Electronic Driver License

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The smartphone is the new wallet. In fact, many people no longer carry a wallet, while "digital wallets" are now a common feature on all smartphones. A digital wallet refers to an electronic device that allows an individual to make electronic commerce transactions. This can include purchasing items online with a computer or using a smartphone to purchase something at a store. An individual's bank account can also be linked to the digital wallet.

An individual's driver license is one of the key documents that people keep in their purse or wallet. The driver license is not only the identifying document that allows people to drive a vehicle, but has also become a key document for other types of authentication such as at banks, retail outlets, air travel, etc. With all of that in mind, however, the driver license is one of the last document types to go digital. HB227, passed by the 2016 Utah State Legislature requires that the Department of Public Safety and the Department of Technology Services work together to identify the challenges and the opportunities to developing an electronic or digital driver license.

Several other states in the US have also begun the process of exploring an electronic driver license.

State	Description
Iowa	In September 2015, Iowa began a 90-day pilot to test a product from MorphoTrust, the company that makes most drivers licenses.[1] The solution uses a mobile app that allows the license to be updated immediately. The Iowa license, developed by Morpho Trust, used a 3D-like photo or digital watermark for validation. A quick screen swipe flips the license to its back, revealing a bar code and the class of the license.
Louisiana	Louisiana HB481 would give drivers the ability to access their digitized license through a smartphone app offered by the Department of Motor Vehicles.[2] The bill passed the House by a vote of 88-8. Louisiana has stated that the app would cost between $3 and $5.

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[1] "Iowa Digital Driver's License Pilot Begins", Government Technology, Sep. 5, 2015. http://www.govtech.com/state/Iowa-Digital-Drivers-License-Pilot-Begins.html

[2] "Louisiana Revs Up Electronic Drivers Licenses", by Derek Major, Government Computer News, May 6, 2016. https://gcn.com/articles/2016/05/06/electronic-drivers-license.aspx

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Delaware	Delaware's Division of Motor Vehicles spent six months studying digital driver's license technology in 2015.
Illinois	Illinois' Secretary of State issued an RFI in December 2015 for a "paperless" driver license that could be carried on a smartphone or tablet. Top concerns include cyber security as well as accessibility and acceptance by law enforcement, travel hubs including airports and businesses outside Illinois.[3] The Illinois Electronic Driver's License Task Force completed their report in April 2016.[4]
New Jersey	New Jersey Senate has introduced SB 2695 requiring a study similar to Utah's HB227.
North Carolina	The state of North Carolina is working with the National Strategy for Trusted Identities in Cyberspace (NSTIC) on a pilot to demonstrate how the trust placed in state-issued driver's licenses as our primary proof-of-identity document can be extended into the online world, enabling secure transactions and delivery of state services to citizens.[5]
North Dakota	In March 2015, North Dakota passed HCR 3036, a bill to study the implications of implementing an electronic driver license for smartphones.[6]
Arizona	SB 1237 adds the implementation and development of electronic driver licenses to the duties of the Director of the Arizona Department of Transportation (ADOT) and specifies what may be done with an electronic driver license.
California	AB221 passed in September 2015 requires the DMV to complete a study of creating a digital mobile driver's license application for smartphone use and report on or before December 1, 2016.
Tennessee	HB556 (2015) as enacted, authorizes the department of safety to develop an electronic driver license system in which licensees may participate; permits development of a mobile application to display images of driver

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[3] Illinois ponders digital driver's license, Illinois Watchdog, Dec. 9, 2015.
http://watchdog.org/250739/illinois-ponders-digital-drivers-license/
[4] "Electronic Driver's License Task Force Report", State of Illinois, April 21, 2016.
http://www.cyberdriveillinois.com/services/open_meetings_act/electronic_drivers_license/edl0416finalreport.pdf.
[5] "MorphoTrust,USA", http://www.nist.gov/nstic/morphotrust-usa.html
[6] HCR 3036, North Dakota, http://www.legis.nd.gov/files/resource/64-2015/library/hcr3036.pdf.

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	licenses on cell phones; allows electronic driver licenses to be accepted in lieu of physical driver licenses.
Texas	Senate Bill 1934 became law on September 1, 2015, the Texas Department of Public Safety was required to conduct a study concerning the use of a digital image for identification and proof of licensure purposes. As a result, five major proposals on how to achieve this goal have been submitted to the DPS. DPS is required, not later than September 1, 2016, to submit a detailed report of its findings and recommendations to the Legislature.

The State of Utah already has some experience issuing digital licenses via a smartphone. The Utah Hunting and Fishing mobile application[7] is the first state digital wallet that allows law enforcement to scan and verify official licenses and permits with their existing equipment. With the Utah Hunting and Fishing Mobile App, you can:

- Download your license: Download and store your fishing, hunting or combination license on your mobile device. Quickly view information about your licenses or permits.
- Download select permits: Download and store the season dates and other details about select big game, small game and other permits. Note: if your permit contains a tag to attach to an animal after harvest, you will need to carry the paper permit with you in the field and follow all tagging regulations.

The application is the first state mobile app to create a digital wallet that allows law enforcement officers to scan and verify official licenses and permits with the same equipment the Utah Division of Wildlife Resource officers are already using. A digital driver license comes with some additional challenges due to the broader reaching implications in the way that it is used, along with the fact that it is often used for identification outside the state and even internationally. It also has a much larger user community.

