# Architecting General Ledger for Global Implementation in Sun Microsystems

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### **Company Introduction**

Sun Microsystems Inc., (NASDAQ: JAVA) develops the technologies that power the global marketplace. Guided by a singular vision -- "The Network is the Computer" -- Sun drives network participation through shared innovation, community development and open source leadership. Sun provides a diversity of software, systems, services, and microelectronics that power everything from consumer electronics, to developer tools and the world's most powerful datacenters. Its core brands include the Java technology platform, the Solaris operating system, StorageTek and the UltraSPARC processor. Sun conducts business in more than 100 countries around the globe. Its fiscal year 2007 revenue was USD 13.8 billion.

#### Abstract

As part of Sun's global implementation of Oracle 11i (codename IBIS - Integrated Business Information Solution), the roll out of Oracle General Ledgers global implementation occurred in August 2007 covering 58 legal entities with 140 GL books worldwide. The application was diligently architected with the objectives to transform the company's finance organization into a shared service centric structure, ensure corporate accounting standards where met, while continuing to comply with US corporate GAAP and local country GAAP requirements, and meet a tightly knit global month end close schedule.

The rest of this paper will guide the reader through the various critical aspects of the system design and business solution that accomplished the project objectives.

#### Planning

The implementation at Sun of the IBIS single global instance of Oracle 11i applications is being done over a phased deployment approach. The end state IBIS Oracle 11i solution will be replacing 800+ legacy applications. The full scope of IBIS covers the full financial suite of applications as well as the Oracle modules to cover the business areas of Marketing, Quoting, Ordering, Services, Install Base, Spares Mgmt, Inventory, MFG, Purchasing and Expenses. The Sun IBIS Oracle 11i General Ledger deployment was the first application module to go live in August of 2007 after successfully achieving a 14 month implementation plan. The second deployment of IBIS has also now gone live in January 08 which was the global services business area with Service Contracts, Install Base, and Customers. There are 3 additional IBIS deployments currently being implemented which will meet the end state goal of being on a single global instance of Oracle 11i applications across Sun for most all business activities.

#### **GL Requirements**

The GL module strategy requirements were to implement a global "Big Bang" for the GL within a 14 month time frame. Which meant all countries and sets of books would be implemented all at the same time with a data conversion. The process of gathering the GL business requirements was executed over a 2 month period utilizing the Oracle AIM methodology. Requirements were categorized as Legal/Statutory requirements, Operational requirements and or Excellence or Efficiency requirements. The requirements gathering process went through many

iterations of requirement challenges before a final business requirements list was documented and approved for solution. The high level strategy was to ensure that all solutions would meet US corporate Gaap and local country Gaap rules and regulations, the availability of multi currency, the availability of multi languages, and continued adherence to the span of controls (both operational and financial).

#### **The Legacy Pains**

The legacy environment included many different instances of Oracle in both 10.7 character , 11.0.3, 11i and non-Oracle applications. The corporate books were all in 10.7 character and had many modifications introduced over the years in order to process the consolidation and elimination requirements from the local countries corporate books. Support (both IT and Business), configuration maintenance and overall business understanding of this very complex distributed environment was extremely difficult. In addition to Oracle modules, there were also PC based systems for some of the smaller countries. In order to keep all systems in synch with the corporate books, dual entry of user maintained configurations was required, which included the chart of accounts values, cross validation rules, and calendar maintenance. Example: If a cross validation rule changed in the 10.7 corporate book, the same cross validation rule would have to be updated in each of the Oracle GL distributed environments. Any change to this legacy architecture was almost impossible and upgrading was out of the question.

### **Oracle 11i GL Hidden Treasures**

The Oracle 11i GL vanilla functionality has some great hidden treasures that have flexibility to meet most business accounting requirements.

The chart of accounts is one of those treasures that really has great flexibility. For IBIS the chart of accounts was setup as a 10 segment accounting flexfield. This allowed for flexibility in both accounting and management type reporting. IBIS also was able to utilize the accounting flexfield security rules functionality to support the control around account usage as well as controlling the access to legal companies.

Another great Oracle 11i feature that IBIS took advantage of was the Multiple reporting Currencies. Within the IBIS architecture we have 7 countries that have an MRC architecture. The flexibility and control of using the MRC architecture met business requirements.

