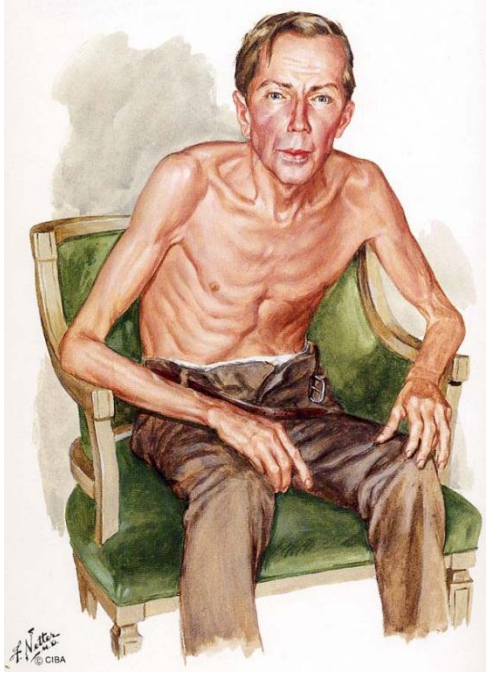
IS-ACTIVE

Inertial Sensing Systems for Advanced Chronic Condition Monitoring and Risk Prevention

- Encourage people with chronic conditions (especially COPD), to **increase the level of physical activity**, while preventing the risks related to shortness of breath
- Emphasize **the role of the home as care environment**
- Provides **real-time support to patients** in order to monitor, self-manage and improve their physical condition according to their specific situation

The need

- **COPD** - Chronic Obstructive Pulmonary Disease:
  - Estimated as the 4th cause of death worldwide
  - Expected to become the 3rd cause of death by 2020
- COPD can be managed, controlled and slowed down with:
  - Proper physical activity program daily
  - Exercising improves the quality of life and results in less hospitalization



Consortium

- **University of Twente** – research institute in Enschede, the **Netherlands**, within the area of telematics and information technology
- **Roessingh Research and Development** – the largest scientific **research center** in the **Netherlands** for rehabilitation technology
- **Inertia Technology** – **SME** in the newly-emerging field of wireless inertial sensor networks form **the Netherlands**
- **The Norwegian Centre for Telemedicine** – research and expertise center that gathers, produces and disseminates knowledge about telemedicine services from Norway and internationally

Consortium

- **Northern Research Institute** – an institute for research in the fields of ICT, Social Sciences, and Earth Observation
- **University Hospital Elias** – a referenced center for medical and academic activities from ROMANIA
- **PROSYS** – a SME from ROMANIA specialized in the design and implementation of complete sensing, monitoring and control systems in a wide range of applications, from surveillance of public utilities to industrial automation

Wireless sensor node platform

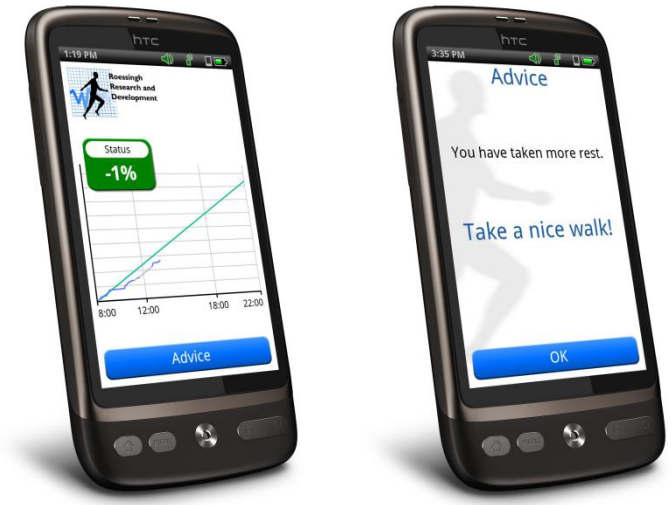
- **ProMove**
  - Inertial sensor node
  - Accelerometer, gyroscope, compass
  - Monitors the activity of patients
  - Detects motion of objects
  - Connects wirelessly to a feedback device
  - Design for wearability

- **Functionality**
  1. Activity monitoring
  2. Exercise coaching

1. Activity monitoring

Mobile feedback – smartphone

- activity graphs
- feedback messages
- adaptive feedback timing
- questionnaires



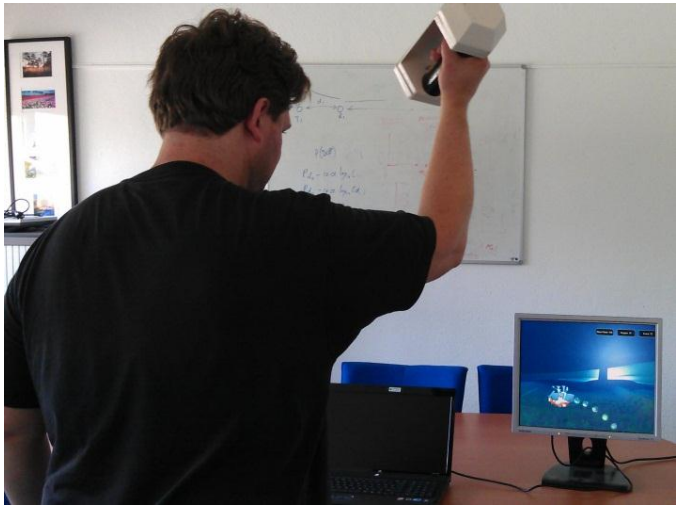
In-home feedback – tablet device

- visual feedback
- activity week plan
- virtual group training
- follow-along exercise videos

2. Exercise coaching

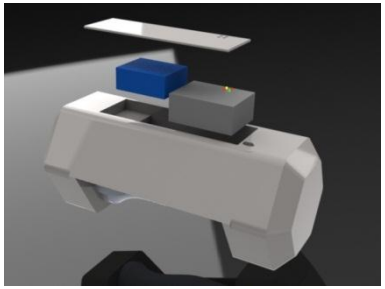
The orange submarine game

- Make being active a fun and appealing thing to do
- Submarine, which moves to the right at a constant speed



Sensorized dumbbell

- Used to create a sensor-enhanced exercising experience
- Contains a ProMove sensor node (detects vertical motion) & a heart rate and oxygen sensors (risk prevention)



Business perspective

- **Market size for COPD**
  - Large and rapidly growing: 44 million patients in Europe, 24 million in USA and 56 million in Asia
  - Potential impact and the societal benefit due to less hospitalization needed are very high
- **Commercialization**
  - 1-2 years after project completion
  - A joint venture of the commercial partners in the consortium as hardware devices (sensor) and as services (feedback, coaching).

Project feedback

- **Prototypes passed the initial trials and were adapted and refined for field trials; Initial trials in 3 countries (NL, NO, RO) with 26 COPD patients**
  - Evaluated usability and user acceptance
  - Surprisingly good acceptance and interest from patients
- **Recognition & Awards**
  - IS-ACTIVE – finalist of the AAL Forum AWARD
  - IS-ACTIVE project was selected from among the 450 applications to be one of the 50 projects on display at Innovation Convention, 2011 - Bruxelles

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Thank you,

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