Polling Question

What industry stakeholder category best describes your organization?

• Charging Network Provider
• Vehicle Manufacturer
• Financial / Payments
• Retailer
• Technology Provider
• Utilities
• Fuel
• Government agency
U.S. Payments Forum Mission

• ... the cross-industry body focused on supporting the introduction and implementation of payment technologies that protect the security of, and enhance opportunities for payment transactions within the U.S.

Current Topics and Issues
• COVID-era changes impacting the payments experience for consumers and merchants
• Petro, Transit and Hospitality merchants EMV-enablement issues
• EMV contactless/mobile acceptance testing & certification standards
• The latest trends and practices for fraud mitigation – EMV 3-D Secure, Secure Remote Commerce, PAR and other online mitigation tools

Beyond EMV – Advanced Payments Topics and Issues
• Mobile payment and tokenization
• Identity and authentication in payments: use of biometrics, mobile data elements, digital ID and payment at electric charging stations
• Digital currencies (crypto), blockchain and artificial intelligence tools (AI)
Forum Activities & Resources

• Collaboration on projects to develop resources to assist with U.S. EMV migration and implementation of other new and emerging payments technologies
  • White papers, educational resources
  • Best practices and technical recommendations

• Education programs for members and the industry
  • Webinars, workshops, Forum member meeting tutorials, published resources

• Communications
  • Market outreach with recommended best practices and industry positions

• Networking
  • Forum for industry stakeholders to interact with all payments industry stakeholders

Information and resources available at www.uspaymentsforum.org
This webinar will provide implementation best practices for EV Technology open payments. The goal is to:

- Understand the charging experience across all networks for open payments.
- Simplify and enhance the charging payments experience.
- Clarify misconceptions and reduce friction.
- Considerations for petroleum merchants scoping how to integrate existing infrastructure with EV technology.
Introduction: Today’s Panel Speakers

Jason Bohrer
U.S. PAYMENTS FORUM

Carly Furman
NAYAX

Cindy Kohler
VISA

Gabriela Loayza
DISCOVER

Oliver Manahan
INFINEON TECHNOLOGIES

Nick Pisarev
G+D

Barton Sidles
bp
EV Technology Open Payments Webinar

Agenda

• Market Status
• Reader Considerations
• Overview of ISO 15118
• Plug & Charge Considerations
• Global Payment Network Requirements
• Q&A
• Resources
In February 2021, the Secure Technology Alliance Payments Council published the white paper, “Electric Vehicle Charging Open Payment Framework with ISO 15118” and hosted the webinar, “Electric Vehicle Charging Payments Innovations”

Available at securetechalliance.org
EV Technology Payments: Market Status

Oliver Manahan, Infineon Technologies
EV Charging Interoperability

• No driver today questions the ability to approach a gas station and fill up with gas. This is **NOT** the case with EV charging today:

• Questions EV drivers ask themselves:
  • Will I understand the sign-in instructions easily or will I need to call customer service?
  • Is the charging port compatible with my vehicle? (is it Tesla, CCS, CHAdeMO?)
  • What do I need to do to gain access? Do I require an app, fob to gain access? Card? Plug & Charge?
  • Is it a secure payment?
  • How do I pay? Is it free, what is cost? If so, how much?
  • Are there peak/off-peak charges or idle charges?
  • How fast will I be able to charge (AC/DC)?
**EV Charging Availability**

• The number of charging stations will greatly exceed the number of gas stations/pumps today. The nature of electric vehicle supply equipment (EVSE) and supply of electricity differ compared to supply of gas.

• To scale, EV charging networks will need to have:
  • Simplistic and ubiquitous technology for access and payment
  • Deployment – paying for energy supply
U.S. EV Market Overview

Growth Drivers
- Improved technology
- Sustainability, minimizing carbon footprints
- Government policy incentives

Electric Vehicles
- ~2M current
- EV 30% sales share in 2030 (~ 22M)

Public Charging Infrastructure
- ~90,000 current
- 1.3M projection 2030 (depending on policies)

Government
- $7,500 federal tax credit (200,000 EVs / manufacturer)
- Additional state tax credit depending on state
- Infrastructure Bill under consideration, $7.5 Billion EVC funding

Source:
Evadoption 2021: IHS Markit / Auto Manufacturer's Alliance, InsideEVs

August 9, 2021 Reuters.com
Open Payment Benefits – Ease of Use – Charge and Go

Open payment solutions ensure that anyone can pay with their card, mobile wallet, or web payment solution to charge their electric vehicle. No subscription or signup required. Straightforward access for EV drivers to plug and charge.

EV drivers can realize the following benefits from direct payment:

- Eliminate uncertainty about the accessibility and availability of EV charging stations.
- Simplify and enhance the charging experience.
- Achieve a consistent charging experience across all networks.
Automaker Investment - Over $100 Billion in EV

Electric vehicles (EVs) is one of the fastest growing sub-segments of the automotive industry.

