



Integrated and Evidence Based Training:

Conducting Risk Based Training Needs Analyses
for Knowledge and Skill Training



orsm.net

Are you using evidence you can trust?

- Relies on data / research
- Objective and unbiased
- Validated by subject matter experts



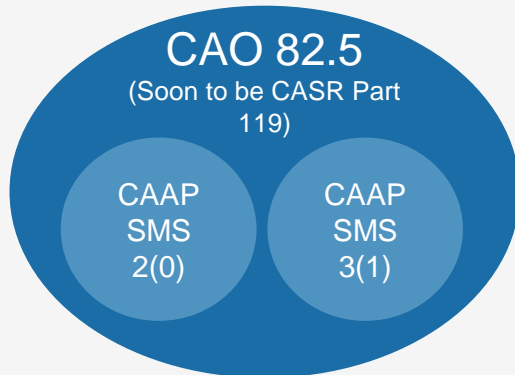
But I've done a Training Need Analysis...

- What the manager says?
- What a small focus group of Flight Crew trainers say?
- Your own perspective of the training needs?
- Does it just mirror a list of core topics that the regulator gave you?

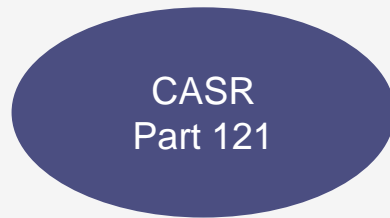


The Regulations don't give me time to add risk based topics....

To maintain an AOC
for high capacity RPT:



To operate
Large Commercial
Air Transport Operations:



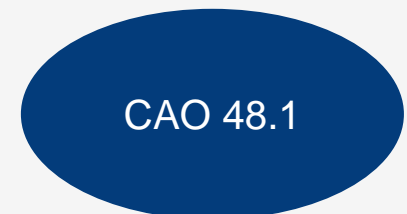
To be a
Flight Training Organisation:



To be
IOSA accredited:



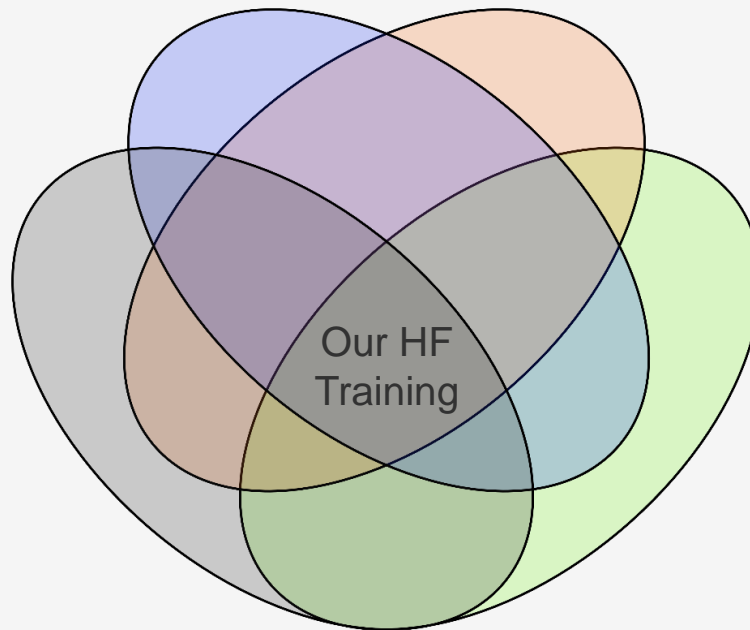
To retain a 'Tier 3'
Fatigue Risk Management
System approval :



But...these are influenced by trends,
and are not always evidence based

Regulatory Challenges

- Terminology and Requirements are not aligned across regulations, we need to meet ALL requirements.
- Different methodologies: *Process focused v Outcome focused*

