Adaptivity
for the Manufacturing Industry

Advantages of a generic architecture

On the road ahead, into the Third Millennium lays a major challenge for the manufacturing industry. It has already been called the Third Industrial Revolution. The rapid growth of a global economy challenges manufacturers to reduce inventory and labour costs. At the same time, it forces them to increase their productivity rates and to adapt faster than ever to the rapid changes of direction markets will take. This must be made possible through increasing manoeuvrability of plants.

The good news is that manufacturers do not stand alone in meeting this challenge. Omron has developed software that provides the information and control that enables manufacturers to increase the earning power of their production facilities: CX Automation Suite. This suite of advanced programs was developed to make a firm contribution to the bottom line of manufacturing industries.

Adaptivity. The best CX Automation Suite has to offer.

The challenge for manufacturing industries at the beginning of the Third Millennium will be how responsive they will be to ever-faster changing demands. Traditional forms of process automation are not designed to do the trick. They have been designed to optimise existing processes but not to change these processes, almost at will. Up till now most process control systems are concentrated on the production process itself.

This will not be enough in the years to come. From now on the challenge will be to organise the entire manufacturing process from resources till end products in such a manner that it not only stays lean but also mean, in the sense that it is permanently conditioned to respond rapidly to every demand. To meet today's demands, it is necessary to embed pre-production and post-production steps into the control and data acquisition of the entire manufacturing process. Constantly optimising this whole process can only be done if it meets one specific requirement.

We call it Adaptivity.

Sounds ambitious? It is very realistic, though. Just think of controlling a manufacturing process as an integrated part of your PC network and the picture becomes probably clearer.

There are all sorts of criteria that you can measure the quality of an organisation by. For the coming years the main criterion for a manufacturing industry will be how adaptive it is to change. This adaptivity will be one of its main advantages in an increasingly competitive world.

'Adaptivity':
The intrinsic ability of systems to adapt rapidly to change.

Omron CX Automation Suite, the happy ending of a long story.
CX Automation Suite puts an end to a story that seemed to never end. The story is about control systems. You are probably familiar with it. It is about a simple relay box that became a rack of PLCs and how one 'state-of-the-art' system got killed by the next in the following episodes and how this story went on and on and on. You will have experienced certain episodes of the story yourself in real life. Would it ever reach a final conclusion?
After almost 50 years it has.

CX Automation Suite puts an end to 'state of the art' systems for computer controlled manufacturing. Instead, CX Automation Suite is not one system but software that has been designed to dynamically 'evolve' with every direction a manufacturer would like to take and to accommodate any implementation, improvement, adaptation or extension of any form of control or data acquisition in a manufacturing industry. And it will not be complicated when you do so. Why?

Because CX Automation Suite fully implements the powerful networking and communication capacities that emerged in the personal computer world and which now form a 'de facto' industry standard. Let us tell you more about CX Automation Suite.

