

Domain



Motivation

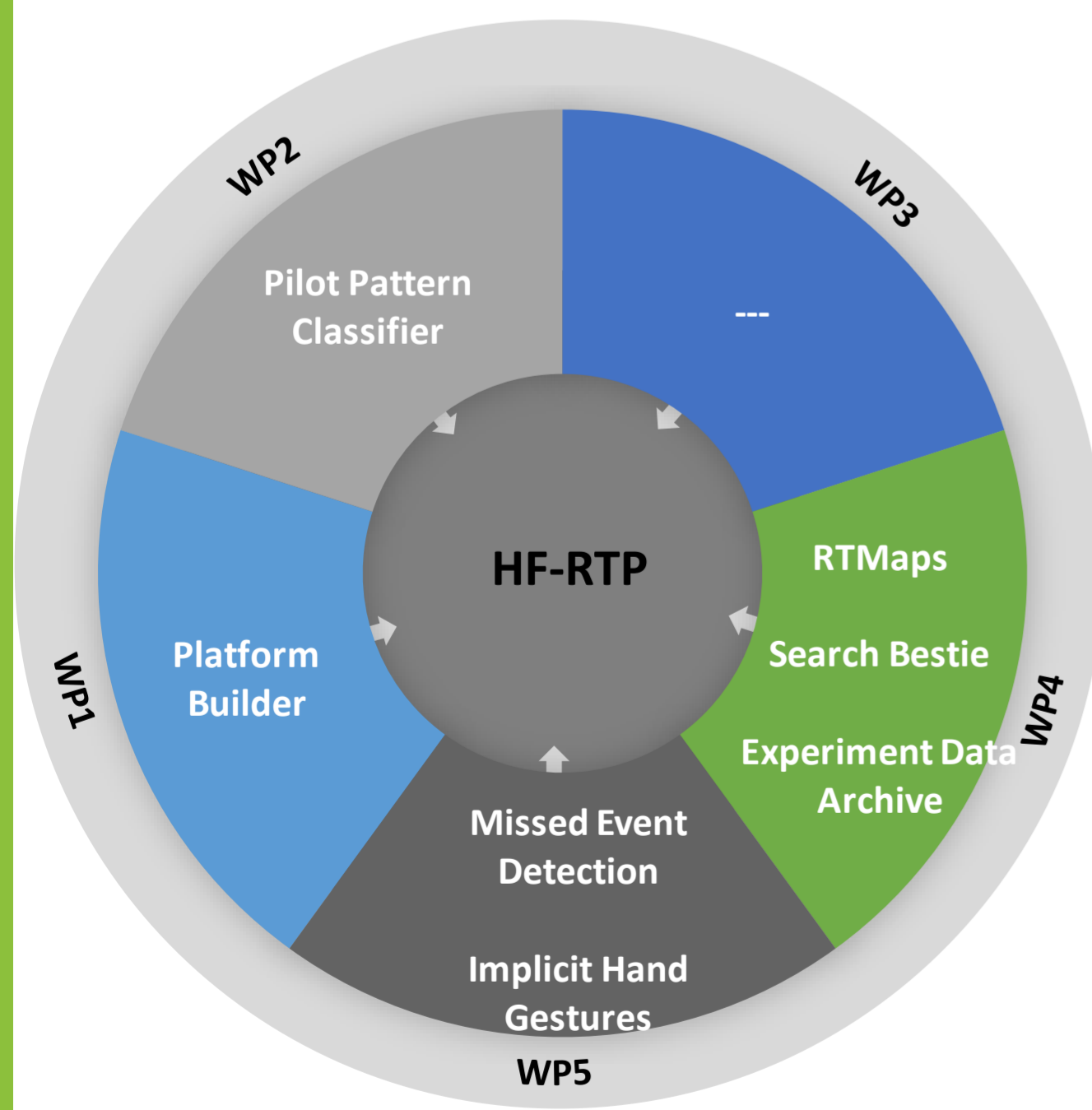
Diversion is a complex task that happens infrequently and in varying conditions. Proper solution requires **integration** of various pieces of information – digital and paper, displaced across the cockpit in short time and in parallel with securing aircraft and communication. A tool that integrates the information and runs necessary calculations for pilot will support **strategic planning** and **reduce workload** when situation happens.

Diversion task is suitable for adaptation to the state of the crew. Available diversion options can be evaluated for difficulty and their priority can be modified by assessed level of **workload** or **fatigue** of the crew.

