

attaining a model of health - customer success

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CA Gen models, on occasion, may contain corrupt objects or associations, sometimes referred to as “model corruptions”. It’s always been easy to find these using Encyclopedia Validate but it's been difficult to do much about them. Therefore, most organizations ignore them until they start to cause problems. This session will provide insight into how Jumar Solutions’ automation techniques help CA Gen users identify, review and resolve these errors before they can impact your critical applications and development projects.

Jumar Solutions overview

The leading global
resource, services and
solutions partner to the
CA Gen community
and
CA Technologies



Hapag-Lloyd overview

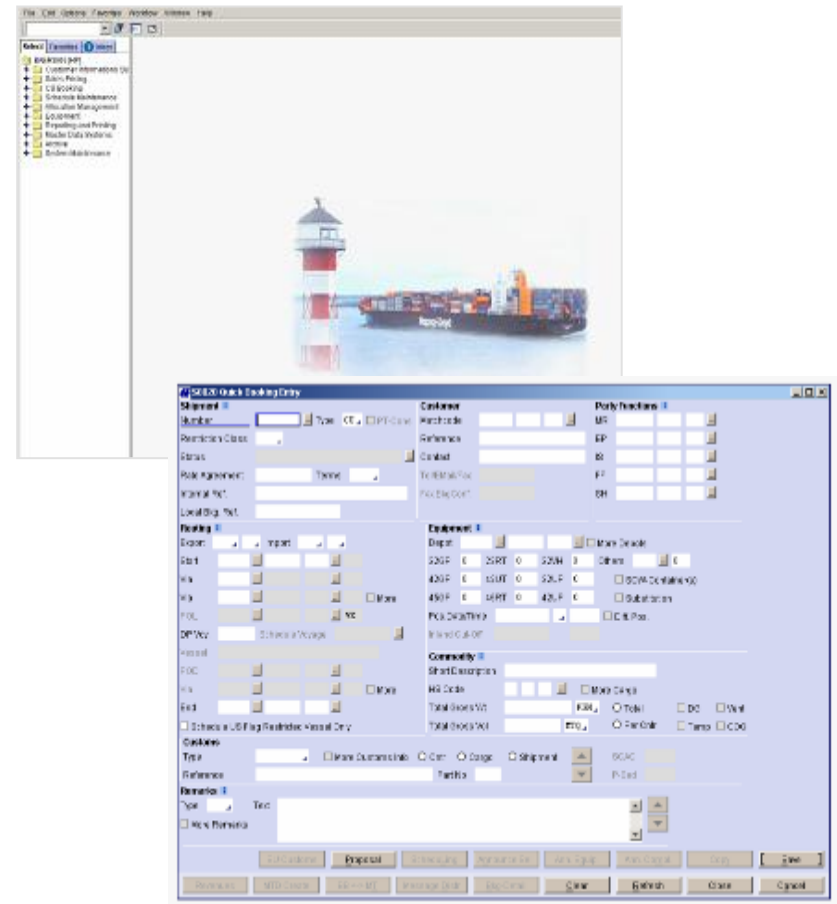


- One of the leading global container shipping companies
- Extensive service network with 76 services around the globe
- 137 modern container vessels with a capacity of about ~617,000 TEU and more than 1.0 million container (TEU) of various types
- Global presence with about 300 sales offices in 114 countries
- Employees: ~6,900

Hapag-Lloyd Freight Information System (FIS)

One Global Operational IT System

- Integrated ocean carrier transport and logistics system
- Covering the entire transport chain and interfaces with all other IT systems
- Using one transport file worldwide for each transport in a central database
- Real-time access to all data for every order, irrespective of the location
- Highest reliability and availability



