

A hand holding a smartphone is the central focus, with a semi-transparent blue overlay across the middle of the image. The background is a soft-focus bokeh of light blue and white circles. The text is white and positioned on the blue overlay.

2017 Payment Industry Outlook

First Data Corporate Strategy & Intelligence

This document is a collection of opinions that are offered solely as a courtesy, and they do not represent business or legal advice. The research is gathered from a wide range of industry publications, analyst reports, white papers, websites, and interviews. The statements in this document related to future business or financial performance may constitute forward-looking statements and actual results or performance may vary.

First Data[®]

First Data: Global Payments Leader

Unrivaled Distribution Network



#1
Merchant Acquirer

6 Million
Business Locations

#3
U.S. Debit Network

1 Million
STAR Locations

#1
Issuer Processor

4,000
Financial Institutions

Most Complete Array of Solutions in the Industry

- **79B transactions** processed annually, over **2,500 per second**
- Engaged by **47 of top 50 Fortune 500** companies
- **\$1.9T in global payment volume**, process 10% of U.S. GDP annually
- Process **4 out of 10 transactions** at the point-of-sale in the US
- World leader in **eCommerce acquiring**
- **1.5x the accounts on file** of the nearest competitor
- Process for **5 of the top 8 U.S. private label cards** and **22 of the top 50 U.S. general purpose issuers**
- **110M+** STAR cards issued, with a network of **3,500 Financial Institutions**

Source: FDC Investor Day 2016

First Data: Trusted Partner for Government Transactions

Scale and Experience

\$2.6 Trillion

Tax payments processed annually for the U.S. Treasury (EFTPS)

2.3 Million

Payments of State Tax annually via remitOne® and StateEFT®

1 Million+

Medicaid Claims Billed per Month via Authenticare®

FISMA High

Federal Security Compliance Level (EFTPS)

Industry Specific Government Solutions

30+ Years

In the business

760 Solutions

For Government, Merchants, & Financial Institutions



Deep Experience

Statewide Acquiring Contracts
NASPO Valuelink Contract
EFTPS Federal Contract

250+ Government Accounts

Across Federal, State, Local, and Higher Education

43 States

Current contracts in place

50 of Top 100 Banks

Use FDGS Tax Payment Solutions

Executive Summary – Outlook

2017 is shaping up to be another evolutionary year for payments



- 1 Investments in **digital payments will accelerate** as both merchants and banks **fight for their share of the consumer wallet**
- 2 Banks are seeing a **strong macro environment** and favorable industry tailwinds
- 3 **Collaboration will continue** for Banks + FinTechs
- 4 **Faster payments will take hold in 2017**; blockchain will be a longer journey
- 5 **eCommerce** continues its path to **ubiquity**, but so does **fraud**
- 6 **Amazon's** ambitions will **continue to challenge retailers** online and in-person, but it also **creates opportunities**
- 7 **Remittance processing** in Government continues to show **strong demand** despite 20 years of growth in electronic Govt payments

A woman with long dark hair is smiling and looking towards the right. She is in a clothing store, with racks of clothes and a counter visible in the background. A blue semi-transparent banner is overlaid on the image.

Part 1: Merchants

Government Merchants Have a lot to Contend With

From digital commerce to EMV to Security

Opportunities

- Fortunately, the **EMV transition** should **smooth out in 2017**¹
- **Opportunities exist** to ride the ubiquity of consumer technologies to create new **connected commerce** experiences

Challenges

- Retail locations, **chargebacks**, **POS upgrades**, **security**, all remain significant challenges
- Online is just as challenged; **fraud is rising** and **mobile apps** require constant investment
- **Limited Govt Investment** in Tokenization can lead to data breaches
- **Government EMV** rollouts have been **slower than Commercial**



