PAYMENTS SUMMIT
Feb. 27 – Mar. 2, 2023

Electric Vehicle (EV) Charging Use Cases

Presented by Jordan Kaplan from Publix Super Markets, Inc.

STA EV Charging Open Payments Framework

- Outreach from Payments Community for EV Charging
- Expansion of Plug&Charge (PnC) ISO 15118
- Outline of Potential Use Cases and Considerations

Acknowledgements for STA Electric Vehicle Charging Open Payments Framework with ISO 15118 (2021 Whitepaper)

Nick Pisarev, Giesecke+Devrient, and Oliver Manahan, Infineon Technologies, for leading this project; Jordan Kaplan, UL, John O'Byrne, UL, and Barton Sidles, Hubject for drafting the Whitepaper

Present and Future EV Charging Use Cases

Charger Location	Present/ Future	Location Accessibility	Level 2	Level 3	Open Payments Applicability
Home garage	Present	Restricted	x	--	--
Home exterior	Present	Restricted	x	--	--
Multi-family dwelling	Present	Restricted	x	--	x*
Multi-family dwelling	Present	Semi-Public	x	--	x*
Work/office	Present	Restricted	x	x	x*
Commercial fleet locations	Present	Restricted	x	x	--
Work/office	Present	Semi-Public	x	x	x*

Charger Location	Present/ Future	Location Accessibility	Level 2	Level 3	Open Payments Applicability
Entertainment/shopping/ restaurants	Present	Public	x	x	x
Gas stations in city	Present	Public	--	x	x
Street parking	Present	Public	x	--	x
Inductive charging on the road	Future	Public	x	--	x
ISO 15118 240V outlet	Future	Public	x	--	x
Peer-to-peer garage/ home/multi-family dwelling	Future	Restricted	x	--	x

*May not be applicable today but may be more applicable as use of open payment charging increases.

Use Case: Visit to the Grocery Store

- Individuals visit a grocery store an average of 1.6 times per week; visits last an average of 43 minutes.
- The International Council on Clean Transportation found that meeting public EV charging demand in the largest U.S. metropolitan areas will require $940 million in investment by 2025.
- Large Grocer Chains have started deploying EV Charging Stations at their locations to meet current and anticipated demand.
- Customers should have the ability to use the same payment method for both their groceries and EV charging and to pay for both at the same time.

Closing Remarks

- Development of an Open Payments Framework for EV Charging would benefit the adoption of Electric Vehicles.
- Support is needed by the Payments Industry Members and Standardization Bodies to support development efforts.
- Customer expectation for EV Charging and its functionality will continue grow.

