

# FLEXSTAND



# Morten Pedersen

Chief Project Manager  
Test Solutions



- B.Sc.E.E, Aarhus, Denmark (1999)
- Telital R&D Denmark A/S (1999->2003)
  - HW and SW development on mobile phones test systems.
- CIM Industrial Systems A/S (2003→)
  - SW and HW development
  - Project Management
  - Resources Management
  - TestStand & LabVIEW certified



# Agenda (55 min.)

- Introduction to CIM Industrial Systems A/S
- Introduction to FlexStand
- TestStand API
- Application architecture
- Plug-ins (Templates, Palettes)
- Demo 1
- More features
- Demo 2



# CIM Industrial Systems A/S

- Computer Integrated Manufacturing

- Test Solutions (15)



- Test & Measurement solutions

- Control and simulation solutions

- Software Solutions (10)

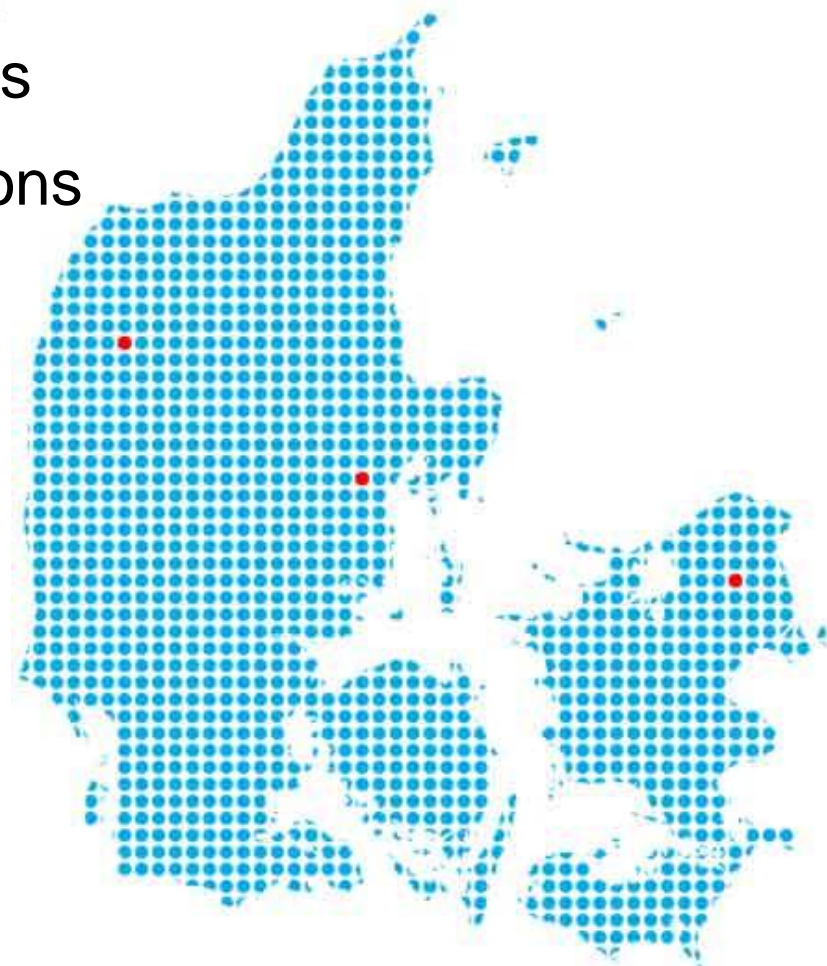


- Intranet and DB solutions

- Product SW developement

- Turn key solutions

- Consultancy assistance

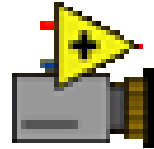
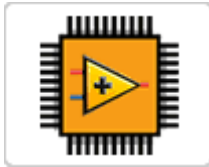


# LV and TestStand Services

Europe's Leading  
in NI LabVIEW and NI TestStand



# NI Technology knowledge in Test Solutions



CIM Industrial  
Systems A/S





# FLEXSTAND

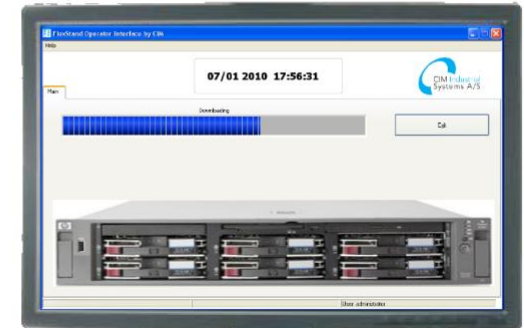
PCB test station



Final test station



Download station



FlexStand framework loaded with different plug-ins

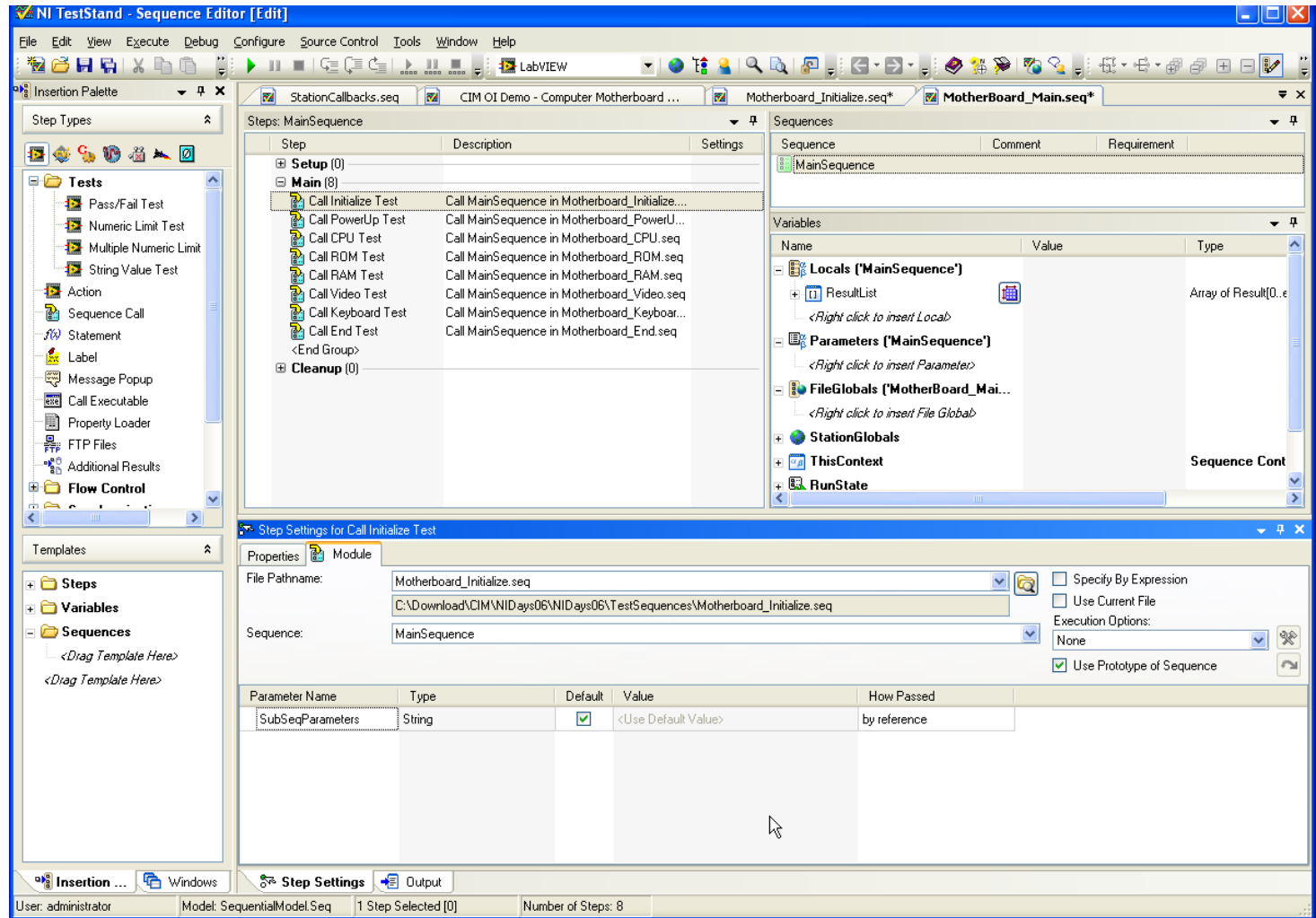


# TestStand and Operator interfaces

- What is an OI in Teststand? (Editor v.s. OI)

TestStand  
Editor →

Used to  
create and  
edit test  
sequences





# TestStand og Operator interface

- Operator interface

Used to  
execute test  
sequences.  
Typically in a  
production line.