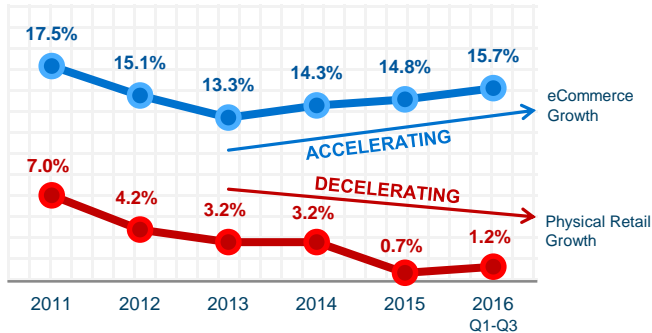
Source: (1) CDC Strategy Analysis

eCommerce: Continued Growth and Growing Pains

eCommerce will continue to gain share from retail, but fraud will follow

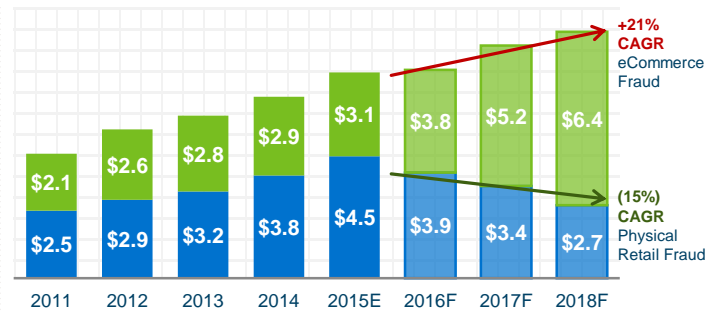
eCommerce volume growth continues to accelerate...

U.S. purchase volume growth, y/y¹



...but EMV will increasingly drive fraud online

U.S. merchant payment fraud losses³



The Growth Story

- **More than 25%** of 2016 holiday sales were via eCommerce, up from 20% in 2015²
- **Growth rates are accelerating**
- **Mobile** will maintain momentum in non-retail segments as Millennials (18-34 age) becoming consuming Govt products and services

The Risk

- eCommerce usually still means **using a 16-digit card number**, just like in 1996
- U.S. EMV shift has **driven fraud online**, which is expected to continue
- **Both the disease and the cure** are expensive and labor-intensive for online payment s

Sources: (1) U.S. Census Bureau, Quarterly E-Commerce Report; FDC Strategy analysis; (2) FDC SpendTrend "2016 Holiday Spend Analysis", January 2017, (3) FT Partners "Transaction Security at the Nexus of E-Commerce, Payment Market Structure Complexity and Fraud".

eCommerce: The 800-Pound Gorilla

Amazon is ubiquitous in eCommerce today, but is its long-term goal “powering” commerce?

Amazon’s eCommerce success has been well documented...

26.2%

of shoppers surveyed said they bought most of their 2016 holiday gifts from Amazon, beating all other retailers¹

From 2014-2015, Amazon captured

60.5%

of U.S. eCommerce growth

and

23.8%

of U.S. retail sales growth²

Amazon has an estimated

63 million

Prime customers, and Prime reaches nearly half of all U.S. households^{3,4}

...however, Amazon’s broader goal may be to “power” all forms of commerce



- Amazon is experimenting in a number of **historically “non-Internet” retail and personal services** segments⁵
- Amazon alone may not scale reference designs for seamless new commerce experiences, but it **could resell the underlying technology** (a la AWS)

Sources: (1) Forbes, “Amazon Is Shoppers’ Top Destination For Holiday Gifts, Increasing Lead Over Walmart,” December 15, 2016; (2) Internet Retailer, “The Winners’ Gallery,” May 2, 2016; (3) Fortune, “Amazon Prime Members Now Outnumber Non-Prime Customers,” July 11, 2016; (4) CNN.com, “Amazon Prime now reaches nearly half of U.S. households”. (5) Company website

eCommerce: FDC's Outlook for 2017

As more goods and services are available online, what will draw them back into stores?

In 2017, eCommerce will likely **drive technology and business model efficiencies for online and brick-and-mortar retailers** that may not fend off emerging threats, but may **give them a fighting chance**

Trend

FDC Outlook

Retailers Rethink Retail

- Costly retail stores **begin to double as local distribution centers**, as well as **low-inventory “showrooms”** for goods to be delivered after the visit
- Amazon’s “Go” grocery store concept could **spur other retailers to accelerate development of next-generation omnichannel technology**

Security & Fraud Remain Top of Mind

- **Retailer data breaches will likely continue¹**, but consumers are growing numb
- **Anti-fraud and tokenization products** will continue to see rapid sales growth as the EMV migration continues to push card fraud online

Solving the “Last Mile” Challenge

- **Restaurants, grocery stores, and personal services** will continue to expand on-demand eCommerce offerings, creating a need for **local distribution and delivery services** to close the “last mile” gap. Online EBT/SNAP pilots are underway
- **Uber, TaskRabbit, Postmates**, and similar companies will seek to fill the void

Source: (1) Javelin, “The Financial Impact of Fraud: Merchants Challenged as E-Commerce Fraud Rises Post-EMV”, October 2016

Transforming the Competitive Landscape of Retail

Extracting growth from more than simply “new locations”

The largest U.S.-based full-line sporting goods retailer...