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[7] The Utah Hunting and Fishing Mobile App, Utah Division of Wildlife Resources. http://wildlife.utah.gov/dwr-multimedia/45-multimedia/multimedia/1531-utah-hunting-and-fishing-mobile-app.html

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Some states allow drivers to show valid proof of insurance and other information on their smartphone. For example, in 2013 the state of Michigan announced new legislation that would allow Michigan motorists to use smartphones and other electronic devices to show their vehicle registration and valid auto insurance instead of having to present a paper certificate. "Many insurance companies already offer electronic insurance certificates to their customers," said Representative Mike Green, R-Mayville, who sponsored Senate Bill 391. "It's time we allow Michigan drivers to use an electronic certificate to prove they have valid insurance."[8]

Cost Analysis

AAMVA has identified the following financial considerations:
  A. Reader infrastructure everywhere an eDL is consumed
  B. Changes in office processes
  C. System infrastructure
  D. Outreach / education / training
  E. Impact on existing revenue streams

Development / Implementation Options
There are multiple components that need to be considered in the implementation of an Electronic Driver License solution. Every solution option will include basic requirements including the need to enhance the ability of the authentication architecture to scale to a much larger number of transactions.
  A. DTS develop in-house
      DTS currently provides development and maintenance services for the State's Driver License Information System. In any scenario, DTS will need to augment the current authentication architecture.
      The cost estimate for in-house development is found in Appendix 2.
  B. Contract
      a. Utah Interactive
          Utah Interactive is a subsidiary of NICUSA that supports the Utah.gov portal and other digital government services, including the Hunting and Fishing mobile application.

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[8] "Why not use your smartphone to show proof of auto insurance?", May 24, 2013.
http://www.michigan.gov/sos/0,4670,7-127--304285--Y,00.html

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    C. Purchase

A growing number of companies are now involved in efforts to produce digital ID systems such as the driver license that can be securely accessed on a mobile device.

        a. MorphoTrust

The MorphoTrust® Mobile Driver License (mDL) was piloted for 90 days in Iowa in 2015. With the MorphoTrust® mDL, you can…

- Add your driver license to the list of things you now use on your mobile phone
- Enjoy added convenience while traveling or purchasing age-restricted products
- Reduce trips to the motor vehicle agency for tasks like updating your address or becoming an organ donor
- Gain access to restricted facilities or government services

Video of Morpho Trust mDL

        b. Hypori

"Hypori offers a "virtual mobile infrastructure" consisting of a centrally located Hypori Server that would be used to host DPS applications and associated data, and "thin" client software installed on mobile devices to connect to the Hypori server. This creates a "virtual mobile infrastructure" that is analogous to a virtual desktop infrastructure that has been optimized for smartphone and tablets. Hypori's proposal is to install the virtual mobile infrastructure platform and create citizen and law enforcement mobile applications that would be a "branded" Hypori thin client to retrieve driver license data on the central DPS Hypori server per DPS specifications."[9]

        c. Global Enterprise Technologies Corporation (GET)

        d. Oberthur Technologies

Oberthur works to "ensure both the management of digital identities, the protection of citizens' personal and professional data as well as their secure access to the world of mobility."

        e. IBM

IBM Mobile Identity is an AAMVA compliant solution that goes beyond just putting an image of your driver's license on your smartphone; it allows institutions to

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[9] "Digital driver license law by Rep. Canales now in development stage by Texas Department of Public Safety." May 18, 2016.
http://www.edinburgpolitics.com/2016/05/18/digital-driver-license-law-rep-canales-now-development-stage-texas-department-public-safety/

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easily issue digital identity documents and create an easy-to-use system for securely storing and managing those documents on any mobile device.[10]

f. [NXP](#)

g. HID

HID's technology enables organizations to securely provision IDs to mobile phones and other smart devices for accessing offices, hotel rooms, data and cloud apps, along with a growing range of extended applications that will soon include mobile driver licenses and government IDs.[11]

h. Gemalto

"Gemalto Mobile DL solutions bring technology and implementation models which take into account user-friendliness, the local DL schemes and practices (drivers, Police, service providers…), and provide the highest level of security in both credential storage, data transmission and verification."[12]

i. Marquis ID

Marquis is working on a smartphone solution.[13] They were recently purchased by Gemalto (see above). They are partnering with IBM.

Technology

Iowa was the first state to do an actual pilot of a smartphone-based license beginning in September 2015. Mark Lowe, Director of the Iowa Driver License Division suggests that the technology they used was not fully mature and will improve over time.[14] Lowe envisions the Electronic Driver's License as a mobile application that does more than simply provide a digital ID verifying driver's privileges. The application provides a trusted connection to the Driver License agency with the following services and functionality[15]:

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[10] "Mobile Muti-Factor Authentication for Digital Driver Licenses", IBM Emerging Technologies Blog, May 4, 2016. http://blog.ibmjstart.net/2016/05/04/mobile-multi-factor-authentication-for-digital-driver-licenses/

[11] "HID Global Showcases Mobile ID Experience for Smartphones at eID Conference", https://www.hidglobal.com/press-releases/hid-global-showcases-mobile-id-experience-smartphones-eid-conference

[12] "Technologies and implementation models from Gemalto", Gemalto website, http://www.gemalto.com/govt/traffic/digital-driver-license.

[13] Marquis ID Systems Digital Driver's License, http://marquis-id.com/ddl/.