FlexStand Operator Interface by CIM

File Edit Help

14/04 2009 10:40:26 Product ID 125-98 Order No. 15833-A #Products Tested 524012

Serial No. 25799 Batch ID 547-B #Products Failed 4

Fall-off [ppm] 7.63

CIM Industrial Systems A/S

Main Sequence File Execution Report

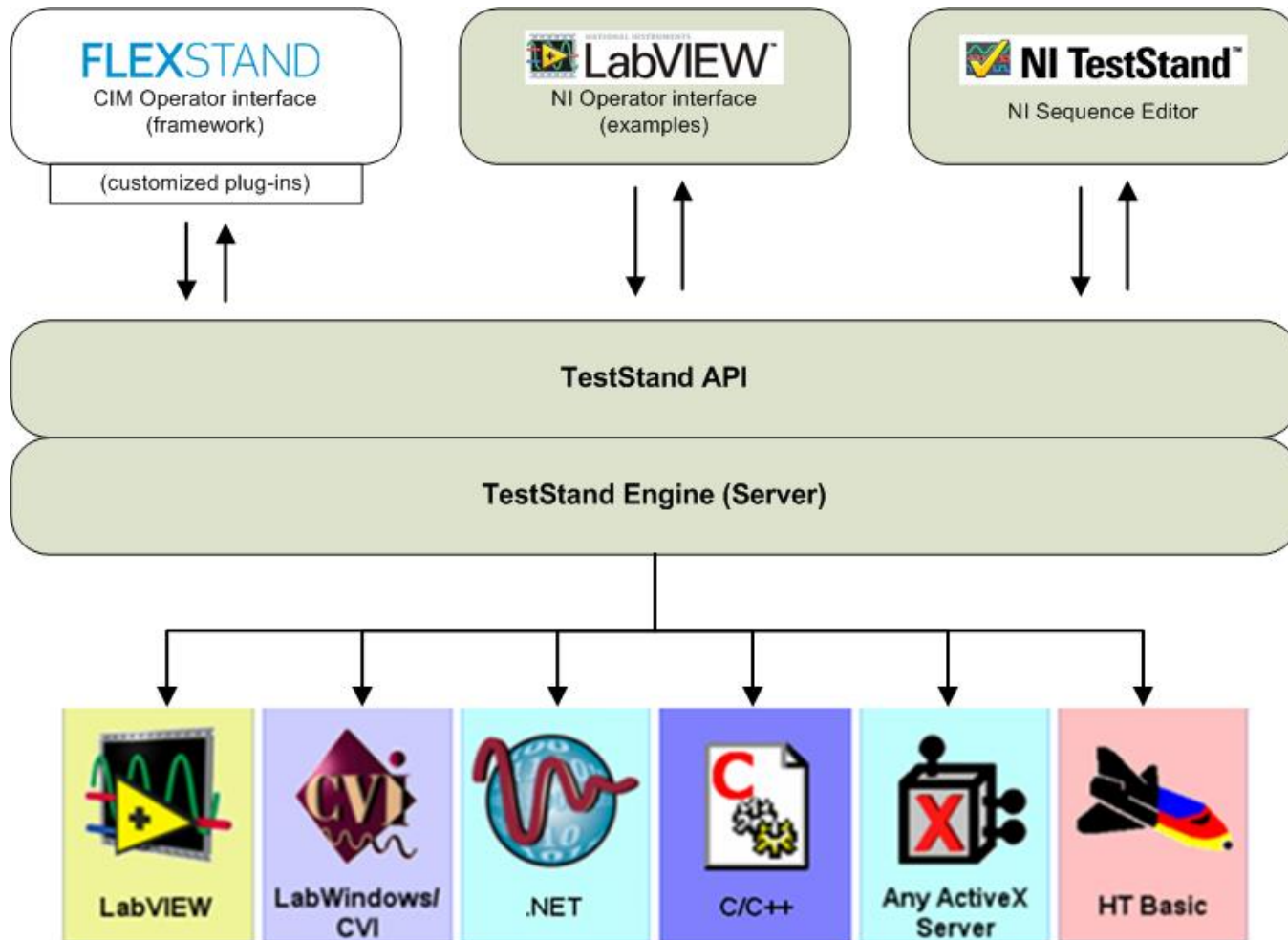
| Name             | Low | Value   | High  | Status  |
|------------------|-----|---------|-------|---------|
| Setup (0)        |     |         |       |         |
| Main (6)         |     |         |       |         |
| Label 1          |     |         |       | Done    |
| Wait             |     |         |       | Skipped |
| Powersupply test | 5   | <= 5.34 | <= 11 | Passed  |
| Label 2          |     |         |       | Done    |
| FanTest          | 9   | <= 10   | <= 11 | Passed  |
| Wait             |     |         |       | Done    |
| <End Group>      |     |         |       |         |
| Cleanup (0)      |     |         |       |         |

