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Health Kiosk

Autonomous Collection of Health Information

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Motivation

- Lack of resources in rural areas
- Medical facilities with higher demand than offer
- Elderly communities
- Screenings for some types of diseases
- Reduction in price of Personal Health Devices
- Higher variety of devices
- Low cost of assembling a system

Overview of the System

- Modular system capable of handling different health devices
- Features such as printing results, citizenship card reading, QR Code
- Internationalization of the system, via text and voice.

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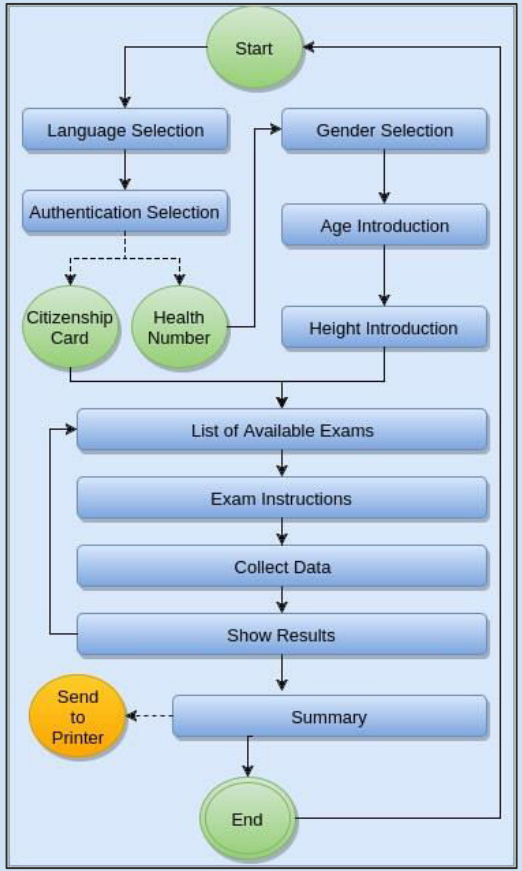
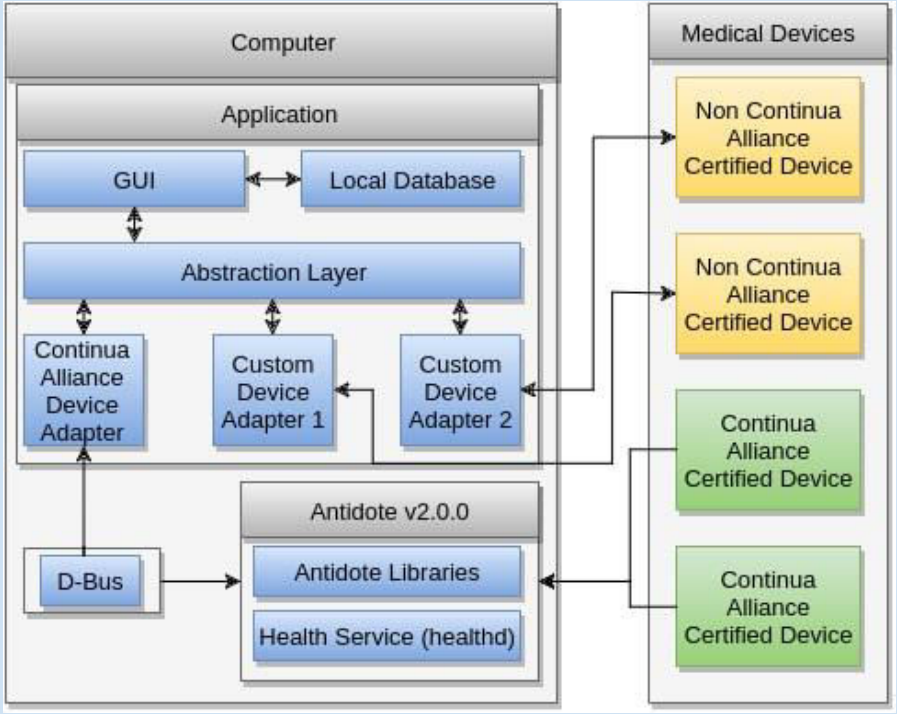
Usage Flow of the Application

- Three main stages
  - User Personal Data Collection
  - Exam Data Collection
  - Summary of Collected Data
- The flow changes according to the configuration of the system



