





CENTRAL BANKING SOLUTION

Designed for Complexity Reduction

Digital. Real Time Risk Management. Role Aware



### WHAT IS BOTHERING CENTRAL BANKS?

In a fast paced economy that is impacted by local and global events, Central Banks are facing increasing pressures as custodians of the financial health of their countries. We are seeing a few common challenges that technology needs to resolve, be it much faster implementation of economic and monetary policies, real time monitoring and mitigation of risks, an integrated view of operations or significantly lower processing costs.

Recent episodes of market stress, ongoing changes in the financial markets and the broader financial system have highlighted the need for prudent risk management. Central banks are periodically reviewing collateral policies that have a direct bearing on monetary policy implementation. This has prompted the need for integrated collateral management and liquidity settlement systems with high level of automation and advanced risk management features.

On the other hand, developing countries have started focusing heavily on financial inclusion as connecting the unbanked and under-served population into main stream banking is critical to the growth of any economy. This initiative is driven through various direct benefit schemes to the public, and is becoming an integral part of the Central Bank's agenda in these countries.

From a day-to-day functioning standpoint, any Central Bank's monetary function needs clear objectives, flexible choice of instruments, timely intervention, and liquid and stable markets to achieve its monetary management and macro-economic objectives.

All this calls for state-of-the-art IT infrastructure that provides smooth operations, zero downtimes and cover the following:

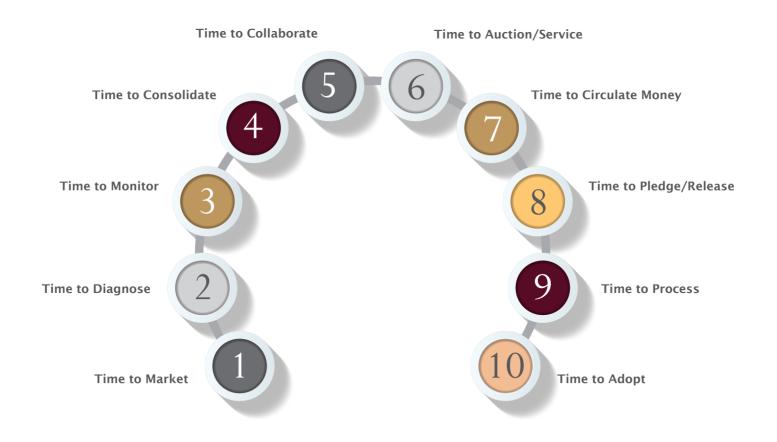
- Accurate and timely financial institution balances, collateral, credit, liquidity and performance tracking through a 360 dashboard view
- · Flexibility to adapt to new policies and instruments
- Balance the risk through a well-diversified and controlled collateral portfolio spread across multiple countries
- Provide transparency and accountability for central bank operations, banking clients, financial infrastructure and governments
- Have an integrated view of position and settlement operations with payment systems, CSDs and ICSDs, and foreign central bank correspondents
- · On demand and periodic financial statements and reports
- Automated and manual interventions to anticipate and resolve exceptions scenarios
- · Integrated risk visualization and analytics

Timely exception and problem identification and actions for immediate intervention are the key to smooth financial operations. Anticipation, prevention, management and resolution of market and financial institution stress conditions helps promote macro-economic stability and out-performance.

Is your Central Banking ecosystem equipped to handle this stress?

# HOW iQUANTUM ACCELERATES YOUR CENTRAL BANK'S PROGRESSIVE TRANSFORMATION JOURNEY

### THE 10T DIFFERENTIATORS



### THE 10T DESIGN FOR CENTRAL BANKS

### **Designed for Speed and Ease of Change**



RAPID POLICY IMPLEMENTATION

- · 2,000+ configurable attributes for business users
- Business users can manage policy implementation by themselves
- Built around "Anything can change anytime" principle



ZERO RECON AND ONLINE REAL-TIME BALANCE SHEET

- Available at central bank and branch/unit levels
- Seamless navigation from GL to transaction (G2T)
- User configurable financial reporting tool



REAL-TIME ONE CLICK DASHBOARDS AND RISK ANALYTICS

- · 360 degree view
- 15+ dimensions & 7+ levels of drill down
- Risk analytics with 50+ dimensions
- Pattern identification for intraday liquidity
- Proactive alerts and notifications



