

BTRM

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Risk Management

David Castle's Treasury Notes

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David Castle

david@walthampartners.com

Data Streaming for Liquidity Managers

An often heard problem statement in Treasury and Liquidity management is that vast amounts of data is available but it is not in the form to be useful in direct risk management decisions.

This challenge can take a number of shapes; event data is not accessible in a timely manner, data is aggregated so loses its value to some users, formats of data differ between silo systems, or vast resources are applied to regulatory data reporting reducing the capacity for business insight analysis.

With the vast resources that our industry has dedicated to data collection, preparation, model development and reporting the opportunity to become more efficient in this process and yield insightful business strategy outputs is compelling.

Streaming Data Collection and Real Time Artificial Intelligence Analytics at scale are now available and may be applied to risk use cases as wide as cyber-risk identification, intra-day-liquidity management and client behavioural analytics.

A **Liquidity Manager** requires the tools to **manage** the balance sheet, **comply** with regulation and risk appetite and gain **insight** of the complex environment in which they operate. Having these in place enables managing the "output" to become **value** added business "input".

Getting this right in Treasury, Finance and Risk can help realise value from the data sets collected.

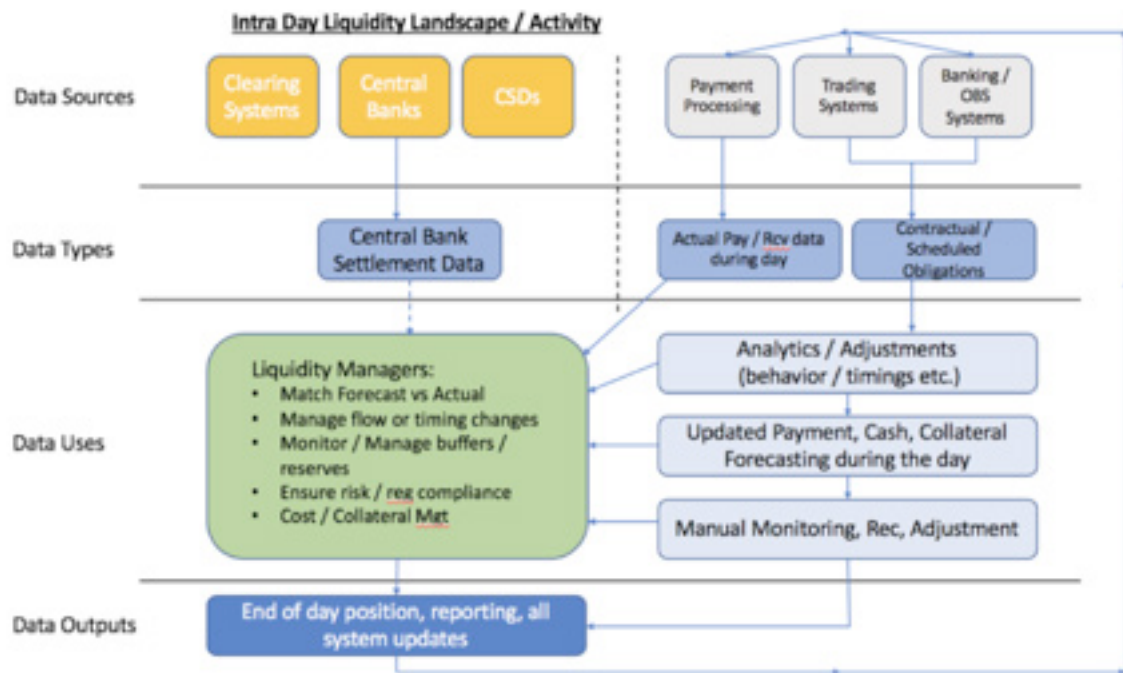
What are the potential benefits of data streaming and pattern analytics in liquidity and client liability management?



Liquidity Managers require increased line of sight to every part of an organisation

The liquidity manager of today requires increased line of sight to every part of an organisation to be able to undertake a wide variety of tasks. These include Regulatory and Internal Risk Appetite compliance such as BCBS 248, Liquidity Coverage Ratio, Net Stable Funding Ratio etc. To most effectively manage these multiple risks it is important to be able to ensure that he is alert to any differences in the Actual versus Forecast events across a balance sheet.

