# Humans and automated systems working together

Amendment 1, 020314 Thales R&D PIA. TCA Ref: DJ14-577-BIZDEV-NDA --- TAV Ref: 16-TLS-179

## Automated systems have proven their benefit in Aviation
## But becoming ever more complex

- Increase in air traffic volumes
- Greater focus on competitiveness
- More stringent environmental standards
- Growing system complexity
- Increased connectivity

**RISK TO DECONNECT THE PILOT**

**How to manage efficient collaboration between humans and advanced automation to improve safety?**



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# What solution?

## Design new systems that change the relation between pilot and systems

**Put humans at the centre of the decision process**

**Don't use human resources for tasks a machine can do**

**Limit the impact of inevitable human shortcomings**

**Prevent the Cliff effect**

**Move from a System Referential to a Pilot Referential**

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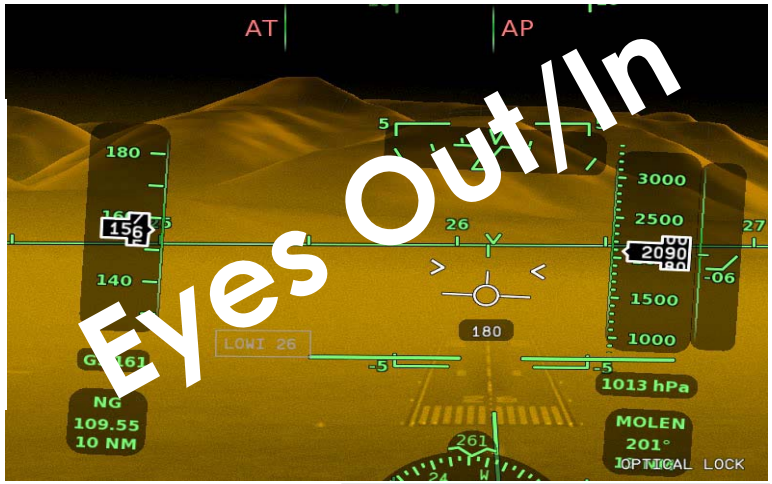
# 3D Flying



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# “Integrated HSI”

**Today:**
**Organised by functions**
**Multiple interactions**

**Tomorrow:**
**Organised by tasks (integrated functions)**
**Direct interaction on object**

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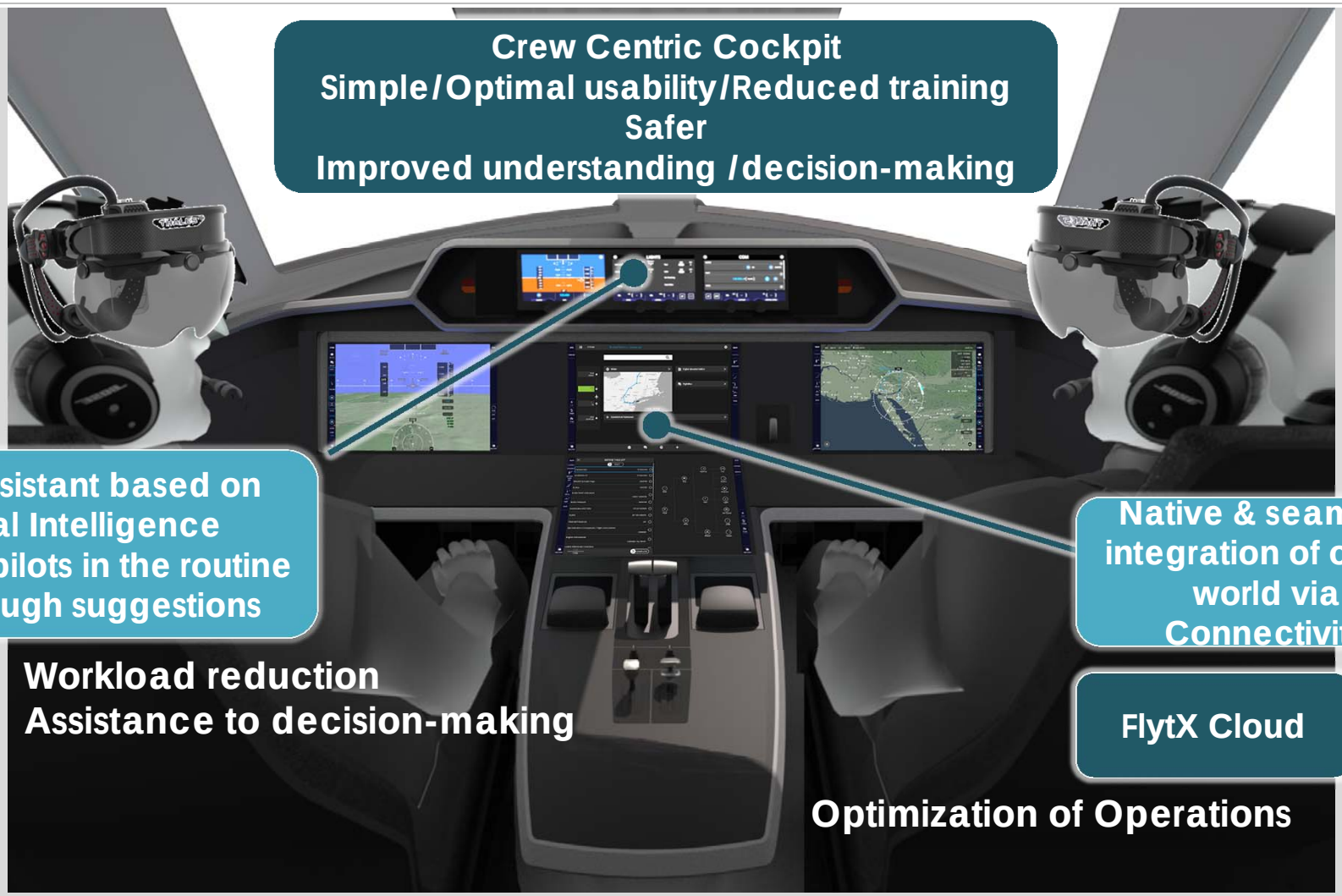
# FlytX New ergonomic and user-friendly cockpit generation



