

Migrating Critical Business Applications to APEX ... Successfully

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TH TECHNOLOGY

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About Me ...

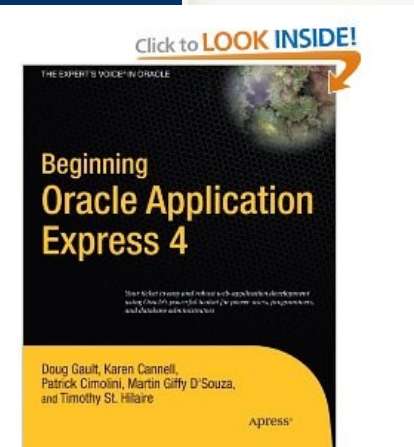
Karen Cannell ~ Consultant, **TH TECHNOLOGY**

- Mechanical/SW Engineer - Analyzed, designed, developed, converted, upgraded, enhanced legacy & database applications for 25+ years
- Building APEX applications for government, medical, engineering industries since HTMLDB
- Leveraging the Oracle 10g, 11g, 12c suite of tools
- Editor **ODTUG** Technical Journal

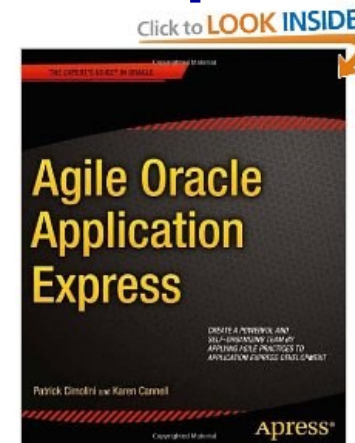
Send Me ODTUG Technical Journal Content!



- **Beginning Application Express**
- **4.2, APress, 2013**



- **Agile Oracle Application Express**
- **APress, 2012**



About You ...

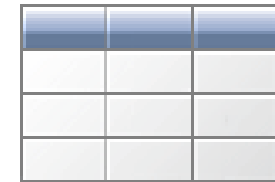
- New to APEX?
- MS Access Applications?
- Oracle Forms?
- APEX Experience ?

- Migration Plans?



Agenda

- Planning
- Migration Process
- The APEX Migration Workshop
- Lessons Learned



Plan for your Migration Processes



We'll Learn

- What to Expect When Undertaking a Migration Project
- Overview of SQL Developer Migration Workbench
- Overview of the APEX Migration Process



Why Migrate?



Migrate Critical Apps to APEX ... Successfully



Why Migrate?

- Consolidate - Platform, Management, DB
- Reliability
- Scalability
- Performance
- Critical Business Function onto Enterprise DB
 - Support
 - Security
 - Accessibility

“Forms is Going Away”
You Have To

The Decision Process - a Project in Itself



Migration != Conversion



Migration Is Not Easy



Migration === Change

- User Interface Will Change
 - Forms to Web
 - Ms Access to Web
 - User Experience Will Change
- Form/Report Flow Will Change
 - Web Pages are Different Than
- Sound Database Design Essential
 - APEX Will Magnify Poor Query Performance

Re-Engineer and Re-Design Will Be Needed



Essentials

- Experienced Resources – Both Sides
- Commitment
- Re-Evaluation, Re-Engineering
- Communication
- Manage Expectations





Migration

- One Way
- Forward
- **Better**





Successful Migration Project

- $> =$ Functionality
- $> =$ Value
- $< =$ Cost to Operate
- 😊 😊 😊 End Users



Planning – Consider These ... *at least!*

- Scope
- Business Process
- Database Design
- Form Design
- Input / Output
- Security
- User Interface
- Standards
- Overall Process
 - Framework?
 - Themes?
- Resources
- Documentation
- Training



Requirements

- Decision
- Commitment
- Business Experts
- Technical Experts
- APEX Experts
- Hardware, Software
- Database/Server Support
- User Support
- Acceptance Criteria
- Training

Communication



Decision

- Solid Management Decision
- Committed Funding
- All Stakeholders On Board
- For The Duration

Be Prepared to Play Cheerleader



Commitment

- Resources
- Bandwidth
- HW and SW
- Support
- Schedules
- Funding



Experts

- Business Expert
 - Legacy App Technical Expert
 - APEX Expert
-
- All on Speaking Terms
 - Able to Share Knowledge



Hardware and Software

- Database and Application Server
- File Servers
- Disk Space
- Backup
- Bandwidth for Estimated Load
- Licenses
- Dev – Test – Production Environments



DB and System Support

- Dev – Test – QA – Production
- Downtime?
- Service Periods?
- Plan Ahead to Get Approvals, Resources
- Expectations
 - Response Time



Post-Implementation Support

- End User Help Desk
- Developers?
- End User Documentation
- Technical Documentation

- Who Writes it?
- Costs
- Timing – Ready for Test Phase?



Acceptance Criteria

- Have A Test Plan
 - Define Key Functionality
- Execute the Test Plan
 - Make Sure Its There

