

VERTICAL MARKET BREAKOUT SESSION

LATEST IN NFC, UWB & BLUETOOTH TECHNOLOGIES

Mike McCamon, NFC Forum

Bjorn Scharfen, FiRa Consortium

Jose Correa, Infineon



Latest in UWB & NFC and moving to an experience driven future

Jose Correa – Director Strategic BD, Infineon Technologies

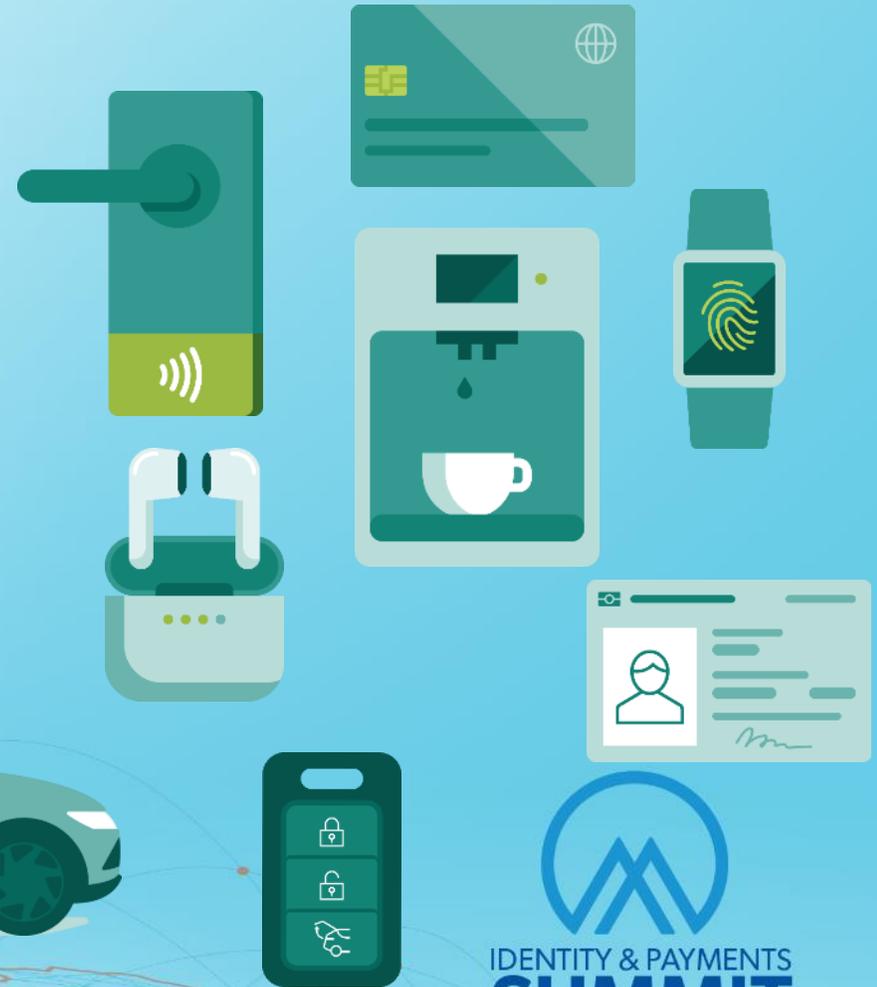
Björn Scharfen - VP @ Infineon, representing FiRa Consortium

Mike McCamon - Executive Director, NFC Forum



Technology impacts how we...

- Identify ourselves
- Pay for goods
- Interact with Consumer electronics
- Interact with infrastructure



Technology advances and Innovation don't necessarily create experiential disruptions ...



- VR Banking?
- Card Sized 3d Display?
- Wifi enabled Ice-maker?

But new consumer experiences can drive technology disruption

Biggest impact on car ride payments



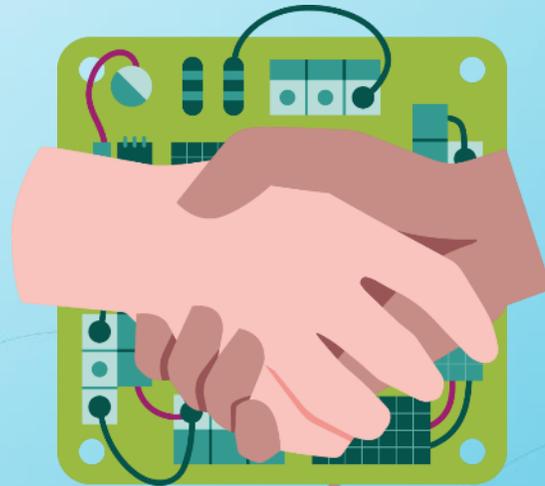
or



IDENTITY & PAYMENTS
SUMMIT

The value of (end) Customer Experience

- From addressing needs to disrupting experience, all while being invisible to the user



