie (2012), Tangri (2018) and the participants. Relationships are built on trust; the alignment of mutual objectives establishes positive traction in the engagement process as described by Amaeshi and Crane (2006), P5 and P4.

## 7.4 Stage two - Understanding Wants & Needs

Sequeira and Warner (2007) argue Identifying & understanding, wants and needs of all parties in the engagement process is vital for meaningful and sustainability engagement. Managing the stakeholder engagement process requires leadership, well-developed communications and diplomacy skills, according to Jeffery (2009). When visions are explained as suggested in stage one by Bowie (2012) and Philips et al. (2014), it encourages informed decision making, addressing Chang (2019) opinion were stakeholders do not choose or know what is theoretically best for them. The performance prism, as suggested by Jeffery (2009), provides the framework for establishing organisational and stakeholder Wants and Needs.

### 7.4.1 Addressing Wants and Needs

P3 acknowledges the IAA regularly drives projects, its Wants and Needs are addressed and heard at that stage. P3 advocates standard practice at monthly Dublin Airport Operational Planning Group (DAOPG) includes asking stakeholders if their Wants and Needs are being addressed to mitigate against surprises as described by the participants and Chang (2019). P2 uses this and similar forums to discuss DAA; for example, infrastructure rehabilitation wants and needs over the twenty-four months. Airfield rehabilitation works are a need; the infrastructure is reaching the end of its life, according to P2. P2 listens to the Wants & Needs of its stakeholders Sequeira and Warner (2007) and endeavours to facilitate the works on taxiways and runways at night or off-peak time when less impactful for the airlines and air traffic management (ATM). Care, Vista and Kim, (2019) and the participants describe compromising for the common good and building relationships outside of the meetings and communication are essential and keeping with the work of Stephenson et al. (2018). Unfilled promises Jeffery (2009) and communication breakdown or absence of communication will lead to stakeholder scepticism weakening the engagement process according to the participants and Philips et al. (2014).

### 7.4.2 Prioritising Wants and Needs

P1 relates the Wants and Needs to safety and echoed by Mearns et al. (2013), where safety requirements in air traffic control are a priority, notwithstanding P3 describes the prioritising of wants and needs around a business need taking the regulatory requirements as a given, priority. Business needs should be aligned with the objectives from a shared vision, as suggested by P4. Prioritisation of the Wants and Needs should be considered along with stakeholder expectations and the decision making processes, according to Jeffery (2009). P2 described prioritising operational needs when discussing the RAG map (Red, Amber & Green) indicative of requirements for rehabilitation airfield works. Red requires immediate action, while amber requires attention in the next twenty-four-month, and green identifies no current issue. The RAG map is communicated to all stakeholders regularly at various stakeholder forums. It is clear that the wants and needs of stakeholder vary as suggested by some participants. All requirements should be put into context and priorities accordingly, safety first, and the business requirements follow.

The operational needs have to remain a priority over wants from an organisational and stakeholder perspective. The airlines' primary concern is their On-Time-Performance (OTP) as indicated by the participants, any airfield works affecting OTP is an impediment for the airlines and air traffic management (ATM) according to some of the participants. Airlines pay the airports landing charges and pay air traffic control for their services; their operations must be protected as it impacts revenues and schedules. The scheduling has a knock-on effect on the European ATM network as described by some participants.

Tangri (2018) argues the importance of capturing knowledge, learning and sharing the experience throughout the process is vital to ensure a learning organisation; the ethos of Dublin Airport Operations Planning Group (DAOPG) as outlined by P3. The DAOPG facilitates a rotating chairperson indicative of a willingness to collaborate, offering openness and honesty to the process as described by Tangri (2018) and P3. P2 describes a great meeting is when the minutes of the meeting can be written in advance, where the work has been completed beforehand.

As discussed relationship are built on trust acknowledging Chang (2019) argument, stakeholders wants and needs can change due to various reasons such as the environment, economic or geopolitical events. Kim and Mauborgne (2015) uphold that motivated engagement with stakeholders is repaid by increasing their competitive advantage over time. While appreciating stakeholders' requirements may change the trust in the relationship acknowledge such while sticking to the process will increase competitive advantage.

### 7.4.3 Costs

As part of the DAA capital investment program, as noted by P2, they must engage with all stakeholders at least every five years. The forms part of their capital investment submission, which if successful, may increase landing charges to the airlines as outlined by P2. Capacity enhancing projects if supported by the Single European Skies (SES) program can attract funding, for example, Airport Collaborative Decision Making (A-CDM).

Dublin airport is an A-CDM airport as described by some participants. Mithas et al. (2019) emphasise A-CDM is a capacity enhancing process, improves air traffic flow and capacity management in Europe. The initiative reduces delays, improving punctuality by increased transparency and optimising European airspace and airports, as described by SESAR (2020). P4 argues there are hidden costs, a lack of cost transparency in these initiatives, and refutes ATM concepts by SES as not being sufficiently representative, which is consistent with the work of Jeffery (2009). Furthermore, P4 argues all stakeholders are not treated as equals which again aligns with the findings of the work by Philips et al. (2014).

P3 acknowledges costs are typically absorbed by the stakeholder accepting ATM enhancing measures as just that enhancing for the greater good. Consistent with the work of Gould (2012), P3 acknowledges that any innovative or capacity enhancing strategies or concepts must be considerate to the stakeholder cost. A specific example of this highlighted was during airspace redesign, a concept known as Point Merge aimed at improving the environmental impact, efficiency and capacity enhancing measures had an element that increased an aircraft flown mileage on missed approaches (aborted landings). Aborted landing is a safety measure reasons include debris on the runway, aircraft slow to vacate or last-minute wind speed and direction (wind shear). These cost infractions are typically accepted as there are more significant advantages than disadvantages.

### 7.4.4 Stakeholder Expectations

Managing expectation through effective communication is crucial to a sustainable stakeholder engagement process, according to Smith (2017), and this again found support amongst the participants of this study. P4 argues sharing information and buy-in on the objectives in its infancy provides common goals. The *ATC performance group* set up in Dublin recently considers stakeholder expectations which align with the work of Jeffery (2009) and Ghalem et al. (2018) coming from setting collaborative objectives, measuring fundamental performance matrix on the environment, punctuality and efficiency. This data would feed into the ATM network. Collectively setting goals has enormous potential, according to Loureiro, Romero and Bilro (2019).

It was interesting that while some of the participants were supportive of this argument, two, in particular, stated that it, their expectation is for smooth project implementation. All the study participants stated that their experience indicate better project outcomes when early stakeholder engagement and buy-in at an early stage occurs, all crucial elements, according to Morsing and Schultz (2006).

### 7.4.5 Key Performance Indicators (KPIs)

A universal consensus amongst the participants noted no specific KPIs for the stakeholder engagement process exist. Jeffery (2009) argues KPIs are a vital element for the success of a mutual and sustainable stakeholder engagement process, the absence of such suggests scope for improvement. P5 explains how the IAA measures their performance from the airline's viewpoint. The IAA conduct an annual customer satisfaction survey based on key performance indicators, namely safety, value for money, service delivery, innovation and customer service. The results provide the IAA with critical data around their service provision and endeavour to improve the service while managing expectations. The sample suggested their organisations have numerous KPIs from a business and operational performance perspective and Key Safety Indicators (KSIs) as described by P1 and P5 for regulatory compliance however differing from the suggested KPI as outlined by Jeffery (2009).