NATIONAL LEVEL BALANCE CONSOLIDATION & TREASURY SINGLE ACCOUNT (TSA)

- Removes money fragmentation
- Seamless merger/de-merger for government entities
- Online balance slicing across multiple dimensions



STATE-OF-THE-ART ONLINE PORTAL

- 50+ business services for banks and government entities
- Advanced service and workflow management including self administration



#### AUCTION MANAGEMENT AND DEPOSITORY

- Integrated public debt (Bond/Bills) auction management including underwriting
- Depository with complete life cycle support for securities up to redemption
- Support for legacy physical bonds



CURRENCY LIFE CYCLE MANAGEMENT

- Includes placing indent for printing, receipt, distribution and destruction
- Automated asset balancing
- Online currency management portal



#### REAL-TIME COLLATERAL AND LIQUIDITY MANAGEMENT

- Support for complex monitory policies and intraday liquidity
- Fully automated pledging/releasing of securities from any depository
- · Multiple collateral pools
- · 25+ eligibility rules
- · 15+ types of haircuts
- · 9+ concentration limits



24X7- RELIABLE AND SECURE OPERATION

- · 99.99% uptime
- · EOD Time <15 mins
- Certified for very high scalability of 100 million transactions a day with 12,000 users
- Fully compliant with PKI security framework



#### IMPLEMENTATION CERTAINTY

- · Agile delivery model
- Best-practices from multiple central bank implementations across geographies;
- Dedicated central banking centre of excellence with certified experts
- Reduced learning curve for users

# iQuantum Landscape

- Integrated operation management across all the departments with real-time dashboards for faster decisions
- · On demand financial statements and reports including the balance sheets
- Integrated risk visualization and monitoring

**KEY ROLES** 

KEY EXPECTATIONS

**SOLUTION** 



- Accurate and timely financial institution balances & performance tracking through a 360 view dashboard
- Flexibility to implement new monetary policies faster
- Online portal to enable banks to have complete on-line access within the bank



### Customer Relationship Management 10

- · Grouping & Baskets
- · Controls & Validations
- · Blacklist & AML
- · Comprehensive data set
- · Online Portal for govt./Fls



### Accounts Management

- Products for Banks and Government
- Comprehensive limits and interest rate types



## Credit/Market Operations

- · Comprehensive Limits and Interest Rate Types
- · Open Market Operations
- · REPO/Reverse REPO
- Short Term, Long Term and Overnight Lending



### **Account Sweeps**

0

- Notional pooling and interest calculation
- · Flexible Rules
- · Advanced Triggers
- · Sweep and Reverse Sweeps



- Treasury Single Account (TSA) implementation
- Govt. payments and receipts management including tax and public funds
- Govt. fund surplus and deficit management



- Seamless auction/underwriting management of bonds/bills
- Comprehensive servicing of bonds/bills
- Management of loans against the public funds



- Seamless life-cycle management of notes/coins
- Integrated management of currency chests/movement across the country



- · Integrated analytics that can provide slice/dice of banking sector
- Mechanism to get pre-active alert on potential catastrophes
- Standardized regulatory reporting framework
- Sophisticated AML to prevent the illegal cross border funding



# Currency and Vault Management

- Currency lifecycle Management
- · Vault/Chest Management
- · Monitoring & Tracking



### Pricing & Invoicing

- · Flexible Rules
- · Invoicing/Collection
- · Flexible Fees Structures



# Depository & Public Debt Management 40

- · Auction Management
- Underwriting
- · Simulation & Allotment
- · DVP-1. 2 & 3 based Settlement
- Comprehensive Security Services



### Enterprise General Ledger

- · Real-time Balance Sheet
- · Integrated Budget/FA
- · n-Tier Structure
- · Financial reporting tool



### Collateral Management

- · Advanced Collateral Pool
- Comprehensive Eligibility
   Factors, Haircuts, and
   Concentration limits
- Revaluation and Margin Call
- · Intraday Liquidity



### Treasury/ Risk Management

- · MM, Equities, Fixed Income
- Derivatives
- · Reserves Management
- · Limits/Risk Management
- · ACU, IMF SDR, Risk analytics