Open architecture based on widely used standards
The best assurance that CX Automation Suite will serve your needs in an unlimited future is that it is based on standards that are widely maintained such as ActiveX® and OPC (OLE for Process Control) and standard interfaces such as COM, DCOM and ODBC/ADO. Designing an architecture along these common standards gives you the certainty that your network will always remain widely connective and data can be shared with other networks. This conformity also means that you can use standard interfaces and standard software.
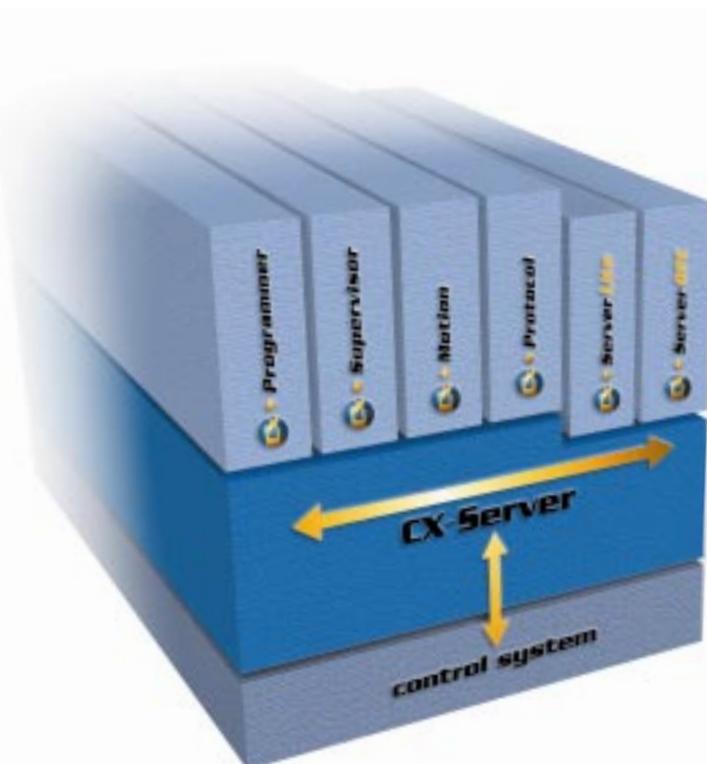
The building block strategy: Omron's contribution to an open, generic software architecture
To build software with a generic, open architecture is one thing, making a vital contribution is another. Yet this is what Omron has achieved. It supplies the basic adaptivity that is indispensable in this day and age.

To fully exploit the capacities of this advanced network Omron set out to standardise the way in which devices fully interface with the network. It means that for each specific device - e.g. controllers - software is available that standardises the device as a component in the network configuration.

Now the picture becomes clearer. By turning each device into a standardised network component, the network becomes extremely transparent. It means that any information becomes available throughout the entire network. And not only that.

Less work and unlimited adaptivity

By defining these components as universal building blocks, building a network requires less programming knowledge and less programming time. Moreover, thanks to this high degree of standardisation and use of generic software a long fostered wish now becomes reality: a network which can be adapted and extended in almost any new direction that you need to take.

CX Automation Suite has the ideal modular structure. The drivers for all networks are included, ensuring a seamless and transparent connection regardless the type of network or device. Adaptivity to the core.

Familiar Windows environment programming

The programming tools in the CX Automation Suite are presented in familiar Windows style. They respond strongly to intuition and therefore facilitate programming tasks.
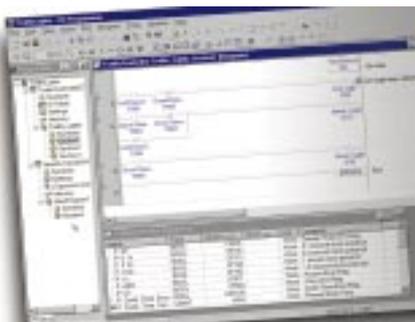
CX-Programmer, the module of the CX Automation Suite that programs PLCs, offers clear overviews that can be arranged fully to every need of the system designer. In the above view on the left, an Explorer-style window has been opened. It shows the PLCs in the project and the many information windows that are available such as IO Tables and Settings. This means that while he is programming, the programmer can view his work from all angles and in every detail, organised per view and to his own requirements. The right side of the screen shows the selected Instruction Types view in a clear Ladder Diagram.

Adaptivity by Omron

As you will have noticed, the CX Automation Suite software is in itself highly adaptive. It is of course one of the necessary conditions for the adaptivity that manufacturing industries need. The CX Automation Suite completes the integration of process control and business information systems, by applying one and the same basic network architecture. On a physical level it integrates process information and business information effortlessly. For the user it means that data of both sources of information can be jointly reported in familiar applications such as spreadsheets in which they can be recalculated in existing layouts or processed along usual spreadsheet procedures. Anybody with a notebook can tap in anywhere in the network and acquire information or visualise the process and adjust settings. He or she will only need the valid entry authorisation.

