Using the AsTeRICS Configuration Suite, Assistive Configurations can be readily created by connecting functional blocks in a graphical editor.





The above example shows a working Camera-Mouse application: the Webcamera element computes the position of the user's face from the live camera images. The x- and y- coordinate outputs are linked to the Mouse element, which sets the mouse cursor position accordingly. A Binary Switch element creates mouse clicks as an external button is pressed. Using additional elements, the behaviour of this model can be modified, e.g. in terms of acceleration, sensitivity or click type selection.

An open source repository is available on the project's web site. Models for different use cases and plug-ins for new sensors and actuators are also available on the project web site.

One of the many input options for the AsTeRICS system is ENOBIO (Figure 5), a wearable system which can be used to control AsTeRICS via EEG (electroencephalogram), EMG (electromyogram) and EOG (electrooculogram). ENOBIO can be used as sensor for Brain Computer Interfacing (EEG-BCI) or muscle triggered interaction.



Figure 5: ENOBIO

If you are interested in Assistive Technology development, would like to get more information on AsTeRICS components, or would like to create an AsTeRICS plug-in to connect your sensor or actuator with the AsTeRICS platform – please contact us.

For more information please check the project's website at www.asterics.eu or contact us via asterics-info@ki-i.at.

## Contact:

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This project is partially funded by the European Commission under the Seventh Framework Programme for Research and Technological Development (FP7, Project runtime 1.1.2010 – 31.12.2012). G.A.No. 247730





Assistive Technology Rapid Integration & Construction Set



## Assistive Technology Rapid Integration & Construction Set

A flexible and affordable construction set for developing user driven Assistive Technologies (AT) solutions by combining emerging sensor techniques like Brain-Computer Interfaces and computer vision with basic actuators.

- **Flexibility** in setting up a workable and convenient device set for a disabled person
- Adaptive configurations for changing circumstances (fatigue, environment, age, disease)
- Many standard configurations for typical use cases
- Integrating various **sensors** (switches, special mice, joysticks, BCI devices etc.)
- Connecting to many **actuators** (PC, IR enabled home appliances, etc.)

The goal of the AsTeRICS Project is to develop a construction set for assistive technologies which can be adapted to the motor abilities of end-users to overcome technology accessibility problems derived from limited mobility in their upper limbs. AsTeRICS is intended to allow access to different devices such as PCs, cell phones and smart home devices via suitable sensors connected to the Personal Platform.

This shall be achieved with a system architecture composing of modular functional hardware and software components well suited for utilisation in various Assistive Technology applications:



Figure 1: Concept of the AsTeRICS modular Assistive Technology system

The system supports many different sensors and actuators which can be combined as desired. Sensors include camera based head- or eyetracking, Brain- and Neural Computer Interfaces (BNCI), sip/puff- and flex sensors, special mice, joysticks and digital switches.



Figure 2: Some sensors supported by AsTeRICS

Actuators include mouse- and keyboard emulation for computer use, infrared and smart home control, mobile phone access and mechatronic manipulators.

A configurable On-Screen Keyboard (OSKA) enables user interaction and parameter modification via the touchscreen.



Figure 3: OSKA with a keyboard for controlling a stereo set