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MANAGING A PRAGMATIC JUST CULTURE IMPLEMENTATION

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I certify that this project is wholly my own work and in accordance with the project regulations.

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"When a safety event occurs, like a mishap, accident or near accident, it is often obvious what went wrong. With hindsight, it is all too easy to point to a certain person that made a mistake, an error of judgement, or violated rules. Quite often, this is not true. Nobody goes to work with the intention to make a mistake. But having blamed somebody for the event, the true failures in the system will not be laid bare, which are often wrong procedures for the task, ill-defined responsibilities or managerial flaws. The effect is that further safety improvement is no longer possible or even frustrated, particularly when events are being criminally prosecuted. The conditions for the safety event remain until the dice are rolled again and another person finds himself in the same situation."
(Kools and Brüggen, 2013)

Executive summary

If people are blamed for honest e.g. non-intentional mistakes commensurate with their training and expertise, this may effectively stop reporting and inhibit safety improvement. A Just Culture (JC) attempts to remove any obstacles for open reporting while maintaining accountability.

Although JC is part of regulation EU 376/2014 (European Parliament and Council, 2014) in force since November 2015, there still seems to be a limited understanding of the concept and even non-compliance. Based on an extensive literature review and interview data this paper provides references and practical guidance to implement a JC at the corporate and national level in the form of implementation checklists, real-life examples an discusses a number of JC-relevant legal terms.

Answering the question of who draws the line between acceptable and unacceptable behaviour the author concludes that the judiciary has the final word. However, only a fraction of all cases is likely to land on the prosecutor's table. It is therefore essential that organisations fully understand the JC principle and take the necessary steps to foster a genuine safety (reporting) culture. This paper argues that this can only be achieved through trust based on close cooperation between all stakeholders, consistency and transparency to what end the setup of a so-called Event Review Group (ERG) can greatly assist.

Deciding where to draw the line is arguably one of the most difficult JC elements – especially in cases of (gross) negligence or repetitive events. Many models exist, but their usefulness largely depends on who uses them. The paper argues that taking a systems view is critical. The key message here is that 'nobody comes to work to do a bad job' and that faulty decisions, omissions or mistakes mostly originate in the context of the normal work. Hence there should be no room from criminalisation of incidents originated from causes other than wilful misconduct or gross negligence.

The paper concludes with a number of future research questions such as 'How JC compares to wilful blindness?' and the JC implications of performance-based oversight and overregulation.

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Glossary

AAIB	Aviation Accident Investigation Bodies
AAIU	Aviation Accident Investigation Unit (e.g. Belgian AAIB)
ACI	Airport Council International
AM	Accountable Manager
ANSP	Air Navigation Service Provider
ASAP	Aviation Safety Action Program
ATCO	Air Traffic Controller
ATM	Air Traffic Management
BeCA	Belgian Cockpit Association
BPAS	Belgian Plan for Aviation Safety (former Belgian State Safety Plan)
CAA	Civil Aviation Authorities
CFR	Code of Federal Regulations
DAAD	Deviation Action and Action Document
EASA	European Aviation Safety Agency
ECCAIRS	European Co-ordination Centre for Accident and Incident Reporting Systems
ELoS	Equivalent Level of Safety
EPAS	European Plan for Aviation Safety
ERC	Event Review Committee
ERG	Event Review Group
EU	European Union
FAA	Federal Aviation Administration
FDM	Flight Data Monitoring
FTE	Full-Time Equivalent
GAIN	Global Aviation Information Network
HF	Human Factors
HR	Human Resources
HSE	UK Health & Safety Executive
ICAO	International Civil Aviation Organisation
IFATCA	International Federation of Air Traffic Controller Associations
ISAGO	IATA Safety Audit for Ground Operations
IT	Information Technology
JC	Just Culture
JCTF	Just Culture Task Force
LVNL	Luchtverkeersleiding Nederland (Dutch ANSP)
MOR	Mandatory Occurrence Reporting
MoU	Memorandum of Understanding
MSc	Master of Sciences
NAA	National Aviation Authorities
NOTAM	Notice to Airmen
NTSB	National Transportation Safety Board
OvV	Onderzoeksraad voor Veiligheid (Dutch Safety Investigation Board)
PGS	Parking Guidance System
SAFREP	Safety Data Reporting & Data Flow Task Force
SLA	Service Level Agreement
SME	Subject Matter Expert
SMS	Safety Management System
SPI	Safety Performance Indicator
SSP	State Safety Programme
US	United States
VOR	Voluntary Occurrence Reporting

Research method

This paper aims to satisfy the requirements for an academic paper while providing practical guidance on a real-life Just Culture (JC) implementation. The text is based on the early work of the Global Aviation Information Network (GAIN) working group and subsequent Safety Data Reporting and Data Flow Task Force (SAFREP) and EUROCONTROL advisory material, relevant aviation regulations and the academic work of Dekker, Woods, Cook, Hollnagel and Shorrock.

The initial project proposal included a second edition of the Belgian Cockpit Association's (BeCA) 2015 safety culture survey in order to measure the impact of the EU376/2014 regulation. However, because of the many changes in the Belgian aviation sector, the availability of other safety culture studies (EUROCONTROL, 2008c; Reader, Parand and Kirwan, 2016) and the realisation that there is more value in a qualitative approach led the author to choose interviews with leading persons in JC (see Table 1).

Mr Antonio Licu	Head of Safety Unit, EUROCONTROL
Mr Roderick Van Dam	Chairman of the EUROCONTROL JC Task Force (JCTF)
Mr Tom Laursen	Vice-President Europe, International Federation of Air Traffic Controller Associations (IFATCA)
Mr Davy Vanhyfte	Safety Manager, Brussels Airport

Table 1 - List of interviewees

These persons were chosen based on their background (ATM, human factors, airport, legal), affiliation and experience with JC implementation. Semi-structured interviews lasted one hour, and the same basic questions were used. However, interviewees could expand when deemed relevant to the subject. Because of the wide scope in replies and context, the author chose not to make a single summary, but to use the obtained insights throughout the thesis[1]. Practical guidance was further acquired through informal contacts with EUROCONTROL JC Task Force (JCTF) members and through external reviews.

With regards to the MSc curriculum, JC was a core theme during the 'Accident Investigation' and 'Active Safety Management' modules, while 'Leadership in Organisations' offered great insights in cultural differences and management models to cope with JC issues. Both 'Psychology in Aviation' and 'Human Factors (HF)' helped to understand the mechanisms behind human behaviour and decision making, while 'Airline Maintenance' and 'Airport and Ground Operations' sketched the operational context of engineers, mechanics and ground personnel.

[1] *In the text, interview content has been referenced using Harvard referencing style for consistency, e.g. (Van Dam, 2018a).*

Abstract

Any safety-related event should be considered as a valuable opportunity to improve operations and prevent recurrence. A Just Culture (JC) supports learning from acts that have proven to be unsafe through effective reporting. This is done by removing the fear for disciplinary actions against the reporter, without removing personal accountability. This balance is reflected in most JC definitions and makes the concept both powerful and elusive. While the objectives may be theoretically clear, real-life implementation is often hindered by lack of trust among the stakeholders and JC understanding. This paper aims to expand the reader's understanding by reviewing the elements that may influence a pragmatic JC implementation.

After an introduction of the concept – which is part of a more humanistic approach to safety –, the text discusses the idea of balancing acceptable and unacceptable behaviour by looking at who should draw the line and where to draw it. Essential in this discussion is the notion of a 'new view' in safety management, which shifts the focus from individual blame towards systems thinking. The ensuing discussion lists a number of obstacles and catalysts and gives pragmatic advice to implement a JC both at corporate as at national level including planning, communication, training and monitoring.

At the national level, the role of the judiciary is paramount. Therefore, relevant terms such as negligence, criminalisation, civil litigation and criminal prosecution are explained. The paper concludes with a listing of relevant research questions on the future of JC, conclusions and recommendations.

Managing a pragmatic JC implementation

1 JC what and why?

1.1 Objectives of the JC principle

A Just Culture (JC) aims to improve safety by enabling people to freely report and raise questions about current procedures, systems or working habits without fear of reprisal (Collin *et al.*, 2013, p. 28; Licu, 2018, p. 1; Van Dam, 2018b, p. 1). This reporting is critical because learning from incidents[2] i.e. occurrences without catastrophic consequences, should be treated as 'free lessons' to improve safety. A real JC creates a trustworthy environment where learning takes precedence over blaming. This protection is critical because although reporting systems are a legal requirement in the aviation sector (European Parliament and Council, 2014, Art. 4 & Art. 5), front-liners[3] will only report (a) when they consider the event important, (b) when they reckon that their report will make a difference i.e. trigger change and (c) when they are certain that they will not be punished for disclosing occurrences which may have been caused by their own mistakes. (BeCA, 2015, p. 58)

Punishing people for 'honest mistakes'[4] may satisfy the human urge to compensate for the suffered loss but "getting rid of the bad apples" (Dekker, 2014, pp. 11–13) does not address the possible systemic issues that caused the mistake in the first place and hence blocks learning and preventing recurrence – the prime objective of any safety investigation. (ICAO, 2013, para. 2.10.5) Worse still, if people involved, especially the reporter, perceive a sanction as unjust or unfair, the consequences for an open reporting culture[5] can be devastating. (Dekker, 2009) Hence, it is essential that any investigation should be carried out from a 'system's perspective' and should avoid excessive focus on the individuals closest to the occurrence. (Laursen, 2018)

Taking this 'new/alternative view' does not mean reporters gain immunity. While no-blame[6] policies are still very popular in healthcare (Provera, Montefusco and Canato, 2005), a blanket amnesty on unsafe acts lacks credibility in the eyes of management and employees and can be seen to oppose natural justice. "A total 'no-blame' culture is, therefore, neither feasible nor desirable." (Reason, 2000, p. 12; Walton, 2004; EUROCONTROL, 2006, p. 10) JC is different – one might say a logical evolutionary step – since it avoids the immunity trap where employees may purposefully break the rules and then hide behind a report. According to EU regulation 376/2014 (European Parliament and Council, 2014, preamble (37)) a JC should "encourage individuals to report safety-related information without absolving them of their normal responsibilities". In other words, JC is not a 'get-out-of-jail-for-free' card[7].

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[2] "Incident: an occurrence, other than an accident, associated with the operation of an aircraft which affects or could affect the safety of operation." (Reportable Incidents, 2019)

[3] 'Front-liners' are people that are closest to the operational work (pilots, controllers, mechanics, nurses, train drivers…)

[4] "An 'honest mistake' means an error (…) without malice intended. There was no thought of harming someone else or taking advantage of a situation caused by the mistake." (Franchina, 2017) It is a mistake that is in line with people's experience and training. (EUROCONTROL, 2008a, p. 12)

[5] A culture is defined "the collective programming of the mind that distinguishes the members of one group or category of people from others." (Hofstede and Minkov, 2010, para. 6) It also referred to as "a common set of values, beliefs and behaviours shared among a group of people." (Myers, 2009, p. 257)

[6] As the name implies, a no-blame policy provides complete immunity to the reporter unlike a JC where immunity is lifted in cases of wilful misconduct or gross negligence.

[7] EU 376/2014 (European Parliament and Council, 2014, preamble.37) details that "employees and contracted personnel should not be subject to any prejudice on the basis of information provided (…), except in cases of wilful misconduct or where there has been manifest, severe and serious disregard with respect to an obvious risk and profound failure of professional responsibility to take such care as is evidently required in the circumstances, causing foreseeable damage to a person or to property, or seriously compromising the level of aviation safety."

Contrary to a no-blame culture, individuals may be held accountable for their actions (GAIN Working Group E, 2004, pp. viii, 14) while keeping in mind a system's perspective.
Some authorities and organisations go one step further and request that in order to benefit from the offered protection a report should be made i.e. no report, no protection (European Parliament and Council, 2014, para. 38; Van Hyfte, 2018)[8].

But, "JC goes beyond reporting [and extends] to the overall behaviour in the company regarding safety or unsafety." (Licu, 2018, p. 1) It can create an atmosphere of trust for employees and leadership to foster a genuine safety culture[9]. Safety reports created by front-line operators often provide insights into the messy reality of daily operations (the so-called 'work-as-done' (Shorrock, 2016; Hollnagel, 2017)) and can reveal unexpected hazards or latent conditions which would have remained hidden when unreported. (European Parliament and Council, 2014, preamble (5)(6)(33)) Laursen (2018) adds that JC complements the existing Safety Management Systems (SMS) by enabling informal conversations about safety.

1.2 Defining a balance

James Reason was the first to coin the term JC in the seminal work 'Managing the Risks of Organizational Accidents' (Reason, 1997) and describes it as a part of a larger safety culture. (Figure 1)

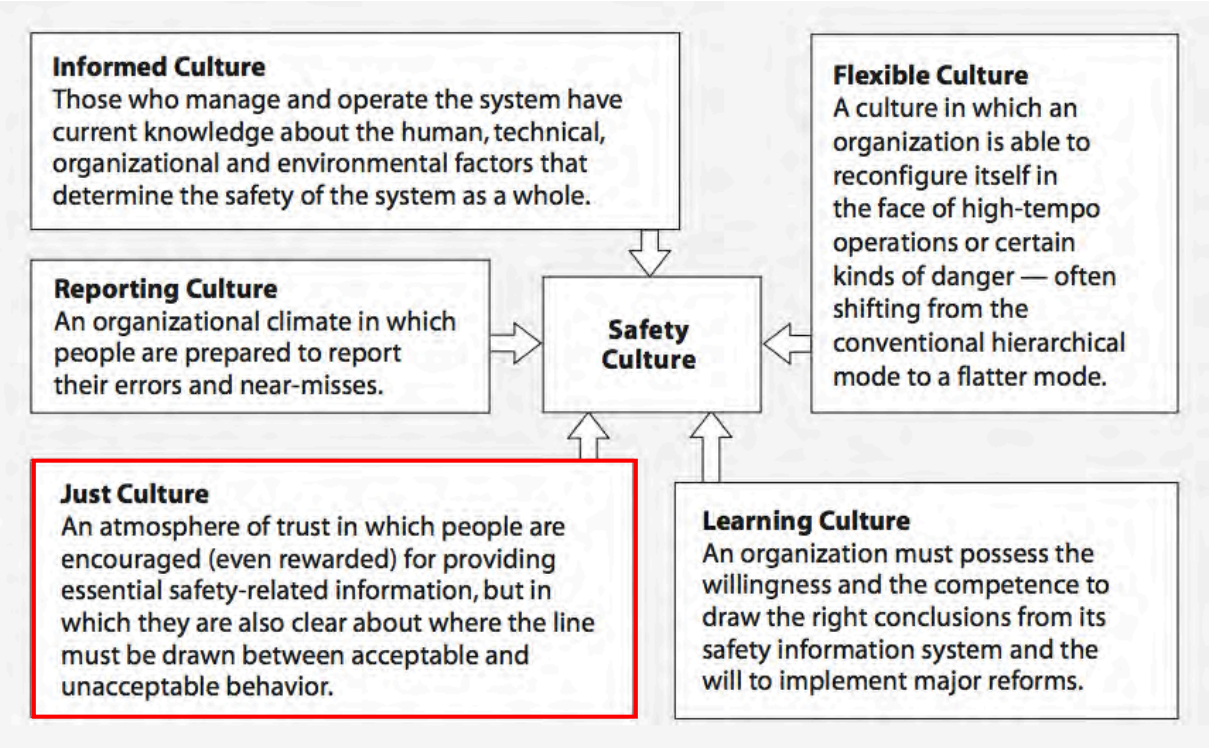

Figure 1 - Components of a Safety Culture (Reason, 1997, pp. 195–196; GAIN Working Group E, 2004, p. 4)

Most JC definitions (a non-exhaustive list can be found in Table 2) contain the idea of a balance. It is this duality – between trust and accountability, between safety and the administration of justice, between acceptable and unacceptable behaviour, between the old and new view on safety – that makes

[8] *"In particular, in a situation where a person is mentioned in an occurrence report and has himself or herself the obligation to report that same occurrence, and intentionally fails to report it, then that person should lose his or her protection and face penalties in application of this Regulation." (European Parliament and Council, 2014, para. 38)*
[9] *Safety Culture can be described as "the way safety is done around here." (EUROCONTROL and FAA, 2008, p. 11)*

the concept both powerful and challenging. By defining this duality, implicitly a choice is introduced; a fictitious 'line in the sand'. Who should draw it and where will be discussed in Chapter 2 and 3.

"An atmosphere of trust in which people are encouraged (even rewarded) for providing essential safety-related information, but in which they are also clear about where the line must be drawn between acceptable and unacceptable behaviour." (Reason, 1997, p. 195)
"A culture in which front line operators or others are not punished for actions, omissions or decisions taken by them that are commensurate with their experience and training, but where gross negligence, wilful violations and destructive acts are not tolerated." (EUROCONTROL, 2008a, p. 11) (European Parliament and Council, 2014, Art. 2.12)
"A culture of trust, learning and accountability." (Dekker, 2017, p. 52)
"JC is one in which errors by front line operators are investigated without retribution in order to find out why they happened and how the system can be improved to prevent the recurring of such errors, but in which at the same time aspects such as sabotage, substance abuse, violations of procedures, and wilful misconduct are not tolerated." (IFATCA as quoted in EUROCONTROL, 2008a, p. 41)
"Workplace justice. A five-skill model designed to help change an organisation's culture by placing less focus on events, errors and outcomes, and more focus on risk, system design and the management of behavioural choices (human error, at-risk behaviour and reckless behaviour) in an environment of free and open reporting." (Marx, 2018)

Table 2 - JC Definitions

1.3 Regulatory requirements

At a global level, both the International Civil Aviation Organisation's (ICAO) Annex 19 (2016b) and its accompanying ICAO Doc 9859 (2013) recognise the importance of mandatory/voluntary reporting in Safety Management Systems (SMS) and State Safety Programmes (SSP) and lay down a number of standards and recommended practices (SARPS) regarding data protection (see also Chapter 5.5). Although ICAO does not use the term 'JC', Annex 19 Art 5.3 (2016b) recommends creating "a reporting environment where employees and operational personnel may trust that their actions or omissions that are commensurate with their training and experience will not be punished is fundamental to safety reporting."

At European level, EU 376/2014 (2014) on 'the reporting, analysis and follow-up of occurrences in civil aviation' has been in force since November 2015. The regulation requires front-line personnel[10] to report safety occurrences and distinguishes between Mandatory Occurrence Reporting (MOR)[11] and Voluntary Occurrence Reporting (VOR) within 72h. Except for the Air Navigation Service (ANS) Performance Regulation[12] (European Commission, 2010; European Parliament and Council, 2013), this is the

[10] EU 376/2014 Art. 4.6 (European Parliament and Council, 2014) lists as mandatory reporters: "pilots and/or other crew members, people involved in design, manufacturing, maintenance and continuous airworthiness monitoring, airworthiness reviewers, ATM staff; airport safety management, those involved in the installation, modification, maintenance, repair, overhaul, flight-checking or inspection of air navigation facilities, ground handling of aircraft, including fuelling, load sheet preparation, loading, de-icing and towing."

[11] Mandatory reportable occurrences are listed in EU 2015/1018 (European Parliament and Council, 2015)

[12] ANS performance regulations EC 691/2010 (European Commission, 2010) and EU 390/2013 (European Parliament and Council, 2013) specified the inclusion of a Key Performance Indicator (KPI) for JC since 2010.

first legislative text that defines and imposes the concept of JC on a sector. It requires aviation authorities and organisations i.e. airlines, maintenance, manufacturers, ground handling companies, air navigation service providers and airports, to implement procedures to protect personnel from being sanctioned for reporting honest mistakes.

At the national level, regulation EU 376/2014 (2014) poses a dual requirement. Firstly, European Union (EU) member states need to set up an independent body to which employees may report alleged infringements against JC within their organisation. (European Parliament and Council, 2014, Art.16.12) This body may also "advise the NAA concerning remedies or penalties" in case JC principles are not applied. (European Parliament and Council, 2014, Art.21) Secondly, and similar to the requirements in ICAO Annex 19 (2016b, Appendix 3), states need to ensure that there are advance administrative arrangements between the judiciary and their aviation authorities which "balance the need for proper administration of justice and the continued availability of safety information." (European Parliament and Council, 2014, Art.15.4)

To date, only a few EU member states comply with these requirements[13] (e.g. Netherlands, UK). (Licu, 2018) The author believes that this non-compliance threatens existing JC implementations, since employees who report under the cover of their organisation's JC policy, may still be subject to undue criminal prosecution due to a lack of awareness and formalised arrangements within the judicial authorities. (See Chapter 5.1)

1.4 A more humanistic safety management

Both ICAO, the EU and the FAA see incidents as precursors for higher consequence outcomes (ICAO, 2013, para. 2.10.3; European Parliament and Council, 2014, para. 5; FAA, 2018). This is in line with classic safety thinking models such as Domino theory (Heinrich (1931) as cited in EUROCONTROL, 2015, p. 5), the Swiss Cheese model (Reason, 1997) and Heinrich's pyramid – also known as the 'iceberg model' (Woods *et al.*, 2010, p. 44) which suggest linear causality. This classic approach (also known as Safety-I (EUROCONTROL, 2015)) is mostly quantitative and tries to capture safety performance through Safety Performance Indicators (SPIs) based on an array of data-driven methods such as control charts, cause-and-effect diagrams, fault tree analysis, Monte Carlo simulations… (ICAO, 2006, 2009, 2013; Stolzer, Carl D. Halford and Goglia, 2015, chaps 3 & 10)

Although these models have helped the aviation industry to achieve an enviable low accident rate, many safety science scholars today argue that 'more of the same' might be insufficient to further improve safety to cope with the predicted increase of air traffic (Amalberti (1977) as cited in Amalberti, 2001, p. 110). Most of them warn about the new challenges caused by the ever-increasing complexity of today's operational context. Complex systems, where linear causality is no longer relevant, but where interactions create emergent behaviour that is deterministically impossible to predict. (Woods *et al.*, 2010, chap. 3) This reality necessitates a revision of the safety definition from "absence of unacceptable risk" (ICAO, 2013, pp. 2–1, 2016b, pp. 1–2) to "the presence of individual and organisational resilience." (Woods *et al.*, 2010, p. 93) Safety then becomes "something that needs to be created constantly and continuously" (Hollnagel, 2014, p. 179) or as Weick (as cited in Dekker, 2017, p. 50) describes it: "a dynamic non-event; when nothing is happening, a lot is happening."

In order to cope with this complexity and also to overcome the 'safety paradox' (Reason, 2000, p. 5; Hollnagel, 2018, p. 109) – when measuring safety by counting bad outcomes, how to say one is safe if

[13] Except for the mentioned reference and multiple informal contacts, the author fruitlessly attempted to validate this statement by an official reference study in cooperation with ECA, IFATCA and EUROCONTROL. Currently (September 2019), the author has requested the European Commission (DG MOVE) to provide evidence of member state compliance regarding articles 15.4 and 16.12 of EU 376/2014 (European Parliament and Council, 2014).

there is nothing left to be measured? – Hollnagel (2014, pp. 136–138) suggests "trying to understand why things go right". First of all, this approach – known as Safety-II – unlocks a vast amount of safety information because instead of looking at the small red line representing the rare accidents – the current 10-year average accident rates in aviation is at 10^{-7} (Boeing, 2018, p. 18; ICAO, 2018, p. 4) – the big green area of the circle diagram becomes available for learning. (Figure 2)

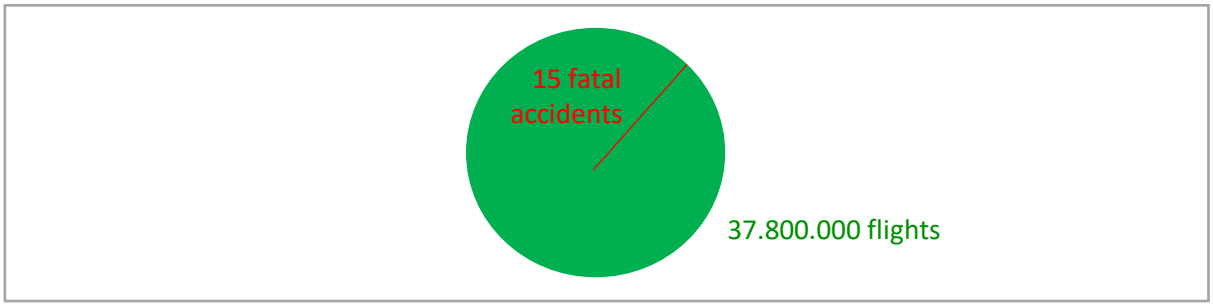

Figure 2 - Circle diagram illustrating an accident rate of ca. 10^{-7} (Aviation Safety Network, 2018; Hollnagel, 2018, p. 47)

Secondly, understanding why things go right might explain that it is often not because people follow the rules (i.e. work-as-prescribed), but because people adjust their work methods so that they match the conditions (i.e. work-as-done) (EUROCONTROL, 2015). In order to capture this 'human performance variability'[14], the author is convinced that there is a need for more qualitative investigations in which the story behind the numbers becomes more important than the numbers themselves.

This trend towards a more humanistic approach in safety management brings another advantage. Adopting this 'new view' (see also Chapter 3.2.4) which assumes that "people do not come to work to do a bad job" (Dekker, 2012, p. 99) and taking a systems-perspective (Shorrock *et al.*, 2014) i.e. seeing 'human error' as a symptom not as a cause, triggers a new type of discussions about real-life issues in everyday work. These discussions about the gaps between work-as-done and work-as-imagined, -prescribed or -disclosed (Shorrock, 2016; Hollnagel, 2017) provide an open door towards an organisational safety culture that is fostered at both the sharp end (i.e. the frontline personnel, those actually performing the work) and at the blunt end (i.e. those who organise, regulate and manage the work) (Woods *et al.*, 2010, p. 8). An environment where operational issues, safety-relevant or not, are shared openly and honestly in order to learn and improve resilience (see Figure 3). In this context a JC is not only indispensable, but it is intertwined with the other elements of Reason's model. (Figure 1) It would be very odd to see an organisation where there is a very good JC, but a complete absence of a learning or flexible culture or vice versa. (Collin *et al.*, 2013)

Figure 3 - Relationship between Safety-I and Safety-II (Hollnagel, 2014, p. 148)

[14] *Performance variability is defined as "the ways in which individual and collective performances are adjusted to match current demands and resources, in order to ensure that things go right." (EUROCONTROL, 2009, p. 2)*

2 Who draws the line?

2.1 What line?

As suggested in Chapter 1.2, JC implies a duality between acceptable and non-acceptable behaviour. (EUROCONTROL, 2008a, p. 13) This is generally described as a '(notional) line in the sand' (Baines & Simmons Ltd., 2015; Cromie and Bott, 2016). Some argue there is no line (Woods *et al.*, 2010, p. 227; Laursen, 2018, p. 2) "because every event is unique." (Brüggen, 2013) and that those who use this idea revert to 'bad apple theory'[15]. Laursen (2018) says that "trying to draw a line says more about the people who control the line than about the person that was involved." Dekker (2010, p. 247) claims that "culpability does not inhere in the act" and calls it "the outcome of processes of interpretation and attribution that follow the act", "a social construct" (Dekker, 2009)

The 'need' for a line is also based on cultural differences. E.g. while within a German (strongly hierarchical) organisation the responsible person could be named instantly, Swedish managers (used to a flat hierarchy) may hardly understand why this would be necessary. (Laursen, 2018, p. 6)

Nevertheless, some systems thinkers seem to accept there is some kind of a boundary to acceptable behaviour – especially with regards to deliberate criminal acts (Laursen, 2018; Van Dam, 2018b, p. 1). The author believes that the idea of a line makes the JC concept easier to understand and may – in some cultures – prove a necessary step towards a full restorative approach or complete systems thinking.

