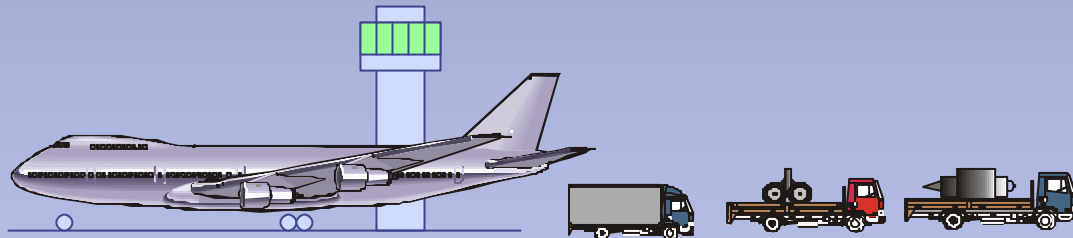


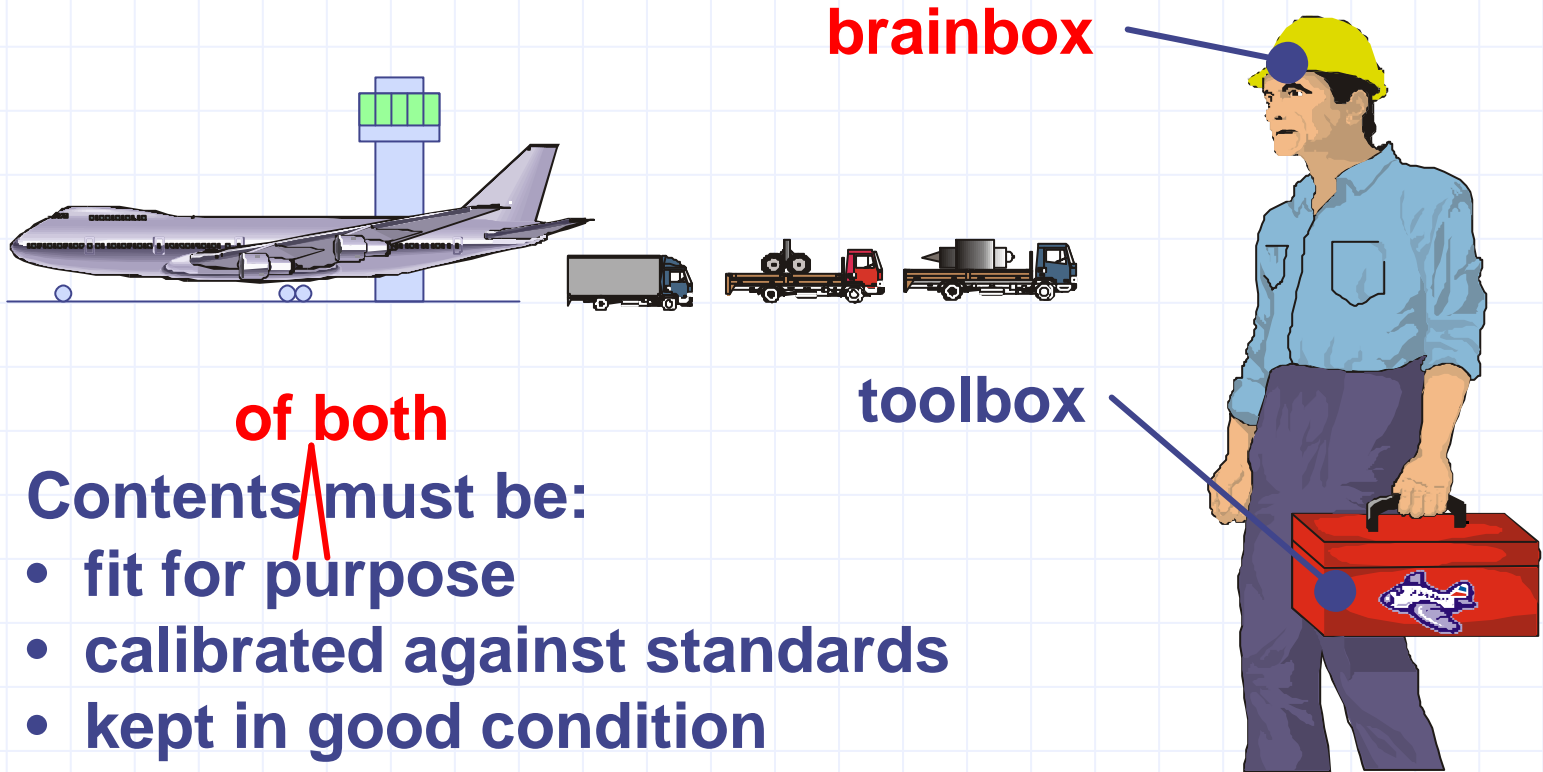
Proving the Competence of the Aircraft Maintenance Engineer

