Training: Ticking boxes or unfolding arms?
Training: Ticking boxes or unfolding arms?

Neil Richardson, Senior Consultant

The history.
The impending Safety Management Systems (SMS) requirements are soon upon us and present many challenges to the aviation industry as a whole; one such challenge is the role of training organisations within such implementation. Exploration of what that role looks like can only be achieved if the intent of the SMS requirements is to be understood by everybody in the aviation system. Our experience has thus far shown that SMS is somewhat of an enigma and current guidance has failed to fully de-mystify what SMS is really trying to achieve. In fact, many organisations believe that they already manage safety through the use of the Quality Management System (QMS) or see it as another function to be owned by the Quality team. These perceptions are understandable, yet do not encourage the organisation to have an effective SMS, leaving the organisation potentially exposed.

To help understand the intent of SMS, it might be helpful to move to one side, for now, the title that has been given to the requirements. The industry has managed safety in some form or another since we started flying and the approach has evolved over generations. The early days of aviation, those before and immediately following the Second World War until the 1970s, have been characterised by some as the “technical era” where safety concerns were mostly related to technical factors. The focus of safety endeavours was rightly placed on the improvement of technical issues and improvement in accident investigation. The early 1970s saw major advances technologically both in the air and on the ground. Improvements and learning were underpinned by adoption of regulations to help set a minimum standard to be achieved.

This heralded the beginning of the “human era”, and the focus of safety endeavours shifted to human performance and Human Factors, with the emergence of crew resource management (CRM) and a growing understanding of human error in other areas of the industry (eg Maintenance). Investment and knowledge in this field was increased in an attempt to gain greater control over the elusive and ubiquitous human error yet, by the mid-1990s, human performance continued to be singled out as a recurring factor in system breakdowns.

The downside of Human Factors endeavours throughout a significant portion of this period was that focus tended to be on the individual, with little attention given to the context in which such individuals were expected to operate. It was not until the 1990s that the fact that the operational context which was influencing human performance, shaping events and outcomes, was acknowledged by aviation, even though such information was
readily available. This became known as the "organisational era" when safety began to be viewed from a systemic perspective, to encompass organisational, human and technical factors and the notion of the organisational accident was embraced by aviation.

**The evolving challenge**

The concept of the organisational accident was made possible by a simple, yet graphically powerful, model commonly known as the Swiss Cheese Model (Reason, 1990). The model, which is still used today, illustrates how any production system, including aviation, can drift into failure. Complex systems such as aviation are extremely well-defended by multiple layers of defences, and failures in a single defence are rarely consequential in the aviation system. Equipment failures or operational errors are never the cause of breaches in safety defences, but rather the triggers.

Breaches in safety defences are a delayed consequence of decisions made at the highest levels of the system, which remain dormant until their effects or damaging potential are activated by specific sets of operational circumstances. Under such specific circumstances, active human failures at the operational level act as triggers of latent conditions conducive to facilitating a breach of the system’s inherent safety defences. In the concept advanced by the Reason model, all accidents include a combination of both active and latent conditions. Unfortunately the Swiss Cheese Model is often only portrayed in part – the layers of ‘cheese’; the system that generates the conditions that can lead to breaches is often omitted yet this is key in understanding the organisational approach.

Management of safety is a continual evolution that builds upon historical approaches and puts the perceptions mentioned earlier, those of Quality Management achieving safety and ownership by the Quality team, into context. The challenges in the modern day aviation system are varied and widespread but many issues we currently see focus around human performance in an environment full of complex interactions. Experience suggests that the EASA regulations are not seen as part of safety management with many stating that safety is achieved through the Health and Safety system. Understanding the basic requirements for safety and human performance, commonly referred to as Human Factors is one thing, yet using the requirements smartly and enabling the desired behaviours takes this particular challenge to a new level. Early on in the Human Factors journey, when the issue was not as fully understood as it is now, training in this subject generally took the form of highlighting the issues that affected performance, swiftly followed by the iteration of the need to be careful. Now, almost 25 years on from the accident that woke up the aviation system to the Human Factors in maintenance (Aloha Flight 243), we have a deeper understanding of the role of the human in an organisation’s Safety Management System.
Simply put, the management of safety is not new – many elements are in place already from the regulatory framework, Quality Management principles and Error Management (for a proactive Part 145 organisation that understands the requirements). SMS requires all the above plus the addition of a risk management approach and wraps it all up in a business-like approach.

What does this mean in essence? Safety is just another core element of a business that helps the organisation achieve its objectives with the minimum of losses, that is, it protects the bottom line of a business and can bring a return on investment. Managing safety requires a plan with objectives, targets and performance indicators, allocation of resource, competent people in safety roles (not just Quality Assurance staff and pilots) and everyone in the business should be clear on how they contribute to the safety performance of the business.