But most important is that Omron designed the CX Automation Suite to place powerful controls in the hands of the manufacturer who shares our vision that manufacturing capabilities will need one property most in the coming era. As we call it: adaptivity.
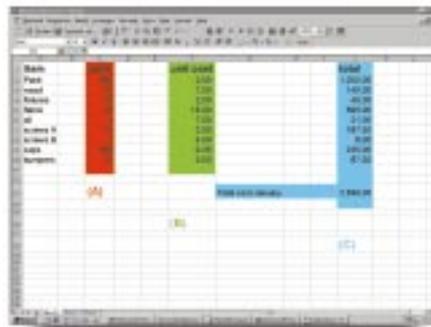
CX Automation Suite software brings powerful information to managers directly. They do not need the assistance of system specialists. For instance, managers can themselves copy factory data (A) as well as administrative data (B) into familiar spreadsheets and use these data in their own familiar manner (C). The CX-Server Lite software offers these capabilities. It is fully integrated with standard software by fully exploiting open interfaces as ActiveX® and COM.

Adaptivity:
your highway to an integrated solution

CX-Programmer

CX-Motion

CX-Supervisor

CX-Server

CX-Protocol

CX-Server lite

CX-Server OPC
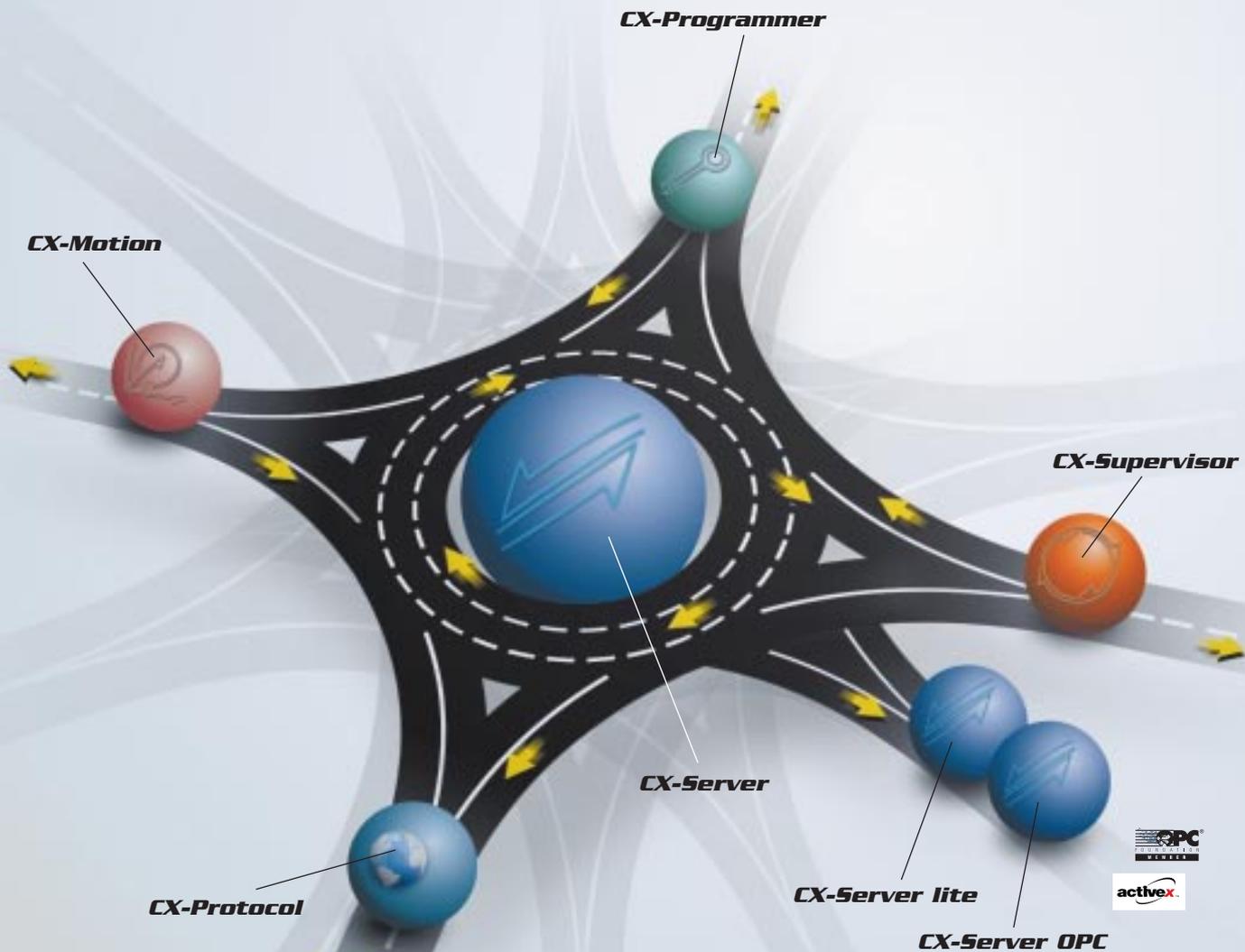
"It is not the strongest of the species that survive, nor the most intelligent, it is the one that is most adaptable to change" Charles Darwin

