

Internet Business Evolution
Characteristics of the Internet Portal Marketplace

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Introduction

This report provides concepts and information that are essential prerequisites to achieve that market ownership.

HRG has conducted extensive research regarding:

- The importance of an integrated solution for Internet information access,
- The real and perceived benefits of portals,
- The best terms with which to characterize portals to your advantage, and
- Opportunities for success in this market.

As a direct result of our research and analysis HRG has confirmed that we are witnessing a most significant change in the way businesses interact with each other and with their customers. The impact of the Internet Business Evolution will be just as significant as the industrial revolution.

In recognition of the significance of these events HRG has formulated definitions for 5 levels of Internet Business Evolution, which can be utilized by vendors and users of the Internet to avoid undefined portal terms such as informational, enterprise, knowledge, internal or external, public or private. We believe these definitions are a significant step towards leveling the playing field for IT and business professionals who wish to cut through the marketing babble and make more intelligent business decisions on how to leverage the Internet. With these definitions customers and prospects will be able to evaluate current offerings and determine how their enterprises can use the Internet for maximum business advantage both now and in the future.

HRG's Internet Business Environment definitions provide a framework to understand the business use of the Internet from the most basic to the most comprehensive. The complete definitions and discussions of these terms can be found within the body of this report.

- E 1 – Information Delivery
- E 2 – Catalog Commerce
- E 3 – Partner Integration
- E 4 – Personalized Commerce
- E 5 – Organizational Automation

We believe that no single provider can deliver a fully functional E 5 solution. That level of functionality can only be achieved through well-crafted partnerships and requires almost equal amounts of product and professional services (consulting services) in order to ensure a successful implementation. E 5 is at present only able to be implemented by the most committed and the largest of companies.

Conclusions

Harvard Research Group concludes that there is an enormous opportunity to define the technologies and deployment paradigms for the Internet business solutions market. Confusion among customers is high about what constitutes a portal. Nearly 60 interviewees gave their own definitions of portals in our survey. Except for those who responded, "Don't know," most of the answers received were different from each other.

Moreover, our results show that users who considered their Internet environment as some form of Internet Portal were very enthusiastic about it, in contrast to non-users, who had little interest in the technology. HRG sees an enormous opportunity to both define the Internet Portal space and educate the marketplace as to its essential value propositions while omitting Internet technical and marketing babble.

Recommendations

Harvard Research Group's key recommendation is to focus your Internet business solutions efforts around a fundamental principle of marketing:

Technology is important, but positioning is even more so.

The basic challenges of marketing are:

- To understand what the customer needs, and
- To position the product in the mind of the customer as being the best for the need.

A company that makes drills, for example, must understand that the customer is interested in making holes in various materials, and not primarily in the metallurgical characteristics of the seller's drills. So the seller's marketing efforts should emphasize how well the product makes holes, and only secondarily, if at all, how hard and flexible the drill steel is.

This basic marketing concept of selling to the customer's need is simple enough to apply when the customer already knows he wants to make a hole of a certain size in a certain material. But in today's complex and rapidly evolving business environment, companies can find it rather difficult to specify what they need in the way of information technology.

The challenge for the technology vendor then is to keep marketing activity focused on customer needs ("the holes") and not on the parts and pieces ("the drills"). This job is all the more difficult because of the clutter of ill-defined terminology in the marketplace.

Nevertheless, enlightened companies are looking for better solutions and companies are realizing they have to embrace new ways of doing business. There is a general belief that information technology can improve productivity and enhance customer loyalty through better service. The gap between these general needs and the list of products and services on a purchase requisition, however, is just too large for an efficient and productive sales dialog.

What is needed is the information technology equivalent of the definition of a hole saw for making large holes in wood versus, say, a screw punch for making large holes in metal, i.e., a set of terms and definitions incorporating both customer needs and technical means. When such definitions are recognized by both customers and sellers, the market is facilitated because people know better what they are talking about.

Harvard Research Group recommends the following activities:

1. Establish the Internet Business Environments (E1–E5) as objective and vendor-neutral concepts,
2. Position its products at points in the E1–E5 spectrum, especially at the high end, and

3. Explain features and benefits in terms of E1–E5 in a way that emphasizes your unique strengths.

The opportunities available at the various levels of Internet Business Environment can be more clearly understood by comparing them according to various parameters. As you move up the technology scale from simple web browsers to the most complex portals it becomes apparent that there is a very real increase in the requirement for professional services (i.e., services and support) during installation, implementation and throughout the life cycle of the solution. HRG fully expects this to be the situation for the foreseeable future. What this means in terms of an E 5 solution is a real and substantial commitment to either developing and maintaining a robust professional services organization or finding a partner who can fill the bill, such as for example, an Andersen Consulting.

