

INCREASE BUSINESS DEVELOPER FLEXIBILITY

IBM Rational introduces enterprise development tools for the changing business developer landscape.



EGL Tech Corner – Issue #1 – 1st Quarter, 2007

Editor's Welcome



Good day all! I'm Jon Sayles, member of the EGL software team in Raleigh. Thanks for taking time to open and read the premier edition of the **EGL Tech Corner**.
[continued](#)

The R&D Team's Corner



Greetings! My name is Albert Ho and I am the manager of the EGL software research and development team. My team consists of ...
[continued](#)

Featured Business Partner

**

ASIST - Leading Application Development & Integration - www.asist.be



ASIST is a Belgian Business Partner that started their work back in the CSP/VisualGEN era, and have continued strongly for over a decade, doing **EGL** projects, migrations, **EGL** training and consulting globally.

Why ASIST?

Besides the decades of focused EGL/IBM technology work (i.e. their experience and expertise), IBM Belgium/Luxembourg presented the **Best Rational Software Business Partner 2006** award to ASIST. This is a unique and special achievement, and our hats are off to ASIST for their software/project accomplishments.

ASIST Does...

ASIST began its work in the area of software migrations, and goes both broad and deep, doing turn-key (tools-based) conversions from:
[continued](#)

Regular Features

- [System i Niche – What's new with EGL in the System i world](#)
- [System z Niche - What's new with EGL in the System z world](#)
- [Talking JSF - EGL and Java Server Faces web page development tips and techniques](#)
- [Thinking SQL - EGL and RDBMS access \(technical tips and techniques on SQL coding\)](#)
- [EGL Language Tip of the Month - Something you probably didn't know about EGL](#)
- [EGL in the News - Articles, publications, conferences, classes and media events](#)
- [Feedback Forum - Your chance to feed questions and comments to the EGL Software team](#)

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Note – Each quarter a different EGL technical business partner will be featured in this Tech Corner from around the globe.

ASIST Conversion Projects - continued from cover page...

- **MSL** - CSP Repository
- **CSP** - Cross Systems Product applications
- **ENVY** - VA Smalltalk/Java Repository
- **VAGEN** - Visual Age Generator applications

ASIST and EGL - Long-standing associates

ASIST began working in EGL over three years ago. In 2004, a customer in France asked ASIST to help them migrate their VAGen/Smalltalk GUI portfolio to a web solution. WSED (WebSphere Enterprise Developer) had just been announced, shipping with EGL and JSF (Java Server Faces) and ASIST used this early release software to move the customer to a web interface.

Lessons Learned...

It was found through this implementation that customers and the “migrators” need to understand if the application requires the functionality of a GUI system or the capabilities provided in a web interface. Based on this experience, ASIST has provided advice and implementations with several GUI customers and given the pros and cons faced when moving from a GUI Client Server system to a web based system. This kind of real-life experience are some of the key value points, in seeking out EGL expertise, from a business partner.

In the past three years ASIST has continued to grow its EGL solutions and offerings - software and skills, and they've successfully migrated and/or re-engineered projects for/with:

- Several government agencies
- Several large banks
- Several large insurance companies
- Music copyright and services industry
- Educational services companies

ASIST Also Does...

ASIST understands the requirements for no-compromise and complex team development, as they've had to implement this in their extensive EGL consulting project work (above). To that end, they've become world-class specialists in Rational **ClearCase** and source management, providing tools, consulting, and project architecture design and assistance support throughout the entire SDLC, including Analysis/Design, Construction, Testing (Unit/Integration/Acceptance) and Production migration and support.

And of course, at its core, ASIST is an independent consulting firm, and its primary concern is always its customer base. They have participated in many projects where they've managed the customer's TCO (Total Cost of Ownership) through end-to-end solutions, software and tools integration that saved their customer considerable money, and provided a more flexible and scalable software development architecture. ASIST's unique **depth-of-expertise** across a broad class of IBM and other technologies, products, languages and solutions were the keys to them being able to accomplish their customer's goals. Occasionally this customer-focus has not always been the path of least resistance, and has translated into considerable work for ASIST - but the customer was always front-and-center in the delivery of the production application. And out of "considerable work" typically comes deeper and more valuable lessons-learned. This is something which ASIST management harvests and re-invests in its technology and services.

