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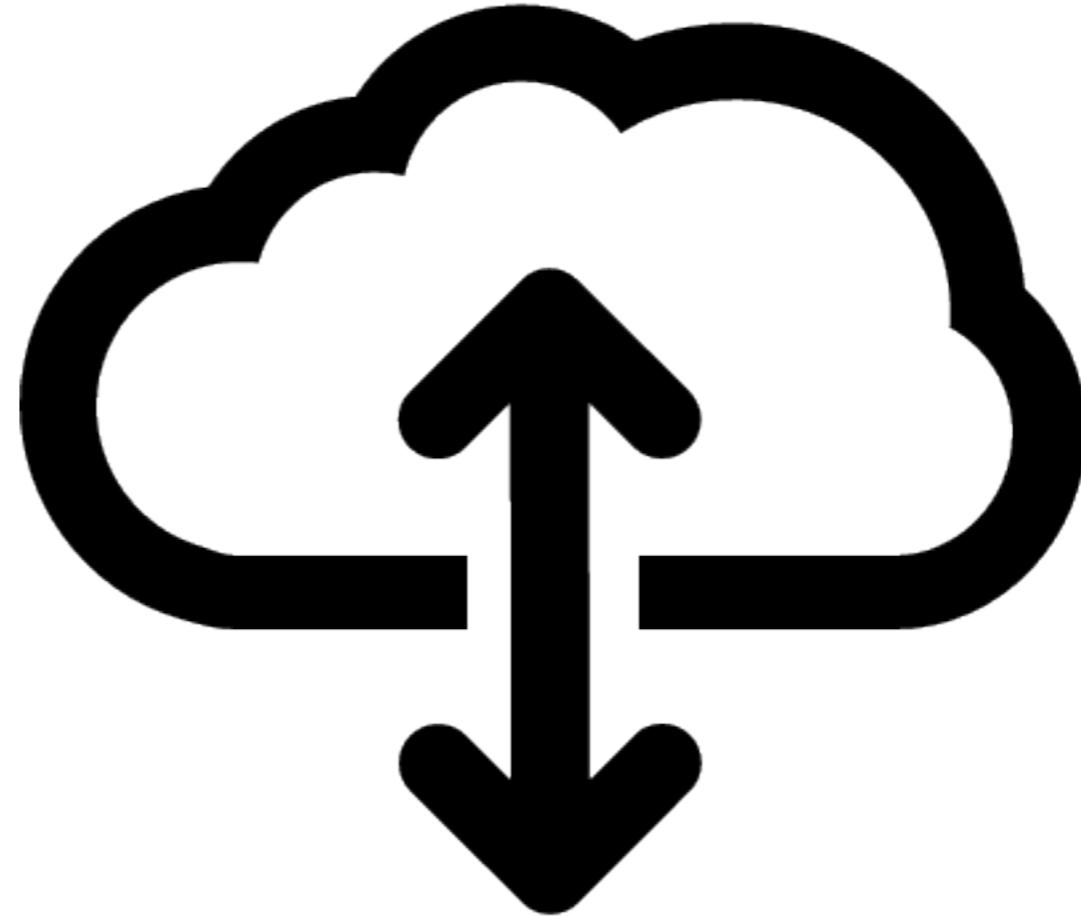
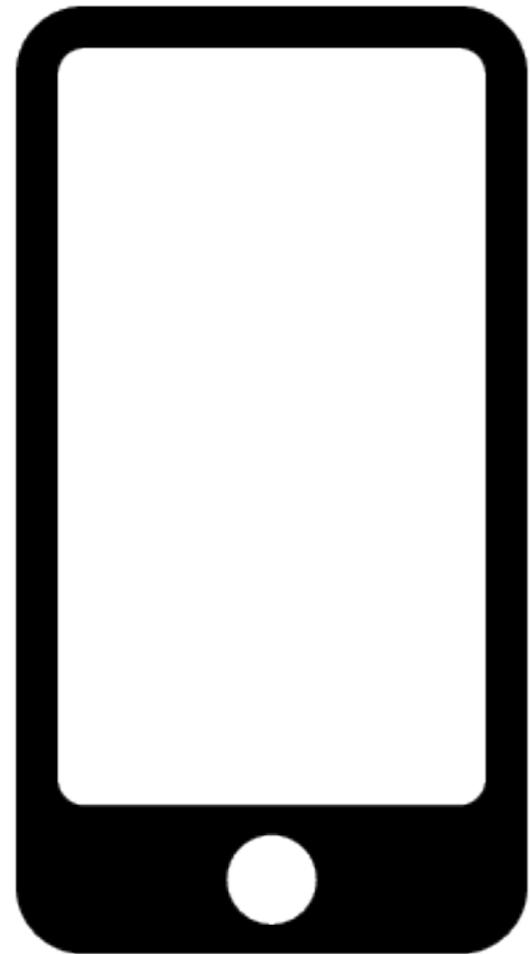
Course Introduction

