

Industrial IT...

...The Next Way of Thinking



Information shared
in real time across
the business
produces a whole far
greater than
its parts.



Daring to dream

In its simplest form, Industrial IT could be characterized by an open control system that automatically configures and re-arranges hundreds of plant instruments to the real-time needs of a new production run. But it could be much more.

Imagine, for example, that each physical plant device was accompanied by a dynamic, *living* software entity - carrying with it not only configuration data but control software, purchase and cost information, maintenance records, mechanical drawings and communication interfaces. Next, imagine that the same approach could be applied to products - endowing each batch, barrel or box with a dynamic set of real-time characteristics.

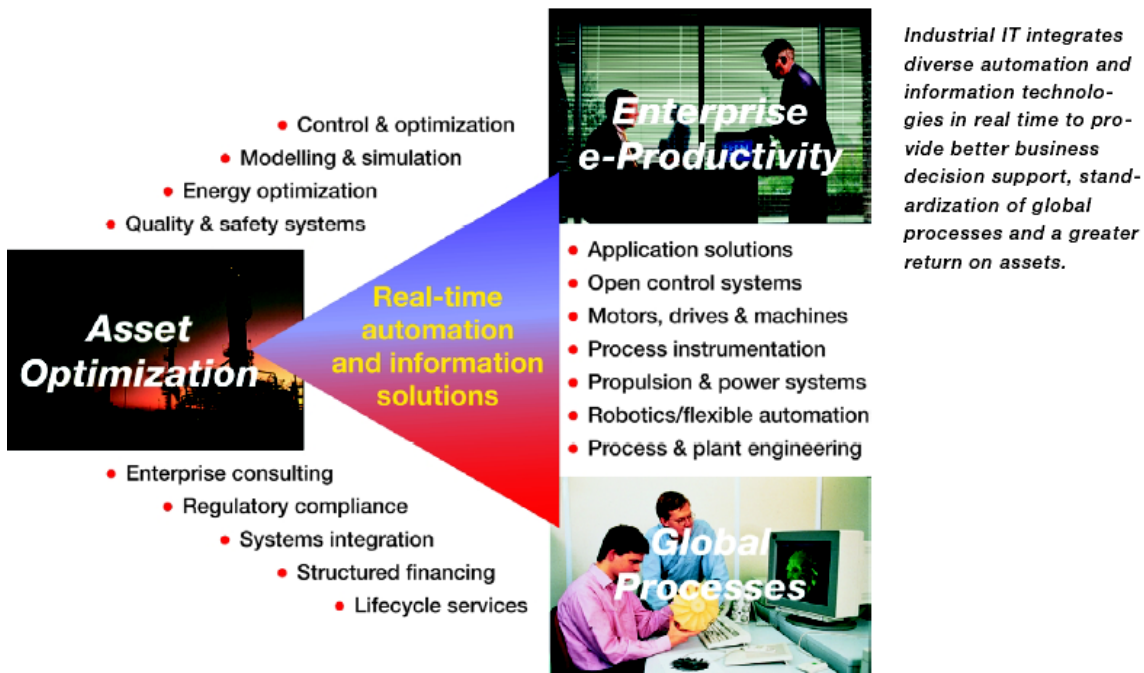
Now, consider the impact if these distributed plant devices could inherit functionality from the environment in which they were placed: new devices would be configured not by a host control strategy, but as a direct result of the business setting in which they were deployed: process transmitters and valves would inherit the range information required for the current "recipe".

Motors and drives would adjust their control set-points as a function of current line speeds. Robots and manufacturing cells could be moved from one task to another - retrieving new control software as they 'recognize' the new processes and its requirements.

and supply chain management would stretch the vision of "e-Productivity" all the way from procurement of the most basic raw materials to delivery of the most advanced finished products.

Just as these devices could automatically inherit characteristics from their surroundings, they could also report information and influence operations in other parts of the enterprise. Real-time information from a bottlenecked or failing device might automatically trigger compensating adjustments in down stream operations. Interactive quality measurements from raw materials through finished goods would provide comprehensive materials traceability and documentation. Most important, the integration of systems for sales pursuit, enterprise resource planning,

