

# **X-2E Application Discover**

# X-2E Demonstration

The screenshot displays the X-2E software interface with the following components:

- Main Window:** Shows a list of pseudo codes for WWCUSTS. The visible text includes:

```
0046.00 /*****  
0047.00 /* Mainline Code  
0048.00 /*****  
0049.00 /* Build subfile  
0050.00 Perform (SFLNRT)  
0052.00 Repeat while ( Command Three equal to '0' ) /* B-----01  
0053.00 And ( *IN12 equal to '0' ) /* |  
0054.00 Move *BLANKS to LOCATE /* |  
0055.00 /* Display screens |  
0056.00 Write Work with Customers /* |  
0057.00 Write Work with Customers /* |  
0058.00 Execute for Work with Customers  
0059.00 /* Move Message  
0060.00 Call 'X'  
0061.00 If (Command Three equal to '1') /* B-----02|  
0062.00 Or (*IN12 equal to '1') /* ||  
0063.00 Leave /* ||
```
- Screen Fields:** A table showing field details for AZWWCUSTSS1. The table is as follows:

Label	Field	File	Line	Column	Attribute	Type	Length	Decimal Posi
Customer	XWBCCD	CUSTS	0	0	Output	A	11	0
Name	XWG4TX	CUSTS	0	0	Output	A	40	0
CusGrp	XWBNCB	CUSTS	0	0	Hidden	A	2	0
	PERSON	CUSTS	0	0	Hidden	A	3	0
Act No	CUSNO	CUSTS	0	0	Hidden	P	5	0
- Data Content Diagrams:** On the right, there are two diagrams:
  - Data Content Diagram for ZZWWCUSTSS2:** Shows a tree structure for 'CUSTS - Purchases' with sub-items like 'CUSGRP - Customer Groups', 'SLMEN - Salespersons', and 'DISTS - Distributors'. Each sub-item has associated 'Joins' and 'Fields'.
  - Screen Action Diagram for AZWWCUSTSS1:** Lists actions such as 'Work with Customers (S1) - AZWWCUSTSS1 (ZZSFC)', 'Change - ZZWWCUSTSS2 (ZZFT01)', 'Delete - ZZWWCUSTSS2 (ZZFT01)', 'Display - ZZWWCUSTSS2 (ZZFT01)', 'CUSTMNT1 - Customer Maintenance', 'WWCONHDR - Orders', 'WWTRNHST - Trans.Hist', and 'Add - ZZWWCUSTSS2 (ZZFT01)'.

# X-2E Professional

## X-Analysis Application Discovery

- **Cross-Referencing**  
Object/Variable/Field/Visual/multi-level
- **Source Code Analysis**  
flow charts/pseudo code/interactive/color coded
- **Graphical Documentation**  
structure charts/data flow/screen flow/internal structure
- **Data Model Analysis**  
foreign keys extraction/ERD/DDL  
export/constraints/DDS-2-DDL
- **Business Rules Analysis**  
business rules extraction/where used/annotation/rules narrative/process mapping
- **UML Generation**  
Activity/Use case/Class diagrams
- **Application Metrics**  
complexities/problems/application areas
- **Entities & Relations**
- **Data Dictionary**
- **Interactive Functions**
- **Internal Functions**
- **External Functions**
- **Action Diagrams**