### 7.4.6 Stage two – discussion summary - Understanding Wants & Needs

Understanding the wants and needs of all stakeholders in the engagement process is crucial, according to Sequeira and Warner (2007) while managing the process takes leadership skills and charisma as noted by Jeffery (2009). P3 notes a driver of projects will have their requirements heard early; however, it is vital according to the participants to continually communicate and elicit stakeholder concerns. The continuity of two-way communications and buy-in on collective goals while having a shared vision as described by Bowie (2012), allows for a mutual sustainable stakeholder engagement process and is consistent with both the work of Philips et al. (2014) and the findings of this study but crucially as consistent with the idea of competitive advantage advanced by Kim and Mauborgne (2015). The participants argue the industry is highly regulated and safety requirement come first, and business requirements follow.

Air Traffic Flow and Capacity Management (ATFCM) initiatives typically cost someone; it depends on the project how costs are distributed; however, noting there is European funding for capacity enhancing projects according to the participants. Key performance indicators as suggested Jeffery (2009) do currently exist for the stakeholder process; however, the participants noted KPIs and KSIs are applicable in the various area from regulatory, business and performance standpoint.

## 7.5 Stage three - Internal preparation and alignment

Assuming there are common wants and needs, this stage can provide substantial benefits, according to Sequeira and Warner (2007). Commencing the stakeholder engagement process with recognised common wants and needs provides for positive engagement.

### 7.5.1 Communicating concerns

Participants in the study noted the Dublin Airport Operations Planning Group (DAOPG) and the Airport Operator Committee (AOC) meetings are suitable stakeholder forums to raise concerns while face to face or by telephone if it is a timely issue. Continuous communication cannot be overemphasised, according to Amaeshi and Crane (2006). Early and regular contact is vital to avoid last-minute surprises, and this was flagged by participants in the study. A specific example of this was provided by P2, who describes the upcoming snow and de-icing plans for the winter. The engagement process will start in September and publish the plans in late October, avoiding eleventh-hour changes is always a concern according to P2, emphasising communication and engagement is a two-way process consistent with the work of Smith (2017).

### 7.5.2 Aligning 'Wants and Needs'

P3 describes the IAA as a driver of projects in an effort to be Innovative and performance-driven. The wants and needs are addressed at the beginning and discussed at initial stakeholder meetings. The participants highlighted as a service provider, any adverse impact on their customers (the airlines) would typically require iteration offering another solution or pivot if needed. Within the sample, there was evidence that seeking feedback from the stakeholder provides some assurance of smooth project implementation.

P4 argues the process of alignment is quite imperfect at the industry level. At the top level, there is a belief that there is full alignment; however, this alignment becomes misaligned at a European level from stage 3 (Internal preparation and alignment) in the stakeholder engagement process. Kaliprasad (2006) suggests the misalignment could be a business strategy misaligned with the customers' needs, while Jeffery (2009) proclaims misalignment could be attributed to a lack of communication. The latter view found more support amongst the participants of this study who outlined the many competitive elements with the airlines leading to differing requirements, for example, airlines wanting their aircraft overlooked by the airport lounges for branding purposes. In contrast, some expect to have airbridges attached to their aircraft, different passenger experiences.

### 7.5.3 Effective ways to overcome challenges

Working together for the common good, as suggested by Arblaster (2012) on collectively designed performance measures is an effective way to overcome challenges, and this again found strong support amongst the sample. The participants of this study emphasised face to face meetings, and being open and honest are the most effective way to overcome problems with stakeholders. P2 describes transparency, building trust and no last-minute changes is most effective. No one glove fits all as noted by P2, what is essential to a middle eastern carrier would perhaps not suit a low-cost airline and vice versa. Appreciating stakeholder requirements is critical while building a stable relationship provides help overcoming challenges according to P5 and P3. P2 argues if stakeholders *lean in* a little to assist overcoming difficulties and genuinely collaborate Sequeira and Warner (2007), the provision of a better airport community can be achieved.

### 7.5.4 Stakeholder Policies and Guidelines

P3 describes their modus operandi with stakeholders at a project commencement meeting is first to outline what the project is about then explaining the collective benefits for the organisation and the stakeholders. This is the beginning of the buy-in process. Over time practice becomes the norm ahead of policy and guidelines, and this is consistent with the findings of Sequeira and Warner (2007).

All participants stated there are no organisational policies or guidelines relating to the stakeholder engagement process; however, regulatory compliance is paramount in aviation, according to this study's participants.

P1 described an issue discovered during the low visibility procedures review. A newly appointed document controller changed documents from a DAA perspective without regards to safety issues for air traffic control. This example was described in more detail in stage one (planning). The problem was resolved through face to face collaboration and revised procedures going forward. An effective way of developing policies and procedures according to Bendell and Huvaj (2018) is to draw policy and guidelines from shared stakeholder experiences avoiding the potential issues as described by P1 above. Stage four discusses building trust with stakeholders. Chang (2019) stated the relationships are built on trust and shared commonalities, and this will be discussed in further detail in stage four, next.

### 7.5.5 Stage three – discussion summary - Internal preparation and alignment

Sequeira and Warner (2007) advocate considerable benefits are forthcoming when there are mutual wants and needs. The early recognition of commonalities assists with relationship development, according to the participants. Regular communication is vital in establishing stakeholder requirements in an effort to reduce problems, particularly at the mature stage of a project. Early engagement allows for co-creation of objectives, according to Vladimirova (2019) and is consistent with the findings from this study. Interestingly, while the majority of the participants agreed they advocated eliciting regular stakeholder feedback ensures for successful project implementation with a higher degree of late problems avoidance. Misalignment can occur with lack of engagement, according to Kaliprasad (2006) while there was some evidence for this reported at a European level, sighting a drop off in the engagement process as it develops. The majority of participants highlight the different stakeholder requirements as challenging. Arblaster (2012) suggests overcoming conflicting challenges is best addressed by face to face and a degree of flexibility. P4 again argues the establishment of co-created values, a shared vision with collective objectives would resolve most misalignment issues.

The policies and guidelines as advocated by Sequeira and Warner (2007) are non-existent in their organisations according to the participants; however, as most of the participants are long-standing managers, they have over time created their ways of dealing with stakeholders. P3 described it as their modus operandi, Sequeira and Warner (2007) note policies and guidelines are standard practices forming policies and guideline over time.

## 7.6 Stage four - Building Trust

Danks, Rao and Allen (2017) argue building mutual respect, rapport and trust attributes built over time can be achieved by commonalities and shared interest. At the preparation phase, according to Noort et al. (2016) stakeholder concerns and expectations are identified also acknowledging Chang (2019), the stakeholders wants and needs can change for various reasons. There was some support for this view, and these are the reasons they will continually ask stakeholders if their wants and needs are satisfied.

