

## ***PRESS RELEASE***

Important Findings of the New  
International Market, Strategy, and Technology Report

# **Process Automation Markets 2010**

### ***Development of the automation world market for the process industries until 2010***

World market for process automation grows at average annual rates of 3.6% between 2000 and 2005 and 5.1% between 2005 and 2010.

2000:	USD 61.1 billion
2005:	USD 73.3 billion
2010:	USD 94.2 billion

**Markets:** Highest demand for process automation in the chemical industry, power plants, and petroindustry; fastest growing demand for hardware, standard software and services of process automation in the pharmaceutical industry. Share of hardware continues to shrink.

**Countries:** North America is the leading market for process automation. In 2000, USA had the highest demand for process automation in the sectors of mining, oil and gas, petroindustry, food and power plants. Asia-Pacific and Eastern Europe are winning market shares from Western Europe and North America. China as the growth engine for automation in Asia in spite of lower levels of plant automation. India, too, is gaining market shares worldwide.

**Trends:** Increasing requirements on the plant operators' side trigger innovation on the side of automation technology suppliers. Software still gaining importance. Instrumentation generally getting smarter and more communicative. Manufacturing Execution Systems (MES) as dynamic interfaces between management and production processes stimulate innovation in automation technology.

INTECHNO CONSULTING  
Dr. Norbert Schroeder  
Steinenbachgaesslein 49  
CH-4051 Basel

Basel, March 18, 2003  
nschroeder@intechoconsulting.com  
Phone.: ++41 / 61 - 281 18 30  
Fax.: ++41 / 61 - 281 18 22

## **Faster Growth of Demand for Automation Technology not before 2005**

According to a new World Report by INTECHNO CONSULTING (Basel, Switzerland), the global market for process automation is expected to grow from USD 61.3 billion in 2000 to around USD 73.3 billion in 2005, and to USD 94.2 billion by 2010. This is equivalent to an average annual growth rate of 3.6% between 2000 and 2005, and 5.1% between 2005 and 2010. The growth rate for the decade as a whole is 4.4%. These are the first results of the new World Report, "**Process Automation Markets 2010**" by INTECHNO CONSULTING (Basel, Switzerland).

The new report is based on around 180 international expert interviews. Additionally, approximately 3,500 primary sources on the single industries have been analyzed and assessed to back up the market figures – association statistics, country statistics, various analyses on sales figures, investment figures, machinery, electrical and industrial electronics statistics as well as a host of business reports.

The **process industries** discussed in this Report cover process technologically oriented industries including power plants. The process technological industries comprise the stones and earths industries, including glass and ceramics as well as iron, steel, and non-ferrous metal production. Rolling mills for steel and aluminum sheets are included, too. So are the chemical and pharmaceutical industries, the petroindustry; the pulp, cardboard and paper industries; the food industry; and environmental protection (drinking water, sewage plants, incinerating plants, etc.). Furthermore, the mining, oil, and gas industries are counted as process industries for all operations from extraction to transportation to preparation. However, measurement and automation technologies for long-distance transportation in pipelines and for exploration are not counted. Each of these industries has individual needs for the processes and plants requiring automation.

In 2000, the demand for measurement and automation technology products and external services was USD 61.3 billion; about 73.7% for core processes, 5.4% for filling and packaging machines, 6.2% for storage equipment, and 14.7% for utilities and end-of-pipe environmental protection within the relevant process industries. For 2010, the share of the core processes in the total process automation market is forecasted to be 74.5%.

## **World Market for Process Automation, Overview**

The world market for process automation is expected to grow from USD 61.3 billion in 2000 to USD 94.2 billion in 2010. In this Report, "process automation markets" refers to the overall automation and instrumentation demand of the process industries that are relevant for the plant operators in the process industries as defined above. It includes the automation demand which is purchased directly from the automation suppliers as well as the indirect purchases via the relevant Original Equipment Manufacturers (OEMs).

Automation technologies required by the process industries refer, above all, to all automation and instrumentation equipment which serves to control and to monitor the various processes within these industries. They also include non-process related measurement, control and monitoring systems, e.g., for storage tanks and utilities. Moreover, they include electronic safety equipment for underground mining, oil platforms and the petroindustry.