## Relational Data Model

- Auto Extracted from Code/CA:2E
- Relational & Physical
- Date Fields

## Business Rule Logic

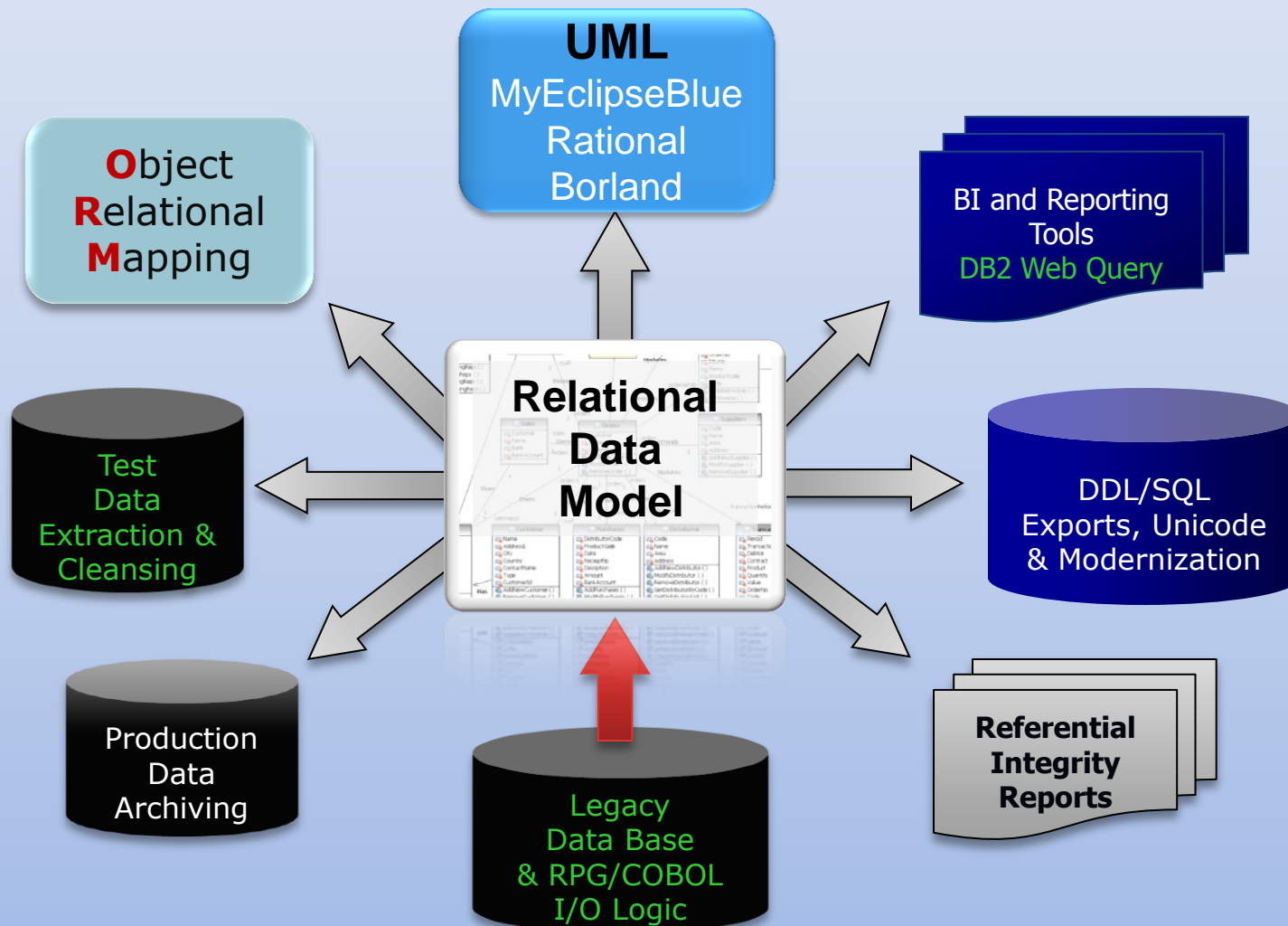
- Validations/Calculations
- Summaries/Narratives/Annotations
- Indexed Database & Mapped to Functions
- CA:2E Action Diagram Logic Extraction

