



AUTHENTIC AND PAYMENT TRENDS

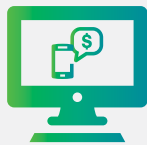
AUTHENTIC IS AN INTELLIGENT
TRANSACTION-PROCESSING PLATFORM
DESIGNED FOR TODAY'S FAST-CHANGING
PAYMENTS BUSINESS.

For more information, visit [ncr.com](https://www.ncr.com), or email nav.kullar@ncr.com.



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AUTHENTIC

Authentic is an intelligent transaction-processing platform designed for today's fast-changing payments business. It has become the payments engine of choice for issuers, acquirers, payment service providers, ISOs and merchants around the world.

Part of NCR's CxBanking software suite, Authentic unlocks amazing consumer experiences across physical and digital banking channels. As the business of payments continues its rapid evolution, and innovation becomes the key to survival in a competitive marketplace, Authentic is there to help financial institutions put their customers at the heart of their business. Whether it is adding mobile payment and eCommerce capabilities, building a multi-channel payments solution, creating a payments hub or developing omni-channel payment services, Authentic allows them to deliver great customer-focused services now and in the future.

TRENDS OVERVIEW

Payments is a complex industry. The traditional credit and debit processing chain, with roles being played by acquirers, processors, issuing banks and card networks is changing. The payments industry is becoming more dynamic and competitive with new entrants, like FinTech companies, trying to take space in this landscape.

Globally, the financial technology industry is continuing to evolve as online and mobile technology is changing consumer expectations at a rapid pace. Payment trends, driven by regulatory, economic and consumer demands, are contributing to an increasingly competitive industry. For many financial institutions and processing companies this represents a serious challenge as they find that legacy payments solutions are slow and expensive to adapt to new opportunities.

This brochure aims to explain some of the key trends and how NCR's Authentic payment processing solution can meet these growing requirements for financial institutions.



REAL-TIME PAYMENTS

Across the world a growing number of real-time payments schemes and infrastructures are being planned and rolled out. Most of these schemes are offering an instant 24/7, interbank electronic funds transfer service that banks enable from a variety of channels: web, tablets and the smart phone. Unlike a decade ago, it is no longer the case that customers have to wait up to three days for money to arrive in their accounts.

The key drivers for this change are pressure from governments to create national and regional payment systems relevant to today's business combined with customer expectations and technology enablement.

Real-time payments opens the opportunity for financial service providers to create value added services for consumers in today's fast moving world.



We wanted a global solution that could provide seamless connectivity to the Faster Payments network”

**Ed Adshead-Grant, General Manager,
Payments and Cash Management
at Bottomline Technologies**

Authentic enables immediate payments between bank accounts so you can participate in the faster payments environment. Its background in the card transaction world makes it the ideal solution for handling the fast response times and the high-volume, lower-value transactions that are typical of faster payment transactions. It can act as your gateway service, interfacing with the central infrastructure and enabling a single point of focus for your bank. It can also take on wider processing of the transactions including authorizing incoming payment requests.

With the ease of integration with channel and core systems and configuring transaction processing, as well as the ability to integrate fraud detection into the transaction path, Authentic is the ideal solution to deliver your needs for faster payments.

In the UK, Bottomline technologies has used Authentic to provide a gateway into the national faster payments infrastructure as part of its aggregator service. Early Warning, in the US, has created a cross-institution real-time 'good funds' network where Authentic provides the central infrastructure switching transactions between banks.

APIs AND OPEN BANKING

The growth of FinTech and integrated service providers across the globe has put pressure on financial organizations to publish APIs (Application Programming Interfaces). APIs provide external parties well-defined access to bank account information and services, such as account information, moving funds or making payments. Banks publish APIs for customer and transaction data access. This allows FinTech companies to deliver capabilities that revolutionize the customer experience offering both opportunities and challenges for the financial industry, especially to traditional banks who have historically only allowed the account holder direct access to this data. In some markets the term being used is Open Banking.

Banks are publishing APIs to partner with FinTechs, in some cases driven by regulation (such as PSD2), by customer demands, and to ensure they still have a role in this world of rapidly evolving FinTech companies. These

changes are part of an overall trend towards increased digitization of services. Consumer experience of seamless services incorporating payments from companies like Amazon and Uber have set expectations that this can be delivered in many other business areas.

Authentic's message mapping capability allows for the rapid definition of messaging interfaces with the 'web service importer' function simplifying the process for XML or web service connections. Business processing of each transaction is provided by action list processing where functions are broken down into discrete 'actions' and configured through a UI based workflow engine. New actions can be built using the published templates. This enables Authentic to handle any type of transaction in the precise way each customer requires.

