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Software Engineering

Bachelor Thesis - Midterm presentation

Fontys Hogeschool Techniek en Logistiek

Demo Facility

Wearables in Logistics

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Research Project

- LOGwear
 - Possibilities of wearables in logistics
- INTERREG Deutschland - Nederland initiative
- Official Kick-Off 12. September 2016
- End March 2018

Involved

- Academic Partners
 - Fontys Hogeschool Techniek en Logistiek
 - Hochschule Niederrhein
- Business Partners
 - imat-uve-gmbh
 - Helmut Beyers GmbH
 - KLG Europe - Venlo bv

Problem

- SME bound by budget
 - Information
 - Design of applications
 - Hands-on experience

Schedule

-
- A vertical timeline chart with a blue vertical axis on the left. Nine circular markers are placed along the axis at different heights, each aligned with a date and a corresponding project milestone to its right.
- 17.Feb Initial Logistics Processes and Wearables Research
 - 02.Mar Project Plan
 - 24.Mar Reference Model
 - 28.Mar Mid-Term Report
 - 11.Apr Mid-Term Presentation
 - 14.Apr Setting up Infrastructure for Demo Facility
 - 02.Jun Design and Implementation Demo Facility Application
 - 13.Jun Final Report
 - 23.Jun Setting up physical Demo Environment

Research

- Processes
- Wearables
- Reference Model / Architecture

Processes

- Goods Receipt and Put away

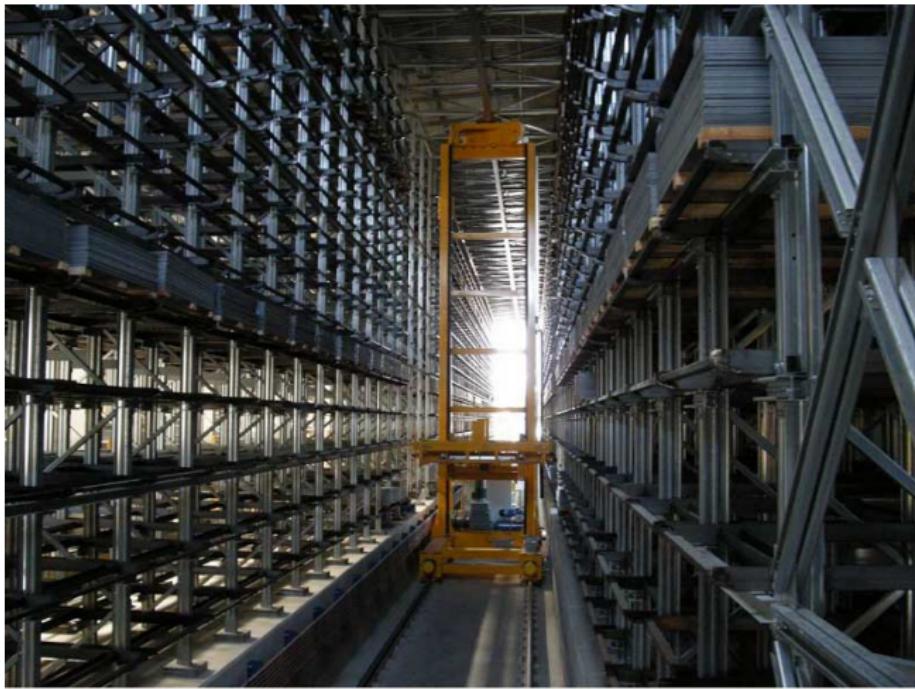
Goods Receipt



Processes

- Goods Receipt and Put away
- Order Picking High Rack

High Rack



Processes

- Goods Receipt and Put away
- Order Picking High Rack
- Order Picking

Order Picking



Processes

- Goods Receipt and Put away
- Order Picking High Rack
- Order Picking ✓

Wearables

- Devices not considered
 - Devices not available
 - Devices for specific purposes
 - Non Hands-free
- General Criteria
 - Performance
 - Cost
 - Battery Life
 - Durability