W/O a Test Plan, Can Never Succeed



Training

- End Users
- Developers
- Support Resources
 - Do Not Assume they Know APEX



Communication



Communication

- All Stakeholders
- Continual
- Honest

- Manage Expectations

Play Cheerleader When You Have To

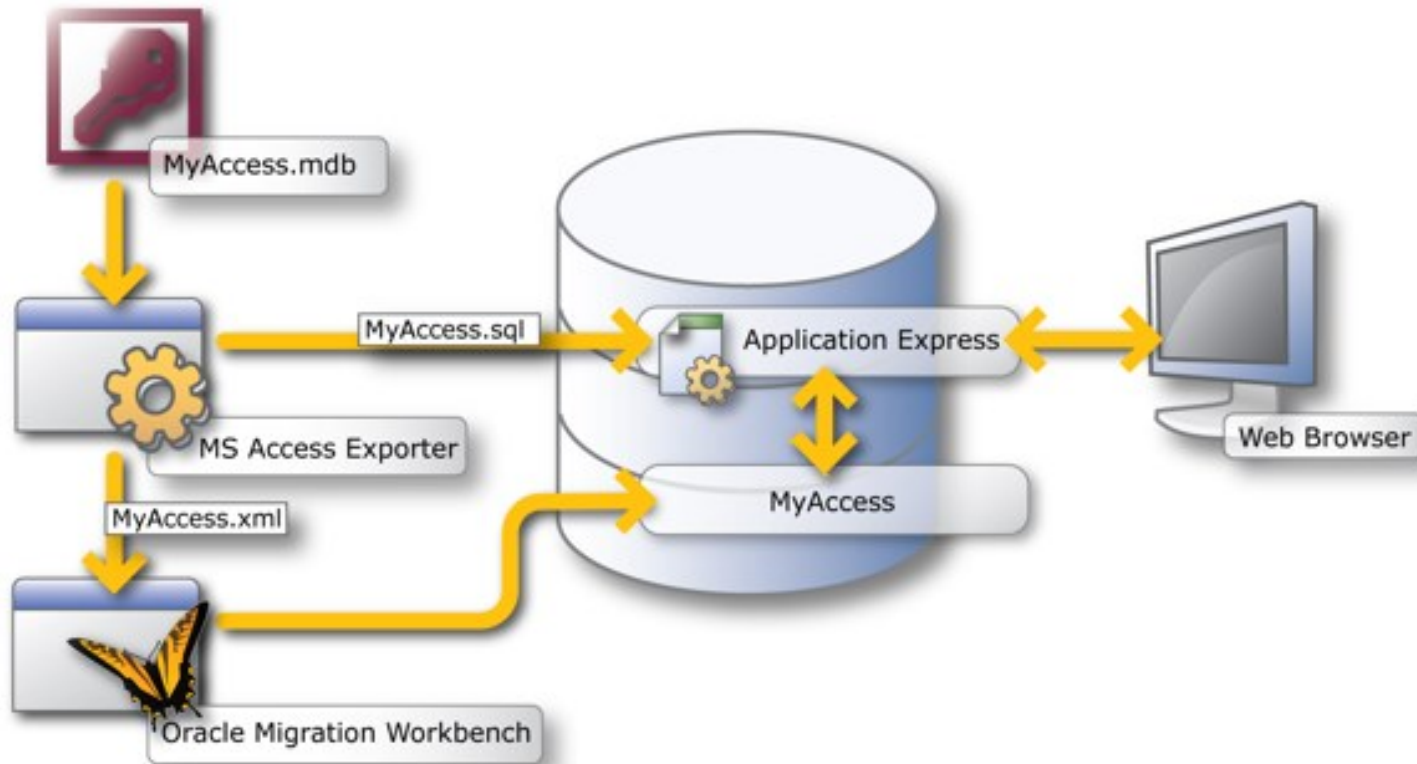


Migrate to APEX - Successfully

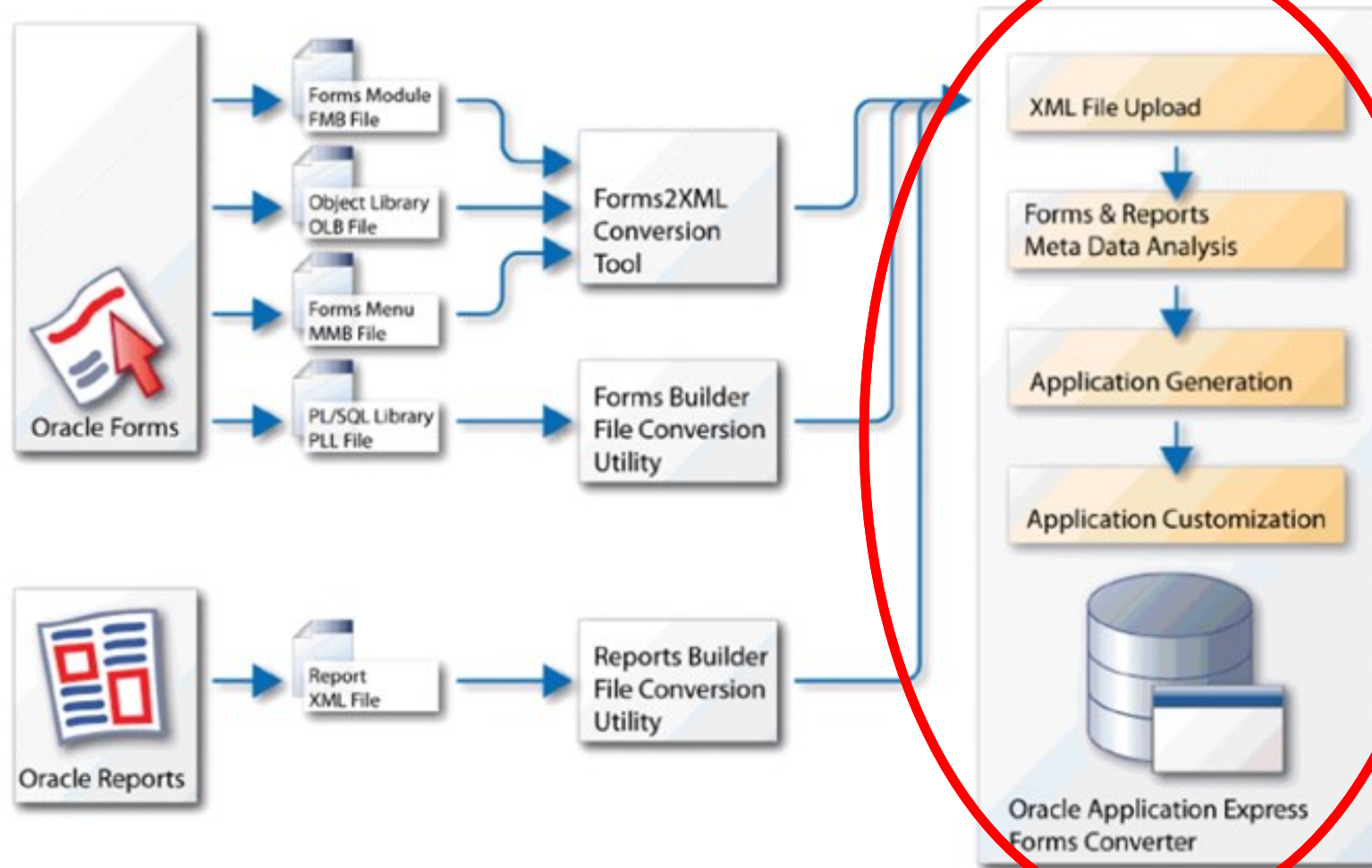
The APEX Migration Process



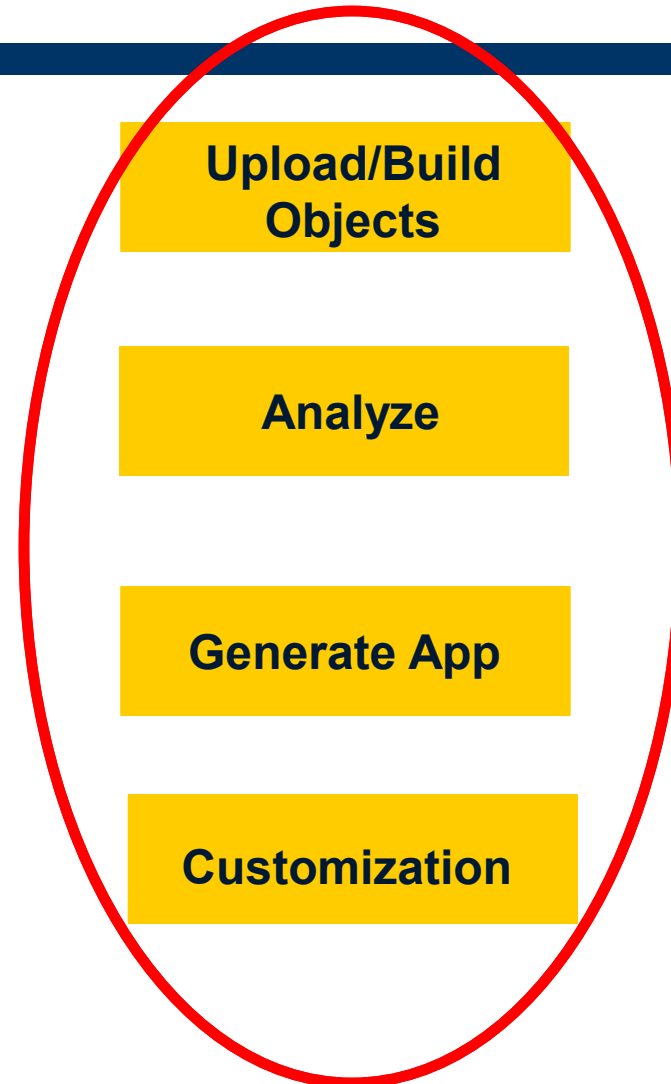
Overview- MS Access



Overview – Oracle Forms



Overview – Other Platforms



Overview – Work Balance

**Upload/Build
Objects**

Analyze

Generate App

Customization



APEX Migration Process

- Export Legacy DB Objects
 - Tables, Views, Triggers, Data
- Migrate DB Objects to Oracle
 - Relational DB Design
- Migrate Application Components
 - Code Modules, Forms, Reports
- Organize into APEX Application
 - Web Pages
 - Web Application
- Customize / FIX IT



Tools to Help

- Oracle Exporter – MS Access
- Forms2XML – Forms/Reports File Convertors
- SQL Developer Migration Workbench
- APEX Migration Workshop



Oracle Exporter

- MS Access Only
- 97, 2000, 2002, 2003, 2007
- No Plans for 2010
- Download from APEX Migration Workshop
- SQL Developer 3.2 – Integrated
- SQL Developer 4.0 ? Not Integrated
- 32bit MS Access ...



MS Access 32bit vs 64bit

- Beware 32bit vs 64bit
- Cannot Mix MS Access 32bit vs 64bit
- Oracle Exporter == 32bit
 - Does Not Run in 64bit MS Access
- SQL Developer
 - 32bit SQL Dev Cannot Connect to 64bit MS Access
 - 64bit SQL Dev Cannot Connect to 32bit MS Access



Exporter Supported Versions

- 97, 2000, 2002, 2003, 2007
- 2010 NOT Supported
- Options:
 - Save As Earlier Version
 - Export Objects as XML (one at a time)
 - Use Ms Access Export to ODBC Database Option (External Data → Export—More—ODBC Database)
 - Table at a time
 - Make sure 32bit MS Access gets 32bit ODBC driver, 64bit Access get 64bit ODBC driver



Exporter - Demo

.. Cannot demo ...