ASIST's command of the broad EGL platform and run-time solutions includes projects in I4GL (Informix 4th Generation Language) and project migrations from I4GL to EGL/IDS (Informix Dynamic Server). ASIST has taken on projects by themselves, and when appropriate, worked with other IBM Business Partners to enable customers in this very special and deep expertise domain.

ASIST has done extensive EGL training - both in tools and technologies (RAD/EGL/JSF, etc.), and in higher-level subjects such as: project management, architecture, design and delivery.

ASIST has done traditional on-site training, on-site mentoring, and "train-the-trainer" program, even working with customers to customize the EGL education offerings they provide. They are also certified IBM Education Business Partners, allowed to train in the standard IBM tools curriculum. This is not a small investment, and brings with it a certain measure of confidence and trust in a particular vendor.

In terms of technical engagements, ASIST has seen the full spectrum of project work, from, initial Proof-of-Concept short-term assignments, to creating large-scale, mission-critical, complex Frameworks, Service Oriented Architecture (analysis, design, construction and deliver) and doing end-to-end application engagements, including standards documentation, developing and implementing test harnesses, production support, and application enhancement request capture.



Summary

In less than a decade, ASIST has become a leading international player in the area of Application Development for large organizations and institutions. Every day ASIST team members are engaging their services at respected international corporations - working in IBM WebSphere, Rational and DB2 environments, with a focus in 4GL, **EGL** and JAVA development, standalone, or in different combinations of environments and frameworks.

ASIST provides its customers with a full service portfolio: in-sourcing, consultancy, migrations, customization, modernization, training and project management. Every project is tailor-made and fully adapted to the specific circumstances of ASIST's customers. According to Paul Pilotto Technical Director, *"People are at the center of everything we do. ASIST has an innovative, entrepreneurial culture, with an emphasis on teamwork and performance. ASIST's culture and people make the difference."*

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Editor's Corner - continued from cover page...

This will be a quarterly publication from the IBM EGL lab that will deliver the latest information on EGL and EGL-related technologies.

Now - we are assuming that since you're on this Tech Corner distribution list you know all about EGL - what it is, and why IBM is so strongly behind the language and tools. Oh ... you don't? Well then, if you have a minute..

EGL (**Enterprise Generation Language**) is a leading-edge, business-oriented software development language - aimed at allowing traditional and Client/Server developers to be able to create:

- Java/J2EE applications, deployed to the web,
- GUI and Java batch applications run in a networked computing environments
- COBOL, CICS, and IMS DB/DC applications deployed to System z and System i platforms

...while being shielded from the details of the underlying run-time technologies.

Our EGL development environment (language and supporting tools) is designed to enable business-oriented developers to create enterprise-level applications and application components very productively. We begin by founding the tooling on a world-class development environment ? IBM IDEs based upon the Eclipse open-source platform. We then provide the EGL language, which is a high-level, procedural, business-oriented language. EGL is easy for developers familiar with other business-oriented languages ? such as COBOL, PL/I, or Visual Basic ? to adopt. The language and the underlying code generators (EGL compiles down to either Java or COBOL) contain tremendous ?smarts? about a wide range of run-time technologies, thus the developer can focus on writing business logic and leave the arcane details of integrating into the run-time infrastructure to the tooling. We further simplify developers? lives by providing a modern declarative programming environment that enables developers to set properties easily and to do most GUI development using drag & drop techniques. All this development infrastructure enables developers to avoid the time (often measured in years) needed to learn such things as XML, WSDL, J2EE, JDBC, Servlet/JSP technology, etc. EGL even simplifies SQL, WebSphere MQ, Indexed and Sequential file handling and DL/I coding - with a macro-language approach to data access, that is structured and extensible. Further, EGL provides possibly the world's easiest on-ramp to developing software services, thus business programmers can quickly contribute to creating systems founded on service-oriented architectures (SOAs).

EGL can also be learned by new/un-seasoned programmers - and here we mean recent college grads and new hires that are ramping up in the ungainly and difficult learning curve that is "business application development" - with an emphasis on acquiring business skills. Recent college grads/new hires not unexpectedly lack traditional COBOL-JCL and especially complex/arcane technologies like IMS-DL/I and IMS DC, or Command Level CICS and BMS expertise. Code written in the simple, business-programming parlance of EGL can be generated to execute in these run-time environments.

Albert's team (see R&D Team Corner) has implemented world-class Services and Web Services support. They have also provided the ability for EGL generated code to call CICS and IMS transactions and type 1 MPPs - as well as calling existing COBOL/MVS business logic from Java platforms. To learn more about EGL see the Tech Corners Links and EGL Events page.

