



**Excel Reserves and Treasury
Portfolio System (REAPS)
志鴻金穗司庫管理系統**



Excel
TECHNOLOGY

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REAPS is a multi-tiered and fully integrated front-middle-back office treasury system that provides full coverage of capital markets and derivatives instruments as well as comprehensive credit risk and market risk control. **REAPS** provides a revaluation and analytics platform to manage the banks and monetary authorities reserve funds and treasury products in today's complex trading environment. **REAPS** was implemented in a monetary authority as well as a commercial banking in Hong Kong and China and is fully operational in both English and simplified Chinese for international and the China markets.



The Excel **REAPS** offers:

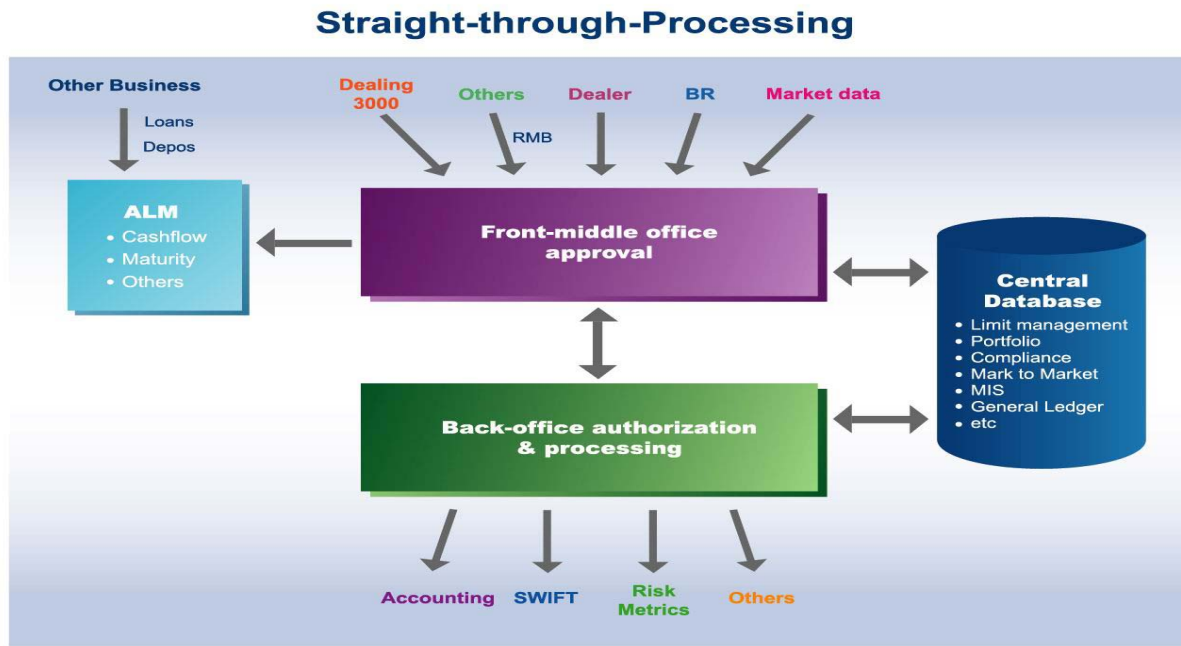
- ❑ Broad coverage of treasury products, including derivatives and structured products
- ❑ Integrated seamless, pre-deal checking, dealing, compliance, risk management, and settlement process of the treasury function
- ❑ Enhanced operational efficiency
- ❑ Comprehensive risk and compliance control for credit risk, market risk, operation risk, settlement risk, and counter-party risk
- ❑ Flexible reporting and GL structure



REAPS: Designed by the Bankers for the Bankers

REAPS provides proven front-middle-back office straight-through-processing capability to enable financial organizations to effectively manage the mission critical Treasury business by providing breadth of product coverage and depth of instrument processing. The system is being used to manage portfolios as large as exceeding US\$120 billion.

The Excel **REAPS** is the result of an in-depth understanding of business processes and customers' expectations of treasury products and represents the investment of several hundred man-years. The system, taking advantage of its multi-tiered architecture, provides ease of deployment to support the organizations' changing business models, while minimizing the overall cost of ownership.



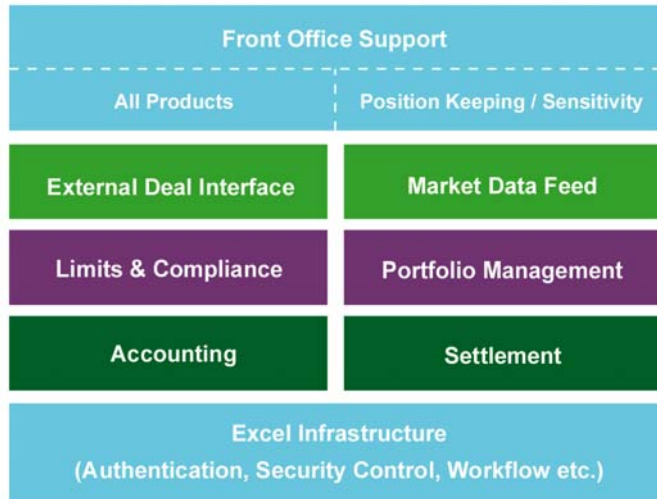
Benefits to Financial Organizations

1. **REAPS** provides a fully integrated end-to-end straight-through solution.
2. The system covers a broad range of Treasury products, including derivatives and structured products. New instruments can be easily configured and added to the system.
3. For the front-office, the system provides an easy-to-use front office dealer platform, which offers real time deal entry, position keeping, sensitivity analysis, and trading position simulation tools to facilitate the trading activities.
4. For the middle-office, the system provides comprehensive counter-party limit control (from pre-settlement, settlement, to issuer), market risk limits control, and trading activities control while enabling stringent compliance checking on the portfolios traded.
5. For the back-office, the system provides full transaction processing covering from deal authorization, confirmation, settlement, accounting, through to revaluation and comprehensive management reporting.