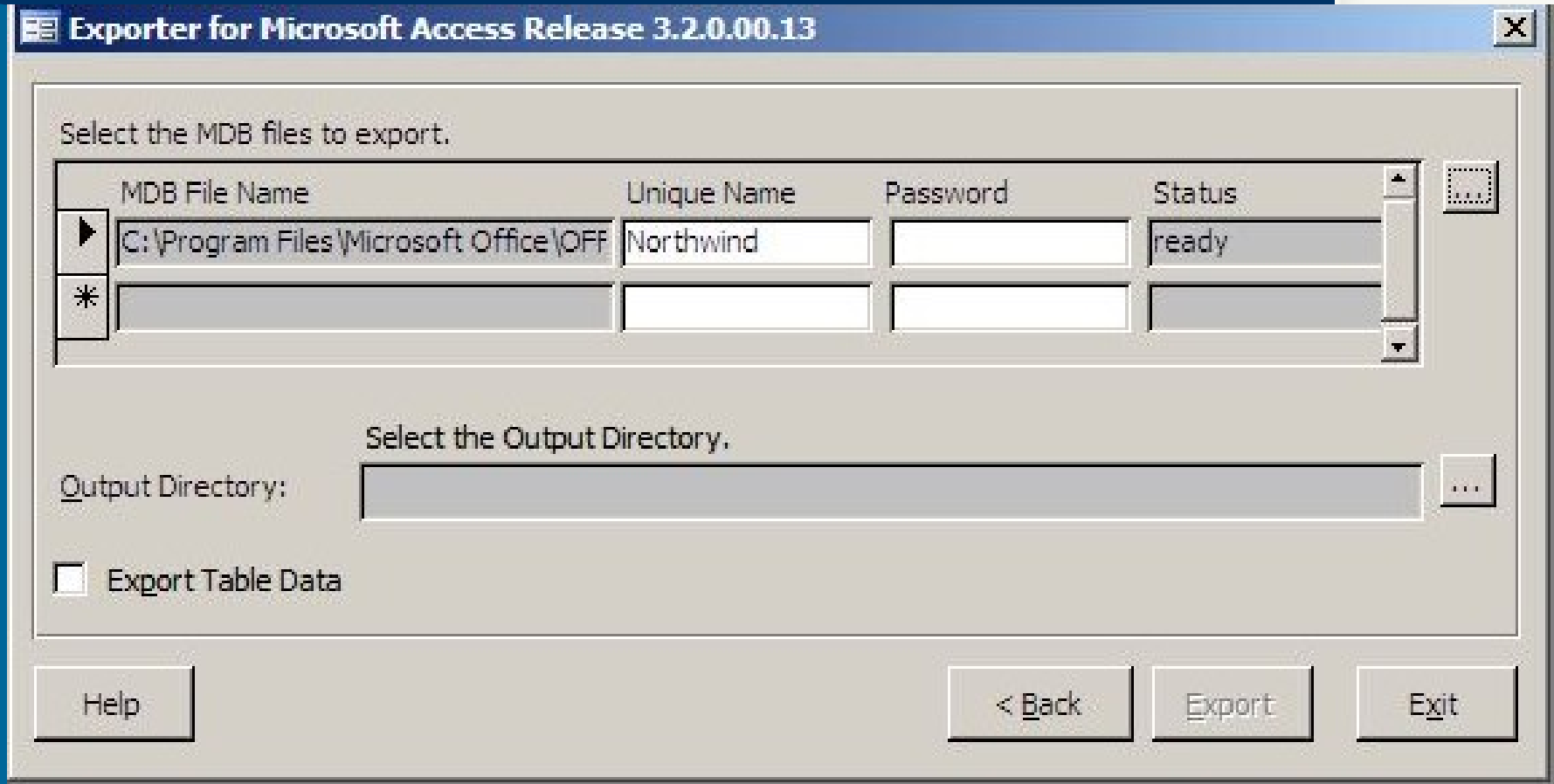
I have 64bit MS Access now!



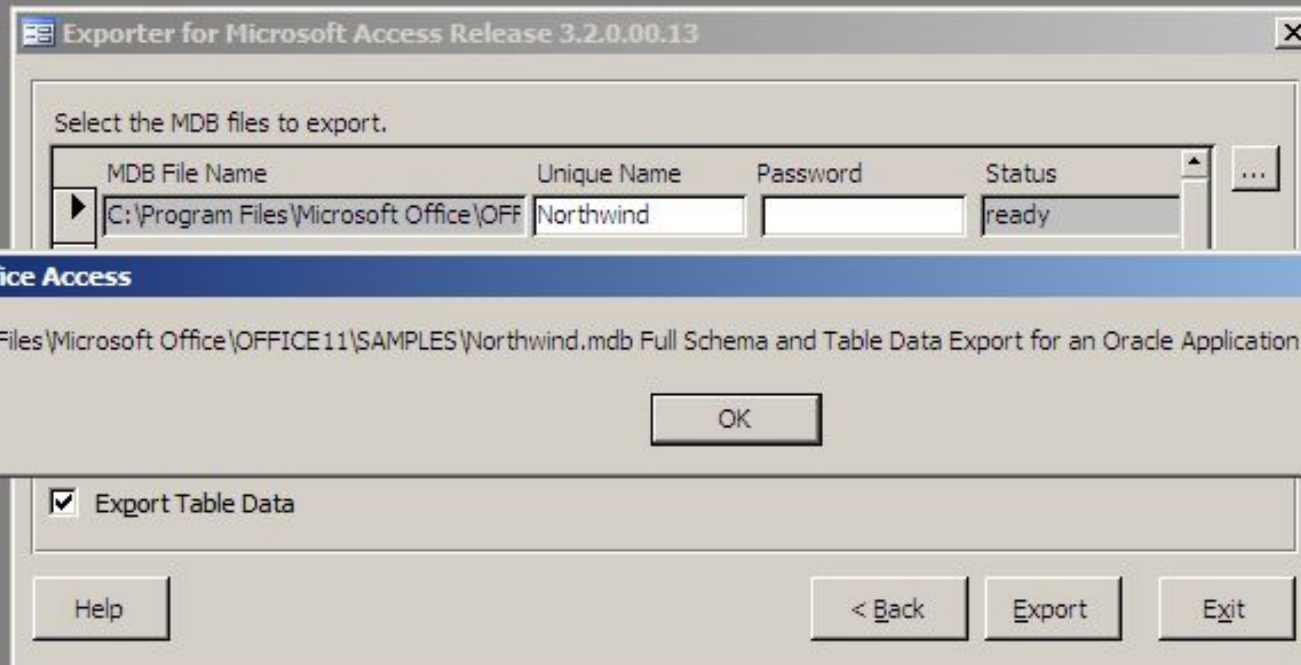
Start Oracle Exporter (32bit .mde!)