The Global Intercompany System within the Oracle 11i GL, was also implemented as a part of IBIS. It is used to transact all intercompany transactions between legal entities. Each legal entity was set up as a GIS org. A total of 10 different transaction types along with the GIS auto accounting functionality helps drive the correct intercompany balancing segments of the intercompany transaction so the user does not have to input the flexfield. This functionality also controls the usage of intercompany accounts. The other plus with GIS is that transactions have to be approved by the sending and receiving GIS orgs before they are interfaced to the GL.

Another driving factor with the designing of the IBIS GL module was the the requirement to automate as many controls as possible. One of the areas we took advantage of was the use of journal approval workflow. The use of this feature allowed for the manual tracking and approval of journals to be brought into the system. Now all manually entered journals are approved per policy and are archived in the system for any historical or audit purposes.

Auto posting within Oracle 11i allows the flexibility to set auto post for one or all journal sources. This feature rhas been great for any boundary system journals that come into the environment. By using auto post there is no need for manual intervention of the system to system journal.

The open GL interface table is the crowning jewel. Without this interface, conversions, boundary system postings, subledger integrations, and spreadsheet uploads would not be possible.

The consolidation and elimination functionality within Oracle 11i provides all the necessary functionality and flexibility to move data between books and eliminate any financial postings as required. Although it took a lot of time to setup, IBIS was able to meet business requirements for both of these areas. The vanilla consolidation process is run once a month between all local countries and the corporate book as well as between Local country corporate books and local country statutory books. The IBIS elimination process is run once a month and includes over 600 unique elimination sets.

IBIS utilizes the Oracle currency translation for all NON-USD denominated local country corporate books and uses the Revaluation functionality to re-measure balances.

### The Building Blocks

### **Design : Multi-Org Foundation**

Sun adopts an 11i multi-org model where it is believed to best fit to its business operations. For each registered Sun company, it has its own individual GL book. For each company where it conducts a full set of business operations (sales, service, corporate functions etc) it has one GL book, one legal entity, one operating unit and one inventory org. The inventory org is used to keep track of spares for service. Other subsidiary entities where it operates a subset of the business activities such as partners and channels management may not require the full set of 11i modules and the multi-org setup. (please refer to the Multi-Gaap Compliance Model section for how the transaction and accounting models are defined). For manufacturing and stocking sites, additional inventory orgs are required. The merits of this model is that it is easier to setup and maintain, system security can be tied to the subsidiary level. Accounting reconciliation can be performed on a book to operating unit subledger level. Refer to diagram1 for the conceptual model.



## Diagram 1 – Sun 11i Multi-Org Foundation Design

### **Design : Multi-GAAP Compliance Models**

As mentioned in the GL requirements section, one of the main objectives is to use vanilla functions as much as possible to solve the complex corporate Gaap and local Gaap requirement. Sun owns over 100 subsidiaries worldwide, and it is essential to determine the appropriate solution for each of the GL book setup, such as it can meet both Gaap requirements. The essential elements of setting up an 11i GL are charts of accounts, calendar, functional currency and the method of consolidating its GL balances to corporate GL book. Sun has classified its type of subsidiaries into 4 main groups and the multi-Gaap compliance models were derived to meet the Gaap requirements. The following sections will go thru each of the models.

**MGCM1** – It is the subsidiary model where the local operation conducts full business activities including purchase of goods for resale, customer accounts, sales and support services where both corporate (US) Gaap and local Gaap use the subsidiary local currency (refer to the section Currency for the determining factor of functional currency). Refer to diagram 2, a primary subsidiary book is to be setup using Sun COA, calendar and local currency. Where needed, a local Gaap book can be created using local Gaap COA and calendar. At month end, GL data are populated from the primary subsidiary book to subsidiary local Gaap book via Oracle consolidation. Also, primary subsidiary book data will be translated to USD using Oracle currency translation, then consolidate into US corporate GL book. The primary GL is associated with the operating unit where fixed assets, payables, receivables... will be implemented.



## Diagram 2 – Sun Multi-Gaap Compliance Model 1

**MGCM2** – This model is similar to the first model except that the subsidiary book should be in USD according to corporate Gaap. The solution is to use Oracle Multi-Reporting Currencies (MRC) functionalities to setup the primary book in local currency as well as in USD reporting currency. Please refer to diagram 3 for the perspective model.



#### **Diagram 3 – Sun Multi-Gaap Compliance Model 2**

**MGCM3** – This model is similar to the first model except that the subsidiary book should be in USD according to both corporate Gaap and local Gaap. There is no need to run Oracle translation prior to consolidating into corporate GL book. Please refer to diagram 4 for the perspective model.