Mobile Web Services

Olivier Liechti & Yannick Iseli

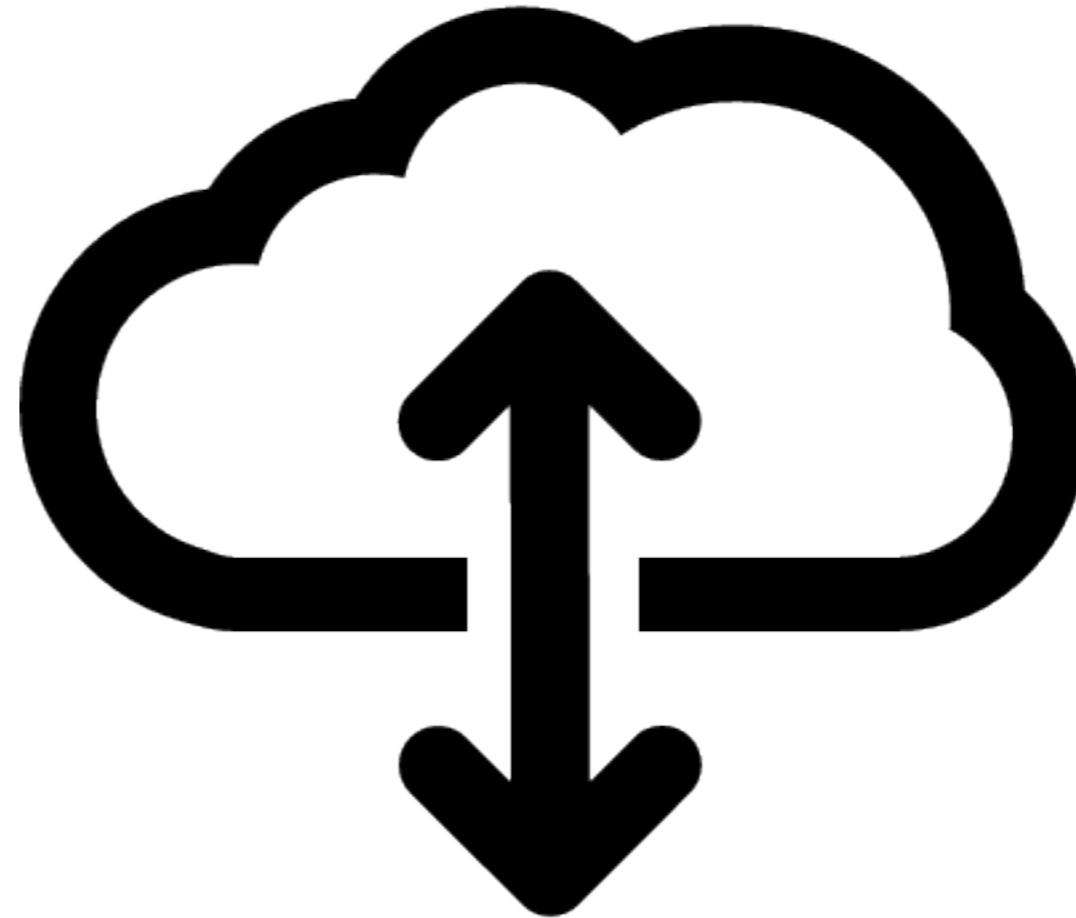
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Mobile

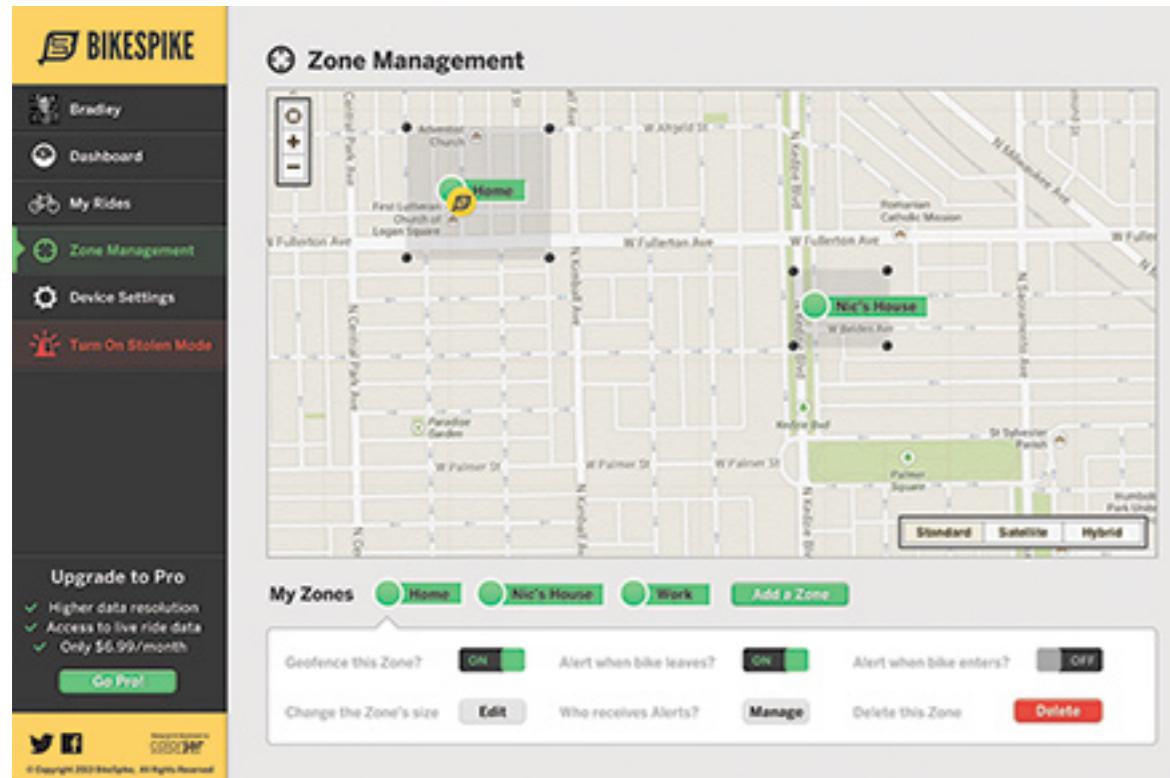
Web Services



Mobile Web Services

Towards the Web of Things

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Zone Management

My Zones: Home, Nic's House, Work, Add a Zone.

