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DATA ADMINISTRATION AND THE INTERNET

A Critical Contribution for the Future

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By Clive Finkelstein, Managing Director
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Contents

■ Clive Finkelstein - *"Data Administration and the Internet"*

- [Synopsis](#)
- [Introduction](#)
- [A Status Update on the Internet](#)
- [Business Process Reengineering](#)
- [The Role of the Data Administrator](#)
- [Business Re-Engineering and the Internet](#)
- [So What of the Future?](#)
- [More Information](#)

Synopsis

[Home](#)
[Courses](#)
[Certification](#)
[Projects](#)
[Papers](#)
[TEN Archive](#)
[EA Blog](#)
[Contact Us](#)
[Search](#)
[Links](#)
[Online Store](#)

We are all used to working in an environment of change, but the pace of change in the IT industry today is unprecedented! It affects all areas and in turn - other industries. The catalyst of this change is the Internet and the new opportunities that it presents. What does this mean to organizations that must still operate in this period of rapid change? How can you plan? What direction should you take? What technologies and products will survive, and which ones will disappear? And what impact do these changes have on the role of Data Administrator?

Back to [Contents](#).

Introduction

In the IT industry our managers look for the next silver bullet to help them overcome the impact of technology change. Does the answer lie with GUIs, or CASE tools, or Open Systems, or Standards, or High-Speed Networks? Is the answer Client/Server, or Data Warehouse, or BPR, or Repositories, or Business Rules? Or is it O-O (whether O-O analysis, or design or programming - take your choice)?

The answer is all of these ... and none of them! There is no silver bullet! For we are now seeing a fundamental change in the rules that we have previously relied upon to plan our future directions. I refer of course to the Internet.

Back to [Contents](#).

A Status-Update on the Internet

Consider the changes that the Internet has wrought since early 1995, and particularly in the last few years ...

- Web browsers are now available for any platform and operating system, based on an open architecture interface using HyperText Markup Language (HTML).
- The release of the Java language by Sun, with Java code (as applets) now able to be automatically downloaded from Web servers to execute on a browser running as a Web client. Java is a platform-independent language which is interpreted as byte code by the browser, so providing an open architecture environment for

the execution of Java applets (see Figure 1).

- The growing acceptance by the industry of Java as a mainstream language: not just for applets on web clients but also for web servers, data base servers; and soon also as a complete development language in the operating system - coming to Windows, OS/2 and Apple Mac OS. Many development tools are emerging for Java with "just-in-time" compilers to improve execution performance, such as: Borland Latte, Symantec Cafe and Visual Café and Microsoft Visual J++.

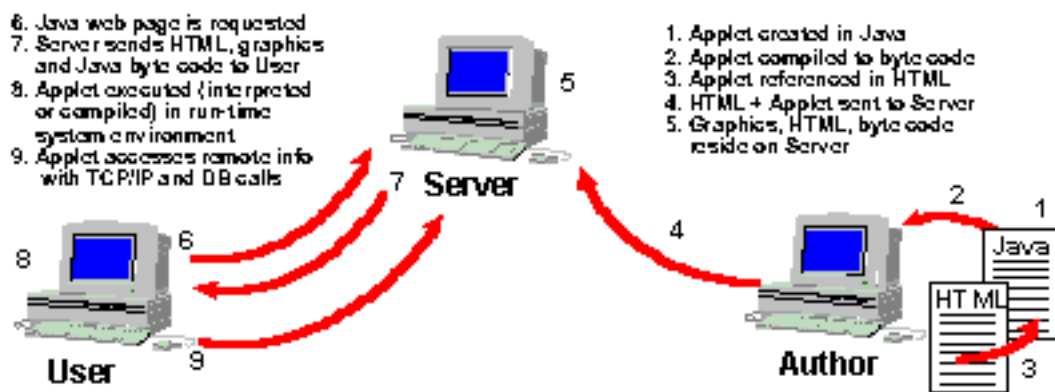


Figure 1: Java applets are compiled to byte code and are referenced by the HTML web pages that use them. Both reside on the web server, ready to be downloaded when requested by a web client. The Java code is executed as interpreted code on the client, or instead as compiled code using a "just-in-time" compiler operating as the Java byte code is downloaded to the client.

(Diagram © 1996 IDG Communications, Inc from an article in Infoworld.)