# Diagram 4 – Sun Multi-Gaap Compliance Model 3

**MGCM4** – For some subsidiary entities, there are minimum business activities. In addition, there may be entities that had been recently acquired by Sun, but still are going through the transition to be incorporated. As such, the subsidiary will only require a basic GL book which to comply with corporate Gaap. The subsidiary, if required, relies on local systems (non Oracle) to recordslocal business transaction activities. Please refer to diagram 5 for the perspective model.



## Diagram 5 – Sun Multi-Gaap Compliance Model 4

#### **Design : GL Transition Model**

GL is the first of the IBIS 11i module to go live in deployment 1. Refer to the diagram 6 below, there are many legacy financial applications (the purple and green boxes in the diagram) which continue to exist during the deployment 1 implementation, and will gradually transition over to IBIS 11i in subsequent phases. In total, there are approximately 80 legacy financial applications and 100 interfaces to/from IBIS GL. The transition model design involved the classification of the type of interfaces which are required to/from the IBIS GL, and to develop such interfaces. Basically, here are the main 3 classifications.



## **Diagram 6 – GL Transition Model Design**

Boundary System Journal Interface (In) – This is the journal interface coded in 'GREEN' into IBIS GL where boundary systems are non-Oracle applications, and will continue to stay post IBIS. The interface program had been developed to import these journals into the IBIS gl\_interface table. The characteristics of this interface program are that the core logic is driven by lookup table to allow the use of various sql loader control files to be used, inserting balancing line with pre-defined accounting strings and perform security rule validations. This interface program currently handled 50 different boundary system journal files.

Legacy Oracle Subledger Journal Interface (In) – This is the journal interface coded in 'BLUE' into IBIS GL where legacy journal sources are Oracle applications. Such journals will first be posted into legacy GLs. The interface program had been developed to re-extract the posted journals and re-create the journals in IBIS GL. The merits of such design are that the audit trail and drill back functionality in legacy GLs will remain functional during the transition. It should be noted that the legacy GLs are 'skeleton' GLs which serve as the journal transit point from legacy subledger to IBIS GL, and should not be used as system of records. IBIS GL are the system of records for financial data.

The Extras Interfaces (In/Out) – These are the interfaces coded in 'Orange' mainly used to distribute seed data and reporting data in and out of IBIS such as exchange rates, chart of account segment values, data extract to reporting data warehouse etc.

#### **Design : GL Charts of Accounts**

As mentioned in the Multi-Gaap compliance model section, there will be a single Sun corporate chart of accounts (COA) to be used for all subsidiary books. However, depending on the subsidiary local gaap requirement, local authority may dictate a local statutory COA. The following examples in diagram 7 illustrate that various local gaap COAs had been setup in IBIS GL, and some segments are shared segments used by different COAs.

		Title		Description	
		Accounting	Flexfield		
		CORPORA	TE ACCOUNT FLE>	SUN CORPORATE ACCOU	٩T
Window Prompt	Value Set Displa	SUN_BELG	IUM_ACCOUNTING	Sun Belguim Local Account	ing
Company	SUN_GL_COMPANY	ISUN_CHIN/	A_ACCOUNTING_F	DON"T USE	
Business Unit	SUN_GL_BUSINESS_UNI	SUN_CN_A	CCOUNTING	China Local Accounting Fle	xfi
Department	SUN_GL_DEPARTMENT	SUN_COLC	MBIA_ACCOUNTIN	Colombia Local Accounting	FI
Account	SUN_GL_ACCOUNT	SUN_FREN	ICH_ACCOUNTING	Sun France Local Accounti	ng
SubDetail	SUN_GL_SUBDETAIL	SUN_HUNG	GARY_ACCOUNTIN	Sun Hungary Local Accoun	tin
Intercompany	SUN_GL_INTERCOMPAN	1			
Management Company	SUN_GL_MANAGEMENT_	Window Prompt	Value Set	Displ	
Product	SUN_GL_PRODUCT	Company	SUN_GL_COMP	ANY	
Project	SUN_GL_PROJECT	Business Unit	SUN_GL_BUSIN		
Market Channel	SUN_GL_MARKET_CHAN	Department	SUN_GL_DEPA	RTMENT	
	- <u> </u>	Account	SUN_GL_CO_A	сст	

## **Diagram 7 – GL Charts of Accounts**

In addition, segment values description can be entered in local language to meet local requirement. It is important to note that Oracle consolidation allows parent and subsidiary books to have different COAs, and this enables the subsidiary local Gaap book to source its journals from its parent subsidiary book.

