

Project Summary

The aim of OpenInterface is to design and develop an open source platform for the rapid development of multimodal interactive systems as a central tool for an iterative user-centred design process.

The increasing huge variety of possibilities for pure, combined, active and passive modalities (explicit and implicit interaction) is at the heart of the OpenInterface project in which we will define an open source repository of modalities that will be a significant instrument for the European multimodal domain.

In the domain of multimodal interaction, after the initial breakthrough phase ("put that there" paradigm) we are now at the stage of replication. Although several multimodal systems have been built, their development still remains a long and difficult task. It is now time to make a step change in the domain of multimodal interaction. The project promises to deliver that change, through the OpenInterface platform.

A central part of that change is:

1. to ground the development of multimodal interactive systems in a scientific understanding of multimodal interaction.
2. to provide a tool for implementing a truly iterative user-centred design process;
3. to turn the results into industrial standards by way of the platform.

Two testbeds (Large Information Space and Game)
Considering multimodal interaction on mobile device and with a pervasive environment

Two validators on mobile device (Large Information Space and Game)
Showing the transfer from research results to industrial standards

Open source platform
For developing multimodal interfaces

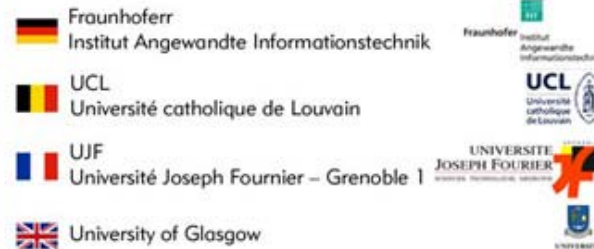
Extension of standards
For multimodal interaction

OI

Scientific understanding of multimodality
Including modality and multimodal characterization, innovative modalities, multimodal guidelines, empirical results from the in-laboratory and in-field « stress » tests of the testbeds and validators

OpenInterface Partners

Universities and Research Centers



Industrial and Private Companies



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Objective: Multimodal Interaction

The main objective of the OpenInterface project is to design, implement and test an open source platform for developing multimodal interaction:

- ➔ that handles a rich and extensible set of modalities,
- ➔ that enables quick replication,
- ➔ that enables a focus on innovation (new modalities or forms of multimodality),
- ➔ that supports dynamic selection and combination of modalities to fit the ongoing context of use,
- ➔ that enables iterative user-centred design.

The platform will embed a set of pure and combined modalities as reusable components and generic mechanisms for combining modalities.

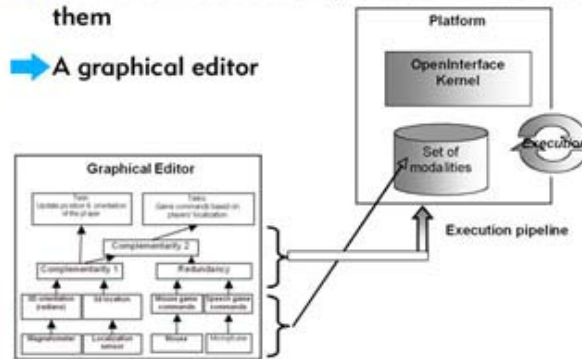
➔ **At design-time**, for specifying the multimodal interaction of a particular interactive system under design, the designer will reuse and assemble OI components. From this assembling, the code of the interaction part of the system will be generated. The open source platform will therefore allow rapid development of multimodal interaction by assembling components. It is then a central tool for supporting a truly iterative User-Centred Design (UCD) process by enabling the rapid development of early prototypes for exploration, prototypes of different design options, and testbeds for experimental evaluation. Moreover by supporting the exploration of new forms of multimodality, the platform will be an instrument for defining extensions to existing standards. As part of the OI project, our objective is to implement this path transferring research results to industry by extending existing standards.

➔ **At run-time**, the platform will include mechanisms for dynamic reconfiguration of the components in order to support dynamic adaptation of the interaction, such as changing the run-time parameter of a component (e.g. the sampling rate of an audio input device), replacing one modality component for a functionally equivalent one (e.g. functional equivalence of modalities).

OI Platform

The OI platform will include:

- ➔ **A runtime kernel**
- ➔ **A component repository**
- ➔ **Mechanisms to add components and assemble them**
- ➔ **A graphical editor**



OI kernel

The two key requirements for the OI kernel are:

- ➔ the required interoperability among heterogeneous software components
- ➔ the dynamic configuration of component network both at development-time and at run-time, enabling interaction adaptation (both adaptability and adaptivity).

Repository of interaction modalities and fusion/fission mechanisms

The platform will include a complete set of modalities and generic fusion/fission mechanisms as reusable components.

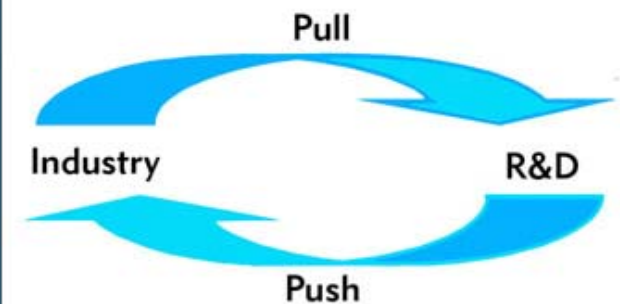
Graphical editor

A graphical editor will be designed and developed for enabling the graphical manipulation and assembling of components in order to specify the multimodal interaction dedicated to a given task of the interactive system at development-time and at run-time.

Technology Transfer

OpenInterface will provide a clear path for transferring research results to industry by adopting an incremental approach to extending current multimodal standards. The impact of OpenInterface will therefore be to speed up technology transfer between research and industry.

- ➔ From the industrial point of view, OpenInterface will extend existing industrial standards with novel interaction modalities and new forms of multimodality.
- ➔ From the research point of view, OpenInterface will enable the reuse of well-defined pure or combined modalities as building blocks.



The OpenInterface platform will be the instrument for this bi-directional push-pull approach on multimodal interaction between research and industry.