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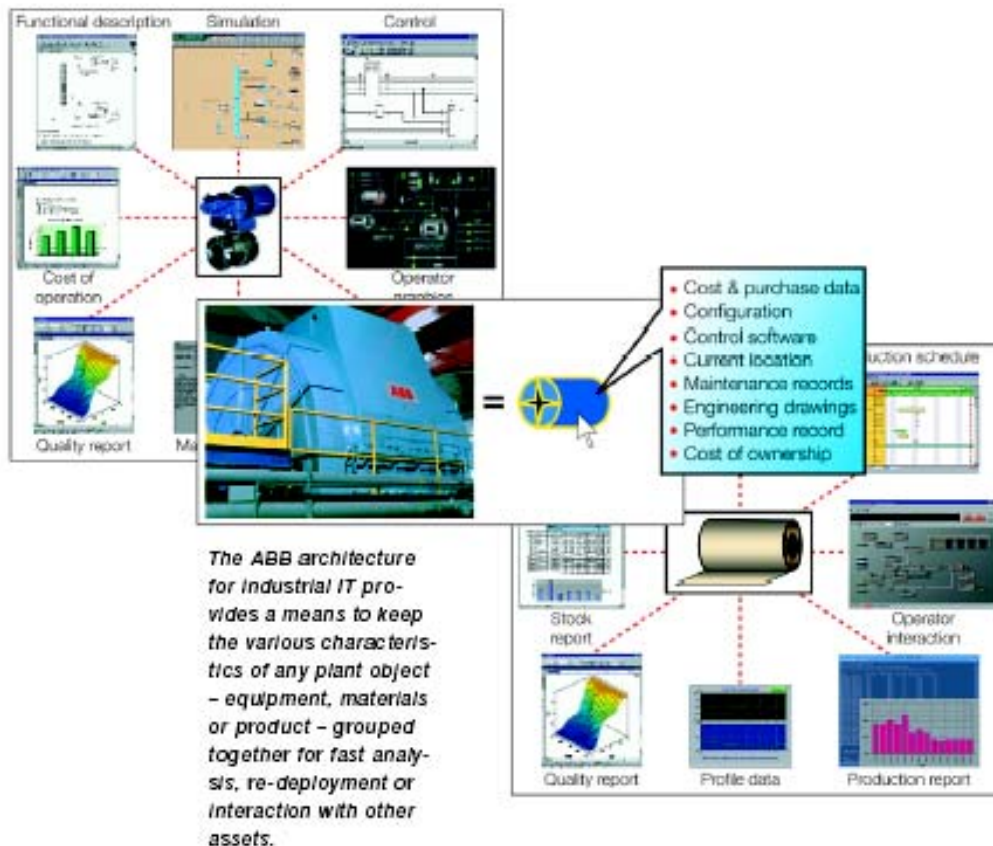


Outside, looking in?

Tools such as the foregoing stretch the value of *plant* information systems from basic control and optimization to a broader arena of automated logistics. Even the best-laid plans can fail however, when the production 'start' button is pushed by a manager without access to the real-time conditions of his enterprise.

Today's paradigm of 'Internet time' is rapidly filtering down to the operations level. Managers who are unaware of the incremental cost of production - and its incremental *value* at any given moment - will be at the mercy of the fiercely competitive, wide-open markets to come.

Ideally, asset optimization includes a comparative, real-time look at the differences in performance between *multiple* assets of similar capacity - be they transmitters, turbines, turbochargers, robots, conveyors, compressors, motors or complete production trains. This analysis can provide an early warning of impending failure, while allowing healthy assets to operate closer to design limits. Most important, a real-time look at asset *availability* leads to greater *productivity* by giving the strongest assets priority in real-time scheduling decisions.



Plant-Centric Architecture

This dynamic interaction of 'enlightened' plant devices reveals the essence - and the dramatic benefits - of Industrial IT Solutions. But how are they achieved?

After years of debate over competing standards for communication protocols, automation providers are starting to understand that the real potential lies not in the 'highway', but in the objects that it connects. A true plant-centric automation architecture must recognize each plant object (valve, pump, motor, fan) and its inherent characteristics (range capacity, speed, output) as one. With this functional marriage accomplished, dynamic access to the object's assets management characteristics, (productivity, capacity, cost of ownership, ROI, etc.) follows logically.

Just the same, each definable unit of manufactured product (batch, barrel, bag, lot, roll) might become an Industrial IT object, accompanied by inherent characteristics including product specification, quality data, raw material, content customer name, delivery date, etc. These product characteristics would become the 'drivers' that issue the call to action of corresponding plant objects.

ABB's approach to the plant-centric information architecture considers the myriad of enterprise objects (plant devices, materials, products) as the building blocks that make up a total production scenario - or even a specific business -to-business transaction. Although the various objects and their associated software may reside on multiple networks or computers, each object carries with it an integral collection of characteristics, or *aspects*. A 'system' is created by dynamically linking a series of distributed objects as software clients.

Beyond the obvious benefits of faster device installation and interaction, the object-oriented architecture opens up powerful scenarios for both asset and business management. A click on the object icon offers up context-sensitive information from current configuration and diagnostic status to maintenance history scheduling commitments. Linked dynamically to other plant management systems, the device contributes its local assessment to *global* decision support tools such as production reports by unit or section, process disturbances analyses, or quality comparisons among end products based on the specific assets used.

Most important, the ABB 'plug and produce' architecture sets the stage for real-time interaction across the enterprise value chain - from e-Business order input to just-in-time procurement and production to end product distribution. Drawing from a vast library of dynamic enterprise objects, the Industrial IT architect will deploy real-time, *repeatable* automation scenarios to fit a wide variety of business objectives. Just as one would browse the files in a PC directory, the user will browse among and configure multiple structures of enterprise assets - assigning each to the most productive and profitable task at hand.

