Oracle OFA
&
GL Link

Tips, Tricks & Traps

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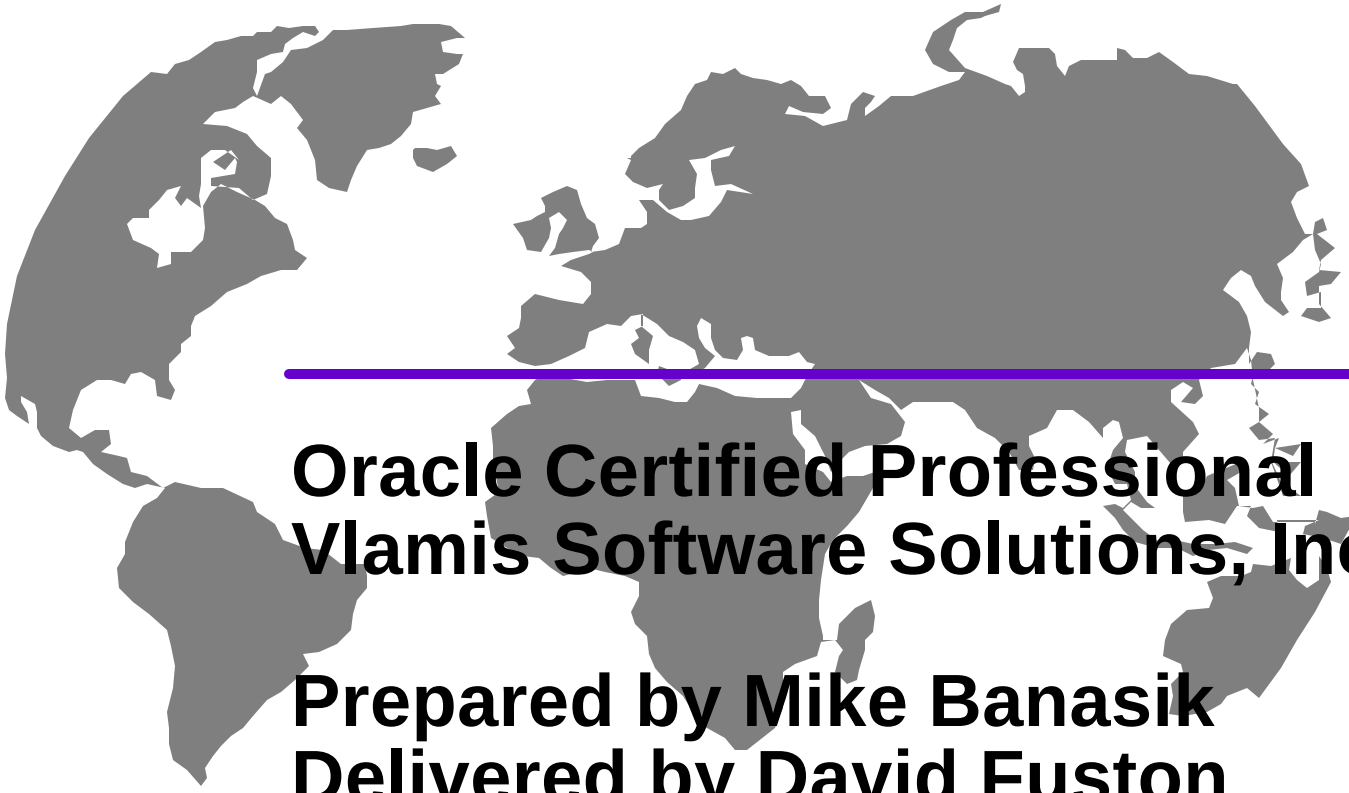

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Vlamis Software Solutions, Inc.

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Delivered by David Fuston

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Vlamis Software Solutions, Inc.

- Oracle Beta Tester for numerous programs, such as Applications 11i, OFA, OSA, Reports 6i, OWB, 9iAS, Oracle 9i OLAP
- Designs and implements databases/data marts/data warehouses using RDBMS and Multidimensional tools for Business Intelligence
- Creator of the first Oracle 9i OLAP Business Intelligence and Analytics tool, VSS Business Analyzer.
- Nationally recognized technical authors, speakers, and publishers
- Active sponsors and supporters of OAUG, CS-OAUG, and other Oracle user groups.

Agenda

- Oracle Business Intelligence Overview
- General Ledger Setup
  - Chart of Accounts & Flexfields
  - Rollup Groups, Parent and Summary Accounts
- Overview of Oracle Financial Analyzer 6.X
  - OFA GL Link
- OFA Express Databases and Catalogs
  - Catalogs and Structures
- Summary

Oracle Business Intelligence

Products	Descriptions
Oracle 9i OLAP & Data Mining Options	Database options to 9i EE
Oracle Express Analyzer/Objects	Ad-hoc tool and Object oriented development environment for building applications
Oracle Warehouse Builder	ETL tool and designer for common warehouse metadata and data transformation
Discoverer (BIS)	Ad-hoc user tool for data analysis (with predefined access to Apps EUL)
Reports	Report writing tool
Oracle Financial/Sales Analyzer	Pre-built financial analysis and sales/marketing analysis applications
BIBeans	Business Intelligence Beans

Express Server

- Database Engine used by some of Oracle's BI tools
- Multidimensional, not relational, Database
- Maximum Efficiency For Maintaining and Analyzing Data Online
- Uses Dimensions and Hierarchies.
- Capability to Drill-down and Pivot Dimensions
- Uses Stored Procedure Language (SPL)
- Requires Custom Dataloader to load data

Oracle Financial Analyzer

- Budgeting and Forecasting App with GUI front end and a distributed Express backend
- Allows Users the Autonomy to Create and Manipulate Own Scenarios of Data
- Ability to Write Data Back
  - Models, Scenarios, Budgets and Forecasts
- Ability to Create Asymmetric Reports
- Integrates Oracle General Ledger with GL Link
- Custom Facts (FDIs), But Knowledge of Express Language May Be Needed

OFA thick client vs. web client

Feature	Thick Client	Web client
Multiple FDIs		X
Multiple Dimensions Down or Across		X
Recognize Data Locks		X
Asymmetric Formatting		X
Calculation Method	Model, single hierarchy	Model, multiple hierarchies
Data Entry Tools	X	
Modified/Maintained by Users	X	

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General Ledger Setup

- Legal entities
- Set of Books
- Chart of Accounts segments
- Currencies
- Accounting Calendar
- Statistical Accounts

General Ledger Setup cont'd

- Budgets
- Allocations
- Segment Reporting per GAAP
- Groups—owners, regulatory agencies, management team
- Rollup groups, parent and summary accounts

GL Setup Limitations

- GL can not setup:
  - Same Child Inv Org in 2 Operating Units
  - Same Operating Unit in 2 Books
  - 2 Functional Currencies in 1 Book
- Key Flexfields are utilized in GL link – Descriptive Flexfields will probably require custom code for both extract and load
- The name of a Financial Data Set cannot be changed – the name must match exactly what is in OFA GL access settings
- Segment Sort order cannot be changed once mapped and processes run – unique dimension and variable id(s) are generated when mapping is created and stored in FDI and dimension catalogs when uploaded into OFA

