



A Career in Payments: Past, Present & Future

CheckFree
CPS – Payments Forum
October 11, 2007

Agenda

Today's Discussion:

- Personal Background
- The Evolution of Electronic Payments
- The Current State
- The Future
 - Account-to-Account
 - Business-to-Business

Personal Background

- Joined the New York Clearing House in August 1981 from Burroughs Corp (UNISYS)
- Technology and payments systems background
- Held numerous positions that included systems development, operations management, business development and overall management of payments systems
- Payment systems
 - Wire Transfer -Clearing House Interbank Payments System (CHIPS)
 - Automated Clearing House (ACH) – NYACH & Electronic Payments Network
 - Check Clearing Operations (NY, Chicago, San Francisco & LA)
 - Image Exchange - SVPCO



Electronic Payments Systems

The Past

Electronic Funds Transfer (EFT) Circa 1981

- Electronic payments systems were unreliable
 - Computerized wire transfer was 11 years old
 - ACH was 7 years old
- Wire transfer systems were mainly terminal based – fully electronic
 - Settlement for CHIPS was next day
 - Fedwire & CHIPS transferring around \$200 billion per day
- ACH – EFT stood for Extra Fast Trucks
 - Items were distributed via paper and magnetic tape
 - Items were originated via magnetic tape
 - A handful of banks were using data transmission
 - Primary ACH applications were direct deposit and direct payment neither application had much traction

Electronic Funds Transfer (EFT) Circa 1981

- Checks were being cleared as they had been for decades
 - Very efficient
 - ECP was in its infancy – pilot clearings with magnetic tape
- Technology begins to improve in the mid to late 80's
 - Mainframe computing is more reliable
 - Distributed processing using mini-computers
 - Telecommunications and modem improvements
 - Personal computers become of age in 1986
 - High speed dial-up comes on to the scene

The Changing Environment

- Wire transfer system becomes more automated with all large banks installing computer-to-computer interfaces
- NYACH embarks on a three year program to establish the first all-electronic ACH (No paper or magnetic tape)
 - PC software for receivers developed
 - Mandated all originators and receivers to have electronic connections – project started in 1987 and completed in late 1989
 - FedACH become all-electronic in 1993
- Limited promotion of electronic payments direct deposit and direct payment begin in the 1990s – acceptance for direct deposit less than 40%
- ECP gains wider use – an all-electronic version created in 1992
- Image exchange pilot for returns conducted in 1992

The Changing Environment

- Wire transfer system focus in the 1990s was primarily on risk controls – operational, credit and fraud
- ACH focus was on new ways to grow ACH volume – business payments, cash concentration, customer initiated entries and in the late 1990s beginning to look at the check conversion applications (RCK, ARC and POP – RCK implemented in 1998)
 - In the last 10 years, NACHA focused on check conversion rather than native electronic payments
- Check focus continued primarily on ECP and the early stages of image exchange planning
- ECP's major flaw is the inability to carry payee information – eliminating any possibility for check conversion – paper or image must follow



Electronic Payments Systems The Present

Pivotal Year for Image Exchange

- May 2007 – annualized rate of image exchange/share is in excess of 8 billion items approximately 25% of total
 - 66% of these items are being received and processed as images
 - 2.6 billion being cleared as substitute checks
 - Approximately \$10 trillion
- 42% of U.S. financial institutions are receiving images
- Federal Reserve, SVPCO, Viewpoint and EndPoint are the major exchanges

Critical Mass for Image Exchange

- Each of the existing networks should double their volume in 2008
- Financial institutions that have not converted will continue to face higher paper clearing prices
- Check clearing volume will continue to decline due to debit cards, ACH check conversion and native electronic payments
- Vast majority of the paper will be long gone by 2010

Wire Transfer Systems

- Wire transfer is the golden goose of wholesale banking
- Fed & Clearing House Wire Transfer Study – 2006
 - Highlights the need for more automation
 - Structured remittance is critical for future growth
- Fed is not providing the proper leadership and is looking for any expedient method to implement without significant work on their part
- Some global banks want to do nothing
- Doing nothing – will cause golden goose to dry up over time