#### **Design : Functional Currency**

Sun Microsystems head office company is registered in US, California, hence its financial processes and accounting practice will need to meet US GAAP. US GAAP FASB52 policy states that an entity's functional currency is generally considered the currency in which cash is generated and expended by the entity. There are also six factors which will affect the determination of functional currency of corporation or its subsidiaries. They are cash flow, sales price, sales market, expense, financing and intercompany transactions. The decision on functional currency will ultimately affect the setup of the book currency in IBIS GL.

If a subsidiary functional currency (determined by above factor) is different than that of the local Gaap requirements, Oracle Multi-Reporting Currencies (MRC) functionality can meet both requirements. The diagram 8 below shows the GL setup screens where user can define the primary and reporting GL books pair under MRC.



Diagram 8 – GL MRC Setup

Oracle currency translation translates functional currency GL balances into nominated currency for reporting and consolidation to parent book. Oracle revaluation re-measures balance accounts (current assets) with foreign currency transactions to its functional currency equivalent in the prevailing period.

## **Design : Calendars**

Sun uses a global fiscal calendar for its corporate and subsidiaries GL. Depending on the subsidiary local Gaap requirement, the subsidiary local Gaap book may require a local statutory calendar which has different fiscal year start and end dates. Oracle consolidation will transfer GL data from subsidiary primary GL to subsidiary local Gaap GL even they are using different calendar. Period 13 is often used in subsidiary local Gaap book for adjustment entries to adjust the primary book accounts into local Gaap accounts.

UN_FISC	AL_	CAL				India Loca	l Bo	ok Fis	cal Calendar with	n an Adjustment Po	eric
un Fiscal	Ca	lendar	(July through Ju	ine)		Qua	rter				
Quar	ter					Year		Num	From	То	Nam
Voar	1	Num	From	То	Namo	2008	1	1	02-APR-2007	04-MAY-2007	01-08
2013	1	1	01-JUL-2012	03-AUG-2012	01-13	2008	1	2	05-MAY-2007	01-JUN-2007	02-08
2013	1	2	04-AUG-2012	31-AUG-2012	02-13	2008	1	3	02-JUN-2007	30-JUN-2007	03-08
2013	1	3	01-SEP-2012	30-SEP-2012	03-13	SUN_LA_F	ISC	AL	1	1	U.
2013	2	4	01-OCT-2012	02-NOV-2012	04-13	Latin Amer	ica	Local B	Book Fiscal Cale	ndar with an Adjus	tn
2013	2	5	03-NOV-2012	30-NOV-2012	05-13	-					
2013	2	6	01-DEC-2012	30-DEC-2012	06-13	Quar	ter				
- I	1		r	N.	-)r	Year		Num	From	То	Name
						2007	1	1	01-JAN-2007	31-JAN-2007	01-07
						2007	1	2	01-FEB-2007	28-FEB-2007	02-07
							and the second second				

<u> Diagram 9 – GL Calendar Setup</u>

### **Design : GL Data Conversion**

IBIS GL went live at the beginning of FY08. In order to meet fiscal reporting requirements, Sun is required to convert prior fiscal year balance (period by period) into the new IBIS GL. This includes both corporate book and all of its subsidiaries books. For subsidiaries local Gaap book, the current fiscal year balances are also needed to be converted at journal details, in case the local Gaap calendar has a fiscal year beginning period other than that of the corporate calendar.

It should be noted that the converted data should include both functional currency as well as each entered currency that the book has transacted. This is essential so that 'foreign currency' balances can be re-created in the IBIS GL, and Oracle revaluation can be executed to re-measure foreign currency balances.

Translated balances are to be recreated in IBIS GL by running Oracle currency translation concurrent program. Historical rates or amounts in the translated currency must be set according to the old GL balances prior to running translation.

Data conversion were done by extracting data from the legacy GL gl\_balances table, and importing to IBIS GL via gl\_interface table.

There were literally thousands of journal batches for the data conversion, and it is essential to have a good reconciliation strategy to reconcile data period by period, currency by currency, and book by book. At Sun, we used a set of sql scripts to select data from legacy and new IBIS GL books, and compared the two sets of data by program codes developed specifically for this reconciliation. In addition, vanilla reports were also used to reconcile random data.