So to wrap up, by providing this Tech Corner as a forum we hope to bring you information on EGL and how it is being used to support and grow businesses around the globe. We will also be equipping you with new EGL development techniques and technical information. And we will inform you about EGL events, conferences, classes, articles and reviews of interest.

We will publish a regular Q&A forum, to provide you with a means of asking us your EGL questions - and getting responses. And we hope through this Tech Corner to encourage you to network and share your EGL expertise and experiences on a global basis. Check out the Regular Features, the links, and articles below. And please feel free to send suggestions for future articles and "news" back to me, Jon Sayles, at: jsayles@us.ibm.com Thanks. §



The R&D Team's Corner - continued from the cover page...

a group of highly talented software engineers who perform the actual work of designing and creating the product. On behalf of the entire team, I welcome you to the first EGL Software Tech Corner.

We intend to use this Tech Corner as a vehicle to communicate with you about the new features, technologies, and solutions that we are introducing. Equally important, we would like to hear from you if you have suggestions, comments, or thoughts about our work.

In future issues different members of my team will appear on this Tech Corner and introduce you to some of the exciting features that are in the product: web services, user interfaces construction, model-driven development, etc. We would also like to share with you tips and tricks on using the new language enhancements, performance tuning, how to get more productive with the development environment and other topics.

I hope you will enjoy reading this Tech Corner. With the new version of the product about to be released soon, we couldn't wait to tell you all the new and exciting things that we will be bringing you. Albert Ho §

EGL produces the code you need to create sophisticated Web applications in your System i environment. Here are resources you need to handle the configuration of your servers including the IBM HTTP Server and WebSphere Application Server Express. These resources will help you implement a complete and total solution.

First - get help! Assuming you are NOT - by trade a WAS administrator, here are some ways to get help on HTTP Server/WAS Configuration (which needs to be done by your HTTP Server / WebSphere Administrator):

Sources of Help:

1. A quick call to IBM Support on the HTTP Server product with WebSphere
2. The Business Partner who sold you your System i Machines
3. Your IBM WebSphere sales representative who can engage a field support person.

The bottom line of all of this is that in the HTTP Server use the **<Location>** tag to map the WebSphere *context* (in `http://www.<yourCompany>.com/eglstuff/eglpgm1.jsp -- /eglstuff` is the *context*). Then configure basic authentication for the **<Location>** tag. Here is a simplistic example

Here is the [System i infocenter for V5R4](#). Once there expand the following:

- System i information Center, Version 5 Release 4
 - e-business and Web serving
 - HTTP Server
 - Tasks
 - Security tasks

Set up **password protection** <-- provides step by step instructions on configuring authentication.

That is the easy part. You will apply authentication in the server to a "path". The tricky part is creating an alias in the HTTP server so that the HTTP server thinks that a WAS context is a directory path You need to define the EGL application "context". So if the user were to use the

URL: `www.<yourCompany>.com/eglStuff/eglpgm1.jsp /eglStuff` is the context and will need to be mapped as an alias in the HTTP Server and **/eglStuff** will have authentication configured.

If this is all Greek to you, you will need to find someone in your shop that is familiar with the IBM implementation of the Apache HTTP Server (again, Get Help!) However, if you are going solo, use these redbooks from www.redbooks.ibm.com as resources for your configuration.

[IBM HTTP for iSeries: Features of the HTTP Server \(original and powered by Apache\)](#)

Note: publication number is: TIPS0285

[WebSphere Application Server - Express V5.0 for iSeries](#)

Note: publication number is: REDP-3624-00

[IBM HTTP Server \(powered by Apache\): An Integrated Solution for IBM iSeries Servers](#)

Note: publication number is: SG24-6716-02

Professional Apache 2.0 - By Peter Wainwright (and others), Wrox press 2002, ISBN: 1861007221



Bob Cancilla IBM Software Group, Rational Product Market Manager - Rational Tools for System i and z

EGL now supports and allows enablement of **CICS Threadsafe execution** through an enhancement to the EGL COBOL Runtime. This enhancement can be obtained by installing the base Rational COBOL Runtime for System z V6.0.1 product or by installing the **PTF UK08442** on the **Enterprise Developer Server for z/OS V5.0** product.

Your existing generated COBOL programs do not require regeneration to take advantage of this enhancement.

