



MANAGEMENT OVERVIEW

A GUIDE TO THE BENEFITS OF USING X-ANALYSIS

Application Analysis & Documentation with X-Analysis

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X-Analysis is the recognized world leading solution for analysis and documentation of the IBM i (System i, iSeries, AS/400) RPG/COBOL applications. It provides key functionality essential to clearly understand and document entire business application. Over twenty years of research and development has produced this powerful repository plus interactive graphical Eclipse based client, enabling the user to browse an application from a high-level model right down to individual lines of code.

This Management Overview document focuses on the Analysis and Documentation for the IBM i applications using the X-Analysis. It discusses the various concepts and methods for an application analysis and documentation of an entire application.

Benefits

The X-Analysis is primarily aimed at IT departments with the IBM i applications written in RPG, COBOL and ILE and for those who works with such applications. Anyone who needs the answers of the following question will find the X-Analysis indispensable:

- What is the impact of an object / variable in the application?
- What are the entry points of the application?
- How data flows for the complete application or individual object?
- How do the processes within the application relate each other?
- What are the references to an object or variable?
- Where is the metrics for the application?
- Where is the system documentation?
- What are the problems associated with the database?
- How a non RPG expert understands the application?

And many more...

The X-Analysis aids in system understanding by identifying recurring program features, classifying the system modules based on their purpose and usage patterns, and analyzing dependencies across the modules. This analysis provides detailed design information about the entire system, accessible to non RPG/COBOL experts, and be easily updated to incorporate ongoing changes in the base system.

The X-Analysis engineers a cross reference library based on which the X-Analysis interface presents various analytical modules / graphs / diagrams and functional designs to assist user in better understanding of an application.

Cross-referencing, pseudo source code views, graphical program analysis, static project document wizards, variable level impact analysis, graphical flow / structure charts, MS Word / Visio wizards, and full integration with IBM's RDj, WDSj, SEU, help improve the development and maintenance productivity.

Here is a brief description of some of the features of the X-Analysis which provide additional benefits to managers, analysts and programmers.

Overview Structure Chart

Knowledge about the application's entry points is critical for the application analysis. Analysts often invest large amount of time to gather information about various entry points of an application. The X-Analysis provides a graphic construct called the 'Overview Structure Chart', which gives a complete snapshot of an application. In other words it graphically displays all the entry points of an application on a single click. With the help of the Overview Structure chart user can have a quick glance over the complete application. Color-coding reveals the application structure in a much more meaningful way.



Illustration 1: Snapshot of the complete System

Structure Chart Diagram

How the control passes from one program to another program within the application? Programmers and analysts have interest in this information as it is an important factor for the analysis and development of an application. The 'Structure Chart Diagram' is a graphic construct of the X-Analysis displaying control flow of a program. The structure Chart diagram displays the complete call structure down the stack. The

