



# TAPPING INTO THE FUTURE

MIFARE® CELEBRATES 25 YEARS OF INNOVATION

FASTER ACCESS, MORE SECURITY, SMARTER CITIES:  
How contactless MIFARE chips revolutionized the way we live...

MIFARE

## 1994 / THE JOURNEY BEGINS

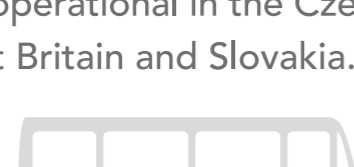
Three engineers at Mikron, an integrated microelectronics company, based in Austria, present their managers with a simple idea to make transport ticketing more efficient. The result: **MIFARE Classic®**, an integrated circuit (IC) with 1K memory is born.

## 1995 / WHEN PHILIPS MET MIKRON

A year after MIFARE's launch, Philips Semiconductors acquired Mikron, paving the way toward new possibilities with their advanced technology in RF transmissions.

## 1997 / MIFARE ON THE MOVE!

MIFARE IC-powered public transport systems are now fully operational in the Czech Republic, Finland, Great Britain and Slovakia.



## 2002 / ON GUARD!

The need for products with multiple levels of security becomes increasingly important. The first contactless **MIFARE® DESFire®** chips with a flexible file system and 3DES encryption are launched to meet this need.

## / LONDON CALLING!

The Oyster Card – a new transport ticketing system initially based on **MIFARE Classic** and now on **MIFARE DESFire** – launches in London.

## 1996 / FIRST STOP!

South Korea becomes the first country in the world to adopt the **MIFARE IC** as part of a new public transport initiative, resulting in shorter queues and faster ticketing during rush hours.

SEOUL 서울



## 2001 / CHANGING STRIPES

Philips Semiconductors introduces the **MIFARE Ultralight® IC** designed for low-cost, high-volume applications like transport and event ticketing. The replacement for magnetic stripe systems has landed.



2003

## 2005 / ULTRA-SECURE TRANSACTIONS

The **MIFARE Secure Access Module (SAM)** is born with the power to handle all crypto-related functions inside reader terminals, enabling the highest levels of secure data transmission.



## 2006 / MOVING UP THE RANKS

Philips Semiconductors evolves into **NXP Semiconductors** and is ranked one of the **top 10** semiconductor companies in the world.



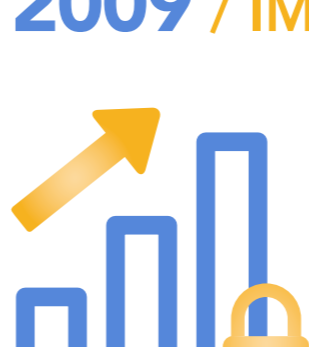
## 2008 / NEW SECURITY BENCHMARK

The launch of **MIFARE® DESFire® EV1**, with Common Criteria EAL 4+ certification for hardware and software, sets the industry benchmark in security. Its open concept allows for the integration of smart paper tickets, key fobs, and mobile ticketing based on NFC technology.



## 2009 / IMPROVED PERFORMANCE

NXP introduces the **MIFARE Plus® IC** as a drop-in replacement for MIFARE Classic, with added security and performance for the cost-sensitive automatic fare collection (AFC) systems in public transport and access control markets.



## / PROTECTION AGAINST FRAUD

With the launch of the **MIFARE Ultralight® C**, the first chip of its kind to use 3DES cryptography for authentication and protection against fraud and cloning, NXP enhances security for disposable tickets.



## 2010 / GOING MOBILE

The **MIFARE4Mobile®** Industry Group brings together leading players in the **NFC** ecosystem to expand MIFARE into mobile devices.