OFA Setup Limitations

- A single instance of OFA can use only one chart of accounts – OFA can handle multiple sets of books as long as they share the same chart of accounts
- Any deletions in GL Analyzer setup forms (dimension, hierarchy, FDI) must manually be deleted in OFA (two separate processes)
- Deletion of FDI(s) is not processed by the GL extracts, nor OFA loads
- Segment Sort order cannot be changed – OFA object definitions are dependent on segment sort order – GL segment sort order should mirror order of dimensions defined in FDI
- FDI(s) can have up to 10 dimensions
- OFA does not support dependent segments – all segments are handled as independent segments

Changing Structure limitations

- **Give careful consideration to design:**
  - **Easy → Add Book, Op Unit, Inv Org**
  - **Medium → Split Book, Op Init, Inv Org**
  - **Hard → Combine Databases, Books, Op Units, Inv Orgs**

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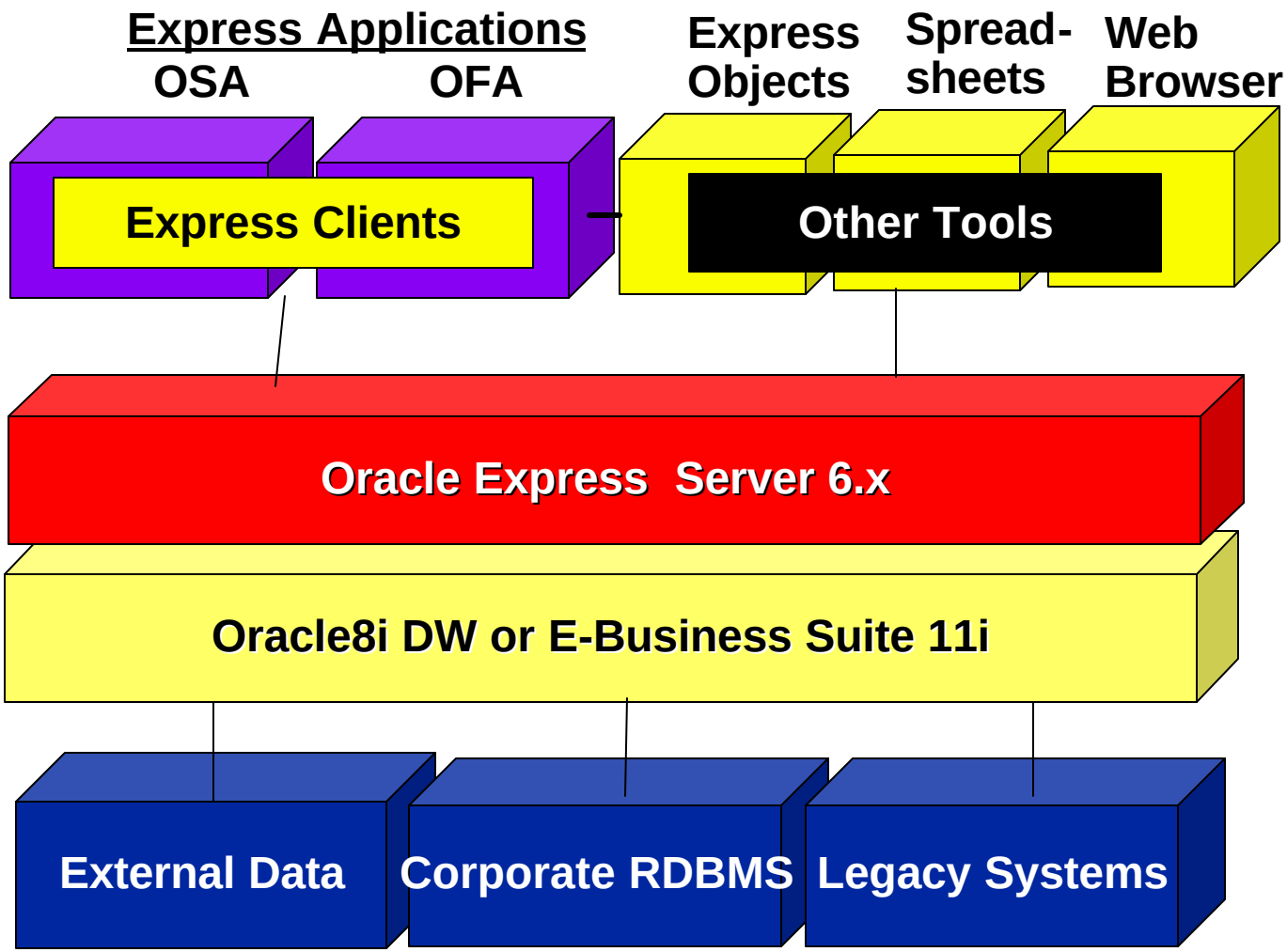
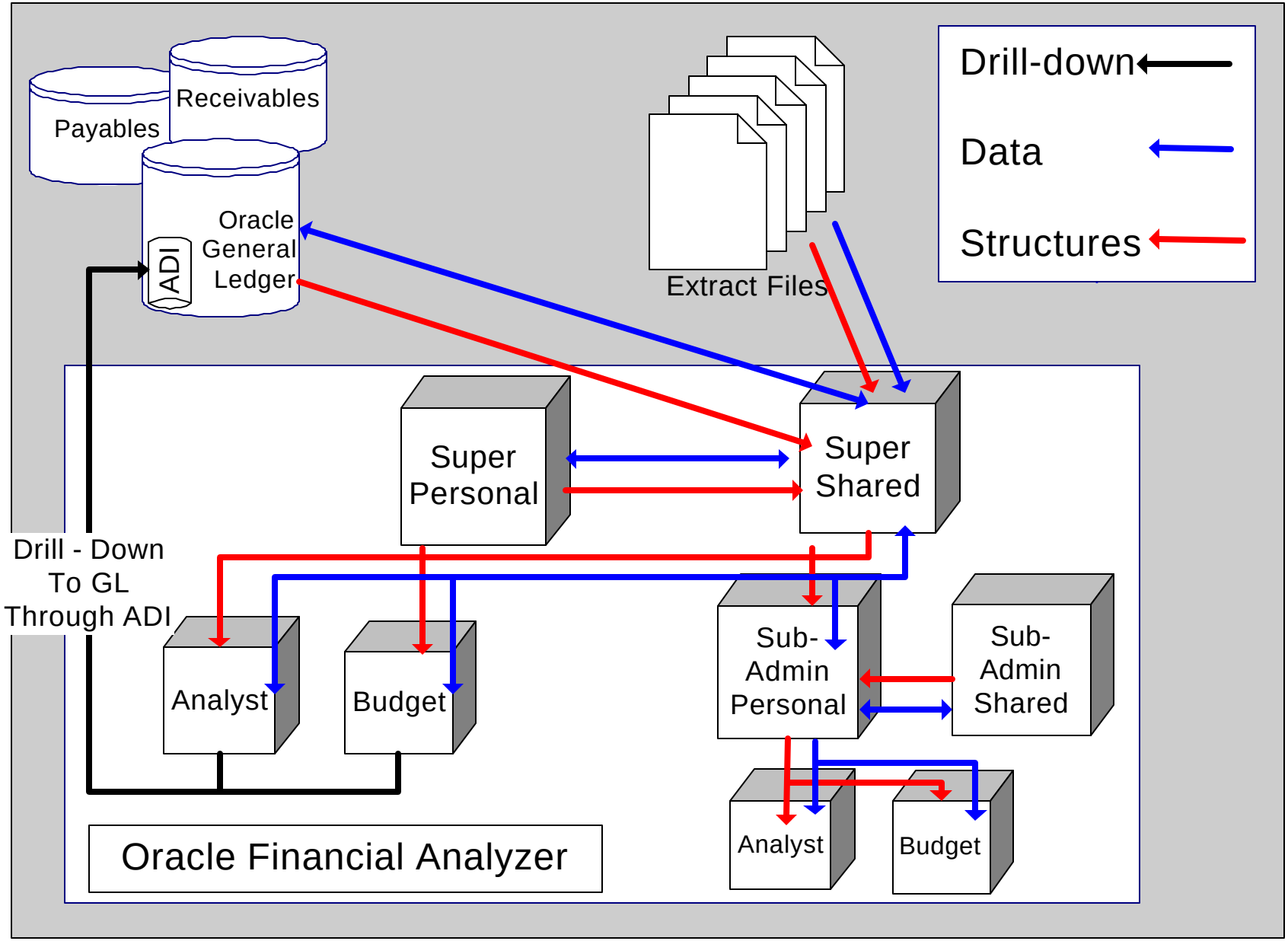
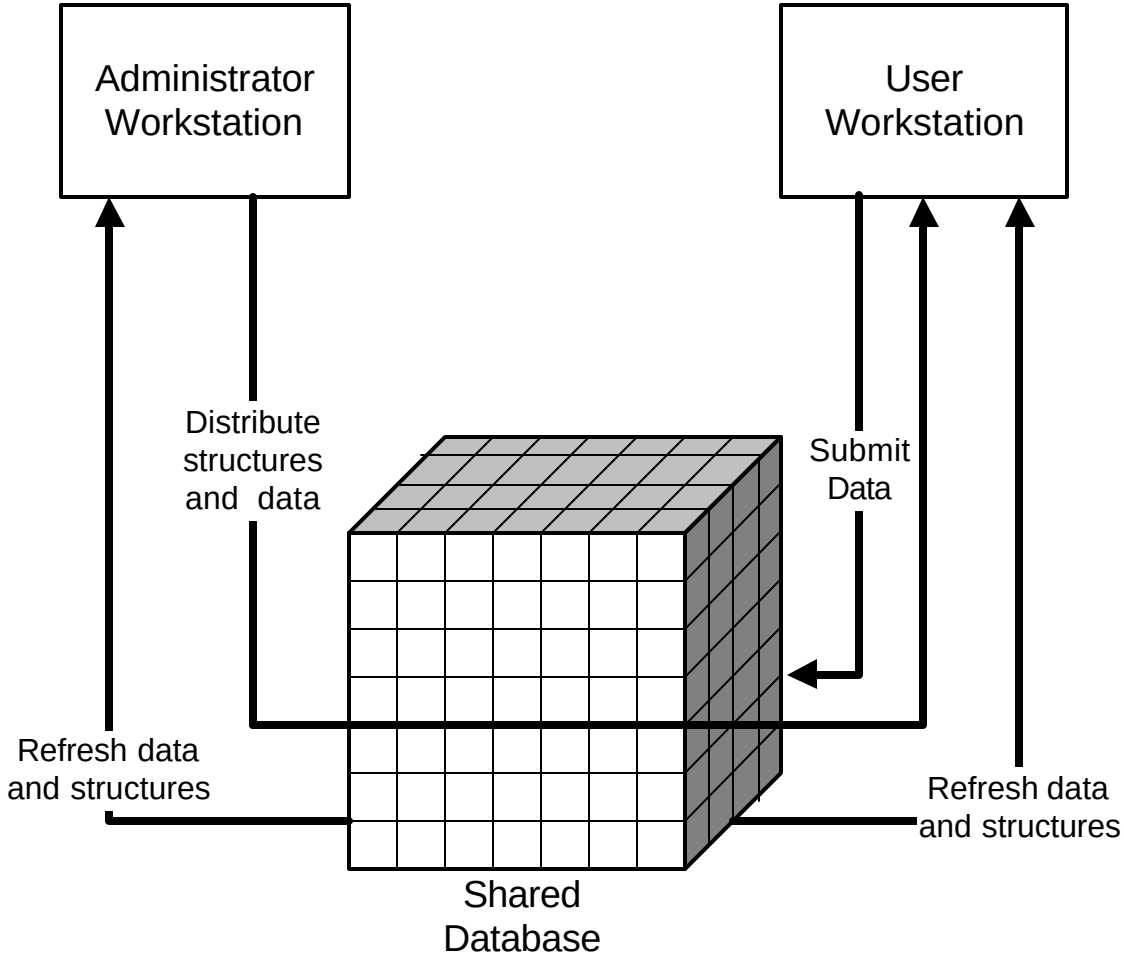
Express 6.x Product Architecture