#### **Design : Access Request and Segregation of Duties**

As a US based company, Sun is required to comply with Sarbanes Oxley (SOX) legislations. This includes system access control and segregation of duties (SoD). In IBIS 11i, responsibilities were created to separate transaction activities according to the SoD guideline. Rule sets were created to be used to detect if any user has been given access to a combination of responsibilities that constitutes a violation of SoD. User submits an online access request form (Sun Identity Manager tool) to request access to specific responsibilities. SoD checking will be performed by

the tool and highlight any potential violations. Manager and module gatekeeper are to approve the request. Once approved, user will be granted the request access in IBIS 11i. Sun Identity Manager tool also performs periodic checking for SoD violation, and terminates users who have been inactive for a length of time. The diagram 10 illustrates some examples in IBIS.

acle Versi	on 11.5.10-IBIS					
Job Ro	FINANCE - FIELD FINANCE - REVENUE MGMNT			D	*****	
Geograpi	hy APAC 💙 *			Responsibilities www.www.www.www.		///////
Count	try AUSTRALIA 💌 *			Find % GL %		
	Responsibility name	Oracle Application	F	Responsibility	Application	
	AU AR INQUIRY	RECEIVABLES		AU GL GIS SCHEDULE JOBS	System Administration	
-	AU PRICING INQUIRY	ADVANCED PRICING		AU GL GIS SETUP	General Ledger	
				AU GL INQUIRY	General Ledger	
	AU RPL AR INQUIRY	RECEIVABLES		AU GL JOURNAL	General Ledger	
	AU RPL DISCOVERER RECEIVABLES INTELLIGENCE	REPORT MANAGER		AU GL LOCAL ACCOUNTING	General Ledger	
_				AU GL SCHEDULE JOBS	System Administration	
	AU RPL PRICING INQUIRY	ADVANCED PRICING		AU GL SETUP	General Ledger	
-				ALLOLOCTUDINOLIDY	ConorolLodger	1110

#### **Diagram 10 – Access Request and Separation of Duties**

#### **Design : The Controls**

IBIS 11i provides an opportunity for Sun to standardize and simplify many financial processes and disciplines. These at least include global charts of accounts, journals and intercompany transaction processes, reports etc. Good controls in IBIS GL is essential to enable these objectives. Oracle GL security rules (example shown in diagram 11) and cross validation rules have been implemented extensively to ensure that users can only do the 'right' thing in the system such as entering and creating the allowable account strings and journals in each specific book. Manual posting is not allowed for control accounts where system journals should come from the appropriate subledgers.

	Independe	ent Segment	Account		Dependent Seg	
	indepe		1		Value Desci	
ecurity Rules						
Name	Descrip	otion		Message		
FA BS Acct	Restric	ted access	to FA BS accounts	FA BS Acct: You can not u		
Interco Acct	Restric	ted access	to Interco accounts	Interco Acct:	ct: You can not u	
Spares Acct	Restric	ted access	to Spares accounts	Spares Acct:	You can not us	
ecurity Rule E	lements			100		
Туре		From			То	
	*	000			ZZZ	
Include					206	
Include Exclude	÷	205			206	
Include Exclude Exclude		205 208			206 212	

#### **Diagram 11 – GL Security Rules**

As a result, standard FSG report components (row sets, column sets etc.) can be created and re-usable in predefined FSG reports (example list of reports shown in diagram 12). This allows Sun to reduce the need for 1200 + FSG reports in the legacy to only 250 IBIS FSG reports, and more importantly, the quality of the reports have improved significantly. Both FSG reports and their components are centrally maintained by a specialized team. A few generic row sets and column sets were made available for users that have a need to create 'ad hoc' FSG reports.



**Diagram 12 – FSG reports** 

### **Design : The Journal Entry**

As highlighted in the previous section about the GL transition model design, it is crucial to develop a flexible and robust journal import interface program. A new concurrent program for such interface was developed which is highly configurable. It allows new sql loader control file sto be added via fnd lookup table for new journal interface files, and the facility to add a balancing line with pre-defined account string for each interface file where needed (see example in diagram 13 below). So, system implementer doesn't need to make a sacrifice choice of whether to switch on or off suspend accounting in GL setup.

