



Electronic Payment Processing:

Challenges and Smart Solutions

CALIFORNIA ASSOCIATION OF COUNTY TREASURERS & TAX COLLECTORS

June 10, 2015

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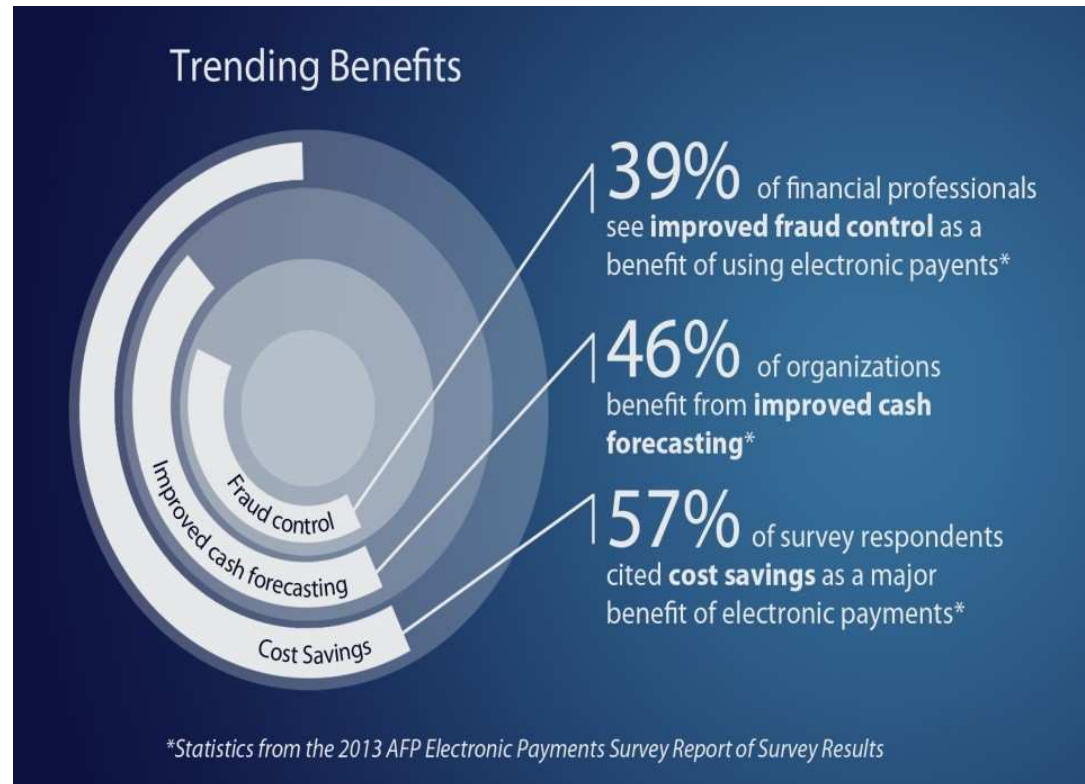
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Perspectives on government e-payments



Receivables Trends

- To reduce redundancies and better manage risk and business continuity, treasury departments are moving steadily toward a “zero-return” environment, where they send and receive information electronically with no paper returned.
- They’re adopting new processes supported by technology that meet their requirements for accuracy, secure transactions and regulatory compliance. In the process, they’re creating leaner operations that benefit their organizations in the following important ways:
 - Reduced transaction costs
 - Reduced fraud exposure
 - Improved cash forecasting
 - More efficient reconciliation
 - Accelerated collections



Trends in electronic, card/payer-not-present and mobile payments

Trends in noncash payments by number and type of transaction

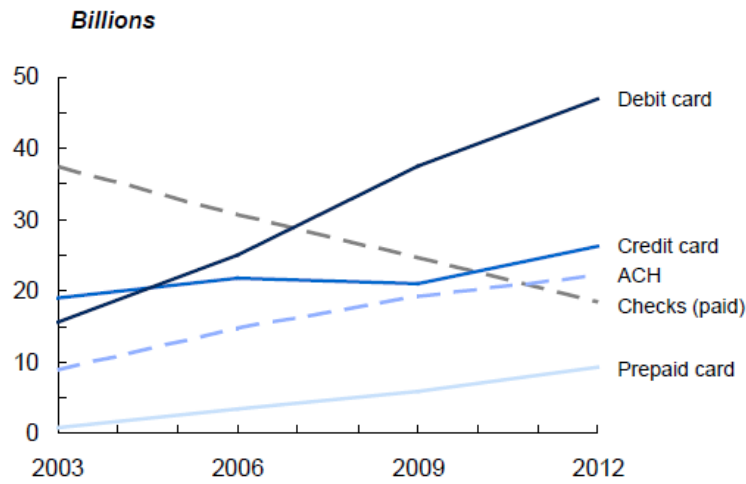
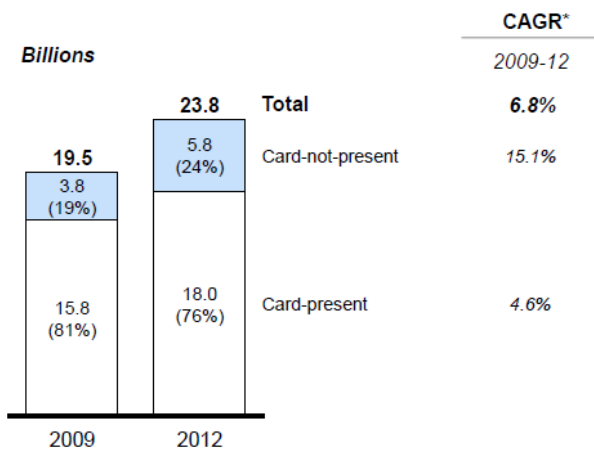
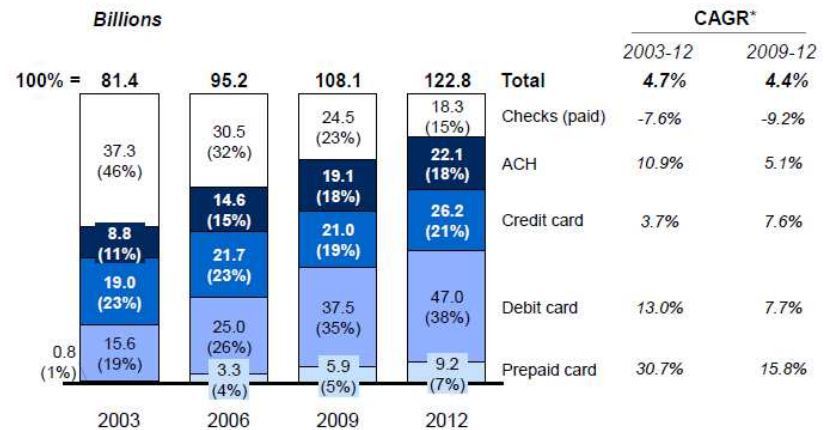