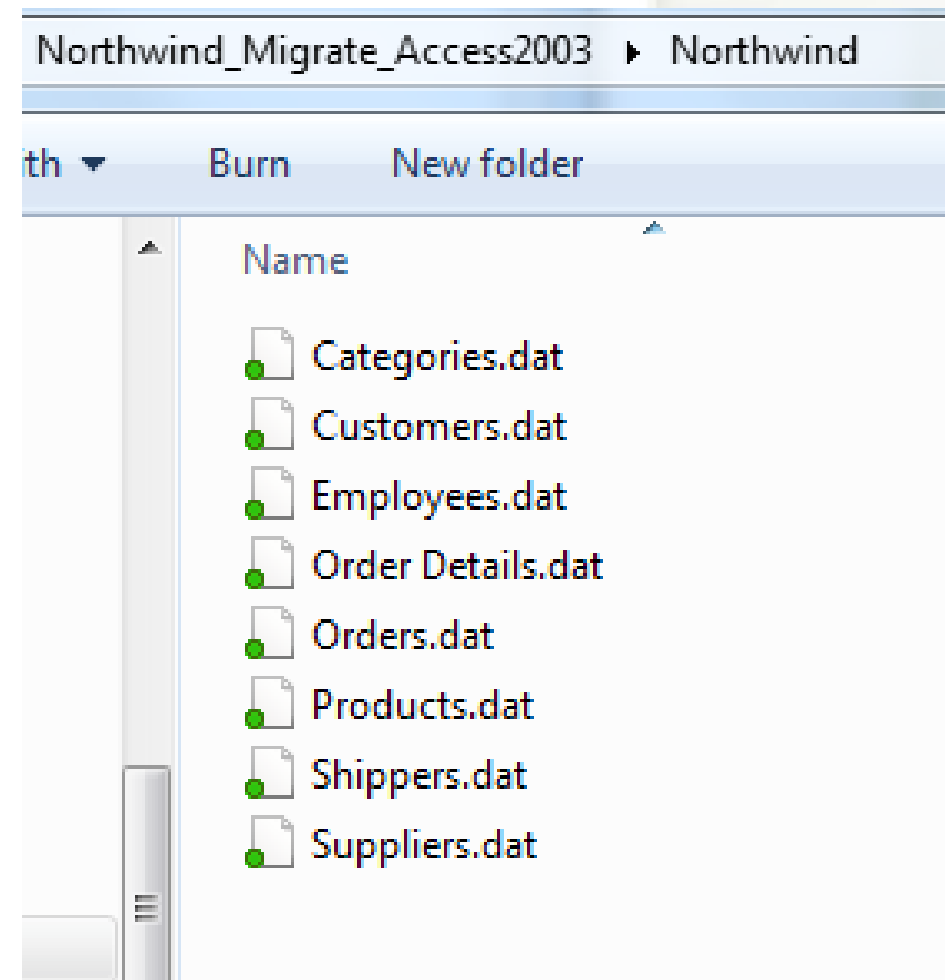
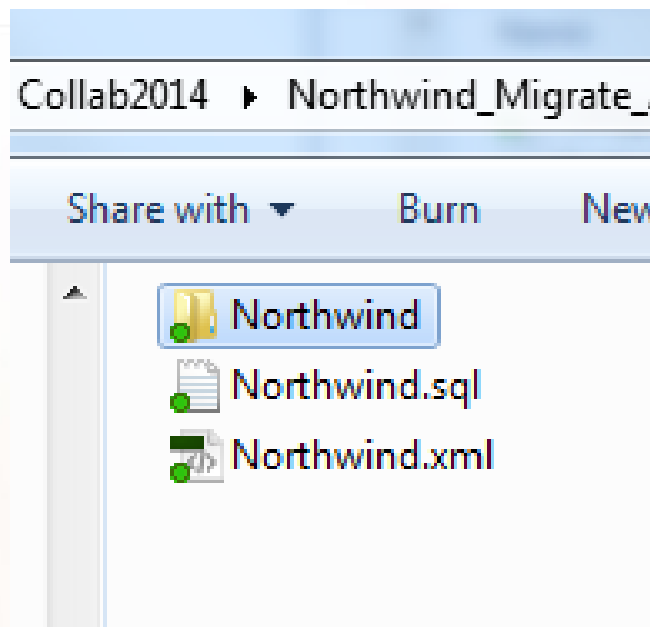
Select MS Access .mdb file



Full Schema and Table Data Export Completed...





Output Files



Migrate Critical Apps to APEX ... Successfully



Exporter - Results

 Northwind.sql	2/17/2014 11:39 PM	SQL File	1,456 KB
 Northwind.xml	2/17/2014 11:39 PM	XML Document	116 KB

- .SQL – Migration Repository file for APEX
- .XML – SQL Developer file



In General, These Steps:

- Oracle Exporter
- Review Output Files
- Import Files into SQL Dev Migration Repos
- Generate Output ... schema.sql
- View Resulting schema.sql ... Run?
- Use Scratch Editor .. Fix Invalids
- Eventually → Good New Schema



Data Migration

- Schema First, Then Data
- Export/Import
- SQL Loader
- SQL Dev Migration
- “Copy to Oracle”
 - My Best Bet on 64b MS Access
 - Tedious for Many Tables
- Load then ETL to Final Structures



Exporter/ DB Migration Results

- Tables → Tables
- Queries → Views
- Program Units → Empty Modules

Must Manually Rewrite

- Check These Things:
 - FK Constraints
 - Triggers
 - The Script Itself

**OK for a Few
Modules,
BIG WORK for
Complex Apps**



SQL Developer Migration

[Overview](#)[Downloads](#)[Documentation](#)[Community](#)[Learn More](#)

ORACLE SQL Developer
Release 4.0 is here

Develop



Administer



Model



Migrate



SQL Dev Migration Workbench

- Database to Oracle

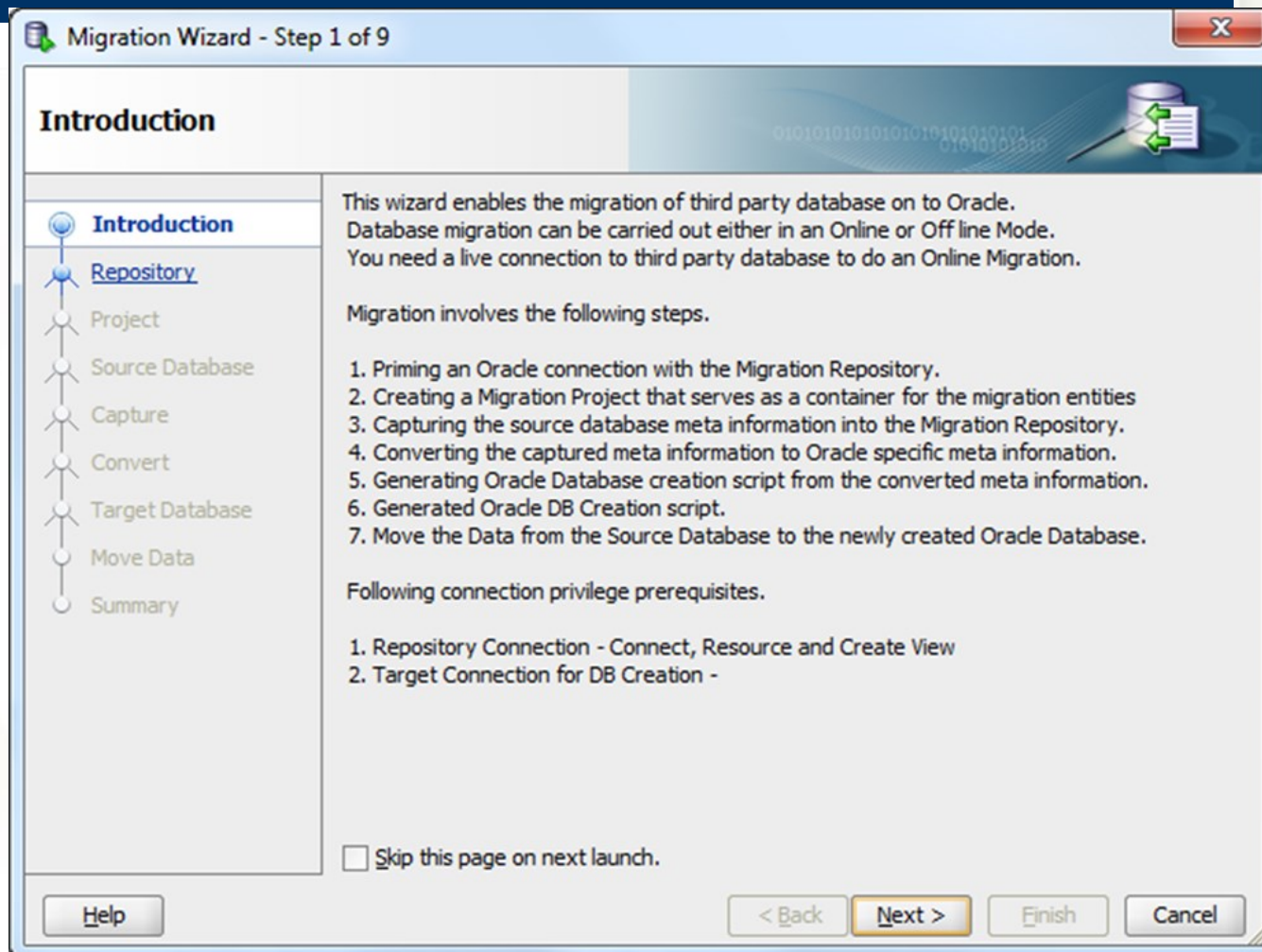
SQL Server – MySQL – Sybase – DB2 –
Informix – MS Access – Teradata

- Earlier Version – More MS Access

- Later Version – More Major DB



Migration Wizard



SQL Developer Tasks

- Relational Tables
- PKs, FKs, Constraints
- Triggers, Sequences
- Views
- Adjustments to Your Schema
- Data Migration

Time Spent Here Is Worth It!



