# Application Transformation with IBM
Reduce risk and cost in mixed-workload environments

Many iSeries™ customers today are at a crossroads.   They have an existing inventory of applications, data and business processes that are rooted in RPG-based, green-screen applications.   These applications fit the primary definition of legacy applications – applications that work – but they are not visually appealing or easy to use for the new users who have been raised on Web and GUI-based applications.   Recognizing this need, IBM has built a portfolio of solutions that can help the iSeries customers transform these legacy applications into modern, mixed workload processes where they can take advantage of the existing applications in conjunction with new Service Oriented Architecture based applications. This Application Transformation solution will help you make the most of your existing applications and help you move them into the on-demand world more quickly and with higher ROI.

This solution is one of the capabilities of IBM's Business Integration offerings.   The attached graphic lays out these capabilities as a continuous process that allows you to continually refine your business in response to new business imperatives as you move toward an on-demand business.

Business Integration Capabilities from IBM

Model   business functions and processes

Transform   applications, processes and data

Integrate   islands of applications, processes and information

Interact   with resources anytime and anywhere

Manage   performance against business objectives

Accelerate implementation of intelligent processes
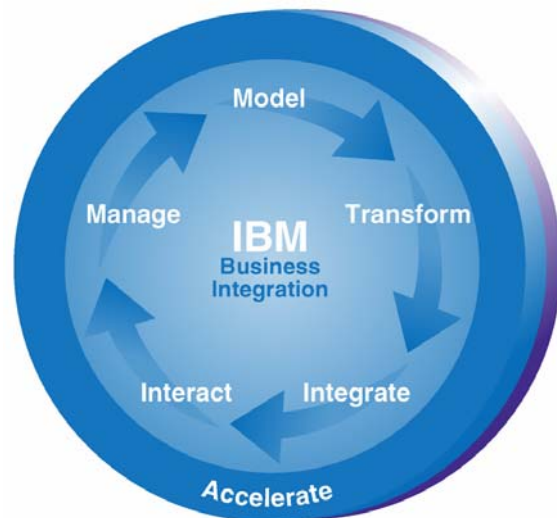
These capabilities and the transform capability in particular, help you deal with the pressures which every IT organization is facing. Some of those pressures are to:

- **Do more with less** - IT budgets have been cut and are not growing. Yet IT must support the needs of the business and prepare for the future of the business. This reflects the reality of today's economic climate.

- **Align IT resources with business priorities -** IT resources and investments have to be aligned with business priorities. Business priorities these days are focused on increased efficiency via internal and external integration.

- **Improve resiliency and security -** Since today's business is global and requires 24x7 operation, your IT infrastructure must deliver continuous operation. Appropriate redundancy must be defined so that IT services continue to be available. Security related threats to IT must be addressed and are a key priority for IT organizations in 2004.

- **Increase IT infrastructure flexibility -** As business attempts to rapidly respond to the marketplace, it will lean upon IT to rapidly meet new requirements. Not only must the business applications be flexible, the IT infrastructure must be able to adapt to the changing loads. Consider the example of a new product that a business wants to offer in response to a competitive product. Not only must the IT environment implement and support the delivery and execution of the offer, the environment must be able to deal with the higher load placed on the external web site and partner connections.

- **Leverage and integrate legacy applications -** Don't reinvent the wheel; connect it to the new machine. With reduced budgets, it makes financial sense to continue to leverage existing applications and to integrate them into the new e-business IT environment.

- **Improve developer productivity -** This continues to be a focus as the need to become more responsive grows. IBM continues to offer improvements in the WebSphere Development Studio to enhance developer productivity. The most recent example of this is the addition of Enterprise Generation Language (EGL) to the new version of WDS. EGL allows your developers to generate either Java or COBOL code from a high-level language rather than by programming directly in either language.

- **Reduce unnecessary complexity -** Complexity is here to stay. What we need to do is to avoid unnecessary complexity.

In support of these changing requirements, IBM has deployed both products and services to assist our customers in their IT transformation. IBM Global Services has developed a Legacy Transformation Services practice that will engage in transforming not only customer applications, but also their data and networking infrastructure as needed. Similarly, IBM Software has deployed products to assist in transitioning our customers' applications to a programming model that will support their on-demand business needs. Features have also been added to our software products over the last decade to enable a

network infrastructure transformation. We will not discuss the networking changes, but will focus on the software products that enable Application Transformation.