Tony Hines
RAeS HFG EMSG

Edited version of presentation to International Air Safety Seminar
Washington DC Nov 2003



Engineers' essential equipment



Joint Aviation Requirements Part 145

- ◆ **competence** of personnel....must be established and controlled....to a **standard**
- ◆ *[all]* staff must be **assessed for competence**
- ◆ certifying staff must be assessed for **competence, qualification and capability....**

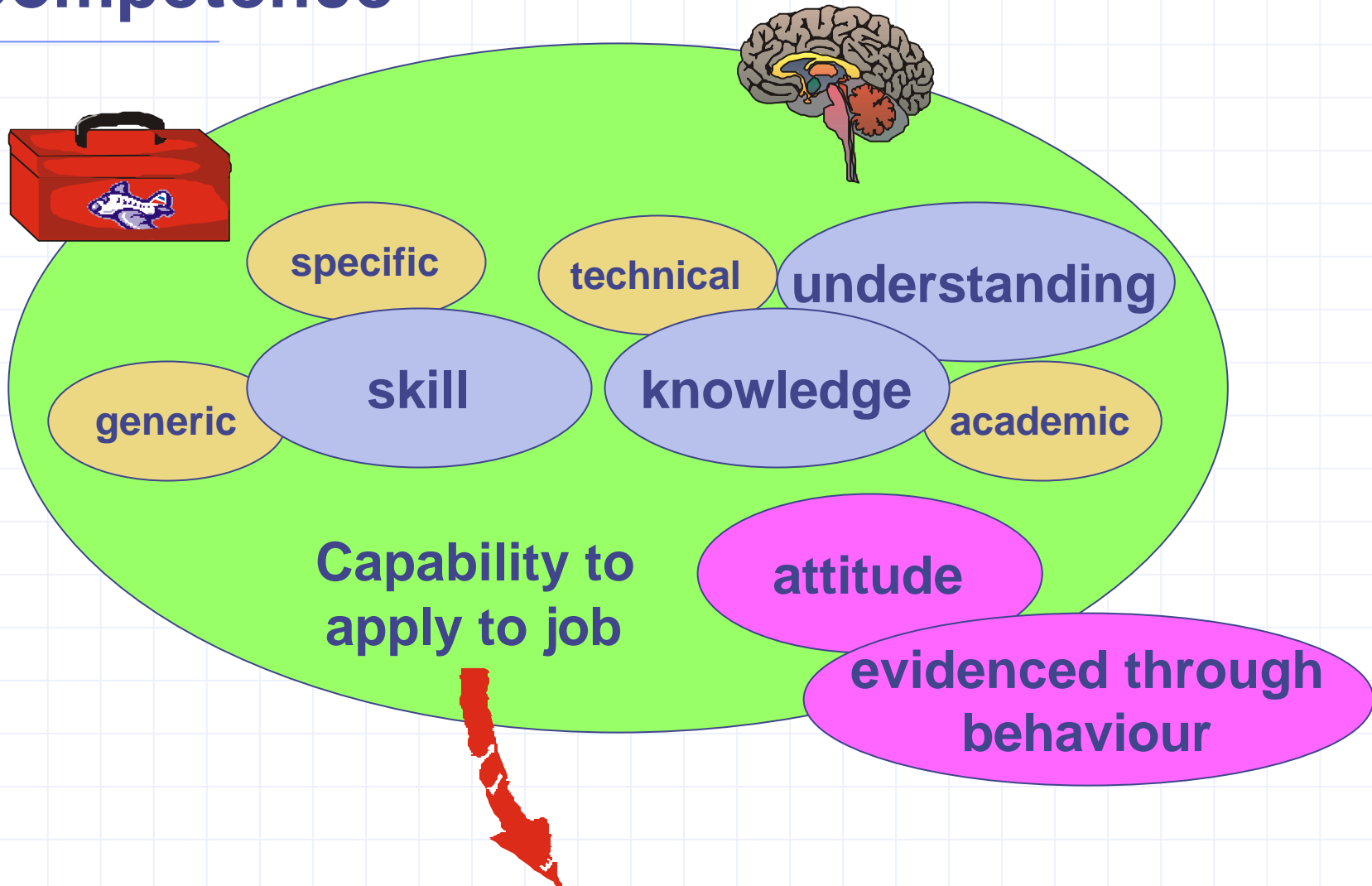
Human Factors assessment

.....personnel should be **assessed for the need to receive** initial Human Factors **training**....

i.e. “formative” assessment

~ not “summative” assessment,
as implied in the previous slide

Competence



Competence Standards

- ◆ Comprehensive statements of the functions to be fulfilled
- ◆ Criteria by which performance is judged
- ◆ Circumstances in which performance can be assessed
- ◆ Knowledge and understanding needed to perform the task

Assessment process – “summative”

◆ Observing performance

- Consistently performs to the required standard

◆ Testing knowledge

- Necessary for effective & safe job performance

◆ Testing understanding

- Relate knowledge to job in hand