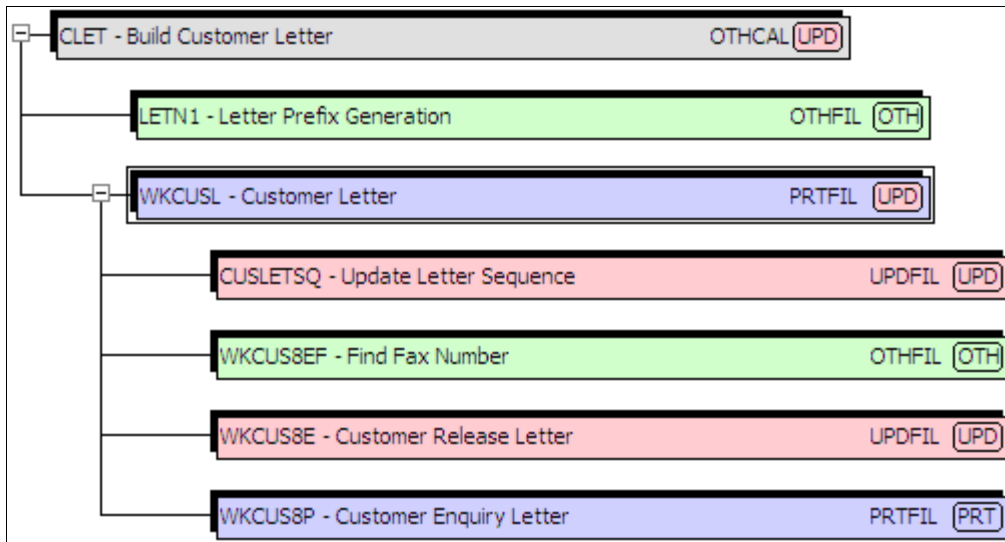


Illustration 2: Forward call stack of a Program

diagram also reveals data input objects and also automatically derives a summarized description of each of the object in the diagram. Color-coding reveals the important functional aspects such as updates, prints, and displays, which helps user to zone in on commonly sought after details.

Program Structure Chart

Program outline informing the program calls including subroutine information helps in gathering quick overview for a program. The X-Analysis displays a program outline chart as the 'Program Structure Chart'. The Program Structure Chart graphically displays the sequence of calls in the program. The call could be to execute a Subroutine / Program / Module / Service Program.

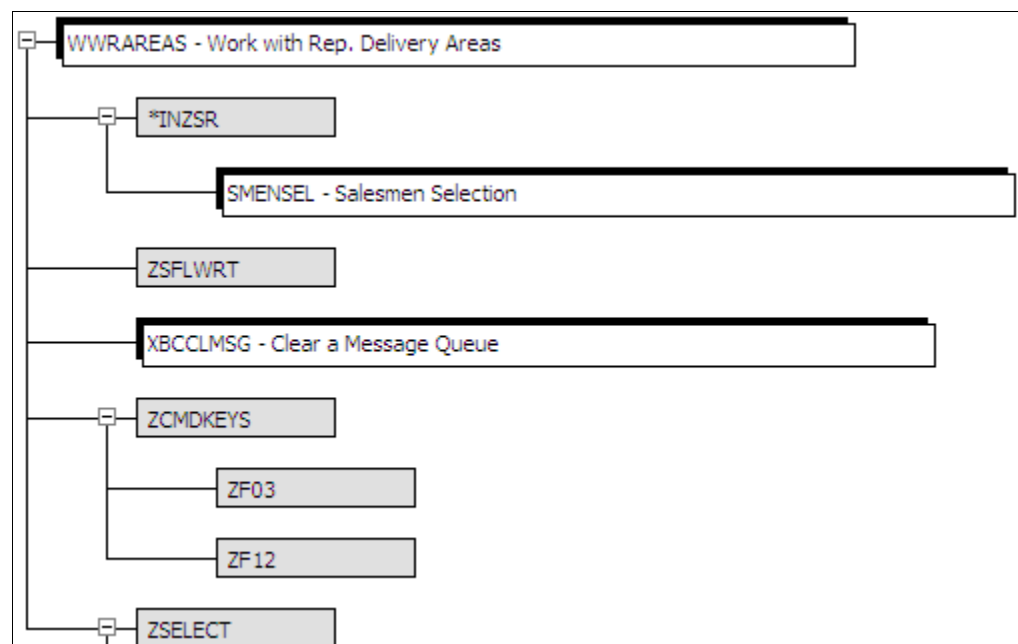


Illustration 3: Execution calls for a Program

RPG as Pseudo Code

For a new or a non RPG/COBOL manager/analyst it is difficult to understand and develop a legacy application. For such users X-Analysis presents structured English or Pseudo Code of a RPG program. On a single click the RPG code can be viewed as a Pseudo Code in X-Analysis. Mnemonics' are substituted with file / field / variable texts and constants or literals. Pseudo code is a great help even for experienced professional as it explains the program logic in simple English language. Pseudo code helps the analysts/managers to speed up the process of analysis.