The USD 61.3 billion demand in 2000 for automation products, systems, and external services that were bought (directly or indirectly) by the end-users, i.e., plant operators in the various process industries, comprises about USD 46.9 billion for the engineering and project execution phase of automation systems and solutions. About USD 14.4 billion were for the operation phase. The share of the project phase is expected to grow from 76% in 2000 to 77% in 2010.

All market figures in the INTECHNO World Report are market figures from the perspective of the operators. They are consolidated in the sense that there are no double counts. If internal services (closed market) for the project and operation phases are included, the world market for process automation grows from USD 87.7 billion in 2000 to USD 135.0 billion in 2010.

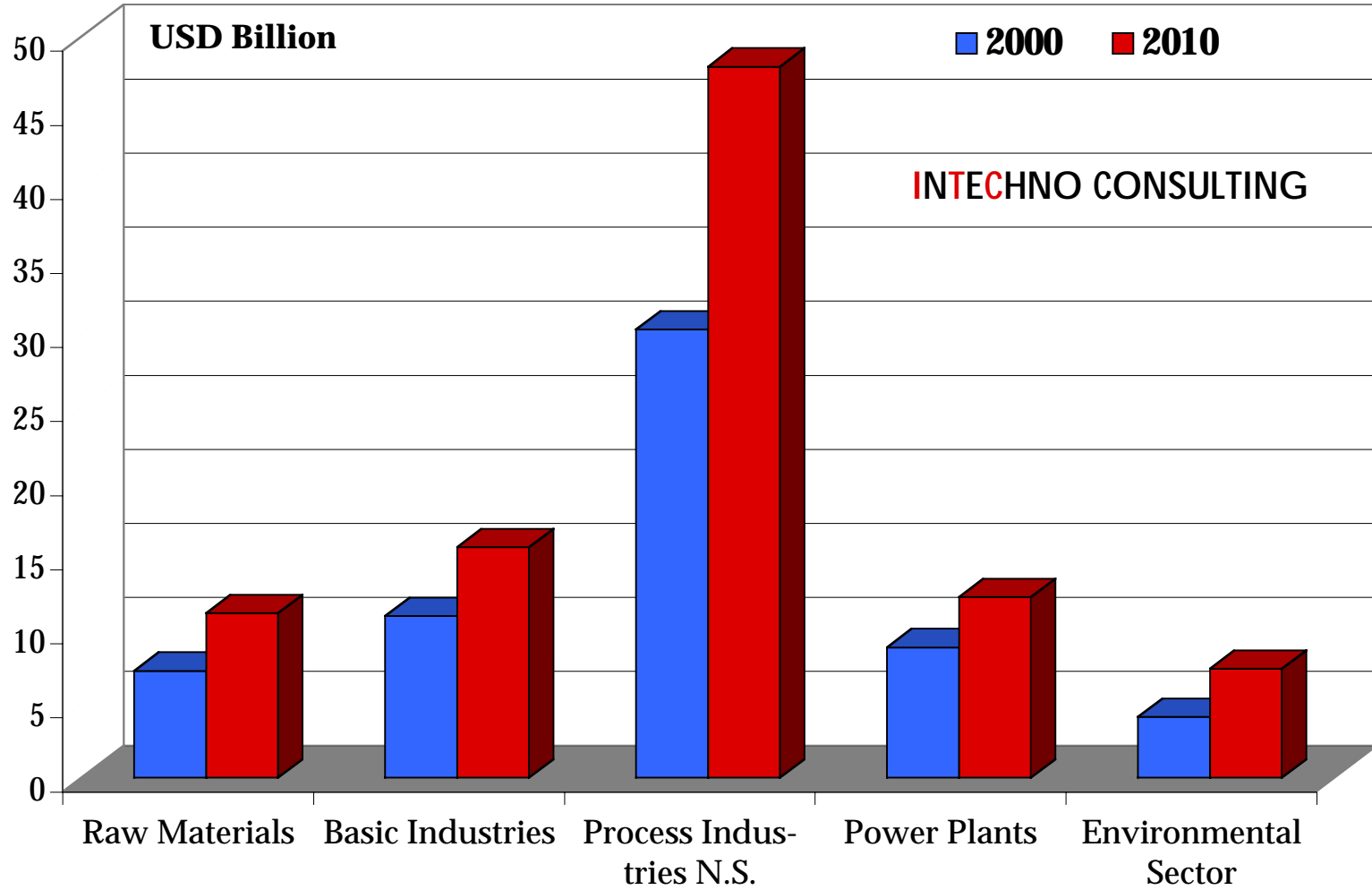
## Market Development by Industries

The new World Report analyzes and forecasts all of the 11 process industries and breaks them down into 130 subsectors, which are in turn analyzed in detail. **Figure 1** shows the world market development for process automation in aggregated application sectors. According to this, **process industries in the narrower sense (n.s.)** dominate the present and future markets with USD 30.3 billion in 2000 and USD 48.0 in 2010. The average annual growth is 4.7%. These process industries in the narrower sense are: chemical and pharmaceutical industries; petroindustry, i.e., refineries and petrochemicals; and the food and beverages industry. In the **chemical industry**, increasingly fierce competition leads to more and more complex and highly automated plants, which are extensively integrated with the logistics concepts of different plant locations and enterprises. Flexibility and availability of the plants tend to keep growing.

