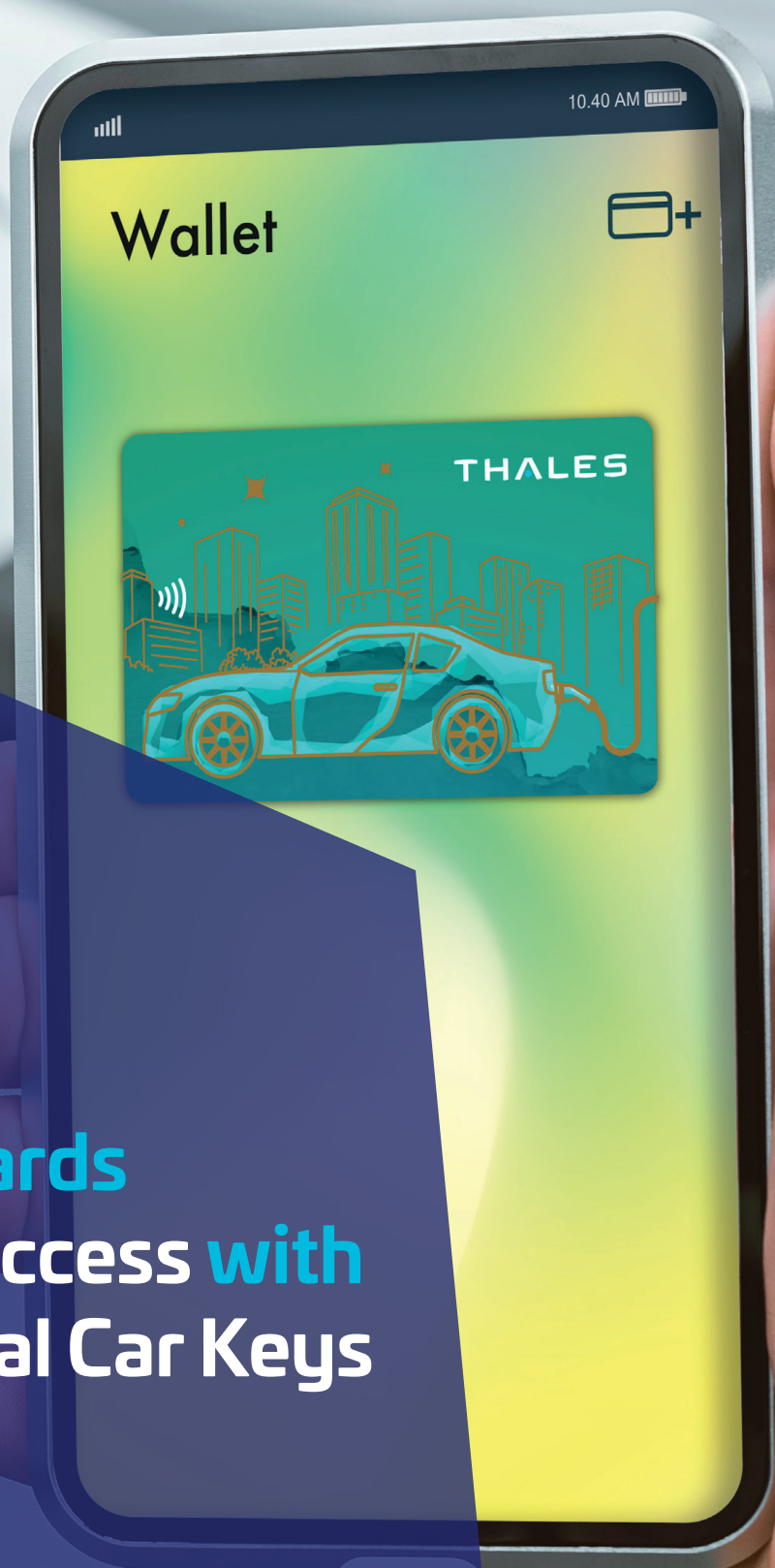


**Moving towards
keyless car access with
trusted Digital Car Keys**



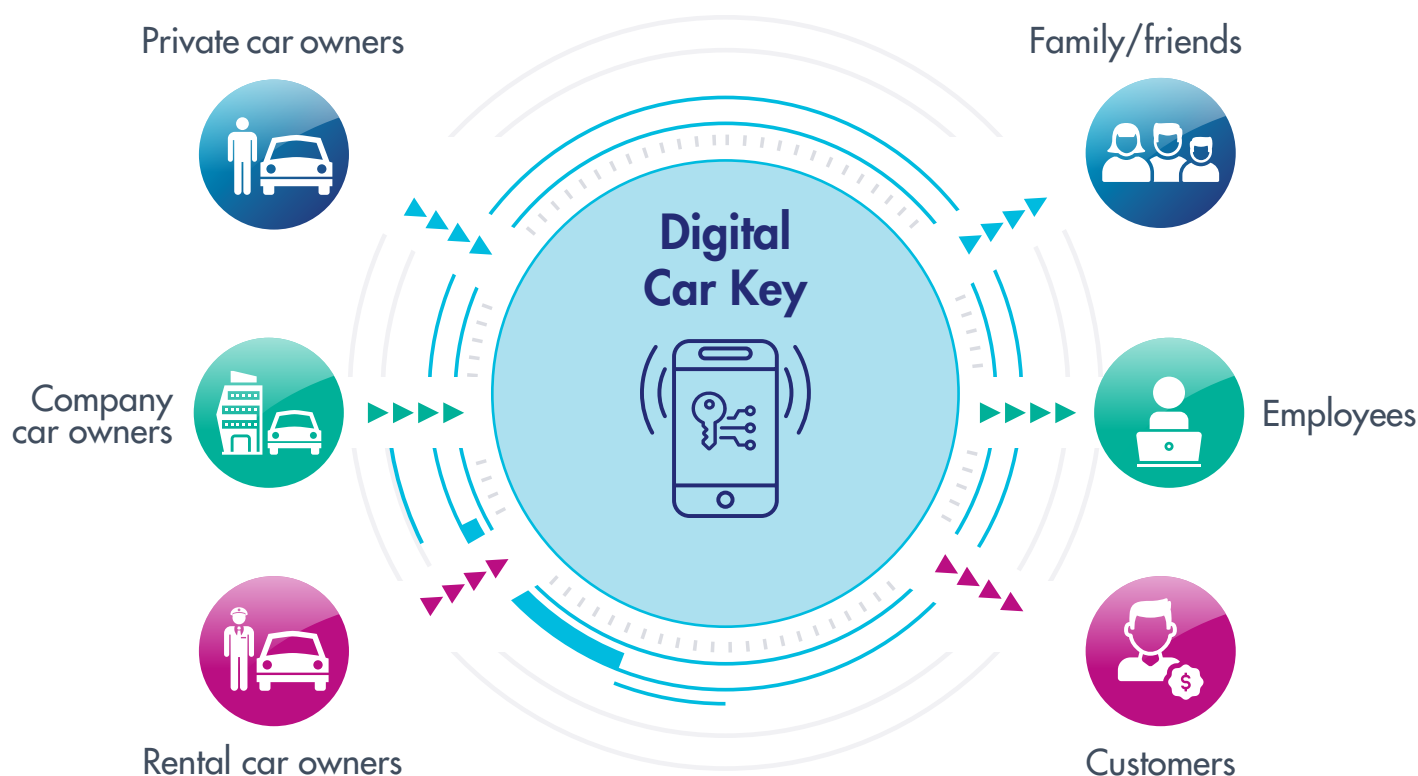
Smartphones have changed the way we do many things in our day-to-day lives and now they're adding ease of use to our vehicles. The automotive industry is perfecting a seamless solution for keyless entry, locking/unlocking, and starting connected cars, without physical keys or key fobs.

The mobile device – and Digital Car Keys – are the answer.

Digital Keys **open doors and opportunities**

Digital Keys are designed primarily to help drivers lock/unlock their cars and start the engine using their smartphones. The concept is known as Passive Entry Passive Start (PEPS) and leverages secure wireless communications to ensure the authentication between a smart device, e.g., smartphone or smartwatch, and an authorized vehicle. The simple act of locking/unlocking a car with a smartphone opens up several use cases for easier car sharing and fleet management:

Digital Car Key - Use Cases



Fast and convenient, sharing digital car keys via smart mobile devices eliminates the need to physically meet or wait in a long line at a car rental desk. Car owners and fleet managers can also specify days of access and use for their cars, based on agreements, and quickly revoke access once a usage limit has passed.

