THE RIGHT BALANCE

SAFETY

Between

PERFORMANCE and REGULATION

OLIVIERO BARSANTI
DIRECTOR OF FOREIGN OFFICE
ANACNA – Italian Air Traffic Controllers’ Association
DO NOT PUSH BUTTON
SAFETY should be the very first objective.

How to manage safety through rules?
PERFORMANCE  SAFETY (and security)

REGULATION

A BEAUTIFUL PICTURE BUT...
...THE ATCO’S PERSPECTIVE

Safety (Separations)

Performance (Efficiency, Flow, Sequence...)

Sudden changes (Emergency, Military, Constraints...)

Stress and Fatigue Management

Note: the sky isn’t that large!

Watch (Monitoring, Alerts...)
Risk Management in a “Risk-allowed” environment (or High-reliability organization)

“Effective control and governance of assets ... to ... achieve the desired balance of cost, risk and performance.” ... ISO 55000
From safety-based regulation to performance-driven regulation (e.g. PBN)

The Fly-By/Fly-Over effect
In order to fulfil these objectives, the European Commission set high-level goals for the SES in 2012 to be met by 2020 and beyond:

• Enable a 3-fold increase in capacity which will also reduce delays both on the ground and in the air
• Improve safety by a factor of 10
• Enable a 10% reduction in the effects flights have on the environment
• Provide ATM services to the airspace users at a cost of at least 50% less

(source: http://www.sesarju.eu/discover-sesar/history/background-ses)
Old Doc 4444 (first ed. 1946)

30 pages...
“9. Visual approach
9.1 An IFR flight may be cleared to execute a visual approach provided that the pilot can maintain visual reference to the terrain and:
   a) the reported ceiling is at or above the approved initial approach level for the aircraft so cleared; or
   b) the pilot reports at the initial approach level or at any time during the instrument approach procedure that the meteorological conditions are such that with reasonable assurance a visual approach and landing can be completed.
9.2 Separation shall be provided between an aircraft cleared to execute a visual approach and other arriving and departing aircraft.
9.3 For successive visual approaches, radar or non-radar separation shall be maintained until the pilot of a succeeding aircraft reports having the preceding aircraft in sight. The aircraft shall be instructed to follow and maintain separation from the preceding aircraft. Transfer of communications should be effected at such a point or time that clearance to land or alternative instructions can be issued to the aircraft in a timely manner.”
6.5.3 Visual approach

6.5.3.1 Subject to the conditions in 6.5.3.3, clearance for an IFR flight to execute a visual approach may be requested by a flight crew or initiated by the controller. In the latter case, the concurrence of the flight crew shall be required.

6.5.3.2 **Controllers shall exercise caution** in initiating a visual approach **when** there is **reason to believe** that the flight crew concerned is not familiar with the aerodrome and its surrounding terrain. Controllers should also take into consideration the prevailing traffic and meteorological conditions when initiating visual approaches.” (Cagliari C500 Citation accident 24.02.2004)

(continues with almost same rule).

**ATCOs RESPONSIBILITY ADDED**
New Doc 4444 (2014)

440 pages (and increasing!)
OBSTACLE CLEARANCE IN ICAO

• Several changes made to PANS-ATM (Doc 4444), Amendment 4 in 2005 and Amendment 5 in 2007, made the situation even less clear,

• SID/STAR issues unsolved, no easy solution (solutions are on the way)

• The “Note” creating a false sense of relief,

• Surveillance monitoring duty of care may blur the lines,

• Shortcomings with charting,

• Questionable language regarding Visual Approaches.
The “Note”

“The objectives of the air traffic control service as prescribed in Annex 11 do not include prevention of collision with terrain. The procedures prescribed in this document do not relieve pilots of their responsibility to ensure that any clearances issued by air traffic control units are safe in this respect. When an IFR flight is vectored or is given a direct routing which takes the aircraft off an ATS route, the procedures in Chapter 8, 8.6.5.2 apply.”