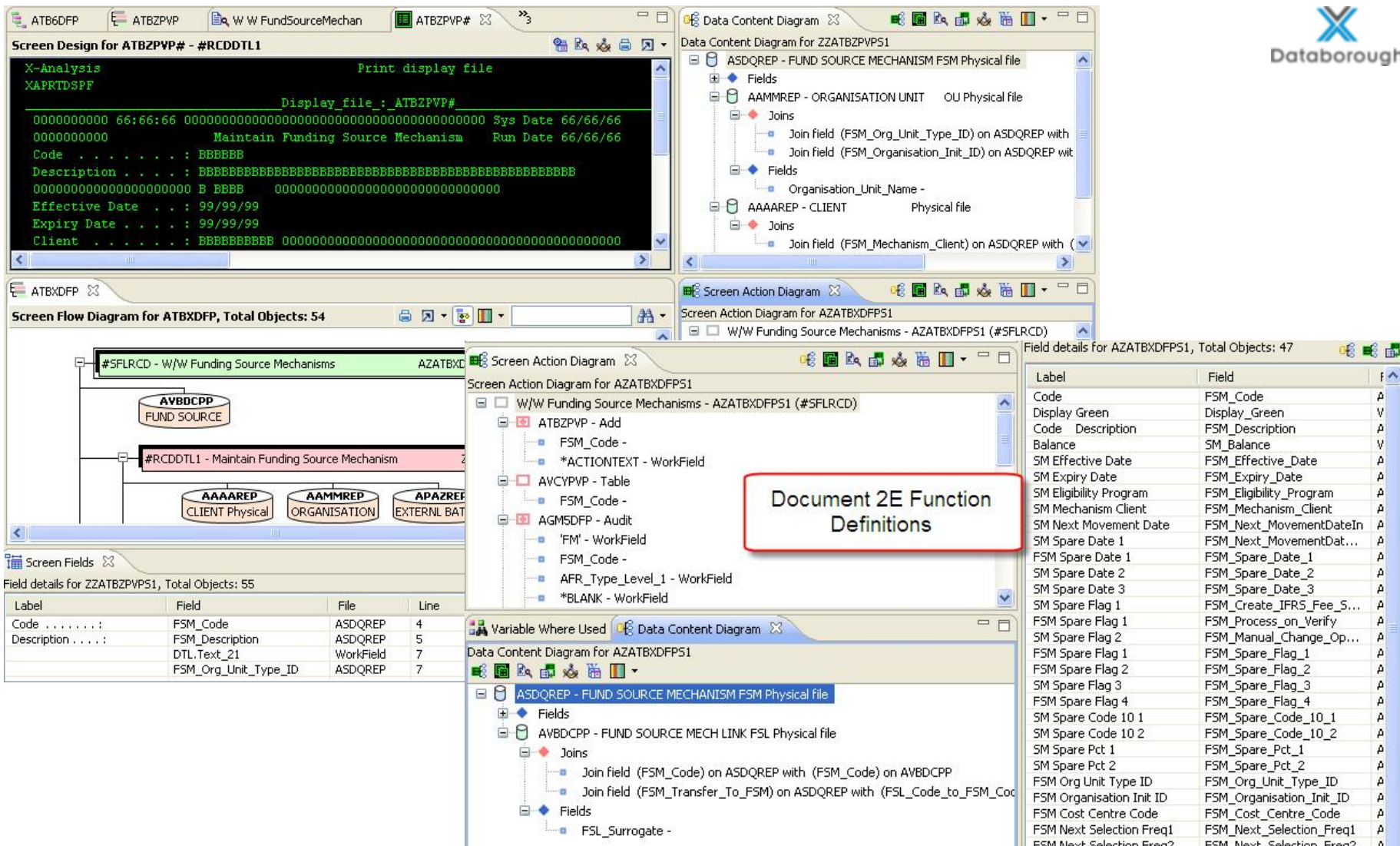
## UI/Print Functions

- Screen Formats/Layouts/Fields/Files/Attributes
- Screen Actions Flow
- ORM Mapped to UI
- Conditional Field/UI/Flow Logic

# Application Discovery

# Using the Derived Relational Model





The screenshot displays a complex software development environment with multiple overlapping windows. The top-left window shows a 'Screen Design for ATBZPVP# - #RCDDTL1' with a terminal-like display of data. The top-right window shows a 'Data Content Diagram for ZZATBZPVPS1' with a hierarchical tree structure. The middle-left window shows a 'Screen Flow Diagram for ATBXDFP, Total Objects: 54' with a flowchart. The middle-right window shows a 'Screen Action Diagram for AZATBXDFPS1' with a list of actions and their associated fields. The bottom-left window shows 'Field details for ZZATBZPVPS1, Total Objects: 55' with a table. The bottom-right window shows 'Field details for AZATBXDFPS1, Total Objects: 47' with a table. A red box highlights the text 'Document 2E Function Definitions' in the middle-right window.

**Field details for ZZATBZPVPS1, Total Objects: 55**

Label	Field	File	Line
Code . . . . .	FSM_Code	ASDQREP	4
Description . . . . .	FSM_Description	ASDQREP	5
	DTL_Text_21	WorkField	7
	FSM_Org_Unit_Type_ID	ASDQREP	7