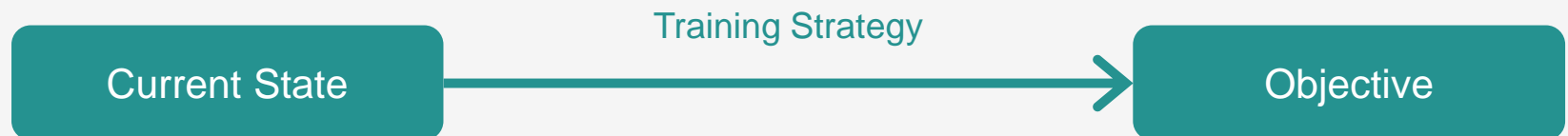


A risk based analysis will tell you your emphasis and order of topics

Human Factors training should focus on managing risk

- What are the risks to the operation?
- What are risks to individuals?
- What is within the employee's influence or control?
- What skills do they need to manage these risks?

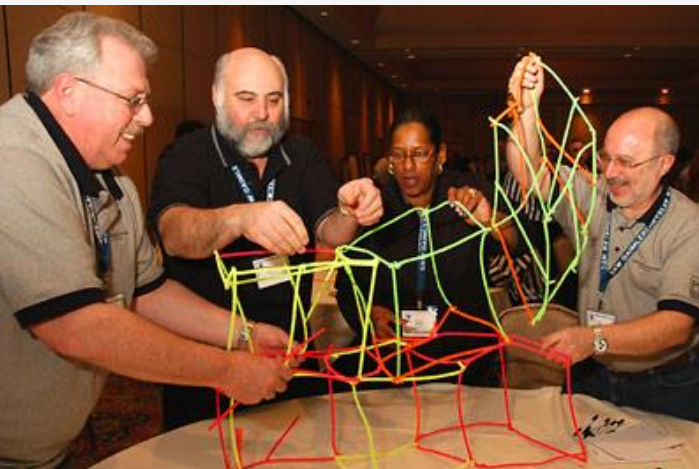
HF Training should have a clear safety objective!



Objectives that don't quite meet the mark

- The pursuit of knowledge.
- To have fun (and get better feedback)
- To meet regulatory requirements
- To be better at working as a team, in general

Anything that you haven't linked back to operational application!



What risks can employees influence?



How can they avoid / prevent, detect, and manage threats and errors?

Brand new course for everyone?

Be efficient! But tailor to some extent:

- Risk Based TNA
- Gap analysis against existing material
- Review and adapt to meet employee group training needs
- Standardise terminology and concepts

