

RFID-løsninger - baseret på smartphones og tablets

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FORCE Technology

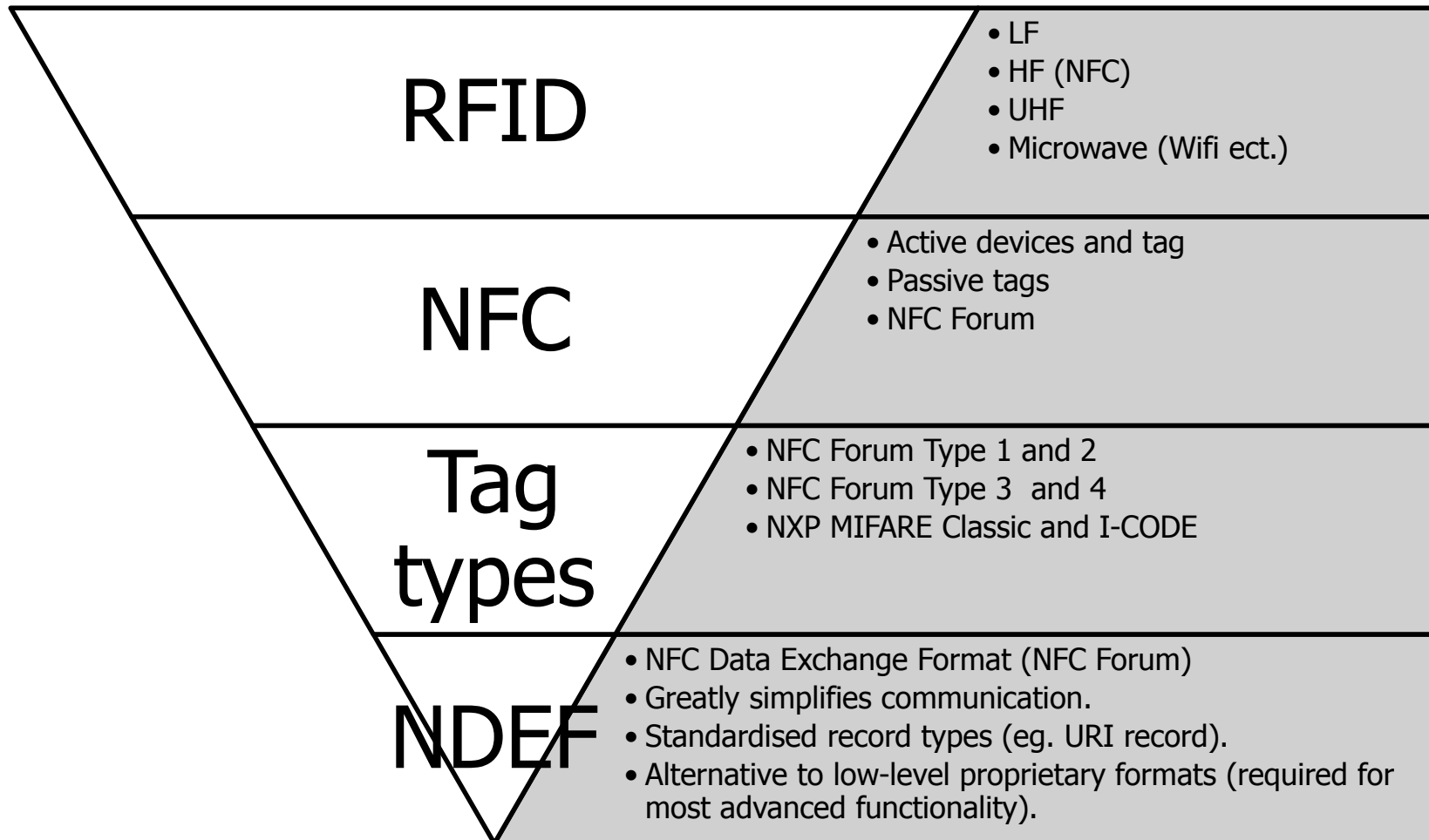
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Direktør,
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FORCE Technology

- Privat, dansk virksomhed
- Hovedkontor i Brøndby
- Egne kontorer i Danmark, Sverige, Norge, USA, Rusland, Singapore, Kina (~50 stk.)
- Omsætning: 1,2 mia (2013), heraf >50% i udlandet
- Ca. 1.500 medarbejdere

- Inspektion og Prøvning
 - onshore, offshore, subsea, nuklear, aerospace, etc.
- Materialer og Svejsning
 - materialevalg, havarianalyse, design, beregning, procedurer, laserteknologi
- Måleteknik
 - målerverifikation, vægtskalibrering, forlystelser, spilleautomater, online spil
- Kemisk Analyse
 - ædelmetalkontrol, toldkemi, vandanalyser, emissionsmålinger, fyrværkeri

