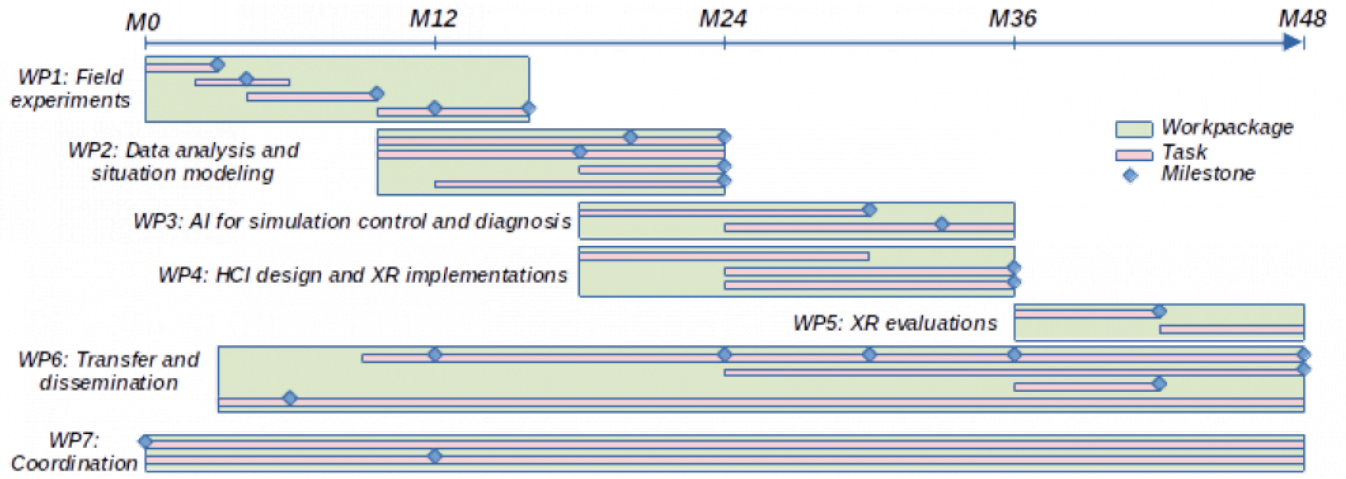
Agenda of the project

The project is organised with 7 workpackages:



Workpackage 1: Field Experiments

WP1 will 1) analyze the preexisting literature on fixation errors in order to characterize specific precursors, with the final aim of 2) creating various scenarios that trigger fixation errors. These scenarios will be used to 3) conduct field experiments to collect data on fixation errors in close to real life simulation environments.

Tasks

1. Theoretical characterization (M0-3, LISN)
2. Experimental design and scenarios (M2-6, LISN, all)
3. Implementation of the scenarios on the CLESS platform (M4-10, UCBL) and on the SCHEMAX platform (M4-10, ONERA)
4. Data collection (M10-16, UCBL and ONERA)

Milestones

- Review of the literature at **M3**
- First version of the scenarios at **M4** for pretests
- Implementation of the four scenarios in the two simulation environments (SCHEMAX at ONERA and CLESS at UCBL) at **M10**
- 30% of the data collection completed at **M12**
- 100% of the data collection completed at **M16**.

Deliverables

- **D1.1** Review of the literature characterizing factors for fixation errors in the two domains (**M12**,

LISN and IRBA)
- **D1.2** Data from the experimentation (**M16**, UCBL and ONERA)

Workpackage 2: Data analysis and modeling

WP1 will collect three types of data during the simulations: behavioral data, physiological data and subjective data. The objectives of WP2 will be 1) to analyze the data following both a human factors methodology (i.e., task analysis) and a cognitive psychology methodology (task 1 and 2), and 2) to build a logic-based model of the situation for the future AI model (tasks 3 and 4).