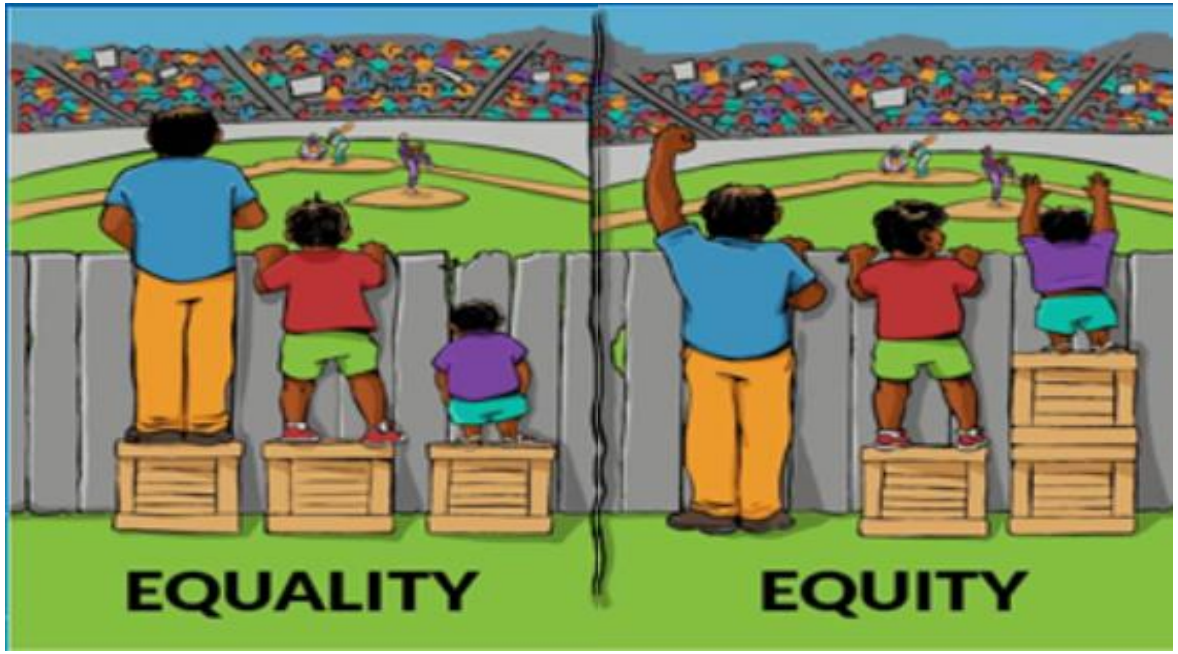
Payment In Transportation

Improving equity and rider experiences through software-a-s-service electronic fare collection

Boris Karsch – Chief Operating Officer, Umo, Cubic Transportation Systems

Equitable Mobility

Accessibility needs to be embedded in how we all operate



32%

Of consumers are unbanked or underbanked

Mobile Payments Today

15%

Of transit riders speak a language other than English

Who Rides Public Transportation, APTA 2017

Improving
Quality of Life

Fundamental
Human Right

Equitable
Access

Cater to all
Walks of Life

Freedom to
Choose

Sustainable

Multi-Modal

Planning for Equity = Ridership Growth

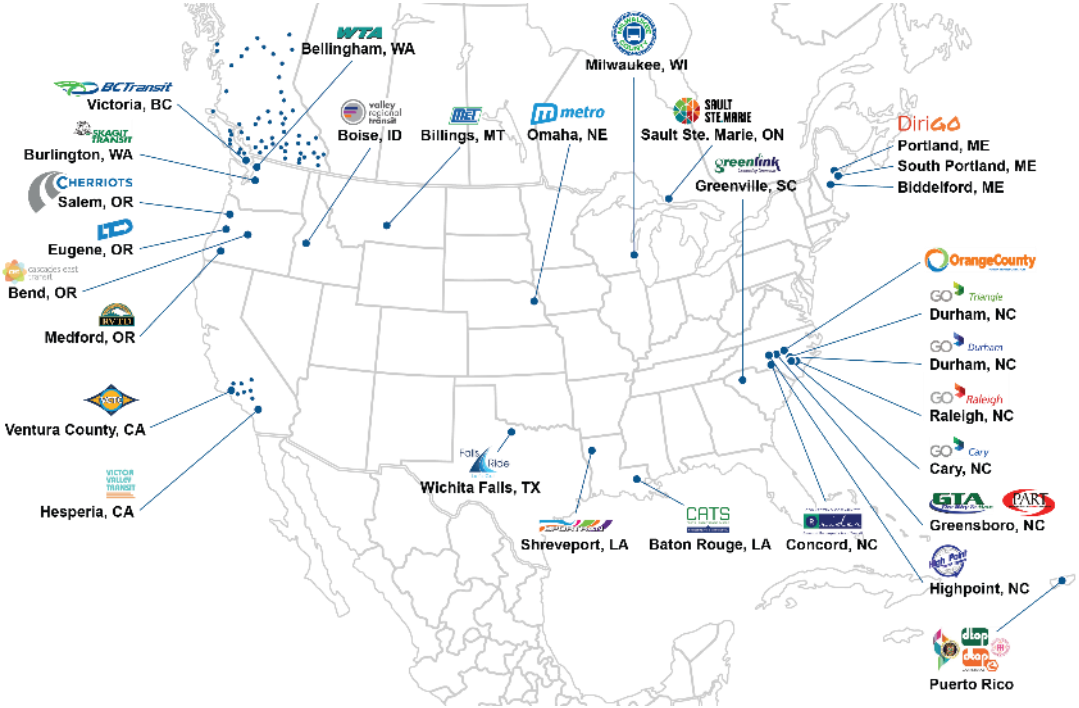
- Offer riders flexibility around payment types & fare media.
- Build the technology with all customers needs in mind. Students, seniors, tourists and commuters.
- Include relevant incentives.
- Riders can’t use the tools if they don’t know how to use them.
- Connect with customers to understand their needs for features that can be added to the platform.
- Design your products with accessibility in mind.

