WP7: Training AdCoS

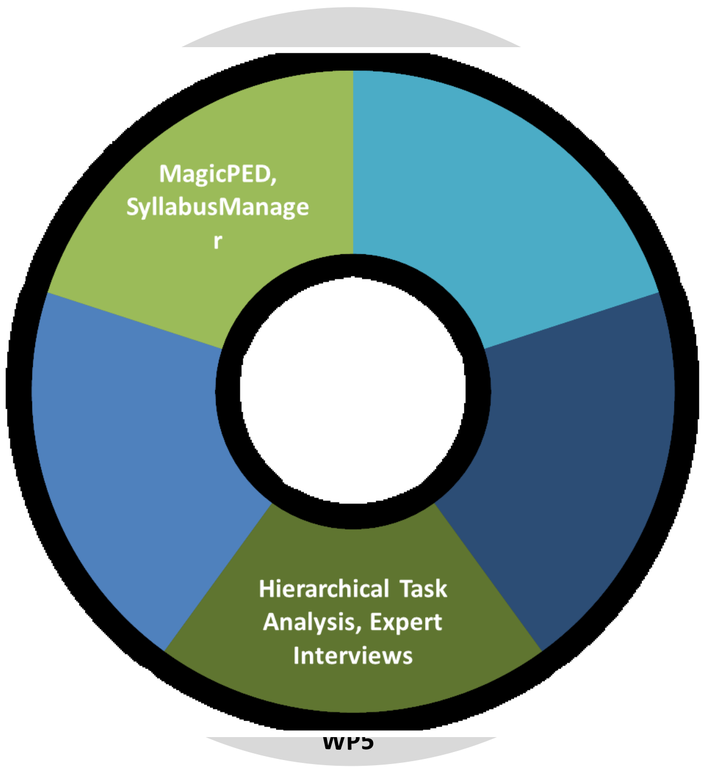
HOLISTIC HUMAN FACTORS AND SYSTEM DESIGN
OF ADAPTIVE COOPERATIVE HUMAN-MACHINE SYSTEMS

Domain

Motivation

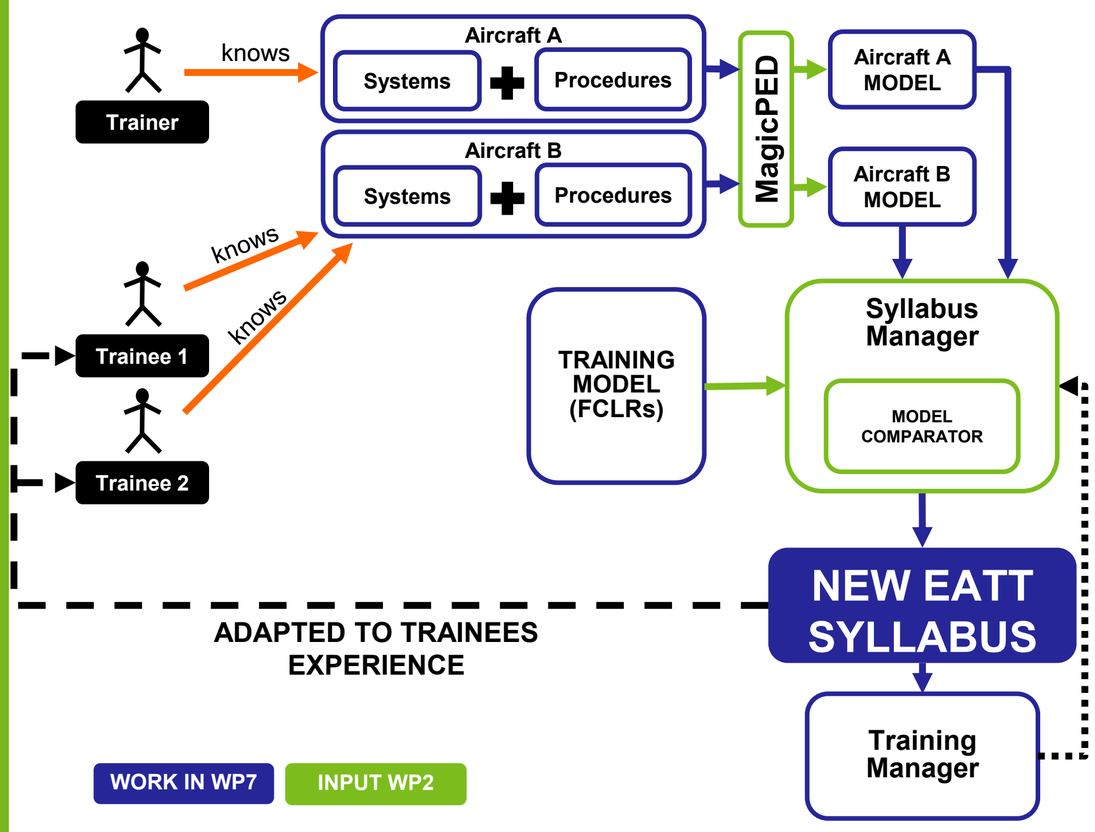
- **Problem Statement:**
  - Generation of **training syllabi based** on **regulatory requirements**
  - **One-size-fits-all training solution**
  - **No credit** for aircraft type, nor **trainees' individual needs**
  - Inefficient and ineffective training, especially in **transition training**, where pilots already have type rating
- **Objective of the Training-AdCoS**
  - A training syllabus (e.g. Airbus A320) **adapted to the skills and knowledge of pilots**, who already have a type rating for another aircraft type (e.g. Boeing 737)