Similarly, as companies move up the scale from low risk low technology solutions such as E 1 or E 2 up to a technologically complex E 4 or E 5 solution there is a real opportunity to reap financial and mindshare rewards. From the customers' perspective as they move in the spectrum from E1 to E5 the bigger the potential reward the greater the risk in terms of lost money, lost customers, lost productivity, loss of reputation, and ultimately lost business. This provides an opportunity if you can combine your products with services to minimize the risks. The level of support is crucial as a small amount of customer dissatisfaction can overwhelm lots of satisfaction, and the latter is needed to propagate additional good will in the marketplace which any provider in turn needs to gain the recognition it deserves.

Methodology

The methodology employed by HRG includes primary and secondary market research focused on the Internet and more specifically on Portals from a B2B and B2C perspective.

The primary research instrument and screener were developed by HRG. The goal of the interviews, which were conducted with IT professionals, was to determine what they like most or least about their current solution, how they would measure its effectiveness, and terms they would use to describe it. If they were to apply a unique name other than portal what would they call it? Customers and prospects currently using or planning to implement a portal solution were asked what the selection criteria were and how the criteria were prioritized relative to the organization's goals and objectives. They were also asked what benefits they hope to realize. HRG asked each respondent how they obtain information about portals.

Throughout this project, HRG emphasized and incorporated as appropriate the following Portal benefits:

- Open Architecture

- Connectivity across systems, new and old
- Integration across enterprise applications
- Development and deployment tools
- Reduced development time
- Performance and scalability
- Higher availability options
- Worldwide support

Internet Business Evolution

Recent developments in information technology – including transaction processing, data warehousing, groupware, desktop and mobile computers, and the Internet – have inspired information system planners to envision pervasive support for the business environment, both within and among enterprises. In their most elaborate expositions, these visionary systems automate the business process itself from Web-based customer contact and ordering to final shipment, billing and restocking. Such systems require much customization, with legacy data being integrated into Internet-enabled applications with great effort.

Nevertheless, customer confusion about the role and function of Web-based business environments was evident in our study. The language used to describe e-commerce sites, e-commerce applications, portals, and Web commerce environments of all types is much abused. Harvard Research Group has developed a set of categories to describe Web-based business environments and mapped them against the features, functions and technological requirements found in practice. These definitions cut through the marketing noise and hype, foggy thinking, and misunderstandings that now characterize this technology domain.

HRG has identified three characteristics, depicted in

Figure 1, with which to describe portals as they become more pervasive in the enterprise. These are not just discrete fundamental functions but also threshold events – or evolutionary plateaus – that are achieved by enterprises as they ascend the learning and growth curve from brochure-ware Web pages to full-blown organizational automation.

One dimension of portal sophistication is the number of data and application resources (both internal and external) that are integrated to deliver the services in the Web commerce environment.

A second dimension is the degree of personalized service to individual users (e.g., customers and employees) that the portal can deliver and the continuity of experience it brings to the user constituencies.

A third dimension is the depth and number of business processes that can be animated and completed through the portal – not only for customers and suppliers, but to satisfy the

requirements of internal business processes like human resource allocation and inventory management.

