

Human Factor Certification Of a Modern Flight Deck

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Why is human Factor certification a must ?

1. Aircraft are becoming more complex





LOOKS COMPLEX / IS SIMPLE



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Good HF practice

SIMPLE



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- 1. Aircraft are becoming more complex**
- 2. Systems are scrutinized for failure, but not humans**
- 3. Pilots are believed to perform 100%, no matter the quality of the HMI**
- 4. Need an incentive for good HMI design (pilot error analysis)**



Complex aircraft + Systems unreliable

**Need Pilot as mitigating factor
(100% succesfull in procedures)**

CS25.1302 : credit for better interface

Pilot error assessment



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- 5. Modern Flight decks too complex to analyse by Engineering judgement**
- 6. Too many applications for derivative certifications**



Required on a modern flight deck ?

1. Good situational awareness



Situational awareness



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- 4. Predetermined (uploaded) profiles**
- 5. Lower minima without land based (ILS) navigation**
- 6. Inclusion of safety enhancing technology**



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1. **Good situational awareness**
2. **No need for non-standard operations / Alerting**
3. **Lots of Enveloppe protection**
4. **Predetermined (uploaded) profiles**
5. **Lower minima without land based (ILS) navigation**
6. **Inclusion of safety enhancing technology**
7. **Fly by wire**
8. **Full authority Autopilot**
9. **Full authority Autothrottle**
10. **More automation**



Good HF practice

SIMPLE



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SIMPLE =

**more and better
automation**



Pilot in the loop:

In which loop ?

Use as "MEAT SERVO" ??

Use pilot for what he is good at :

OVERSIGHT



Manual aircraft
with
automated
help

Still in service

- Automatic aircraft
- Limited fidelity
- Limited protection
- Limited automation authority

Here we are

- Full authority Automation
- Sufficient fidelity
- Full protection

Next step



How do the Certification Requirements facilitate the introduction of a modern Flight Deck ?

What needs to be done in the future to speed up the Certification of technological advancements ?



Thank You
and
Be SAFE



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