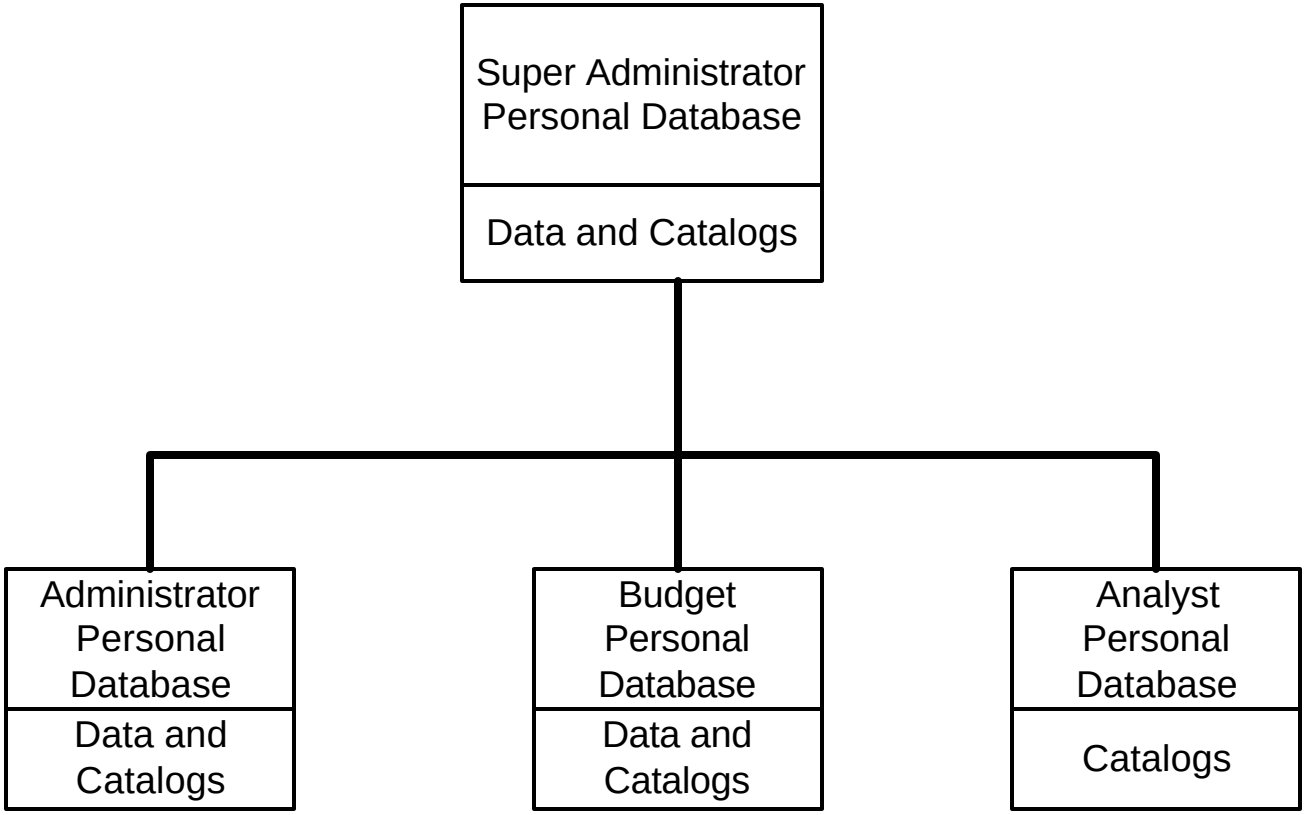



Payables
Receivables
Oracle
General
Ledger
ADI
Extract Files
Drill-down
Data
Structures
Super
Personal
Super
Shared
Drill - Down
To GL
Through ADI
Analyst
Budget
Sub-
Admin
Personal
Sub-
Admin
Shared
Analyst
Budget
Oracle Financial Analyzer

The OFA Shared Database



The OFA Personal Database

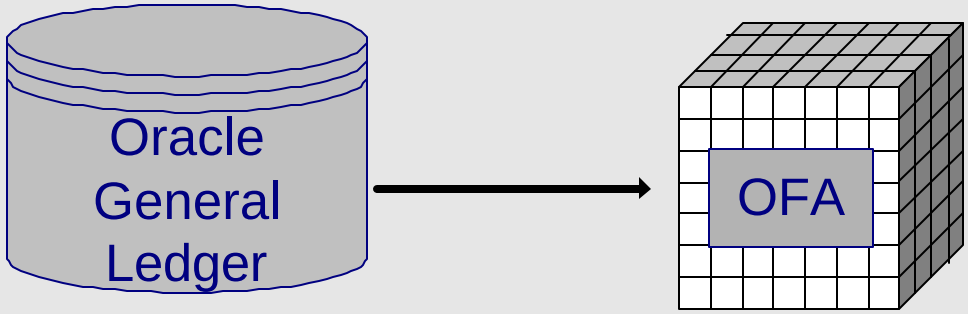


Express Objects in Database

Express Objects: Structures that define an Express DB

- Dimension – index to variable data
- Variable – arrays of data
- Relation – simply a variable with a constrained domain
- Formulas – variable data calculated on the fly
- Programs – custom code
- Miscellaneous other types

Oracle GL to OFA Mapping



Relational

Multidimensional

Segments	→	Dimensions
Segment Values	→	Dimension Values
Calendar	→	Time Dimensions
Rollups	→	Hierarchies
Balances	→	Financial Data Items

Financial Data Set

Express Database Objects

variables | formula | dimension | dimension value

objects1

	MONTH					
	Jan97			Feb97		
	Sales	Units	Avg Price	Sales	Units	Avg Price
– World	8,769,594.00	11554	$758.99	8,820,239.00	11626	$758.68
– Americas	2,620,114.00	3202	$818.36	2,654,537.00	3206	$828.11
+ Canada	696,492.90	806	$864.29	718,237.30	803	$894.22
+ USA	1,553,282.00	1609	$965.19	1,551,032.00	1614	$961.21
+ Mexico	160,006.30	215	$742.90	169,708.50	213	$795.03
+ Argentina	58,284.48	363	$160.56	58,540.31	370	$158.11
+ Brazil	111,276.60	165	$676.21	115,805.00	162	$716.60
+ Colombia	40,770.59	44	$935.96	41,213.54	43	$949.27
+ Australia	740,387.00	944	$784.47	759,259.10	958	$792.91
+ Europe	3,773,573.00	5278	$714.96	3,800,665.00	5322	$714.13
+ Asia	1,635,521.00	2131	$767.56	1,605,779.00	2141	$750.14

OFA Integration With Oracle GL

- Use the GL Link to Load Data from Oracle GL to OFA
- Map Structures from Oracle GL Directly to OFA Structures Using Forms in Oracle GL
- Can Alter Number of Segments Brought Over From Oracle GL – Can Combine Segments
- Can Customize OFA and Use Other Non-Oracle Sources

OFA GL Link – 2 Step Process

- 2 step push-pull process
  - First step is Push - GL Extract via Concurrent Manager request (actually 6 extracts total)
    - GL Segment values*
    - Accounting Calendar**
    - Currencies**
    - Period rate for translation**
    - Actual and/or Budget account balances*
    - Hierarchies**
  - * write data to temporary files in APPLCSF/APLRPT directory or where specified in *.env file
  - **programs mark rows in GL tables, but do not write data

OFA Integration With Oracle GL

- **Second step is Pull – OFA load**
  - **Express server reads temporary text files**
  - **Express server accesses GL tables directly, reading rows marked for extraction**

OFA GL Link

- Supported in Oracle GL 10.7 (6.3 only), 11, and 11i
  - Limitations on some new features not available with link to 10.7
- Drill to GL detail
  - Uses Oracle ADI
- Budget Write-back Redirect
  - Write Back to New Budget
  - Avoid Overwriting Previous Iterations
- Can Switch to Different GL Instance (new in 6.3)

OFA GL Link cont'd

- **Solve Profile after Balance Load**
  - **Will only solve the portion of the database that has new data**
- **Improved MetaData Flow from GL to OFA**
  - **Ability to link to single OFA instance to multiple GL instances**
- **Option to Create Attributes Between 2 GL Dimensions During Balance Load**
  - **Can then be used on worksheets**

OFA Tips

- Analyze How Many Dimensions Are Really Needed
- Maintain Hierarchies in GL, If Possible
- Use GL Link to Load Structures, But May Need to Write Custom Load for Data
- Use GL Link to Load Actuals, Custom Code to Take That Information and Load Into Other FDI In Order to Customize Structures
- Any Customization Would Require a Knowledgeable Express Resource
- Use Models to Create Balance Sheet or Income Statement If COA Not Capable

GL Link Traps #1

- **Preferred Setup is OFA and GL on separate servers (Unix or NT platforms)**
  - **Causes need for automatic FTP routine to transfer data extracts to OFA server**
  - **OFA Load Extract must wait until all of GL Extract routines have completed**
  - **Bug # 1258324 OFA checks for Load Extract request via Task Processor, but does not check for presence of segment and balance GL extract files.**

GL Link Traps #2

- **Connectivity between GL and OFA**
  - **Is the GL account user-id and password correct?**
  - **Is the user-id valid for Oracle databases?**
  - **If user-id is valid, issue may be with OFA or Express MDB**
  - **Can Express MDB connect to SQL via an snapi session?**
  - **Check environmental variables (ORACLE_SID, ORACLE_HOME, user-id rights)**

GL Link Traps #3

- **Error: Must extract at least one character**
  - **Dimensions are defined with certain number and combination of segments**
  - **If dimensions are redefined in GL by removing or changing segments**
  - **At next extract, the error will reappear**
  - **Fix is to clear out all metadata in OFA**

GL Link Traps #4

- **Dimension is not a valid GL_SEGMENT**
  - **Extract worked the first time**
  - **On second extract, get the above error**
  - **Segment order for dimension changed in GL, which causes OFA to no longer recognize it**
  - **Fix is reset metadata**