APEX Performance

- Poor Performance is **MAGNIFIED** in APEX
- Fix SQL Performance Issues Early
- Fix SQL Performance Issues Outside of APEX
- Good Relational Design Pays Off
- Don't Skimp Here!

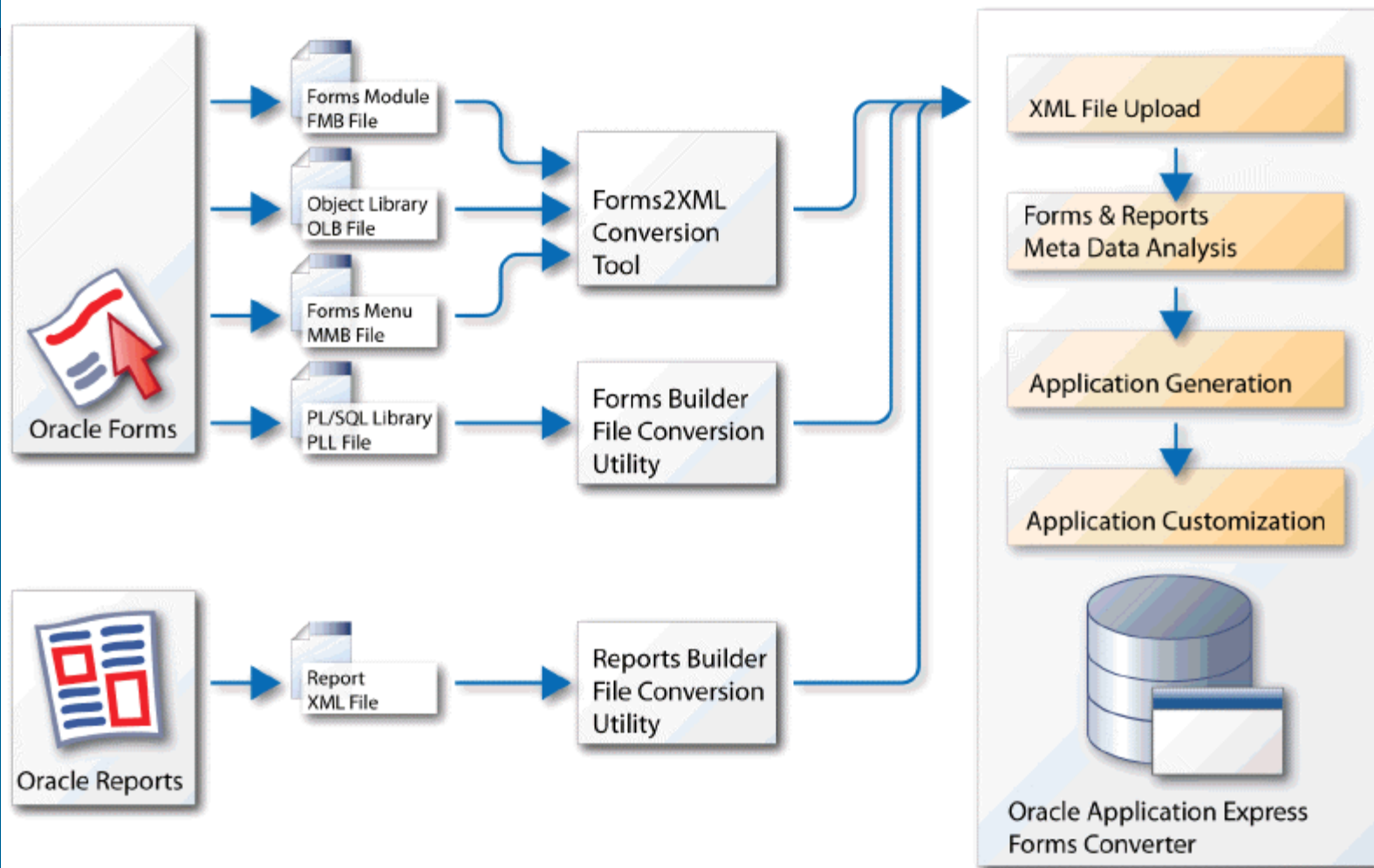
Good Relational Design Is Important



If Migrating Oracle Forms...



Oracle Forms Conversion



Convert Parts to XML

- Forms2XML for Forms, Menus, Libraries
 - Forms (.FMB), Menus (.mmb), Object libraries (.OLB)
 - Utility or Command Line
- Forms Builder File Conversion Utility
 - PL/SQL Library (.PLL)
- Report Builder File Conversion Utility
 - Binary (.RDF), ASCII (.REX), JSP (.JSP)



Forms Conversion, cont'd

- Create APEX Workspaces and Users
 - APEX Administrator
- Upload Database Objects into Workspace Schema
 - SQL Scripts
 - SQL Developer (or your favorite SQL-PL/SQL IDE)
 - Sample Files:
 - forms_conversion_ddl.sql
 - forms_conversion_data_insert.sql



The screenshot displays the Oracle SQL Developer interface. The main window shows a SQL Worksheet with the following DDL scripts:

```
1 CREATE TABLE "S_REGION"  
2 ( "ID" NUMBER(7,0) CONSTRAINT "S_REGION_ID_NN" NOT NULL ENABLE,  
3 "NAME" VARCHAR2(50 BYTE) CONSTRAINT "S_REGION_NAME_NN" NOT NULL ENABLE,  
4 CONSTRAINT "S_REGION_ID_PK" PRIMARY KEY ("ID") ENABLE,  
5 CONSTRAINT "S_REGION_NAME_UK" UNIQUE ("NAME") ENABLE  
6 );  
7  
8 CREATE TABLE "S_DEPT"  
9 ( "ID" NUMBER(7,0) CONSTRAINT "S_DEPT_ID_NN" NOT NULL ENABLE,  
10 "NAME" VARCHAR2(25 BYTE) CONSTRAINT "S_DEPT_NAME_NN" NOT NULL ENABLE,  
11 "REGION_ID" NUMBER(7,0),  
12 CONSTRAINT "S_DEPT_ID_PK" PRIMARY KEY ("ID"),  
13 CONSTRAINT "S_DEPT_NAME_REGION_ID_UK" UNIQUE ("NAME", "REGION_ID") ENABLE,  
14 CONSTRAINT "S_DEPT_REGION_ID_FK" FOREIGN KEY ("REGION_ID")  
15 REFERENCES "S_REGION" ("ID") ENABLE  
16 );  
17  
18 CREATE TABLE "S_TITLE"  
19 ( "TITLE" VARCHAR2(25 BYTE) CONSTRAINT "S_TITLE_TITLE_NN" NOT NULL ENABLE,  
20 CONSTRAINT "S_TITLE_TITLE_PK" PRIMARY KEY ("TITLE") ENABLE  
21 );  
22  
23  
24 CREATE TABLE "S_EMP"  
25 ( "ID" NUMBER(7,0) CONSTRAINT "S_EMP_ID_NN" NOT NULL ENABLE,  
26 "LAST_NAME" VARCHAR2(25 BYTE) CONSTRAINT "S_EMP_LAST_NAME_NN" NOT NULL ENABLE,  
27 "FIRST_NAME" VARCHAR2(25 BYTE),  
28 "USERID" VARCHAR2(8 BYTE)
```

SQL Developer – Execute DDL script(s)



Create Conversion Project

- Application Builder → Migrations
 - Lower right on the page
- Create Project
 - Load Forms Module XML File First (myForm_fmb.xml)
 - Load Additional XML Files
 - Reports, Menus, OLBs, PLLs



Application Builder

All Applications Database Applications Worksheet Applications Packaged Applications

Search input field with 'Go' button, navigation icons (grid, list, list with details), 'Actions' dropdown, 'Reset', 'Import', and 'Create' button.