- Maritim Industri
 - modelforsøg, skibssimulatorer, beslutningsstøttesystemer, human factors
- Sensorteknologi
 - røntgen- og ultralyd-inspektionssystemer og -scannere
- Energi, Klima og Miljø
 - energioptimering, biomasse og affald, miljøvurdering
- Ledelsessystemer
 - rådgivning og certificering, kvalitet, miljø, arbejdsmiljø, lean
- Fødevarer- og patientsikkerhed
 - bakteriereduktion (salmonella, campylobacter, E. coli, m.v.) fødevarer og hospitalsudstyr

- **Formål:**
 - Entydig identifikation af udstyr anvendt til opgave
 - Finde udstyr/genfinde tilsyneladende bortkommet udstyr
 - Sikre rettidig kalibrering
 - Optimere brug (via statistik for anvendelse)
- **Værktøjer:**
 - Passive tags (+30.000 enheder, 1x1mm -> 5x5cm "rough")
 - Håndholdt, trådløs læse-/skriveenhed (på udstyrslagre)
 - NFC-enablede smartphones (hos medarbejdere i marken)
 - Integration til eksisterende udstyrsdatabase
 - Smartphone-app (info, registrering, flytning, brug)



NFC Forum Tag Types

NFC Forum Type 1 and 2

- Read/write
- Configurable read-only (lockable)
- Small capacity (48 byte to 2 kbytes)
- Cheap

NFC Forum Type 3 and 4

- Read/write
- Pre-configured read-only
- Larger capacity (up to 1 Mbyte)
- More expensive

NXP Proprietary Tag Types

MIFARE Classic

- Good capacity (1 – 4 kbytes)
- 7 byte UID
- Read/write/locking
- Key-based read/write protection (broken)
- Cheap

I-CODE

- Varying capacity
- UID
- Read/write/locking
- Some key-based protection depending on model
- Some models up to 50 years data retention
- Varying cost

NFC Product Comparison Table



	NFC Forum Type 1-4	7 byte UID	Permanent write-prot.	Key-based authentication	Memory size	Data retention	Housings	Price
MIFARE Classic	No	Yes	Yes	Crypto-1	1k-4k bytes	10 years	All	< €1
MIFARE Plus	No	Yes	Yes	AES	2k-4k bytes	Unknown	Plastic cards	< €3
MIFARE Ultralight	Type 2	Yes	Yes	3DES	64-128 bytes	5-10 years	All	< €1
MIFARE DESFire	Type 4	Yes	Unknown	3DES, AES	2k-8k bytes	10 years	Plastic cards	< €2
I-CODE	No	Yes	Yes	MIFARE (Crypto-1?)	128-256 bytes	10-50 years	All	< €1
NTAG	Type 2	Yes	Yes	No	80-168 bytes	5-10 years	All	< €1

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NFC in Mobile Platforms



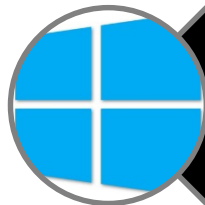
iOS

- iPhones used by FORCE Technology
- No NFC support yet



Android

- Various smartphones used by FORCE Technology
- Good NFC support



Windows Phone 8 and Windows 8

- Windows 8 tablets used at FORCE Technology
- Some NFC support



Other

- Blackberry
- Symbian
- Classic Windows, Linux, ect.

NFC Platform/Tag Type Comparison Table



	Windows (Phone) 8	Android 4.1	Blackberry 7.1	Symbian
Type 1 NDEF	Yes	Yes	Yes	Yes
Type 2 NDEF	Yes	Yes	Yes	Yes
Type 3 NDEF	Yes	Yes	Yes	Yes
Type 4 NDEF	Yes	Yes	Yes	Yes
MIFARE NDEF	Yes	With NXP chipset	No	Yes
I-CODE NDEF	No	With NXP chipset	No	Unknown
Non-NDEF commands	No	Yes	Type 2 and 4, unknown for others	Yes
Reading UID	No	Yes	Yes	Unknown
Locking tags	No	Yes	Yes	Yes
NDEF formatting	No	Yes	Yes	Unknown

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MIFARE 1K	No	Yes	Yes	Crypto-1	1k	10 years	Plastic cards	< €3
MIFARE Ultralight	Type 2	Yes	Yes	3DES	64-128 bytes	5-10 years	All	< €1
MIFARE DESFire	Type 4	Yes	Unknown	3DES, AES	2k-8k bytes	10 years	Plastic cards	< €2
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MIFARE Classic compatible

