

Migrating Complex Oracle Forms Applications to APEX: Utopia or Reality?

A step-by-step journey to successfully
modernizing legacy Oracle Forms
applications to Oracle Application Express

PITSS.CON 11.0.0

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Introduction

Oracle APEX is having an unforeseeable success, at least if we take a look at Oracle developer conferences: APEX stream presentations can often be recognized by the line of people arriving early to have a chance of finding empty seats.

For the last decades Oracle Forms has been the mostly used environment for developing complex Oracle database applications. Oracle Forms is still a very powerful environment, sustained by Oracle, but the new Internet era is imposing additional requirements on our applications. This confronts us with the necessity to assess the available technologies and decide the best ones for re-developing some of our legacy applications. And APEX is often one of the first choices if you ask Forms developers, because of the easy transfer of the PL/SQL programming skills and of the low costs this solution promises to offer.

The question is: exactly how good is APEX? Can it sustain the powerful, complex applications that our business needs? This paper is approaching to answer this question in a more general discussion about what does it take to successfully re-develop complex Forms applications with APEX.

What do we want to achieve?

The modernization task is challenging because we want the benefits of both the new and the old systems, APEX and Forms, at once. We want to be able to build complex applications, like we did with Forms, taking advantage of the modern-looking Web interface offered by APEX. Our end users will not accept losing any of the functionalities they were used with the Forms application. Here is a list of the typical targets and corresponding concerns we have met when discussing to our customers:

1. A well performing, modern looking application

To what degree is APEX able to offer us all the means to reach this? Are there limitations that we need to know?

Well, all you need is an experienced APEX developer (or more) and the solutions to any technical challenge should be within reach. But here we need to be aware of the general limitations of Web applications, for instance, the browser memory. Applications running in a simple browser will not have the same resources as applet-based solutions, like the latest versions of Forms. That means we will need to redesign our applications in order to comply with the Web browser requirements.

The same applies for the user interface: a pixel-based GUI, like we had in Forms, is not recommended. Modern Web applications need to be correctly rendered on any browser and screen resolution.

2. Reusing developers skills

Despite the expectations, just knowing PL/SQL is not enough. No complex APEX application can be developed without strong JavaScript and HTML skills. In addition to this, for Forms-to-APEX migration projects, we will need to know very well the Forms architecture, in order to understand the old application inner mechanisms. This is a challenge for most companies also because the knowledge of the old application has been lost over the years and the documentation is insufficient or even inexistent at all.

3. Keeping costs under control

This is definitely a concern; after all, it is one of the reasons we consider choosing a free technology. But, while making some savings with our software licenses, we need to make sure the other costs won't ruin our budget. The re-development process costs, for instance, are strongly influenced by the capability to re-use our investment in the current system.

There are solutions designed to assist the automated Forms-to-APEX redevelopment. Oracle APEX, for instance, comes with its own Forms converter. The use of a converter is useful, because it parses the application and re-creates automatically a portion of the application. Generally, when looking for a conversion solution, we would probably want to pay attention to:

- **Analysis capability:** the degree to which the entire application is taken into account, not only separate FMB modules. Two and a half decades of coding Forms lead to highly complex applications. The investment we have made so far is spread over FMB, MMB, PLL, OLB files, database objects and not only, and our converter should be able to consider all these objects in the migration process.

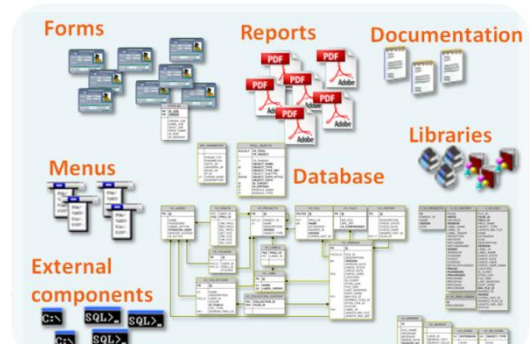


Figure 1: Typical Forms application components

- **Reuse of investment:** The degree to which essential application components, like the business logic, can be reintegrated in the new application.
- **Quality of the end result** – can we easily understand and maintain the produced application? Is it free of proprietary components?

The PITSS.CON Solution

The solution we would like to present in this paper, PITSS.CON, takes into consideration the whole application, offering a step-by-step approach designed to assist the entire road, from the decision

making, training, documentation, conversion process, until the fine-tuning and maintenance of the resulted application.

1. The decision making

Deciding for Forms 11g, APEX, ADF or other technology is a challenging task itself. Here we advise our customers to take into consideration the skills they have now or plan to have in the future in the organization, the application complexity and its integration with external components.



