Faking CRM:

Talking the Walk

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CRM Evolution

- CRM emerged in the late 1970's as Cockpit resource management training

- This was an industry-generated response to a number of accidents viewed as due to 'mismanagement of available resources'
  (NASA Workshops 1979 & 1986: Cooper, White & Lauber, 1980; Orlady & Foushee, 1987).

- Extended from cockpit to Cabin, ATC (TRM), Maintenance (MRM)
  (Fotos, 1991; Vandermark 1991, Barberino & Isaac, 2000; Patankar & Taylor, 2004).

- Eventually migrated to other domains, including maritime, space, healthcare, offshore oil & gas, and the rail industry
  (Wiener, Kanki & Helrmeich, 1993; Hayward & Lowe, 2010).

- CRM has evolved considerably (see Helmreich, Merritt & Wilhelm, 1999), is now mandated under most aviation regulatory regimes, and is widely practiced in some form in most corners of the aviation world

CRM Research

- Over the past 30 years there have many conference papers, journal articles and book chapters written about CRM:

  ▶ Design
  ▶ Content
  ▶ Application
  ▶ Culture
  ▶ Evolution
  ▶ TEM
  ▶ Effectiveness
  ▶ Assessment
  ▶ Adaptation
  ▶ Migration
  ▶ Future…

  Cooper, White & Lauber, 1980

  Orlady & Foushee, 1987

  Helmreich, Chidester, Foushee, Gregorich & Wilhelm, 1990

  Helmreich & Foushee, 1993

  Wiener, Kanki & Helmreich, 1993

  Helmreich & Merritt, 1998

  Helmreich, Merritt & Wilhelm, 1999

  Klampfer, Flin, Helmreich, Hausler et al., 2001

  Merritt, 1993, 1998, 2003, 2004

  Goeters, 2002

  Salas, Wilson, Burke & Wightman, 2006

  Kanki, Helmreich & Anca, 2010

  Hayward & Lowe, 2010

  Suffler, Salas & Xavier, 2010

CRM Effectiveness

- An aspect that has received insufficient attention so far is examination of the behaviour that CRM training actually produces and its impact on flight safety

- While CRM enjoys strong 'face validity', empirical evaluation and validation has been patchy

- One of the key benefits of CRM is believed to be improved functioning of flight deck crew due to better communication and cooperation on everyday tasks, and in particular when faced by anomalies and high threat situations

- A number of 'well-managed' accidents are cited as examples of the positive effects of CRM training…

Effective CRM

- A number of 'well-managed' accidents are cited as examples of the positive effects of CRM training:

  ► United 232 DC-10 @ Sioux City, July 1989

  - •111 fatalities
  - •185 survivors

Effective CRM

- More recently:
  - ▶ US Airways 1549A320 landing on the Hudson River, February 2009

Hit flock of
Canada Geese
@ 2,818 feet

Effective CRM

- And more recently still:

  ▶ November 2010:
  QF32 A380 uncontained engine failure @ Singapore

QF32:
Three ECAM pages of inoperative systems

- Hydraulic circuits : (2 on A380: green and yellow):
  - Green is lost, as well as 2 pumps on engine # 4. Crew wonders why, as engine still running
- Flight controls in alternate law:
  - Speed and bank angle protections are lost
  - Leading edge slats are lost, ailerons and *spoilers are partially lost*
- Fuel system: (11 tanks on A380: 4 *feed tanks -1 per engine, + 3 tanks in each wing, + 1 trim tank in the horizontal stabilizer)*
  - Fuel imbalance develops, but no leak message, while FO2 could see a leak on left wing from the cabin. Crew decides not to follow ECAM instruction to transfer fuel
  - Fuel dump system does not work
  - Fuel transfer from trim tank inoperative: balance will slowly shift to the rear
- Brakes (1 front gear, 2 fuselage gears, 2 wing gears, 22 wheels)
  - Anti-skid lost on wing gears, braking lost on left wing g
- Electrical circuits (1 generator per engine + 2 on AP
transfer
  - BUS 1 and 2 are lost. Crew starts APU but automated
- Pneumatic circuit: a leak triggers avionic system ove
- Auto-thrust and Auto-land systems inoperative
- Software unable to compute all these failures
  - Landing distance calculation task entrusted to 5th pilot.
  - Calculation gives a margin of 134 meters on a 4000m

# Reality:
Our people *create* safety

CRM 'Failures'

- The 'flip side' of this is that when airlines have incidents involving human performance problems (most events), these are frequently regarded / cited as "CRM Failures".

