

TECHNOLOGY AUDIT

CORECT v8.0









SoftwareMining

BUTLER GROUP VIEW

ABSTRACT

CORECT, from SoftwareMining, is a toolkit that undertakes language translation, and generates accompanying documentation, to enable COBOL programs to be migrated to a more up-to-date language. Thousands of organisations still run critical applications that are written in COBOL, often on legacy platforms – an estate which, over time, can incur ownership disadvantages and inordinate risk. Although most would like to migrate such applications to technologies that are more up-to-date, migration programmes can be prohibitively expensive, and are prone to failure. CORECT automates the conversion of COBOL code to either Java or C#, high-quality code, and also incorporates best practice such as abstracting business rules. Butler Group sees CORECT as an advanced and highly cost-effective solution for transformation of sizeable legacy code bases. Given that this is a leading-edge solution, we feel that many prospective customers will welcome the reassurance of information on existing, referenceable customers, and of SoftwareMining being happy to undertake proof-of-concept projects, and prove the benefits available from CORECT.

KEY FINDINGS

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|  Efficient migration for COBOL applications compared to other means. |  Preserves the value of investment and stability in legacy systems. |
|  Incorporates business rules extraction and other advisable code rationalisation. |  Innovative, leading-edge approach to migration. |
|  Value is added by creation of documentation during conversion. |  Existing customers are few in number, but provide valuable references. |
|  Does not focus upon the conversion of presentation logic. |  Proof-of-concept available, to aid assessment by prospective customers. |

Key:  Product Strength  Product Weakness  Point of Information

LOOK AHEAD

The next release will incorporate more integrations with third-party COBOL tools, and improved search facilities to find business rules.

FUNCTIONALITY

Product Analysis

The lengthy heyday of COBOL (COmon Business-Oriented Language) started about 40 years ago, when the first standard for the language was defined by the American National Standards Institute (ANSI), and it was very much the prevalent language for development of business application until the 1980s, and in some cases beyond. However, for some years now languages such as C (including C++, and other derivatives such as C#) and Java have been proven platforms, and both more suitable and more popular than COBOL for developing applications on distributed computing platforms. The result is that few developers under 40 years of age have been trained in COBOL, and even fewer of any age would now want to take a career path towards COBOL skills.

Most IT managers would not choose to migrate or otherwise change live applications without due cause. However, ownership of critical code that is 'stuck' on a legacy language and platform base can bring significant difficulties. For example, integrating with common elements of the organisational IT architecture – such as security, application management, and application integration facilities – can be considerably more difficult, or sometime impossible, and these issues can lead to problems with meeting organisational guidelines on matters such as risk and compliance.

SoftwareMining adopts the position that legacy COBOL code should be transformed into more flexible and modern forms, following analysis to understand the particular requirements. This transformation is automated to as great an extent as possible, in order to promote efficiency, simplify the process, and reduce demands on human skill levels, as well as timescales. The company has based its tools upon Artificial Intelligence (AI) principles, and the tools themselves are programmed in List Processing (LISP) language and are driven by heuristics – the result is that the system as a whole is very flexible, and easily customised to match specific customer needs.

Product Operation

CORECT combines a Translation Toolkit, which undertakes automatic translation of COBOL programs to Java or C#, with a Business Rule Extraction and Documentation Toolkit (BRE Toolkit). The code generated is claimed to be of a standard that allows it to be efficiently maintainable code, in order to form no barriers to new developers taking over the future maintenance of the application using Java or C#. Correspondingly, the code generated adheres to the relevant JavaBeans or object-oriented approach, and uses the latest Java or C# patterns, along with a framework-based deployment.

CORECT aims to enable translation to a target platform without any re-architecting of programs. This has the advantage of it being possible to prove a system on a new platform is a like-for-like equivalent of that prior to translation. However, it does 'clean up' code translated, for example by enhancing data descriptions that lack meaning or clarity. Mostly, COBOL 01-level data items are translated to a Java class.

The BRE Toolkit delivers query-driven insight into the code base, addressing needs such as an in-depth understanding of a particular calculation within an application. CORECT also generates documentation during its analysis, a feature that many organisations would welcome, given the typically poor state of knowledge surrounding some ageing applications. BRE Toolkit allows assignment of descriptions in natural language, to provide more meaningful descriptions than do the variable names referenced within the identified rule in COBOL. The documentation produced includes how each data access statement replaces equivalent COBOL statements, thereby enhancing future maintainability.