1.2 Billion people use MIFARE every day

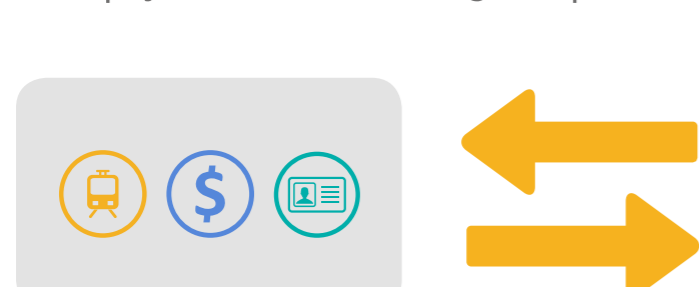
## 2016 / SMARTER CITIES

The brand-new **MIFARE® DESFire® EV2 IC** helps create smart city environments with transport ticketing, access management and micropayment — all on a single chip.



## / MORE FEATURES, MORE SECURITY

The new **MIFARE Plus® EV1 IC** enables over-the-air services and selective upgrades of security-relevant applications.



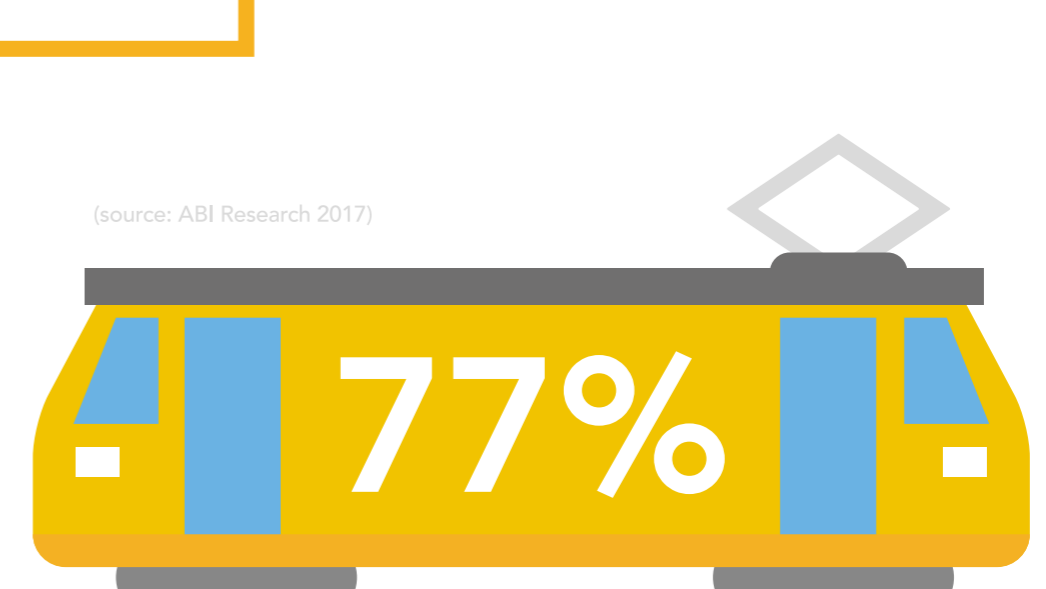
Stadiums in Istanbul, Manchester, Munich and São Paulo are already using MIFARE for contactless access or micropayments. The Allianz Stadium in Vienna, Austria, begins using the Rapid Marië payment card based on MIFARE DESFire EV2 ICs for fast, cashless payments.

## 2017 / CES

The Consumer Electronics Show (CES) attendees receive a **MIFARE DESFire EV2** powered badge to access the Las Vegas Monorail, bike-sharing services and the event itself! They can even add transit fares on-demand with the **MIFARE AppXplorer** from NXP.



(Source: ABI Research 2017)



of the market uses MIFARE

MIFARE becomes the **#1 SOLUTION** for automatic fare collection, holding over **77%** of the market share in transport ticketing.

2018

## / SHORTER QUEUES WITH MIFARE 2GO

NXP launches **MIFARE 2GO**: An end-to-end cloud service that digitizes MIFARE product-based credentials. Las Vegas Monorail becomes the first to use MIFARE 2GO, integrated with Google Pay, to enable mobile transit tickets (and less foot traffic) in the Bay area. MIFARE 2GO works on smart phones, wearables, wristbands, and other NFC-enabled devices.