Geofence this Zone? **ON** Alert when bike leaves? **ON** Alert when bike enters? **OFF**

Change the Zone's size **Edit** Who receives Alerts? **Manage** Delete this Zone **Delete**



Broadcast Ride **ON**

Alerts **OFF**

Geolocation/Zone Alerts **ON**

Location Update Frequency 

Fewer (longer battery life) More (less battery life)

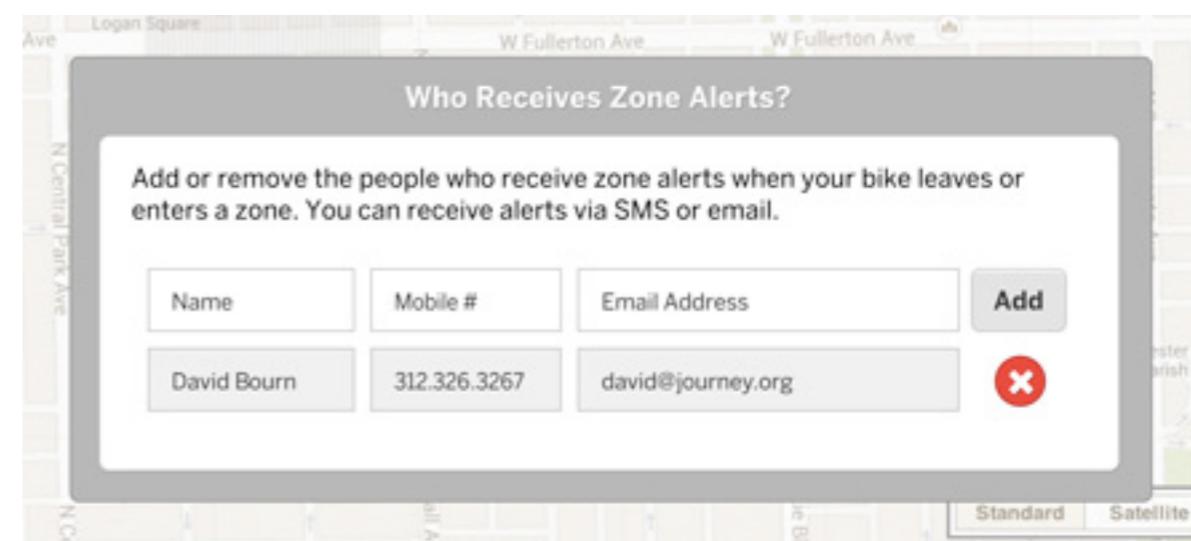
Tamper Sensitivity 

Less sensitive More sensitive

Crash Alerts **ON**

Crash Detection Sensitivity 

Casual Rider Mountain Biker



Who Receives Zone Alerts?

Add or remove the people who receive zone alerts when your bike leaves or enters a zone. You can receive alerts via SMS or email.

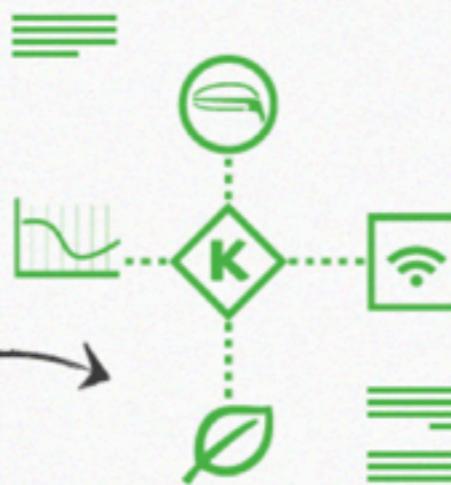
Name	Mobile #	Email Address	Add
David Bourn	312.326.3267	david@journey.org	X

Koubachi analyzes your data
and gives you detailed care instructions
when and how to care for your plants.



2

PCE
Koubachi Plant Care Engine



3



Apps ➤

Measure ➤

Analyze ➤

Display

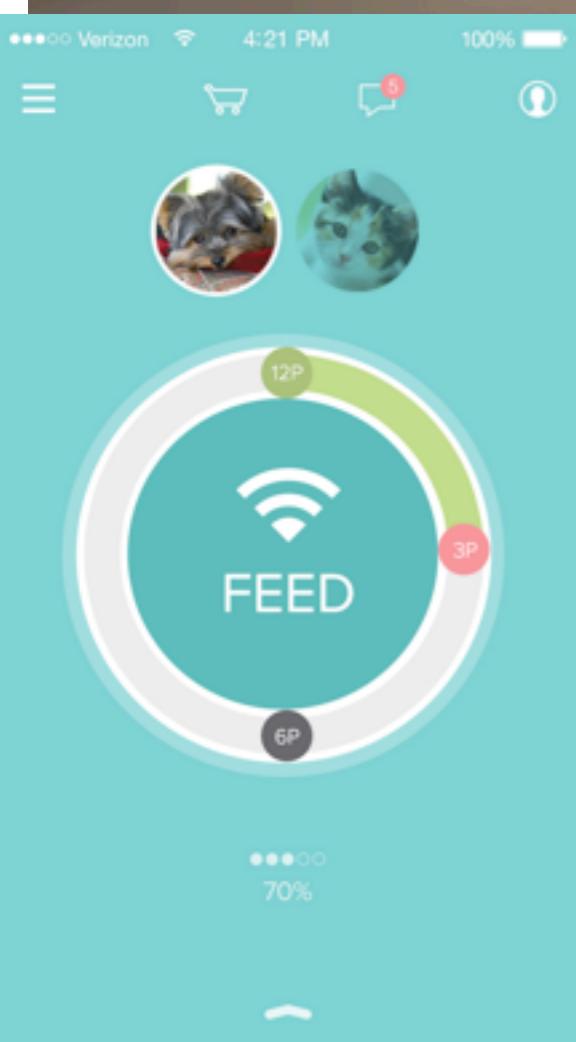
1

2

3

Pet Health

Through portion control and nutrition management, SmartFeeder will combat the pet obesity epidemic.



This screen shows a pet profile for "Cash" located in Los Angeles, CA. The pet is a Male Yorkie. It displays "126 Meals Feed", "1 Meals Left Today", and an "85% Health Ranking". Below this, a "Todays Feeding Schedule" shows meals at 8A, 12P, and 6P. A "Food Intake" chart shows consumption over time from January to June, with a current level around 2 CUP. At the bottom, there are links for "My Devices", "Schedules", and "Users".

This screen lists various notifications. It includes a feeding notification for "Cash has been fed" at 10:57 PM, a food level notification for "Running low on food" yesterday at 10:57 PM, a power level notification for "Power is running low" with 20% remaining, and marketplace notifications for "Healthy Food" (6 new choices added) and "Organic Treats" (6 ago). There are also buttons for "Order more food now", "Power", "Remind me when im home", and "Marketplace".



