ICAS WORKSHOP
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SAFETY & SECURITY

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The GoP has defined a vision for 2020+ of the Air Transport System able to respond to citizens’ needs:
- Three fold capacity
- Quality: all weather operational, on time, airport operation 24h/24h, environment respect, affordable to a large public.

A fundamental requirement in this vision:
- Safety: 80% of accident rate reduction
- Security: no successful hijack.

WT3 was set up to define a Strategic Research Agenda to reach these challenges on Safety & Security.

Three pillars:
- Breakthrough technologies and systems
- Human factors
- Certification/regulation
1 - WT3 FINDINGS:
THE WAY AHEAD FOR SAFETY

- Generalisation of automatic aids, with proper “pilot in the loop” design concept, to suppress the major causes of accident: Controlled Flight into Terrain, Loss of Control, Approach and Landing.
  - Airborne system for total protection of Flight Envelop and Flight trajectory, with automatic recovery.
  - Generalisation of automatic approach & landing, safe ground movements in all weather operation, by affordable means (GNSS...)

- Real time detection and avoidance of all weather hazards: clear Air Turbulence, Icing, Windshear, Wake vortex..., by airborne sensors and data link.

- Airborne systems for automatic separation assurance, for the Autonomous Aircraft, 4D navigation. Aircraft separation and navigation on ground.

- Smart total Vision Cockpit for gate to gate operation in all weather conditions, a key component for the pilot in the loop concept.

- Methods and tools for large systems development and certification, human centred design.
1 - WT3 FINDINGS : THE WAY AHEAD FOR SECURITY

- **Airborne Security**:
  - Automatic aids for abnormal passenger behaviour detection,
  - refusal of the A/C control devices to obey to unauthorised person,
  - automatic interdiction to fly into protected areas
  - ultimate resource: removal of the Aircraft control from the cockpit.

- **Air Transport infrastructure security based on**:
  - efficient and “hassle free” system to control person, goods and intrusion into large areas.
  - Robustness of software/hardware with regards to all aggressive agents: software virus, jamming, spoofing...
From the technical view, WT3 propositions are at reasonable reach:

- beginning of maturity curves
- no major technology wall foreseen

Safety & Security call for global and systemic approach, including social factors.

Efforts should be constant and permanent: not waiting for tragic events to happen to “wake up”.

Security depends largely on Public Authorities.

Priority should be given to Systems/Products that can serve both Safety and Security, for economical reasons.
3 - FROM SRA1 to the GoP VISION

- SRA is just a Research Agenda
- From R&T acquisition to actual realisation of the GoP vision:
  - International agreement on operational procedures: ICAO...
  - Definition of common standards for development of products/systems: EUROCAE, RTCA...
  - Development of products/systems by Industry, cooperation...
  - Certification by public authorities: EASA, FAA...
  - Incentive for Air Transport operations to adopt new systems, transition issues.
- A long and challenging route!
The International aeronautic community has a common interest to support Air Transportation which is a key asset for world-wide economics development.

A clear common objective: to restore/enhance public confidence in Air Transport to pave the way for Air Transport growth: Safety and Security are the building blocks.

Common approaches in different international bodies: ICAO panels, RTCA, EUROCAE... to ensure common standards, interoperability.

Co-operation for shared cost burden:
- international co-operation
- inter sectors co-operation: Industry, Research Centres, Academia.
Thank you for your attention