Interesting Devices

- Smartglasses

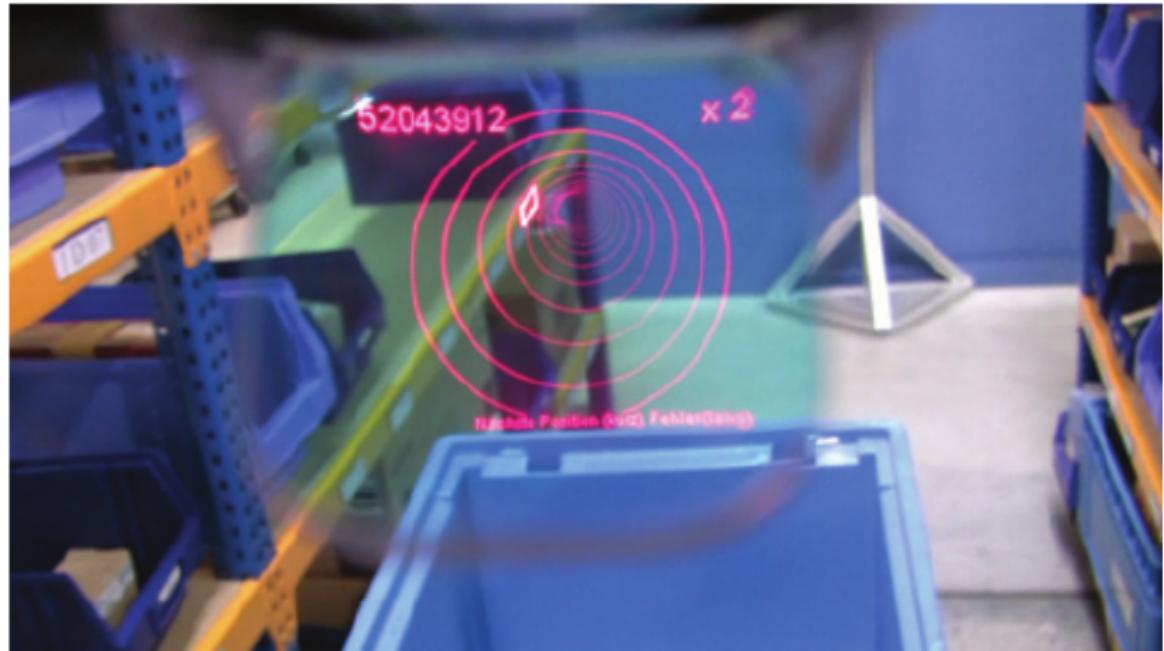
Smartglasses



Usages



Usages



Usages



Interesting Devices

- Smartglasses
- Ringscanner
 - Wrist-Mounted-Computer
 - Headset

Ringscanner combo



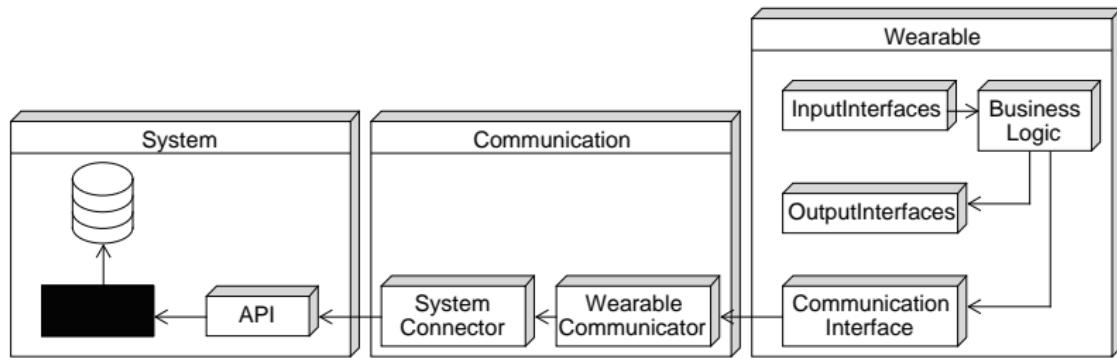
Decision

- Ringscanner chosen
- Durability
- Battery Life
- Performance

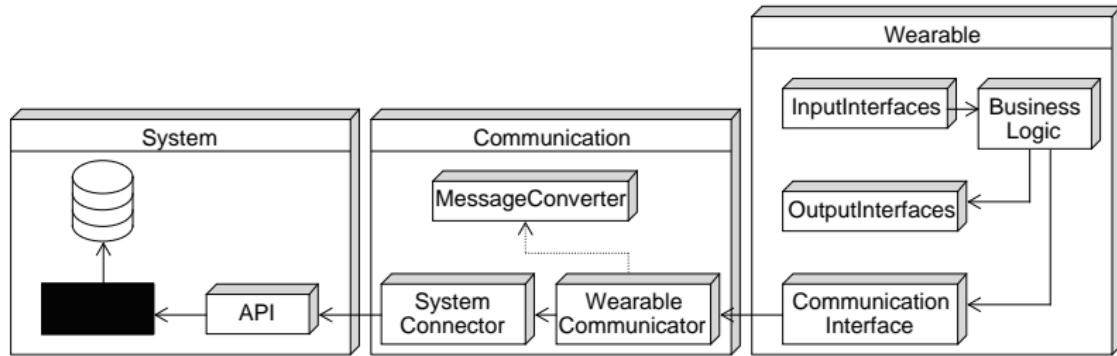
Reference Model

- Single Model
- Abstract
- Flexibility
 - Allow changes if needed

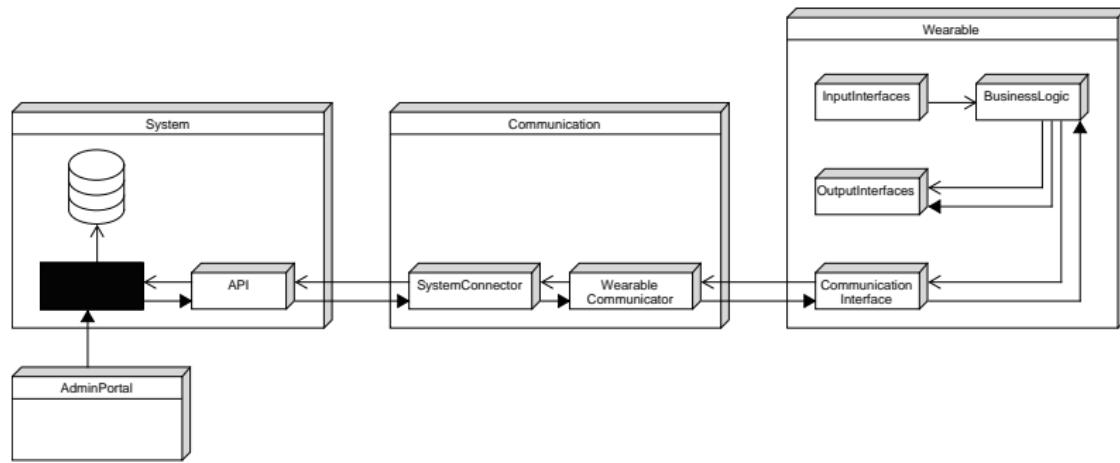
Reference Model



Reference Model Examples



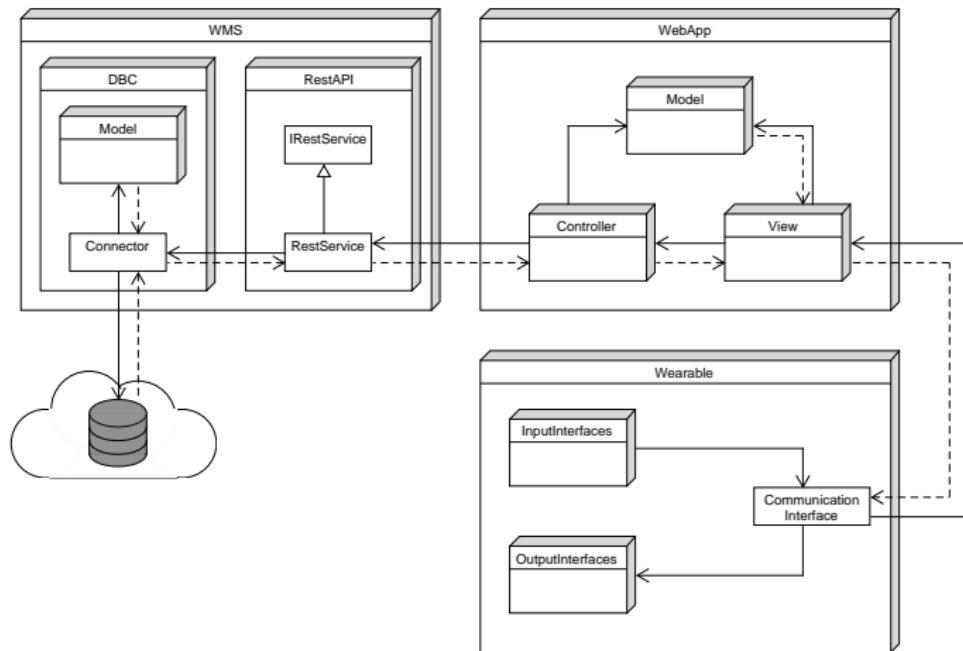
Reference Model Examples



Demo Facility

- Physical demo facility
 - Infrastructure
 - Design
 - Wearable Application
 - Physical Demo Environment

Infrastructure



API

- GET
 - Order
 - NextOrder
- POST
 - ConfirmOrderLine
 - ConfirmOrder
- PUT
 - ResetDatabase

Web Application

- Worker Login
- Display Order Details
- Start Order
- Confirm Order

Wearable Application

- Thin Client
- Run Web Application
- Incorporate Wearable possibilities

Conclusion

- Research
 - Wearable
 - Process
- Reference Model
- Web Application
- Wearable Application

Reflection

- Better plan delays
- Plan for earlier results

Future

- Finalize Web and Wearable Application
- Setting up physical environment
- Test Demo Case

- Multiple Wearables for Comparison
- Implementation Pilot Company

Thank You

Wearables in Logistics - Demo Facility