Industry collaboration for user adoption



Ultra-Wideband @ STA summit

FiRa Consortium Insights on Use Cases

Björn Scharfen
VP Digital & Secure Identities, Infineon Technologies

February 26th, 2024

FiRa Members Represent a Broad Range of Industry and Institutes

120 industry leaders with a commitment to supporting UWB have already joined FiRa!

ALLEGION
PIONEERING SAFETY™



BOSCH

CISCO

Google

HID

NXP

QORVO

Qualcomm

SAMSUNG

THALES



非科
NON SECOND

infineon

intel

MEDIATEK

SONY



ALARM.COM

CALTEKRAH

CEVA

Chipsbank
芯邦

Continental

芯芯半导体
CXSEMI

COMARCH
dormakaba

FORVIA
HELLF

GIANTSEMI

umec

KEYSIGHT
TECHNOLOGIES

LENZE

LG

LITEPOINT
A Teradyne Company

Meta

小米

MinebeaMitsumi
Passion to Create Value through Difference

MKSEMI
瀚 巍

motorola

muRata
INNOVATOR IN ELECTRONICS

纽瑞芯科技
NEWRADIOTECH



PINPOINT
ground positioning
systems

RENESAS

ROHDE & SCHWARZ
Make ideas real

SAMSUNG SDS

SUNWAY
COMMUNICATION

TOKAI RIKA

ULTRARECEPTION
优 智 联

vivo

B&O

BriRadio

CHAMBERLAIN
GROUP

COMPRION

danalto

ELATEC
RFID Systems

ellisys
Better Analysis

exafore

Excelpoint®

FEASYCOM

gp GEOPLAN
PASSION FOR LOCATION

MEIZU

IIWARI

INGEEK 银基

IntraPosition

KYUNGWOO
KYUNGWOO SYSTECH

Laird™
CONNECTIVITY

LEGIC



MAXSCEND

Mobile
Knowledge

NOCCELA

欧思微
OSEMITECH



品铂科技
PINPOINT

SEN)RATO

SJI
Connecting
Tomorrow

SPARK
MICROSYSTEMS

SCC
上海司达曼科技

SNOWBALL

SynchroniCT
RFID & PROXIMITY SYSTEMS

trueSense

ublox

UWBS
优 必 胜

WAYMO

WELZEK

WNC
Wistron NeWeb Corp.

WNCAN
桓 参 科 技

沃旭通讯
WOXU WIRELESS

远峰科技
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ALLION®
AIoT EXPERT

CAICT
中国信通院

Dt&C

eurolins | KCTL

HCT
HCT CO., LTD.

SGS

SRTC
国家无线电监测中心检测中心

同耀实验室
TA Test & Certification Laboratories Group

TTA

HIV
HOCHSCHULE FÜR
TECHNIK UND WIRTSCHAFT
UNIVERSITY OF APPLIED SCIENCES



ETH zürich

Yale University

CYPRESS®
EMBEDDED IN TOMORROW™

Ultra-Wideband, Widely Adopted In Standardization



- Standardises UWB PHY and MAC layers in 802.15.4 (Wireless Personal Area Network)



- **Leverages IEEE, develops use cases & services, ensures interoperability by certification**