A top 10 US bank has used Authentic to set up a payments hub providing a central service for processing transactions from their various channel systems. Services available from the hub are published using web service APIs.



PSD2

Payments Services Directive 2 (PSD2) is a significant evolution of existing regulation for the payments industry in Europe which will be implemented in 2018. The goal is to set out a common legal framework for businesses and consumers making and receiving payments within the European Economic Area. One key part is to open up payment account access to all providers via APIs, creating more competition.

PSD2 will drive forward the pace of real-time payment services with the emergence of more FinTech providers being able to provide services through open APIs. The open collaboration between banks and FinTech will impact the customer favorably. The interface to services will be well defined, secured and controlled rather than the ad-hoc mechanisms that have been used to date. It will also allow service providers to ensure their data is up to date and accurate as well as securing access.

Authentic delivers capability to execute services that are delivered to the market through publishing APIs. The key feature of message mapping enables the publishing of APIs and the connection to corporate systems to collect information needed to respond to the request. While action list processing is a UI based workflow engine enabling the definition of the steps required to process the transaction.

Meeting the needs of PSD2 will be a gradually evolving process with solutions that will need to change and grow over time. Initial implementations are likely to provide some basic information services and, as factors like authentication of the user request become bedded down, then the services will be expanded. Hence a platform is required, like Authentic, that can be rapidly changed to extend the services on offer.

Cumberland Building Society in the UK is a long-time user of Authentic who has grown their services over time.



Technological advances have allowed us to make everyday banking much easier and more convenient for our members. NCR, Authentic and Fractals have played a key role in delivering that.”

Gary Richardson, General Manager IT Cumberland Building Society.

MESSAGING STANDARDS

In the world of payments, there are many different standards of messaging today developed by individual organizations to meet specific needs. But globalization means organizations have to support a wide range of messaging standards which impacts on the ongoing costs of maintaining payments systems.

The ISO 20022 message standards have been developed by ISO (The International Organization for Standardization) with the vision to create a global suite of message standards for the financial industry, enabling communication interoperability between financial services organizations by using a single standardized approach of methodology, process etc.

This new standard covers a wide variety of financial use cases from card transactions to trade finance. Various organizations are contributing to the development of specific elements of this standard. NEXO is a European organization developing ISO 20022 for interaction with POS terminals while IFX has worked with NEXO to submit information for ATMs. NEXO has also developed the ISO 20022 formats for communication of card messages between acquirers and issuers.

A common messaging standard reduces costs and time to market for organizations as they can use the same messaging protocols for connections to many external services and systems. However, these messaging standards are never static requiring changes because of new business services or regulatory demands.

NCR has realized message interfaces is an ever-developing area and has built into Authentic tools that allow the rapid configuration of new message formats and transaction flows. The message mapping feature, where message interfaces are defined using a UI, incorporates a 'web services importer' to further simplify the creation of web service interfaces. Action list processing enables the configuration of the steps to process each transaction as well as network activity such as sign on or timeout.

While the development of ISO 20022 opens up the possibility of a single consistent messaging format across the financial industry, the reality is that these new protocols are going to co-exist with current message formats (often built around ISO 8583) for many years to come, so having a transaction processing engine that is flexible enough to deal with the old world at the same time as the new world is critical.

A major French processor who wants to grow their processing solution outside France into other European countries will be using Authentic to handle new ISO 20022 formats such as NEXO.

MOBILE

The mobile wallet is becoming an increasingly popular way for consumers to pay and store credit or debit card information on their smart phone, tablet, smart watch or other wearable device.

In many markets attitudes towards mobile payments have shifted significantly with people becoming more open-minded in the use of their mobile devices as confidence has been established through the use of contactless cards. Mobile payments have quickly evolved with technology such as NFC enabling contactless mobile payments.

In this increasingly competitive market, mobile companies, banks and FinTech companies continue to roll out mobile platforms to compete in this space.

As mobile technology continues to transform payment and transaction services, Authentic enables you to meet new demands from your customers and create innovative services that keep you ahead in a competitive market. Designed to be flexible and highly configurable, Authentic makes it easy to add mobile functionality to your portfolio of banking and payments solutions. It handles all account types across all payment channels, and accepts, authorizes and routes any mobile-initiated transaction to the relevant network and issuer for standard processing supporting consumer-to-business, business-to-business and person-to-person payments as well as processing payments via near field communications (NFC), SMS or a mobile on a 3G network.