GL Link Traps #5

- **GL.GET.INFO.VARS no RG_DSS_VARIABLES meet the selection requirements**
  - **GL extract included only dimensions, but not any FDI**
  - **Rerun GL Extract where FDI(s) exist**

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OFA Catalogs

Database	Example	Catalogs (Shared & DBA Personal Super)	
Shared	OFAS.db	MC.catalog (master)	DM.catalog (dimension)
		FD.catalog (Findata)	HI.catalog (hierarchy)
		RL.catalog (attribute)	MD.catalog (model)
		LC.catalog (menu items)	BR.catalog (folder)
		BW.catalog (worksheet)	CO.catalog (component)
DBA Personal Super	Super.db	DI.catalog (display)	GR.catalog (graph)
		IT.catalog	RE.catalog (report)
		SG.catalog (segment)	SL.catalog (selection)
		SS.catalog (solve script)	SO.catalog (solve)
		SELGRP.catalog (selection group)	
		ASYM.catalog (asymmetric)	
		SVDIST.catalog (saved distribution)	

Catalog Maintenance

- Catalogs are simply two-dimensional Express variables.
- Each catalog is dimensioned by XX.ENTRY and XX.PROP where XX is the catalog abbreviation.
- Catalog information determines how data is stored, formatted, and used.
- Modify catalogs using Express language or via a GUI tool, such as OFA Administrator
- The internal object name - RL.AA85072
  - Concatenation of the object's prefix, i.e. RL
  - A period
  - The user's unique internal code (AA for DBA)
  - A randomly generated number, i.e. 85072

Renaming Structures

When renaming attributes and models, modify both the XX.ENTRY and XX.CATALOG.

When renaming hierarchies, modify HI.ENTRY and FMSHDIM.XXX, where XXX is the dimension abbreviation.

Attribute Renaming Example:

```
maintain rl.entry rename ‘RL.AA85072’ ‘ACCT.ACCTTYPE’
rename .RL.AA85072 ACCT.ACCTTYPE
limit rl.entry to ‘ACCT.ACCTTYPE’
limit rl.prop to ‘OBJ.NAME’
rl.catalog = ‘ACCT.ACCTTYPE’
update
```

Comparison of Tools

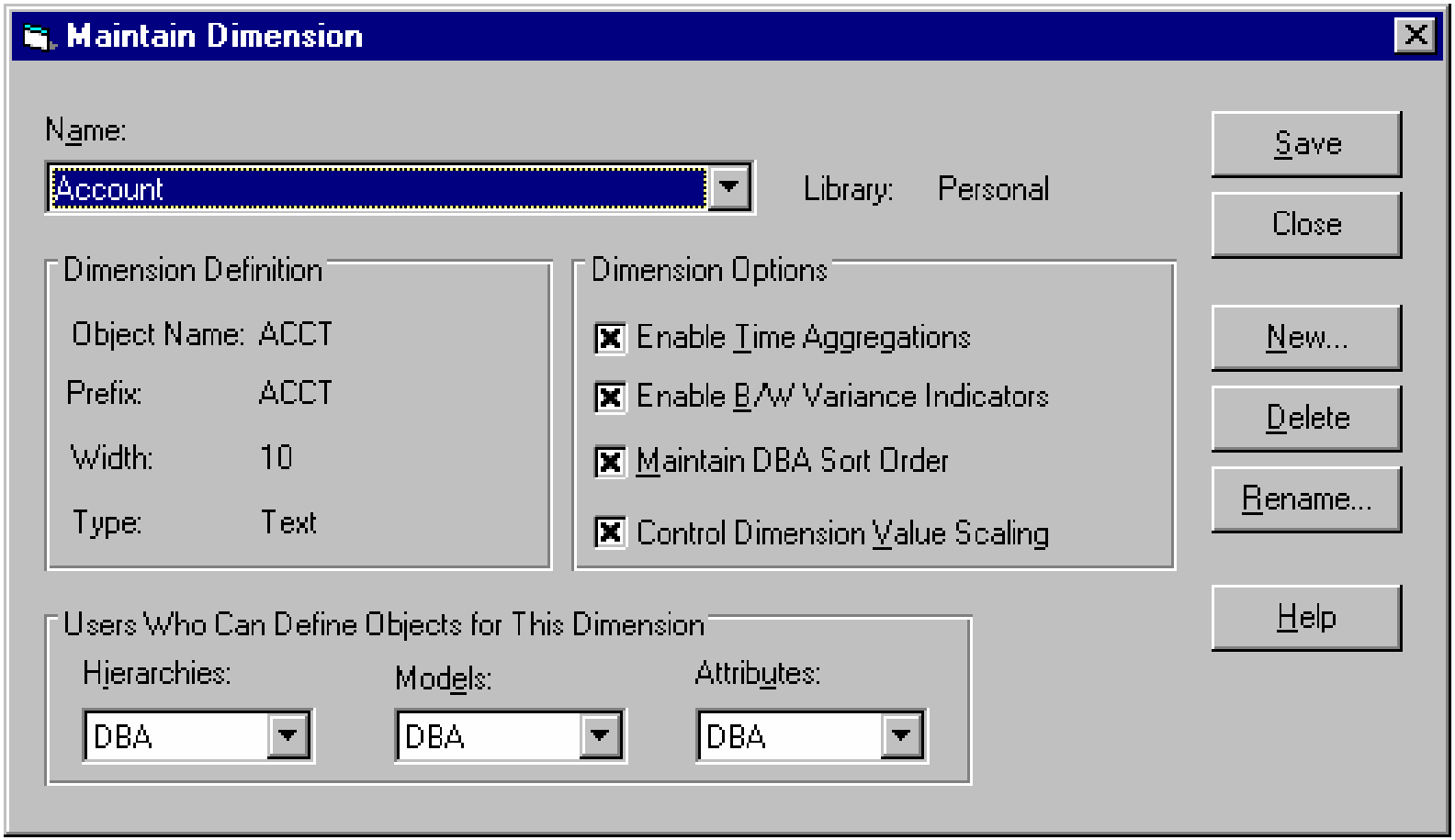
	OFA GUI Admin	Express Store Procedure Language (SPL)
DM.Catalog & FD.Catalog	Novice Admin Create in OFA	Not recommended
HI.Catalog & Related Structures	Novice Admin Create in OFA	Intermediate Admin Optional renaming & structure maintenance
RL.Catalog & Attribute	Novice Admin Used to create original relation	Intermediate Admin Optional renaming for Best Practice & structure maintenance
MD.Catalog & Model	Novice Admin Used to create original model	Advanced Admin Recommended for modifying complex or large custom models
LC.Catalog* Menu	Not Applicable	Intermediate Admin Use Express Administrator or Express 4GL

*Maintenance of the Custom Code is not included in this comparison.

