



ECA

European Cockpit Association

Pilots' view on resilience in aviation

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GPS jamming and spoofing: flight deck impact

EGPWS: false terrain warnings leading to unexpected climbs

Navigation: inaccurate position and/or no RNP capability

TCAS will have lower priority on EGPWS and might be undetected

Weather radar: wrong decluttering

CPDLC: inoperative due to GPS clock issues



Resilience to GPS jamming / spoofing

1. Maintain a **good network of conventional radio aids** (navigation + approach)
2. Provide **maps of the areas of possible GPS jamming/spoofing**
3. Provide **alerts of GPS jamming and spoofing** via ATC/ACARS/plane connectivity
4. Improve the **aircrafts' resets procedures** for GPS recovery



Other resilience issues

1. **Management of extreme weather events** (increasing at our latitudes, due to climate change)
2. **Airlines staffing & rostering**
3. **Flight planning**
4. **ATCOs shortage**
5. **Over reliance on RNP navigation** and decommissioning of conventional navigation aids
6. **Remote towers/approach control** of nearby airports located in the same ATC centre



Possible mitigations

1. Better integrate weather forecast in the operations

- Make connection between weather forecasters and ATC tight
- Empower ATCOs with weather depiction on the radar screen
- Enhance aircraft connectivity

2. Ensure pilots fitness

- Address crew shortage
- Ensure stable and sustainable rosters (link with FRMS)

3. Improve flight planning (providing realistic turnaround / block times)

4. Fix ATCOs shortage (mitigating sickness and avoiding fatigue / high workload)

5. Maintain navigation radio aids and CAT I ILS beyond 2030.

6. Distribute nearby airports remote towers/approach control in different ATC centres



Thank you!

