



# ONERA

THE FRENCH AEROSPACE LAB

[www.onera.fr](http://www.onera.fr)





# LABSIM - Facilities

# LABSIM-> Facilities

Actually, we maintain three physical means :

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**PYCSHEL**

*prototyping & conception of systems for helicopters*

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**SCHEME**

*prototyping bench for innovative interfaces*



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**PYCSHEL**

*prototyping & conception of systems for helicopters*



**SCHEME**

*prototyping bench for innovative interfaces*



**LIPS**

*laboratory for pilot/system interaction studies*

# LABSIM-> Facilities





## PYCSHEL



This bench stand for **P**rotot**Y**ping & **C**onception of **S**ystems for **HEL**icopter. It allows the researcher to design, prototype and test systems for Helicopters. It is composed of a CAVE for immersive display, four tactile-screen for avionics and two seated cockpit : one with passive helicopters sticks and another one with active side-sticks.





## SCHEME

This bench is composed of a cylindrical 180° immersive display & a single operator station. It is primary used to design/prototype new interaction means & study the subject behaviour & cognitive state through bio-physiological metric such as eye-tracking, mo-cap, ECG, EMG, EEG & GSR. Moreover, this bench is the LABSIM hybrid-reality bridge to real-world UAV.



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## LIPS

This laboratory is mainly used for the human-system interaction studies. It allows the interaction of up to 10 operators (ATC's, pilots, UAV payload operators, UAV pilots,...) in a complex scenario with up to 128 vehicles. It grant the possibility to study the interactions between the operators and the systems or between the different operators



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*Multi-touch screen close up with simplified avionics*

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*Multi-touch screen close up with simplified avionics*



*CAVE overview with LABSIM VESA image generator*





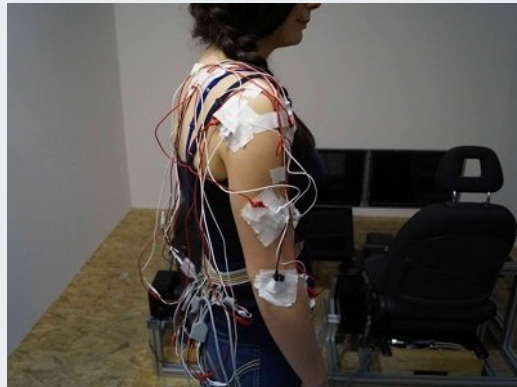
# LABSIM-> Facilities



*Multi-touch screen close up with simplified avionics*



*CAVE overview with LABSIM VESA image generator*



*subject equipped with the Biopac © EMG*

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*Multi-touch screen close up with simplified avionics*



*CAVE overview with LABSIM VESA image generator*



*subject equipped with the Biopac © EMG*



*same subject equipped with the Biopac © EMG and the Optitrack © Flex13 mocap sensors*

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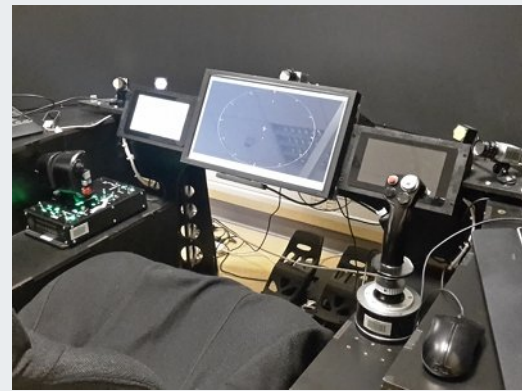
*Simpit Icarus 180 Avenger © immersive display  
equipped with the SmartEye © eye tracker back  
station*



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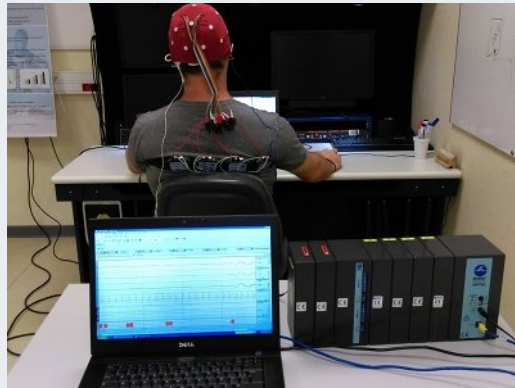


*Close-up of the SCHEME immersive cockpit*

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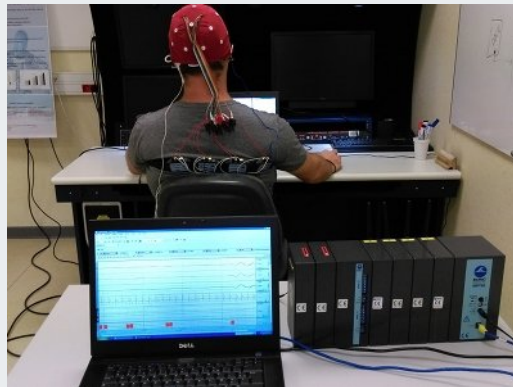


# LABSIM-> Facilities



*Simple experiment with the Biopac © EEG*

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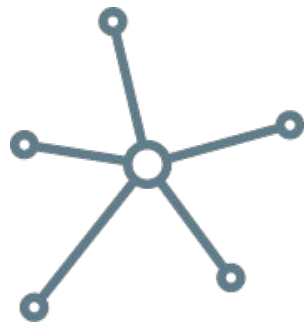


*Simple experiment with the Biopac © EEG*



*Overview of the multi-UAV mono-operator fusion ground-station equipped with the Biopac © ECG*





# LABSIM

<http://www.labsim.github.io>