

# PACDEFF Conference 2010

## Operationalising NTS Training

*Moving it out of the classroom  
and into the flight deck*

**Captain Cameron Tribe**

B.Tech(Av), M.Tech Man(ATM), FRAeS

Senior Training Captain B737 Fleet

# The Wrong Stuff...

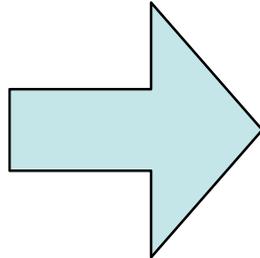
## Disclaimer

This product is meant for educational purposes only. Any resemblance to real persons, living or dead is purely coincidental. Void where prohibited. Some assembly required. List each check separately by bank number. Batteries not included. Contents may settle during shipment. Use only as directed. No other warranty expressed or implied. Do not use while operating a motor vehicle or heavy equipment. Postage will be paid by addressee. Subject to approval. This is not an offer to sell securities. Apply only to affected area. May be too intense for some viewers. Do not stamp. Use other side for additional listings. For recreational use only. Do not disturb. All models over 18 years of age. If condition persists, consult your physician. No user-serviceable parts inside. Freshest if eaten before date on carton. Subject to change without notice. Times approximate. Simulated picture. No postage necessary if mailed in the United States. Breaking seal constitutes acceptance of agreement. For off-road use only. As seen on TV. One size fits all. Many suitcases look alike. Contains a substantial amount of non-tobacco ingredients. Colors may, in time, fade. We have sent the forms which seem to be right for you. Slippery when wet. For office use only. Not affiliated with the American Red Cross. Drop in any mailbox. Edited for television. Keep cool; process promptly. Post office will not deliver without postage. List was current at time of printing. Return to sender, no forwarding order on file, unable to forward. Not responsible for direct, indirect, incidental or consequential damages resulting from any defect, error or failure to perform. At participating locations only. Not the Beatles. Penalty for private use. See label for sequence. Substantial penalty for early withdrawal. Do not write below this line. Falling rock. Lost ticket pays maximum rate. Your cancelled check is your receipt. Add toner. Place stamp here. Avoid contact with skin. Sanitized for your protection. Be sure each item is properly endorsed. Sign here without admitting guilt. Slightly higher west of the Mississippi. Employees and their families are not eligible. Beware of dog. Contestants have been briefed on some questions before the show. Limited time offer, call now to insure prompt delivery. You must be present to win. No passes accepted for this engagement. No purchase necessary. Processed at location stamped in code at top of carton. Shading within a garment may occur. Use only in well-ventilated area. Keep away from fire or flame. Replace with same type. Approved for veterans. Booths for two or more. Check here if tax deductible. Some equipment shown is optional. Price does not include taxes. No Canadian coins. Not recommended for children. Pre-recorded for this time zone. Reproduction strictly prohibited. No solicitors. No alcohol, dogs, or horses. No anchovies unless otherwise specified. Restaurant package, not for resale. List at least two alternate dates. First pull up, then pull down. Call toll free before digging. Driver does not carry cash. Some of the trademarks mentioned in this product appear for identification purposes only. Record additional transactions on back of previous stub. Decision of judges is final.



## *Traditional CRM/NTS Training*

CRM/NTS/HF  
Classroom  
Theory



Communication  
TEM  
Leadership / Followership  
Situational Awareness  
Stress & Fatigue Management  
Workload Management  
Automation Management  
Conflict Resolution  
Organisational Safety Culture  
Decision Making

- ✓ Annual renewal
- ✓ Training matrix
- ✓ Not formally assessed
- ✓ Flight and cabin crew together

## *Training / Assessment Path of NTS today*

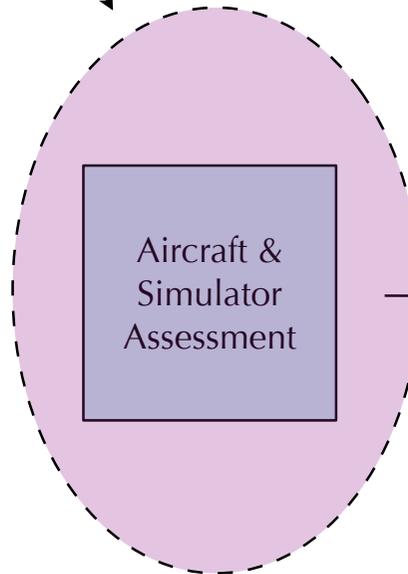
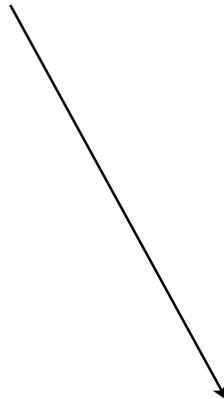
CRM/NTS/HF  
Classroom  
Theory