Figure 2: The technology choice

Whether this decision is a clear one or not, defining pilot projects is a recommended starting point. For pilot projects we advise selecting a set of functionally-related modules of medium complexity, used by external clients over the Internet. We can use for this selection process the PITSS.CON APEX and ADF application assessment reports. PITSS.CON is best equipped for such a task, because it offers various migration and upgrade features that can take an application very quickly to a broad spectrum of modern technologies: Forms 11g upgrade, APEX and ADF Assistants, Web services, Application Engineering, Business Logic to database and others.

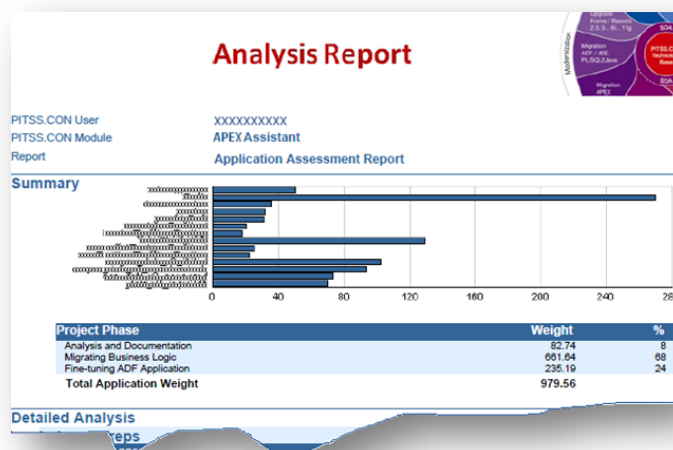


Figure 3: PITSS.CON Application Assessment Report

2. The roadmap

After deciding on the target technology, the planning phase is crucial for the project success. When planning the migration project we need to have in mind the goals set in our previous chapter: we would like to obtain a very good Web application that can be easily managed by our development team, while reusing as much as possible of the investment we have made in our old application.

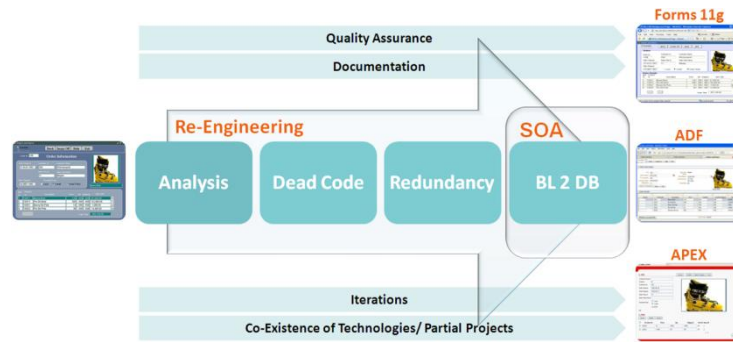


Figure 4: PITSS.CON Migration Roadmap

The process outlined by PITSS.CON is specially designed for this, leading to the creation of a clean, standards-based application, documenting the process, offering excellent training support for the development team and maximizing the components reuse:

2.1. Application Analysis

A good analysis will lay the foundation for a successful migration project. PITSS.CON will load in its Oracle-based repository not only the definition of the Forms modules, but all the application related sources and files, database objects, parsing them and establishing the inter-dependencies. A series of complex reports will help the development team document the process, take informed decisions and gain back the control over the application.

2.2. Reducing Redundancies and Unused Objects

A direct result of the PITSS.CON application analysis is its capacity to identify orphan objects. Deleting these objects will considerably reduce the application complexity; saving conversion efforts and helping us better assess the time budget for the migration efforts.



Figure 5: PITSS.CON Unused Objects Analysis Report

2.3. Migrating the Business Logic to the Database

The Forms code written with PL/SQL will need to be migrated to the database. APEX resides in the database, so it can easily call the migrated code. But moving the code to the database is not an easy task. Often neglected by most migration providers, this aspect is frequently the most difficult part in migration projects from Forms to any other environment. From the experience of working with countless Forms applications, PITSS has developed a dedicated PITSS.CON module, BL Assistant, able to maximize the extraction of the business logic from the Forms applications and migrate it to the Oracle database, while creating an easy to understand and well performing architecture.

2.4. Generating the APEX Application

This should be the core of the paper, but is actually a simple step, if the previous ones have been done properly. PITSS.CON performs this step automatically, within the APEX Assistant module. The result is an application having the most Forms components migrated to APEX. The remaining components that do not have a 1-to-1 correspondent in the APEX world will remain to be re-implemented manually within the next phase, Fine Tuning.