ILM Landscape – High level

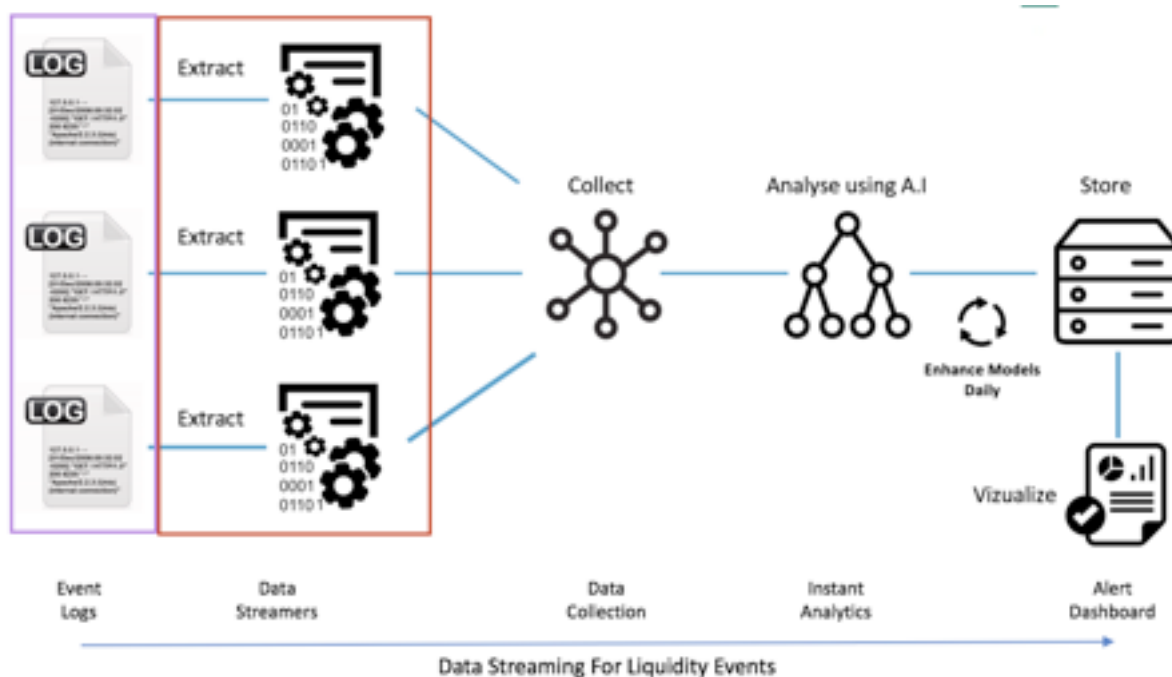


Data Sources, Types, Uses and Outputs for Liquidity Management

Accessing business critical information at the right time to increase the effectiveness of buffer and liquid asset costs is now possible with the use of data streamers. This is particularly useful for a liquidity manager seeking to identify events such as outlier payments or settlement issues which may require action to ensure appropriate funding is available.

Omar Yaacoubi, CEO and Co-Founder of barac.io, tell us “Data streamers which are able to capture the business-critical elements from data logs the instant that an event occurs enable risk owners to be alerted in real-time rather than once a transaction has progressed through a processing batch. This means that the time between an event such as a failed or unexpected payment and identification of a risk or required action to manage this may be reduced to sub seconds. This can now be achieved without the need to implement large data architecture projects.”

Extracting data from multiple sources without the need to propose significant core system investment spend is a sea-change in the tools available to Treasury to be able to manage forecast versus actual events and reduce the intra-day funding activities which may add cost to the balance sheet.



Data Streamers enable instant notification
 Reproduced courtesy of barac.io

While there is a debate in some quarters about the necessity for “real-real-time” notification there is no doubt that being able to source data at the “**right**” time from disparate systems to enable a full view of risks that a liquidity manager is required to address is a step forward.

Capturing data in this way allows risk and business owners to develop robust models and data sourcing protocols that are becoming increasingly important from both a business management and regulatory perspective.

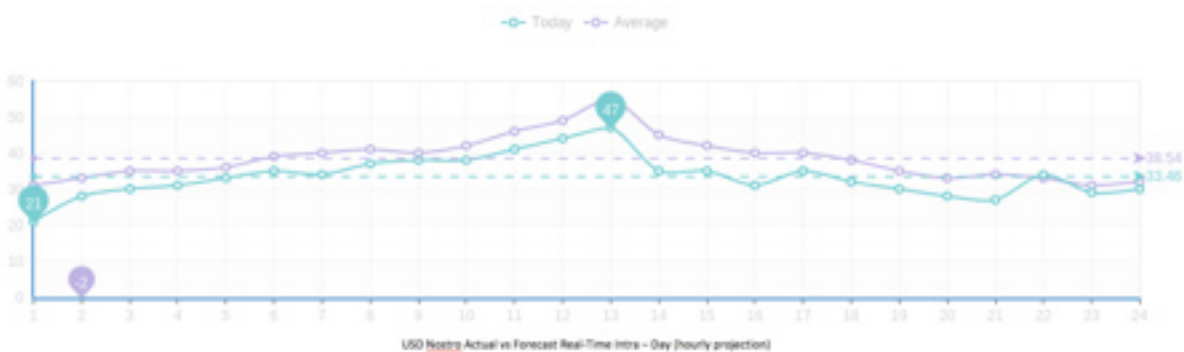
As data collection improves A.I. Modelling techniques may be applied to help identify patterns of behaviours or processes that might warrant adjustment or review to establish if cost saves or increased liquidity value may be achieved.