Open Sequence File... Test UUTs Break Exit

Test File 1.seq MainSequence User: prh

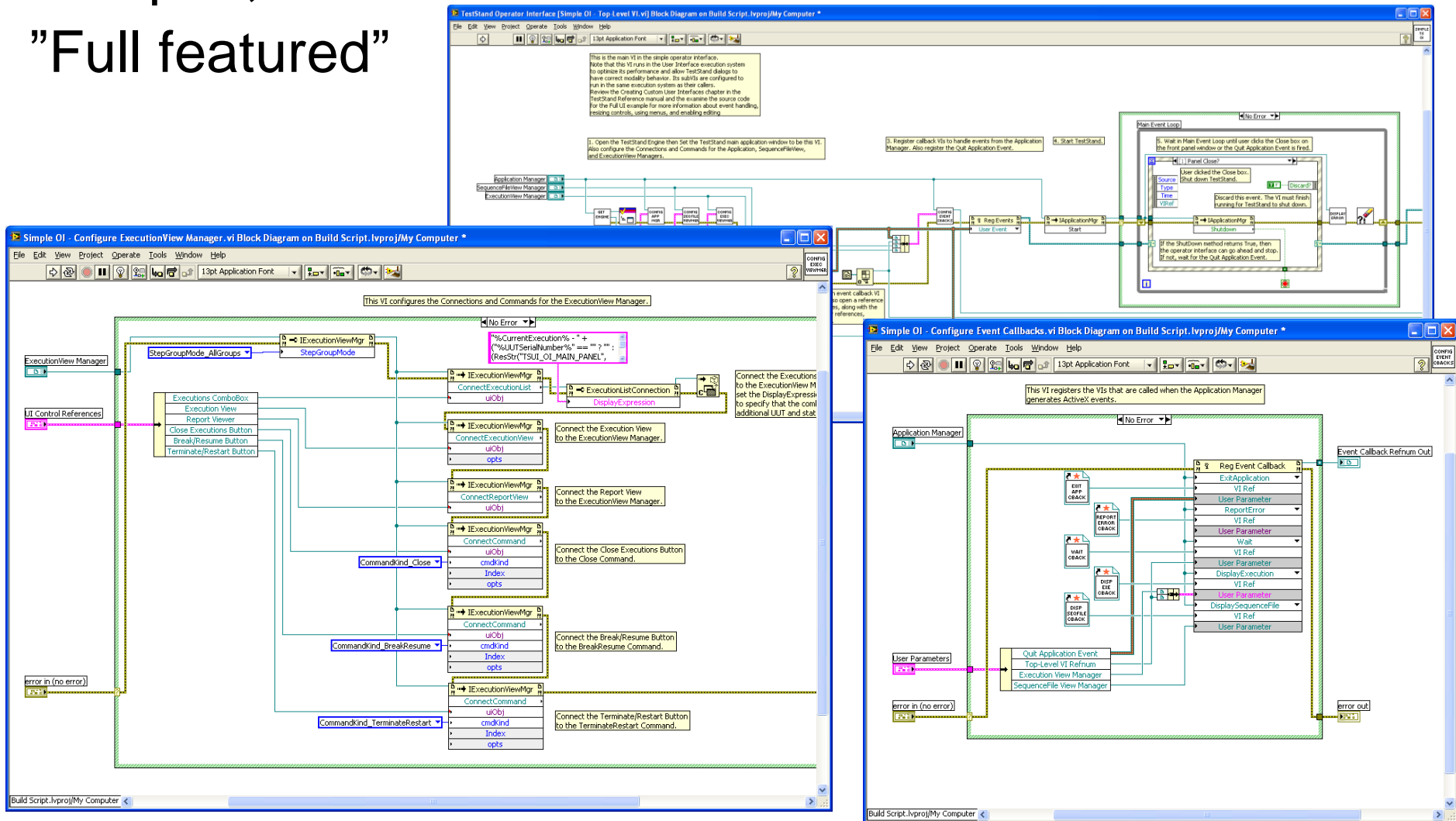
Systems A/S

# TestStand and Operator interfaces



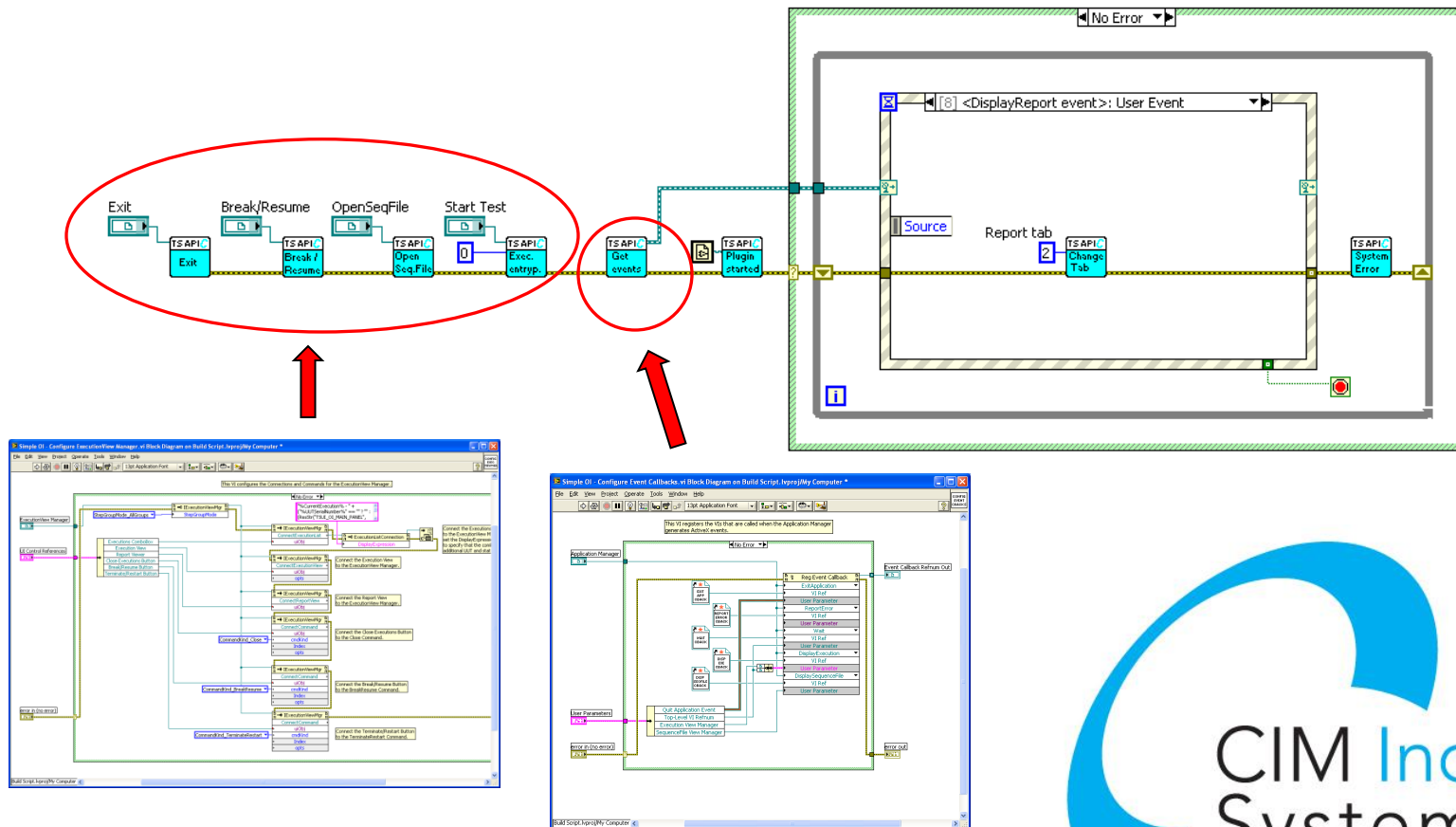
# NI TestStand examples:

"Simple",  
"Full featured"

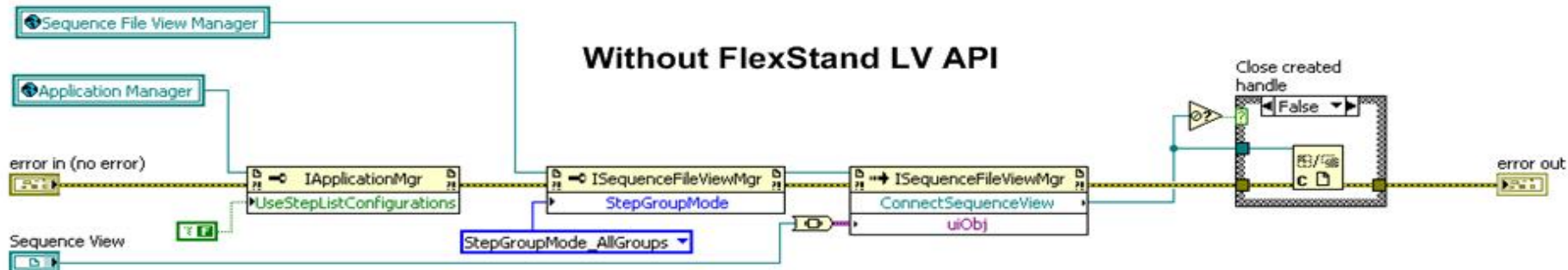
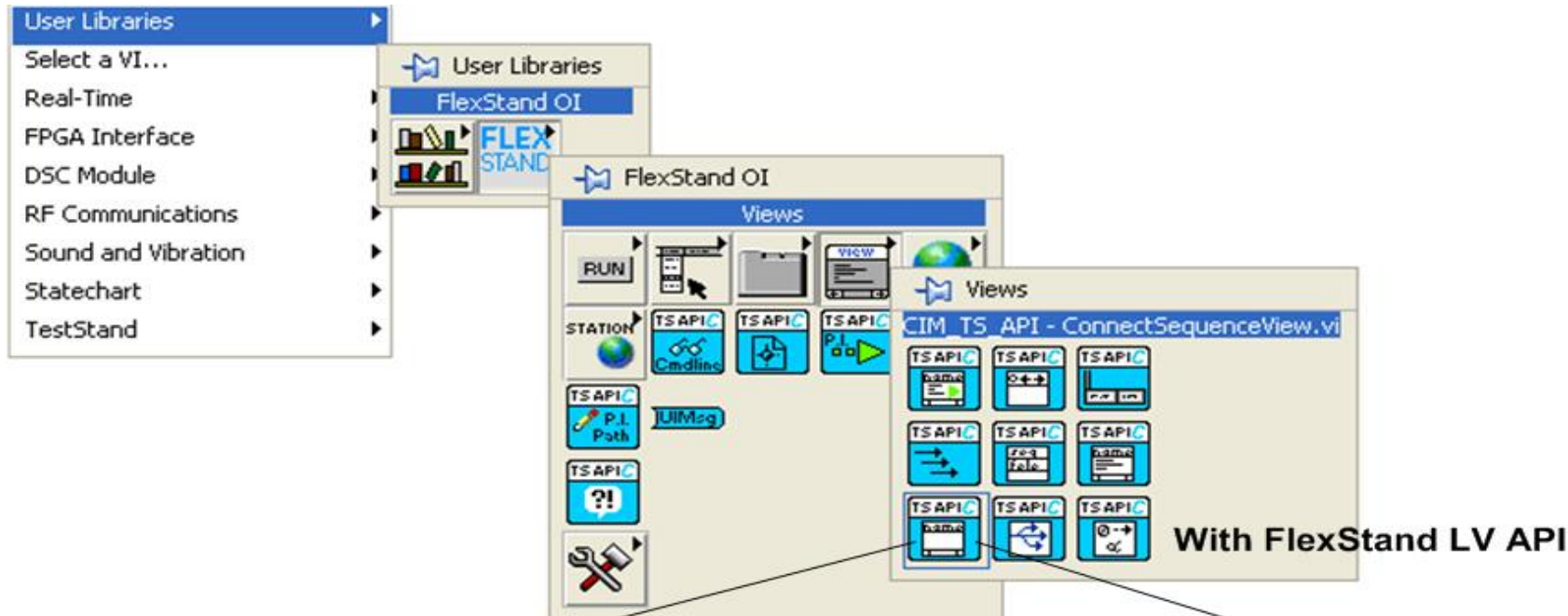


# FLEXSTAND OI API examples:

- Hides advanced TestStand operations in VIs with a simple interface



# FLEXSTAND LabVIEW palette



# FLEXSTAND OI Design

Diagram illustrating the FLEXSTAND OI Design interface components:

- Your menu:** Points to the menu bar (File, Edit, Configure, Help).
- Your tabs:** Points to the tabs (Main, Sequence File, Execution, Report, Instructions).
- Your logo:** Points to the CIM Industrial Systems A/S logo.
- Integrated dialogs:** Points to the "Passed" dialog box.
- Your main plugin:** Points to the main test execution area.
- Your bottom plugin:** Points to the status bar.

The interface displays a test sequence table with columns: Name, Low, Value, High, and Status.