### Government Services

60

- · Treasury Single Account
- Surplus/Deficit Management
- · Payments/Receipts
- Agency Transactions
- · Tax Collection
- $\cdot \ \ \text{Settlement/Reporting}$



### National Payment Systems

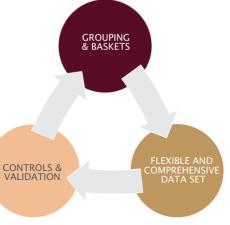
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- · Gross/Net Settlements
- Advanced Liquidity Management
- · Dynamic Settlement
- · Low/High Value Payments

# 10. CUSTOMER INFORMATION AND RELATIONSHIP MANAGEMENT

Extensive coverage of attributes to support Government, Financial Institutions & Individual Customers

- · Dynamic customer group
- · Customer constitution
- · Customer category
- · Customer sub-category
- · Customer segment
- · 3+ additional groups



- · 80+ attributes
- · User-defined fields for adding additional fields with validation
- · 360 degree view with 5+ levels of drill-down
- Configurable customer ID (CIF No.) structure; Number reservation
- Real-time Treasury Single Account with configurable customer and account groups

### WOULDN'T IT BE GREAT IF YOU COULD...

Dynamically group the Government customers and accounts into different baskets and get real-time view of balances eq. at Country and Ministry levels

Set dynamic limits and account level priority for posting transactions

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Use the legacy CIF number as well as the new number in the system

Have self administration capabilities to configure operational controls, access controls and workflow for commercial banks and Government entities in the online portal

· User configurable

documents: grace period,

Signatories grouping and

tracking and alerts for

pre & post opening

· 4+ eyes workflow and

· Black List & De-dup

check

limits

· KYC Check

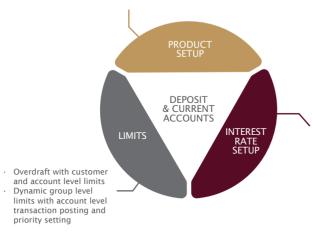
authorization

# 20. ACCOUNTS MANAGEMENT

priority setting

Product configurator with over 200+ user configurable attributes

- · Product Group, Products, Account Type and Account
- Product level mapping to General Ledger using Access Codes; Flexibility to change the reporting GL in real time
- · Special products for govt, operation Drawing, Personal Ledger and Assignment (with budget tracking)
- · Customer constitution level control to various products
- · Rules around tenor, amount
- · In-built document control



- Fixed/Floating (indexed) Individual or combination of key elements - Product, Account type, Account Sub-type
- · Tiered interest slabs
- · Debit/Credit balance-based interest rate
- · Interest basis 360,365,366, Actual; Rounding basis;
- · Holiday treatment
- · Group level notional balance-based interest calculation

### WOULDN'T IT BE GREAT IF YOU COULD...

Launch a new product in 15 minutes

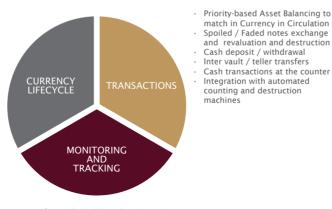
Access and post transactions using both legacy and new account numbers

Group the signatories and assign them authorization limits and let the system show appropriate signatures while posting the transaction

# CURRENCY AND VAULT MANAGEMENT

Flexible and user configurable currency management, vault/teller functions

- · Printer capacity maintenance
- · Re-order level maintenance
- · Order placement & tracking
- · Receipt and inventory management
- · GL level tracking for the complete lifecycle right from order placement
- · Printer fee calculation
- · Cash distribution route analysis
- · Cash distribution to chests / branches
- · Demonetization



match in Currency in Circulation

and revaluation and destruction

Cash transactions at the counter

Spoiled / Faded notes exchange

Cash deposit / withdrawal

Integration with automated

counting and destruction

machines

- · Configurable dashboards and trends
- · Notification and alerts
- · Portal for Commercial Banks
- · Integration with mints/press

### WOULDN'T IT BE GREAT IF YOU COULD...

Let the commercial banks request for currency deposit and withdrawal with the denomination schedule details ahead of time