### 7.6.1 Practical ways to build trust with stakeholders

Goffee and Jones (2015) emphasise the different levels of trust in organisations and with their counterparts. Amongst the sample in this study, there was support for the idea that people build trust with people and organisations. P2 and P5 argue if you say you will do something, do it. Unfilled promises, according to Jeffery (2009) and communication breakdown leads to distrust diminishing the stakeholder engagement process, and this approach is very much consistent with that of Philips et al. (2014). Open dialogue, an example P1 described when a stakeholder calls to say they have a problem, P1 commits to investigate the issue and return the call, not to fix the issue but to call back at an agreed time. That call is a promise to get back to the stakeholder. It is essential to build trust and get back regardless of no impending news; do what you say you will do. There was a suggestion that being brutally honest indicates to the stakeholder that they are trustworthy.

Kaliprasad, (2006) argues when creating a high-performance culture like in air traffic management (ATM) vulnerabilities should be recognised, interrupted, designed and embedded for all stakeholders. This provides grounds for valuing trust, and so there is potentially scope for honest and at times, brutally honest feedback. Evidence of trust was volunteered by some participants, while other participants expressed issues of commercial sensitivity.

P1 describes a recent agreement by DAA to allow Dublin ATC to integrate part of their system into the new air traffic management system in the Visual Control Tower (VCT). A clear demonstrated a high-level breakthrough in recent times, while also acknowledging the positive working relationship between the DAA and Dublin ATC. Covid-19 has since devastated the air transport industry, due to financial constraints this initiative and associated costs have delayed the agreement by several years. There was a heightened awareness amongst participants that the airlines as commercially sensitive and reluctant to disclose any commercially sensitive information. Stephenson et al. (2018) describe the new route development process, as costly and commercially sensitive, particularly when findings indicate a profitable route. An airline may have to divulge certain information, a significant piece of the jigsaw may be an element required from the Airport Authority. This information if disclosed is commercially sensitive indicative of the trust relationship between an airline.

Regularly at the Dublin Airport Operations Planning Group (DAOPG) trust is expressed amongst stakeholders. For example, when there was an airspace redesign for enhanced ATM measures, it increased the mileage specific aircraft had to do on a go-around (when the aircraft does not commit to land and tries again). The airline accepted and absorbed the cost for the overall benefit of ATM development process.

### 7.6.2 Trust and information sharing

Stephenson et al. (2018) outline relationships grow when Air Traffic Management (ATM) stakeholders are sharing information and intelligence. Participants spoke about the natural telephone conversations which occur between stakeholder, which sometimes reveal essential information. This information has resolved many issues where resources were reallocated to better operational use.

The DAOPG is a prime example of an open and transparent flow of information in this regard, according to participants. There was general agreement regarding this among participants who described evidence of trust, which can be seen when other Air Navigation Service Providers display openness as to the real capacity issues they are experiences with Eurocontrol. One participant noted that although the airlines are competitors, the airlines would more likely achieve their respective On-Time-Performance (OTP) if they collectively addressed issues relating to operational impediments rather than dismissive of the other problems. Since the establishment of safety management systems, stakeholders are very protective of their data. That said there can be a reluctancy to share information to protect corporate interests. Compliance with safety management principles goes hand in hand.

### 7.6.3 Stage four - discussion summary - Building Trust

As suggested in the literature building trust and rapport occurs over time acknowledging stakeholder concerns can change over time due to various reasons as stated by Noort et al. (2016) and Danks, Rao and Allen (2017). The participants suggest doing what you say you will do provides reliability from a stakeholder perspective coupled with open and frank dialogue helps build trust. Furthermore, the participants gave trust-related examples indicative of successful engagement protocols. Stephenson et al. (2018), sharing information and intelligence provides for a progress air traffic management system. P4 suggested although airlines are competitive, working cohesively on common issues would likely achieve their respective On-time-performance (OTP).

## 7.7 Stage five - Consultation

Sequeira and Warner (2007) and Jeffery (2009) describe stakeholder consultation is inclusive of being representative, responsive, context-focused, completed, realistic and documented. Consultation requires a proficient mediator, negotiator with statesmanship and communication skills with an ability to draw out key issues to consider during and after consultation as described by Amaeshi and Crane (2006).

### 7.7.1 Representation

An open invitation at the earliest stage of projects is essential, cast the net wide as possible. There is a recognition amongst the participants the safety regulatory division (SRD) and safety management unit (SMU) should be invited into the process early and throughout the process to alleviate project setbacks. Furthermore, recognising EU regulation 2017/373 is a significant issue acknowledging historical, cultural differences between SRD and ANSPs. The problems stated above by P4 are observations more than experiencing them; however, project delays occur time and time again. Sequeira and Warner (2007) outline all stakeholders concerns should be appreciated and heard. P2 noted from a regulatory perspective; stakeholders have to be represented at least every five years. For one week, the DAA would engage with a large number of stakeholders; this process forms part of an investment development submission by the DAA to the regulator.

P3 emphasis the universal email list of stakeholders invited to the Dublin Airport Operations Planning Group (DAOPG) meetings account for almost all operational stakeholders at Dublin airport; all are welcomed; however, not all attend. All the stakeholder regardless of attending are sent the minutes, action items and agendas. P1 noted at the runway safety team meetings, the Irish Airlines Pilot Association (IAPA) do not attend; however, in his experience, pilots 'wants and needs' are represented by various airline captains.

### 7.7.2 Methods of engagement

Sequeira and Warner (2007) suggest a series of consultative methods could be used in the engagement process. The participants in this research use the following: telephone, email and most effective is face to face, focus groups round table and occasional teleconferencing meetings. Participants noted that many sub workgroups materialise from the DAOPG or NTRP (New Tower Parallel Runway) meetings to investigate various concerns. It was found that most participants believed the traditional formalised written communication no longer works in isolation without round table engagement. The three most common forms of meetings since COVID-19 has been a combination of Microsoft TEAMS, ZOOM and Skype. A number of participants highlighted some noteworthy positive consequences to COVID-19 and the work environment that the literature did not pick up on.

Recognising IT has the benefit of monitoring and reporting progress however the drawback is the lack of ad hoc informal 'water cooler moments' as suggested by Hodge (2020) and face to face interaction which is difficult to replicate digitally. Hodge (2020) describes hybrid working a new term used to define the new working arrangement split between home and office. Martine Hass professor of management at the Wharton School, Pennsylvania, suggests an existing working relationship can last for some time online; however, for recruits, this relationship is more challenging to establish and maintain.

Technology companies are furiously working to bridge the gap using virtual reality, according to Hodge (2020). Head of Marketing at Asana, a project management company Dave Kings suggests there is a requirement for three C's for collaboration, communication, content and coordination.

Hodge (2020) claims several organisations can provide these tools, namely G Suite by Google, it allows for multi-users to collaborate and work on the same document at the same time. Slack provides instant messaging while Microsoft offers supporting software TEAMS and Asana, providing a project management platform for the whole organisation. Skapinker (2020) describes the poll results of the Global Business Travel Association in June 2020. The result indicated 60 per cent of companies would restart their domestic business travel arrangements in approximately three months. However, 44 per cent stated that international travel was less clear, cautiously suggesting six month and unclear whether they would be resuming international business travel at all. Skapinker (2020) further indicates that business travel will resume; however, to what degree is the unknown. The results of this poll are indicative of the sentiment of the business community; it would appear unlikely that business travel will return to pre-COVID-19 levels, particularly in light of the virtual reality phenomena as stated by Hodge (2020).