	Type Axoon_or_o	OOK_CONTROL_FIL	-6		-			
Me	aning Control File na	ames			Type	XXSUN_GL_JOUR_BALANCING_CC		
Applic	ation XXSun Custo	m Application		Meaning		Balancing line combination		
Descri	ption Control File na	ames for GL Unpost	Application		XXSun Custom Application			
				Description Balancing line			combinations for Unpo	
ACCERCOL	ACCERECI	annonaline atl	00001-104	Code	Mean	nina	Description	
ACCESSGL	ACCESSGL	accessline.ctl	90001:10	Code ACCESSGL	Mean	ning ESSGL	Description	
ACCESSGL ACCTACALL	ACCESSGL ACCTACALL	accessline.ctl acctacall.ctl	90001:10	Code ACCESSGL AMEXPCARE	Mean ACCE	ning ESSGL KPCARD	Description 110-110-0001-173-095 110-110-0001-173-098	
ACCESSGL ACCTACALL AMEXPCARD AREXTRACT	ACCESSGL ACCTACALL AMEXPCARD AREXTRACT 11IGL	accessline.ctl acctacall.ctl amex.ctl erp_glext.ctl	90001:10 90002:10 90003	Code ACCESSGL AMEXPCARE AREXTRACT	Mean ACCE AMEX	ting ESSGL KPCARD KTRACT_11IGL	Description 110-110-0001-173-095 110-110-0001-173-098	
ACCESSGL ACCTACALL AMEXPCARD AREXTRACT AUDIOGL	ACCESSGL ACCTACALL AMEXPCARD AREXTRACT_111GL AUDIOGL	accessline.ctl acctacall.ctl amex.ctl erp_glext.ctl audio.ctl	90001:10 90002:10 90003 90004:10	Code ACCESSGL AMEXPCARD AREXTRACT AUDIOGL	Mean ACCE AMEX AREX AUDI	ing ESSGL KPCARD KTRACT_11IGL OGL	Description 110-110-0001-173-096 110-110-0001-173-096 110-110-0001-173-096	
ACCESSGL ACCTACALL AMEXPCARD AREXTRACT AUDIOGL AUTOGL	ACCESSGL ACCTACALL AMEXPCARD AREXTRACT_11IGL AUDIOGL AUTOGL	accessline.ctl acctacall.ctl amex.ctl erp_glext.ctl audio.ctl autoattend.ctl	90001:10 90002:10 90003 90004:10 90005:10	Code ACCESSGL AMEXPCARE AREXTRACT AUDIOGL AUTOGL	Mean ACCE AMEX AREX AUDI AUTO	ning ESSGL KPCARD KTRACT_11IGL OGL	Description 110-110-0001-173-094 110-110-0001-173-094 110-110-0001-173-094 110-110-0001-173-094	

#### Diagram 13 – Custom Journal Interface Program Setup

Manual journals where they are not originated from subledger systems may require approval. Corporate policy dictates that manual journals with lines below the pre-defined corporate threshold amount doesn't require approval.

However, journal with lines above such amount will require approval. The approval hierarchy goes up according to the authorization limit of the approvers.

All intercompany journals must be originated from 11i GL global intercompany module (GIS). That means, both sender and receiver must approve the transactions before journals will be created in the respective GL books. This is to ensure that intercompany accounts are balanced at anytime.

In general, AutoPost is running for all journal sources and categories in IBIS GL. The job is scheduled to run every 30 mins. It is important to note that the default priority of the 'Posting' concurrent job should be increased so that the hundreds of posting jobs can be cleared in between each cycle. 'Posting' job is incompatible with many other concurrent jobs, hence, it warrants a higher priority to streamline the execution of GL concurrent jobs. The priority can be set in the Define Concurrent Program form, or can be achieved using specialized concurrent queue.

#### **Design : The Extras**

**Languages :** It is often heard that Oracle 11i supports multi-languages. There is a lot of talk and metalink documents referring to this feature, but they are very technical for end users to understand. As a result, most companies simply stick with 'English.

In plain words, Oracle 11i has the full multi-languages capability. When the database is created and if it is set to be UTF8, immediately, user can enter data in any language in any application form and will be stored in the database as UTF8 data. When user submits any report, the report will retrieve the data as it was entered.

If 11i language packs are installed, form and report boilerplates will be displayed in such languages, and also, for selected data fields such as payment terms etc. (about 8,000 data fields in 11i), Oracle allows users to type the data in each of the installed languages, and the appropriate data will be retrieved by forms and reports in the language the user preference is set. However, it is worthwhile to note that the more language packs that are installed, the longer it will take to upgrade or apply 11i maintenance patches to your system. Company can decide which language pack (one pack, one language support) to be installed.

The diagram 14 shows an example of an Japanese report utilizing the Japanese language pack.

通貨: JPY 残高タイプ: 実績		
Company: 645	Japan	
会計フレックスフィールド		摘要
ソース カテゴリ 名称	摘要	
645-431-0001-116-9984-999- 02-08 02-08	645-9999-99999999	-99

#### Diagram 14 – Japanese reports from Japanese language pack

**Workflow inquiry** : workflows are used extensively throughout the 11i implementation. Oracle provides user friendly tool for user or administrator to view workflow status of particular transactions, either in inquiry mode or update mode. This status monitoring tool is helpful for users to track their transaction status such as who the approver is, what is causing the delay, who received notifications etc. Diagram 15 below shows an example of the workflow status monitor tool. In order to give access to user, system administrator will need to include the tool in the appropriate responsibility.