Encryption possible

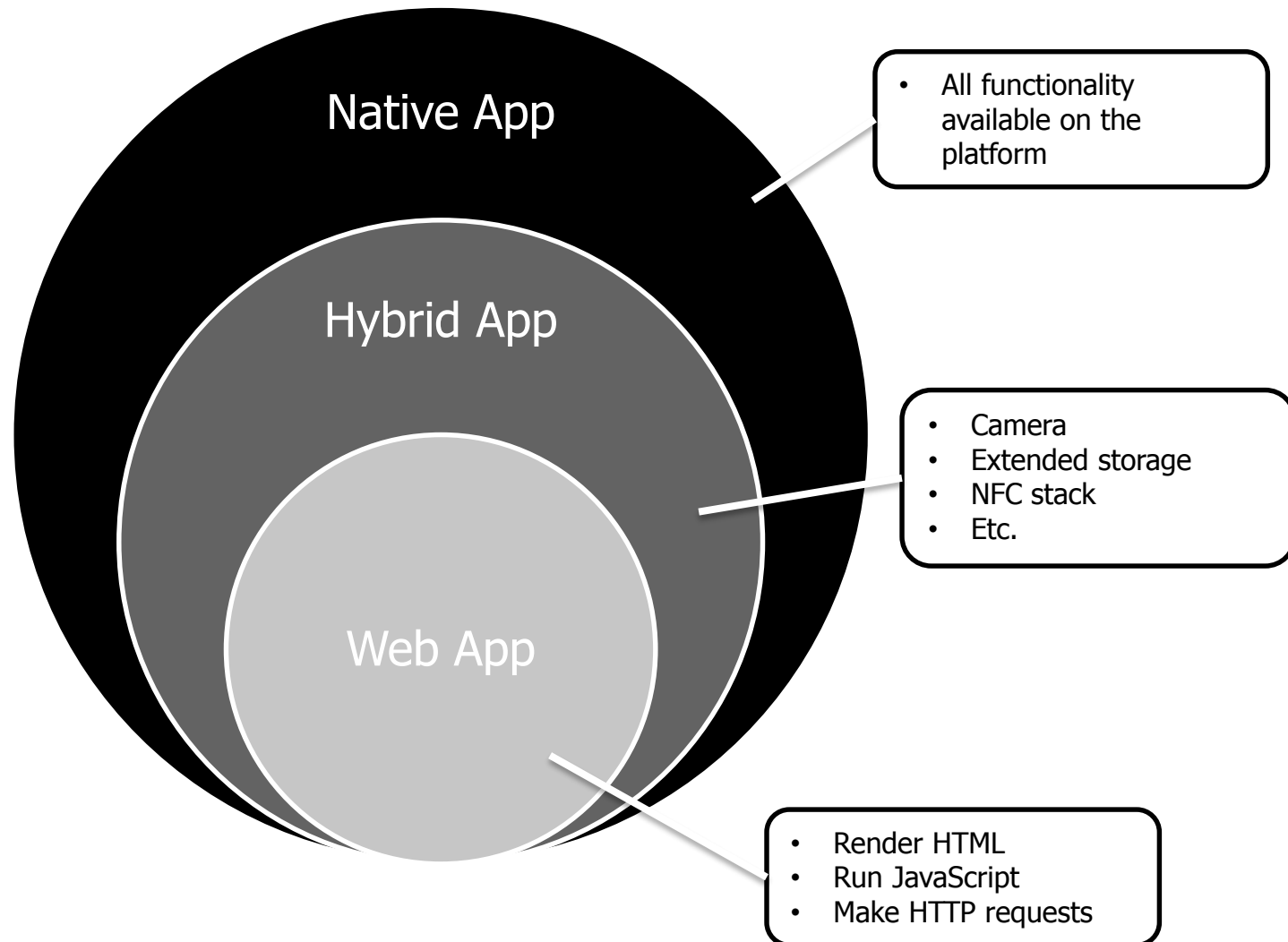
No

NFC Product/Platform Compatibility

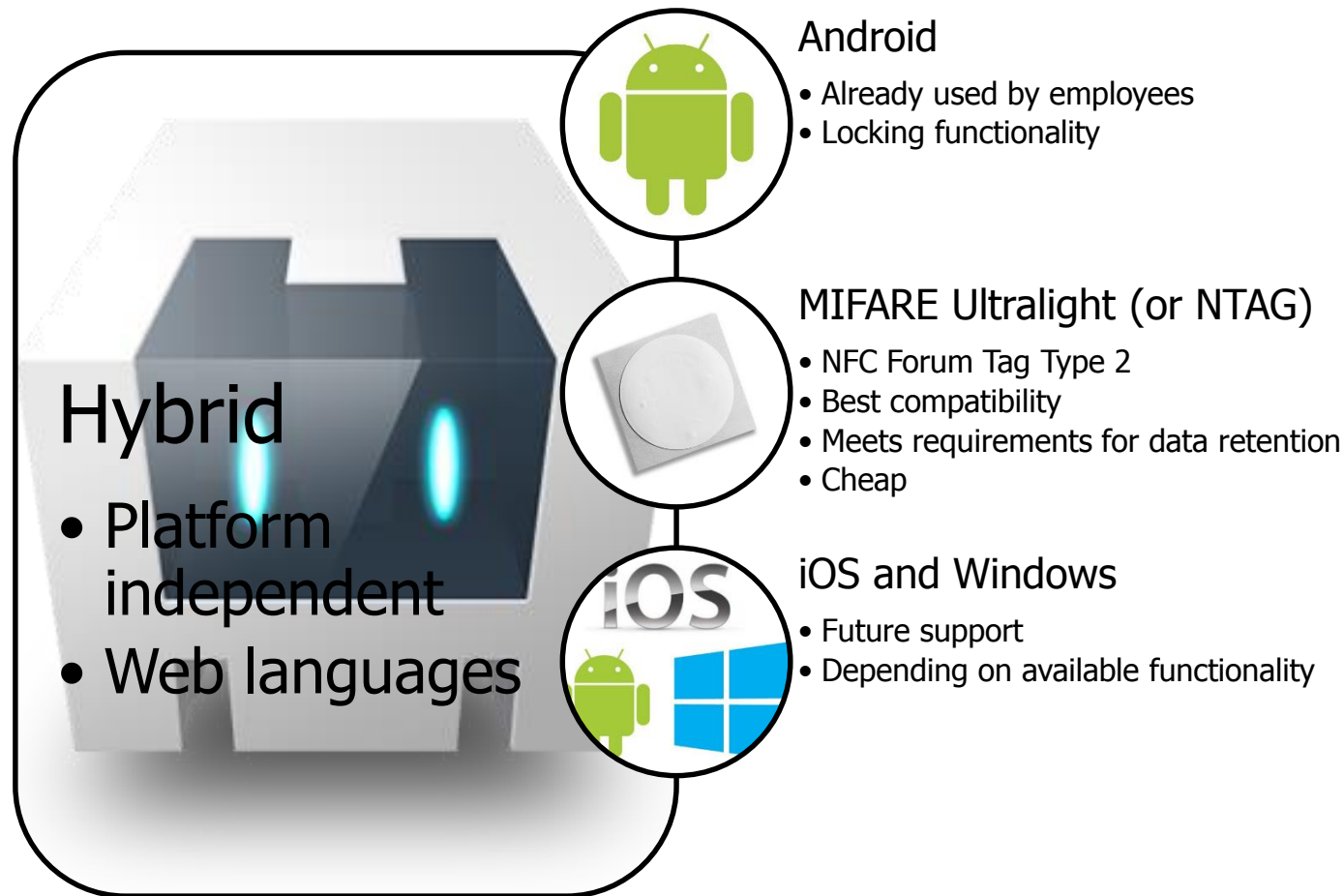


	Windows (Phone) 8	Android 4.1	iOS 8 ?
MIFARE Ultralight	NDEF read/write	NDEF read/write Non-NDEF read/write Locking	Most likely, if support for NFC Forum Tag Type 2
NTAG	NDEF read/write	NDEF read/write Non-NDEF read/write Locking	Most likely, if support for NFC Forum Tag Type 2
MIFARE Classic	NDEF read/write	<i>With NXP chipset:</i> NDEF read/write Non-NDEF read/write Key-based auth. Locking	Possibly, but only with NXP chipset
I-CODE	Not compatible	<i>With NXP chipset:</i> NDEF read/write Non-NDEF read/write Key-based auth. Locking	Not likely, and only with NXP chipset

Mobile Apps API Access



Proposed Tags and Platform



- RFID-teknologien giver nye muligheder for såvel os som vores kunder (og kunders kunder)
- Såvel pris på tags/udstyr som kompleksitet af løsninger er acceptabel (og faldende)
- Manglende kompatibilitet og standardisering en udfordring (som ikke synes at blive mindre)
- Faktisk muligt at finde en god, brugbar løsning 😊

Spørgsmål ?

