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Workshop: New Multi-Sensor Device for Remote Management and Disease

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http://www.armor-project.eu

Epilepsy

"Epilepsy is the commonest serious brain disorder, affecting up to 1% of the population worldwide"

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What is ARMOR?

*"**A**dvanced multi-pa**R**ametric **M**onitoring and analysis for diagnosis and **O**ptimal management of epilepsy and **R**elated brain disorders"*

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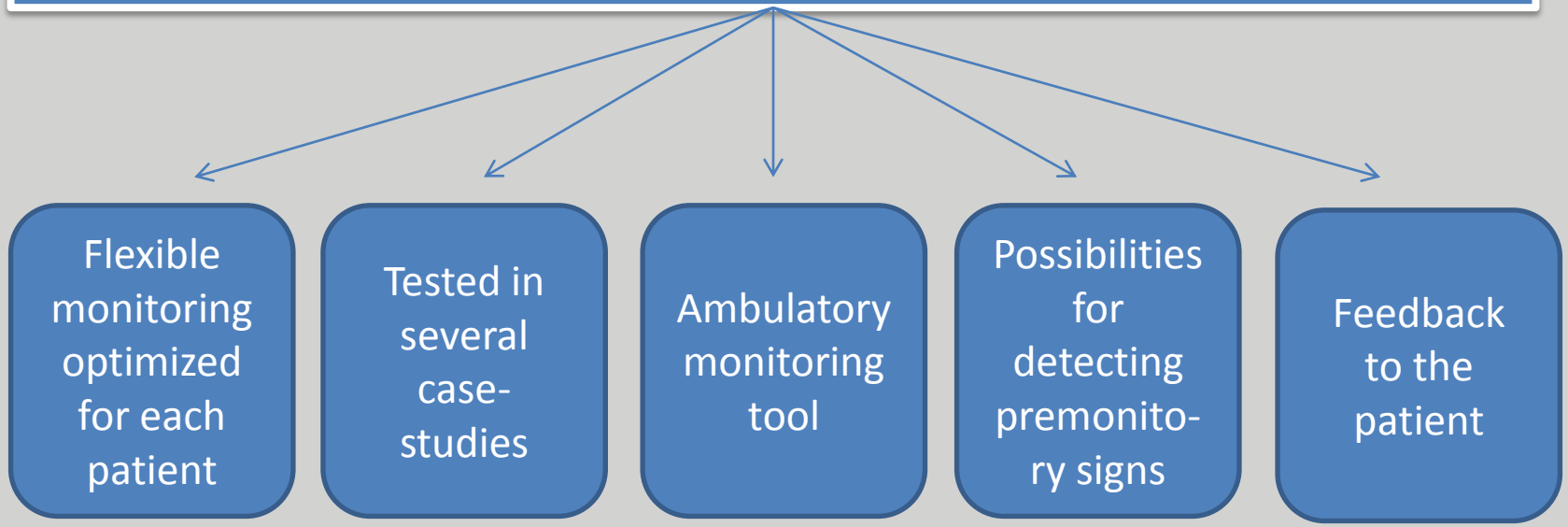
General Information

- ARMOR project is partially funded under 7th Framework Programme (FP7)
- Call: FP7-ICT-2011-7 (STREP)
- Starting Date: 01/10/2011
- Duration: 36 months
- Project Coordinator: Sensing & Control Systems S.L.
  - Coordinator: Dr. Narcís Avellana
  - Scientific Coordinator: Prof. Vasileios Megaloikonomou

Overview

ARMOR will design a more holistic, personalized, medically efficient and economical monitoring system for people with epilepsy.



Scenarios

Offline

SCENARIO1
Epilepsy or non-epileptic paroxysmal events (NEPE)

SCENARIO2
Delineation of the clinical EEG expression of different types of epilepsy

SCENARIO3
Follow Up – Medication evaluation

SCENARIO5
Research on local signs of idiopathic generalized epilepsy

SCENARIO6
Pre-surgical evaluation

SCENARIO7
Nocturnal Seizure

Online

SCENARIO 4
Protection from seizures

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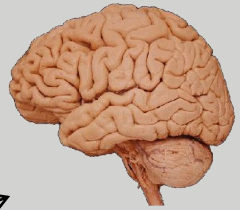
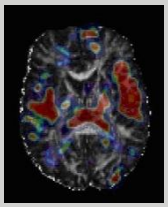
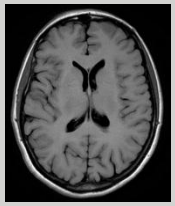
Multi-parametric Data Adquisition

Medical Record

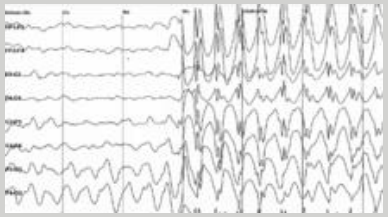


Clinical Data and Images

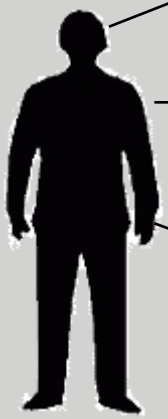




Monitoring (EEG)