### 7.7.3 Responsive to organisational and stakeholder concerns

Noort et al. (2016) describe responsiveness as joint responsiveness to both stakeholder and organisational concerns as part of the mutual stakeholder engagement process. All matters are addressed either on the phone if raised or raised at meetings. Actively seeking out stakeholder engagement concerns in an open and transparent manner is how some of the participants sought to conduct their round table meetings, mainly asking those less vocal.

If an issue requires action an action item is opened which must be closed at a later date. The open and transparent active responsiveness is in an effort to mitigate against last-minute issues.

Ayuso et al. (2011) describe when accessing new knowledge through responsiveness to stakeholder concerns, it should be given due consideration. P1 recalls a subgroup was set up to investigate the viability of real-time (Instant) wind readout versus the standard two-minute average. This became an action item of the DAOPG; the subsequent subgroup investigation concluded to leave the current procedure in place. The air accident investigation unit found in an accident involving a German aircraft using instant wind readouts was a contributing factor to the cause of the aircraft crash. This was an example of responsiveness supplied by P1 given due consideration to stakeholder matters. The importance of action items was inferred to by the majority of participants from a collective perspective as it is representative of openness and shared values. There are specific characteristics of action items; they are assigned to a someone, have a closing date and reports of any difficulties identified.

There was an acknowledgement of the varying levels of stakeholders by the participants consistent with the work of Clarkson (1995); not all stakeholders are required to know all the details at implementation hence the different levels. However, P4 in response to the question posed by the researcher, recognises the lack of IAA and DAA public statement about environmental issues relating to their operations and the use of the new runway at Dublin airport. A statement to merely addressing public concerns, the secondary stakeholder, according to Clarkson (1995) to on environment issues stating how the new runway will be used in the most environmentally friendly way when it opens. Aviation environmental issues are of great concern with the European Commission also in the public domain are campaigns like flight shaming and the Greta effect as described by P4 which is consistent with the work of Vladimirova (2019).

### 7.7.4 Context focused and realistic issues

P1 describes the aviation community as realists, pragmatic and safety focussed. On occasions, unrealistic expectations are expressed for commercial reasons yet adversely affecting other operators. This is in contradiction of Jeffery (2009) description of the mutual stakeholder engagement process. The majority of participants noted there is a mutually agreed policy with regards the winds, in particular tailwind & crosswind tolerance on the active runway at Dublin airport. Outside of the accepted tolerance, ATC will change the active runway.

P1 explains newer aircraft designs and larger aircraft (heavy jets) are less tolerant of the agreed wind tolerance. Chang (2019) describes the stakeholder wants, and needs may change for various reasons, this may be an example of revisiting previously agreed wants and needs. Unplanned runway changes can have a significant effect on the flow of traffic inducing delays and direct costs to airlines; unforeseen runway changes are kept to a minimum particularly in peak season where 850 flights a day are not uncommon prior Covid-19. It was further noted peak summer traffic is likely to be less than 350 aircraft movements periodically in the summer of 2020 at Dublin airport.

P3 reflecting on the question describes the Dublin Airport Operations Planning Group (DAOPG) has enabled concerns to be more context focused and realistic with the odd exception as discussed. Meeting the same people at monthly meetings has created a culture of realism and context centred; however, short term priorities (unrealistic expectations) have been noted by the participants. Sequeira and Warner (2007) emphasise organisational, and stakeholder expectations must be realistic while engaging in good faith. A sign of strength in the stakeholder engagement process is the acceptability of what is on the table or not on the table. It also signifies clear and defined boundaries, according to Jeffery (2009). The consultative process should produce *material*, documented evidence of activities supportive of any initiatives.

P3 further describes an unrealistic expectation Jeffery (2009) during runway rubber removal works, there was a requirement to inspect the runway by walking the runway as stipulated by the regulator due to runway shelf life. The unrealistic expectation was this runway walk could be conducted whenever the DAA wanted. This was unrealistic, a mutually agreed procedure allowed for runway walks being accommodated during low levels of traffic.

### 7.7.5 Completion

A lot of Air Traffic Control activities are regulated, records are kept and once agreed are signed off. P3 outlines at the end of a project, there is a project review, and any actions are closed at that point. When airfield works are completed, the DAA cross-check documents against specifications once verified; the airport authority assumes responsibility for the area of works. Any works on the airfield for example from an ATC perspective would include a temporary work instruction (TWI) which would be distributed to all staff containing a detail of the works involved the commencement and completion dates and times outside which the restrictions are lifted for operational.

### 7.7.6 Stage five – discussion summary - Consultation

Consultation is a term used by Sequeira and Warner (2007) and Jeffery (2009) to include representative, responsive, context-focused, completed, realistic and documented. The participants acknowledged a regulatory requirement to engage with stakeholders on many of the organisation's activities. Dublin ATC is invested heavily in the stakeholder engagement process with an open invitation policy. The methods of engagement, as noted by the participants are records of meetings, action items and agenda which are circulated to a comprehensive email list regardless of meeting attendance. Since Covid-19, TEAMS, ZOOM and Skype are the preferred method of meetings according to the participants. Actively seeking out stakeholder concerns and regular communication helps ensure smooth project implementation. Stakeholder concerns are documented openly and further investigated if warranted. As noted by the participants, in aviation, people tend to be realists and context focused; however, as indicated by the participant some short terms bias protrudes, and examples were offered indicative of such.

The industry being highly regulated completion rigorous documentation is a prerequisite. Outside of regulatory-related issues, action items, for example, would have a closing off date and any related difficulties are documents as suggested by the participants for all to see.

## 7.8 Stage six - Respond and Implement

The consultations stage outlines five key areas, including representation and identification of concerns. Stage six formulates a plan to deal with concerns raised in an open and transparent manner, as described by Jeffery (2009).

### 7.8.1 Dealing with raised issues

Dobbin and Kalev (2016) declares active social accountability as a means of dealing with a course of action surrounding formulating and make clear how the organisation will address stakeholder issues. There were acknowledgements that the IAA is very open and transparent with its stakeholders more so than most Air Navigation Service Provides. A positive attribute for creative and innovative strategies in air traffic management.

P1 from a regulatory perspective describes any safety issue is progressed through the safety management unit (SMU) where they oversee and further progress the problem with the aviation regulator if necessary. At a localised operational level participant describe if stakeholder issues can be resolved quickly then they do so; otherwise, it can be escalated to the department of transport and or department of Justice, suggesting it depends on the issue however protocols are in place. P3 and P5 describe how issues are raised at or before meetings if needed an action item is opened, and possibly, a sub workgroup may be established to address the concerns mutually. All issues should be dealt with in an open and transparent manner as described by Sequeira and Warner (2007) and Bowie (2012), and evidence of this was found within the current sample.