What does equity mean for transit payments?

Access for All

Lessons from diverse customers

70+ agencies and field-tested in operation for 7 years



Diverse communities with diverse payment needs and preferences

Elderly

People with disabilities

Struggling for cash

Cash preferred

Banked

Casual riders

Commuters

College students

Tourists

Regular riders

Children

School students

Can prepay

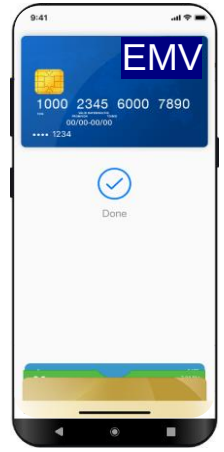
Caretakers

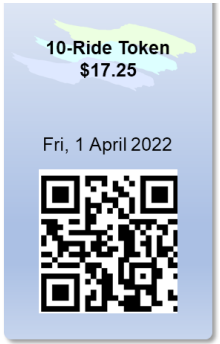
Employees

umo™

Diversity Of Sales Channels

Flexibility in boarding option to address all riders





umo™

Equitable fare policy

- Stored Value
- Fare capping
- Concession fares
- Passes
- Transfers
- Special Fare Programs

Achieving equity in transit payments

- Fare media choice
- Distribution and sales channel choice
- Equitable fare policy

What advantages do you get with a Platform?

- **Reduced Capital Costs**
- **Shorter Deployment Time**
- **Lower Risk**
- **Free Upgrades**
- **Ongoing Support**
- **Negotiated Term**
- **Shared Risk**

We Take Care of the Technology

Customer convenience for all

Mobile App with payment, trip planning, & service alerts

Extensive cash load options to improve equity

Operational tools to reduce cost of fare collection

Regional capabilities

Proven SaaS solution servicing agencies since 2016

You Take Care of the Passengers

Mark Kroncke
March 2, 2023
mkroncke@invoketechnologies.com

Considerations for Upgrading Large Regional Transit Systems

Large transit agencies such as those in Chicago, Los Angeles and San Francisco have regional differences, but also many similarities.

Mobile options, fare capping, open payment, cash-on-card only, mobility as a service (MaaS), fareless and more are on the way.

New Systems

Require integration with

- Existing Fare Structures
- Retail Vendor Network
- Customer Relationship Management System
- Mobile Wallet and App
- Website
- Ticket Vending Machines
- Regional Clearing and Settlement

Consideration #1
Public Transit Systems must never leave anyone behind.

Consideration #2

Changes in transit systems affect enormous numbers of people.

"As a ubiquitous brand and the trusted transit fare payment system for more than three million Bay Area residents, Clipper is ideally positioned to expand to offer more choices for seamless travel payment in the future, and we are very careful in the way we go about this, because we care about our customers."