Assessment outcomes

Pass **X** Fail **X** Graded

◆ **Candidate is competent**

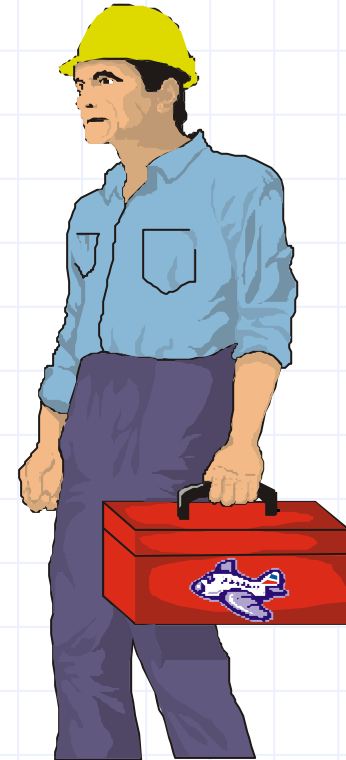
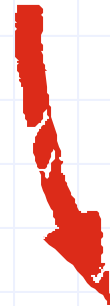
◆ **Candidate is NOT YET competent**

- **does not imply incompetent**
- indicates need for more experience/training

◆ **Insufficient evidence to judge**

Performance standards describe
what our engineer must **KNOW**
and be able to **DO**

“Competencies” describe
what he (or she) needs to **BE**



Competency framework

- ◆ Specifies **personal qualities** needed to be effective in job role
- ◆ Describes **behaviours** of effective performers

Qualities required for members of U S

Army Second Ranger Battalion

Teamwork
Enthusiasm
Stamina
Tenacity
Initiative
Courage
Loyalty
Excellence
Sense of humour



LAME Competency Framework (2000)

- ◆ Research project prompted by CAA Paper 97011 (Dec 1997) *Report on the work of the JAR 145 Quality Assurance Review Team*
- ◆ Drafted by “experts” in the work of LAMEs
- ◆ Validated by LAMEs, managers, QA staff, trainers, union members and CAA surveyors
- ◆ ~ based on interviews, written comments and confidential questionnaires

LAME Competency Framework (2000)