Aircraft &  
Simulator  
Assessment

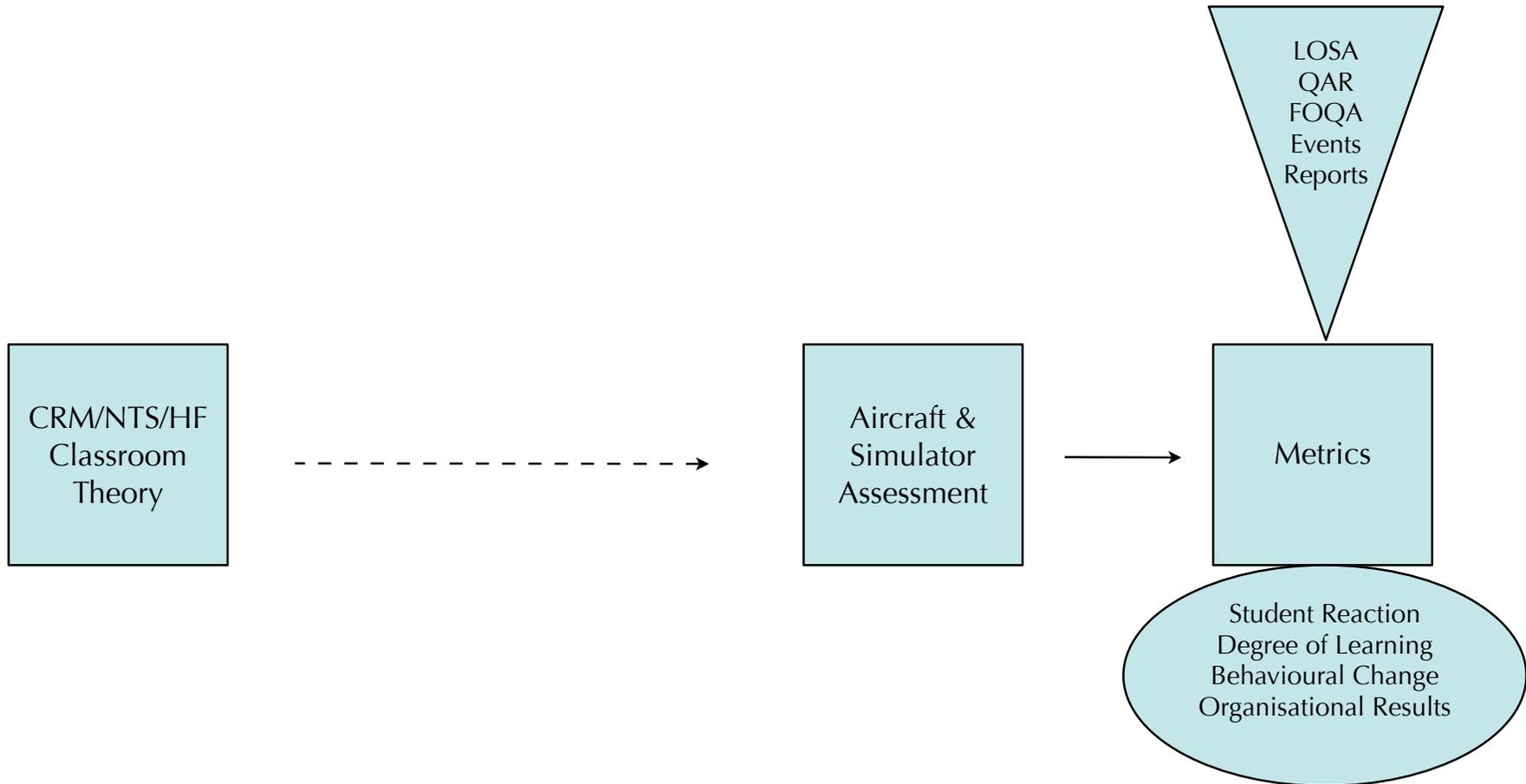
## *Primary Method of Measurement*

CRM/NTS/HF  
Classroom  
Theory

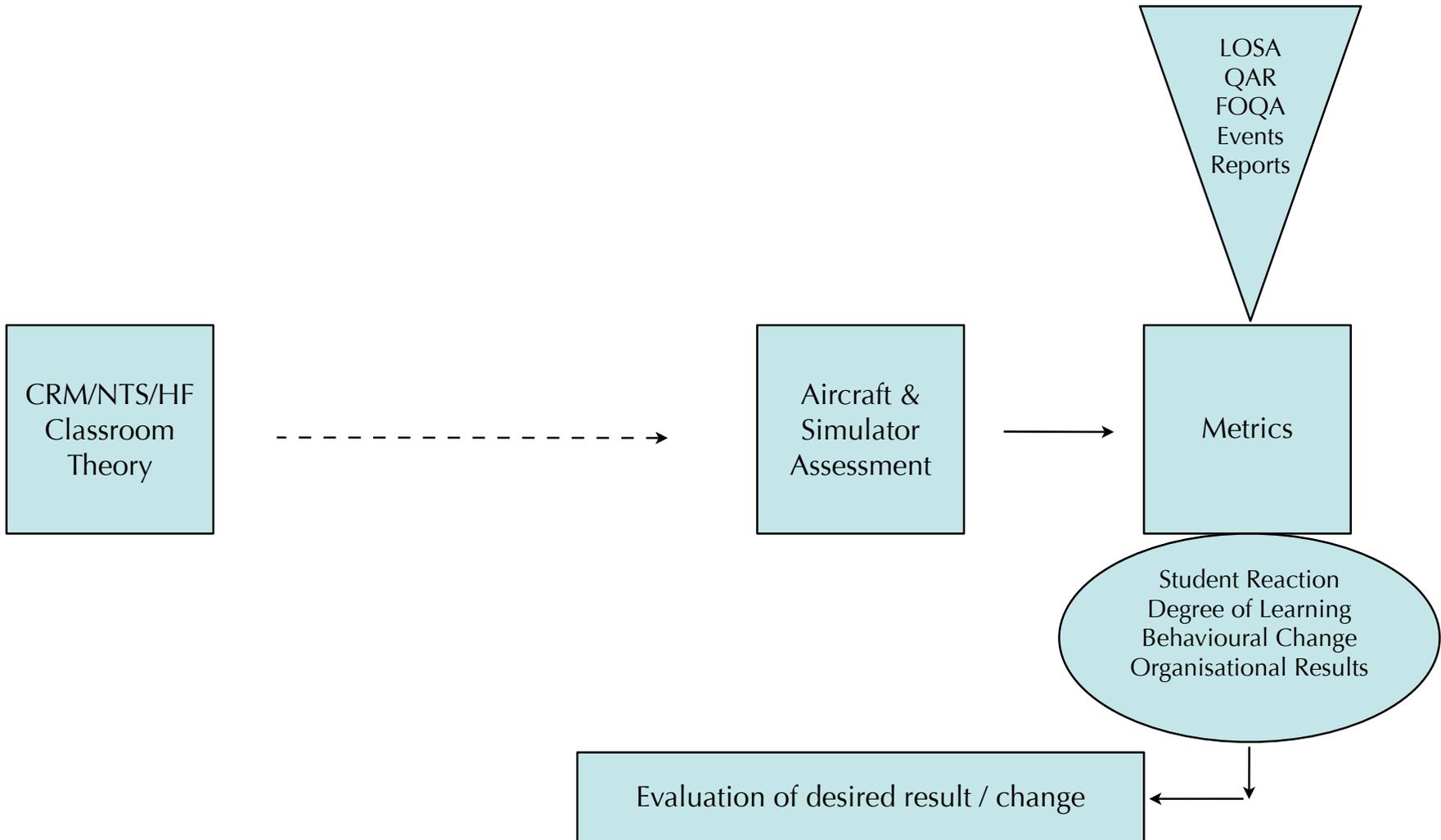


Metrics

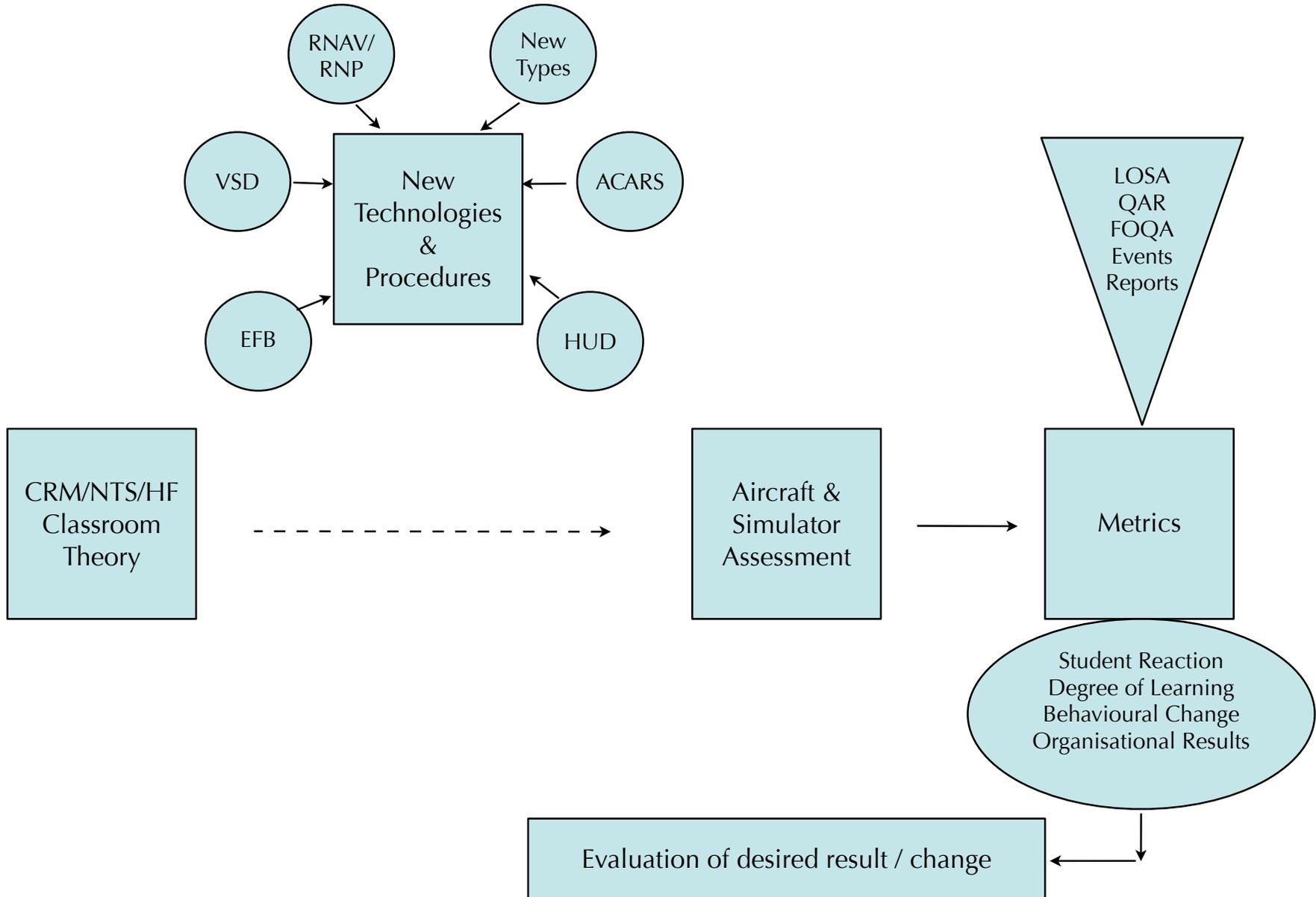
## *Additional Means of Assessment*



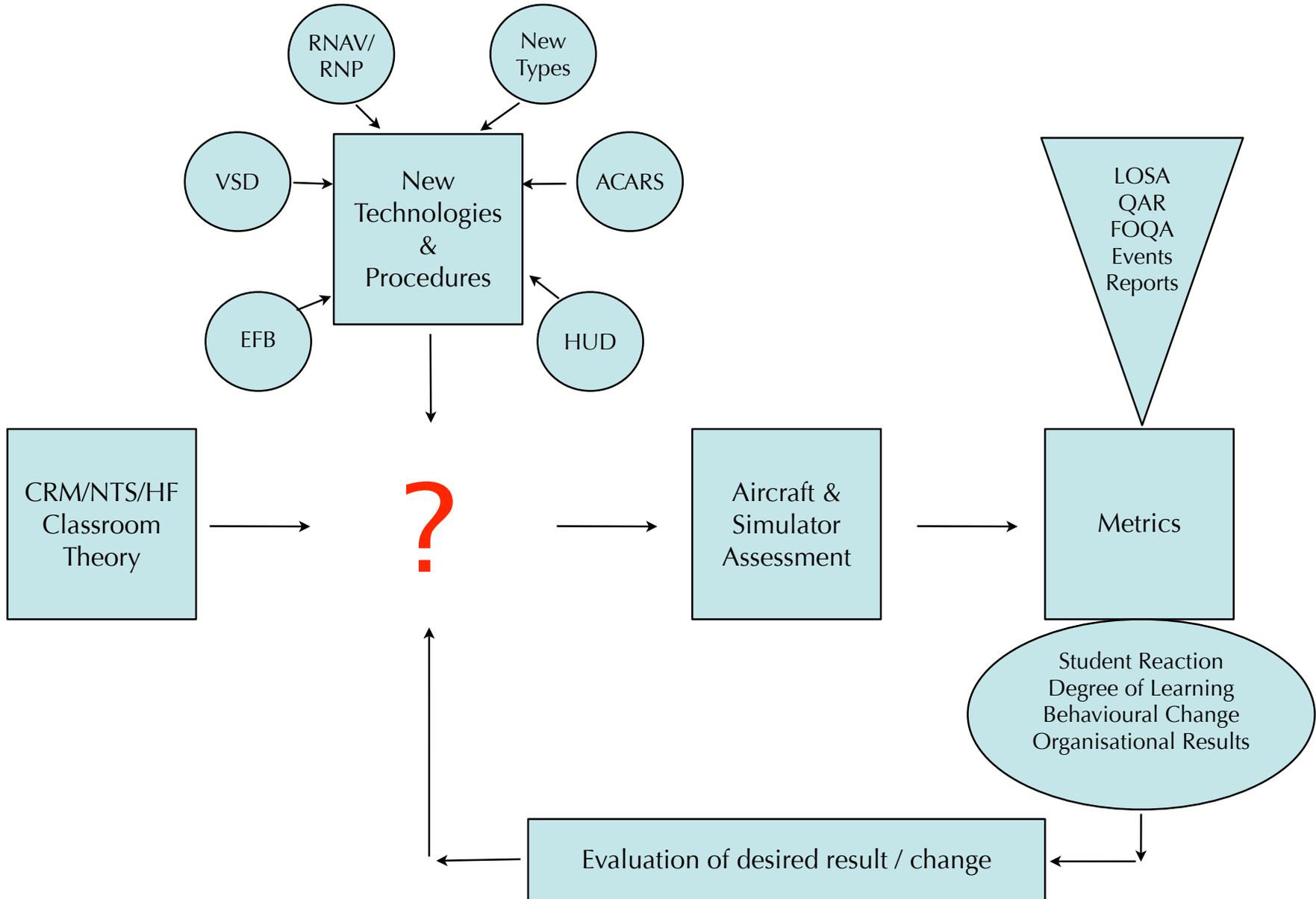
# Feedback



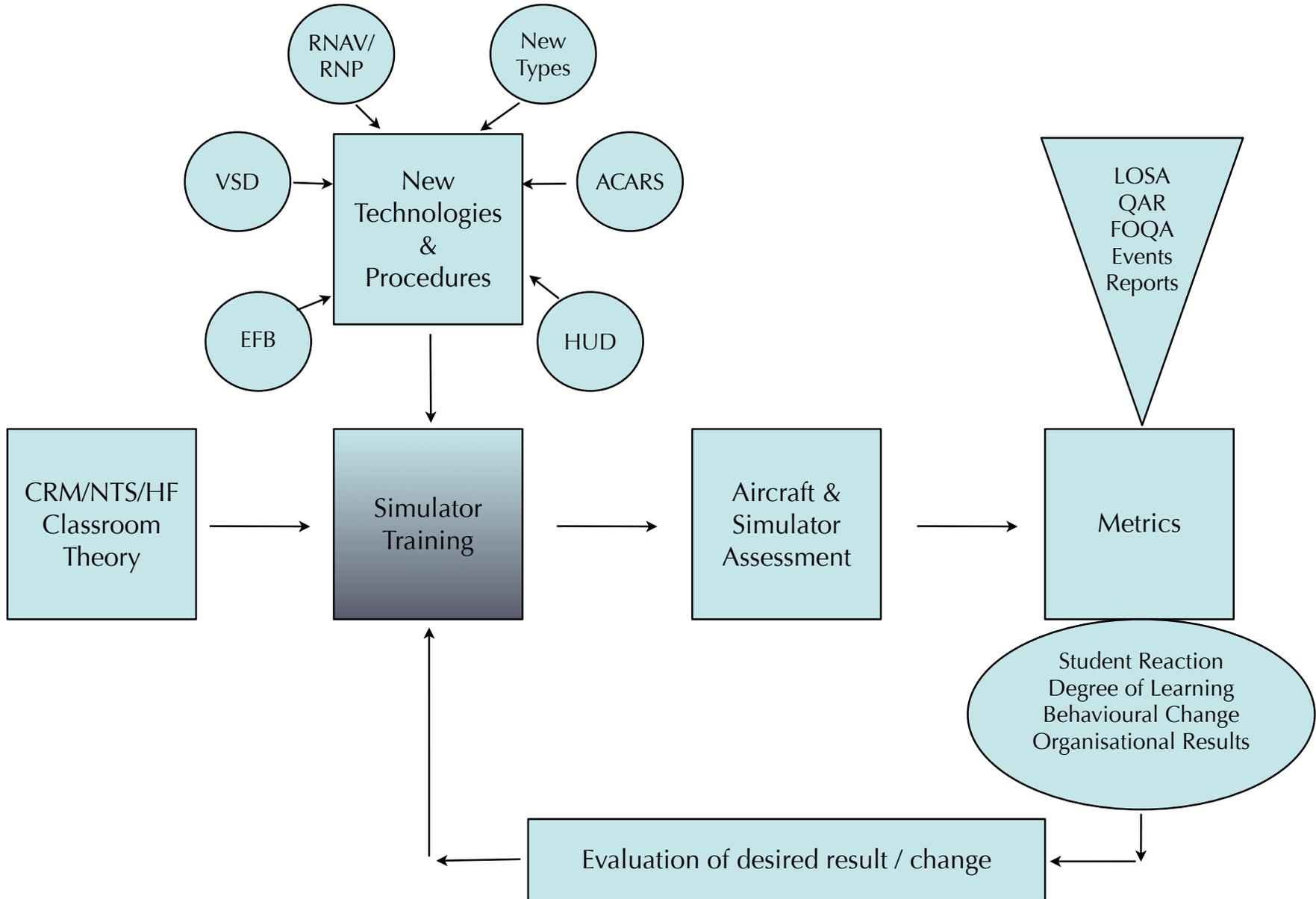
# Impact of New Technology



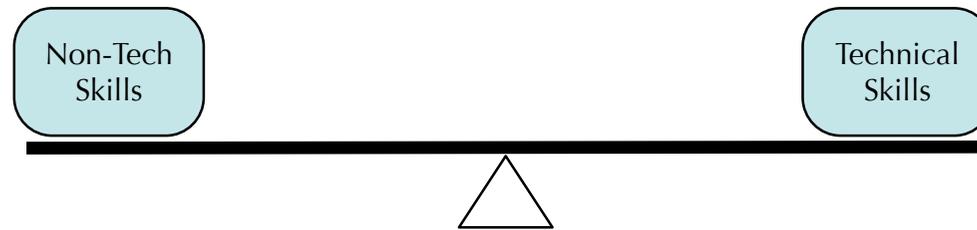
