



# Human Integration in the Life-cycle of Aviation Systems HILAS

Nick McDonald

For HILAS consortium

*HILAS is an Integrated Project supported by the European  
Commission RTD programme (Aeronautics and Space)*

# The HILAS consortium



- Integrated project with 40 partners
- 13 European countries + Israel, China
  - Manufacturers
  - Airlines
  - Maintenance organisations
  - Research institutes, universities
  - RTD companies
- Critical mass to exert European and global leverage
- Initiated 1st. June 2005 to last 4 years

# Core management team



- Trinity College Dublin (co-ordinator)
- Smiths Aerospace
- Thales Avionics
- JRC
- Aircraft Management Technologies (AMT)
- Easyjet
- SAS Braathens AS
- NLR

# Humans in systems integration



<b>System stage</b>	<b>Human role</b>	<b>Development focus</b>
No automation	Humans manage technology and system interfaces	Core technologies

# Humans in systems integration



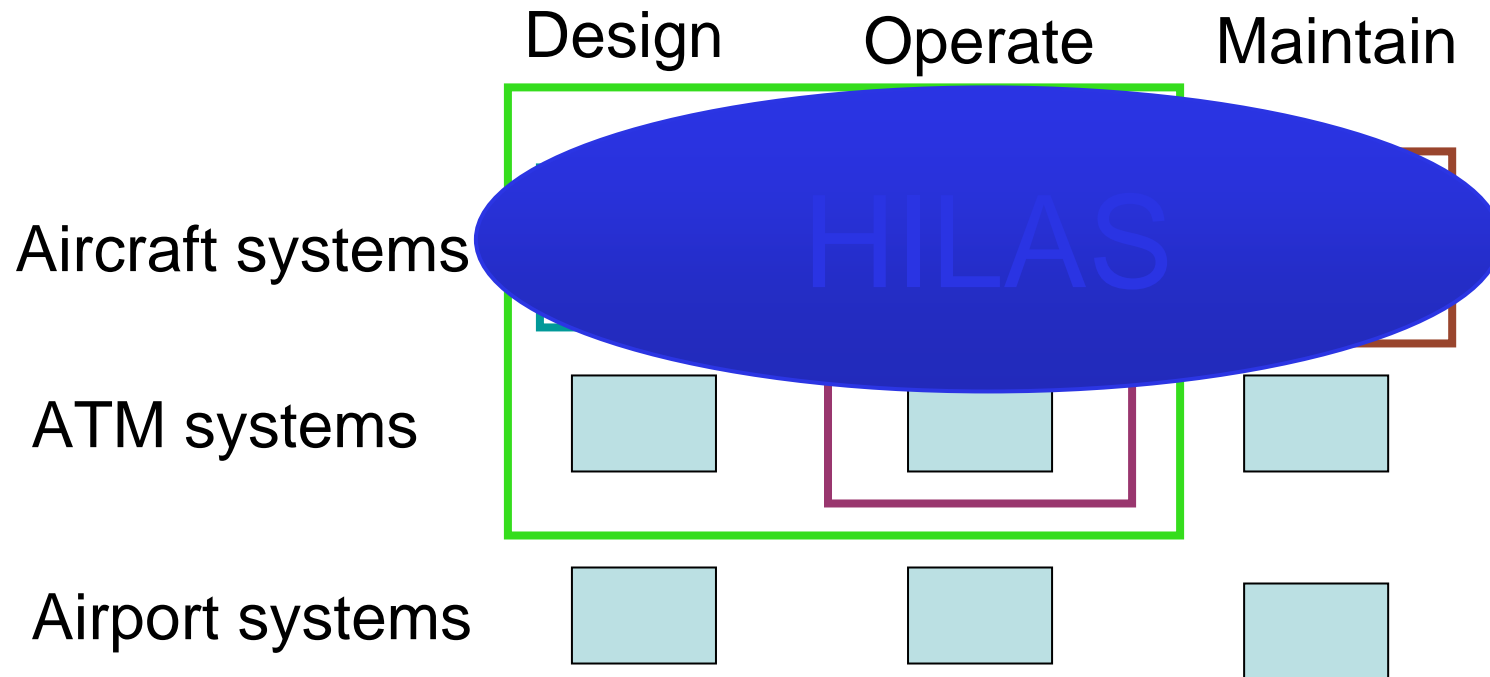
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Automation within technology systems	Humans manage residual functions and system interfaces	Technology integration in manufacture & supply