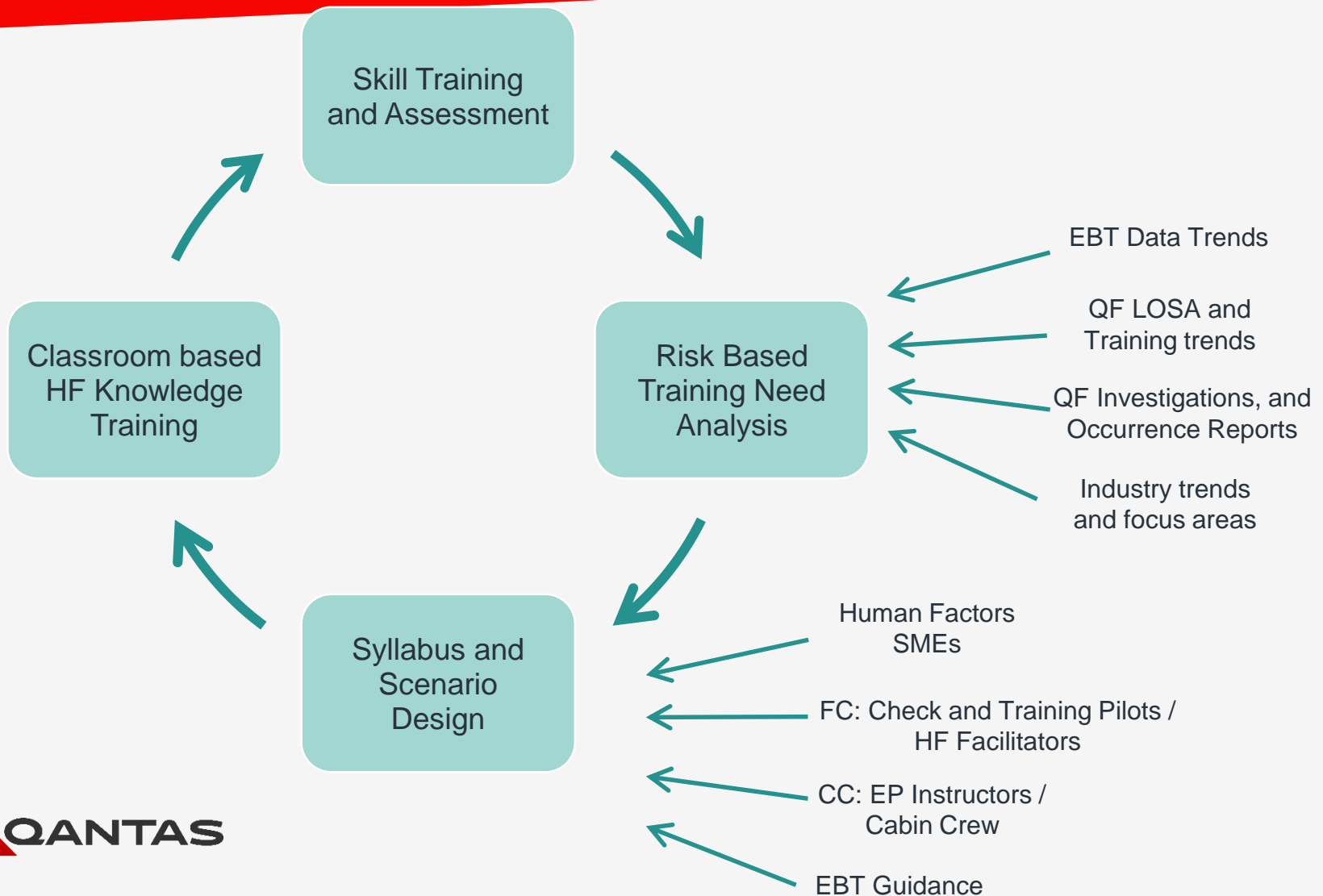


Training works with other Safety Management System (GMS) processes

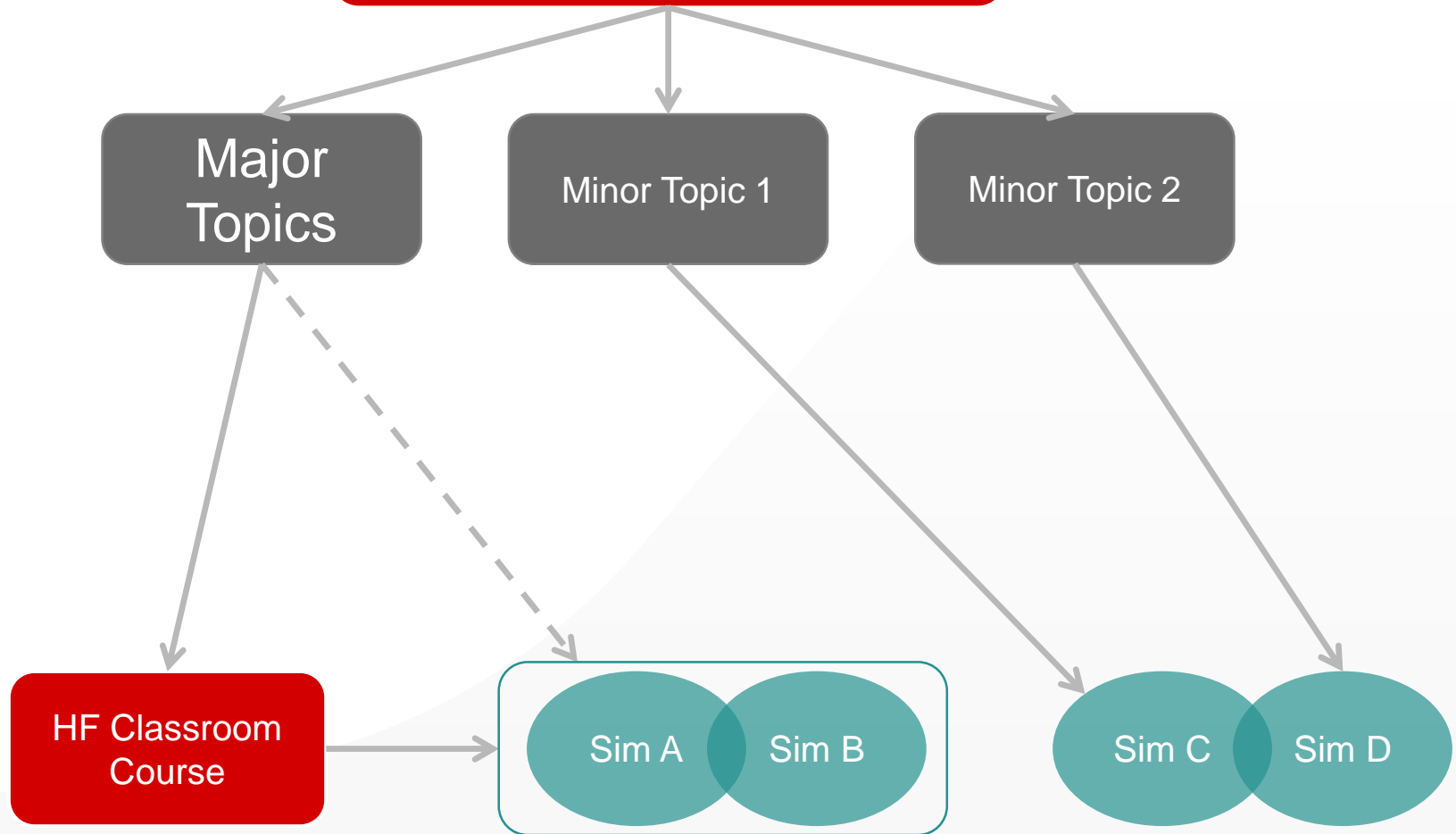
- Evidence based
- Flexible
- Responsive to operational needs
- Closed loop of information



Holistic Approach to Human Factors Training Classroom and Simulator



Risk Based Training Needs Analysis



Risk Based Training Need Analysis - Method

ROLE ANALYSIS

ORGANISATIONAL TRENDS

GLOBAL / INDUSTRY TRENDS

Flight Crew

Non Technical Behaviours

Situational Awareness

The monitoring of progress and overall management to allow accurate perception of all factors affecting airspace and crew

- 1. System Awareness**
 - Monitor and report changes in system status
 - Anticipate potential changes to system
- 2. Environmental Awareness**
 - Collects information about the environment
 - Confirms suitable resources when necessary
 - Shares information about the environment with others
- 3. Anticipation**
 - Develops contingency strategies
 - Identifies possible future problems or threats

Decision Making

Formulating and implementing an appropriate plan of action based on the assessment of available information

- 1. Problem Definition/ Diagnosis**
 - Define objectives and identify a problem
 - Review current tactics with other crew members
- 2. Option Generation**
 - Develop alternative course of action
 - Ask other crew members for options
- 3. Risk Assessment / Option Choice**
 - Consider and share risk effects of alternative courses of action
 - Talk about possible risks for courses of action in terms of crew limitations
 - Develop tactics and implement strategies
 - Confirm selected course of action
- 4. Outcome Review**
 - Evaluate outcome against plan
 - Reassess plan, if necessary, with crew consultation

