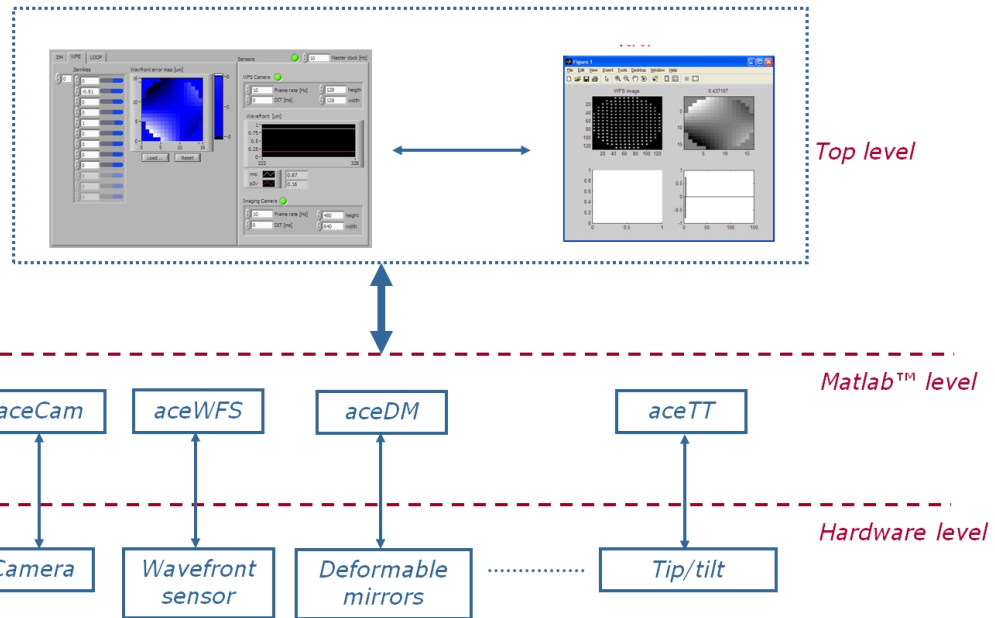# ALPAO Core Engine

ALPAO Core Engine (ACE) is a completely new software architecture for adaptive optics. Thanks to ACE, you will be able to develop instruments using adaptive optics rapidly and efficiently.

The ALPAO Core Engine (ACE) is an open, flexible and ergonomic architecture featuring unrivalled performances. This modular architecture allows users to use only the modules they need while working from MATLAB®. Performance has not been sacrificed at the expense of ease-of-use since it is possible to close the loop up to 400Hz by using ALPAO's deformable mirrors and wavefront sensors.
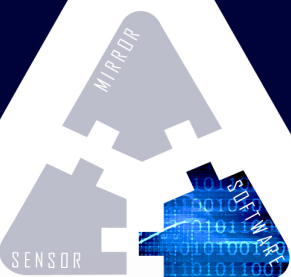
Moreover, flexibility means that the ACE adapts to the application. Indeed, in some applications, it is possible to dispense with a wavefront sensor and use the signal coming from a camera or a photo diode. Thanks to the ACE, you can be certain of having a system that is tailored to your application.

The ALPAO Core Engine comes with convenient built-in documentation including examples.

Top level

Matlab™ level

| aceCam | aceWFS | aceDM | aceTT |

Hardware level

| Camera | Wavefront sensor | Deformable mirrors | Tip/tilt |

Recommended configuration: 4Gb of RAM, 100Mb of disk space, MATLAB® R2009b and higher versions

ALPAO Core Engine (ACE)
PRODUCT DATA SHEET

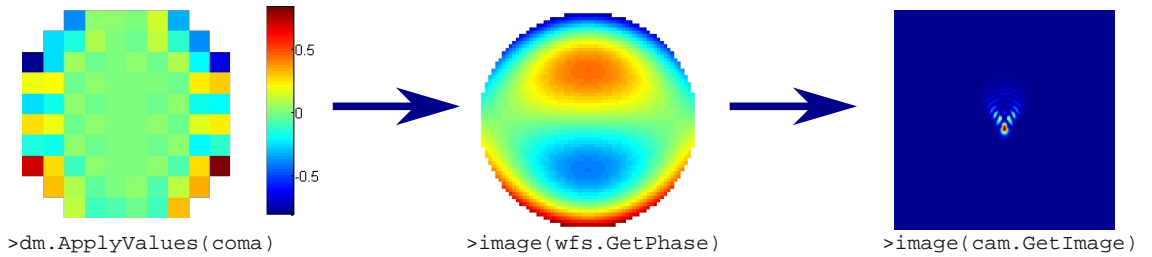## Create custom experiments

ACE is an object-oriented toolbox for MATLAB® allowing to access all the opto-electronic devices by built-in functions. Automated experiments and advanced control set-up are developed easily.

```
>dm.ApplyValues(coma)
```
```
>image(wfs.GetPhase)
```
```
>image(cam.GetImage)
```

## Access to all the data in real-time

You will be able to process your data in real-time and export the results (display and values) in a wide choice of file formats (ASCII, .xls, .tif, .jpg, etc.).

Target (µm)    Mirror command

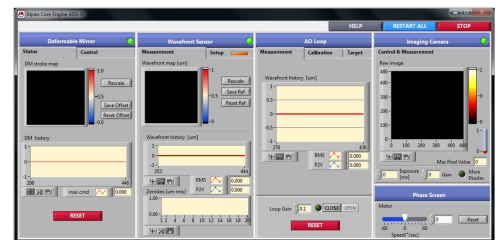*Custom figure generated and exported in a graphic file.*
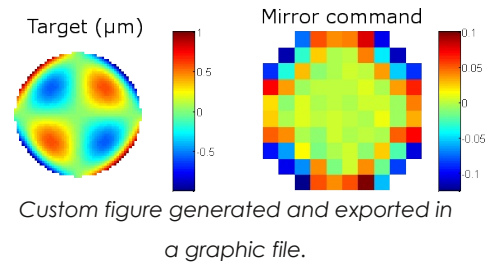
## Optimize your AO system to your needs

With the ALPAO Core Engine, you can work on the wavefront sensor data or with your scientific detector. Adaptive optics without wavefront sensors and correction of non common path aberrations are easily implemented.

Aberration    Corrector    Image

**ALPAO Core Engine**
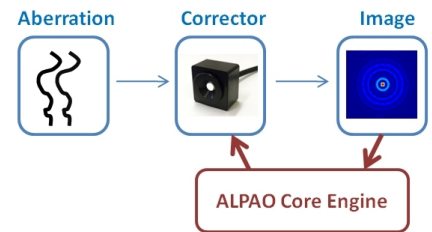
## Build your own graphical user interface

You can use the Matlab® communication capabilities to interface your AO set-up with various softwares. For example, you can create graphical user interfaces calling ACE via Matlab®.