Sharing digital car keys opens a world of possibilities and ease of use, but could also create potential issues with global operations, if not well implemented. [The Car Connectivity Consortium®](#) (CCC) was created to develop a standardised ecosystem for global smartphone-to-vehicle connectivity solutions bringing together more than [one hundred fifty member automotive and mobile companies](#) worldwide.

CARCONNECTIVITY consortium®

The group, in which Thales has a leading chairman position, developed the **CCC Digital Key Certification**, which provides a standardised solution for the interoperability and security of digital keys, giving mobile device OEMs, auto makers and end users confidence in its consistent reliability and aiding in adoption by all.

+21,5% CAGR

Automotive Digital
Key Market – 2021 - 2031 *

US\$ 11,6 Bn

Market Value Global Automotive
Digital Key by 2031 *

*[Transparency Market Research](#)

Establishing trust and convenience for a **seamless customer experience**

Building a secure solution

According to a recent [Automotive Cybersecurity Report](#), attacks on keyless entry systems rank in the top three most common for connected cars. New technology that will build users' trust and enable wide adoption is crucial.

Digital IDs and associated digital keys need to be provisioned and stored securely into each component of the ecosystem - in mobile devices on one side and in vehicles on the other - to recognize each other through secure, mutual digital authentication with industry-leading encryption.

Built-in convenience

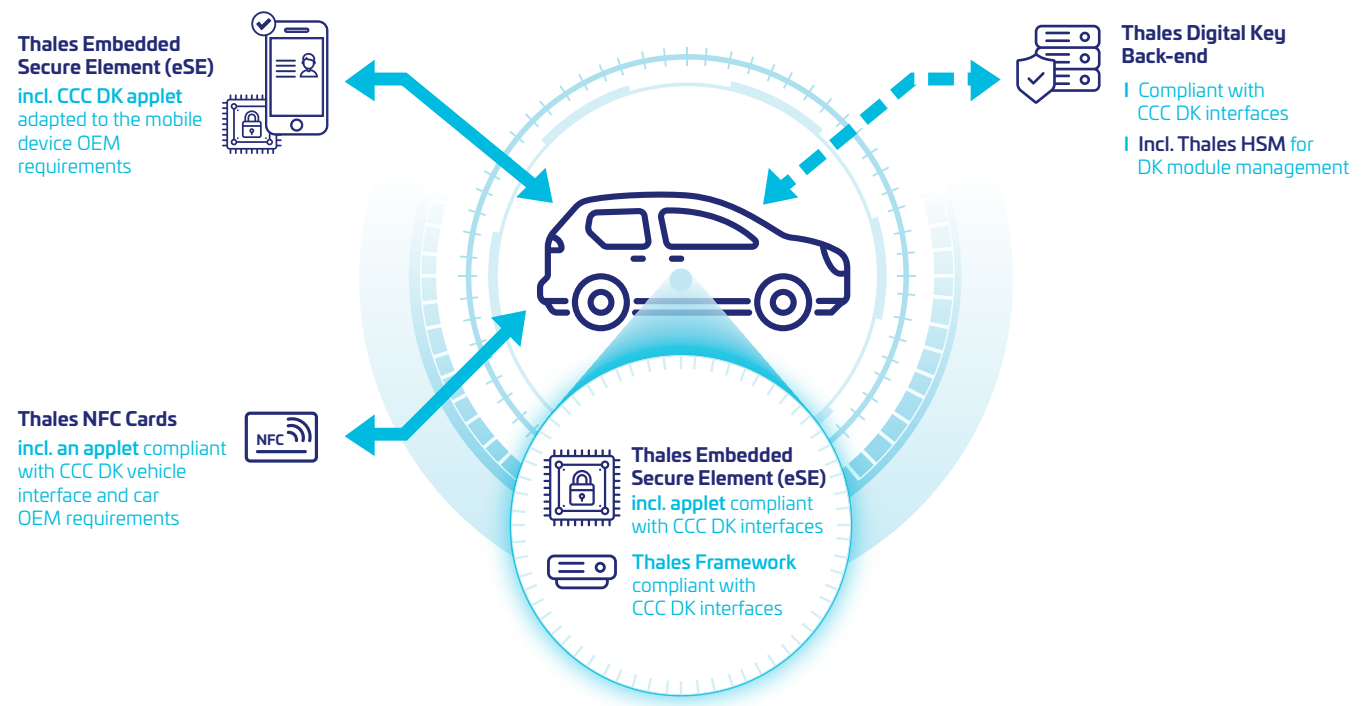
With Bluetooth® connectivity and Ultra Wideband (UWB), drivers can now unlock and start their car without holding the mobile device close to the car. Mobile devices can stay tucked away in a bag or pocket enabling passive keyless access and engine start. Additional remote key functions are being introduced such as seamless trunk opening for smart package delivery.