**The Key to the
Organisation's Success**

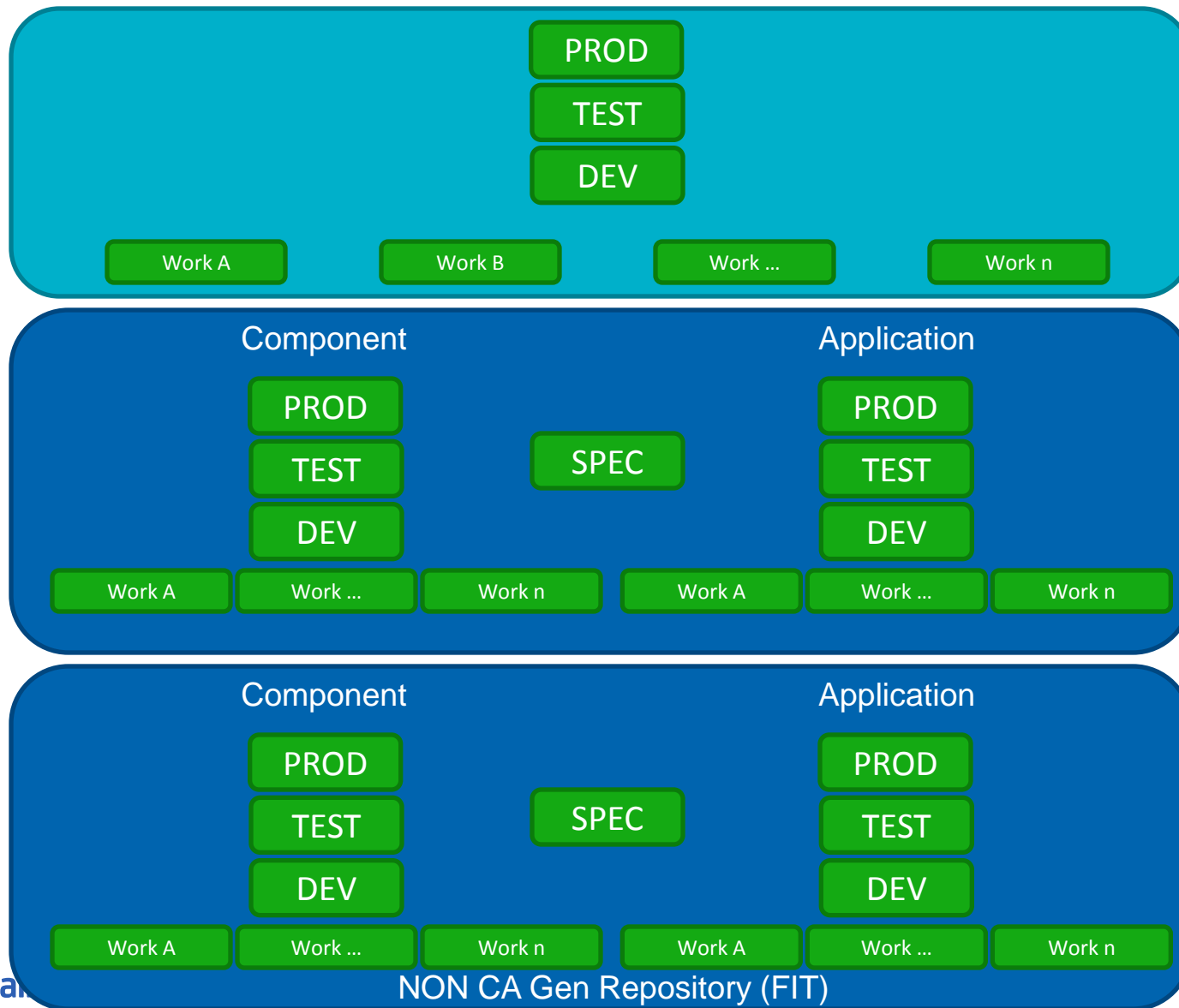
CA Gen @ HL in figures

- 1 all-embracing Enterprise Data Model
- > 1000 CA Gen based Entities
- > 90.000.000 Objects within mainframe CE
- > 70 Models in use
- > **14,000,000** Objects within our largest live model
- > 25.000 CA Gen generated modules
- > 18 Years of production of CA Gen based application

WHAT are we doing with CA Gen – and HOW ?

- Initial target: one all-embracing enterprise data model
 - + Excellent data consistency and analytic capability
 - High complexity and problematic maintenance of a monolithic application like FIS
- Introduction of “Component Based Development”
 - + Separation of specification and implementation, encapsulation of logic
 - Grown overhead due to separation of components and more complex model structure
- Modernization of the User Interfaces
 - + Model of business logic still remains in CA Gen
 - Client and Middle Tier not completely within CA Gen model (but still model based with own model)

WHAT are we doing with CA Gen – and HOW ?



migration to CA Gen r8

history and beta

- Complete move to DLL technique on z/OS was already done with migration 6.5 to 7.5
- CA Gen 7.5 went out of official CA support end 2008
- CA Gen 7.6 did not bring any interesting features for us
- Release changes tend to be very complicated
- Beta participation to become aware of problems as early as possible (bad experience from 7.5 migration)
- Beta to test new (or for us new) functionality
- **Beta highlighted inconsistencies within our models (e.g. ancient object types deprecated in IEF 3.x)**
- **Urgent problems due to unavailable Subset ID's**
- **Increasing inability to delete “Unused” Action Blocks from models**

migration to CA Gen r8

planning & migration

- Up to now we always did the migration by “Upgrade in Place”
- Driven by the subset id problem and the ancient object types encountered we decided to go a different way this time
 - Setup of a new CE (new binaries & new tables)
 - Download of models in Upload Format out of the existing CE
 - Upload into the new CE
 - Convert to new schema level
 - Adopt into SPEC catalog to create new model family

This approach failed !

migration to CA Gen r8

what was the problem – and how to proceed?

- Many model corruptions
 - Partly already the download failed
 - In this case the simple solution was to first copy the model within CE
 - Partly we had problems during adopt
 - This was extremely disturbing as it took quite a long calculation time before the error occurred -> CA Support
- “Upgrade in Place” as emergency solution
 - 1:1 copy of ‘old’ CE
 - Upgrade in Place
 - Conversion of models
 - Create new models from subset of the already done work
 - Adopt & Migrate these small models