No applications found.

About
Application developers use wizards to declaratively assemble applications organized by page. Session state is transparently managed. Click the **Create** button to create an application.
[Learn more ...](#)

Tasks

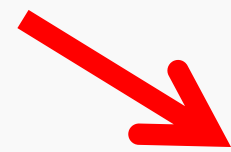
- Application Builder Defaults
- Application Groups
- Workspace Themes
- Cross Application Reports
- Application Express Views
- Export

Recent

Report contains no data

Migrations

- Migrations





Cancel

Next >

* Project Name

* Type

Description

* Schema

Locate the Forms Module XML file generated by the Forms2XML conversion tool. Click [here](#) for information on how to generate a Forms Module XML file.

* Forms Module XML File customers_fmb.xml

Tasks

- [Download Exporter for Microsoft Access](#)
- [How to Migrate Microsoft Access Applications](#)
- [How to Convert Oracle Forms Applications](#)
- [Sample Files](#)

Enter Project Details

Migrate Critical Apps to APEX ... Successfully




Project Details Confirm

Cancel

Upload Another File >

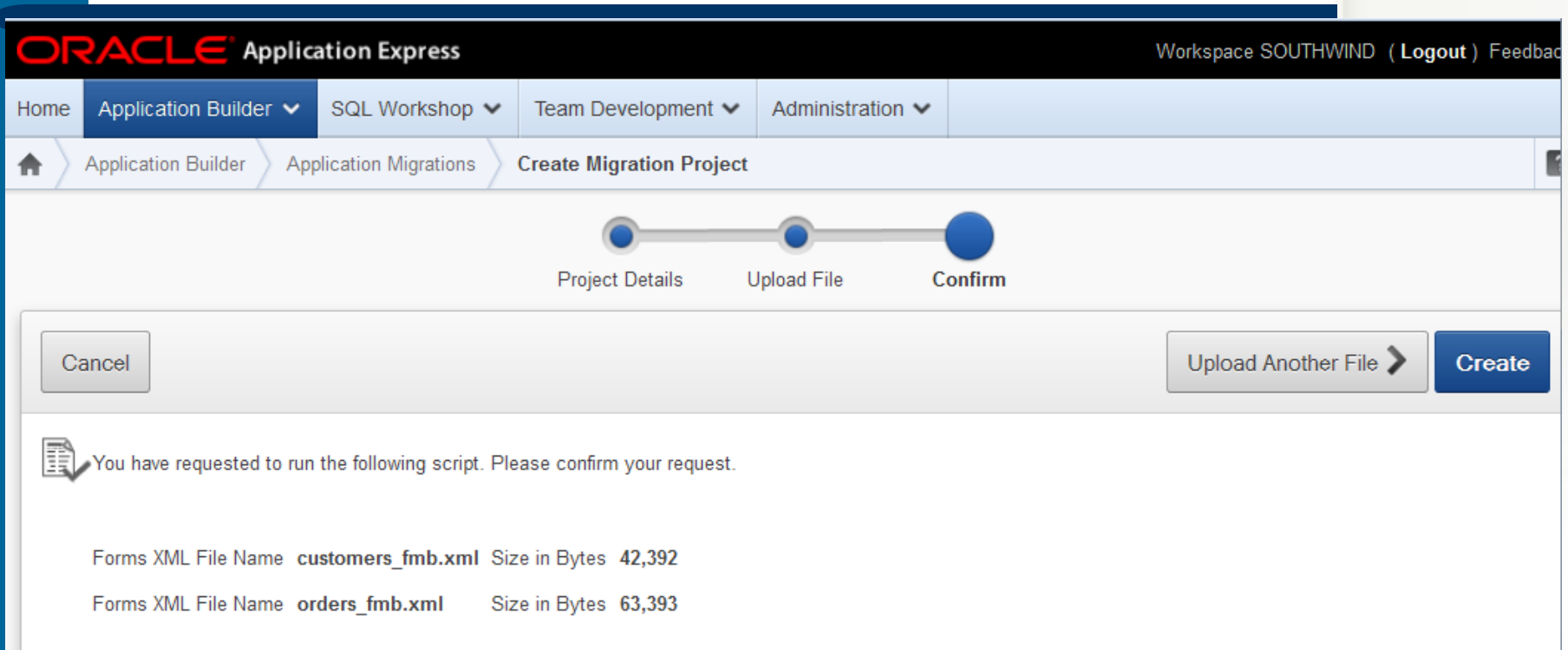
Create

 You have requested to run the following script. Please confirm your request.

Forms XML File Name `customers_fmb.xml` Size in Bytes `42,392`

Upload Main Form First






ORACLE Application Express Workspace SOUTHWIND (Logout) Feedback

Home Application Builder SQL Workshop Team Development Administration

Application Builder Application Migrations **Create Migration Project**

Project Details Upload File **Confirm**

Cancel Upload Another File **Create**

 You have requested to run the following script. Please confirm your request.

Forms XML File Name	customers_fmb.xml	Size in Bytes	42,392
Forms XML File Name	orders_fmb.xml	Size in Bytes	63,393

Upload Other Forms, Reports, Menus, OLBs, PLLs



Project created.

Upload File > Create Application >

Search: Go Actions

Edit	Type	File Name	Blocks	DB Blocks	Items	Triggers	Record Groups	Lists of Values	Alerts	Program Units	Component Count	Percent Complete
	FMB	customers_fmb.xml	4	3	25	20	1	1	2	7	75	77.33
	FMB	orders_fmb.xml	4	3	34	45	1	1	3	5	106	83.96

1 - 2

- Tasks**
- Delete Project
 - Edit Project Details and Applicability
 - About Forms Conversion
 - Set Application Defaults

- Recent**
- orders_fmb.xml
 - customers_fmb.xml

Completion Status








Components: **181**
 Completed: **147**
 Percent Complete: **81.22**

Forms Conversion

Project Created.



Migration Project Page

Edit	Type	File Name 	Blocks	DB Blocks	Items	Triggers	Record Groups	Lists of Values	Alerts	Program Units
	RPT	Employees.xml	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
	FMB	customers_fmb.xml	<u>5</u>	<u>4</u>	<u>30</u>	<u>23</u>	<u>1</u>	<u>1</u>	<u>2</u>	<u>7</u>
	MMB	customers_mmb.xml	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
	FMB	orders_fmb.xml	<u>4</u>	<u>3</u>	<u>34</u>	<u>45</u>	<u>1</u>	<u>1</u>	<u>3</u>	<u>5</u>
	OLB	stndrd20_olb.xml	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
	PLL	wizard.pld	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>

Example with Forms, Reports, Menus,
OLBs, PLLs



Now What?

Am I Really 81.22% Done?

Triggers	Record Groups	Lists of Values	Alerts	Program Units	Component Count	Percent Complete
20	1	1	2	7	75	77.33
45	1	1	3	5	106	83.96

1 - 2

Edit Project Details and Applicability

About Forms Conversion

Set Application Defaults

Recent

orders_fmb.xml

customers_fmb.xml

Completion Status

Components: **181**

Completed: **147**

Percent Complete: **81.22**



Review and Edit Modules

- Project Details
- Forms
- Reports
- Menus
- Object Libraries
- PL/SQL Libraries

- Use Annotations to Track Progress



Changing the applicability will update all components within your project to the new value, irrespective of their current setting.

Component ▾	Applicable
Alerts	Yes ▾
Attached Library	No ▾
Blocks	Yes ▾
Block-Level Triggers	Yes ▾
Canvas	No ▾
Coordinates	No ▾
Editor	Yes ▾
Form-Level Triggers	Yes ▾
Item-Level Triggers	Yes ▾
Lists of Values	Yes ▾
Menu	No ▾
Module Parameter	No ▾
Object Group	No ▾
Program Units	Yes ▾
Property Class	No ▾
Record Groups	Yes ▾
Report	No ▾
Visual Attributes	No ▾
Windows	No ▾
1 - 19	

Project Details - Components



Trigger Applicability

Changing the applicability will update all components within your project to the new value, irrespective of their current setting.