ACH – Check Conversion an Interim Product

Bill Payment

- Accounts Receivable Conversion (ARC)
 - 2004 - 1.25 billion
 - 2005 - 1.62 billion
 - 2006 - 2.1 billion
 - Continued growth expected in 2007 with new industries adopting (telecommunications, insurance)
 - Volume grows slowly, flattens in 2008
 - Volume to decline in 2009
 - o Payments will move to direct payment, Internet and home banking
 - o Many payments will migrate to credit/debit cards
 - Image Exchange will not replace ARC – inferior solution



ACH - Check Conversion an Interim Product

Point-of-Sale

- Merchants like image exchange model except for cost
 - No signage
 - No customer confusion
 - Lower incidence of fraud
- Back-Office Conversion (BOC) NACHA implemented March 2007
 - Sign at point-of-sale stating that check can be converted to an EFT
 - Merchant converts check in a back-office environment to an ACH debit
 - Very slow take-up
- Volume will ultimately move to cards over time
 - BOC could result in accelerating movement
- BOC peaks in 2008 & 2009



ACH Check Conversion an Interim Product

Business Check Conversion

- Best application for image exchange
- Corporate customers do not want their checks converted to ACH debits
- Business checks without aux-on-us field eligible for conversion
- Receiving banks working on marrying ACH & Check systems
- The longer image exchange takes the more inroads ACH will make

ACH – Business Opportunities

Native Electronic Payments Growth

- Business-to-business payments (3-4 billion)
- Business-to-consumer (7.3 billion)
 - direct deposit (salaries, annuities, dividends, expense reimbursement)
- Consumer-to-business bill payment (7 billion)
 - Internet banking
 - Direct payment
 - Company Web sites
- Account-to-account (4.4 billion)
 - Transfers between accounts
 - Consumer-to-consumer
- Cross-border (Research indicates market small)





Electronic Payments Systems The Future

Account-to-Account

Account to Account Transfers

- Consumers should be able to perform the following electronic transfers and payments from one platform using a **credit push**:
 - Transfer funds between accounts at the same institution
 - Transfer funds to your account at another institution
 - Transfer funds to stock and mutual fund accounts
 - Transfer funds to accounts of other family members within same financial institution or an external institution
 - Pay person to person
 - Pay any bill electronically
- Channel of choice – Internet or Personal Banking, Mobile Banking, ATM & Telephone Banking

A2A Payment Mechanisms


- **Wire transfer** – real-time transfer with payment finality
 - Extensive reach but has high cost for origination and receipt
- **EFT Network** – real-time transfer
 - Limited reach unless all switches participate
- **ACH** – next day transfer
 - Ubiquitous

All methods should be available from **Personal Banking** platforms with pricing based on speed of delivery

Account Identifiers

- Transit Routing Number and Account Number
 - High risk for consumer or business to publicize
 - Can be used illegally for demand drafts, fraudulent checks and ACH debits
- EFT Personal Account Number (PAN)
 - Limited risk but could be used illegally as off-line debit
 - May require credit only version
 - No current ability to pay business customers
- Universal Payment Identification Code
 - Safe identifier can not be used for debit (electronic or paper)
 - Portable
 - Mobile phone number
 - Currently only available for business customers but can be rolled out to consumers
- Email Address
 - Safe identifier
 - Closed networks (PayPal)
 - Needs to be supported with proper banking identifiers
 - Portability issues

Limitations of Internet Banking

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Add a Payee

Payee Name:

Nickname:

Payee Account ID:

Verify Payee Account ID:

Payee Address 1:



Payee Address 2:

City:

State: **ZIP:**

Payee Phone: () -

Step 1 of 3
next reset

 **FDIC Insured**
 **EQUAL HOUSING LENDER**

Payee Account ID is really Payer Account ID




No location for actual Payee Account Information




A2A Solutions

- Financial institutions must
 - Modify initiation platforms to allow transfers using account identifiers
 - Home banking
 - Mobile Phones
 - Telephone banking
 - ATM
 - Use railroad that makes the most sense for the customer
 - EFT network
 - Wire transfer network
 - ACH network
 - Price for the service based on value received