- Adaptation of 802.15.4 for car related use cases



- Mainly spectrum regulations



- Aliro (Access Control), spec to use UWB, BLE, NFC



- Location for factories and industry



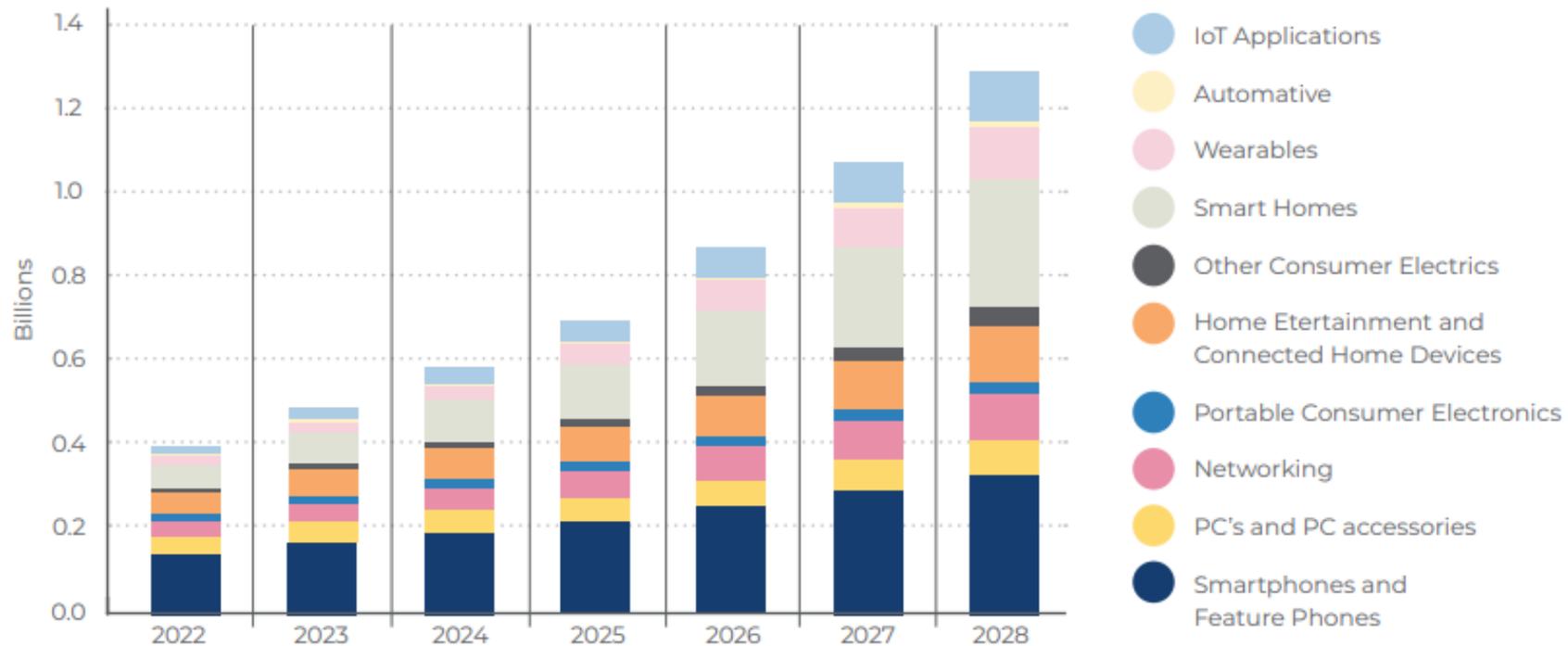
UWB Adoption by FiRa Members



...among others

UWB Adoption Rate is Gaining Speed within the Industry

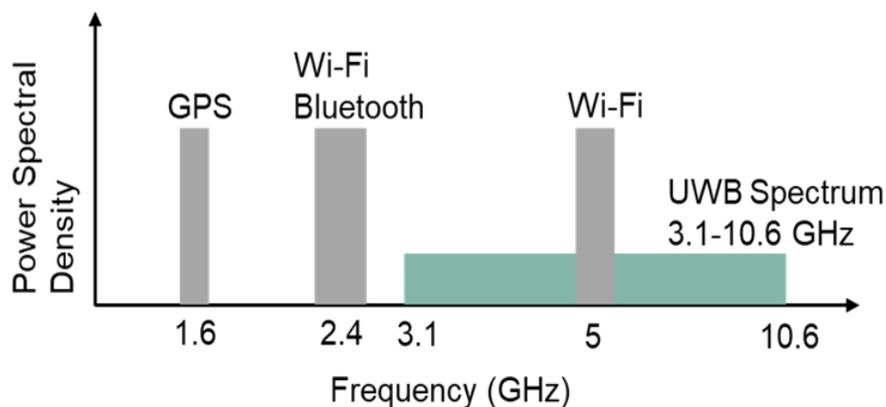
Expected world-wide device shipments for UWB¹