2.2 Corporate level

Accountability (see Chapter 3.3.7) can be considered at two distinct levels: at corporate level and at national level. Some people disagree with this viewpoint and argue that there should be no 'line-drawing' at corporate level. Both Van Dam (2018b, p. 1) and Laursen (2018, p. 4) warn that "although JC may be relevant at corporate level, EU376/2014 (2014) explicitly describes criminal behaviour" and argue that "only a judge can decide upon these matters."

However, the author feels it would be neither desirable nor manageable to have all (minor) incidents checked by the judicial authorities. Not only would capacity and speed be insufficient, but more importantly the learning needs to be done as close as possible to the operation.

At the corporate level, there is no regulatory specification on who should draw the line between acceptable and unacceptable behaviour. Neither ICAO Annex 19 (2016b), EU 376/2014 (2014) or EU 965/2012 (2012) designate a specific person or corporate entity. The occurrence reporting regulation only requires organisations "to adopt internal rules describing how 'JC' principles (…) are guaranteed and implemented, after staff consultation". (European Parliament and Council, 2014 Art. 16.11) With regards to commercial air transport operations, the accountable manager (AM) holds the overall responsibility for the safety of the company's operations (European Commission, 2012, Annex III ORO.GEN.200(a)), and is therefore often tasked with taking the ultimate decision on JC matters.

[15] *'Bad apple theory' describes the reasoning that if one removes those who erred (the bad apples) from the organisation, the safety problem is solved. However, the focus on human mistakes does not remove the organisational factors (latent conditions) from the system, making it vulnerable to future recurrence. In other words, somebody else may make the same mistake. (Dekker and Leveson, 2014)*

2.3 National level

At the national level, the judiciary has the final word on culpability. (Van Dam, 2018b, p. 1) Similar to what happens in case of accidents or serious incidents (European Parliament and Council, 2010), the judiciary may institute an investigation into an incident parallel to the technical investigation. It is imperative to understand that both investigations serve distinctly different goals. The objective of the safety investigation is to understand how and why an occurrence took place to prevent recurrence (ICAO, 2016a), while the judicial investigation aims to determine if there was any criminal behaviour involved i.e. laws being broken and eventually penalise the guilty.

According to Van Dam (2017), there is but "a single JC which is one and indivisible" and in the end "it is the prosecutor who decides [to investigate/prosecute or not]". In case of prosecution, ultimately, a judge will decide on the faith of the defendant.

However, since the aim of JC is to remove the fear of reprisal to stimulate reporting, undue judicial action such as investigation, prosecution or conviction may be perceived by front-liners as a liability and therefore impede this objective[16]. Hence the importance of efforts such as those by the EUROCONTROL JCTF to raise awareness among prosecutors and other judicial experts about JC.

2.4 The role of the (social) media – First and second stories

Aviation accidents and incidents have social, political and economic consequences and therefore draw a lot of media attention. In search of an explanation for the (potential) loss, far too often premature conclusions are drawn about possible errors and omissions (i.e. the 'First Story'[17]) which fuel public demand to bring those responsible to justice. (Michaelides-Mateou and Mateou, 2010, p. 7) Often, people involved are put on public trial through (social) media even before the factual investigation has started.

Fred Bijlsma, former Dutch aviation prosecutor agrees that "the public demand to blame someone is growing stronger." (2013, p. 65). Koivu (2013, p. 67) adds that "too often, the emotive response of the media and the general public to dramatic accidents concentrates on a single employee instead of trying to build the big picture of real causal and contributing factors and the question why an accident occurred" i.e. the 'Second Story'[18]. This not only prevents learning but also hampers reporting. After all, people are unlikely to report if they feel that their report will bring them personal shame or blame. (Dekker, 2009) Moreover, unless the press fully understands the purpose of JC, "there is a risk that they might see it as a system for covering up mistakes and protecting individuals." (EUROCONTROL, 2008b, p. 6)

[16] For a more extensive discussion on this subject, please refer to Chapter 5.3.

[17] "First stories, biased by knowledge of outcome, are overly simplified accounts of the apparent "cause" of the undesired outcome and are not an explanation of failure." (Woods et al., 2010, pp. 241–242)

[18] Contrary to First Stories, Second Stories look for explanations why things happened the way they did. They look behind the 'Human Error'. "They typically emerge slowly after long delay, require context, have high complexity and often low newsworthiness." (Shorrock, 2017)

3 Where to draw the line?

3.1 Navigating the grey area: JC models

Although JC has been mandated in the aviation industry since November 2015 (European Parliament and Council, 2014), many organisations still seem to struggle where to draw the line between acceptable and unacceptable behaviour and it probably is the hardest part of building a Just Culture. (EUROCONTROL, 2008b, p. 10) There is seldom a discussion about cases on the far ends of the culpability scale. Acts of sabotage are criminal offences to be dealt with by the judiciary, while honest mistakes (i.e. free of intention to harm or negligence) should have no disciplinary consequences but should be used to learn and improve.

Moving to the middle of the scale things become less clear. This grey area (mostly coloured orange on the green-to-red gradient – see Figure 4) requires "careful judgement." (Reason, 1997, p. 211) In order to facilitate this judgement a number of models have been developed. This section will discuss four of them: Reason's decision tree, EUROCONTROL's simplified flowchart, Baines & Simmons' FAIR2 System and David Marx' JC model but there are others (e.g. Human Error and Violation Decision chart (Hudson (2009) in Airborne Law Enforcement Association, 2009, p. 59).

Figure 4 - Eight different classes of behaviour (Kools and Brüggen, 2013)

Most models try to determine the 'intention'. They seek if there was a so-called 'mens rea' or 'guilty thought'. This is a legal term which combined with an 'actus rea' or 'guilty act', renders an act into a criminal offence. (Coelho dos Santos, 2013)

3.1.1 Reason

Already in 1997, Reason (1997, pp. 205–213) suggested a decision tree to determine the culpability of an unsafe act (see Figure 5). If multiple acts lead to an occurrence they should be treated separately. The proposed model (like many others afterwards) features a 'substitution test' that asks how another person with similar qualifications and experience would have acted under the same circumstances? Similarly, Reason suggests having a 'jury of peers' to distinguish between system-induced errors and negligence. The professor reckons that 90% or more of unsafe acts should be considered blameless.

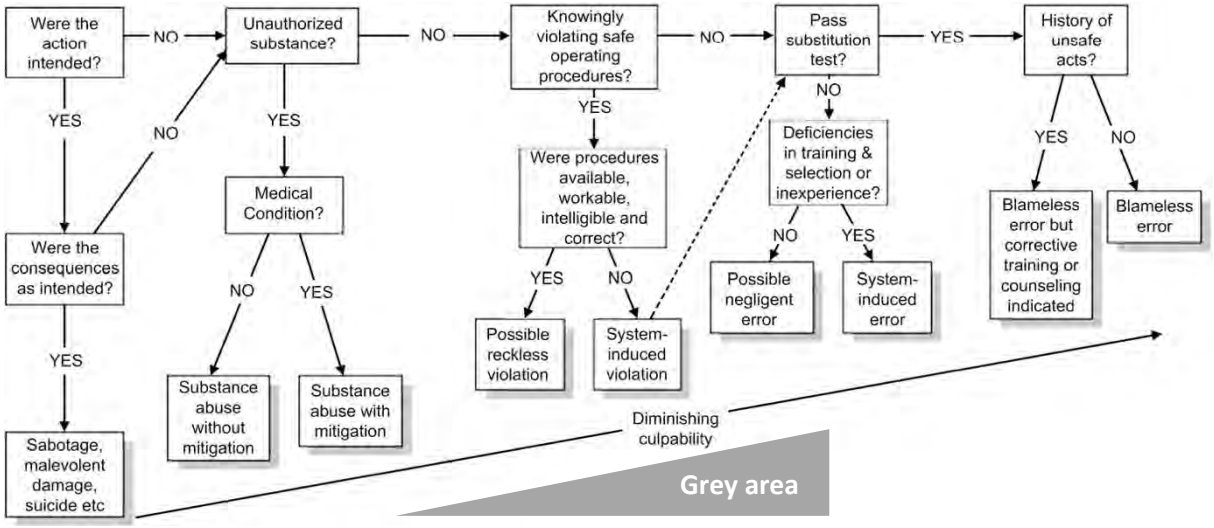

Figure 5 – A decision tree for determining the culpability of unsafe acts (Reason, 1997, op. 209)

3.1.2 EUROCONTROL

In 2006 EUROCONTROL (2006, p. 13) defined a simplified version of Reason's decision tree which clearly illustrates the balance between safety occurrences which should be treated within the company SMS and those (rare) events which require judicial intervention. (Figure 6)

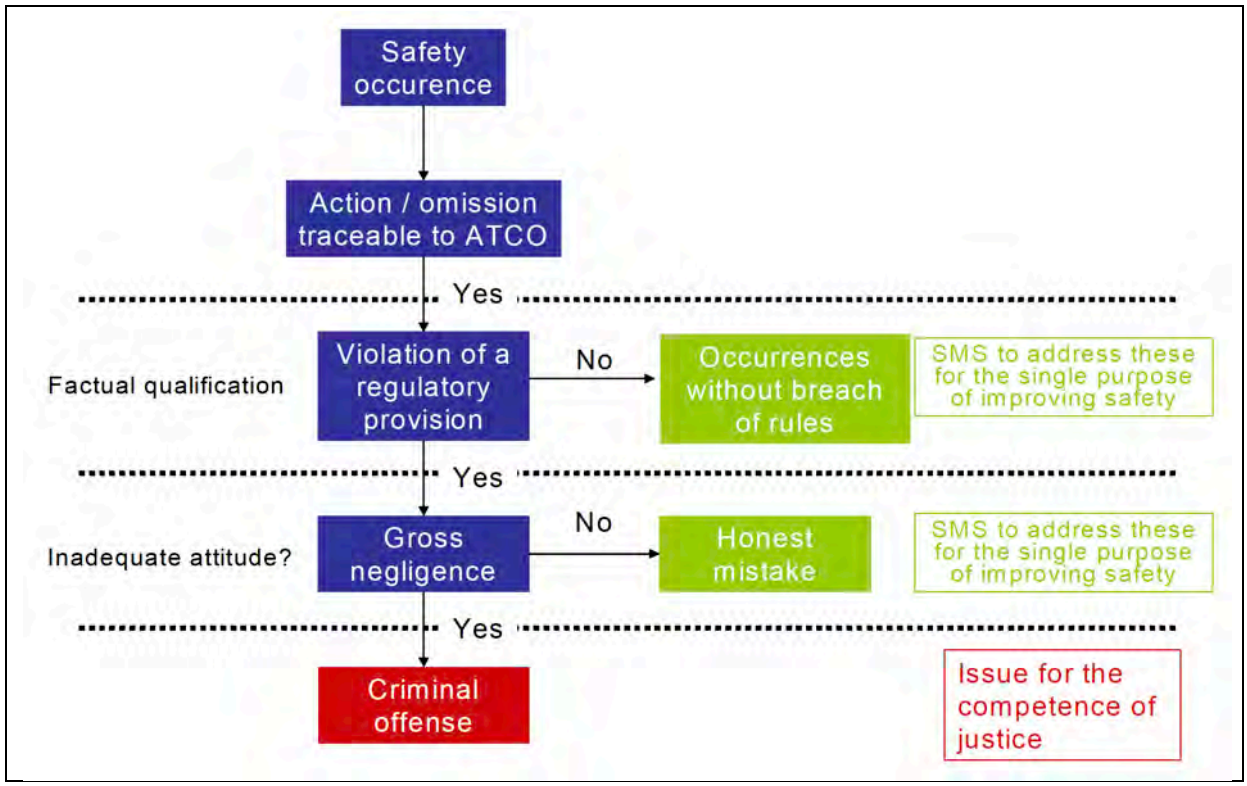

Figure 6 - JC concept (EUROCONTROL, 2006, p. 13)

3.1.3 Baines & Simmons' FAIR2 Model

A more recent development is Baines & Simmons' FAIR2 System. (Baines & Simmons Ltd., 2015) After an objective and factual investigation, three steps are to be followed. Step 1: Classify the Behaviours. Step 2: Apply the Additional Tests. Step 3: Identify Effective Interventions and Accountability. All steps need to be performed by an Event Review Group (ERG) which typically consists of the SMS Manager, (preferable an uneven number of) trained ERG members and Subject Matter Experts (SMEs). In the first step, the ERG determines the behaviour type using a so-called 'Behaviours Analysis Flowchart'. This is shown in Figure 7.

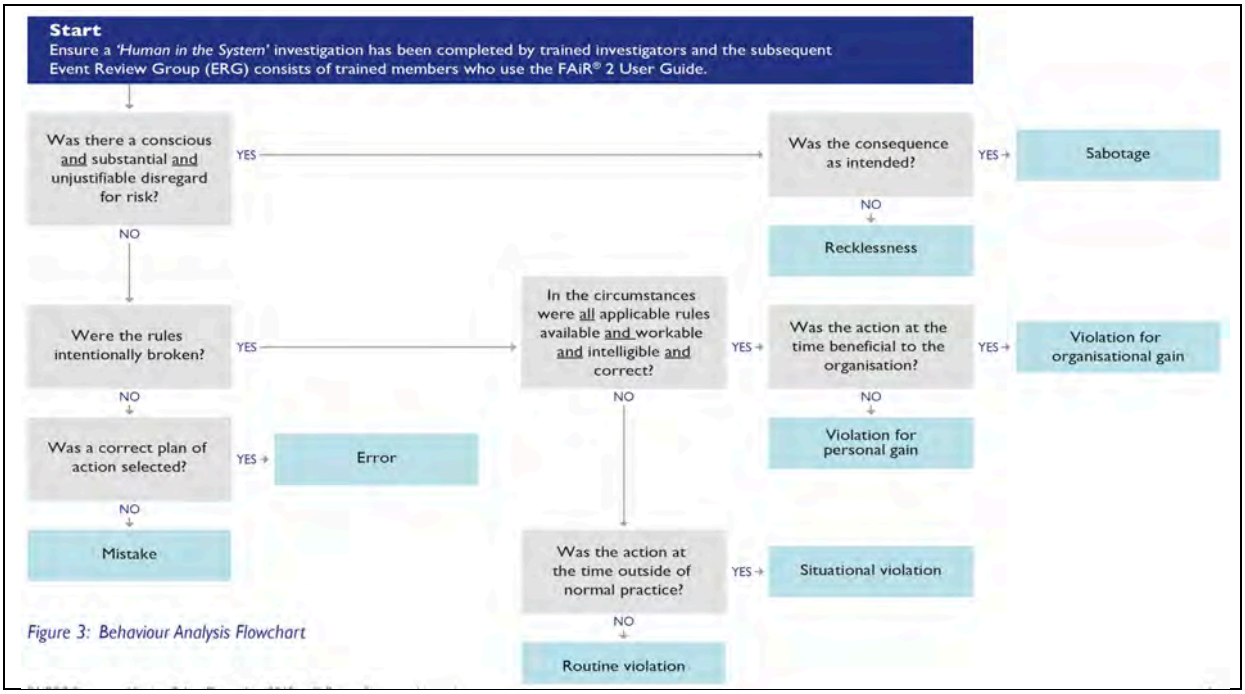

Figure 7 - FAIR2 Behaviours analysis flowchart (Baines & Simmons Ltd., 2015)

Subsequently, both a substitution and a routine test ("Has this event happened before to either the individual or to the organisation?") are performed. The latter evaluates if an act was 'normative' i.e. reflecting everyday working practices (so-called 'operational drift') if the same individual experienced a similar event before or if remedial actions from a previous event have failed to prevent recurrence.

The final step is to identify interventions and accountability. The type of intervention is based on the failure type (the light blue boxes in Figure 7). The level of 'accountability' will be influenced by the evaluation of the tests in step 2 (Figure 9 – next page). This needs to be done for all those involved and should not just focus on personnel at the 'sharp end' which resembles the fairness in Hudson's Just & Fair Culture. (Hudson *et al.*, 2008) The outcome of this evaluation results in three distinct error types: errors, mistakes and violations, which call for different interventions as illustrated by Figure 8.

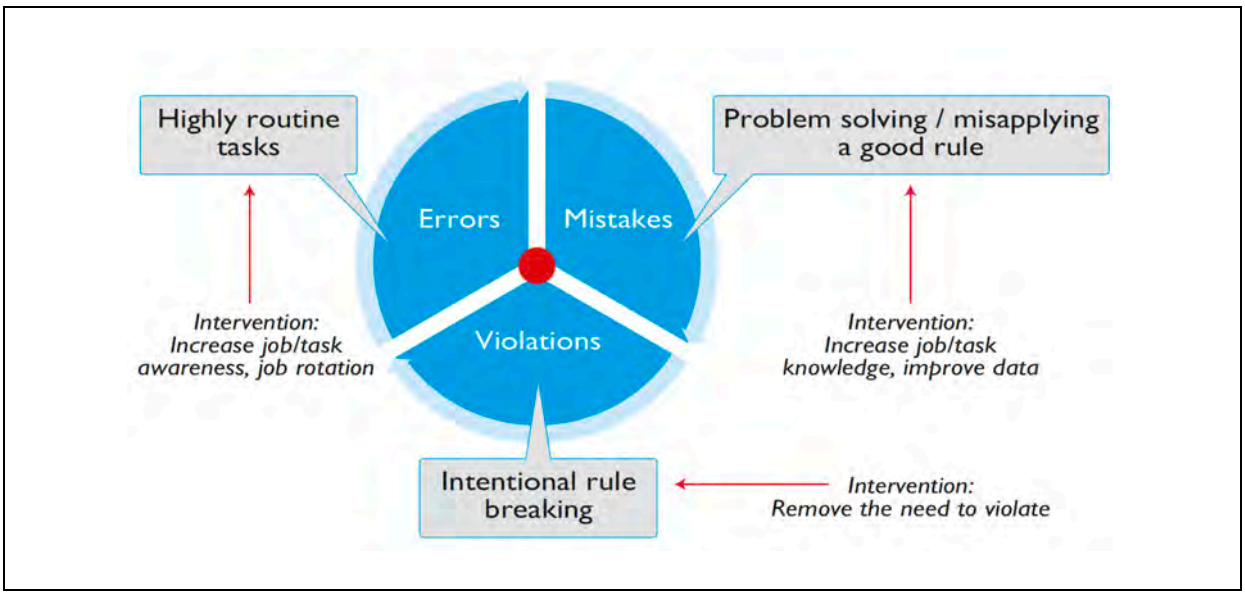

Figure 8 - Interventions based on error type (Baines & Simmons Ltd., 2015)

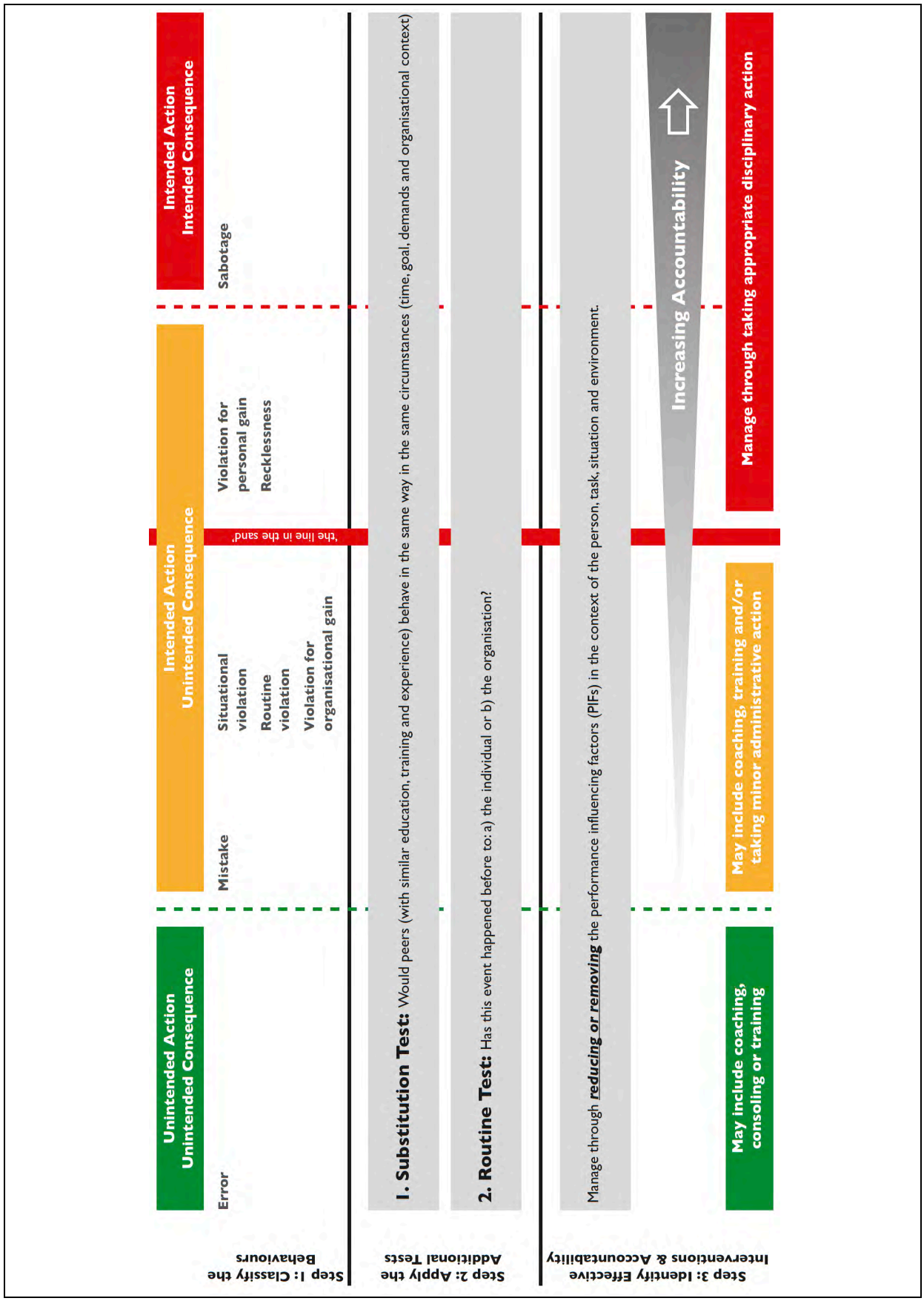

Figure 9 - FAIR2 Test, Interventions and Accountability (Baines & Simmons Ltd., 2015)

3.1.4 David Marx' JC Model

Marx' algorithm (Figure 10) is based on the distinction between three types of behaviour. 'Human Error' defined as an inadvertent action (slip, lapse, mistake). 'At-Risk Behaviour' defined as a deliberate behavioural choice that increases risk where risk is not recognised or is mistakenly believed to be justified. 'Reckless Behaviour' defined as conscious disregard of a substantial and unjustifiable risk. Depending on the behaviour classification, three different responses are suggested: "Console the human error. Coach the at-risk-behaviour. Punish the reckless. Independent of the outcome" (Marx, 2009, pp. 636–639).

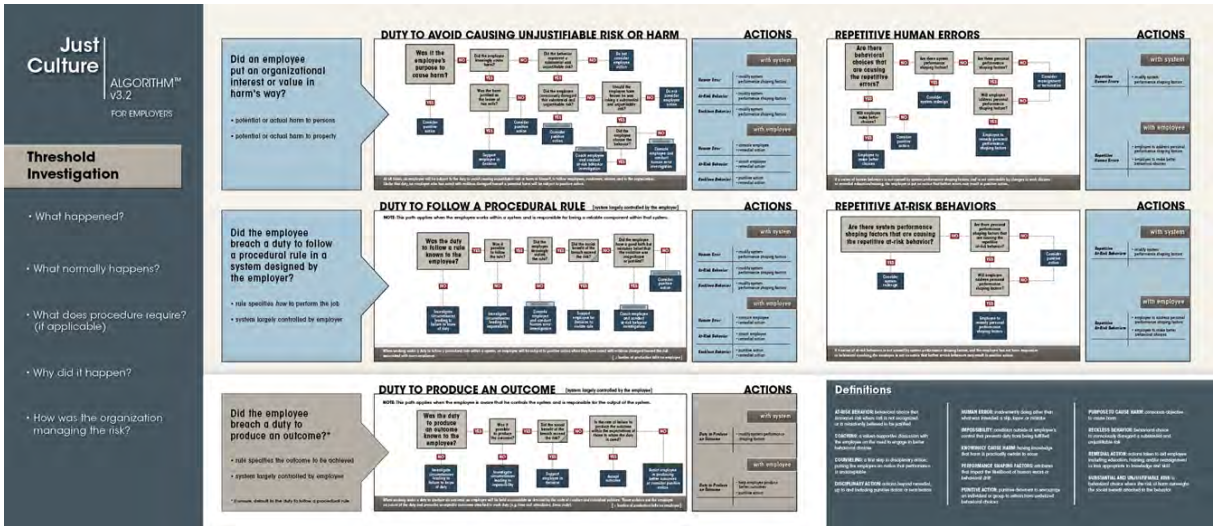

Figure 10 - David Marx' Just Culture Algorithm (Marx, 2018)

3.1.5 An integrated approach (FAA ASAP)

In 1997 the Federal Aviation Administration (FAA) launched its Aviation Safety Action Program (ASAP), a voluntary reporting scheme to identify potential precursors to accidents. ASAP is based on JC principles as it aims to "resolve safety issues through corrective action rather than through punishment or discipline." (FAA, 2002a, p. 1) Contrary to Europe where every airline has a customised reporting system, ASAP provides a generic setup including a standardised framework, Memorandum of Understanding (MoU) (FAA, 2017), training and data protection protocols. This integrated approach heavily relies on an ERG, but the FAA uses the term Event Review Committee (ERC) which is defined as "a group comprised of a representative from each party to an ASAP MOU (usually management, a staff representative and a qualified FAA inspector[19]) who reviews, and analyses reports submitted under an ASAP." (FAA, 2002a, p. 1) This program clearly defines who draws the line and provides guidance on where to draw it (see Figure 11).

