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AXIONAL 4WEB

MIGRATING AND REENGINEERING APPLICATIONS

FROM 4GL TO WEB

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4GL CURRENT ISSUES

User adoption is getting poorer •



. Difficult to find support personnel from third parties.

4GL BUSINESS APPLICATIONS

CURRENT ISSUES



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MIGRATION STRATEGIES

TO MODERNIZE THE EXISTING 4GL APPLICATIONS THERE ARE 3 MAIN OPTIONS:



01. Use a Wrapper to make applications visible on the web

STRATEGIES



02. Conversion to Java source code



03. Reengineering using a migration platform

TO MODERNIZE THE EXISTING 4GL APPLICATIONS THERE ARE 3 MAIN OPTIONS:

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Use a Wrapper to make applications visible on the web:

• "Frontware" solutions where the application is still maintained using the 4GL language

Drawbacks:

- •
- •

STRATEGIES

Not a real application renewal solution

Have to maintain and support the legacy source code.

Very strict licensing policy

TO MODERNIZE THE EXISTING 4GL APPLICATIONS THERE ARE 3 MAIN OPTIONS:



Conversion to Java source code:

Drawbacks:

Development costs: You have the same functionality as before, but without added capabilities to manage the new architecture. Java is more powerful and flexible but the simplicity of 4GL is lost.

- •

STRATEGIES

• Conversion of language: from 4GL to native Java source code.

• The converted code can be maintained within any Java development suite.

No reengineering: re-architecturing issues must be handled after the migration process. N(Java Web applications need several architecture components like an Application Server, a DB Server,...)

TO MODERNIZE THE EXISTING 4GL APPLICATIONS THERE ARE 3 MAIN OPTIONS:





Reengineering strategy:

- browsers.
- •
- application
- •

STRATEGIES

Generating Web based applications with a modern look running on standard

Having a robust architecture that is easy scalable and with the reliability required for mission critical systems.

Providing a consistent look and feel and coherent behavior for the overall

Ensuring the security access control.

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DEISTER APPROACH

DEISTER APPROACH



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- Deister had an ERP built on 4GL.
- In the early 2000s we decided to migrate the product to a fullweb software
- There were millions of lines of code
- . Clearly a tool and a methodology were required
- The approach was to build a platform: AXIONAL 4WEB •
- This approach has been used by other companies having a significant amount of 4GL applications.

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AXIONAL 4WEB

CONVERSION

Conversion from monolithic "green-screen" terminal applications to multi-tier architectures that support multi-tenant Web-based clients.

GOALS

The modernization is done with a "robotized" mechanism included in Axional 4WEB. It doesn't require a full manual intervention.

ACTION

- Web forms •
- •
- No need to modify the DB
- •

AXIONAL 4WEB





AXIONAL 4WEB THE RISK IS MINIMIZED:

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Short learning curve: •

- It doesn't require programmers with a high technical expertise.
- The tool handles all technical specificities for high performance applications
- Developers need to concentrate only on user requirements and the business logic part.
- Provide the Production Environment managers with powerful tools to monitor and tune the performance of the systems.

Easily Integration:

• the entire organization information.



It provides connectivity and data transformation services between separate applications, facilitating the integration of

AXIONAL 4WEB WHAT REENGINEERING MEANS?

- Centralized management of user rights & permissions.
- Not depending on the code in each form/menu,...
- Forms & reports will be automatically multilingual ready, including Asian alphabets.
- Each user can select the preferred working language.
- Consistent look & feel across all application forms, no matter how was the original design of each screen.
- Securitized
- Hundreds of pre-built components ready to be incorporated into your system
- Traceability and full audit trail capabilities



AXIONAL 4WEB **MULTI-LINGUAL SUPPORT**

The architecture components will help developers to generate code adapted to different languages, regional differences and technical requirements of a target locale. In particular, the architecture takes care automatically of:

- . Cyrillic & Asian alphabets (Unicode, UTF-8).
- . Country specific formats for dates, numbers and currencies
- . Different algorithms for string comparison and sorting.



AXIONAL 4WEB **REPORT GENERATOR AND DISTRIBUTION TOOL**

• A main strength of Axional tool. It produces several categories of reports.

• Operational reports:

Page perfect documents: •

- When output data needs to be printed using a specific layout
- Developers can easily design documents like a purchase order or an invoice.

Business reports:

• Complex business reports, having many sections, groups, graphs and maps.

Book-quality reports:

- · Personalized documents with visually striking designs, tailored for high-end audiences
- Different algorithms for string comparison and sorting.

• For massive reporting, developers need simply to write the SQL to fetch the data and leave the rest to the engine. • The render will automatically accommodate font size and page orientation in accordance with the data source.

