



PITSS AMERICA

TROY, MI

[HTTP://PITSS.COM/US](http://pitss.com/us)

**Industry:** Software and Services



DTE ENERGY

DETROIT, MI

[HTTP://WWW.DTEENERGY.COM](http://www.dteenergy.com)

**Industry:** Utilities

**Oracle Products & Services:**

- Oracle JDeveloper / Oracle ADF 11g
- Oracle Forms 11g
- Oracle WebLogic Server
- Oracle HTTP Server

**Credits:**

Gavin Woods, PITSS America

Martin Disterheft, PITSS America

## DTE ENERGY

*“Upgrading to the latest Oracle Forms allowed us to integrate with Oracle ADF which not only improved and optimized our application but additionally provided our customers with an intuitive User-Interface through the use of Oracle ADF Rich Client Components.” Kutumba Rao Hanumolu, MS, PMP - Principal Supervisor – ITS DTE Energy*

### Executive Summary

DTE Energy upgraded their train scheduling system, known as Automated Rail Receipts (ARR) application, from Oracle Forms 6i to 11g, in order to enhance and integrate their application with ADF. Leveraging the ADF calendar component, PITSS was able to design a user-interface that integrates seamlessly with the existing ARR Oracle Forms application running on Fusion Middleware 11g. By enabling end-users to utilize state-of-the-art web functionality, like drag & drop and mobile device accessibility, productivity was significantly increased for their existing business processes.

### The Business Drivers

DTE Energy originally set out to replace an existing calendar system, a Java-based web application with limited functionality for the end-user. PITSS proposed a re-write of the existing calendar application based on ADF technology. Not only because of the many rich user-interface features that ADF provides (drag & drop, filtering, context sensitive menus), but also its capability to seamlessly integrate with the existing Oracle Forms environment and its accessibility capabilities through various Mobile devices.

### Solution

DTE Energy’s integration use cases were to open the ADF application from Forms via automatic authentication and develop deep two-way integration hooks to allow Forms to invoke ADF logic - and visa versa.

Two options could be used to provide automatic/single-sign on functionality: Oracle Access Manager or, in DTE Energy’s case, a Java HTTP Servlet. Forms passed login credentials securely to a Java HTTP Servlet, where the servlet authenticated the login credentials before opening the ADF Calendar. Once the ADF Application has been opened, Forms can call any ADF JavaScript-Client Listener with Forms 11g’s new built-ins “web.javascript\_eval\_expr” and “web.javascript\_eval\_function”.

ADF invokes Forms logic by first executing the 11g Forms Applet’s DOM method, “raiseEvent”. The DOM method executes the forms level trigger “WHEN-CUSTOM-JAVASCRIPT-EVENT”. Whichever Forms module the customer wanted ADF to call into, the “WHEN-CUSTOM-JAVASCRIPT-EVENT” had to be added onto the Form.

To allow the two application windows to successfully communicate via JavaScript, the browser must access both the Forms and ADF Applications on the same hostname, port, and HTTP protocol. The reason is to conform to standard internet browser security rules for JavaScript interaction between two application windows. Because Forms and ADF WebLogic servers will naturally run on a different host and/or port, Oracle HTTP Server (OHS) was used as a reverse proxy server. OHS enabled the applications to run on the same, host, port, and HTTP protocol.

### Project Duration and Next Steps

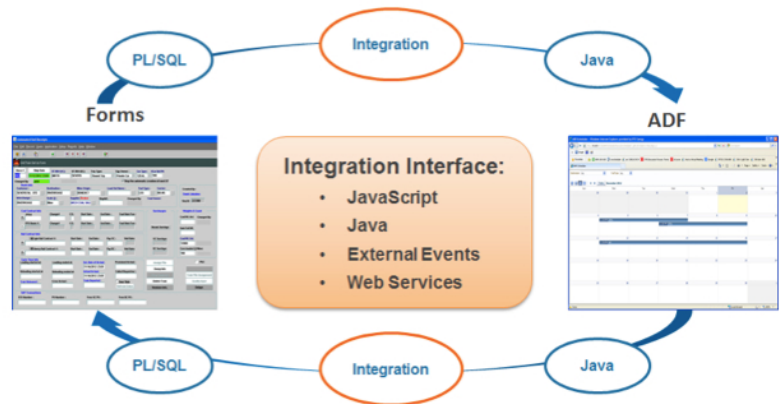
The PITSS ADF project was designed to adhere to DTE Energy’s requirements. PITSS understood the business value DTE Energy was looking to receive from the integrated applications and provided a first version within a few weeks. Afterwards, the application was enhanced, tested, and finalized for production deployment in less than 2 months.

After the DTE Energy business users were introduced to ADF with the integrated Calendar application, they understood the business potential and benefits of an ADF User Interface integrated with Oracle Forms. DTE Energy is now planning further ADF development including ADF Dashboards and ADF Mobile applications.