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Track and guide the currency repatriation and exchange with end-to-end tracking

# 40. DEPOSITORY: ISSUANCE OF TREASURY BILLS & BONDS

Extensive coverage of attributes to support Government, Financial Institutions & Individual Customers

- · Issue Creation
- · Auction Window timings
- · Settlement Accounts
- · New Issuance Re-issuance
- · Competitive and Non-competitive bids
- · Auction price Price and Yield based
- · Bidding (Regular/Underwriting)
- · Allotment Simulation
- Devolution
- Allotment
- AUCTION PROCESS

  ALLOTMENT

  KEY
  FEATURES
- · 60+ securities updates
- Provision to update regularly from Reuters/Bloomberg
- · In-built depository with comprehensive services
- · Commission payment for primary dealers
- · Govt. Charging mechanism
- Debt managed loan account
- · Clearing and Settlement DVP-1, DVP-2 and DVP-3

- Uniform/Discriminatory method
- Weighted average price/Yield calculation
- Non-competitive pricing based on weighted average/cut-off
- · Underwriting allotment

### WOULDN'T IT BE GREAT IF YOU COULD...

Convert physical bonds into de-materialized form or serve legacy physical bonds with structured workflow

Support both member and their constituent accounts seamlessly with comprehensive segregated accounts

# 50. ADVANCED COLLATERAL & LIQUIDITY MANAGEMENT

100% STP, active exception control, alerts and tracking mechanism

- · 20+ eligibility conditions
- Advanced haircut groups and classes with 15+
  haircuts
- 8+ concentration limits with advanced concentration limit groups
- Comprehensive pricing model including theoretical price calculation and auto escalation models
- 55+ standard messages with 115+ combinations of messages;
- Flexible in-built Service Integration Layer with user configurable messages, validation rules and message transformation layer
- Comprehensive loan products for short-term, long-term, overnight and REPO loans
- Advanced REPO collateral adjustment with pool for shortage and overage

- 9 pledging/release modes including TPA, CCBM, Outsourced Accounts, Agency arrangements
- · Provision for manual processing
- Interfaces with Reuters and Bloomberg for Prices, Rates, Security attributes
- Automatic revaluation, reconciliation with depositories, margin calls
- Comprehensive support for credit claims
- Complete loan life cycle
   management including accruals,
   revaluation and settlement



- Graphical multi-dimensional dashboard with 8+ levels of drill down feature provides the entire distribution of securities and exposure in various dimension
- Advanced action driven exception monitoring console
- · 90+ configurable alerts/notifications
- · 60+ dynamic dashboards/reports
- · Support for 50+ types of exceptions

### WOULDN'T IT BE GREAT IF YOU COULD...

Provide support for 100% STP based pledging and release with advanced exception monitoring console

Have multiple collateral pools with segregated limits for multiple lending and liquidity facilities

# 60. GOVERNMENT SERVICES AND PAYMENT PROCESSING

Agency banking services with 100% STP, active exception control, alerts and tracking mechanism

- Automated notional balance calculation and rule-driven decision for investment and loans
- Ensures minimum balance requirement for government agencies



FILE UPLOAD

**SETTLEMENT** 

& REPORTING

- Netted settlement & Gross settlement
- Partial & full
   processing
- Government agency automated specific scroll/reporting arrangement
- Alerts and Notifications

- Agent bank configuratio
  - configuration for each agency (govt.)

    Service mapping to

collection & payments

· Service codes for

- Service mapping to government agencies
- Transaction feed timing and settlement control

- & MESSAGE PROCESSING Configurable message layout File upload service with
  - day/time window monitoring

    Exception monitoring console
  - Configurable feature to define file level
  - Supports ISO20022, 15022, proprietary XML, XLS, TXT, CSV
  - Automatic alert on failure Built-in recon engine

### WOULDN'T IT BE GREAT IF YOU COULD...

Set up a dynamic Treasury Single Account with real-time balance consolidation

Automate the surplus and deficit management based on pre-configured business rules

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# 70. CREDIT AND MARKET OPERATIONS MANAGEMENT