MC.CATALOG (Partial List)

```
-> report w 20 down mc.prop w 15 mc.catalog

-------------------------------------------MC.CATALOG--------------------------------
-------------------------------------------MC.ENTRY----------------------------------
MC.PROP                 HI.CATALOG  MD.CATALOG  FD.CATALOG  RL.CATALOG  DM.CATALOG
--------------------    ----------  ----------  ----------  ----------  ----------
CLASS                   FMS         FMS         FMS         FMS         FMS
MODIFIER                NA          NA          NA          NA          NA
TIME.MODIFIED           NA          NA          NA          NA          NA
DESCRIPTION             Hierarchy   Model       FinData     Attribute   Dimension
PREFIX                  HI          MD          FD          RL          DM
CATALOG.TYPE            NA          NA          NA          NA          NA
ENTRY.DIM.NAME          HI.ENTRY    MD.ENTRY    FD.ENTRY    RL.ENTRY    DM.ENTRY
PROP.DIM.NAME           HI.PROP     MD.PROP     FD.PROP     RL.PROP     DM.PROP
SUPPORT.OBJ             HI.SUPPORT  MD.SUPPORT  FD.SUPPORT  RL.SUPPORT  DM.SUPPORT
DOC.OBJ                 HI.DOC      MD.DOC      FD.DOC      RL.DOC      DM.DOC
FMS.DP.DEL.CATS         NA          NA          SO.CATALOG -NA          MD.CATALOG -
                                                FD.SO.REFERS            DM.MD.REFERS
                                                                        FD.CATALOG -
                                                                        DM.FD.REFERS
                                                                        HI.CATALOG -
                                                                        DM.HI.REFERS
                                                                        RL.CATALOG -
                                                                        DM.RL.REFERS
                                                                        SL.CATALOG -
                                                                        DM.SL.REFERS
                                                                        DI.CATALOG -
                                                                        DM.DI.REFERS
                                                                        SO.CATALOG -
                                                                        DM.SO.REFERS
```