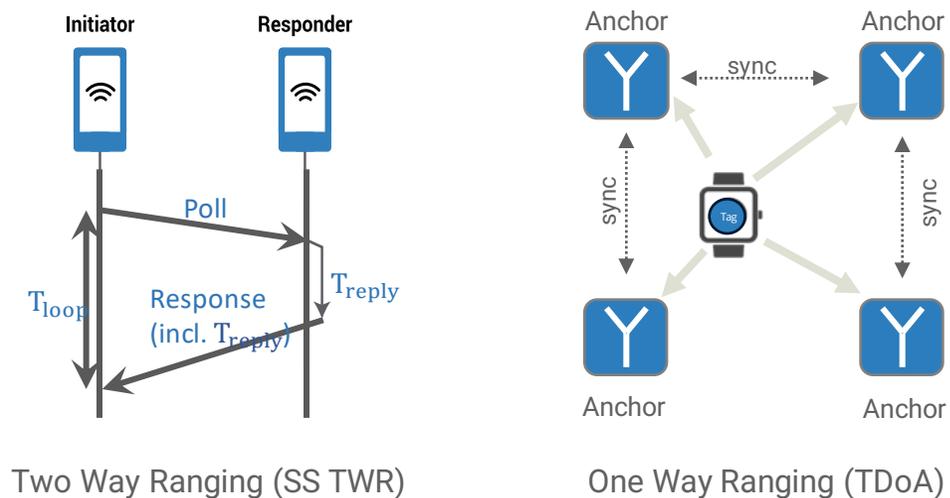
By 2028 ~1.3 billion devices are expected to be shipped in various applications

Ultra-Wideband (UWB) Enables Secured Fine Ranging And Sensing

UWB operates in a wide spectrum



UWB is based on ToF (Time of Flight) and Impulse Radio



UWB complements other technologies & enhances the user experience without compromising security



UWB **Fine Ranging** Revolutionizes Many Use Cases

Potential UWB Use Cases supports many situations in everybody's life

FiRa V2.0 specifications were released in late 2023 supporting several new use cases such as:

- Find Something/Someone
- Untracked Indoor Navigation
- Point and Trigger
- Transport
- Tap-Free Mobile Payment
- Asset Tracking

...and more to come

FiRa User Journey

Multiple FiRa use cases in a day!



Untracked Indoor
Navigation



Use Case: Untracked Indoor Navigation

Securely and precisely find people, things and places even in crowded environments

Advantage with UWB:

- Protected
(location determined by user device)
- Secured
(untracked navigation)
- Multi-path resistant



FiRa User Journey

Multiple FiRa use cases in a day!



Untracked Indoor
Navigation

Payment



Use Case: Payments

Tap-free mobile payments save time and allow for more intuitive shopping

Identified use cases:

- Tap-free Mobile Payments
- Unmanned Store Payments
- Stadiums
- Car Park Payment
- In-Vehicle Payment