Exhibit 9: Card-present vs. card-not-present general-purpose credit card transactions

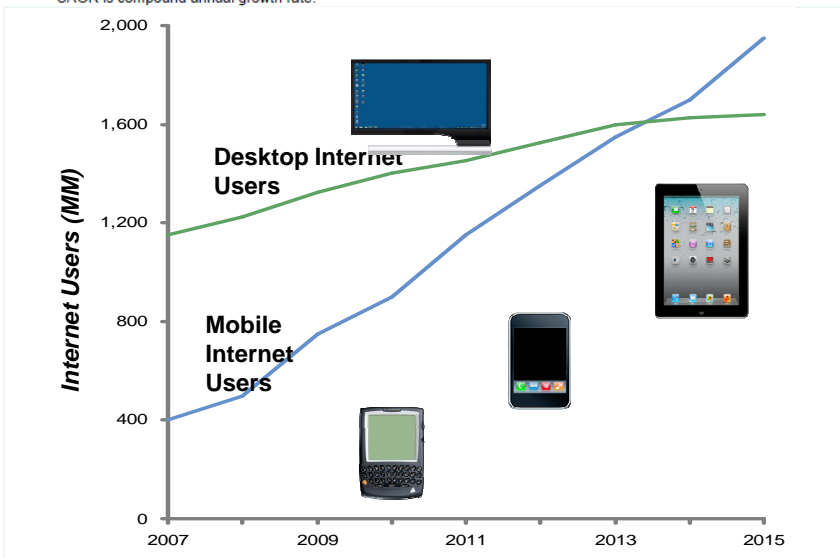


Source: The 2013 Federal Reserve Payments Study: Recent and Long-Term Payment Trends in the United States: 2003 – 2012 (fifth in a series of triennial studies conducted since 2001 by the Federal Reserve System to estimate aggregate trends in noncash payments in the United States.)

Exhibit 4: Noncash payment transactions by payment type



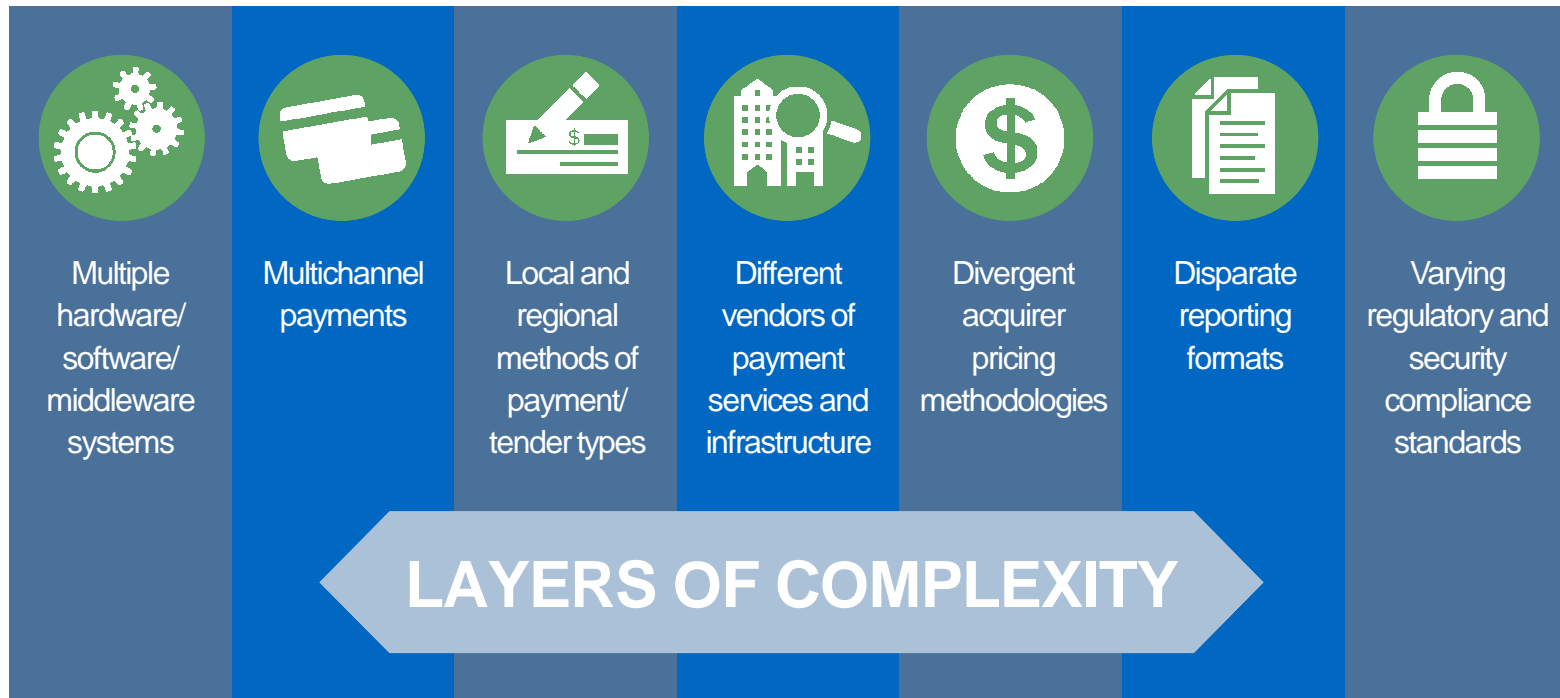
Figures may not add due to rounding.
*CAGR is compound annual growth rate.