RFID

RADIO FREQUENCY
IDENTIFICATION

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RFID READERS

RADIO FREQUENCY
IDENTIFICATION



e et de Gestion

Real-Time Location Tracking



IMPROVES HOSPITAL AND PATIENT WORKFLOWS



1

PATIENT FLOW: PATIENT WAIT TIME TRACKING

Classify patients by appointment type and track their wait times in zones. Improve future scheduling and patient satisfaction while rewarding your most responsive caregivers.



THE AVERAGE PATIENT WAIT TIME for an appointment in the U.S. is 20 minutes and 26 seconds.

Vitals 2012 Annual Report



WAITING BEYOND 20 MINUTES for an appointment is the tipping point for patients when they feel like their time is being wasted.

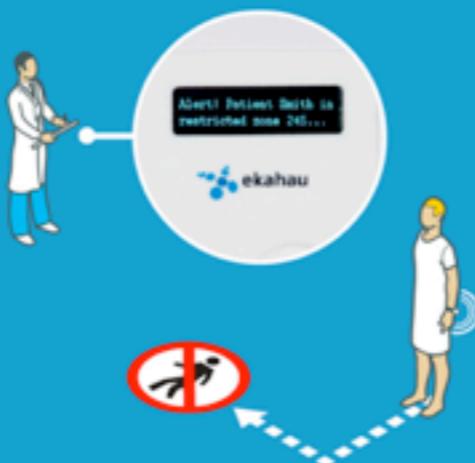
Medical Economics 2013 article

2

PATIENT FLOW: ELOPEMENT PREVENTION

Improve patient safety by keeping them ambulatory and visible with a panic button on the go and searchable web-based maps.

Send alerts to their caregiver if they wander beyond safe, geo-fenced boundaries.



UP TO
100%

PREVALENCE OF WANDERING BY AMBULATORY RESIDENTS WITH DEMENTIA in nursing homes is staggering — estimates of up to 100% have been reported.

Source: ECR

3

PATIENT FLOW: IMPROVE COORDINATION AND COMMUNICATIONS BETWEEN CAREGIVERS

Coordinate patient treatment processes by notifying staff assigned to patients of their location, next procedure and wait time.

Allow caregivers to accept work orders and improve speed of admission, discharge and transport procedures.

Send mass notifications to all or some badge holders regarding patients and processes.