...and more to come

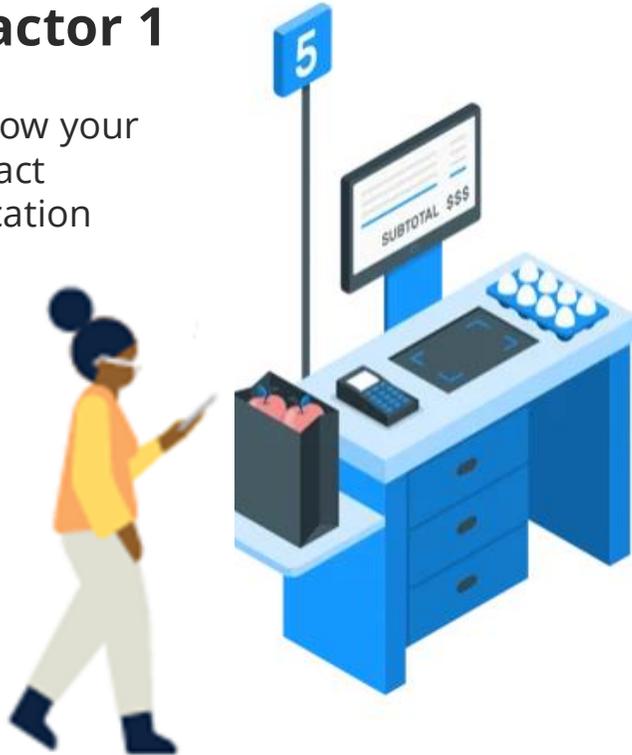
Use Case: Payments

UWB may support two-factor authentication with centimeter-level accuracy



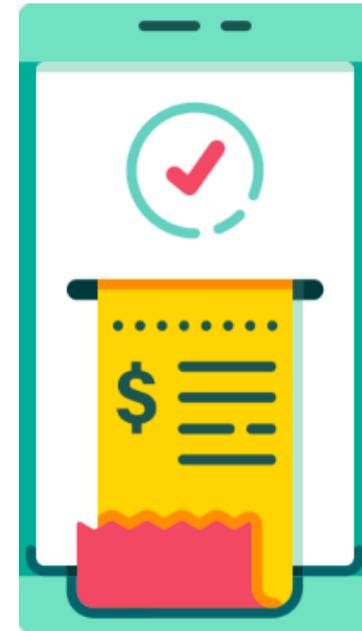
Factor 1

Know your exact location



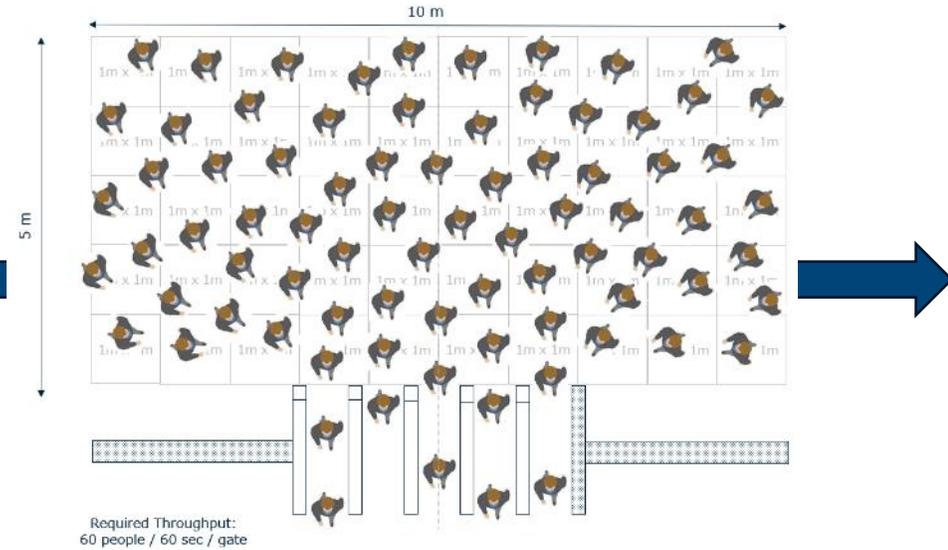
Factor 2

Confirm through a gesture or just walk out



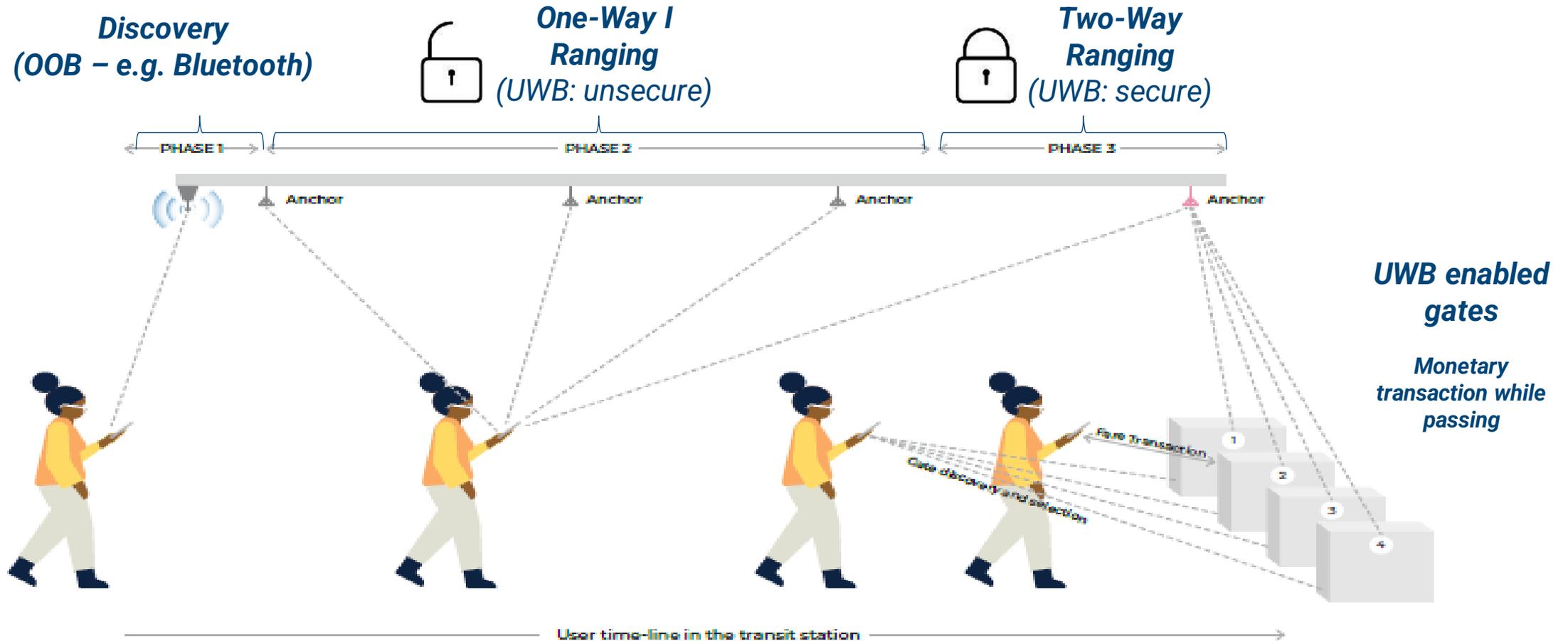
FiRa User Journey

Multiple FiRa use cases in a day!



Use Case: Public Transportation Fare Collection

UWB can create a seamless experience



FiRa User Journey

Multiple FiRa use cases in a day!

Untracked Indoor
Navigation

Payment

Public
Transportation Fare
Collection

Physical Access
Control



Use Case: Physical Access Control

Securely and easily open doors

Advantages of UWB:

- Protection against relay attack
(Security certification)
- Seamless detection
(Various ranging methods)
- Multi-session support to avoid
tailgating



FiRa User Journey

Multiple FiRa use cases in a day!