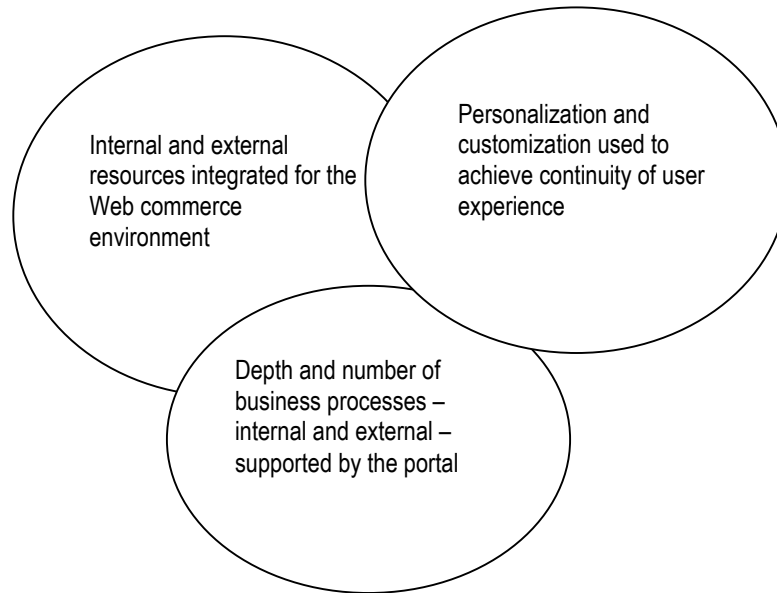


Figure 1. Dimensions of Portal Evolution.

HRG has defined 5 levels of Internet Business Evolution, designated as E 1 through E 5. As depicted in Figure 2, the scale increases in sophistication and in the number of services to both the enterprise and its customers as one ascends it. The levels are defined and explained comprehensively in the next section; here are brief introductions:

E 1: Information Delivery

A Web site provides simple text resources to initiate customer dialogue – but does not mediate that dialogue. A page with a phone number and the name of the company would satisfy this definition.

E 2: Catalog Commerce

A Web commerce site provides applications to initiate customer dialogue and mediate transactions in a rudimentary way – say for tracking orders. A simple cyberspace storefront – even if orders are fulfilled traditionally – would satisfy this definition.

E 3: Partner Integration

A Web commerce environment integrates data and applications outside of the enterprise to complete a transaction or provide a customized service. At this level, enterprises can exchange data with business partners to complete pre-arranged or repetitive transactions, for example, when a particular customer replenishes their usual supply of photocopy paper.

E 4: Personalized Commerce

An Internet-based enterprise environment achieves an advanced state of personalization (with partners, suppliers and customers). It offers the same continuity of experience and context preservation that the user expects when dealing with his oldest and deepest contact within the company, including all historical data, current communications, and CRM data

E 5: Organizational Automation

An enterprise-wide business support substrate uses transactions initiated through a Web commerce instrument to set off and complete the entire chain of events that drive and animate the business, including all back-end processing functions such as billing and restocking.

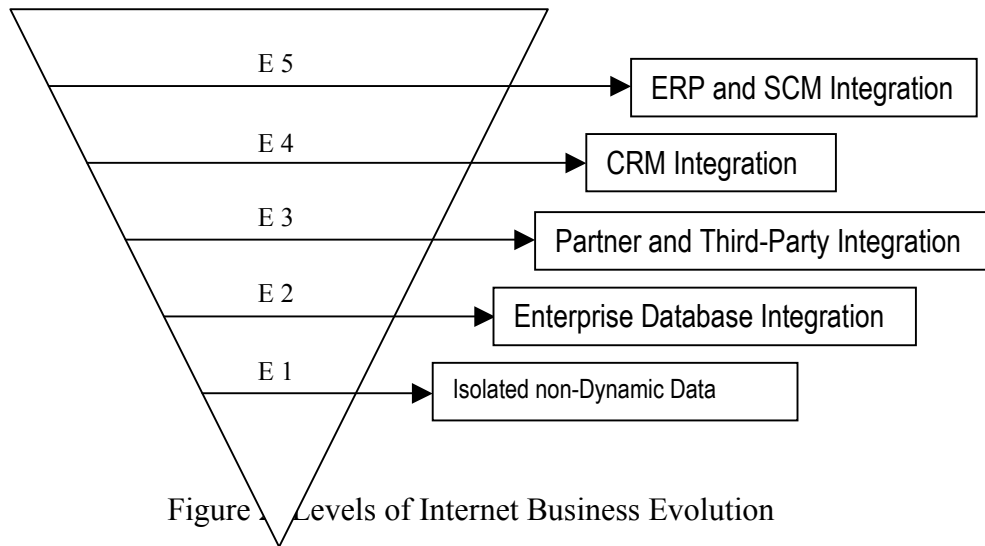


Figure 1 Levels of Internet Business Evolution

With each step upwards, the Internet Business Environment (IBE) becomes increasingly demanding technologically. The most salient trend along this path is the integration of actionable data sources within and without the enterprise. From our survey work, interviews and field observations, we conclude that the more evolved an IBE becomes, the more it draws upon CRM, ERP, and SCM applications. In its most highly evolved exposition, the borders between the portal and these and other business systems almost totally dissolve.

