



MANAGEMENT OVERVIEW

**A GUIDE TO THE BENEFITS OF USING
X-RRESIZE**

Automated Field Re-engineering With X-Resize

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X-Resize is one of the modules in the internationally successful X-Analysis tool Suite. The X-Resize automates the entire life cycle of implementing field expansion and field type changes in legacy systems.

This overview document focus on the Automated Field Re-engineering with the help of the X-Resize module.

Benefits

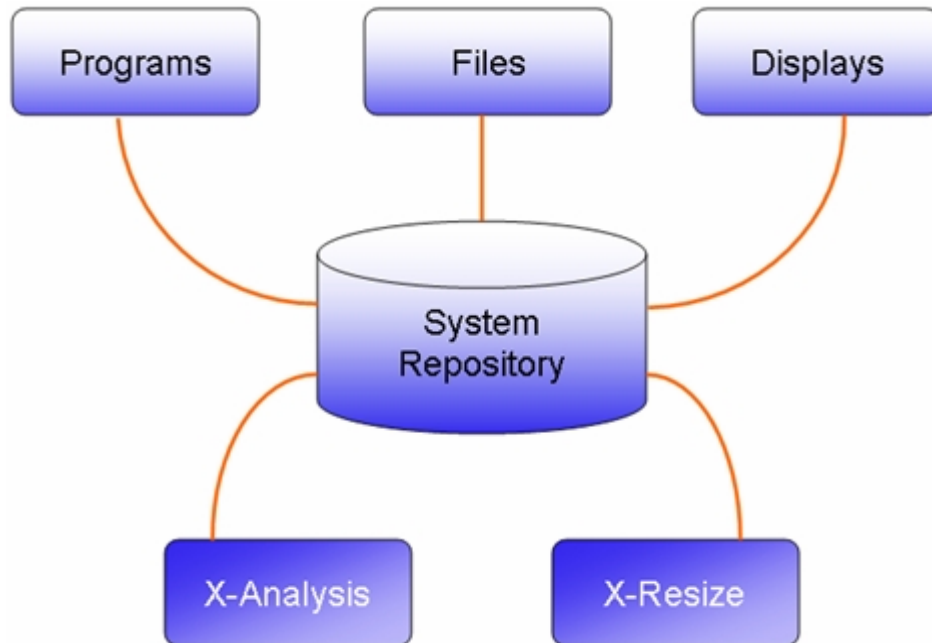
The X-Resize module offers following benefits:

- Instant & Detailed impact analysis for all instances: Fields, variables, programs, displays, reports, including aliases
- Integrated project control documentation with X-Analysis
- Totally automated source conversion for all object/source types
- Automated Bulk recompile
- Automated production merges
- Powerful impact and problem analysis features
- Automated data conversions

And many more...

Using the reverse-engineering techniques, the essence of any AS/400 software application is reverse engineered, and the output is stored in a structured data repository. This data repository is detailed down to variable level in each program, and includes a data model of the entire system.

The reverse engineering process has been developed over the last 12 years, and is both repeatable and totally automated. It is this that gives X-Analysis and all of its individual modules such as X-Resize such a significant productivity advantage.



Instant & Detailed Impact Analysis

The impact of change a single field in a single physical file can often extend throughout many different components of an entire system. Programs, logical files, displays, menus and even related data files can all potentially be affected by such a change. Variables that are used to hold values passed from fields that are to be changed are affected, and variables related to these variables are also affected. These factors make the task of identifying the impact of even an individual change tedious and labour intensive.

X-Resize simplifies this task greatly with a comprehensive series of reports and drill-down inquiries over the entire system, to indicate the affected programs, files, displays, fields, variables etc. In addition there are exception reports for instances where the conversion of the display files cannot be completed automatically because of overlapping or screen size restrictions. Another very useful and powerful report is where conversions will cause the field to require resizing, such as for currency conversions where the number in the field will increase.

X-Resize has sophisticated search criteria including aliases, exclusion words, and predefined sets. This makes the task of identifying and reporting the impact of changes accurate and efficient. Once identified each field and file can be assessed in terms of where usage throughout the entire system. The full impact across the application is automatically discovered using the X-Analysis impact analysis capabilities – unmatched in power. All inferred references drilling down through programs and variable names, prefixes renames etc. are discovered by the tool.