...creates an all-in-one digital platform for youth sports leagues



A prominent Midwestern grocery chain...



...opens an in-store clothing boutique



A leading operator of college and university bookstores...



...launches an on-campus beauty and cosmetics concept



A contemporary home furnishings retailer...



...unveils a chain of hotels to sustain overall brand growth



Sources: Company websites.

Transforming Government With Automation

The pendulum continues to swing towards self-service Government kiosks and automation

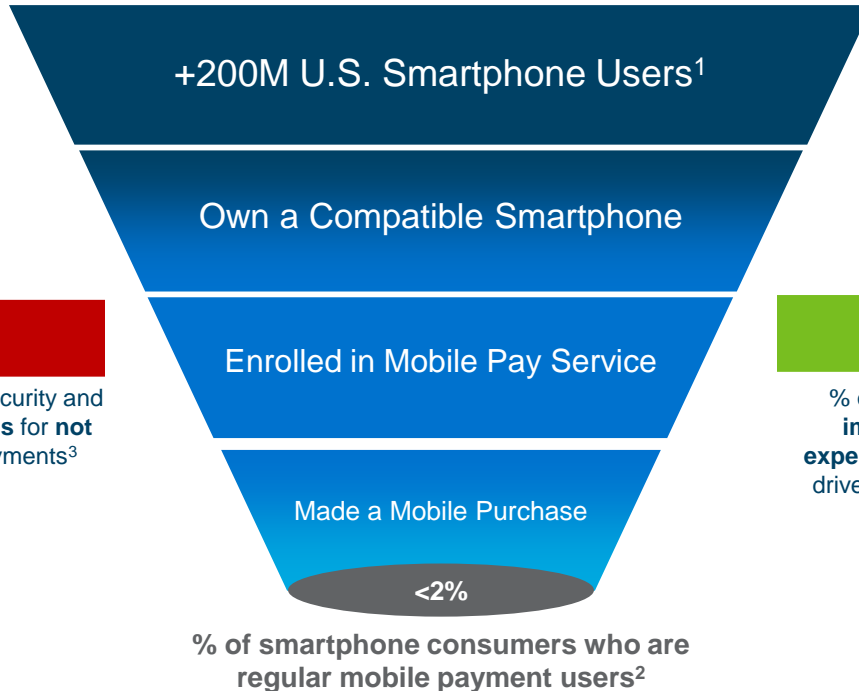


With 50%+ of retail activities automatable¹, the shopping experience will continue to change which will drive more demand for Government self service

Sources: (1) "Where machines could replace humans—and where they can't (yet)", McKinsey, July 2016. Company reports and websites.

Mobile Wallet Adoption

Adoption slowed by risk concerns and unclear value propositions



~60%

% of consumers cite security and privacy as **top reasons** for **not adopting** mobile payments³














>50%

% of consumers say an **improved shopping experience** or **loyalty** could drive them to adopt mobile payments⁴

Sources: (1) eMarketer US Forecast of Smartphone users for 2016, (2) "Study of Mobile Banking & Payments", 3rd Edition, First Annapolis, " Aug 2016 and FDC Strategy estimates, (3) "Future of Retail Study", Walter Sands, Feb 2016, (4) "North America Consumer Digital Payments Survey", Accenture, Jul 2015.