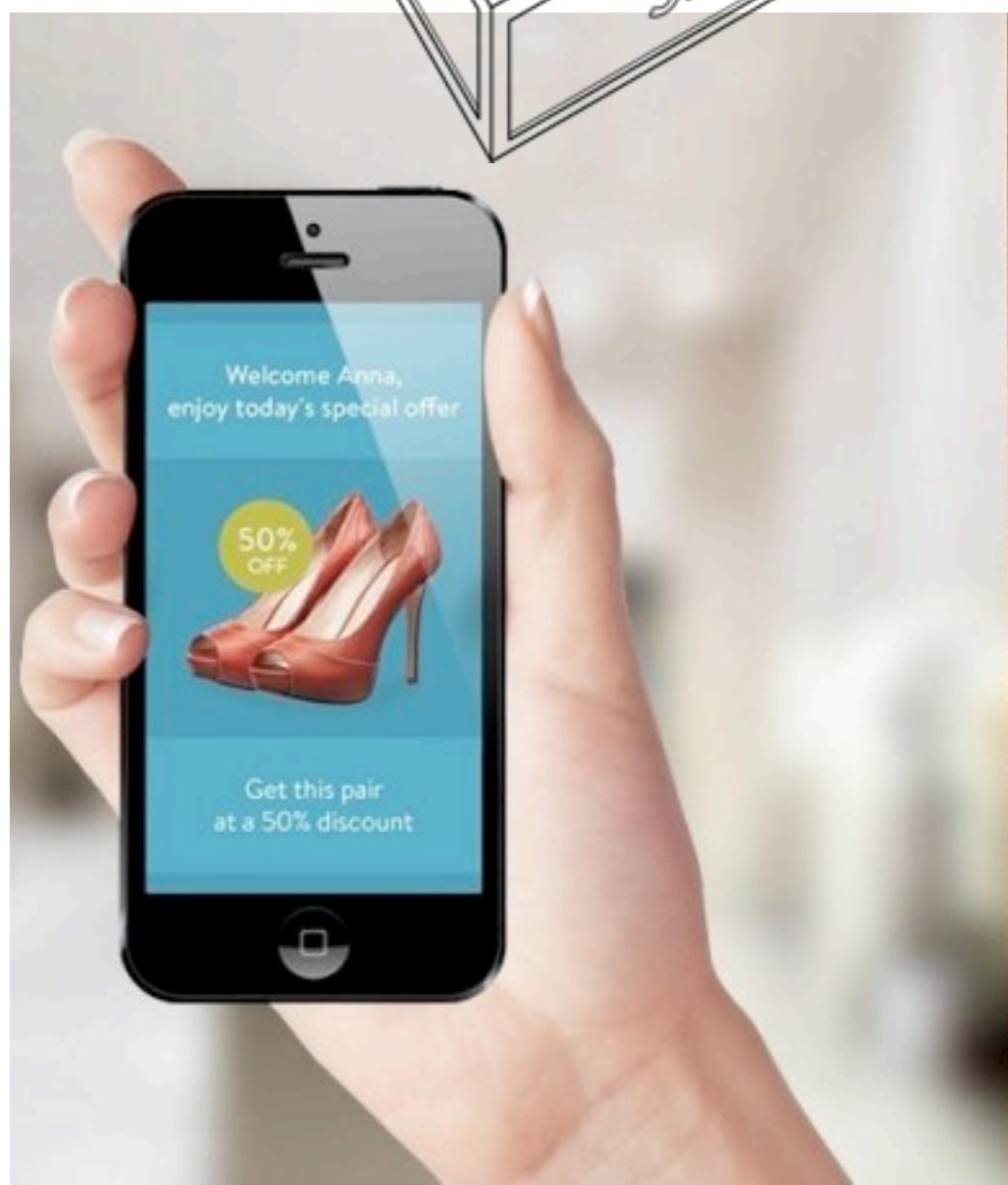
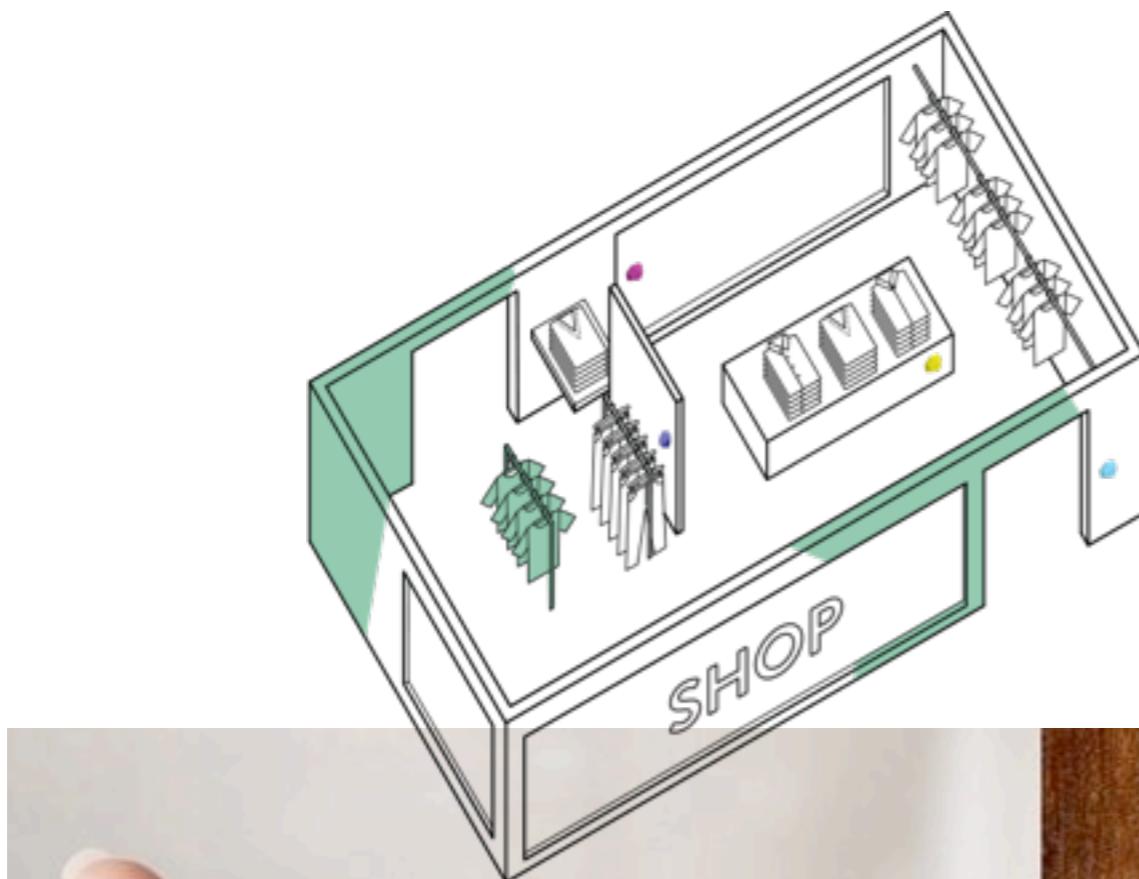
\$4,167
SAVED

30% OF NURSES ON AVERAGE REPORT SPENDING AT LEAST ONE HOUR PER SHIFT SEARCHING FOR EQUIPMENT. Assuming a \$66,690 average salary, an estimated \$4,167 dollars is lost per year, per nurse, on equipment searches.

Source: Nursing Times

The Real-Time Location Systems (RTLS) market is estimated to reach \$4 billion by 2022 reports Transparency Market Research.