Source List of CUSF in XAN4CDEM/QDD5SRC, Lines: 69, View Level: 4

Seq No	*...+... 1	...+... 2	...+... 3	...+... 4	...+... 5	...+... 6	...+...
0022.00	A	ADD3		34A		TEXT('Address 3')	
0023.00	A	ADD4		34A		TEXT('Address 4')	
0024.00	A	CNTRY				TEXT('Country')	
0025.00	A	PSCD				TEXT('Code')	
0026.00	A	CUSNO				TEXT('No.')	
0027.00	A					TEXT('as.' 'No.')	
0028.00	A	CMMNT1				TEXT('Comment Line 1')	
0029.00	A	CMMNT2				TEXT('Comment Line 2')	
0030.00	A	CMMNT3		40A		TEXT('Comment Line 3')	
0031.00	A	DOCRCD		3A		TEXT('Docn.sent')	
0032.00	A					COLHDG('Doc.' 'Sent')	

Automatically drills down through all variants and programs for all related variables

Variable Where Used for *ALL/CUSNO, Lines: 141, View Level: 1

Name	Seq No	*...+... 1	...+... 2	...+... 3	...+...
CLET	0004.00	DCL	VAR(&CUSNO)	TYPE(*DEC)	LEN(
CLET	0009.00	CHGVAR	&CUSNO	&CUSNC	
CLET	0010.00	CALL LETN1	(&CUSNO	&PREFIX	&LETSQ)
CLETN	0001.00	PGM	PARM(&CUSNO	&PREFIX	&LLETSQ)
CLETN	0003.00	DCL	VAR(&CUSNO)	TYPE(*DEC)	LEN(
CLETN	0010.00	CALL LETN1	(&CUSNO	&PREFIX	&LLETSQ)
CNTACS	0003.00	A	CUSNO	SP 0	TEXT('Cus. No.')
CNTACS	0021.00	A	K CUSNO		
CNTCMNT	0097.00	C		eval	zcusno = cusno
CNTCMNT	0116.00	C		eval	cusno = zcusno
CNTCMNT	0243.00	C		eval	cusno = customer
CNTCMNT	0257.00	C		kfld	cusno

Integrated Project Control

The product uses the concept of projects, where a project is defined by a unique description. All of the fields and variables that are to be resized or added to existing files are identified at this stage. This is achieved by two methods: firstly by using user-defined search criteria, and secondly by specifying the fields manually such as when adding a new field to a physical file. The X-Resize then builds a list of all of the objects that are affected by the changes defined for the project.

These lists are stored in a structured database and are used for tasks such as:

- Impact analysis reports and inquiries.
- Project Management with Databorough's X-Analysis Application Overview.

These lists can also be used build an application area in Databorough's documentation and analysis tool, X-Analysis. There is an option to export the relevant associated object lists to third party change management software such as Aldon.

```

X-Resize          Work with X-Resize Projects          Databorough Ltd.
XRRWJKPRJ                                               10:42:22
                                                         29 Jan 2009

Enter options, press Enter.
1=Initialise 2=Change 4=Delete 5=Display 6=Searches 7=Fields 8=Build Lists
9=Work with lists 10=Conversions 12=Print dev. problems 13=Print pgm problems

  Project      Status      X-A Lib      Project Description
  ___ ASERXR1    Lists built  ASERXB       LOTID
  ___ RFSUNITEST Conversion  XAN4CDRF     Robins UNICODE Test
  ___ RFSVERTEST Conversion  XAN4CDRF     RFs test on current version

F1=Help  F3=Exit  F6=Add  F10=Cmd line  F12=Cancel  F24=More keys

```

Illustration 1: Each projects are given a unique description

```

X-Resize          Work with X-Resize Searches          Databorough Ltd.
XRRWJKSCH                                               10:46:30
                                                         29 Jan 2009

Enter options, press Enter.
1=Run search 2=Change 4=Delete 5=Display 6=Run search incl. aliases
7=Work with exclusions

  Search Word      + Option      Field Type, Length, Decs. DecChg
  ___ G4TX          0 *ADD        Character          0
  ___ NAME          0 *ADD        Character          0

F1=Help  F3=Exit  F6=Add  F10=Cmd line  F12=Cancel  F24=More keys

```

Illustration 2: User-defined search criteria

```

X-Resize          Work with X-Resize Project Fields          Databorough Ltd.
XRRWJKFLD                                               10:46:48
                                                         29 Jan 2009

Position on: _____
Enter options, press Enter.
2=Change 4=Delete 5=Display 6=Field usage 7=File usage

  Field      File      Curr. Vals      New Vals Field text...
  ___ AACG    XFRF      1 0 0           0 0 0 JCPMST AUTO ADD-C/O ENTRY
  ___ AACM    XFRF      1 0 0           0 0 0 AUTO ASSIGN CUST#  Y/N

F1=Help  F3=Exit  F6=Add  F7=File/field sequence  F24=More keys