# Almost a Complete Picture



# *The Critical Component*



**In the simulator**



***“NTS is great stuff when you have time to do it...”***

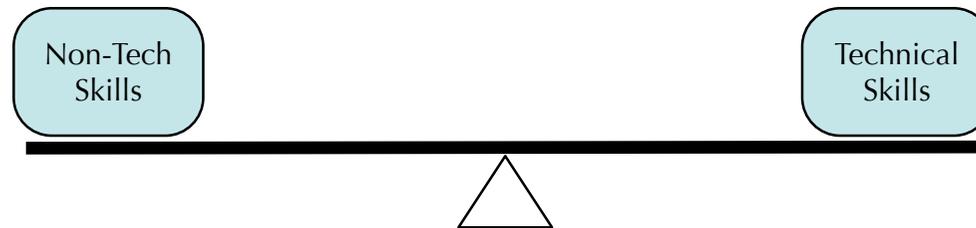
# Why?

Historically pilots most relate to assessments of:

- ✓ Technical knowledge
- ✓ Manipulative skills (“stick & rudder”)
- ✓ Memory items
- ✓ Running the operation
- ✓ Being calm under pressure
- ✓ Completing the mission
- ✓ Getting it back on the ground in one piece

**Power means safety!**

## Bridging the gap to achieve the balance...



- ✓ Application of theoretical principles in a dynamic flight deck context
- ✓ Proving the theory works
- ✓ Providing practical NTS training for crews, an NTS toolkit
- ✓ Demonstration of the “right stuff”
- ✓ Practice in using the tools
- ✓ Furthering the culture change of pilot attitudes towards NTS
- ✓ Assessor education and training

# NTS Simulator Training

## *Benefits of simulation devices*

- ✓ Competency based training - can be repeated in a short time-frame
- ✓ Real-time
- ✓ Recordable for facilitated playback
- ✓ Scenario based
- ✓ Can replicate areas of weakness from line observations & report data
- ✓ Tailored to the individual, not the group
- ✓ Tailored to the objective
- ✓ Don't always have to be full flight sims

# NTS Simulator Training

Where / when should it be imbedded?

- ✓ Cyclic training sessions, LOFT exercises
- ✓ Type rating
- ✓ Pilot intake course
- ✓ Command development flights
- ✓ Command training course
- ✓ Instructor training course
- ✓ Check Captain training course

# NTS Training & Assessment

## CAAP SMS-3(1) Appendix: High Capacity RPT NTS Assessment Markers

### Check Captains Non-Technical Skills Guide

The four essential skills grading will be further amplified by the use of observed essential skill elements. They will be used for an assessment grading of 1, 2 or 5 and optional for 3 and 4. Each essential skill has a defined group of elements.

