The Next Generation of Treasury Technology

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Today's Discussion

Innovative Technology Happening Now	Emerging Technology Coming tomorrow
Data Visualization	Cryptocurrencies
Real Time Payments	Blockchain/Distributed Ledgers
API Connectivity	Artificial Intelligence: Robotics & Machine Learning

The Report

Today's Reporting

Cur.	Buy/Sell	Settlement position	Netting cur.	Rate	Netting position (USD)	To pay (USD)	To receive (USD)
AUD	Buy	-5,225.04	USD	1.072156	-4,873.40	4,873.40	0.00
CAD	Buy	-467,619.71	USD	1.046498	-446,842.43	446,842.43	0.00
EUR	Sell	8,913,402.41	USD	0.668360	13,336,232.69	1,310,643.40	14,646,876.09
GBP	Buy	-13,150,996.24	USD	0.594990	-22,102,879.38	22,102,879.38	0.00
HKD	Sell	567,146.29	USD	7.750300	73,177.33	0.00	73,177.33
HUF	Sell	35,600,823.00	USD	177.660000	200,387.39	0.00	200,387.39
JPY							
SEK							
SGD							
USD							

Account number	Budget	Stat.	Transaction date	Debit	Credit	Balance/Sum	Description
			07/02/2010			1,403,891.37	
1260	CPDEBIT	AC	07/02/2010	5,500,651.00		-4,096,759.63	REMARK=END-OF-DAY INVESTMENT SWEEP TO JPM OFFSHORE DEPOSIT
1260	INTEREST	AC	07/02/2010		0.06	-4,096,759.57	REMARK=INTEREST ON END-OF-DAY INVESTMENT PRINCIPAL = $14,585.00 RATE=00.15%,FOR
1260	OUTWIRE	AC	07/02/2010	150,000.00		-4,246,759.57	YOUR REF=NCSBOOK000127,PAID TO=001256 DEMO CORPORATE SERVICES I,NC 515 W
1260	OUTWIRE	AC	07/02/2010	4,449,000.00		-8,695,759.57	YOUR REF=NCSWIRE000461,PAID TO=CITIBANK NYC CITIBANK NEW YORK NY 10043-0001,,FED
1260	MISCCR	AC	07/02/2010		14,585.00	-8,681,174.57	REMARK=RETURN OF PRINCIPAL - END-OF-DAY SWEEP REPURCHASE AGREEMENT.
1260	ZBACREDI	AC	07/02/2010		911.45	-8,680,263.12	REMARK=TRANSFER FROM ZERO BALANCE #1295
1260	ZBACREDI	AC	07/02/2010		3,612.44	-8,676,650.68	REMARK=TRANSFER FROM ZERO BALANCE #1254
1260	ZBACREDI	AC	07/02/2010		22,750.00	-8,653,900.68	REMARK=TRANSFER FROM ZERO BALANCE #1243
1260	ZBACREDI	AC	07/02/2010		761,643.47	-7,892,257.21	REMARK=TRANSFER FROM ZERO BALANCE #1272
1260	ZBACREDI	AC	07/02/2010		6,599,786.12	-1,292,471.09	REMARK=TRANSFER FROM ZERO BALANCE #1268
			07/02/2010	10,099,651.00	7,403,288.54	-1,292,471.09	
1260	CPDEBIT	AC	07/06/2010	57,356.00		-1,349,827.09	REMARK=END-OF-DAY INVESTMENT SWEEP TO REPURCHASE AGREEMENT
1260	INTEREST	AC	07/06/2010		38.20	-1,349,788.89	REMARK=INTEREST ON END-OF-DAY INVESTMENT SWEEP. PRINCIPAL= $5,500,651.00
1260	OUTWIRE	AC	07/06/2010	6,950,000.00		-8,299,788.89	YOUR REF=NONREF,PAID TO=CITIBANK NYC CITIBANK NEW YORK NY 10043-0001,FED
1260	MISCCR	AC	07/06/2010		5,500,651.00	-2,799,137.89	REMARK=RETURN OF PRINCIPAL - END-OF-DAY SWEEP JPM OFFSHORE DEPOSIT.
1260	ZBACREDI	AC	07/06/2010		15.56	-2,799,122.33	REMARK=TRANSFER FROM ZERO BALANCE #1254
1260	ZBACREDI	AC	07/06/2010		268,200.00	-2,530,922.33	REMARK=TRANSFER FROM ZERO BALANCE #1298
1260	ZBACREDI	AC	07/06/2010		621,092.44	-1,909,829.89	REMARK=TRANSFER FROM ZERO BALANCE #1272
1260	ZBACREDI	AC	07/06/2010		987,673.36	-922,156.53	REMARK=TRANSFER FROM ZERO BALANCE #1268
			07/06/2010	7,007,356.00	7,377,670.56	-922,156.53	
			07/06/2010	17,107,007.00	14,780,959.10	-922,156.53	

Reporting

- Rows and columns of data
- Manual analysis: your eyes have to scan for exceptions
- No drill down
- No change on-the-fly
- Questions require explanations

Data Visualization vs. Reporting

Business Intelligence

- **Visualize information to find new conclusions**
- **Multiple drill downs**
- **Immediate update**
- **Build/update yourself**

What happens to "the report"?