Mobile Wallet Landscape

Millennials are the mobile and alternative payments users... once they start working, demand will grow

The Types	The Players	Key Points	FDC Outlook
Large Techs & Networks	     	<ul style="list-style-type: none"> • Dominates current wallet mindshare (+70%¹) • Driven by new technology (e.g., Apple Pay, Samsung's MST) 	<ul style="list-style-type: none"> • Improving In-App + In-Browser payment experiences will accelerate adoption • New features emerge: rewards, P2P, omnichannel, loyalty, etc. • Secure international footholds
Financial Institutions	   	<ul style="list-style-type: none"> • Integrated with existing mobile banking experience • Consumer surveys suggest "banks" are the most trusted provider (+55%¹), yet they remain one of the least-used wallet options 	<ul style="list-style-type: none"> • Mobile banking, payments, and P2P become more deeply integrated • Continued jockeying for top-of-wallet placement • Leverage API to create more utility
Merchants	  	<ul style="list-style-type: none"> • Newest form of mobile wallets • Started as a response to the Tech Wallets, but evolved into merchant commerce experiences 	<ul style="list-style-type: none"> • Customer loyalty and experience to spur adoption • New entrants to emerge • Partnerships proliferate

Bottom Line: the wallet horserace will only get more jumbled in 2017

Sources: (1) "Study of Mobile Banking & Payments", 3rd Edition, First Annapolis, " Aug 2016. Company websites.

Mobile Wallet Partnerships

Many issuers have given limited time offers to encourage adoption

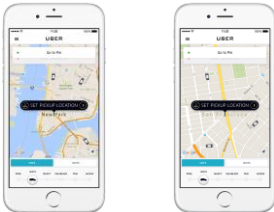


Discover cardholders received an automatic 10% cashback bonus on purchases made using Apple Pay¹



Android Pay users received \$10 - \$15 towards their checkout at online retailers Jet.com and Newegg²

UBER



New Uber users were offered a free first ride when they used their Capital One credit card³






AMEX Checkout users were able to book with points for their Airbnb reservations⁴

Sources: Samples of promotional offers from company web sites: (1) AppleInsider, "Discover cards to support ApplePay on Sept. 16 with 10% cash-back offer", Sept 2015; (2) Android Pay web site, (3) Fortune, "Capital One is offering free Uber rides to card members", Sept 2016; (4) Fortune.com, "Use Your AmEx Points to Book on Airbnb", Nov 2015

Government Mobile Apps use is also increasing Rapidly

Govt Usage of Mobile Wallets is new...

The U.S. Treasury's Bureau of the Fiscal Service provides the public with three types of Digital Wallets through www.pay.gov.

		
<p>PayPal allows users to connect with just a username and password. Users have access to their stored account balances, bank accounts, credit cards, and even pre-paid cards.</p>	<p>Dwolla is focused on lowering transactional costs for its users and its merchants / businesses</p>	<p>Amazon Payments is a way for customers to make payments or purchase goods and services from US based websites using the payment methods stored within an Amazon.com account.</p>

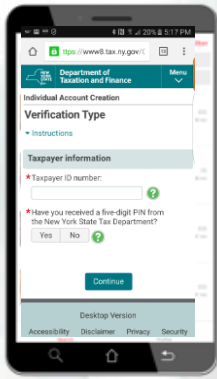
Government eCommerce Convergence

Native Mobile iOS and Android Applications



In home care service, with GPS and Time Tracking effectively reduces Medicaid fraud, waste and abuse.

Responsive Design Applications



Occasional Users - monthly, quarterly, or one time use.
 ADA and 508 Compliant from a PC, Tablet and SmartPhone

Millennials' expectations of instant gratification are intensifying, with 75% of 18 to 32 year olds agreeing with the following statement: "I get frustrated with things that waste my time..."
 Source: YPulse

Connected Commerce: Overview

More than omnichannel, it's about embedded, personal commerce any where, any way

Connected Commerce Goes Beyond Omnichannel

“Omnichannel is dead ... Moving forward, it's all about connected and not connected — not in-store or online.”

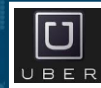
Patrick Gauthier

Amazon VP of Payments¹

Connected Commerce 101

- Not just anyone, but **any thing**
- Not just channels, commerce **any where** AND in **any way**
- Highly **personalized**
- Largely **invisible, frictionless**
- Has **multiple modes** of interaction (personal device, voice, autonomous)
- Still in its **infancy**

Early Examples



Paying for an Uber ride isn't about asking for the fare total and swiping a card; it's a seamless transaction via mobile device.



At Disney World, parents don't need to remember tickets, passes, or credit cards; it's all embedded in their wearable bands.



Amazon's Alexa personal assistant uses voice to share information, select music, control the home, and power commerce.



Ford is investing billions to make their future cars a commerce platform; it will buy gas, food, parking, etc.