#### COMMUNICATION AND TEAMWORK

CM.	Communication
TW.	Teamwork
SO.	Support of others
CS.	Conflict solving

#### LEADERSHIP AND MANAGEMENT

AA.	Authority and assertiveness
MS.	Maintaining standards
WM.	Workload management

#### SITUATIONAL AWARENESS

AE.	Awareness of aircraft systems, external environment and time
TE.	Threats and Errors

#### DECISION MAKING

PD.	Problem definition and option generation
RA.	Risk assessment and option selection
OR.	Outcome review

#### COMMUNICATION AND TEAMWORK

##### Communication

1. Vital information not relayed to other crew/team members or consultation with those crew members non-existent.
2. Isolated attempts are made to relay information to other crew/team members, but are not tested for correct reception or interpretation.
3. Normal level of communication with other crew members though on occasions not always understood or verified.
4. Clear and concise communication with other crew/team members. Uses resources in a manner that improves overall performance.
5. Communication with other crew/team members stands out, for clarity and ease of information transfer.

##### Teamwork

1. Unable to work as a team member, creates barriers between crew thereby not using input or feedback from others.
2. Atmosphere allows limited participation from other crew which often only concerns critical issues.
3. Establishes team and creates atmosphere for input and feedback from other crew.
4. Builds and maintains team. Establishes atmosphere for input and feedback from other crew which enhances overall performance.
5. Actively builds and maintains team. Establishes atmosphere that maximises participation and feedback from other crew.

##### Support of Others

1. Rarely considers other crew members, provides little or no assistance.
2. Occasionally considers other crew members and infrequently provides support.
3. Takes condition of other crew members into account and helps other crew but not always during more demanding situations.
4. Takes condition of other crew members into account, gives feedback and support when required.
5. Takes condition of other crew members into account, provides continual support enabling them to maximise their performance.

##### Conflict solving

1. Concerned with who is right, no attempt to resolve conflicts and may accuse other crew of making errors.
2. Most of the time concentrates on what is right rather than who is right. May overreact to interpersonal conflicts.
3. Concentrates on what is right rather than who is right. Normally able to suggest conflict solutions.
4. Always concentrates on what is right and quickly resolves any conflicts in a calm manner.
5. Anticipates possible conflicts which are optimally resolved whilst concentrating on what is right.

#### LEADERSHIP AND MANAGEMENT

##### Authority and assertiveness

1. Is not able to take initiative and unable to complete tasks. Hinders or withholds crew involvement.
2. Attempts crew involvement in order to assist in completing essential tasks.
3. Takes initiative to involve crew and enable timely task completion.
4. Takes initiative to ensure crew involvement and task completion to a good outcome.
5. Takes initiative, motivates and ensures involvement of all appropriate crew and ensures task completion to the best outcome.

##### Maintaining standards

1. Unable to apply standards to task completion. Sustained deviations are not challenged or corrected.
2. Mandatory standards are met with difficulty. Minimal intervention in case of deviations.
3. Complies with standards and intervenes in case of significant deviations.
4. Efficiently complies with standards intervenes in case of deviations.
5. Incorporates appropriate standards into all aspects of flight management. Able to anticipate deviations.

##### Workload management

1. Unable to plan and prioritise tasks. Available resources not utilised.
2. Does not anticipate workload resulting in time only to complete high priority items
3. Plans and prioritises sufficiently to complete high priority tasks.
4. Plans and prioritises, uses resources effectively in order to efficiently complete primary and secondary tasks
5. Primary and secondary tasks so well organised that challenging aspects of flight management appear easy.

#### SITUATION AWARENESS

##### Awareness of aircraft systems, external environment and time

1. Lack of awareness of a clearly evident and developing situation that will cause the aircraft to breach clearances, violate procedures or place it in danger.
2. Level of awareness such that situations are only reacted to with difficulty, and not anticipated. Limited attempts to update overall awareness.
3. Situationally aware of essential items, may be unaware of less obvious factors. Some attempts at updating awareness.
4. Situationally aware of all significant factors affecting the flight, regularly updated by checking against instruments, ATC, and other crew members.
5. Situational awareness of such a high standard that even subtle factors, affecting the aircraft are integrated into flight management.

##### Threats and Errors

1. Unable to detect and respond to threats and errors which may result in undesirable aircraft states
2. Identifies significant threats and may attempt countermeasures.
3. Able to identify significant threats and errors and apply appropriate countermeasures.
4. Threat and errors managed with appropriate countermeasures.
5. Threat and Error Management integrated into Flight Management.