Flexible and user configurable loan products

- · Fixed/Floating (indexed)
- Individual or combination of key elements - Product, Account type, Account sub-type
- · Tiered interest slabs
- Debit/Credit balance-based interest rate
- · Interest basis 360,365,366 Actual; Rounding basis;
- Holiday treatment
- Group level notional balance-based interest calculation
- Dynamic group level limits with account level transaction posting priority setting



- Product Group, Products, Account Type and Account Sub-Type
- Product level mapping to General Ledger using Access Codes; Flexibility to change the reporting GL in real-time
- Special products. E.g., export credit re-finance
- Customer constitution level control to various products
- · Rules around tenor, amount
- · In-built document control
- Liquidity Adjustment Facility and Margin Standing facility
- LAF/MSF allotments on fixed and variable rates
- Margin setting and collateral calculation
- · LAF settlements
- Reversal of second LAF settlements

### WOULDN'T IT BE GREAT IF YOU COULD...

Track the total exposure and collaterals at the click of a button

7

# 80. ACCOUNT SWEEPS

Rule-driven account sweep and reverse sweep

- One-to-Many with apportionment of balances
- · Many-to-One



- Arrangement type level rules with account level override
- · Execution frequency & time
- Sweeping based on debit balance and credit balance
- Balance selection choice. E.g., fixed amount, percentage, actual, above minimum balance, threshold, whole balance
- · Instant activation/de-activation

- · Sweep & Reverse Sweep
- · Manual
- · Automatic at EOD
- · Time bound execution

nual

PROVISION TO SWEEP AND REVERSE SWEEP THE FUND FROM AGENT BANKS AND RAISE ALERTS ON FAILURE

### WOULDN'T IT BE GREAT IF YOU COULD...

Configure complex sweeping rules and offer detailed tracking of execution including nested sweeps

# 90. PRICING AND INVOICING

Simplified pricing and invoicing engine

- Relationship based and client driven fee structure
- Flexibility of defining different fee structure
   User configurable
- charge codes
- Tier Fee structures
  Value and volume slab
- Different frequency of billing across clients
- PRICING & INVOICE PROCESSING & COLLECTION
- Customer wise invoice and collection schedule
- Event and service based invoice and collection frequency
  - Pricing group with multiple charge codes
  - Segregation of charges for transaction value, volume and discount at the pricing group level
  - Discount based on transaction code, volume and billing code
  - · Each customer can have multiple billing codes
  - · Customer based invoice settlement configuration
  - Interim invoice generation for verification
  - Billing code specific invoice generation
  - Collection at customer and billing code level
  - Direct debit of customer account for collection through various payment modes

### WOULDN'T IT BE GREAT IF YOU COULD...

Calculate fees based on dynamic events

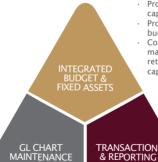
Generate the interim invoice for checking before the final invoice is generated

Club multiple invoices under a collection for customer

# 100. ENTERPRISE GENERAL LEDGER

Online real-time balance sheet with integrated budget and fixed assets

- · Dynamic 360 degree "Tree view" based approval & tracking
- Provision to track budget at multiple GL Head levels with N-tier budget grouping
- Support for zero based, incremental, program based & adhoc budgeting models
- Provision to track all income, expense & capital items
- Provision for uniform & non-uniform budgets
- Complete Fixed Assets life cycle management right from indent to retirement including depreciation/ capitalization models, TDS, etc



& REPORTING

- · Supports n-tier GL structure · Multi-entity, currency and
- lingual support · 30 digits with 3 decimals for
- balances and upto 8 decimals for exchange rates · De-coupled GL charts from the
- transaction laver
- · Access codes for flexible maintenance with no impact on accounts and external systems
- · Old-To-New (OTN) mapping with legacy GL numbers
- · Dynamic posting controls like user/role, currency, amount and accounting units

- · Automated provisioning based on age buckets and receivables types
- Supplementary transaction control for last financial year
- · Comprehensive provisions for invoice processing, payables and receivables
- · Dynamic real-time configuration and generation of balance sheets and financial statements
- · Dynamic multi-dimensional dashboards with provision to drill-down from GL to the actual transactions
- Branch/unit level as well as global balance sheets

### WOULDN'T IT BE GREAT IF YOU COULD...

Generate the balance sheet and financial statements in real-time without waiting for end of the day