Carol Kuester, Director, Electronic Payments
Bay Area MTC

Consideration #3

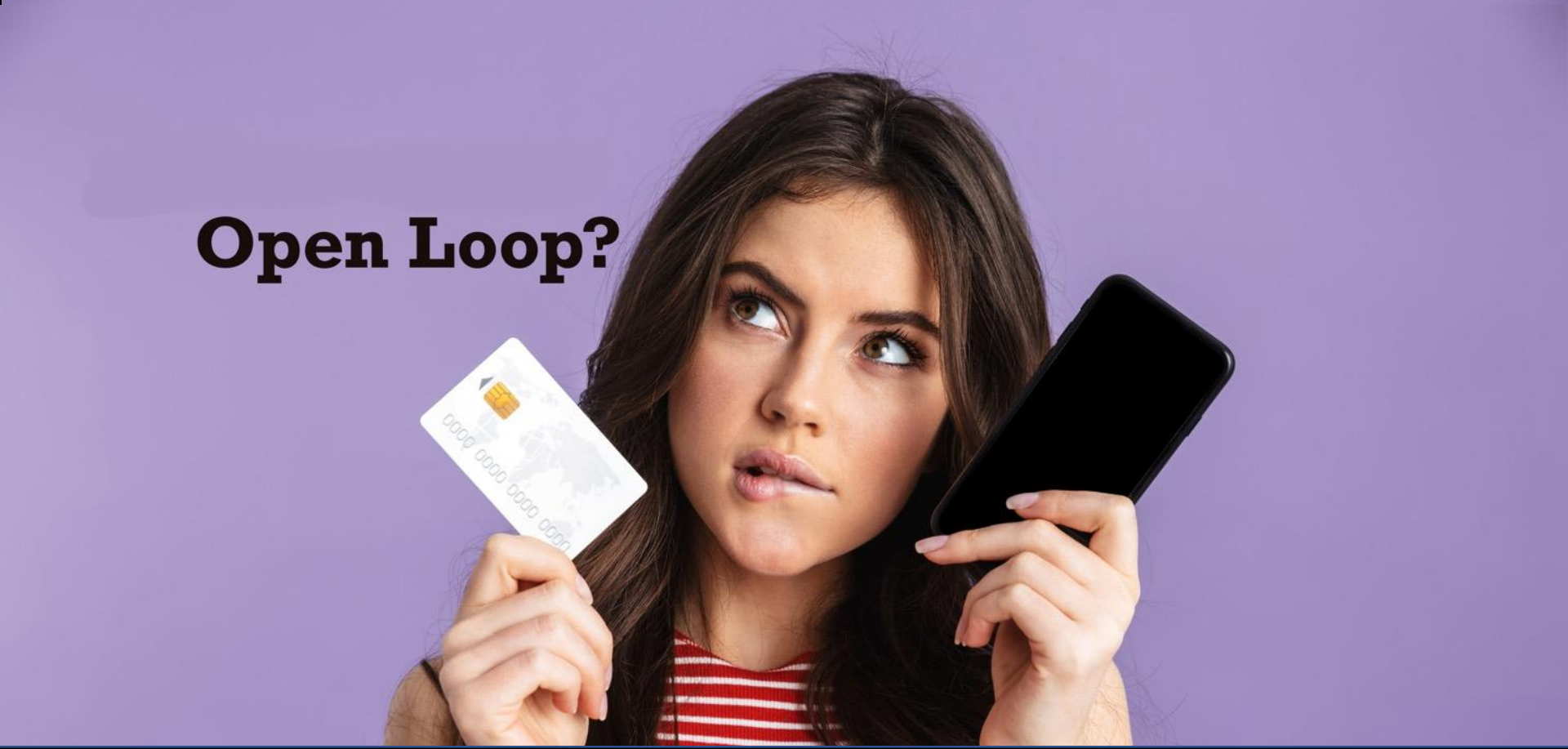
Demographics and Multi-Agency

Consideration #4

The Costs

Consideration #5

Intelligent solutions based on data



Final Consideration: Stand-Beside Solutions

What do Large Agencies Really Need?

1. Standardization of Mobility data
2. Standardization of eligibility verification
3. Negotiation of interchange fees
4. Research and testing
5. Build on successful services

Thank you.