The automation demand in the **raw materials sector** is expected to grow from USD 7.2 billion in 2000 to approximately USD 11.1 billion in 2010, which corresponds to a 4.4% average annual growth. The raw materials sector includes mining (coal, uranium, ores, salts, construction materials) as well as oil and gas production. Mining in highly industrialized countries can only be successful with constant rationalization and higher and higher finishing stages. Extraction and transport show a trend towards remote control.

The **basic industries sector** comprises the stones and earths industries, including glass and ceramics; metal production (from blast furnaces and smelting to rolling

**Figure 1: Development of the World Market for Process Automation until 2010 - Segmentation by Industries**



mills and coating); and the pulp, cardboard and paper industries. The automation demand in this sector rises from USD 10.9 billion in 2000 to around USD 15.5 billion in 2010, which corresponds to an average annual growth rate of 3.6%. Automation technologies in these sectors contribute to further enhance productivity, reduce pollutant emission, improve product quality, and develop plant flexibility. Surface control, image processing, thickness measurement and modern weighing technologies keep growing.

Worldwide demand for automation technology for **power plants**, decentralized power generation and standby plants should rise from USD 8.8 billion in 2000 to USD 12.2 billion in 2010. The average annual growth is 3.3%. Note that in the United States, automation demand declines sharply between 2000 and 2005, because high surplus capacities were created in 2000 and 2001. Only by 2010 will the automation demand reach the level of 2000 again.

Worldwide automation demand in the **environmental protection sector** is estimated to grow at an average rate of 6% per year, from USD 4.1 billion in 2000 to about USD 7.4 billion in 2010. The main reasons for this growth are: the worldwide demand for drinking and service/cooling water keeps rising; stricter environmental legislation in industrial and fast-developing countries drives the demand for modern sewage plants, solid waste treatment plants and exhaust air purification equipment.

