Perception CSI

Specifications

PERCEPTION CSI

Overview

CSI stands for Custom Software Interface and is a powerful technology which allows software integrators and *Perception* users to customize and automate (parts of) the *Perception* software. As opposed to the 'standard' API technology, programs written with CSI form an integral part of the *Perception* software and are fully integrated into the *Perception* user interface.

While *Perception* and its options offer a perfect solution for most measuring, processing and reporting tasks, there are still some areas where the supplied software is not tailored to your specific requirements. A viable solution in this situation is to extend the *Perception* software with your own programs by using the *Perception* CSI.

Writing your own program has the advantage of having total control over your extensions, while you maintain access to the flexibility and power of the *Perception* environment. Your imagination sets the limits.

Other 'standard' interface techniques allow you to add an external program that works in parallel with the main application, either on the same machine or via remote access. Using the *Perception* CSI, you create plug-ins that become part of the *Perception* application on the same machine.
These plug-ins have a user interface that is based on the *Perception* concept known as 'sheets'. You create a DLL that is linked into the *Perception* software at start-up.

Should you require external/remote control of the *Perception* software, then you should consider using the *Perception* Remote Control option (a.k.a. Remote API or COM/SOAP/RPC).

The documentation and support files that are provided are to be used with the C# programming language(1) in the Microsoft® Visual Studio® development environment.

For those who do not have the desire to program the system at this level, HBM can do the job for you on a project basis.

Functionality

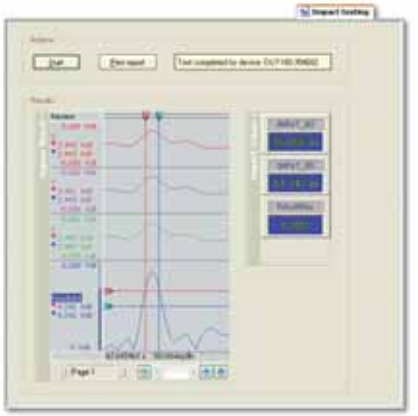
CSI is based on the *Perception* sheet concept: you add a sheet to the collection of *Perception* sheets. This sheet behaves like any other sheet with one exception: it is your sheet. You define the user interface, functionality, etc.

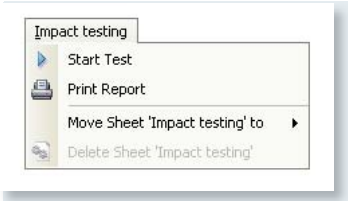
Usually you will create a single instance of a sheet, visible or not. However, you can also create sheets that can be used multiple times. Since you use the standard *Perception* sheet interface, you also have access to a sheet menu and a sheet toolbar that you can adapt to your specific needs.

Apart from the sheet functionality, CSI gives you access to:

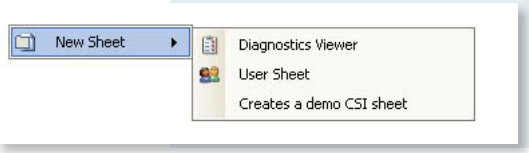
- All public and documented features: user mode, component and sheet manager, workbench, etc.
- *Perception* DLL's and components
- .NET DLL's and components
- Extra DLL that provides easy access to commonly asked functions

The documentation describes real world examples and provides the required source code.





CSI provides complete integration of your custom sheet into the *Perception* software.



Tailor the *Perception* software exactly to the requirements of your application.

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Capabilities

The following list is a summary of capabilities. While not complete, it gives an idea of the many aspects of *Perception* CSI.

- **Hardware control** Full control of all aspects of the hardware: acquisition parameters, control and status; amplifier settings; trigger settings, etc.
- **Data management** Complete interfacing to all data sources, including strings, numbers, and waveforms. You can also create your own numeric variables, strings, and waveforms. The waveform interface is the PNRF data format.
- **Formula database** Create your formulas on the fly and use the results. Create your own functions to be used within the formula database and expand the formula database capabilities.
- **Build on *Perception* objects** You can use the C# inheritance concept to build function code based on well-tested, existing classes from *Perception*.
- **"Off-the-shelf" components** When you use *Perception* components, you also get all of the additional stuff for free. E.g. the display also gives you zooming, cursors, measurements, drag-and-drop, etc. Examples include displays, meters, data navigators, etc.

Automation

CSI lifts automation to a level that exceeds standard automation concepts like macros and scripting. Even built-in programming environments usually lack the capability to connect to the internals of the software as tightly as CSI does.

With the power of the external C# programming environment(1) and CSI knowledge, you can build automation applications ranging from simple to the extreme.
There are almost no limitations in realizing your vision of data acquisition, analysis, and reporting.

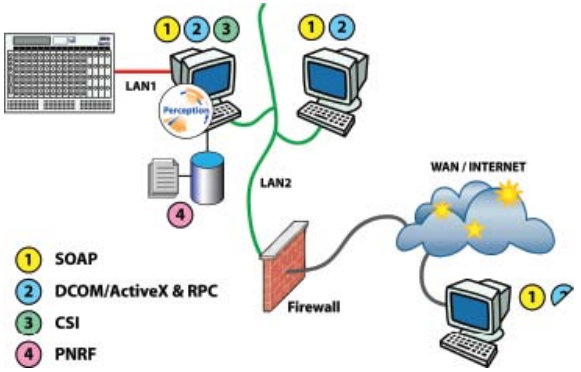
Using the external programming environment allows integration of modern techniques like active-X and internet communication into your CSI-based *Perception* sheets. It also allows for future expansion and compatibility with the operating system and programming techniques without large investments.

The capability to build separate formula functions and save them in an auto-loading file that can be used in any CSI-enabled *Perception* may be extremely useful for your company. Create your own functions for special analysis based on your company's know-how and distribute them within your company, world-wide.

Perception remote control and automation options

CSI is part of a complete suite of remote control and automation options for *Perception*. Depending on your requirements and application, one or more of the following options may be useful to you.

- **PNRF Reader** The GEN Series PNRF Reader allows you to build software that 'reads' the proprietary native GEN Series file format.
- **SOAP** The XML-based SOAP remote control protocol allows interfacing with other software running on Windows, Unix, Linux, etc. ASCII based commands are used to load setups, control acquisition and trigger, and fetch status as well as live data.
- **RPC** In addition to the functionality provided by SOAP, RPC includes direct control of hardware settings like timebase, acquisition modes, amplifier, trigger modes, etc. RPC is a low level communication protocol.
- **COM** is the easiest and most popular way to interface. COM allows retrieval and control of all hardware settings, acquisition control, data retrieval and more. COM is supported by any major programming language and also HP-VEE, NI Labview, Matlab and other software packages.



The *Perception* remote control and automation options allow you to control hard- and software from any location: outside your LAN, inside your LAN or on the same computer.

(1) Basically any .NET-based programming language can be used. However, documentation, examples and included support are for C# in the .NET environment of Microsoft Visual Studio 2005. On request optional support is available for C++ and Visual Basic .NET.

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