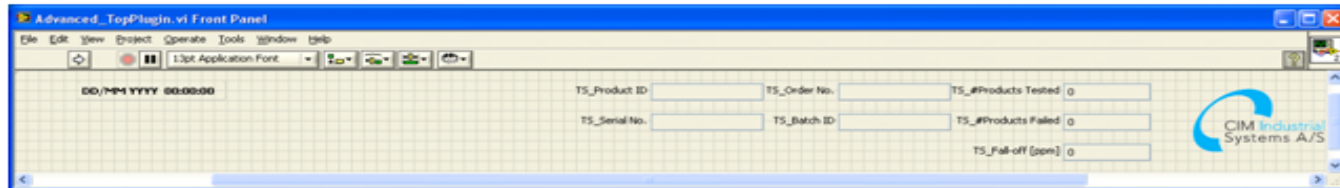
| Name                         | Low | Value | High | Status |
|------------------------------|-----|-------|------|--------|
| Setup (2)                    |     |       |      |        |
| Simulation Dialog            |     |       |      | Done   |
| Turn Vacuum Table On         |     |       |      | Done   |
| End Group                    |     |       |      |        |
| Main (13)                    |     |       |      |        |
| Powerup Test                 |     | True  |      | Passed |
| PSU NoiseTest                |     | True  |      | Passed |
| RAM Test                     |     | True  |      | Passed |
| Post URL to Instructions Tab |     |       |      | Done   |
| IF                           |     |       |      |        |
| CPU Test                     |     | True  |      | Passed |
| ROM Test                     |     |       |      | Passed |
| Video Test                   | 0   | < 5   | < 10 | Passed |
| Keyboard Test                | 5   | < 6   |      | Passed |
| IF                           |     |       |      |        |
| CPU Diagnostics              |     |       |      | Done   |
| ROM Diagnostics              |     |       |      | Done   |
| RAM Diagnostics              |     |       |      | Done   |
| Video Diagnostics            |     |       |      | Done   |
| Keyboard Diagnostics         |     |       |      | Done   |
| End                          |     |       |      | Done   |
| Else                         |     |       |      | Done   |
| Powerup Diagnostics          |     |       |      | Done   |
| End                          |     |       |      | Done   |
| End Group                    |     |       |      |        |
| Cleanup (1)                  |     |       |      |        |
| Turn Vacuum Table Off        |     |       |      | Done   |
| End Group                    |     |       |      |        |

The main plugin area displays a large green "Passed" message, a "Scan Serial Number" field, a "Serial Number" field containing "354-652-1-8", and a "Start Test" button. Below the serial number field is a photograph of a circuit board with a barcode label.

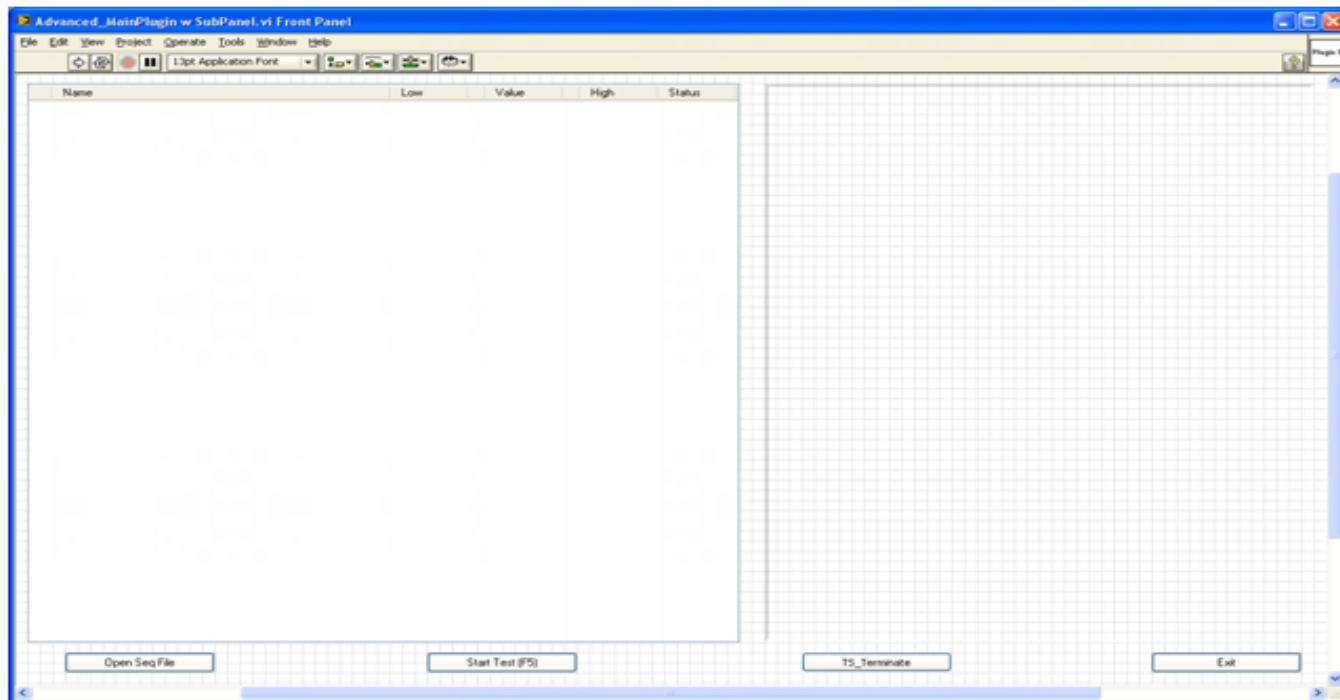
The status bar at the bottom shows: FlexStand OI Design - Advanced - Computer Motherboard Te... MainSequence, User: administrator, 100%.