COMMUNICATION

Teamwork

Team members working together to achieve common objectives

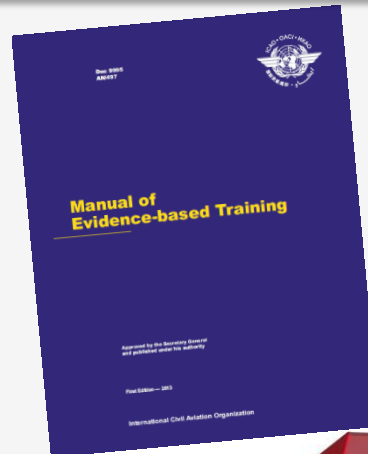
- 1. Team Building and Monitoring**
 - Establish shared plan for team communication and participation
 - Monitor for team dysfunctions
 - Encourage inputs and feedback from others (lower the barriers)
 - Do not compete with others
- 2. Considering Others**
 - Acknowledge capabilities and concerns of other crew members even if they do not agree
 - Respond to support language
 - Take confidence of other crew members into account
 - Give personal feedback
- 3. Supporting Others**
 - Support other crew members in demanding situations
 - Offer confidence
 - Address crew concerns over unclear instructions, communications or situations where doubt exists
 - Support language
- 4. Conflict Solving**
 - Identify resolution of potential conflict
 - Assume resolution of potential conflict
 - Keep calm in conflict
 - Engage conflict resolution
 - Concentrate on what is right rather than who is right

Leadership & Managerial Skills

The ability to influence others and achieve objectives by setting direction, example and a productive working environment

- 1. Use of Authority and Accountability**
 - Advocate crew position
 - Take initiative to ensure involvement and task completion
 - Take command if situation requires
 - Motivate crew by appreciation and coaches when necessary
- 2. Providing and Monitoring Standards**
 - Establish task completion
 - Monitor if task completion deviates from standards
 - Review if task completion deviates from standards, if situation requires
 - With crew being consulted, develop plan if necessary
- 3. Planning and Coordination**
 - Encourage crew participation in planning and task completion
 - Clearly state intentions and goals
 - Coordinate task completion
 - Coordinate task completion, change plan if necessary
- 4. Workload management**
 - Distribute tasks among crew, clearly and correctly appropriately
 - Identify operational tasks are prescribed to retain sufficient resources for primary flight duties
 - Allocate enough time to complete tasks

QANTAS HUMAN FACTORS



Risk Based Training Need Analysis - Method

ROLE ANALYSIS

- List Tasks required of the employee group
- Identify Threats and Errors associated with the tasks
- Assign Risk Weighting to each issue
- Identify Non-Technical Skills needed to manage these Threats and Errors or to excel in the task.

Risk Based Training Need Analysis - Method

ROLE ANALYSIS

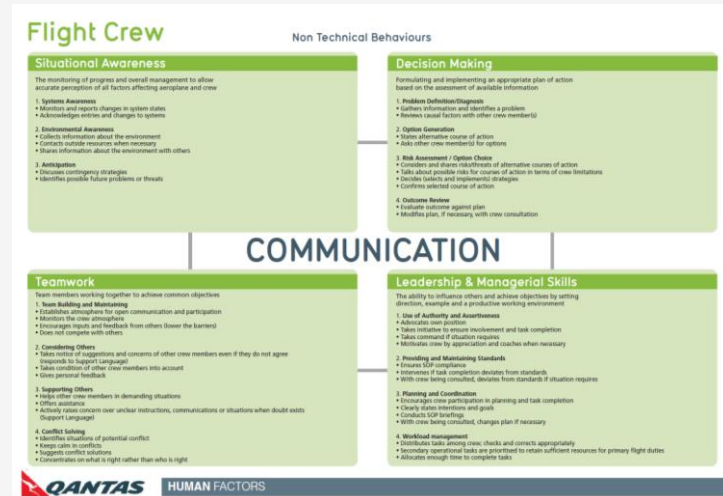
Task	Potential Threats / Error / Violations	Risk Weighting of issue (based on SME advice)	Communication - Relaying and receiving information	Situational Awareness	Teamwork	Decision Making - including Risk Perception	Leadership and Supervision	Speaking up	Conflict Resolution	Workload Management	Attention and Processing	Memory	Procedural Compliance	Stress	Fatigue	Other?/
Determining fuel needed	Calculation Error	2		1							1	1				
	Data Entry Error	2		1							1	1				
	Failure to effectively cross check	3									1		1			
	Team consultation and agreement	2	1		1	1	1									
Topic Area Risk Score (Risk Weighting x Topic score)																

Risk Based Training Need Analysis

ROLE ANALYSIS

Training topics can have a broader scope than assessment topics

- e.g. Training in Attention and Processing could improve SA or TW performance.