Seq No	*...+... 1	...+... 2	...+... 3	...+... 4	...+... 5
0021.00	C*	Initialise Parameters			
0022.00	0636C	SDP001	DOUEQ'N'		
0023.00	0640C				
0024.00	0642C				
0025.00	C				
0026.00	C				
0027.00	C				
0028.00	C				
0029.00	C				
0030.00	0765C				
0031.00	C				
0032.00	C* IN				
0033.00	C				
0034.00	C				

Seq No	PSEUDO CODE
0021.00	/* Initialise Parameters
0022.00	Repeat until (Redisplay Screen equal to
0023.00	Repeat until (Return Code equal to 'E
0024.00	And (Mode equal to ' ')
0025.00	If (Srl.no. equal to *BLANKS)
0026.00	Move left *ON to ZZERR (1)
0027.00	Move left 'OEM0003' to MSGID (7)
0028.00	End
0029.00	Move ACACFN to Account Type
0030.00	Perform (Validate Screen)
0031.00	Read Accounts Master File < 26>
0032.00	/* INITIALISE SCREEN :
0033.00	If (Account Type equal to 'ACT')
0034.00	Or (Account Status equal to 'D')

Illustration 4: Structured English view of a Program

Data Flow Diagram

The 'Data Flow Diagram' displays the control flow among all objects (programs & files). The Data Flow diagram displays object where used displaying the files and programs accessed by the subject object. It is color-coded

and shows both the flow of data at a high object level and the contextual information about the specific variables / parameters passed among the objects. From analytical point of view

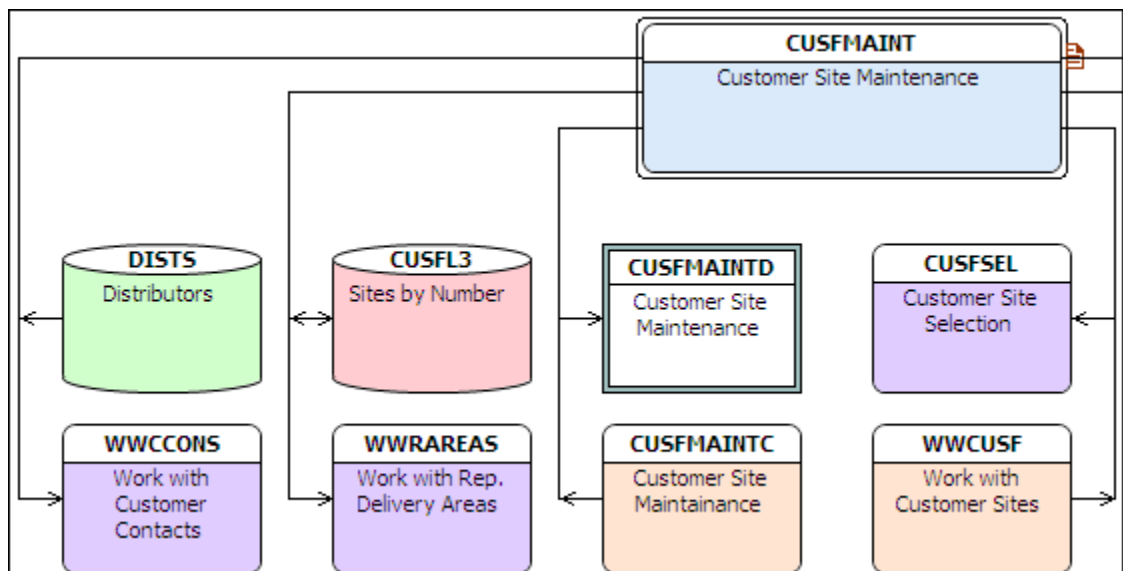


Illustration 5: All references for an Object

one can immediately access the impact of a program / file in an application.