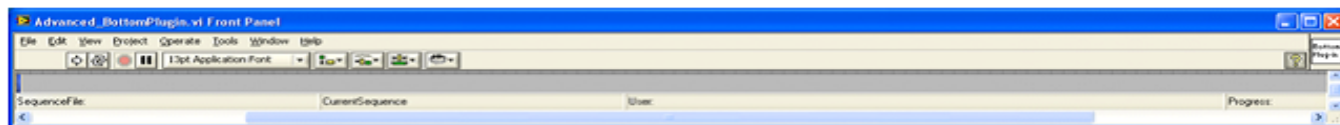
# FLEXSTAND OI Design



← Top plugin

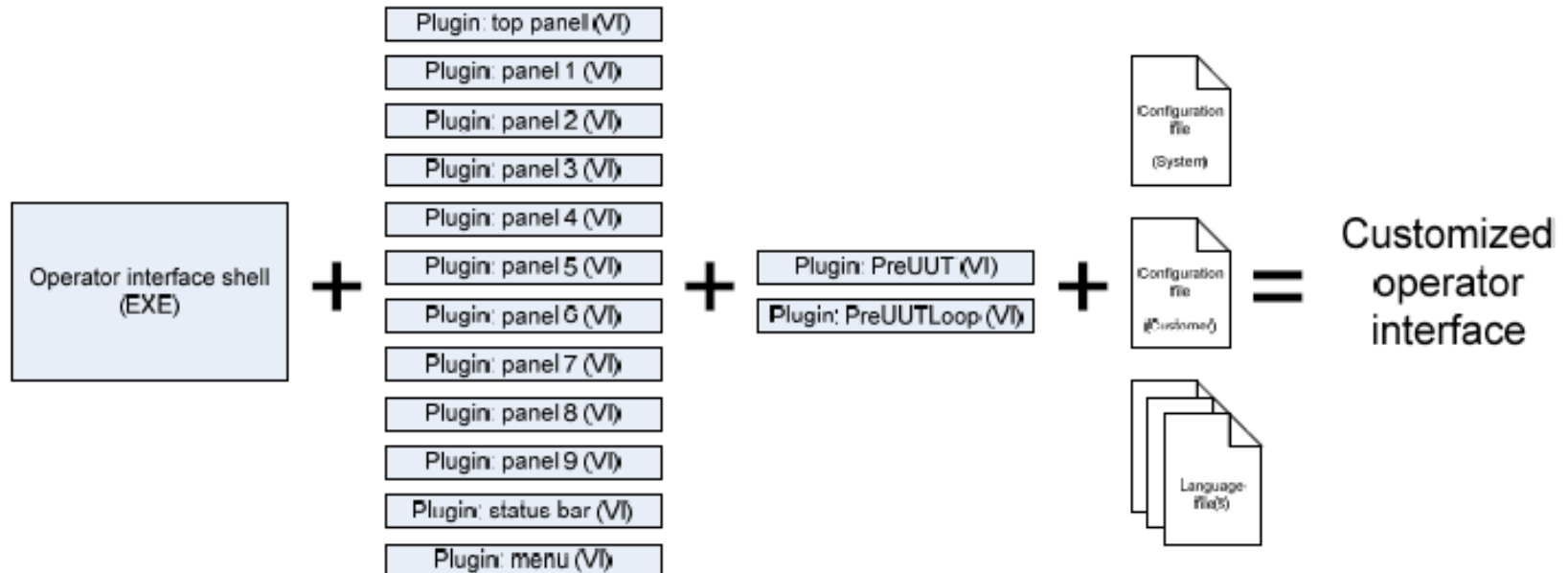


← Main plugin

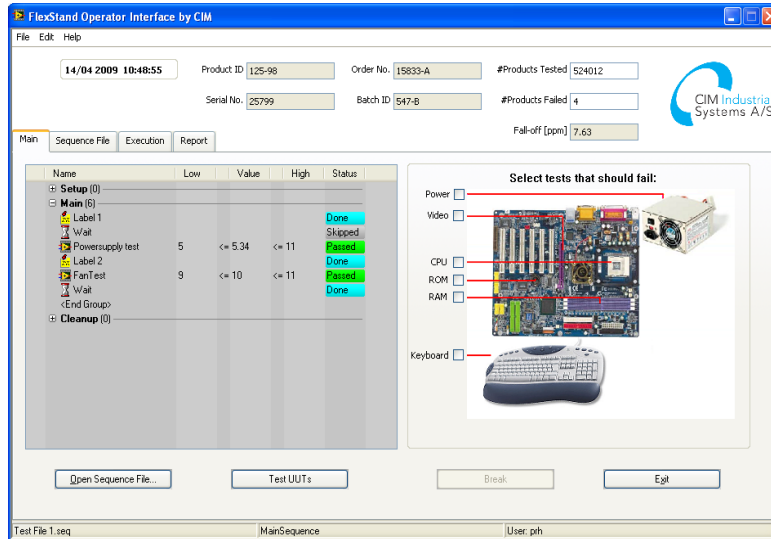


← Bottom plugin

# FLEXSTAND OI Design



# FLEXSTAND OI design



← Top Plug-in

← Main Plug-ins

← Bottom Plug-in

|                     |
|---------------------|
| Top panel plugin    |
| Main panel plugin   |
| Bottom panel plugin |

|                     |
|---------------------|
| Top panel plugin    |
| Main panel plugin   |
| Bottom panel plugin |

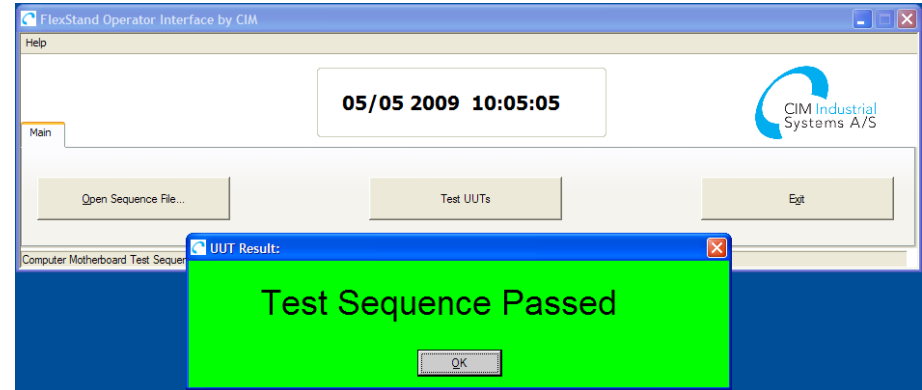
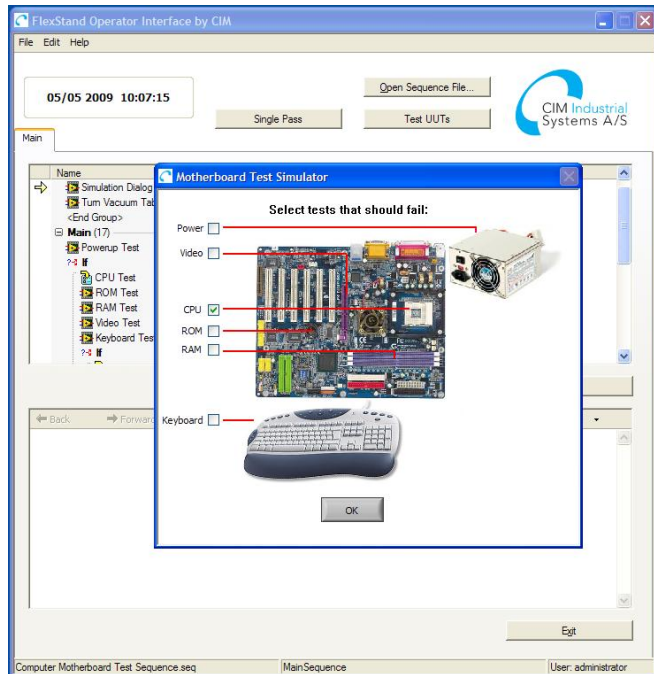
|                     |
|---------------------|
| Top panel plugin    |
| Main panel plugin   |
| Bottom panel plugin |