**Field details for AZATBXDFPS1, Total Objects: 47**

Label	Field	F
Code	FSM_Code	A
Display Green	Display_Green	V
Code Description	FSM_Description	A
Balance	SM_Balance	V
SM Effective Date	FSM_Effective_Date	A
SM Expiry Date	FSM_Expiry_Date	A
SM Eligibility Program	FSM_Eligibility_Program	A
SM Mechanism Client	FSM_Mechanism_Client	A
SM Next Movement Date	FSM_Next_MovementDateIn	A
SM Spare Date 1	FSM_Next_MovementDat...	A
FSM Spare Date 1	FSM_Spare_Date_1	A
SM Spare Date 2	FSM_Spare_Date_2	A
SM Spare Date 3	FSM_Spare_Date_3	A
SM Spare Flag 1	FSM_Create_IFRS_Fee_S...	A
FSM Spare Flag 1	FSM_Process_on_Verify	A
SM Spare Flag 2	FSM_Manual_Change_Op...	A
FSM Spare Flag 1	FSM_Spare_Flag_1	A
FSM Spare Flag 2	FSM_Spare_Flag_2	A
SM Spare Flag 3	FSM_Spare_Flag_3	A
FSM Spare Flag 4	FSM_Spare_Flag_4	A
SM Spare Code 10 1	FSM_Spare_Code_10_1	A
SM Spare Code 10 2	FSM_Spare_Code_10_2	A
SM Spare Pct 1	FSM_Spare_Pct_1	A
SM Spare Pct 2	FSM_Spare_Pct_2	A
FSM Org Unit Type ID	FSM_Org_Unit_Type_ID	A
FSM Organisation Init ID	FSM_Organisation_Init_ID	A
FSM Cost Centre Code	FSM_Cost_Centre_Code	A
FSM Next Selection Freq1	FSM_Next_Selection_Freq1	A
FSM Next Selection Freq2	FSM_Next_Selection_Freq2	A

# Design Recovery Documentation

Programs - CUSFMAINT

```

Embedded Rules for CUSFMAINT in CDEMO/QRPGLESRC, Lines: 334, View Level: 4
Seq No  *...+... 1 ...+... 2 ...+... 3 ...+... 4 ...+... 5 ...+... 6 ...+... 7 ...+... 8 ...+... 9 ...+... *
0200.96  =!BRC*  If the field ZCNAME is blank then it is invalid , set the field VALID to
0200.97  =!BRC*  off.
0200.98  %!BRC*  Business Rule No. CDEMO/QRPGLESRC/CUSFMAINT/201 Validation.
0200.99  @!BRC*  V00001 CUSF      CNAME      You must enter the customer name.
0201.00  B>!BRC      if          zcname = *blanks
0202.00  ->!BRC      eval        *in32 = *on
0203.00  ->!BRC      eval        msgid = 'OEM0012'
0204.00  ->!BRC      callp(e)    rtmmsgtext(msgid:errmsg)
0205.00  ->!BRC      eval        valid = *off
0206.00  ->!BRC      leavesr
0207.00  E>!BRC      endif
0209.00  C* Telephone number
0209.95  =!BRC*  If the field ZTELNO is not equal to blank , verify the field ZTELNO
0209.96  =!BRC*  against ' 0123456789'. If FOUND then the field "Phone" is invalid , set
0209.97  =!BRC*  the field VALID to off.
0209.98  %!BRC*  Business Rule No. CDEMO/QRPGLESRC/CUSFMAINT/210 Validation.
0209.99  @!BRC*  V00002 CUSF      TELNO      The telephone no. is invalid.
0210.00  B>!BRC      if          ztelno <> *blanks
0211.00  ->!BRC      check       ' 0123456789' ztelno z1
0212.00  ->!BRC      if          %found
0213.00  ->!BRC      eval        *in34 = *on
0214.00  ->!BRC      eval        msgid = 'OEM0014'
0215.00  ->!BRC      callp(e)    rtmmsgtext(msgid:errmsg)
0216.00  ->!BRC      eval        valid = *off
0217.00  ->!BRC      leavesr
0218.00  ->!BRC      endif
0219.00  E>!BRC
0221.00  C* Fax number
0221.95  =!BRC*  If the field ZFAXNO is not equal to blank , verify the field ZFAXNO
0221.96  =!BRC*  against ' 0123456789'. If FOUND then the field "Fax. No." is invalid ,
0221.97  =!BRC*  set the field VALID to off.
0221.98  %!BRC*  Business Rule No. CDEMO/QRPGLESRC/CUSFMAINT/222 Validation.
0221.99  @!BRC*  V00003 CUSF      FAXNO      The fax. no. is invalid.
0222.00  B>!BRC      if          zfaxno <> *blanks
0223.00  ->!BRC      check       ' 0123456789' zfaxno z1
  
```

Business rules indexes, narration and marking inserted by X-Analysis and viewed using the interactive browser