Price Credit Transfer Based on Service Level

Transfer Money to Your Accounts					
Specify instructions to schedule your Money Transfer request.					
Select Account	From Account		To Account		
	<input checked="" type="radio"/> Checking Account xxxx3333 <input type="radio"/> Savings Account xxxx2345 <input type="radio"/> Money Market Account xxxx4290		<input type="radio"/> Bank of America xxxx5734 <input type="radio"/> Community Credit Union xxxx2345 <input checked="" type="radio"/> Merrill Lynch xxxx1236		
	Select Service Type	Service Type	Daily Limit	Delivery	Cut Off Time
	<input type="radio"/> Standard <input checked="" type="radio"/> 	\$25,000.00 \$2,000.00	3 Business Days Next Business Day	4 PM ET 4 PM ET	
Amount	\$ 2,000.00				
Your Monthly Limit Remaining	\$ 25,000.00 (This Limit is for transferring money to Accounts. Learn more...)				
		<input type="button" value="confirm"/> <input type="button" value="cancel"/>			
Select Service Type	Service Type	Daily Limit	Charge	Delivery	Cut Off Time
	<input checked="" type="radio"/> Standard	\$25,000.00	\$5.	3 Business Days	4 PM ET
	<input type="radio"/> 	\$10,000.00	\$7	Next Business Day	4 PM ET
	<input checked="" type="radio"/> 	\$10,000.00	\$10	Real-Time	Anytime

The Payment Platform of the Future

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personal banking **PERSONAL ONLINE BANKING** **NEW ACCOUNT CHOICES** **LOANS & CREDIT CARDS** **CUSTOMER SERVICE**


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Add a Payee

Payee Name:
Nickname:
Payee Account ID:
Verify Payee Account ID:
Payee Address 1:
Payee Address 2:
City:
State: **ZIP:**
Payee Phone: () -

Payee Bank Routing Number: **Step 1 of 3**
Payee Bank Account Number:
Payee Personal Account Number:
FDIC Insured
 **EQUAL HOUSING LENDER**

Personal Online Banking your opinion matters! 

The Platform of the Future – Bill Payment

Corporate Sales	
Invoice #	0147586
Date	12/06/01
Order #	3458003
Page #	1 of 1
Customer #	804978-75
Amount	\$2096.28

George,
Thank you for your order!!

Sold to:	Ship to:
Hudson Computers Supply ATTN: G. Nederman 45 E Main St. Suite 1B Warren, NY 32132-6754	Hudson Computer Supply ATTN: G. Nederman 45 E Main St. Suite 1B Warren, NY 32132-6754

Qty	Size	Color	Item #	Description	Unit Price	Disc	Total
4	34'	N/A	7523411	T1 Cable	\$105.00		\$420.00
2	N/A	N/A	7565433	Network Router	\$540.00		\$1080.00
1	Sm	Blue	6543733	19" LCD Display	\$426.00		\$426.00
1	Md	Red	6242444	Mousepad	\$15.00		\$15.00

Sub Total	Tax	Shipping	TOTAL
\$1941.00	\$155.28	\$0.00	\$2096.28

Questions?
Call customer service @ 243-555-3232

If you are paying by check please return this portion with your payment

Amount	Due Date	Customer #	Invoice #
\$2096.28	01/06/02	804978-75	0147586

We encourage you to send payments electronically via ACH credit or EDI Payments to:

ACME Products Inc.
ABA # - 021052053
UPIC/Acct # - 3783000152
Reference # - RJ8049
Invoice # - 0147586342

* To ensure proper credit of electronic payments both the reference # and invoice #(s) are required.

Remit checks to:
ACME Products Inc.
1209 Cedar Ln.
Holyoke, MD 34212-4565

Sold to:
Hudson Computers Supply
ATTN: G. Nederman
45 E Main St. Suite 1B
Warren, NY 32132-6754

We encourage you to send payments electronically via Personal Banking Bill Payment:

ACME Products Inc.

Bank Routing No. - 021052053

Bank Account No - 37830152

Your Account No - 147586342

(Please ensure that you include your account number)

Account Setup

Welcome to USA Credit Union's OnLine USA - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites RSS Mail Print W Word PDF

Address <https://www.usafcu-onlineusa.org/onlineuserv/HB/HomeBanking.cgi> Go Links

Google G Go Bookmarks 610 blocked Check AutoLink AutoFill Send to Settings

USA Credit Union Home Contact Us Rates Sign Off

Account Access Bill Payment External Transfers Stock Quotes User Options Online Forms MyStatement Help Consumer Loans

Overview Transfer Funds History Add Accounts

External Accounts Investment Accounts

Account Ownership

Select the owner of the account you want to add

☐ Select if you are the primary owner of this account.
(My name appears on this account as the primary owner, not the joint owner.)