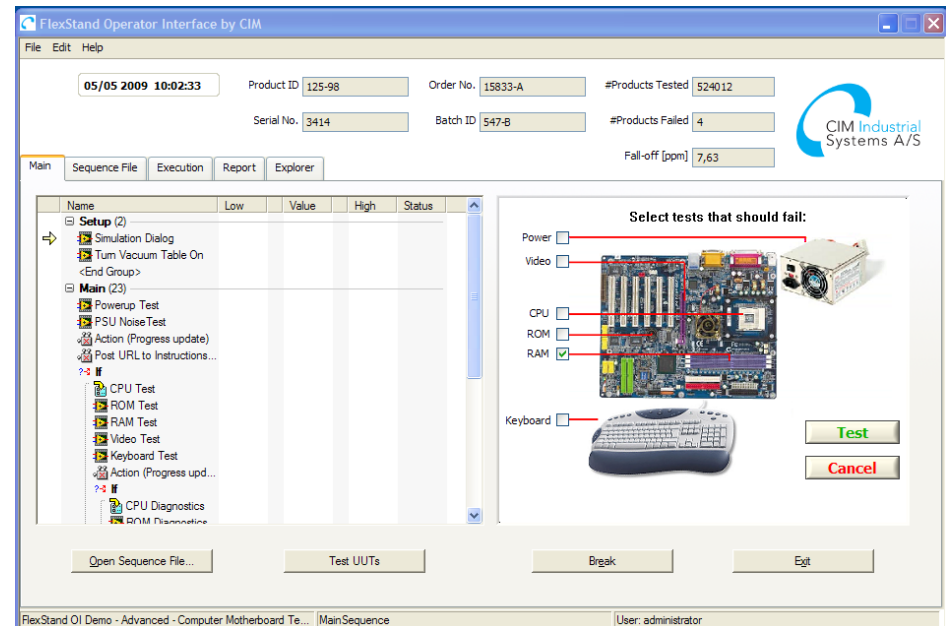
# Shipped examples

Simple

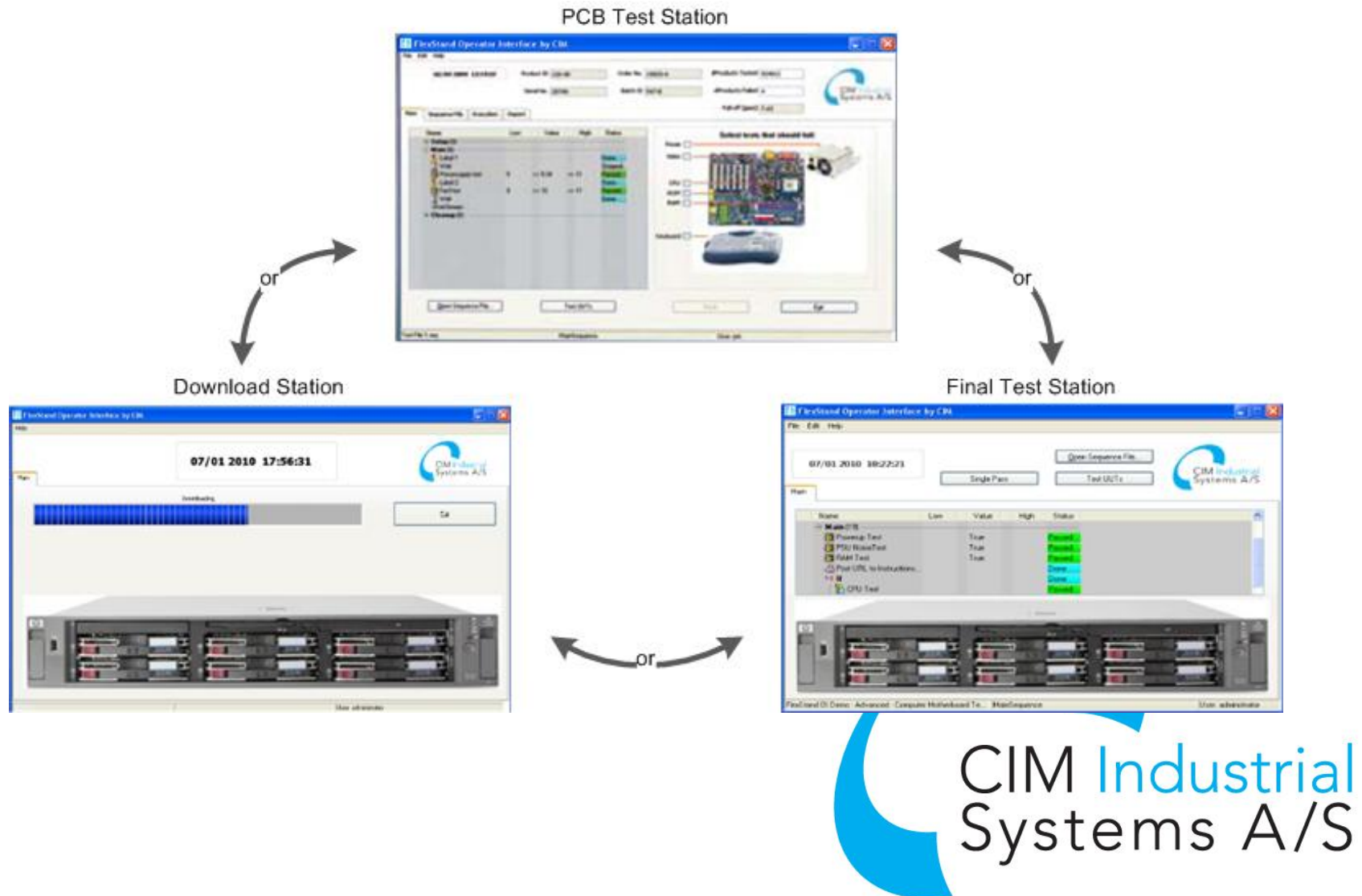
Standard



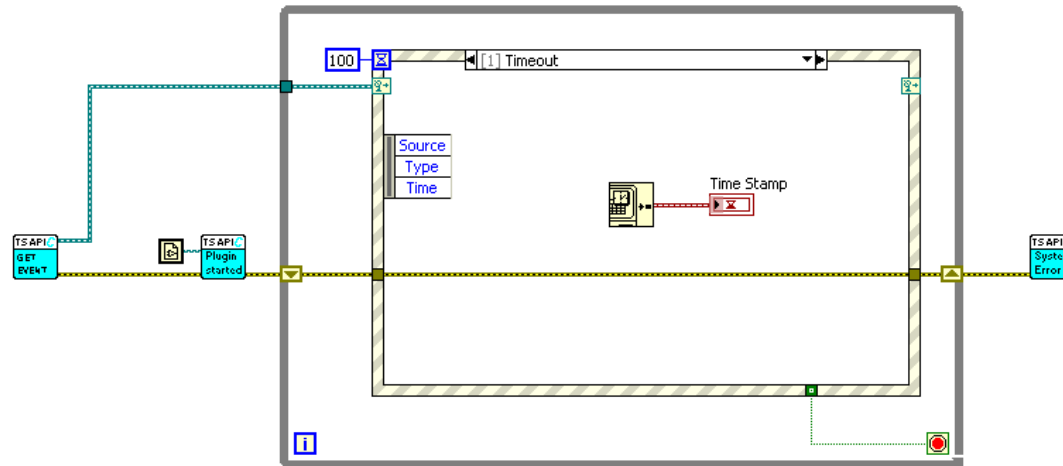
Advanced



# Practical examples



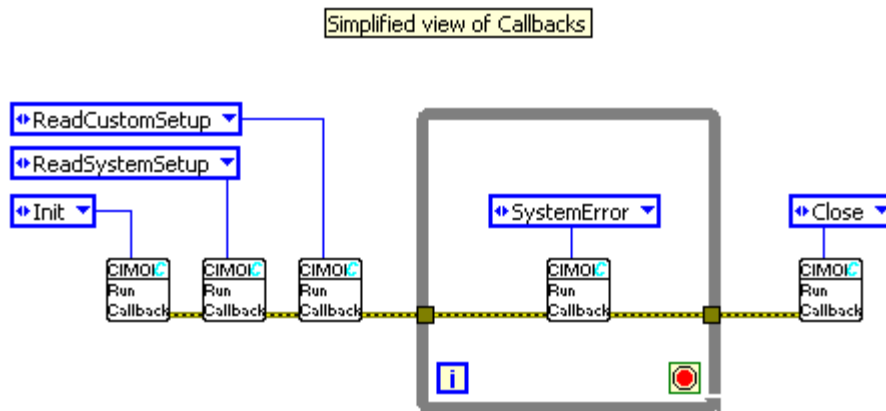
# Demo 1





# FLEXSTAND Callback VIs

- Init
- Read system setup
- Read custom setup
- Close
- System error



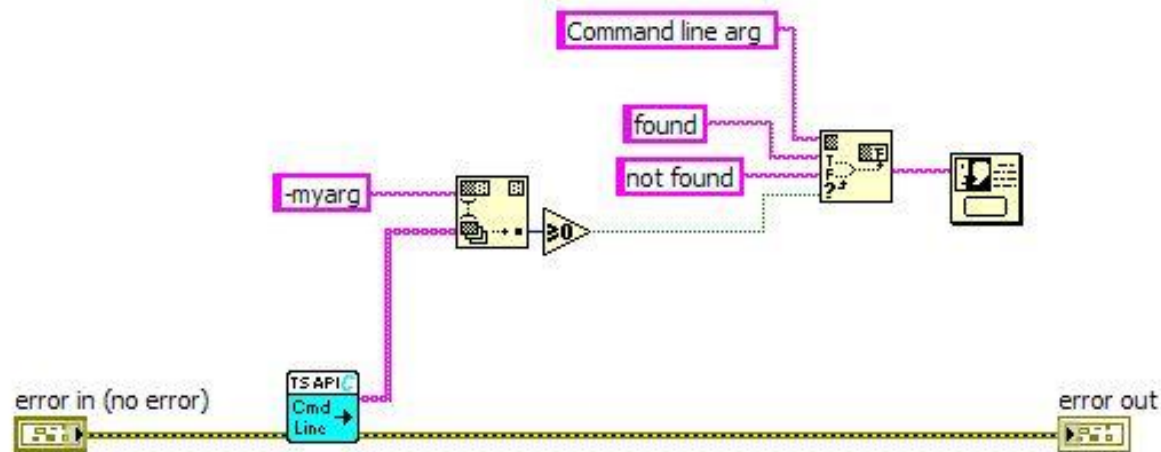
# Command line parameters

- Handles TestStand og LabVIEW cmd line parameters
- Can be used for:
  - Automatic load and execution of sequences
  - Automatic change between different OIs
  - Custom arguments
- Eksempler:
  - FlexStand\_OI.exe –run MainSequence c:\Mytest.seq
  - FlexStand\_OI.exe –simple
  - FlexStand\_OI.exe –myarg