The author recognises cultural issues, differences in the legal system and the fact that a generic system might be easier to impose in a consolidated aviation industry (USA), compared to a fragmented one (EU), but urges organisations and rule-makers to learn from ASAP best practices (FAA, 2009)

[19] *This is different from an ERG which normally does not include a CAA official.*

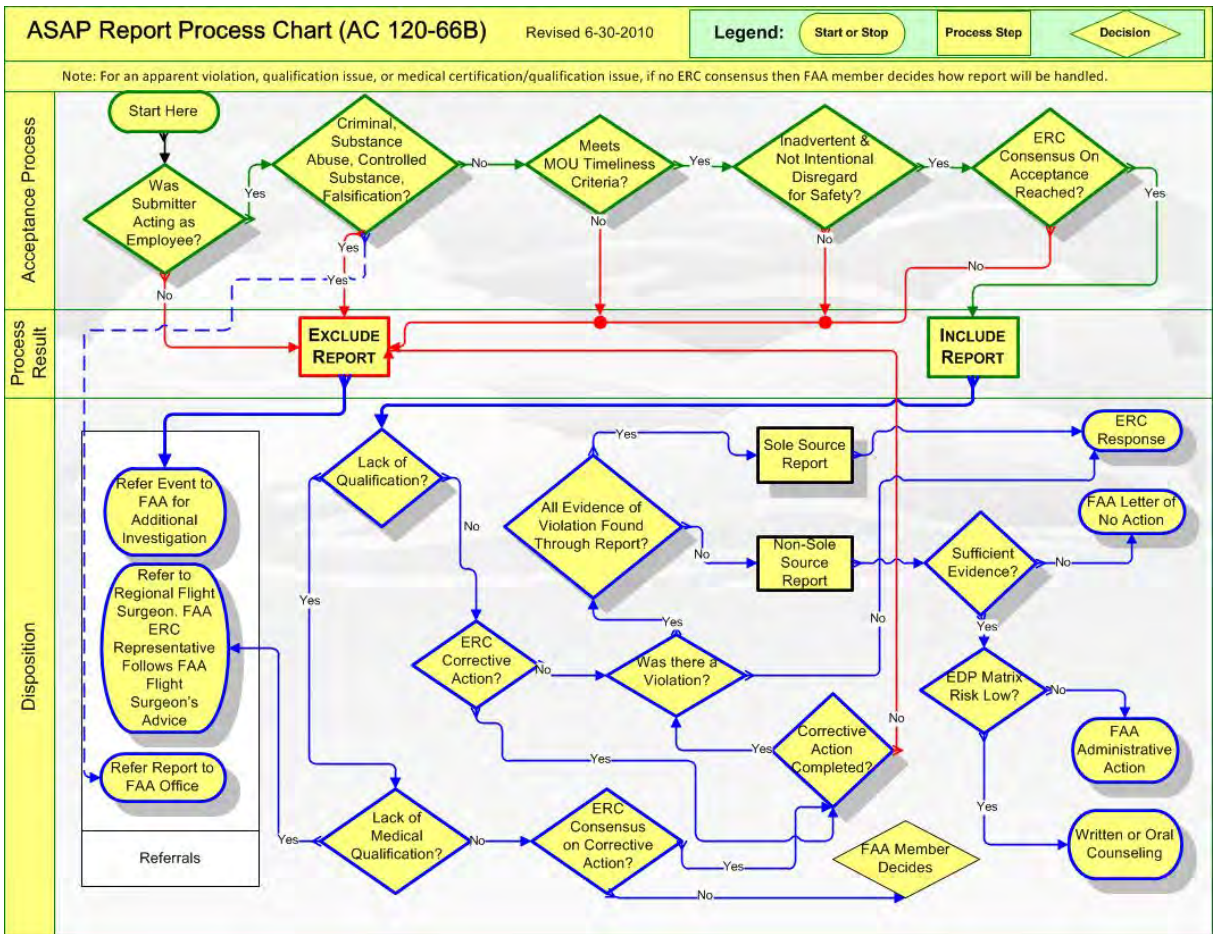

Figure 11 - ASAP Report Process Chart (FAA AC 120-66B) (FAA, 2002b)

3.1.6 (Dis)advantages of JC models

Despite their common use and their promise of 'objectivising' a decision, the author recommends caution, since these models provide little more than a formalised explanation of a path followed through a flow chart. A few well-chosen responses (different explanations) quickly lead to a different path and therefore different result on the culpability scale. This was well illustrated when during a workshop (Dekker, 2018) where Dekker divided the participants into two groups and asked both groups to end up at opposite sides of the culpability scale for the same incident. Both succeeded without effort. Therefore, the author believes that the importance of these algorithms should not be overrated. JC flowcharts are as objective as the people using them.

This is because each incident has multiple accounts depending on context and perspective. (Laursen, 2018) Dekker claims that "there is no single truth" because it is falsely assumed that "acceptable or unacceptable behaviour form stable categories that are independent of context, language or interpretation." (Dekker, 2009) The author is convinced that the model used is less important than the fact that an occurrence (including human behaviour) is reviewed from a systems perspective by a group of people with different backgrounds. A well-chosen ERG allows discussing the all-important context of an occurrence from different angles which reduces the risk of a biased or single-sided decision. (FAA, 2014) Such a multi-disciplinary review will also help to remove a perception of partiality or unfairness. Dekker argues – despite opposing the concept of a line – that defining who draws the line is probably more important than where to draw it. (Dekker, 2009)

3.2 Conducting a JC investigation[20]

Even with the finest policies and agreed procedures in place, a JC implementation is put to the test every time a new occurrence needs to be investigated. And the hard-earned trust which might have taken years to build could be destroyed in seconds if the investigation is perceived to be unjust or unfair. The following chapters give practical advice on how to conduct an investigation based on the 'new view' as suggested by Dekker, Woods, Cook, Hollnagel and Shorrock.

3.2.1 The false symmetry between errors and consequences

Although Reason's Swiss Cheese Model (Reason, 1997) remains useful to explain simple failure systems, technological advances have rendered our working environments into complex systems, unsuitable to be analysed by linear thinking. Yet the model still appears in the curriculum of almost every safety course. This is why the value symmetry (Hollnagel, 2018, p. 7) between effects and causes remains so pursuant. In reality, however, big consequences do not necessarily have big causes. Failure is simply one side of the coin. Perrow (1984, p. 5) claims that "we explain the unusual event by invoking the usual and proclaiming it to be different. When of course it is not." Or as Laursen (2019) puts it: "Success and failure are both results of doing normal work."

In a JC investigation, the outcome should have no impact on the evaluation of an act. E.g. If someone crosses a red light, the event (crossing the red light) should be analysed in the same way whether an accident was caused or not. This is a major difference compared to the judicial system where the amount of harm is a primary factor in the decision to prosecute or not. This is called "No harm, no foul." And while a blind eye may be turned to those imposing unnecessary risk, provided the outcome is good, those causing heavy damage or injury will face severe consequences although the error itself may be identical. (Marx, 2009, pp. 94–96)

3.2.2 Importance of context - local rationality

Dekker (2002, chap. 2) notes that reactions to failure are mostly 'retrospective' (i.e. looking back on a sequence of events, of which the outcome is known), 'proximal' (i.e. focussing on those closest in time and space to the mishap), 'counterfactual' (i.e. explaining what could have been done to prevent the mishap) and 'judgmental' (saying what one should have done, or failed to do). Similar to applying the label 'Human Error' (see also Chapter 3.2.4) none of this helps to understand why an incident occurred.

Independent of consequence severity, the goal of any JC investigation should be to understand the context in which an event occurred. Jens Rasmussen (as cited in Dekker, 2017, p. 60) argues that when asking "How could they have been so negligent, so reckless, so irresponsible?" it is because the wrong reference frame for understanding behaviour has been used. Discovering the 'local rationality' i.e. understanding why did it make sense to the people at the time to do what they did (Dekker, 2002, p. 12), is the only way to ensure true learning and decide upon the fate of those involved. According to the author, 'getting inside the tunnel' (see Figure 12) is a pre-requisite to be perceived just and fair.

[20] The term 'JC investigation' may sound odd, since JC is a mindset which should be carried throughout the whole organisation and should be applied during any investigation. However, many organisations use the term in referring to the event review process which draws the line between acceptable and unacceptable behaviour.

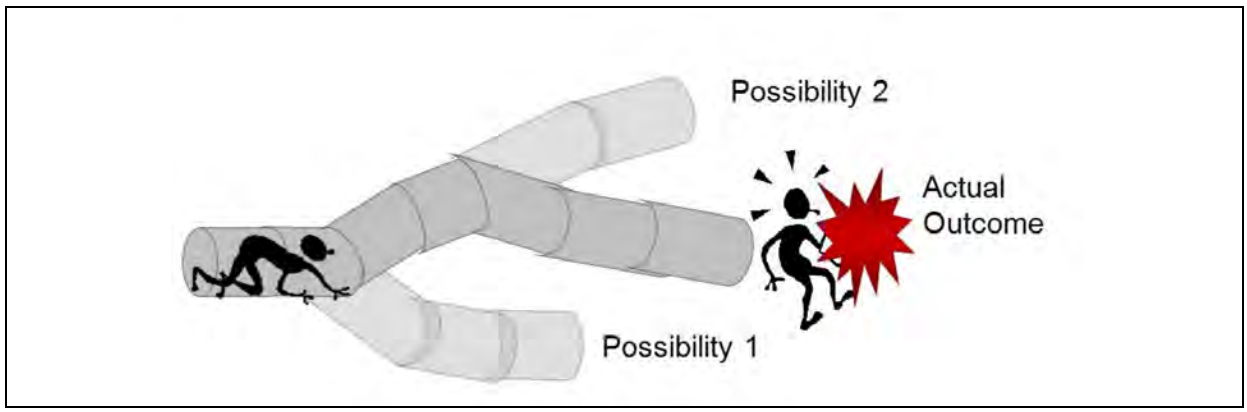

Figure 12 -The importance of context (Dekker, 2002, chap. 33)

3.2.3 The danger of hindsight bias

The retrospective element introduced in the previous chapter raises a new issue: hindsight bias. Over-simplification of the causes (which in hindsight seem obvious, but often were hidden at the time of the occurrence), overestimating probability and overrating the value of procedures makes it easy to blame those involved. (Woods and Cook, 2003, p. 138; Dekker, 2017, p. 55) The chairman of the investigation into the Clapham Junction railway accident in Britain wrote, "There is almost no human action or decision that cannot be made to look flawed and less sensible in the misleading light of hindsight." (Hidden, A. (1989). Clapham Junction Accident Investigation Report, p. 147 as cited in EUROCONTROL, 2008a, p. 19) Although difficult, investigators should be careful not to be guided by the outcome of an event, but instead to investigate 'up and out' (see Figure 13). Failing to do so, may be perceived as unfair, compromise trust and damage JC.

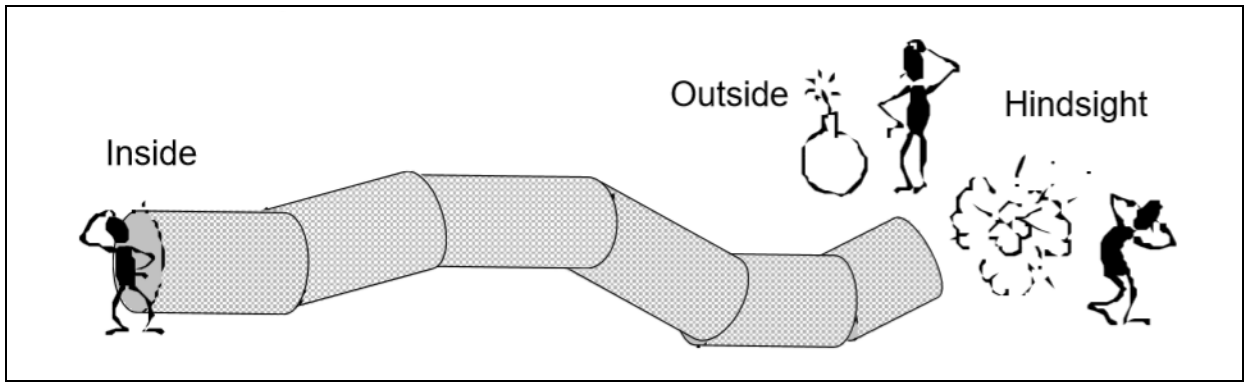

Figure 13 - Different perspectives on a sequence of events (Dekker, 2002, p. 18)

3.2.4 The label 'Human Error' - Old & New (Alternative) View

First stories (see Chapter 2.4) often feature the term 'Human Error'. Unfortunately, this label does not explain anything, let alone why something happened. (Woods *et al.*, 2010, chap. 1) People design, build, maintain and operate tools or machines (e.g. aircraft). So inevitably there will always be a human to blame. In other words, it is always a 'Human Error'. The term is just a reminder that humans are fallible. Unfortunately, it is often seen as a conclusion. A prime example of this are most of the National Transport Safety Board (NTSB) reports which need to include a probable cause as illustrated in Table 3.

"The NTSB determines that the probable cause of this incident was the flight crew's misidentification of taxiway C as the intended landing runway, which resulted from the crewmembers' lack of awareness of the parallel runway closure due to their ineffective review of NOTAM[21] information before the flight and during the approach briefing. Contributing to the incident were (1) the flight crew's failure to tune the ILS[22] frequency for backup lateral guidance, expectation bias, fatigue due to circadian disruption and length of continued wakefulness, and breakdowns in CRM[23] and (2) Air Canada's ineffective presentation of approach procedure and NOTAM information."

Table 3 - Probable Cause of Taxiway Overflight, Air Canada Flight 759 at San Francisco on July 7, 2017 (NTSB, 2017, p. 68)

"'Human error' has long outlived its usefulness in systems safety, and has now become the handicap of human factors, safety and justice." (Shorrock, 2013) And its use creates more problems than it solves. (Hollnagel and Amalberti, 2001, p. 15) Alternative investigation methods are needed asking different questions (Table 4). Questions that help to understand why there were breakdowns in CRM, why the crew failed to tune the ILS frequency and why the company used ineffective chart presentations. In short: to achieve real learning.

Old view	New (alternative) view
Who is responsible?	What is responsible?
Human error is a cause	Human error is a symptom of trouble deeper inside a system
To explain failure, seek failure. Find people's: inaccurate assessments, wrong decisions and bad judgments.	To explain failure, do not try to find where people went wrong. Instead, find how people's assessments and actions made sense at the time, given the circumstances that surrounded them.
Human Error is a conclusion	Human Error is a starting point

Table 4 - Two views on human error based on (Dekker, 2002, Preface)

3.2.5 Restorative justice

As mentioned in Chapter 3.2.2, the initial response to failure often stands in the way of understanding failure because it is often retrospective, counterfactual, judgmental and proximal (Dekker, 2014, chap.2). Dekker, therefore, suggests an alternative to this retributive approach which focuses almost solely on the offender and is often insufficiently independent, lacks a peer jury and has no appeal process. This different approach is called 'restorative justice'. (see Table 5) Dekker (2015) claims that: "You can either learn or blame, but you cannot do both."

[21] A notice to airmen (NOTAM) is "a notice containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations." (ICAO Annex 11 as cited in Notice To Airmen (NOTAM), 2018)

[22] An Instrument Landing System (ILS) is defined as "a precision runway approach aid based on two radio beams which together provide pilots with both vertical and horizontal guidance during an approach to land." (Instrument Landing System (ILS), 2014)

[23] Crew Resource Management (CRM) is "the effective use of all available resources for flight crew personnel to assure a safe and efficient operation, reducing error, avoiding stress and increasing efficiency." ('Crew Resource Management (CRM)', 2019)

Retributive justice	Restorative justice
What rule was broken? How bad was the breach? What should be the consequences?	Who is hurt? What are their needs? Whose obligation is it to meet those needs?

Table 5 - Different questions asked in Retributive and Restorative Justice (Dekker, 2015)

3.2.6 Repetitive events

Most models discussed in Chapter 3.1 have provisions to deal with repetitive events. Together with negligence, assessing similar occurrences involving the same individual seems to be one of the most difficult challenges in a JC environment. (Kools and Brüggen, 2013; Dekker, 2017, pp. 42–46)

The investigation should try to uncover why the same person is involved. A key factor is to consider exposure (e.g. it would be difficult for an individual to make a medication error if this person does not administrate drugs), personal issues and other systemic issues (e.g. insufficient training, unclear instructions, fatigue, stress, mental health issues…). (Vandel *et al.*, 2005, p. 11) The author recommends talking to the person involved to find out if the event is the result of a deliberate choice and trying to understand this person's local rationality.

If the act involves a violation, assessing the adequacy of the imposed limits or procedures may help. Similarly, conducting an expert and/or peer review of the event may uncover hidden motivations[24]. In case of a continued deliberate and unjustifiable risk (see Chapter 3.3.4) contacting staff representatives in order to take appropriate action e.g. (temporary) removal from duty, is likely inevitable. In all cases, continuous adherence to the agreed JC process[25] is critical.

3.2.7 Malicious compliance and work-to-rule actions

Malicious compliance is similar to work-to-rule actions and describes a situation in which workers deliberately stick to the rules meticulously effectively bringing the work process to a standstill. (Dekker, 2017, p. 41) If this happens, there is a considerable gap between work-as-described and work-as-done. (Shorrock, 2016) A partnership approach may reduce this gap. The author considers 'Malicious Compliance' not a JC issue. Work-to-rule actions may actually reveal the shortcomings of work procedures and may help to address them.

3.3 Legal terms related to JC

The JC jargon features many legal terms. The paragraphs below intend to clarify the respective definitions because of differences in national law, similar terms may have different meanings.[26] There is an on-going debate over the presence of judicial language in EU 376/2014 (European Parliament and Council, 2014). While some EU member states may see this as a hidden attack on their judicial sovereignty, aligning EU criminal law or at least harmonising the definitions may be beneficial. (Van Dam, 2018b) The author agrees and believes it may be useful to standardise common legal terms in order to promote a better understanding of JC without undermining regional societal needs.

3.3.1 (Corporate) Liability

Liability is a legal term and can be seen as "the failure to correctly exercise legal responsibilities." (Van Dam, 2018a) It is the blameworthiness that a court imposes on a party for its actions or omissions and for which the court will impose a form of compensation i.e. monetary damages in a civil case and

[24] In this respect, the author experienced that it is often surprising how harsh colleagues can review each other's actions.
[25] JC Process: this term is used by many organisations to refer to the agreed policies and procedures that cover the event investigation process and subsequent evaluation of human behaviour according to JC principles.
[26] Given the scope of this paper the definitions provided in this chapter are limited and serve as an introduction to the notions presented. For more detailed information, please refer to specialised legal literature.

criminal sanctions in a criminal proceeding. (Michaelides-Mateou and Mateou, 2010, p. 7) One might say that liability is legal accountability.

The current tendency of "widening the historic precedence of placing the blame on the individual at the sharp end towards corporate management" (Finocchiaro and Starrantino, 2013, p. 31) is encouraging because it takes into account the working context instead of focusing on those closest to the event. A good example of this 'corporate liability' is the 2013 Santiago de Compostela railway accident, where preliminary charges were expanded to include top officials of the state railway infrastructure company ADIF, including rail safety senior officials, for alleged negligence (Shorrock, 2013, p. 34).

3.3.2 Criminal acts

"Criminal acts are transgressions of law and thus may be defined as any crime, including an act, omission, or possession under the laws applicable, which poses a substantial threat of personal injury, notwithstanding that by reason of age, insanity, intoxication[27] or otherwise the person engaging in the act, omission, or possession was legally incapable of committing a crime". (EUROCONTROL, 2006, p. 32) It is important to mention that criminal code differs between countries. However, most penal codes include the notions of a 'mens rea' and an 'actus rea' as mentioned in Chapter 3.1.

3.3.3 Civil litigation vs criminal prosecution

The law constitutes of two main parts, namely civil and criminal. Civil law is concerned with an individual's rights and duties. Its purpose is to remedy the wrong and to compensate the victim for the damages suffered. Criminal law is concerned with wrongs committed against society as a whole. The purpose of criminal law is largely to punish the wrongdoer and to deter similar acts. (Michaelides-Mateou and Mateou, 2010, p. 8)

3.3.4 Recklessness

In legal terms, a reckless act is associated with deliberate and unjustifiable risk (i.e. a foreseeable risk and where a bad outcome is likely, but not certain) "Whether the risk is unjustifiable depends on the social value of the activity involved, as well as on the probability of the occurrence of the foreseen evil." (Smith & Hogan as cited in Reason, 1997, p. 207)

3.3.5 Negligence

In legal terms, somebody is considered negligent when causing harm that a 'reasonable and prudent' person (the so-called 'ordinary man'[28]) would have foreseen and avoided. (Smith & Hogan as cited in Reason, 1997, p. 207; Anderson (1856) as cited in Michaelides-Mateou and Mateou, 2010, p. 9) For example, if person A finds a gun and – convinced that it is unloaded – points it at B and pulls the trigger, then person A is considered negligent if any reasonable and prudent person would have avoided this act considering the risk that the gun might be loaded.

It is important to understand that ''to raise a question of negligence, there needs to be a duty of care on the person, and harm must be caused by the negligent action.'' (GAIN Working Group E, 2004, p. 6) Depending on the country, criminal law distinguishes between three types of negligence: slight, ordinary and gross. Table 6 shows that the distinction is made in respect to the awareness of the consequences i.e. the 'mens rea'.

[27] The term 'intoxication' in the context of this definition seems odd, since all interviewees agreed that substance abuse should be excluded from JC considerations.

[28] In this context 'ordinary' should be interpreted as 'commensurate with training and experience' i.e. 'comparable to peers with the same level of (assumed) competency' (Smith & Hogan as cited in Reason, 1997, p. 207)

Slight negligence	Failure to use great care. In case of damage caused by inadvertent carelessness (Panelli and Scarabello, 2013, p. 59)
Ordinary negligence	Failure to use ordinary care. In case of damage caused by a person who could envisage the consequences of his behaviour but still acted convinced that this person could avoid the harmful outcome. (Panelli and Scarabello, 2013, p. 59)
Gross negligence or Wilful conduct	Failure to use even slight care. In case of foreseeable damage caused by "a manifest, severe and serious disregard of an obvious risk and profound failure of professional responsibility to take such care as is evidently required in the circumstances (…)" (European Parliament and Council, 2014 Art. 16.10(b))

Table 6 - Three types of negligence (Note: differences may exist between states)

According to Van Dam (Van Dam, 2018b, p. 3), Dutch prosecutors, during a discussion about a series of incidents/accidents at a glider airfield, confirmed that gross negligence can be considered cumulative. This may have significant consequences when confronted with repetitive events (see also Chapter 3.2.6).

Of all terms discussed, negligence is probably the most problematic because its meaning depends heavily on its socio-cultural and legal context. What is considered 'reasonable' and 'prudent' for someone, may be negligent to someone else. (Dekker, 2009) This ambiguity is what makes judging so difficult. Therefore, some (Bijlsma, 2013, p. 64; Van Dam, 2018b, p. 1) argue that only the judiciary (prosecutor or court of law) can determine if behaviour should be categorised as gross negligence, wilful (mis)conduct or having criminal intent.

For example, consider a pilot who was unaware of the obligation to turn on probe heating in icing conditions causing an unreliable speed condition endangering passengers and crew. Is this lack of knowledge due to limited training driven by cost-cutting? Or should it be attributed to a lack of professionalism? In other words, if a rule that should be known, is not followed, is this a case of (professional) negligence or a systemic issue? In another example, De Winter (2013, p. 9) concludes "that experienced commanders have less right to plead unpremeditated or unintentional non-compliance than less experienced pilots" with regards to continued unstabilised approaches[29].

3.3.6 Duty of care and (due) diligence

A duty of care refers to "the obligation to use care toward others that would be exercised by an ordinarily reasonable and prudent person in order to protect them from unnecessary risk of harm" (*Duty of care*, 2019). Sokol (2012) recommends "to take three perspectives, (a) foreseeability of the harm that ensues, (b) the nature of the relationship between the parties, usually called the element of proximity, and (c) the question whether it is fair, just and reasonable that the law should impose a duty of care."

3.3.7 Accountability vs. responsibility

When drawing a line, it is important to know who was responsible or accountable for the occurrence. Therefore, it is key to understand the differences between these terms. According to Van Dam (2018a) responsibility is "the allocation and performance of a task and/or function i.e. the fulfilment of an obligation." While accountability is "the allocation of an obligation vis-à-vis someone which is often associated with some kind of reporting line."

[29] *An unstabilised approach can be defined as one where the airline's minimum acceptable criteria (such as airspeed, configuration and thrust setting) for the continuation of an approach to land are not met. (Stabilised Approach, 2019)*

The difference is that responsibility can be shared while accountability cannot i.e. it always belongs to a single person. Being accountable means that a person is not only responsible for something but also that answerable for the actions taken. (Brenner (2005) as cited in Stolzer, Carl D. Halford and Goglia, 2015, chap. 9) ICAO (2013, chapters 5-7) is clear: "In safety management, the term 'accountability' may be perceived as responsibilities which should not be delegated." Also, accountability is something a person is held to only after a task is finished.

Extreme system thinking may create the illusion that nobody would ever be accountable because there will always be a systemic failure to point at. The author believes this reasoning is flawed. System thinking helps to better understand the context (see also Chapter 1.4) by using concurrent narratives rather than linear thinking. However, it does not remove the fact that people remain answerable for their actions (Licu, 2018, p. 6) while keeping in mind, that there are many responsibility-authority mismatches where people are made responsible for something over which they have no complete authority. (EUROCONTROL, 2008a, p. 14)

3.3.8 Legal systems

According to Tamanah (2001) "Law is a mirror of society - a reflection of its customs and morals - that functions to maintain social order." Therefore, many different legal systems exist. Two common bases in the Western world are the 'Napoleonic Code' based on the former French Civil Code instituted during the Napoleonic wars (e.g. France, Belgium, Netherlands, Italy) and 'English Common Law' (e.g. US, UK) based on precedent judicial decisions (University of South Carolina, 2018; Saint, 2019).