Source: Bloomberg Businessweek, MarketingProfs; Morgan Stanley Research

¹Figures as of 2013

Potential hidden risks in the payment value chain



“It is tough to maintain command and control over your business if you contract outsiders who contract more outsiders who contract additional outsiders.”

– AML expert **Kevin Sullivan**, former investigator with the New York State Police assigned to the NY High Intensity Financial Crimes Area (HIFCA) Task Force

EMV

How EMV Chip Cards are Different

- Chip cards are inserted into chip-reading devices rather than being swiped
- If PIN is supported on the chip card, it will replace traditional signature
- In conjunction with PIN, chip cards provide an added layer of authentication
- Terminals will accept both magnetic stripe and chip cards for years to come

Customer Verification Methods (CVM)

Chip and Signature	<ul style="list-style-type: none"> ■ The consumer signs to validate their identity ■ Prevents counterfeit card fraud
Chip and Offline PIN	<ul style="list-style-type: none"> ■ The chip card and the terminal validate the PIN, then authorize ■ Prevents counterfeit, stolen and never received or issued card fraud
Chip and Online PIN	<ul style="list-style-type: none"> ■ The consumer's PIN is sent to the host for validation ■ Prevents counterfeit, stolen and never received or issued card fraud

Benefits of chip technology

- **Confidence** – EMV has been used globally with cards in Europe for over a decade; and in Canada over the last seven years
- **Security and Fraud Protection** – dynamic authentication reduces the value of stolen cardholder data; Chip technology is more difficult to duplicate and combining its use with a PIN helps reduce fraud due to lost, stolen or counterfeit cards
- **Reduces Chargebacks** – the use of PIN with the chip technology can significantly reduce the frequency of chargebacks
- **Global Interoperability and Consistency** – outside of the U.S., 43.3% of all cards are EMV and 86.8% of terminals are EMV capable

US migration drivers

- Avoid becoming a destination for criminals and global magnetic-stripe fraud activity
- Increase satisfaction of traveling international cardholders
- Maintain interoperability with the rest of the world
- Position the industry for the adoption of other forms of payment, notably NFC mobile contactless payments
- Payment brand mandates and chargeback liability shifts are forcing the adoption of this technology

What is a liability shift

- Liability Shift is a change in who bears the chargeback related cost of fraudulent transactions
- The penalty for merchants or issuers missing the October 2015 (non Petro) / October 2017 (Petro) deadline is a shift in fraud related liability.
- Merchants who have not implemented an EMV certified solution will risk absorbing the cost of all disputed counterfeit and potentially lost/stolen/not received fraudulent transactions they initiate



Electronic payment solutions can help California counties



- Smart electronic payments solutions can significantly impact California county treasury operations by helping you:
- Minimize risk (cybersecurity, business resiliency, counterparty)
 - Minimize burden of compliance (PCI-DSS, NACHA)
 - Minimize cycle-times (valid data, funds settlement)
 - Minimize costs (to county, to payer)
 - Maximize efficiencies (payer self-service, automation, operational)
 - Maximize responsiveness to payer (convenience, preferences, service)
 - Maximize focus on your core competencies

Addressing your e-payment application needs

Deploy e-payment application

- Automate payment posting with valid data
- Support client branding, data, terminology and process
- Minimize process cycle times (data)
- Design for each LOB/Dept 's distinct and evolving needs
- Promote adoption

Deliver on payer preferences

- Execute frictionless e-payment transactions
- Pay at any time and receive confirmation in real time
- Access via web, mobile or phone (automated or human)
- Use credit card or bank account
- Enjoy convenient, payer-friendly self-service approach

Operate efficiently

- Minimize funds settlement cycle times (funds)
- Achieve cost objectives with flexible funding models
- Use role-based administration and service functions
- Consolidate e-payment channels and other receivables
- Utilize a single provider end-to-end

Mitigate risk

- Utilize security and fraud prevention
- Support compliance: PCI-DSS, NACHA
- Minimize scope, cost and time of client development
- Implement timely with extensive testing support
- Leverage scale, capabilities and expertise

Cybersecurity is a Top Focus - Example

Technology and Architecture	Adaptive security embedded throughout all parts of the technology infrastructure
Security Operations	Proactive, risk-based and intelligence-led operations
Data Security	Differential protection of critical information assets at every level
Enabling the Business	Robust programs to ensure cybersecurity awareness and preparedness

Dear Fellow Shareholders,



Jamie Dimon,
Chairman and
Chief Executive Officer

CYBERSECURITY UPDATE

In last year's letter, I gave a frank assessment about cybersecurity and why it is such a critical priority for the entire company. We outlined how JPMorgan Chase had spent approximately \$200 million in 2012 to protect ourselves from cyberwarfare and to make sure our data were safe and secure, and we dedicated more than 600 employees across the firm to the task. Despite these intense efforts, we acknowledged that the issue of cybersecurity worried us – and, today, that worry only has continued to intensify.

