DELTA

software
technology

BSQ

Modernization Project at BSQ Bauspar AG

"The large application adaptations required will be made automatically. This is the only way to ensure a consistently high quality so that the cost of the testing effort can be reduced. For this purpose, Delta Software Technology will provide a customized migration factory with its AMELIO Modernization Platform. This concept has already proven itself in the completed proof of concept."

CARSTEN THUMMES,
HEAD OF CENTER OF EXCELLENCE IT MODERNIZATION GERMANY,
CGI DEUTSCHLAND LTD. & CO. KG

CGI Germany selects Delta Software Technology as partner for the modernization project at BSQ Bauspar AG

BSQ Bauspar AG plans to migrate its core application package. The project includes also the migration of the complete infrastructure. Particular attention will be paid to the transformation of the database management system IMS/DB to a relational database management system. CGI Germany was chosen as general contractor for this modernization project. Delta will provide the technology for the automated migration.

CGI Germany has been supporting this application package as part of an application management project for about 15 years. For BSQ Bauspar AG it was therefore obvious to ask the GCI IT Modernization Experts as well as their partner Delta Software Technology to propose a modernization solution and rehosting offer for the application package.

Requirements for the migration

The application package organizes BSQs administration processes and is currently operated under IBM z /OS. In order to reduce the operating and maintenance costs BSQ intends to migrate the package of IBM z/OS to a modern and more cost-effective platform. In the process the IMS/DB database will also be replaced by a relational database.

An IMS-emulation or a similar solution is no option for BSQ, because it neither reduces the operating nor maintenance costs. Instead a real SQL solution, using Microsoft SQL Server, will be implemented.

BSQ demands a high quality solution, the test effort must be kept as low as possible and a short project duration must be guaranteed as well. In order to also meet these non-functional requirements, CGI decided to carry out the replacement of IMS/DB and the code changes necessary for the rehosting in a fully automated way. The tools needed for this are provided and operated by Delta.

THE AUTOMATIC WAY WITH AMELIO MODERNIZATION PLATFORM

The rehosting and the change of the database management system require the analysis of over 6 million lines of the COBOL Code (program and copybooks) and a yet unknown number of necessary changes. A manual transformation of this size would be both time-consuming and error-prone. Therefore, Delta will use its AMELIO Modernization Platform to create a tailor-made migration factory. This factory will analyze and transform the sources automatically and rule-based.

For the rehosting following transformations are necessary:

- changing of EBCDIC - character encoding to ASCII

- changing IMS/DB, DB2 and VSAM to Microsoft SQL Server

Special focus lies on the conversion of the IMS/DB database, because the change from a hierarchical to a relational database is a paradigm shift. A simple one-to-one replacement of IMS statements by SQL statements is not possible. Instead, a multi-level, automated method will be performed.

CREATING A NEW DATA MODEL

In order to accomplish the paradigm shift, the data model must be changed. For this purpose the AMELIO Modernization Platform extracts the current data model from the IMS/DB database definition. Out of this, a proposal for the new model is derived. This proposal will be finalized by CGI experts with their specialized knowledge and according to the future requirements to the model.

DEFINING TRANSFORMATION RULES

Based on the new data model and the automatically analyzed information about the use of the existing data model, rules will be defined for the transformation from old to new.

For the transformation rules too, a proposal will be produced which can be customized and extended by CGI.

THE TRANSFORMATION

The migration factory receives the previously created analysis and transformation rules as input. Thereby the application can be fully automatically transformed based on this set of rules.

In order to separate application logic and database accesses IMS/DB accesses will not be replaced in-place. Instead, the SQL accesses will be outsourced in automatically generated data services.

For the transformation the entire application package will be analyzed. The IMS accesses will be replaced by corresponding new data service calls or functions and error handling will be adjusted. All IMS/DB statements contained in the code will be removed.

In this step also additional rehosting–transformations will automatically be carried out on the basis of the required or defined replacement of EBCDIC by ASCII and of DB2 and VSAM by Microsoft SQL Server.

WHAT ARE THE CHARACTERISTICS OF THE MIGRATION SOLUTION FOR BSQ?