Application Transformation is about transforming applications, processes and data to create new business value from existing IT systems. The Transform capability includes a set of tools that help maximize the predictability, efficiency, and quality of mixed workload development and deployment.

Mixed workload, a concept which plays a key role in the Transform capability, refers to an environment in which legacy systems are integrated with non-legacy systems (such as Java and .Net), and run in an interconnected manner to achieve an optimal balance of performance, cost, and risk.

The key business benefits of the transform capability include the ability to:
- Reuse existing assets, which costs five times less than developing new applications from scratch
- Enable rapid change to meet new market opportunities
- Reduce cost by simplifying business processes
- Improve developer productivity
- Minimize risk of disrupting critical processes.

For the IT shop, the benefits of IBM's transform capability include the ability to:
- Accelerate predictable delivery of business value
- Improve end user satisfaction
- Increase operational and development flexibility
- Reduce development, integration and maintenance cost.

These benefits are especially important in an environment where application interfaces are difficult to use and user workflows are outdated. For many companies, green screen interfaces can be difficult to learn and usually require training, but these companies need to extend their green screen applications to new users, such as business partners, suppliers, and customers. A modern Web interface is often much easier to extend to business partners than a green screen interface.
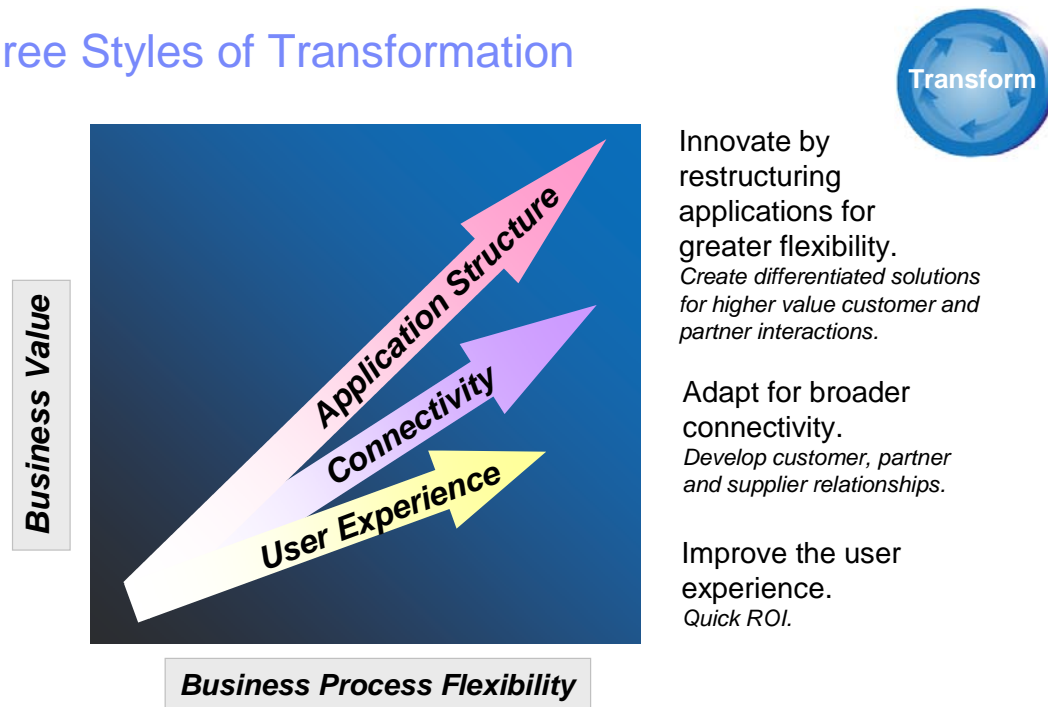
Another issue that must be addressed in this transition is that the workflow of green screen applications is often out of date, requiring users to navigate through many unnecessary screens and fields. Furthermore, users of green screen applications are often asked to input the same information multiple times into the application. A better solution would be to ask users to provide information one time only, and then to enter it for them on subsequent requests for the same information.