By the end of 2014, we will have spent more than \$250 million annually with approximately 1,000 people focused on the effort. This effort will continue to grow exponentially over the years.

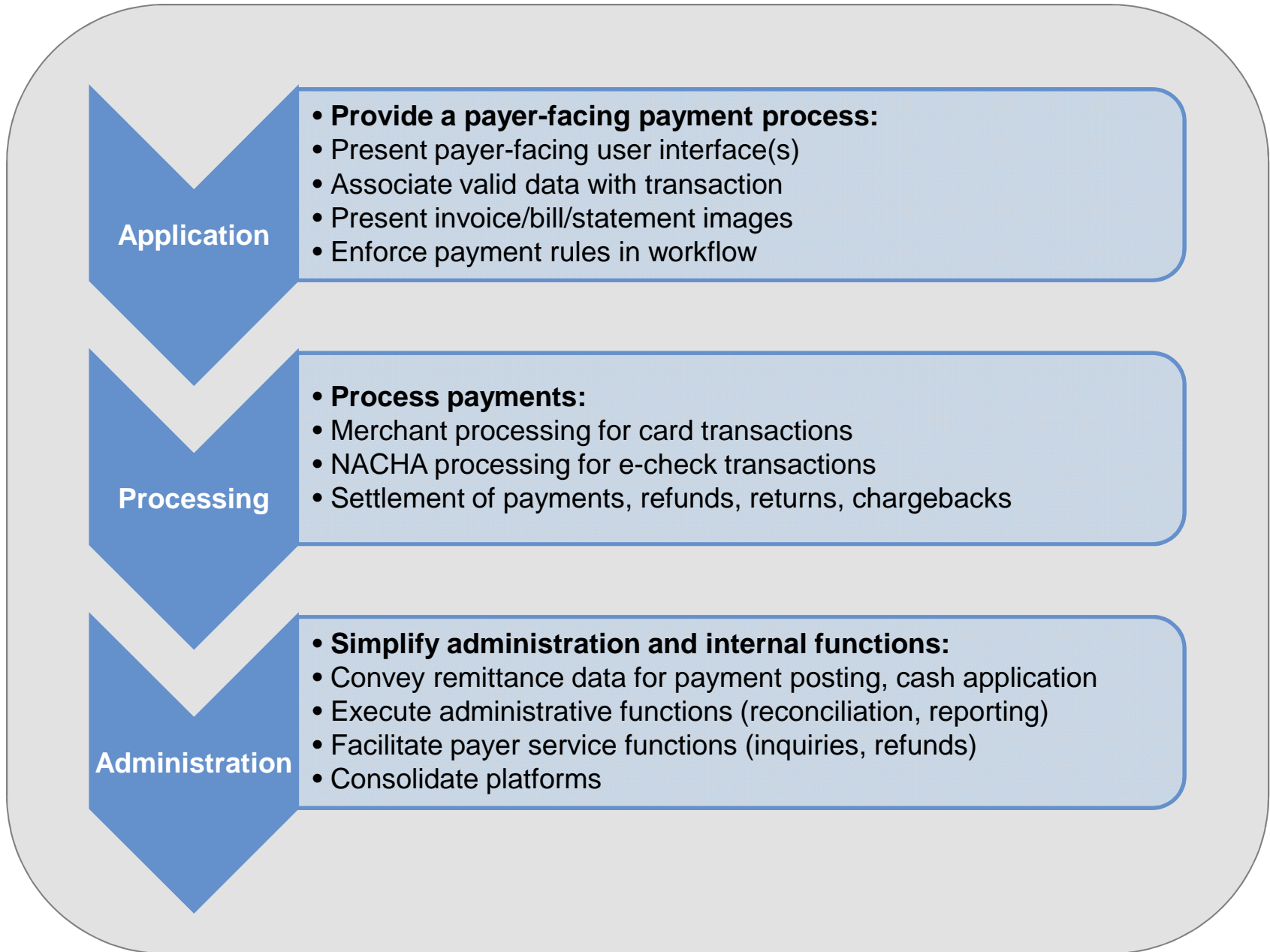
In our existing environment and at our company, cybersecurity attacks are becoming increasingly complex and more dangerous. The threats are coming in not just from computer hackers trying to take over our systems and steal our data but also from highly coordinated external attacks both directly and via third-party systems (e.g., suppliers, vendors, partners, exchanges, etc.). It appears that a large, successful attack on a major retailer last year was the result of a third-party system breach.

“By the end of 2014, we will have spent more than \$250 million annually with approximately 1,000 people focused on the effort. This effort will continue to grow exponentially over the years.”

“We are continuing to carefully protect our perimeter from existing threats, beef up our processes to detect internal threats and monitor related third-party systems to make sure their protections are adequate.”

