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# THE PATTERNS DEVELOPMENT PROCESS FOR E-BUSINESS APPLICATIONS

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## **Abstract**

*The main aim of this paper is to show how e-business represents an order of magnitude increase in the complexity and sophistication of systems used by large organisations and how the patterns can resolve this. The most significant contributing factor to this complexity is the high degree of integration required by virtually all the systems that contribute to the basic act of buying and selling goods and services.*

*In present, it seems likely that the ability to handle complexity, and deliver systems in a timely manner, will ultimately become business critical factors; the "Patterns for e-business" initiative is a frontal assault on proliferating complexity and integration.*

**Keywords:** *e-business applications, patterns, best practices, integration of systems*

## **E-business applications**

The specialists characterize these applications in this way:

- There is no longer a simple choice between buy and build. Systems architects and designers are faced with build, buy, rent, connect, or any combination.
- The consequence of errors and downtime with applications that interface to customers and trading partners are often major, and simply cannot be tolerated.
- It is often stated that Internet time runs several times faster than normal time. Speed of response is critical. If calling on accumulated experience means that a system is delivered significantly faster, then the business benefit will probably be very significant.
- E-business application development technologies are more complex and require very high levels of skill. The complexity of tasks means that Java and C++ are essential tools, and reuse of design components would reduce workloads considerably.
- The number of issues that systems need to address has become much larger. This includes availability, security, systems management, extensive integration with other systems, and increased application complexity.

Just as many other areas of business are using benchmarking and best-practice to establish a starting point for their activities, so IT professionals increasingly need a set of architectural and design 'best-practices' as a starting point for their activities. And the Patterns for e-business can be considered like this.

## ***The importance of best practices in application development***

The Internet is an excellent medium for communication, but, more importantly, it has evolved into a powerful business tool, a place where companies get real work done, establish real competitive advantage, and generate real growth and profits.

In March of 2000, Lou Gerstner, the chairman of IBM, predicted a major fallout in the Internet industry, not because the technology or medium itself was inherently flawed but because many companies experimenting with e-business were not adhering to sound business practices. The trends and new requirements proven *the importance of using best practices in the development of successful e-businesses.*

This rule of using best practices also applies when developing the applications and systems that run today's e-businesses. Application developers require proven techniques for building systems to take advantage of this new communications and business medium.

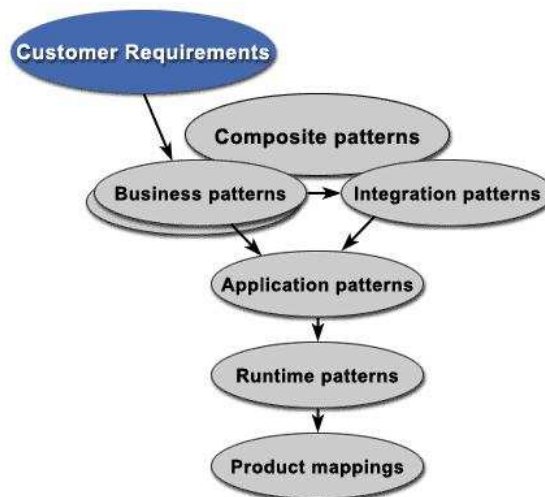
***“Patterns for e-business” initiative of IBM***

Patterns for e-business address a wider set of issues, such as design, development, integration, deployment, operation, and management for Web-based applications. These issues will become even more important over the next few years as systems architectures become more complex in response to the need for highly integrated, real-time corporate e-business applications. The complexity and variety of systems will ultimately expose businesses to unacceptable systems architecture risks, unless experience is gathered and abstracted as it is with the “Patterns for e-business” initiative.

The complexity of Web-based applications goes well beyond that of traditional enterprise systems. Security, systems management, interoperability, performance, availability, and many other issues are amplified in importance as soon as systems face into the external world. This is compounded by a need to integrate with existing legacy applications for processing of core transactions and for other activities such as on-line cross selling. The array of technologies needed to address these issues is bewildering and it is, of course, imperative that they all work together. This is why it is so important that “Patterns for e-business” addresses the runtime architectures with instantiations detailing actual products used. Simply knowing that a portfolio of products can work together is a highly valuable piece of information.

IBM has compiled the collective wisdom and experience gained from more than 20,000 successful Internet-based engagements and transformed that wisdom into the IBM Patterns for e-business. These Patterns provide the best-practice blueprints and tools to facilitate the application development process and enable companies to shorten time to market, reduce risk and, in general, see a more significant return on investment.

**No matter the methodology driving an application development project**, the major steps in successful projects are essentially the same.



**Fig.1. The Patterns for e-business layered asset model**  
Source - <http://www-128.ibm.com/developerworks/patterns/>

The Patterns provide assistance in all phases of the development process, beginning with requirements gathering. As a development team puts together requirements, the Patterns Web site helps match those requirements to the appropriate pattern, **Business pattern**. As the team refines the requirements and determines which existing systems, data stores and infrastructure will be integrated into the system, they can use the **Application pattern** to develop how application components and data within a business solution interact.

After choosing the Application pattern, the team can match **Runtime patterns** topology based on the existing environment and business needs. The Runtime pattern establishes the components needed to support the chosen Application pattern. Without advocating a particular vendor, this pattern defines the logical middleware nodes, their roles and the interfaces among these nodes in order to meet business requirements.

Developers must now determine which products to use for the actual development. At this point, the Patterns provide a wide range of options and lend the developer significant assistance. Developers can access from the Patterns Web site **Runtime Product Mappings** that identify tested, optimal software implementations for each Runtime pattern. Associated with each Runtime Product Mapping on the Web site are best-practice application, design, development and management guidelines that have been gleaned in the process of developing these patterns. Developers can use them to access a wealth of information about other, similar development efforts.

## Conclusions

The most significant contributing factor to this complexity is the high degree of integration required by virtually all the systems that contribute to the basic act of buying and selling goods and services. This integration is not confined to systems within the enterprise, but increasingly includes systems belonging to trading partners, third-party trading exchanges and perhaps most importantly those that face out to the customer.

The Patterns development process is a live project, ever-evolving and being updated as new products are released and are used in the building of real applications. IBM has constructed the Patterns and the Patterns Web site to enable development teams to work through the development process using their preferred methodology or the methodology suggested by consultants engaged to assist in the project.

Application development, regardless of the complexity of the project or the methodology, will benefit greatly by employing a best-practice approach to the process. While some aspects of an application development project may be unique, all development process generally follow the same major steps.

The IBM Patterns set the foundation for scalable e-business objectives. Companies can find the tools to build their first Web-based application, or link to additional services and products that will enhance even more complex projects. Using open-source standards, the Patterns take a vendor-neutral approach that accommodates today's complex environments and leverages the value of a company's existing infrastructure investment.

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