### 7.8.2 Conflict resolution

Jeffery (2009) and Dobbin and Kalev (2016) acknowledge dealing with differentiating issues can be challenging; however, P2 suggests a willingness to *lean in*, engage face to face in a delicately and timely manner. The participants revealed some thought-provoking examples of conflict resolution. Taxiway Zulu is an example P1 describes were poor execution of stakeholder engagement occurred; however, a learning curve for all stakeholders. The taxiway was built; it was a size restricted (wingspan).

The taxiway did not pass the safety management system in Dublin ATC; therefore, ATC could not use it. The safety issue identified was an aircraft would not be cleared by ATC to use it; however, a pilot could mistakenly taxi on it and cause an incident. The taxiway was then closed for eighteen months and barriers put in place to indicate its closure. ATC developed a system solving their hazard identification, (RVM) Restriction Violation Monitoring where an alert would go off in the tower reporting any violations; this resolved the ATC hazard. Taxiway Z was opened yet, pilots started taxiing on the taxiway without instruction by ATC, and the DAA had to close it again. In collaboration with all the significant stakeholder's taxiway Z was redesign with painted islands along with new procedures. They resolved the issue face to face around the table. There is strong evidence from the sample and is consistent with Sequeira and Warner (2007) whereby early engagement is vital with stakeholders; this example demonstrates the consequences and repercussions through lack of stakeholders engagement.

P2 describes an agreement to close the main runway from 7 pm daily for the summer to facilitate essential runway works. An airliner (long-range, heavy jet), late in the process, due to weight and weather they could not take the shorter runway and could not guarantee if they would require the main runway daily. Through engagement and collaboration with the airline, it was agreed that works would not commence until 9 pm. The movement of two hours many appear non-controversial however factor in thirty contracts, machinery and the asphalt curing process, time is precious. P2 maintains the operation takes precedent over the airfield works, and they need to facilitate Freer et al. (2014) the operators where possible.

As part of an ATM initiative to increase efficiency and streamline the arrival traffic at Dublin, required a redesign of airspace according to P3. It involved a change in airspace classification (the use of airspace). P3 outlined, major conflict ensued with some airspace users. It was resolved through dialogue, thereby providing support for de Gooyert et al. (2017), and compromise by placing more class G airspace elsewhere. Appendix III, Classification of airspace.

### 7.8.3 Stage six – discussion summary - Consultation

How organisations respond and implement concerns raised by stakeholders clearly and openly, according to Dobbin and Kalev (2016) is social accountability. The participants acknowledge the IAA is open and transparent in dealing with its stakeholders. Issues are openly discussed at various forums, and where required, a representative subgroup will investigate the problem of mutual concern to the stakeholders according to the participants. Early face to face engagement, collective objectives and flexibility to lean in as described by participants. The participants gave examples of scenarios dealing with conflict resolution in a collaborative and effective manner, ensuring a sustainable mutual stakeholder engagement process.

## 7.9 Stage seven - Monitor, Appraise & Document

The importance of tracking and recording activities provides the ability to evaluate the effectiveness of the engagement as sighted by Sequeira and Warner (2007) and Jeffery (2009). Menozzi et al. (2017) argue the knowledge management systems available are particularly important when documenting how issues were resolved, the ability to quantify various elements of the process, such as efficiencies, costs and time spent on activities.

### 7.9.1 Methods of documenting, monitoring and evaluation

Participants claim communications are more formal and structured when dealing with the regulators. All communication in the DAA is through one office for consistency in documents, monitoring and evaluation having a single point to point contact is essential. P5 notes a single point of contact during stakeholder engagement is crucial. P3 highlights the appointment of a facilitator to projects and monthly meetings, for example, the DAOPG and NTRP meetings.

The facilitator, as described by Amaeshi and Crane (2006), provides a helicopter view, communication skills and an ability to draw out key issues. P4 is more critical of closing off, and the review of projects yet acknowledges the work gets done. There is support from the participants suggesting, what we have works and provides flexibility, however in certain circumstances a more formalised knowledge management system as described by Sequeira and Warner (2007) and Jeffery (2009) would be advantageous. P2 is critical of cottage-type industries when describing these types of systems.

The participants are consistent with their view; the levels of consistency in the message to stakeholders are essential. P4 maintains the processes between the regulator and air navigation service provider (ANSP) requires monitoring, shared monitoring as described by Sequeira and Warner (2007) and Menozzi et al. (2017). There should be additional time allocated to projects to satisfy the regulator as claimed by P4. There was a recognition by participants in certain environments a more formalised method should be applied. Such a system, as suggested by Menozzi et al. (2017) is needed to jointly monitor the shared processes between the regulator and the ANSP.

### 7.9.2 Unleash the flow of information

The traditional methods of circulating minutes are common practice along with action and agenda items in the regular stakeholder engagement operational environment according to the majority of participants. P2 suggest the minutes of a meeting are the record; however, the action items induce accountability; there is no hiding. Furthermore, P2 notes the minutes of meetings should not be used as a banana skin which can occur if on the email list yet have not read the minutes. P3 describes the flow of information upwards is by monthly reports, and any pressing issues are brought forward directly before then. P4 acknowledge the flow of information with monthly meetings and reports however critical of the information flow in the describing the departments as silos which is not in keeping with the ethos of Freeman (2004), Sequeira and Warner (2007) and Jeffery (2009).

### 7.9.3 Stage seven – discussion summary - Monitor, Appraise & Document

The ability to track and record stakeholder activities which can be later evaluated and appraised is crucial according to Sequeira and Warner (2007) and Jeffery (2009). The knowledge management system, as referred to by Menozzi et al. (2017), provides the records enabling sustainability of the stakeholder process. As acknowledged by the participants, there are no formal knowledge management systems; however, stakeholder meetings have convenors who records and guide the meeting, addressing any relevant issues. The participants noted at each meeting, minutes (record of the meeting), agenda items and action item which have specific characteristics (assigned to someone, have a closing date and a history of any difficulties incurred). The information flow is through the said methods above as described by the participants, action items by the departments feed into upward on monthly reports or phone calls for pressing matters or office notices to operational personal as required. P4 is critical of the flow of information across internal departments as though operated independently.

## 7.10 General Question - Risk mitigation and enhancing safety and efficiency with Stakeholder engagement

The participants acknowledge the IAA is one of the better Air Navigation Service Providers (ANSP) with open and honest stakeholder engagement processes while adding it contributes to risk mitigation. Morsing and Schultz (2006) proclaim the co-creation of processes and procedures allows for a greater scope of efficiencies in Air Traffic Management. Successful outcomes in air traffic management come from stakeholder engagement; therefore, the process is a key enabler for success. P3 and P4 advocate the risk in the stakeholder engagement process is not knowing there is a problem which P3 suggest is a sign of poor engagement practices. Covid-19 has brought the air transport industry to a crossroads requiring a top-level understanding according to P4 and P1. There is a need to be more open; COVID-19 has a long-term situation. Through a mutual stakeholder engagement process at industry levels throughout Europe, as suggested by P4 will prove beneficial for the aviation industry.

### 7.10.1 General Question - summary

Co-creation of processes and procedures provides enormous scope for mitigation against risk and increased efficiency as described by Morsing and Schultz (2006). The participants argue the stakeholder engagement process is a key enabler for a successful outcome and risk mitigation in air traffic management.