- "But they've done the CRM course…"
    - ► ("…and obviously it's not working")

- Just because something regarded / taught as a CRM skill or behaviour is identified as a contributing factor to a safety occurrence does not mean this is a failure of CRM training
    - ► Is every successful sector / sortie a proof of 'CRM success'?

CRM Success Factors

- Many factors influence the effectiveness and success of CRM training, including:

  - ► Organisational support / commitment / resourcing

  - ► Quality of CRM Management

    - ◎ Selection, training, resourcing, support, reward

  - ► Quality of CRM Instructors / Facilitators

    - ◎ Selection, training, resourcing, support, reward

  - ► Quality of CRM implementation ~ across three phases:

    - ◎ Awareness / Practice & Feedback / Continual Reinforcement

  - ► Ongoing, iterative support from the organisation

| CONTINUAL REINFORCEMENT PHASE |
| PRACTICE & FEEDBACK PHASE |
| AWARENESS PHASE |
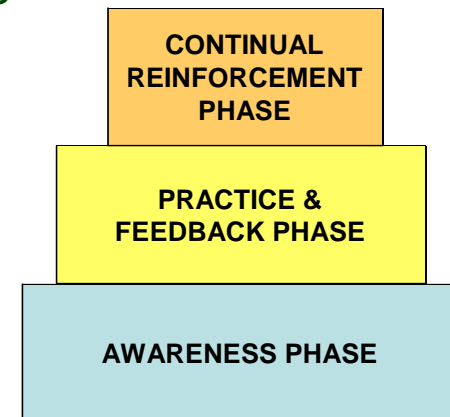
CRM Implementation

- CRM concepts should be integrated into every stage of training and be continually reinforced in line operations

- Effective CRM programs include three phases:

  ▶ Awareness / Practice & Feedback / Continual Reinforcement

- GAIN Operator's Flight Safety Handbook:

  ▶ *"... for a CRM program to be successful it must be embedded in the total training programme, it must be continuously reinforced and it must become an inseparable part of the organisation's culture.*

  ▶ *CRM should thus be instituted as a regular part of periodical training and should include practice and feedback exercises such as complete crew LOFT"*

Global Aviation Information Network. (2001). *Operator's Flight Safety Handbook, Issue 2, Section 4, Human Factors,* pp 4-8. December 2001. Montreal: Author.

CRM Evaluation

- Most airline and military pilots today are expected / required to demonstrate appropriate 'CRM behaviours' if they are to succeed

- A variety of CRM skill assessment systems are in play, including

  ► NOTECHS, NTS, NTCs, [Inter]Personal Competencies, etc.

- Can produce significant benefits for the training and evaluation of CRM skills, feedback to design of CRM training

- This introduces / encourages thinking about what pilots need to do to receive a good score

Faking

The secret of success is sincerity.
Once you can fake that you've got it made.

Jean Giraudoux
French Diplomat, dramatist, & novelist
(1882-1944).

- An issue of serious concern:

  ► The evolution of *'faux CRM'*

Faking CRM

- ## Faux CRM:

  - ◉ 'A form of false or inappropriate CRM behaviour'

  - ◉ 'Playing the CRM game'

    - ◎ Paying lip service to CRM, with behaviours that are not constructive or safety enhancing

      - ▶ may in fact have the opposite effect

    - ◎ Playing the 'nice guy', unnecessarily polite but in ways that are inconsequential / may threaten safety or crew harmony

    - ◎ Using excessive, unnecessary communication

    - ◎ Showing trivial or obsequious forms of support for other crew.

Faking CRM

- Faux CRM:

  - A distortion of proper CRM that inhibits, if not precludes, effective CRM being practiced

    - Distracts crew from more important operational issues

    - Interferes with effective crew cooperation & communication

  - For example, the focus is moved from TEM and Operational Risk Assessment to minor / largely irrelevant aspects of crew interpersonal interaction

    - Keeping things friendly / nice / harmonious

Faking CRM

- Faux CRM:

    - Any pilot can be involved in 'role playing' behaviour that they believe equates to good CRM

    - The 'faux CRM' problem mainly concerns junior pilots who perceive they have something to gain by demonstrating what they believe to be appropriate CRM behaviours

        ▶ where in fact the behaviours equate more to 'point scoring' in relation to assessments.