*“For organizations considering replacing the legacy Oracle Forms technology with ADF, the integrated, and therefore hybrid environment, allows a low risk phased approach to migrate the application to ADF. “*  
*Martin Disterheft – PITSS America*

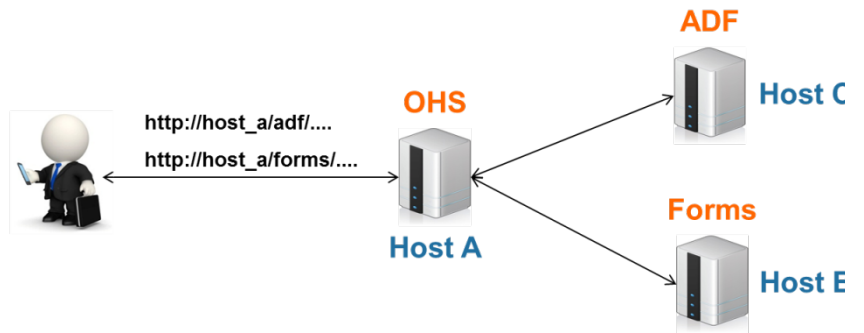
### Application Integration Architecture

The following is an architectural diagram of development technologies used for the Forms and ADF integration. For DTE Energy’s use-case, JavaScript was the technology of choice.



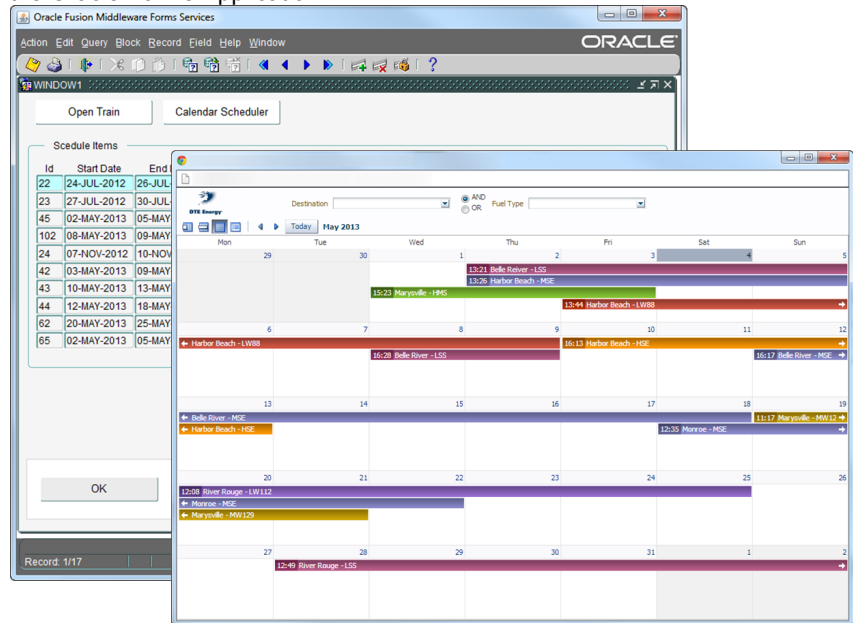
### Hardware/Software Architecture

Oracle Fusion Middleware 11g Platform provided DTE Energy with a complete solution to run the Forms and ADF Integration via JavaScript. The Forms and ADF application servers ran on separate hardware hosts. Due to browser security rules that require ADF and Forms to run on the same host, port, and protocol, OHS was used as a reverse proxy solution to conform to those respective rules. OHS reverse proxy provided the architecture glue to enable Forms and ADF integration.