Untracked Indoor
Navigation

Payment

Public
Transportation Fare
Collection

Physical Access
Control

Find Something

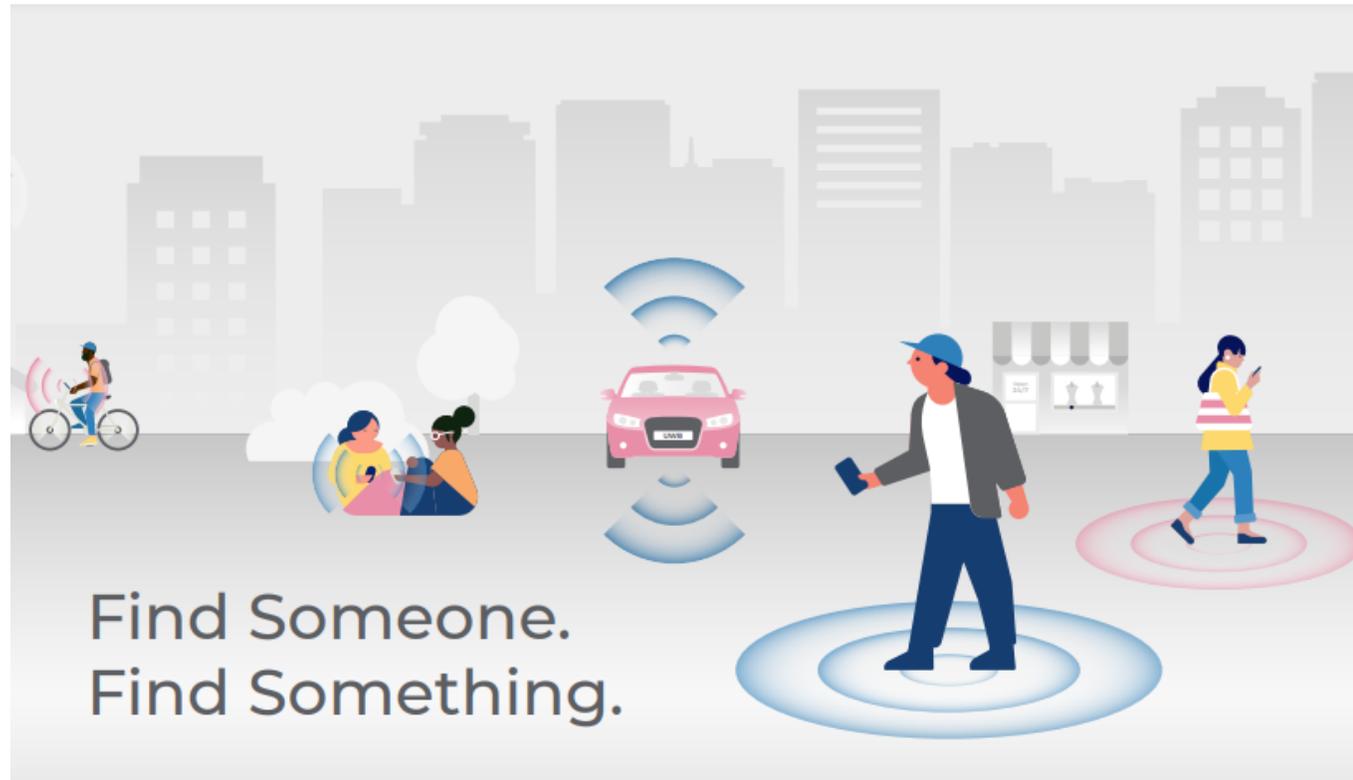


Use Case: Find Someone. Find Something.

Utilizing UWB-enabled smartphones and tags for precise location-finding

UWB advantages:

- Real-time
- High Integration
- Easy to Use



FiRa Certification Program

Aimed at driving UWB interoperability among UWB devices

The **FiRa Certified logo** is available for use by FiRa Consortium members who have devices that fulfill the criteria of the functional certification program.



Learn more about the FiRa Certification Program at firaconsortium.org/certifications

FiRa's Security Working Group is currently working on a **Security Certification Program** for use cases demanding a dedicated security grade. This **may include a Secure Element** which is already part of the FiRa specification.



THANKS

THE FUTURE OF PAYMENT

Mike McCamon, Executive Director

CONTACTLESS ADVOCATES

NFC Forum is comprised of 500+ member organizations including some of the most familiar global technology and consumer companies who actively collaborate with dozens of adjacent technical bodies to deliver technology, payment, transport, digital key, packaging, and automotive solutions.



ALL IT TAKES IS A TAP

Near Field Communication (NFC) is a standards-based, short-range wireless technology that makes life easier and more convenient. With a compliant range of 5mm and the ability to share power across connections, NFC is finding its way into almost everything.



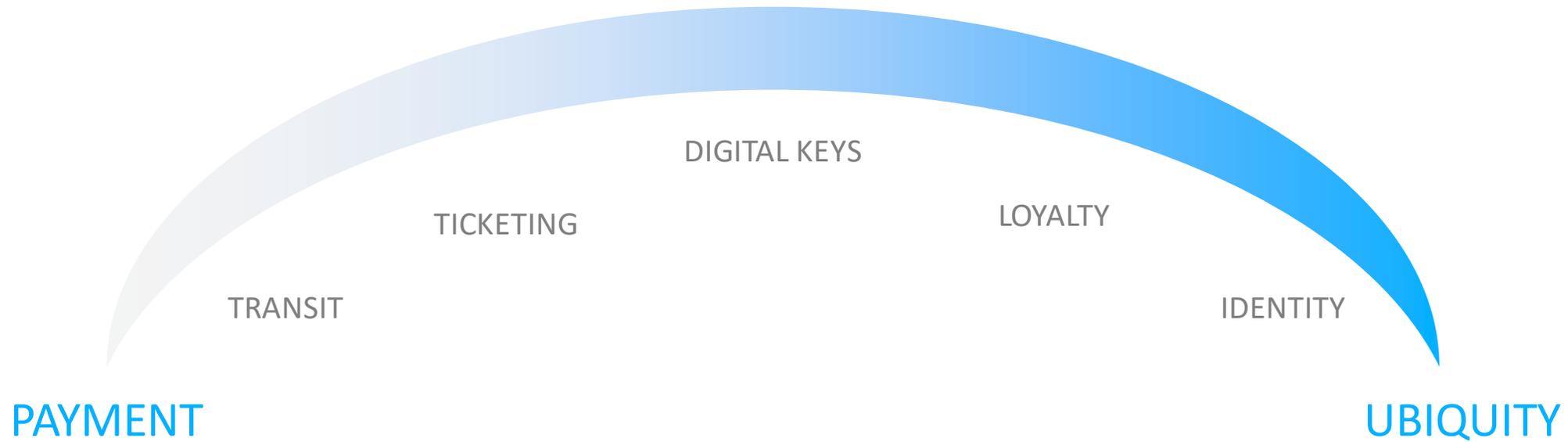
CONVENIENT & PERVASIVE

Key takeaways from our biannual ABI Research report across nine different countries, covering a variety of age ranges revealed that:

- **85%** of consumers use NFC technology.
- Beyond mobile payments, **public transportation** is a key driver for contactless use cases.
- **Nearly 60% prefer using their mobile phone** or smartwatch over a contactless card.
- Also becoming increasingly important is **Tapping** consumer products and unlocking doors.