☒ Select if the owner of this third party account is someone other than yourself.

Add External Accounts

To enable accounts held at other financial institutions, you must add them to our system. Begin the search for your financial institution by entering the name or by entering the 9-digit ABA Routing/Transit number found on your check or deposit slip.

Enter your Bank or Credit Union's name Find

OR

Enter the 9-digit ABA Routing / Transit Number Find

Memo

000989430 0014409843 1436

9-digit ABA / Routing Number Account Number

(For Savings and MMA accounts, you can find the 9-digit Routing Number between the 1:1 symbols on your deposit slip)


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357350

start | Internet

Inbox - Mic... New Messag... Welcome to ... Outlook Sen... 1:01 PM

Enrollment Information



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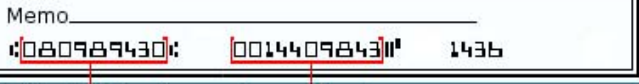
Account Access | Bill Payment | External Transfers | Stock Quotes | User Options | Online Forms | MyStatement | Help | Consumer Loans

To set up your account immediately, include your login information for the Bank of America online banking website below and click "Submit".

NOTE: Please be sure to accurately enter account details below. As the user of this service you are responsible for any erroneous transfers caused by incorrectly entering the third party account information requested below.

Enroll this Bank of America Bank Account for Funds Transfer


Enter the name of the person who owns this account.

First Name	<input type="text" value="Laurie"/>
Last Name	<input type="text" value="Thomas"/>
Account Type	<div><input type="text" value="Checking"/> (Some account types, especially IRAs, 401(k)s and custodial accounts have special tax implications and restrictions. At this time, these accounts are not allowed for use with this service)</div>
Account Number	<input type="text" value="9471872375"/> (From your Account Statement)
Re-enter Account Number	<input type="text" value="9471872375"/>
ABA Routing / Transit Number	<div><div><div>Memo</div><div></div></div><div><div>9-digit ABA / Routing Number</div><div>Account Number</div></div><div><input type="text" value="021200339"/> (Select the 9-digit ABA Routing Number found between the symbols on your check or deposit slip as shown above)</div></div>
<div><input type="button" value="Submit"/> <input type="button" value="Cancel"/> Click here to learn more about Account Types.</div>	

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Overview

Transfer Funds

History

Add Accounts

External Accounts | Investment Accounts

Add External Accounts

Accounts Enabled for Funds Transfer

Congratulations! The following accounts are now enabled for Funds Transfer. Click the "Transfer" button to move money now.

Bank of America Checking Account xxxxxx2375

Transfer Funds | Add Another Account

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Transfer Request - One Time or Recurring

Welcome to USA Credit Union's OnLine USA - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Reload Home Search Favorites RSS Print Mail News Groups

Address <https://www.usafcu-onlineusa.org/onlineuserv/HB/HomeBanking.cgi> Go Links

Google G Go 610 blocked Check AutoLink AutoFill Send to Settings

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Overview Transfer Funds History Add Accounts

Bank of America account xxxxxx2375 added successfully.

Select Accounts

Select the source and destination account for your transaction

From USA Credit Union, Share Savings, 357350 [Add an External Account](#)

To Bank of America, Checking-#####2375

Select Payment Type

☒ One Time Transfer

☐ Recurring Transfer


Submit Cancel

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start FRFS: FedACH Partic... Laurie Thomas's Tax... Welcome to USA Cre... 1:15 PM

Transfer Amount & Speed



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Overview | **Transfer Funds** | History | Add Accounts

Transfer Funds
Enter transfer details and click "Submit" to preview your transaction

From

USA Credit Union, Share Savings, 357350

To

Bank of America, Checking-#####2375

Enter Transfer Amount

Amount

\$

Your Monthly Limit Remaining is \$ 25,000.00
[Learn More About Limits](#)


Select a Service

Service	Funds Delivery	Daily Limit	Cut Off Time
<input type="radio"/> Standard	3 Business Days	\$15,000.00	10 PM PT
<input checked="" type="radio"/> Premium	Next Business Day	\$2,000.00	5 PM PT
<input type="radio"/> Scheduled	Enter Send Date <input type="text" value="11/06/2006"/> Funds will be delivered to the destination account 3 to 4 business days after send date.	\$15,000.00	

For details on when transferred funds will be available, [click here](#).
For details on fee amount, [click here](#).

