СЕТЕВЫЕ МОДЕЛИ И ПРИЛОЖЕНИЯ

ЧЕЛОВЕКО-МАШИННЫЙ ИНТЕРФЕЙС (ЧМИ). ИСПОЛЬЗОВАНИЕ ОБЛАЧНОГО ЧМИ И ЕГО СРАВНЕНИЕ С ДРУГИМИ ЧМИ

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HUMAN MACHINE INTERFACE (HMI). USAGE OF CLOUD HMI AND ITS COMPARISON WITH OTHER HMI SYSTEMS

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This article deals with Cloud HMI, an innovative HMI architecture, which possibilities are not fully discovered at the moment. It is reported that a cloud based HMI must consist of a server and a visualization device. Depending on how this cloud based HMI is integrated into manufacturing lines of industrial plant it can have advantages and be beneficial to the users by lowering costs, updating the software, making it possible to the see the processes from any screen or have disadvantages connected with security and problems with the Internet.

In the end, when a traditional HMI architecture and a cloud based HMI architecture are compared it can be seen that when a Cloud HMI is implemented properly it can give many positive things and possibilities for carrying out further research.

Cloud Human Machine Interface. Cloud HMI is an innovative HMI architecture. It has many prospects in the future and its full potential is yet to be revealed.

Normally a cloud based HMI consists of a server and a visualization device.

The server device connects with controller and proceeds protocol conversion, data logging, event logging, recipe, database maintenance, macro commands execution, etc. Usually plants install the HMI software itself on secure servers, or even virtual servers, and using web browsers or special applications access the control screens.

Many electronic devices with screens can be used as the visualization device. That is why the visualization function can be perfectly integrated into, for example, iPad with the powerful Cloud HMI software.

Advantages and disadvantages of a cloud based system.

A cloud based system has the following advantages:

1. The cloud model itself. The very reason that cloud based applications are gaining traction is that there is no need to deal with all of the problems associated with owning software.
2. Cost. The way companies make money offering a cloud version of their application is to charge consumers for its use. This is the SAS model, and the per-month cost can be very attractive, especially if you have a lot of workstations that you need to deploy.
3. No obsolesce. The hosting company is going to make sure that you are always running the latest version of the product. This also ensures that all of the instances of your system will be running the exact same version of the application.
4. See your screens from anywhere. It is very easy to set up access to your control screens from any Internet connection.

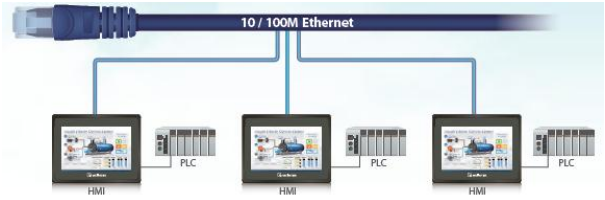
However, there are also some problems with a cloud based system:

1. Security problem. It is very easy to set up access to control screens from any Internet connection. This means that there is a possibility to have someone exploits your information. If one of any number of hackers discovers your interface there can be a potential problem.

2. The network connection. When a cloud based HMI is used you have the internal network to. Putting all data in the cloud adds one more point of failure.

3. Loss of data. All the company hosting your application cares about is their monthly fee. That is why if your company can't afford to pay the fee in the end there will be absolutely no HMI/SCADA software left.

Comparison of cloud HMI architecture with traditional HMI architecture. When a traditional HMI architecture is used (Picture 1), each workstation is equipped with one HMI. If any of the HMIs stops working, the machine is out of service.



Picture 1. A traditional HMI architecture

When a cloud based HMI architecture is used (Picture 2), servers are situated in the cloud and they are connected to PLCs. The visualization device can be a wireless iPad or wired screen. Each visualization device can access any server with hot-standby mechanism. If any visualization device is out of service, another visualization device can take over operation without interruption.

Picture 2. A cloud based HMI architecture

The idea of cloud based HMI is gaining in popularity. It can be predicted that over time more and more technical processes will be moving into the cloud, and this will bring a lot of benefits and possibilities.

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