



Open Day

PJ-05 EXE-05.02-V2-2.1 (FREQUENTIS, ORO NAVIGACIJA, DLR)
Multiple Remote for three Airports

Jörn Jakobi (AT-One/DLR PJ05 Project Coordinator)
DLR, Braunschweig
23/03/2018



Founding Members



Agenda



- 10:00 Welcome & Introduction
- 10:30 Validation Plan & Objectives
- 10:50 ANSP's Multiple Remote perspective
- 11:10 Multiple Remote Assistance functions
- 11:30 Validation Set-up
- 11:50 Live-Demo at DLR Remote Tower Lab
 - in a HITL Simulation controlling three
 - Airports with simultaneous traffic by a single
 - Air Traffic Controller Position
- 13:00 Lunch
- 13:45 Q&A Session
- 14:30 End of Meeting

- Jörn Jakobi (DLR)
- Maria Hagl (DLR)
- Egidijus Zaremba(ON)
- Regina Bruzek (FRQ)
- Sebastian Schier (DLR)

*all times UTC+1

German Aerospace Center (DLR)

Institute of Flight Guidance

Introduction to the Institute and Remote Tower Research

23 March 2018



Knowledge for Tomorrow

DLR – German Aerospace Center

National aeronautics and space research centre of Germany



- Research Institution
- Space Agency
- Project Management Agency

Research Areas

- Aeronautics
- Space Research and Technology
- Transport
- Energy
- Defence and Security

Locations and Employees

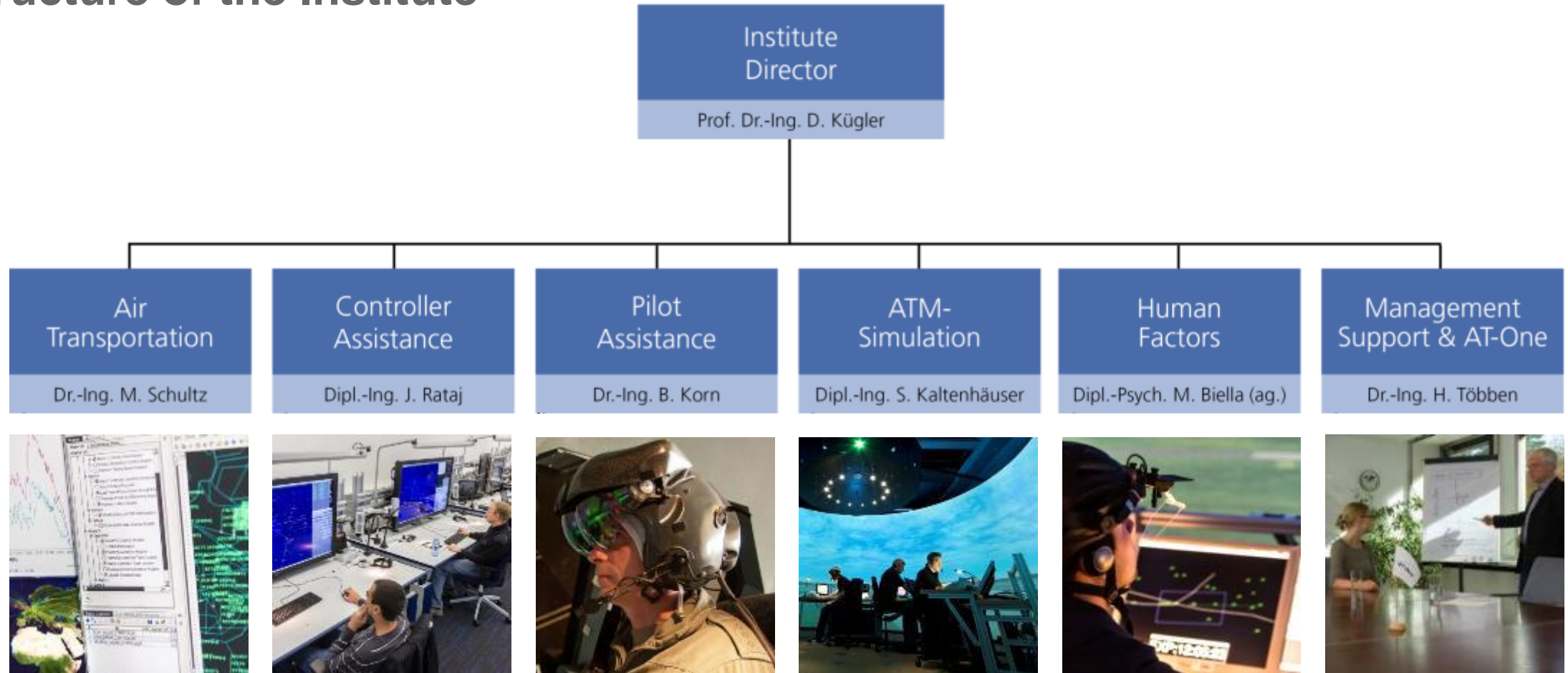
Approx. 8000 employees across
33 institutes and facilities at 20 sites.

