

# **Oracle MAF: A WebCenter & MAF based e-Government Portal**

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## **Introduction**

It all started with a one-stop e-Government Gateway using Oracle WebCenter Portal, WebCenter Content, ADF and OSB, all under the version 11.1.1.7. With the focus on delivering high-performance services for the benefit of all residents, companies and visitors of the country, the e-Government Portal was part of the transition to a knowledge-based economy. Having taken this first step, the customer sought to leverage the platform to the next level with a new mobile channel, providing government services and information to end users through mobile devices, anytime and anywhere. The project aims to create a user-centric mobile portal and a hybrid application for iOS and Android with native look and feel, following a multi-channel service delivery approach. This presentation will guide through the architectural decisions, taken to accommodate the customer requirements, which also can prove as a possible solution for other WebCenter Portals. It will be shown how the combination of WebCenter Portal, WebCenter Content, OSB, ADF 12c and MAF brings mobility to an existing portal in order to attract new users and to promote governmental services to the top of e-Government solutions.

## **Why Oracle and why Fusion Middleware?**

For customers around the world it is hard to decide what technology and products to use for their solution. Our customer went through the same torment, but we convinced them to use Oracle Fusion Middleware products for their Desktop Portal solution. This decision turned into a future proof architecture for their business when they introduced the Mobile Portal. The second worry of the customer was that Oracle WebCenter Portal cannot deliver a solution that is fast and that produces a modern user interface. We have shown the customer he was wrong once more. We spend 4 days making a Proof of Concept that changed the customers mind.

Oracle is well known for keeping to the standards, providing products that will always get supported and updated to the latest trends. This made us believe that Oracle is the right choice for our customer.

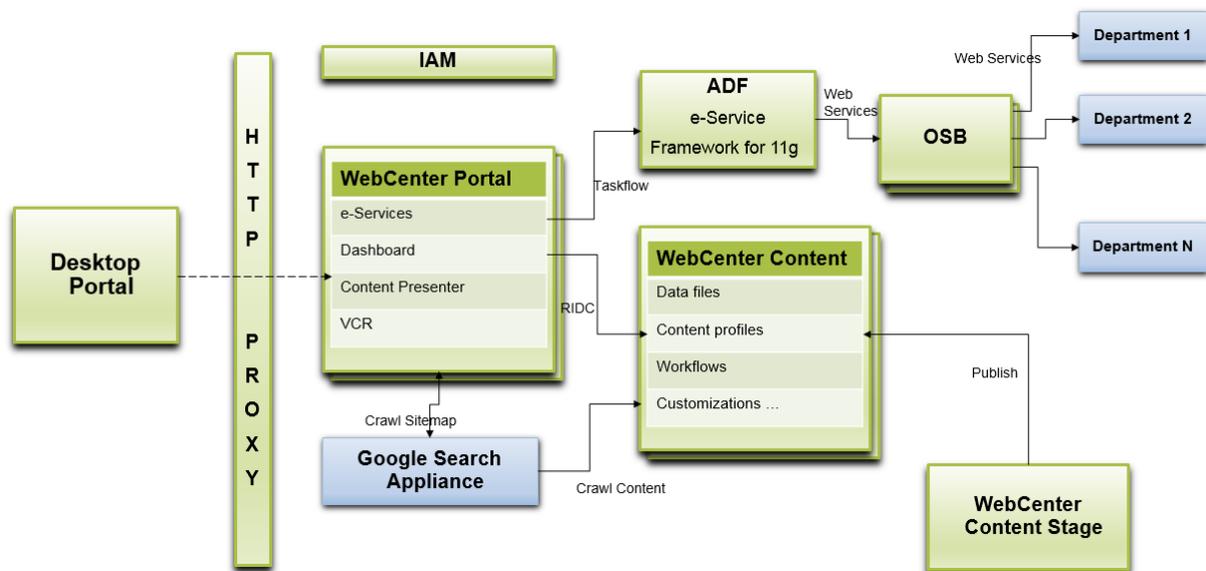
## **It all started with the architecture for the Desktop Portal**

The wish from the customer was to create a platform for future that should serve the citizen and business. The users of the portal should have access, through a modern user interface to e-Government content like Life Events, Service Information, e-Services, Department information, etc. The system should be fast, must have a responsive design and should be in two languages: Arabic and English. The solution should offer to the end users a Personalized Dashboard where they can have access to widgets like: to-do list, calendar, transaction history, prayer time, etc.. Search, e-Service and integration with communities like Google+, Facebook, etc. were also some of the customer requirements.