Member X-Ref   Outline   Business Rules

Business Rules for CUSFMAINT, Number of Lines: 7

Source Member	Narration	Type	Rule No.	Field	File/Program	Rule
CUSFMAINT	If the field ZCNAME is blank then it is invalid.	V	00001	CNAME	CUSF	You must enter the customer name.
CUSFMAINT	If the field ZTELNO is not equal to blank , verify...	V	00002	TELNO	CUSF	The telephone no. is invalid.
CUSFMAINT	If the field ZFAXNO is not equal to blank , veri...	V	00003	FAXNO	CUSF	The fax. no. is invalid.
CUSFMAINT	If the field ZDSDCDE is not equal to blank , veri...	V	00004	DSDCDE	CUSF	The distributor is invalid.
CUSFMAINT	If the field ZSTATUS is not equal to blank , set ...	V	00005	STATUS	CUSF	The status is invalid.
CUSFMAINT	If the field ZUSERNM is blank then it is invalid.	V	00006	USERNM	CUSF	You must enter a customer name.
CUSFMAINT	If the field ZSALUT is not equal to blank. If the ...	V	00007	SALUT	CUSF	The title is invalid.

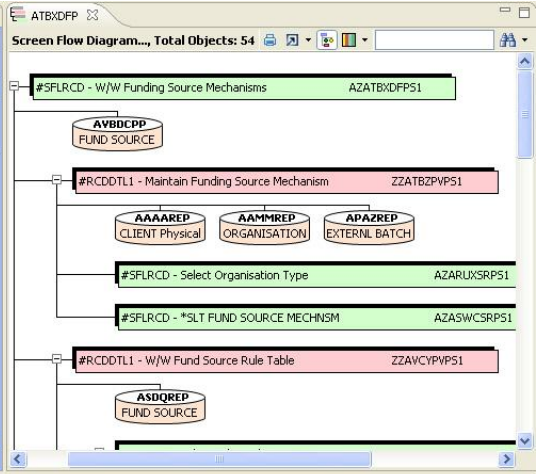
Programs - ATBXDLV1   ATBZPVP   W W FundSourceMechan

Action Diagram for W W FundSourceMechanisms Display file(ATBXDFP)

```

/* Data Section for ATBXDFP */
Workfield
  LCL.Display_Balances      Alpha
  LCL.X090_Run_Date        Packed
/* Program logic for W W FundSourceMechanisms Display file(ATBXDFP) */
USER: Initialize program
Execute Check Core Module
  LCL.X090_Run_Date = WRK.X090_Run_Date
Call Get All GCD EXT
USER: Initialize subfile control
CTL.Display_Balances = LCL.Display_Balances
If CTL.Display_Balances = 'Y'
  CTL.text_3 = 'Yes'
Endif
If *OTHERWISE
  CTL.text_3 = 'No'
Endif
  