So what is CICS Threadsafe execution?

As of CICS Transaction Server V2.2, CICS added the ability to reduce the switching between the CICS and DB2 address spaces when DB2 calls were made by the application program. By reducing this switching, the overall amount of CPU time used can be reduced. In fact, one COBOL generation customer reported they were getting up to **25% CPU time reductions** by taking advantage of this new ability of CICS.

However, the programs and all the calls it does have to be Threadsafe and now EGL is.

For more information on CICS Threadsafe and what it means, please see the following IBM Redbook abstract called [CICS Threadsafe for CICS](#)

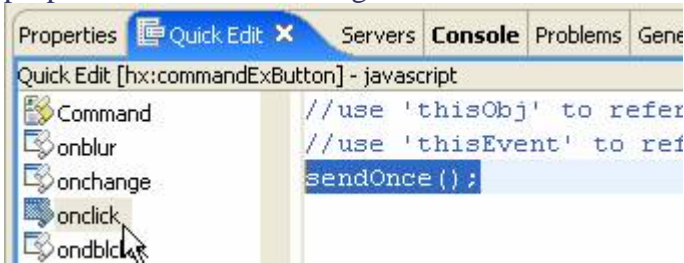


Mark Evans - Mark is VisualAge Generator Product Manager. He has a 2nd job in the EGL ECO System team - as specialist in COBOL generation, CICS, mainframe connectivity and VAGEN Migration.

A common problem in handling web (and green screen for that matter) occurs when a form contains a submit button that users can click twice, and fire off two purchases, make two withdrawals, add a record twice, etc. There are several ways you can handle this with client-side/JavaScript. But the general concept is that, instead of submitting your form's action immediately, you add an onClick event that counts the number of submits and either ignores all after the 1st, or throws a JavaScript alert (see below).

Here is an example of the latter. Note that this is not entirely complete, and will need some additional research on your part to obtain a JavaScript 'timer' or some method of acknowledging just how long to set the trap for onClick-twice situation

1. On your Submit Button after binding it to your function, from JSF properties, add an onClick event in the JSF properties like the following:



2. Add a hidden variable to your form to store the # of times the user clicks (see below we've used one, named: subTimes

3. Copy this client/side JavaScript into the end of your .JSP page.

```
<script>

function sendOnce() {

var times = parseInt(document.getElementById('form1:subTimes').value); //

times++;                               //increment counter

document.getElementById('form1:subTimes').value = times;    //store new counter value

if (times == 1) {           //1st time click

    return true; }

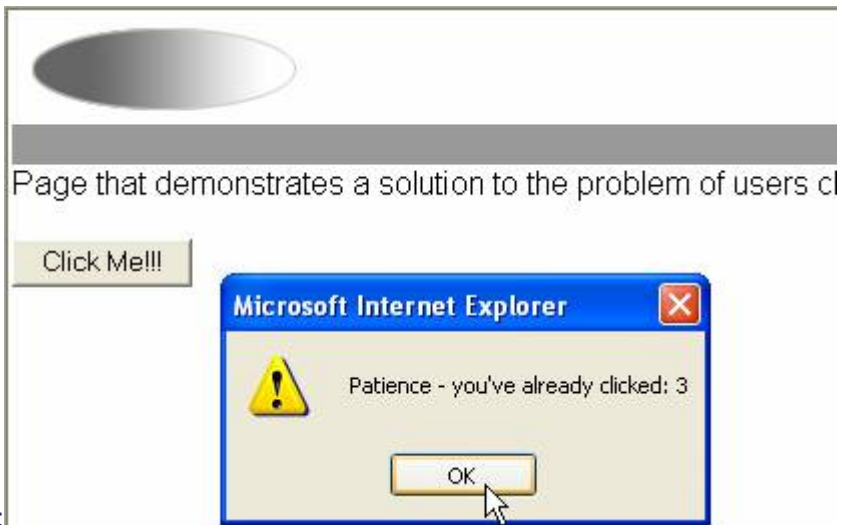
else {                       //not 1st time click

    alert("Patience - you've already clicked: " + times);    //inform the user

return false; }

}

</script>
```



This will result in run-time Alerts, such as:

Note (again) that you will need to add a 'timer' script to your page's JavaScript functions, to allow your Server/Side function to finish. There are many free examples of JavaScript timers on the internet.

Jonathan Sayles is a member of the EGL ECO System team.