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Transfer Confirmation



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Overview | **Transfer Funds** | History | Add Accounts

Transfer Funds

Review and click "Confirm" to schedule this transaction


Request Date	11/03/2006
From	USA Credit Union, Share Savings, 357350
To	Bank of America, Checking-#####2375
Amount	\$ 10.00
Funds Delivered	3 Business Days <small>Transfers scheduled for Next Business Day delivery will take an extra day as it is after the cut off time</small>
Fee	\$ 3.00 per transaction*
<div>Confirm Back</div>	

*This amount will be deducted from the account from which you requested the transfer. If the account receiving the transfer charges to receive ACH or Wire transfers, those charges would be additional.

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Transfer Detail Response



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Overview | Transfer Funds | History | Add Accounts

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Transfer Acknowledge

The transfer below has been scheduled based on your instructions.

Reference Number	10553123	Click here for Printer friendly page
Request Date	Fri, 11/03/2006	
From	USA Credit Union, Share Savings, 357350	
To	Bank of America, Checking-#####2375	
Amount	\$ 10.00	
Funds Delivered	3 Business Days	
Charge	\$ 3.00 per transaction*	

Make Another Transfer

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Transfer Status



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Overview | **Transfer Funds** | History | Add Accounts

Your funds transfer request between USA Credit Union, Share Savings, 357350 account and Bank of America, Checking-#####2375 account for \$10.00 has been scheduled.

Recent Transactions

Ref.#	Request Date	From	To	Amount	Charge	Status	Action
10553123	11/03/2006	USA Credit Union, Share Savings, 357350	Bank of America, Checking-#####2375	\$10.00	\$3.00	Pending	Cancel

Approved Accounts

Financial Institution	Account	Action
USA Credit Union, Share Savings	357350	
USA Credit Union, Basic Checking	3573599	
Washington Mutual Bank, MMA Checking	#####9199	Remove

Third Party Accounts

Account Owner	Financial Institution	Account	Action
Laurie Thomas	Bank of America, Checking	#####2375	Remove

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357350

Email Confirmation

From: memberservice@usacuonline.org

Sent: Fri 11/3/2006 1:33 PM

To: George.Thomas

Cc:

Subject: Funds Transfer Request #10553123 Has Been Scheduled

Hello George,

We have received your funds transfer request:

Item #: 10553123
Amount: \$10.00
From: USA Credit Union, Share Savings #####
To: Bank of America, Checking #####

We received your request on November 03, 2006, at 01:27PM EST. You should expect to see the funds in the destination account within 3 business days. The timing can vary, however, depending on the institution.