Styles of Transformation

In dealing with our customer base, IBM has identified three distinct styles of transformation. Each of these approaches will have value for some of you as you move through the on-demand spectrum. These styles are identified in the graphic below. The

more you invest in programming resources and time, the more flexibility and business value you can expect to derive from the effort.

Three Styles of Transformation

Business Value (vertical axis)

Business Process Flexibility (horizontal axis)

Innovate by restructuring applications for greater flexibility.
Create differentiated solutions for higher value customer and partner interactions.

Adapt for broader connectivity.
Develop customer, partner and supplier relationships.

Improve the user experience.
Quick ROI.

In the Transform User Experience style, customers generally are driving for a quick solution that will deliver a better user experience and a quick ROI.   Those customers who need to integrate their existing applications with partners, suppliers or customers with a standardized interface, whether that is to the desktop or to another application will find value in the Transform Connectivity style, but will tend to invest more time and effort in the process.   Those customers who are looking for truly differentiated solutions that will deliver high business value and business process flexibility will be driving toward the Transform Application Structure style.

The choice of any one style does not lock you a dead-end application. Over time, you can – and probably will – migrate applications from one style to another as your business needs change.   The Transform User Experience style will often allow you to deliver key value in a timely manner, but you may want to improve operational efficiency over time by migrating that application to a Transform Connectivity or a Transform Application Structure style as you free up the resources to make those changes.   The end user may not even realize that there has been a change, since the Transform Connectivity style of web service may be seamlessly replaced by a web service in the Transform Application

Structure style without changing the presentation of results to the end user.   This kind of change again helps improve productivity, since the end users do not have to be retrained to use the updated application.

Now we can take a deeper look at each of these styles of transformation.

Transform the User Experience

By replacing green screen interfaces with a point-and-click Web interface and by improving the workflow of green applications, you can increase end user and reduce training costs.   This is especially true in situations like call centers where employees change jobs more often and stay in jobs for shorter times.   A Web interface makes new employees productive sooner, since they are familiar with the web interface and are no longer frustrated by the look and feel, or the inefficient workflow, of old-fashioned green screen applications.

This form of transformation allows you to easily remove unnecessary screens and fields, and multiple legacy applications can be integrated into a single Web interface. Single sign-on can also be used to simplify the process of accessing several host applications. Users are asked to enter data one time only, and are not asked to perform repetitive tasks that can be done automatically for them.

This same style can be used to extend applications to new users like business partners, suppliers, and customers. Since green screens are replaced by an intuitive, point and click Web interface, users who have not received training on the system are able to navigate legacy applications more like traditional Web applications. This transformation to a Web interface requires no access or modification to the source code. If the back end system is doing a good job serving the needs of the business, but the front end presentation layer (green screens) is a source of problems, then transforming the user experience is a great way to achieve quick ROI and avoid replacing legacy applications.

IBM has several offerings that can help iSeries customers transform existing iSeries applications to Web applications. The first of these is the WebFacing product that is delivered as part of the WebSphere® Development Studio for iSeries. WebFacing can convert applications from green screen to web GUI based on the DDS maps of your source code. With this DDS information, each screen will be converted from a green screen to a web GUI. Using this form of transformation, you will not change the application and process flow, but you will improve the user experience and avoid the interactive application charges that are inherent in most iSeries green-screen applications. Since WebFacing is fairly familiar to the iSeries community, this article will focus on the other available alternatives from IBM.

WebSphere Host Access Transformation Services

WebSphere Host Access Transformation Services, or HATS, is the newest addition to the WebSphere Host Integration Solution. HATS delivers improved ease of use of existing 5250 (and 3270) applications by dynamically transforming the screens into more Web-like HTML pages for the end user.