[14] "Digital Driver's License," presentation to AAMVA Region II, 2015. http://www.aamva.org/DigitalDriversLicense_LoweDiFraia_June2015/

[15] eDL - Digital Driver's License Concept, Mark Lowe, Iowa Driver's License Division, June 19, 2015. https://prezi.com/nz5qwuz5diyo/ddl-digital-drivers-licese-concept/?utm_campaign=share&utm_medium=copy
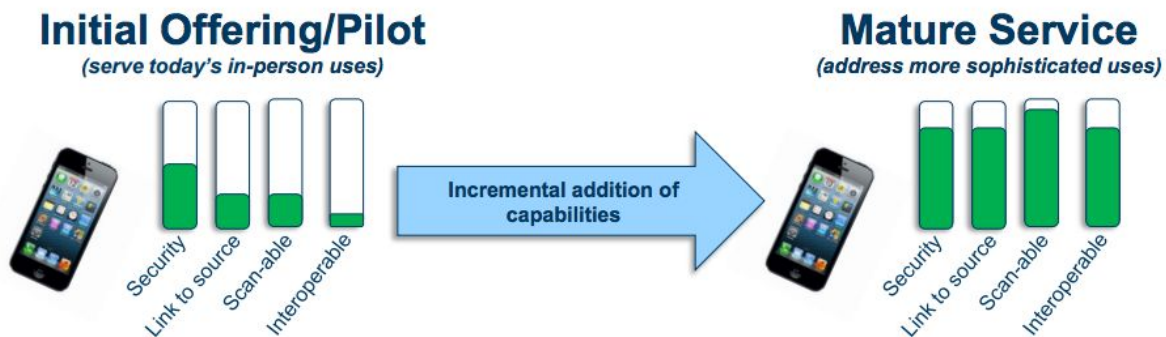
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- Driver's License / ID
- Driving record
- Vehicle Record and Registrations
- Services
  - Renewals and duplicates
  - Purchase certified records
  - Pay civil penalties and fines
  - Schedule and pre-check
  - Possible other state services

It is reasonable to expect that as states begin to fully explore the possibilities of an electronic driver's license, capabilities available from third party vendors will mature significantly and new functionality, as well as improved security features will become available.

Solution providers are working to include a variety of technologies into their mobile drivers license applications including facial recognition, near field communication, digital watermarks, and biometrics to make the application more secure and easy to use in the future.

Security	Link to Source	Scan-ability	Interoperability
• overt features • Covert features	• Revoke • Reinstate • Organ donor changes • Address change • Other…	• Optical (device camera) • By dedicated devices • By mobile device • Using covert/overt features • Other non-optical means • QR codes, bar codes…	• QR Codes • Covert features • NFC • Bluetooth • Future innovations…

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The Customer / Driver License Holder could share or send information to trusted third parties from the application such as:
- Initiating authentication and verification
- Sending information (records, status)
- Creating profiles for defined users (for instance, emergency contact information and medical information for first responder

Standards

Standards are very important when dealing with issues such as identity. Because the Driver License is a universal form of IT that is used in a wide variety of scenarios, standards have been developed to ensure integrity and reliability of the document.

A. **Federal Standards**
NIST has developed an Electronic Authentication Guideline[16] that could extend to electronic driver's licenses and other types of ID used for authentication.

Enhanced Driver License Standard
The US Department of Homeland Security has been working with states to enhance their driver's licenses and identification documents to comply with travel rules under the Western Hemisphere Travel Initiative (WHTI)[17], effective June 1, 2009. Enhanced driver's licenses make it easier for U.S. citizens to cross the border into the United States because they include a vicinity Radio Frequency Identification (RFID) chip that will signal a secure system to pull up your biographic and biometric data for the CBP officer as you approach the border inspection booth, and a Machine Readable Zone (MRZ) or barcode that the CBP officer can read electronically if RFID isn't available.

The top 39 land ports of entry, which process more than 95 percent of land border crossings, are equipped with RFID technology that helps facilitate travel by individual presenting EDLs or one of the other RFID-enabled documents.

Real ID
Passed by Congress in 2005, the REAL ID Act enacted the 9/11 Commission's

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[16] "Electronic Authentication Guideline", NIST Computer Security Division, August 2013. http://csrc.nist.gov/publications/nistpubs/800-63-1/SP-800-63-1.pdf
[17] Western Hemisphere Travel Initiative, US Department of Homeland Security, https://www.dhs.gov/western-hemisphere-travel-initiative-basics.

recommendation that the Federal Government "set standards for the issuance of sources of identification, such as driver's licenses." The Act established minimum security standards for state-issued driver's licenses and identification cards and prohibits Federal agencies from accepting for official purposes licenses and identification cards from states that do not meet these standards. Secure driver's licenses and identification documents are a vital component of a holistic national security strategy. Law enforcement must be able to rely on government-issued identification documents and know that the bearer of such a document is who he or she claims to be. REAL ID is a coordinated effort by the states and the Federal Government to improve the reliability and accuracy of state-issued identification documents, which should inhibit terrorists' ability to evade detection by using fraudulent identification.[18]

The Real ID Act details the following provisions for licenses issued by the states if they are to be accepted for federal purposes:

- Authority
- Data Retention and Storage
- DL/ID Document Standards
- Grants to States
- Immigration Requirements
- Linking of Databases
- Minimum DL/ID Issuance Standards
- Minimum Standards for Federal Use
- Repeal of 9/11 Commission Implementation Act DL/ID Provisions
- Security and Fraud Prevention Standards
- Verification of Documents

A Real ID-compliant form of identification requires the following pieces of data:

- Full legal name
- Signature
- Date of birth
- Gender
- Unique identifying number
- Principal residence address
- Front-facing photograph of the applicant

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[18] Secure Driver License, US Department of Homeland Security,
https://www.dhs.gov/secure-drivers-licenses.

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NIST / North Carolina Pilot

MorphoTrust, in partnership with the North Carolina Departments of Transportation (DOT) and Health and Human Services (DHHS), will demonstrate how the trust placed in state-issued driver's licenses as our primary proof-of-identity document can be extended into the online world, enabling secure transactions and delivery of state services to citizens. The pilot will leverage North Carolina's state driver's license solution to create a digital credential for those applying for the North Carolina (DHHS) Food and Nutrition Services (FNS) Program online.[19]

Secure Data Transfer

When considering the use of device-to-device validation, the application should be able to adapt to evolving secure data transfer standards, including Bluetooth and NFC.

