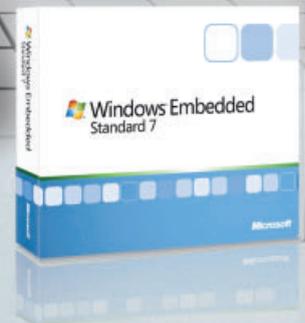
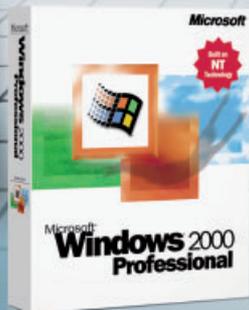
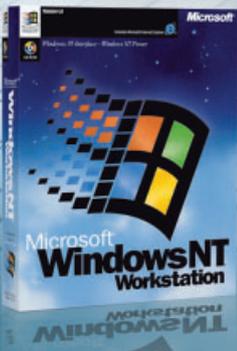


technology

BECK

TwinCAT®
Version **3**



Microsoft: The software platform – three pillars for success

Microsoft is the world's leading supplier of software that helps people and companies all over the world achieve new things while being more productive and successful. This ever-present software is found today in large and small companies, in the private sector and in mobile and specialized devices; it is provided in the form of web services that are available at any time, and for Microsoft partners it forms the basis for their own successful products. This success story was and is made possible by Microsoft's consistent approach: that of a broad, uniform and flexible platform.

Partner

The graphic is divided into three vertical panels, each representing a pillar of Microsoft's ecosystem:

- DEVICES:** Includes Windows (desktop/laptop), Windows Phone (smartphones), and Windows Embedded (industrial devices).
- TOOLS:** Includes HTML5, Cloud Power, Microsoft .NET, and Microsoft Visual Studio 2010.
- SERVICES:** Includes Microsoft Office 365, Microsoft System Center Configuration Manager, Microsoft Dynamics CRM Online, Windows Intune, Microsoft SQL Azure, and Windows Azure.

Microsoft®

Software as a foundation

Ever since the establishment of the company, Microsoft has recognized the potential of standard software to revolutionize life in every aspect. Consequently, the range of such software from Redmond has constantly increased in the past decades: from the first purely PC-based programs, via server software and operating systems for mobile and Embedded devices and on to today's Cloud-based services. Emphasis was placed not only on ready-to-use products for end customers, but also on consciously building up an ecosystem of partners for whom the Microsoft product range serves as the foundation for their own specialized solutions.

Beckhoff Automation, for example, introduced the first PC-based machine controller 25 years ago and is today one of Microsoft's most important partners in the Embedded software sector. PC Control represents an excellent example of how the consistent adoption of a standard platform, coupled with great innovative strength in one's own specialist field, leads to considerable and lasting economic success. Beckhoff's own, initially special products were developed over the course of time into their own platform within the industrial automation sector, which can be flexibly implemented by users all over the world.

Like Microsoft, the example of Beckhoff shows very instructively that a successful platform rests on several pillars. Devices, Services and Tools represent the three most important pillars today.

Devices

When one thinks of Microsoft, one inevitably thinks of Windows. The graphic operating system (OS) is probably the most widespread software in the world today. After the triumphant march of the PC, for which Microsoft's first operating system, MS DOS, was to a large extent jointly responsible, Windows has not just shaped and co-determined "personal computing" for literally billions of people all over the world and for millions of companies. No, today it also forms a software basis in the server sector, in smartphones and in innumerable special devices, whose manufacturers can benefit from standard software and concentrate on their own core competencies.

As such a manufacturer, Beckhoff has consistently offered Windows-based Industrial PCs and controllers for many years. In its combination of standardization and adaptability, the Windows Embedded product line in particular is proving here to be an ideal basis for implementing proprietary industrial expertise in special functions and extensions – such as real-



Hans Beckhoff meets Bill Gates: On January 31, 2005, Bill Gates, Microsoft Corporation's Chairman and Chief Software Architect, introduced the E-home technology system at the Home of Today in Munich (Germany). During the presentation of the intelligent building services, Hans Beckhoff, demonstrated the core of the E-home technology, the CX1000 Embedded PC with Windows CE operating system, to Bill Gates.

time extensions that make Beckhoff products suitable for the control of time-critical processes in manufacturing plants, or new transport protocols that are optimized for the particular requirements in industrial automation.