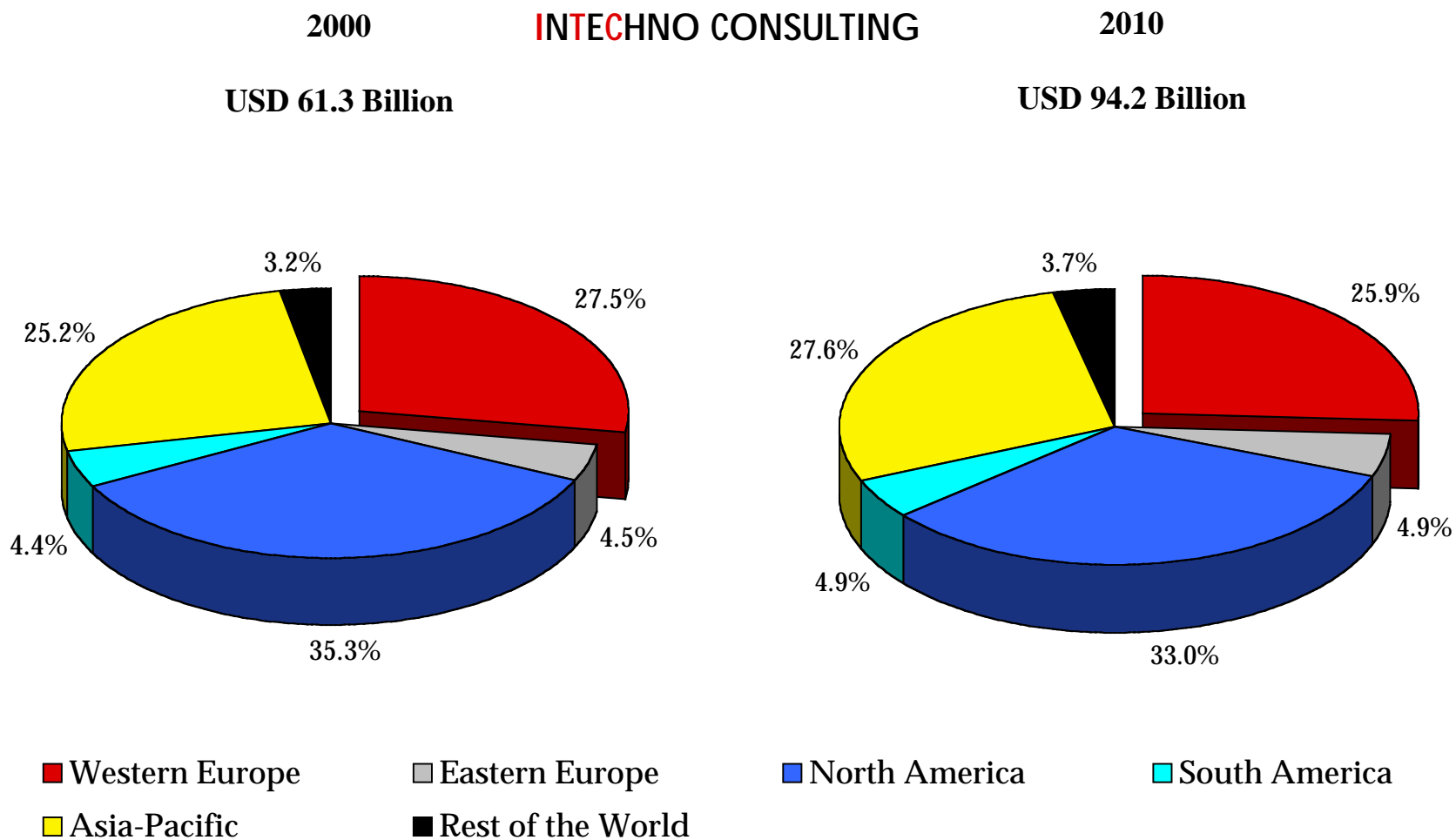
## Market Development by Regions

**Figure 2** shows the world market development for process automation by **regions**. The USD 61.3 billion demand for measurement and automation technologies is divided among the global regions as follows:

- <b>Western Europe</b>	27.5%;
- <b>Eastern Europe</b>	4.5%;
- <b>North America</b>	35.3%;
- <b>South America</b>	4.4%;
- <b>Asia-Pacific</b>	25.2%;
- <b>Rest of the world</b>	3.2%.

The high share of **North America** is due to the United States' dominating market position in the sectors of chemicals, petrochemicals, pharmaceuticals, pulp and paper, mining, oil and gas, and power plants. Other reasons are Canada's strong position in ore mining, gas extraction, and pulp and paper production as well as the Mexican investments in the cement industry and in gas and oil extraction. Another important reason for the United States' dominating market position is the strong dollar of 2000, compared to the much weaker exchange rates of the previous years. Until 2010, the shares of the USA and Western Europe will tend to shrink, and those of **India** and **China**, to rise. In addition to the constant growth of automation

**Figure 2: Development of the World Market for Process Automation until 2010 - Segmentation by Regions**



investment in power plants, refineries, chemical and metal production, automation investments in the environmental sector keep growing here, too.

The reasons for investing in process automation are varied: In the highly industrialized countries, it serves to enhance product quality, master the variety of products, improve process safety and plant availability, to efficiently utilize resources and to lower emissions. In fast-developing countries, on the other hand, mastering mass production is the main motive for applying process automation. Quality and environmental aspects, however, are gaining importance as well.