Training doesn't have to fit into rigid modules:

- Decision Making in Teams
- Problem solving in unanticipated situations
- Cognitive Processes that improve the Effectiveness of Procedures
- Assertive communication between employee groups

Risk Based Training Need Analysis - Method

ORGANISATIONAL TRENDS

What have you seen in your organisation recently?

- Short landings? Long landings?
- Incorrect taxi routes?
- Continued unstable approaches?
- Low risk perception about WHS issues?

What Non Tech Behaviours are needed to demonstrate optimum performance in these areas?

Ideally, reports and investigations will be coded appropriately so that HF / Non Tech Behaviour Information can be easily accessed.

Risk Based Training Need Analysis - Method

GLOBAL / INDUSTRY
TRENDS

- EBT Data Report
- Focus areas of IATA, ICAO, EASA.
- Significant safety incidents and investigations
- Research studies

Are they seeing something that we haven't seen yet?

Can we learn from their experiences?

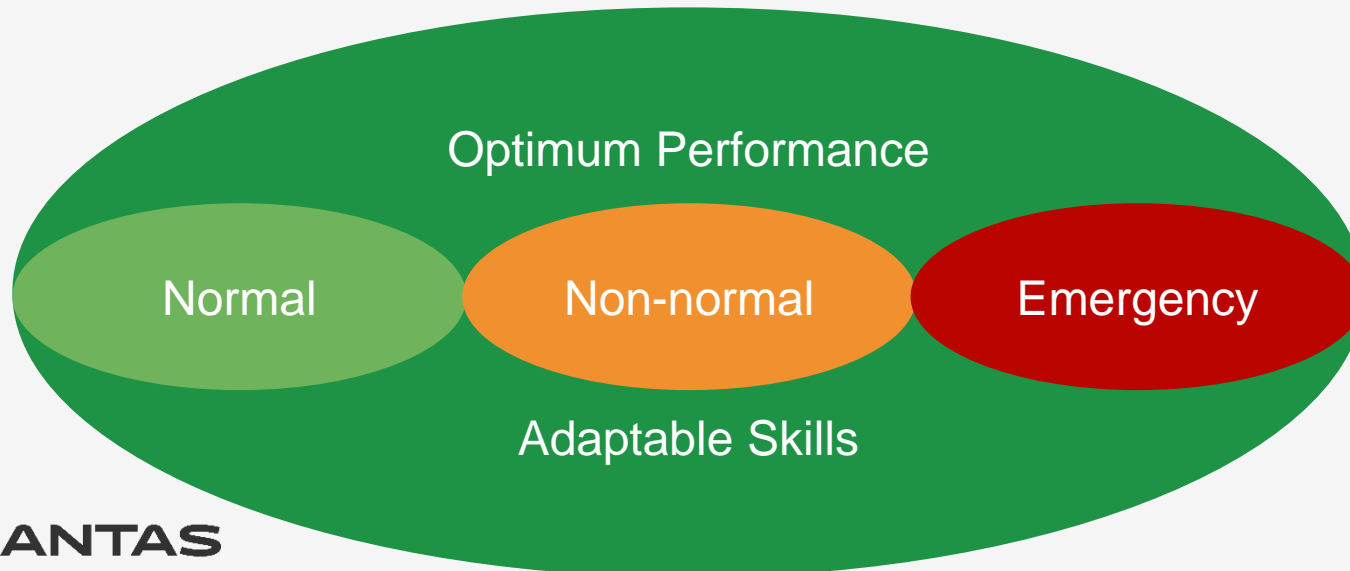
Risk Based Training Need Analysis - Method

ROLE
ANALYSIS

ORGANISATIONAL
TRENDS

GLOBAL / INDUSTRY
TRENDS

Why analyse all three levels?



Sounds like too much work...

ROLE ANALYSIS

Only refresh when the role changes.