migration to CA Gen r8

post migration

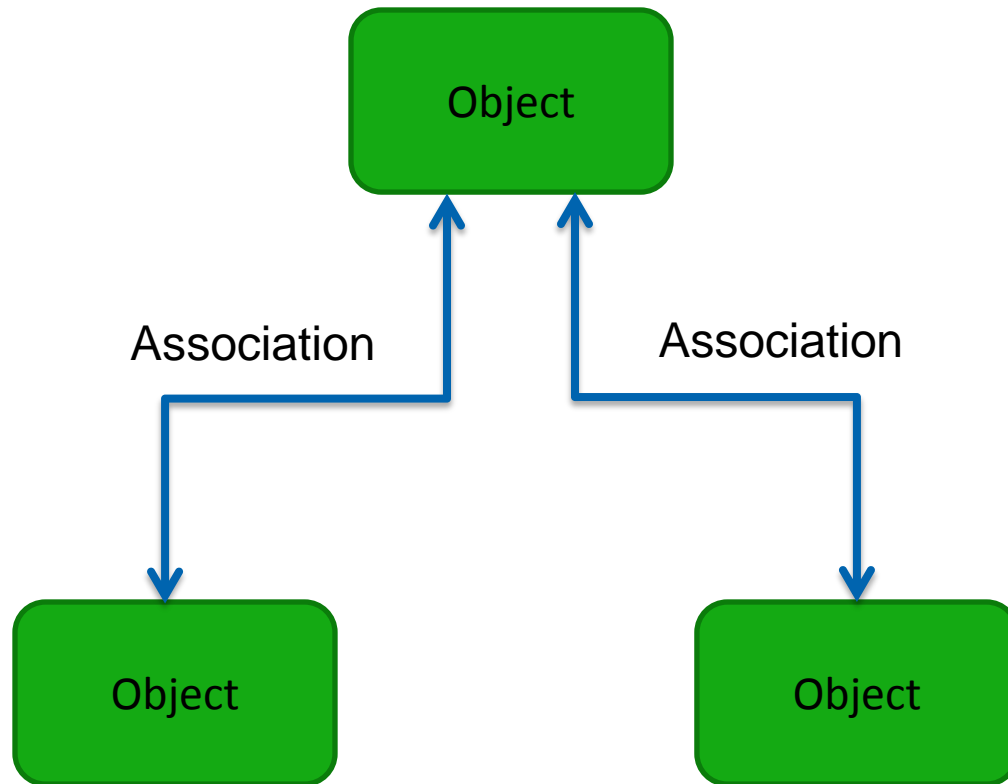
- Uncertainty of the scale of the health problem and any future impacts
- Focused investigations to the failure of HE migration
- Initial fixes provided by CA Support to remove **IEF 3.x object** types
- CA Support escalated to Jumar Solutions

a statement before we move on!

Model corruptions do not necessarily mean that there will be associated problems with the CA Gen Model. In fact, it is not uncommon for these corruptions to exist without them affecting day to day activities. But, depending on the activities being executed (e.g. model management, upgrade, normal model updates on specific objects) the corruptions can cause failures. There are also types of model corruption that do need to be managed and the impact of them understood.