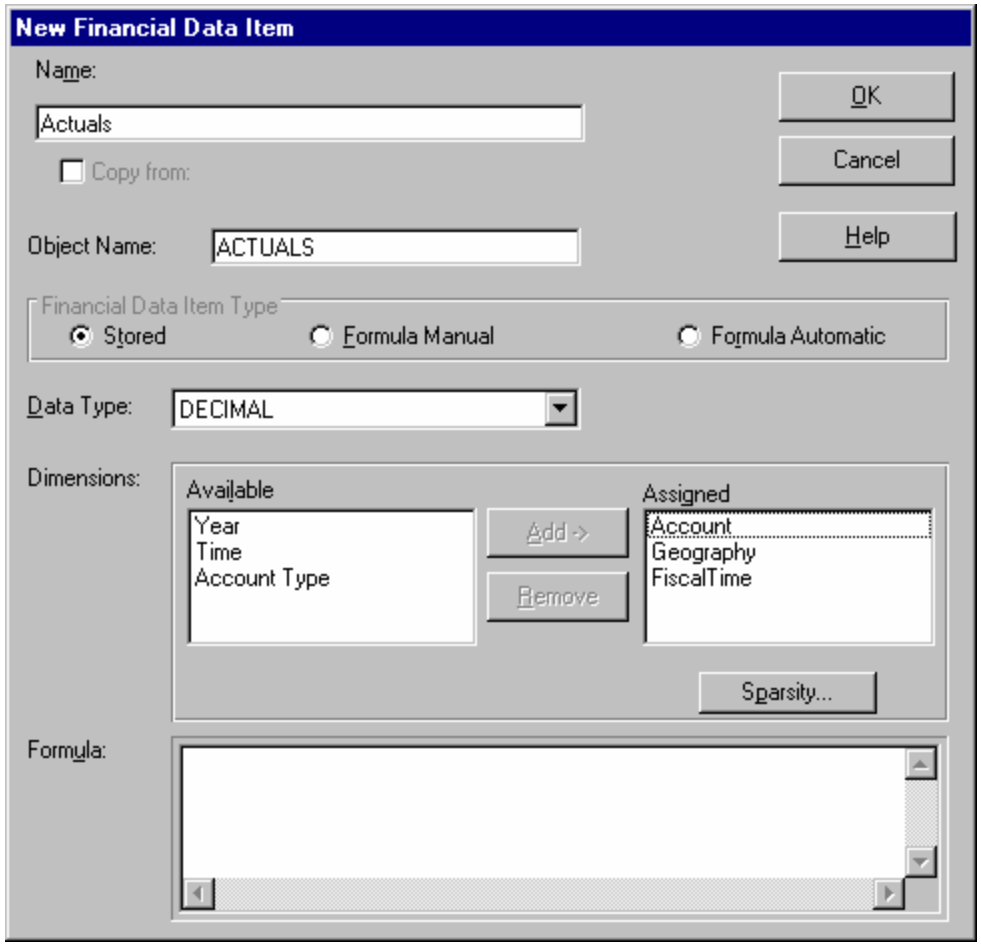
OFA Administrator - Add a Dimension



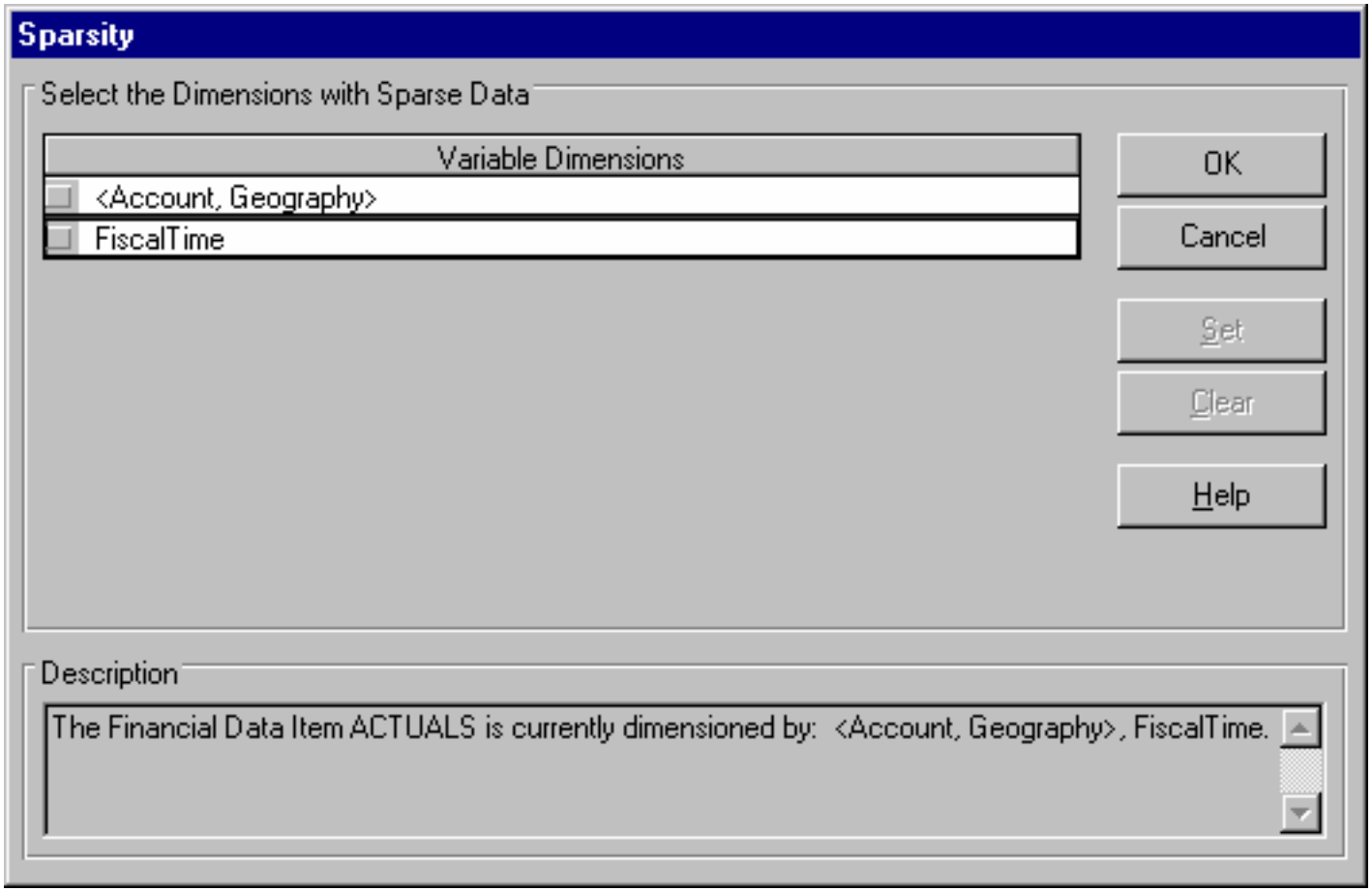
DM.CATALOG (Dimension)

```
-> report w 20 down dm.prop w 15 dm.catalog

-------------------------------------------DM.CATALOG---------------------------------
-------------------------------------------DM.ENTRY-----------------------------------
DM.PROP                 TIME        USER        YR          ACCT        GEOGRAPHY
-------------           ---------   --------    -------     ---------   ----------
CLASS                   STD         STD         FMS         PERSONAL    PERSONAL
MODIFIER                IRIDEV      IRIDEV      IRIDEV      AA          AA
TIME.MODIFIED           NA          NA          NA          99/09/28    99/09/17
                                                            14:55:24    12:59:18
DESCRIPTION             TIME.DESC   USER.DESC   YR.DESC     ACCT.desc   GEO.desc
PREFIX                  TIME        USER        YR          ACCT        GEO
RELATION.OK             NoOne       EveryOne    NoOne       DBA         EveryOne
HIERARCHY.OK            EveryOne    NoOne       NoOne       DBA         EveryOne
MODEL.OK                NoOne       NoOne       NoOne       DBA         EveryOne
SORT.OK                 NA          NA          NO          YES         YES
TIMEAGG.USED            NO          NO          NO          YES         NA
VARTYPE.USED            NO          NO          NO          YES         NA
TIME.AGG                NA          NA          NA          ACCT.AGG    NA
VARTYPE                 NA          NA          NA          ACCT.BW     NA
COL.LABEL               TIME.LBL.COLNA          YR.LBL.COL  ACCT.lbl.colGEO.lbl.col
ROW.LABEL               TIME.LBL.ROWNA          YR.LBL.ROW  ACCT.lbl.rowGEO.lbl.row
STANDARD                TIME.STD    USER.STD    YR.STD      ACCT.std    GEO.std
```

OFA Administrator – Add a Financial Data Item



OFA Administrator – Sparsity



FD.CATALOG (Financial Data Item)

```
-> report w 20 down fd.prop w 15 fd.catalog

--------------------FD.CATALOG---------------------
---------------------FD.ENTRY----------------------
FD.PROP                  ACTUALS
--------------------    ---------------
CLASS                   PERSONAL
MODIFIER                AA
TIME.MODIFIED           99/09/20
                        10:27:41
DESCRIPTION             NA
COL.LABEL               NA
ROW.LABEL               NA
MASK                    NA
DIMENSIONS              ACCOUNT
                        GEOGRAPHY
                        FISCALTIME
EXPRESSION              NA
STORED                  YES
PRIVATE                 NA
CLOSENAME               NA
CLOSE.DIMS              NA
LOCKNAME                NA
LOCK.DIMS               NA
WRITENAME               NA
WRITE.DIMS              NA
READNAME                NA
```

FD.CATALOG cont.

```
READ.DIMS                NA
BASE.DENOM               NoScale
SOLVE.TYPE               NONE
SOLVE.NAME
WIDTH                    10
DATATYPE                 DECIMAL
INDIRECT                 NA
SOURCE                   NA
BALANCE.TYPE             NA
CURRENCY.TYPE            NA
SET.OF.BOOKS             NA
VARIABLE.ID              NA
BUDGET.VERSION.ID        NA
PSEUDO                   NA
CURRENCY.CODE            NA
DATA.DIST.OK             NA
SPARSE                   YES
SP_DIMS                  CMP.AA45503
                         <ACCOUNT GEOGRAPHY> FISCALTIME
SCALE                    NA
CHART.ID                 NA
BUDGET.NAME              NA
ORG.ENTITY.NAME          NA
ENTITY.ID                NA
```