We decided to use Oracle Fusion Middleware Products to provide a technical solution for all the requirements of the customer, for this we have used the following products:

- WebLogic
- WebCenter Portal
- WebCenter Content
- Oracle Service Bus
- Oracle HTTP Server
- Oracle Identity and Access Management
- Oracle Database

The following picture indicates the high level architecture for the customer Desktop Portal.



*Illustration. 1: The High Level Architecture for the Desktop Portal*

The Oracle Service Bus has been used to connect to Departments services and to proxy them to the ADF e-Service Framework that we developed. The ADF e-Service Framework is supposed to make it easier for the customer to integrate new e-Services into the Desktop Portal.

WebCenter Portal consumes the ADF e-Services taskflows in order to allow end user to execute activities like: Pay the Traffic Fines, Pay Water and Electricity, etc.

The structure and the content, for the portal, was split among WebCenter Portal and WebCenter Content. With the help of Navigation Model we stored the structure of the site in WebCenter Portal. The Navigation Model utilizes generic pages that consume Content Presenter taskflows which are dynamically connected to the content stored in WebCenter Content Data Files.

The search of the platform was realized with a non-Oracle product, Google Search Appliance. Google Search Appliance was configured to index the WebCenter Portal sitemap and content from WebCenter Content.

Identity Access Management was configured to provide a Single Sign Solution for the platform.

The solution has a Stage environment where Editorial Team is editing, validating and accepting the content through some WebCenter Content workflows. Once the content is accepted it is transferred to the Production environment.

### ... and the story continues with the Mobile Portal

The customer desired to aim even higher, with their e-Government platform. They requested to develop a Mobile Portal that will serve the citizens and business in the same way as the Desktop Portal does. By the time the customer decided to go mobile, Oracle had already a solution for mobile: Mobile Application Framework.

The requirement was to reuse as much as possible the infrastructure, the structure and the content from the Desktop Portal. The Mobile Portal must be accessible through mobile browser but also provide a hybrid mobile application. The mobile browser and the hybrid application should have more than 95% of the features in common. The e-Services and Personalized Dashboard should be reshaped for mobile usage. The most important requirement was that the load generated by the Mobile Portal shouldn't affect the Desktop Portal.

The following illustration shows the architecture for the Mobile Portal which reuses most of the components from the Desktop Portal (see the blurred part of the design).