## Market Development by Products and External Services

The USD 61.3 billion worldwide demand for automation products, systems, and external services in 2000 comprises about USD 37.3 billion for hardware products and systems, and about USD 2.9 billion for standard software. Around USD 21.2 billion were spent for external engineering, installation, commissioning, maintenance, and training services (**Figure 3**).

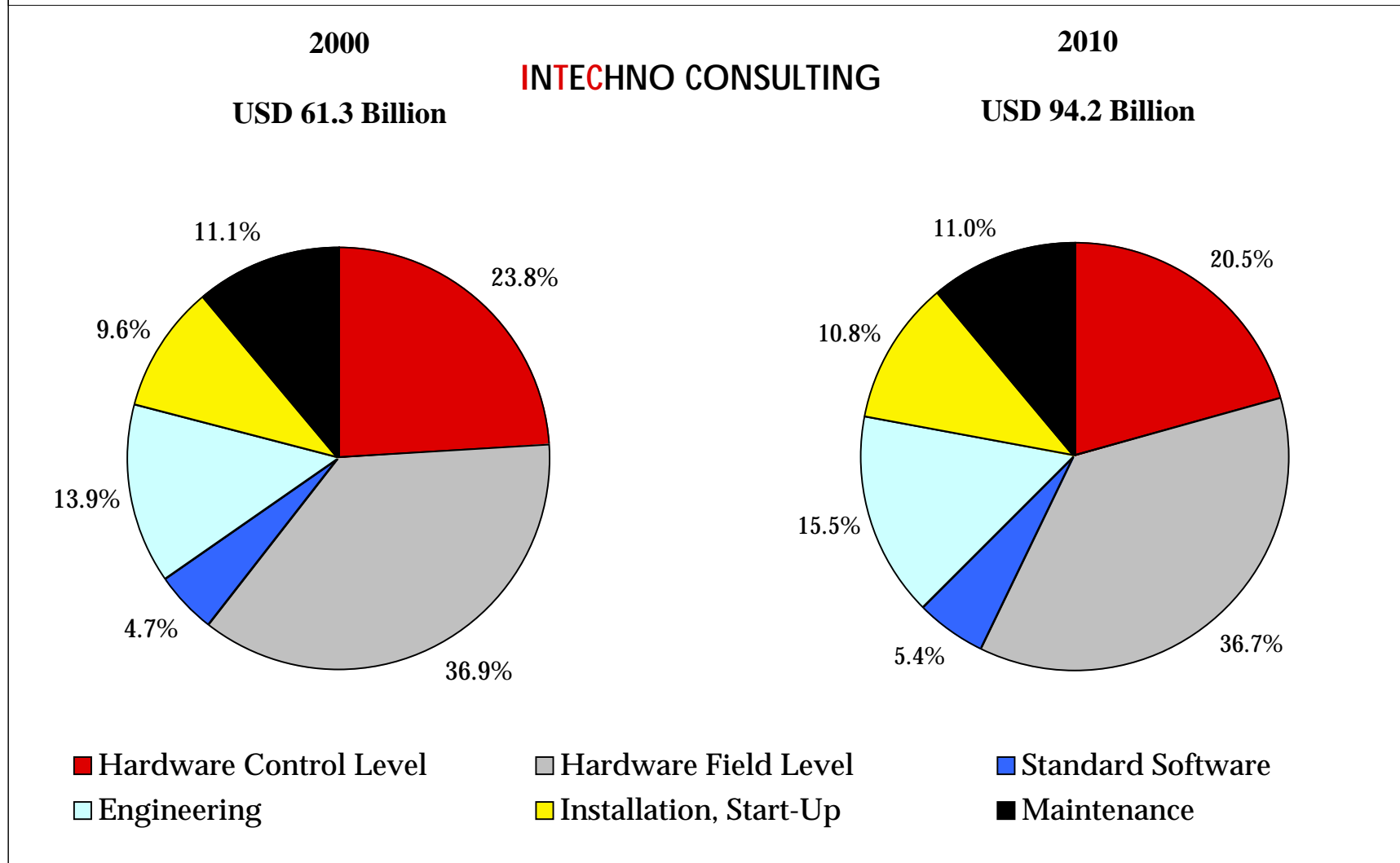
About 39.3% of the automation hardware bought in 2000 were for the process control level, and 60.7% for the field level, including all sensors, measurement equipment, and actuators integrated in the various process technological machines. Until 2010, the share of the control level in the total hardware will probably shrink to 35.8% worldwide. The primary reasons for this are: Intelligence is moving to the field level; and control level products and systems are getting cheaper – they are increasingly becoming commodities. Features of technical uniqueness are getting few and far between, especially in view of the increasing application of PCs on the user-related HMI level and the process-related control level.