Take, for example, a mortgage company. At E 1, the company would simply post its name and phone number of its office and some links to raw data resources – say lists of available rates. At E 2, the company would be offering scenario-building software for checking amortization schemes, soliciting business through e-mail, taking applications, and updating customers on the status of their loans. At E 3, the company would in addition be automatically obtaining third-party data from credit bureaus and registrars of deeds to process pre-approvals. At E 4, the portal would be streamlining the processing of repeat customers, and offering options and terms based on previously noted preferences in the applicant's community and demographic group. At E 5, the mortgage company would be approving mortgages using collaborative software linking the

applicants and the mortgage officers – as well as servicing loans and managing available funds with upstream wholesale lenders, totally automating the business processes through the portal's activity.

The most sophisticated portals, at level E 5, absorb many of the mundane business functions that were handled via postal mail and human contact through telephony and personal meetings. The economic efficiency and service effectiveness that a portal at level E 5 can achieve is not just a matter of technical development. It depends, of course, on the comfort level of its customers and suppliers with respect to on-line services, but more importantly, it depends greatly on the commitment of the enterprise's management to the success of an automated, on-line enterprise.

Definitions of Internet Business Environments

Harvard Research Group has concluded that there is a requirement for a high level framework that integrates Internet business needs with solutions, and defines the evolution of the solutions over the entire spectrum of requirements and time. Because uses for this category of product are practically without limit, we have selected terms and definitions to portray clearly the extraordinary scope and nature of this market.

The Internet Business Environment (IBE) definitions provide you with a glossary by which you can position your Enterprise Portal offerings. You will thereby be able to avoid the terminological clutter around the portal idea, and focus on how their offerings meet real business requirements.

The IBE framework uses five levels to define the entire range of business needs from the most basic customer interface to an integrated business network well tuned to users and closely coupled with suppliers. Included in the definition of each level is a defining statement and discussion, a list of characteristics most typically found at that level, the impacts on businesses and consumers, and the issues raised from the perspective of several stakeholder communities. Specifically, the following stakeholder perspectives are examined.

Stakeholder Perspectives

The vendor perspective. Capabilities can be characterized by their degree of conceptual complexity. A capability can be shallow, packaged, and thin, with low differentiation, or it can be thick and customized with high differentiation. The issues for the vendor are competitive barriers to entry, message clarity, ease of bringing to market, and extent to which consulting services are needed to prepare buyers for deployment.

The engineering perspective. Capabilities can be characterized by their degree of technical complexity. Some technical issues include: standards and openness, security, privacy, access control, component integration, flexibility of adapting the customer's environment, degree of distributed processing, and integration with legacy systems.

The customer or CIO perspective. Capabilities can be characterized by some measure of bang for the buck, such as return on investment. Relevant variables are acquisition cost, cost of ownership and operation, efficiency, marketshare, profitability, and whether benefits are quantifiable,

The deployment or preparation and installation perspective. Capabilities can be characterized by the time and effort required to bring them to usefulness within the customer organization. Can the capability be installed out-of-the-box, or is it service-intensive? Does its content or complexity require consulting help? If the capability does not easily map onto the customer organization or business practices, then a significant business reengineering effort may be recommended.

The internal user or organizational user perspective. Capabilities can be characterized by efficiency, productivity, leverage, and ease of maintenance. A highly effective capability will give internal users ego-enhancing feedback about the impact of their activities, contribute to their status and recognition in the organization, and have a perceived impact on salary and stock options.

The external user or consumer perspective. Capabilities can be characterized by benefits, ease of use, and savings in time and money. These qualities are enhanced by personalization. Artificially intelligent agents could give a sense of intimacy. Nevertheless privacy must be maintained, and this must be apparent to the user.

E 1 – Information Delivery

A web site provides information about the business and its products, including links to other sites of interest. Typical uses are to inform prospects and customers as well as to disseminate marketing, technical, and other relevant or related information. Similar uses occur in educational and nonprofit organizations. This level is traditionally a low risk, low reward Internet business presence and is typically the easiest and fastest to implement of the internet-based business environments. Used primarily as an information dissemination and business facilitation solution.