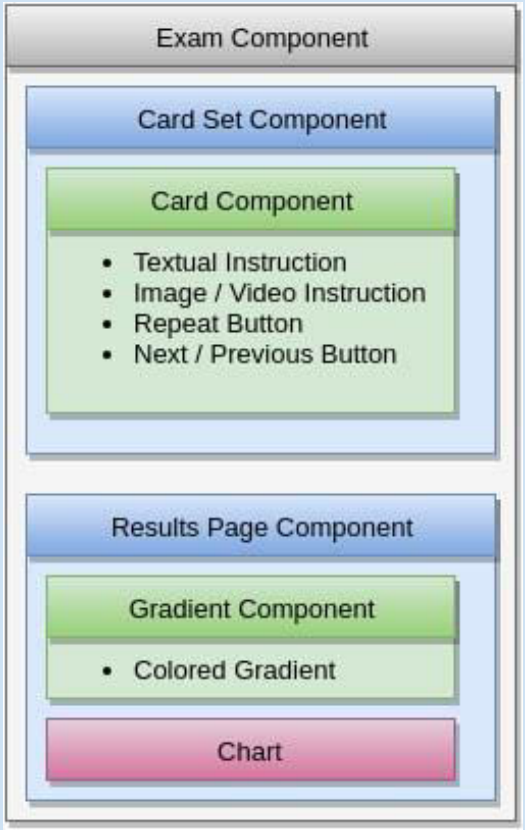
Personal Health Devices

- Different types of devices
  - Continua Alliance Certified and Noncertified
- Different types of communication
  - Assure compatibility with the maximum number of devices
  - Easy integration of new devices



Web Components

- Allow the creation of reusable components
- Increase the modularity of the application
- Eases the addition/removal of components
- Eases future development



Internationalization

- Pre-Generated voices using Text-to-Speech technology
- Use of i18next[1] framework allows an easy integration of new languages
  - Based on JSON files for each language
  - Each text string has a pair ID/value for each language

```
{
    "welcome_title": "Bem Vindo ao Quiosque de Saúde”
}
```

```
{
    "welcome_title": ”Welcome to the Health Kiosk”
}
```

[1]http://i18next.com

QR Code

- Contains all collected data
- Adds an entry to the user's calendar
- Can be used with other purpose
    - Health Kiosk smartphone application

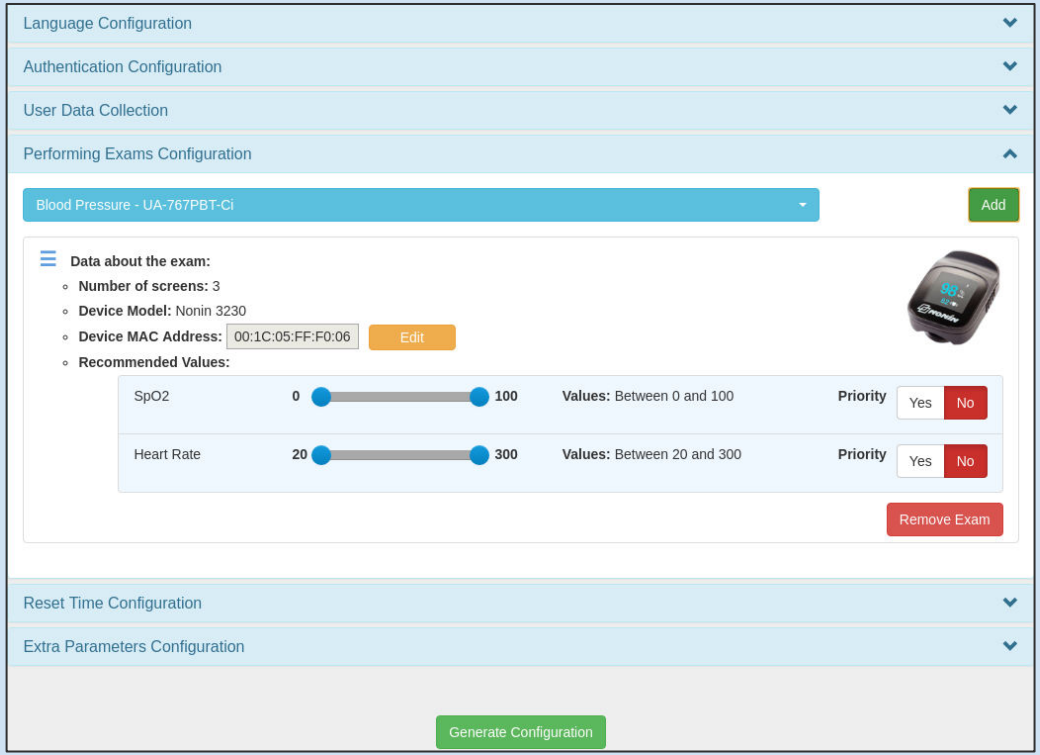
Oximetry:
Oxygen Level (SpO2): 98
Heart Rate (BPM): 79
Blood Pressure:
Systolic Pressure (mmHg): 109
Diastolic Pressure (mmHg): 70
Heart Rate (BPM): 62
Weight:
Weight (Kg): 74.9

Smart Card Reader Identification

- Enables automatic collection of data
- Avoids human error when introducing personal data
- Only public data is available
- Can help creating a user profile
    - Personal data and a photography are available in the card