Drill-down from the general ledger to the actual transaction in real-time

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# 110. iQUANTUM TREASURY

Effective Capital and Risk Management to identify ideal buy/sell strategies for re-balancing portfolios to achieve better risk-returns

Survive market shocks Fully integrated front-mid and increased back office STP treasury regulatory scrutiny and PORTFOLIO platform supporting all asset Protect revenue MANAGEMENT classes with real time rich margins by assessing analytics aiding in guick and impact of volatility and pro-active decisions driving FRONT/MID/ higher profitability and market changes STRESS BACK ÓFFICE through Sensitivity TESTING managing risk analysis Enterprise-wide cash Automated reporting flow visibility with of Branch positions accurate forecasting with online updates to over 30-y period with BRANCH Traders'positions RISK **TRFASURY** POSITION real-time awareness of MANAGEMENT using real time Risk exposure and INTEGRATION position management and automated dealing P&L view system (ADS) RESOURCE RELIMITS & MOBILIZATION CONTROL Sophisticated limits Complete processing FRAMEWORK management engine for of Domestic and automated online Foreign Currency Loan FUND monitoring of limit Management with STP MANAGEMENT breaches and alerts to without any manual reduce counterparty intervention credit risks, improve controls resulting in operational cost benefits Optimize investments and minimize operational expenses through accurate

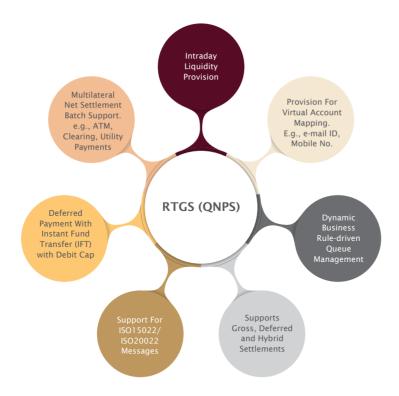
tracking of short- and long-term funding requirements.

WOULDN'T IT BE GREAT IF YOU COULD...

Have a real-time risk visualization dashboard with 50+ dimensions

# 120. NATIONAL PAYMENT SYSTEM

Integrated new generation national payment system



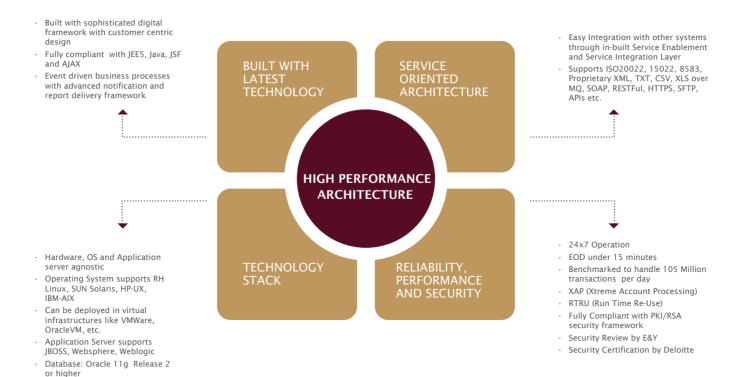
### WOULDN'T IT BE GREAT IF YOU COULD...

Have a system that supports multi-currency settlement with advanced rule driven queues for high value and low value payments

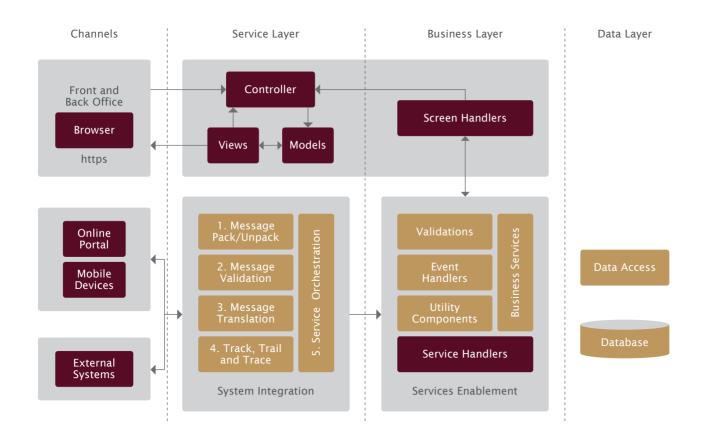
Have an advanced service integration layer with wide range of 3<sup>rd</sup> party system integration

### iQUANTUM TECHNOLOGY OVERVIEW

Platform, Operating System and Application Server Agnostic. Superior Scalability and Security.