See the big picture

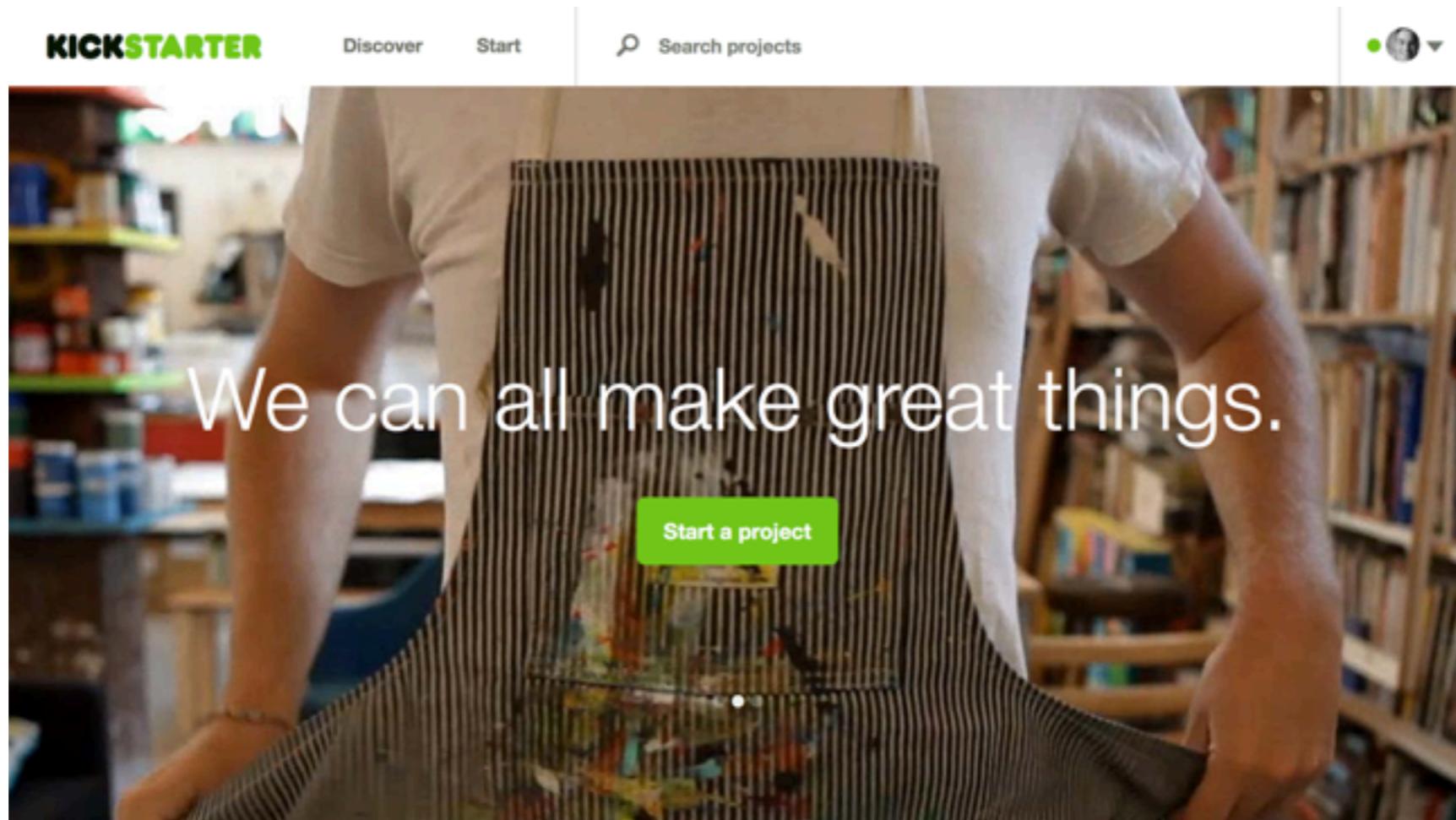




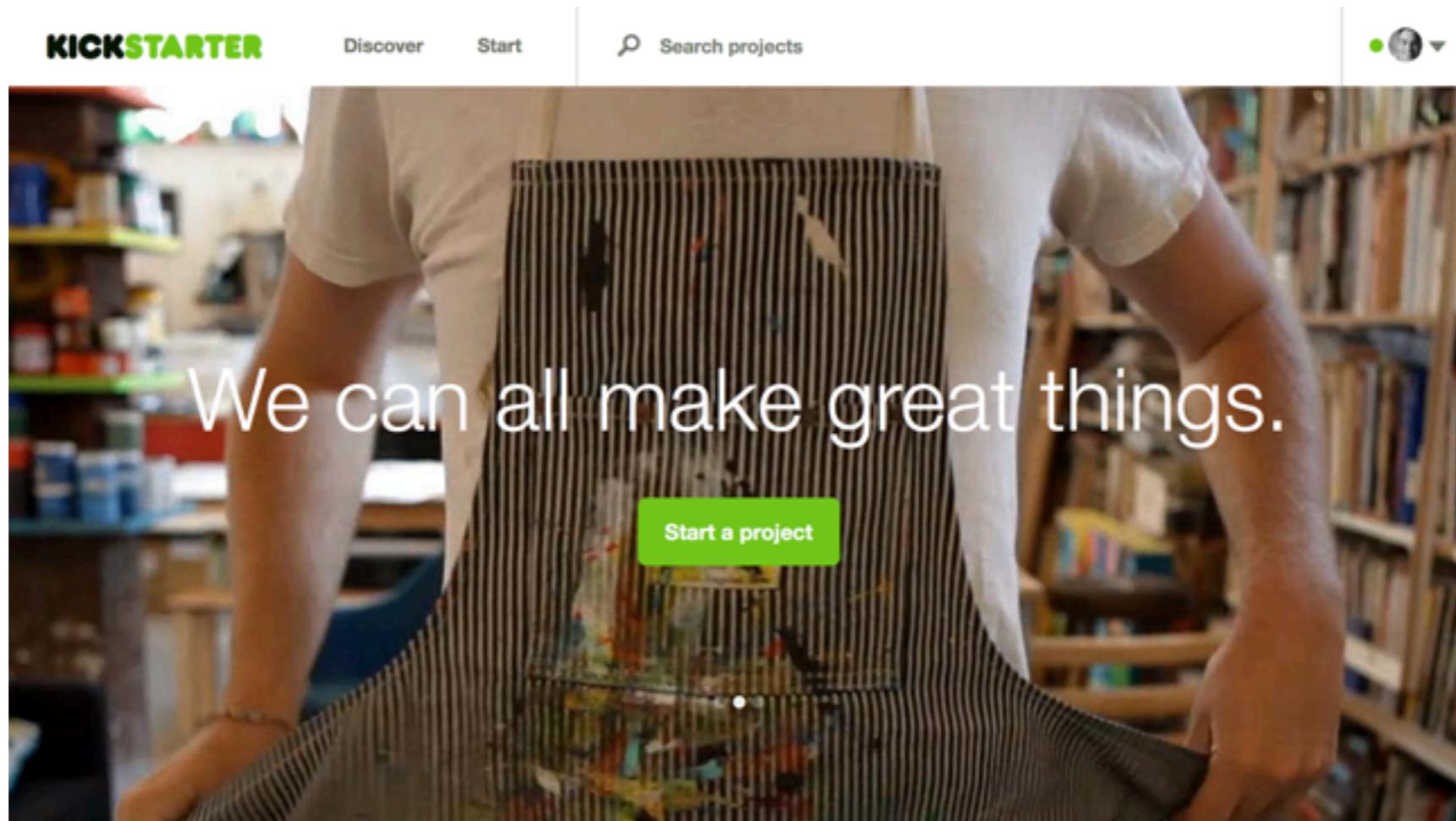