Email
mkroncke@invoketechnologies.com

LinkedIn
linkedin.com/in/markkroncke

Web
Invoketechnologies.com

Cal-ITP

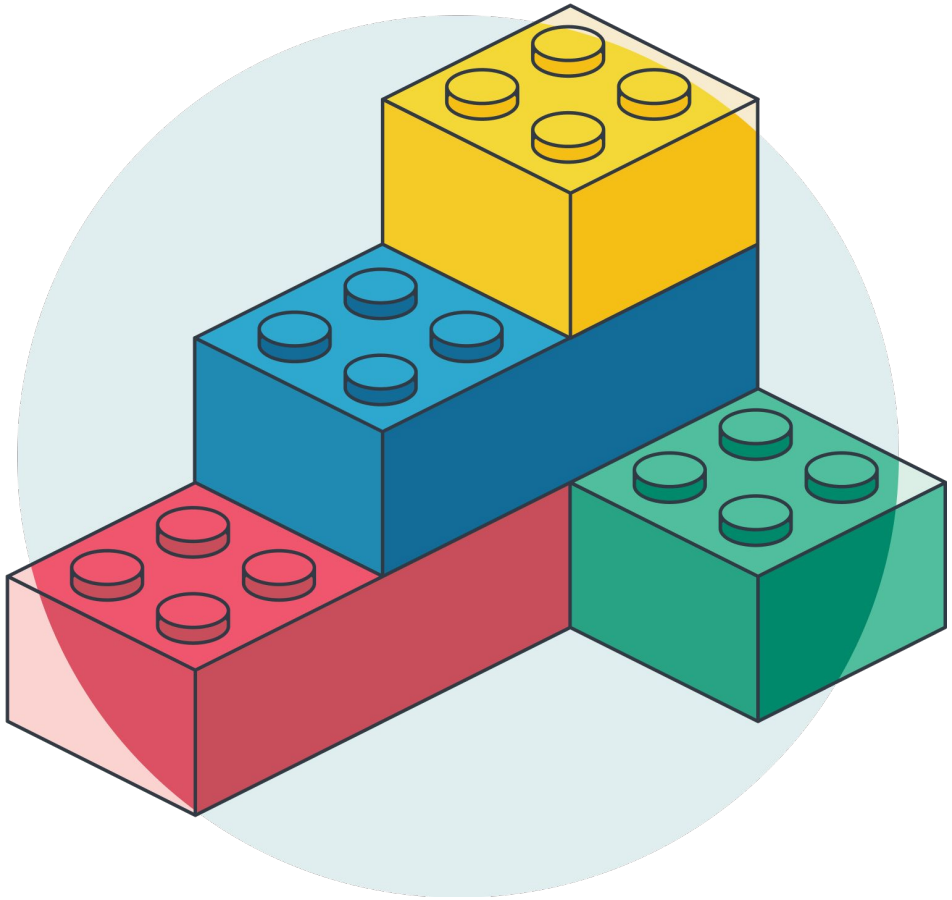
Financial inclusion through mobility payments in California

March 2023

Cal-ITP is building an interoperable ecosystem

In a state as large and diverse as California, **payment systems** and mobility **data technologies** need to be **interoperable** across systems large and small, regardless of mode.

Our home is California but what we do benefits the US as a whole!



Payment acceptance

Monterey-Salinas Transit fare collection system

First open-loop contactless fare collection demo in CA

- Tap bank cards or digital wallets to pay
- Riders can sign up for the Cash App Card and receive Boosts (money back)
- Older adults use Cal-ITP Benefits to receive their discount upon payment
- GTFS data accessed through trip planners