- Microsoft attempted to use their dominant desktop market share to establish Visual Basic (VB) Script as a competitor to Java. A similar attempt was made by Netscape, with their share of the browser market, to achieve standardisation by the IT industry on Javascript (a subset of Java) in Netscape Navigator. Both companies have now realised that the impetus behind Java gives them no alternative but to provide inter-operability between Java, Javascript and VB Script. *This benefits all the industry.*
- Most DBMS products are now moving to use Java and HTML: to accept input as HTML direct from Web forms, then carry out relevant DBMS queries and generate dynamic HTML Web pages to provide output in response. DBMS products to provide this

capability include: DB2, Oracle, Sybase, SQL Server, DB2, CA-OpenIngres and Informix.

- Client/Server development tools are also moving to Java, with transparent access to the Internet and corporate Intranets by applications built using these tools: generating dynamic HTML output to display transaction results. Vendors are developing new tools to provide this capability, with backward compatibility for applications using their earlier tools. Products include: Powersoft Optima++ (with compatibility for Powerbuilder); Centura (previously Gupta - with compatibility for SQLWindows); and Borland Latte (with backward compatibility also for Delphi and C++).
- Data Warehouse products are emerging with an internet interface, accepting HTML input and generating HTML output. And Data Mining and Screen Scraper tools that provide GUI interfaces for Legacy Systems are also becoming internet-aware. Some now accept 3270 I/O data streams and dynamically translate them to, or from, HTML to display on the screen; thus they provide a transparent HTML interface for easy migration of 3270 mainframe legacy systems to the Internet and corporate Intranets.
- The Internet is based on the TCP/IP communications protocol and Domain Naming System (DNS). Novell, Microsoft and other network vendors now realise TCP/IP is also becoming the network protocol standard for the corporate Intranet and Dynamic Domain Naming System (DDNS) is now a transparent Internet / Intranet Network Directory Services standard. The communications standards used for the Internet thus also become part of the corporate Intranet. This enables low-cost Virtual Private Networks to be established using the Internet as the backbone, or high bandwidth will continue to be provided using dedicated private networks as part of the Intranet.

The pace of change over the last few years, brought about by the Internet, has been unprecedented in our industry. In turn, the Internet and the IT industry are bringing change to many other industries.

Back to [Contents](#).

Business Process Reengineering

Consider now BPR and the percentage of BPR projects that have failed: generally acknowledged to be 60% - 70%!!! (Of course, an optimist might say that 30% - 40% have succeeded!) In a previous article "*Business Re-Engineering: Three Steps to Success*" in the Jan/Feb 1994 issue of the Data Base Newsletter, I discussed some of the reasons for this high failure rate ...

Many BPR projects have focused only on processes - ignoring the business plans on which those processes depend, and the business information needed to support decision-making. To re-engineer business processes no longer required because of changed strategic plans is an exercise in futility! My earlier Newsletter articles discussed that the three steps to BPR success ensured that Business Processes and Business Information both supported the Business Plans set for the organisation (see Figure 2). This is also available as a single article titled "[Business Re-Engineering: Three Steps to Success](#)" and can be read online, or can be downloaded as a Word 6.0 document from the IES web site "White Papers" as follows: <http://www.ies.aust.com/~ieinfo/articles.htm>

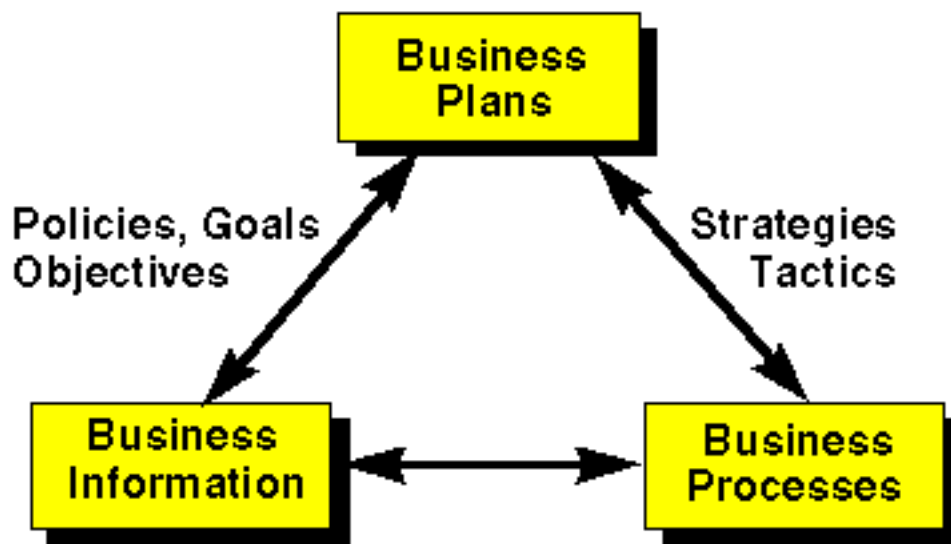


Figure 2: Business Processes and Business Information must both support the Business Plans that are set for the organisation.

