



## GENERAL CONSTRUCTION CO.LTD MAURITIUS

*"From months of frustration due to lack of visibility and to efforts required to climb the learning curve of new complex web based technologies to the discovery of a strong, productive and extremely rich framework backed up by Oracle's own strategy for very large scale ERP development, the GCC development roadmap became much clearer and the future is now looking more and more exciting as we are slowly but surely growing with Oracle ADF and other Fusion Middleware Technologies." Jean-Marc Desvaux, Head of IS – General Construction Co. Ltd*

**Industry:** Building & Civil  
Engineering Contracting

### Oracle Products & Services:

- Oracle JDeveloper/Oracle ADF 11g
- ADF Faces Rich Client
- ADF Task Flows
- ADF Business Components
- Oracle WebLogic 11g
- Oracle Database EE
- Oracle iAS EE
  - Internet Directory
  - Single Sign-On

## GENERAL CONSTRUCTION CO. LTD (GCC)

*"For the traditional forms developers, having to learn Java is synonymous with moving backwards from a 4GL to a 3GL tool. With Oracle's ADF, the Java learning curve is reduced as you work with an intelligent java based framework. As your ADF knowledge rapidly increases, so does your understanding of the Java language." Jean-Marc Desvaux. Head of IS – General Construction Co. Ltd*

### Executive Summary

GCC has been able to rely on Oracle Database & Development tools including Forms/Reports during the last 20 years to build and maintain applications covering most of the enterprise central services which are backing up construction site operations, Logistics, Professional Support & Corporate Service levels. GCC IS chose Oracle ADF (Application Development Framework) as the framework to enable them to leverage new technologies in their ongoing development efforts. Their new ADF application integrates with existing Oracle Forms applications and GCC is able to utilize existing development resources. The move to ADF has allowed GCC IS to rapidly extend their existing applications to construction sites whatever their respective size and location and thus bringing a standard and structured way for sites to deal with the central services with the ultimate objective of improving the overall information ecosystem.

### Organization

General Construction Co. Ltd. (GCC) is one of the leading building and civil engineering companies in Mauritius. Founded in 1958, the company is involved in a range of activities from the design and construction of office and hotel complexes and harbor and airport development facilities to the development of roads, bridges, dry docks, pipelines and reservoirs. General Construction is privately owned by Mauritian shareholders who are dedicated to hiring local laborers and further developing the island.

### The Business Issue

From a 20 years background of continuous development with Oracle Forms, Reports & Database, GCC's IS Departments major challenge was to make the switch to Enterprise Web applications development in order to reach all construction sites and to turn them into active players in their Information System and progressively apply the same new technologies to Core systems.

The main objectives were to protect, integrate and slowly transition the existing environment and choose a development framework on which to build application development foundations for the future.

### Key Challenges

- Choose the right toolkit and infrastructure to build the future on.
- Upgrade the Forms/Reports Developers skills to newer industry standard technologies.
- Build a unified Security model to manage authentication and authorization for both Core applications users and Project-centric applications users.
- Integrate existing Oracle Forms, Reports and new ADF applications.
- Integrate Security with HR data.
- Delegate security of some application modules to line of service managers.

- Forms & Reports

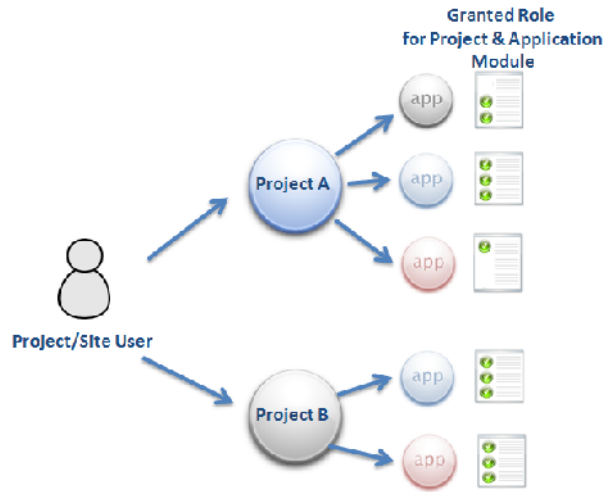
## Related Software

- VNC Versioning system
- Netapp Storage & SMVI
- Vmware ESX
- FusionChart

## Metrics:

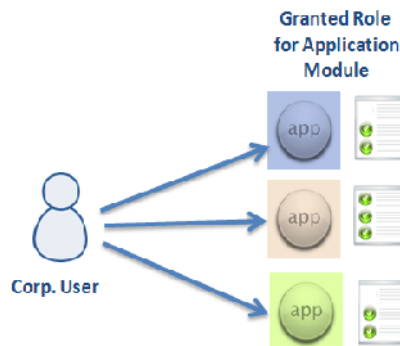
- 100 Concurrent Users

## Project-centric Applications Roles



User is allocated Application Modules Roles per Project.  
Roles can be different across Projects and can change quite frequently as and when HR allocation to Projects is reviewed