The **opportunity** for banks is to apply compliance discipline to value-added business process and strategy outputs.

We have identified four **key value drivers** that banks may consider applying data streaming and advanced modelling techniques to:

1. Intra-Day-Liquidity Management (Buffers)
2. Business Process Cost Improvement (HQLA)
3. Client Behaviour Patterning (Accounts & Products)
4. Collateral Management (Delivery/Settlement)

USD Nostro Balance



Example ILM Nostro Forecast vs Actual Funding Balance – Hourly
 Courtesy of barac.io

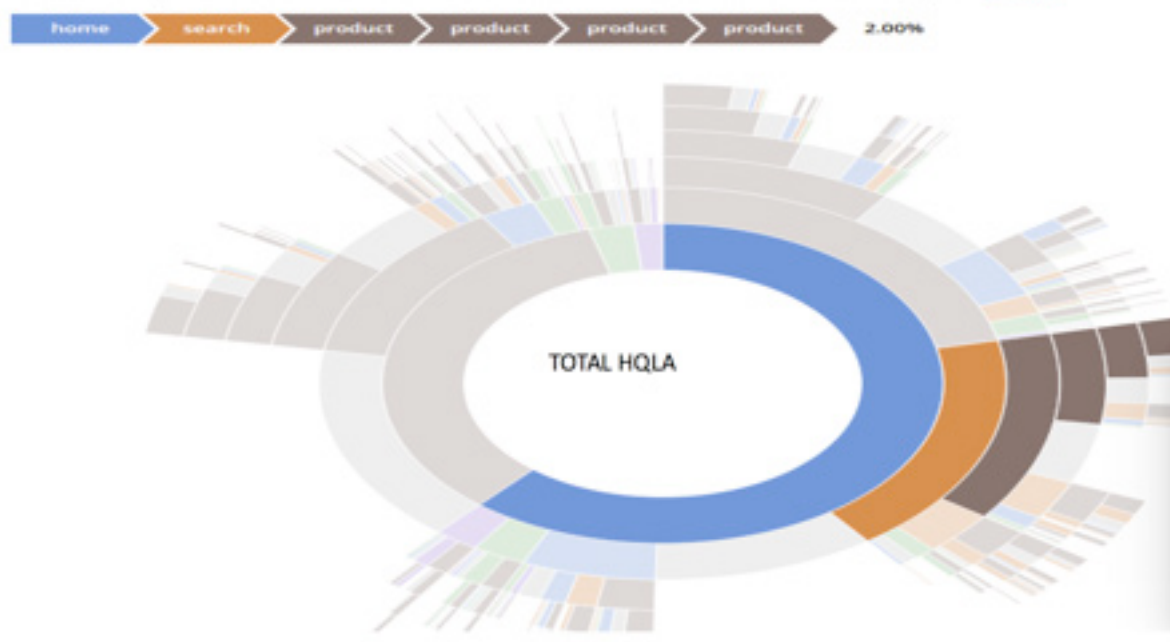
Visualisation of forecast versus actual events which includes alerts to outlier events and risk appetite is a powerful tool for liquidity managers. In the above exhibit we can see how the actual balance in a USD nostro as it varies versus an hourly projection based upon booked business during a business day. The dotted lines represent a max and min balance range that the risk owner wishes to manage within.

Events such as unexpected payments or receipts would likely drag the balance outside of this “collar” with an **instant alert** from the data streamers providing granular drill down for the front office or support staff to both expose root cause and required action to repair – be it market activity such as funding or operational action such as payment release intervention.

Omar explains, “We have discovered that the granularity of event data which adds value for a front office risk manager is often available in near instant time, especially when comparing actual events to forecast based on the pre-booked transactions. Same day client payment requirements, rooting of critical settlement information such as failed DVP trades, or alerts to nostro balances falling below a pre-defined risk minimum are all possible with **data streaming**. In addition to this taking a behavioural modelling approach to business processes to identify recurrent root causes or processes that increase cost enables a much more agile approach by providing risk owners with critical insights that may not be available from batched or less timely data sets.”

Liquidity Buffer Cost – root cause of contribution to HQLA and Buffer cost:

Use Case is to identify business line events to related business lines or client concentrations to enable event cost values to be investigated and optimized.