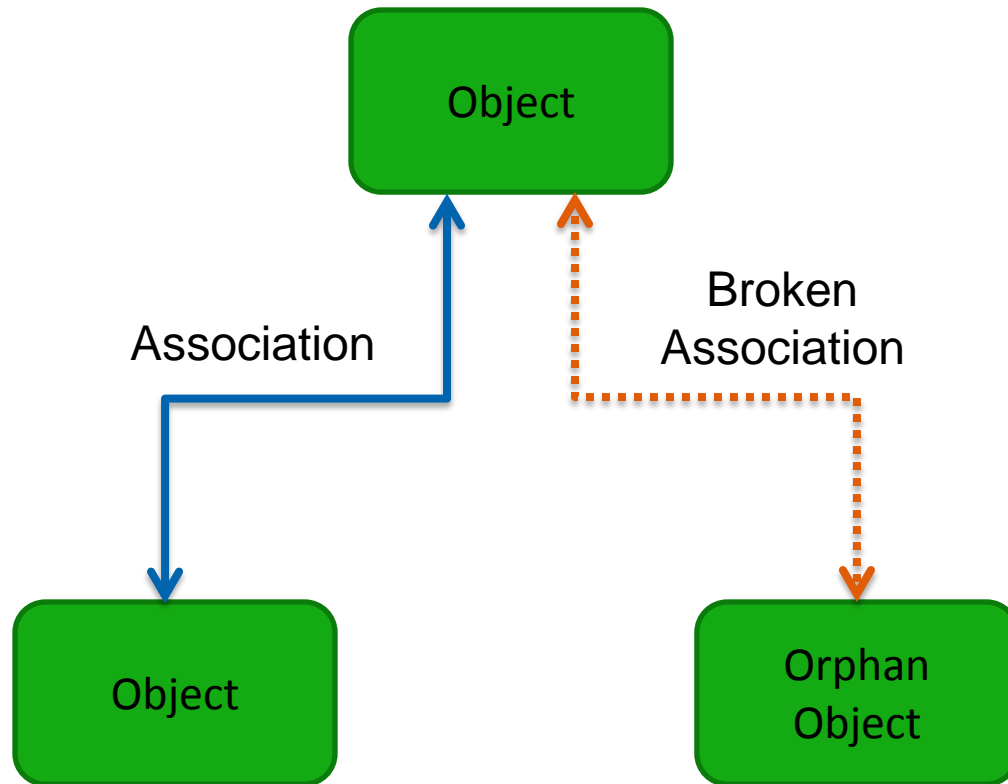
the CA Gen encyclopaedia

the basics



the CA Gen encyclopaedia

the basics



CA Gen model corruptions

- What is a model corruption?
- An Encyclopaedia Validation Error?
- Not always



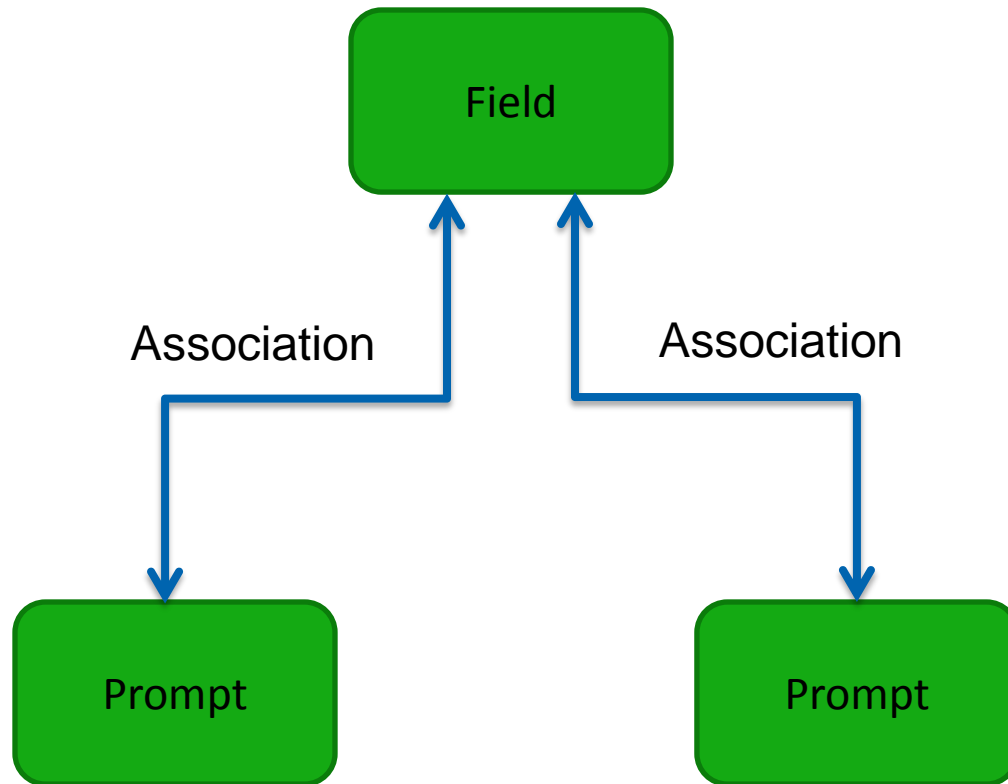
CA Gen model corruptions: examples

- Objects without all mandatory associations (“orphaned objects”)
 - This is the most common we find and not picked up by validation report
- Duplicate single cardinality associations
- Values in properties that are not permitted
- Objects which are no longer valid (removed from schema)
- Objects with Associations to other objects which are not permitted

a real example: the problem



a real example: the problem multiple prompts



how did Jumar get involved?

- We know the schema well enough to diagnose a problem
- We are the world leaders in using the API
- We are automation experts who can help with the solution

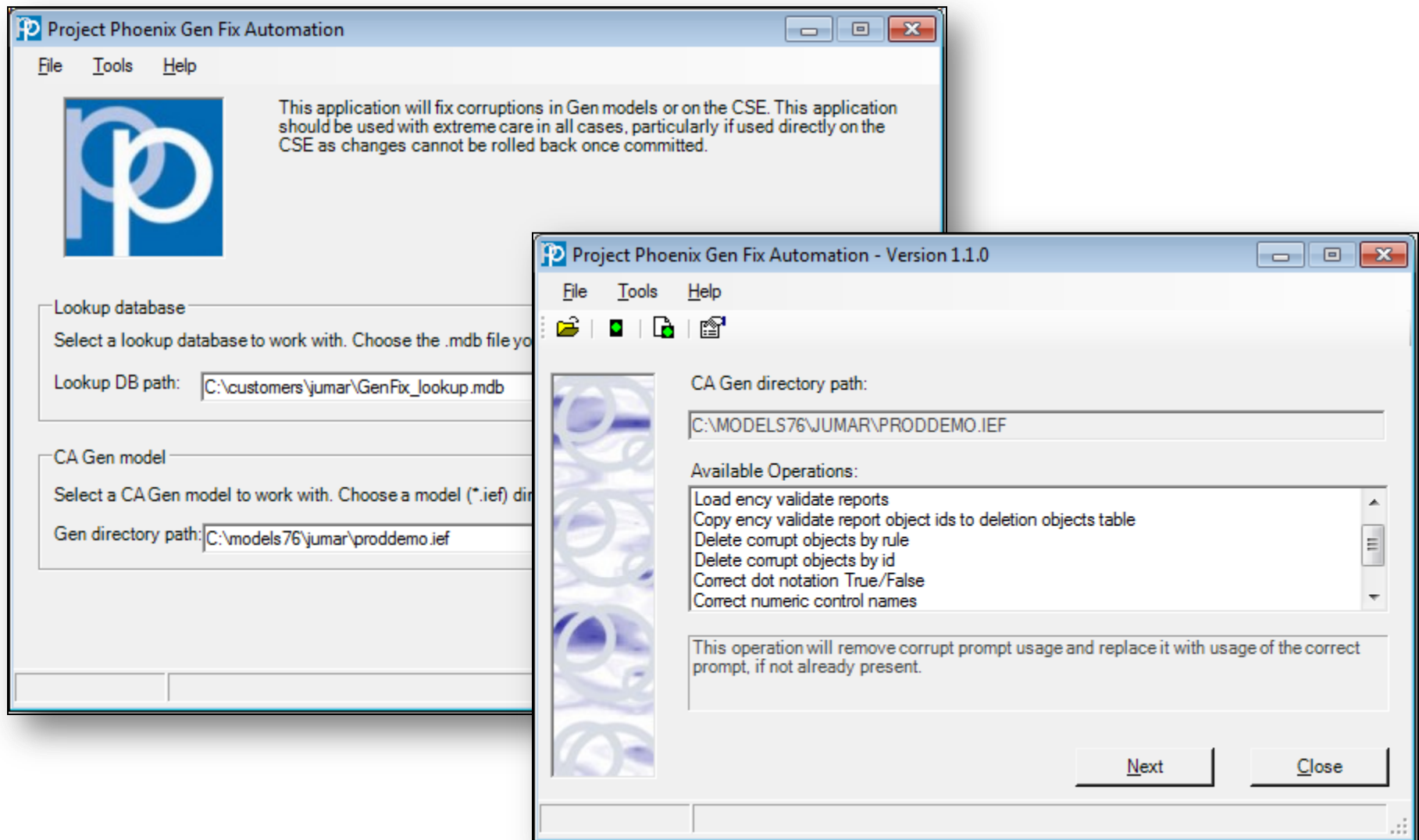
how does Jumar deal with CA Gen corruptions?