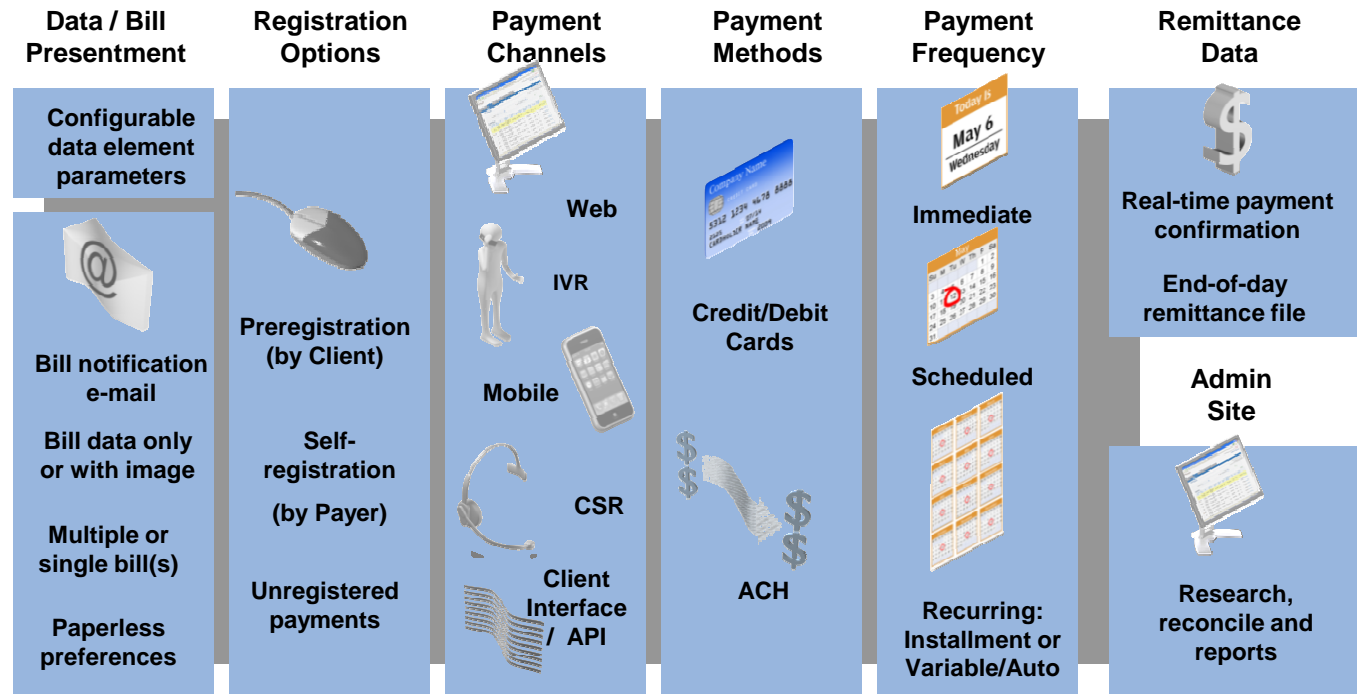
Source: Jamie Dimon, JPMorgan Chase & Co. 2013 Chairman and CEO letter to shareholders