Feedback Forum

Your chance to feed questions and comments to the EGL Software team - and get answers!

Well wouldn't you know it - issue#1 of the EGL Newsletter and we have no questions.

Darn it. So, how do we fix this for issue #2?

Please send questions of all types, sizes and persuasions back to Jon Sayles, at: jsayles@us.ibm.com

Thanks. §

Thinking SQL

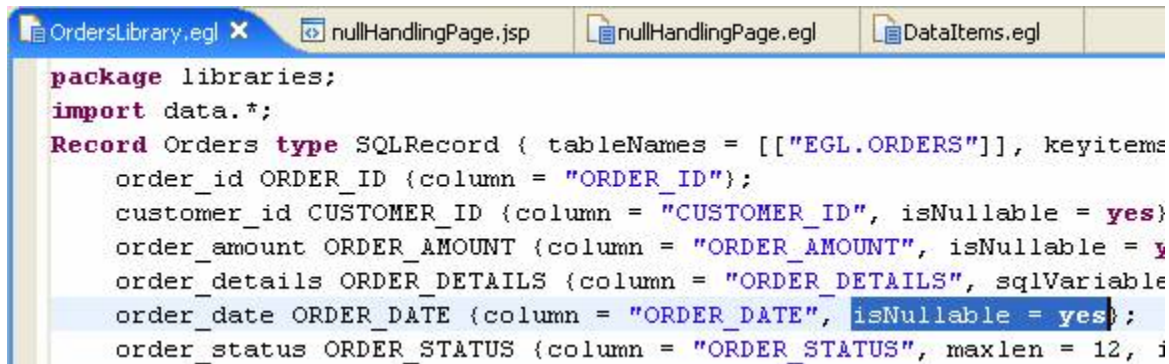
Null Values in Table Rows - Testing for and setting NULLs

Null values are a special RDBMS value that allows you to specify: not 0, not blanks, but instead the absence of value, or an unknown value. Put another way, a null represents: Not/Available or Not/Applicable conditions - in your business logic.

The build descriptor option **itemsNullable** controls the circumstance in which EGL internally maintains a null indicator for a primitive variable in your code.

If you accept the default setting for that option, EGL internally maintains a null indicator only for each variable that has the following characteristics:

- Is in an SQL record
- Is declared with the property **isNullable** set to **yes**



```
package libraries;
import data.*;
Record Orders type SQLRecord { tableNames = [{"EGL.ORDERS"}], keyitems
  order_id ORDER_ID {column = "ORDER_ID"};
  customer_id CUSTOMER_ID {column = "CUSTOMER_ID", isNullable = yes}
  order_amount ORDER_AMOUNT {column = "ORDER_AMOUNT", isNullable = y
  order_details ORDER_DETAILS {column = "ORDER_DETAILS", sqlVariable
  order_date ORDER_DATE {column = "ORDER_DATE", isNullable = yes};
  order_status ORDER_STATUS {column = "ORDER_STATUS", maxlen = 12, i
```

Do not code host variables for null indicators in your SQL statements, as you might in some languages.

To test for NULL in a nullable host variable, use an EGL if statement. Example:

```
if (orderDB.order_date is null)
```

You also can test for retrieval of a truncated value, but only when a null indicator is available.

You can null an SQL table column in either of two ways:

- Use an EGL set statement to null a nullable host variable, then write the related SQL record to the database;

```
set orderDB.order_date null;
```

- Use the appropriate SQL syntax, either by writing an SQL statement from scratch or by customizing an SQL statement that is associated with the EGL add or replace statement.

For additional details on null processing, see **isNullable** and **itemsNullable** in the EGL product help. For more on the concept of null values [catch this article](#):

Jonathan Sayles is a member of the EGL ECO System team.

EGL provides a comprehensive and extremely useful lexicon of extended keywords, which can be used to streamline and simplify you code - making it more efficient, more maintainable and giving you time to study up on that latest golf tip your friend sent you last week as an Internet link. In this issue we cover - IN, LIKE, and Matches.

IN Keyword - note, not the SQL IN - something even better!

The EGL in keyword allows you to test for the presence of a value in an array or EGL DataTable. Typically you would have to write a *for* loop to test for this condition. Instead you can code (and maintain) far fewer statements using IN.

