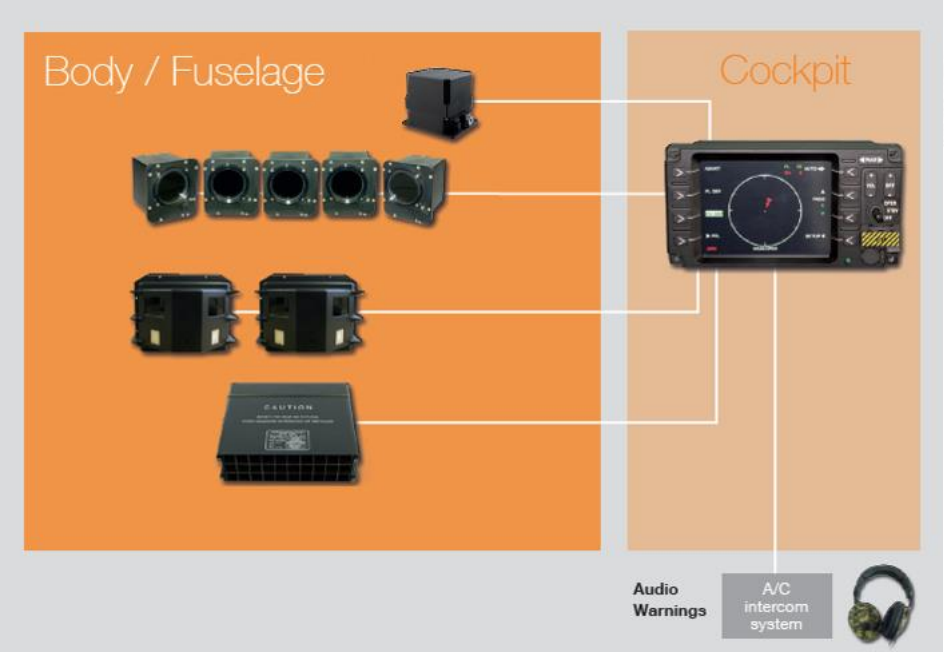
Challenges for Airborne Self-Protection

Dr. Hubert Piontek
07 June 2017

Outline

1. Self Protection Systems today
2. Threat examples
3. Challenges
4. Requirements for future Self Protection Systems
5. Summary

Self Protection Systems today



- (mostly) independent systems
- based on single/few sensors
  - MWS
  - LWS
  - RWR
- Counter measures:
  - Chaff
  - Flare
  - DIRCM

Threat Example 1: Osa family

- Originally radar based acquisition and tracking
- Missile range: ~ 12km
- Missile speed: ~ Mach 2.4
- Modifications include optical acquisition and tracking
  → no EM emission prior to launch
- CM needs to act against tracker or destroy the incoming missile

Picture by Ştefan Ciocan

Threat Example 2: Strela family

- Many versions with improvements
- Spread around the globe
- No RF emission:
  - “silent” firing
  - passive tracking
- Missile Range: ~ 5km
- Missile speed: ~ 500m/s
- Proven CM: flares

Challenges

- “Silent” firing possible
- TTI is typ. ~3-7 s
- New rocket fuels
- “Smart” seekers
- Congested EME

Requirements towards future Self Protection Systems

- Flexible architecture: multiple sensors, retrofit over time likely
- New/enhanced sensor types with adaptable characteristics
- Sensor fusion
- Cognitive data processing
- Fast sensors and quick system reaction: <1s for short range attacks
- Low false alarm rates, especially in contested & congested EME

Conclusion

Self Protection Systems remain relevant

- as stand-alone (sub) systems
- as functionality in an integrated EW system

We will need to integrate some “game changers” to stay on top of the situation and protect our troops.

Thank you for your attention!