## 7.11 Discussion Conclusion

The participants sighted the number of stakeholders can be challenging with different priorities and different cultures. Regulatory requirements insist on stakeholder engagement for most activities in ATC. Stephenson et al. (2018), Vladimirova (2019), and the participants acknowledge early engagement is vital for stakeholder buy-in. Jeffery (2009), Bowie (2012), Tangri (2018) argue the establishment of a shared vision and mutual objectives provides for a sustainable joint stakeholder engagement process. The participants noted early stakeholder engagement is crucial for establishing and aligning wants and needs. At the same time, Jeffery (2009) argues the process requires strong leadership skills for building relationships and addressing the concerns of stakeholder. The project initiator normally absorbs project costs. However, occasionally these costs are absorbed by the stakeholder in the context of ATM capacity and efficiency-enhancing projects which may attract European funding. Although KPIs pertaining to the stakeholder engagement process as suggested by Jeffery (2009) does not exist in the context of stakeholder engagement, however, do exist for business, regulatory and performance purposes.

The literature claims significant benefits come from the alignment of mutual wants and needs according to Sequeira and Warner (2007), Vladimirova (2019) and the participants. Proactively seeking feedback from stakeholders ensure for smooth project implementation according to the participants. Different challenges are best overcome by face to face and a degree of flexibility, as noted by Arblaster (2012). Conflict can be reduced when there is a shared vision and co-created objectives, as described by Sequeira and Warner (2007). Although no official stakeholder engagement policies exist most the managers have their modus operandi from personal experience with stakeholders which according to the literature, procedures and guidelines are standard practices making policies and guidelines over time.

Apart from regulatory obligations, ATC proactively engaged in an open invitational transparent manner with its stakeholders, eliciting concerns regularly to mitigate against 11th-hour changes. Face to face round table is a standard method of stakeholder meetings, however outside of meeting the telephone and email are the instruments of choice according to the participants. In recent time the move to online platforms for meetings resulting from COVID-19. The participants recognised there were no knowledge management systems, as suggested by Menozzi et al. (2017). However, regular stakeholder engagement meetings are documented by minutes of meetings, action and agenda items as described by the participants. P4 outlined there ought to be more transparency yet formalised mutual process between the regulator and air navigation service provider to limit project overruns due to regulatory issues.

The participants describe the IAA as open, honest and willing to listen and address stakeholder concerns and conflicting issues. Furthermore, the participants, while recognising face to face and collaboration being the most effective methods of engagement. Limiting conflict comes from a shared vision, co-creation of objectives from the beginning according to the literature and participants. The researcher found the literature thin concerning engagement with regulatory bodies.
The stakeholder engagement process with the regulator requires a more transparent yet formal process, associated structures inclusive of a knowledge management system with a semi-rigid framework, as suggested by Menozzi et al. (2017).

The limitation from an organisational perspective includes a lack of structure in the process; the system works; their modus operandi and their learnt experiences. Sequeira and Warner (2007) research on policies and guidelines state they are regular practices forming policies and guidance over time. The researcher is of the mindset where a process is working well use the learnt practices. Construct policies and guidelines around them, giving structure to the process for a sustainable stakeholder engagement framework furthermore. This mindset logically follows through to the example given by P1 in the scenario discussed in stage three, of a new document controller changing documents in one organisation affecting another with safety implications. The DAA could do with the same policy and guideline processes as suggested for a sustainable stakeholder engagement process.

The aviation industry is in flux resulting from COVID-19 with many redundancies and severance packages in the industry. There will be a lot of expertise lost, and without proper policies and guidelines, the stakeholder engagement process as exists may find new challenges going forward.

The final chapter in this research project furnishes the reader with a conclusion, limitations found, future research areas and recommendations. The recommendations will afford the organisation with additional strengthening propositions to an existing, fully functioning stakeholder engagement process.

# 8 Chapter eight | Conclusion, Limitation, Recommendations & Future research

## 8.1 Introduction

The purpose of this study was to explore and understand how a stakeholder engagement process provides Dublin ATC with a platform to collaborate with stakeholders, working towards the delivery on its commitments under the SESAR JU framework.

The findings suggest that although conflicting stakeholder priorities and cultures are challenging from an organisational perspective the ability to listen and reconcile differences is the key to a successful stakeholder engagement process as described by Jeffery (2009). The aviation industry is highly regulated; many of the organisation's activities are regulatory required to engage with stakeholders. Stakeholder engagement is about relationships and building trust as outlined by Sequeira and Warner (2007), where there is conflict, the best solution is face to face dialogue and the ability for all sides to *lean in* and learn to collaborate. A lack of communication can lead to misalignment of expectations from stakeholders leading to unsuccessful project outcomes. Successfully project outcomes are derived from a continued effort on the part of the organisation to ensure that all the wants and needs are being addressed, ensuring smooth project implementation.

An interesting finding during this study with the Dublin Airport Operations Planning Group (DAOPG) as an unplanned consequence of its monthly meetings and activities had changed the attitudes of many of the stakeholders to be more context focussed and realistic in their expectations (Jeffery, 2009). Another interesting finding was during COVID-19 lockdown business had to rely on online platforms, primarily Microsoft TEAMS and Zoom being most popular. As noted some IT benefits, the ability to monitor and report progress, while the face to face ad hoc water cooler moments as suggested by Hodge (2020) interactions are difficult to replicate digitally. Another interesting finding although no stakeholder engagement policies or guidelines exist the managers working on their modus operandi, this works well to a point when that person leaves the organisation and there are no policies and guidelines as occurred in the example given in Chapter 6, Research Findings.

## 8.2 Limitations

A clear limitation of this study was the limited sample size and the ability to get a larger cross-sectional European perspective. It was planned to interview participants while attending a pre-scheduled Eurocontrol May 2020 meeting in Brussels. However, due to COVID-19 pandemic, the meeting was cancelled, hampering the ability to meet and contact the participants, both work and governmental restrictions were too prohibitive, contact was not unforthcoming. Therefore, the researcher was unable to attain a fuller European perspective in the area of stakeholder engagement in air traffic management, reducing this study's sample size. Yin (2016) argues a research study gains value even with a single participant; this study provided five participants.

The focus was on Dublin air traffic control, prohibitive from a European aspect; however, the title was from a Dublin air traffic control viewpoint. A broader, fuller European perspective would have benefited the study as Europeans we have to satisfy the same objectives set by the Single European Skies (SES) and another perspective would have provided for richer data.

Tracy (2020) argues human researchers and their methods lead to bias coming from familiarity, furthermore, working in the organisation implies bias, whether positive or negative as is the case with the researcher. The researcher limited bias by relying on the framework of Sequeira and Warner (2007) and (Jeffery, 2009). The research questions were developed from the literature around the stakeholder engagement process further limited bias yet keeping within the said framework.

During the first interview, the researcher discovered a technical difficulty during the interview; however, did not draw attention to it, putting right the issue and continuing unbeknownst to the participant. The technical issue resulted in a fifteen-minute gap in the fifty-five-minute interview recording. The researcher wrote down soon after the interview while it was fresh in their mind details of the interview before transcribing. However, this led to a limitation and bias in this study. The researcher sought to clarify certain elements in the interview, as outlined in the information letter with the participant. This provided the researcher with adequate data to mitigate against any undue bias that may have resulted if clarification had not been sought.