## / SUPERIOR CRYPTOGRAPHIC PERFORMANCE

NXP introduces the **MIFARE SAM AV3** with 3DES and AES capabilities, turning the simplest reader into a high-security transmission device.



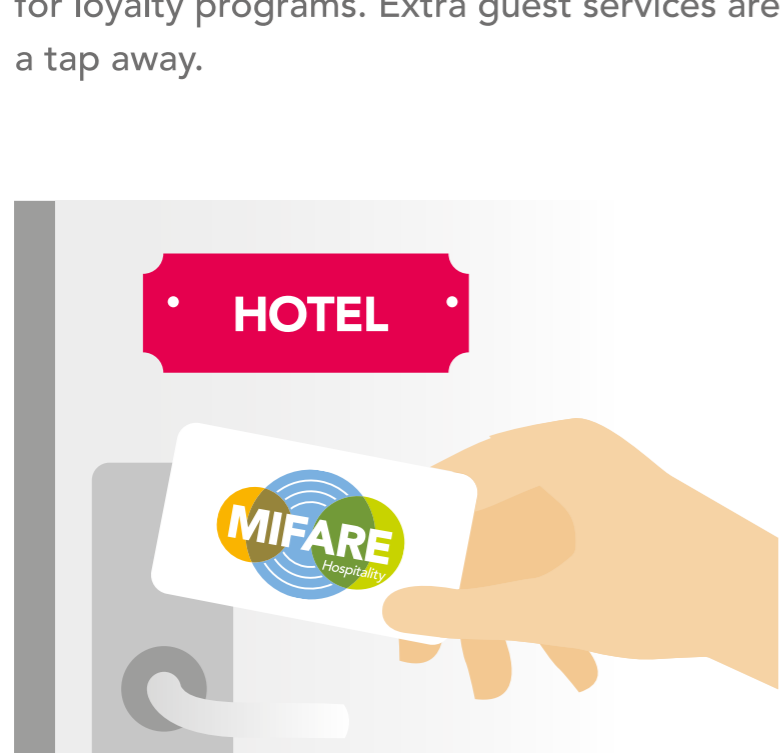
## 2019 / SIMPLIFIED DEPLOYMENT OF SMART CITY SERVICES

**MIFARE® DESFire® Light IC** eases the deployment of trusted contactless services with a pre-defined file structure, designed for single-application use cases.



The **2018 FIFA World Cup Russia™** uses **MIFARE ICs** inside the match tickets, offering fans a convenient and secure way to enter the stadiums.

**MIFARE Hospitality**, a chip that lets travellers safely access hotel facilities and take advantage of multiple mobile interactions like Wi-Fi pairing, room temperature control and easy sign-up for loyalty programs. Extra guest services are never more than a tap away.



## PARTNERS

NXP boasts a **RICH ECOSYSTEM** of **MIFARE** business partners ranging from OEMs, to service providers and system integrators.



**MIFARE** becomes the **HEART** of contactless infrastructure in over **750 cities** around the globe. Next to using contactless chips, more and more cities are expanding their offering with MIFARE digital services.

## / MELBOURNE TRANSFORMED

Public Transport for Victoria — one of the largest public transport systems in the world — adopts **MIFARE 2GO** for mobile ticketing across multiple transportation modes.

Almost **100,000** public transport users have used the mobile ticketing solution within 3 months after the launch, which means mobile ticketing is growing quickly.



NXP's MIFARE contactless products have brought over two decades of innovation to all corners of the globe — but we couldn't have done it alone. Our success is thanks to all our brilliant teams and industry partners who have worked tirelessly toward realising our shared vision of a connected world.

See where we're going next at [www.MIFARE.net](http://www.MIFARE.net)

NXP, the NXP logo, MIFARE, the MIFARE logo, DESFire, MIFARE Classic, MIFARE Plus, MIFARE Ultralight, NTAG and ICODE are registered trademarks of NXP B.V. All other product or service names are the property of their respective owners. © 2019 NXP B.V.