Offices in Brussels, Paris,
Tokyo and Washington.

Institute of Flight Guidance



Structure of the Institute



Remote Tower Operations – from Vision to Reality

Proof of Concept
[Multiple+]
SESAR2020
PJ05 2016-2022

Proof of Concept
SESAR 6.9.3 & 6.8.4 2009-2015
RAiCe 2008-2012
RAiCon 2010-2012
VICTOR 2008-2012
...

Technical Tests

RApTOr 2005-2008
RAiCon 2010-2012
ART 2007-2009
LFV/SAAB Project
SESAR 2009-2015
6.9.3 & 12.4.7
...

First Prototype
@DLR 2005



2018

Standardisation
EUROCAE WG100
ED-240 (2016)



First operational Installation
@LFV 2015



First RTC trials
@DLR 2010

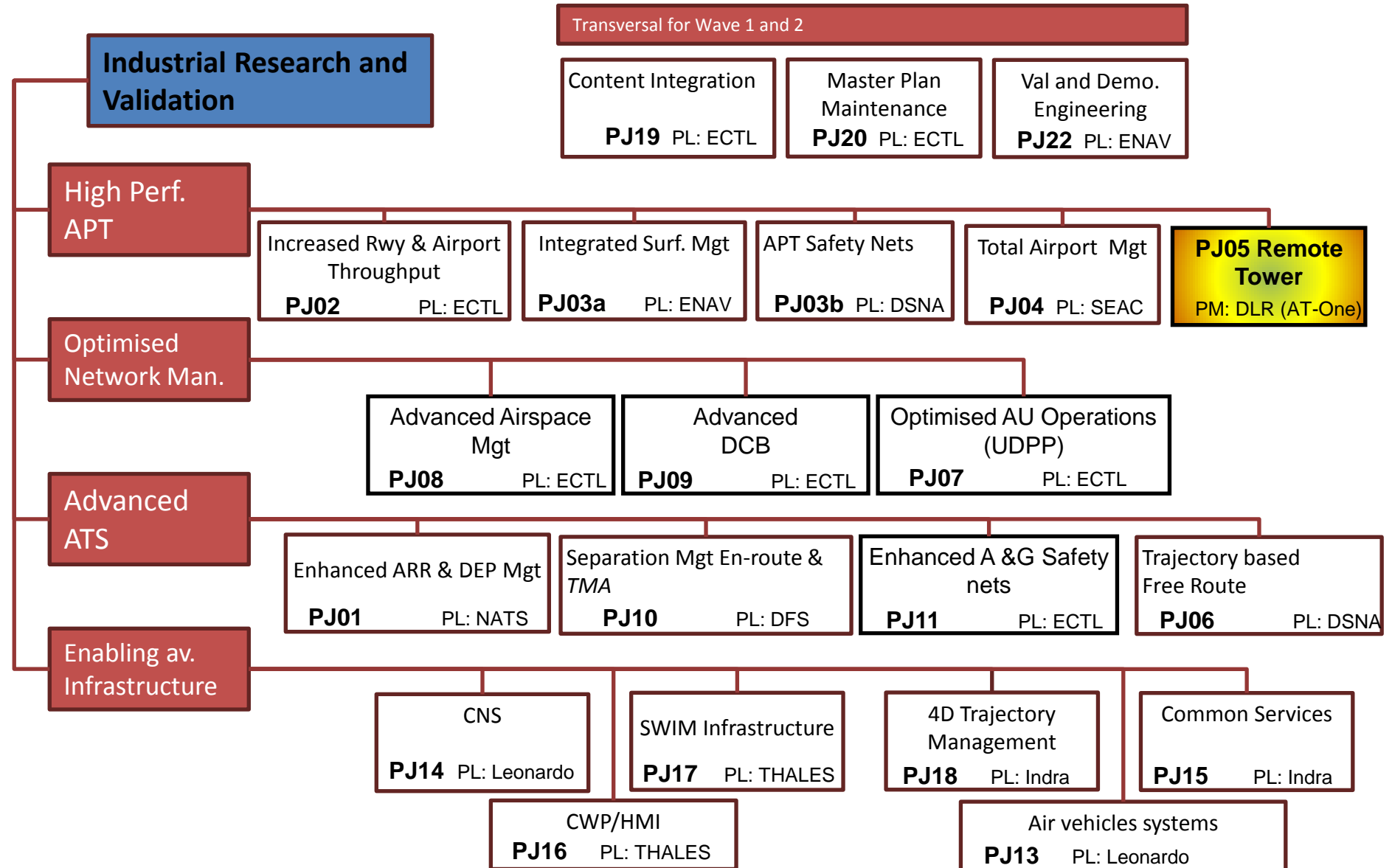


2002

The Vision
Virtual Tower 2002-2004



S2020 IR Work Programme



PJ05

Remote Tower for Multiple Airports

DLR (AT-One)

WP1 Project Management

DLR (AT-One)

WP2 Solution PJ.05-02

Remotely Provided Air Traffic Service for Multiple Aerodromes for up to three airports

LFV/COOPANS

EXE-05.02-V2-2.1_ON

EXE-05.02-V2-2.2_COOPANS

EXE-05.02-V2-2.3_INDRA

EXE-05.02-V2-2.4_HC

WP3 Solution PJ.05-03

Highly Flexible Allocation of Aerodromes to Remote Tower Modules

DFS

WP4 Ethics Requirements

DLR (AT-One)