    - Faux CRM appears to have evolved because crew discovered that this behaviour has been accepted, and may be rewarded, both in training, and on the line.

Faking CRM

- ## Culture:

  - ⊙ Culture is, of course, an issue, particularly national / ethnographic culture

    - ► Some cultures more disposed towards presenting a favourable image / considerations of 'face'

    - ► However, it is evident that faking behaviour is present across varied cultures and global regions

    - ► Faking can also be dependent on the culture of the organisation / department / training system / assessment system.

The impact of culture on CRM performance:
Ooi, 1991; Johnston, 1993; Merritt, 1993; Pidgeon & O'Leary, 1994; Helmreich, 1994; Maurino, 1994; Merritt & Helmreich, 1996; Orasanu, Fischer & Davison, 1997; Helmreich & Merritt, 1998; Mjøs, 2004;

Faking good

- Origins:

  - ◉ Common to many professions

  - ◉ We learn it when we prepare for and attend selection interviews
    ("*Impression Management*")

  - ◉ Airline pilot candidates are among the most practiced of 'fakers'

  - ◉ Once at the airline this continues

    - ▶ Behaviours that are perceived as appropriate are 'modelled'

    - ▶ More prevalent where promotion is based on merit / assessment / PQs

    - ▶ Not necessarily intentionally dishonest or deceptive

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"A simple 'Thank you' would suffice"

Discouraging Faking

- Controlling Faux CRM:

  - Reduce / control / eliminate 'faux CRM':

    - ▶ by making all pilots aware that this is discouraged, and requiring Instructor Pilots, Captains and other senior crew to draw attention to suspected examples of faux CRM, and provide constructive feedback on the preferred behaviour.

  - Review training and assessment systems:

    - ▶ to ensure that faux CRM behaviour is not encouraged or rewarded by the company.

Promoting Effective CRM

- CRM has been misunderstood / misinterpreted by some organisations / some pilots

  - ◉ Yet it is sometimes intentionally distorted to meet personal assessment goals.

- So, it may be useful to re-emphasise the primary objective of CRM ~ **to improve flight safety**.

  - ◉ This can be achieved by distinguishing between:

    - ► Team-enhancing behaviours that have an indirect safety benefit – "**Type 1 CRM actions**", and

    - ► 'Hard' CRM skills that address safety-critical behaviour – "**Type 2 CRM actions**".

Promoting Effective CRM

- Distinguish between two fundamental types of CRM behaviours:

  - **Type 1 CRM** are 'desired CRM behaviours':

    - ▶ Team enhancement goal, with indirect safety benefits
      ~ but not *faux CRM*; &

  - **Type 2 CRM** are 'essential / safety critical CRM behaviours':

    - ▶ With direct / immediate safety benefits or implications

    - ▶ Type 2 CRM behaviours appear to be lacking in many incidents /accidents, possibly because they are not adequately encouraged, taught and tested in training.

Promoting Effective CRM

- Examples of **Type 1** team-enhancing CRM behaviours (likely to have an indirect safety benefit):
  - ► 'flight deck ambience', 'supporting', 'informing', 'de/briefing'

- Examples of **Type 2** safety critical CRM behaviours (those that, in context, can have an immediate safety benefit):
  - ► 'cross-checking', 'questioning', 'clarifying when unclear', 'challenging when uncertain', 'clear communication'

Promoting Effective CRM

- The goal is to make this distinction in all crew training, and in the evaluation of CRM skills

  → emphasising that artificial displays of team-enhancing behaviours ("faux CRM") are not sufficient to be assessed as demonstrating good CRM

- Crew evaluation processes must be consistent in rewarding expected CRM behaviours

  → and in discouraging / eradicating inappropriate behaviours ~ including 'faux CRM'.

Promoting Effective CRM

- This process can be assisted by ensuring that crewmembers have adequate support for effective safety critical CRM behaviours and interventions within the organisation

- For example for a junior pilot to effectively monitor and challenge the performance of a senior pilot

  - Provide an effective assertiveness tool (eg., *'The Support Process'*)

  - Support this with:

    → Policy

    → Procedures

    → Practice via role play scenarios in CRM Recurrent

    → Alignment with & evaluation (reinforcement) via NTC markers

Thank you

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