Diagram 15 – 11i Workflow Status Monitor

**Exchange rate :** As a global implementation, many Oracle 11i modules rely on exchange rate defined in GL. Exchange rates need to be readily available, otherwise, foreign currency transactions may fail. Sun conducts business in over 100 countries, hence, a complete set of exchange rates are essential for the prevailing month. In addition, each country may transact in multiple currencies, exchange rates must cover all the possible permutations. Sun had developed an extension which is based on Oracle provided API to populate exchange rates (daily and period end rates) in the GL, based on an exchange rate input file. In addition, daily cross rates are also yielded (generate the complete permutation of exchange rate from one currency to all other currencies). Diagram 16 shows the examples of daily cross rates.

From	То	Date	Type	AED To BRL
AED	- BRL	31-JUL-2007	Spot	.5231632111
AED	BWP	31-JUL-2007	Spot	.0438896225
AED	CAD	31-JUL-2007	Spot	.2890883102
AED	CHF	31-JUL-2007	Spot	.3346175313
AED	CLP	31-JUL-2007	Spot	143.6223956873
AED	CNY	31-JUL-2007	Spot	2.0740841581
AED	COP	31-JUL-2007	Spot	536.1504009148
AED	CVE	31-JUL-2007	Spot	22.292742693

Diagram	16 -	11i	Daily	Exchange	Rate
Diagram	10 -	111	Dany	Exchange	Mail

**Month end restricted access :** For financial month end close, it is often required that general users should be barred from 11i access to certain responsibilities that could interfere with the month end close process. For example, accountants who have journal posting access should not be transacting during the period when the consolidation team is finalizing the books financial data. Because of the the large span of application responsibility access matrices, an extension was developed such as targeted users can be selected and barred from access ing those responsibilities by end dating their fnd\_user\_responsibility rows temporarily. Once the month end closing is complete, the users access will be restored. Diagram 17 shows the ability of the extension to select users based on geo, modules or specific users.

sea the second se	1	2.4 2.4	rescription	ANSON GL FEI	iou cius	e Geo miciusic	A1	
Parameters		Parameters 2000000000000						
Language	America							
		Period Close Geo	Meanii	ng	Descrip	tion	Tag	٩.
			Sun G	ermany	00		EMEA	4
		Period Close Module	Sun U	nited Kingdom	OU		EMEA	
		Responsibility	IN_US	GAAP_INR	GL		ASIA_S	c
Times			US_US	GAAP_USD	GL		US	7
	An Coor	User	IN_MR	C_USD	GL_MR	с	ASIA_S	c
un me Job	AS 3001	Lockout or Restore	AR_MF	RC_USD	GL_MR	с	US	
		Report or Update UPDAT	IO_IN_	USGAAP_INR	10		ASIA_S	Cag
mpletion			SELEC	T ALL OTHER			ALL_PE	FP
			88-Sur	New Zealand	ou		NZ_DU	мО
			AU_US	GAAP_AUD	GL		ASIA_S	CIS
				SELECT ALL	OTHER			ALL
				%GL%		General Ledge	er	GL
			1	%AR%		Receivables		AR
				W PPO IECTO	0/	Drojecto		DA

# **Diagram 17 – Month End Restricted Access Extension**

#### **Design : Month End Close**

The month end starts with all subledger journals transferred and posted to subsidiary GL books. Central accounting team will then prepare subsidiaries balances including intercompany, cash, revenue, accrual, reserve etc. Once the subsidiary GL data is finalized, Oracle consolidation workbench (see diagram 18) is run to transfer subsidiary GL data to corporate GL book, and if appropriate, subsidiary local Gaap books.