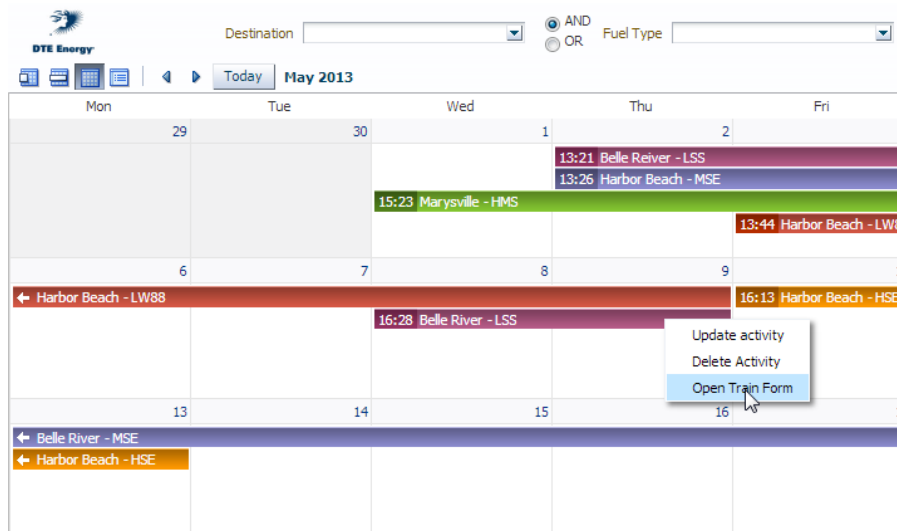


### Application View

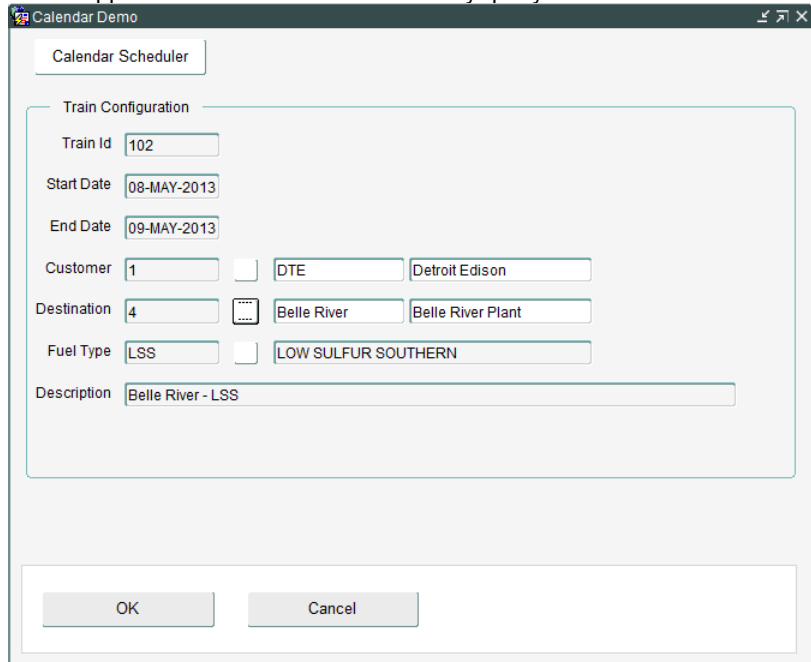
Starting with the top screenshot and onwards, the ADF Calendar is opened from the Oracle Forms Application.



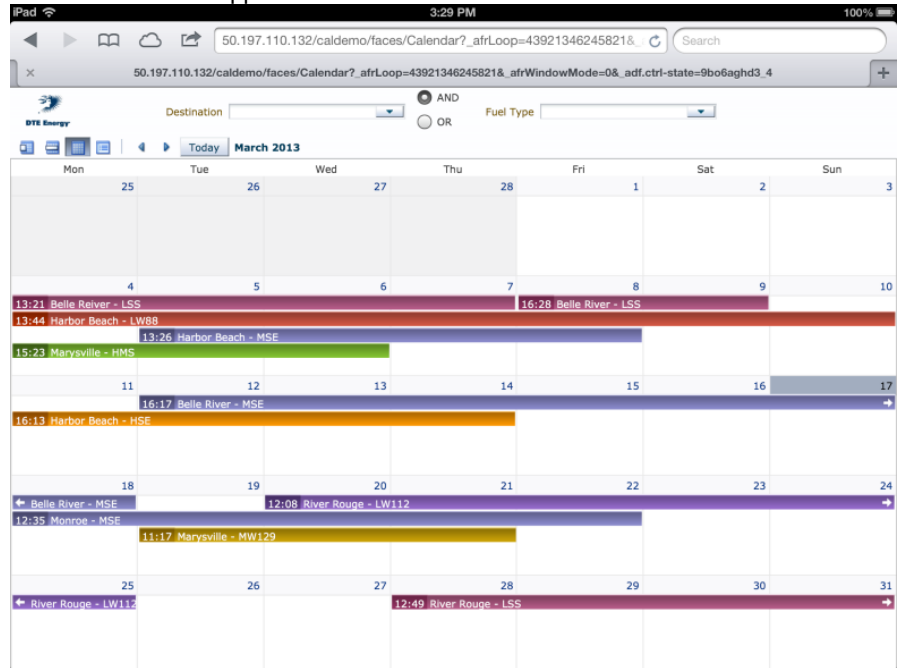
Users can use the rich user interface capabilities such as drag and drop trains between different dates and use context sensitive menus. When the user needs to view details on a specified train in the forms application, the user simply uses an ADF context menu to open the forms application with the train details queried and ready for viewing.



ADF-Forms Integration via JavaScript allows ADF to bring the user back to the Forms application window and automatically query for the selected train:



The ADF Calendar application is also accessible from iPad devices:



**About DTE Energy**

DTE Energy Co. (NYSE: DTE) is a diversified energy company involved in the development and management of energy-related businesses and services nationwide.

**About PITSS America**

With more than 400 customers across all industry sectors and geographies, PITSS has gained an excellent worldwide reputation and is considered an expert in modernizing and/or developing an Oracle Forms or ADF based applications.