Simplifying the e-payment value chain

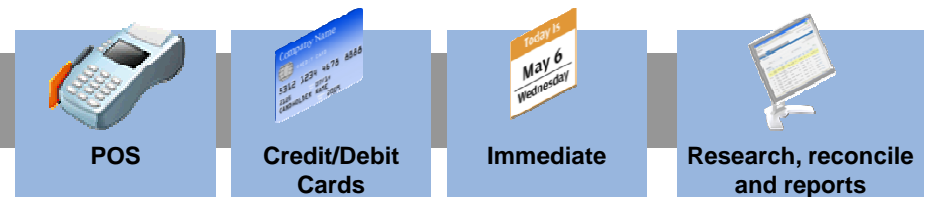


Most Desirable e-Payment Solutions

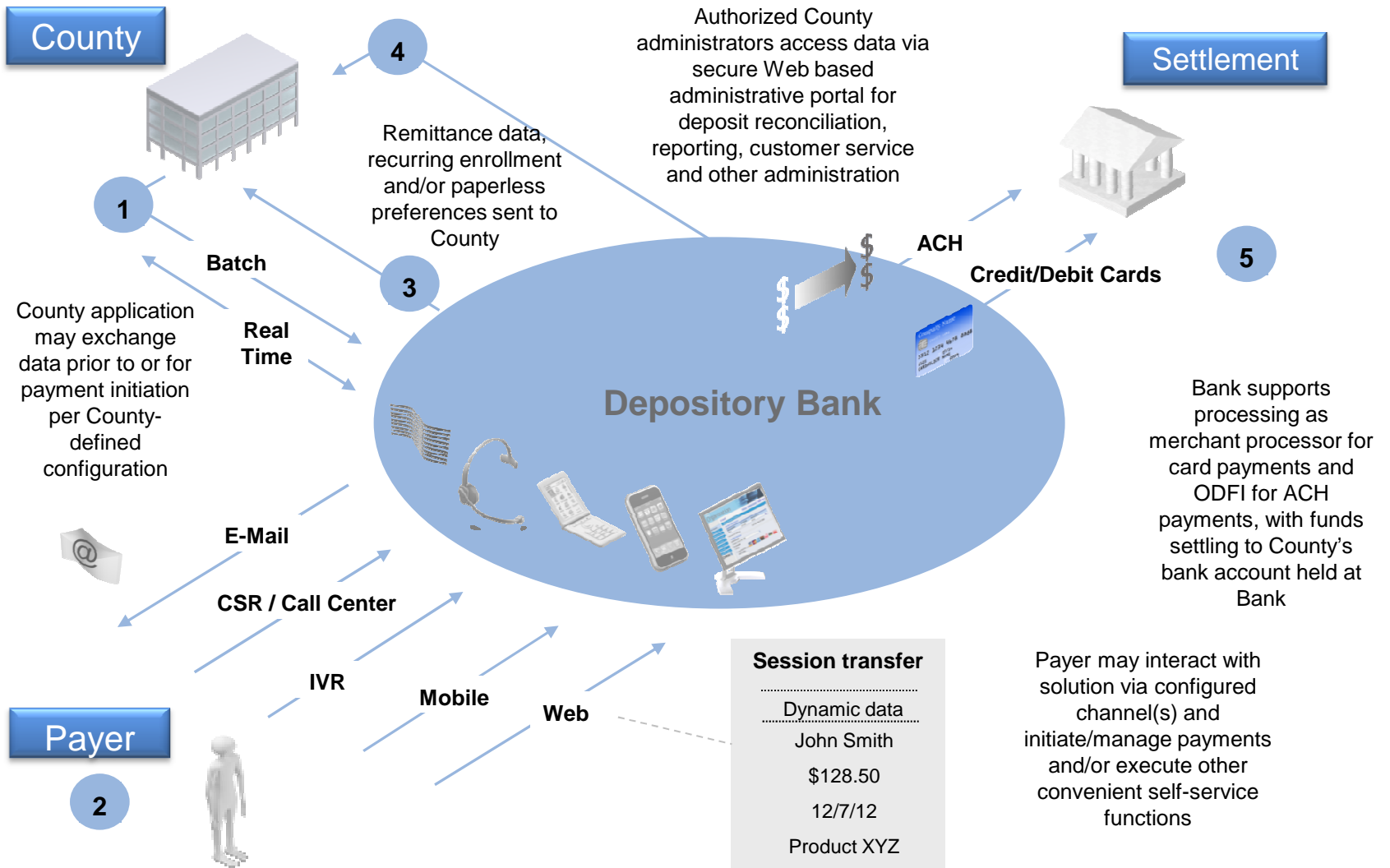
- Hosted solutions
- Feature-rich, highly-configurable and modularly-expandable to support multiple departments / LOBs



- Manage PCI-DSS and NACHA compliance
- Accelerate cash flow and processes
- Reduce costs and inefficiencies of paper
- Automate acceptance and posting
- Support payer convenience and preferences
- Consolidate platforms
- Drive adoption
- Focus on core competencies



Payment lifecycle



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Mobile e-payments

Mobile Optimized Browser

- Responsive Web Design. If payer accesses via
 - Small-screen device (e.g., smartphone), then mobile-specific UI is presented
 - Large-screen device (e.g., PC), then Web channel UI is presented
- Compatibility across common platforms via mobile browser

Integration with Client's Mobile App

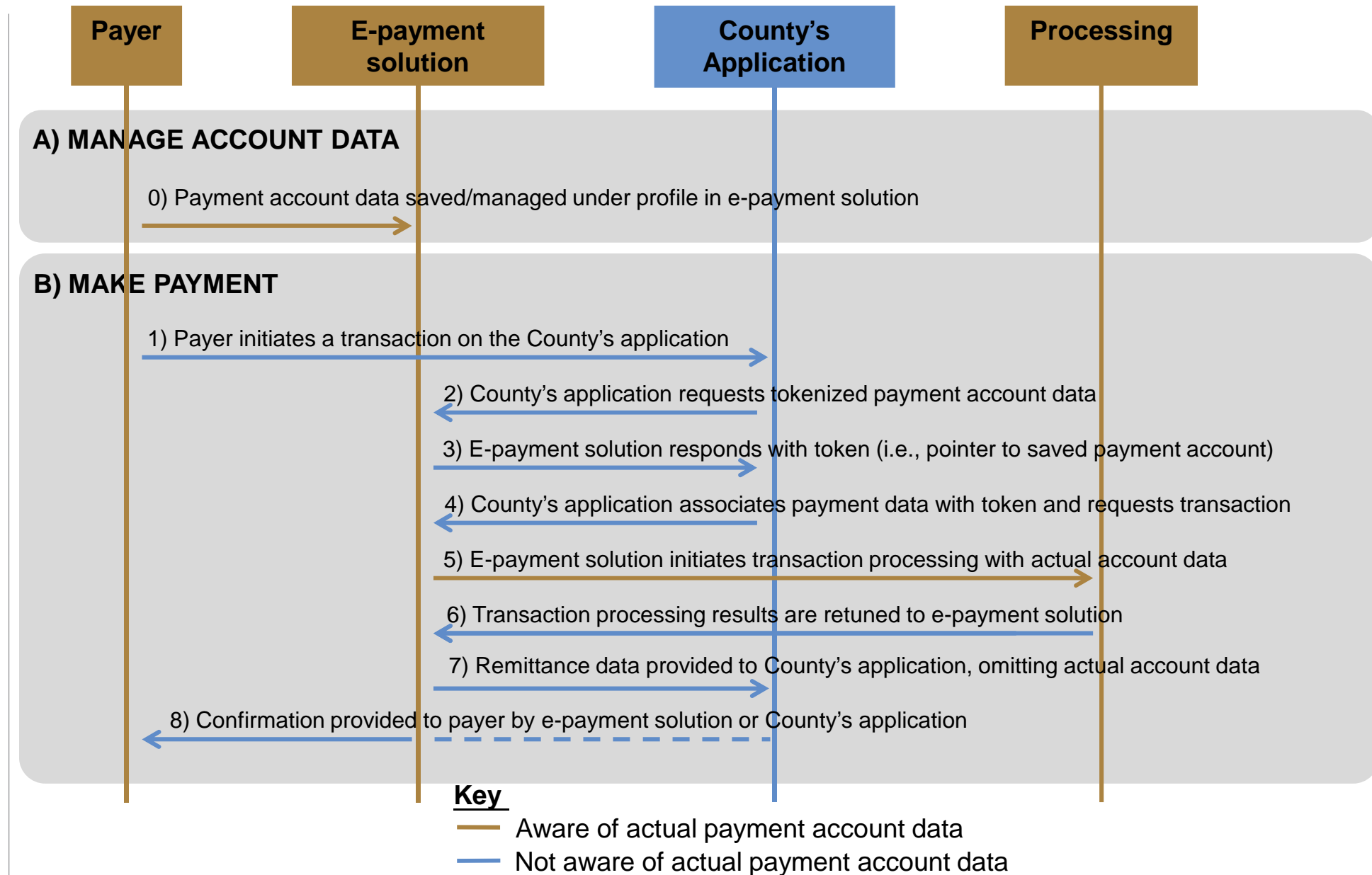
- Payment processing integration with client-developed mobile "app"
- Use of real-time APIs to complete transaction
- Tokenization capabilities available