Business Re-Engineering (BRE) is a superset of Business Process Reengineering (BPR). It structures Business Plans, Business Information and Business Processes so that they are mutually supportive. But to achieve this requires a partnership between the Business and Data Administration.

Back to [Contents](#).

The Role of the Data Administrator

The only thing stable today ... is CHANGE itself. Organizations must therefore structure themselves to respond rapidly to change. They must above all change to a market-driven and customer-driven focus, rather than be organization-driven or product-driven as in the past. New business process opportunities can emerge from this customer-oriented focus, with new processes crossing previous functional boundaries. These cross-functional processes can lead to dramatic breakthroughs with re-engineered business processes.

But if you have redundant data, you also have redundant processes to maintain each of those redundant data versions up-to-date. When your data is structured non-redundantly, many of these redundant processes disappear. The way an organization operates when it must keep all of those redundant data versions up-to-date and consistent is quite different from the way it should operate with only one valid version of data: which, when updated, is available to all who are authorized to access it.

The Data Administrator's role is vital in achieving integrated, non-redundant data bases that can be shared throughout the enterprise. This in turn leads to simpler business processes, with re-engineered cross-functional processes that focus on customers - and that can take advantage of the new business opportunities that emerge from a cross-functional emphasis.

Back to [Contents](#).

Business Re-Engineering and the Internet

What does this mean, when we also consider the Internet? Its impact on business processes - with instant access to customers and suppliers - is documented in the paper: "[*Business Re-Engineering and the Internet: Transforming Business for a Connected World*](#)". This is an update of the earlier paper referenced above, to reflect the effect of the Internet and Intranets.

Most DBMS and Client/Server Development tools will interface directly and transparently with the Internet and Intranet. Web browsers, Java, HTML, the Internet and Intranet all provide an open-architecture interface for most operating system platforms. Previous incompatibilities between operating systems, DBMS products, client/server products, LANs, WANs and EDI will disappear - replaced by an open architecture environment based on HTML and Java.

The open-architecture environment enjoyed by the audio industry - where

any CD or tape will run on any player, which can be connected to any amplifier and speakers - has long been the holy grail of the IT industry. *Finally, once the industry has made the transition over the next few years to the open-architecture environment brought about by Internet and Intranet technologies, we will be close to achieving that holy grail !!!*

The client software will be the web browser, operating as a "fat" client by automatically downloading Java code when needed. Client/server tools will typically offer two options, each able to be executed by any terminal which can run browsers or HTML-aware code:

1. Transaction processing using client input via web forms, with dynamic HTML web pages presenting output results in a standard web browser format, or
2. Transaction processing using client input via client/server screens, with designed application-specific output screens built by client/server development tools. This optional client environment will recognise HTML, dynamically translating and presenting that output using the designed application-specific screens.

These client/server development tools will provide transparent access to data base servers using HTML-access requests, whether accessing operational data or Data Warehouses. In turn the data base servers will process these requests - transparently using conventional languages, or Java, to access new or legacy data bases as relevant. These may be separate servers, or instead may be mainframes executing legacy systems.

Web servers will then operate as application servers, executing Java code or conventional code as part of the middle-tier of three-tier client/server logic distribution, with data base servers also executing Java code or conventional code as the third logic tier.

Back to [Contents](#).

So What of the Future?

Development will be easier: many of the incompatibilities we previously had to deal with will be a thing of the past. Open architecture development using the technologies of the Internet will also be part of the Intranet: able to use any PC and any hardware, operating system, DBMS, network, client/server tool or Data Warehouse. *This will be the direction that the IT industry will take for the foreseeable future.*

New reengineering opportunities will emerge from immediate access to

customers and suppliers via the Internet. But this also means that *the chaos of redundant data that exists in most enterprises ... will now be visible to the world!* This will be apparent from the front window of each organization's web site. Not by what can be done, but rather by what they cannot do when compared with their competitors.

So how should your organization operate when your customers have immediate access with the click of a mouse to you ... and to your competitors? If your organization cannot meet the needs of those customers, they will leave you just as fast - also with a click of a mouse ... and go to your competitors!

Hardware, software, networks and the IT industry are all rushing to embrace the Internet and Intranets. What is the next silver bullet? Is it an: Object-Oriented, BPR, Open, CASE, GUI, Client / Server, Repository of Networked Business Rules Data Warehouse ???

Or is the next silver bullet Data Administration? If so, we had better start getting our organizational house in order NOW !!! *The role of Data Administration has never been so important for success in business as it will be in the coming competitive Armageddon.*

Back to [Contents](#).

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Back to [Contents](#).

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