3.3.9 Discretion

Some legal systems provide prosecutors discretion (e.g. UK, Belgium, Netherlands) not to prosecute (Crown Prosecution Service, 2013; Habchi, 2015, p. 33; Van Dam, 2018b, p. 3) based on the principle of expediency/opportunity (Bijlsma, 2013, p. 65) even where a breach of the law is evident. Unlike for example the Italian penal system where breaches of the law, when discovered, must be criminally investigated – so-called 'mandatory prosecution'. (Panelli and Scarabello, 2013, p. 59)

4 Implementing a JC at corporate level

"Achieving a safety culture does not have to be akin to a religious conversion – as it is sometimes represented. There is nothing mystical about it. It can be acquired through the day-to-day application of practical down-to-earth measures. Nor is safety culture a single entity. It is made up of a number of interacting elements, or ways of doing, thinking and managing, that have enhanced resistance to operational dangers as their natural by-product." (Ingenrieth, 2017)

4.1 Preparation

4.1.1 Understanding why

Before anything else, it is critical to understand why an organisation aims to implement a JC. One or more reasons may apply such as regulatory requirement, high-level initiative, response to a critical incident, competition… A thorough understanding of the drivers and final objectives behind such a project will help to overcome obstacles and to face setbacks.

4.1.2 Top level-commitment & understanding

An absolute pre-requisite is top-level commitment (Royal Pharmaceutical Society, 2012, p. 2). Convincing the corporate leadership of JC benefits may require considerable effort from the project leader. Apart from regulatory compliance, increased safety reporting and the benefits a more people-focused company culture, a key argument is that while JC is primarily implemented by a safety motive, it is recognised "that the same factors that are creating accidents are creating production losses as well as quality and cost problems." (de Courville (1999) as cited in EUROCONTROL, 2006, chap. 21) In other words: safety and efficiency often go hand in hand and this argument should be used to the fullest. It is essential that the leadership comes to grips with the essence of the 'new view' and systemic thinking.

4.1.3 Resources

Ensure that leadership commitment translates into adequate financial and human resources (HR). On the financial side, consider a budget for acquiring, installing and fine-tuning an adequate reporting system and consultancy (e.g. HF specialists).

4.1.4 Staff involvement

The author recommends involving staff representatives as early as possible. Early staff involvement ensures future participation, minimises the gap between work-as-done and work-as-imagined and is a regulatory requirement[30] in aviation. (European Parliament and Council, 2014, Art. 16.11) While top-level commitment is a pre-requisite, this does not mean that JC needs to be managed solely top-down. A good example of an attempt to build JC bottom-up is the JC manifesto[31] (*Just Culture Manifesto*, 2018) which allows individuals to voluntarily subscribe to the basic JC principles.

4.1.5 Select the right people

Approach those who have an open mind towards change and humanistic thinking. A group of like-minded souls can be very persuasive and sharing a common goal will likely tap into the discretionary effort of the group members. Change requires extra energy. Wasting this energy in trying to convince the wrong people can strand the project before it has started. The Royal Pharmaceutical Society (2012, p. 2) recommends recognising and expanding bubbles where the right culture already exists (see Figure 14) and also the former head of safety of the Dutch Air Navigation Service Provider (ANSP) states that "we need to have examples of people demonstrating the desired behaviour" to build on. (Brüggen, 2013, p. 44)

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[30] *"Each organisation established in a Member State shall, after consulting its staff representatives, adopt internal rules describing how 'JC' principles, in particular the principle referred to in paragraph 9, are guaranteed and implemented within that organisation." (European Parliament and Council, 2014, Art. 16.11)*

[31] *The JC Manifesto is derived from the Manifesto for Agile Software Development (Cockburn, Jeffries and Martin, 2001)*

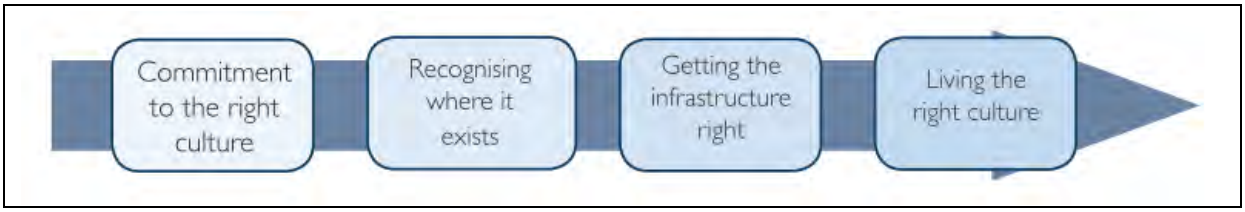

Figure 14 - Achieving the right culture (Royal Pharmaceutical Society, 2012, p. 2)

Whenever possible, select those who have a voice in the working force both among the leadership as among staff. Having people's ear may be related to hierarchical position, but not necessarily so. Consider cultural differences as an asset and make sure the team's diversity is representative of the workforce. Choose people that can act as project champions. Let their actions speak for themselves. Show. Do not tell.

4.1.6 Connect with the (judicial) authorities

The challenge for a JC at the corporate level is to ensure that there will be no conflict between corporate JC rules and national criminal law. (Licu, Baumgartner and van Dam, 2013, p. 16) A CEO cannot and must not replace a judge and this line should be clearly identified. To avoid surprises, establish formal contacts to the regulatory and judicial (prosecuting) authorities. (Dekker, 2009)

The same reasoning is applicable to social issues. Make sure to assess any legal impediments beforehand. EUROCONTROL (2006, chap. 5) warns that for some organisations, "the main challenge of developing a JC will be to change the legislation, especially if the changes are counter to social legislation."

4.2 Putting it all together

4.2.1 Scope

An organisation should be clear about the scope of its JC policy and procedures. "Sub-contracting or even chain-sub-contracting, contract workers and short term employment bring their own challenges to the culture of reporting." (Koivu, 2013, p. 68) While in most aviation organisations contracted personnel needs to be treated as regular employees (European Parliament and Council, 2014 Art. 16.11), promoting safe working behaviour among subcontractors can be a real issue in the railroad industry. (Thommesen, 2010) Here service level agreements (SLAs) may include high penalties for mistakes or delays and may have impact on future tenders. Similar difficulties arise in healthcare where surgeons or other medical specialists are often self-employed and underreport (Lawton and Parker, 2002, p. 15).

4.2.2 Developing Policy and Procedures

When developing a JC policy and procedures, first and foremost, there should be acceptance that humans make mistakes (pilots, controllers, train drivers, judges…) (Licu, Baumgartner and van Dam, 2013, p. 16) Secondly, it needs to be understood that – apart from exceptional cases related to malicious intent or mental illness – "nobody comes to work to do a bad job" (Dekker, 2014, p. 6). The UK Health and Safety Executive (HSE) summarises: "We all make errors irrespective of how much training and experience we possess and how motivated we are to do it right." (Health and Safety Executive, 2009, p. 10)

Most likely the discussions that took place in the preparation phase (see Chapter 4.1.2) will help to shape a JC policy[32] and procedures. Furthermore, discussing real or imaginary case studies, brain-storming on possible misuse and reviewing industry guidance may help to take away the doubts and uncertainties. The JC process should be clear, unambiguous, understood, and accepted by all to avoid distrust in the system. (EUROCONTROL, 2006, chap. 5)

Some organisations have created very detailed agreements between management and staff representatives. However, it should be understood that no agreement can cover all imaginable cases. (GAIN Working Group E, 2004, p. vi) "JC is not a panacea. It is a way of thinking." (Van Dam, 2018b, p. 2) Agree on the JC principles (Who draws the line? Where to draw it? How to guarantee confidentiality? What is the composition (if any) of the ERG? Who is responsible to communicate decisions and how is this done?) rather than trying to capture all possible incident categories and subsequent actions. Agreeing to what may be perceived as a fuzzy agreement, requires a leap of faith from both sides.

For management, it is important to allow unions insight into sensitive decisions regarding employees. Fear might exist that JC might be misused for other issues (Van Dam, 2018b, p. 1) or that "people would hide behind JC" (Licu, 2018, p. 2). For staff representatives, real commitment to JC requires setting aside any unrelated and unresolved issues with management, observe adherence to procedures without interfering in an on-going investigation. They should also clearly explain their role to those represented to avoid the risk of being perceived as protecting their position on the back of a blamed colleague by 'collaborating' with management.

A robust event investigation process should help to overcome these fears. And consistently adhering to the agreed procedures will build confidence over time. JC should transcend personality (Koivu, 2013, p. 68), hierarchy, race, gender, education or cultural background. JC should not rely on people but on principles. So, when the 'believer' manager is replaced, clear guidelines and procedures should ensure that the JC process is still followed. Beware of positions that allow people to draw lines in a 'hidden way'. (Licu, 2018, p. 4) E.g. an operations manager that has been in position for years and aims to settle a personal vendetta. Laursen confirms: "As soon as it becomes individual, you have lost." (Laursen, 2018, p. 2)

4.2.3 Staff support and Event Review Groups (ERG)

The author recommends that whenever a staff member is subject to a JC investigation, this person should be allowed to be supported by a (trained) staff representative. Including this step in the formal JC process will enhance transparency, re-assure the person(s) involved and secure participation in the investigation. The organisation may consider using a flow chart but should keep in mind its limitations (see Chapter 3.1.6).

Including a multi-disciplinary ERG will help to highlight all contextual aspects of an occurrence and will likely result in a more balanced and more widely accepted decision. Make sure that ERG members are objective, properly trained and bring the necessary experience in their domain. Licu (2018, p. 4) is unsure if all ERGs have sufficient skills and knowledge to determine unacceptable behaviour and warns that "there are many tons of grey between black and white". Nevertheless, EUROCONTROL also decided to implement an ERG.

[32] *The author is convinced that a safety policy should be as simple as possible as to be repeatable by all employees. He proposes the following statement: "Everybody is responsible for safety. Please report. You will not be punished for honest mistakes." The actual working procedures can be detailed in the Safety Management Manual.*

4.2.4 Determine Roles and Responsibilities

Based on the agreed policies and procedures, determine the roles and responsibilities within the organisation. “Find enough of the ‘right’ kind-of people (energetic, well-liked, well-known and respected)” to maintain the energy required for the system to function. (EUROCONTROL, 2006, chap. 5) Decide who will have a vote on JC decisions and whether there are any veto rights. Ensure to create a simple and transparent structure to avoid “hiding behind closed curtains” (Van Dam, 2018b, p. 2). Depending on the size and structure of the organisation, JC functions (e.g. attending an ERG) may be combined but beware of a possible conflict of interest (e.g. manager trying to cover own mistakes by blaming subordinate or vice-versa). Predicting the exact numbers of full-time equivalents (FTEs) needed to handle JC promotion, increased reporting and event investigations may be challenging. Above all, the role of the safety (investigation) team needs to be solely advisory and unrelated to any disciplinary action as to safeguard independence and employee trust.

4.2.5 Confidentiality

Ensure robust data protection both on the technical side (IT accessibility, firewalling, backup) as on the human side (confidentiality agreements, job descriptions). Both EU 376/2014 (European Parliament and Council, 2014) and ICAO Annex 19 (ICAO, 2016b) provide extensive guidance on the protection of the reporter and those mentioned in the report. Internal procedures need to describe any de-identification process. In smaller organisations (e.g. business aviation operator) with a limited number of employees, it may prove difficult to maintain confidentiality. However, those having access to identified data should adhere to confidentiality agreements at all times, not to break the trust in the system. In the author’s experience, the reporter himself is often the first to disclose confidential information.

Some organisations choose to accept anonymous reports. However, validating events or gathering additional information without a known reporter may be difficult. While anonymous reporting may serve as an indicator for the (lack of) maturity of JC and may reveal sensitive issues in organisations with little trust, it is delicate to respond to. Open queries regarding a specific issue may be based on false assumptions, bogus information or understanding and result in adverse perceptions.

Apart from the internal protections, organisations should also consider “how to protect the organisation’s data from undue outside probing” (Dekker, 2009). This depends on the legal framework of the country concerned. (see Chapter 5.3.1)

4.2.6 Reporting system

Dekker (2017, pp. 67–71) summarises a successful reporting system as “voluntary, non-punitive and protected”. Apart from these requirements, reporting should be made as easy and efficient as possible. It should not be harder to report than walking into someone’s office and telling the story. When installing off-the-shelf systems, make sure to ‘copy - adapt - paste’ (Vullings and Heleven, 2015) and tailor the system (front- and back-end) to the specific context (e.g. actual work, language, workplace) of both reporter and back-office user.

Consider accessibility (web, mobile phone, private device), stability and responsiveness. Use auto-filled fields for identification where possible. Allow for photo/video/file uploads. Consider a speech-to-text feature. Consider if mandatory fields can be derived from other selections or be added after submission. Voluntary reporting counts on the discretionary effort of employees. A committed company should recognise this and actively stimulate voluntary reporting. Giving employees a voice that is heard and acknowledged is the start of a different discussion about safety and will seed a true safety culture.

4.2.7 Substance abuse & Mental health

There is a general agreement that alcohol or drugs use is intolerable and a clear violation of work ethics and company procedures (Laursen, 2018; Licu, 2018; Van Dam, 2018b). Therefore most JC policies exclude substance abuse. (EUROCONTROL SAFREP Task Force, 2005, Appendix 5; Van Hyfte, 2018, p. 3)[33] For example, reports sent to the US ASAP are accepted[34] only when unrelated to substance abuse or sabotage. (FAA, 2002a) When investigating a case related to substance abuse, search for the reasons behind and be aware that what is unacceptable today, may have been acceptable in the past. (Licu, 2018, p. 3) This does not necessarily alleviate the violation but may help to understand the mindset of those involved and formulate an adequate response. Similarly, mental health issues may affect behaviour (actions, decisions or omissions). Understanding the individual background of those involved may help to understand the impact of the affected psyche.

4.2.8 Training & promotion

Training starts from day one. First with leadership, then with the implementation team and finally with the workforce. Make sure to keep the front-liners informed from the start of a JC implementation. Be totally honest about the ultimate objectives, commitment and progress. Actively seek participation from staff and channel suggestions through the agreed representation.

Ensure that front-liners know how report and are aware of their rights and duties in relation to incidents. Make sure they understand the investigative process and its objectives. “Disinclination to report is often related more to uncertainty about what *can* happen than by any real fear about what *will* happen.” (Dekker, 2017, p. 64) Thoroughly assess this understanding at all corporate levels at regular intervals preferably using validation through one-on-one interviews. Informing the organisation and making sure that the understanding reaches deep enough will require a constant and consistent effort. (EUROCONTROL, 2006, chap. 5) E.g. at EUROCONTROL much opposition came from an unexpected corner when the non-operational staff worried about possible consequences for them which blocked implementation for four years. (Licu, 2018, pp. 2, 7)

4.3 Living the system

4.3.1 Building trust

Just because the JC process is implemented and documented, does not mean it will be effective immediately. “It takes time, persistence and patience to change safety attitudes and behaviours.” (EUROCONTROL, 2006, chap. 5) or as Licu and Van Dam (2013, chap. 20) put it "a JC policy is not a document but a continuing effort." It is about building trust.

There are several factors influencing the success or failure of JC. (see Table 7) An often-used image is that of a puzzle. (see Figure 15) This metaphor nicely illustrates that all pieces need to fit together to achieve a functioning system. It also means that factors are linked to each other. E.g. it will be very difficult to obtain trust if there is no feedback or acknowledgement of human fallibility.

[33] *This does not mean that the organisation may not have other obligations related to employee well-being*

[34] *Only when a report is accepted it is de-identified and protected from the public domain (Incl. Right of Information Act).*

PREREQUISITES/CATALYSTS	OBSTACLES
○ Top-level commitment ○ Acceptance ○ Trust ○ Understanding ○ Feedback ○ Independence ○ Confidentiality ○ Ease of use ○ Motivation	○ Ambiguity ○ Stigmatisation ○ Financial and professional penalties ○ Lack of any of the pre-requisites

Table 7 - Pre-requisites, catalysts and obstacles to JC (EUROCONTROL, 2006; Dekker, 2009)

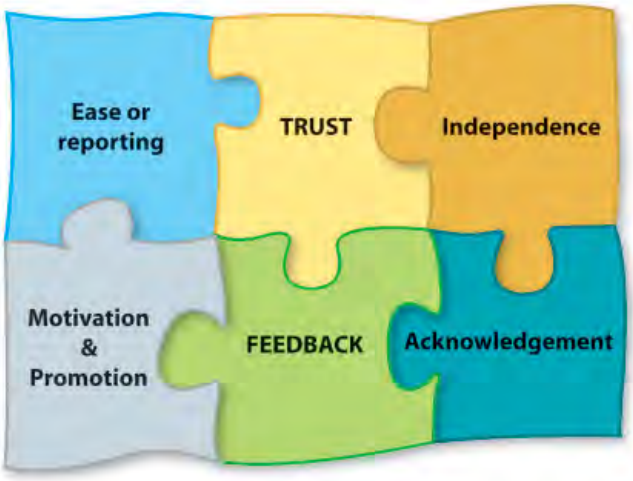

Figure 15 - Pre-requisites to an effective JC implementation (EUROCONTROL SAFREP Task Force, 2005, p. 50; EUROCONTROL, 2006, p. 15)

Because trust is an absolute pre-requisite for JC, the author proposes an alternative diagram. Figure 16 shows how other factors contribute to building this trust. Key is the acceptance of human variability and the focus on finding the gap between the work-as-done and the work-as-imagined.

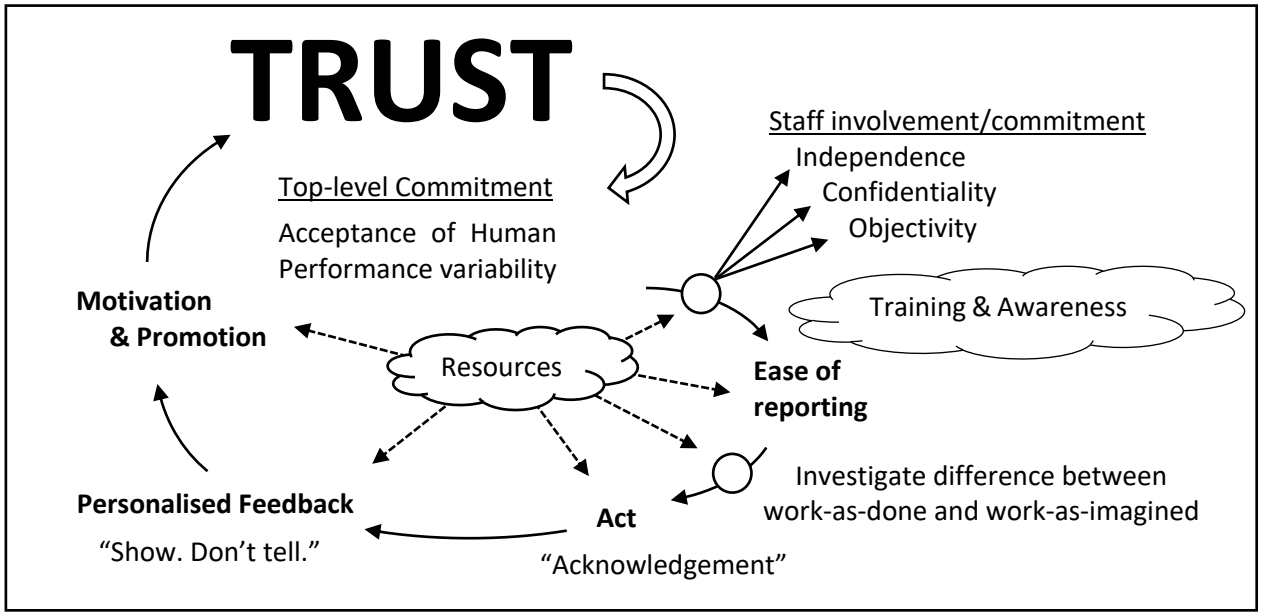

Figure 16 - A new model to implement JC (the author)

It will be up to the organisation's leadership to demonstrate top-level commitment by showing the acceptance of human performance variability and allocating adequate human and financial resources to the project. Early staff involvement will help to secure motivation and will likely lead to a simple and easy to use reporting system. Establishing an agreed policy and process ensures transparency while instituting independent safety cell with clear rules on confidentiality and objectivity will help to build confidence. Effective promotion and training should ensure common understanding of the JC principles as described in the company's tailored policy and procedures. And when the system goes live and people start to report, timely feedback on the progress of the investigation and resulting actions is essential to boost motivation and build the necessary trust.

Keep in mind that trust goes both ways. "If the leadership does not trust its employees, then how to build a JC?" (Dekker, 2017, pp. 52–53) On the other hand, when trust is present, front-liners will likely have confidence in their "management's prioritisation of safety over assigning blame." (EUROCONTROL, 2006, p. 21) This mutual understanding and trust is the driver behind a true JC.

4.3.2 Lead by example

Make sure to 'lead by example' and raise awareness of management's commitment to safety. Involve management in the reporting process to visibly show that they commit to a JC. (EUROCONTROL, 2006, p. 14) "If the top of the company does not live up to its own professed standards, how can they expect the bottom to do so?" (Collin *et al.*, 2013, p. 29) Consistently apply the agreed procedures and results will follow automatically. Sinek (2018) explains that although results may be hard to measure on a daily basis, consistency will ensure success over time.

4.3.3 Actively stimulate reporting - Feedback

Use commercial marketing strategies to encourage reporting and enhance safety culture. Ensure communication is user-centred by adapting the message to the target audience (e.g. management vs. operational personnel). Keep it fresh by varying style (and media) over time, as to maintain the reader's attention and to stimulate active contribution. (EUROCONTROL, 2006, chap. 5) Show tangible evidence on how safety can enhance production, efficiency, communication and consequently cost benefits. (EUROCONTROL, 2006, p. 27)

Brüggen (2013) argues that management should praise open reporting especially when reporters feel something is their 'mistake' and suggests giving voluntary reporters the opportunity to testify about their experience to show that they are not afraid to lose face, but focus on improving the system. Such examples clearly demonstrate the organisation's safety ambitions and could be strengthened even more by rewarding and recognising good practices. (EUROCONTROL, 2006, p. 27)

Regarding individual feedback: "Reporters like to know whether their report was received and what will happen to it, what to expect and when." (EUROCONTROL, 2006, chaps 27–28) Every report is an opportunity to demonstrate the learning obtained through safety reporting. Providing timely feedback about the progress of the investigation, findings and resulting actions secures future reporting, because people feel valued and realise that their extra effort makes a difference. None or inappropriate feedback will cause reporting rates to plummet.

A 2016 safety culture survey among airline pilots with 7239 respondents shows that both safety communication and timely feedback are in the top 2 of least favourable responses. (Reader, Parand and Kirwan, 2016, fig. 5) This illustrates that there is plenty of room for improvement in the existing (aviation) systems.

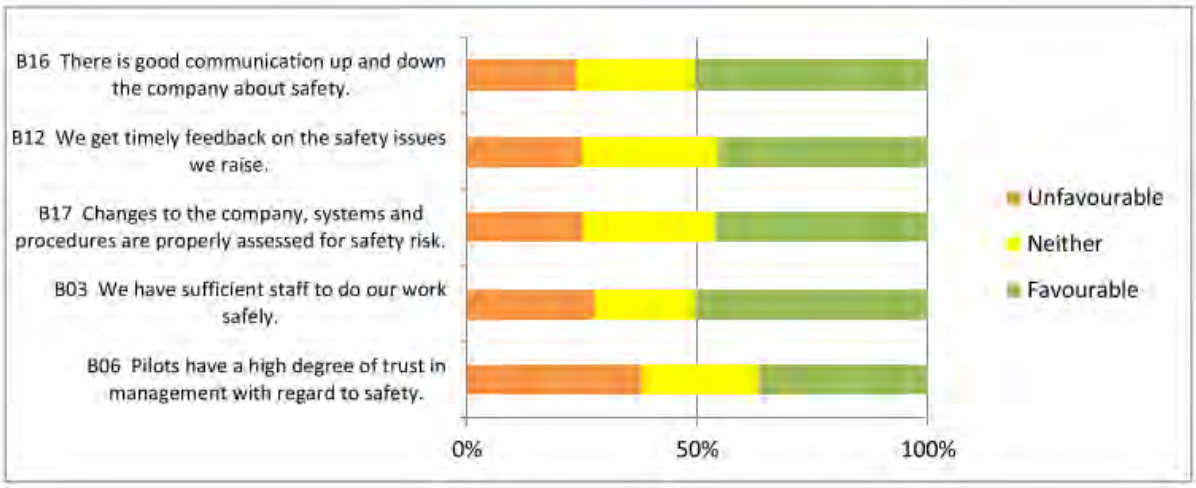

Figure 17 - Top 5 least favourable responses overall on safety culture perception (Reader, Parand and Kirwan, 2016, fig. 5)

Next to individual feedback is also important to communicate 'horizontally' to others in the organisation or industry (operators, manufacturers, Original Equipment Manufacturers (OEMs), maintenance) who might experience similar issues. This is considered a best practice in the nuclear industry. (EUROCONTROL, 2006, p. 12) A good example is an incident where an aircraft collided with an air bridge due to a malfunctioning parking guidance system caused by the black livery of the aircraft. Long before this occurrence, Air New Zealand, operating "All Black" aircraft, had tackled this issue by developing reflective black paint, but the information was never disseminated globally. Two years after the incident and on request of the affected airline, the European Aviation Safety Agency (EASA) published an information bulletin, warning operators for this scenario. (Kaminiski-Morrow, 2018)

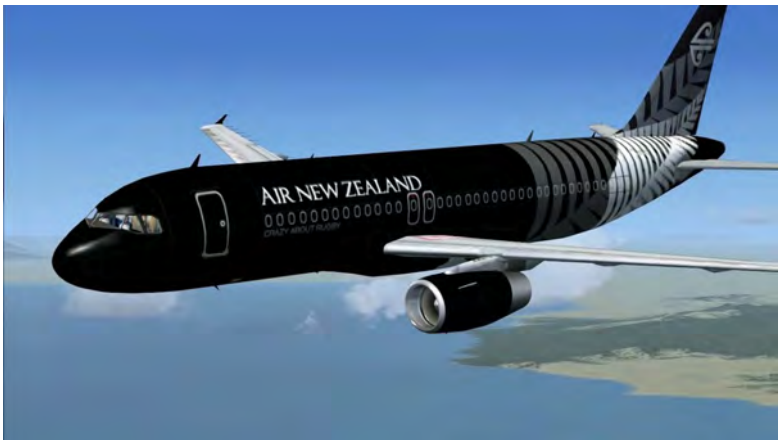

Figure 18 - Air New Zealand "All Black" livery (Air New Zealand, 2010)

4.3.4 Accountability and systems thinking

It is not because we apply a systems perspective that people are no longer accountable. (Licu, 2018, p. 6) JC is not immunity (Van Dam, 2018b) and an organisational culture where 'anything goes' is unlikely to promote safety improvement. In this respect Dekker (2017, p. 41) claims that "learning theory suggests that people break a rule because they have learned that there are no negative consequences and that there are, in fact, positive consequences."