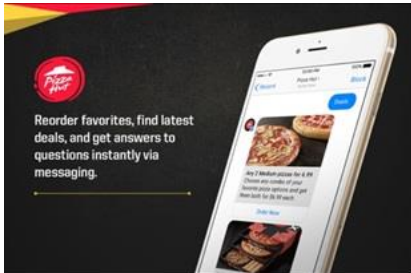
Starbucks targets its customers with hyper-personalized offers based on purchase history, weather, and app usage.

Sources: (1) "Amazon on Why Personal Commerce is the Next Big Thing", Pymnts.com, April 2016. Company websites.

Connected Commerce: Bots!

Facebook and its evolution as a commerce platform drives citizen expectations for similar services

Merchants are building Facebook bots!



- For customer service and ordering
- Payment credentials can be used across the platform
- Consumers can access businesses' mobile websites within Messenger

Why it could succeed

- 1B+ consumers on the platform²
- Meaningful developer engagement (30K+ bots on the platform)²
- Addresses growing reports of app fatigue
- Successful case study in WeChat

Why it could struggle

- Entirely new form factor for U.S. consumers
- Consumers still have to upload their cards
- The technology powering bots is still evolving
- P2P uptake in Messenger has been limited

Sources: (1) "Pizza Hut and Whole Foods Debut Social Media Chatbots", Engadget, July 2016, (2) Facebook earnings call, November 2016.

Connected Commerce: FDC's Outlook

Continued expansion into new experiences

Merchants Lead the Way

Merchants will play a key role in **crafting connected commerce experiences** – QSR, personal services, gig economy, and even retailing are prime candidates

Personalization

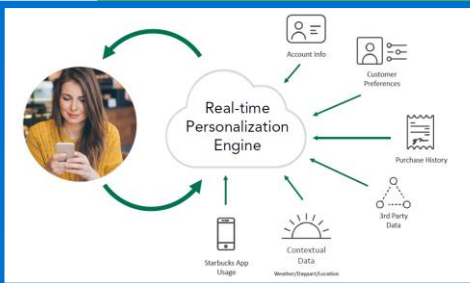
Leaders such as Starbucks will focus on **personalization as a key differentiator** in their connected commerce experience

Platform Expansion

Amazon, Apple, and Google will partner with developers and merchants to put **their platforms at the heart of these connected commerce experiences**

Piloting the Connected Car

Auto manufacturers will be **full-speed** ahead with the enablement of their platforms; those not in the game today will soon announce their intentions



Source: FDC Strategy

A low-angle photograph of a modern bank building facade. The words 'THE BANK OF' are visible in large, raised, metallic letters on a dark grey panel. A blue semi-transparent banner is overlaid across the middle of the image.

Part 2: Banks

P2P Payments

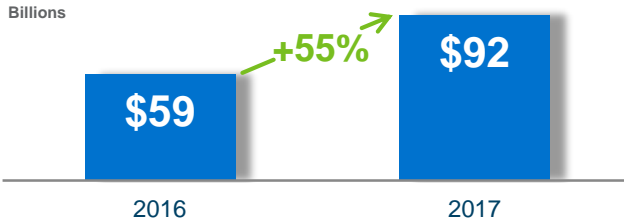
Can Government cash benefits arrive via P2P?

U.S. mobile P2P payments volume growth will likely remain strong

Sending money will likely be the primary use case; purchasing will be evolutionary

Nearly one-third of U.S. adult smartphone users will use P2P at least monthly in 2017¹

Most common Venmo transactions²



FINTECH

VS

BANKS

venmo **PayPal** **Square Cash** **f** **👤**

- ✓ Social engagement features
- ✓ Millennial attraction – “Venmo me”³
- ✓ Integrates with contacts on mobile devices and social networks i.e. Facebook



- ✗ Privacy and security concerns
- ✗ Speed i.e. next-day payment

zelle Bank of America CHASE citi FIS fiserv. WELLS FARGO PNC **13+ Other Bank Partners**



- ✓ Close attachment to customer funds
- ✓ Comfort in stability and security of customer’s bank
- ✓ 20+ FIs connected to 100M accounts today⁴





- ✗ Consumer switching costs to another app
- ✗ Potential lack of cohesive experience and branding across all banks³
- ✗ Regulatory constraints – social / transaction details