- Users request and receive information.
 - User authentication not required.
 - No personalization.
 - Read access to organizational databases.
 - Dissemination of marketing, technical, product or corporate information
 - Increased Customer satisfaction
 - Increased Customer retention
 - Global capabilities
 - Timely distribution and accessibility of information
 - Ease of use with browser-based interface tools
 - Worldwide support
 - Mobile distribution
 - Tree Structure View
 - Caching
 - Performance Monitoring
-
- *Business Impact.* No business is transacted. Any integration with other business systems is limited to read-only access to business or product data.
 - *Consumer Impact.* Some personalization may be provided, but the user is not authenticated.
 - *Vendor Perspective.* Shrink wrapped components with customary technical support. Third parties provide site design services.
 - *Engineering Perspective.* Design intuitive features to expedite sales. Minimize technical and consulting support requirements
 - *Customer Perspective.* Low acquisition and ownership costs. Impact on bottom line is difficult to quantify.
 - *Deployment Perspective.* Straightforward
 - *Internal User Perspective.* Not suitable for internal corporate use.
 - *External User Perspective.* Must be very easy to use.

E 2 – Catalog Commerce

The web site transacts business using secure communications. This is the simplest environment for commercial transactions. The consideration exchanged need not be money – for example barter transactions may be supported. Another example of a system at this level would be one for vouchering internal payments between departments in a corporation.

- All features and functionality of the preceding environment.
 - Products, services, or information are ordered and delivered for valuable consideration.
 - User authentication may include personal and payment data as well as password.
 - Little personalization beyond transaction status.
 - Interaction with organizational systems for shipping, billing, and user service.
 - Business to consumer (B2C) e-business
 - Products and services can be ordered
 - Products and services can be delivered
 - Customers can be invoiced and billed
 - Currency support
 - Order management, e.g., order entry and tracking
 - Transaction management
 - Buying habits can be determined based on customer orders
 - Demographics can be determined based on personal information
 - Buying habits and demographics can result in automated marketing, e.g. e-mail
 - Interaction with statistical databases.
 - Data mining for customer profiling
 - Significant return on investment
 - Reliability and high availability
 - Security
 - SSL point-to-point encryption
 - Load balancing distributed transaction manager
 - Performance trend analysis
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- *Business Impact.* Buying habits may generate email solicitations. Integration with business systems is necessary for ordering, shipping, billing, inventory tracking, product registration, and customer service.
 - *Consumer Impact.* The user is authenticated by personal data associated with a payment card and usually also by password. Personalization may be provided by recall of account information, access to status of previous orders, and use of special services provided for a fee.
 - *Vendor Perspective.* Components sold with training and support. Certification and monitoring of channel partners and other third parties are essential to assure quality of deployed system.

- *Engineering Perspective.* Secure and reliable payment and order handling are paramount. High availability is essential. Good interfaces are needed for back-end integration.
- *Customer Perspective.* Costs are justified by revenue and marketshare. Impact on profitability is readily measurable.
- *Deployment Perspective.* Security and availability considerations govern the deployment siting and phasing. Extensive testing is recommended to validate integration with back-end systems.
- *Internal User Perspective.* Not suitable for internal corporate use.
- *External User Perspective.* Must be perceived as an attentive, responsive, knowledgeable, trustworthy, and always available sales clerk, who remembers who you are and knows the status of your orders.

E 3 – Partner Integration

User requests cause transactions with one or more supplier sites. Supplier transactions can be related to specific user requests or generated by off-line inventory management procedures. In a business environment, this level entails close relationships with suppliers for prearranged transaction types similar to traditional EDI purchase order exchanges. Industry standards and best practices will apply. It also supports request-for-bid processes and bid-related supplier auctions resulting in best price and quality for component pieces, parts, and raw materials.