LONG ARC OF CONTACTLESS



Adoption of digital wallets is accelerating and inevitable



META TRENDS IMPACTING CONTACTLESS



Digital Wallet Ubiquity



Convergent Personal Identity



Payment Terminals going Mobile



#1 DIGITAL WALLET UBIQUITY

- Consumers have more than one card in their wallet
 - Biannual study showed 82% have two or more, 27% had four or more
- Further Increases Demand for Transit Open Loop
- Digital Keys for auto, work, and home
- Ticketing and travel



Consumers are abandoning their cards for the convenience and security of mobile handset or wearable



#2 CONVERGENT PERSONAL IDENTITY

- Digital wallets will host personal identity: your Drivers License
- Consumers have many other identities: Loyalty, Rate Discounts, Institutional
- Opportunity to leverage this trend for a better user experience

PRE-CONDITIONS

Permission
Discount
Mobility

PAYMENT



POST-PROCESSING

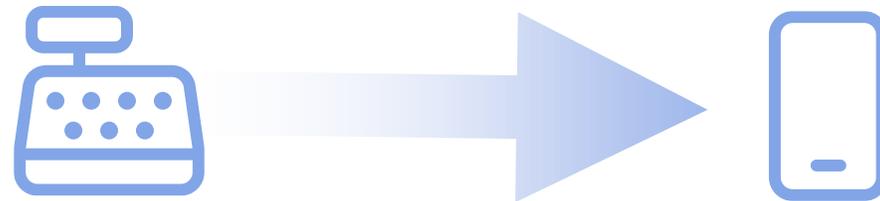
Receipt
Data Collection
Permission Access

Retail and Payment SIG actively working Roadmap item to define and enable “Multi-Purpose Tap.”



#3 PAYMENT TERMINALS GOING MOBILE

- SmartPOS, Tap-on-Mobile, Device to Device – all about using common off the shelf (COTS) mobiles as handset terminals
- Reshape the retail by moving payment from “the counter to the customer”
- Operators gain more flexibility

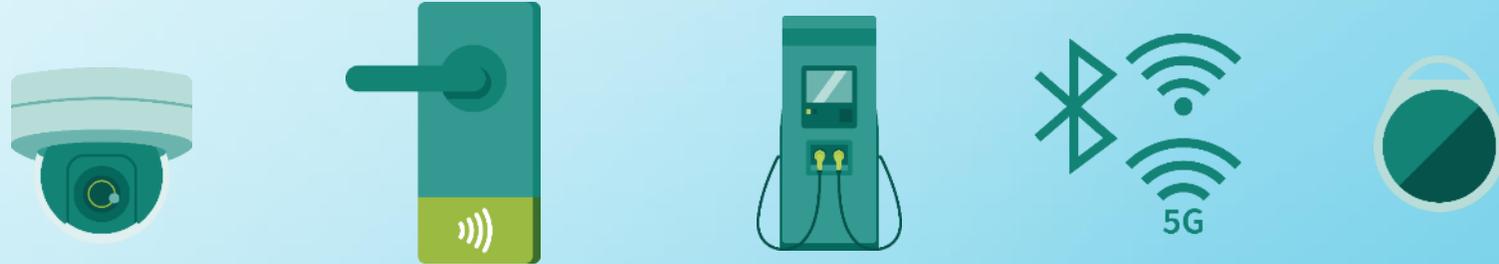


NFC Forum Roadmap includes “Extended Range” and
“Enhancing Device to Device Connectivity”



Use-Cases

“Augment + Complement” instead of “Replace”



- Automotive – UWB + NFC + BLE + EV charging + ...
- Retail – NFC + UWB + BLE + AI + Biometric + ...
- Access – NFC + UWB + BLE + Biometric + ...
- Consumer Electronics – BLE + NFC + UWB + ...

Thanks