<table>
<thead>
<tr>
<th>Automaker</th>
<th>Electric Model Forecast</th>
<th>EVs- Share of Sales</th>
<th>Investment in EVs</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMW</td>
<td>12 electric models by 2021</td>
<td>50% by 2030</td>
<td>$35B by 2025</td>
</tr>
<tr>
<td>Ford</td>
<td>6 electric models by 2021</td>
<td>40% by 2030</td>
<td>$30B by 2030</td>
</tr>
<tr>
<td>General Motors</td>
<td>4 electrified models by 2020</td>
<td>40% by 2030</td>
<td>$35B by 2025</td>
</tr>
<tr>
<td>Mercedes</td>
<td>4 electrified models by 2020</td>
<td>50% by 2025</td>
<td>$47B by 2030</td>
</tr>
<tr>
<td>Volkswagen Group</td>
<td>11 electric models by 2022</td>
<td>50% by 2030</td>
<td>$86B by 2025</td>
</tr>
<tr>
<td>Volvo</td>
<td>7 electric models by 2022</td>
<td>50% by 2025</td>
<td>Not yet announced</td>
</tr>
<tr>
<td>Tesla</td>
<td>4 models, 3 new models by 2022</td>
<td>100%</td>
<td>$12B- EV &amp; battery factories</td>
</tr>
<tr>
<td>Rivian</td>
<td>2 models by 2021, 6 models by 2025</td>
<td>100%</td>
<td>$5B- second assembly plant</td>
</tr>
<tr>
<td>Lucid Motors</td>
<td>1 model by 2021, 3 models planned</td>
<td>100%</td>
<td>$4.4B- accelerate production</td>
</tr>
</tbody>
</table>

Source: MJ Bradley
One of the big selling points of electric vehicles (EVs) is that they're **cheap to run**.

Charging is often categorized into 3 levels:

**Level 1**
- VOLTAGE: 120V 1-Phase AC
- AMPS: 12-16 Amps
- CHARGING LOAD: 1.4-1.9 kW
- CHARGING TIME: 3-5 Miles per Hour

**Level 2**
- VOLTAGE: 208V or 240 V 1-Phase AC
- AMPS: 12-80 Amps (Typ. 32 Amps)
- CHARGING LOAD: 2.5-19.2 kW (Typ. 6.6 kW)
- CHARGING TIME: 12-60 Miles per Hour

**DC Fast Charge**
- VOLTAGE: 208V or 480V 3-Phase AC
- AMPS: >100 Amps
- CHARGING LOAD: 50-350 kW
- CHARGING TIME: 60-80 Miles in 20 Minutes
Charging Providers supporting Open Payments is growing

<table>
<thead>
<tr>
<th>Charging Provider</th>
<th># of charging stations*</th>
<th>% of market</th>
<th>Open /Close Loop</th>
</tr>
</thead>
<tbody>
<tr>
<td>ChargePoint</td>
<td>26,523</td>
<td>55%</td>
<td>Open</td>
</tr>
<tr>
<td>Non-Networked</td>
<td>7,730</td>
<td>16%</td>
<td>N/A</td>
</tr>
<tr>
<td>Tesla</td>
<td>5,743</td>
<td>12%</td>
<td>Open Pilot</td>
</tr>
<tr>
<td>SemaCharge</td>
<td>1,993</td>
<td>4%</td>
<td>Open</td>
</tr>
<tr>
<td>Blink</td>
<td>1,377</td>
<td>3%</td>
<td>Close</td>
</tr>
<tr>
<td>Greenlots (Shell)</td>
<td>1,063</td>
<td>2%</td>
<td>Open</td>
</tr>
<tr>
<td>EVgo</td>
<td>862</td>
<td>2%</td>
<td>Open</td>
</tr>
<tr>
<td>Volta</td>
<td>1,056</td>
<td>2%</td>
<td>Close</td>
</tr>
<tr>
<td>EV Connect</td>
<td>743</td>
<td>2%</td>
<td>Open</td>
</tr>
<tr>
<td>Electrify America</td>
<td>777</td>
<td>2%</td>
<td>Open</td>
</tr>
<tr>
<td>FLO</td>
<td>269</td>
<td>&lt;1%</td>
<td>Close</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>48,647</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Source: Data as 8/16/2021 taken from the Alternative Fuel Data Center (AFDC) website which is part of the US Department of Energy*
Getting to Know Nayax

Established in Israel in 2005

550+ employees worldwide, >35% R&D

Offices in 8 countries and distributors in 44 markets

Licensed payment institution

>30K end customers

>517K active connections, in >62 countries

Accepts >80+ payments methods and 40+ currencies

0.8Bn transactions processed in 2021

Presenter:
Carly Furman, CEO, Nayax LLC
EV Technology Payments: Overview of ISO 15118

Nick Pisarev, G&D
ISO 15118 specifies the digital communication between Electric Vehicle (EV) and the charger or Electric Vehicle Supply Equipment (EVSE)
ISO 15118 - Payment (Authorization) Path - Proposed

Account/Contract

Yes → Plug & Charge

No → Direct Payment

Yes → Plug Pay and Charge

No → External Payment

Yes → Plug and Pay external

No → No Service

Proposed
ISO 15118 EV Charging Use Cases

- Plug & Charge
- Smart Charging
- Vehicle-to-Grid (V2G)
- Wireless
More and more companies are adopting and supporting the Plug & Charge standard worldwide.

Many Original Equipment Manufacturers (OEMs), Electric Vehicle Service Providers (EVSE) and charging networks are adapting the Plug & Charge standard based on ISO 15118.

Just to list a few.....
EV Technology Payments: Plug & Charge Considerations

Barton Sidles, bp
EV Technology Payments: Global Payment Network Requirements
Global Payment Network Requirements

What is the Merchant Category Code (MCC)?

It is a four-digit number assigned to describe a merchant’s primary business based on annual sales volume.

It can also identify a specific merchant or type of transaction and data can be used for a range of purposes:

- Activity tracking and reporting
- Risk management

Note: Acquirers (and their agents) are required to assign the correct MCC to each of their merchants.
Additional Resources from the U.S. Payments Forum

• EMV Connection
  – https://www.emv-connection.com

• Get Contactless
  – https://www.getcontactless.com

• mDLConnection
  – https://www.mdlconnection.com
Resource Contact Information

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Thank You!