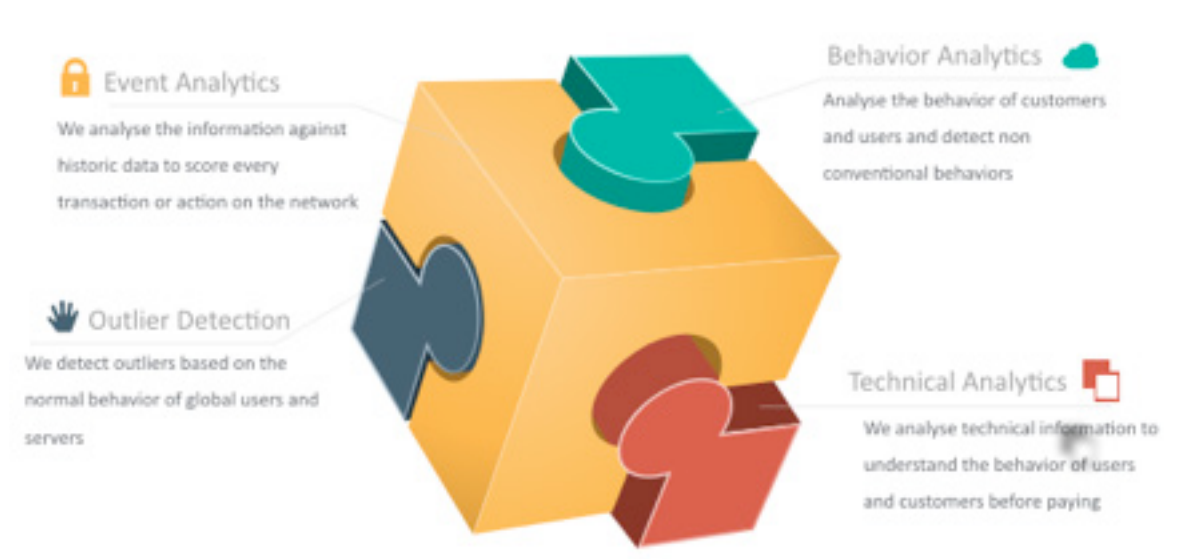


Balance Sheet Wide HQLA Contribution

Root cause analytics which are based upon client or business process behaviours are becoming increasingly relevant to liquidity managers. Being able to look at the total liquid assets that a bank holds and identify specific business activities or client behaviour patterns that contribute to this not only allows for **substantial cost saving** to be explored but also offers the potential to engage clients in conversations around solutions that may be value added for them and for the bank.

Variables which might add up to a large liquidity buffer saving can be disparate. For example clients who transfer balances between accounts based on differential pricing when actual liquidity value is improved if it were more stable (i.e. the pricing model does not today encourage the most valuable behaviour). Or a business process, such as the manner in and timing of FX payments processing grossing up balances. Adapting each of these could make a real difference in balance sheet cost.

Artificial Intelligence Modelling is designed to be applied in a wide range of scenarios which include changes in patterns of events or informing likely outcomes based upon historical data sets.



Omar briefly explains what is possible with AI as "the ability to detect any **non-conventional behaviour** for a business in real time to respond quickly. Our A.I. uses a combination of machine learning, to learn from previous behaviour, and deep learning, to detect outlier and non-logical behaviours."

As regulators continue to raise the bar in the expected robustness of data and risk models implementing processes which source clean and business critical data for use in specific risk management approaches will form part of a wider need for a bank.

Opportunities to continue to develop business process improvement to reduce cost and increase returns from the balance sheet are increasingly in demand and now possible without the need for long term, high cost, system development projects.

Getting these tools in place will enable a **Liquidity Manager** to **manage, comply**, and gain **insights** to provide **value** added business advantage from the ALM perspective.

**About the author:**

David Castle is the Managing Partner at Waltham Partners. He has 25 years of experience in financial services having worked across diverse cultures and geographies in Treasury, Fixed Income, Investment Management and Sales businesses. Waltham Partners provides advisory and business development services in Treasury, Balance Sheet Management and FinTech.

david@walthampartners.com

More information on Waltham Partners may be found at <https://walthampartners.com>

**About Omar Yaacoubi:**

Omar Yaacoubi, CEO of barac.io, is a strategic expert in artificial intelligence (AI) and big data technology. Throughout his career he has designed and implemented big data and risk management strategies across Financial Services, Retail, Telecommunications Industries and for Government Agencies. Carrying a Masters degrees in Computer Science and Innovation Strategies Omar has worked as a Consultant around the globe including Silicon Valley, Europe, U.K. and Africa. He is a serial entrepreneur having previously founded Trick Consulting before barac.io

omar@barac.io

More information on barac may be found at <http://barac.io>

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