



# ATM A NEW DIMENSION

FOR TOO LONG TERMINAL HANDLERS HAVE  
STRUGGLED TO INTEGRATE ATMs INTO THE  
**OMNICHANNEL BANK**. THE ANSWER IS TO  
RETHINK THE SYSTEM ARCHITECTURE



White paper by **Ali Paterson**,  
Managing Director at Advertainment Media

## The world's first ATM dispensing notes from a 'hole in the wall' outside a branch of Barclays in North London in 1967 was a Rubicon moment.

It was the first time that consumers had been given the choice of engaging with their bank through an alternative channel to access a basic financial service: withdrawing cash. It was also the beginning of the end of a one-size-fits-all banking model. This new choice led, inevitably, to today's banks' multi-channel environment. 'Cash machines' continue to play a vital role in the banking mix – but it's a role that could go way beyond dispensing cash.

Consumers now have infinite choice in the way they bank: by mobile app, wearables, desktop, in branch, in kiosk, through a call centre, through video banking, over voice-activated, smart home systems, and to engage with as many financial service providers as they wish for specialist or general financial services products. While challenger banks are integrating these experiences from scratch, legacy providers have the challenge of dismantling operational and technical silos to ensure their customers can hop on and off any and all of channels, each seamlessly picking up where the last left off.

The basic architecture on which most of the world's 3.5 million or so ATMs still operate, however, has not evolved. For years, banks have had to manage multiple vendors with incompatible applications and estate upgrades largely dictated by Microsoft's end-of-life cycle for its Windows operating system. The eXtensions for Financial Services (XFS) standard, which was an attempt to free operators from hardware vendor lock-in, has been available since the beginning of 2000. But, despite being a big step forward, it has not yet radically changed the industry. Its authors could not, after all, have foreseen the arrival of mobile and tokenised payments, EMV and contactless cards, cryptocurrency and the rich ecosystem into which ATMs are now expected to fit.

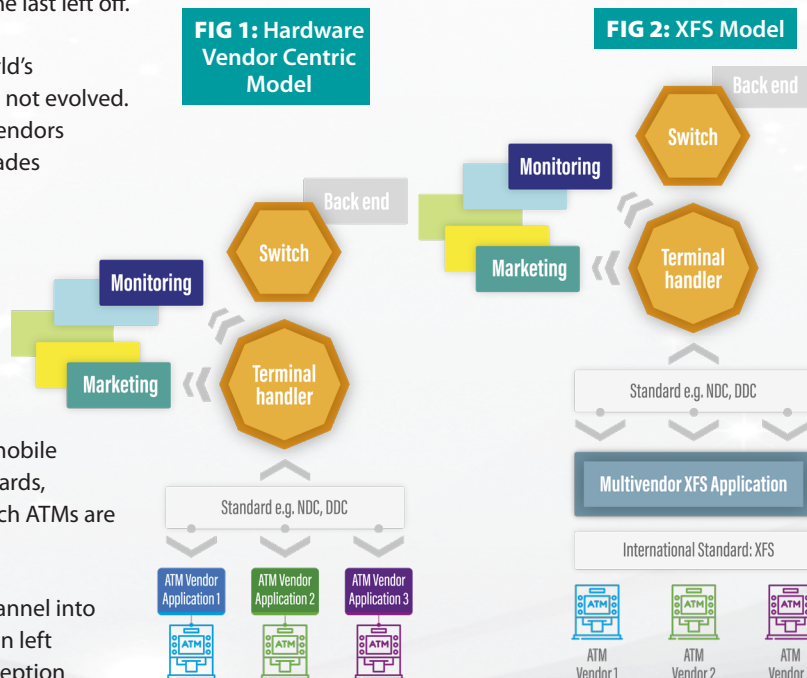
Fully integrating the first alternative banking channel into a multi-channel digital system, it seems, has been left until last, presumably motivated by the misconception

that 'by the time our customers have all of these new ways to bank they will abandon our oldest channels first'. Yet, according to the 2019 *ATM and Self-Service Software Trends Report* by ATMMP, 88 per cent of financial institutions see ATMs as part of their wider digital strategy – almost half going so far as to say they are crucial to it.