In light of COVID-19, work-life restrictions and the absence of face to face was a limiting factor in the interviews according to the author. Qualitative research, as described by Bryman and Bell (2011), is time-consuming yet the ethos and benefits, as suggested by Yin (2016) of rich information data outweigh any time-consuming elements. The author is of the belief and consistent with the work of Hodge (2020), face to face interaction is difficult to replicate digitally hindering feelings and impression lost in a digital interview. According to the researcher, the absence of face to face was a limiting factor in this study. The following section will provide areas for future research.

## 8.3 Future research directions

This study has suggested and enhanced an existing stakeholder engagement framework as outlined by Sequeira and Warner (2007) and Jeffery (2009) and proposed a conceptual model based on the findings within the complex environment of air traffic management as a stated objected of this study. Future research in this area should consider the following area;

- A desired sampling size, as noted by Yin (2016), should be representative of an intended population. Further research should consider a wider range of participants/stakeholders combined with wider European participants/stakeholders' approach to allow for a broader perspective.

- A mixed-method approach of research would provide a varied and more comprehensive study with regards sampling size and data capturing. The mixed method would provide greater scope in capturing data from those less confidence in the interview process, yet the research records their rich data. Also, participant time limitations could be a contributory factor in refusing an interview, yet completing a questionnaire, for example, would allow the data to be recorded when suitable for the participant.

- Eurocontrol has forty-one members, and two comprehensive agreement states Eurocontrol (2020), this study did not include cultural differences because of the cancellation of meetings in May 2020, due to COVID-19. Future research in this area ought to be considered. Although Asia, not a member state, have significant airlines operations in Europe. The European and Asian perspective would add great value while the Asian cultural differences vary considerably to Western society would furnish an additional perspective, as noted by Yin (2016).

  This would build towards a more unified globally stakeholder engagement framework tailored to meet the needs not only of the Single European Skies (SES) initiatives in air traffic management but provide a global framework for future ATM.

- Air Traffic management is a complex environment; a future study may consider studies in other complex environments from a stakeholder engagement process perspective. The more evidence from complex environments would be supportive in the context of a stakeholder engagement process.

The researcher developed a spreadsheet containing almost 100 references, with a breakdown of literature title, author, year and keywords in the article. The spreadsheet provides a strong basis for further research from a literature perspective. Any student or academic could use this as their base adding more recent data. The spreadsheet can be found in Appendix V.

## 8.4 Recommendations

The researcher is recommending these points as a result of this research study. The recommendations have been identified at an organisational level in an effort to iterate and enhance the stakeholder engagement process at an operational level in the IAA, indicative of a learning organisation (Tangri, 2018). These recommendations will provide a rigid framework around the stakeholder engagement process enabling the IAA to further cement a robust platform for Dublin Air Traffic Control to deliver on its commitments under the SESAR JU framework.

The following recommendations include;

1. Develop and Implement a stakeholder engagement policy and guidelines in line with best practice.

2. Develop shared objectives with operational stakeholders in a joint ATM vision for the future.

3. Develop and implement key performance indicators (KPIs) around the stakeholder engagement process.

4. Implement a knowledge management system between the ANSP and SRD.

5. Develop and implement policy and procedures on project management to be read in conjunction with stakeholder engagement policy and guidelines.

6. Improve Interdepartmental communications.

Most of the recommendation can be developed and implemented with in-house expertise and advice from Eurocontrol. Third part consultation may be required as inferred by Jeffery (2009).

## 8.5 Personal learning statement

This was by far the most challenging academic piece of work I have ever completed. It is a marathon, not a sprint. I have learnt so much both academically and personally. There were times of joy and despair throughout the dissertation process. I broke things down into more manageable pieces, coupled with sheer determination and grit; one gets there. The endorphin rush when a portion of work is completed provided motivation to push to the next piece of work. My supervisor, Colette a tower of inspiration, early days I was told it is about getting it over the line. We did just that. I am delighted to have completed this body of work and grateful and appreciative to all who played a hand in it. Thank you.

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# Appendix I – Information letter

Dear Sir / Madam

I am currently studying part time at the National College of Ireland (NCI) in Dublin, undertaking a Master of Business Administration degree course. As part of my studies I am required to undertake a research dissertation. I work at the air traffic control centre in operations at Dublin airport. I would like if you would consider being a participant in my research study as part of my dissertation. Please find below some details of the research area.

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**Purpose Statement:** The research seeks to understand and explore how a stakeholder engagement process provides Dublin ATC with a platform to collaborate with stakeholders, working towards the delivery on its commitments under the SESAR JU framework.

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**Request:** I am asking you as an individual of your organisation to participate in a semi-structured interview to support in this research. All data collected and the participants are strictly confidential and anonymous. The participants can withdraw from the process at any time without question. The interview will take approximately thirty minutes and will be covering the areas around stakeholder engagement (please find attached sheet). If you have any queries, please do not hesitate in contacting me at X18158315@student.ncirl.ie or on my mobile at 08X XXXXXXX.