Trigger Name ▼	Form Level	Block Level	Item Level
KEY-CLRBK	No ▼	No ▼	No ▼
KEY-CLRFRM	Yes ▼	No ▼	No ▼
KEY-CLRREC	Yes ▼	Yes ▼	No ▼
KEY-COMMIT	No ▼	No ▼	No ▼
KEY-CQUERY	No ▼	No ▼	No ▼
KEY-CREREC	No ▼	No ▼	No ▼
KEY-DOWN	No ▼	No ▼	No ▼
KEY-DUP-ITEM	No ▼	No ▼	No ▼
KEY-DUPREC	No ▼	No ▼	No ▼
KEY-EDIT	No ▼	No ▼	Yes ▼
KEY-ENTER	No ▼	No ▼	No ▼
KEY-ENTQRY	Yes ▼	No ▼	No ▼
KEY-EXEQRY	Yes ▼	No ▼	No ▼
KEY-EXIT	No ▼	No ▼	No ▼
KEY-HELP	Yes ▼	Yes ▼	Yes ▼
KEY-LISTVAL	No ▼	No ▼	Yes ▼
KEY-MENU	No ▼	No ▼	No ▼
KEY-NEXT-ITEM	No ▼	No ▼	Yes ▼
KEY-NEXTSET	No ▼	No ▼	No ▼
KEY-NXTBLK	No ▼	No ▼	No ▼
KEY-NXTKEY	No ▼	No ▼	No ▼
KEY-NXTREC	No ▼	No ▼	No ▼
KEY-OTHERS	No ▼	No ▼	No ▼
KEY-PREV-ITEM	No ▼	No ▼	Yes ▼
KEY-PRINT	No ▼	No ▼	No ▼
KEY-PRVBLK	No ▼	No ▼	No ▼
KEY-PRVREC	No ▼	No ▼	No ▼
KEY-	No ▼	No ▼	No ▼

Project Details – Forms Triggers



Review Form Components

- Alerts
- Blocks
- List of Values
- Program Units
- Record Groups
- Triggers
- Canvas
- Coordinates
- Editor
- Property Class
- Visual Attributes
- Windows



Component Mapping – *Generally...*

- Alerts → Messages
- Blocks → Regions
- List of Values → LOV
- Program Units ✖
Manually Rewrite
- Record
Groups → Named LOV
- Triggers → ✖
Rewrite many of these as
Computation, Validation or
Process
- Canvas → Template
- Coordinates ✖
- Editor → HTML Editor
- Property Class ✖
- Visual Attributes ✖
- Window → Page



Q- Go ▾

File Name = 'customers_fmb.xml'

Component	Count	Equivalent Component	Implementation Details	Included	File Name	Applicable
Alerts	2	-	An alert message can be stored as a Text Message in the Shared Components of an Oracle Application Express application. Text Messages can be used to build translatable text strings with substitution variables that can be called from PL/SQL packages, procedures, and functions.	-	customers_fmb.xml	Yes
Blocks	4	Regions	A single block can be mapped to a region in Oracle Application Express. Based upon the block type and data source type (table/view) identified in the Forms XML file, some default mappings are defined. For example, a report block which is based upon an Oracle view, will be mapped to an Interactive report in Oracle Application Express. A form block based upon a table, will be mapped to an Interactive report and form in Oracle Application Express.	0	customers_fmb.xml	Yes
Canvas	5	-	In Oracle Forms, the canvas is the object on which the GUI is drawn, the "background" of the form. In Oracle Application Express, the engine constructs the appearance of each page in a application using Templates. Templates define how pages, page controls, and page components display.	-	customers_fmb.xml	No
Coordinates	1	-	Depending on the Coordinate System used in the Oracle Forms application, coordinates can be expressed in real units such as inches, centimeters, and pixels. One unit in an Oracle Application Express item position might not be equal to one physical pixel in an Oracle Forms application. Therefore the coordinate values cannot be automatically applied to the generated application.	-	customers_fmb.xml	No
Editor	1	-	In Oracle Forms, Editors provide standard editing features, including search/replace and cut, copy, and paste, for text items. For a selected text item, an Editor can be mapped to a HTML Editor in Oracle Application Express.	-	customers_fmb.xml	Yes
Lists of Values	1	Lists of Values	A List of Values can be mapped to an equivalent List of Values in Oracle Application Express. When LOVs are selected for inclusion in the migration to Oracle Application Express their associated record group will also be included in the migration.	1	customers_fmb.xml	Yes
Program Units	7	-	In the post-generation phase of a Forms Conversion to APEX, Program Units can be incorporated into your Oracle Application Express application as a PL/SQL package, page process, computation or validation.	-	customers_fmb.xml	Yes
Property Class	1	-	In Oracle Forms, a Property Class is a named object that contains a list of properties and their settings. An object based on a property class can inherit the settings of any property in that class that make sense for the object. Similarly, in Oracle Application Express, a Theme is a named collection of templates used to define the user interface of an application. Oracle Application Express has a repository of 20 themes, and you can also create your own custom themes.	-	customers_fmb.xml	No
Record Groups	1	-	In Oracle Forms, LOV values are derived from a record group. When an LOV is defined, it is associated with a named record group. When an LOV is included in the migration, its associated Record Group will also be included in the migration to Oracle Application Express.	-	customers_fmb.xml	Yes
Triggers	20	-	An Oracle Forms trigger is an event-handler written in PL/SQL to augment the default processing behavior. The trigger logic can be incorporated into an Oracle Application Express application as a computation, validation or PL/SQL process at post-generation phase. Where feasible, POST-QUERY block trigger logic can be automatically incorporated into the generated application, as part of the Enhanced Migration process.	-	customers_fmb.xml	Yes

Lots to Do Here!



Lots of Manual Work To Do

- Just Keep Pluggin' ...
- Component by Component
- Use Annotations to Assign Components to Developers
- Track Overall Progress on Project Details Page



Annotations

- Use to Assign Developers
- Notes
- Tags
- Most Every Component

Annotations

Applicable Yes ▾

Priority 3 ▾

Complete No ▾

Assignee Southwind ▾

Notes

Tags

Change when done

- Select Assignee -
Southwind
Southwind_Admin

page into an an HTMldb_DELETE_MESSAGE or
called on the DELETE button.

apex_submit DELETE Confirm




Annotations

- Migration Utility Will Decide Some For You
- Notes
- Tags

Annotations	
Applicable	No ▾
Priority	3 ▾
Complete	Yes ▾
Assignee	- Select Assignee - ▾
Notes	<p>The Datasource associated with the block is not a table or view in the schema associated with your Conversion project.</p>
Tags	






Note as to why not included by Migration Utility



Program Units

Q- Go ▾

File Name = 'orders_fmb.xml'

Name	Program Unit Type	Assignee	Tags	Applicable	Complete	Notes Snippet	File Name
 CHECK_PACKAGE_FAILURE	Procedure			Yes	No		orders_fmb.xml
 QUERY_MASTER_DETAILS	Procedure			Yes	No		orders_fmb.xml
 CLEAR_ALL_MASTER_DETAILS	Procedure			Yes	No		orders_fmb.xml
 CHECK_WINDOW_SIZE	Procedure			Yes	No		orders_fmb.xml
 DATE_CHOOSEN	Procedure			Yes	No		orders_fmb.xml

1 - 5



Code That Does Not Translate

- IF NOT (Form_Success) ...
- Get_Relation_Property()
- QUERY_MASTER_DETAILS
- Go_Block
- Check_Package_Failure
- Set_Block_Property
- Etc., Etc., Etc. ...