Identify key non-tech areas that should be covered for each role.

ORGANISATIONAL TRENDS

Regularly.

Put systems in place to ensure that information flows down to you

- E.g. Coding / Causal Factor System
- Searchable Databases.

GLOBAL / INDUSTRY TRENDS

Regularly.

EBT should provide a lot of this.

Use a template! Don't start from scratch each time!

Training Needs Analysis

[Title]

Contents

1. Background.....	2
2. Scope.....	2
3. Objectives of the TNA.....	3
4. The Needs Analysis Process.....	3
5. Relevant Regulatory and Qantas Group Requirements.....	4
6. Review of Existing Content.....	4
7. Target Audience.....	4
8. Role Requirements.....	4
9. Organisational Trends.....	4
10. Industry Trends.....	4
11. Recommendations.....	4

6. Relevant Regulatory and Qantas Group Requirements

This course will be designed to address the regulatory requirements of:

- CAO 82.5 CAAP SMS 3(1), IOSA Standards, CASR Part 145, CASR Part 42, CASR Part 147.

It will also address the Qantas Group / <AOC> requirements of

- QMS, QSMS, TACM.

7. Review of Existing Content

[Brief outline of any existing training content or training programs, e.g. extract of NTS elements, training aims and objectives, course outline. Include any excerpts in an appendix at the end of the document.]

- What is the target audience already currently being trained in? Make sure you avoid double up of content.
- Is there a matrix that needs to be followed? If so, outline the previous training topics.
- Is there anything that hasn't been covered recently?
- Is there any material that you need to standardise with e.g. using the same terminology in initial course as in recurrent courses?

8. Role Requirements

[Summary of any priority training areas identified by the task analysis / role requirement analysis detailed in section 4]

A template for completing this process is found in the Appendix.

Note: For some roles who have had HF/NTS training for a while this may be the Non-Technical Behaviours associated with the role, as already assessed in the training system.

1. Background

Provide details around the background of the TNA being conducted. This may include descriptions of:

- High level objectives of Human Factors training in Qantas/Business Unit. This will be as stated in the CASA submission, Training Manual, or SMS
- High level purpose of the project
- Why the course is required
- What launched the project
- The purpose of the TNA document

An example:

Qantas Airways Limited recognises the value of enhancing human performance as a core part of our overall commitment to safety enhancement. There is strong commitment and recognition of the importance of the HF/NTS training program in improving safety and efficiency via the prevention, recognition, and management of operational threats and errors at the individual and organisational level. Qantas aims to manage threats and errors across the organisation through Human Factors training programs that address current operational needs.

This project is to design and implement the next recurrent Human Factors program, which will run from July 2014 until June 2015.

This course is required to meet the requirements of the QAL CAO 82.5 CAAP SMS 3(1) submission which requires annual Recurrent Training for Flight Crew and Cabin Crew.

This project has been initiated <as part of the regular annual review process / following several recent occurrences / following a significant identified safety trend>.

This Training Needs Analysis (TNA) will investigate the Human Factors training requirements of <target audience>

2. Scope

[Clearly state what scope]

This TNA will examine but will not focus on addressed through

12. Appendix 1: Analysis of Role Requirements – Template

(Note: Red scoring is a mocked up example for the template only and should not be used)

Task	Potential Threats / Error / Violations	Risk Weighting of issue (based on SME advice)	Communication - Relaying and Situational Awareness	Teamwork	Decision Making - Including Risk Leadership and Supervision	Speaking up	Conflict Resolution	Workload Management	Attention and Processing	Memory	Procedural Compliance	Stress	Fatigue	Other???
Driving in ramp areas	Driving in prohibited areas	3	1		1	1	1				1			
	Failure to adhere to correct towing procedures	1			1						1			
	Speeding or failure to obey traffic signs / markings and rules/procedures	3	1		1	1	1	1	1		1			
Topic Area Risk Score (Risk Weighting x Topic score)			6		3	7	6	6	3	3	7			

Thank you



Assurance - Safety Meetings - A Seat at the Table