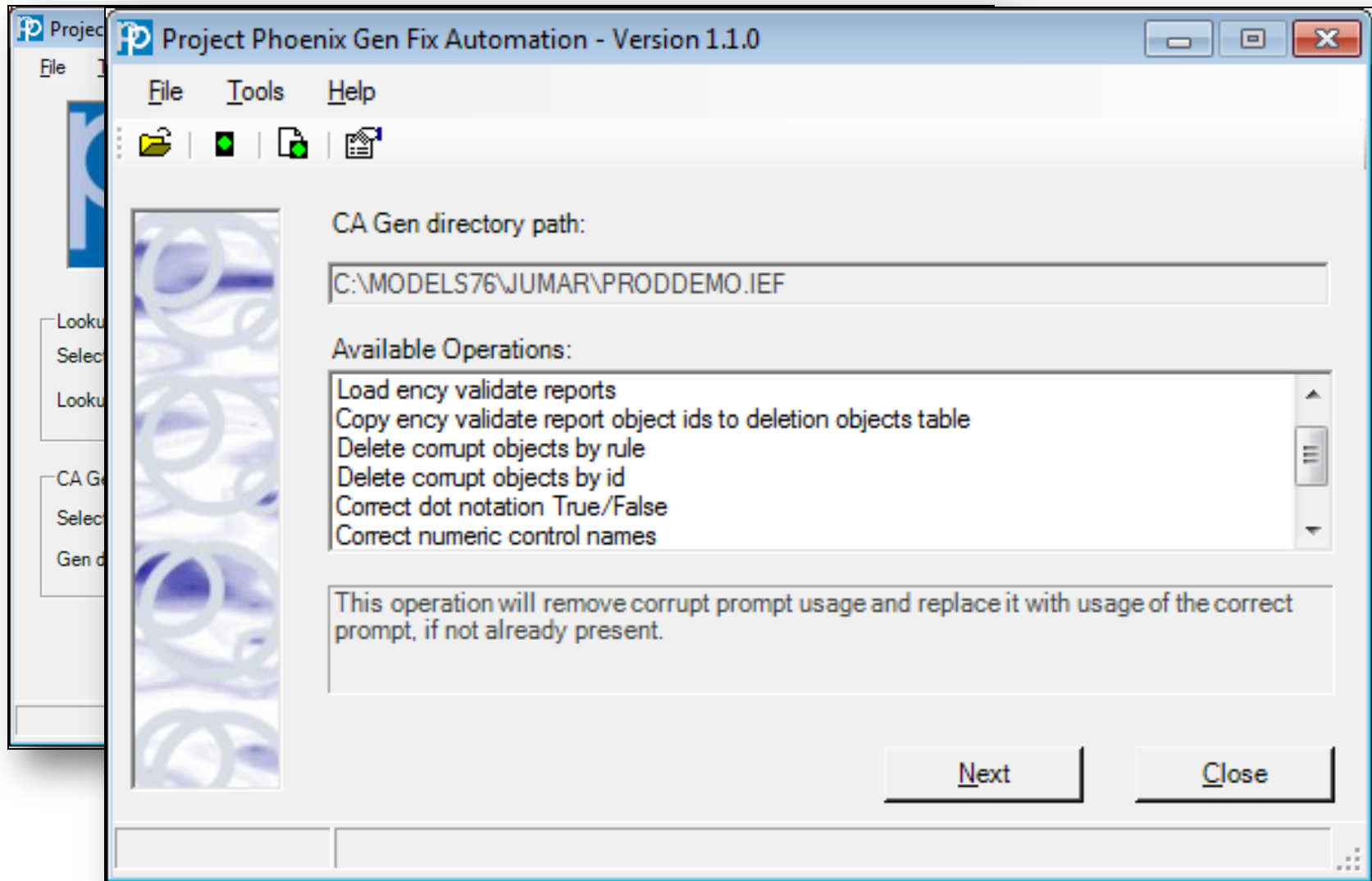
our approach



investigate



investigate



investigation: the schema tool

Schema - GEN SAMPLE MODEL R76

File List Properties Tools Help

AllFusion Gen model

Gen directory path C:\MODELS\SAMPLE.IEF

Object Type 21 - ACBLKBSD

Object Navigation

Object Id 21

Neighbourhood Dump

Obj Id	Name
21	FILE_FUNCTIONS_READ
65557	FILE_FUNCTIONS_WRITE
720917	MENU
786453	MAINTAIN_DIVISION
851989	MAINTAIN_DEPARTMENT
917525	EMPLOYEE_LIST
983061	EMPLOYEE_DETAIL
1048597	GUI_MENU
1114133	GUI_MAINTAIN_DIVISION
1179669	GUI_DETAIL_DIVISION
1245205	GUI_DETAIL_DEPARTMENT
1310741	GUI_MAINTAIN_EMPLOYEE
1376277	GUI_MAINTAIN_DEPARTMENT
1441813	GUI_DETAIL_EMPLOYEE
1507349	GUI_FILE_FUNCTIONS_WRITE
1572885	GUI_FILE_FUNCTIONS_READ
1638421	CLIENT_DETAIL_DEPARTMENT
1703957	SERVER_DETAIL_DEPARTMENT
1769493	CLIENT_DETAIL_DIVISION
1835029	SERVER_DETAIL_DIVISION
1900565	CLIENT_DETAIL_EMPLOYEE
1966101	SERVER_DETAIL_EMPLOYEE
2031637	CLIENT_MAINTAIN_DEPARTMENT
2097173	SERVER_MAINTAIN_DEPARTMENT
2163799	CLIENT_MAINTAIN_DIVISION