Impact analysis can be carried out using CORECT, enabling an analyst to assess the effects of proposed changes to data structures – this enables sections of code that will be affected to be clearly identified, prior to changes being made. Additionally, the identification of code that is no longer in use can be automated in the same manner.

Presentation logic is only translated directly, without enhancement, as normally there is a customer requirement to enhance screen designs (e.g. with a corporate colour scheme, and logo) as part of a technology migration. CORECT uses XML as an intermediate stage within the process of translating data definitions, and the XML can be used as a platform-independent model (PIM), as per Object Management Group (OMG) standards. Screen definitions, in HTML or C#, can be generated as appropriate to the implementation.

The documentation generated by BRE Toolkit can include diagrams, including the following example types:

- A program calling structure, which gives an application- or portfolio-level view of how code is connected and integrated.
- Calls within the code of each program (e.g. to COBOL sections, which become Java methods after translation).

Product Emphasis

Butler Group believes CORECT to be an innovative solution within the market for legacy modernisation. Where organisations elect to migrate applications without radical re-design, code conversion constitutes a major part of the effort involved. CORECT can hugely reduce the resources required to convert COBOL code and, as well as addressing a range of enterprise requirements by offering options to convert to either Java or C#, it adds value to the conversion process by generating documentation (which can assist the activities such as testing that constitute further requirements beyond the scope of CORECT).

DEPLOYMENT

In one project currently being undertaken, SoftwareMining has migrated five million lines of COBOL code to Java, and tested the target application, with the involvement of only eight Java developers, eight unit testers, and four user acceptance testers from the customer organisation – an exercise that has been completed in 14 months. An assessment has been made of the resource levels that would be needed to manually rewrite the same code base in 14 months – it estimates that 150 people would have been required, as opposed to the 20 that completed the exercise using CORECT.

Commonly, customers opt to undertake a 'proof of concept' exercise in order to be satisfied of the capabilities of CORECT before embarking on a full application translation. SoftwareMining is in favour of such an approach, as IT functions within customer organisations can more readily obtain a sufficient budget, and the exercise enables technical teams' support to be won. The Translation toolkit is straightforward to operate; the user defines the source COBOL platform (e.g. IBM, UNISYS, or MicroFocus), and the target platform (Java, C#, or BRE Toolkit), and migrates a single program at a time.

The company estimates that the automated translations from CORECT yield one program, translated and tested, per man day, whereas manually rewriting and testing of a single program would take three to four man weeks. It should be understood, however, that additional resources would be required, above and beyond those dealing directly with the translation of COBOL code, in common with any project to fully migrate a business application – for example, testing of each program, and of integration of the application on the target platform, must be undertaken, and additionally data migration must be completed. A modular modernisation approach can be undertaken – for example, the interactive element of an application could be translated first, with the batch functions following, although integration overheads could arise. Subsequent to implementation of a converted application on a target platform, appropriately-trained resources are needed to support the application in its new language.

Technical support is available via e-mail and telephone, and typically the availability of on-line manuals and other readily available documentation, backed by telephone support are sufficient for organisations to make progress, according to SoftwareMining. The CORECT Toolkit runs on the Microsoft Windows platform, and translated Java code can be run on any platform supporting Java.

PRODUCT STRATEGY

SoftwareMining was established to meet the perceived need for tools and services to support enterprises faced with the demand to migrate their core business applications onto new platforms. The company can provide either a professional services offering (involving translation commonly being undertaken off-site), or it can assist with implementation of CORECT. SoftwareMining believes that CORECT is most valuable for larger companies across industry sectors, where mainframe computing has been the long-term platform. However, organisations in financial services, utilities, manufacturing, government and defence are known to be particularly affected by legacy code issues, and Fortune 500 companies and governmental organisations are the main target market for SoftwareMining.

Table 1 summarises benefits and disadvantages of various alternatives to the approach of code translation, which the company sees as being: to re-write code manually; to migrate an existing application to a compatible, more modern platform (known as re-hosting); or to migrate business to a packaged application. Depending on customers' existing configurations, and balanced against the cost and risk of modernisation projects, Return On Investment (ROI) can arise in a number of ways, such as the following:

- Benefits from basing applications on newer technology e.g. better security; integration with process modelling (especially for compliance), and with other applications.
- Rationalisation of legacy technology platforms, and possible associated overheads of premises, licences, and staff costs.
- Dwindling skills base for legacy languages and technologies, with associated risk, and rising costs of ownership.
- Extending the life of an application to support further changes and features, while maintaining functional stability, and also capitalising on historic investments made.