Integrity

Professionalism

Decision taking & judgement making

Accuracy & thoroughness

Communication

Methodical

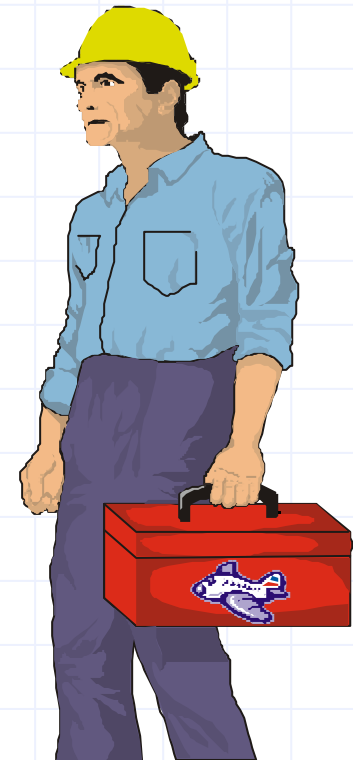
Analytical

Leadership

Teamworking

Adaptability

Self development



Integrity

- not sacrificing high standards for immediate gain

- ◆ **Understands implications of commercial imperatives**
- ◆ **Maintains consistently high standards of work, loyalty, honesty & commitment**
- ◆ **Never cuts corners nor jeopardizes the safety of others by taking the “soft option”**

Integrity cont.

- ◆ **Stands by decisions & principles even in the face of strong opposition or threats**
- ◆ **Has courage to admit mistakes & weaknesses and to act on them**
- ◆ **Pursues work to the end to ensure optimum service to internal & external customers**

Performance Management

◆ Assessment

- against Standards & the Competency Framework

◆ Constructive feedback

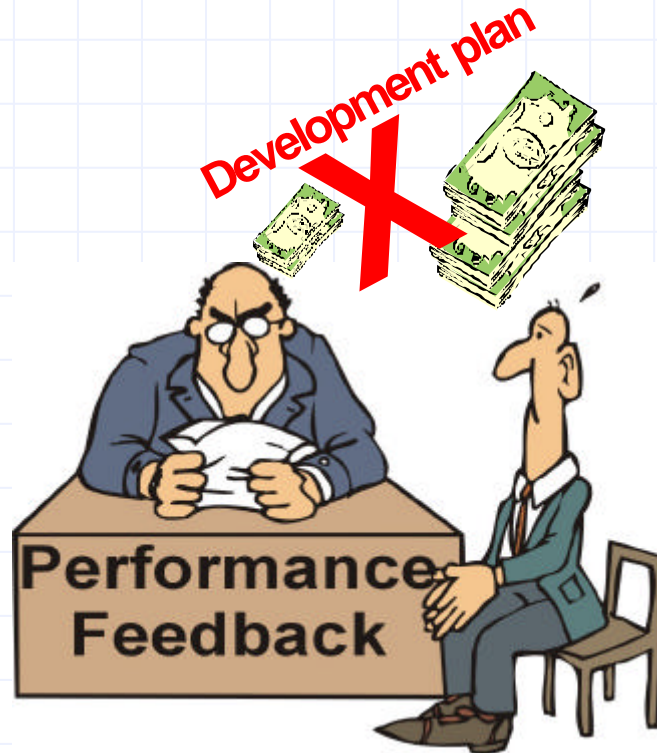
- from reliable sources

◆ Personal development

- self managed, with help from others

Performance feedback

- ◆ Once per year
- ◆ One to one
- ◆ One way



a common experience?

Assessing competencies (Armstrong 1999)

Very effective

consistently exceeds targets and required standards
(beyond normal expectations)

Effective

fully achieves required standards
(meets normal expectations of the job)