Applied MTTs

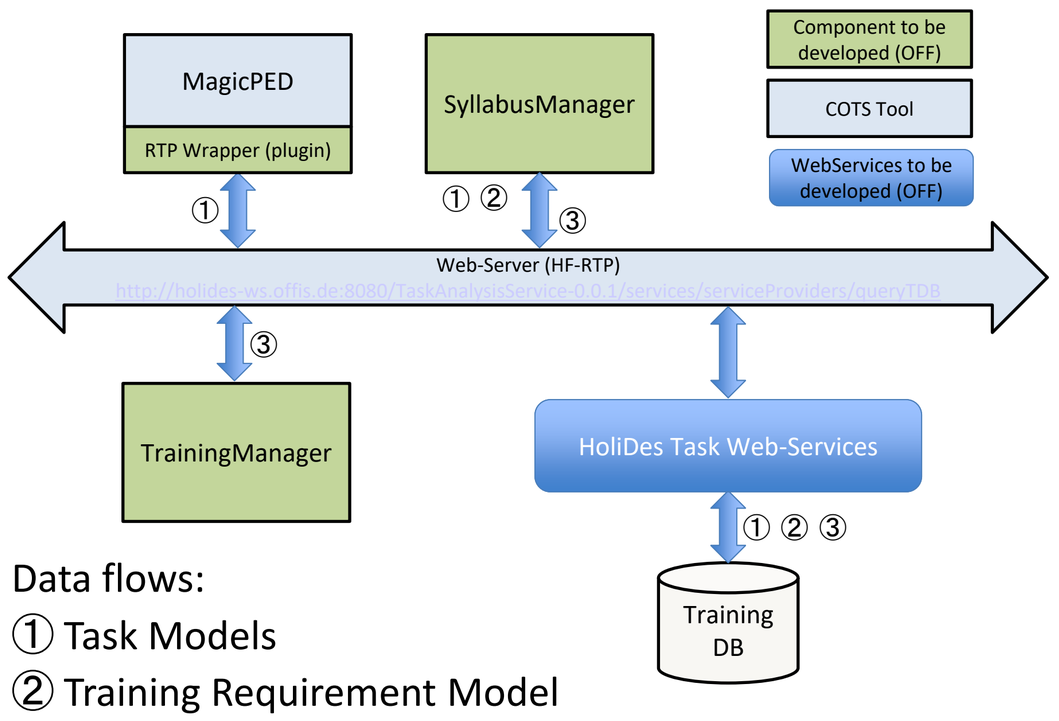


Current State: Tailored HF-RTP

General Architecture



HF-RTP Tailoring Architecture



Data flows:
① Task Models
② Training Requirement Model
③ Training Syllabus

Categorization

Differences on Procedural Layer	Differences on Concept Layer	Type of Transfer	Learning Methods	EATT Category
Procedures are equal	N/A	Low Road Transfer	Try & Error	1 Identical Procedures
Procedures are equal, but instruments differ (position, name)				2 New Instruments
Procedures exist in both aircraft, but are not equal	Source procedure (S) and target procedure (T) share common concept	High Road Transfer Positive Transfer	Metaphoric L. L. from Model	3 Changed Action Sequences based on reoccurring principles
	S & T without common concept, but T has concept not interfering with other concept		Metaphoric L. L. from Model (initial training of principle as preparation of forward-reaching)	5 Changed action sequences and/or decision not based on reoccurring principles
	T does not follow a concept		L. from Model	6 New procedures not based on reoccurring principles
	Conflict between T's concept and another concept	High Road Transfer Negative Transfer	L. from Model L. from Errors	
Procedure completely new	T does follow a concept	High Road Transfer	Metaphoric L. L. from Model	4 New procedures based on reoccurring principles
	T does not follow a concept	High Road Transfer	L. from Model	6 New procedures not based on reoccurring principles