The CX Automation Suite has been developed to serve you with powerful yet comprehensible software that builds and runs networks that simply control one machine or an entire manufacturing process. It comprises the follow parts:

Programmer

Full PLC Programming and Testing power

With CX-Programmer the Omron Programmable Logic Controllers are being programmed. It programs all types, from micro PLCs up to the new high-end CS series. CX-Programmer supplies all the programming power needed to even construct complex, multi-device systems applying ladder and/or Statement List languages.

In addition to the comprehensive programming environment, CX-Programmer provides all tools necessary to engineer, test and debug any automation system. On-line capabilities are included like program up- and download, monitoring and multi-rung editing, up to three levels deep in the network. CX-Programmer maintains backward compatibility with other Omron programming support packages including LSS, SSS, CVSS, SYSMAC-CPT and SYSWIN.

Supervisor

Powerful, yet easy to use

CX-Supervisor provides all the functionality and flexibility that you will need for building and running small to midsize SCADA applications. It contains a consise range of graphic objects that can be used to present process information to an operator in a clear, consise and unambiguous manner. At the same time CX-Supervisor contains all functionality for supervisory control and for linking the factory floor with office automation systems. A full range of intuitive tools facillitates development tasks to novice users and allows the expert designer to concentrate on more complex tasks. Applying COM, ActiveX, OLE, ADO, OPC, CX-Supervisor presents the most advanced technologies in the user-friendly Windows evironment.

Motion

The full configuration and monitoring of motion

The CX-Motion software package is dedicated to the configuration and programming of Omron Motion Control Units (MCU's). Two or four axes MCU's are supported. CX-Motion allows the user to see overviews of the whole application as well as to focus-in on specific details. CX-Motion supports enhanced G Code programming and supports position data with descriptive labels. The online monitoring and graphing function is a considerable time saver when tuning and adjusting motion control applications.

Protocol

Programming software for the Omron Protocol Macro Support Unit

CX-Protocol is the software support tool for the Omron Protocol Macro Support Unit (PMSU). The software supports the configuration of protocol macros for communication with external serial devices, such as Omron temperature controllers, bar code readers, and modems, that are connected to a PMSU. The PMSU then allows these devices to be controlled from the PLC. CX-Protocol allows the tracing of data sent and received by the PMSU and the monitoring of the data stored in PLC memory.

Server Lite

Total Adaptivity

The Omron CX-Server Lite software assures you total adaptivity. It allows standard office software like Word, Excel, Visual Basic, VBA and Delphi, to access Omron automation devices by using the ActiveX standard. CX-Server Lite contains a concise collection of dedicated graphic components that enable easy building. Connections are made, changed or added by dragging-and-dropping graphic components and filling out standardised panels. CX-Server Lite is a full version of CX-Server, but exposes ActiveX® only.

Server OPC

Total Conformity to OPC standards

OPC is a set of standard OLE/COM interface protocols intended to stimulate greater interoperability between automation/control applications, field systems/devices, and business/office applications in the process control industry. Omron contributes to these standards the CX-Server OPC that fully integrates PLC devices into this open architecture. CX Server-OPC provides full data exchange with multiple applications in a network, regardless the type, such as a SCADA package, a VBA application or an Excel spreadsheet. The many graphical aids and Wizards facilitate the design of any application.
By maintaining the OPC Foundation standards Omron guarantees sustained adaptivity of your CX-Server OPC.

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