With the 3-tier architecture, **REAPS** can be deployed easily to support the organization's business model; e.g. centralized treasury, with optional branch front-end support.

Functional Overview

The Excel **REAPS** is developed in a modular structure such that future addition of new products and changes on currently defined products can be implemented easily. At a high level, **REAPS** addresses the following main areas:



External Deal Interface

REAPS provides external deal interface that enables deal information from external sources such as front end dealing systems, or other sources of transactions can be integrated into the system via flexible user-defined mapping mechanism

Product Coverage

REAPS supports all typical treasury products traded in the marketplace, including derivatives and structured products, as follows. New instruments can be easily configured and added to the system.

Products	Categories	Coverage
Fixed Income	International	Bonds (Fixed/Floating/Zero Coupon), Discount Bills, MBS, Repo, Reverse Repo,
	Chinese	Bonds (Fixed/Floating/Zero Coupon), Repo, Reverse Repo, Buy/Sell Back, Underwriting & Distribution of Bonds
Money Market	Fixed & Floating	Any
FX	Spot, Forward & Swap	Any
Cash	Interest-bearing accounts	Nostro, Vostro
Derivatives	Interest related	IRS, CIRS, FRA
	Exchange Traded Futures	Bond, Index, FX & Interest Rate
	Exchange Traded Options	Bond, Index & FX
	OTC Options	Bond, Index, FX, Interest Rate & Swaption
Structured Notes	Index Linked Note	Consumer Price, Core Inflation, Average Wage
	Credit Linked Note	CLN
	Interest Rate / Exchange Rate Linked Note	Range Accrual & Step-Up Cap

▪ Market Data Feed

The market data feed function enables a wide range of market information to be captured automatically into **REAPS** to ensure timeliness and accuracy of the data. The market data feed function currently covers the following:

Market Data Type	Reuters	Bloomberg	Telerate	Other Source	Manual Maintenance
FX Spot Rate	√		√		√
FX Forward Rate	√		√		√
Security Market Price	√	√	√	√	√
Reference Rate & Yield Curve	√	√	√		√
Debt Security Market Data					√
Index Ratio					√
Floating Interest Rate					√
Exchange Traded Futures Price		√			√
Exchange Traded Options Price		√			√
OTC Options Price					√
Issuer Credit Rating		√			√
Troy Oz and Grames					√
SWIFT BIC				√	√

▪ Limits and Compliance

REAPS provides comprehensive counter-party limit control (from pre-settlement, settlement, to issuer), market risk limits control, and trading activities control while enabling stringent compliance checking on the portfolios traded. Limits can be applied to the respective tier of the hierarchical portfolio structure, or to the respective slice of positions which are user-definable by multiple dimensions, such as limit groups, limit types, by instrument, by country, by counter-party, and etc.

Credit Risk	Market Risk	Trading Control	Compliance Checking
Counter-party Limit -pre-Settlement -Settlement	Position Limits by Product	Dealer Position Limits	Currency Allocation
Issuer Limit	Tenor Limits by Product	Dealer Trading Limits	Asset Allocation
Issuer Concentration	Issue Concentration	Stop Loss Limit	Asset Recall
Country Limit		Payment Limit	Remaining Life
			Wholesale Borrowing Limit

▪ Head-Office Branch Transaction Platform

The add-on Head-Office Branch transaction platform provides the branches deal capture function and pricing information enquiry functions, thereby facilitating the timely roll out of treasury products to the extensive branch network.

▪ System Integration

The open design of **REAPS** ensures ease of system interfaces, facilitating the integration with a variety of internal and external systems, such as:

Area	Functional Area	Interface with
Front Office	Market Data	Reuters, Bloomberg & Telerate
	Dealing Systems	Dealing 3000, Bloomberg Trading
	Pricing Engine	Widely used analytics & pricing engines
Middle Office	Market Risk & VaR	Risk Metrics Risk Manager
Back Office	Settlement	SWIFT via SWIFT Alliance
	Confirmation Matching	Citynetworks TRAM
	Nostro Reconciliation	Citynetworks Autorecs
Management	Asset Liability Management	IPS Sendero
	Performance Attribution	Wilshire Axiom

Other Components

Security Control

Standard user ID, password and audit controls are available to ensure only authorized persons have the right level of access to the system, with maker and checker feature. On top of this, security access can be further restricted by specifying the data entitlement rights for the respective end users. All the actions and the details of the changes performed by the users in the system are logged in the audit trail.

Workflow Based

The processing workflow of each product is defined with the use of the Excel Workflow Engine via graphical user interface, to map business operation workflow onto the respective processing logic, to facilitate adapting to the constant evolution of treasury products and to on-going changes in business requirements.

System Architecture

REAPS is developed using the latest and proven 3-tiered architecture.