Developing

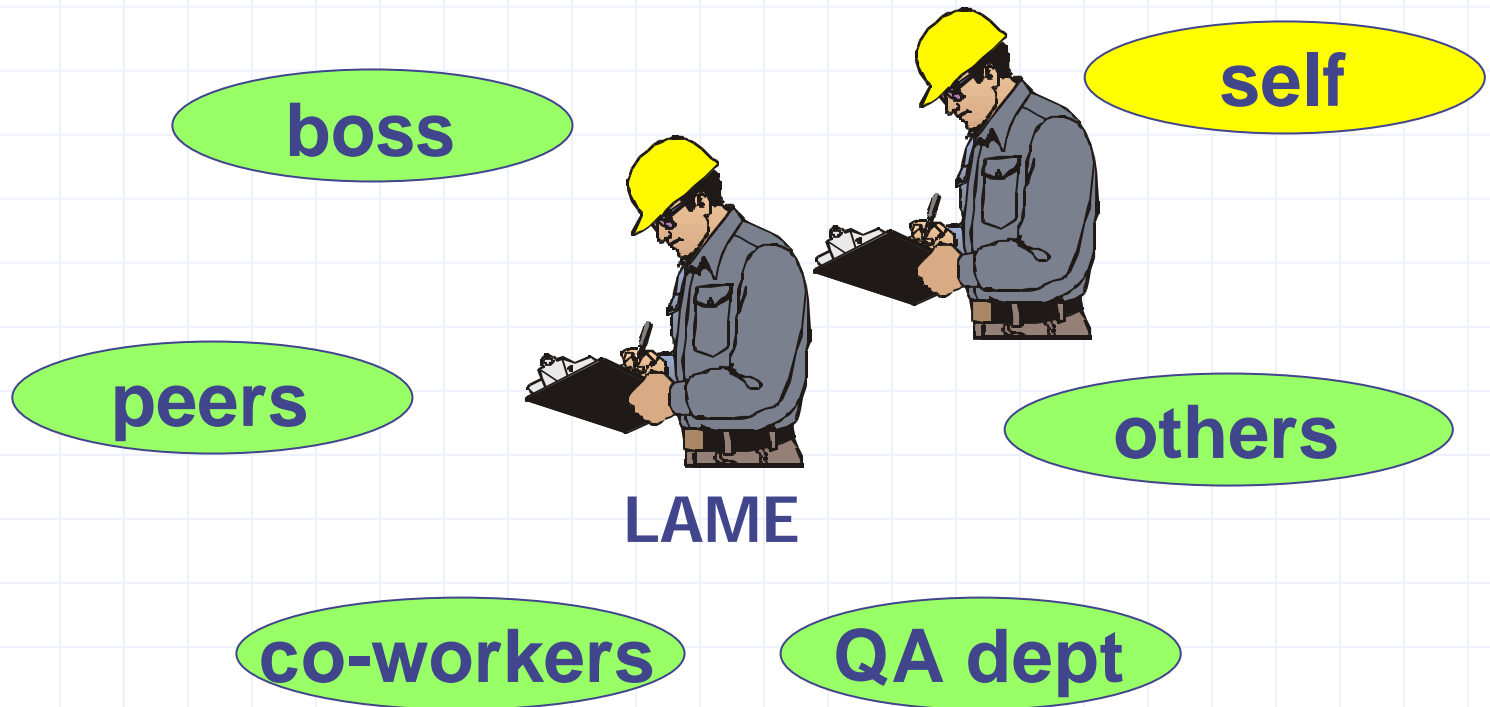
performance improvements necessary
(stronger in some aspects than others)