# Humans in systems integration



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Integrated system design - 'system of systems'	Information systems link people and technologies in seamless processes crossing boundaries	Complex systems deliver operability for customer and society

# System integration in aviation



# Models of 'humans in the system'



Level of model	Functional	Operational functions enabled	Design functions enabled
Descriptive classification of human factors	Factors which potentially affect performance	Taxonomies for incident analysis, performance reports	Checklist for design support



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Descriptive classification of human factors	Factors which potentially affect performance	Taxonomies for incident analysis, performance reports	Checklist for design support
Analytic model of human operator	How 'human factors' affect performance	Analyse & diagnose problems and events	Evaluate HMI from user perspective

# Models of 'humans in the system'



Level of model	Functional	Operational functions enabled	Design functions enabled
Descriptive classification of human factors	Factors which potentially affect performance	Taxonomies for incident analysis, performance reports	Checklist for design support
Analytic model of human			Evaluate HMI
of system			concepts



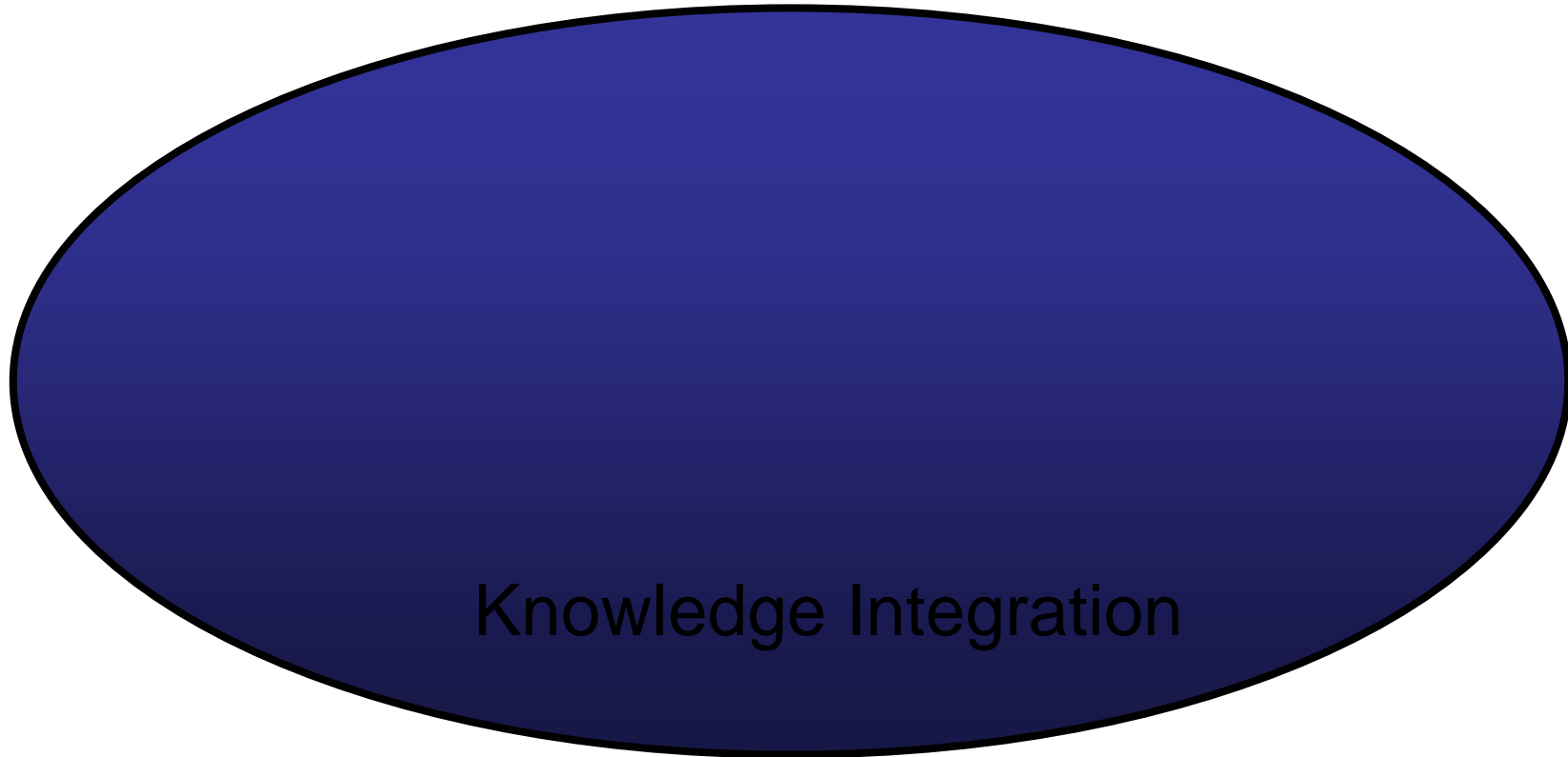
# HILAS - 4 Strands of RTD activity



Design

Operate

Maintain

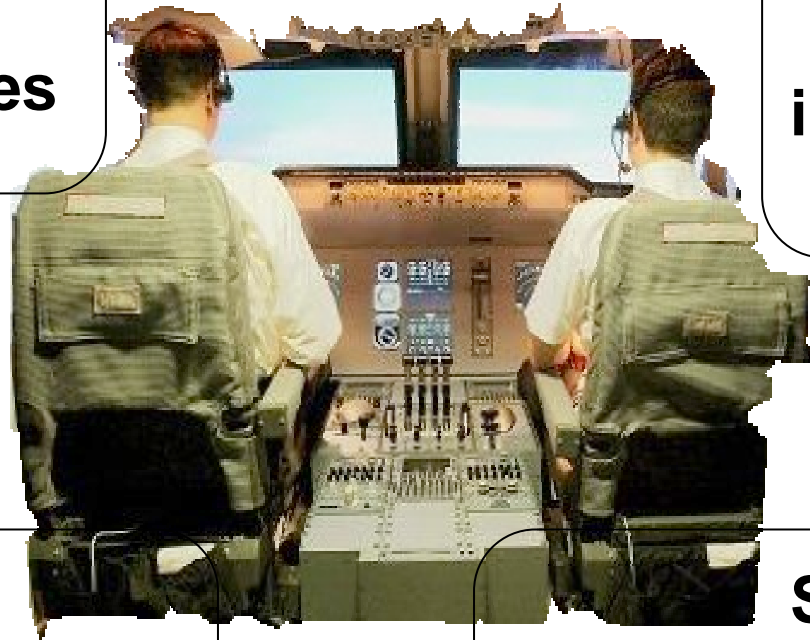


# Flight deck technologies



**Select display  
& control  
technologies**

**Integrate  
technologies  
in applications  
on simulator**



**Run  
experiments  
using HF design  
& evaluation tools**