Ass Id	Name	Card	Num
36	CONTAINS	M	4
53	DEFNDBY	M	8
88	GRPBY	1	1
170	IMPLBY	1	1
245	REFDBY	M	2
374	FOUNDBY	1	1
476	OWNEDBY	1	1
611	USESEXST	M	2

Prp Id	Name	Fmt	Value
79	DESC	T	This example is valid for th...
170	IEFGEND	C	Y
181	INTEXT	C	I
216	MODDATE	I	20061013
219	MODTIME	I	15422622
224	NAME	N	FILE_FUNCTIONS_READ
244	PASSGLOB	C	M
245	PASSPCB	C	N
246	PASSRUN	C	Y
340	TISUPPLY	C	N
532	EXSTUSG	C	N
923	SVTYPE	C	T
1202	LSTNUM	C	Y

Default Property Code 224

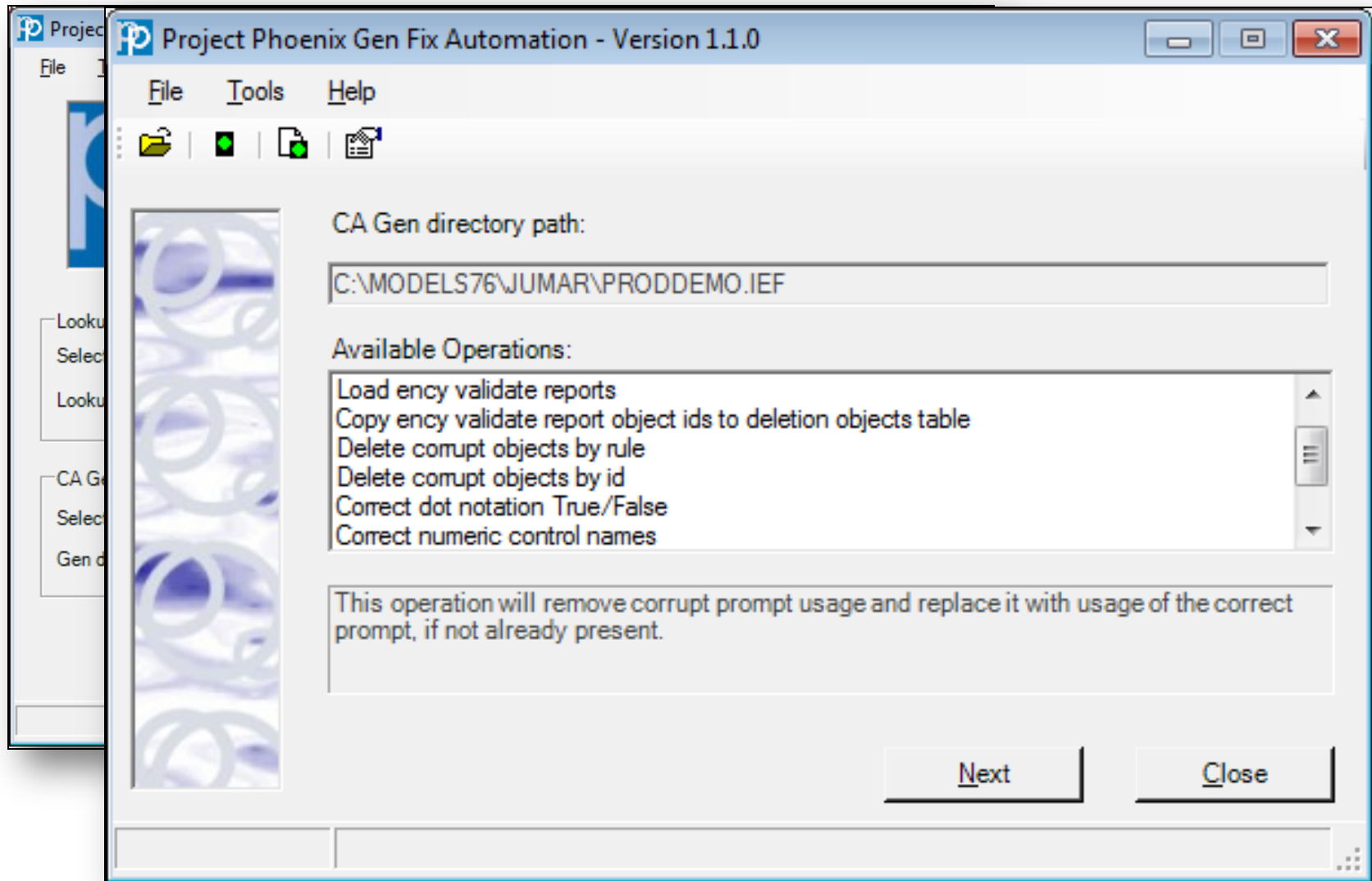
☒ Show Populated Only (Association List) ☒ Show Populated Only (Properties List)