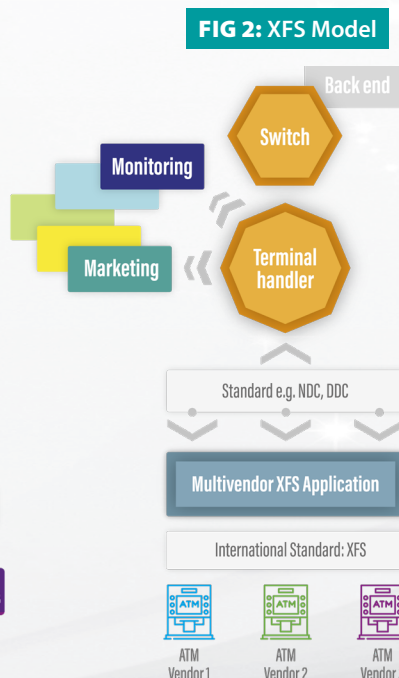
It's not hard to see why. The ATM is uniquely placed to connect the digital with the physical worlds – and, as banks across the globe reimagine their 'phygital' services, the focus now is on adopting a radically new ATM architecture to facilitate the ATM's evolving role as part of a truly omnichannel customer experience.

Mark Aldred, Head of International Sales at Auriga, comments: "The ATM is the longest serving digital banking channel and as a result, like cash, it has been targeted for criticism by those who believe that, in the digital world, only the latest innovation is the best. And yet the ATM actually *is* the best, if not the only, example of when information technology meets operational technology, because it is so much more than a cash machine."

**FIG 1: Hardware Vendor Centric Model**



**FIG 2: XFS Model**



## THE EVOLUTION OF ATM ACQUIRING SOFTWARE

**Hardware Vendor Centric Model:** In the early days of ATM adoption, hardware vendors were the only possible providers of ATM software, as no XFS standard was available. This forced any bank deploying machines from different vendors to install multiple software.

They drove the standards under which the world's machines were – and still largely are – deployed. De-facto standard protocols, such as NDC (manufacturer NCR's Direct Connect standard) and Diebold Nixdorf's messaging protocol DDC, separated the ATM software from its terminal handler, and banks had to rely on their switching systems to be responsible for managing the devices. The resulting operational complexity and compatibility problems combined to stunt the evolution of ATMs. **[Figure 1]**

**XFS Model:** The introduction of the eXtensions for Financial Services (XFS) standard interface from around 2000, on which most, if not all, ATM applications are now built, was designed to break vendor monopoly of machine software. This resulted in a significant reduction in customer investments in ATM applications, as a single common application can run on any hardware. However, XFS has been only partially successful in achieving its objective.

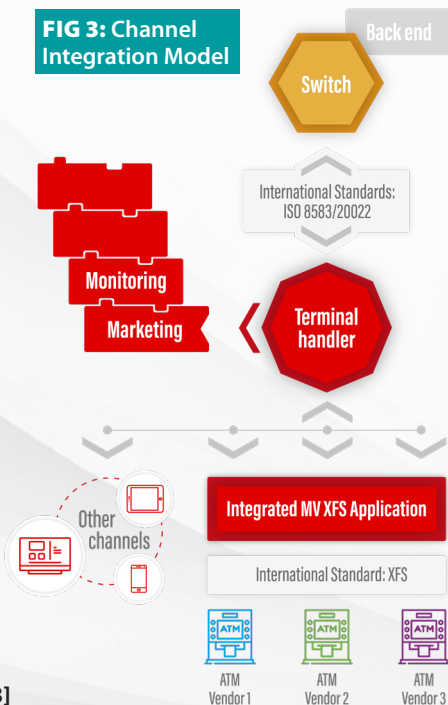
After the arrival of XFS, virtually anyone could develop a 'multi-vendor' application, in theory creating healthy competition among manufacturers, thus reducing investment in hardware by banks. However, the fact that the original equipment manufacturers have also developed multi-vendor applications has stifled that aim. As a result, it remains the case, that the top two multi-vendor software suppliers are also the largest ATM manufacturers. »

» This has not helped banks to leverage hardware price competition. In that respect, the CEN/XFS standard, while an innovation-positive standard, has failed so far to achieve its potential. Something is still wrong.