The Plant-Centric approach considers each enterprise object as a modular building block from which to create total production scenarios.

Putting it all together

In discussing ABB's commitment to Industrial IT solutions, it must be emphasized that the total vision involves far more than dynamic linking of plant and product objects. The ABB architecture - and the shift to more *open* products, systems, and communications - is freeing technical personnel to focus more time on application-oriented solutions that offer vast incremental value. ABB Automation employs some 19,000 software and application engineers - nearly forty percent of our total workforce - in support of squeezing extra value from industry specific, vertically integrated applications.

As the ABB 'productivity objects' are deployed across the enterprise, the job remains to link them with internal and third party systems for decision support, assets optimization and common processes. The era of business downsizing has left many organizations unprepared for this task. Thus, the Industrial IT concept must include a broad range of professional services for technology migration and integration, networking, object packaging - plus process and plant optimization and asset availability. Nearly twenty percent of ABB Automation revenues now come in this area. Our team of application and service professional worldwide boasts a proven track record of value-added project execution.

Finally, the Industrial IT portfolio must include financial tools to help project implementation, risk and reward measurement, and payback evaluation. As a global leader in financial services, ABB brings a diverse set of capabilities including

leasing and structured financing, insurance, financial consulting, and risk management. This internal capability directly extends the

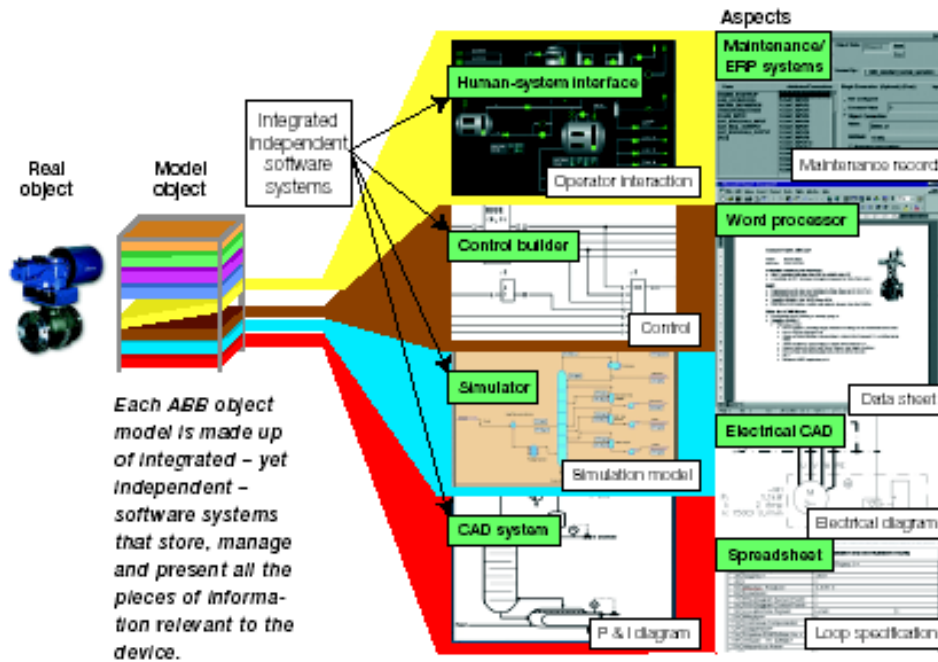
range of ABB Automation solutions into an arena of client/supplier partnership that, in itself, can offer significant dividends.

ABB Automation has formed strategic alliances with major customers from every industry. In their simplest form, these agreements incorporate special pricing considerations and preferred-supplier commitments. More sophisticated partnership encompass dedicated project teams and executive sponsors, joint development; shared risk and reward project execution; and on-site lifecycle support. Through these partnership, ABB customers have saved hundreds of million of dollars in reduced procurement costs, faster project implementation, improved asset availability, standardized software and spares, and - most important - the integrated benefits of real-time enterprise solutions.

Pushing the technology envelope

While most of the tools and the talents for Industrial IT solutions exist today, the never-ending pace of technology will only enhance their scope and benefits.

At a recent industrial exhibition, ABB's automation display incorporated a 'think tank' of progressive product ideas as a guide to discussions on *the next way of thinking* about Industrial IT. Our demonstrations here incorporated emerging technologies such as GPS-based plant information systems,



wireless communications among plant devices, object based document management and remote plant operation via the WAP mobile phone interface.

Amidst a 1500 square meters display of robust and proven automation technologies, the think tank quickly became a show stopper. Intended primarily to stimulate thought on the future of enterprise automation, many visitors chose to view

the think tank demonstrations as a privileged look into ABB's development programs. So be it.

Clearly, the benefits of integrated real-time automation and information. Working in partnership with our customers, ABB Automation is committed to transforming the dramatic benefits of Industrial IT from vision to *reality*.