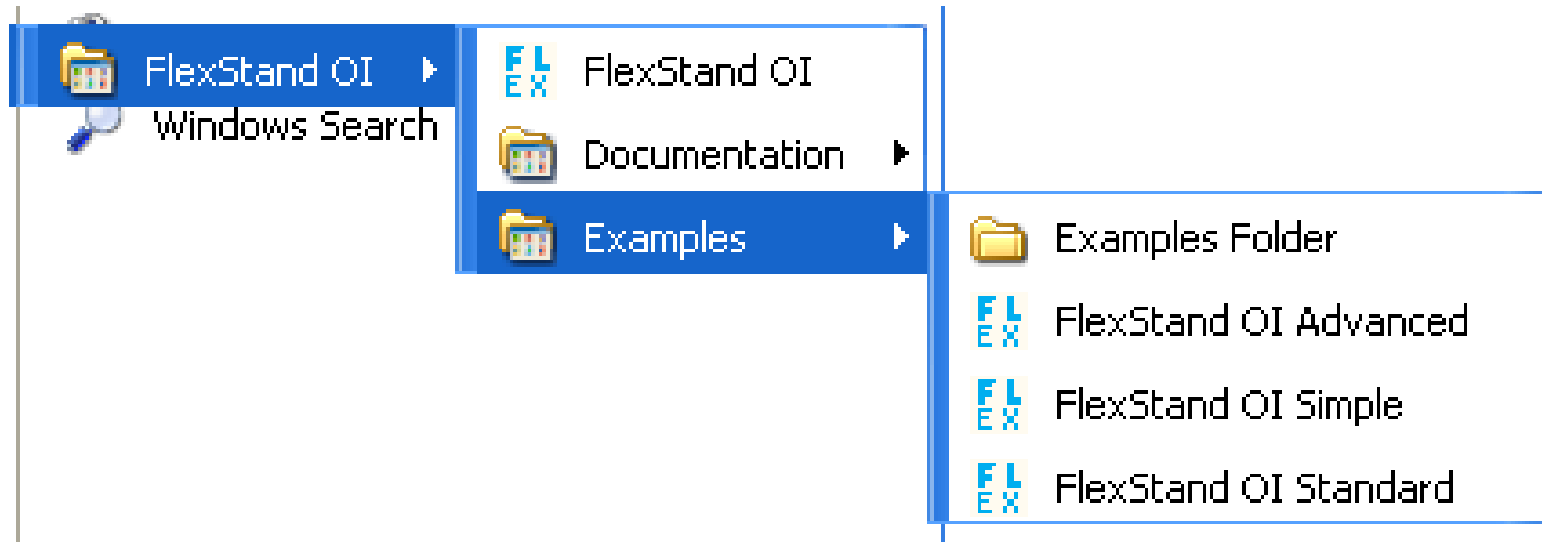
# Command line parameters

FlexStand\_OI.exe -myarg



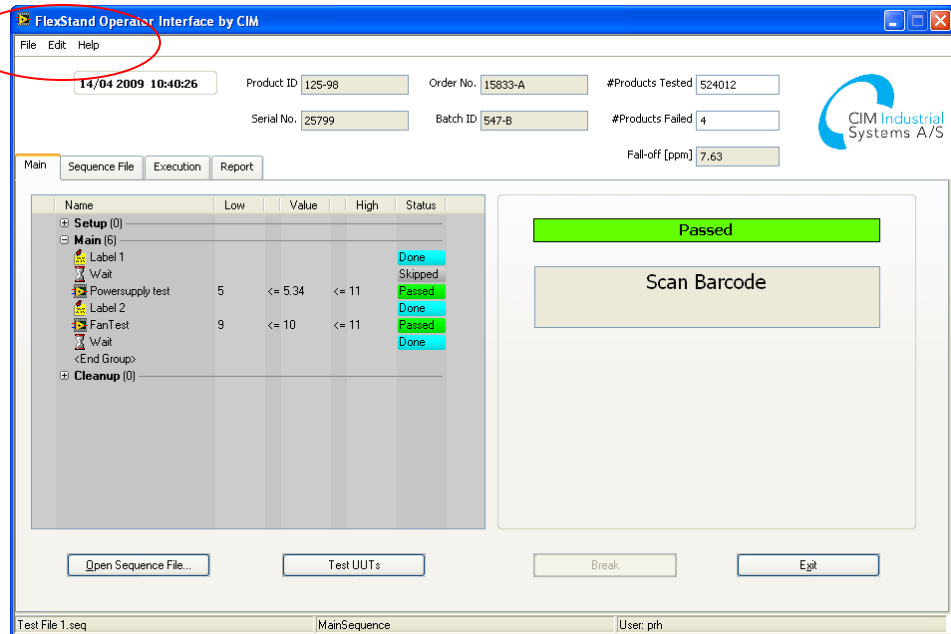
ReadCustomSetup callback

# Command line parameters



# Custom menu

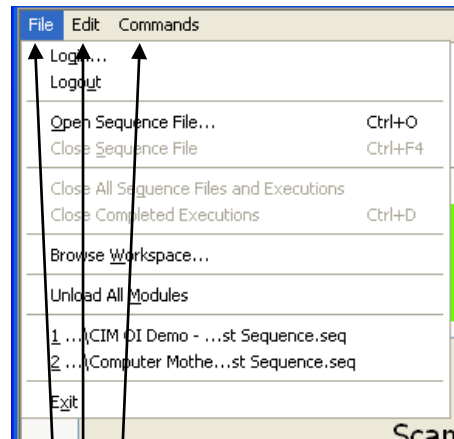
XML file



Supports TestStand  
and custom menu items



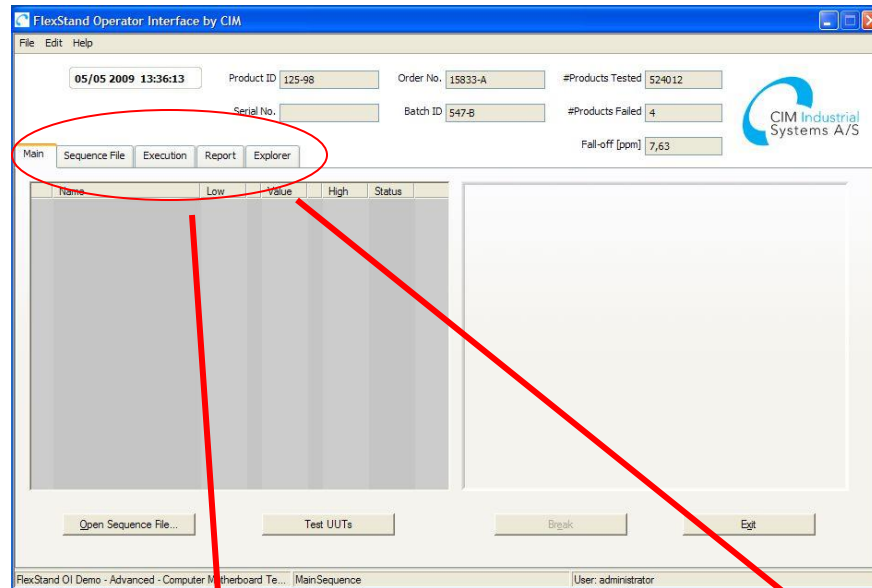
# Custom menu



```
MenuConfiguration.xml - Notepad
File Edit Format View Help
<?xml version="1.0" encoding="iso-8859-1"?>
<MenuConfiguration>
  <MenuSetting>
    <TopLevel>
      <TopLevelText>File</TopLevelText>
      <Items>
        <Item>CommandKind_DefaultFileMenu_Set</Item>
      </Items>
    </TopLevel>
    <TopLevel>
      <TopLevelText>Edit</TopLevelText>
      <Items>
        <Item>CommandKind_DefaultEditMenu_Set</Item>
      </Items>
    </TopLevel>
    <TopLevel>
      <TopLevelText>Commands</TopLevelText>
      <Items>
        <Item Tag="mytag2" Shortcut="+Shift+F10">MyItem</Item>
      </Items>
    </TopLevel>
  </MenuSetting>
</MenuConfiguration>
```

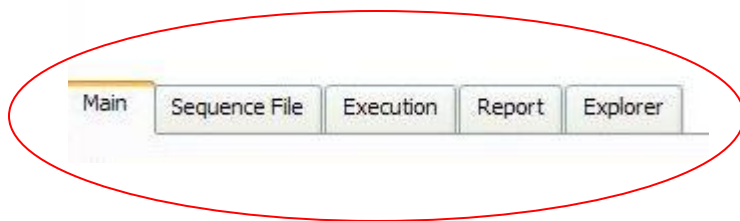


# Language control

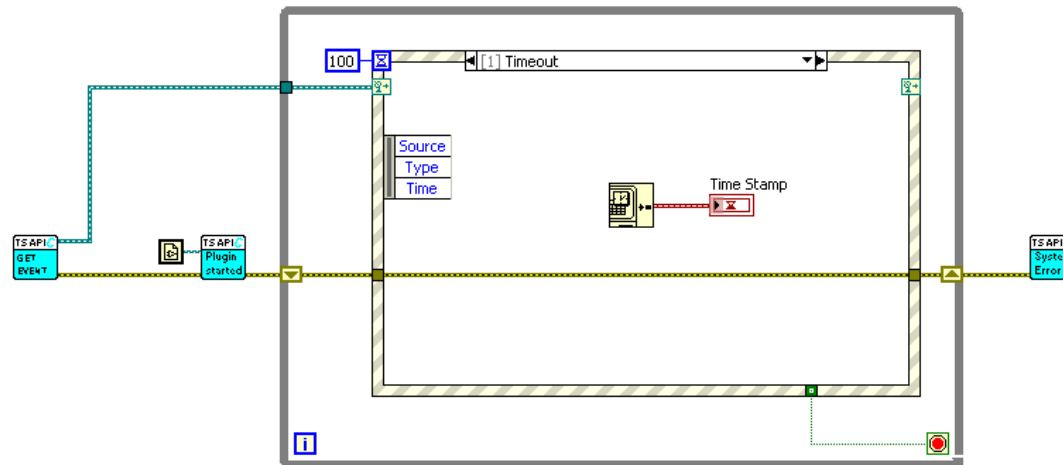


Language control supports:

- Menu Items
- Buttons
- Tabs
- Captions
- User messages



# Demo 2



# Licenser

Developer 800 €

Runtime pr. udstyr 150 €

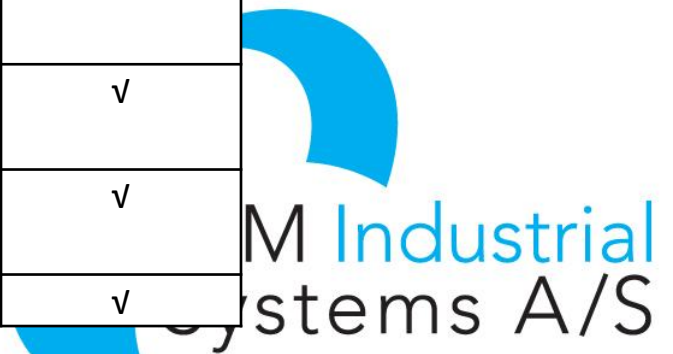


# Licensed to PC Motherboard



# FlexStand feature list

| Feature                                                                                          | FlexStand OI<br>RT<br>(150€) | FlexStand OI<br>SDK<br>(800€) |
|--------------------------------------------------------------------------------------------------|------------------------------|-------------------------------|
| LabVIEW palette *                                                                                |                              | √                             |
| Examples (Simple, Standard and Advanced)                                                         |                              | √                             |
| Programmers Reference manual                                                                     |                              | √                             |
| TestStand Deployment Engine                                                                      | √                            | √                             |
| LabVIEW run-time                                                                                 | √                            | √                             |
| Plug-in architecture: Top plug-in, bottom plug-in,<br>Supports up to 10 main plug-ins            | √                            | √                             |
| Automatic resize of GUI                                                                          | √                            | √                             |
| Callbacks                                                                                        | √                            | √                             |
| Tab control<br>including automatic tab change and show/hide tabs                                 | √                            | √                             |
| Command line parameters: Supports TestStand<br>standard parameters and Custom defined parameters | √                            | √                             |
| Custom menu: Supports TestStand standard menu and<br>custom menu entries                         | √                            | √                             |
| Language localization                                                                            | √                            | √                             |



\*) Palette includes functions for sequence view, report view, button control, Statusbar, Tab control and other functions.