Table 1: Alternative Approaches to Code Translation		
Alternative Approach	Benefits	Disadvantages
Re-write code manually	Opportunity to incorporate planned change	Highest-risk option, due to likely duration and complexity
Re-hosting	Simple migration	Replaces one legacy system with another, postponing problems
Migrate to packaged solution	Long term solution	Extra costs of ownership, and of process re-engineering

Source: Butler Group **DATAMONITOR**

SoftwareMining has key business partnerships with Microsoft (as a member of the Microsoft Mainframe Alliance); one of the four largest Indian services provider companies; one of the largest US consultancies; and a Systems Integrator (SI) that is incumbent with many US government agencies. Given the additional project lifecycle activities that have to complement code translation (e.g. technical and user-oriented testing, data migration, build, deployment, and potential re-architecture of structure and presentation), SIs are typically involved within projects using SoftwareMining tools in order to provide requisite expertise and resources. The company has technology partnerships with Borland, Sun, and IBM.

CORECT is charged for as a factor of the number of lines of code translated, and there is an associated runtime support charge. Organisational adoption of CORECT attracts the lowest level of charging, although SoftwareMining adds an initial standard fee for ensuring that specific requirements are catered for e.g. coding standards. The company additionally offers a services-based approach to translation when requested by clients, which of course incurs an increased cost beyond the software-only cost. Testing on the target platform can also be undertaken by SoftwareMining, at further cost. The company can give outline costs for typical code volume requirements, but for competitive reasons prefers these not to be published. It also prefers its product roadmap not to be divulged in detail – Butler Group can comment that it includes the prospect of further facilities to enhance customer value.

COMPANY PROFILE

SoftwareMining was first established in 1996, with the main aim to develop its product element to the point where this could be marketed – this goal was attained in 2002. It is headed by its founder, Dr. Cyrus Montakab, and has management and product development teams at its headquarters in Guildford in the UK, and further development and service delivery teams in St. Petersburg, Russia, as well as satellite sales offices in the US. Almost half the workforce works either in Research and Development (R&D) or support and services roles, with the majority of the remainder undertaking sales and marketing activities. Staff numbers are expected increase by around 30% in the next year.

The company is privately held (mainly by members of its management team and workforce), and chooses not to reveal details of its financial position (other than to say that currently 90% of its earnings arise from business in North America).

Currently, SoftwareMining states that three major enterprises – a large bank, a global consulting company, and a Federal agency – are users of CORECT: references from these companies are available on request, within the pre-sales stages.

SUMMARY

The combination of resource problems and technology limitations facing organisations with substantial COBOL-based applications will not allow them to put off the challenges of code migration forever. Market estimates reckon that the existing, inadequate skills base will shrink dramatically over the next ten years, by which time manual conversion may no longer be an option.

SoftwareMining has a proven solution that automates the code conversion stage of legacy COBOL transformation, adding value during the process, as well as a strong statement of benefits to lay on the table. Although it currently has a limited customer base, Butler Group expect many more organisations to be knocking at this company’s door in times ahead.

Table 1: Contact Details	
<p>SoftwareMining Surrey Research Park 40 Occam Road Guildford GU2 7YG Tel: +44 (0)1483 68 48 03 Fax: +44 (0)1483 68 34 81 sales@softwaremining.com www.softwaremining.com</p>	<p>US sales contact us-sales@softwaremining.com</p>
Source: SoftwareMining	DATAMONITOR

Headquarters	Butler Direct Pty Ltd.	Butler Group	Important Notice
<p>Europa House, 184 Ferensway, Hull, East Yorkshire, HU1 3UT, UK Tel: +44 (0)1482 586149 Fax: +44 (0)1482 323577</p>	<p>Level 46, Citigroup Building, 2 Park Street, Sydney, NSW, 2000, Australia Tel: + 61 (02) 8705 6960 Fax: + 61 (02) 8705 6961</p>	<p>245 Fifth Avenue, 4th Floor, New York, NY 10016, USA Tel: +1 212 652 5302 Fax: +1 212 202 4684</p>	<p>This report contains data and information up-to-date and correct to the best of our knowledge at the time of preparation. The data and information comes from a variety of sources outside our direct control, therefore Butler Direct Limited cannot give any guarantees relating to the content of this report. Ultimate responsibility for all interpretations of, and use of, data, information and commentary in this report remains with you. Butler Direct Limited will not be liable for any interpretations or decisions made by you.</p>
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