...wording also leaves some loopholes
Terrain Clearance While Vectoring or on a Direct Route

“8.6.5.2 When vectoring an IFR flight and when giving an IFR flight a direct routing which takes the aircraft off an ATS route, the controller shall issue clearances such that the prescribed obstacle clearance will exist at all times until the aircraft reaches the point where the pilot will resume own navigation. When necessary, the relevant minimum vectoring altitude shall include a correction for low temperature effect.

Note 1.— When an IFR flight is being vectored, the pilot may be unable to determine the aircraft’s exact position in respect to obstacles in this area and consequently the altitude which provides the required obstacle clearance. Detailed obstacle clearance criteria are contained in PANS-OPS (Doc 8168), Volumes I and II. See also 8.6.8.2.

Note 2.— It is the responsibility of the ATS authority to provide the controller with minimum altitudes corrected for temperature effect.

8.6.5.5 In terminating vectoring of an aircraft, the controller shall instruct the pilot to resume own navigation, giving the pilot the aircraft’s position and appropriate instructions, as necessary, in the form prescribed in 8.6.4.2 b), if the current instructions had diverted the aircraft from a previously assigned route.”
Terrain Clearance While Vectoring or on a Direct Route

- Definitions of «on» or «off» «ATS Route»
- What if pilot initiated/requested? «giving»?
- Pilot request below MVA e.g. due to severe WX?
- Direct routings can be filed / flown by modern avionics... «on» or «off»?
- Surveillance Vs non-surveillance airspace?
- Unclear point of transfer of responsibility back to crew (“until the aircraft reaches the point where the pilot will resume own navigation”).
Cagliari CFIT (2004)
NOTAM NO VISUAL

LIXX (ITALY)
A) ITALY B) 16 MAR 2011 00:01 C) 13 JUN 2011 23:59
E) IFR OPERATIONS NO CLEARANCE FOR VISUAL APPROACH ISSUED.
REF AIP ENR 1.3-1
(A1530/2011/11)
SUGGESTED PRACTICES FOR VISUAL APPROACH APPLICATION
EASINESS

FAA 5–6–3. VECTORS BELOW MINIMUM ALTIMETRY

Except in en route automated environments in areas where more than 3 miles separation minima is required, you may vector a departing IFR aircraft, or one executing a missed approach, within 40 miles of the radar antenna and before it reaches the minimum altitude for IFR operations if separation from prominent obstacles shown on the radar is applied in accordance with the following:

a. If the flight path is 3 miles or more from the obstacle and the aircraft is climbing to an altitude of least 1,000 feet above the obstacle, vector the aircraft to maintain at least 3 miles separation from the obstacle until the aircraft reports leaving an altitude above the obstacle.

b. If the flight path is less than 3 miles from the obstacle and the aircraft is climbing to an altitude of least 1,000 feet above the obstacle, vector the aircraft to increase lateral separation from the obstacle until the 3 mile minimum is achieved or until the aircraft reports leaving an altitude above the obstacle.

c. At those locations where diverse vector areas (DVA) have been established, terminal radar facilities may vector aircraft below the MVA/MIA within those areas and along those routes described in facility directives.
ARE/DO ATCOs MULTITASK?

“Human brains do not perform two tasks at the same time. The brain handles tasks sequentially, switching attention between one, then another. The more you multitask, the worse you are at it. Multitasking leads to as much as a 40% drop in productivity, increased stress, and a 10% drop in IQ”.

Information overload
WHAT IS THE DESIRED BALANCE?

Safety, Reliability, Environment

Risk/Safety

Rule

Performance
THANK YOU
DANKE
TERIMA KASIH
감사합니다
MERCI
GRACIAS
OBRIGADO
MANGE TAK
Спасибо!
DO NOT ENTR
Enter Only
DO NOT ENTER
DO NOT ENTER