It utilizes a rules-based transformation engine to transform selected areas of the green screen into a variety of presentation styles such as hot links, drop down boxes, radio buttons, etc. You can extend existing green screen applications to Web users within hours of loading the software by using the templates provided. Or you can create from simple to highly customized applications through increasing levels of customization. The graphic below shows how an original green screen can be transformed to a simple table look and feel (the center view), or to a much more customized view with the table data represented as a bar graph using one of the wizards built into the HATS toolkit and with a calendar widget added as a dropdown for entering order dates. These wizards can make the application much easier to use and can also help reduce order entry errors.
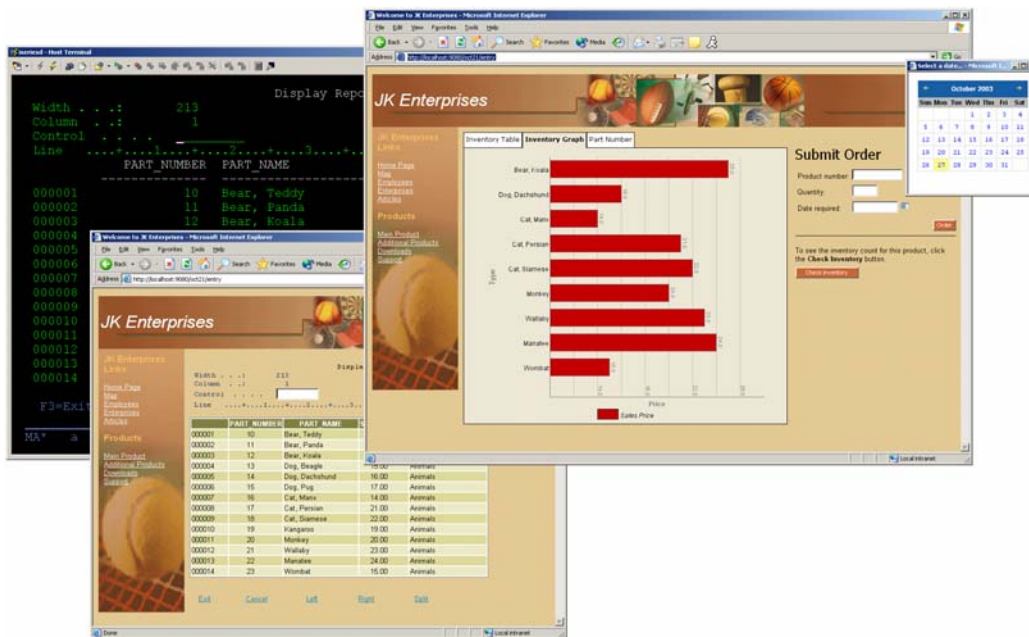
These applications can also be transformed into Web Services using the wizards in the HATS studio, which is a plug-in to the WebSphere Studio. HATS also has tight links to the WebSphere Portal Server, taking advantage of the Portal Server's Credential Vault for Single Sign On support and also delivering Click-2-Action support so that existing applications can be integrated at the glass with other portlets and trigger actions in those portlets based on the information from the host application.

HATS Customer Experiences

Kawasaki used HATS' capability to combine screens from the original host application to quickly convert the application to web delivery, allowing easy access from any web-connected client, greatly enhancing the productivity of their district managers, who could now access the applications from anywhere as they traveled through their districts.

American Software was able to convert an AS/400®-based power management application to a web-based application without changing the existing application. Again, American Software was able to extract additional value from their applications with minimal effort and time by using HATS to convert the application to the web.

Transform Connectivity

The Transform Connectivity style focuses on improving connectivity to legacy applications by adapting them to the new integration requirements. This adaptation is done by either using one of our existing Business Integration adapters or by exposing the application to other applications through a standard interface like a Web service. HATS can provide this web service interface by using the tools provided by the WebSphere Development Studio to convert a HATS Integration Object into a Web service. This is a simple process for which numerous examples are already available. Developers can also use the WebSphere Development Studio's capabilities to build Web services and other connections to the iSeries applications which do not require the interactive connectivity of the TN5250 server that HATS requires.

Transform Application Structure

At this time, IBM's iSeries® tools to support this form of Transformation are less robust than those for our zSeries customers, but iSeries customers can use the tools contained inside the WebSphere Development Studio to componentized their existing applications

into reusable components that can be utilized in mixed-workload applications which combine these RPG code components with new Java code that has been adapted to meet new requirements. If you are beginning this transition to a restructured set of applications, please contact your IBM representative, who can locate IBM services experts that can help you take your first steps along this path to transformed applications.