- All features and functionality of the preceding environments.
 - Prearranged transaction types with partner organizations.
 - Mutual authentication of partner transactions.
 - User requests can trigger transactions with partner sites.
 - Interface to other business systems
 - Payments can be made to suppliers
 - Supplier is authenticated
 - Supplier authentication is transparent to users
 - Supplier auctioning (bidding process)
 - Bidding can take place with selected or pre-determined suppliers
 - Business to business (B2B) e-business
 - XML support for B2B transactions
 - Scheduling
 - Messaging
 - X.509 Digital Certificate Management
 - Security Management Tools
-
- *Business Impact.* Supplier-site transactions are limited to prearranged kinds. These transactions may engender new business relationships but require little change in the business processes of the participants.
 - *Consumer Impact.* Various user populations inside and outside an organization are supported by a web-based system. Authentication to supplier sites is transparent to users.
 - *Vendor Perspective.* VP-level sales cycle for combination of product, customization, training, and support at all participating organizations. May involve multi-year budgeting.
 - *Engineering Perspective.* Access controlled by roles. Transaction types and authentication protocols designed and tested with suppliers. Privacy attributes of supplier systems must be specified and confirmed.
 - *Customer Perspective.* A major IS acquisition that can improve efficiency and customer satisfaction. Concept testable at low risk, but critical mass of supplier transactions is needed for benefits to become apparent.
 - *Deployment Perspective.* Supplier cooperation is essential to speedy deployment. A phased approach is easily planned. Some internal jobs descriptions in inventory management will change.

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- *Internal User Perspective.* Some jobs will be eliminated. Others will be simplified.
- *External User Perspective.* Faster response to requests, and the potential for lower prices if savings are passed along.

E 4 – Personalized Commerce

The web site effectively collaborates with the user who could be a consumer or a company employee by tailoring its presentation to expressed or inferred interests. This is the highest level of functionality provided to individual users, who could be customers, employees, executives, or just plain folks.

- All features and functionality of the preceding environments.
 - Personalized information is provided, based on expressed or inferred interests of the user.
 - Users may design their own page layout and content.
 - Users may communicate, collaborate, and share knowledge or information with each other.
 - Customer Relationship Management
 - Unified authentication, i.e., single sign-on
 - Role-based authentication and authorization
 - Increased efficiency by integrating all corporate data
 - Increased effectiveness of management resulting from more comprehensive data
 - Dynamic publishing
 - Dynamic subscription services, e.g., alert bars and interest channels
 - Automatic suggestion of alternative content
 - Content Management
 - Import all document types
 - Ability to index Notes, Exchange, and ODBC compliant data sources
 - Spider indexing
 - Content aggregation and retrieval
 - Natural language searching
 - Connection, query, result set functions
 - Automatic and explicit services, e.g., categorization
 - Meta-data repository for security and components
 - Open architecture
 - Performance and scalability
-
- *Business Impact.* Advanced interface functions are integrated with business, marketing, and demographic data. This level of functionality could also be used within a department of an organization with the necessary additional security.
 - *Consumer Impact.* The site may emphasize or omit presentation elements based on the user's profile, preferences, and behavior. Users may design a personal starting page and subscribe to personal interests. Users may assist each other.
 - *Vendor Perspective.* Effectiveness of personalization depends on training and support. Differentiation may be difficult with first time buyers. Marketing may focus on upgrades and consultant recommendations.
 - *Engineering Perspective.* Advanced personalization functions require careful design and documentation so the product can be adapted to the customer's needs.

- *Customer Perspective.* Added impact on profitability measured through effect on market share.
- *Deployment Perspective.* Must monitor usage patterns and survey users to see if the personalizations are having the desired effect.
- *Internal User Perspective.* Good deployment will require minimal training and provide unobtrusive security control. Will simplify the job and increase job satisfaction.
- *External User Perspective.* Well deployed personalization features, such as tailored links and semi-automatic searches, will dramatically increase user efficiency and satisfaction.

E 5 – Organizational Automation

The web-based system provides a fully automated, customer driven supply chain management capability. Users can be customers, vendors, suppliers, employees, and stockholders. (“stakeholders”) This level provides key functionality for fully automated, customer driven, supply chain management. Information is used to enable optimum response to customers at the lowest cost with the best possible asset management. Facilitates data mining and related sales and marketing information use. Provides leverage to increase customer satisfaction and customer retention. The integrated support of organizational business processes together with the high degree of personalization makes employees super efficient, typically enabling one to do the work of two or more. This level is a high-risk, high-reward Internet business environment, and provides the greatest potential for significant return on investment.

