

# Smartphones in use in logistics solution

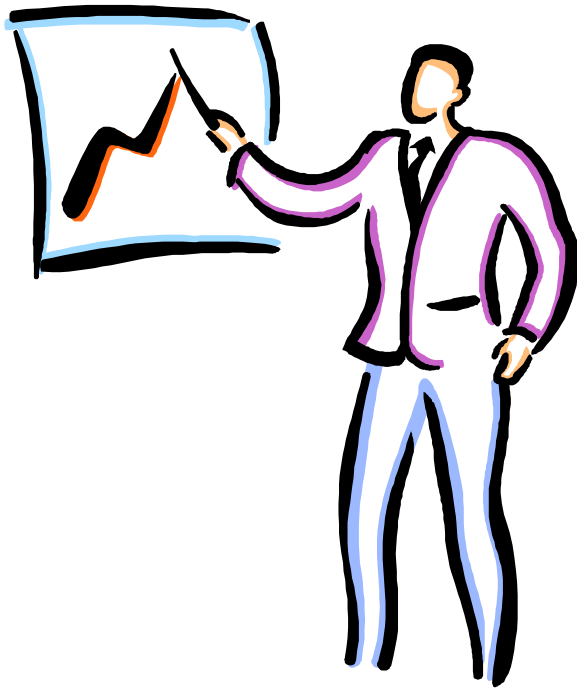
- Pros and cons when choosing a smartphone in the place of a dedicated unit
- Requirements
- How to choose between smartphones
- Trunk-test results

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# Developing new library services

## - Intelligent Material Management (IMMS)

Becoming a  
cost effective  
library



Creating  
intelligent  
presentations



Achieving  
improved  
logistics and  
customer  
service





# Requirements

# Library warehouse behavior

- Products: Library materials - books, CDs, DVDs, games etc.
- RFID technology: HF-Chips ...
- Standard warehouse behavior:
  - Keeping track of products and inventory across several locations
- Non-standard warehouse behavior:
  - Most materials are shared by the various libraries in a municipality
  - Users have materials on loan and return them after use to a library of their own choice
  - Users are told what to with a material when returning it – but do not necessarily follow instructions
  - Users can choose any library as pick-up location for ordered materials
  - Materials displays in the libraries should inspire loans
  - Users browse and move products in the warehouse

# IMMS - to scan or not to scan

- Without IMMS (before)

Negative:

- Printed reservation lists
- Risk of looking for the same material at different locations
- Risk of looking for materials not on the shelves
- Risk of looking for materials that has been lost
- High number of individual material scanning (when sending and receiving)
- Material visible on website - even though it's not available on the shelves

Positive:

- Scanning is performed at a dedicated workstation optimized for the task
- Big antennas on desks allow for very good scanning distance
- Desk scanners are (ergonomically) designed for the task
- Scanning is only needed when sending or receiving materials.

- With IMMS (future)

Positive:

- Online reservation lists ordered by most efficient pickup path
- Lists showing only the most relevant location
- Online reservation lists only contains materials on the shelves
- Lost materials are removed from lists immediately
- Low numbers of individual material scanning
- Material only visible on website WHEN the material is on the shelves

Negative:

- Scanning will be performed almost everywhere
- Small scanner in smartphone only allows for a small scanning distance
- Smartphones are not ergonomically designed for repeated scanning
- Scanning is needed every time a material or a transport unit with materials is moved



**RFID or  
NFC?**

# Dedicated RFID reader vs Android NFC reader

## Android NFC

- Product name:
- LG Nexus 4
- Size: 13.39 x 6.87 x 0.91 cm
- Weight: 139 g
- List price: 3.400 dk kr
- Reading distance: 4-5 cm
- OS: Android
- Functionality:
  - Shows the order in question
  - Scans RFID tags and gives feedback to user in the form of sounds, lights and text messages
  - Allows various user inputs regarding the scanned object, including "not found"
  - Additional features: Phone, email, calendar, internet etc.