IBM's Leadership in Enterprise Transformation

Business Integration Qualities from IBM

Service Oriented Architecture (SOA) enablement
Simple, integrated development

- Common tools platform
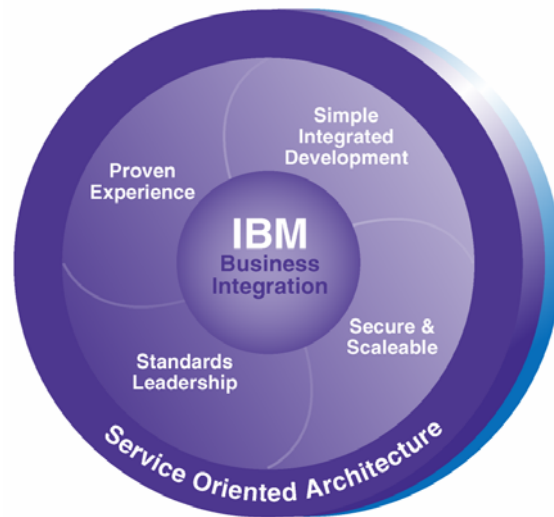- Re-use and unification of assets

Secure and scalable deployment

- Common and flexible deployment environment
- Flexible management and security infrastructure

Standards leadership

- Interoperability
- Investment protection
- Freedom of choice

Proven experience

- Augmented with best practices

Why should you choose IBM for your transformation project? It starts with the Business Integration Qualities that IBM has been focused on in its Business Integration offerings. All of IBM's Application Transformation tools are built on a simple, integrated development platform. There is a common platform and a number of tools to promote reuse and unification of assets. We take advantage of the Secure and Scalable Deployment environment that is one of the keystones of the WebSphere Platform

IBM's commitment to Standards leadership gives our customers assurances of interoperability, and protects their existing investment in applications while giving them the freedom of choice to move to other implementations in the future. IBM's Proven Experience in delivering quality software products and solutions, along with our documented best practices, give our customers assurance that they will be able to deploy new solutions in a timely manner and mitigate the risks in that deployment. The service oriented architecture that results from these transformation styles gives our customers a stable, long-term platform for their future development efforts. And, finally, IBM's

Services team and our network of iSeries Business Partners are readily available to help our customers customize the solutions that are needed for their specific business needs.

<u>Conclusion</u>

IBM's Application Transformation solution can significantly improve your return on your IT investments.   The most significant of these value drivers is the cost reduction that can be realized by reusing existing code.   The Software Productivity Research study we referenced earlier shows a 5X improvement in cost when code is reused rather than rewritten.   IBM offers several reuse techniques in the Application Transformation solution.   We have tools that allow you to componentize your existing code, giving you reusable components that can speed up development projects and reduce cost. We also have tools that can turn existing green screens into web pages with no programming and no change to the existing code.   This saves even more cost than reuse!

Since all the Application Transformation tools are built on the Eclipse framework, all of your developers will increase their flexibility, since they don't have to learn a new tool every time they are asked to use a different coding language.   They also don't have to waste time trying to find the code repository, because all the code is stored in the same place, regardless of the language.   And the most significant tool in increasing the skill optimization of your developers is their use of EGL, which allows programmers to use a graphical technique to develop their code, regardless of the final language for implementation.   EGL generates the source code at compile time. This allows non-Java programmers to create Java programs without actually writing Java code. Java programmers can also generate COBOL code using this same tool.

In addition to all the other benefits of the Application Transformation offerings, these offerings provide a window into the world of portals. Legacy applications can be accessed as portlets in WebSphere Portal, along with other legacy and non-legacy portlets. Host screens can be customized to work well within a portal environment. For example, the number of fields on a screen can be reduced in order to fit the screen into the smaller amount of space allocated to a typical portlet. Applications can be integrated at the portal layer, using innovative WebSphere Portal features such as Click-2-Action and Cooperative Portlets. Single sign-on can be accomplished in WebSphere Portal using the Credential Vault.

All of these benefits are available to you through IBM's Application Transformation offerings today, and they can be extended dramatically as you utilize the other offerings in IBM's Business Integration solutions. Information and applications from your legacy iSeries applications can be integrated into larger business processes that incorporate both your legacy applications and new Java or .Net applications along with packaged applications from other providers like JD Edwards (PeopleSoft). Again, by utilizing IBM's Business Integration solutions, you can move more quickly into the on-demand world with a resilient, secure and flexible IT infrastructure that helps you keep your IT costs down and decrease your development risk because you are able to reuse those "systems that work" – your legacy assets on the iSeries.