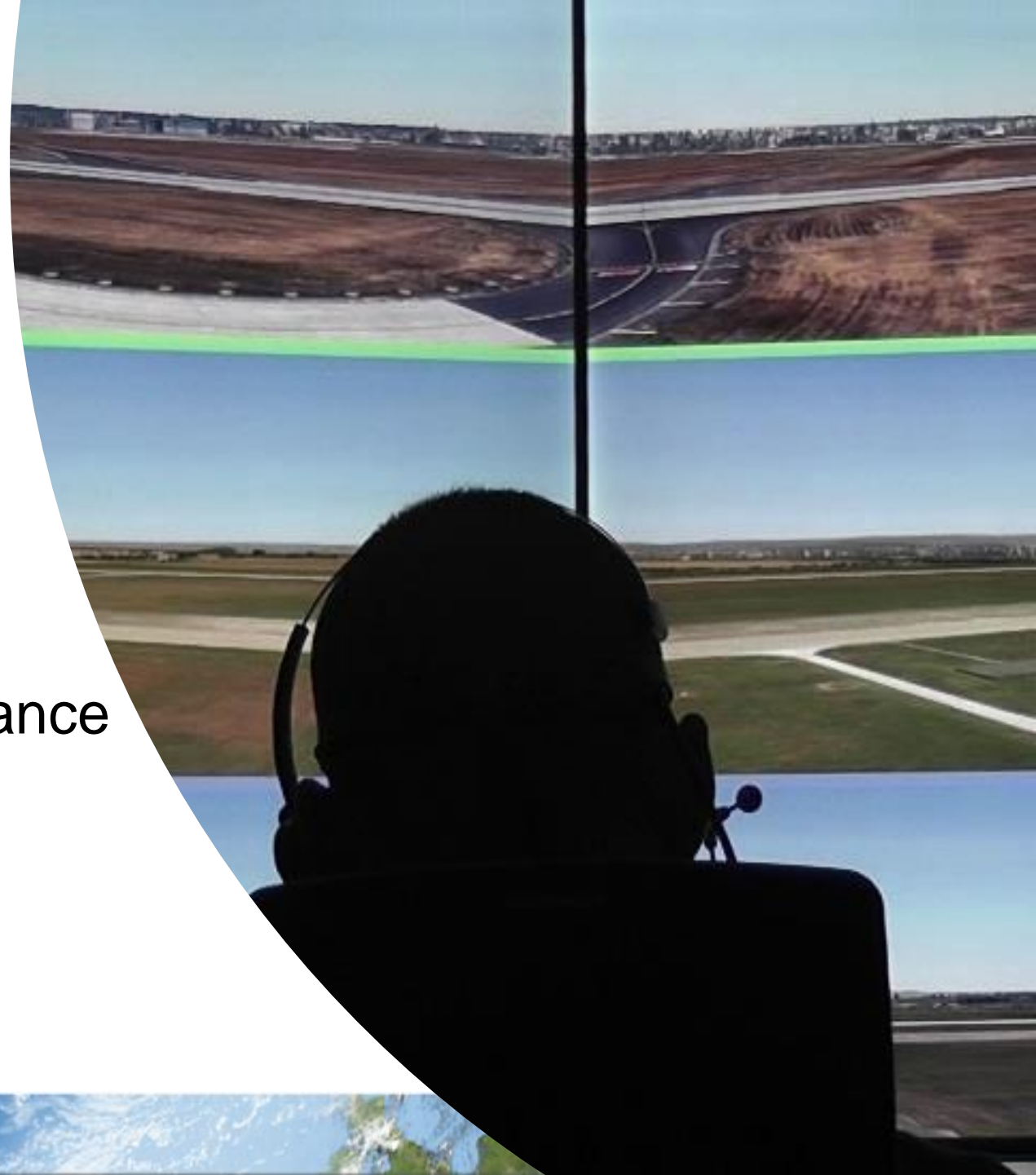
WP5 Solution PJ.05-05

Advanced Automated MET System

LPS (B4)

Validation Scope (V2) - “Concept Validation through Simulation”

- Proof of operational feasibility & safety for 1:3 multiple setting
- Prototyping: Planning tool assistance



Partners / Tasks



VALSTYBĒS ĪMONĒ
ORO NAVIGACIJA

- **Operational Concept**
- **Validation**



- **Provider Simulation Platform**
- **Validation**



- **Integrated Control Panel**
- **Provider field test platform**

Schedule & Set Up

V2 Simulation in Braunschweig (HC, DLR, FRQ, SELEX)

V2 Simulation in Braunschweig (ON, DLR, FRQ)

