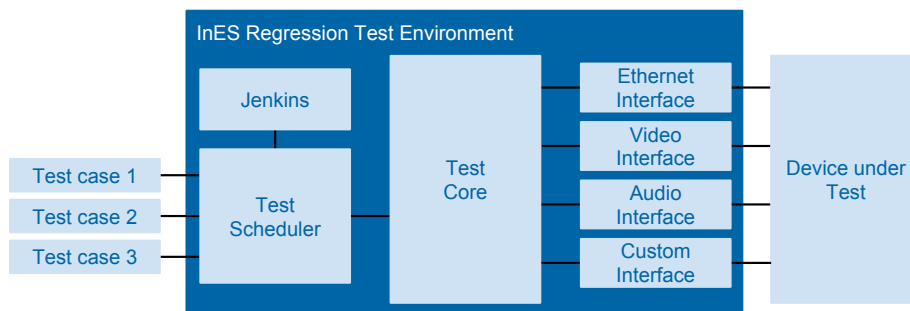# InES Regression Test System

The InES Regression Test System provides a platform to design and execute tests. It provides a wide range of interfaces to interact with the system under test. This includes interfaces to analyse and manipulate Ethernet traffic as well as interfaces to generate and analyse video and audio signals. The test system is based on a Linux operation system and can therefore be run on multiple platforms. The individual test cases are described in a Python script and can be run manually or automatically on the test system. The test system provides an interface for Jenkins (jenkins-ci.org), an application for building and testing software continuously.

The InES Regression Test System provides following advantages:

- Quality improvements due to regression testing

- Automation of the testing process

- Simplified test implementation

- Individually adaptable to provide the needed test capabilities

The InES Regression Test System provides the interfaces to the system under test as well as the classes to control and manage the test progress. The user just needs to define the test cases to be proceeded.

Quality improvements due to regression testing

A regression test is used to test all functions of a system to guarantee full functionality. The test system is feed with a big amount of test cases covering the full functionality of the system under test. The test cases can be based on the specified function as well as on reports by customers or partners. A new software or hardware release of the system has to pass all test cases before being published, therefore provides each new release an improvement in quality.

The InES Regression Test System provides tools to organize and manage the regression test. It provides a real time feedback to supervise the testing progress and summarises the results in a PDF document.

```
Test case
```
```python
for delay in range(1000):
    self.add(VideoDelayTest(source = HDMI, resolution = '1080p', expectedDelay = 100+delay)
    self.add(Network(networkDelay = delay)
```
```
Test results
```
```
Video Delay Test
--------------------
[OK] Video Delay = 96
[FAILURE] Video Delay = 127 (expected 110)
```

The test cases are written in Python. The execution of the test cases provides simply readable results.

Automation of the testing process

The InES Regression Test System provides an interface for Jenkins, a widely used system for building and testing of software. The interface integrates the tests into Jenkins alongside the building steps for the software. This allows to automatically compile the software, load it into the target hardware and run the tests on the system without any need of human interaction. Jenkins provides a web interface in which regression tests can be controlled and monitored. Like this it is possible to fully control the whole process of building and testing remotely from any PC, laptop or tablet.

The Jenkins interface allows to easily supervise and control the testing process.

Simplified test implementation

The InES Regression Test System provides the interfaces to the target system as well as tools to schedule and execute the tests. The user just needs to describe the test cases to be executed and provide it to the test system. As description language is Python used.

The test system can be installed on a PC or an embedded system. It is also possible to split the test system over multiple platforms. The communication between the different platforms is realized over Ethernet.

InES Regression Test System based on an embedded system. It is connected over Ethernet to the local network, therefore it is possible to control the tests from any network capable device.

Individually adaptable to provide the needed test capabilities
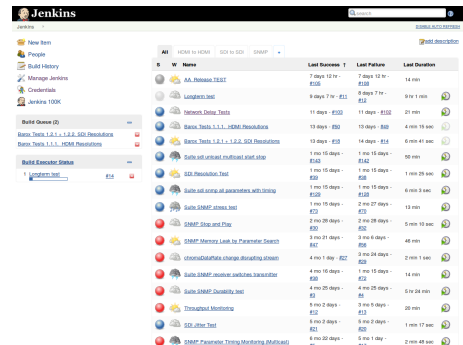
The InES Regression Test System is build up modular and therefore can be individually adapted for the needed interfaces of the system under test. Not used interfaces can be deactivated to reduce the power and memory requirements of the testing system. It also provides the possibility to add new or extend existing interfaces to match the requirements of the system under test.

PC based test setup for a high definition video and audio transmission over Ethernet. The test system simulates on the PC all the video/audio sources and sinks as well as an Ethernet network.

Contact Information

ZHAW Zürcher Hochschule fuer Angewandte Wissenschaften
Institute of Embedded Systems (InES)
Technikumstrasse 9
CH-8401 Winterthur

Tel.: +41 (0)58 934 75 25
Fax.: +41 (0)58 935 75 25

E-Mail: hans.gelke@zhaw.ch
Homepage: http://www.ines.zhaw.ch