Particularly strong growth is seen in **field bus communication** and **Ethernet/ TCP-IP** components. While the former should grow at a rate of 8.2% per year, the growth rate for the latter should be around 17%.

The share of external **engineering** demand will keep increasing worldwide. It is expected to rise from 13.9% in 2000 to 15.5% in 2010. The new World Report distinguishes between basic engineering, detail engineering, and application engineering. The latter includes software engineering and minor hardware adaptations. Especially all industries with prototypical plants have to expect further increases in engineering expenditures. The trend towards rationalization and plant optimization, accompanied by increased integration of automation systems with the information systems of the production site and the enterprise level will further add to the engineering share in the total plant project costs.

The share of the external "**services**" demand for the operation phase, i.e., maintenance, adaptations, support, training, stripping and disposal remains nearly constant at 11%. Especially in times of weak economic activity, spending for adaptation

**Figure 3: Development of the World Market for Process Automation until 2010 - Segmentation by Products and External Services**





and modification measures grows considerably. In addition to marked quality improvements, these can lead to plant optimization and even capacity increases.

## Technological Trends

**Intelligence, modularity, and remote diagnostics** are the trends of the future. Decentralized automation allows distributing intelligent automation components across the plant. Smart pumps are just one example for these units whose electronics are increasingly integrated within the aggregates, thus allowing new forms of communication and interaction. New **biotechnological processes**, too, represent new challenges for automation, particularly in pharmaceuticals and biotech-based fine chemicals production. **Minireactors and microreactors** will bring new challenges for automation as well.

In general, automation technologies will benefit substantially from **vertical integration** with the information technologies used for management processes. Important growth is emerging at the interface, where both worlds meet – the **MES systems**. Optimization, statistical quality control, and product tracing/tracking are a few examples. Horizontal integration of core processes with the utilities remains an area of progress and growth as well. However, automation is not going to explode for ever. The manless factory and plant will not materialize yet for many years. Highly automated plants are more flexible than totally automated plants. Moreover, the former have a higher availability as well as lower maintenance and investment costs.

## Success Factors for Process Automation Suppliers

**Leading suppliers** of automation systems and instrumentation will have to focus their product development strategies even more on customer benefit. This leads, above all, to increasingly standardized and modularized products, in particular in view of enhanced communication and smartness features of automation products. The share of "embedded" software continues to grow, the aim being to keep enhancing the functionality of the products, and thus the customer benefit. Product developers of market leaders should adopt and always live by the philosophy of making their own products obsolete before the competitors do. To maintain market leadership, they practically have to compete with their own success. This philosophy allows, moreover, to identify weak points in a systematic way, and thus to mend them in time. New product and service concepts should always include the established products as exceptions, so that user firms can continue to use prior investments.

**Niche suppliers** of automation systems and solutions, on the other hand, should strive to better anticipate the customers' future requirements. There are two ways to achieve this: a **systematic bottleneck analysis**, and thinking in terms of the

needs of the **customer's customers**. Resulting innovative tendencies in the customer's processes and/or products can help make the supplier's own product and service program more innovative and more future-oriented, and contribute to its optimization.

In addition to sophisticated development strategies, **service strategies** are becoming more and more crucial for longer-term market success. For the **project phase**, important strategies are: engineering cooperations across borders and time limits, online support for installation and commissioning, and system integration. Innovative service concepts for the **operation phase** are: online services like remote maintenance and remote support, remote optimization and hotline services as well as intelligently combined service packages.

Innovative **logistic concepts** like Supply Chain Management (SCM) help make automation technology and service suppliers faster, more flexible and more responsive. Finally, systems and solutions for **Customer Relationship Management (CRM)** will gain in importance over the next few years.