Project KPIs

- Decrease workload by 10%
- Reduce time on diversion task by 10%

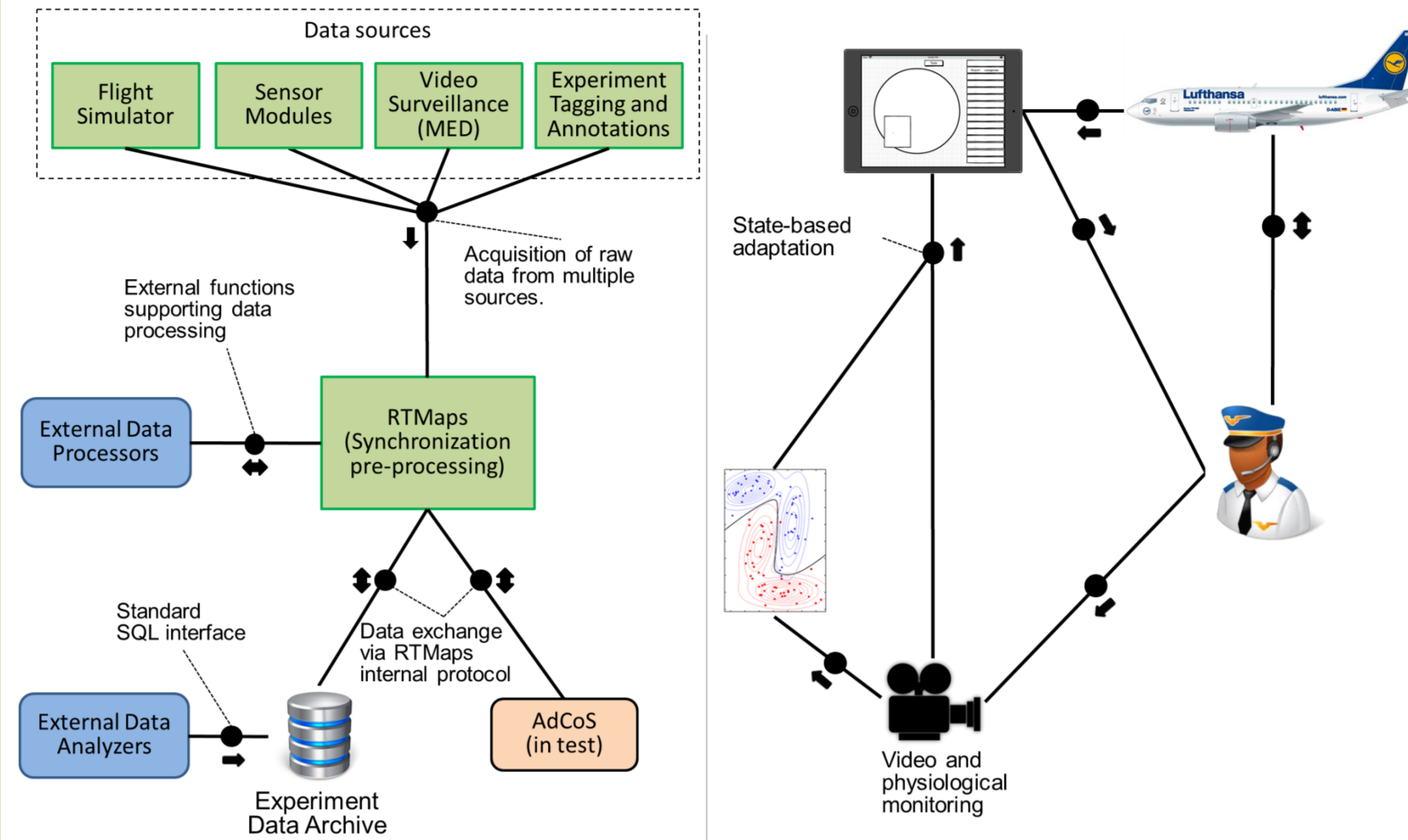
Applied MTTs



Current State: Tailored HF-RTP

HoliDes Goals

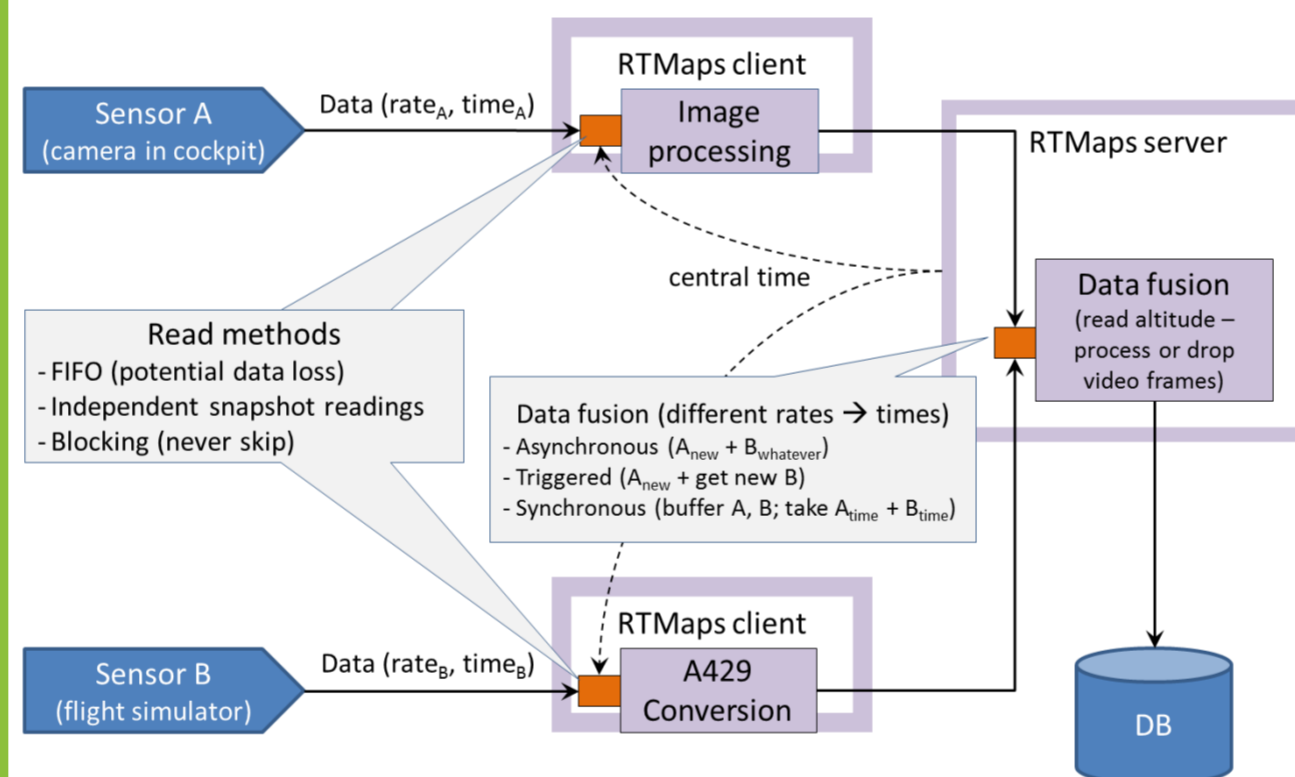
HF-RTP tailored for the Diversion assistant will have two instances: tool-chain for supporting HF work during experimental data acquisition and tools for real-time pilot state assessment.