EV charging payment & rewards

Valley CAN EV-Charging

Open-loop contactless card pays for public charging

- First 200 participants qualify for $1,000 EV public charging credit

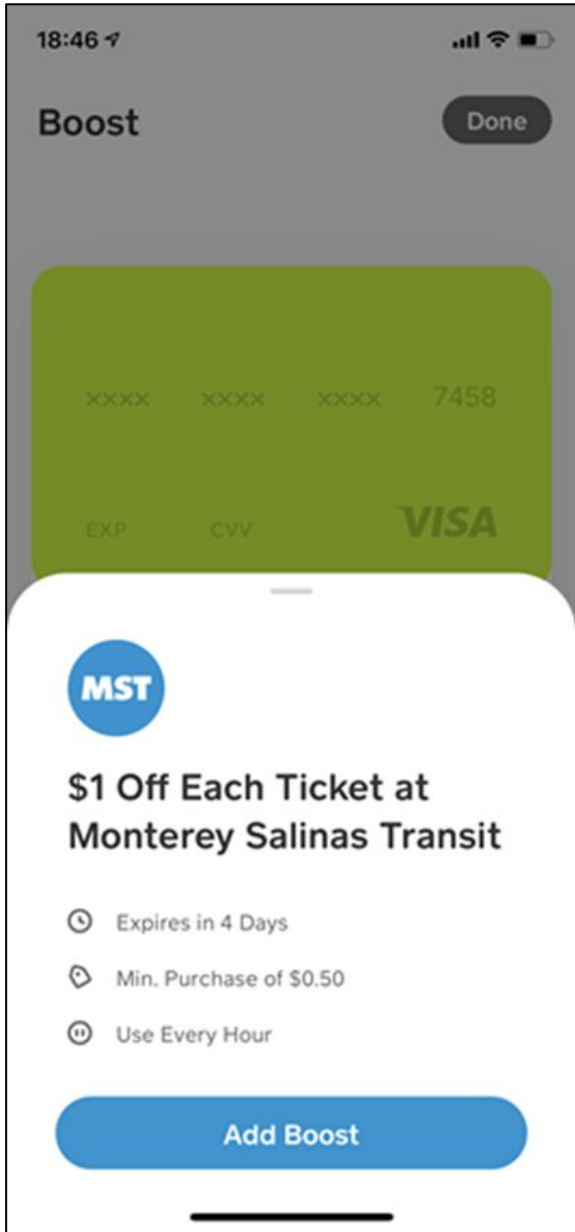
Contactless bank cards are

- **Customer-friendly** for low-income and previously under and unbanked customers
- **Effective for governments** to administer
- **Interoperable** across public EV charging providers and across modes

Payment issuance

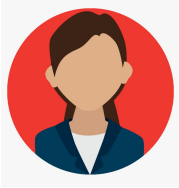
Cash App for digital transit payments

- Square offers the Cash App Card for customers without a debit or credit card
- Paper Money Deposits lets customers load cash at participating retailers. $1 fee per load of up to $500
- 30% of Cash App Cards tapped at MST are new users.
- **Low-cost financial products support access to transit services, and vice versa.**



Transit riders and the underbanked

Average transit user



Average under-banked

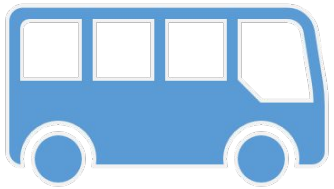
Race	**White**	48% in metro areas 53% elsewhere	**White**	60% of underbanked 59% of unbanked
	Hispanic	25% in metro areas 17% elsewhere	**Hispanic**	22% of underbanked 19% of unbanked
	Black	22% in metro areas 26% elsewhere	**Black**	15% of underbanked 15% of unbanked
Income	**Low Income** *<$50,000/yr*	44% in metro areas 69% elsewhere	**Low Income** *<$50,000/yr*	56% of underbanked 78% of unbanked

Sources: U.S. Census, *Morning Consult*

Mobility can be a ride out of poverty

Low-income customers spend the bulk of their income on transportation, so mobility can change their lives, giving them