Authentic customers have deployed mobile wallet technologies, such as ApplePay, to enable consumers to pay using their mobile phone or wearable device.



OMNI-CHANNEL BANKING

Consumers are driving expectations of consistent service across all banking channels whether that is branch, ATM, call center or digital channels such as internet or mobile. Branch transformation is changing the nature of the use of automated channels with growing range of services that can be delivered in automated devices or through remote access to tellers.

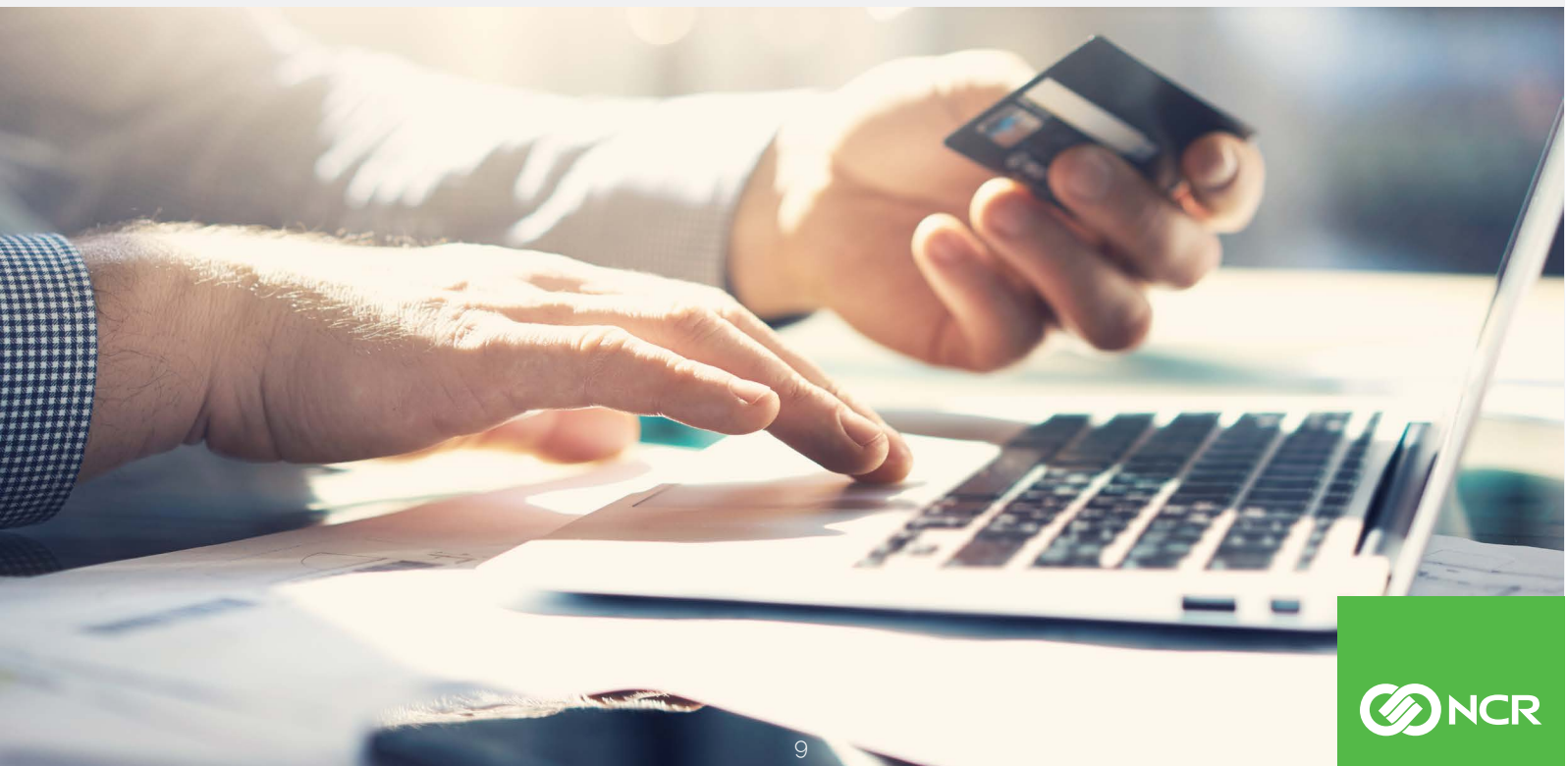
Consumers are also using a mixture of channels to effect a single transaction perhaps starting a loan application online but then wanting to discuss it with a specialist in a branch before completing it, or pre-staging a transaction using the mobile channel while completing it by visiting an ATM or branch just as they have experienced with 'click and collect' in the retail world.