The essential characteristic of the migration factory provided by Delta for the migration project is the fully automated implementation of mass changes. The consistently rule-based approach prevents manual intervention, thereby always delivers predictable, reproducible and traceable results.

Further qualities:

- **No „One Size Fits All" solution**
  Instead of a standard solution Delta provides a migration factory exactly tailored to the needs of BSQ. In this way, requirements and expertise of both CGI and BSQ are being incorporated into the data model and into the code for the access of the relational database.

- **No footprint – no vendor lock-in**
  On the target platform no modules for an IMS/ DB emulation or other components coming from Delta or other suppliers will be required. The transformed COBOL-modules are clean SQL-programs and copybooks. The generated code will need no tools from Delta for further development and maintenance, because the generated COBOL – code is readable and easy to maintain.

- **Parallel development and extension during the migration**
  Due to the rule-based approach, the results are reproducible at any time. Therefore the BSQ application can be extended and maintained, while the factory is configured or even while the factory is productive. Already performed transformations can be repeated if the sources have been changed in the meantime. Thus the freeze-times can be reduced to an absolute minimum.

- **Reduced test effort**
  The reproducibility of the solution also has a significant impact on the test effort. If the use of a transformation rule once leads to a correct result, this will also apply to any other application of the rule. This approach has proved successful in previous migration projects.

Using AMELIO Modernization Platform by BSQ Bauspar AG and CGI Deutschland means that the application will be transformed reliably and at a constant high quality. Although more than 6 million lines of Code need to be analyzed and possibly adjusted, the tight timescale can be achieved due to the automation.

PROJECT START

In January 2015 the Proof of Concept for the rehosting project that had been ordered by BSQ Bauspar AG was started under the direction of CGI Germany in cooperation Delta Software Technology. It was successfully completed at the end of February. The pre-set goals were achieved: It was demonstrated that the application package of the BSQ Bauspar AG with the entire infrastructure can be migrated to the new platform Microsoft Windows and that the necessary program adjustments (especially the replacement of the IMS/DB database management by Microsoft SQL Server) can be conducted by a fully automated migration factory.

Would you like to know more about the migration project or do you plan a modernization or refactoring project? Would you like to migrate an application package to a new platform? Are you interested in the automation of mass changes? We would like to show you which possibilities are available for you with the AMELIO Modernization Platform. We are looking forward to your request: Delta and CGI.

An article in our newsletter of november 2014 also dealt with the subject "replacement of IMS database".

CGI is the world's fifth largest independent provider of IT- and business process services with 68.000 employees at 400 locations worldwide, including 2.300 in Germany.

CGI Germany Ltd. & Co. KG and Delta Software Technology cooperate in modernization- and outsourcing projects.

For the CGI projects Delta delivers its tools for application analyses (AMELIO Logic Discovery) and fully automated transformations (AMELIO Modernization Platform).

Delta Software Technology

Delta Software Technology is a specialist for generative development tools that automate the modernisation, integration, development and maintenance of individual IT applications.

Our solutions help you to quickly and safely adapt your applications to new business requirements, architectures, technologies and technical infrastructures.

- **AMELIO® Modernization Platform™**
  The tailor-made factory for the modernisation of large IT applications: 100% automatically and that's why it is safe, reliable and error-free.

- **AMELIO® Logic Discovery**
  Comprehending COBOL- and PL/I-Applications: Cut costs and risks for maintenance, modernization and re-implementation.

- **HyperSenses®**
  Integrated system for model driven development of DSLs and software generators.

- **SCORE® Adaptive Bridges™**
  Intelligent service enablement for the reuse of proven applications with modern technologies: flexible, profitable and non-invasive.

- **SCORE® Data Architecture Integration™**
  Data as real business services: fast, easy and independent of data architectures and management systems.

- **SCOUT²® Development Platform**
  Optimized and integrated development processes across all software components, tools and platforms: Stop the "fight against the infrastructure".

- **ADS™ Application Development for COBOL and PL/I**
  Platform independent development for future-proof back-end applications.

Delta has a more than 35-year track record of successfully delivering advanced software technology to Europe's leading organisations, including AMB Generali, ArcelorMittal, Deutsche Telekom, Hüttenwerke Krupp Mannesmann, Gothaer Versicherungen, La Poste, RDW, Suva and UBS.

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