Be fair. Always consider why people chose to not follow the rules. Is the rule or procedure still relevant? Are there better ways to achieve the same goals? Apply systems thinking (Shorrock *et al.*, 2014) and ask why people did what they did. "The question is not how to get rid of the bad apples, but in what way the organisation is responsible for creating them?" (Dekker, 2017, p. 44)

4.3.5 Communication & perception

As mentioned in the previous chapters, JC is about trust. Therefore, whenever something is said or published, make sure it helps to build this trust - even if the message is unpleasant. When communicating always consider how the message could be perceived by different parties. Keep in mind that words or writing style may be misinterpreted. Therefore, using a neutral (non-judgemental) language is essential. (Licu, 2018, p. 4)

Avoid any hint of partiality by making references to agreed JC procedures and never engage in a personal attack, or what might be seen as such. Especially when delivering negative news, make sure tone and language used are in accordance with JC principles (i.e. avoid blame). Whenever possible, consider a joint communication by management and unions (or staff representation). Licu (2018) argues that there should be a 'we' resonating rather than 'us and them' when talking JC.

4.3.6 Violations, disciplinary action & transparency

How to respond when ending up on the 'wrong side' of the culpability scale? All depends on the context. E.g. recklessly ghost riding a baggage cart truck, while violating 20 or more driving regulations is a clear violation, but unless the reasons for doing this are understood, no systemic solutions (if any) can be implemented and recurrence prevented. (Van Hyfte, 2018, p. 2)

Once mental health issues or substance abuse are ruled out (see Chapter 4.2.7), look at the context and try to understand the reasons behind the behaviour while looking for systemic issues. Did the system help or prevent people to behave differently? Apply the guidance presented in Chapter 3.2. Hudson proposes a Just and Fair Culture flow chart (see Figure 19). Similar to the flow charts discussed in Chapter 3.1, the author believes that they should be considered as guidance only; not as a formal and seemingly objective algorithm to determine culpability.

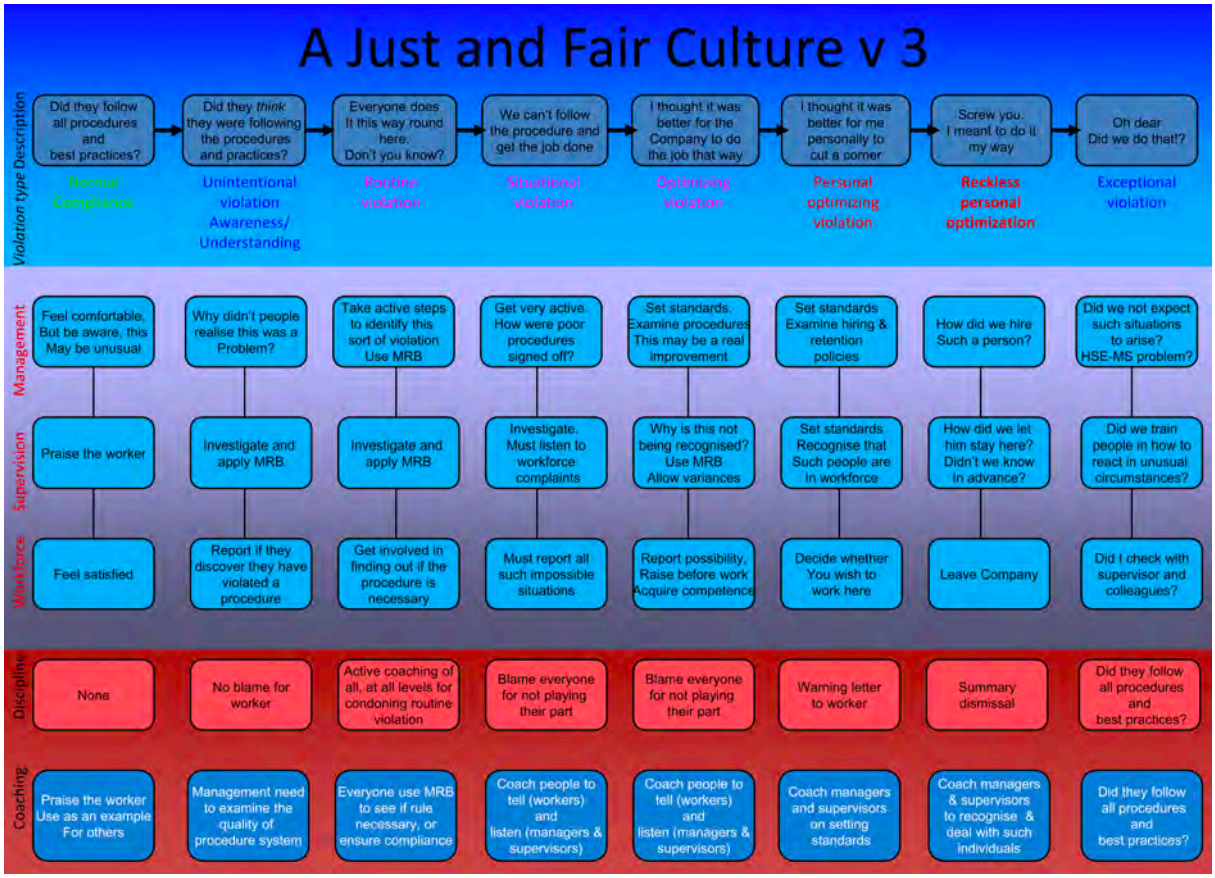

Figure 19 - A Just and Fair Culture v.3 (Hudson, no date)

If the decision is made to issue disciplinary action, the question is how to mitigate the possible negative impact on JC of such a decision? Two options exist: actively explaining the decision or keeping silent.[35] The author is convinced that silence is not a valid option since it gives room for rumours and speculation. Finding the right balance between a clear account of the event and protection of the reporter may prove difficult but is necessary even if HR policies may preclude discussing individual disciplinary sanctions. In such cases close cooperation between HR department, safety department and AM with regards to communication is essential.

The same challenge is applicable when an incident occurs which is known outside the protections of the reporting system (e.g. a runway incursion). A quick, factual description of the facts known at the time and the assurance that the JC process will be adhered to may help to prevent speculation or mood making for personal gain. An excellent example of such transparent communication is the Dutch Air Navigation Service Provider (ANSP) Luchtverkeersleiding Nederland (LVNL) who since January 2015 voluntarily publishes incident reports on its corporate website. (KNVVL, 2015) When after a loss of separation incident a mayor questioned LVNL procedures for political gain regarding noise abatement, the issue was quickly dismissed. (Van Dam, 2018b, p. 3)

4.3.7 Performance measurement

During the interviews, it was mentioned that "JC cannot be measured in an Excel sheet." That it is about how people feel. (Laursen, 2018, p. 4; Van Dam, 2018b, p. 4) Because JC is about perception the author believes that it cannot be captured in quantitative terms but should be approached qualitatively. Independent surveys should be complemented with open questions, preferably validated by interviewing random respondents (CANSO, 2008, p. 3).

For example, reporting rates are a valuable indicator[36] but more important is report maturity. Is the report about a procedure, about an error committed by the reporter or someone else? Report quality may prove another interesting metric. Is the report factual? Does the reporter mention possible solutions or recommendations to prevent recurrence? Since JC is intertwined with a broader safety culture, other performance indicators (or valid survey questions) can be found in safety culture studies. (see Table 8) Blind benchmarking i.e. comparing the organisation's score with that of similar organisations may be useful but only if based on identical questions and methods. Blajev (2013) warns that single incidents cannot serve as a performance measurement. An incidental degraded performance does not necessarily point to overall degraded competence.

[Likert scales 1 to 5]	Airline A	Airline B	Airline C	Airline D	Airline E	Un-known	**Over-all**
My company is genuinely concerned about safety.	3,9	3,3	3,9	3,5	4,0	3,3	**3,6**
My accountable manager is committed to safety.	3,8	3,1	3,6	3,4	3,1	2,9	**3,3**
The safety department is committed to safety.	4,3	3,1	4,1	3,4	4,3	3,4	**3,7**
In my company, employees take a personal responsibility for safety.	4,1	3,8	4,1	4,0	4,4	3,7	**4,0**

[35] *This issue was raised by Dr. Cengiz Turkoglu during an informal conversation with the author. Dr Turkoglu is a senior lecturer and course director for the MSc Airworthiness at Cranfield University. He researches the concept of 'risk culture'.*

[36] *Some organisations impose certain quotas of reports per month. The author feels this is useless, since it likely leads to poor quality reports about known hazards and may mask the actual maturity of the reporting culture.*

There is a mutual expectation among employees regarding safe behavior.	4,0	3,8	4,1	3,9	4,3	3,4	**3,9**
I am provided adequate resources (manuals, documentation, time, equipment) to accomplish my job safely.	4,0	3,4	3,6	4,0	3,5	3,2	**3,6**
I understand how my company makes the distinction between a no-blame error and an intentional violation or act of gross negligence.	3,4	2,4	3,7	2,9	4,0	2,4	**3,1**
I feel well informed about safety issues (and mitigating measures) within my company.	3,7	2,3	3,3	2,8	3,4	2,7	**2,9**
In my company, people are treated in a just and fair manner when reporting safety occurrences and issues?	3,5	2,5	3,6	3,2	3,9	2,5	**3,1**
The forms (paper or electronic reports) to be used when reporting safety events are well designed and easy to access/use.	4,1	3,0	3,7	3,8	4,1	3,2	**3,5**
I do not like losing time filing safety reports because nothing will change anyway.	2,3	3,4	2,6	2,6	2,5	2,7	**2,8**
The safety department has enough resources (funds and decisive authority) to accomplish its safety management task.	3,8	2,8	3,5	3,7	3,3	2,7	**3,2**

Table 8 - Partial results by company BeCA Safety Survey 2015 (n=416) (BeCA, 2015, p. 64)

4.3.8 Handling the media at the corporate level

"The press is the gateway to the public. Failure to co-operate with the media can be seen by the public as a lack of concern by the organisation, or that the organisation is trying to withhold the truth." (EUROCONTROL, 2008b, p. 10) As an organisation make sure to deliver a structured response by recognising the feelings of those who were hurt, stating the facts known at the time and explaining that the organisation will use the investigation conclusions to prevent a recurrence. Emphasise the importance of a serene atmosphere to conduct a proper investigation and the possible impact of undue speculation on future reporting. Table 9 gives practical guidance on how to interact with the media.

ALWAYS **Communicate concern and authority** **Keep the public's perspective in mind**	
Do	**Don't**
Tell the truth	**Lose your calm** if asked a difficult or hostile question
Be consistent – give the same messages to all audiences	**Speculate** if you don't know the answer. Say "I don't know"
Stick to known facts – never speculate *	**Place blame**
If you **don't know, say so**	**Try to be clever**
Be **candid and timely** in your responses	**Bluff**
Repeat yourself as often as necessary	**Fill silences**. Say what you mean to say and nothing more.
Make corrections when faced with a mis-stated fact or questions	**Use humour**

Always provide information from a **public interest viewpoint**	**Say "no comment"**. Say "I don't know, but we are trying to find out".
Seek **third party support**	**Discuss injuries or deaths** until next of kin have been notified
Return calls	**Say anything 'off the record'**
If you make a promise for information/updates, **keep it**	Give information you **wouldn't want to see in public**
After accidents, or serious incidents, **show appropriate concern** preferably expressed by the CEO	**Trickle** the story out

Table 9 - Rules of behaviour when interfacing with the media (EUROCONTROL, 2008b, p. 37)

Any interaction with the media should be seen as an opportunity to explain the nature and purpose of a JC. Hopefully, this will result in more balanced and accurate media reporting about incidents that will "keep the general public, the government and the judiciary better informed, improving the image of JC and making things safer in the long term." (EUROCONTROL, 2008b, p. 6)

4.3.9 Removing rules

Dekker (2017, p. 49) claims that "rules are often unnecessarily detailed and over-specified." Existing procedures should be challenged in terms of usability and usefulness. Sometimes removing procedures might give the only workable solution.

For example, after the construction of a fourth runway at Frankfurt Airport, the complexity of the new traffic situation made it impossible to translate into procedures. This caused the management to take a new approach. Instead of adding more rules, they drastically reduced the number of procedures and returned autonomy to the air traffic controllers (ATCOs). This not only led to a workable solution; traffic flows are now safer and more efficient than before. ATCOs again realise they are an essential element of the system (not mere procedural executers) and actively contribute to improving it. (Däunert, 2017)

Another example is the simplified flight deck briefings now in use at Alaska Airlines which result in an improved focus on the actual threats. (Loudon and Moriarty, 2017) The bottom line is that when people are handed back autonomy, they feel valued and involved. The author is convinced that after winning the 'hearts and minds' (Energy Institute, no date), JC will appear by itself. But removing rules and returning autonomy to the human operator is a challenge in a world that becomes ever more focused on liability. According to Marx (2009), such a mentality shift can only be achieved if society releases the false idea of human perfection.

4.4 Checklist

Although Reason believes that "a wholly JC is an unattainable ideal" (Reason, 1997, p. 205) it is definitely something worth striving for. "The virtue – and the reward – lies in the struggle rather than the outcome." (Reason, 1997, p. 220). If there is already good corporate leadership in place, chances are that 80% to 90% of a JC is covered. (Van Dam, 2018b, p. 1) The checklist in Table 10 attempts to summarise the items discussed in this chapter as well as the best practices mentioned in the FAA guidance material (FAA, 2009, chap. 9).

PREPARATION	☐	Determine the **reasons and objectives** for implementing a JC
	☐	Ensure **top-level commitment and understanding**
	☐	Secure both human and financial **resources**
	☐	Gather a **motivated and representative implementation team**
	☐	**Inform staff** about the JC implementation progress. Be transparent.
	☐	**Connect with regulatory and judicial authorities** to assess and reduce any legal impediments
SETUP	☐	Determine the **scope** of the JC process (e.g. subcontracting)
	☐	Develop a JC **policy, process and procedures** (incl. establishing an ERG)
	☐	Agree on **roles and responsibilities**
	☐	Implement a simple and effective **reporting system**
	☐	Ensure that the practical implementation is **tailored** to the organisation's needs
	☐	Organise company-wide **training and measure understanding**
LIVING THE SYSTEM	☐	**Build trust** by being transparent and leading by example
	☐	**Be consistent**, always adhere to agreed procedures
	☐	Actively **stimulate reporting** by providing timely and relevant feedback, focusing on positive results and recognising success
	☐	Before communicating, consider staff **perception**
	☐	Apply **systems thinking** (context!) while **holding people accountable**
	☐	Measure safety/JC **qualitatively**, rather than quantitatively
	☐	When interfacing with the **media**, be firm and remain consistent. Convey the second story and explain the bigger picture.

Table 10 - Checklist: JC implementation at the corporate level (the author)

5 Implementing a JC at national level

5.1 Background

The previous chapter discussed how to implement JC at the corporate level. However, if at the national level there is no support for a JC from the judicial and regulatory authorities and individuals fear repercussion when reporting, the organisation's efforts might be in vain.

EU 376/2014 (European Parliament and Council, 2014, Art. 16.6) attempts to introduce the JC principles at the national level by instructing EU member states to "refrain from instituting proceedings in respect of unpremeditated or inadvertent infringements of law which come to their attention only because they have been reported." Furthermore, the regulation requires EU member states to set up a national body and advance administrative arrangements with the judiciary (see also Chapter 1.3).

However, the caveat is that criminal justice remains a national matter. Therefore, the regulation is applicable only "without prejudice to applicable national criminal law" (European Parliament and Council, 2014, Art. 16.6) indicating that the national judicial authorities retain full sovereignty.

To date, only a few EU member states have a national body or advance arrangements with the judiciary.[37] This means that many are currently non-compliant with EU 376/2014. This non-compliance may block uninhibited reporting because it remains unclear to reporters how and when the judiciary may take action on a safety report. The main obstacles for implementation appear to be threefold: (a) lack of urgency, (b) lack of JC understanding and (c) lack of trust among the judiciary, competent authorities[38] and the aviation organisations.

With regards to lack of urgency, those countries who are compliant often faced incidents that made a swift JC implementation necessary (e.g. the 'Delta-case' in the Netherlands – see next chapter). For others (e.g. Belgium) the need for JC implementation was caused by a crisis – Brussels Tower supervisors were convocated by the judiciary for non-compliance with preferential runway system procedures – but became the subject of political debate between unions, political parties and judiciary and eventually stalled any further progress.

Regarding lack of understanding, the concept of JC is relatively new and only a few people in the judiciary seem to be able to describe its exact scope and meaning. (EUROCONTROL, 2006, p. 6) Prosecutors may falsely perceive JC as a request for immunity[39]. While the JC definition and objectives may be straightforward, it takes time and effort to remove fear, uncertainty and doubt among stakeholders. This can be done by studying real-life case studies. The same is true for the aviation experts, who often only have a limited view of working context of the prosecutor, attorney or judge and have little understanding of the legal constraints the judiciary faces.

According to the author, lack of trust is closely linked with lack of understanding. Comparable to the corporate level, communication and mutual understanding of each other's roles and responsibilities is key. To quote Reuter (2013, p. 51) "An open dialogue about our needs, fears and misconceptions is the way forward."

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[37] Although some Member States (e.g. Belgium) have advance arrangements under EU Reg. 996/2010 (European Parliament and Council, 2010 Art. 12.3) regarding accidents and serious incidents, they do not necessarily cover occurrences as described in EU376/2014 (European Parliament and Council, 2014).

[38] Competent authorities are not necessarily limited to the National Aviation Authorities (NAA) but may also include the Ministry of Labour & Social Affairs or similar agencies which may be involved in a JC discussion.

[39] "Safety experts are rightfully concerned about the fact that the judiciary intrudes their safety domain. However, some (mis)use this argument in order to claim judicial immunity." (Licu, Baumgartner and van Dam, 2013)

The different legal systems (Chapter 3.3.8), discretion (Chapter 3.3.9) and the specific national differences make a generic (i.e. global or even pan-European) approach difficult and thus require a local JC implementation. In this respect, Van Dam (2018b, p. 5) hopes that JC implementation may help "to harmonise criminal notions in Europe", although this looks currently unlikely. (Coelho dos Santos, 2013)

Fortunately, prosecution of aviation incidents is relatively rare, despite the availability of potentially incriminating information, apart from the recent Swiss cases (IFATCA and ECA, 2018). "Most states rely on a mix of unspoken agreements, on prosecutors who do not know, do not care or do not dare to take on an aviation case, a self-restrained national media, or trust that has its roots in history rather than solid legal provisions." (EUROCONTROL, 2008a, pp. 15–16) Nevertheless, as mentioned before, some countries have implemented a JC at national level (e.g. Netherlands, UK).

5.2 An existing implementation: The Netherlands

In 2000, two years after a runway incursion incident in low visibility conditions involving a Delta aircraft and a Boeing 747 on tow at Amsterdam airport, the Dutch aviation prosecutor formally charged three air traffic controllers (ATCOs) with "the provision of air traffic control in a dangerous manner." After lengthy proceedings, the case was closed as an infringement[40] to which no appeal was possible. The ATCOs were convicted without punishment. (EUROCONTROL, 2008a, pp. 36–41)

Reporting rates dropped by 50% because ATCOs perceived to be individually liable for mistakes and because of the admission of the investigation report as evidence in court. (Ruitenberg, 2002) Pilot and controller associations, as well as their respective airlines and ANSPs, urged the Dutch government to clarify this situation. On February 1st, 2005 a new law (Nederlandse Overheid, 2004) came into force that set up a new investigative body i.e. Onderzoeksraad voor Veiligheid (OvV), responsible for technical accident/incident investigations. (Nederlandse Overheid, 2004, para. 1.3) for all sectors (rail, aviation, industry, nuclear…).

The Netherlands now has a dedicated aviation prosecutor for aviation-related matters. Formal instructions for the aviation prosecution office exist under the form of a protocol (Nederlandse Overheid, 2008), which describes that in case of concurrent investigations (judicial and technical) both parties shall ensure by mutual consultation that neither investigation is hampered by the actions of the other. However there is no automatic notification by the OvV towards the Public Prosecution Service as this might question the independence of the OvV and hinder the willingness to report[41]. (Nederlandse Overheid, 2008)

After entry-into-force of the new law, the Ministry of Infrastructure & Environment started a JC case study discussion group including the aviation service providers (airlines and ANSPs), the Aviation Police Department and the Public Prosecution Service. (Bijlsma, 2013) These so-called 'kitchen table meetings' and the associated "incident reporting prosecution policy" (Nederlandse Overheid, 2008) now serve as a best practice for other countries and ICAO. (Van Dam, 2009)

[40] An infringement means "guilt in the sense that blame is supposed to be present and does not need to be proven." The only admissible defence against this is being devoid of all blame. This would work only if the air traffic controller was off-duty and therefore not in the tower to begin with. (Rechtbank Haarlem, 2002; EUROCONTROL, 2008a Appendix 2)

[41] In this context, it is important to emphasize that Dutch prosecutors have discretion i.e. no obligation to prosecute (see also Chapter 3.3.9). (Nederlandse Overheid, 2006)

5.3 Tools

5.3.1 JC Guidance material

In the author's opinion, the EUROCONTROL 'JC guidance material on interfacing with the judicial system' (EUROCONTROL, 2008a) provides a unique reference when attempting to implement a JC at national level. The document suggests that three key questions need to be answered in order to clarify the roles and responsibilities of all stakeholders in a possible prosecution: suspect, prosecutor, safety investigators, defence lawyer, judge, organisation, victims (if any), lawmaker, society and regulator. These three questions are: (a) Who draws the line? (b) What is the role of domain expertise? (c) How is safety data protected? (EUROCONTROL, 2008a, p. 21) Table 11 summarises the questions (Q.) and answers (A.) based on research conducted in the different EU member states.

Q.	**Who in the State, organisation or society draws the line between acceptable and unacceptable behaviour?**
A.	The more a State has made clear, agreed, structural arrangements about who gets to draw the line, the more predictable the judicial consequences of an occurrence are likely to be. That is, controllers and ANSPs will suffer less anxiety and uncertainty about what may happen in the wake of an occurrence, as structural arrangements have been agreed on and are in place.

Q.	**What and where should the role of domain expertise be in judging whether behaviour is acceptable or unacceptable?**
A.	The greater the involvement of the domain expertise in support of drawing the line jointly with the judicial system, the fewer controllers and ANSPs are likely to be exposed to unfair or inappropriate judicial proceedings

Q.	**How protected against judicial interference are safety data (either the safety data from incidents inside of ANSPs or the safety data that come from formal accident investigations)?**
A.	The better protected safety data is from judicial interference, the more likely controllers in that State could feel free to report. The protection of this safety data is connected, of course, to how the State solves questions 1 and 2.

Table 11 – Checklist: Three key questions when implementing a JC at the national level (EUROCONTROL, 2008a, p. 21)

Furthermore, the guidance material proposes a five-step approach as illustrated in Figure 20. This illustration is focused on ANSPs but can be expanded to other aviation organisations.

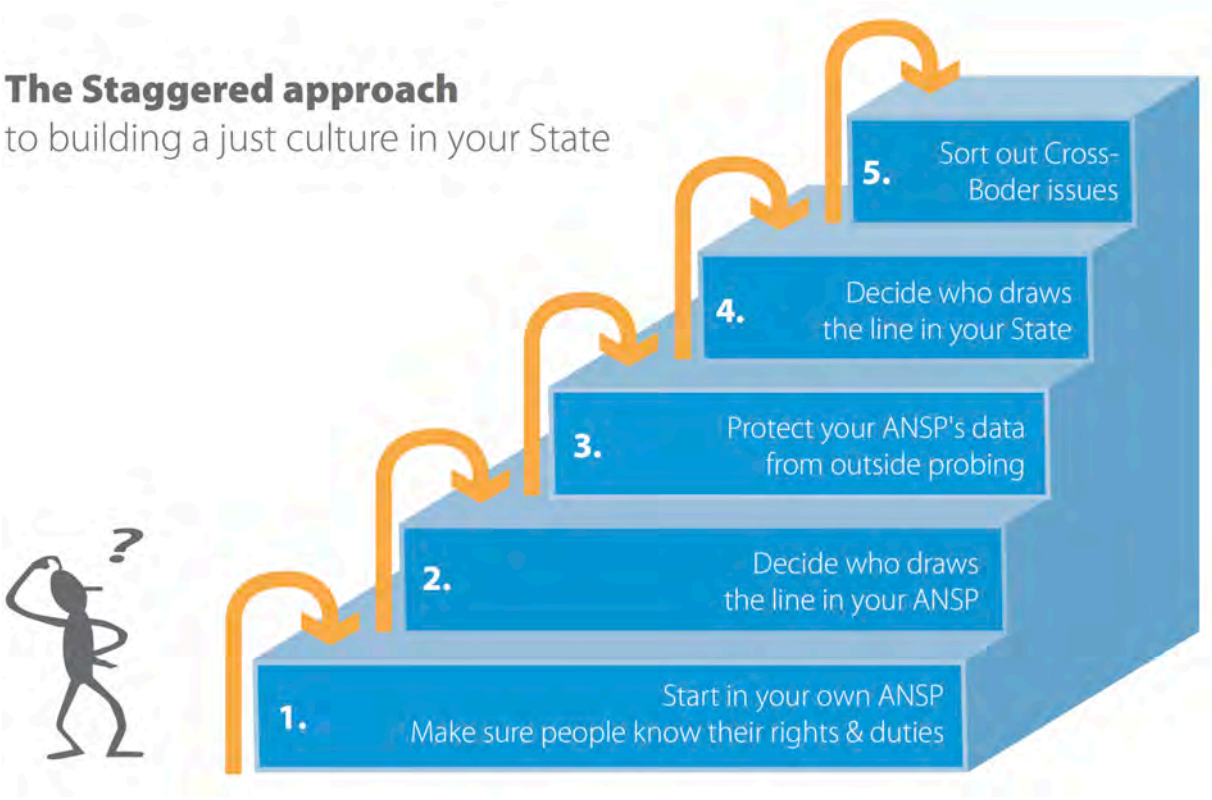

Figure 20 - A staggered approach to building a JC (EUROCONTROL, 2008a, p. 27)

5.3.2 JC Prosecutor Expert Course and JC Workshops

According to Schubert (2013, p. 48) "JC often relies on the subjective evaluation of key legal concepts, such as negligence and the existence of a concrete danger". In both cases, the operational context is essential to understand behaviour which may seem questionable by the general public. In some instances, courts have concluded that danger existed where pilots or controllers saw none, which is one of the main obstacles that block the implementation of a real JC. Schubert (2013, p. 48) proposes that part of the solution could be the systematic training of prosecutor experts who combine their operational expertise with a basic understanding of judicial reasoning.

This is exactly what happens during the three-day hands-on EUROCONTROL Prosecutor Expert Courses (PECs), where aviation professionals (pilots and ATCOs) and judiciary experts (prosecutors, judges and attorneys) are brought together to discuss JC. Selected participants appear on an expert[42] contact list allowing prosecutors to obtain objective information from people with domain expertise when faced with an aviation case.