#### DECISION MAKING

##### Problem definition and option generation

1. Complete lack of methodology in problem solving, likely to cause the aircraft to breach clearance, violate procedures or place it in danger.
2. Difficulty in defining the problem and generating suitable options, essential factors only considered.
3. Problem solving sound, generates suitable options but may have not considered less obvious factors.
4. Problem solving takes into account most factors, generates appropriate options and allows for contingencies.
5. Correct definition, reviews all factors, considers contingencies and generates best options, and incorporates into flight management.

##### Risk assessment and option selection

1. No process for assessing risk or selecting options.
2. Some attempt to assess risks of available options. Option selected is therefore not properly assessed for risk.
3. Assess risks considering major factors, selected option satisfactory and provides a safe outcome.
4. Considers and shares risks of alternatives, confirms selected course of action with other crew. Selected option consistently results in a good outcome.
5. Considers and shares risks of alternatives, consistently chooses best option and confirms selected course of action with other crew.

##### Outcome review

1. Fails to check outcome against plan.
2. Attempts to check outcome against plan. Does not attempt to modify options if required.
3. Checks outcome against plan. Modifies options.
4. Checks outcome against plan. Modifies options to achieve a good outcome.
5. Integrates outcome review and option modification to achieve optimum outcome into flight management.

# NTS Assessment In Practice

Captain/First Officer Name: \_\_\_\_\_ Staff Number: \_\_\_\_\_  
 Check Pilot: \_\_\_\_\_ A/C Type: \_\_\_\_\_  
 Other Crew: \_\_\_\_\_ Date: \_\_\_\_\_

Cyclic Number: \_\_\_\_\_ RHS  Interim  Revalidation   
 Progress Command Upgrade  Other: \_\_\_\_\_

- |   |                                    |
|---|------------------------------------|
| <b>M.</b> Manipulative Skills               | <b>C.</b> Communication & Teamwork |
| <b>K.</b> Knowledge of Systems & Procedures | <b>L.</b> Leadership & Management  |
| <b>A.</b> Automated System Usage            | <b>S.</b> Situational Awareness    |
| <b>E.</b> Execution of Procedures           | <b>D.</b> Decision Making          |

	V/N	Grading					Reason Code
		1	2	3	4	5	
1. Pre-Flight Planning (Weather/Fuel/NOTAM/MEL)							
2. Takeoff – Reduced VIS less than 300 m <input type="checkbox"/> 400 m <input type="checkbox"/> 500 m <input type="checkbox"/>							
3. Rejected Takeoff							
4. Engine Failure after V <sub>1</sub>							
5. Climb (OCP)							
6. Descent Planning/Descent/STAR							
7. Visual Approaches (Straight In/Circuit/No Slope)							
8. Instrument Apps (ILS LLZ VOR NDB DME RNAV/GNSS RNP)							
9. Instrument Apps (ILS LLZ VOR NDB DME RNAV/GNSS RNP)							
10. Go-Around Two engine <input type="checkbox"/> OEI <input type="checkbox"/>							
11. Approach and Landing Two engine <input type="checkbox"/> OEI <input type="checkbox"/>							
12. Low Visibility Operations (Cat II Cat III)							
13. Support Duties							
14. Systems Knowledge							
15. Procedures/SOP Knowledge and Application							
16. MELs							
17. Abnormal/Emergency							
18. Command of Flight (Captain)							
19. Command Potential (First Officer)							
							Element
1. Communication and Teamwork							
2. Leadership and Management							
3. Situation Awareness							
4. Decision Making							



# NTS Training & Assessment

## Challenges

- ▶ Buy in (Management, Check & Training, Crews)
- ▶ Instructor / assessor training costs
- ▶ Inter-rater reliability issues
- ▶ NTS sub-standard performance policies & procedures
- ▶ Who is to blame for a poor NTS performance?
- ▶ Cost / benefit *evidence*
- ▶ Pilot group reluctance to video recording of simulator sessions
- ▶ Legal exposure
- ▶ Third party training providers
- ▶ Already busy cyclic sessions capturing revalidation requirements
- ▶ More simulator time = reduced line flying resources (\$1M/1day)

## Summary

- ✓ Practical training is a key lead-in and follow-up component of assessment procedures
- ✓ Trainers and assessors must be specifically trained
- ✓ Buy-in is required at all levels
- ✓ Effectiveness must be regularly assessed by impartial and reliable means; e.g. LOSA
- ✓ Targeted implementation during a pilot's career development
- ✓ Cost / benefit is not always readily apparent

***Objective: safe and efficient operations  
through training***