Due to the availability of compatible operating system software on a broad range of different devices, Microsoft guarantees that customers and partners in entirely different areas can benefit from the standardization and unification. That is an essential pillar of a software platform. But it's not the only one.

Services

"Cloud Computing" is one of the new technologies that are permanently changing the IT landscape today. However, it is only the logical continuation of a more general trend towards networking and the flexible provision of computing power and data "on demand," which, in the form of "Web services," for example, has broken open isolated structures and made new

scenarios possible in recent years. There is no notable software or equipment supplier that can escape that.

Services logically represent the second important pillar in Microsoft's platform strategy. Web-based services have already formed a core component of the .NET software strategy for a decade and make it possible today for innumerable tailor-made and standard solutions to communicate with one another across platform borders. Our partner Beckhoff has proven to be a trailblazer in this area as well. In addition to its proven expertise in the field of industrial communication protocols (for example EtherCAT), new interfaces such as "Web services on Device (WSD)" were adapted at an early stage, thus facilitating the use of Beckhoff's own products in heterogeneous environments.

With announcement of the Cloud Computing platform "Windows Azure" in autumn 2008, Microsoft finally began the implementation of a new infrastructure that enables customers and partners to procure computing power and memory

capacities “as required” from Microsoft in order to flexibly offer their own services on them. The same technologies are used here that are used on the different types of devices with Windows (PC, server, mobile and Embedded devices). The platform thus extends this by virtually unlimited additional capacities. In order to use these capacities optimally on the devices and in the Cloud, matching tools are required as the third pillar of the platform strategy.

Tools

Many years ago, as it announced the new .NET software strategy at the same time, Microsoft placed a matching, revamped and optimized toolbox on the market: Visual Studio®. Since its introduction it has developed into a popular, highly productive and widely used tool. Today it not only supports the software development for all Windows variants, but also for the Web, for databases and for the Cloud platform Windows Azure. It serves not only as an administration and configuration tool for numerous Microsoft products. Faithful to the consistent platform approach, Microsoft also licenses the Visual Studio® environment for use and integration by customers and partners in the context of its “Visual Studio Industry Partner (VSIP)” program, which means that these suppliers can integrate their special tools (their own editors, compilers, configuration tools and much more) into a proven environment that is familiar to the users instead of having to take care of the development and maintenance of their own “framework” for these functions. Beckhoff, as a long-standing VSIP, therefore uses Microsoft Visual Studio® 2010 as the engineering environment for the latest generation of its TwinCAT 3 automation software. As a result, Beckhoff customers can use the special Beckhoff tools and technologies on an equal footing with the standard tools for programming in C/C++, .NET languages, Web Markup or the user interface design with Silverlight. This saves training time, increases the productivity of the customers who work on the Beckhoff automation platform, and lowers the error rate. This shows that fully developed tools today represent a supporting third pillar of a successful software platform.

The future of the platform

The exponential progress of innovation in IT is leading to the fact that new trends are gaining in importance in increasingly shorter intervals and must be picked up and suitably answered by those involved in the market. At present, for example, the topic of the “consumerization of IT” represents a great chal-



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lenge for many suppliers, particularly in the enterprise and industrial sector – namely the trend that the needs of the users of a product are gaining in importance. The trend towards Cloud Computing is also only now really starting to take off. And new Web technologies such as HTML5 & Co. are getting ready to replace existing concepts.

Due to the width of its product range and its innovative capability, Microsoft is ideally positioned for this. The announcement that the next generation of Windows (code name “Windows 8”) will be executable on ARM-compatible chipsets means nothing less than the expansion of the “Windows Experience” to completely new device classes – and thus a further unification of the platform on the device side. The Cloud Computing services offered by Windows Azure are being continuously extended by new services and offers in order to tap into innovative scenarios. On the tools and technologies side, HTML5 will play a more important role in the future alongside the established tools and could unify the user interface development on account of its cross-device nature.

Whatever specific direction the platform may take in the future, there is no doubt that it will be essential for Microsoft to bring partners like Beckhoff along for the ride, because a platform provider can only be as successful as those who build on it.

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