Problem Analysis

Analyzing application's problem is a time consuming task and the process can slow up the entire process of application analysis. With the help of X-Analysis one can generate a list of categorized application problems. The Problem Analysis option displays the application database files and reports problems. It is a very powerful tool for analysts as it can reveal all the database issues in just a click.

Problem Analysis data for XAN4CDXA - Total Problems: 96						
Problem Category/Object	Description	Total	Library	Member File	Member Name	Mem
CONSTRAINT	Database file has constraints defined	0				
<input checked="" type="checkbox"/> DEVMISMCH	Source member changed after devicefil...	2				
DPLCTLFS	Duplicate Logical files	0				
FIFOLIFO	Database file has FIFO/LIFO keywords ...	0				
<input checked="" type="checkbox"/> FILEMISMCH	Source member changed after file created	2				
<input checked="" type="checkbox"/> INTRNLFILE	Internally described file	1				
MULTIFORMT	Database files with multiple record form...	0				
MULTIMBRS	Database files with multiple members	0				
<input checked="" type="checkbox"/> NODEVOBJ	No device file found for existing source ...	6				
<input checked="" type="checkbox"/> NODEVSRC	No source member for device file	4				
<input checked="" type="checkbox"/> NOFILEOBJ	No file found for existing source member	6				
<input checked="" type="checkbox"/> NOFILESRC	No source member for file	1				
<input checked="" type="checkbox"/> NOMEMBERS	Files with zero members	1				
<input checked="" type="checkbox"/> NOPGMOBJ	No program object found for source me...	16				
<input checked="" type="checkbox"/> NOPGMSRC	No source member for program	5				
<input checked="" type="checkbox"/> PGMISMCH	Source member changed after program...	1				
<input checked="" type="checkbox"/> SELECTOMIT	File has Select/Omit rules	11				
TRIGGERS	Database file has triggers defined	0				
<input checked="" type="checkbox"/> UNUSEDLFS	Unused Logical files	52				

Illustration 6: Get to know various problems of the application

Software Metrics

Project estimation is essential for any Legacy application maintenance and/or development project. Deriving accurate project estimation is not possible without Application/Software Metrics. The X-Analysis is capable of generating the Metrics for the complete application or part of the application on a click. The Metrics option is very helpful in deducing various components of the project estimation.

The Metrics option provides detail related to all the source members. Analysts can view the various metrics related to the application's source members on a click. The user can set separate weights to the various parameters for the Batch and the Interactive programs to check the program metrics.

Complexity Level	Units	Attribute	Source L...	Files	Device Files	Called Pro...	Calling ...	Copybooks
Grand Total	144		16149	193	38	122	110	0
Batch Programs	65		2644	95	0	42	64	0
Low Total	65		2644	95	0	42	64	0
Average Total	0		0	0	0	0	0	0
High Total	0		0	0	0	0	0	0
Interactive Prog	38		9550	98	38	80	46	0
Low Total	38		9550	98	38	80	46	0
Average Total	0		0	0	0	0	0	0
High Total	0		0	0	0	0	0	0
Others	41		3955	0	0	0	0	0
Display Files	39		3687	0	0	0	0	0
Printer Files	2		268	0	0	0	0	0
Copybooks	0		0	0	0	0	0	0

Illustration 7: Make informed decision with Metrics

Export to MS Visio

The graphical constructs of the X-Analysis can be exported to the MS Visio application. The automatic export helps in maintaining quality documentation of various graphic diagrams produced by the X-Analysis.