community
access



daily
travel

options to
build credit

hello@calitp.org

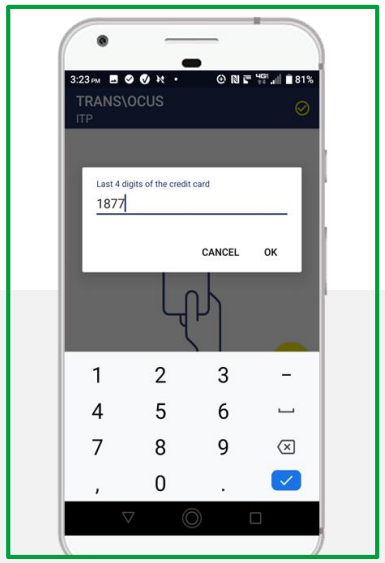
Open Loop Payment Inspection

Carl Commons

PAYMENTS SUMMIT
Feb. 27 – Mar. 2, 2023

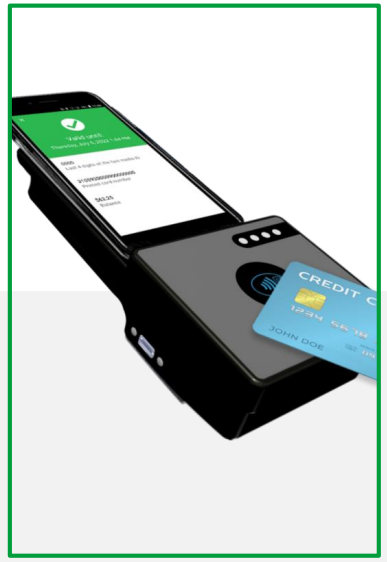
init

Three Inspection Options



Manual Entry on
Smart Device

Tapping on
Smart Device



Reader Attached
to Smart Device

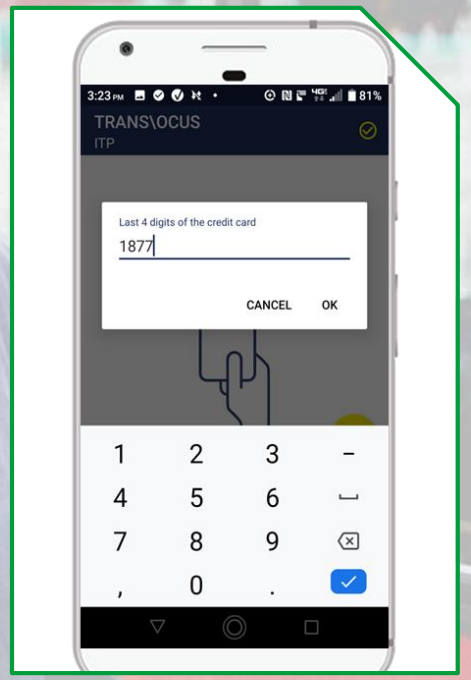
Manual Entry on Smart Device

Description

- Enter basic information for vehicle
- Type in last 4 of the PAN on the card

Challenges

- Manual intervention for inspector
- Last 4 of PAN is not unique
- Complications accessing DPAN for virtual cards



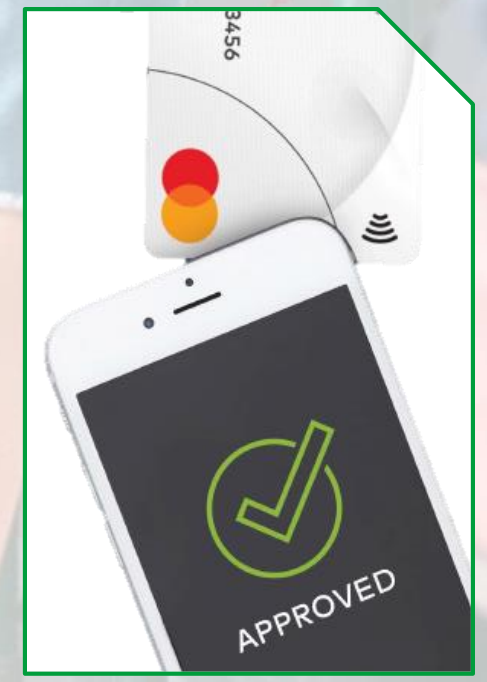
Tapping on Smart Device

Description

- Internal NFC component of the device
- Contactless Payments on COTS (CPoC) PCI standard

Challenges

- Security – typical phones do not have secure key storage so must be done with software
- PCI compliance is recommended/required since the phone is handling clear text credit card data



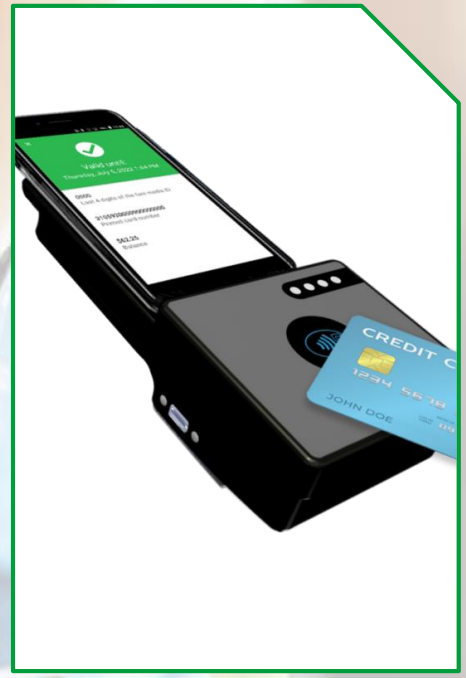
Reader attached to Smart Device

Description

- Sleeve plus mobile device
- Encryption and key storage stays on sleeve
- Mobile device only handles encrypted data

Summary

- Reader model in the sleeve is the same as the readers in the validators
- Same key management
- Offline inspection is possible



Summary

Best for low volume	Best in near future	Best readily available
Manual Entry on Smart Device	Scanning on Smart Device	Reader Attached to Smart Device
Secure although not 100% reliable	Security is complex and new	Security is proven
Simple and inexpensive to implement	Hardware is simple but software is challenging	Additional hardware costs but synergy with validators
Not user friendly for agency or rider	User friendly for all	Functionally user friendly but physically bulky

Thank you!

Contact us for more information.

Carl Commons

commons@initusa.com

+1.757.685.3359

www.initusa.com