## RFID scanner without screen

- Product name: Baracoda TagRunners
- Size: 12.3 x 5.2 x 3.3 cm
- Weight: 130 g
- List price: 4.596 dk kr
- Reading distance: 2-3 cm
- OS: Windows
- Functionality:
  - Scans RFID tags and gives feedback to user in the form of sound and lights
  - (the order has to be show on a separate screen)



## RFID scanner with screen

- Product name:
- Psion Neo
- Size: 16.8 x 6.4 x 3.4 cm
- Weight: 275 g
- List price: 9.387 dk kr
- Reading distance: 2-3 cm
- OS: Windows
- Functionality:
  - Shows the order in question
  - Scans RFID tags and gives feedback to user in the form of sounds, lights and text messages
  - Allows various user inputs regarding the scanned object, including "not found"



# Conclusions: Dedicated unit or Smartphone

- Dedicated unit

Cons:

- a) Heavy
- b) Big or in need of a separate screen
- c) Single purpose
- d) (somewhat negative image)

Pros:

- a) Good grip
- b) Easy to push new software
- a) Known mature technology with little OS changes

- Smartphone


Pros:

- a) Light
- b) Small
- c) Multi functional
- d) Positive image

Cons:

- a) Bad grip
- b) User must be more involved in update process
- c) Immature technology with many OS updates





**Which  
Android  
unit?**

# Choosing specific Android unit

Deciding factors:

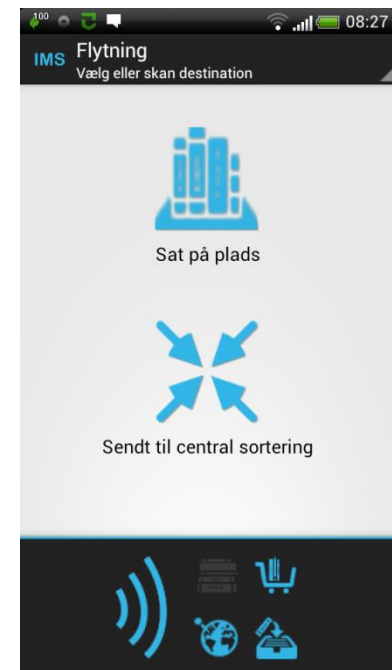
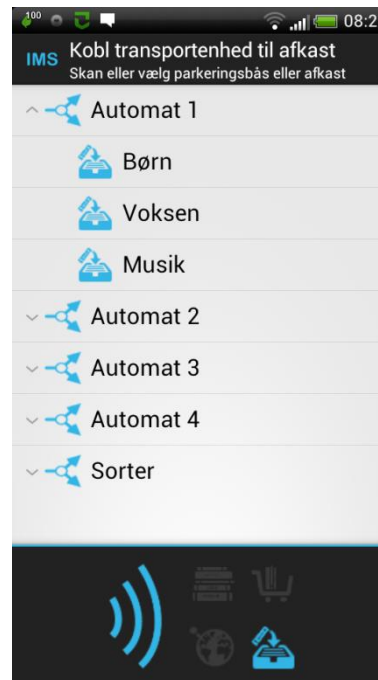
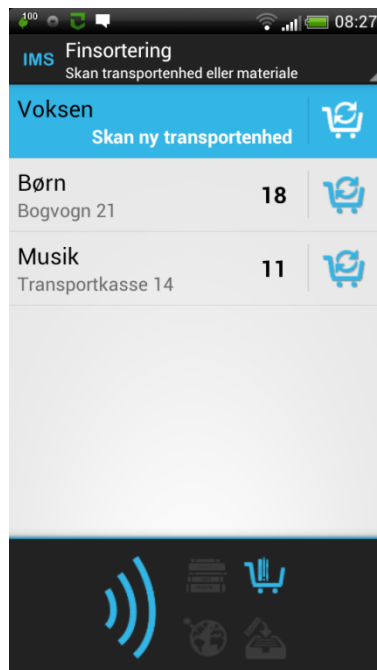
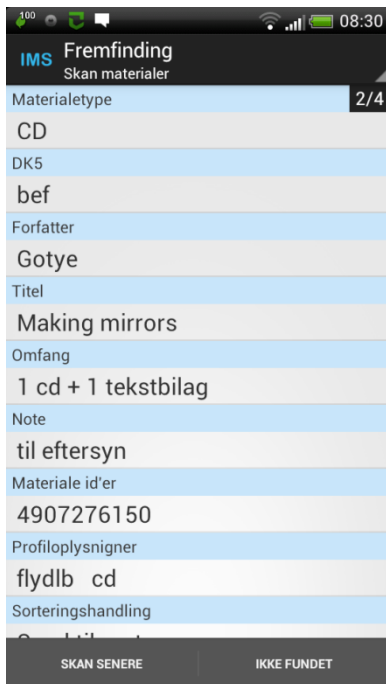
- Battery drain
- Strength of NFC reader, number of partial readings
- Ergonomics
- Data exchange speed
- Your project specific needs / requirements?