**Crew Centric Cockpit**
**Simple/Optimal usability/Reduced training**
**Safer**
**Improved understanding /decision-making**

**Virtual Assistant based on Artificial Intelligence to support pilots in the routine tasks through suggestions**

**Workload reduction**
**Assistance to decision-making**

**Native & seamless integration of open-world via Connectivity**

**FlytX Cloud**

**Optimization of Operations**

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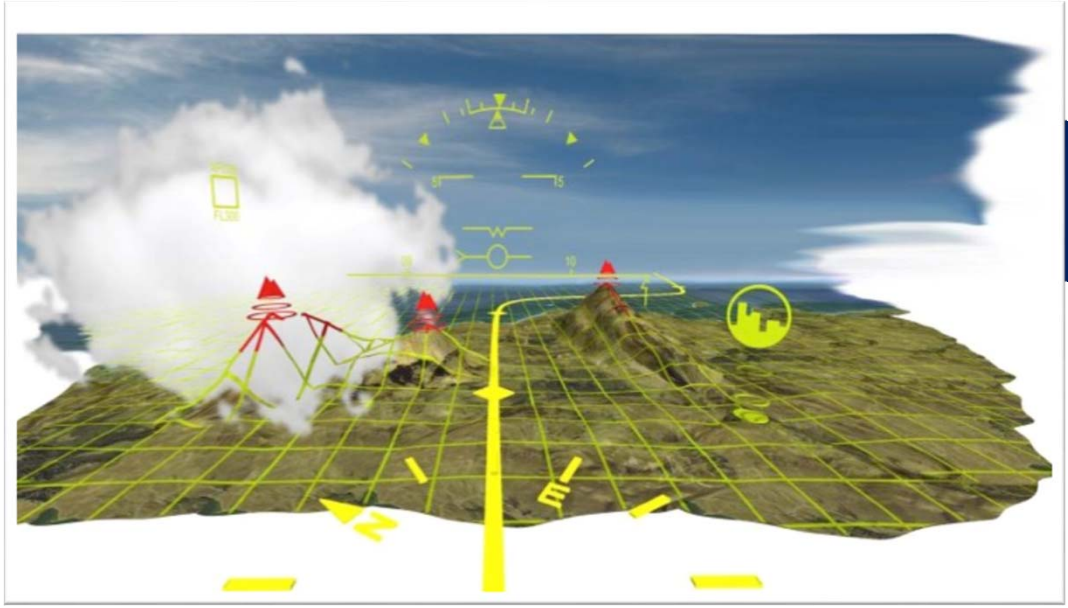
# “Fly by trajectory”: an innovative concept



**Main pilot task: monitor and fly the trajectory**

**System displays optimized and flyable trajectories**

**Full integration of protection functions and crew alerts along the trajectories**

**Enable pilots to directly manage the aircraft trajectory**

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