Similarly, the EUROCONTROL Just Culture Task Force (JCTF) organises JC workshops in EU member states on demand of the local ANSP (preferably in cooperation with the NAA). For Licu (2018, p. 1) who is responsible for organising these courses in cooperation with ECA and IFATCA, “JC is both the vehicle and the bridge to open the idea of ‘system thinking’ in the judiciary’s mind.”

[42] These experts are not expert witnesses. Instead experts help the prosecutor to understand the context of what happened in order to decide whether to prosecute or not. Experts should be able to translate complex technical issues by using explanations that are understandable, cohesive and to the point. Experts should be seen as honest, unbiased, and non-defensive. (Licu, 2017) – As from July 2019, the PEC has trained over 227 participants: 90 judicial experts, 59 ATCOs, 41 pilots, 37 observers from 41 countries. (EUROCONTROL, 2019)

5.3.3 JC Model Policy

The Model Aviation Prosecution Policy (MAPP) or 'JC Model Policy regarding criminal investigation and prosecution of civil aviation incidents and accidents' (EUROCONTROL, 2012) is a template which can and is being used as a basis for a national policy regarding civil aviation accidents or incidents reported under mandatory and voluntary occurrence reporting schemes. It is an excellent starting point for NAAs and the judiciary to discuss and agree on advance administrative arrangements.

5.4 Criminalisation

JC is a balance between enhancing safety and the administration of justice where safety experts need to recognise the role of the judiciary, but "where misuse of criminal procedures or ignorance on the part of the judiciary is unacceptable." (Licu and Van Dam, 2013) Such misuse or ignorance can devastate any progress made in terms of JC. "Criminalising an incident could send the message to everybody in the operational community that incidents are something shameful" and seriously affect reporting. (EUROCONTROL, 2008a, p. 14) This need for continued reporting and cooperation with safety investigations is also reflected in ICAO Annex 13 (ICAO, 2016a), which states that "The sole objective of the investigation of an air accident or incident shall be the prevention of air accidents and incidents. It is not the purpose of this activity to apportion blame or liability."

Many agree that prosecution seldom (if ever) improves safety. (Hollnagel, 2013, p. 13). Unfortunately, there are many examples where pilots or ATCOs were convicted for systemic failures resulting in accidents with catastrophic consequences e.g. Cagliari (Pooley *et al.*, 2013), Uberlingen (*B752/T154 Skyguide Uberlingen 2002*, 2019), Helios (Woods *et al.*, 2010, pp. 80–82). Although less frequent, the Delta-case (see Chapter 5.2) and the recent convictions of Swiss ATCOs (IFATCA and ECA, 2018) are cases where criminal charges were brought to court solely based on incident reports, greatly affecting the reporting culture in their respective countries and beyond.

In order to mitigate the negative side-effects of judicial interference, Dekker (Dekker, 2009) mentions that some countries mandate a so-called judge of instruction, i.e. a go-between before a prosecutor can start a case, make the prosecutor part of the regulator or use disciplinary rules within the profession. However, all depends on the legal context. For example, the Italian Criminal Code is based on the principle of compulsory prosecution and assumes that "the agent who does not prevent an event for which he has the legal obligation to prevent it, equates to causing it." (Franchina, 2017, p. 6) This means that there is no discretion (see Chapter 3.3.9) and that whenever the judiciary is informed about a possible breach of the law, a judicial investigation is mandatory.

While it is clear that cases of gross negligence should be prosecuted (Panelli and Scarabello, 2013), Dekker argues that when criminalisation is seen as a deterrent, this becomes problematic "as threat of prosecution does not deter people from making errors, but rather from reporting them" (Dekker, 2009). As mentioned in previous chapters, the author is convinced that building bridges between the judiciary and front-line staff will help to understand the operational context and result in more balanced – less criminalising – approach that will build trust and strengthen reporting as proposed by other organisations (Quinn, 2007, pp. 13–14).

5.5 Data protection and confidentiality

In Europe, EU 376/2014 (European Parliament and Council, 2014) describes the collection and storage of information (Art. 6)[43], confidentiality and appropriate use of information (Art. 15)[44], the protection of the information source (Art.16) and access to documents and protection of personal data (Art. 20) member states are even encouraged to "retain or adopt measures to strengthen the protection of reporters or persons mentioned in occurrence reports" (Art. 16.6). E.g. in the Netherlands reports related to aviation occurrences are non-public. (Rijksinstituut voor Volksgezondheid en Milieu, 1992, Art. 7.2) and are considered inadmissible evidence[45] because of the 'nemo tenetur' principle i.e. the right to silence of the defendant (Saunders judgement at the European Court for Human Rights (NJ 1997, 699, § 68-71 as cited in Nederlandse Overheid, 2006)

But only a few countries have such protections in place. E.g. Switzerland has opted out of the data protection provided by ICAO Annex 19[46] (ICAO, 2016b) and Annex 13 (ICAO, 2016a) and investigation reports are routinely used as evidence in legal proceedings. This "makes it crucial for investigators to use language that is not inflammatory or biased; and oriented towards explaining why it made sense for people to do what they did, rather than judging them for what they allegedly did wrong." (EUROCONTROL, 2008a, pp. 16–17)

Currently, many states enjoy a delicate balance between reporter confidence and the fear of prosecution. According to EUROCONTROL (2008a, pp. 15–16) controllers feel relatively free to report, because the reported information is not used by the judicial authorities - even though the legal door is wide open by means of common freedom-of-information laws. Data protection is currently more relevant with respect to media and possible ensuing public or political pressure (see Chapter 5.6).

In the US Code of Federal Regulations (CFR) Part 193 (US Federal Government, 2019) requires the FAA to protect voluntarily provided aviation safety information from public disclosure[47]. The reasoning is that "this does not deprive the public of any information that it would otherwise have access to because the agency would not otherwise receive the information" (EUROCONTROL, 2006, p. 19). Furthermore, the FAA ASAP program (see Chapter 3.1.5) deidentifies reports as soon as they are accepted into the system and protects their contents from public disclosure except "reports of events involving

[43] *"The handling of the reports shall be done with a view to preventing the use of information for purposes other than safety, and shall appropriately safeguard the confidentiality of the identity of the reporter and of the persons mentioned in occurrence reports, with a view to promoting a 'just culture'." (European Parliament and Council, 2014, Art. 6.4)*

[44] *"Member States, the Agency and organisations shall not make available or use the information on occurrences: (a) in order to attribute blame or liability; or (b) for any purpose other than the maintenance or improvement of aviation safety" (European Parliament and Council, 2014, Art. 15.2)*

[45] *Additionally, Art. 57 of the Rijkswet Onderzoeksraad voor Veiligheid (Nederlandse Overheid, 2004) prescribes that some information may not be included in the final investigation report considering higher interests with regards to the investigation and prosecution of criminal acts and benefit or prejudice of people involved in the occurrence. Although the OvV report is public, Art. 60 of the law allows a confidential publication only to those knowledgeable of information contained in the report for reasons described above. Furthermore, Art.69 repeats that the investigation reports, occurrence reports, statements and recordings cannot be used as evidence in criminal, administrative and civil proceedings, nor can investigators be called as witness or technical expert.*

[46] *Similar to EU 376/2014 (European Parliament and Council, 2014), Annex 19 (ICAO, 2016b) features a so-called 'principle of exception'. This means that a competent authority may disclose protected information in case of "gross negligence, wilful misconduct or criminal activity" or when necessary for the proper administration of justice" when it is clear that "the benefits of its release outweigh the adverse domestic and international impact such release is likely to have on the future collection and availability of safety data and safety information." In this perspective, ICAO recommends states to have 'appropriate advance arrangements' in place between authorities and the judiciary. (ICAO, 2016b Art.5.3, Appendix 3)*

[47] *Nevertheless, the protection is not absolute since it is applicable "withholding it would not be consistent with the FAA's safety and security responsibilities". This includes "disclosing information provided under this part to carry out a criminal investigation or prosecution." (US Federal Government, 2019, para. 193.9)*

apparent non-compliance with FAA 14 CFR that is not inadvertent or that appears to involve an intentional disregard for safety, criminal activity, substance abuse, controlled substances, alcohol, or intentional falsification ” (FAA, 2017). Since the US legal system is based on common law, many incident cases are settled through civil litigation. By protecting the report, the reporter is protected from undue litigation. Unfortunately, “present case law seems to be inconsistent and future case law may not adequately protect the confidentiality of reporting programmes.” At least two cases[48] in the US have addressed confidentiality related to aviation accidents, and they reached opposite results.” (EUROCONTROL, 2006, p. 20)

5.6 Handling the media at national level

Whenever an incident happens the media will not only approach the organisation but will also question the role of the overseeing authorities. The only way of removing confusion and risk of misunderstanding is to provide simple and straightforward information about the JC principles and the procedures involved. This is why ANSP, National Aviation Authorities (NAA), Aviation Accident Investigation Bodies (AAIB) and the judicial authorities should have carefully selected, trained and experienced press officers. (EUROCONTROL, 2008b, p. 25) Any information provided should be clear, validated and emphasise the key focus: safety and “the human aspect of the crisis.” (EUROCONTROL, 2008b, p. 34) The most appropriate way to address sensation is to be transparent (keeping in mind confidentiality restrictions) and provide factual data. A good example is the UK Civil Aviation Authorities’ (CAA) publication of airprox reports in response to the media attention after a number of near-misses in the mid-1980s (EUROCONTROL, 2008b, p. 20).

[48] *“In one case, the judge recognised that the confidential information programme would be undermined if the litigating parties were given access to the otherwise confidential information. Thus, he decided, preliminarily, that it was more important for the airline to have a confidential information programme than it was for the litigating parties to have access to it (AA965 Cali accident, Colombia, Dec 20, 1995) In the other case, the judge reached the opposite result and allowed the litigating parties access to the information. (USAIR Flight 1016 Flight Into Terrain During Missed Approach, Charlotte, July 2,1994). (EUROCONTROL, 2006, p. 20)*

5.7 Checklist

PREPARATION	☐	**Understand JC** implementation at the corporate level Who draws the line and where to draw it?
	☐	**Ask the NAA about the current status** of JC implementation at national level Is there a body? Are there advance arrangements with the judiciary?
	☐	Contact the **prosecutor's office**, preferably with help from the NAA
	☐	**Gather other stakeholders** (e.g. other governmental departments, ANSPs, airlines, airports, unions, professional associations…) to build momentum and importance
	☐	If necessary, consider creating some sort of **urgency**
SETUP	☐	Consider inviting the EUROCONTROL JCTF to deliver a JC workshop or invite the prosecutors to attend a PEC to **increase JC understanding**
	☐	Agree on an **MoU and timeline** for the preparatory meetings
	☐	Discuss the **type of legal setup** which will be needed and identify potential obstacles.
	☐	Attempt to answer the **three questions** mentioned in Table 11: • Who draws the line? • What is the role of domain expertise? • How is safety data protected?
	☐	Consider **cross border issues**
	☐	Consider using real, theoretical or foreign **case studies to test** a draft setup
	☐	Consider a **JC forum / ERG at national level** similar to the 'kitchen table meetings' in the Netherlands (see Chapter 5.2)
	☐	**Keep the momentum** until the very end and regulations, directives, laws are in place
LIVING THE SYSTEM	☐	**Monitor and review**[49] the working of the body, JC forum / ERG If no cases, consider using real, theoretical or foreign case studies
	☐	**Share best practices** among stakeholders
	☐	**Maintain contact** between the stakeholders (especially the judiciary)
	☐	Ensure that new stakeholder representatives receive **adequate training** before participating in a JC forum / ERG

Table 12 - Checklist: JC implementation at the national level (the author)

[49] *"Whatever the policy, you will only see how much it will hold water with real-life cases." (Licu, 2018)*

6 The future of JC

Although the JC concept has been around for some time now, implementation and understanding strongly depend on the sector (aviation, healthcare, rail…) and geographical location (Europe, US, Australia, Middle East, South-East Asia, India, China…). Although differences will always exist due to the differences between operational contexts and cultural backgrounds, harmonising the JC language and promoting understanding may help to broaden its reach and make it more accessible for other sectors or regions. According to Van Dam (2018b, p. 4) "JC is not a value by itself, it is about balancing values. And even if values are different, you can still balance them."

On the legal side, the new EASA basic regulation has opened the way for supranational oversight. Combined with a better JC understanding "this may create an opening to start harmonising criminal notions in Europe" (Van Dam, 2018b, p. 5)

On the other hand, regarding civil law, the increasing fear for litigation may lead to overregulation. This may pose a threat to JC since it becomes very easy to specify where an individual – or an organisation[50] – deviated from written rules. It should, however, be understood that not everything can be captured in rules or laws. In many cases "JC will continue where legislation stops." (Licu, Baumgartner and van Dam, 2013, p. 17) But for this to happen a mentality shift in public opinion about blaming human error based on first stories towards more 'black box-thinking' (Syed, 2015) will be needed.

Another interesting development is the introduction of performance-based oversight in aviation which – without adequate oversight – may lead to de-facto self-regulation (Pont, 2019). It is to be seen how increased commercial pressure and regulatory capture may lead to wilful blindness and influence JC within a company or at national level. Questions such as who draws the line and where to draw it, have become very relevant during the 2019 Boeing 737 Max crisis and some see the CEO as top-level hazard (Baron, 2019).

Currently, it appears to be difficult measuring the benefits of improved reporting, because it is nearly impossible to measure what did not happen; let alone to determine whether JC was a factor. Reporting rates can be monitored, but how to prove they are related to JC maturity? The author genuinely believes that more qualitative research digging into employee JC perception is needed. Looking for more examples where things went well (Safety-II), such as ATC performance in the 1995 BMI B737 oil-loss incident (Weston, 2013, p. 57), can serve as evidence for the benefits of JC.

Last but not least, over the last decades the field of cognitive psychology has advanced tremendously thanks to improved neuroimaging. A better understanding of the human brain combined with new psychological research provided new insights into human behaviour and decision making. (Ariely, 2008; Kahneman, 2011) Some even claim that "there is no such thing as free will" (Cave, 2016). However, Licu and van Dam warn "to keep things simple and realistic" (Licu and Van Dam, 2013, p. 21) as cognitive psychologists are not (yet) able to fully understand human error and eliminate culpability. Nevertheless, understanding the underlying drivers of human behaviour is important and should be continued, because human factors and ergonomics research results in enhanced system design and workable procedures. Thanks to systems engineering, a more user-centric design (ISO, 2010) can help the human operator doing the right thing and build inherent resilience.

[50] *This raises the question to what extent a regulator is liable when something bad happens to a fully compliant organisation. (Koivu, 2013, p. 68)*

Conclusions and recommendations

JC is an essential element of a safety culture. While current legislation focuses on improved safety reporting, the author believes that a pragmatic JC implementation can deliver much greater benefits. At the corporate level, understanding the gap between the work-as-done and the work-as-imagined while applying a system's perspective can (re)connect management with front-line professionals. In a perfect world there probably should be no discussions on where to draw the line between acceptable and unacceptable behaviour. However, cultural differences and JC maturity may necessitate the idea of a line before moving towards a full restorative approach or complete system thinking.

In this context, the importance of flow charts or JC models should not be overrated and organisations should move towards more qualitative investigations (using narratives) compared to the almost entirely quantitative approaches today. This change towards a 'new view' recognising human performance variability requires top-level commitment but is together with transparency and consistency a critical step in building the required trust. A good way to anchor these elements is the use of an ERG i.e. a team of SMEs who can provide the necessary context for a multi-disciplinary investigation. Such a team is one way of uncovering responsibility-authority mismatches and efficiency-thoroughness trade-offs in order to re-evaluate the role of the human operator in the system and provide those closest to the work with the necessary tools and training to cope with the unexpected i.e. to become resilient.

At the national level, it is essential to build bridges between the judiciary and (aviation) authorities to avoid the negative consequences of undue prosecution i.e. criminalisation. A better JC understanding, as provided by the current EUROCONTROL JCTF initiatives, and the introduction of ERGs at state level may help recognising the operational context and result in a formalised framework including advance arrangements as required by EU 376/2014 (European Parliament and Council, 2014). Although many countries enjoy a delicate serenity regarding prosecution of aviation incidents, the recent Swiss cases show how fragile a JC is. Unfortunately, the public demand to blame someone seems to be growing stronger. So, until there is a societal mind shift away from retributive justice, the importance of formalised agreements, confidentiality and data protection will only increase.

After writing this paper, the author realises that many JC discussions are related to negligence. This concept is extremely difficult because it is closely related to local rationality and context – hence the importance of ERGs. Despite great advances in neuroimaging, psychology and human factors it is still impossible to look inside someone's mind. Therefore, future research on negligence in the context of JC and the harmonisation of common legal concepts may be valuable.

As the examples in this paper demonstrate, JC is not limited to aviation but is applicable to many other sectors. For this reason, the author hopes that this paper can help them to benefit from the lessons learned and best practices from aviation. Implementing JC takes time, but it is time well spent. Because it is about people and after all: people are safety.

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Appendices

Appendix A. Interview Antonio Licu

Date	20/11/18
Location	EUROCONTROL Network Manager - Brussels
Interviewee:	Antonio Licu
Title:	Head of Safety Unit EUROCONTROL

[Author:] According to you, what are the objectives of a Just Culture?

For me, it is fundamental **to improve safety**. Just Culture should be done in the context of improving safety. Now the second stream we use within EUROCONTROL is **to open a bridge to the judiciary and to their understanding of safety and culture in aviation**. Basically, these are the two top objectives for me. Improving safety: enabling people to freely report without fear of reprisal, and at the same time open this idea of 'system thinking' in the judiciary's mind. Just Culture is both the vehicle and the bridge for that. This is both a personal as well as a EUROCONTROL objective on how to progress on the topic.

You need the judiciary to have a realistic approach. Because when we started many years ago it was almost 'incestuous'. Just culture was done only between ourselves in aviation. We were only aviation people (Air Traffic Controllers and pilots) discussing Just Culture and we all loved just culture and talked about how good a job we did in aviation and how bad the judiciary was. We had to move away from this exclusively introspect view.

[Author:] If you look at the preamble EU 376/2014, it's very clear that the commission says, we have to improve safety reporting because that's the basis of all safety Improvement. Is that true in your opinion?

For me is not only reporting. **I would not want to limit just culture to reporting, but to the overall behaviour in the company regarding safety or unsafety** - because until now we looked at unsafety. That's why **we are pushing to change the language** in how we write reports. The understanding that the outcome doesn't necessarily mean we have done different things during the day *[when an incident occurred]*. **It's about understanding 'normal work'.** For me, it's more than reporting and how you operate in the normal world. But it's difficult, in the early days of Just Culture we had Prof. Erik Hollnagel who explained that if you are doing only Safety-II[51] and you just do positive safety, you don't need Just Culture, because you don't have to justify negative events. To me, that view is too extreme, and I know that people like Roderick *[van Dam]*[52], me and others do not accept that; and neither would the judiciary. **We have accountability to deal with risk and issues, but complementary to that I think just culture applies equally for normal work** and **the language used for both normal work and mishaps should be the same**. If that becomes our de facto language, then it will be much more difficult to accuse people and have a narrow individual approach when an incident happens.

[51] *Safety-II: a concept which defines safety as the ability to succeed under varying conditions. The understanding of everyday functioning is therefore considered a necessary prerequisite for the understanding of the safety performance.* (EUROCONTROL, 2015, p. 3,28)
[52] *Roderick van Dam: chairman of the EUROCONTROL Just Culture Task Force. Former EUROCONTROL head of legal affairs.*

[Author:] It's about changing the mentality overall?

Yes. Okay, it may be abusing the definition a bit. But it's a lot. We see everybody struggling with it, including ourselves inside EUROCONTROL. We thought we were the best, the martyrs, the most beautiful and the most knowledgeable on the subject and still we had a hard time putting the pieces together internally for almost four years from the signature of the Internal JC policy. Policy signature is the easiest part – the rules of application of the policy elements took a lot of iterations.

[Author:] You mean you ran into the same obstacles that other companies did?

Yes, like all the others. It's one thing to play the consultant and to say to others what should be done. But it's a totally different story to really do it yourself. And I was shocked because the issues were not within the operational centres (Maastricht UAC[53] and Brussels NOC[54]). **The most difficult was to explain the concept to non-operational people** who were worried about questions such as: 'What does JC mean for me?' and 'I don't want to be disciplined'.

[Author:] Is it a question about perception? Or is it because they don't know? Because they were not trained? Because it's a new concept? Or is it just because there's no trust?

I think it's a bit of everything. **It starts with the trust** and it starts with the fact some people (especially senior leadership) think they know everything and that just culture is just an invention. **The new EUROCONTROL DG who by the way is a champion of Just Culture who has promoted great practices in IAA[55] before joining EUROCONTROL, clearly said: 'I don't want to have an issue with people hiding behind safety.'** That unions would be hiding behind just culture and that we are unable to learn what we need to know *[in order to improve safety]*, **like an umbrella protecting them for anything which goes beyond operational incidents**. That you cannot discipline when necessary because of a misapplied just culture. He wanted to make sure this was not the case. Of course, **'nobody can guarantee that no party will not try to abuse it.' But the reasoning behind [the just culture principle] is not aimed at that.**

Take for example alcohol abuse. Alcohol is the easiest thing to classify outside just culture. I mean a person probably has a good reason why he/she's drinking, but at the end of the day, it's a clear line that performing duty work while you had been drinking is not acceptable. Personally, I do not see how you can claim just culture for alcohol? How you can justify it?

[Author:] But obviously the line may be moving over time. That what was acceptable 20 years ago, nowadays is no longer acceptable.

Years ago, there were alcohol issues in the industry. However, when I visit ops rooms today, it's eradicated. Why? In my view, there are two reasons. In the old days, traffic was less dense and the older generations were educated differently. Nowadays it's become too busy. There is simply too much traffic. Operational people simply cannot afford to drink anymore. On the other hand, people are also trained differently. Therefore, when I visit an ops room today, things are totally different. It's clean, there is no smoking, there is no alcohol.

Things have changed, also in terms of what is acceptable. People pay much more attention to such things *[as alcohol abuse]* in the Ops room.

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[53] UAC: Upper Area Control
[54] NOC: Network Operations Control
[55] IAA: Irish Aviation Authorities

[Author:] Because they feel more liable? Because they're trained in a different way or is it because society gives them another perspective?

It's a bit of everything. I like to believe that it is because of the training and awareness that we have introduced. When I arrived at the ATC school, they never mentioned 'just culture', 'human factors' or 'team'. I remember our earlier instructors – they did not believe in teamwork. "There is no teamwork in ATC. You're on your own on your screen. Clear?!" "Yes, sir." This is what changed with time and I believe that the current curricula have been greatly improved. I must give credit to these developments and to regulations and the common content for training. Nowadays, things are different. Everything has become accessible. You can read and study. Information is available 24/7. Take for example books. Good luck trying to find books on just culture back in the early '90s.

[Author:] So that's why you developed it? Starting with the GAIN network group?

Yes. Actually, it was called the 'SAFREP task force' before it became a dedicated just culture task force. That was a very good group, but it was abandoned for various objective and subjective reasons. From the start, we had all stakeholders around the table: such as the European Commission, IATA and all the professional associations such as IFATCA. As a matter of fact, the just culture description was inspired by an earlier IFATCA definition. Unfortunately, the SAFREP report was never made publicly available. It was called 'Report on ATM Incident Reporting Culture: Impediments and Practices'. (EUROCONTROL SAFREP Task Force, 2005) This report contains the first just culture definition - exactly the same definition that you see today in the EU regulation 376/2014 – which was co-signed by Roderick *[van Dam]*. That group wrote three very good reports. If I am not mistaken the report mentioned was done by SAFREP1. SAFREP2 was a roadmap for KPI's. And SAFREP3 came up with concrete developments of lagging and leading indicators which must have been one of the first just culture questionnaires. Actually, the SAFREP1 report is available for any EUROCONTROL stakeholder. So, any pilot or controller organisation can have it. Unfortunately, it was never published on the net. When you look at Appendix 2, you will find an example of best practices from Alaska Airlines. Appendix 4 gives ANSPs examples, Appendix 5 other airlines.

[Author:] The GAIN working group was working at a global level. And then they stopped…

The GAIN working group stopped because the FAA stopped funding. I don't know the exact reasons for that decision. We also started using flow diagrams. You know, the ones with 'substitution tests' similar to those from Prof. Reason. (EUROCONTROL SAFREP Task Force, 2005, pp. 47–48)

But this was the early days. It really only took off later, when reading Reason's book and understanding what Hudson said about different cultures. We wrote an essay and then said: 'Okay, let's have a group that can work on this.' It was a lot of work, but everyone participated back then. And I think we did a good job, because when you look today at 'what are the impediments?' many of them are still valid.

[Author:] Next question: in your opinion who draws the line?

Inside every organisation, there is somebody who draws the line. I know we tell everyone that the only correct answer is that only the prosecutor draws the line. But until you arrive at the point where a prosecutor acts, internal decisions are also made within companies. I have the impression, that with all these new *[event review]* committees that are being established, it looks that drawing of lines will be done more and more within these just culture committees *[and no longer by a single person].*

This is probably driven by EU376/2014. **Yet, I have not seen these committees at the national level. To me, it seems that these committees are to decide whether it is black or white. Unfortunately, I**

am not sure if they are sufficiently equipped with the right skills and knowledge for this task, plus there are many tons of grey between black and white.

[Author:] Do you think there's value in having an event review committee?

I think so because it is more unlikely that there would be a unilateral decision by "public dictators". Because although a dictator could be a positive, an 'illuminated' one that is, he can easily turn into a negative one. One who thinks: 'I'm a champion. It's my company. Who are these guys to tell me what to do? I've seen it all. I've done it all.' I've seen companies were the director of operations is much stronger than the CEO because CEOs are coming and going, so he *[the director]* is the guy who decides. Most of the time these guys are just below so they will remain in the company and they are the ones who are either the good guys or the bad guys. This is to me, where **people may draw the line in a "hidden" way.**

[Author:] And what about a review committee at the national level?

Sometimes I'm worried that we might have opened Pandora's box because in some states this was a non-issue. I mean, the people did okay, maybe the pilots were targeted, but the political and judiciary authorities thought that ATC where the people at the airport giving parking tickets. They didn't know what ATC was. Everybody wanted to keep a low profile until the big cases came which could no longer be contained.

Prosecutors simply say: 'we're not interested unless there is damage or there is blood on the runway'. For example, during the Just Culture prosecutor workshop in Slovakia, prosecutors told us: 'we don't open a case unless there are less than six or seven dead or 120.000 Euros in damages. This was due to grandfather rights coming from the Czechoslovak republic in the '40s or 50s or before. For example, if they have a serious incident involving a small Cessna which potentially could have been an accident, but there are less than 6-7 passengers involved, the case is dismissed.