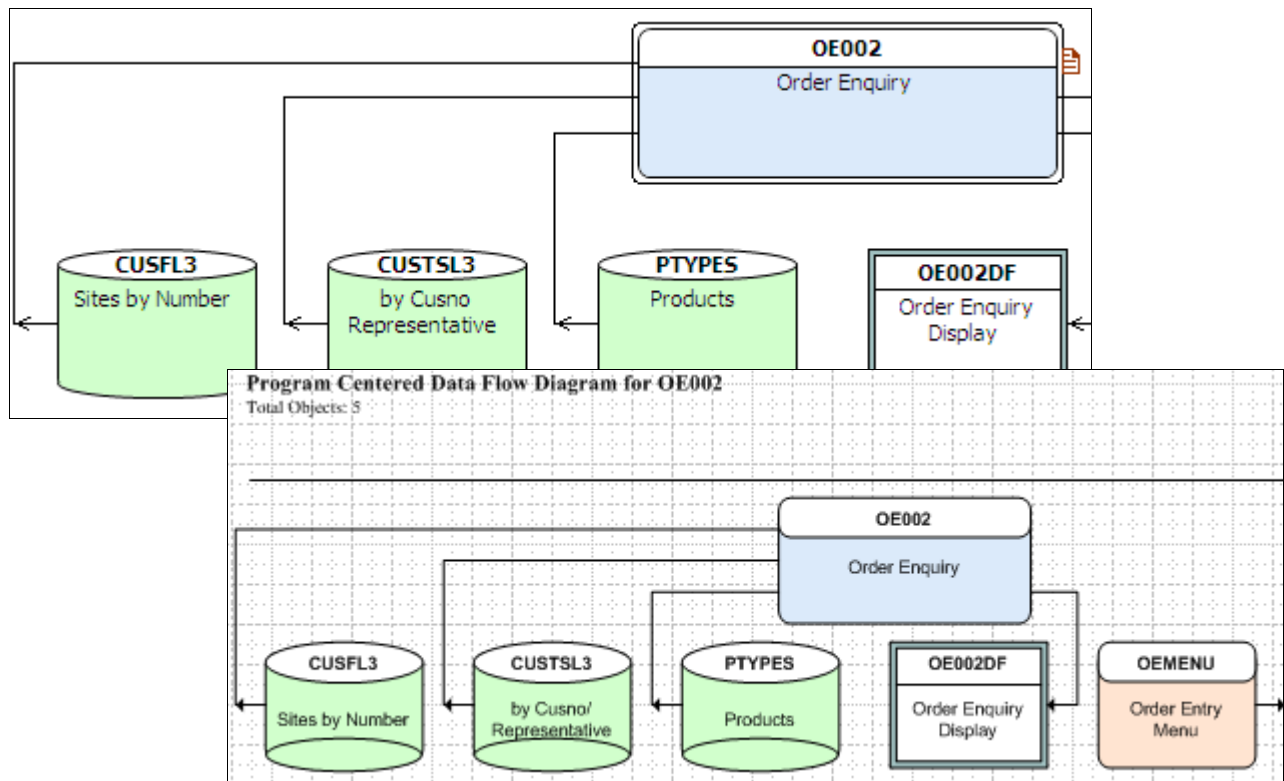


Illustration 8: Get exports to MS Visio

Export to Spreadsheet

Programmers/Analysts/Managers all need spreadsheet for various purpose. Acknowledging this basic requirement the X-Analysis offers export option to spreadsheet. The MS Excel is a typical spreadsheet application and the X-Analysis provide direct export to the MS Excel. The X-Analysis provide export to spreadsheet but it does not essentially require MS Office package. The spreadsheet export can be invoked in any spreadsheet application like OpenOffice, etc.