	Conflict between T's concept and another concept	High Road Transfer Negative Transfer	L. from Model L. from Errors	

S = Source SOPs, T = Target SOPs, L.= Learning

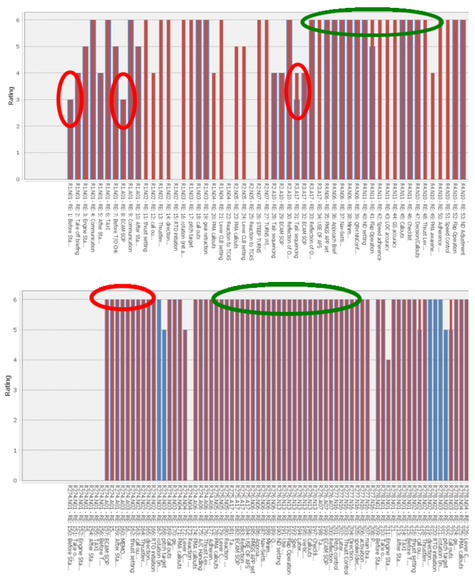
Results

Modelling Results

Aircraft	Classes	Attributes
A320	89	1850
B737	75	1065

Aircraft	Tasks	Rules
A320	1722	4088
B737	2795	5540

Evaluation Results



Baseline Assessment

PI 1 - Syllabus Development:
The definition of a syllabus with the SyllabusManager saves about 16% of effort, with the current cost this results in about 152€ per syllabus. With about 360 syllabi per year, this sums up to over 54.000€ per year for only one aircraft type. Assuming similar savings for the other 13 aircraft types LFT trains, this would make over 700.000€ a year.

PI 2 - Training:
Compared to the standard training of 12 Lessons LFT offers currently for transition training, we were able to reduce this to 8 lessons. This is a 30% reduction of effort (and with this in cost) per crew.

Contact

truestream aerospace GmbH
Völkersstraße 42
22765 Hamburg
Cpt. Frank Rister
truestream@hamburg.de

Lufthansa Flight Training
Schützenstraße 10
12526 Berlin
Cpt. Felix Helmke
felix.helmke@lft.dlh.de

OFFIS e.V.
Escherweg 2
26121 Oldenburg
Jan-Patrick Osterloh
osterloh@offis.de
Dr. Andreas Lüdtke
Luedtke@offis.de

Consortium

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