Kind Regards

_____

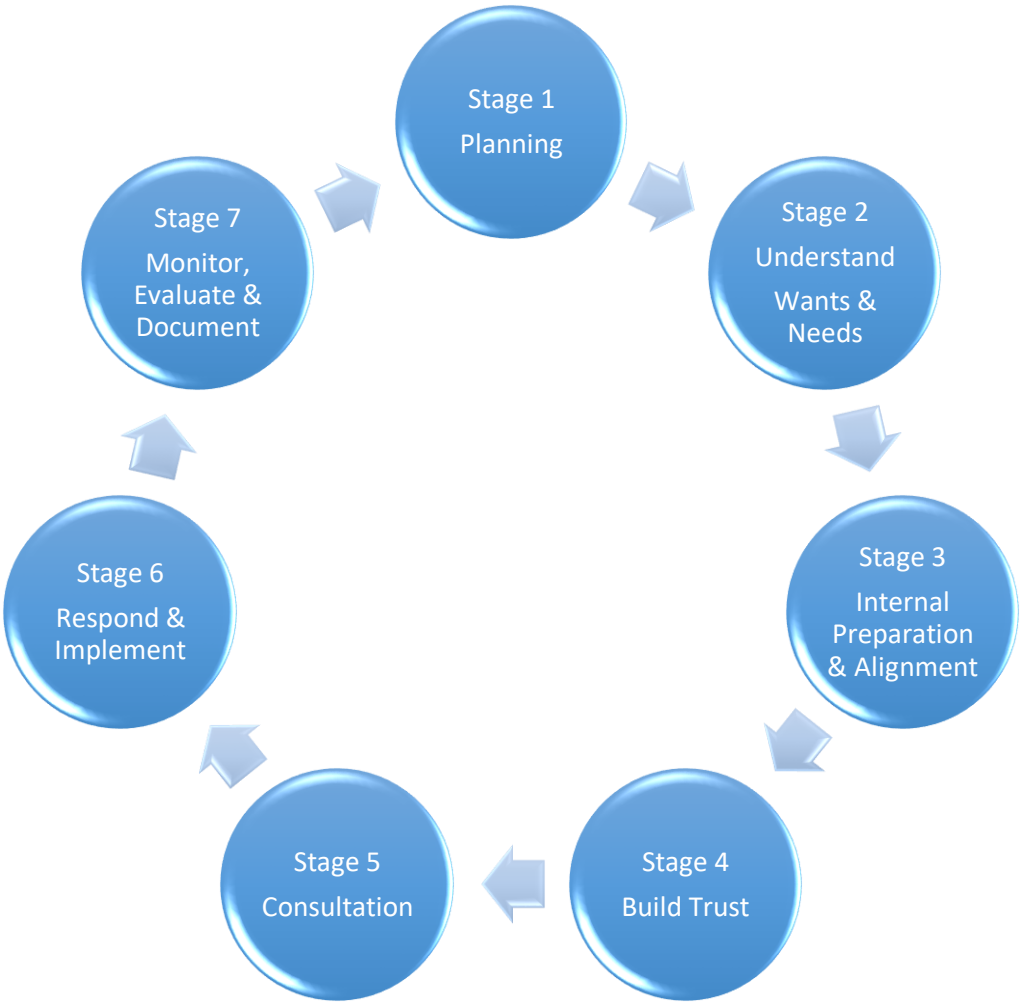
Robbie Hughes

National College of Ireland (NCI)
08X XXXXXXX

Page 1 of 2

Sequeira and Warner (2007) and Jeffery (2009) and Freeman (2010)

**Stakeholder Engagement - Seven stage process**



# Appendix II - Informed Consent Letter

**Purpose Statement:** The research seeks to understand and explore how a stakeholder engagement process provides Dublin ATC a platform to collaborate with stakeholders, working towards the delivery on its commitments under the SESAR JU framework.

The research being undertaken forms part of a thesis while undertaking a Master of Business Administration degree with the National College of Ireland (NCI). The interview will be in a semi-structured format taking approximately thirty minutes.

Signing the consent form will not waiver your legal rights or releasing the researchers or involved institution(s) from their legal and professional responsibilities.

I am aware that I have an option to allow my interview to be audio recorded to ensure an accurate recording of my responses. I maybe asked during the study for clarification or additional information following the interview process.

The Information gathered from the research will be stored on a protected device protecting the information and anonymity of the interviewee. This information will be destroyed once the NCI has given permission to do so. A participant will be identifiable as participant one, two etc. protecting anonymity and confidentiality.

This study has received ethical clearance through the National College of Ireland.

Participant Name: _____ (please print)

Participant Signature: _____

Researcher Name: _____ (please print)

Researcher Signature: _____

Date: _____

***Contact details:***

Robbie Hughes **Ph:**08XX XXXXXXX **Email:** X18158315@student.ncirl.ie

# Appendix III – Airspace Classification

The following as described in the International Civil Aviation Organisation (ICAO) Annex 11, Air Traffic Services, Chapter 2, Section 6 on airspace classification and designated in accordance with the following:

**Class A.** IFR flights only are permitted, all flights are provided with air traffic control service and are separated from each other.

**Class B.** IFR and VFR flights are permitted, all flights are provided with air traffic control service and are separated from each other.

**Class C.** IFR and VFR flights are permitted, all flights are provided with air traffic control service and IFR flights are separated from other IFR flights and from VFR flights. VFR flights are separated from IFR flights and receive traffic information in respect of other VFR flights.

**Class D.** IFR and VFR flights are permitted and all flights are provided with air traffic control service, IFR flights are separated from other IFR flights and receive traffic information in respect of VFR flights, VFR flights receive traffic information in respect of all other flights.

**Class E.** IFR and VFR flights are permitted, IFR flights are provided with air traffic control service and are separated from other IFR flights. All flights receive traffic information as far as is practical. Class E shall not be used for control zones.

**Class F.** IFR and VFR flights are permitted, all participating IFR flights receive an air traffic advisory service and all flights receive flight information service if requested.

**Class G.** IFR and VFR flights are permitted and receive flight information service if requested.

# Appendix IV – Interview Questions

**Seven stage stakeholder engagement process**

**Stage 1 - Planning**

Meaningful stakeholder engagement as suggested in the literature is a willingness to listen and enter the process not just for organisational gains.

a. What are the organisational challenges that a stakeholder engagement process can resolve?

b. What are the objectives or purpose of the stakeholder's engagement process in your organisation from your prospective?

c. How does this process add value to your organisation?

**Stage 2 - Understanding Wants & Needs**

Identifying & understanding the Wants and Needs of all parties in the process

a. How are your Wants and Needs heard in the process?

b. How are the Wants and Needs prioritised?

c. Where costs are incurred during the process, how are the distributed?

d. What are your expectations from the stakeholder engagement process?

e. Do you establish Key Performance Indicator (KPIs) as part of a Stakeholder engagement process?

**Stage 3 - Internal preparation and Alignment**

According to the literature this stage can result in significant benefits assuming there are common Wants and Needs between the organisation and stakeholders.

a. How are issues or concerns communicated to stakeholders?

b. How are your Wants and Needs aligned with those of the stakeholders?

c. What are the most effective ways in your opinion to overcome difficult challenges between stakeholders?

d. How would you describe your organisations stakeholder policies or guidelines?

**Stage 4 - Building Trust**

The literature suggests building mutual respect, rapport and trust, attributes built over time, can be achieved by commonalities and shared interest.

a. What is the most effective way of building trust and respect with stakeholders in your experience?

b. Could you provide an example of when you knew trust was established with a stakeholder?

c. Have you noticed when trust has been established there is more information sharing?

d. Transparency is the key to building trust, would you agree?

**Stage 5 - Consultation**

Consultation includes being Representative, Responsive, Context focused, Complete, Realistic and Material.

a. How do you ensure that all stakeholders are included/represented?

b. What methods of engagement are used in the engagement process?

c. What would be the most common?

d. How do you ensure all concerns organisational and stakeholder are addressed?

e. Would you say all concerns are ‘context focused’ and ‘realistic’?

f. Could you give an example an unrealistic expectation?

g. How would you indicate that the issue or works have been resolved or completed?

**Stage 6 - Respond and Implement**

The literature suggests after consultation with the stakeholders the organisation would formulate a plan to deal with issues raised in an open and transparent manner

a. How does the organisation deal with issues raised by its stakeholders?

b. Could you give an example of when there was conflict of interest between a stakeholder and the organisation? And How was it resolved?

**Stage 7 - Monitor, Appraise & Document**

The literature recommends having a system to document, monitor and appraise the stakeholder engagement process, allowing for analysis and changes in the development of a progressive sustainable stakeholder engagement process.

a) How are the meetings and activities documented, monitored or evaluation in the organisation?

b) Would the organisation consider or see benefits using a system for documenting, monitoring and evaluation the stakeholder engagement process?

c) How is the flow of information relayed from stakeholder meetings to operational or organisational departments?

**General question**

a. Would you agree that the stakeholder engagement process strengthens the organisations reputation and mitigates against risk, enhancing safety and efficiency?

- That is all the questions, however if you would like to add or comment or anything, I have not captured please elaborate.

- In the event I missed something or require clarification would it be okay to make contact in this regard.

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