B. **AAMVA**

The American Association of Motor Vehicle Administrators (AAMVA) has formed an Electronic Identity (eID) working group to review and leverage existing identity credential standards and recommend standards for the AAMVA membership relating to the emergence and rising popularity of electronic identity. The focus of the working group is to define, describe, and deploy (and/or enable deployment of) solutions and standards that yield a high level of identity assurance for online transactions in intra- and inter-state/province scenarios. The working group has published a white paper on electronic IDs[20], along with a more recent "functional needs white paper".[21]

AAMVA supports the following systems for exchange of driver license information:

a. Commercial Driver License Information System (CDLIS)

The Commercial Driver's License Information System (CDLIS) is a nationwide computer system that enables state driver licensing agencies (SDLAs) to ensure that each commercial driver has only one driver's license and one complete driver record. State driver licensing agencies use CDLIS to complete various procedures, including:

- Transmitting out-of-state convictions and withdrawals

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[19] NIST / MorphoTrust Pilot, 2015, http://www.nist.gov/nstic/morphotrust-usa.html.

[20] "Electronic Identity: The Who, What, Why, and How eID Will Impact the AAMVA Community", eID Working Group, September 2013.
http://www.aamva.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=4563&libID=4540

[21] "Mobile Driver's License Functional Needs White Paper. 0.6", AAMVA, 2016.
http://www.aamva.org/mDL-Resources/

- Transferring the driver record when a commercial driver's license holder moves to another state
- Responding to requests for driver status and history

    b. The Commercial Skills Test Information Management System (CSTIMS)[22]
An Internet-based tool that provides a consistent way to track the scheduling and entry of test results for commercial skills tests by jurisdiction and third-party examiners.

- An electronic driver license on a mobile device could potentially communicate electronically with systems such as CSTIMS and receive electronic notifications within the supporting app.

C. **Identity Ecosystem Steering Group**
The Identity Ecosystem Steering Group (IDESG) is a private/public partnership working to solve the problem of online identity management facing consumers and businesses. Membership in the IDESG tops 200 organizations, with government and industry members representing more than 12 countries. IDESG grew out of the National Strategy for Trusted Identities in Cyberspace.[23]

D. **Other Countries / International**
The development of global standards is driving a common framework towards an internationally recognized driving license. ISO/IEC 18013, first introduced in 2005 and which came into force in 2009, provides a common toolbox for the implementation of secure driving license programs. Initially focused on the physical format and visual security elements, the standard has evolved to include guidance on electronic security, testing and interoperability for migration towards a secure, credit-card format e-document.[24]
These smart cards often include integration with mobile applications and services that extend beyond just the driver function.

    a. **El Salvador**
El Salvador was one of the very first countries to introduce a smart card-based driving license. El Salvador issues a nationwide multi-application smart card solution to successfully manage the nation's driver's license, vehicle registration

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[22] Commercial Skills Test Information Management System, AAMVA. http://www.aamva.org/CSTIMS/
[23] Identity Ecosystem Steering Group, http://www.nist.gov/nstic/about-idesg.html.
[24] "Steering the Future with Electronic Driver License," whitepaper by gemalto, November 2013. http://www.gemalto.com/brochures-site/download-site/Documents/documentgating/gov_wp_eDriving_license.pdf

and tax payment procedures and processes. More than 10 million electronic documents have been issued in El Salvador and 76,000 new cards are issued every month.

b. **European Union**
European Commission regulation 383/2012 of May 2012 defined, for the first time, a unified European electronic driving license. The EU mandated the introduction of a single highly secure European driving license from January 2013 that replaces some 110 different paper and plastic licenses. The aim: to enhance safety as well as freedom of movement for European drivers on the roads, reduce driving license fraud through an easy to recognize European format and facilitate exchange of information between member states. Implementations are underway within the EU's 28 members, with programs that incorporate contactless technologies enabling e-driving licenses potentially to benefit from infrastructures already deployed for epassports or e-resident permits.

c. **Australia**
Australia is hoping to move to a digital license for the smart phone within the next 3 years.[25]

d. **United Kingdom**
The UK's Driver and Vehicle Licensing Agency is working on a smartphone version of its driving licence.[26]

e. Barcelona
In 2013, Barcelona became the first city to issue its citizens a secure Mobile Digital Identity Service.[27] The mobile ID facilitates access to a growing number of digital services.

E. Related Industry Standards

a. Apple Wallet
Apple Wallet is an application in iOS that allows users to store credit cards, debit cards, boarding passes, event tickets, etc.[28] The UK's equivalent of the DMV is

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[25] "NSW Government proposes digital license for smartphones", by Claire Reilly, CNET, March 13, 2015. http://www.cnet.com/au/news/nsw-government-proposes-digital-drivers-licenses-for-smartphones/
[26] "UK Developing Digital Driver License," BBC, May 16, 2016 http://www.bbc.com/news/technology-36302214
[27] "Barcelona Busts Out Mobile ID for City Services", by Pablo Valerio, UBM Future Cities, Sep 16, 2013. http://www.ubmfuturecities.com/author.asp?section_id=407&doc_id=525767
[28] Apple Wallet, Wikipedia. https://en.wikipedia.org/wiki/Wallet_(application).

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considering making digital driving licenses that could be stored in the Apple Wallet.[29]

b. Google Wallet
Google Wallet is a peer-to-peer payments service developed by Google that allows people to send and receive money from a mobile device or desktop computer at no cost to either sender or receiver. Currently, Google Wallet does not provide full wallet functionality and is primarily for exchanging money.