V3 Simulation in Braunschweig HC (DLR, FRQ, SELEX)

V3 Shadow Mode at RTC Budapest (HC, FRQ)

Nov 2017 ✓

March 2018

Nov 2018

Mar 2019

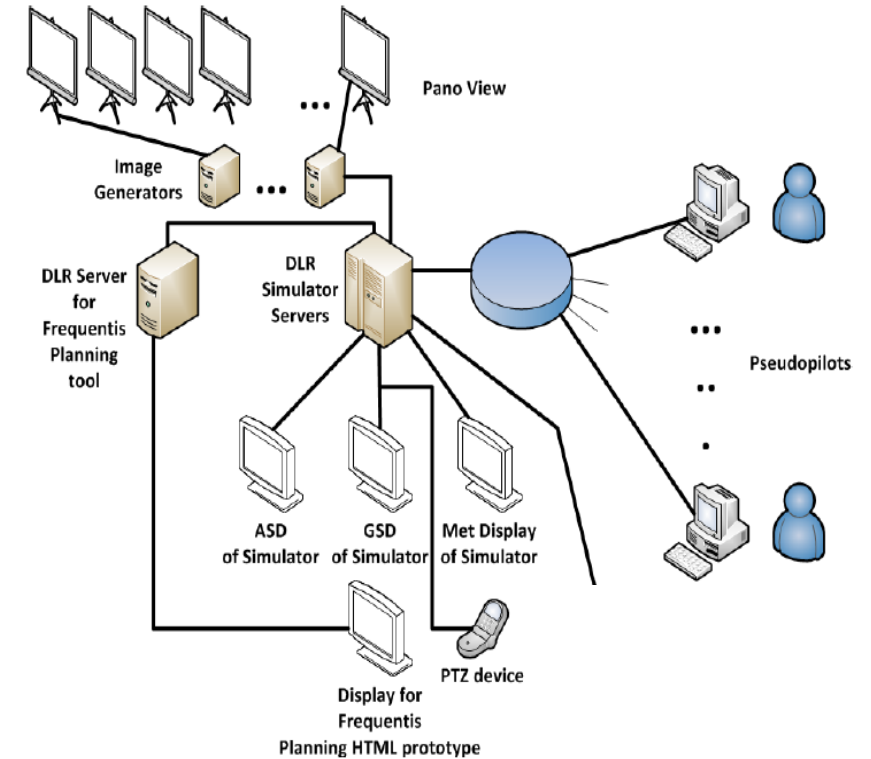
small airport

Multiple RTM

medium airport

small airport

Overview



V2 Simulation at DLR/Braunschweig – SET UP

3x Panorama views with
augmentation

3x Approach Radar

Planning Tool

Flight Strips

3x PTZ View for each
airport

Support Information &
Control Functions

Voice Communication





Most recent Field-Test-Platform, DLR Braunschweig





DLR TOWERLAB



Current research activities...



Head-Up-Only

Concept study for a multimodal RTO interface (under development):