## iQUANTUM TECHNICAL ARCHITECTURE



### iQUANTUM SOLUTION AWARDED FOR EXCELLENCE

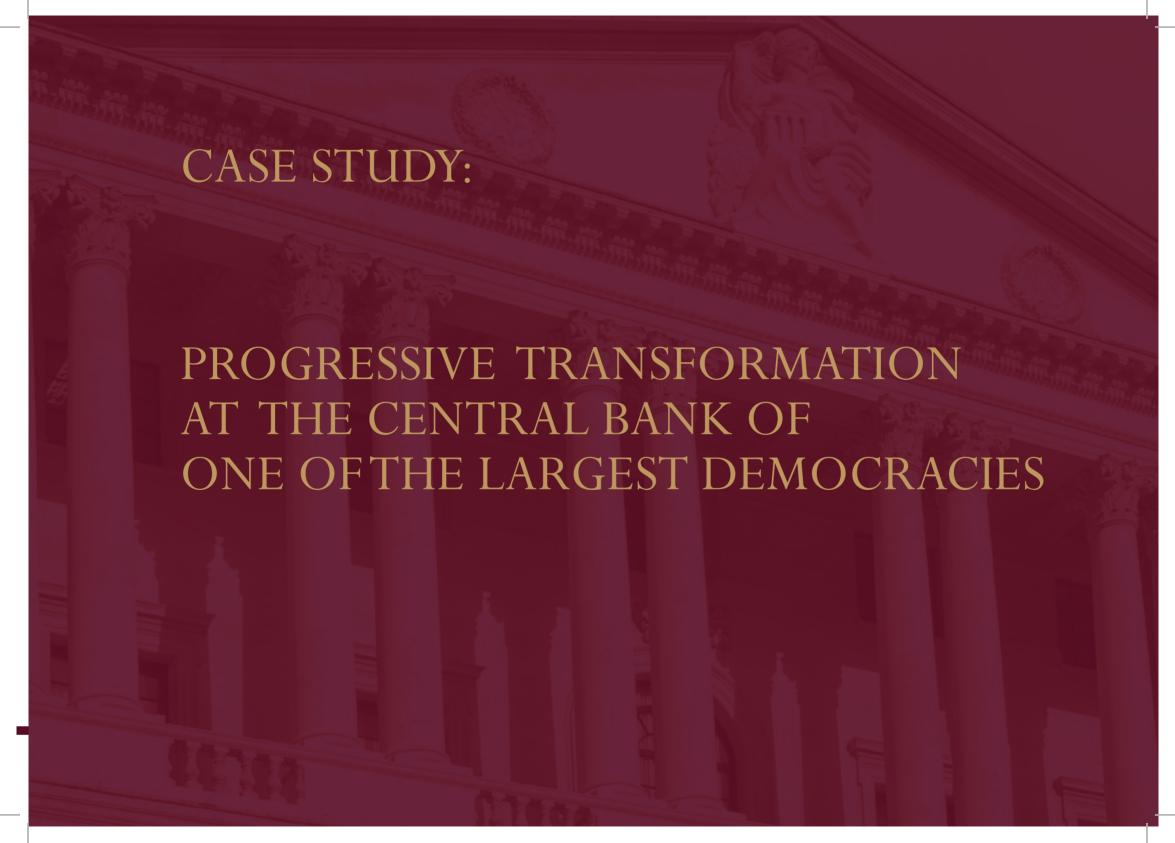


# CENTRAL BANKING — AWARDS 2015

**Technology Provider of the Year** 

# CENTRAL BANKING AWARDS 2016

Payments Provider of the Year



### **CLIENT OVERVIEW**

1,100

**4,400**CURENCY CHESTS

14,000+

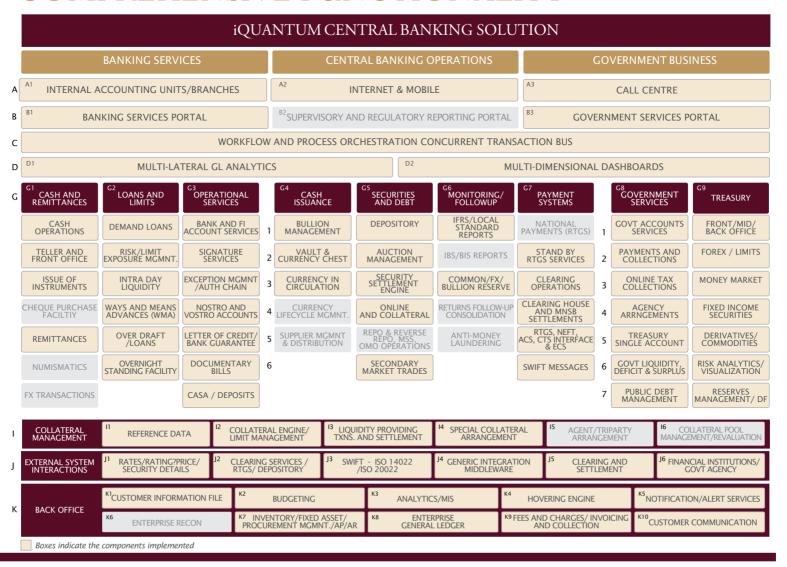
### **INTELLECT SOLUTION OFFERED**

- · Enterprise General Ledger
- Integrated Core Banking Solution for Central Banks
- · Complete Depository Services
- · Comprehensive Government Services
- · Public Debt Management Solution
- · Currency in Circulation Management
- · Wide Range of Market Operations
- National Payment System for Gross and Net Settlements
- · Portal for Banks and Government Entities



- Rollout of Public Debt
   Management, Market Operations,
   Depository and other Key
   Components
- National Rollout of Complete Banking & Government Services
- Pilot Launch Complete Banking & Government Services
- "Last Mile Delivered first" –
   Re-engineered the Enterprise GL
   and implemented in 6 Weeks
- Contract Signed

### COMPREHENSIVE FUNCTIONALITY



# REALISING iQUANTUM BENEFITS FOR 12 DEPARTMENTS AND 30 GOVT. ENTITIES



### DESIGNED FOR COMPLEXITY REDUCTION



#### Public Debt Floatation & Market/Liquidity Operations Settlement

- · From 5 systems to 1
- · Fully automated
- Over 95% operational risk reduction

### 2

#### Entire Intraday Liquidity process

- · From 3 systems to 1
- · Robust in-built depository

#### Weekly Statement Affairs to Parliament

- Reduction from
   3 days to
   real-time
  - · 100% elimination of reconciliation efforts