Object Count 31 Association Count 56 Property Count 40

our approach



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Row Labels		FS SPECIFICATION CATALOG	FS WORK APPLICATION	FS WORK TD	FS DEVELOPMENT	FS TEST FR09	FS PROD FR09/47	FS DEVTE APPLICATION	FS TEST APPLICATION FR09	FS PROD APPLICATION FR09/4	FS WORK KTC	FS DEVTE KOMPLEMENTE	FS WORK VO	FS PROD KOMPLEMENTE FR09	FS TEST KOMPLEMENTE FR09	FS GDM	FS WORK TD	FS WORK KAM	FS TEST FR09 TDT	FS PROD FR09 TDT75	FS PROD FR09/47 TDT	FS WORK TDT75	FS TEST FR09 TDT75	FS DEVTE TDT	FS WORK FI	FS CHECK ENCY API	FS WORK KCT	FS WORK OS	FS WORK KTP	FS WORK MR	FS WORK TDT	FS WORK OS COPY REF	FS WORK SC	FS WORK REQ	FS WORK LOG	FS WORK KBW	FS WORK KSP	FS WORK KEF	FS WORK KHE	FS WORK KST	FS TEMPLATES	FS WORK KBI	FS WORK TRAINING AQI	FS WORK TRAINING QI				
- ACBLKBSD			1																										1																			
ASSOCIATION FROM OBJECT DOES NOT EXIST.			1																																													
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- ACBLKTD																383																																
TD Action Block must be associated with a Linkage or a Root object for PC IR or an Entity Type																351																																
TD Action Block must be associated with a Linkage or a Root object for PC IR or an Entity Type																																																
1																32																																
- ACBLKUSE				1	2	2	2																					1	1		6																	
Action Block Usage must be associated with an Action Block Definition																												1			6																	
Action Block Usage must be associated with an USE action or an Expression Function Usage or a Set or a Set Local or a GET ASYNC RESPONSE																																																
- ACTIF				1													1											2			2																	
IF action must be associated with an Action Block				1														1										2			2																	
- ACTNOTE				1													4											9	2		14																	
Note must be associated with an Action Block				1													4											9	2		14																	
ACTNOTE																																																
- 1																												1			1																	
Note must be associated with an Action Block																												1			1																	
- BATCHJOB					4	4	4																																									
Batch Job must be associated with a Procedure					4	3	3																																									
Batch Job must be associated with a Procedure																																																
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- BATCHJS					6	5	5																										1															
Batch Job Step Program must be associated with a Batch Job					1	1	1																																									
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- 1						1	1																										1															
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- BUSPROC					1	1	1																																									
Procedure may be associated with at most ONE Batch Job					1	1	1																																									
- BUSPRST								2	2																																							
Procedure Step may be associated with at most ONE Window Primary (primary window)								1	2																																							
Procedure Step may be associated with at most ONE Window Primary (primary window)																																																
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- CNDDEF																																				6							4					
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investigate / report encyclopedia validate reports

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Inter-Action Block must be associated with an Action Block Usage or an Action Block Usage	5995	4889	3332	460	726	726	993	984	960	1
Inter-Action Block must be associated with an Action Block Usage or an Action Block Usage										
1	545	444	303				90	90	88	
Inter-Action Block must be associated with an Action Block Usage or 1 an Action Block Usage										
Inter-Action Block must be associated with an Expression or a Data View Definition			1							
OBJECT CONTAINS AN ORDERED ASSOCIATION WITH AN INVALID PREVIOUS OBJECT ID.				17						
OBJECT CONTAINS AN ORDERED ASSOCIATION WITH AN INVALID SEQUENCE NUMBER.				17						
OBJECT CONTAINS AN ORDERED ASSOCIATION WITH AN INVALID SEQUENCE NUMBER.										
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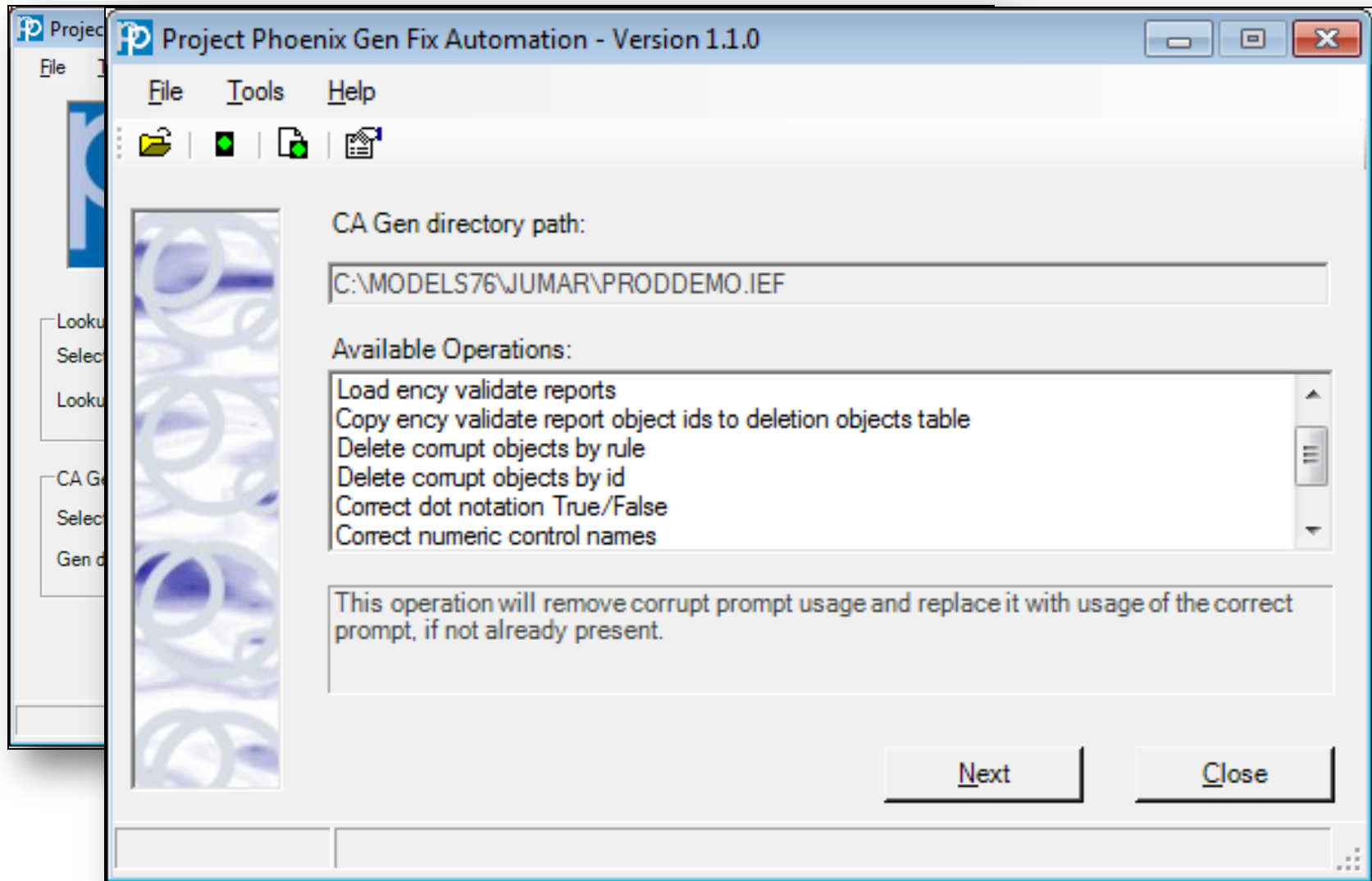
investigate / report