Library	Name	Type	Attribute	Description	Changed	
PF	XAN4CDEM	ASTATUS	*FILE	PF	Status file	14/09/09
E	XAN4CDEM	BALANCEPRD	*QMQR	PROMPT	Balance by Product	13/05/10
E	XAN4CDEM	BALANCEPRD	*QMFORM	QUERY MGR	Balance by Product	13/05/10
E	XAN4CDEM	BALANCESTO	*QMQR	PROMPT	Balance by Store	13/05/10
E	XAN4CDEM	BALANCESTO	*QMFORM	QUERY MGR	Balance by Store	13/05/10
CL	XAN4CDEM	CBC110	*PGM	CLP	Order Entry System	14/09/09
R	XAN4CDEM	CB906R	*PGM	RPG	Back-out account	
E	XAN4CDEM	CB906RD	*FILE	DSPF	Order Entry display file	
CL	XAN4CDEM	CLET	*PGM	CLP	Build Customer Letter	
CL	XAN4CDEM	CLETN	*PGM	CLP	Print Customer Letter	
PF	XAN4CDEM	CNTACS	*FILE	PF	Contacts	

Illustration 9: Get exports to Spreadsheet

System Documentation

System documentation can provide an introduction and overview of a systems. New Managers / Analysts / Programmers and other staff may need to familiarize themselves with a system; the first thing that will be requested is a system documentation. The system documentation can also be used for many other purposes including auditing, maintenance, etc. Time and human resource are the critical aspects of creating a meaningful system document.

The X-Analysis automatically generates static system documents into MS Word/PDF. Any graphical diagram, list or structured table can be exported individually or via a project documentation wizard which builds an entire set of documents automatically with contents and index pages dynamically built. This can be over entire systems, individual objects, or applications defined by users in this module.

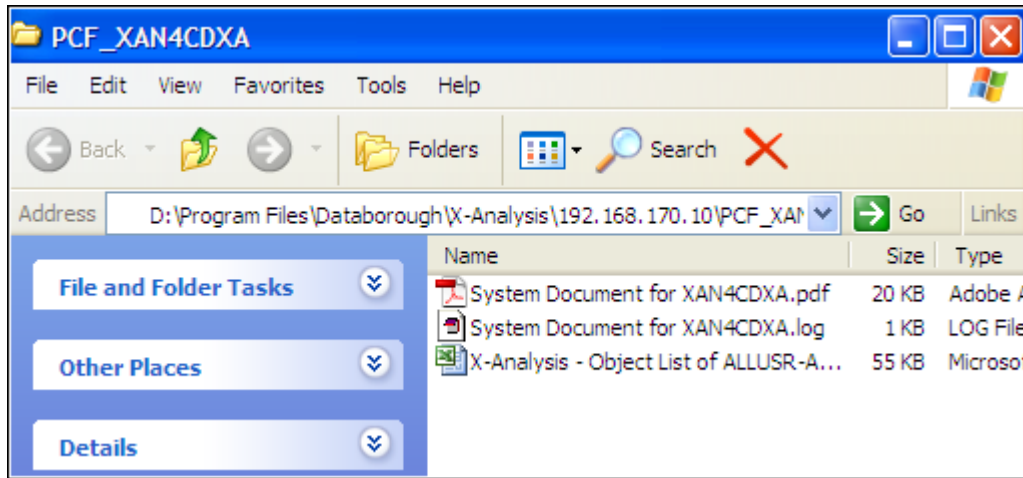


Illustration 10: Application folder containing generated documents

Application Overview

The X-Analysis provides the facility of subdividing an application area into groups of objects that meet the user defined selection criteria. The 'Application Area Diagram' displays all the application areas of an application, which provides overview of the application. It is an interactive diagram and by clicking on the different parts of the system one can see the relationships between either all parts or just the area you've clicked on and the areas it relates to.