The challenge for many financial organizations is that transaction processing is still organized on a silo basis with each channel—ATM, branch, mobile etc.—having its own systems for handling transactions with each connecting independently to the core banking system or other external services. Bringing together transaction processing

across all these channels enables financial organizations to deliver on the 'omni-channel' expectations of their customers as well as reducing the costs for updating services or system connections.

Authentic has been designed from the outset as a multi-channel transaction processing system which is agnostic of the token used by the consumer or business to initiate the transaction. Customers make use of Authentic to process transactions originating in many channels from ATM and POS devices to branch and digital banking channels whether initiated with a card, a customer number, a mobile number or some other token.

Actual processing of a transaction in Authentic is defined through the 'action list processing' component which is a workflow engine. Processing is broken into granular steps or services allowing easy reuse of the processing services across different transactions and the application of the transaction processing across different channels.



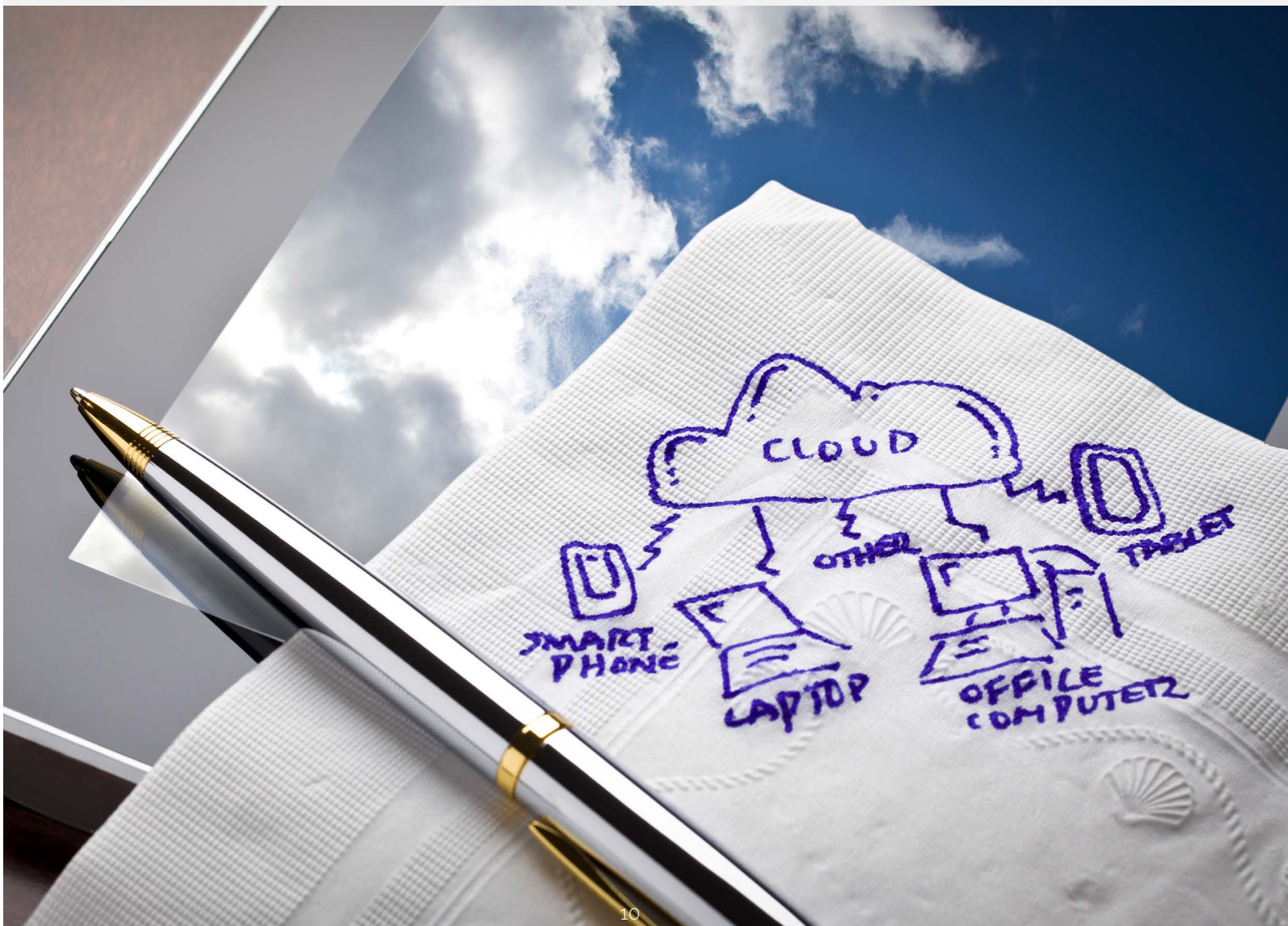
CLOUD

Cloud computing can be an enabler of increased agility and cost efficiencies. Cloud based technology is on the rise slowly, with an increasing number of banks investing in private cloud deployments. However, regulatory and security concerns in the risk-averse nature of financial services means this shift will take time.