Use Cases

Although the primary purpose of the Utah driver license is to provide an official document that conveys driver privileges, it is now used for many other purposes. A few are listed here with more elaboration in Appendix 4.

A. Use by law enforcement and other government entities
Travel
Adult passengers 18 and over must show valid identification at the airport checkpoint in order to travel.
Traffic Violation
Several law enforcement agents participating in the review committee stated that they would likely continue to use traditional methods for driver's license verification in the short term, writing down the digital ID's information and then verifying it against state DL databases using the UCJIS application.

B. Commercial Driver License
C. Use by private entities
Alcohol Purchase
You must be at least 21 years of age to purchase, possess, or be provided with any alcoholic beverage. Acceptable forms of identification include: a valid passport, a valid driver's license or military identification card with a date of birth and a photo, or an official state issued identification card.
D. Additional Information may be integrated with the license
    a. Organ Donation
    b. Privacy
    c. Medical Fitness

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[29] May 13, 2016. http://www.theverge.com/2016/5/13/11672666/uk-apple-wallet-digital-drivers-license

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      d.   Military Status
      e.   Voter Information

AAMVA's summary of use cases is included in **APPENDIX 4** at the end of this document.

The Driver License Division conducted a survey in June of Utah businesses, asking how they currently accept the driver license as ID and how they would respond to an electronic driver license. Here are some responses:

- **Holiday Convenient Store**: They scan licenses when someone purchasing alcohol or tobacco looks under 45 years old. They would be open to a mobile license as long as they can scan a 3D barcode as well as see a picture and verify that the license is not expired. They have purchased a barcode reader to use, so the concern is how that system might access the State servers as well as out-of-state licenses. Would they need two systems?
- **Smith's Grocery**: They check an ID when someone buys alcohol or tobacco and looks under 27, if they are taking a check when there is no check history, when someone is purchasing a gift card using a credit card, and when they are cashing a check. They scan the 3D barcode. They are willing to use a mobile license as long as they can see the age and identify the person who is providing ID.
- **Smith's Pharmacy**: They must scan a barcode. They cannot accept an E-License until it is written in law and implemented in the Pharmacy Act. If it is state-issued and NOT a photo of a license, they would accept it as long as it is the current law. They will need to validate the license and make sure it is not expired.
- **US Bank**: They would accept an E-License if they are aware that it is state-issued. Their biggest concern is forgery. They would want to verify that the individual is using an app created by the state that they recognize. Concerned that not everyone has a scanner, so he suggested that there is a program for businesses to log into to verify a mobile license. They check the validity of an ID, as well as the issue and expiration dates.
- **Walgreens**: They are open to an E-License. They already use an electronic Walgreens account to identify people for medications. As long as the mobile license scans and is state-issued, they would be willing to accept it. Their pharmacy policy would need to be updated to include mobile licenses.

Potential Challenges

AAMVA has identified the following considerations in developing an electronic driver license:

A. Biometrics, PIN, or other mechanisms could be used to link the eDL to the holder.
B. The solution should allow for simultaneous view of the eDL holder, a portrait image extracted from the eDL, and biographical information such as that seen on the physical card.
C. Offline vs. online issues
D. Processing time is important, should be comparable or better than the physical card
E. Minimize additional reading equipment
F. Limit physical contact between the eDL carrier and reading equipment

Concerns

- Dead battery
- Unwanted location tracking
- Identity theft via software vulnerabilities
- Lack of cellular data coverage
- User fails to lock application

Security

Any application, developed internally or by a third party would need to address all aspects of security: credential storage (on the mobile device), data transmission, and secure verification. The application could also include the capability to remotely deactivate or remove the digital license if the device is lost or stolen.

In Iowa, the process for enabling the electronic driver license will begin when the driver is issued a PIN giving them access to download the app. The customer will select their preferred biometric – a thumbprint or facial image – and the smartphone will be used to capture it. This will be used to access the app in the future. When the app is opened in the future, the user presents the biometric to be verified. If successful, the app will be unlocked. Then it will communicate with DOT to verify that the device is authorized to present the license and that the license remains valid.[30]

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[30] "Iowa Test Drives Mobile Licenses," SecureIDNews, May 11, 2015.
http://www.secureidnews.com/news-item/iowa-test-drives-mobile-licenses/
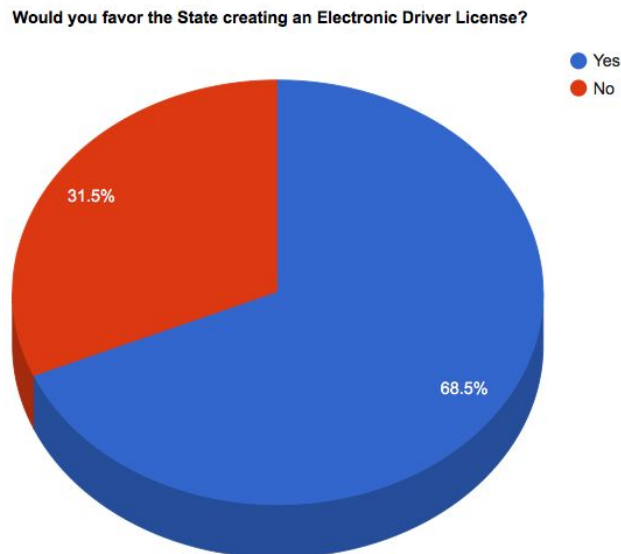
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Several of the options available for the mobile driver's license include the ability to lock access using the device's biometric capabilities, meaning that the user would generally have to use his/her fingerprint to access the license.