```

Illustration 3: Fields changes can be added manually

Fully Automated Source Conversion

This stage assumes that all of the details specified in the analysis are correct. The source is copied away and relevant changes automatically implemented. These changes can be made by replacing existing lines of code with commented copies of the old lines included, or replaced and comments added to the line changed. Any instance where a field is moved into a program specific variable will result in automatic changes to the affected variables where necessary. The product will make the change where possible and report exceptions where fields could not be changed because of overlapping problems. The source that will be converted includes:

- Physical and logical files (this includes multi member files)
- Programs
- Display files
- Report DDS

```

Columns . . . : 1 71          Browse          RFPROJ3CV/QDDSSRC
SEU==>          OE003DF
FMT DP .....AAN01N02N03T.Name+++++RLen++TDpBlinPosFunctions+++++
***** Beginning of data *****
0001.00      A                      CA03(03 'Exit')
0002.00      A                      PRINT
0003.00      A*
0004.00      A* Subfile Record
0005.00      A          R OESFL          SFL
0006.00      XRSZEA* Changed by X-RESIZE
0007.00      XRSZEA*          PRPRNO          5Y 00 8 2
0008.00      XRSZEA          PRPRNO          7Y 00 8 2
0009.00      A                      DSPATR(HI)
0010.00      A          PRDESC          30A 0 8 9
0011.00      A                      DSPATR(HI)
0012.00      A          PRCOST          7Y 20 8 41EDTCDE(1)
0013.00      A                      DSPATR(HI)
0014.00      A          PRSQTY          5Y 00 8 53EDTCDE(1)
0015.00      A                      DSPATR(HI)
0016.00      A*

F3=Exit  F5=Refresh  F9=Retrieve  F10=Cursor  F11=Toggle  F12=Cancel
F16=Repeat find      F24=More keys

(C) COPYRIGHT IBM CORP. 1981, 1999.

```

Illustration 4: Display File Changed with X-Resize

```

Columns . . . : 1 71          Browse          CUSNOXRT/QRPGSRC
SEU==>          PRJINZ1
FMT * ..... *. 1 ...+... 2 ...+... 3 ...+... 4 ...+... 5 ...+... 6 ...+... 7
***** Beginning of data *****
0001.00      * INITIALISE A PROJECT:
0002.00      FPROJECT IF E          K          DISK
0003.00      FPRODFT IF E          K          DISK
0004.00      FPROTRK UF E          K          DISK          A
0005.00      DBI IAAJOBN          DS          6
0006.00      XRSZEI* Changed by X-RESIZE
0007.00      XRSZEI*          1 60AA1
0008.00      XRSZEI          1 80AA1
0009.00      C          *ENTRY  PLIST
0010.00      C          PARM          AAJOBN
0011.00      C          AA1          SETLLPROTRK          81
0012.00      *
0013.00      *IF NO CURRENT RECORDS THEN INITIALISE WITH DEFAULTS FROM PRODFT:
0014.00      C          *IN81  IFEQ *OFF
0015.00      C          AA1          CHAINPROJECT          82
0016.00      C          MOVE XWFMDT  XWPLDT

F3=Exit  F5=Refresh  F9=Retrieve  F10=Cursor  F11=Toggle  F12=Cancel
F16=Repeat find      F24=More keys

```

Illustration 5: Program Changed with X-Resize

Bulk Recompile & Data Conversion

It is possible to recompile all affected objects into a new library from within a conversion project of the X-Resize. This includes CL, RPG, ILE, PF, LF, DSPF. It is also possible to export the relevant compilation requirements to third party change management software such as Aldon, Turnover etc.

The compilation can be done by one object type at a time i.e. files followed by displays, followed by programs etc. These can be fully tested without any impact on a production system. Alternatively the entire recompile can be submitted as a single job from within the X-Resize. The bulk recompile can be parameterised so as to ensure strict adherence to development standards.

Where data needs to be converted (as in a currency conversion), a conversion factor is specified and the X-Resize uses this factor to automatically apply the conversion across all fields listed in the project.

Highlights

- Automated field expansion conversions
- Decimal position conversions
- Integrated project control documentation with X-Analysis
- Totally automated source conversion for all object/source types
- Automated Bulk recompile
- Automated data conversions
- Exception reports for overlays and other problems
- Instant & Detailed impact analysis
- X-Resize can be used to convert file fields for Unicode compatibility

The X-Resize automates the entire life cycle of implementing field expansion and field type changes in RPG systems. All instances of all related variables are discovered across an entire system, and these changes automatically made in all relevant places of programs, files, displays and databases. Detailed exception reporting is provided where automated changes are not possible because of problems such as display overlays or overflows, or even business logic corruption potential. There are documented cases of saving companies hundreds of man days in such projects.

Experience the fully loaded X-Analysis with 30 days trial copy of the software.
For any information regarding the X-Analysis please visit our web site:

www.databorough.com

or write e-mail to us at:

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