- All features and functionality of the preceding environments.
 - System supports the organization’s internal operations.
 - Organizational systems fully integrated.
 - Total automation of business
 - Systems and users generate and respond to events in the organizational process model.
 - Controlled communication among customers, vendors, and internal organizations
 - Reengineering of internal methods and external relationships may be needed.
 - Supplier profiles can be determined and generated
 - Supplier can be selected based on profiles
 - Integration with all enterprise applications, both legacy and modern.
 - Event workflow
 - Event monitoring and capture
 - Enterprise Resource Planning
 - Supply Chain Management
-
- *Business Impact.* Systems and users will generate and respond to events in the business process model. Reengineering of internal methods and external relationships may be needed.
 - *Consumer Impact.* The users can be any of the organization's stakeholders: employees, stockholders, suppliers, vendors, or customers. Because the users include those outside the organization, security and privacy considerations are paramount.
 - *Vendor Perspective.* A consultative sell to the CEO and perhaps BOD. Vendor would be wise to partner with first-tier management consultants. The product being sold is not a system but the transformation of the client's business.
 - *Engineering Perspective.* System has to interface with mission-critical transaction and repository systems. Access controls for internal and external user roles must be easy to get right. All aspects of security must be rock solid.
 - *Customer Perspective.* A bet-your-company decision forced by competitive pressures. Will look to the vendor to minimize risks.

- *Deployment Perspective.* The phasing of the work both internally and with suppliers is a challenging consulting job in itself. Moreover, portions of the client's business will probably have to be re-engineered.
- *Internal User Perspective.* Empowers the average employee and makes them super efficient. One person can do the work of two or more.
- *External User Perspective.* Perception of a responsive organization that really has its act together. Impact on stakeholder loyalty can be very valuable.

Application of IBE Levels to Enterprise Relationships

Figure 3 shows how the IBE levels defined above would apply to a company wanting to capitalize on the Internet to strengthen relationships with its customers (accounts receivables) and its suppliers (accounts payables and capital).

The levels correlate with features, functionality, implementation, investment, culture change and benefits, with level “0” being the lowest. The functionality offered to customers and suppliers are not directly linked, as a company could provide level “0” to its customers and have level “2” for its suppliers (typical of today’s commodity suppliers). However, it could not provide level “3” to its customers without level “2” or better for its suppliers.

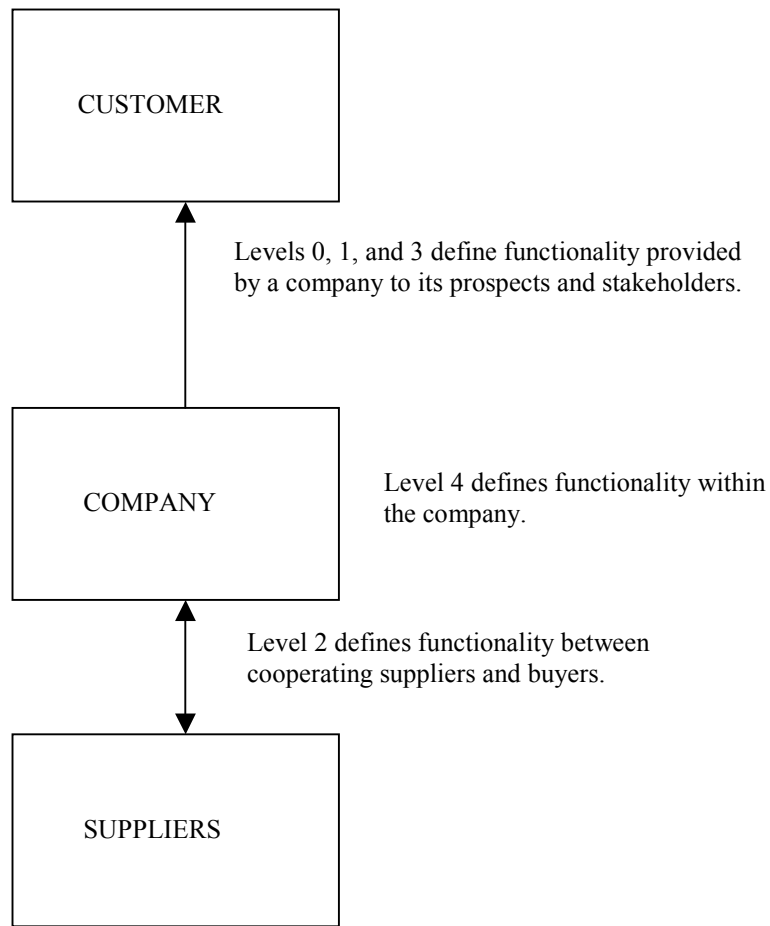


Figure 3. Application of IBE Levels in Enterprise Relationships