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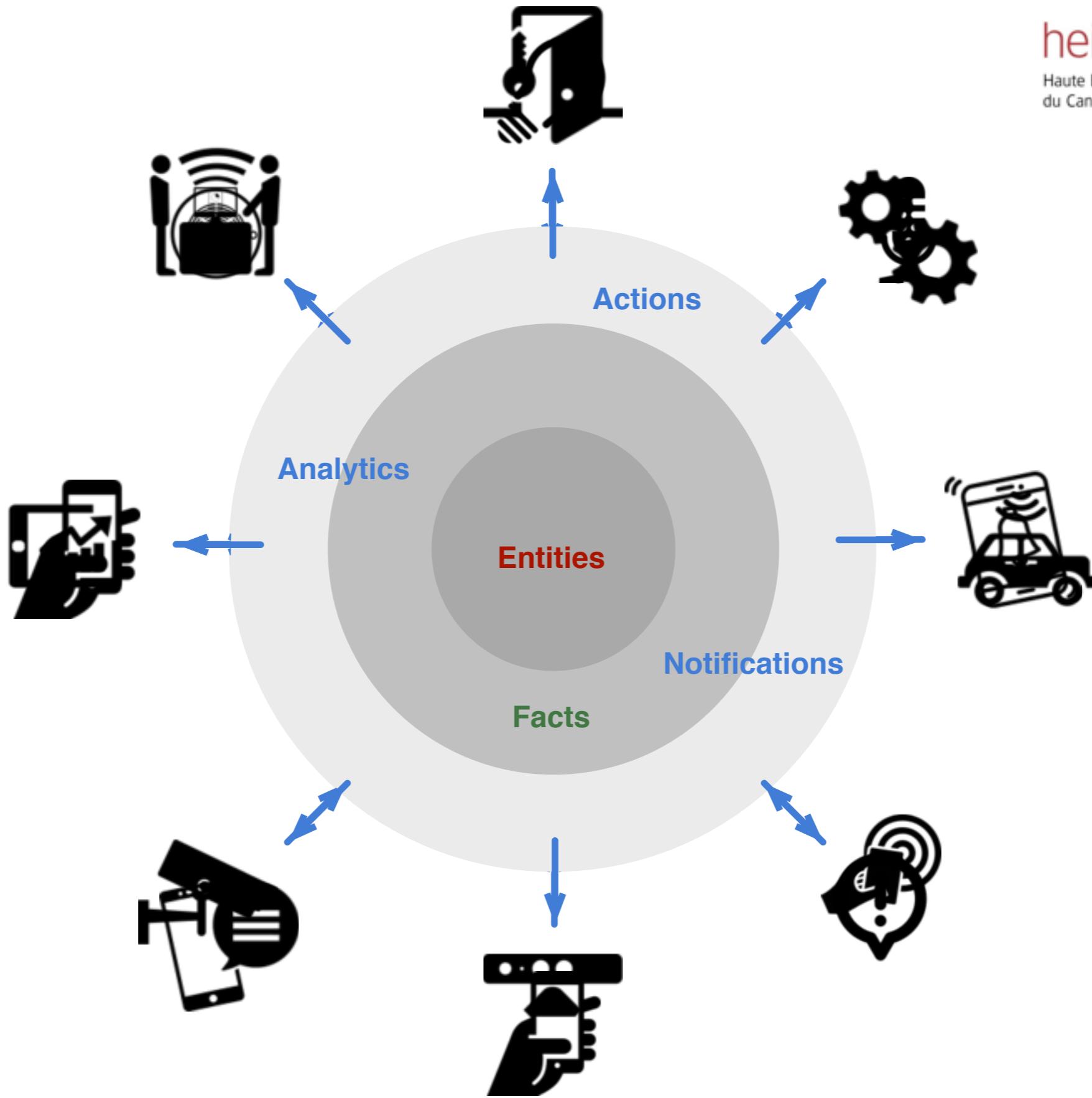