In experimental instance, HoliDes tools will help acquiring data and assuring synchronization among various data sources, signal processing and storing for future use. In deployment, HoliDes tools will assess pilot state and trigger system adaptation.

Current state (Y2)

Most of tools from both instances have been developed to testable prototypes following the steps of V-model. Dedicated test cases for individual or connected tools have been defined and executed.



Test Example

Tool-chain of simulator, RTMaps and EDA demonstrates data synchronization from two sources and conditional storage in the experiment database.

Plan for Y3

Diversion assistant will be improved based on feedback from experiment with pilots.

Selected tools will be finished for integration in the two HF-RTP instances: MED tested in a dedicated experiment, pattern classifier trained on data obtained so far.

Integrated tools will be applied in cockpit experiment for evaluation of the Diversion assistant.

Success criteria

1. KPIs are satisfied
2. Diversion assistant is positively evaluated in experiment, whose data are retrieved and stored via selected HoliDes tools
3. Selected HoliDes tools can assess pilot state at least in a dedicated experiment and Diversion assistant can adapt to the assessed state

Results

Design of HMI for Diversion assistant AdCoS

The design has been created and refined in a number of VOC and evaluations with Honeywell and external pilots. Information was layered through graphical elements to minimize time to understand and decide. A prototype application has been created and validated on artificial data with pilots.



Algorithms for ranking diversion alternatives

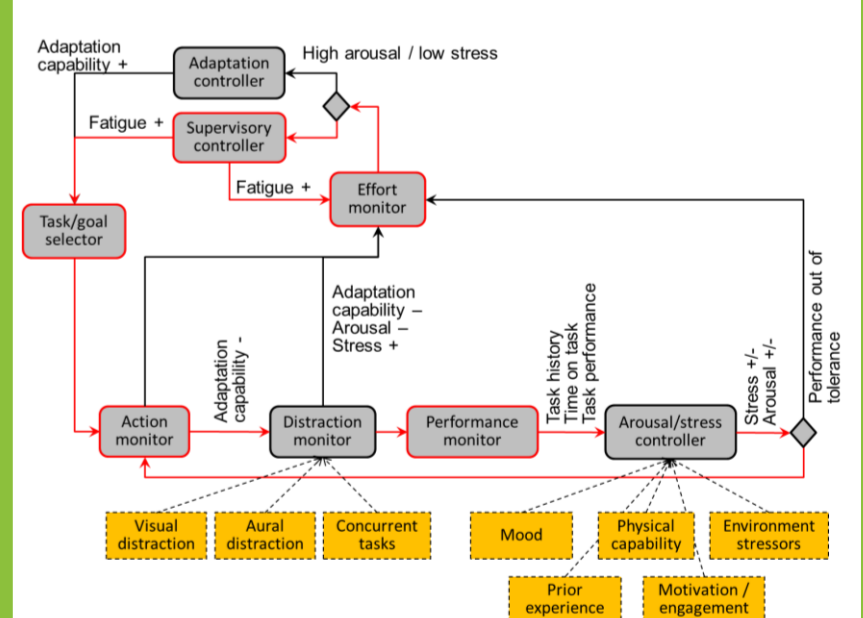
Smart data integration and data fusion is critical to provide sound situation model for the crew.

Experiment data archive

Requirements were defined and tool was created and tested in a simple test case.

Fatigue model and assessment strategies

Review and definition of fatigue and its assessment.



EFB infrastructure made reusable and portable to various SW/HW platforms.

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