**Strategic drivers:**  
Reduced crew concepts  
Flight & ATM environment  
Improved safety & reliability

# Flight operations



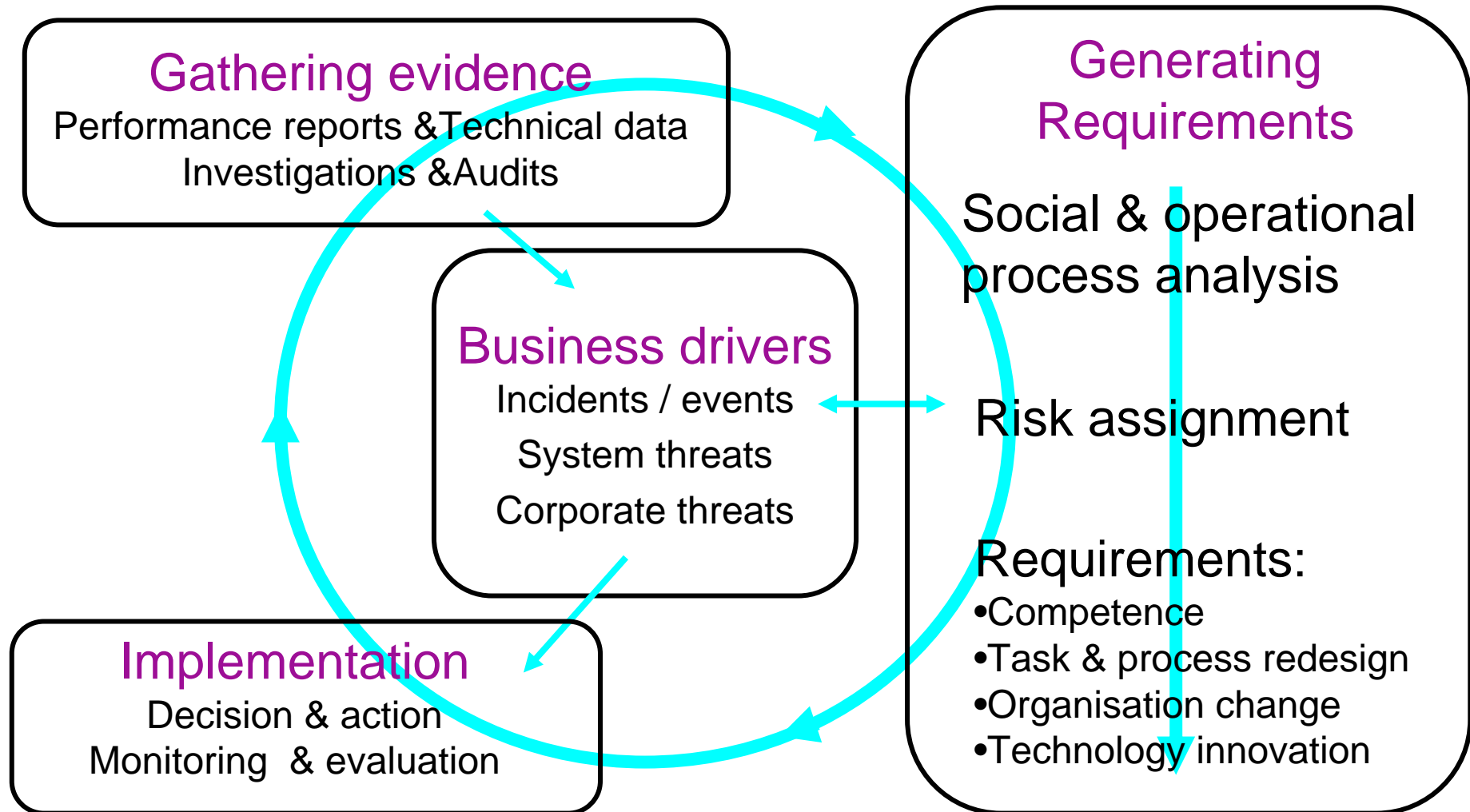
- Current Flight Ops. performance monitoring systems (e.g. LOSA) do not provide a clear trajectory to changing the operational system
- HILAS is developing a performance management tool to integrate performance monitoring and process improvement
  - Link human performance and flight technical data
  - Integrate human factors requirements in process redesign
  - Identify risk parameters to guide management action
  - EFB (Electronic flight bag) platform with on-ground d'base functions
- Target 2 operational phases in system development
  - Flight – approach and landing
  - Ground – pre-flight actions and aircraft release/turnaround
- Develop, validate and trial system with 6 European airlines