Imagine and **describe** a **service** that would combine a **mobile app** and some kind of **sensor(s)** for the benefit of a **particular user group**.



Build an **end-to-end prototype to demonstrate
(selected aspects of) your service concept.**



“In my **application domain**, there are **Entities**: plants, bikes, locations, users, buildings, activities, objects, etc.”

“By **interpreting** streams of events, I can infer **Facts** about domain entities.”

“**Sensors** report **streams of Observations** about what they see (in the physical or in the digital world).”

**Entities**

Locations: Kitchen, Living Room, Basement
People: John, Sarah, Bob, Alice
Meetings: meeting1, meeting2, meeting3

Facts

"The last known temperature in the kitchen is of 12.2 degrees (at 12:05:00)"
"The warmest temperature in the kitchen during the last 24 hours is 23.2 d"
"John has been in the elevator at 12:20:00"
"John has been in 5 locations during the last 2 hours"
"John and Sarah have been in three meetings together over last week"

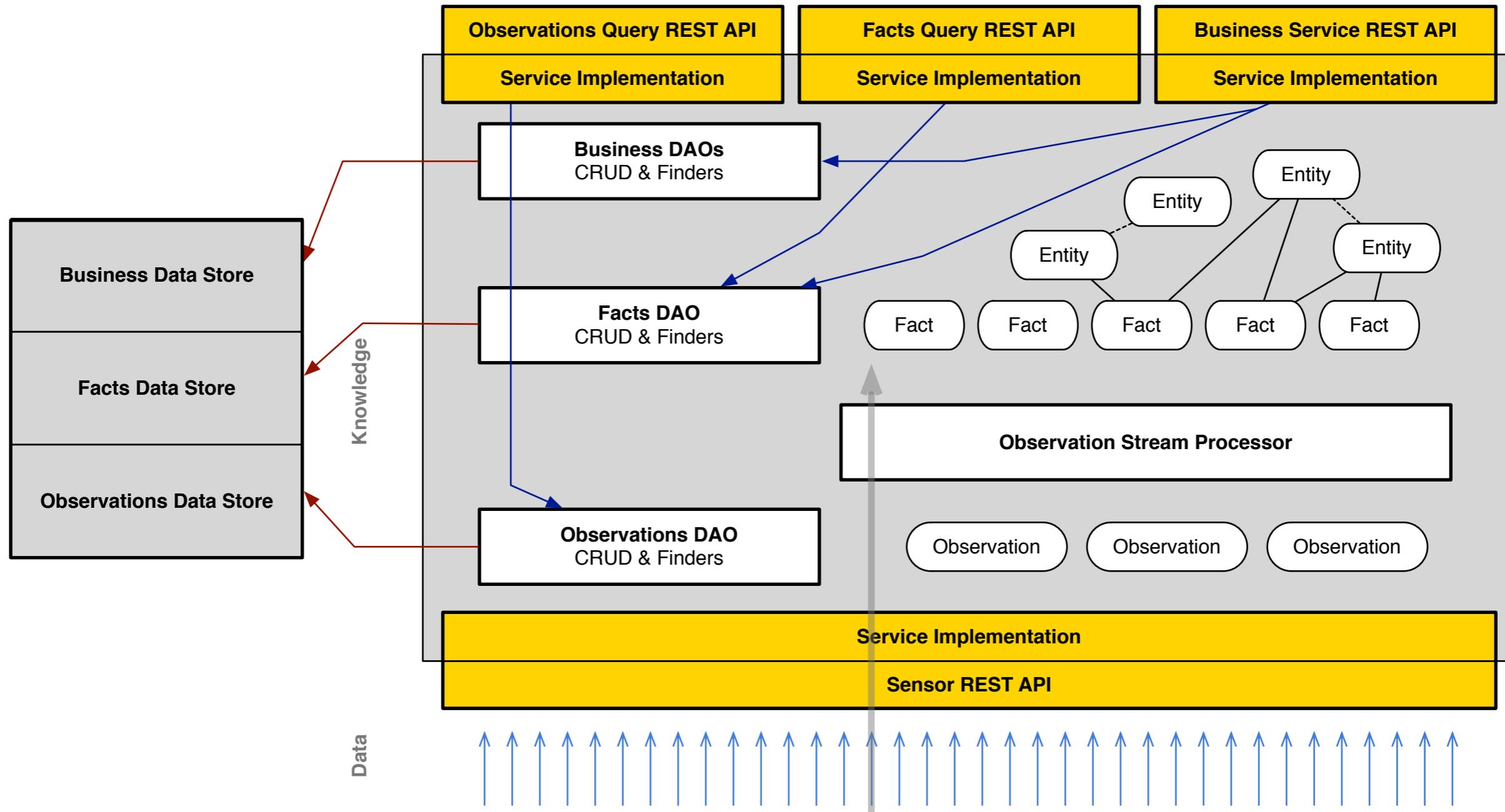
Observations

"sensor A2 has measured a temperature of 12.3 degrees at 12:02:00"
"sensor A2 has measured a temperature of 12.2 degrees at 12:05:00"
"sensor A3 has measured a temperature of 12.8 degrees at 12:05:00"
"sensor B8 has seen tag 87KHE8 appear at 12:20:00"
"sensor B8 has seen tag 82UU28 disappear at 12:20:00"
"sensor C6 has sensed a new location at 46°47'25.2"N 6°31'22.1"E"



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Introduction

Imagine, design and
describe your
service concept

Java EE:
Access a DB with
JPA

Design and
implement your
domain model

Java EE:
Implement business
logic in **EJBs**

Design and
implement your
business logic

Java EE:
Implement a REST
API with **JAX-RS**

Design and
implement your
REST APIs

Introduction to android

Specify the features
and the **UX** of your
mobile app

Building a **UI** with
android

Design and
implement the **UI** of
your mobile app

Network
programming with
android

Call your REST
API from your
mobile app

Demo
Fame
Glory
Happiness

Friday Morning

- **General introduction (08:30 - 09:15)**
 - Course organization (15')
 - Mobile Web Services and the Web of Things (15')
- **Setup (09:15 - 10:00)**
 - Download & installation (Netbeans with Glassfish, maven, git)
 - Git(hub) Crash Course, Phase 1
- **Git(hub) Crash Course (10:30 - 11:00)**
 - Git(hub) Crash Course, Phase 2
- **A first look at Java EE (11:00 - 12:00)**
 - Introduction to Java Enterprise Edition & Glassfish (Java EE) (30')
 - “Getting Started with Java EE Applications” tutorial: (<https://netbeans.org/kb/docs/javaee/javaee-gettingstarted.html>)

Friday Afternoon

- **Introduction to the Service Design Workshop (13:00 - 13:30)**
- **Group Work (13:30 - 16:00)**
 - Brainstorming
 - Story boards and scenarios
 - Wire frames and mockups
 - Synthesis and documentation
- **Service Concept Presentations (16:00 - 16:30)**
 - Each presents during 10'
 - 5' Q&A / feedback

Week 1: RESTful Web Services

- **Monday morning**
 - Intro to EJBs & JPA
 - Design your Observations, Entities and Facts
- **Monday afternoon**
 - (Partial) implementation of your Observations, Entities and Facts.
 - (Partial) implementation of the corresponding DAOs
- **Tuesday morning**
 - Intro to REST & JAX-RS
 - Design of the different REST APIs for your service
- **Tuesday afternoon**
 - (Partial) implementation of your REST APIs
 - Implementation of test clients and/or of sensor simulators
- **Wednesday & Thursday**
 - Implementation & Demo

Week 2: Mobile Clients

- **Friday morning**
 - Introduction to mobile development with android
 - Tutorial
- **Friday afternoon**
 - Design of the UI for your mobile app
- **Monday morning**
 - (Partial) Creation of the UI components for your app
- **Monday afternoon**
 - (Partial) Creation of the UI components for your app
- **Tuesday morning**
 - Introduction to network programming with android
- **Tuesday afternoon**
 - Calling your REST APIs from your mobile app
- **Wednesday morning**
 - Implementation and end-to-end testing
- **Wednesday afternoon**
 - Implementation and end-to-end testing
 - **Code freeze**
- **Thursday morning**
 - Documentation, preparation of the presentation and demo.
- **Thursday afternoon**
 - Presentations & demos