😐 Carronidaeox Vointerrata (N			_	_	17X			2 77 ×
Preparation/Transfer Parent AU Parent Period 02 20 Post Subsidii	Elimination I_USGAAP_AUD 08 Consolidation Data Mapping Balance Type	(855_AU) AU_USGAAP_AUD to Actual	US_USC	Method Currency	Balances	STX Tra	Mappin Mapping Instation 1 Transfer Transfer	g Seit Status
Sub:	Usage sidiary Set of Books	AU_USGAAP_AUD	Pa	rent Set of Books Budget	US_USGAAP_USD	R	eview Jou	imal
Mapping BR MRC LISD	to US-US			Standard Period Average Period		-	imination	Ser
BV3_USGAAP_ CL_MRC_USD CNCON_USGA	GBP to US to US_US AP_CNY ti	S_USGAAP_U GAAP_USD ₀ US_USGAA	ISD IP_USD	Bun Options	Trapsfer		Elimingt	10 1
CNPRO_USIA	Segment Rule	s (AT_USGAAP_	EUR to US_US	GAAP_USD) -	US_USGAAP_U	ISD < 532	2_AT 3	
CY_USGAAF	Parent: US_USGA	AP_USD			Action			Subsidiary: AT_USGAAP_EUR
	Intercomp	any	Copy Valu	e From			-	Intercompany
EG USGAAF	Manageme	ent Company	Copy Valu	le From			- 1	Management Compan
	Product		Copy Valu	le From			-	Product
	Project		Copy Valu	le From			-	Project
1	Market Ch	annel	Copy Valu	le From			-	Market Channel

## **Diagram 18 – Oracle Consolidation Workbench - Consolidation**

Corporate finance consolidation will then perform intercompany elimination using Oracle consolidation workbench (see diagram 19). An elimination set is setup for each company and account where elimination is required. The elimination journal will be generated by the system and will be posted by the consolidation team. Final reconciliation of the consolidated corporate GL book is performed with the assistance of a pre-defined set of FSG reports.

No. of the second	ration inanster	J Elimination	n L	_	2.44	_		-		Mapping	
	Parent	US_USGAAP_U	USD			Overall Status	Not Generated			Mapping Set	
1000	Parent Period 06-08				Confirm				mapping out		
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Post											
1	Elimination Se	ł		Elimination	Company	Status	Date Last Run	Rŧ		Transfer	
	CONB3 JAPA	N ACC760 INT	CONSUMPT	921		Not Genera	ated	-			-
	CONB3 JAPA	IB3 JAPAN ACC787 INT CONSUMP1 921			Not Generated				Transfer Set		
	CONB3 JAPA	N ACC791P	CONGI IME	021		Not Conors	stad	Elimination Sot	-		
	CONB3 JAPA	N ACC791S								Elimination Ser	
	CONB4 APAC	C-INTAM-LCC	Elin	nination Set	CONB3 JA	PAN ACC760 I	NT CONSUM		F	Eliminate	
	CONB4 APAC	C-INTAM-LCC		Description	CONB3 JA	PAN INT CONS	SUMPT ELIM		Linningro		
	CONB4 APAC	C-INTAM-LCC	Eliminatio	n Company	921 Corporate Eliminations					Review Journal	
	CONB4 APAC	C-INTAM-LCC				ion Accounts (US	USGAAP USD) - CONB3	JAPAN ACCT	60 INT C	ONSUMPT ELIM	anana.
	[1]	_	Ef	fective Date	s Elin	ination Entry	CONB3 JAPAN INT COL		IM	Currency LIS	D.
_	_									Currency UC	

### **Diagram 19 – Oracle Consolidation Workbench - Elimination**

#### **Shared Services**

Owning to the single global instance approach, the IBIS GL project had been the enabler to migrate Sun finance teams into shared service centric communities. The global accounting team is the gatekeeper for all the subsidiaries GL books. They perform, validate, approve and post journal transactions to the GL. In addition, they perform corporate finance functions including maintaining intercompany accounts, treasury and tax functions. The finance consolidation team, as mentioned in the month end close section, is responsible to consolidate and produce the final corporate financial data as well as preparing financial statements and external reports. The finance application management team is a specially trained system team who maintains and updates the systems seed data such as COA values, cross validation rules, security rules etc. They also resolve any accounting issue in the system and advise the finance users the appropriate resolution steps. During month end, they act as the custodian of system access, open/close GL periods and finalise all boundary systems journals transferred and posted in the GL. IT support team resolves any system technical issues.

#### Conclusion

As demonstrated in this paper, one would learn for a large scale Oracle 11i implementation, it is essential to set the objectives of the project upfront, clearly define the requirements, understand thoroughly all aspects of standard Oracle 11i functionalities, and design the solution that meets the requirements. Sun chose to rely critically on vanilla 11i features in lieu of perfection, and apart from the few basic interfaces and extensions, the entire company is now performing its accounting functions in a single global Oracle 11i instance. Hopefully, this is a good reference for other companies who wish to implement Oracle GL with minimum costs and high return.

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