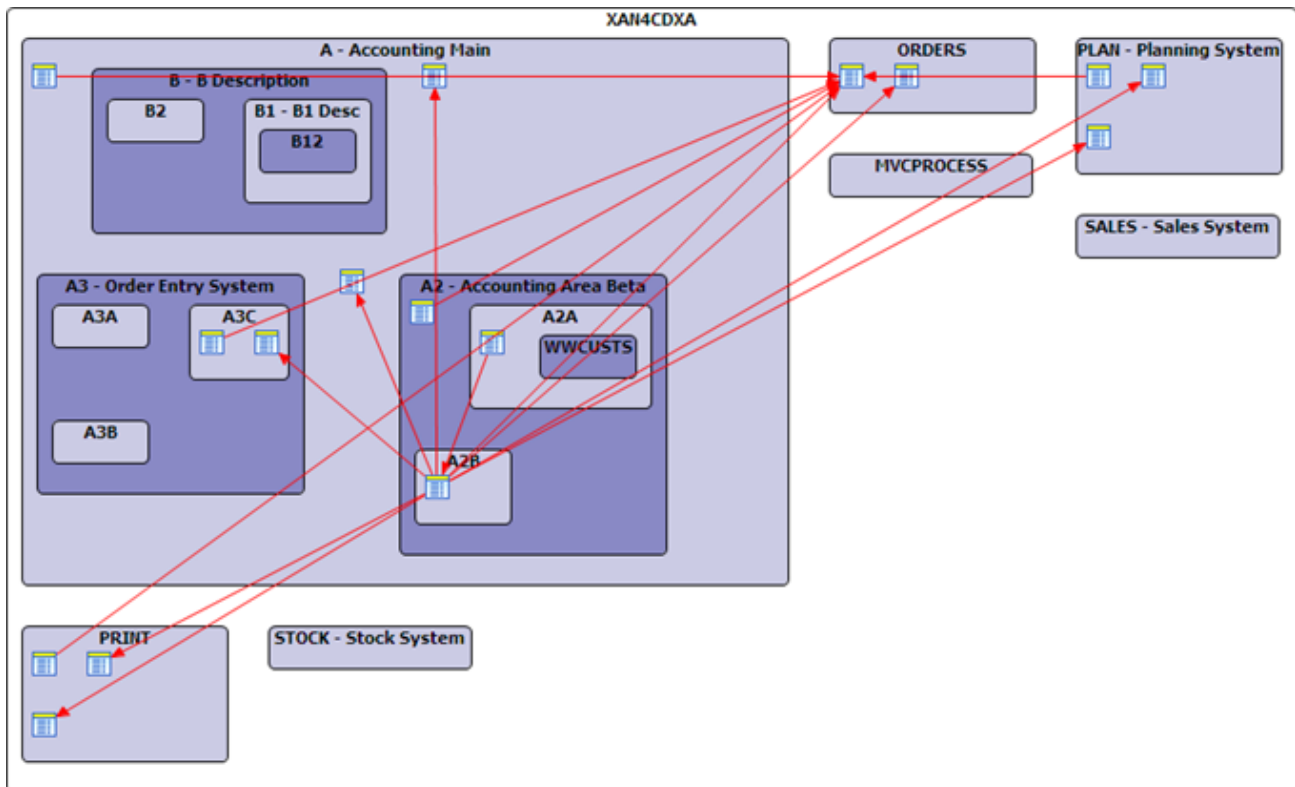


Illustration 11: Analyze parts of the application

Highlights

- Simple to use - Eclipse based plug in
- Real time documentation - Comprehensive, accurate and current documentation of an application
- Ease of maintenance - Improves quality , productivity and reduces risk for any maintenance IT Project
- Better understanding - Helps the IBM i shops to enhance productivity and understanding of an application environment
- Better handling - Capable of handling extremely complex systems
- Solution for multi-level impact analysis and cross-referencing of the complex RPG and COBOL applications
- Export to various tools viz. PDF/MSWord, MS Visio and Spreadsheet (not dependent on the MS Office)
- Graphical & Pseudo Code documentation of the entire system
- Program flow-charting
- Links to the SEU and the LPEX editors
- Problem analysis and Metrics for the complete application

The X-Analysis can be used with equal benefits and enthusiasm by both highly technical IBM i programmers and by those with little or no programming knowledge, which distinguishes it from other IBM i tools.

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:

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