CodeTurn for Natural Migrations to C#

About Anubex Natural Migrations

Many of today's mainframe applications that were developed in SAG Natural and Adabas are still mission critical and continue to deliver significant benefits to the organizations that use and rely upon them. Nevertheless, the Total Cost of Ownership and technological risk associated with these applications have now escalated to unacceptably high levels. Anubex' CodeTurn for Natural migration provides an opportunity to liberate these valuable and reliable business systems from their dependency upon non-strategic, legacy technologies and enable them to be integrated with state of the art components. For this purpose, CodeTurn supports COBOL, Java and C# as target languages. This Fact sheet specifically provides more insight into the C# target.

Product highlights

CodeTurn for Natural takes any application developed in Natural (i.e. the programs, DDM's, copycodes etc.) and automatically converts it into a fully identical application, but designed to run within an alternative environment on the same platform, or a different platform altogether. The new application is completely free of dependencies on Natural technology and, instead, uses modern and industry standard development tools such as Java, .NET and COBOL, to allow flexible application integration and extension.

Convert From Anywhere

The Anubex conversion process utilizes Natural's SYSTRANS output format, in order to migrate the Natural artifacts. This approach largely isolates the conversion from the underlying system, therefore every Natural platform is supported, i.e. IBM Mainframe (z/OS, MVS), Fujitsu BS2000 and Unix.

Convert To Anywhere

A converted application can run on Open Systems running Linux, Unix or Windows (LUW), or in the Cloud. The chosen target platform is simply selected as a configuration option during the conversion process.

Additional Anubex tools handle the transformation of other source types, such as JCL, Assembler and COBOL programs etc., thus ensuring that the ***entire*** application runs on the new platform.

Client Technology Compatibility

End-users can connect to the application with either a web-browser, or their current Terminal Emulator.

The fact that the Terminal Emulator can optionally be retained for connection to the migration application enables the switch-over to be 100% transparent to end-users.

Many Natural mainframe applications are enhanced or integrated through 3rd party screen-scraping technology. Anubex conversions provide byte-to-byte compatibility with the existing mainframe protocols; therefore screen-scrapers remain compatible, even on Open Systems.

Database Access

The Adabas, VSAM or DB2 data and structures are migrated to an RDBMS using Anubex' DataTurn. The data access statements in the Natural code use IO Modules to access the RDBMS, and these are also generated by DataTurn. Using IO Modules abstracts the specifics of the underlying RDBMS from the application.

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Natural artifact mappings and maintenance

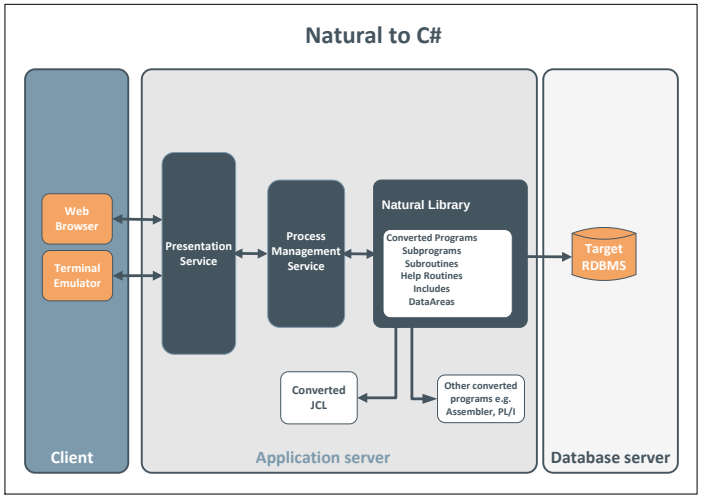
The table below summarizes how the different Natural object types are converted into their C# counterparts.

Natural object type	Counterpart
Programs, Sub-Programs, Subroutines	Classes
Copycodes	Inline code
Data Areas – GDA / LDA/PDA	Classes
***Predefined maps**	Classes

After migration, all C# code is maintained using standard development tools on the chosen platform. The converted Predefined maps can be maintained using a WYSIWYG editor, to further facilitate application integration and modernization.

Migration Architecture

The below is the overview of the Architecture when migrating from Natural/Adabas to C# running on Linux, Unix, or Windows.



Parametrization of generated C# code

The C# code that is generated through CodeTurn can be parametrized to best integrate within the customer development environment.

- Handling of reinput statements;
- C# namespace naming conventions;

Complete Natural Coverage

Natural is recognized as a rich and powerful development environment. The Anubex Natural migration tools provide support for advanced Natural language features, including:

- High-precision Natural computations (29 digits);
- Natural *Reinput* statements;
- Natural *Escape* handling;
- Multi-lingual user interfaces;
- Adabas, VSAM and DB2 data sources.

Adabas Migration

The Adabas database and all its data are migrated automatically to a relational database (RDBMS).

- The migration tools support all of the leading RDBMS products;
- All DDL is created fully automatic;
- The data model can be normalized or de-normalized, or a hybrid;
- The migration tools can map the Adabas Date and Time fields to native RDMBS Date and Time fields.

Automated Testing

The converted application is tested with Anubex' TestMatch and DataMatch. Using these tools significantly reduces the time and effort needed to complete the project:

- TestMatch avoids the requirement to manually create test scenarios for the complete application;
- TestMatch limits the application end-user involvement in the project to acceptance testing.
- DataMatch validates the content of databases, greatly reducing the effort needed to perform batch application testing.

References

Anubex has a 100% success rate, having completed numerous Natural migration and modernization projects around the globe on both IBM mainframe and LUW target platforms. Each of these projects has been delivered on time, within budget and to the complete satisfaction of the customer.

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