# Maintenance

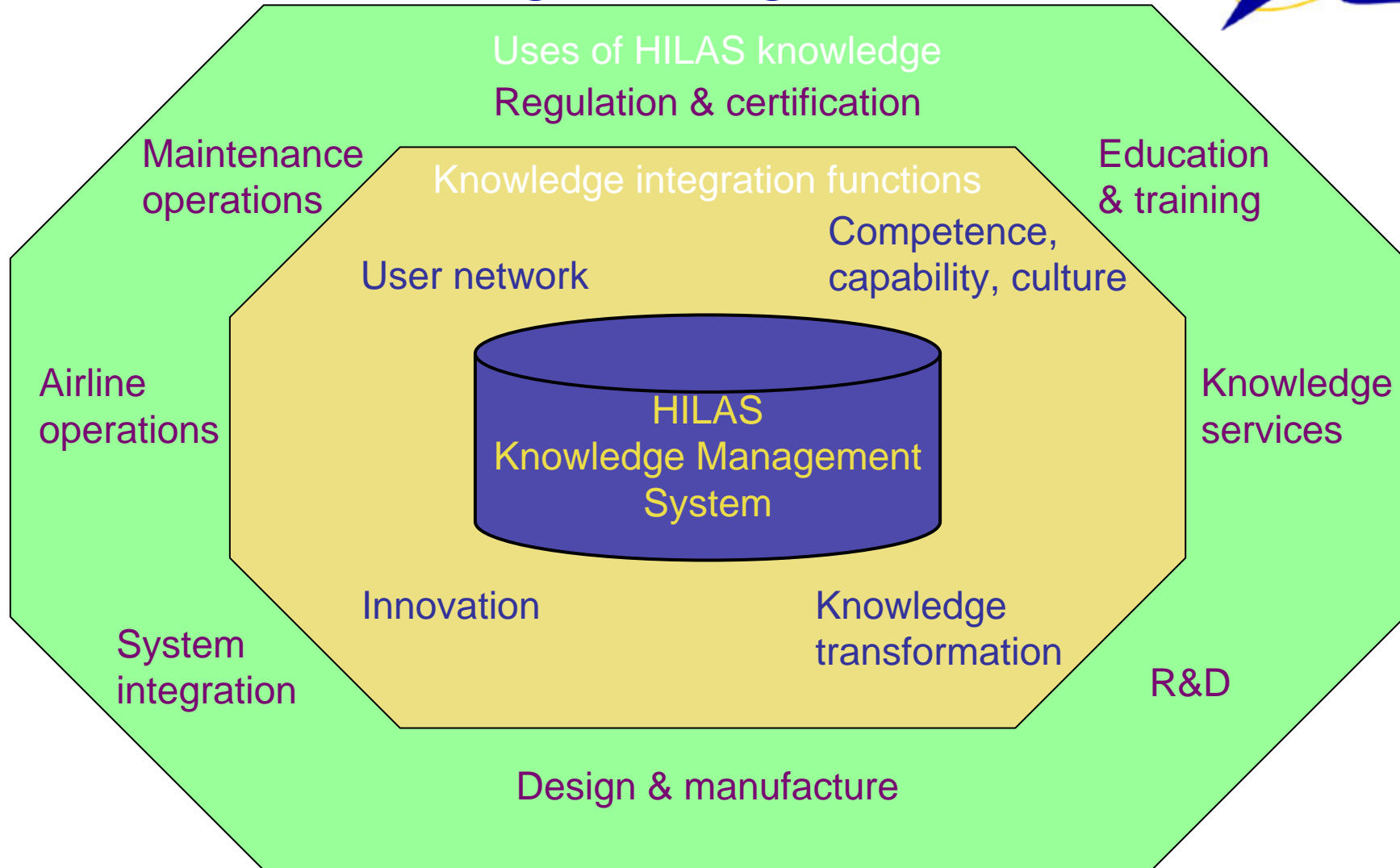


- Origin of Human Factor problems
  - upstream processes of planning & supply
  - complex co-ordination of parallel tasks
- Integrated Maintenance Management System (IMMS)
  - Comprehensive support for process improvement
  - Task support for technician (including VR)
  - Competence requirements
  - Quality & Safety functions
    - Performance reporting
    - Incident management
  - Feedback for design improvement
- Standardisation of methods
  - Improve, develop & integrate existing methods

# Operational risk management in flight ops. & maintenance



# Knowledge Integration



Human Integration into the Lifecycle of Aviation Systems



# What HILAS will deliver



- HF evaluation of new applications for technologies
- Flight operations and maintenance
  - Process & performance improvement
  - Quality & safety oversight
  - Standardised methods
- Knowledge resources
  - Exchange and transformation - ‘knowledge broker’
  - Competence & capability maturity
  - Contribution to innovation

# Thank you



- [www.hilas.info](http://www.hilas.info)