The future is visual, analytical, and voice driven

- Dashboards – rather than rows and columns

- Voice commands (e.g. Alexa, what is my cash exposed to?)

- Designed for performance reporting, KPIs, and quick identification of exceptions

- The report becomes the answer

Real Time Payments

Real-Time Payments – coming soon

What is happening globally?

- SWIFT is trying to decrease cross-border settlement times

- United States
  - ➢ The Clearing House (TCH) has launched a new payments infrastructure for RTP in US, Canada
  - ➢ Mexican banks have stated they are ready when America is ready

- Some turning to non-bank payments
  - ➢ Ripple and other Blockchain networks are developing "non-bank" clearing RTP for cross-border

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Real-Time Payments – what it means

1) **RTP brings predictability**
   - Knowing exactly when payment arrives = knowing when to send it

2) **Better support for the supply chain**
   - Expedited invoice presentment, reconciliation, and payment = opportunity to take advantages of early payment discounts

3) **Fraud prevention**
   - Quicker payments = quicker settlement = inability to recoup losses
   - Increases the need for real-time payment fraud detection

API Connectivity

APIs – what is happening?

APIs are being introduced in finance and banking

- Regulations in Europe/UK pushed banks to consider APIs in Europe – and globally
  - Some global banks want APIs to replace FTP connectivity
  - Other banks want a 'real time' alternative to SWIFT

- Very limited testing by banks, often limited to pilots with a single customer

APIs – why do we care?

Bank Connectivity

- Move to API will mean real-time bank reporting (not immediately, but within a few years)

- Banks that only offered SWIFT connectivity may offer APIs

- Pre-built integration rather than unique file interface for each project
  - Reduces implementation time and cost
  - Standardizes onboarding and security

Cryptocurrencies & Blockchain

Cryptocurrencies

- Bitcoin is the most famous; but the least practical
  - Limited supply (prices like a rare commodity)
  - Effectively illiquid
  - Maximum of 8 transactions per second

- What can we expect from cryptocurrencies?
  - Cheaper and faster cross-border payments
  - Payment providers use their own cryptocurrencies to facilitate currency conversion

Distributed Ledger Technology

- Distributed ledger technology (DLT), the successor to Blockchain, is considered by many as the next generation of business applications

- Current DLT development is limited to pilot transaction sharing (e.g. letters of credit) with low volumes, low participants

- DLT may be more 'behind the scenes' than technology that treasury can touch/feel

Distributed Ledger Technology

Key issues to overcome include:

- ✓ Understanding by non-tech finance community

- ✓ Consensus on: is DLT technology improvement or disruption?

- ✓ Scalability to support mainstream volume

- ✓ Fragmentation of market players

- ✓ Counterparty risk and potential regulation

Artificial Intelligence

Robotic Process Automation (RPA)

- Robotics, powered by AI, will be the next generation of automation for all software applications

- Robotic software ("bots") will take over much of finance and accounting
  - Reconciliations
  - Accounting entries
  - Cash management
  - Investment/borrowing decisions
  - Payment screening
  - Trade confirmation

Any task that is predictable

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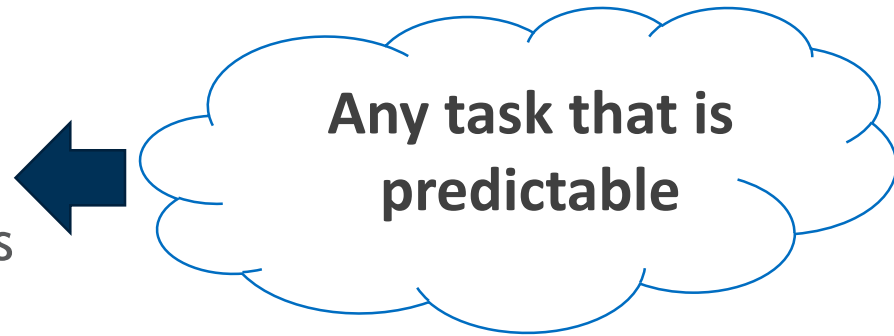
Machine Learning

- Limitation of today's 'bots' is what can be programmed by a person

- Machine learning means:

  1) Software applications can self-develop new capabilities based on data analysis and exceptions

  2) Replaces the "experience" of a person

Machine Learning

Treasury possibilities for machine learning

Short term (learning from exceptions)

- Machine learning applied to transaction detection, creating new rules from big data
  - e.g. for payment fraud, bank reconciliation, etc.

Longer term (anything where people would learn)

- Cash forecasting, FX hedging, Tax optimization, Investment policies, Capital Planning, etc.

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Vision for financial technology

The future of software is robotic process automation and machine learning
FinTech platforms will be self-learning robots within 10 years

Cryptocurrencies will become a standard
Demand will start in emerging markets

The report will evaporate
Business analysis will be visual, voice and on-demand

Thank You

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