```

Screen Flow Diagram..., Total Objects: 54



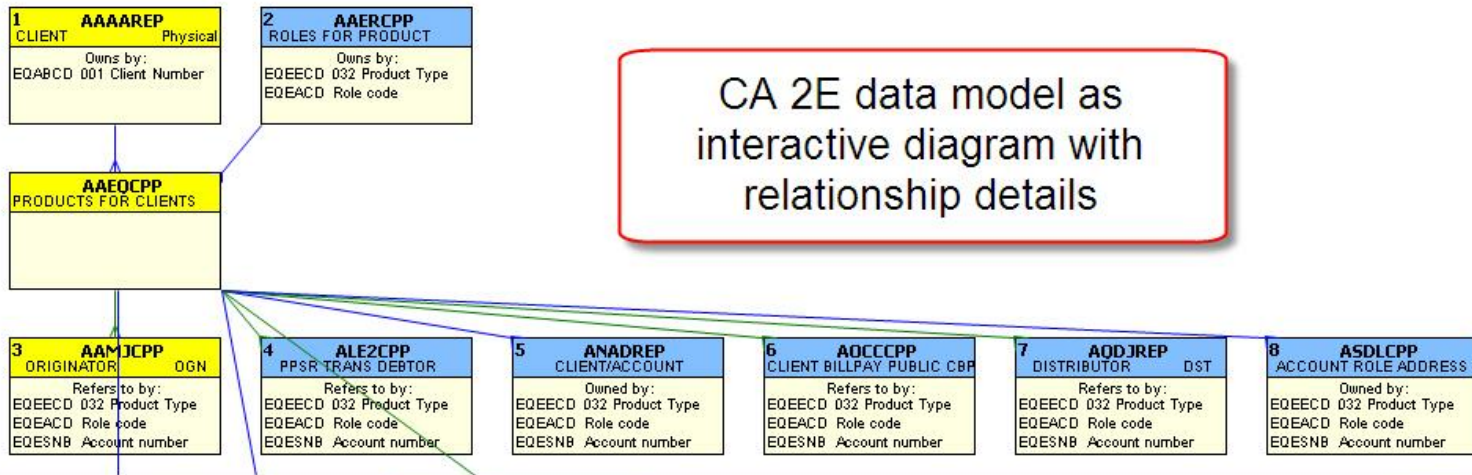
Business Rules

Business Rules for function AZATBXDFP1, Number of Lines: 23

Source Member	Narration	Type	Rule No.	Field	File/Program	Rule
ATBXDFP	PGM.*Reload subfile = CND.*YES.	X	00022			USER: Process o
ATBXDFP	LCL.090 Run Date = WRK.090 Run Date.	X	00002			Execute function
ATBXDFP	If RCD.*SFLSEL is Table.	X	00020			RCD.*SFLSEL is
ATBXDFP	If RCD.*SFLSEL is Rules. If LCL.FSL Record Found Y/N is Yes. LCL.Attachment Description = CONCAT(CO...	X	00018			RCD.*SFLSEL is
ATBXDFP	If RCD.*SFLSEL is Delete. If RCD.FSM Sovereign Record is Yes. If *OTHERWISE. If LCL.LAE Record Found...	X	00013			Funding Source f
ATBXDFP	If RCD.*SFLSEL is Change or Display.	X	00012			RCD.*SFLSEL is
ATBXDFP	If RCD.*SFLSEL is Action=5.	X	00019			RCD.*SFLSEL is

# Business Logic Analysis

Data Model Diagram for DEMO1/AAEQCPP, Total Objects: 12



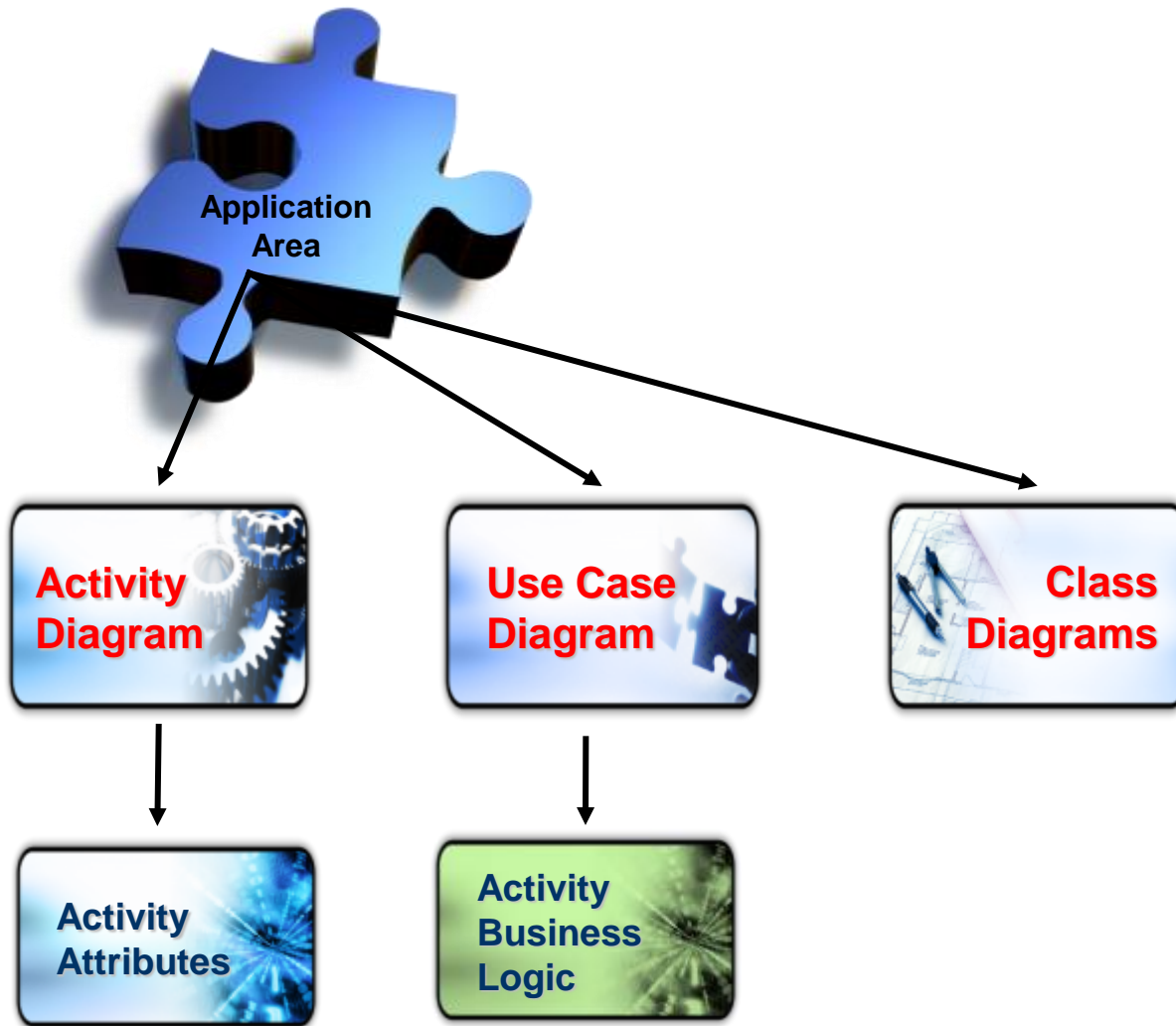
Variable Where Used | Data Content Diagram | Outline | DMD Details

