



## Introduction to Non-Technical Skills (NTS)

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### NTS: What are they?

Non-Technical Skills (NTS) are the cognitive and behavioural abilities by which work is delivered safely and effectively. The titles or labels used to describe/define those NTS may vary depending on the industrial context in which they are to be applied. For the purposes of this briefing note, and based on evidence from research, the main NTS are:

- Communication
- Decision Making
- Leadership
- Situation Awareness
- Stress Management
- Teamworking

The NTS can usefully be articulated by asking the question **‘what does good look like in your workplace?’** and using the answers to give a definition of:

- What the individual/team must be able to do
- What the individual/team must know and understand in order to do it

With the skills, knowledge and understanding defined we can then develop (or refresh) a suite of training packages ideally linked to training/exercising programmes in a way which supports meaningful assessment to be carried out and all achievements recorded and recognised.

All organisations address the NTS in some way. Generally the approach is to incorporate the NTS skills into a technical training programme on the premise that NTS are applied, as a matter of course, every day in a technical context. However, this tends to undermine the importance of the NTS to the point of burying them so far into the technical learning and assessment that (a) the individuals may not even be aware that their NTS are being evaluated and (b) the organization has no meaningful benchmark or understanding of their employees’ NTS.

### NTS: Why do we need them?

Investigators realised that many catastrophic (and near catastrophic) incidents were due to weaknesses in the NTS (often referred to loosely as ‘human error’ or ‘human factors’) and not necessarily due solely to technical failures. Clearly, in many cases the ‘human error’ was allied to (or in the context of) a technical issue but not necessarily (yet) a catastrophic one.

Some of the earliest studies of NTS were in the aviation industry as a result of data analysis from recovered ‘black boxes’ comprising Flight Data Recorders and Cockpit Voice Recorders. Originally the studies had a sharp focus on those in the cockpit but it was quickly established that ‘human factors’



affect the entire crew. Hence the NTS were developed in the context of a programme of Crew Resource Management (CRM). This term is still widely used.

United Airlines is recognized as being the first company (in 1981) to explicitly address the NTS associated with working in a high-risk industry. This was in direct response to some of the findings from the investigation into the crash of Flight 173 (Denver to Portland: 28 Dec 1978) which found that human errors in situation awareness, decision making, communication and leadership led to the crash and 10 fatalities.

Further examples from the Aviation Sector include two Boeing 747s colliding on the runway at Tenerife airport (583 fatalities: 27 March 1977). There was no major technical fault or failure. The subsequent analysis of the incident indicated significant weakness in the communication, team working/coordination, decision making, leadership and stress management behaviours of the crew and ATC staff.

Subsequent high-profile disasters to the US (NASA) Space Programme, including Challenger (7 fatalities: 28 Jan 1986) and Columbia (7 fatalities: 01 Feb 2003), although mainly technical in nature, increased the awareness and profile of NTS as a tool which could make a positive contribution to greater safety and effectiveness.

Similarly, analysis of the Piper Alpha disaster (167 fatalities: 06 July 1988) and Deepwater Horizon (11 fatalities: 20 April 2010) raised the profile of NTS further. These events again demonstrated a combination of safety barrier failures, poor quality of communications, weak leadership etc. as a direct result of Deepwater Horizon the International Association of Oil and Gas Producers (IAOGP) now recommends NTS in their CRM programmes.

Compare this with the 'Miracle on the Hudson' (when US Airways flight 1549 from La Guardia to Charlotte successfully ditched in the Hudson River on 15 January 2009) where the National Transportation Safety Board (NTSB) cited NTS as being a major contributing factor in the outcome (5 serious injuries from total of 150 passengers and 5 crew).

There is growing evidence to suggest that NTS can make significant improvements to the way in which we work and may have a greater and more immediate impact on how we work than the leadership boom of the last 20 years.

## NTS: Why now?

The importance of technical skills/knowledge has long been accepted in high-hazard, technical industries. The importance of NTS has been overlooked historically and has only relatively recently been recognised. There are many reasons for this including:

- **Acceptance** – part of being a responsible organisation is being able to ask yourself difficult questions and to answer honestly and fully. Some people/organisations need support to do this and to accept the fact that there may be weaknesses in their NTS. Findings from the investigation and analysis of some high-profile catastrophic incidents have provided compelling evidence that NTS have played a significant part. Greater use of digital recording technology, significant developments in corporate leadership/accountability and simple weight of evidence are helping organization to realize that they should start asking themselves the difficult questions about NTS.



- **Articulation** – much of the work has been already been done and organisations do not need to ‘re-invent the wheel’ by struggling to find and apply a taxonomy which is meaningful without being trite and, importantly, does not ‘threaten’ those at which it is directed. In addition it is possible that the organisation’s mission statement and values can be used as the basis for articulation thus linking high-level corporate aspiration directly with workplace behaviours and outcomes.
- **Identification of ‘what good looks like’** – this links to the articulation issue and is an approach welcomed by organisations. Practitioner workshops have thrown up some opposing, and strongly held, views of what good looks like! This provides a key learning point for the organization and the basis for co-creation of a specification that everyone can agree with.

## NTS: The Human Factor Link?

In order to keep our approach to NTS as accessible as possible it is necessary to consider the main ‘human factor’ of Cognitive Bias (CB). In short, CB applies itself to every decision we make and so it is important that we know what it is so that we can look out for it!

Different people have different CBs and therefore deviations occur (i.e. different people will make different decisions based on the same evidence). People are generally not even aware that they have these biases until they are explicitly addressed. Common CBs include:

- **Groupthink** – thinking the same as everyone else and not challenging
- **Confirmation bias** – you see what you want to see
- **Normalisation of deviance** – you explain deviance away as normal
- **Over-confidence** – mistaking experience for knowledge, competence and situation awareness

The CRM approach helps to identify and address (mitigate) the potentially negative impact of Cognitive Bias in the workplace and thus amplify the application of positive Cognitive Bias (organisational culture).

## NTS: What are the benefits?

The NTS approach allows clients to explicitly address a set of key workplace skills that have arguably been ‘under the radar’ for some time. It also allows the client to contextualise these skills to their own specific requirements which reflect their organisational culture and values as well as their operational requirements. Other benefits include:

- Provides a crucial (and often overlooked) part of barrier management strategy
- Demonstrates an investment in the person (improves recruitment and retention)
- Provides a deeper understanding of WHY and HOW (rather than just the WHAT)
- Allows management a deeper understanding of the workplace challenges (i.e. what good really looks like)
- Reflects your values/mission/ethics and organisational culture
- Reflects best practice in terms of workplace performance requirements
- Identifies and optimises meaningful alignment across:



- High risk processes and their control systems
- Competence Management System (CMS)
- Culture (leadership)
- Training and Exercising Environment
- Supports organisational systems, processes and culture that allow:
  - the individual the space and working environment in which to apply and display the required skills, competences and behaviours
  - the organisation to learn from previous and imminent incidents and apply that learning in a meaningful way
- Supports the skills, competences and behaviours of individuals as a situation escalates
- Facilitates more efficient and robust interventions on BOTH sides of the Bow-Tie

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