Improvable

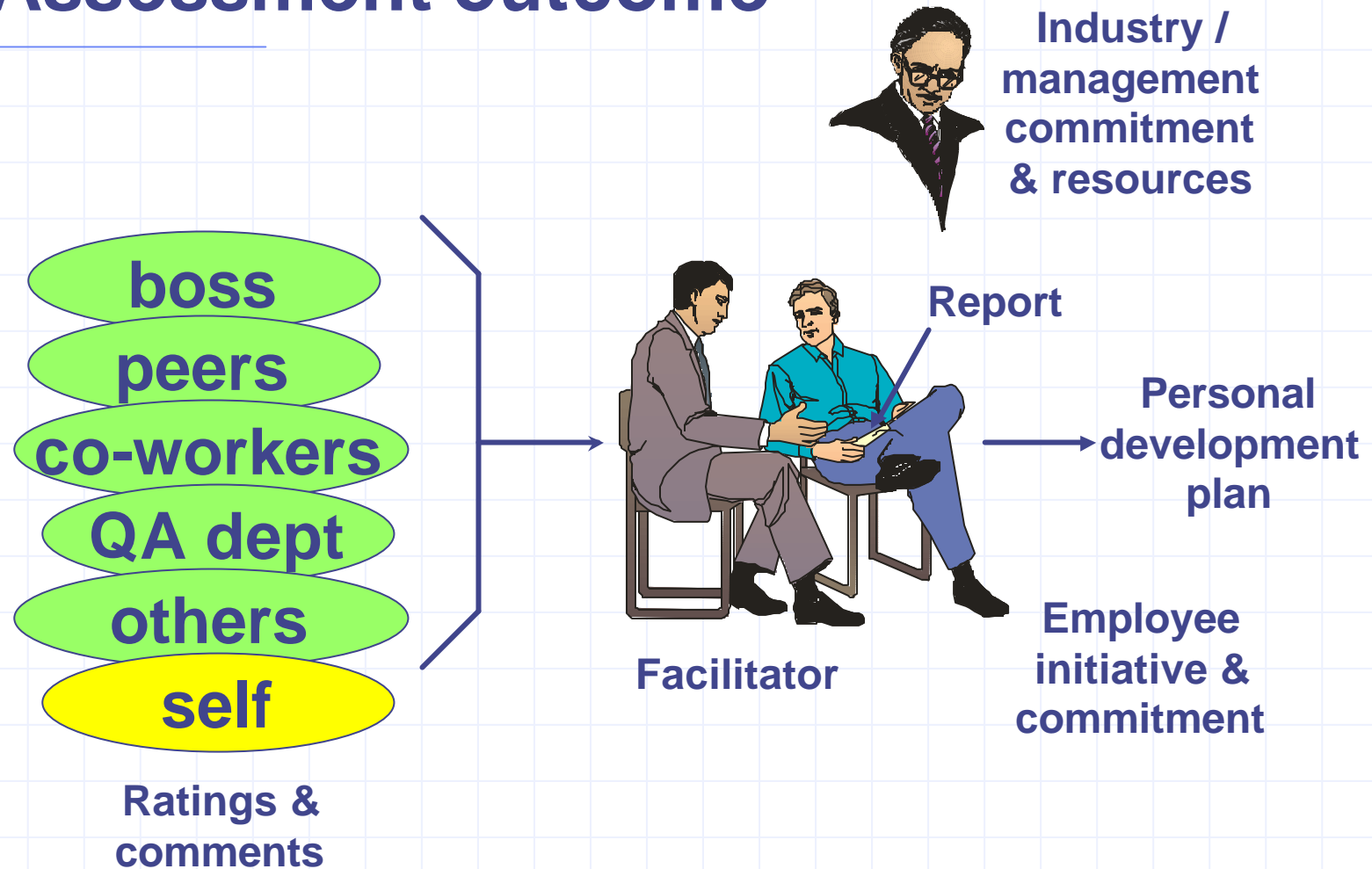
much room for improvement in defined areas

