

## Securely cleaning your COBOL-, PL/I- and Delta ADS Applications

Flexibility and fast adaptability of core applications are prerequisites for an optimal software support of business processes. COBOL, Delta ADS and PL/I applications have grown over decades, they have been extended and adapted to new requirements. This has reduced the maintainability of the applications and has significantly hindered their further development.

With the AMELIO CleanUp Factory by Delta Software Technology you can quickly and securely clean up your COBOL and PL/I as well as Delta ADS applications and thus regain the flexibility and adaptability of your core applications.

The screenshot displays the AMELIO CleanUp Factory interface with several key components:

- Coverage Report of Copybook GAMBET:** A table showing code execution statistics.
 

Line	Code	#Exec.
53	) END-EXEC.	1
54	*****	
55	* COBOL DECLARATION FOR TABLE EASTINWTRY *	
56	*****	
57	01 DCLEASTINWTRY.	1
58	10 VIN.	1
59	49 VIN-LEN PIC S9(4) USAGE COMP.	0
60	49 VIN-TEXT PIC X(4).	1
61	10 AUTOYEAR PIC S9(9) USAGE COMP.	1
62	10 MAKE.	0
63	49 MODEL-LEN PIC S9(4) USAGE COMP.	0
64	49 MODEL-TEXT PIC X(20).	1
65	10 BODY.	0
66	49 BODY-LEN PIC S9(4) USAGE COMP.	0
67	49 BODY-TEXT PIC X(35).	0
68	10 PRICE PIC S9(6)V USAGE COMP-3.	1
69	10 TRANS.	0
70	49 TRANS-LEN	
- Dead/Unused Data Definitions:** A table listing data definitions.
 

Name	Type	Declared in	Line
01 POS-INDEX	binary(4)		42
01 CONVERT-YEAR	unsigned external(4)		43
01 CONVERT-PRICE	unsigned external(5)		44
01 DCLEASTINWTRY		GAMBET	57
10 VIN		GAMBET	58
10 AUTOYEAR	binary(9)	GAMBET	61
10 MAKE		GAMBET	62
10 MODEL		GAMBET	65
10 AUTOTRIM		GAMBET	68
49 AUTOTRIM-LEN	binary(4)	GAMBET	69
49 AUTOTRIM-TEX	character(32)	GAMBET	70
10 BODY		GAMBET	71
10 PRICE	decimal(6)	GAMBET	74
10 COLOR		GAMBET	75
10 CYLIND		GAMBET	81
- Patterns:** A tree view showing code patterns like 'P001-IF-NO-ENDIF' with line numbers and counts.
- Source Code:** A window showing COBOL source code with annotations and error messages.
- Details for 'P001-IF-NO-ENDIF':** A pop-up window explaining the pattern and its occurrence.
- Procedure Graph:** A flowchart showing the execution flow between routines like BUYSR, SELLSR-BEGIN, and MAIN EXIT-PROGRAM.
- Dead Code:** A list of routines identified as dead code, such as ROUTINES DO-TABINIT, INSERTIT, UPDATEEVCURSOR, and DELETEEVCURSOR.



# Regaining the Flexibility and Adaptability for Core Applications

## Reliable core applications, but ...

The core applications of many enterprises, developed or generated in COBOL and PL/I, have grown over many years or decades. They have been changed, extended and adapted to new requirements.

Changes and restructuring have led to a decrease of the originally well structured and maintainable code. Especially dead code results in poor readability and unnecessary complexity of the source code. These code sequences are often introduced when execution conditions are changed or new code sequences are added. Dead code is not easy to detect and in case of any doubt the dead code will still be maintained just to be on the safe side.

Applications have often also been passed from developer to developer over generations. Programming languages, standards and company policies have been changed during that period. But the existing code has been adapted to these changes only in a few cases and as a result, a mixture of different styles, language versions and programming guidelines occurred.

The result is increasing maintenance costs. Flexibility and fast adaptability are no longer ensured, because an unnecessarily large amount of code must be maintained, the clarity got lost and the read- and maintainability has decreased.

## The Challenge

Over the years the applications have become large and complex systems. Goal is to clean up the source code and make it understandable and maintainable again. Hardly anyone dares to deci-

de if certain code lines/blocks or data elements are still required. Removing code from complex applications is only for the brave. A simple “Search” and “Replace” is not sufficient for a name changes or consistent implementation of standards.

- **Distributed code with many dependencies:**  
The code to be cleaned up, whether single data elements, names, statements, code lines or large code blocks, is distributed across the entire application and there are dependencies between the code lines. This requires a detailed analysis which is too time-consuming and error-prone when done manually.
- **Code from Copybooks, Includes and Macros:**  
The code to be cleaned up can be generated by copybooks (COBOL) and includes (PL/I). If a generator technology, like Delta ADS, has been used, the code might also derive from macros. In these cases it is not sufficient to clean up the program, the generic module (copybook, include, macro) must also be cleaned up instead. Modules which are used by several programs must be analysed together with these programs to guarantee a consistent evaluation of all impacts and dependencies and to clean them up if necessary.

So, the questions that arise are:

- ? How can you recover the flexibility and adaptability of your applications?
- ? How can the read- and maintainability of the code be regained?
- ? Reliable and without obstructing regular maintenance tasks?

# AMELIO

## CleanUp Factory

### AMELIO CleanUp Factory

With the AMELIO CleanUp Factory from Delta Software Technology you can quickly and securely clean up your COBOL, Delta ADS and PL/I applications and thus recover the flexibility and adaptability of your core applications.

- AMELIO CleanUp Factory analyses the entire source code automatically
- Dead code sequences, from data elements to single statements up to entire code blocks, are detected and securely removed.
- Different syntax variants can be reduced to one standard, e.g. from COBOL'74 to COBOL'85.
- If the code to be cleaned up is derived from a copybook, an include or a macro, all impacts and dependencies are verified and the modules are cleaned up consistently.
- By using the Pretty-Print function the layout of the application can be re-formatted and the improved readability can be achieved.
- Every change that is implemented by the factory is documented in an audit-proof way, as

special marking in the code and/or as additional documentation that contains a detailed list of the lines that have been removed or modified in which module and why.

- The clean-up of the application can be performed cluster-wise or for the entire source code.
- The maintenance and further development of the application can be continued without any obstruction while the CleanUp takes place.

### Additional Options

But with the AMELIO CleanUp Factory not only standard clean ups can be performed. The factory can be precisely tailored to the customer's requirements. In this way, the read- and maintainability of the application can be improved through individual options, like:

- Name changes of sections, paragraphs, data elements
- Uniform implementation of company policies
- Replacement of (business-specific) code smells
- Replacement of third-party tools like VORELLE etc.



# AMELIO

## CleanUp Factory



### Clean Source Code for a better Support of your Business Processes

Regain the flexibility and adaptability of your applications needed for an optimal support of your business processes. The AMELIO CleanUp Factory cleans up the code reliably, fully automated and, if required, with additional project specific customizations. The maintenance and further development of the application can be continued without any obstruction during the CleanUp.

You have an application that you want to free automatically from unnecessary ballast. Get in touch with us. We would like to discuss possibilities and approaches in a personal conversation.

Let the AMELIO CleanUp Factory improve your applications:

[www.delta-software.com/cleanup](http://www.delta-software.com/cleanup)



#### 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® Logic Discovery™

Comprehending COBOL- and PL/I-Applications: Cut costs and risks for maintenance, modernization and re-implementation.

#### 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.

#### 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.

#### 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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