Mobile-Based Telephony

- IVR channel (key-pad input, human voice output)
- CSR channel (speak to live agent)

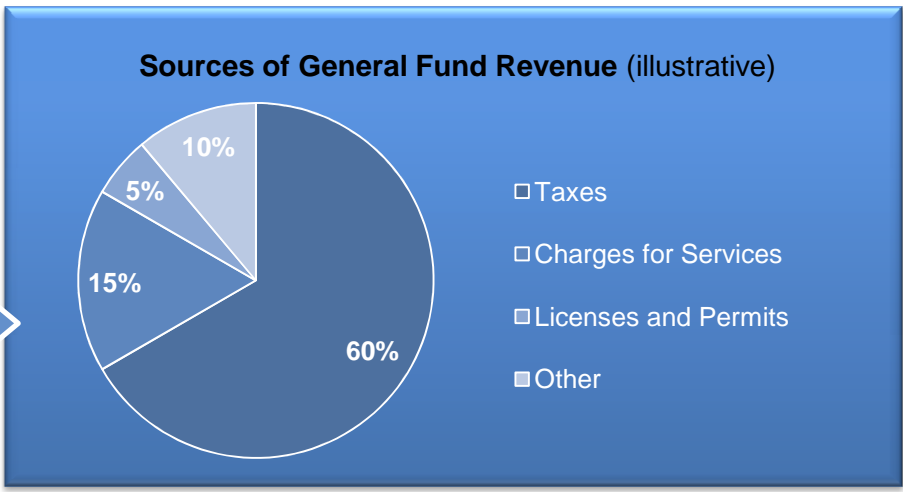
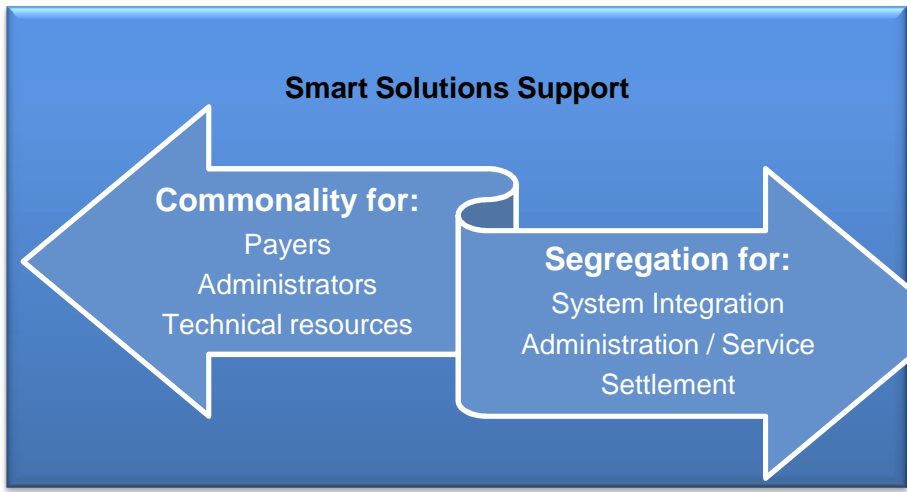
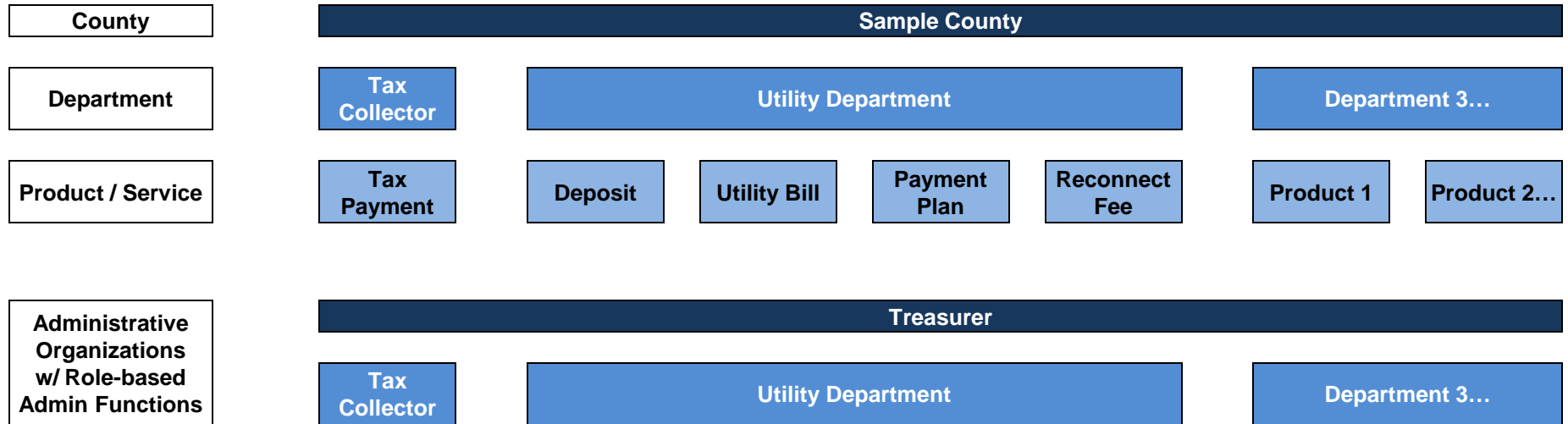


