Contactless Solutions with MIFARE & Beyond

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SECURE CONNECTIONS FOR A SMARTER WORLD

EXTERNAL

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TRANSPORT TICKETING LANDSCAPE







KEY DRIVERS FOR ADOPTION



GLOBAL MARKET PRESENCE



TRANSPORT TICKETING LANDSCAPE

TRENDING TECHNOLOGIES & SOLUTIONS



- EMV (open-loop) & white label EMV
- Account Base Ticketing
- Optical solutions (QR-code)
- NFC
- Mobile & wearables/BYOD (iOS & Android)

KEY DRIVERS FOR ADOPTION



- Infrastructure and operational model optimization
- Superior User/customer Experience & convenience
- Compete with alternative transport solutions
- Complement existing ticketing technology

GLOBAL MARKET PRESENCE



 Hight: closed-loop (MIFARE, FeliCa, CIPURSE, Calypso)

Limited*: EMV (PNOs: Visa & MasterCard)

Limited: Mobile**

Limited: ABT



2030 & BEYOND: TRANSPORT TICKETING TECHNOLOGY ADOPTION

Front and back-end replacement ABT & white label EMV operations & Artificial Intelligence Open-loop with EMV enablement High investment with and long-term (address tourists, add convenience planning Add security, improve current for occasional travelers, alternative) close-loop set-up Moderate/high investment **Quick-wins** NFC Mobile top-up (smart cards) **System Overhaul** • NFC mobile (ISO7816) Customer centric with low investment Speed-up operations & Wave 2: up to 5 years remove cash · Deploy single app **Complementary solutions** payment scheme Wave 1: up to 18 months **Complementary solutions AFC Systems Initial Adoption Convenience, Transparency, Experience**

WHY NFC FOR SMART CARDS & MOBILE?



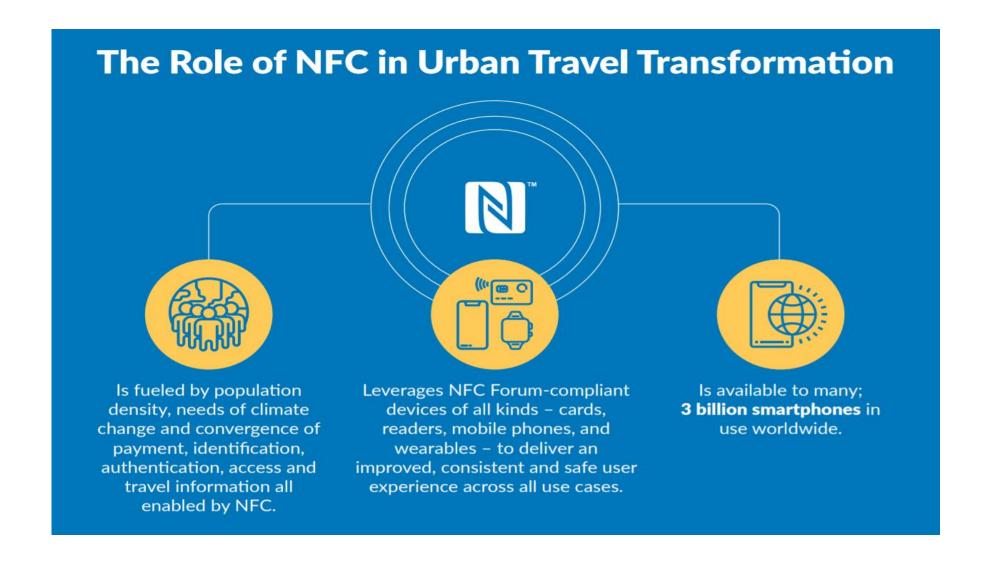


The NFC Forum brings the convenience of NFC technology to life. We empower organizations to deliver secure, tap-based interaction with an intuitive, simplified, reliable experience to users around the globe.

"45% of the global population use NFC contactless cards or NFC-enabled smart phones nearly everyday, according to an ABI Research survey."



LEVERAGE THE MARKET PRESENCE OF NFC







NTA Case Study, NFC Mobile PoS & MIFARE® DESFire®

The NTA in Ireland introduced NFC mobile reload app for their Leap card

Android: January, 2016

iOS: April, 2021

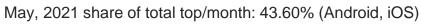


Pre-COVID: active users 480,000 (Andorid)

May, 2021: over 200,000 active users (Android, iOS)



Pre-COVID share of total top/moth: 27.00% (Android)



Surpassing retail top-up for the first time, making NFC apps the most popular top-up/sales channel.



Improvement of operational model

Savings from sales channel shift & cash handling

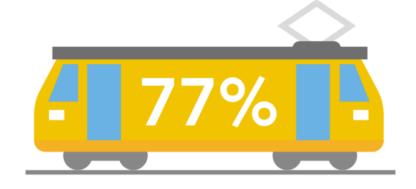
Customer convenience and transparency



MIFARE® LEADER IN CONTACTLESS ICS



1.2 Billion

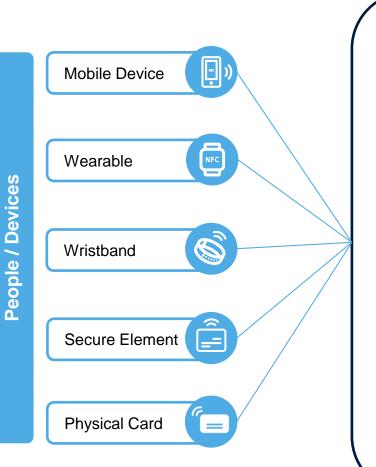


Running in over 750 cities

People use MIFARE every day for smart mobility, access, micropayment, loyalty

#1 in automatic fare collection, with **77%** market share in **transport ticketing**

MIFARE 2GO CLOUD SERVICE ECOSYSTEM



MIFARE 2GO



End-to-End cloud solution

Secure platform for digital credential issuance and management

Designed to work with existing MIFARE product-based infrastructures

TRANSIT

Transit agencies, car- or bike sharing providers, taxi provider, parking operators, system integrators

ENTERPRISE

Corporate access, government access, logical access

HOSPITALITY

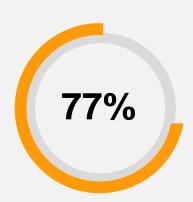
Hotel room access, enhanced mobile guest experiences, loyalty cards, membership cards

HIGHER EDUCATION

Campus access, micropayments at canteens or printers



TRANSIT & ACCESS LEADING THE SERVICE EXTENSION



MIFARE is the leading contactless transportation solution used in 750+ cities worldwide

Continents adopted MIFARE 2GO for public transport

7+ countries

50+ transit agencies

20+ universities

2B Android devices

enabled on MIFARE 2GO





SECURE CONNECTIONS FOR A SMARTER WORLD