Set Application Defaults

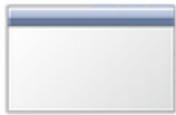
- Tabs
- Authentication
- Application Theme
- Globalization



Tabs

Default Application Tabs:

- No Tabs One Level of Tabs Two Levels of Tabs



Authentication

Default Authentication Scheme

- Application Express Database Account No Authentication



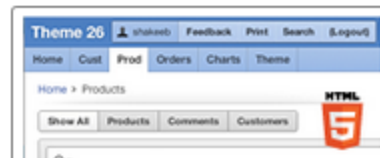
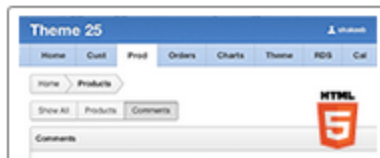
Theme

Default Application Theme:

- Scarlet (Theme 21) Bluejay (Theme 22) Uniframe (Theme 23) Cloudy (Theme 24)



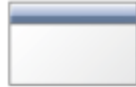
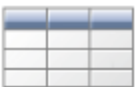




- Blue Responsive (Theme 25) Productivity Applications (Theme 26)



Page	Page Name	Page Type	Page Source	Source	Delete Page
1	Home	Blank		-	×
2	Customers	Tabular Form	Table	S_CUSTOMER	×
3	Orders	Report	Table	S_ORD	×
4	Orders	Master Detail	Table	S_ITEM	×
5	Items	Report	SQL Query	select "S_ITEM"."ORD	×
6	Items	Form	Table	S_ITEM	×
7	Inventory	Tabular Form	Table	S_INVENTORY	×

Add Page

Select Page Type:

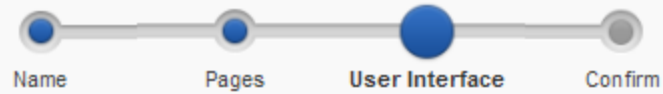
- Blank

- Report

- Form

- Tabular Form

- Master Detail

- Report and Form


Action: Add blank page to application

Subordinate to Page:

Page Name:





Navigation: [←](#) [Cancel](#) [Next >](#)

Show **Standard Themes** ▾

Select a theme:

- Scarlet (Theme 21)**
- Bluejay (Theme 22)**
- Uniframe (Theme 23)**
- Cloudy (Theme 24)**
- Blue Responsive (Theme 25)**
- Productivity Applications (Theme 26)**


Navigation: [> Themes](#) [> Compatability](#)

Lets One Override The Default Settings

Migrate Critical Apps to APEX ... Successfully



Application 114 - Southwind Sample Forms Conversion Demo created. ✕



The application has been successfully created.

Tasks
Your imported file is located in the export repository. Unless you plan to install again, you should remove it.

Edit Application Run Application

Done! ... well, ... sort of.



Southwind Sample Forms Conversion Demo

Home

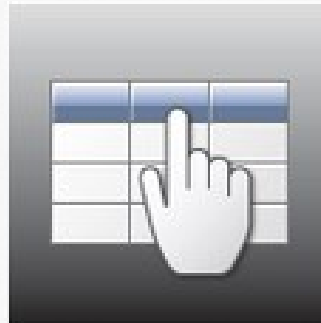
Home



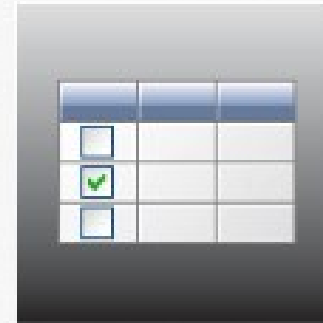
Customers



Orders



Items



Inventory

release 1.0

Check it out at <http://localhost:7777/apex42/f?p=114>



Things Not Generated

- Forms Based on Views
- Non-Database Blocks
- PL/SQL Libraries
- Menus
- Object Libraries
- Alerts
- Property Classes, Visual Styles and Formats

You Need to Figure Out IF and Where These Go



Things Generated

- Forms
 - Block → Region, one per Page
 - Master-Detail Block → Master Detail Page
 - Tabular Form → Tabular Form
 - Need PK, INSERT or UPDATE
 - LOV, RG, CB Date Pickers, Editors When Possible
 - POST-QUERY Triggers* (when moved into Enhanced Query)
- Reports
- Program Units IFF PL/SQL



Migration Advice

- Move Business Logic Into Packages
- Use/Develop Standard Theme
 - CSS
 - Templates
 - Navigation
 - Menus vs Tab, Button Placement, Page Hierarchy
 - Page Flow
- Communicate

**IT WILL LOOK and PERFORM DIFFERENT
than Users Are Used To**



The APEX Migration Workshop



Oracle 12c Migration Enhancements

- Enhanced SQL Developer
- Enhanced SQL Developer Migration Workbench
- IDENTITY Columns – defined in the table, no need for sequence and trigger
- Implicit Result Sets
- 32K VARCHARs - up from 4000, MAX_SQL_STRING_SIZE DB parameter
- FETCH FIRST ROWS - SELECT * FROM T1 FETCH FIRST 10 PERCENT ROWS ONLY
- SQL Translation Framework



SQL Translation Framework

- Does Not Convert to SQL or PL/SQL
- For Apps w ODBC, JDBC, OLE DB or .NET
- Enables Client-Side Code to Run Unchanged
- Neat Stuff But Not Usually a Help for APEX Migrations



“..that’s an awful lot of work ...”

**Build From Scratch is
Always an Option ...**



Get Help – Experience Counts

- Consultants
- Frameworks
- Consult / Training
- Co-Developing



Lessons Learned



What Works

- Re-Evaluate, Re-Engineer
 - for Oracle DB
 - for Web Pages
 - for Web Flow / Interface
- Good Relational DB Design
- Have Standards – Apply Standards
- Communicate
 - Evaluate – Reassess – Repeat



What Does Not Work

- Straight Conversion
- Migrating as Isolated Project
- Migration as APEX Training
- Skimp on DB Design
- No or Skimpy Training
- No or Poor Communication
- “Aw, This is Easy...”



Lessons Learned

- Plan
- Know Your Team
- Re-Think, Re-Engineer the Business Process
- Take Time for Good DB Design
- Migration Utilities May Help
- Maintain Communications
- Keep Showing, Validating Progress





 **Honesty**



Summary

- Migration is a Process
- Re-Evaluate – Re-Engineer
- These HELP
 - SQL Developer Migration Workbench
 - APEX Migration Workshop
- Lots of Manual Work to Do
- Communication - Expectations







Questions ?

*Please fill out
the evaluations*

Migrating Critical Apps to APEX ... Successfully

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Thank You

*Please fill out
the evaluations*

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References/Recommended Reading

- **APPLICATION EXPRESS MIGRATION WORKSHOP**

<http://www.oracle.com/technetwork/developer-tools/apex/application-express/mig-index-095631.html>

- **ORACLE APPLICATION EXPRESS 4.2 APPLICATION MIGRATION GUIDE**

http://docs.oracle.com/cd/E37097_01/doc/doc.42/e35126/appmgr_start.htm

- **MIGRATING APPLICATIONS AND DATABASES WITH ORACLE DATABASE 12C**

<https://docs.google.com/viewer?url=http%3A%2F%2Fwww.oracle.com%2Ftechnetwork%2Fdatabase%2Fmigration%2Fmigrating-to-oracle-database-wp-12c-1896125.pdf>

- **SQL DEVELOPER SUPPLEMENTARY INFORMATION FOR MS ACCESS MIGRATIONS**

http://docs.oracle.com/cd/E39885_01/doc.40/e18459/toc.htm

- **APEX ACCESS MIGRATION TUTORIAL**

- <http://www.oracle.com/technetwork/developer-tools/apex/application-express/tutorial-090294.html>

- **ORACLE DATABASE AND APPLICATIONS MIGRATIONS FORUM**

For help, there is a separate Oracle forum for Application Migrations, including MS Access:

<http://forums.oracle.com/forums/category.jspa?categoryID=27>



References/Recommended Reading

- **SQL DEVELOPER MIGRATION WORKBENCH**

<http://www.oracle.com/technetwork/database/migration/index-084442.html>

- **MIGRATING APPLICATIONS AND DATABASES WITH ORACLE DATABASE 12C**

<https://docs.google.com/viewer?url=http%3A%2F%2Fwww.oracle.com%2Ftechnetwork%2Fdatabase%2Fmigration%2Fmigrating-to-oracle-database-wp-12c-1896125.pdf>

- **USING SQL TRANSLATION FRAMEWORK IN ORACLE DATABASE 12C TUTORIAL (FYI)**

https://apex.oracle.com/pls/apex/f?p=44785:24:0::NO:24:P24_CONTENT_ID,P24_PREV_PAGE:7500,16