# Non-scientific trunk-test results

Vurdering (1-5 points, hvor 1 er uacceptabelt, 3 er rimeligt og 5 rigtig godt)

	Batteri- Levetid	Skanner læsestyrke	Ergonomi	Processor- og kommunikations- hastighed	Pris (på KKBs indkøbsaftale med Atea)
Samsung Note 1	?	?	1	?	?
Samsung Galaxy SIII	5	3	4	5	3882,00
Samsung Galaxy Nexus	5	3	4	4	3381,00
LG Optimus L5	2	4	5	2	1119,00
LG Nexus 4	5	5	4	4	3348,00
Sony Xperia S	?	2	3	?	?
Sony Xperia R	?	2	3	4	?
HCT One S	5	1	3	5	3990,00

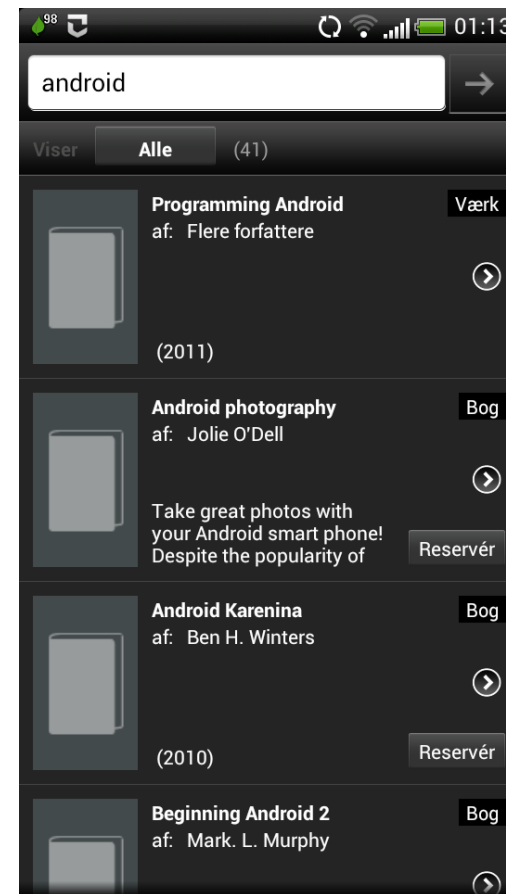
# The IMMS app - beta



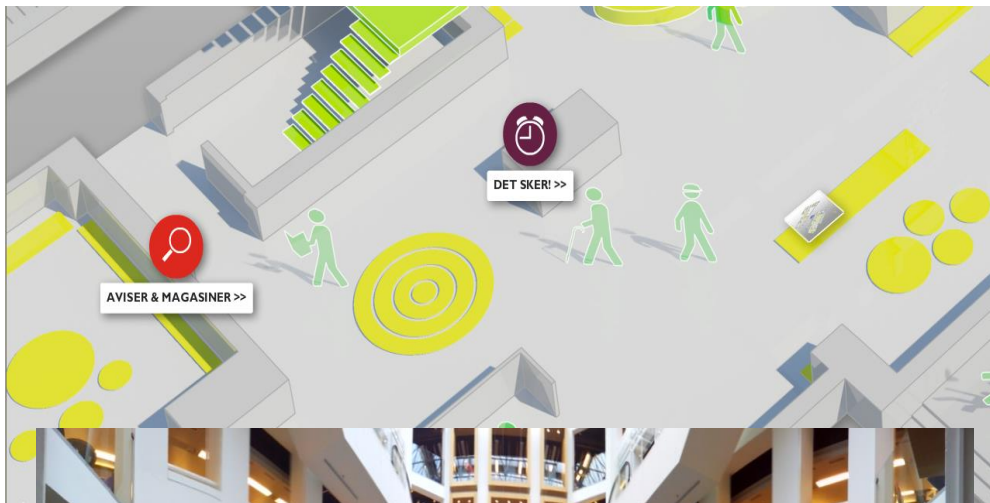


**Future  
uses?**

# Extending service level using apps



# Wayfinders and data enhanced displays



# THANK YOU FOR YOUR ATTENTION!

## Feel free to try our scanner app during the break

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