The legacy protocols that still separated the multi-vendor XFS applications from the terminal handler continued to have a chilling effect on innovation. The rigid ATM infrastructure – ATM application, terminal handler and the proprietary protocol between the two – still didn't allow for easy integration with, for example, mobile devices. This has left ATMs orphaned and siloed like no other digital channel. **[Figure 2]**

**Channel Integration Model:** Today, a new architecture has emerged that frees ATMs from the straightjacket of legacy and is allowing them to take their rightful place in a truly omnichannel bank. This model clears the roadblocks created by the de-facto company-driven NDC/DDC protocols, and reliance on legacy terminal handlers and instead employs universally accepted messaging standards, for example ISO-8583 and ISO-20022, to

deliver business functions. While the XFS standard continues to guarantee multi-vendor development of innovative applications, the reassembled software stack clears the way to connect the ATM to other downstream services, such as mobile channels, upstream transaction processing layers and core banking services. **[Figure 3]**



Among the many advantages are:

- Standard protocols and much simpler, cost-effective and modern web services interfaces
- Lower total cost of ownership
- Increased availability
- Cross-channel capabilities
- Enhanced customer experience and personalisation
- Accelerated time to market
- Increased choice and reduced cost of hardware
- Lower cost and more efficient maintenance and management of the ATM estate

The terminal handler and the multi-vendor applications are now, in effect, an integrated solution. There is no need to define, agree, publish and implement on both the ATM and terminal handler side, specifications to support new functionalities. These integrated solutions are now able to provide better customer experiences and allows banks to deliver functionalities faster and at lower cost, as the technology lets them focus their energies on business functions. In fact, all major competitors in the ATM software solution space started to channel their investment into this new type of architecture.

In summary, the NDC/DDC message protocols between the terminal handler and the ATM application gained a high level of adoption but, arguably, they significantly constrained the evolution of ATM services, even as the underlying technologies became more flexible. In many institutions, the proprietary ATM infrastructure that grew up around the 'NDC/DDC-thinking' has resulted in the self-service channels becoming isolated from the mainstream digital banking investments. Given the proprietary ownership of NDC and DDC there was little scope for the industry players to redefine this vital link in the current ATM ecosystem. Fortunately, the advent of channel integrated solutions, technology and flexible internet protocols has allowed innovative vendors to bypass the structural restrictions of NDC/DDC.

## REWRITING THE FUTURE OF ATMs

Not every ATM's core purpose is now that of a cash dispenser. In some locations, it is serving as an equally important point of contact to a bank via video link in communities where

there are no fully staffed services. ATMs are facilitating mobile-initiated withdrawals and providing an opportunity for banks to personalise customer experience with targeted communication. In a busy branch or standalone environment, 24-hour video tellers extend the capacity of the branch, release other staff for more complex advisory roles, or give customers confidence when dealing remotely with their bank.

With mobile and tokenisation, there is no need for users to carry a card, and transactions can be set up in advance using a mobile in a secure location, thus reducing risk of ATM fraud. And the same machines can recycle cash, lowering operating and environmental cost.

But all these services depend on ATMs being indivisible from a bank's overall digital strategy. The channel integration model not only facilitates more advanced ATMs but also ensures they work seamlessly alongside every other consumer touchpoint.

As Aldred says: "The solutions and architectures still deployed today have become the barriers to the ATM achieving its potential. It's time to break the shackles and allow ATMs to live up to the name of automated teller machine. It is a key channel for communicating with consumers and the most secure channel for remote access to a full range of banking services, 24 hours a day."

A whole generation has grown up since that first machine dispensed a bundle of 10 x £1 notes to an excited queue, clutching vouchers to feed into the ATM in return for this fixed sum. If we'd known then what we know now, the industry might well have built things differently. But hindsight is a wonderful thing.

What many did correctly forecast in 1967 was that the ATM would become an essential part of delivering inclusive and accessible financial services. And by adopting a new omnichannel ATM architecture that role is about to take on a whole new and exciting dimension.



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