New mobile services such as GoVerifyID allow an organization to quickly, easily and inexpensively add face, voice, and fingerprint authentication into any existing security process. Currently these services are being used to access bank accounts, financial transactions, and healthcare records and could be used to strengthen security around a driver license access.

Potential Benefits

In a recent survey of almost 4000 Utahns, 68.5% felt that an electronic driver license would be a good idea.

Although the Driver's License Division produces the driver's license primarily as an official document authorizing an individual to driver specific type(s) of vehicles, it has evolved into a primary ID that is used for many other purposes.

- Document Management and Digital Signature
- Authentication to Online Services

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- Penalty Point Management and Better Road Behavior
- Proof of Identity
- Electronic Notifications
- Reduce Driver License Fraud

See http://www.movemag.org/identity-management/314-goin-mobile for a perspective on mobile driver's license benefits.

Recommendations

A. Option:
   DTS and the Driver License Division both agree that an electronic driver license appears to be inevitable and are willing to support any initiative by the legislature. Both agencies also agree the current technology is not fully mature, but that an acceptable solution could be either developed entirely in-house or in conjunction with a third party vendor. An RFI or RFP will need to be issued to fully understand external costs before we can understand which option is preferred.
B. Recommended Implementation date: No sooner than December 2018
   This recommendation assumes that the next legislative action would occur during the 2017 General Session and that funding would not be available sooner than July 2017.

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APPENDIX 1

Electronic Driver License Flow
06/30/2016

To begin the process of obtaining an electronic Driver License (eDL), the customer will access the Public Safety/Driver License web site and navigate to the page that will allow the request for eDL to be entered. On this page the customer will enter in their last name, DL/ID card number, date issued and the last 4 of their SSN. This information will be required to ensure the validity/authenticity of the request.

This information will be submitted to the Driver License Division (DLD) where programmatically it will verified against the DL database. Once verified, a letter will be programmatically generated with a registration PIN and mailed to the customer's address that is on file. (Note: By mailing the registration number to the customer's address, this will have the effect of two-factor authentication. Alternatively, a process may be developed to allow the pre-authorization/verification of an email address to which the registration PIN can be sent to.)

The letter (or email) received by the customer will contain the registration PIN and instructions to download the eDL from the State's App Store. The installation process will complete the registration process by asking for the DL number, registration PIN and an application/user PIN. Once successfully submitted to DPS, the app will receive an eDL that will be displayed on the mobile device. The information displayed will be the same as what is contained on the physical DL/ID card. It will also contain a "last verified" date/time that will indicate the last time information was retrieved/updated from the DL system. It will also contain a varying verification checksum and a barcode containing the data displayed on the eDL.

For display/use, whenever the eDL mobile application is activated it will request the user-assigned PIN. (If multiple eDLs exist on the device, the DL number to be used must be selected first.) The PIN (along with DL number) will be submitted to DLD and authenticated. The PIN will be validated and current DL information (DL details, photo, verification checksum, date/time last verified, barcode) will be returned to the device for display. (Note: If the mobile device is out of range/cannot connect to the network for authentication/refresh, the PIN will be authenticated locally and the stale data displayed.)

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To verify the eDL, vendors, banks, etc. will be able to access a DLD site for verification. They will enter the DL# and issue date that is on the eDL. The response will return the eDL holder name, last verified date, age and verification checksum, all of which can be compared to the eDL. Future functionality may include a mobile device application that can scan the eDL and provide the verification.

Law enforcement will use the existing Utah Criminal Justice Information System (UCJIS) applications to view DL information. Last verified date and verification checksum will be added to the UCJIS DL response to allow the officer to verify the eDL.

APPENDIX 2: COST ESTIMATES

Upfront hardware:	$40,000.00
Yearly hosting costs:	$34,958.40
Upfront Oracle costs (estimated):	$400,160.00
Ongoing Oracle costs(estimated):	$72,160.00

In-house developed application
In-house development (depending on complexity):	$200,000 - $500,000
Ongoing application support (IT Analyst III):	$152,041.34

Details:

OSB servers (receives authentication requests)
4 servers (2 at the Salt Lake Data Center, 2 at the Richfield Data Center), load-balanced locally and between the two centers for redundancy.

Upfront cost of physical servers: 4 @ $5,000 $20,000.00

Yearly System Administration costs:
4 servers @ $404.06 per month each: $19,394.88
Each server has 4 CPU cores @ $81.06 each per month: $15,563.52

Web Services servers (performs database work)
4 servers (2 at the Salt Lake Data Center, 2 at the Richfield Data Center), load-balanced locally and between the two centers for redundancy.

Upfront cost of physical servers: 4 @ $5,000 $20,000.00

Yearly System Administration costs:
4 servers @ $404.06 per month each: $19,394.88
Each server has 4 CPU cores @ $81.06 each per month: $15,563.52

Oracle licensing:
Oracle SOA Suite for Oracle Middleware (est.) $184,000.00
Oracle WebLogic Suite (est.) $144,000.00
First year maintenance:

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Oracle SOA Suite for Oracle Middleware (est.) $ 40,480.00
Oracle WebLogic Suite (est.) $ 31,680.00

Ongoing Oracle maintenance:
Oracle SOA Suite for Oracle Middleware (est.) $ 40,480.00
Oracle WebLogic Suite (est.) $ 31,680.00

Mobile applications developed in house:
Apps developed for both Android and iOS platforms
Depending on complexity/features desired: $200,000 - $500,000

1 additional IT Analyst III to support the applications if developed in-house:
2080 hrs a year x $87.02 hourly rate = $181,001.60

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APPENDIX 3: CONCEPT OF A POTENTIAL IN-HOUSE eDL APP

Draft idea for an app that contains license data. Also contains a rough draft idea for a process to verify that the information on the device is legitimate.