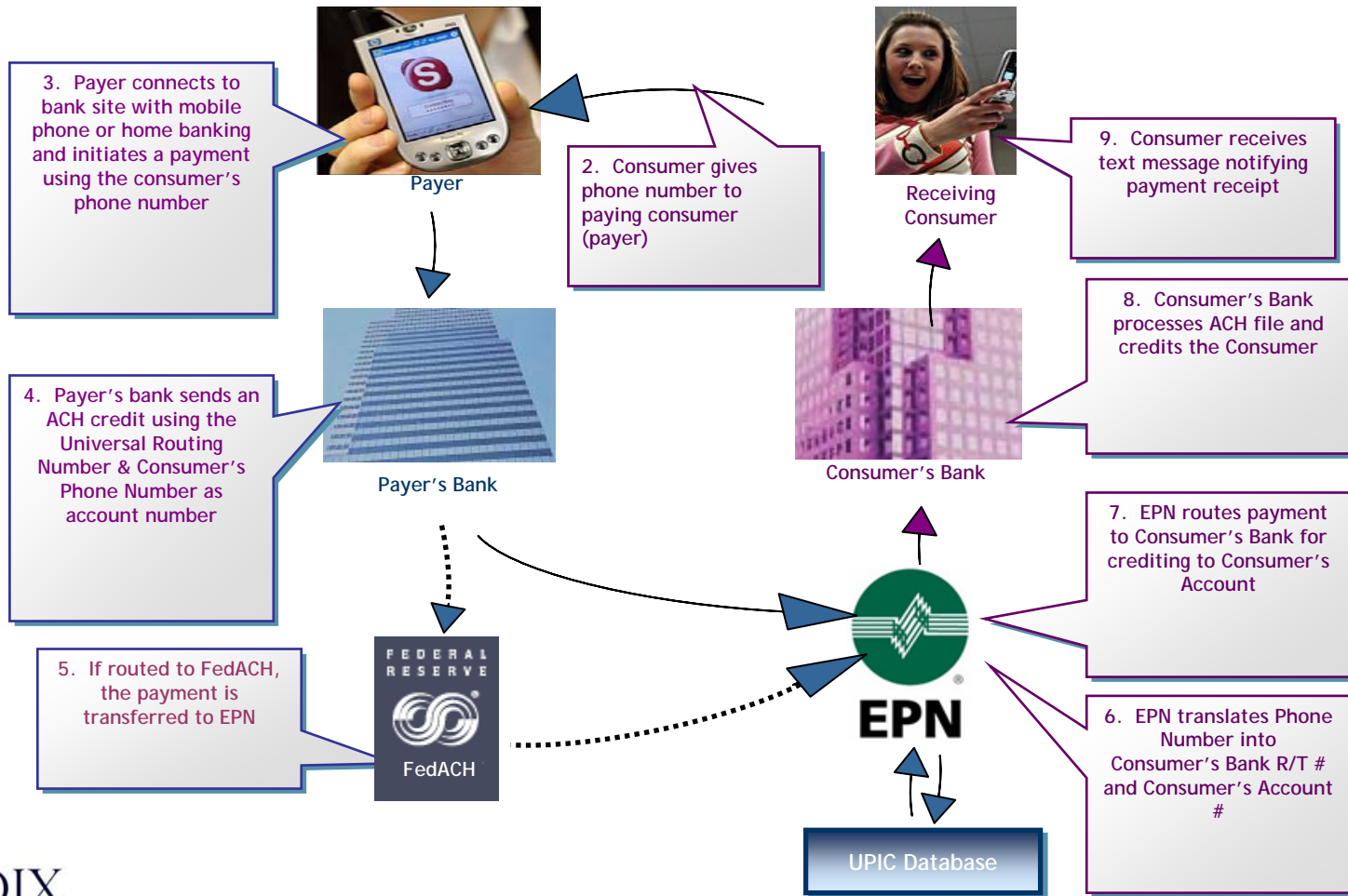
If there is a problem with executing your request, we will notify you by email and on the Overview page.

Sincerely,

MEMBER SERVICES



Mobile Phones using UPIC Architecture





Electronic Payments Systems The Future

Business-to-Business Payments

Situation

U.S. Payment Systems – Wire Transfer & ACH
Require Automation Enhancements



What is needed for payment initiation?

- Bank systems require upgrades to provide more electronic payment automation
 - Automatic creation of electronic payments directly from accounts payable systems
 - Business customers ability to export from payables or key in structured remittance information
 - Elimination of faxed instructions to the bank for wire creation



What is needed for payment receipt?

- Business customer receives enough structured information to automatically post to accounts receivable
- Bank information delivery systems need to be upgraded to transmit automated remittance reports
- Banks must supply business beneficiary with all relevant data for automated posting in a standard format



The Standards

- ISO 20022
 - International Standards Organization
 - Universal Financial Industry message scheme (UNIFI)
 - Extensible Mark-up Language (XML)
 - UNIFI an effort to combine multiple XML standards
 - IFX
 - OAGI
 - SWIFT
 - TWIST
 - Rosetta Net

The Standards

- STP 820
 - American National Standards Institute
 - Streamlined version of ANSI X12.820
 - Defines minimum number of data elements for automated posting and reconciliation
 - Does not deviate from original standard
 - Full compatibility with companies and banks using 820 standard
 - Simplifies coding for banking software vendors