[Author:] Do you use any practical guidance or model (e.g. David Marx, Baines & Simmons, Reason) here at EUROCONTROL?

What I'm trying to use more and more is this brilliant thinking which comes from Steve *[Shorrock]*. He sees how the conversation goes and then **uses a neutralised language**. It's not easy because when you investigate reports are written in a different way. Other criteria that I would use as guidance – especially when it comes to alcohol and substance abuse - is the **Reason decision-making tree**, which we plagiarised. In EAM 2/GUI 6 'Establishment of Just Culture principles in safety data reporting and assessment'. (EUROCONTROL, 2006)

I still believe – apart from the exceptions (e.g. Germanwings accident) – that when you come to work, you come to do a good job. If it *[the occurrence/incident]* has nothing to do with alcohol and if your medical condition is normal, unless you are an idiot, or you intentionally create damage, then you should be absolved. We actually tried writing a just culture policy that described when you would NOT be disciplined. I can tell you, if you try to write a "positive" policy you will end up with pages and pages. But it doesn't stop there. If you write it in such a way, your policy may be uncontained. I mean, you always forget something where you will not discipline. In fact, for some ANSPs we wrote a punitive policy, which stated: we will discipline when you drink and another three or four things. That was more successful.

You have to agree at the board level. Ask yourself as an organisation, what are our lines? First of all, it's alcohol and drugs. Then it is 'medical condition'. But keeping in mind the Germanwings, how much

can you know because this is *[medical and thus]* confidential information and it might be not easy for someone to tell: I'm flying with a medical condition. These are to me the red lines.

[Author:] This looks similar to ASAP (Aviation Safety Reporting) which they use in the United States, where they clearly say: if there's no substance abuse if and there's there is no sabotage then the incident is accepted and will be de-identified.

Yes, exactly. And I don't see any other criteria that I would use.

[Author:] What about repetition? What about repetitive events? How do you handle those?

It could be one of the cases which is at the borderline because you cannot know whether it is a lie or not, but I hope the *[attitude to the]* profession would stop that. I mean, this is never an easy case because you deal with people that are taking risky options.

[Author:] Let me give you an example. During 10 years of analysing flight monitoring data, I could recognise some individuals by looking at their flight profile even though the data were de-identified. Often the same people crossed the same line over and over.

This is again linked to culture and company. In the past, competition may not always have been fair in eastern European countries. In the 20th century, there ATC used to be an organisation of big families. The kids would follow their parents and become an air traffic controller. They started with 10 student ATCOs and the course would finish with 12...! This is not a joke. Obviously, some of these controllers were not fitted for busy centres or for ATC at all, so they were deployed on less busy sectors or units. In the West, if they start the course with 24 and they finish with 2 it is considered a major achievement because they cannot afford nepotism. Luckily, FEAST[56] tests have made selection procedures much more professional and objective. So, the above example has become a thing from the past.

To be clear, in some cases it was the company's fault; not that of the individual. It is not always easy for training and recruitment departments to admit that they were unsuccessful in selecting the right people. If a person is unfit to do the work, then it is a company problem in terms of selection, training and licensing.

[Author:] This is in line with Hudson's view: you have to broaden it. You should look at what has happened before (in selection, in training, etc.). You should not only apply a just culture but apply a just and fair culture.

Imagine seeing the same guy for the fifth or sixth time. I mean, what is he doing during retraining? What does the training department do? There must be something wrong with him? I mean, it's not just his divorce or kids or family that are leading him from the incident to incident. **For me, you should look at repetition, not on an individual perspective. You need a systemic view.**

Here at EUROCONTROL it probably works because there are so many different nationalities. There are sufficient checks and balances and enough smart people to keep things on track. The recruitment is done correctly. It's not by nepotism. You pass tons of filters, tons of assessments.

[Author:] For the moment, do you have any event review group?

[56] *FEAST: Future European Air traffic controllers Selection Tests*

It is about to be established. On the 8th of November *[2018]*, they finally agreed, and we will see it happening during 2019.

[Author:] In your current setup will the decision be made by the accountable manager based on the advice of the Event Review Committee or will it be the Event Review Committee itself that will decide by majority upon the outcome?

Because it needs to be in line with the disciplinary procedure, it's a long way to Tipperary before you are strongly disciplined. Imagine, I write you an email or a memo to say look you didn't behave properly. Please, next time don't do it again. Then this notification counts as a disciplinary action for the next two years and no other disciplinary action can be taken. This includes air traffic controllers, flow managers or whoever. So, we are dealing with a different kind of "animal" here.

On the other side of the world, you probably see the other extreme, where people are fired in the blink of an eye. This is not good either. **It is often difficult to reach a balance. A balance that can be reached only by reasonable people negotiating reasonably.** Currently, I seldom see this happening between ATC unions and ANSP management. They are on camping at different extremes. Sometimes, unions try to obtain immunity. This is why I like ECA approach. It starts with the fact that we are humans. We make mistakes because we're not perfect.

Regarding the court cases in Switzerland - we cannot discuss the cases until they are closed – otherwise, we will be perceived as interfering with the Judiciary process. Then we will no longer be credible for a prosecutor.

[Author:] What do you think about Dekker's view on the fact that it is hardly ever the person's fault?

Again, to me, that view is too extreme, and I know that people like Roderick *[van Dam]*, me and others do not accept that; and neither would the judiciary. **We have accountability to deal with risk and issues.**

If I would be in court, I would like to have Steve *[Shorrock]* at my side, because he's more balanced. Referring to for example the Uberlingen case, I give those involved a lot of credit. It was a very traumatising event and on top of that they had their colleague murdered, so I do appreciate why they approach the *[just culture]* idea from a slightly different angle.

That is why I think you always need someone on the other side as for example Roderick *[van Dam]*, in order to keep the balance. **If there are no balances anymore, then you have only one side of the story.**

[Author:] To you, what are either prerequisites i.e. necessary conditions and on the other side obstacles to create a just culture?

The policy was the easiest item to achieve. We made Just Culture applicable to all the people in the agency (not only operational staff) and it was signed immediately.

But after that, people made it much bigger than it is. I work in an office. Sure, I want to be treated fairly when I do my work properly. But let's be honest, I'm hardly in a position to kill people or make mistakes that yield very high consequences. Nevertheless, as I mentioned before, this issue blocked the organisation for four years.

[Author:] If you have to give it a top 3 of obstacles, what would it be?

People, people and people. Both as individuals or depending on their position. On both sides. I mean the leaders of the unions and/or staff associations and the CEOs are equally responsible. Often the desired output is rendered impossible because of their opposing agendas.

[Author:] If you are talking about agendas, do you see a lot of mixing between industrial and safety issues?

I would rather work with staff association and trade associations (controllers and pilots associations) because they're their aim is to the profession. It is not only about fewer hours of work, more salaries and things like that. I need tools on which I can leverage my negotiations and with them, it will be this way.

I have some bad examples in some companies where the professional association equals the union; it is the same people with different hats on. To me, these are good examples because you have a different conversation. In a company like ENAV (Italy) and ENAIRE (Spain), you have a clear separation between unions and professional associations.

[Author:] Okay, but in the end, it will be the unions that will need to sign?

Of course. They are the formally recognised social partners.

[Author:] EU 376/2014 requires the setup of a 'National Body' and there need to 'Advance Arrangements'. One of the things that I like to study is to see in what member states those requirements are not fulfilled. In my opinion, there is still a lot of work to be done. Do you agree?

I would say in most of them. Regarding those who claim they have Advance Arrangements between aviation and Judiciary, I think you will need to see if they pass the first test, as the Turkish Airlines crash in Amsterdam. A practical case. Today with the increased knowledge of aviation by the prosecutors, they will probably be more inclined to work together, and things may become different in many states. However, I think it will just need to see how much it will hold water in real-life cases.

I think on the ECAC website there are just a handful of states that have not reported evidence of having Advance Arrangements. The Netherlands is a great example to follow. They have an aviation prosecutor and good arrangements between judiciary and aviation, but they had to go through some big cases such as the Delta runway incursion and the Turkish 737 crash to arrive at this point.

[Author:] Yes, but that's based on EU 996/2010, but for EU 376/2014?

Yes, true, we need other arrangements and **I don't think there is anyone today, except for the Netherlands and the UK. The work is however in progress in many States.**

[Author:] Last question. In the future, what will become relevant questions regarding just culture? For example, what will be the influence of Performance-Based oversight and regulations on Just Culture?

I'm with Roderick view on this topic. Performance-Based oversight means could lead to the thinking that the regulator is stripped to the bone. They don't necessarily have the people to do the job. So, inspections are based on whether there is a higher perceived risk. Apart from that, there may be a lack of competence within the NSAs.

I am afraid that the separation of the forces has created a big imbalance in aviation. Many authorities are losing experienced and competent people to the industry (airlines & service providers), so who will be left to oversee the industry itself?

Appendix B. Interview Roderick Van Dam

Date	25/11/18
Location	Van Der Valk Hotel – Brussels Airport
Interviewee:	Roderick Van Dam
Title:	President of the International Foundation for Public Aviation (IFPA) Former Legal Counsel and Head Legal Service at EUROCONTROL Chairman of the EUROCONTROL Just Culture Task Force (JCTF) Lecturer at the International Institute of Air and Space Law of Leiden University; Rapporteur to ICAO for 1988 Montreal Protocol on Acts of Violence against International Aviation.

[Author:] According to you, what are the objectives of a Just Culture?

"There are two overarching concepts that are equally important and that already exist for a long time in society: safety and justice (at the corporate level and at judicial level). Just Culture is a way of balancing both. It's like water and fire; if done right there will be a rainbow otherwise it will be steam.

In my opinion, Just Culture is about the protection of the reporter. The essence is incidents and reporters.

I stand by the EUROCONTROL definition – which I helped drafting – which states that there should be no punitive action unless in cases of criminal acts, in which the case needs to be transferred to the only authority that can make a call on such matters: the judiciary – in particular, a Prosecutor as the first. As very few pilots or controllers effectively show criminal behaviour, Just Culture is good news for reporters of a mistake."

[Author:] Is it then about creating an atmosphere of trust?

"Correct. This being said, I feel that Just Culture is sometimes "used" by staff as a means to cover everything related to their well-being. We must realise that staff and management will not always be on the same line (we are not necessarily holding hands in a hot bath singing "Kumbaya"). If you can't stand the heat get out of the kitchen! You may don't like your boss. Your boss may not like you. You are well protected by the definition, so what else do you want? Let me tell you a little secret: if you have good corporate leadership, you already have 80% to 90% Just Culture.

I do realise the questions stated by Just Culture can be relevant at the corporate level, but this shouldn't be 'overdone'. EU376/2014 explicitly describes criminal behaviour: gross negligence, wilful violation, destructive acts. if you apply this at corporate level, one should ask who the judge is. In this discussion, I am very strict about the interpretation of the definition. **Only the judiciary can make such a call. I have never heard a prosecutor use the term 'civil negligence'.**

> *(12) 'just culture' means a culture in which front-line operators or other persons are not punished for actions, omissions or decisions taken by them that are commensurate with their experience and training, but in which gross negligence, wilful violations and destructive acts are not tolerated;* (European Parliament and Council, 2014 Art.1.12)

"Just Culture is one and indivisible. Often Just Culture is coloured by those who want to use it for their advantage. We shouldn't accept that. Actually, Just Culture is very clear and simple. It is not a panacea. We shouldn't make it too big. It is a way of thinking."

[Author:] How does performance-based oversight affect Just Culture?

"**Performance-based oversight as part of the Safety Management Systems cult appears to me like the imaginary emperor's clothes and in this context, I have become very worried about the fastly diminishing role of the regulator in a time of privatization where financial interests have taken over.** Being a fin-de-carrière rebel, I love to cry out: the emperor has no clothes!

> *"The Emperor's New Clothes" is a short tale written by Danish author Hans Christian Andersen, about two weavers who promise an emperor a new suit of clothes that they say is invisible to those who are unfit for their positions, stupid, or incompetent – while in reality, they make no clothes at all, making everyone believe the clothes are invisible to them. When the emperor parades before his subjects in his new "clothes", no one dares to say that they do not see any suit of clothes on him for fear that they will be seen as stupid. Finally, a child cries out, "But he isn't wearing anything at all!"* (*The Emperor's New Clothes*, 2018)

Regarding the notion of making mistakes: It seems still to be very difficult for controllers or pilots' authorities to even imagine that they could ever get in touch with the judiciary. I do remember a discussion with controllers of a National ANSP were claiming that 'they didn't make any mistakes'."

[Author:] Where is the line and who draws it?

"The just culture definition and concept talks about intolerable behaviour; more specific criminally relevant behaviour. The real question is: when can there be no more protection for a certain behaviour? The answer is simple: when the behaviour is no longer commensurate with training and expertise and thus becomes criminally relevant. I do understand that management may feel awkward when errors are made. Therefore, many try to make a difficult discussion easier by defining the cases for which there will be a formal investigation and what procedures need to be followed. Sometimes this corporate reaction contains an overdose of 'motherly hormones' (e.g. Can you please define 'being under influence of alcohol'?). Consequently, **some organisations have gone so far that they have set up – what I would call - 'corporate tribunals' which act behind closed curtains. All to protect the reporter. This scares me because in this case the prosecutor is kept in the dark.** Remember that there are no public investigation reports for incidents. Only the reporter's report is available and will probably not be known to the prosecutor in case the incident had little or no consequences.

Even the biggest idiot can understand the need to react to the behaviour mentioned in Art. 16.10. I am convinced that there is no need for such elaborate constructs because this kind of behaviour is extremely rare – at least, I may hope so. So why should a company want to sweep such events under the mat? Besides, keeping the blinds shut may make prosecutors curious which may be the last thing the organisation wants.

> *Art. 16.10 The protection under paragraphs 6, 7 and 9 of this Article shall not apply to any of the following situations: (a) in cases of wilful misconduct; (b) where there has been a manifest, severe and serious disregard of an obvious risk and profound failure of professional responsibility to take such care as is evidently required in the circumstances, causing foreseeable damage to a person or property, or which seriously compromises the level of aviation safety.* (European Parliament and Council, 2014 Art.1610)

On the other hand, there are organisations - like LVNL (Dutch ANSP) - that experiment with total transparency. You can almost hear them say: 'It is good for our self-confidence that we can be so open and honest.' I think this might be a way of pushing Just Culture forward because you disarm the media reactions. You put the first story on the table, and you start talking about the second story right away.

An interesting example which was picked up by the press was a case where a mayor questioned LVNL about a possible loss of separation during simultaneous parallel approaches. A political question driven by noise issues. Thanks to the transparency of LVNL this was treated as a non-event and was rapidly dismissed by the prosecutor. Once again, we are talking about incidents. It will most probably be a different story in case of an accident.

[Author:] What do you do with repetitive events?

We had a discussion with prosecutors about a series of incidents/accidents at a glider airfield, showing a distinct trend. **During a discussion with prosecutors, the question was raised whether gross negligence can be cumulative? Their answer was simple: yes, it can be.** So even if there is no criminal behaviour (yet), this should not be a reason not to step in and investigate to prevent graver consequences from happening. This doesn't necessarily mean there will be a conviction, but at least the judiciary is informed and may opt to investigate.

It is also important to keep in mind that 'the line' may move over time and with cultural background. What was acceptable 10 years ago, may have become totally unacceptable today (e.g. smoking). What is acceptable in one culture, may be not done in another culture.

[Author:] What is the difference between responsibility, accountability and liability?

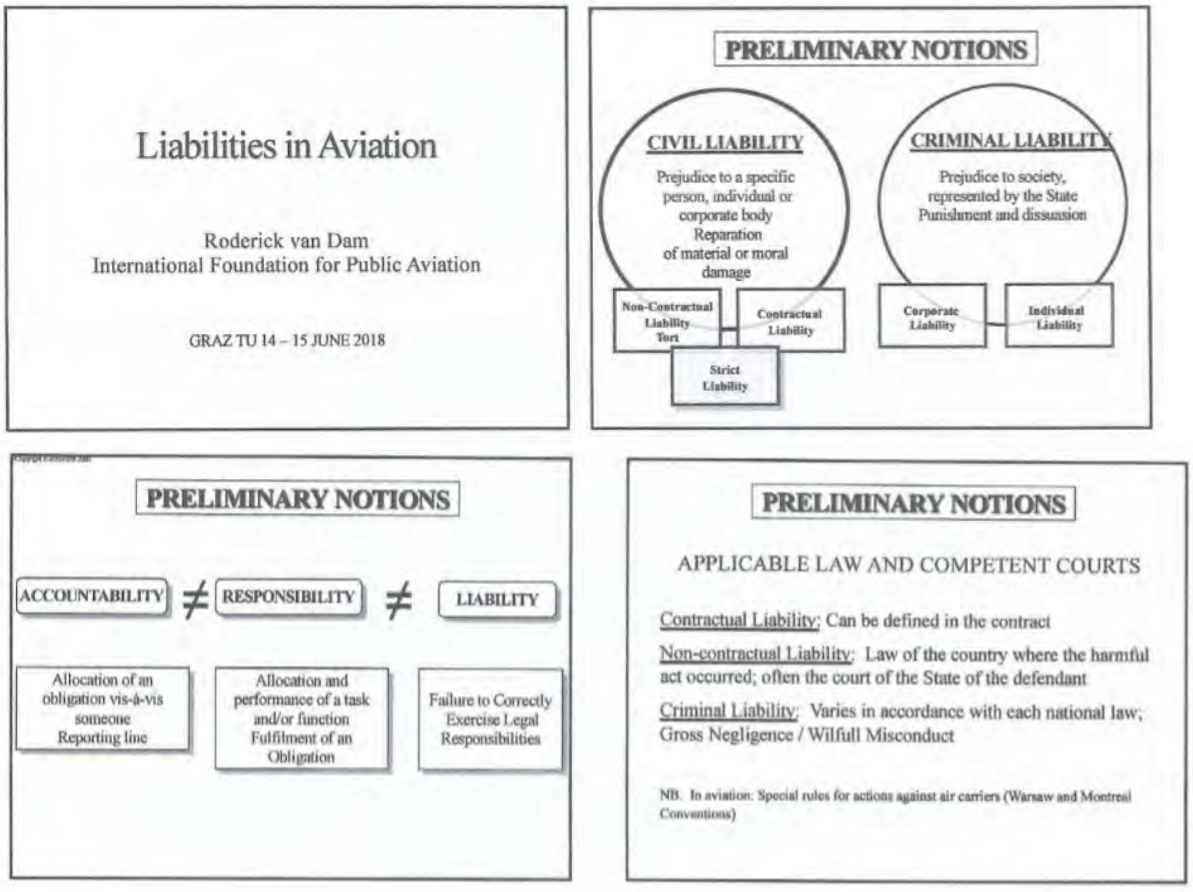

Figure 21 - Liability in aviation: accountability, responsibility, liability as explained by R. van Dam

[Author:] What obstacles do you see in implementing a Just Culture? If tomorrow you were asked to implement Just Culture in a new airline, how would you approach this task?

"Talking as a CEO, I would first want to talk to the prosecutor. Because in the end, it is he or she that will draw the line. I would want to talk to the safety manager and HR to ask them what do we have now? What have we done in the past in case of near-misses? What kind of mechanisms do we already have in place (embedded safety procedures)? Do I need more to implement Just Culture?

Possible obstacles could be company health and market position resulting in commercial pressures. The competition between production and safety (e.g. ordering new tyres can only be done in the next financial quarter. Basically, it all boils down to: what risks am I prepared to take? Although I agree that a risk assessment is nothing more than an educated guess.

I am truly surprised that the first regulation was the performance regulation. Suddenly Just Culture has become a KPI?! How is this possible? In my opinion, you cannot capture Just Culture in numbers.

What is the return on investment (ROI) of Just Culture? In an organisation that is pretty stressed out by commercial pressure, people still report. "

[Author:] How do you see the future of Just Culture?

"Just Culture is here to stay, also because someone has linked his name to it or because it has become law. Also, at the global level, you see that the idea is picked up albeit in different wording under Australian and American pressure; e.g. ICAO Annex 19 speaks of 'commensurate with…'

If you would make a map of the Just Culture understanding, Europe would probably light up together with the USA, keeping in mind that the US is more oriented towards civil litigation instead of criminal. Unfortunately, if you move to the far east things are different. Nevertheless, I am convinced that **the definition survives interpretations worldwide. Justice is not a science it is a painting of a society.** So, when a Chinese citizen feels comfortable with the laws in his country than that's ok although we may strongly disagree looking through our Western eyes. Just Culture is not a value by itself, it is about balancing values. And even if values are different, you can still balance them.

[Author:] Should we roll out Just Culture beyond the Western world?

This is already happening. The big global carrier associations act almost as nations overflying the globe and therefore influence states where they operate. This might have a healing effect in countries where Just Culture might be culturally difficult. In this context, state sovereignty seems to become less important. For example, **the new EASA basic regulation appears to create an acceptance of the European Commission of responsibilities and liabilities as the EU States now can delegate oversight and enforcement of safety to EASA. Supranational oversight and enforcement together with the associated responsibilities and liabilities! This is a breakthrough, which even might create an opening to start harmonising criminal notions in Europe.** Imagine how great it would be if everybody would have the same understanding of gross negligence. I truly believe that in 20 or 30 years, the EU will have responsibilities in criminal law. I strongly believe in the European idea – there is no way back.

Regarding the power shift from states to companies, it remains ethically unacceptable that an insurance company itself would become the regulator.

During the interview, Mr Van Dam referred to the Chatham House Rule. "When a meeting, or part thereof, is held under the Chatham House Rule, participants are free to use the information received, but neither the identity nor the affiliation of the speaker(s), nor that of any other participant, may be revealed." ('Chatham House Rule', 2018)

Appendix C. Interview Tom Laursen

Date	23/11/18
Location	Skype
Interviewee:	Tom Laursen
Title:	ATCO at Naviair IFATCA Executive VP Europe Former head of Occurrence Management and Deputy Safety Manager at SkyGuide

[Author:] According to you, what are the objectives of a Just Culture?

It's to improve safety.

[Author:] Sure, we all want to enhance reporting, but Decker does not necessarily agree on the fact that having more reporting will improve safety. What is your opinion on that?

One of the conditions to improve safety – and this is where just culture comes in – is to make sure that we communicate about safety. **We need a fair approach to the people who have the information that is needed in order to learn from safety.** So, people who can contribute to learning about safety needs to be treated fair in cases where they have to provide delicate or touchy information that could be used against them. This is the balance that that is very important.

[Author:] So it's kind of protection. Is it creating an atmosphere?

It is one of the conditions needed to facilitate communication about safety.

[Author:] Ok, and what are the other conditions then?

You need somewhere where you can talk about safety. Maybe you need a formalised system to collect information, depending on the size of the company. If it's a small company, you probably don't need a formalized process. But in many companies, you have a reporting process and then, of course, you need some kind of safety handling. I wouldn't say investigation and I don't use the term Safety Management System here deliberately, because you need somehow intelligence. People who can handle the information so that you can make meaningful learning out of it. And the last part regarding meaningful learning is very important because if you want people to talk again, they also must see at the end that something meaningful comes out of it.

It's a loop and **I deliberately do not call it safety management system because I think that sometimes too formalized and does not always help us. Informal conversations about safety need to be added.** In these informal conversations, you also need the just culture to be a part of it. Because if informal conversations are not used to find meaningful ways of improving safety people will stop talking informally as well. This is a cycle which is not always easy to identify, but we have most of the elements in place.

The second part of the process, where you handle information and make something useful out of it, is often underestimated when seen from the people who deliver the information.

[Author:] What you're saying is that just culture is almost a prerequisite to creating this kind of formal and informal communication?

It is. The meaning of just culture is that the people who have the information are treated fair. So, if you don't feel that you're treated fair, you will just reduce the information that you give. Even further that is because it's already reduced when you give it. You will limit the information you make available for the system of what's going on.

[Author:] We often talk about a balance or a duality: between acceptable behaviour and non-acceptable behaviour, between safety and the judiciary or judiciary and just culture at the corporate level. Balances which you don't have in a no-blame culture because there everything goes. If people ask me questions about Just Culture it is mostly because this confuses them. What is your view on this?

About acceptable and unacceptable behaviour – by the way, I hate the word behaviour – I have a very extreme view on this. **I think this line *[between acceptable and unacceptable behaviour]* should never be discussed in relation to safety issues. If there is any doubt about this line, whether the person was well-intended or not well-intended, then it should be outside the safety work as it has nothing to do with improving safety.** Then it must be something like sabotage or you're in a mental state where you do not know what you're doing. Regarding the rest i.e. everything that is reported, I am a hundred per cent sure that the people who work. work to their abilities. So, if you have an organization where you ask this question a lot, then you already have a problem. You can forget about learning from what you have. Just asking the question will destroy the possibility of a free flow of information.

[Author:] How do you handle repetitive events? What do you when the same person pops up time after time keeping in mind that this person may be more exposed to an occurrence more than others?

That just means that the same people report.

[Author:] Let me give you an example when I was doing Flight Data Monitoring, I could distinguish certain persons by looking at their flight data. Sometimes we called the same person multiple times confronting him with the same type 'occurrence' (e.g. non-stabilised approach) What is your opinion on that?

In my view, this example is outside the safety department. This is managerial. If you let your safety department deal with this, you have a problem.

[Author:] But even then. Imagine, I'm a safety manager and it's the fourth time that I see this guy for a similar event. Where do I then draw the line as a safety manager by saying: is there something else I could do to change the system or is it really up to the individual and do I refer them to the management?

I am not familiar with FDM, so I cannot go into it the situation that you're talking about there. I think we're living in two completely different worlds because we never have the same situation twice and we don't have a threshold system on what we do like you have. Sure, there is STCA *[Short Term Conflict Alert],* but in a centre like Copenhagen we're talking about 20 events a year.

So, if somebody shows up 20 times and nobody else shows up. Yeah, then we would have an issue but that's not how it is. Okay, maybe somebody shows up twice, but that's the threshold we have. In Skyguide, it was like 30 to 35 a year with almost 450 controllers. We don't have the same system as you have. Our performance is not scrutinized like yours. but the whole idea of this line goes against the fundamental issue. That is **the most important thing for just culture is that the report is the reporter's report.**

In many companies or actually almost in all companies, except when I was in charge of the investigation team in Skyguide, a report becomes the company's report as soon as you file it. But actually, it is the reporter who is telling about where risk is in the system. I would deal with the guy from your example by saying to him: where are the risks that you have so we can help you? Please help us understand where the risk in the system is that you have identified. That's why I say, I don't know these thresholds and how much risk is involved.

[Author:] Risk is very personal, and most will say:" Yeah, but I still had 500 feet to recover. We used to do idle landings all the time. It was still safe." What do you do when 95% of the people are adhering to a certain rule and 5% says:" That's not applicable to me. I will do my own risk assessment."