Example: Assume an array of customers, loaded from the database, and a string variable named: srchString:

```
if (srchString in customers.Last_Name || srchString in customers.First_Name)
  sysLib.setError("Search String in Array");
else
  sysLib.setError("Search String NOT in Array");
end
```

Note that IN returns an EGL reserved system index value sysVar.arrayIndex. This index value designates either:

- 0 for not found
- > 0 for the array occurrence in which the IN match occurred

You can use the sysVar.arrayIndex value to further process the array information.

```
if (srchString in customers.Last_Name || srchString in customers.First_Name)
  move customers[sysVar.arrayIndex].Last_Name to temp_name;
else
  sysLib.setError("Search String NOT in Array");
end
```

LIKE Keyword - Note not the SQL LIKE, not even the MTV-Generation's LIKE

Like allows you to use SQL LIKE wildcards to search for text patterns in a string.

- % = 0 ? n wildcard characters allowed
- _ (underscore) exactly one wildcard character allowed at this position in the string

Matches Keyword

Matches are similar to Java regular expressions. They extend the capability of doing LIKE text searches with terse patterns. They allow you to setup complex masks that can be used to solve the kinds of sophisticated text-searching-issues you may find in production specifications. Please read the Product Help on Matches (search on: matches operator). Examples:

```
Find non-Alphabetic (anything but upper and lower-case letters) in a string
if (strField matches "[^A-Za-z]*") //tests-true for any non-alphabet character
```

```
Find non-Numeric characters (anything but numbers) in a string
if (strField matches "[^0-9]*") //tests-true for any non-numeric character
```

```
Test for a valid routing code in a string: ##-##-##
if (!(codeVal matches "[0-9][0-9][-][0-9][0-9][-][0-9][0-9]"))
```

Jonathan Sayles is a member of the EGL ECO System team.

EGL in the News

Events, articles, conferences, classes, URLs, anything newsworthy about EGL

<p>EGL Articles</p> <p>Note there are too many articles being published on EGL every week to mention them all. We will post a few links with each issue of the Tech Corner</p>	<p>Rational DeveloperWorks - This key IBM external site has dozens of articles on EGL (too many to annotate here). Enter EGL in the search area and read ☺</p> <p>EGL and DB2 Application Transformation - An article that describes the use of EGL by traditional programmers to create leading-edge applications</p> <p>Transitioning: Informix 4GL Applications to EGL - This IBM Redbook describes how Informix customers can upgrade their 4GL application development environment to the Rational Software Development platform, and, more specifically, transition to the Enterprise Generation Language (EGL).</p> <p>Egypt Ministry of Interior uses EGL to Rapidly Web-enable Key Legacy System - A published case study of how EGL saved over 15 branches of a major government agency time and money in software development and use</p> <p>EGL Overview - In this article learn about EGL if you're new to the language.</p> <p>Inside Enterprise Generation Language - a System i article on EGL by Bleddyn Williams, an internationally recognized thought leader in software development</p>
<p>EGL Distance Learning Classes</p> <p>Note that the April 3rd (V6) and June 5th (V7) EGL Distance Learning classes are offered at no charge (free) to the first 40 enrollees.</p>	<p>Version 6</p> <ul style="list-style-type: none">• April 10th to April 13th/April 24th to April 27th• June/July - to be announced <p>Version 7</p> <ul style="list-style-type: none">• June 5th to June 8th/June 19th to June 22nd• August - to be announced
<p>EGL Conferences and Events</p>	<p>IBM Rational Software Development Conference, June 10-14, 2007, at the Walt Disney World Swan and Dolphin in Orlando, Florida.</p> <p>Gateway College - EGL Technical Training and Symposium</p> <p>System z Technology Roadshow - Learn how to take advantage of new trends and deliver more value to your customers!</p> <p>NEIBM - March 26th to 28th, Wakefield Ma, U.S. - EGL presentations, seminars and Hands-on-Labs.</p>
<p>EGL Links (much more on EGL)</p> <p>As above, only the most important links shown here</p>	<p>The EGL Zone on IBM's Developer Works - the primary source of EGL information, worldwide, containing white papers, publications, documentation, code examples, links to the product and much more</p> <p>The EGL Technical Forum - The place to post technical questions and get technical answers</p>
<p>EGL Product download Links</p>	<p>Rational Web Developer</p> <p>Version 6 Note that you will need to register, to IBM DeveloperWorks. Don't worry. It's quick and painless (and no salesman will call) ☺</p> <p>Version 7 Available Q2, 2007</p>

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