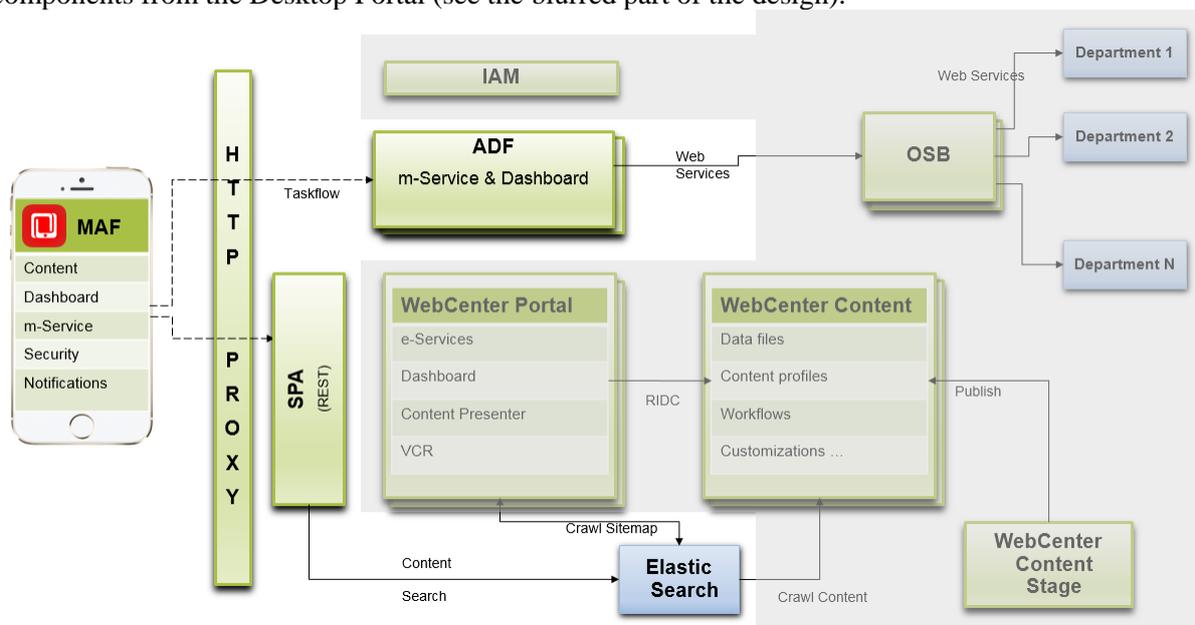


Illustration. 2: The High Level Architecture after introducing the Mobile Portal

For the Desktop Portal we already introduced a number of Oracle Products. To that list we added for the Mobile Portal the following:

- WebLogic 12c
- ADF 12c
- MAF 2.1.3

Additional to the Oracle products we used Elastic Search to cache the content structure from WebCenter Portal and the content Data Files from WebCenter Content. Elastic Search is a search server based on Lucene. It provides a distributed, multitenant-capable full-text search engine with a RESTful web

interface and schema-free JSON documents. Elastic Search is developed in Java and is released as open source under the terms of the Apache License.

Elastic Search was used to take off the extra load from the Desktop Portal, for this to work we developed a WebLogic job that extracts the Data Files from WebCenter Content and stores the content in a JSON format optimized for mobile usage. The content structure, taken from WebCenter Portal, was extracted using WebCenter Portal REST services that read the Navigation Model. The Elastic Search has some intelligence build in that recognize when the content or the structure changes and automatically updates the Elastic Search cache. In this way we reduced the editorial effort to take care on updating another system, they actually just update the Stage environment, after the changes are approved by the workflows it will get published to the Production system. The WebLogic job is listening the Production system for any change and if there are any then Elastic Search is updated. The update requires only few minutes to execute.

The SPA block, from the diagram, refers to Single Page Application. Remember the customer required to have more than 95% of the functionalities in the mobile browser and in the hybrid mobile application. Therefore we had no choice than to use external link features, in the hybrid mobile application, instead of the AMX features. Using SPA allowed us to cache, in the hybrid mobile application, some pages as local HTML features in order to confirm with Apple regulation of having mobile application delivered through their store. With this approach the customers will not have double development time for this kind of uses case.

We used MAF to enrich our hybrid mobile application with notifications, more security options, and access to device hardware. Even though we are not utilizing the full features of MAF at the moment, the customer has a future proof solution that will be used to enrich the solution offered to the end users.

ADF 12c was another key component in our approach, using external links feature for MAF. The new ADF 12c comes with a lot of improvements for speed and for mobile experience, with new components that are beautifully rendered on mobile devices. We reshaped the e-Services and the Personal Dashboard for mobile usage using ADF 12c.

## **Conclusion**

The Oracle Fusion Middleware provides great products that can be used for many customer business requirements. On top of the rich functionality palette, the customer gets future proven products, because Oracle is investing in developing those products. Best examples are provided by MAF and ADF12c, and from what we see the development of Oracle WebCenter Portal is going in a direction that will help customers reduce the development effort for building complex solutions but in the same time getting an even richer list of functionalities.

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