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# 4GL CONNECTOR

## OPEN SOURCE TECHNOLOGY AND SERVICES TO BRING INFORMIX 4GL CODE TO THE JAVA ENTERPRISE APPLICATION ENVIRONMENT

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## EXECUTIVE SUMMARY

In today's Services Oriented Architecture – SOA – environment, Informix 4GL applications have no place. Or have they?

**MoreData** is a company with more than 20 years experience with Informix products and Informix 4GL has been used extensively in many of it's projects. But the company also works with the Java Platform, especially the Java Enterprise Edition. Having to develop with Java much of the programming logic that already was working in Informix 4GL seemed a terrible waste.

With this problem in mind MoreData built a solution that allows existing **4GL code to be used directly in Java Enterprise** applications.

The solution allows existing programmers to continue their work with familiar tools, keeping their productivity and still be able to provide functionality for the current SOA-generation systems. With new interfaces built on Web 2.0 technologies, the well-proven 4GL business code can live on for many years.

**This technology is available to any company now, delivered by MoreData** as open source software delivered as a set of services. **4GL Connector provides extended ROI from Informix 4GL** technologies, existing code and the programmer's knowledge.

## 4GL VALUE

Informix 4GL was created in the 80's and is still one of the most successful computer languages. Millions of lines of code exist and many critical business systems still are based on this technology. Unfortunately, Informix failed to provide an interesting evolution path for the technology, and it is now viewed by many as “legacy” because of the archaic character interface of the programs built with it.

Still, many companies continue to maintain 4GL systems and even develop new modules with it. This can only be explained by the perception of value and productivity that 4GL gives to its users. In fact, 4GL is a very simple and productive language to use for business logic and complex database-driven programming. Also, the development-test-deploy cycle is very easy and very fast, and experienced 4GL programmers find it hard to abandon.

## BARRIERS TO 4GL/JAVA INTEGRATION

The 4GL compiler generates C code and, theoretically, the Java Native Interface could allow Java programs to call 4GL functions. Unfortunately, given the fact that the C code generated by 4GL is not thread-safe, only the simplest Java programs can use this method.

## TECHNOLOGICAL APPROACH

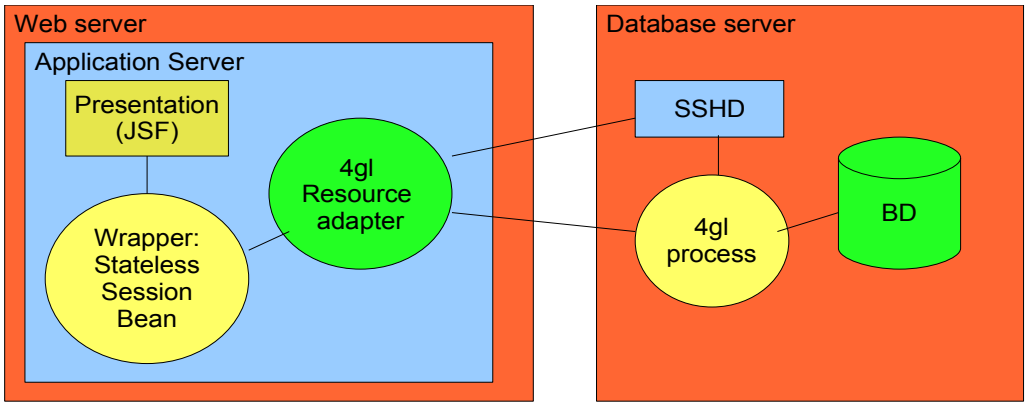
Based on existing compiler technology, MoreData developed a set of tools that generate Java wrapper classes for 4GL functions. These wrapper classes can be used anywhere on the Java Application Server as Stateless Session Beans. They also can be exported as web services immediately.

Hidden behind these wrapper classes is a Java Connector Architecture standard-

compliant Resource Adaptor that manages and uses the functionality available in 4GL as a process-pool. For the 4GL programmers, the only thing they must know is that the functions they want to make available to the Java application must be processed by one code-generation tool – *gfglc* – after being documented with some annotation-style comments in the 4GL module file.

## SOLUTION ARCHITECTURE

The following diagram shows the architecture of the system, where the generated code interacts transparently with the application server, on one end, and the 4GL compiled functions library, on the other. All the interaction between Java and 4GL is made via a specialized network protocol, and all types of arguments and return values can be passed, including arrays.




For the Java developers, 4GL functions appear as simple methods of a set of EJBeans. So, no special treatment is needed.

Instead of the two different servers depicted in the diagram, other server arrangements are also possible, since the components communicate by TCP/IP.

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## SOLUTION DELIVERY

MoreData offers 4GL Connector using an services-based open-source model, which is described in the following table.

| PHASE | WORK | DELIVERABLES |
|---|---|---|
| I – TRIAL | • 1 day workshop<br>• 3 day requirements survey | • 1 VM image with a usable trial environment on JBoss<br>• Development manuals<br>• Requirements survey report |
| II – DEVELOPMENT KICK-OFF | • Solution customization<br>• Programmers training<br>• Sysadmins training<br>• Mentoring on-site | • Development environment |
| III – DEVELOPMENT SUPPORT | • On-site or remote support | • Progress evaluations |
| IV – PRODUCTION | • On-site support | • Production environment |

Depending on the customer team size and training/support needs, the delivery can take about 5-10 weeks of work, spread over a time frame of 2-4 months. Other arrangements can be negotiated.

Prices vary, depending on time spent on the project, personnel and travel costs.

## CONCLUSION

4GL Connector is a reliable, fast and economic way to allow Java Enterprise applications to use the existing 4GL code base, without any code conversion. 4GL knowledge can be used profitably to build SOA systems.

This technology is currently used in MoreData's customers, including the biggest mobile operator in Portugal.

MoreData is an experienced partner that any company can trust to deliver this solution, and the open-source approach guarantees that the investment is well protected.

Additional info can be obtained at:

www.moredata.eu/en/informix.html

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