I always thought that airlines have a huge problem because apparently, you hire people that are not really fit for the task that you are giving them.

[Author:] It also has to do with the fact that if there is a line, it's not static. We see that the line moves over time and what was acceptable 20 years ago, may have become unacceptable today.

Exactly. These guys are probably old guys, most of them? **It is almost always an organizational problem. It's never ever an individual problem. As soon as you go individual, you have lost.** These guys are not going to tell you where the risk is in the system. You don't know where your risks are. It's an individual talk you have with this guy. Already when I heard you before, he's already in the defensive. I mean he's defensive because you're accusing him of going over the threshold. As soon as he gets the note in his inbox, he will not talk to you any longer about the risk. He will try to defend himself, and we are not talking about organizational risk any longer.

It is very important but also very difficult to accept that. It is not about the individual. Safety Management is about the organization and the system. This guy needs to help you to understand where the risk is for him. This requires intelligence from the safety department or the people investigating, because what kind of organizational learning do you take from this? For example, we have to do something about how we recruit people. Maybe we have to do something about how old they are. Or maybe we must accept that the thresholds were different 20 years ago, 15 years ago and 10years ago, and it will not be possible to get them into the threshold that we defined as a company. This is what we accept, the rest we don't accept. So, it's always up in the organization if you want to have a just culture. I am quite extreme on this.

[Author:] I understand and I'm absolutely with you on the learning part. I absolutely agree that we should have everything in place to create an atmosphere where staff can give an open and honest account of what happened. Did you read David Marx on this?

I never read David Marx, because bad-apple thinking is very much in all his concepts. Like you are saying now. There's a whole Bad Apple Theory that you introduced with these thresholds. We could talk about the degree, but you have already introduced a threshold and then you're saying to the people if you go beyond this threshold, you will get a message. If I would get a message like that, I would already be defensive. Maybe over time in the airlines you have accepted that that's part of your job, but that doesn't make it right. It still makes it a Bad Apple Theory. And David Marx created a social control system, but don't get me started on that. It's a managerial tool. David Marx is a top-down tool. Okay, this is also what we did in the past with the just culture toolbox. We did a top-down tool. **Just culture is about bottom-up and not top-down. You cannot catch it in policies and measure it in an Excel sheet.** It is about how people feel and how you feel today is not the same as you feel tomorrow. [A good example of a bottom-up approach is the Just Culture manifesto (*Just Culture Manifesto*, 2018)]

[Author:] So according to you there is there never a line? Because as soon as you draw a line, you already have an issue? Is it what Roderick's says: there should never be a line except if it's criminal and then it's for the Judiciary to handle anyway?

Exactly. I can only agree with Roderick on that one. I did investigations for three years. I was the head of the Investigation Unit at Skyguide. We had 1300 reports every year which added up to like 4000 reports.

There was a guy once who was involved in a near-miss or a separation infringement. The planner on this sector came to me and said:" Sorry Tom, but I was at the water station when it happened." Is it that people cannot go to the water station when they need to, is that what we want? This was the closest I was two to one of the threshold events you described. Sure, you could say that everybody should be in their position all the time... I mean this is normal behaviour that you hire a workforce. Within this workforce, as you said before, you will have different ways of working. It is about how you hire your workforce which is the issue when you find out that somebody does it like this and somebody does it like that. You have your proficiency checks. I am sure you have them.

[Author:] Yep, every six months.

For example, in Copenhagen, we have the proficiency checks and there we talk about these boundaries. What do you think about when we fly to this city? Is it okay that we do things like this? How the boundaries are being kept within limits? There is always a discussion. It's not about the individual. It's about how we try to keep these boundaries. So, nobody goes crazy.

First of all, when we select people, we make sure that we have not criminals or psychological cases. Just like everybody else. So, you have already narrowed it into some kind of box. And then we have control over them for three years before they become air traffic controllers and that helps a lot. Compared to you, you can have control over them for what is that: two or three months when they perform their training? Before you have the culture within the company, so maybe that's where you should start working.

[Author:] But aren't you shifting it solely to selection then?

This is an organisational issue. This is one of the issues. There might be the talk that I talked about before, maybe you have to have more discussions about where are the boundaries for what we do in this organization. These boundaries are by the way mostly set by the operational personnel by themselves. For example, when you work with the pilot next to you, you will interact with him and talk about the boundaries and you create a small feedback loop amongst yourselves. What to do when you fly into Charleroi or to Paris. This is where these things are developed and controlled.

Most of it. It's not controlled at the upper echelons of the company anyway. So, the feedback loops between the pilots might be the ones you should look at. You have these boundaries - within an acceptable limit. I'm just giving a few examples. For me, that would be my job as a safety manager: to improve these feedback loops when I have identified something that I don't like.

I know my former safety manager. He was from Swiss Air and he was the boss for 10 years. He had twice somebody where he said, I can't stand behind this guy. Then he would go to the union and then he would ask. Listen. I have this issue. Can you stand behind this guy? Is he a good guy? And can we have him within the company? And in one of those two cases, the union said: sorry we can't stand behind this guy any longer. Keep in mind this is Swissair, a big company. In 10 years, they have to let one guy go because of a boundary issue.

Basically, decisions say a lot more about you than it says about the person. If you have five to ten every year, it is your theory behind what you do. It is the Bad Apple Theory that you are using to find this. I think David Woods has made a lot of work on this topic: **trying to draw the line says more about the people who would control the line than about the person who was involved.**

I think the *[Flight Safety Foundation Conference]* workshop in EUROCONTROL this year *[2018]* was a clear example of the difference between the pilot world and the air traffic control world. For most of the pilots present, not all of them, it was about the 'hero thinking' with regards to the pilot. If he sticks to standard operating procedures, he's okay. And if not, he's not. But this is not why you are there only to stick to standard operating procedures, at least not in my view. So, maybe even the guy who goes outside the boundary has a lot more experience with going outside the boundary and he's the guy who saves the company of the day the shit hits the fan. You don't necessarily know what it's good for and what it's bad for you don't have a clue about that.

I admit that you can have situations where there's a guy you would say listen, there's something wrong here. But then it's a managerial issue. Then you have to go to your management and say listen, there's something wrong with this guy and usually, it's alcohol, personal problems or something else. If you identify stuff like that, go to your management and say we do not feel comfortable any longer. This guy is doing strange things.

[Author:] So, let me get this straight. What you're saying is that if it is really an individual issue and it's not temporary then you have a problem in selection.

Exactly. Or you don't have a problem, but you just have different ages in your company. And actually, that's not too bad, because this has a positive effect. It makes the line between acceptable and unacceptable or the line between risk or no risk more visible. Because, if you don't see *[come close/touch]* the line, when will you ever know where the line is when it's crossed?

[Author:] You mean where the risk really lies.

Yes. I don't remember where exactly, but there's a study about who gets into trouble in accidents. The conclusion was that it is impossible to predict what kind of person will get himself into these kinds of problems. It's everybody. So, it's very difficult to say that an individual will get into trouble. For example, the one you talked about before, who did five unsterilized approaches. This is very difficult and making yourself judge about that as a safety department says more about you than about the person.

So, in my view, I have never ever had that angle that I needed to look for these boundaries as a safety manager. That was not my task. I have to look for systemic risk that I could present to the organisation and that's why you should do too. **In just culture, – and I think this is very important – it is the reporter's report. It is not the safety management's report.** So, if you want to report something it is to the system. And then you give them *[the reporters]* the accountability of helping us *[the safety team]* with finding out what to do. Instead of asking the reporter why he or she was outside a specific boundary.

[Author:] What would you do to make sure that doesn't happen again?

No, it would be better to ask: what can we improve? Because with your question you are already judging. I admit that this is an extreme view of Just Culture. **But these two points are essential to me: that it is the reporter's report and that it is about systemic risk.**

In Denmark, I'm so lucky that nobody ever asked that question. Actually, when I saw you your questions here: who draws the line in your organisation? I don't know. This is not an issue. I remember I

made research similar to yours. Sidney *[Dekker]* and I, we did research together for EUROCONTROL once. So, I went to Sweden to ask exactly the same question as you about acceptable and unacceptable behaviour. And then they asked me: why would you do that? Nice answer, don't you think? Next, I went to Germany and I got an answer right away. So, in Germany the judge was in the room while in Sweden he was probably somewhere in the forest. They've probably never seen him. So, I'm sure that communication about safety is a lot easier in Sweden than in Germany.

[Author:] Working for an international airline group, I saw that happening before. During meetings, there would be four of us around the table. The Belgians were mostly in phase with the Danish while Germany and the UK were fighting above our heads. I think the cultural issue which you're bringing up here. That's very relevant, isn't it?

Take, for example, the Asiana crash in San Francisco back in 2013 where the Asiana flight crew didn't get any support at all from their airline for three days. In the end, US ALPA took care of them in order to protect them from the very aggressive media because in Korea mistakes are not tolerated. Just to say that the mentality and the culture of a country is a major factor in implementing a Just Culture. Do you agree?

But that is the next step. You have to find out what is possible in your country. Because although I have this extreme view, I am also pragmatic. So, what I thought was possible in Switzerland, was actually impossible. I should have had fewer ambitions and should have done it more stepwise, but I achieved something and there was a guy after me who continued. And I'm sure that today they have a lot better way of dealing with it than before we started.

If you can, make an analysis of what is possible and what is not possible. Determine what you can and can't do. If the line between acceptable and unacceptable behaviour is necessary for the management or for somebody in the organisation to be able to implement some of the other things around just culture, then do [use] it. Make your sacrifices for something else if needed. But I'm telling you what I would like it to be.

[Author:] Ok, but in principle, you're saying: there is no line. If a line is crossed, then it becomes a judiciary matter. Then it's criminal and so by definition outside the scope of the organisation.

Correct, it is outside the scope. And it probably will be alcohol or other issues like the Germanwings pilot or something that is outside. Something that we cannot really accommodate; especially not in organisational Safety Management. Because these are issues that are now they are trying to deal with it at EASA level. Medical tests or psychological tests?

[Author:] In response to the Germanwings tragedy, EASA came up with a five-point plan. An initial psychological assessment at the start of your career, a psych test during our routine medical, random testing, the creation an international medical database and – most importantly – the implementation of peer support programs. PSPs are a good example of a just culture view. It acknowledges the idea that everybody has ups and downs in his life. So, let's make sure that we can help colleagues to the best of our abilities not by stigmatising them but by providing a safe harbour and get them back 'on the line' as soon as possible.

One of the governing principles of what we do - not only in just culture, in everything - is that **it takes teamwork to fail as well as it takes teamwork to succeed**. **That means it's the whole organization or the whole system that fails when we fail. And if we believe in that sentence we can never ever go wrong. We have too much focus on the individual.** I wouldn't say that we could never ever go there. But if we believe in that sentence, then you should very rarely go to the individual level.

Because this guy is part of a team. No matter what. I know this is against what we used to be. I think the newer generations are better at that than the older, but we used to be heroes. Especially Captain's with hats at the airport. And there's still some of it in the system. Do you know Arthur Dijkstra[57]? I studied with Arthur in Sweden. One day he gave me his card and it said 'captain'. I always joke with pilots who put 'captain' on their card and ask them "Do you steer a boat?"

[Author:] Hahaha, I'm so happy I didn't put Captain before my name!

So, I said, captain? But I thought you were a pilot? It just says a lot about the culture. Look, I am a senior Air Traffic Controller. In my view I am an Air Traffic Controller, I am not a senior Air Traffic Controller. I am part of a team. So, just in that little word there, you still see the 'hero-thinking'.

[Author:] But again, that's also very tightly coupled with National culture. It's the same if we see an Italian crew passing by, they will have these big stripes on their uniforms, and it's the same in South-America. Just look at the amount of gold they have on their hats.

Going back to the sentence that I introduced here about teamwork. **If we want to improve just culture in our aviation world then it is important to understand that it's all about teamwork. There needs to be much more understanding of that than the other way around that it is about individuals being heroes or anti-heroes.**

[Author:] It's interesting that you put this forward because if you look at the regulations just culture is now all about safety reporting and trying to do hazard identification and to get the SMS working, but to me, it's much more than that. It's what you're talking about. It's about creating this atmosphere. And - as you say - asking people: where do you see the risks? Finding information that you will never obtain if you don't create this atmosphere of trust. My motto has always been: if you have good leadership, there's no need for a just culture because it will be there anyway.

Last question: what are for you the main obstacles in creating a just culture? You already mentioned: not drawing a line because that is already applying Bad Apple Theory. What other things come to mind? For example, how to overcome the gap between management and unions?

Three things. First of all, teamwork! **It takes teamwork to fail as well as it takes teamwork to succeed.** If a safety manager would understand that then we are already very well on the way. **Secondly, it is the reporter's report. We need the front line to help us find risk within the system.** The reporter's record is the principle that the people at the front line are the ones that know where organisational risk is situated. Therefore, it's very important information in the overall picture. So, these people need to be asked where *[in their view]* risk is. And the third one is what you already mentioned: **if you have to go to the Bad Apple Theory, you should question yourself.**

If you stick to these three principles, then I'm sure that all the processes that we have, - because we have a lot of processes to help this *[idea of Just Culture]* - EU 376/2014 and everything else we set up will work a lot easier. In some cases, you won't even need them any longer. That's what I would tell my safety manager and even my CEO.

[57] Arthur Dijkstra is a captain in KLM Royal Dutch Airlines as well as a flight safety investigator. He completed a MSc study in Human Factors at Linkoping University, Sweden and started a PhD study in the field of Resilience Engineering at the section of Safety Science at the University of Technology in Delft in 2005. He contributed to Resilience engineering: Concepts and precepts by Hollnagel, E., Woods, D.D. and Leveson, N. (2007), Surrey (UK): Ashgate Publishing, Ltd.

I'm going to Sofia in two weeks where we have a course that is called 'Think Safety'. You should actually come one day. It's about thinking differently about safety. We have a just culture part in that course, and I think I will put these three principles up before I start going through ICAO Annex 13, etc.

[Author:] Let me summarise: three principles. Teamwork: you fail, and you succeed as a team. It's your report as a reporter…

Yeah, well I would probably say that 'the front-line input to finding the organisational risk is crucial.' That is the reporter's report. If you want to know where the organisational or systemic risk is, you need the front-line input because they are the ones who know where it is.

And the third one is the Bad Apple. If you go to the Bad Apple Theory, you should ask yourself what kind of model you are using. It's saying a more about yourself than it's saying about the individual. Yeah, but involved so these three principles. I think I will put them up and maybe make a Sidney-like video to put on the internet. No, but he talks about restorative, proximal, not judgemental and all that. But my experience tells me that these three issues are very important if you want to handle just culture within your organisation. And in some places, it's not even necessary to talk about them, because people just think that way.

Appendix D. Interview Davy Van Hyfte

Date	26/11/18
Location	Brussels Airport Company HQ
Interviewee:	Davy van Hyfte
Title:	Safety Manager Brussels Airport Company

[Author:] According to you, what are the objectives of a Just Culture?

Talk about safety in an open, transparent and honest way with a single objective: to learn from past occurrences. This also means learning from human factors that may have contributed to the safety event. If we can achieve open communication without people feeling blamed, then we have reached our Just Culture goal.

[Author:] Does Just Culture go beyond communication/reporting?

Absolutely. Of course, we follow EU 2015/1018 with regards to mandatory occurrence reporting, but since years we also have a voluntary reporting scheme which allows everyone (not only staff) to report either anonymously or by name.

[Author:] What is the percentage of anonymous reports?

Difficult to say. It depends on the type of report. Safety suggestions often come with a name, while post-occurrence reports are more anonymous.

[Author:] And this system is publicly available?

Yes. It is available on our company website [www.brusselsairport.be/en/b2b/safety/vsr] and via a dedicated referral domain [www.brusafety.be]. Each year we invest in a dedicated safety campaign to promote the use of this tool towards 3000 individuals.

[Author:] Who draws the line between acceptable and unacceptable behaviour within Brussels Airport?

In every safety investigation, we consider if 'Human Factors' were contributory to the event. This includes an error classification (slip, lapse, mistake…) where we also assess if the act was deliberate or not. **We consider unacceptable behaviour in cases where someone deliberately violated a procedure AND that person failed to report.** We do acknowledge that procedures may not be adequate and understand that people may choose not to follow them to obtain a safer outcome. However, in such cases, it is essential that a report is made in order to learn about the circumstances and to modify the procedure.

[Author:] So in short, you consider unacceptable/culpable behaviour in case of deliberate action with failure to report?

Correct.

[Author:] But what if someone deliberately violates a procedure and then writes a report to cover himself?

That will need to be investigated. After an occurrence, we interview the persons involved. During these interviews, we assume that people are inherently good [Dekker: 'nobody comes to work to do a bad

job']. Using the right questions, we try to understand if the intentions of that person are genuine or not.

[Author:] Do you use a flow chart to help you to make this decision?

We use a customised investigation template based on UK Health & Safety (UK HSE) guidelines to which we have added the human factor classification from the ICAO Human Factors manual (ICAO, 1998).

In fact, it is all in the management system. We collect data from all available sources. We then conduct a qualitative analysis. We then explain our findings (including Root Cause Analysis (RCA) and improvement proposals) to the management system unit – taking into account human factors. And finally, the de-identified facts and lessons learned are disseminated to Belgian CAA (BCAA) and via Local Runway Safety Team (LRST) and Apron Safety Committee (ASC). But also, to our internal Safety Board.

At this level, the conclusions of the investigation may also be challenged. E.g. "Was the act deliberate or not?" During my time as a safety manager, I have seen only two cases where the board concluded that there was a deliberate act involved. One incident involved a person recklessly ghost riding a baggage cart truck, violating 20 or more driving regulations.

[Author:] And what happened to this person?

We contacted the ground handling company, explained what had happened and asked them to cooperate in understanding the reason for this behaviour. Unfortunately, the reaction of this company was to terminate the individual's contract. This clearly shows that Just Culture principles have not yet permeated the whole sector.

[Author:] So it shows. Not to speak about the missed learning opportunity.

That's right. We try to put the building blocks in place, but everyone has to participate. A good example is that we have put Just Culture in all of the terms and references related to an investigation. We clearly specify that our sole aim is to prevent recurrence of incidents and not to attribute blame.

[Author:] Did you ever encounter criminal behaviour where you had to re-direct a case to the judicial authorities?

No. Once we received an anonymous report on a suspected alcohol intoxication of a flight crew. That was the only time when I had to alert the police and subsequently informed the authorities. To me, it is clear that alcohol abuse is unacceptable behaviour.

[Author:] Earlier we discussed the Safety Board, I assume they act as an 'Event Review Group'. Who is part of that group?

Our Safety Board consists of the Director Operational Continuity & Compliance. In theory, this should be the Accountable Manager (AM), but the Safety Manager should have direct access to the AM. In our organisation, there is an alternative setup. The Director chairs the Safety Board and it is he who reports directly to the AM. EASA requires to have four nominated persons for airports: the Safety Manager, the Fire Services commander, a nominated person Operations and a nominated person Infrastructure. The Director and these four people together with the Compliance Manager, the Safety Training Manager and Health & Safety and Cargo make up the Safety Board.

[Author:] I assume you can call ad-hoc meetings?

Correct

[Author:] And in such a case everyone needs to attend, I mean there is no light version of the Safety Board for urgency reasons?

No. All functions have to be represented.

[Author:] Can you consult external expertise?

Sure. We can ask external consultants. Additionally, we require that every member of the Safety Board attends a Human Factors course.

[Author:] Impressive. Is this Airport Council International (ACI) guidance or is this something you have decided within the company?

It was our own decision to have everybody trained, including yearly refreshers.

[Author:] What pre-requisites, catalysts or obstacles do you identify in implementing a Just Culture?

Currently, ATC, airports and airlines are required to have an operational (S)MS in place. Ground handling companies do not. Additionally, they are torn between the requirements imposed by financial and regulatory oversight on the one hand and the fierce competition in their sector on the other hand.

During the last tender for ground handling certificates at Brussels Airport, I tried to add the requirement for a management system. The idea was that – just as between ATC, airports and airlines – ground handling could contribute to the (S)MS of the other parties. Therefore, I suggested to include the safety KPIs in the quality management system. After all, I believe that safety is as essential as the quality of the operation. Adding this requirement would enable ground handlers to add their safety obligations in the contracts with their customer airlines. Unfortunately, the financial regulator commented that safety was outside their competence and it is thus unlikely that our suggestion will be retained. This is a pity because apart from the safety benefits and this would have enabled us to correlate safety with quality.

In my opinion, these regulatory differences are a significant obstacle in a common safety approach. Regarding Just Culture, we now sometimes see airlines sending us pictures of things that go wrong during ground handling, blaming the ground crew. This finger-pointing is ineffective. Much is related to systemic issues and needs to be treated at organisational/regulatory level.

[Author:] I agree. We need a holistic approach. On the other hand, I believe that, although numbers and KPIs are useful tools, safety cannot be captured in numbers/KPIs alone.

I believe that safety improvements should not only be based on KPIs. It's just one of the elements to build a complete picture of what happens in the field. The analysis of reports, KPIs, trends and investigations should lead to targeted audits which can either confirm or discard safety issues. Such a systemic approach avoids looking at the person, but at the issue itself.

Talking about pre-requisites, we are about to introduce a new concept inspired by Colruyt [a Belgian supermarket group]: proficiency checking. Although I don't like the term - it sounds as if people will be punished if they don't perform up to standards – I am convinced that the concept has the potential to enhance Just Culture. Colruyt employs so-called 'work-simplifiers'. New hires who look for new and innovative ways to simplify the work as it is done. Work-simplifiers are not seen by staff as 'checkers', but as colleagues who try to understand the work, how the staff is trained and what can be done to

support employees doing their daily work. Workers openly talk about the issues they encounter. They say: “Listen, this is what I am supposed to do. But let me show you: if you do it this way it is quicker, easier…” Work-simplifiers actually take this on-board and actively seek how to improve the process by giving feedback not only to the individual but to the shop-community.

Imagine what we could achieve in aviation. Just a simple example, irrelevant SOPs? Get rid of them. Today, who checks whether SOPs are still relevant?

[Author:] Great! This is a practical example of finding the difference between work-as-done and work-as-imagined. And this is something you will be doing in the future?

Absolutely. And we get full support from our management because it is a way of involving our social partners as well. Instead of saying we will not punish you for reporting honest mistakes, we actively search for ways to make their work easier!

[Author:]
I think that as long as safety requirements for ground handling are not imposed by a regulatory frame-work, and I am not talking about voluntary initiatives such as IATA Safety Audit for Ground Operations (ISAGO), I believe things won’t change for the better. As an airport operator, we know what it is like having to comply with new regulations. Often this means more resources. On the other hand, it also means that these investments have to flow back via your customers. If ground handling would have similar regulations, you could easily calculate the resources needed and incorporate them into your contracts.

[Author:] Any other pre-requisites, catalysts or obstacles?

I think the social partners (unions) should be more involved. Their responsibility is to represent the employees and ensure safe working conditions. Apart from the legally required meetings of the Health & Safety Committee they are hardly involved.

Some years ago, Bpost [Belgian mailing company] and its social partners made a joint communication in a response to postmen damaging front gardens with their bicycles, mopeds or other vehicles. The communication was very clear and stated that postmen were allocated time slots to finish their rounds, but that under no circumstance time pressure should be an excuse to damage property, not follow the driving code or endanger themselves or others. If postmen were unable to finish their round in the given time, they needed to report it. Upon receiving a report, management promised to provide a solution (by allocating more time, revise the routing, provide other means of transportation…) If unreported, disciplinary action would be proposed by the social partners.

[Author:] A true partnership approach! What do you think about the efforts being done at the national level to support Just Culture?

I don’t have the impression that a lot is happening for the moment and this hinders our cooperation with Skeyes [formerly known as Belgocontrol, Skeyes is the Belgian ANSP] where ‘all umbrellas are open’. [Skeyes tower supervisors were summoned in a judicial investigation regarding the use of the preferential runway system. This triggered a strong reaction among the ATCOs and a request to clarify Just Culture at the national level.] This blocks advances on important safety topics such as drones. Their reasoning is: until a Belgian regulator puts requirements in black and white, we will not act. This political impasse puts us years back in time, because our cooperation was and is very fruitful, but is now bound by stricter corporate legal constraints.

[Author:] How does performance-based oversight affect Just Culture?

Again, it comes down to the management system. Last year, we analysed the training feedback forms, KPIs, trend monitoring and hotspots. Next, we clustered them with eight years of oversight activities and entered those in our risk register. This forms the basis of our next oversight programme. This means that we use the full scope of the management system's inputs and outputs to steer future objectives.

[Author:] Ok, but what happens at the organisational level. However, at the national level, how does the BCAA help you in terms of Just Culture?

We have little experience with the national aviation authorities on Just Culture. Just recently, the BCAA set up a new yearly meeting together with all Belgian airports to discuss the European Co-ordination Centre for Accident and Incident Reporting Systems (ECCAIRS)[58] reports of the last 12 months. The meeting also serves as an update on the European Plan for Aviation Safety (EPAS) and Belgian Plan for Aviation Safety (BPAS) and its linked audit programme. 2019 will have fewer audits for airports, but more targeted (i.e. performance-based) based on Deviation Action and Action Documents (DAADs) and Equivalent Level of Safety (ELoS, comparable to alternate means of compliance). But for me, it is too early to assess what impact this will have on Just Culture.

[Author:] How do you see the future of Just Culture, keeping in mind that we all have evolved at different speeds?

Let's hope that ground handling quickly shifts to a Management System. This way everybody speaks the same language and it is easier to achieve results. We already see this when we compare the working of the LRST with that of the ASC.

[Author:] What happens if tomorrow Brussels Airport has an incident. How will this be handled from a Just Culture perspective?

We will approach it as we always do, we will launch an investigation, interview people, look for systemic issues such as training deficiencies, lack of resources, etc. Of course, we will also perform a Human Factors analysis and together with the person(s) involved see what can and needs to be done.

[Author:] And how will you respond towards the media?

First of all, it wouldn't be me that would comment it would be our spokesperson. Either way, I would suggest explaining what efforts we already make (selection, training, procedures); that you can never rule-out incidents; that we have an integrated way of working (management system); <here we come from compared to the past. An example last year was wildlife strikes. Due to the extremely warm weather during the spring, we should have advanced our mowing schedule. Unfortunately, this didn't happen. Meanwhile, we have taken steps to prevent this from happening again. Stick to the facts.

Another example was the near-miss we had in 2016 [an Air Dolomiti Embraer ERJ195 took off without clearance while an Aer Lingus A320 was on very short final on a crossing runway (AAIU, 2017)] were we immediately ordered an as-built survey which we handed over to the investigative authorities. Getting the facts seems like a good basis to start from.

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[58] Also referred to as the ECCAIRS-standard format with which all mandatory reporting reports need to comply as mandated by EU 376/2014 (European Parliament and Council, 2014).