The role of the human

Of all the elements needed to manage safety, it is arguably the management of error that brings the biggest challenge. Error management has three components; error reduction, error containment and the management of these activities. Of these three, the last is by far the most challenging and difficult¹. The regulations set our minimum standards and the risk management process will set our controls particular to the hazards in our business. The humans in our system have to deploy these controls and this is where the organisational approach needs to come to the forefront.

Identifying system weaknesses before they result in losses is the key and getting this data is culturally driven due the stigma attached to error. This is the huge wall facing organisations right now and this requires everybody to understand the need for Error Management, enhance personal knowledge of human error (whilst avoiding emotional responses to such), resourcing the management of error through effective organisational improvements identified through open reporting and investigation; all underpinned by a robust, meaningful and consistently applied Just Culture.

We have worked with many organisations who confidently state that they have a Safety Management System or that Human Factors is high on the agenda yet, scratch the veneer, and the reality of the operation reveals behaviours and attitudes that have been at the heart of many organisational accidents for decades.

Understanding the limitations of humans and the required safety behaviours only goes so far – people need to apply such learning for any Safety Management System to be truly effective and this can only be enabled in the appropriate safety culture. No organisation can claim to have an effective SMS if the human element is not actively managed; people do safety, not policy and process.

The training contribution

So, where does training fit in the bigger scheme of things? Given the above, two key points appear to be raised:
Has the delivery of Human Factors training moved on, commensurate with understanding, since its first inception?

Is the training seen as part of a bigger cultural change programme designed to create a culture where safety management can flourish?

It could be argued that the former situation will remain if the latter approach is not taken thereby breeding the ‘arms folded’ attitude of staff often observed at the start of a Human Factors course.

The traditional approach clearly has limitations as once the delegates leave the benign training room they are once again thrust into the very environment that can generate conditions that can lead to error. Reminding them to be careful or reminding them of their responsibilities does not represent an organisational approach and any learning is extremely short term. The training must serve to reveal the reality of why system defences are potentially being breached and this can result in some uncomfortable conversations yet responsibility for managing error goes deep into the system. Taking a facilitated approach is key in unlocking this reality and a strong facilitator is required to avoid any excuses being made and to uphold the intent of a Just Culture – not reinforcing a no blame culture. The aim of a facilitated session is to underpin learning through praise of the right behaviours, challenging of the inappropriate ones and identification and capture of the conditions that are provoking error within the business. This can be enhanced by the organisation living off internal operational safety data and not just relying upon others accidents or the latest fashionable topic. This can only be done if the delegates are won over by the organisational commitment to the programme and are confident that change will come as a result. If training is not integrated with the implementation and on-going performance of safety management then this will result in an ‘arms folded’ attitude and the training will be a tick box exercise only.

Add to that the sensitivities of dealing with the subject matter and the facilitator has a tough job to contend with. Error conjures up all kinds of images based on our own bias and that of society. We need to challenge phrases such as ‘deliberate error’ and avoid giving error magnitude (error has no size but the outcome often shapes people’s view of the error) along with the beliefs that error is under our control and we should be more careful. Such clarity is not helped due to diverse levels of industry knowledge. Until such knowledge is coalesced we will be faced with views and opinions that serve to confuse rather than clarify. In a recent article on Safety Culture the phrase “if an error was intentional, the FAA can take action” was used which does not align with established Error Management terminology. Beliefs regarding error are embedded deep within societal values and can get in the way - any facilitator must be able to challenge others, including management, objectively and needs to be an advocate of Human Factors – not just a trainer. Application of this within an aviation environment is essential, so a
working knowledge of the requirements, (Part 145, Part M etc) is also key. Get this right and the delivery of Human Factors not only unfolds people’s arms but actively engages staff and supports the desired cultural shift. Get it wrong and you run the risk of an increasingly cynical workforce.

So, what is the training trying to achieve?
Ultimately, it is designed to support and promote modified behaviours to ensure:

1. Professional standards are reinforced resulting in safety risk reduction.
2. Positive application of Human Factors principles in day-to-day roles.
3. A working knowledge and practical application of the requirements of certification (for Part 145).
4. A shift towards positive application of assertive and proactive behaviours.
5. The development of a positive ‘safety culture’ within teams, and within the organisation.
6. An appreciation to challenge the ‘norms’ within the peer group.
7. An increase in ‘lower iceberg’ reporting to help paint a picture of reality to the organisation to enable management to make effective risk-based decisions.