Registration Process for Digital License

This process is to verify that the email address and mobile number for that person that we have on file is correct. We need to be able to deliver verification codes to them at various times as a form of two-factor authentication.

1 - Customer registers through online site similar to how they change their address or add emergency contact information: authenticating by entering last 4 of SSN, license number, issue date and last name.
2 - Customer enters an email address and/or mobile number. A verification code is sent through email and/or text and the person must verify the email address and mobile number.
3 - Customer enables the Digital License for their driving record.

Download and Initialize the Digital License App With Data

This process is used to load all the Driver License data onto the phone. It will contain all the same data that is on the hard copy of the license including barcodes.

1 - Customer searches for and downloads the Utah Driver License Digital License App from the App Store. A link to the app is also provided at the http://dld.utah.gov/ site.
2 - Once the app is downloaded, the customer creates a PIN or password to secure the information that will be contained in the app. (If the PIN or password is later forgotten or entered incorrectly X number of times, the data on the device will be wiped and the customer will have to start again from this step.)
3 - Customer enters their license number, last 4 of SSN, issue date of license, and date of birth into the app.
   - App hits the Utah Driver License Digital License web service with the DL info and requests that a verification code be sent to the email address and/or mobile device on file.

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- the mobile number and/or email address on file for the license number is sent a verification code.

4 - Customer enters the verification code from the text or email into the app.
   - app then retrieves all license data (photo, signature, name, address, etc.) from the Utah Driver License Digital License web service

Notes -
   - Do we allow for a Digital License to be saved on multiple devices? (If so, we will track each device that they have used.)
   - Do we allow for multiple Digital Licenses to be saved on a single device? (Each Digital License would have it's own PIN.)
   - The verification code is only good for X minutes.
   - Only one verification code should be active per email or phone number at a time.

Updating the Digital License App Information.

This process is used to keep the Digital License up-to-date with the latest address and other info.

1 - Customer opens the Utah Driver License Digital License App and enters their PIN.
2 - Customer presses the 'Update Info' button.

Notes -
   - this process is secured by creating a secure token on the server side during the initialization/setup process based on a combination of unique device and customer information

Verification that the App is Authentic

It will be fairly easy to mimic the design and look of the application and fake a license. In order to verify that the app is legitimate, the Digital License and a third party internet-enabled device will share a "Verify Code" facilitated by a Driver License server.

Below is how a typical verification process would work. Both parties (the customer and the Third Party) must have online access.

1 - Customer unlocks the Digital License app with their PIN.

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2 - Customer shows Third Party their Digital License and the Third Party evaluates the data and photo. At this point it would also be possible for the Third Party to scan the bar code on the device (using any number of standard bar code scanners or apps) and retrieve data into their system.

3 - The customer presses the 'Retrieve Verify Code' button.

4 - Customer receives a 4 or 5 digit Verify Code back onto their device that the Third Party sees.

5 - Third Party goes to the Utah Driver License Digital License Verify site and enters the Verify Code.

6 - The Digital License Verify site returns information that will verify the Digital License data. It also returns the number of seconds since the 'Retrieve Verify Code' was requested. The Third Party should verify that the number of seconds is an expected number and that the license number returned matches the license number on the device.

Notes -

- Web service calls to our service will pass the unique secure token created during the initialization/registration process. It is possible for a customer to work with an attacker to hack their own Digital License. (It is possible for an attacker to reverse engineer any native app code and interface with our web services through their own modified app.) We should have processes in place that once a customer is known for hacking their own Digital License, that their Digital License will be revoked and they will be relegated to using a hard copy only.
- The Verify Code is only valid for a 2 minute window. (If longer than 2 minutes, it would be easy for the customer to request the Verify Code from the "real app" and then enter that Verify Code into a fake app that simulates the 'Retrieve Verify Code'.
- The app should have some kind of animation so that a simple static image could not be used as a forgery.
- It would be much harder (take more resources) but not impossible to verify that the Digital License is authentic in an offline mode.