Thales Digital Car Key Solution

Guiding automotive players for a fully secure implementation

Thales offers a secure, end-to-end solution for automotive stakeholders looking to implement the latest CCC Digital Key™ Release 3 specification. Our deep connectivity and cybersecurity expertise support car makers from drivers' secure enrollment into Digital Key service platforms, the secure storage of digital IDs and associated keys, up to credentials renewal and key revocation.

Thales solutions enabling the CCC Digital Keys (CCC DK)



Thales solutions for Digital Key Storage & Credential Management – Compliant with the CCC Digital Key™ Release 3

I On the mobile device side

Thales has been manufacturing [embedded Secure Elements](#) (eSE) and applets for the telecom industry for decades. These offer a tamper resistant environment inside mobile devices to store digital IDs and keys and protect them against hardware or software-based attacks. We provide customers with all needed applets (including the CCC Digital Key applet) as part of our comprehensive Thales eSE offer.

I On the vehicle side

Thales supports car makers to protect digital keys stored inside their vehicles. Our deep knowledge of the attack landscape and cybersecurity protocols enable us to provide CCC Digital Key-compliant storage protection, based on Thales embedded

Secure Elements, applets and framework provided as components of our solution.

I On the cloud side

Thales [Hardware Security Modules](#) (HSM) act as powerful credentials storage machines that manage distributed keys' lifecycle (renewal, revocation) and ensure crypto-based authentication between smart device and vehicle.

I NFC Card

Thales offers NFC Cards fully compatible with the CCC Digital Key standard. This brings a secure keyless access alternative to car users who may not have their smartphone with them or want to provide car access to someone such as a valet parking or car wash attendant.



Increase security with the Fingerprint option

Leveraging proven Thales technology from bank cards with fingerprints, biometric sensors can be added to NFC cards for a higher security option. Fingerprint

verification adds a layer of authentication ensuring keyless access is given to intended recipients only and eliminating concerns about lost or stolen cards. User-friendly with infinite lifetime usage (no batteries required), fingerprints from several people can be added to the card easily, which helps when

sharing with family members and caretakers. NFC cards with fingerprint verification provide an innovative brand opportunity for automotive OEMs – as both a differentiator in the market and a unique advertising option.

Thales goes beyond industry standards, offering extra features for a fully secure and seamless experience:

| Digital ID generation and key provisioning

Thales has the technology to generate and provision diversified, random IDs as well as keys and credentials into smart mobile devices and vehicles. For this, we leverage our Thales Luna Hardware Security Modules (HSM) that build the security foundation for vehicle-to-car mutual authentication.

| Secure driver authentication

The use of biometrics technology, specifically the [Live Face Identification System](#), can complement the digital ID check process. This additional safeguard ensures only the driver associated with the smartphone can unlock his car and start the engine.



Why choose **Thales Cybersecurity Solution** for your **Digital Car Key**?

- | End-to-end Cybersecurity solutions** (hardware and software) extensive knowledge
- | Thales CCC Chairman position** ensuring perfect understanding of CCC Digital Key standard
- | CCC Digital Key Release 3 compliant** security solution
- | Long-term Secure Element expertise** - both in vehicles and mobile devices
- | Smooth integration** thanks to Framework and Applet provided with our embedded Secure Elements (eSE)
- | Thales Digital Car Key solution (CCC Digital Key Release 1) deployed in the fields** by several Car OEMs since 2016





Thalesgroup.com/Automotive