ISO 20022 – Remittance Information

<Strd>

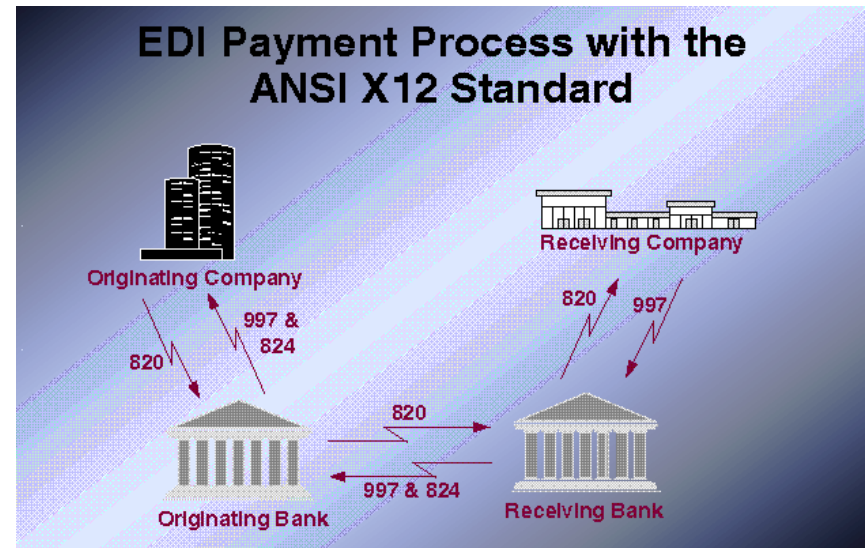
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<CdtrRefTp>
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```

</Strd>



STP 820 – Remittance Information

RMR*IV*3920394930203**30.01*40.01*2\
REF*R7*3920394930203*SPOKE WITH MS. JONES \
DTM*003*20030123\
ADX*-8*01*TD*USED CATALOG 199JAN2003\



B2B Payments Opportunity

- Domestic
 - The Federal Reserve Study (2001) - 4+ billion payments
 - New study this year
- Global
 - The Clearing House Study – 85 million payments
 - Includes payments already being made by wire and bank proprietary systems
 - Based on 75% of U.S. major trading partners



ISO 20022 - Benefits

- Based on current technology
- Brings multiple standards together
- Global standard potential
- Currently being implemented in Europe
 - Key for implementing SEPA
 - No other viable alternative
 - Time frame for full implementation is extended



ISO 20022 - Barriers

- Cost to the U.S. banking and business community to implement
 - No return on investment for payments system operators or financial institutions (over 15,000 FIs in the US)
 - Businesses of all sizes will need to implement it in their enterprise resource planning (ERP) or accounting systems
 - Cash management and accounting software providers will need to implement the complex standard into their accounting packages
 - Financial Institutions will need to develop remittance delivery capability using the new standard for their business customers
- 20 years before ISO 20022 is broadly adopted by US businesses
- The standard is unproven in any payments systems

STP 820 - Benefits

- Speed to market - large corporations are able to process the STP 820 in their ERP packages without any upgrades or changes
- Cash management software vendors are already implementing the STP 820 for their ACH offering
- Minor implementation effort for vendors for wires
- Banks already have EDI delivery platforms that can be used to deliver the STP 820 to their business customers today
- This is the first step to streamlining front-end applications for business customers
- Most corporations do not have XML in their five-year plan for payments

STP 820 - Barriers

- U.S. Standard
- Some banks do not believe the wire transfer systems should be upgraded for B2B traffic
- Global banks only want to upgrade once

Corporate Expectations

- Wanted a structured remittance capability for electronic payments for years
- Do not want to wait 10-15 years
- AFP Payments Advisory Group sent a letter of support for STP 820
- AFP group opposes implementation of ISO 20022 in the near term



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Solutions

- Implement STP 820 for ACH & wires now
- Ensure that formats can be mapped using ISO 20022
- Include 9000 characters of remittance for Fedwire
 - CHIPS has it
 - SWIFT MT103 Remit
- Additional remittance space allows:
 - Reduced expense by all parties to implement
 - ISO 20022 to be carried by ACH,SWIFT, CHIPS or Fedwire
 - Banks that want to use ISO can

Next Steps

- Industry needs to solidify the course of action
- Need bank commitment for implementation of origination and remittance delivery
- Work with the software vendors to implement the standard
- Operators or others may need to supply a white label remittance delivery capability – centralized or stand-alone



Questions?