HI.CATALOG (Hierarchy)

```
-> report w 20 down hi.prop w 15 hi.catalog

-------------------------------------HI.CATALOG----------------------------------------
-------------------------------------HI.ENTRY------------------------------------------
HI.PROP                 HI.AA8091               HI.AA84206              FMS.TIME
--------------------    ---------------         ---------------         --------------
CLASS                   PERSONAL                PERSONAL                FMS
MODIFIER                AA                      AA                      IRI.DEV
TIME.MODIFIED           99/09/17                99/09/17                NA
                        14:42:46                14:55:46
DESCRIPTION             NA                      NA                      NA
DIMENSION               ACCOUNT                 FISCALTIME              TIME
TYPE                    TREE                    TREE                    Tree
RELATION.LIST           NA                      NA                      NA
HIERARCHY.ID            NA                      NA                      NA
ID.FLEX.CODE            NA                      NA                      NA
ID.FLEX.NUM             NA                      NA                      NA
GL.HIER.TYPE            NA                      NA                      NA
PRIM.HI.OBJ             NA                      NA                      NA
HIER.DETAILS            NA                      NA                      NA
GL.ROOT.NODE            NA                      NA                      NA
SOURCE                  NA                      NA                      NA
LOWEST.LEVEL            NA                      NA                      NA
```

HI.CATALOG Related Structures

```
-> report fmshrel.acct

 -------------------------------------FMSHREL.ACCT-----------------------------
 ----------------------------------------ACCOUNT--------------------------------
FMSHDIM     ASSETS      LIAB        EQUITIES    REVENUES    EXPENSES    A10000
-------     ----------  ----------  ----------  ----------  ----------  ------
HI.AA8091   TOTACCT     TOTACCT     TOTACCT     TOTACCT     TOTACCT     ASSETS

-> report fmshdep.acct

-------------------------------------------FMSHDEP.ACCT-----------------------------
-----------------------------------------------ACCOUNT--------------------------------
FMSHDIM.ACCT            ASSETS      LIAB        EQUITIES    REVENUES    EXPENSES    A10000
---------               ---------   ----------  ---------   ----------  ----------  ------
HI.AA8091               1           1           1           1           2           1

-> report w 10 fmshseq.acct

-------------------------------------------FMSHSEQ.ACCT-----------------------------
-----------------------------------------------ACCOUNT--------------------------------
FMSHDIM.ACCT            REVENUE     EXPENSES    ASSETS      LIABILITY   EQUITY
------------            --------    ---------   -------     ----------  --------
HI.AA8091               2           9           16          23          30

-> report w 10 fmshico.acct
-------------------------------------------FMSHICO.ACCT-----------------------------
-----------------------------------------------ACCOUNT--------------------------------
FMSHDIM.ACCT            REVENUE     EXPENSES    ASSETS      LIABILITY   EQUITY      A10000     -
-------------           ----------  ----------  ----------  ----------  ----------  -------
HI.AA8091               1           1           1           1           1           1
```

HI.CATALOG Related Structures cont.