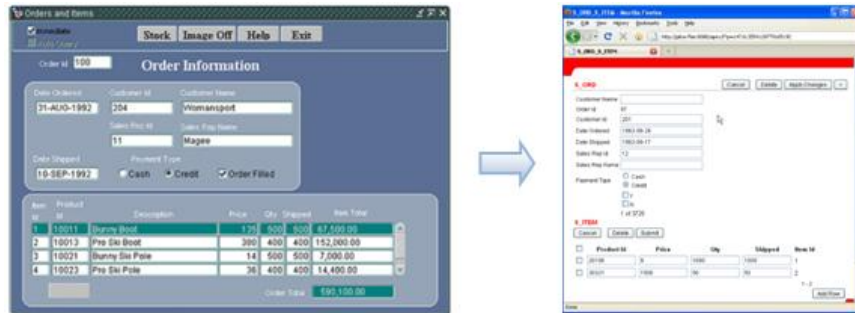


Figure 6: Example of an application automatically migrated with PITSS.CON APEX Assistant

2.5. Fine-Tuning

Although the PITSS.CON products are maximizing the degree of components re-use, there still remain some objects that will need to be re-developed manually. This is because the two environments, Forms and APEX, differ significantly, and there are Forms functionalities that need to be developed

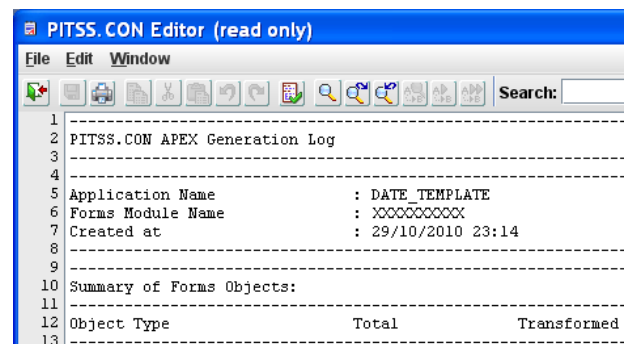


Figure 7: PITSS.CON APEX Generation Log

in a different way in APEX. PITSS.CON is generating a conversion report that details all the steps that we need to take at this step.

2.6. Deploying and Maintaining

This phase measures the real success of a migration project: if the application has been created with a clear architecture, avoiding foreign or proprietary constructs, if the entire process has been properly documented, then the application will be easily maintained. If not, the perspective of maintaining an application that the developers do not understand is posing serious risks for the entire business process that the application is supposed to sustain.

Business Benefits

Let us re-consider now our initial question: “Migrating complex Forms applications to APEX – Utopia or Reality”. We may answer it now: it is definitely a reality that may be closer than you expect.

After detailing the main PITSS.CON products that assist a successful migration to APEX, here are summarized PITSS.CON APEX Assistant main benefits:

- **Easy**, automated migration of Oracle Forms applications to APEX technology
- **Well organized and clean code**: the migrated application code artifacts will be identical to the ones that would be obtained by a manual rewrite, allowing you to easily further develop and maintain the generated application
- **No proprietary components**: the generated APEX application consists of native APEX API calls and can therefore be integrated in an existing APEX installation without importing external components into the system
- **Investment protection**: the PL/SQL business logic that has already been successfully implemented with Forms will be extracted and re-used within the migrated application. The components reuse is also maximized:

Forms Objects	Oracle APEX 3.2 and Forms2XML	PITSS.CON APEX Assistant
Blocks		
■ Table-based	Yes	
■ Control	No	Yes, migrated to Items and Triggers
■ Master-detail	Yes, under special conditions	
Business Logic		
■ Triggers	No	Yes, Business Logic can be migrated to Computation, Validation, Process, Branch or moved to the database.
■ Program Units	No	
Variables		
■ Global Variables	No	Yes, migrated to Page Items
■ Parameters	No	Yes, migrated to Protected Page Items

- **Guidance plus Expert-Services** for a quick and cost-effective migration. The step by step APEX Assistant approach is accompanied by generated documentation and can be supported with professional consulting services to make the migration process simple and successful.

Conclusion

Still not sure which way to go? PITSS.CON has plenty of products designed to assist you in taking the best decision for your Oracle Forms applications. But PITSS support goes beyond this; we also sustain you during the entire process with professional consultancy, training and documentation. Typical recommended first steps on the application modernization road are proof of concept and pilot migration projects. More information on our services offer can be found by contacting our sales team or visiting our Web page.

So call or visit us on Oracle development conferences close to you, register for our free webinars. We are looking forward to analyze your existing application and provide you with an assessment of your situation.

About PITSS

PITSS is the leading supplier of fully integrated solutions for effective management of Oracle Forms applications. The innovative PITSS.CON software helps its customers to analyze, migrate, upgrade and maintain their Oracle Forms applications in its entirety. PITSS thus opens an evolutionary path for the migration of Oracle Forms applications to a Service Oriented Architecture (SOA). PITSS.CON has earned a reputation through its high level of automation and performance. Migration and development projects are run rapidly, economically and reliably within shortest possible time frames. With PITSS.CON, companies achieve an average cost saving of 30% for regular development projects and up to 90% for upgrade projects. PITSS is an Oracle Certified Advantage Partner and has customers in Europe, USA and Asia.



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