## Core Applications Roles



Corp. User in turn is allocated Corp. Application Modules Roles and work on behalf of all sites or of none (ex: Creditors Payments, Cash Book, Equipment Transfers,...)

## Solution

- Adhere to what Oracle does to build Oracle Applications and get the same strong technology roadmap.
- Kick Start the learning process by using a JEE/ADF specialist for two weeks to coach the team and help establish custom base classes to support further development.
- Develop a custom ADF application foundation for efficient reusability using Libraries, Task Flows and Page templates, sitting on top of the custom Security architecture.
- Leverage Oracle infrastructure products to implement a custom Security Model for all custom applications built with Forms, Reports and ADF :
  - Database used to store security data: per Project Application Module roles and privileges
  - Oracle IDM Directory and Single sign-on used for Authorization and Application Module access
  - A Security custom application is used to delegate Security Management to "Security

Managers"; who can be IT Department or a line of service manager.

- Leverage Oracle ADF Security to apply Security at Container and UI levels.

### Project Scale

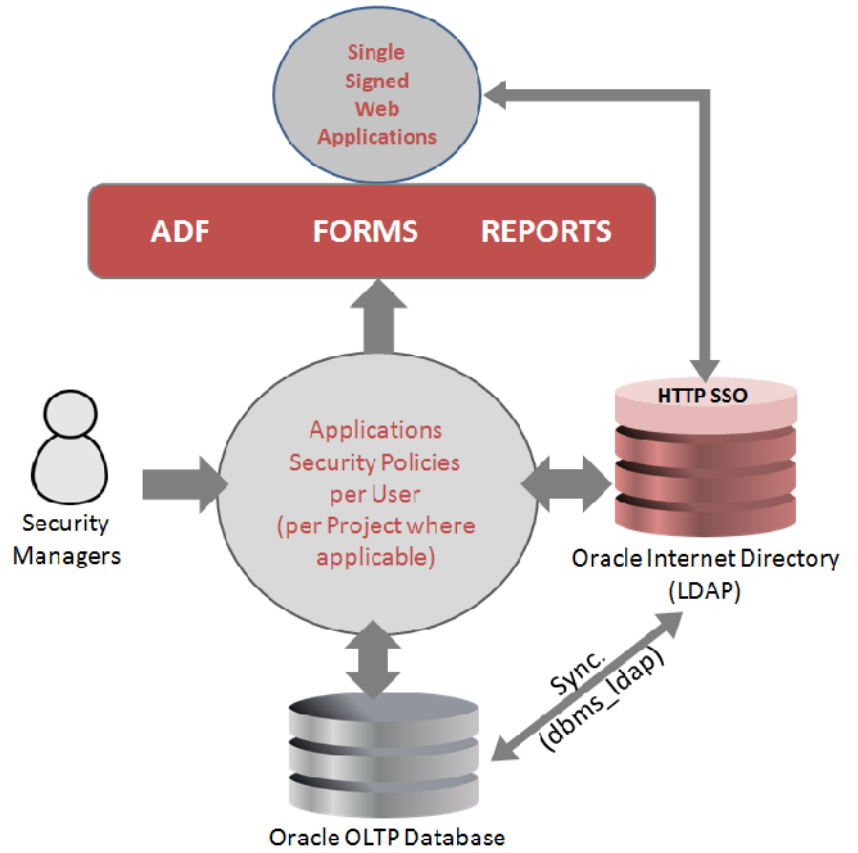
With only 2 developers trained in Oracle's ADF, the GCC IS team was able to develop the first 5 components of a much larger overall Forms integration/migration to ADF EE effort that will eventually span 20 business domains. Thanks to the training by the JEE specialists, the initial ADF10g effort took 4 weeks. It was then reviewed, debugged, and upgraded to ADF 11g with the addition of reusable page templates and Reports related task flows as well as the movement more of code into libraries. This effort took an additional 4 weeks. Project scale details include:

- 3 developers
  - 1 ADF/Forms/Reports
  - 1 ADF/Reports
  - 1 Forms/Reports
- 200 Business Components
- 60 Pages
- 10 Task Flows
- 1500 Forms
- 1500 Reports

### Business Value

- Adaptability and smooth transition to ADF has removed risky alternative technology costs as a whole.
- Once foundations have been well thought out and implemented, the Development process can progress and deliver, thus allowing the business value to be added smoothly as GCC steps into the future.
- Easy provisioning of enterprise users whether at sites, at central service premises or Head Office is done dynamically since security is built as a normal business process.
- Repositioning of GCC's IS Department has lead to a positive outcome and the ability to engage new development opportunities as required.

Software Architecture



**Hardware Architecture**

Network Storage and Virtualization used to consolidate Storage and facilitate backup and recovery. Further details of the deployment platform include:

- Linux RedHat Operating System
- Oracle ADF 11g
- Forms/Reports 10.1.3
- Oracle Infrastructure 10.1.4
- Oracle Webcache & HTTP 11g fronting WLS 10.3.3 connecting to a single Oracle 10gR2 DB EE instance.
- All Middleware machines except for DB are virtualized on VMWare.
- VMs are on Netapp storage. Oracle home & datafiles are on Netapp storage NFS mounts.
- Entire infrastructure is backed up using custom scripts, Netapp Snapshots & Snapmirror plus Snapmanager for Virtual Infrastructure to ease VMs backups.



**Application View**

Project –Centric Application Modules Menu

Here showing the list of authorised application modules on a selected project to the logged on user.

The screenshot displays the 'General Construction Co.Ltd - Web Applications' interface. At the top left is the company logo. To the right, there are links for 'Projects' and 'Logout', and a 'Welcome D...' message. Below this, the selected project is identified as 'T26 - Main Contract'. A grid of application modules is shown, each with an icon and a label:

- Site Mats Procurement (Icon: Blue folder with a blue tray)
- Project Site Communication (Icon: White folder with a yellow pencil)
- Reporting Central (Icon: White folder with a red ribbon)
- Quantity Surveying (Icon: White folder with a calculator)
- HR : Staff 2 (Icon: Yellow diamond warning sign with a person)
- Bulk Materials (Icon: Yellow triangle warning sign with a person carrying a load)
- Configuration (Icon: White folder with a blue and green chart)

## Sample Module Screenshot : Staff Timekeeping

The screenshot displays the 'Time Sheet Summary' interface. At the top, there is a navigation bar with 'Home', 'Clock Data', 'Staff2 TSheet', and 'Reports'. Below this, the 'Daily Summary' section is active. The main area shows a table with the following data:

Man No	Employee Name	Post	WDays (Allocated)	Presence			Abs	No Days (Seconded)	Basic Hrs	OTime Hrs	Grace Time	Details
				Total	Sat & AL	Sun & PH						
F00007	[REDACTED]	FOREMAN	4	5	1			36	6.5			
G00018	[REDACTED]	FOREMAN	4	4				36				
H00010	[REDACTED]	TIMEKEEPER	4	5	1			36	11.5			
J00008	[REDACTED]	TIMEKEEPER	4	4				36				
J00020	[REDACTED]	ASSISTANT G...	4	5	1			36	7			
K00014	[REDACTED]	TIMEKEEPER	4	4				36	1.5			
L00044	[REDACTED]	TIMEKEEPER	4	5	1			36	8.5			
M00008	[REDACTED]	ADMINISTRAT...	4	5	1			36	6.5			
M00058	[REDACTED]	ASST: M&E C...	4	4				36	0.5			
N00016	[REDACTED]	TIMEKEEPER	4	5	1			36	12.5			
P00024	[REDACTED]	FOREMAN	4	4				36				
P00026	[REDACTED]	SURVEYOR	4	4				36				
R00050	[REDACTED]	FOREMAN	4	4				36				
S00037	[REDACTED]	TIMEKEEPER	4	4				36				
S00053	[REDACTED]	FIRST AIDER	4	4				36				
S00055	[REDACTED]	FOREMAN	4	4				36				
S00056	[REDACTED]	FOREMAN	4	4	1		1	27	7			
V00013	[REDACTED]	TIMEKEEPER	4	5	1			36	9.5			

Oracle Reports sample integration via Task flows.