A challenge to the management team through such a programme is the very real threat that application of the desired behaviour can interrupt the operation and through reporting, will paint a picture of reality that can ‘frighten the horses’. This is where the organisational commitment to the required cultural shift will be challenged. It can either be supportive and learn from the lessons within or it can focus inappropriately on the person who shouted ‘stop’ or reported a system weakness. Given that safety management thrives on operational data, if the organisation does not have the ability or will to change in reaction to such data then the desired behaviours will slowly recede and the organisation will be ‘flying blind in the safety management cloud’.

The long term sustainability of the values and behaviours encouraged during an effective safety training programme ultimately resides with the organisation’s management team. Human Factors training is often seen as a solution to an undesired behaviour (that led to an outcome) or a regulatory need (a quick shot of Human Factors training in the arm) yet it is in fact an enabling process and without sustainability management and measurement, it is unlikely to result in effective learning transfer.

**Sustainment of learning**

Training is the function that most organisations will turn to when seeking performance improvement however, most organisations overlook an essential aspect beyond the training that will often make it
much more effective - manager engagement. Unfortunately, with time, skills and knowledge gained during training tend to go unused or forgotten and after training, learners typically fall into one of three categories:

- they do not try to apply training.
- they attempt to apply it but realise no worthwhile results; or
- they apply training and get some positive results.

Any positive application will of course lead to sustainment of the skills learnt yet estimates suggest that successful application (point 3 above) is as low as 20%. The remaining 80% is known as scrap learning - learning that was delivered but unsuccessfully applied (points 1 and 2) and is therefore wasted.

These results support the notion of the need for sustainment beyond the training itself. Great trainers, effective learning techniques, appropriate and relevant material are all key elements of training yet external factors can also play their part. Prior to training, managers have the ability to prepare employees and beyond the training activity, they have the ability to influence the employees, through praise and effective coaching techniques, and the work environment to enable employees to apply such learning. Studies have indicated that manager engagement, both before and after training, is relatively low. The famous behavioural psychologist B.F. Skinner once stated “Education is what survives when what has been learned has been forgotten.” Despite an undoubted degree of forgetting, education can be sustained, with prolonged safety performance, if training does indeed align with a larger cultural change programme including manager engagement. When it comes to Error Management and the intention to create a culture where organisational learning can be sustained, we must learn from the behavioural aspects from near misses and output failures if we are to prevent recurrence of safety breaches.

The need for change.

This is apparent in many areas; It does not only applies to how Human Factors and Error Management training is conducted but also a change in the organisational approach to the management of error: a change in how it sees the training function in relation to the wider cultural shift and a change in beliefs, attitudes and behaviours of all staff within the aviation system. We see learned behaviours tainting the new approach – the terms Just Culture and Human Factors have become throw away terms in many organisations and old habits die hard irrespective of what the Safety and Quality policy says. Quite simply, if attitudes and behaviours continue as they have done then we will keep getting what we have always got – tick box training, continued generation of error and violation provoking conditions, staff having to work around regulations to meet delivery schedules and the associated risk
and losses associated with such. Yet for an organisation willing to support the required shift the benefits are huge: proactive loss management bringing commercial advantage; market differentiation; lower risk profile; the warning signs of accidents; and a more engaged workforce which has to be reason enough for the need for change.
References

2. FAA says new 'safety culture' will stress solutions, not blame. CNN.com. March 14 2012.
3. “The large majority (76%) of respondents indicate that training is a key organisational method for optimizing employee performance” – Manager engagement paper, Knowledge Advisors.
4. The Current State of Scrap Learning and Manager Engagement, Knowledge Advisors, referring to work by R.O. Brinkerhoff (2010).
5. The Current State of Scrap Learning and Manager Engagement, Knowledge Advisors, referring to work R.O. Brinkerhoff (2010)
6. “It appears that managers infrequently use resources that are available to them to support employee application of learning”. “None of the response options below [referring to post learning analysis] were selected by more than 25% of respondents. This activity is remarkably low...”, Manager engagement paper, Knowledge Advisors.
7. New Scientist, 21st May 1964

Robert O. Brinkerhoff, referred to above, is a professor at Western Michigan University and an internationally recognized expert in evaluation and training effectiveness, has been a consultant to dozens of major companies and organizations in the United States, South Africa, Russia, Europe, Australia, New Zealand, Singapore, and Saudi Arabia. His clients include American Express, Anheuser-Busch, Anglo-American Corporation (Johannesburg), the Federal Aviation Administration, Compaq, Canadian Tire, EDS, QUALCOMM, the U.S. Postal Service, and the World Bank.