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Simplified example of the verification process shown below.
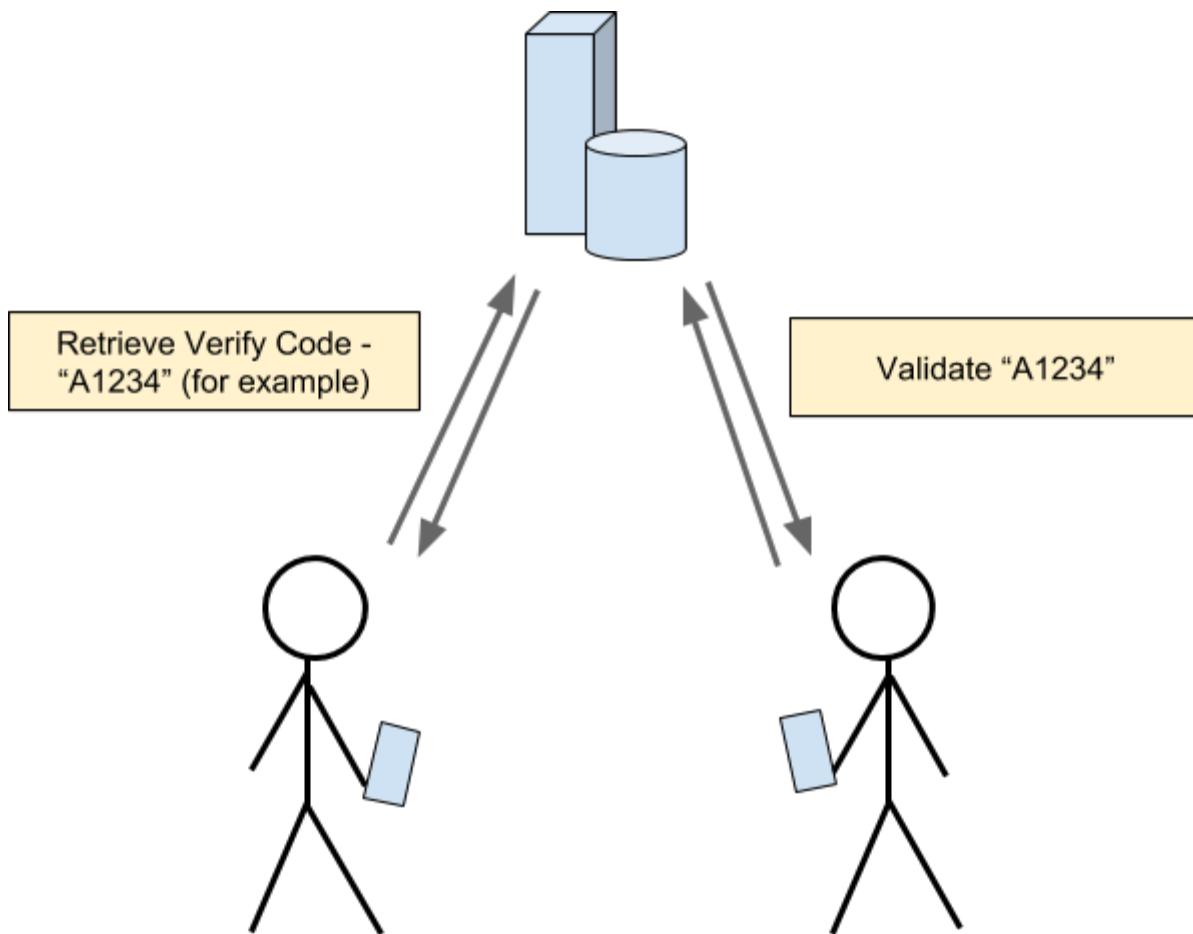
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APPENDIX 4: USE CASE EXAMPLES (AAMVA)

2.11.1 TSA

In the US, any person wishing to enter the secure area of a commercial airport has to identify him or herself. These checks are performed by the Transportation Security Administration (TSA). For domestic commercial flights, the most common means of identification is a DL.

In 2014, 761 million passengers enplaned at commercial service airports in the US. (The number was 739 million in 2013.) While the percentage that uses a DL is unknown, an estimate places this at 80%. This translates into 609 million DL verification actions by TSA in 2014.

The verification process is typically conducted in a controlled physical environment by a person who is trained in handling DLs. DLs presented can originate from any US issuing authority. DLs presented can conceivably also originate from a non-US issuing authority, although it is surmised to happen less frequently.

Online operation can be expected. Processing time is important.

2.11.2 Road stop

A road or traffic stop can technically be defined as a temporary detention of a driver by police to investigate a possible violation of law. During a road stop, the law enforcement officer conducting the road stop typically tries to identify the driver of the vehicle. The obvious document used for this purpose is a DL. According to the US Department of Justice (Bureau of Justice Statistics), there were 26 million road stops in 2011.

The verification process is typically conducted in a non-controlled physical environment by a person who is trained in handling DLs. DLs presented originate primarily from US issuing authority, although DLs from other issuing authority can be expected. Operation can be either online or offline. Processing time is important, but not as critical as e.g. in the TSA case.

2.11.3 Proof of age

In the US, the purchase of alcohol is generally restricted to persons aged 21 and older. Alcohol selling establishments are responsible for complying with such laws. This is typically performed by perusing the DL of any person appearing youngish (e.g., all persons appearing to be 25 or younger).

The total alcoholic beverage sales in the US was $211.57 billion in 20144. If it is assumed that an average purchase of alcohol is $50, that implies 4.2 billion individual purchases in 2014. According to the Census Bureau, in 2014 the 20 to 24 age group made up 9.7% of the total population aged 20 and above. If it is further as-
sumed that:

- Alcohol purchases are spread equally among persons of legal buying age;
- Only persons 25 and younger are "carded"; and
- The 20 to 24 age group is more or less the same size as the 21 to 25 age group;

More than 410 million DL verification actions took place in 2014. (Although this calculation is based on several assumptions, it is considered sufficient for purposes of the discussion.)

The verification process is typically conducted in a controlled physical environment by a person who is not trained in handling DLs. DLs presented originate primarily from US issuing authority, although DLs from other issuing authority can be expected. Online operation can be expected, although offline operation is possible. Processing time is very important.

When using a physical DL, the DL consumer obtains access to all the information on a DL. In future, if a mDL were to be used, it is envisioned that the consumer will only obtain sufficient information to confirm that the mDL belongs to the person presenting it, and that the person is of legal drinking age.

2.11.4 Other use cases

Additional traditional use cases where a DL is used include the following:

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- Car rental. In this case, a DL is used to identify the renter, as well as to provide driving privileges.
- Confirming identify in order to obtain social services.
- Confirming identity to a hotel on checking in.
- Confirming identity to financial institutions when conducting face-to-face business.
- Confirming identity in order to vote. (This is not a requirement in all jurisdictions.)
- Access control, e.g. to federal facilities. This can be seen as an extension of the TSA use case discussed earlier.

New use cases brought about by the nature of a mDL can be expected. Online use is one example. Online use can take many forms, e.g.:

- Signing documents electronically
- Improving security of other solutions/credentials on a mobile phone.