DMD Relations for DEMO1/AAEQCPP, Total Relations: 11

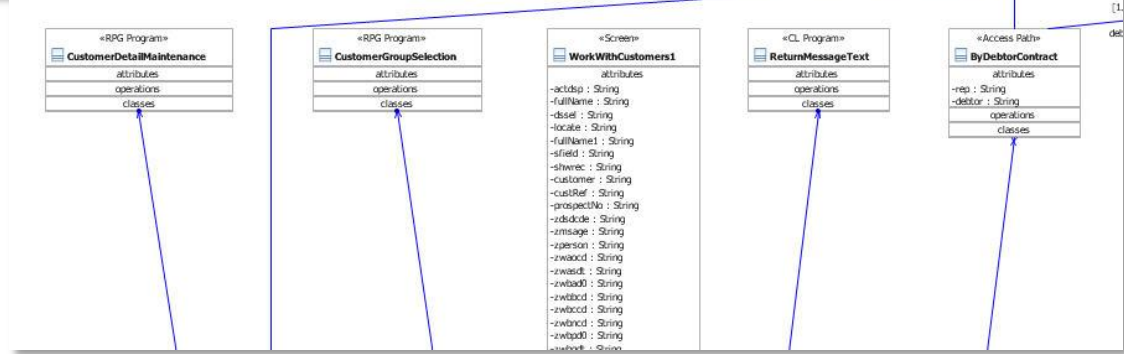
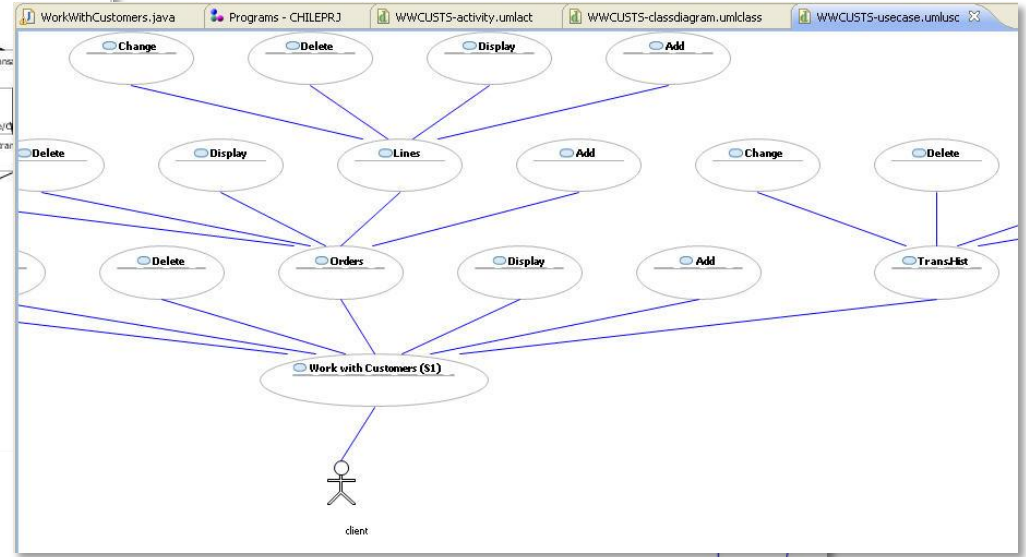
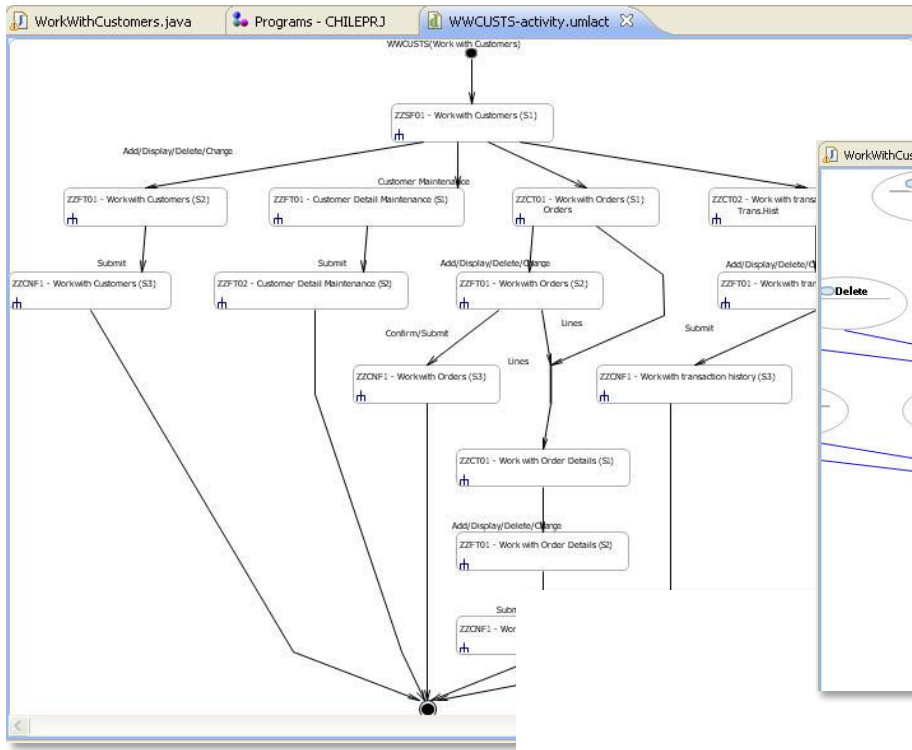
Rel No.	Dependent File	Relation Type	Parent File	Dependent Fields	Parent Fields
1	PRODUCTS FOR CLIENTS Physical file	OWNED BY	CLIENT Physical file	001 Client Number	001 Client Number
2	PRODUCTS FOR CLIENTS Physical file	OWNED BY	ROLES FOR PRODUCT Physical file	032 Product Type, Role code	032 Product Type, Role code
3	ORIGINATOR OGN Physical file	REFERS TO	PRODUCTS FOR CLIENTS Physical file	001 Client Number, 032 Pr...	001 Client Number, 032 Product Type, .
4	PPSR TRANS DEBTOR PPD Physical file	REFERS TO	PRODUCTS FOR CLIENTS Physical file	001 Client Number, 032 Pr...	001 Client Number, 032 Product Type, .
5	CLIENT/ACCOUNT ARCHIVECAA Physical file	OWNED BY	PRODUCTS FOR CLIENTS Physical file	001 Client Number, 032 Pr...	001 Client Number, 032 Product Type, .
6	CLIENT BILLPAY PUBLIC CBP Physical file	REFERS TO	PRODUCTS FOR CLIENTS Physical file	CBP Client, 032 Product Ty...	001 Client Number, 032 Product Type, .
7	DISTRIBUTOR DST Physical file	REFERS TO	PRODUCTS FOR CLIENTS Physical file	001 Client Number, 032 Pr...	001 Client Number, 032 Product Type, .
8	ACCOUNT ROLE ADDRESS ARA Physical file	OWNED BY	PRODUCTS FOR CLIENTS Physical file	001 Client Number, 032 Pr...	001 Client Number, 032 Product Type, .

# Data Model Analysis





# UML Diagrams & UML Extensions



# UML Diagrams S-Shots

- ∞ Scientific Forensics
- ∞ System wide perspective
- ∞ Visualization
- ∞ Non Expert Inclusion
- ∞ Explicit Information
- ∞ Quality of Communication

## Summary Benefits of Analysis