### 4

#### Annual Financial Statement

- Reduction from 10 days to online (2 min)
- 99.99% elimination of reconciliation efforts

# 5

# 100% improvement in Reconciliation

- Elimination of reconciliation for 30,000+ transactions among 29 regional offices
- Huge reduction in Operation Cost

# 6

#### Real-time view of entire government position

- Fully
   automated
   real-time view
   of all the
   government
   department
   balances
- Automatic surplus & deficit management

## 7

#### From 6+ complex systems to single iQuantum

Real-time information availability to the senior management team for effective decision making

### DESIGNED FOR CUSTOMER SUCCESS

Suchitra Sukumaran, Deputy General Manager in RBI, says Intellect had installed the system "in record timing", as well as a number of other system. "The entire government accounts in the country, throughthe Bank's own offices and the agency mechanism, are consolidated through this platform".

Mr. Pierre Laporte, Governor and Chairman, Central Bank of Seychelles - "Polaris' Intellect Core Banking System (CBS) for Central Banking will usher a new chapter in the transformation journey of our banking, monetary and financial system in the country. Polaris'distinctive edge in the financial technology domain and long standing performance benchmarks led to its selection vis-a-vis other competitors"

Mats Wallinder, Dy. Head Cash & Payments Systems Dept., Central Bank of Sweden - "I truly believe, and have noticed, that one major important factor for the success is the way how your team interact together with Central Banks during the design and at the same time spent efforts to reduce the complexity of the product".