Feedback sources

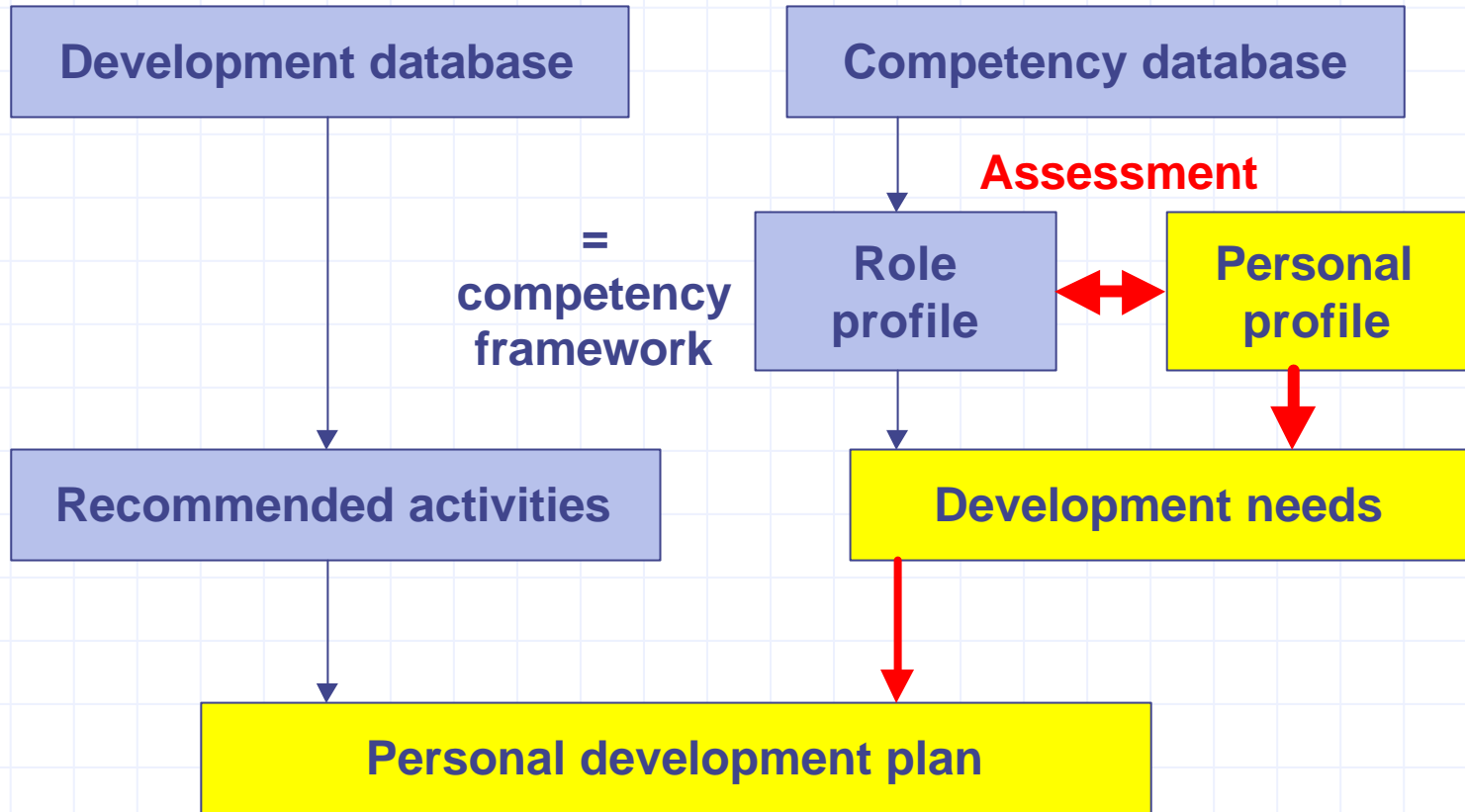
= 360 degree feedback



Assessment outcome



Web-based system (example of..)



Human Factors training

JAA Maintenance Human Factors Working Group Report (May 2001) – para 2

Aim:

Integrate **technical** knowledge & skills
with **basic HF** knowledge & skills

Objectives:

Develop **HF skills** (communication, teamwork, etc),
as **appropriate to job.***