• Long-term signatures with embedded trust chain, time stamp and verification information on certificate validity





AXIONAL 4WEB **REPORT GENERATOR AND DISTRIBUTION TOOL**

Includes electronic signature:

- Applying compliant signatures to PDF/A documents
- . Verification of signatures in a PDF document
- . Simple, advanced and qualified electronic signatures
- . Long-term signatures with embedded trust chain, time stamp and verification information on certificate validity.
- . Forms of simple and medium complexity can be automatically created using the metadata contained in the BD.
- . For more complex screens and forms, a Graphical user interface will assist programmers.
- . The layout can be optimized according to the size of the end user device:
 - Smartphone, tablet, portable computer, workstation. •
 - Different algorithms for string comparison and sorting.





AXIONAL 4WEB FORMS:

. Includes electronic signature:

- Support for mass signature devices (HSM) via PKCS#11
- Author's signature (MDP)

. Invisible and visible signatures and design functions for visible signatures:

- Allows mail integration
- Crontab-style scheduling for generating and distributing reports across the entire organization.

. Forms Designer includes a comprehensive set of widgets to provide a powerful graphical user interface:

- Widgets come with all the required functionality.
- . Forms Designer manages the Form logic:
 - Field events
 - Form events
 - A huge set of predefined functions is available to developers to be embedded in the code.

• Form styling and navigation are defined globally to ensure a consistent look and feel on the overall project.



AXIONAL 4WEB PACKAGED TOOLS IN AXIONAL:

. Dashboards:

- Axional Studio includes a Dashboard Builder.
- Developers can quickly enable their end users to access the data they need, when they need it.
- Dashboard Components can be of any type: graphics, maps, tables or a combination of them.
- Axional library offers a comprehensive set of widgets that can be further customized by programmers.
- Dashboards are IWA enabled. Using the DB accelerator, complex queries over huge quantity of data can be displayed on near real time.
- Dashboards are Web based. End users can access their graphs and charts from wherever they are, with any device.
- This components can be used also to build specific desktops for users when they log into the application.





AXIONAL 4WEB

PACKAGED TOOLS IN AXIONAL:

• Axional Business Intelligence Suite is a comprehensive set of tools:

- . Extracting and integrating data from various databases.
- . Organizing it into a high-performance data warehouse or data lake.
- . Giving business users access to all this data and the possibility to process data through an easy-to-use interface.
- The two main components of the BI suite are:
 - . 1.Axional Visual Discovery: A powerful Dashboard to display interactively multi-dimensional graphics with embedded Time Evolution of represented magnitudes.
 - **2.ROLAP analytical** tool for end users.
- The tool includes a full featured **ETL** (The module is based on a Data Transformation Engine).





AXIONAL 4WEB

PACKAGED TOOLS IN AXIONAL:

Geospatial tools:

- Enterprise data most of the time have a component that can be tied to a place.
- Geospatial extension of Axional Studio allows organizations to easily implement spatial extensions and simplifies the process of building geospatial applications. (Developers can build compelling maps that help end users visualize patterns, trends and exceptions in their data)
- To display the results, the tool includes a set of specific renderers, including Thematic (choropleth) maps, Heat Maps and Clustering.



AXIONAL 4WEB

CONNECTIVITY AND INTEGRATION:

- Axional Integration Bus is an Enterprise Services Bus (ESB) that provides connectivity and data transformation services between separate applications:
 - Allows the implementation of a truly service-oriented architecture, integrating multiple data sources and bringing access to services and data using both SOA protocols and non-SOA protocols.
 - Includes a big collection of connectors ready to use for quickly integrating heterogeneous data sources like applications, files, mobile devices, messaging systems and data bases.



AXIONAL 4WEB MONITORING TOOL:

- The Axional Suite provides specific consoles to get a deep view of server internals using any of the available interfaces (Eclipse SWT, WEB or TCP).
- For Informix DB, Axional Studio includes a specific plug-in for the monitoring tool zabbix.



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METHODOLOGY

MAIN ASSUMPTIONS:



METHODOLOGY



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METHODOLOGY

METHODOLOGY

STEPS:

METHODOLOGY

STEPS:

EXECUTION:

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BENEFITS

GREAT BENEFITS FOR YOUR COMPANY:

- Get your mission critical applications ready for the next 10-15 years.
- Reap the benefits of modern architectures (multi-tenant, cloud ready, secure, highly scalable...).
- Take advantage of Axional's pre-packaged components and provide your users with a bunch of new features and capabilities.
- Mobile access: Empower individual users providing them with a portable and user-friendly access to enterprise applications.
- Using a transitional period, the migration will be smooth and without disruptions.

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