Edit Fmshico.acct

```
if limit(ACCOUNT to children using fmshrel.ACCT convert(ACCOUNT,int)) eq NA
then 0
else if statrank(ACCOUNT) eq statlen(ACCOUNT)
then 1
else if inlist(limit(ACCOUNT to ancestors using fmshrel.ACCT
statval(ACCOUNT statrank(ACCOUNT) +1)), ACCOUNT) eq YES
then 2
else 1
```

INTEGER | Line 6/8, Col 46/55 | CAPS | NUM

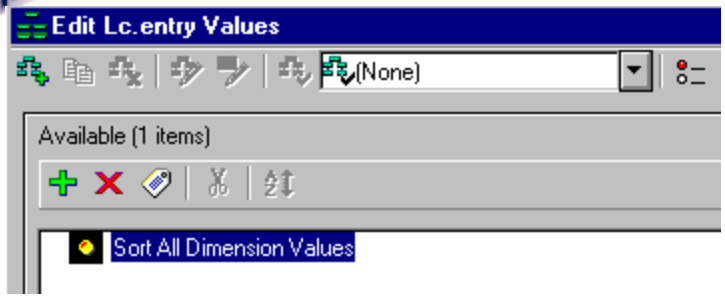
RL.CATALOG (Attribute)

```
-> report w 20 down rl.prop w 15 rl.catalog

---------------------RL.CATALOG--------------------
----------------------RL.ENTRY---------------------
RL.PROP                 RL.AA85072
--------------------    ---------------
CLASS                   PERSONAL
MODIFIER                AA
TIME.MODIFIED           99/09/28
                        15:05:52
DESCRIPTION             NA
REL.TYPE                ONE
BASE.DIM                ACCT
AGGR.DIM                ACCT.TYPE
OBJ.NAME                .RL.AA85072R
TYPE_B                  NA
SELECTION_B             NA
TYPE_A                  NA
SELECTION_A             NA
```

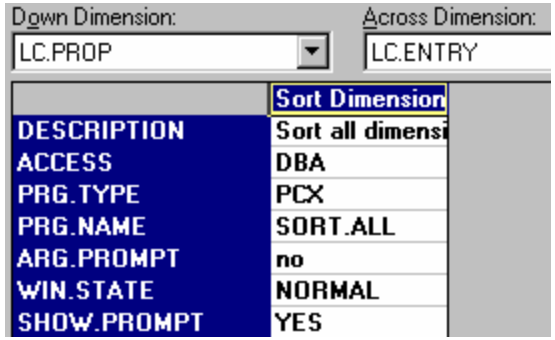
MD.CATALOG (Model)

```
-> report w 20 down md.prop w 15 md.catalog

 -------------------------MD.CATALOG--------------------
 --------------------------MD.ENTRY---------------------
MD.PROP                 MD.AA48642
--------------------    ---------------
CLASS                   PERSONAL
MODIFIER                AA
TIME.MODIFIED           99/09/22
                        15:26:28
DESCRIPTION             NA
BASE.DIM                ACCOUNT
COMPILE.NEEDED          NA
VARIABLES               ACTUALS
DIMENSIONS              ACCOUNT
PROGRAM                 .MD.AA48642O
RECALC                  NA
EQU.VARIABLE            .MD.AA48642E
USER.PROG               NA
NOWARN                  NA
MODDAMP                 NA
MODERROR                NA
MODGAMMA                NA
MODINPUTORDER           NA
MODMAXITERS             NA
MODOVERFLOW             NA
MODSIMULTYPE            NA
MODTOLERANCE            NA
EXTRA.DIMS              NA
TYPE                    LIST
SELECTION               SALES
                        INT_INC
                        DIV_INC
```

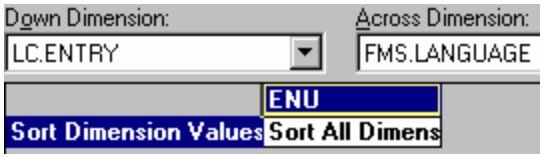
LC.CATALOG



•Create an entry in LC.ENTRY



•Complete the LC.PROP entries for the entry, Sort All Dimension Values



•Enter the description for the menu item in LC.DESC

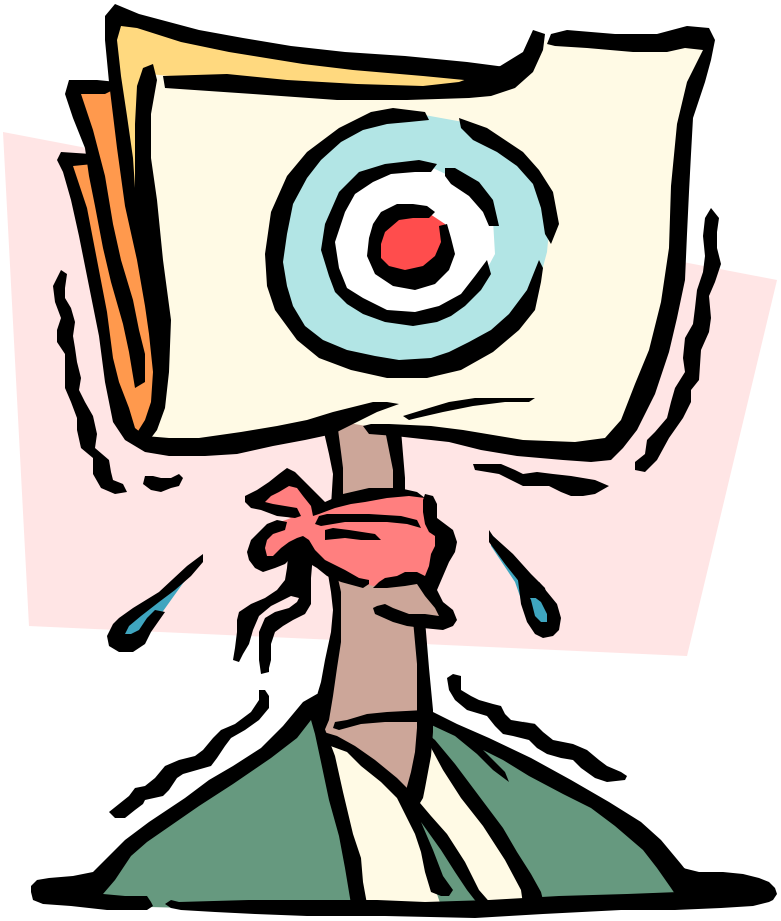
Putting it All Together

- OFA user interface presents all databases as one logical database
- OFA uses a series of catalogs in several databases
- Catalogs have numerous interrelationships and cross-references
- OFA Administrators can change the behavior of OFA by modifying the properties of these catalogs
- OFA Administrator GUI tool allows administrators to do basic routine maintenance
- Most customizations and best practices require the use of Express Stored Procedure Language (SPL) and knowledge of the underlying catalogs

OFA Resources

- **Oracle Metalink for patches and bug fixes**
  http://metalink.oracle.com/
- **Oracle Technology Network for software downloads and white papers**
  http://technet.oracle.com/

QUESTIONS?



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