# **FLEXSTAND highlights**

- Very short learning time
- Very short development time (>10 x faster)
- Simple and advanced operator interfaces
- Easy and powerful API
- Subpanel to dialogs
- Automatic resize of OI to plug-in sizes
- Reuse of plug-ins by copy/paste
- Language control
- Custom menu






# See more at:

**www.FlexStand.eu**

**www.ni.com**



The screenshot shows the FlexStand website. The header features the 'FLEXSTAND' logo and 'CIM Industrial Systems A/S'. A navigation bar includes links like Home, Product Info, Download, Contact Info, About CIM, Buy License, My Licenses, and Login. The main content area has a blue background with the text: 'Simplify your test process by using FlexStand Operator Interface', 'Out of the box, Operator Interface for TestStand, based on evidence', 'Flexible – one API for all testers', and 'Encapsulation of TestStand API into LabVIEW VIs'. There is an image of a computer monitor displaying the FlexStand interface. To the right, it says 'Not all faults look bad! Just think out of the box... FLEXSTAND'. Below this, it describes 'FlexStand Operator Interface: Build TestStand solutions by using simple LabVIEW VIs from CIM' and 'FlexStand TestView: Out of the box monitoring and control application for your devices.' The footer contains copyright information for 2009 by CIM Industrial Systems A/S and a Sitemap link.

**FLEXSTAND**  
CIM Industrial Systems A/S

Home | Product Info | Download | Contact Info | About CIM | Buy License | My Licenses | Login

Simplify your test process by using FlexStand Operator Interface

Out of the box, Operator Interface for TestStand, based on evidence

Flexible – one API for all testers

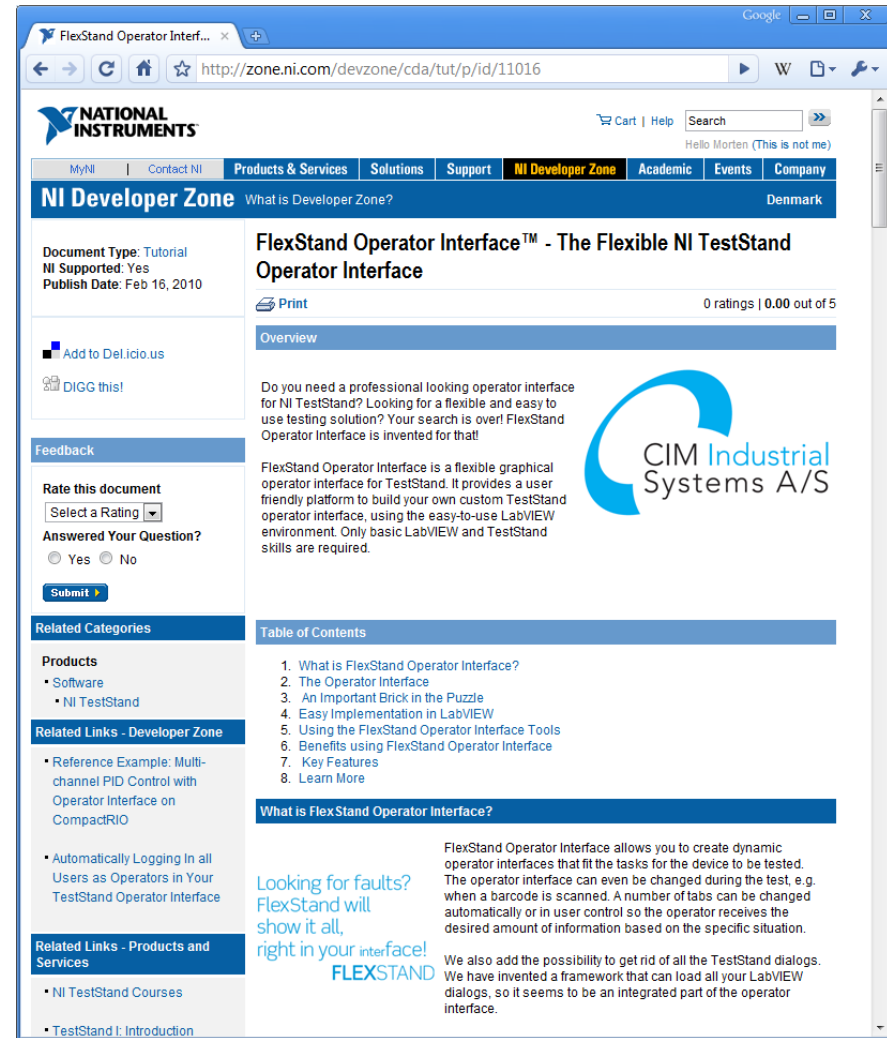
Encapsulation of TestStand API into LabVIEW VIs

Not all faults look bad!  
Just think out of the box...  
**FLEXSTAND**

**FlexStand Operator Interface:**  
Build TestStand solutions by using simple LabVIEW VIs from CIM

**FlexStand TestView:**  
Out of the box monitoring and control application for your devices.

Copyright © 2009 by CIM Industrial Systems A/S  
[Sitemap](#)



The screenshot shows the NI Developer Zone page for the FlexStand Operator Interface. The header includes the National Instruments logo and navigation links like MyNI, Contact NI, Products & Services, Solutions, Support, NI Developer Zone, Academic, Events, and Company. The page title is 'FlexStand Operator Interface™ - The Flexible NI TestStand Operator Interface'. It includes a document type (Tutorial), NI supported status (Yes), and publish date (Feb 16, 2010). There are links for 'Add to Delicious' and 'DIGG this!'. A feedback section allows users to rate the document and answer questions. A table of contents lists 8 items, including 'What is FlexStand Operator Interface?'. The 'What is FlexStand Operator Interface?' section describes it as a flexible graphical operator interface for TestStand, built using LabVIEW VIs. It mentions that it allows for dynamic operator interfaces that can be changed during a test, such as when a barcode is scanned. It also notes that it can load all LabVIEW dialogs, making it an integrated part of the operator interface.

**NATIONAL INSTRUMENTS**

MyNI | Contact NI | Products & Services | Solutions | Support | **NI Developer Zone** | Academic | Events | Company

**NI Developer Zone** What is Developer Zone? Denmark

Document Type: Tutorial  
NI Supported: Yes  
Publish Date: Feb 16, 2010

[Add to Delicious](#)  
[DIGG this!](#)

**FlexStand Operator Interface™ - The Flexible NI TestStand Operator Interface**

0 ratings | 0.00 out of 5

[Print](#)

**Overview**

Do you need a professional looking operator interface for NI TestStand? Looking for a flexible and easy to use testing solution? Your search is over! FlexStand Operator Interface is invented for that!

FlexStand Operator Interface is a flexible graphical operator interface for TestStand. It provides a user friendly platform to build your own custom TestStand operator interface, using the easy-to-use LabVIEW environment. Only basic LabVIEW and TestStand skills are required.

**Table of Contents**

1. What is FlexStand Operator Interface?
2. The Operator Interface
3. An Important Brick in the Puzzle
4. Easy Implementation in LabVIEW
5. Using the FlexStand Operator Interface Tools
6. Benefits using FlexStand Operator Interface
7. Key Features
8. Learn More

**What is FlexStand Operator Interface?**

FlexStand Operator Interface allows you to create dynamic operator interfaces that fit the tasks for the device to be tested. The operator interface can even be changed during the test, e.g. when a barcode is scanned. A number of tabs can be changed automatically or in user control so the operator receives the desired amount of information based on the specific situation.

We also add the possibility to get rid of all the TestStand dialogs. We have invented a framework that can load all your LabVIEW dialogs, so it seems to be an integrated part of the operator interface.

**Looking for faults? FlexStand will show it all, right in your interface!**  
**FLEXSTAND**

# Questions ?



**Thanks for the time**

**[www.cim.as](http://www.cim.as)**

**Win an iPod at our booth**

