

Is MT in Crisis?

Panel Session at TMI 2007

- Panelists:
 - Robert Moore (Microsoft Research)
 - Robert Frederking (CMU)
 - Dekai Wu (Hong Kong Univ of Science and Technology)
 - Harold Somers (Manchester University)
- Moderator:
 - Steven Krauwer (Utrecht University, steven.krauwer@let.uu.nl)

The Impact of DOTD on Aviation

Steven Krauwer

Utrecht University

steven.krauwer@let.uu.nl

Overview

- The problem
- Some known contributing factors
- The discovery
- The proposal
- The take-up
- The impact
- The results
- The future

The problem

- Around 1900:
 - First powered aircraft
 - Flying highly experimental
- Success and progress hard to measure because of interplay between many known and unknown factors and lack of standards for measurement

Some known contributing factors

- wind
- thermals
- difference between start and finish altitude
- start speed
- flight duration
- distance covered
- altitude reached
- number of passengers transported

The discovery

- Papilloni (1902) first observed a strong negative correlation between what experts saw as successful flights and the noise made upon touchdown
- Noise could originate from various sources (gliding, rolling, exploding, crashing, victims) but the correlation was very strong

The proposal

- Papilloni proposed the following approach:
 - high precision equipment is used to measure the noise made by the plane upon touchdown
 - the measure unit is Decibel upOn TouchDown (DOTD)
 - a lower score indicates better performance

The take-up

- Immediate interest from whole aviation community
- Soon formally adopted by NISA (National Institute for Successful Aviation) with some refinements
- Used as the driving force for aviation R&D funding

The impact

- DOTD became an enabler for competitive R&D in aircraft development
- it led to adoption of standards for noise measuring
- it led to standards for determining the moment of touchdown
- it led to improved measuring techniques, such as:
 - more precision (at present up to 45 decimals)
 - cancellation filters for wind and engine sounds
 - cancellation filters for birds and spectator noise

The results after a century, in 2007

- new generation of advanced, successful airplanes
- features (based on latest campaign)
 - air speed up to 15 km/h
 - domination of electric or spring engines
 - max altitudes 0.2 – 0.5 meter
 - max distances covered 0.5 – 25(!) meter
 - soft, flexible materials (fur very popular in spite of animal activists)
 - touchdown almost inaudible to the human ear, even when on fire
 - pre-flight scream prevention training for passengers
 - advanced anti-scream masks for passengers

The future (till 2017)

- challenges
 - higher altitudes (up to 3 meter)
 - distances up to 100 meter
 - untrained passengers
- expectations
 - with the present funding level this should be possible within 10 years
 - earlier with more funding!

Structure of the session

10-30: Panelists introduce themselves and tell us whether or not MT is in crisis

30-35: Open floor discussion

35-55: Panelists describe last two big achievements in MT

55-60: Open floor discussion

65-80: Panelists predict next breakthrough

80-85: Open floor discussion

85-90: Closing