Configuration of the System

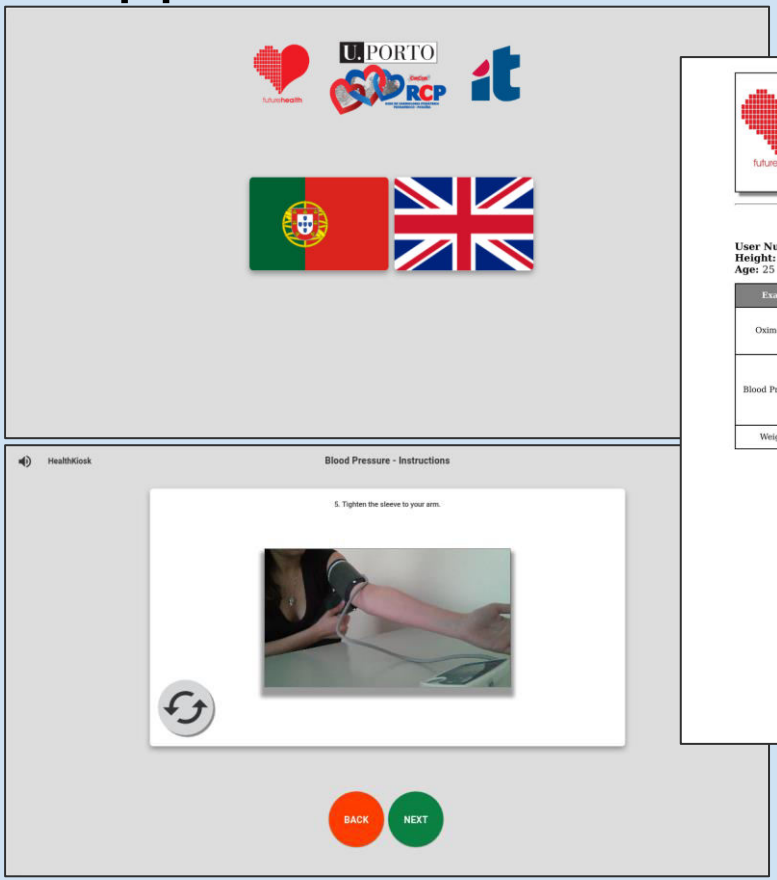
- Currently done using a configuration file
  - In the future is going to be made using a Graphic User Interface
- Feature Selection
  - Language
  - Identification Method
  - User Data
  - Exams Details
  - Inactivity Reset Time
  - Printer, QR Code, Sound...

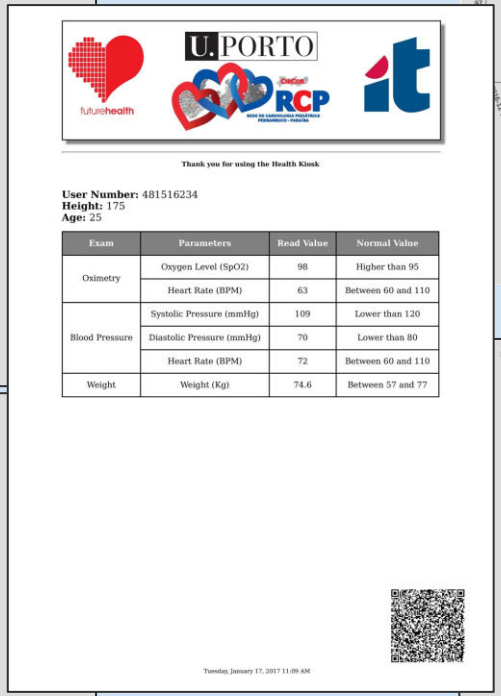


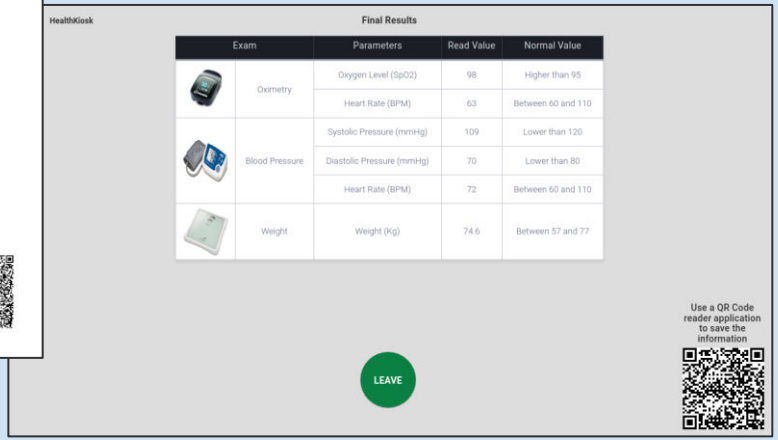
Web Real Time Communication

- Direct communication between the Health Kiosk and a Health Office
- Establish a video conference between both ends
- User can clarify any doubts
- Established communication is bidirectional:
  - The health professional can receive data from the health kiosk in order to assess the patient.
  - The status of the health kiosk can be remotely changed by the health professional.

Application Interface







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Future Work

- Integration of new Devices
  - Glucometer
- Usability Testing
  - Department of Computer Science, Faculty of Sciences, University of Porto
  - City Hall of Valongo
- Electronic Health Record
  - Integrate collected data into an electronic health record.

Questions?

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