Who We Are

The Secure Technology Alliance is a not-for-profit, multi-industry association working to stimulate the understanding, adoption and widespread application of secure solutions. We provide, in a collaborative, member-driven environment, education and information on how smart cards, embedded chip technology, and related hardware and software can be adopted across all markets in the United States.

What We Do

Bring together stakeholders to effectively collaborate on promoting secure solutions technology and addressing industry challenges

- Publish white papers, webinars, workshops, newsletters, position papers and web content
- Create conferences and events that focus on specific markets and technology
- Offer education programs, training and industry certifications
- Provide networking opportunities for professionals to share ideas and knowledge
- Produce strong industry communications through public relations, web resources and social media

Our Focus

Access Control
Authentication
Healthcare
Identity Management
Internet of Things
Mobile
Payments
Transportation

Member Benefits

Certification
Council Participation
Education
Industry Outreach
Networking
Technology Trends
... focuses on securing payments and payment applications in the U.S. through industry dialogue, commentary on standards and specifications, technical guidance, and educational programs about the means of improving the security of the payments infrastructure and enhancing the payments experience.
Introductions

• Randy Vanderhoof, Secure Technology Alliance
• Oliver Manahan, Infineon Technologies
• Jordan Kaplan, UL
• Barton Sidles, Hubject
• Nick Pisarev, G+D Mobile Security
Polling Question

What industry stakeholder category best describes your organization?

- Charging Network Provider
- Vehicle Manufacturer
- Financial / Payments
- Retailer
- Technology Provider or Other
EV Charging 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:

- Is the charging port compatible with my vehicle?
- How fast will I be able to charge?
- What do I need to do to gain access:
  - Is it free?
  - Is there a cost – if so, how much?
  - Do I require an app, fob etc. to gain access?
- Will I be able to gain access easily or will there be challenges?
- Will I understand the sign-in instructions, will I need to call customer service, download an app?
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

Electric Vehicles
- 1.2M current
- 18M projection 2030

Public Charging Infrastructure
- ~60,000 current
- 900,000 projection 2030

Government
- $7,500 federal tax credit (200,000 EVs / manufacturer)
- Additional state tax credit depending on state

Source: Edison Institute, June 2019

Market statistic slides provided by Hubject
Automaker Investment - Over $100 Billion in EV

<table>
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<tr>
<th>Automaker</th>
<th>Electric Model Forecast</th>
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<tr>
<td>Volvo</td>
<td>7 electric models by 2022</td>
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</tbody>
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Source: MJ Bradley
EV Stats

U.S. Average

regular gasoline 2.58
electric eGallon 1.17

January 11, 2020

CHARGE YOUR CAR IN MINUTES, NOT HOURS

Level 1 Charging
Up to 2 miles, 30 minutes

Level 2 Charging
Up to 10 miles, 30 minutes

DC Fast Charging
Up to 75 miles, 30 minutes

Sources: Bloomberg, Statista, City Observatory
Use Cases - Overview

- Home Garage
- Home Exterior
- Multi-Family Dwelling

- Workplace Charging
- Entertainment/Shopping/Restaurants
- Gas Stations/Convenience Stores
- Street Parking

- Inductive Charging
- Peer-to-Peer Charging
- Plug & Charge
Over Night Stay at Hotel
Use Case – Over Night Stay at Hotel

Number of Electric Vehicles are steadily increasing in US

Opportunity for hotels to meet demand and add value for their guests

Large hotel chains have already been implementing EV Charging Stations

Guests should have the ability to use the same payment method for their hotel stay and EV Charging.
Visit to a Grocery Store
Use Case – Visit to a Grocery Store

Grocery stores are selling 14.5% of all gasoline in US

Unique way to attract customers and extend store time

Large grocery chains have already been implementing EV Charging Stations

Customers should have the ability to use the same payment method for groceries and EV Charging.
California Senate Bill 454

- Drivers using any electric vehicle supply equipment (EVSE) shall not be required to pay a subscription fee or become a member
- Drivers shall have the choice to pay with credit card or mobile pay or both
- All fees associated with a charging session shall be disclosed at point of sale
- Payment Requirements:
  - Europay MasterCard Visa (EMV) chip
  - Near Field Communications (NFC) reader
  - Must comply with industry data security standards
  - Payment hardware may be installed on a kiosk or individual EVSE
ISO 15118 specifies the digital communication between Electric Vehicle (EV) and the charger or Electric Vehicle Supply Equipment (EVSE)
Plug&Charge Stakeholder Roles

**PKI & Ecosystem**
Trusted party for issuing the certificates and managing data pools
- Certificate Authority

**Automaker**
Vehicle manufacturer (e.g. cars, vans, buses, trucks)
- Provisioning Certificate

**Mobility Operator**
Charging relationship with EV driver (e.g. charging network, auto OEM, utility, retailer, fleet)
- Contract Certificate

**Charge Port Operator**
Charging station owner & operator (e.g. utility, charging network, retailer, port)
- Leaf Certificate
Plug&Charge Ecosystem

- Automaker Backend
- Mobility Operator
- Charge Port Operator
- PKI

ISO 15118
TLS Handshake
EMVCo – the Global Standard for Secure Payment
Secure Element based set of cryptographic standards combining symmetric and asymmetric cryptographic algorithms using:

ISO 7816 – Chip technology for:
- Authentication via transaction cryptogram and/or certificates
- Payment User Verification
- Authorization
Payment Credential Proliferation

Payment Networks and Brands

- ISSUER
- TSPs

Token Service Providers

Digital Card

Credential Issuance

Token Requestor

Tokenization

Host Card Emulation

eCommerce Tokens

Trusted Service Manager

Card Emulation

- HCE, dCVV

Wearables

MNO and Automotive

Smart Home
Secure Technology Alliance Payments Council Work in Progress

Find synergies to between existing standards and innovate the way we pay for EV charging:

EMV Tokenization

ISO 15118

EMV & ISO 7816

ISO 15118

EMV

Tokenization
Plug&Charge Ecosystem: Proposed

- Automaker Backend
- PKI
- Charge Port Operator
- Tokenized Credit/Debit/ACH
- TLS Handshake

Ecosystem: Proposed

- Plug and Charge
- TLS Handshake
- PKI
- Tokenized Credit/Debit/ACH
- Charge Port Operator
ISO 15118 - Payment (Authorization) Path - Today

Contract

Yes → Plug and Charge

No

External Payment

Yes → Plug and Pay external

No

No Service
ISO 15118 - Payment (Authorization) Path - Proposed

1. Contract
   - Yes: Plug and Charge
   - No: Proposed

2. Proposed
   - Direct Payment
     - Yes: Plug Pay and Charge
     - No: No Service

3. Direct Payment
   - Yes: Plug and Pay external
   - No: External Payment

4. External Payment
   - Yes: Plug and Pay external
   - No Service
Next Steps and Conclusion

Industry Participation

Propose / Recommend implementation
Payments Resources

• 2020 Payments Summit – [https://www.stapayments.com/](https://www.stapayments.com/)
  - February 25-27, 2020 – Salt Lake City, UT
• Secure Technology Alliance Knowledge Center – [https://www.securetechalliance.org/knowledge-center/](https://www.securetechalliance.org/knowledge-center/)
  - Educational resources on the use of secure payments technologies, including EMV, contactless, mobile, IoT and biometrics
• U.S. Payments Forum – [https://www.uspaymentsforum.org](https://www.uspaymentsforum.org)
  - Resources on the implementation of new and emerging payments technologies in the U.S.
Speaker Contact Information

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