Tokenization



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Supporting multiple county departments



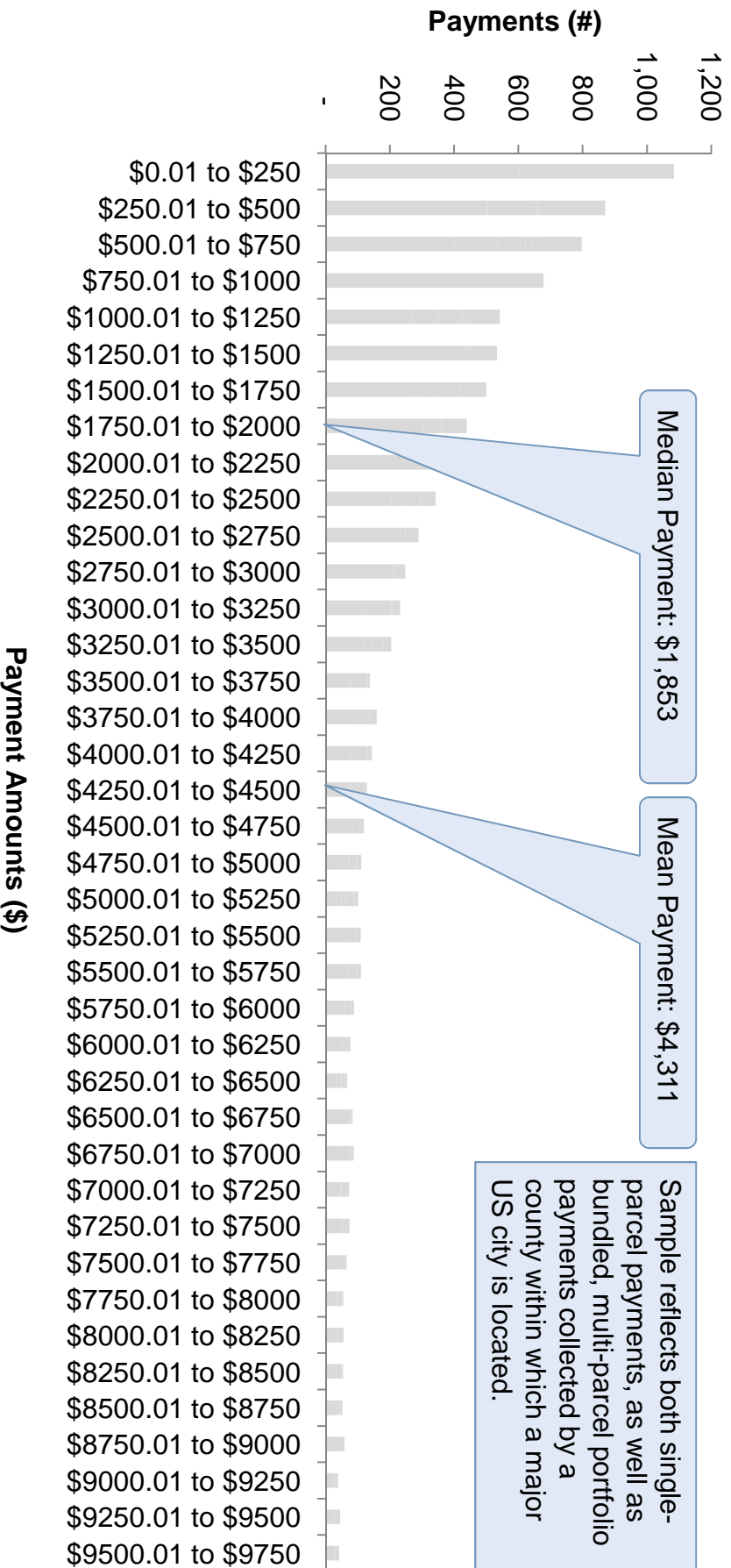
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A Simple, No Cost to the County Convenience Fee Model



Payer-friendly convenience fee structures

Sample distribution of property tax payments



- Convenience fees can equitably align cost to payers
- That utilize convenient payment channels and methods
- In proportion to usage and payment amounts
- That drive the underlying processing expense

Sample reflects both single-parcel payments, as well as bundled, multi-parcel portfolio payments collected by a county within which a major US city is located.

Driving Adoption

Drive consumer conversion rates with promotional strategies

- Ads (print and digital)
- E-mails
- Statement stuffers
- Display posters
- How-to brochures
- FAQ fliers
- Newsletter articles
- Statement, envelope and phone-hold messages



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