Tasks

1. Ergonomic task analysis and xAPI model of the task (M10-M24, IRBA and UCBL)
2. Cognitive psychology characterization of fixation errors (M10-M24, LISN and ONERA)
3. Data analysis for fixation error detection (M18-M24, ONERA)
4. Formal model of the task and mental states (M18-M24, LMF and LISN)

Milestones

- Characterization of the behavioral markers of fixation errors at **M18**
- Task model at **M20** and xAPI model at **M24**
- Formal model of the situation at **M24**
- Result of data analysis for AI modeling at **M24**

Deliverables

- **D2.1** Report on characterizing factors of fixation errors based on participant's data (**M24**, LISN and ONERA)
- **D2.2** Report on human-factor analysis of the task and xAPI model (**M24**, IRBA and UBCL)
- **D2.3** Logic-based model of the tasks for all scenarios and statistical model for data analysis (**M24**, LMF and ONERA).

Workpackage 3: Development of the algorithms

The main property of the formal model (Task 2.4) is to support the computation of possible belief states of the operator according to the representation of the situation. Based on this model, the objective of WP3 is to design and implement algorithms for both situation control and human error diagnosis. This model will not only provide the information required for the construction of the IDEFIX assistant (WP4), but also for situation control that will be used, in conjunction with the task model, for the experiments in XR in WP5.

Tasks

1. Algorithms for situation control (M18-M30, Heudiasyc)

2. Algorithms for human error diagnosis (M24-M36, LMF and LISN)

Milestones

- Model for ambiguity assessment and control implemented at **M30**
- Formal model of the IDEFIX error detection assistant implemented at **M33**

Deliverables

- **D3.1** Report on AI models and algorithms for situation control and human error diagnosis (**M36**, LMF, Heudiasyc, LISN).

Workpackage 4: Development and implementation of the IDEFIX assistant in XR environments

The objectives of WP4 are to develop 1) the two virtual environments necessary to test the assistant in WP5 and 2) the human-computer interfaces associated with the aviation and healthcare domains.

Tasks

1. Human-computer interface(s) for the assistant (M18-30, LISN)
2. Implementation of the assistant in the AR aviation environment (M24-36, ONERA)
3. Development of the VR medical environment (M24-36, Heudiasyc)

Milestones

- XR environment for pilots (ONERA and LISN) implemented at **M36**
- VR environment for medics (Heudiasyc and LISN) implemented at **M36**

Deliverables

- **D4.1** HCI model for the presentation of errors (M36, LISN).

Workpackage 5: Investigation of the assistant efficiency and acceptability

The main objective of WP5 will be to evaluate both 1) the assistant's ability to increase professionals' capabilities to detect and mitigate these errors when they occur and 2) professionals' attitude towards the assistant, including trust, acceptability and interaction fluency. A secondary objective will be to investigate the impact of the simulation environments on participants' behavior.

Tasks

1. Data collection (M36-M42, ONERA and UCBL)
2. Data analysis (M30-M42, ONERA and LISN) : Investigating the impact of the assistant and investigating the impact of the simulation environment

Milestones

- Data collection completed (ONERA, UCBL) at **M42**

Deliverables

- **D5.1** Report on the data analysis (**M48**, ONERA, LISN)

Workpackage 6: Dissemination and Transfer

The objective of WP6 is to ensure the widespread dissemination and use of the findings of the IDEFIX project. All partners will be involved in WP6.

Tasks

1. Scientific publications
2. General audience dissemination
3. Presentation of the prototypes to professionals
4. Provision of free access to the materials

Milestones

- Web site (LISN) operational at **M6**
- Publications submitted at **M12**, **M24**, **M30**, **M36**, **M48**
- Pedagogical guide (IRBA) and access to the prototype (ONERA, Heudiasyc) online at **M42**
- Full access to the material (scenarios, anonymized data) at **M48**

Deliverables

- **D6.1** Website will all publications, communication material and scientific demonstrations, including the guide of pedagogical recommendations (**M48**, LISN and IRBA)

Workpackage 7: Coordination of the activities

We distinguish two main activities for coordination: scientific organization of the work and administrative tasks in relation to the ANR deliverables.

Tasks

1. Scientific management (M0-48, LISN)
2. Communication with ANR (M0-48, LISN)

Milestones

- M7.1 Kickoff meeting and full agenda (LISN) at **M0**
- M7.2 Consortium Agreement and Data Management Plan (LISN) before **M12**

Deliverables

- **D7.1** Intermediate scientific report (**M24**, LISN)
- **D7.2** Final scientific report (**M48**, LISN)
- **D7.3 to D7.6** Annual financial reports (**M12**, **M24**, **M36** and **M48**, LISN)