Sources: (1) “US Mobile Payments Outlook”, eMarketer, 2016; (2) “Why would anyone in her right mind use Venmo?”, The Washington Post, 2015; (3) “Is Zelle the De Facto P2P Solution in the U.S.?”, Mercator, 2016. (4) Company websites

Faster Payments

First Data Government Tax Payment Solutions are adding same day ACH to State clients

	The Players	The Developments	FDC Outlook
Same Day ACH		<ul style="list-style-type: none"> • Same Day credit ACH launched in September 2016¹ • Transactions ramping at expected clip; \$5B and 4M transactions in Oct² • 95% of top FIs expressed intent to participate³ • FDC StateEFT® support 	<ul style="list-style-type: none"> • Phase 2 launches in Sept 2017 for Same Day Debit¹ • Will focus on consumer-to-business (billers) • Work through growing pains (e.g., combating fraud, increasing security) • Solve for new use cases
Real-Time Payments		<ul style="list-style-type: none"> • The Clearing House is leading an effort to develop an all-new real-time solution • Core systems providers have partnered with TCH⁴ • Alternative solutions also announced by MasterCard, Wells Fargo⁵ 	<ul style="list-style-type: none"> • TCH's initial RTP launch estimated for Q2⁴ • Early pilots could focus on consumer use cases, including bill pay • Accelerating competition from tech-led solutions including Venmo, Square Cash, etc.

Faster payments is happening and will take hold in 2017

Source: (1) NACHA Resource Center web site; (2) "\$5 Billion – Not Bad for a (Same) Day's Work", BigFinTechMedia, November 2016; (3) NACHA, "Nation's Financial Institutions On Target To Offer Same Day ACH Payments In 2016", April 2016; (4) TCH web site; (5) Pymnts.com, "Mastercard, Wells Fargo Launch Mastercard Send", December 2016

The Evolution of Blockchain and Distributed Ledgers

Big-name companies continue to invest, but the future of the technology is not clear

Major banks and securities exchanges are experimenting with blockchain technology

14 of the Top 30 Global Banks¹



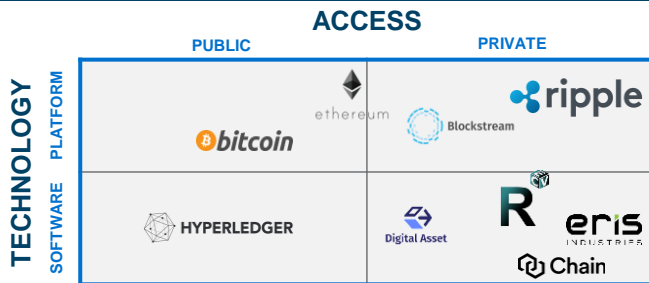
Representative Companies

21 of 63 Global Securities Exchanges¹



Representative Companies

But technology standards are far from coalescing, and interoperability is not guaranteed



- Goldman Sachs and Santander pulled out of the R3 consortium due to disagreements over direction²
- Changing the public blockchain standard requires mass consensus from developers and users, which has spawned more flexible private blockchain models³
- The hype is cooling, and some experts now believe financial institutions may stick with non-blockchain technology for internal uses⁴

Sources: (1) CoinDesk "State of Blockchain Q3 2016"; (2) Fortune, "Why Goldman Sachs and Santander Are Bailing on R3's Blockchain Group," November 22, 2016; (3) Bloomberg News, "Man Who Introduced Millions to Bitcoin Says Blockchain Is a Bust," August 18, 2016; (4) Fortune, "Why Blockchain Fails—and When It Will Succeed," November 3, 2016.

Paper Checks are still coming – Remittance Processing

Government clients contract with Bank Partners or Direct with First Data



GREATER SCALE

419 Million

Payments processed annually through our national network

34 Million

Remittance payments monthly



BROADER EXPERIENCE

25 Years

Experience in lockbox processing

3,400

Remittance processing lockboxes across various industries



DEEPER COVERAGE

8 processing sites

- Charlotte, NC,
- Chicago, IL,
- Atlanta, GA,
- Dallas, TX,
- Philadelphia, PA,
- Los Angeles, CA,
- Newark, DE
- Staten Island, NY

- Economies of scale
- Any range of volumes
- Remote Deposit Capture
- 100% conversion to image
- Image archive capabilities
- Able to replace paper payments with array of electronic payment options