Deploying applications in the cloud gives financial organizations the ability to match their hardware needs to their usage, growing or shrinking over time as demand for the application grows or shrinks; this is particularly relevant to spikes in demand such as Black Friday or

Singles Day or Chinese New Year. Technologies, such as containerization enable for more rapid and reliable deployment of new product features; providing a more agile and strategic manner in which to provide new services to its customers.

Authentic is built entirely on Java technology making it easy to fit into cloud environments. For a customer in the US a proof of concept was developed where Authentic, using its orchestration capability to invoke appropriate micro-services, was packaged into containers and deployed into a cloud environment.



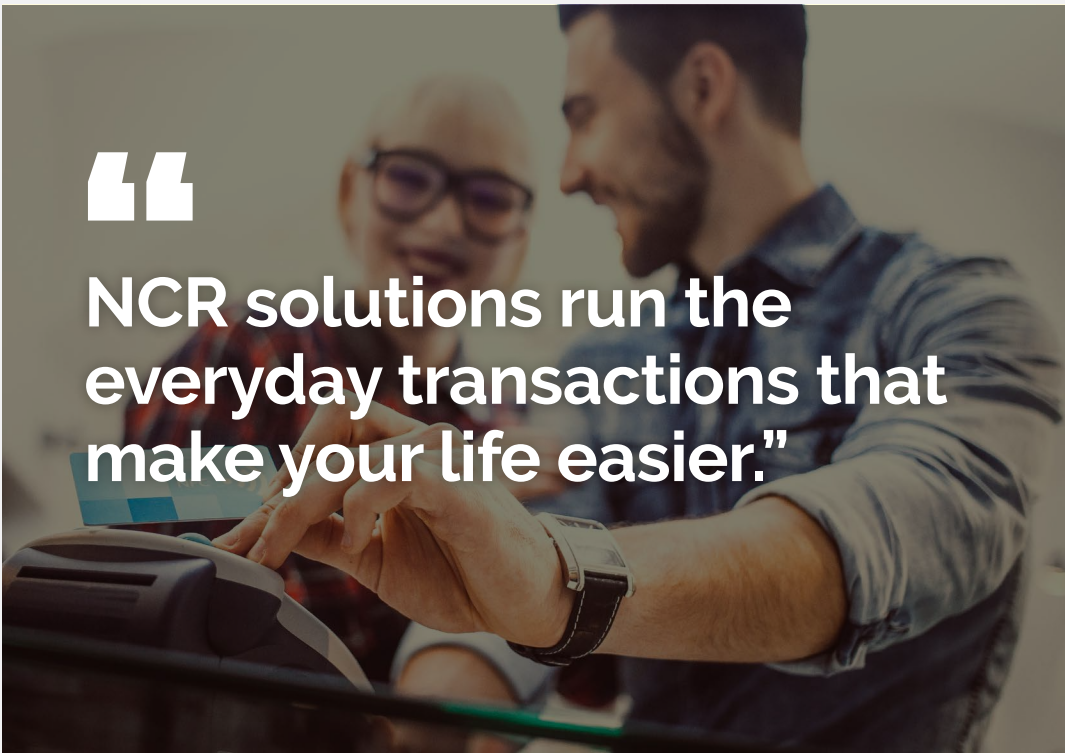
WHY NCR?

NCR Corporation (NYSE: NCR) is a leader in omni-channel solutions, turning everyday interactions with businesses into exceptional experiences. With its software, hardware, and portfolio of services, NCR enables nearly 700 million transactions daily across retail, financial, travel, hospitality, telecom and technology, and small business. NCR solutions run the everyday transactions that make your life easier.

NCR is headquartered in Duluth, Ga., with over 30,000 employees and does business in 180 countries. NCR is a trademark of NCR Corporation in the United States and other countries.



NCR solutions run the everyday transactions that make your life easier.”





CONTACT US AT NCR.COM TODAY

Authentic is an intelligent transaction-processing platform designed for today's fast-changing payments business. Part of NCR's CxBanking software suite, Authentic unlocks amazing consumer experiences across physical and digital banking channels.

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