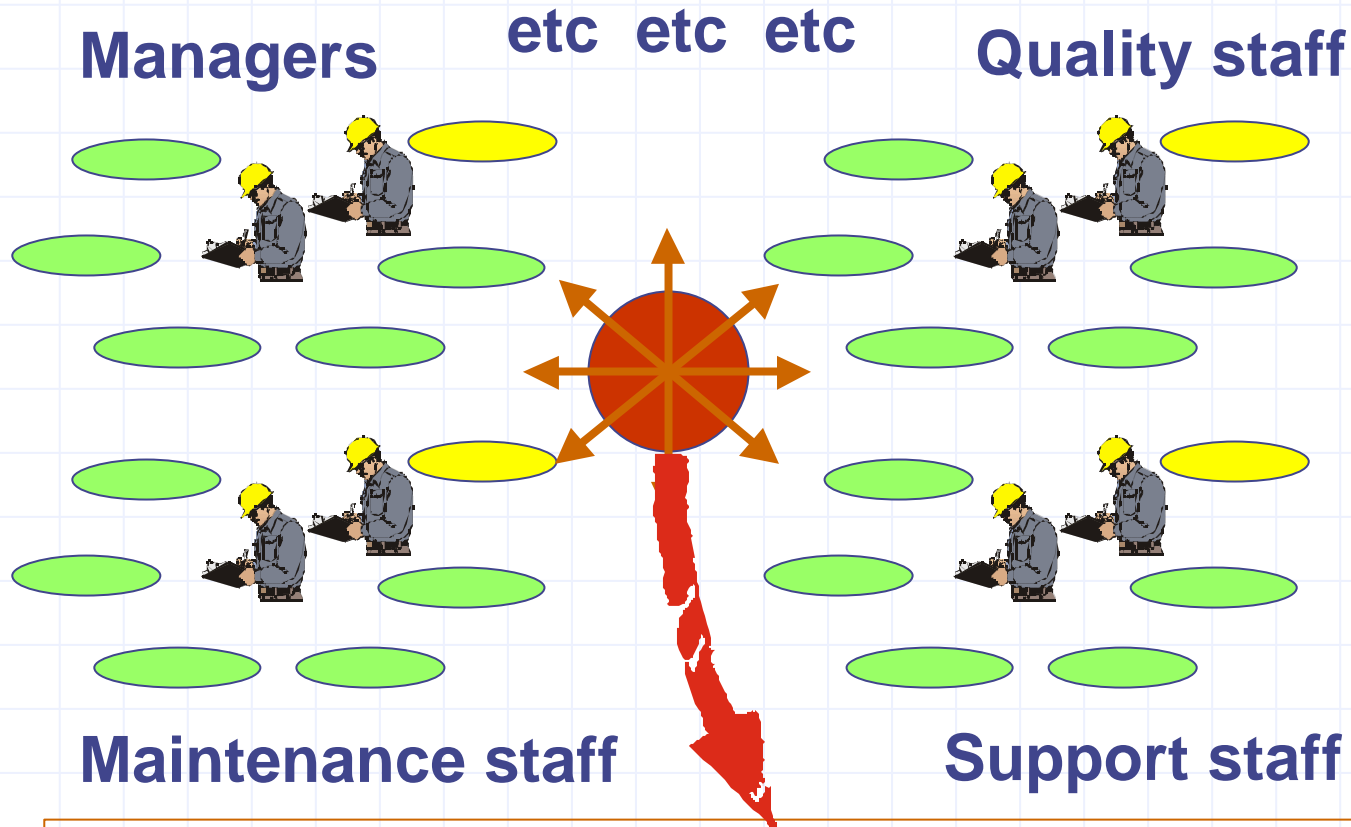
Encourage a positive **attitude** to safety/
discourage unsafe **behaviour**.

*** appropriate to whose job?**

JAA Maintenance Human Factors Working Group Report (May 2001) – para 3

- **Post holders, managers & supervisors**
- **Certifying staff, technicians and mechanics**
- **Planners, engineers**
- **Quality control/assurance staff**
- **HF staff/HF trainers**
- **Stores dept. staff, Purchasing dept. staff**
- **Ground equipment operators**
- **Contract staff in the above categories**

A mutually supportive system?

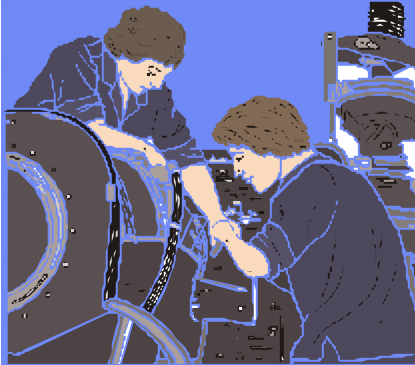


- based on a set of complementary Competency Frameworks

....to fulfil the aspirations of....

*JAA Maintenance Human Factors
Working Group Report – para 2*

- ◆ Develop HF skills (communication, teamwork, etc),
- ◆ encourage a positive attitude towards safety,
- ◆ discourage unsafe behaviour and practices.....and so...
- ◆ make a **positive impact on the safety and efficiency of maintenance operations.**



Competence
=
know how + can do
to industry standards

Thank you for listening

Tony Hines