The screenshot shows the Microsoft Access interface. The 'Table Tools' ribbon is active, displaying various options like Filter, Sort & Filter, Records, Find, and Text Formatting. The left pane shows a list of tables: SelectionObjects, SelectionRules, EncyValidate, and Mapping. The main window displays the 'EncyValidate' table in Datasheet view. The table has 10 columns: ObjectType, Objectid, Problem, AssociationRequired, Association, PropertyType, Destination, NextObject, RealNextOb, and PreviousSec. The data is organized into rows, with 'SESSION' objects at the top and 'IMPLGIC' objects below. The status bar at the bottom indicates 'Record: 1 of 2294'.

ObjectType	Objectid	Problem	AssociationRequired	Association	PropertyType	Destination	NextObject	RealNextOb	PreviousSec
SESSION	2083092813	Session of mox	CHGBYMIG OR DIRCHGD OR INDCHK						
SESSION	2083118412	Session of mox	CHGBYMIG OR DIRCHGD OR INDCHK						
SESSION	2083118461	Session of mox	CHGBYMIG OR DIRCHGD OR INDCHK						
SESSION	2083119316	Session of mox	CHGBYMIG OR DIRCHGD OR INDCHK						
SESSION	2083121136	Session of mox	CHGBYMIG OR DIRCHGD OR INDCHK						
SESSION	2083121347	Session of mox	CHGBYMIG OR DIRCHGD OR INDCHK						
SESSION	2083121529	Session of mox	CHGBYMIG OR DIRCHGD OR INDCHK						
SESSION	2083122397	Session of mox	CHGBYMIG OR DIRCHGD OR INDCHK						
SESSION	2083122398	Session of mox	CHGBYMIG OR DIRCHGD OR INDCHK						
SESSION	2083122399	Session of mox	CHGBYMIG OR DIRCHGD OR INDCHK						
SESSION	2083122412	Session of mox	CHGBYMIG OR DIRCHGD OR INDCHK						
SESSION	2083122543	Session of mox	CHGBYMIG OR DIRCHGD OR INDCHK						
SESSION	2083122582	Session of mox	CHGBYMIG OR DIRCHGD OR INDCHK						
SESSION	2083122599	Session of mox	CHGBYMIG OR DIRCHGD OR INDCHK						
SESSION	2083123237	Session of mox	CHGBYMIG OR DIRCHGD OR INDCHK						
SESSION	2083123252	Session of mox	CHGBYMIG OR DIRCHGD OR INDCHK						
SESSION	2083123415	Session of mox	CHGBYMIG OR DIRCHGD OR INDCHK						
SESSION	2083123426	Session of mox	CHGBYMIG OR DIRCHGD OR INDCHK						
SESSION	2083123441	Session of mox	CHGBYMIG OR DIRCHGD OR INDCHK						
SESSION	2083123504	Session of mox	CHGBYMIG OR DIRCHGD OR INDCHK						
IMPLGIC	2083123540	TEXT OCCURRE			IEFVGEN				
IMPLGIC	2083123851	TEXT OCCURRE			IEFVGEN				
IMPLGIC	2083124670	TEXT OCCURRE			IEFVGEN				
IMPLGIC	2083124863	TEXT OCCURRE			IEFVGEN				
IMPLGIC	2083125056	TEXT OCCURRE			IEFVGEN				
IMPLGIC	2083125191	TEXT OCCURRE			IEFVGEN				
IMPLGIC	2083125234	TEXT OCCURRE			IEFVGEN				
IMPLGIC	2083125301	TEXT OCCURRE			IEFVGEN				
IMPSCRN	2083125450	TEXT OCCURRE			IEFVGEN				
IMPLGIC	2083125681	TEXT OCCURRE			IEFVGEN				
OLTRAN	2083125686	TEXT OCCURRE			IEFVGEN				

- Synchronisation with SDLC
 - Models will need to be checked in completely
- Prioritisation of fixes
 - Critical, Session, Needs Investigation
- Test against known models

automated fix



- Corruptions have been with us all our “IEF lives”
- They can lie dormant for many years without any visibility
- Hit us when we really do not need the pain
 - Updating models or areas of models which have not been used for a period of time
 - During change programmes such as upgrade, modernisation, re-platforming

next steps

- De-risk the uncertainty
- Get your models checked regularly as part of natural model management strategy
- Identify what is causing corruptions
 - Age of the models, Model management, 3rd party tools, in-house utilities
- Fix serious corruptions found
- Does your CA Gen model have corruption?
- Jumar now offer a free assessment of your Validation Report
 - We will provide a summary of issue types by model

thank you

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