Genetic Data



Body Sensors:

- Temperature
- Blood pressure
- EMG, EOG, GSR…
- Heart rate
- Accelerometer

\+ **Environmental Sensors**

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ARMOR Sensors

EEG-Sensor/EOG-Sensor
Electroencephalography

ECG Sensor
Electrocardiogram

Activity Sensor
3 Dimensional acceleration sensors

GSR Sensor
Galvanic Skin Response

SPO2-Sensor
Saturation of peripheral oxygen

Respiration

EMG-Sensor
Electrical activity produced by skeletal muscles

Context, environmental signals
Light and sound

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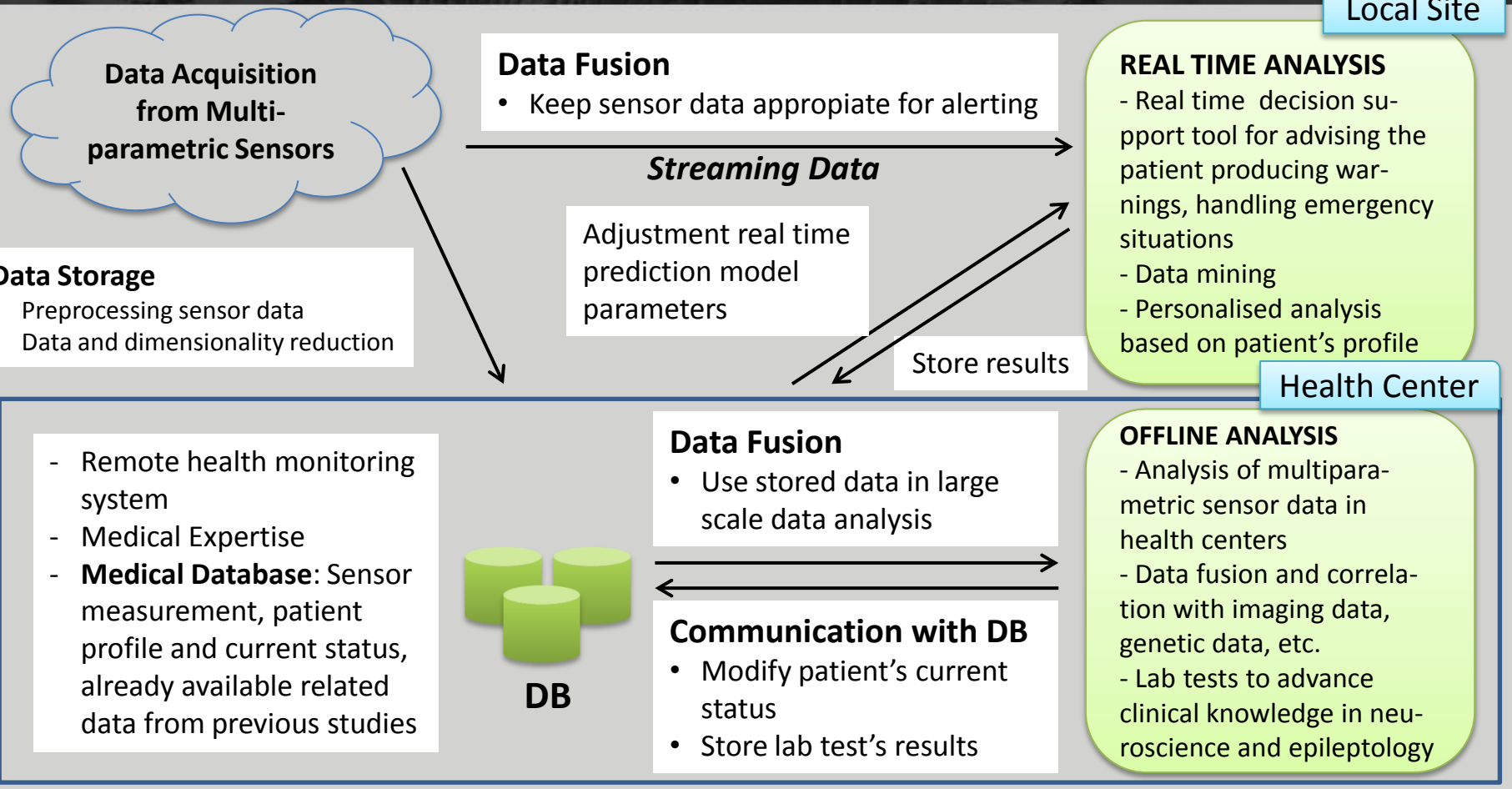
Multi-parametric Data Processing & Analysis (i)



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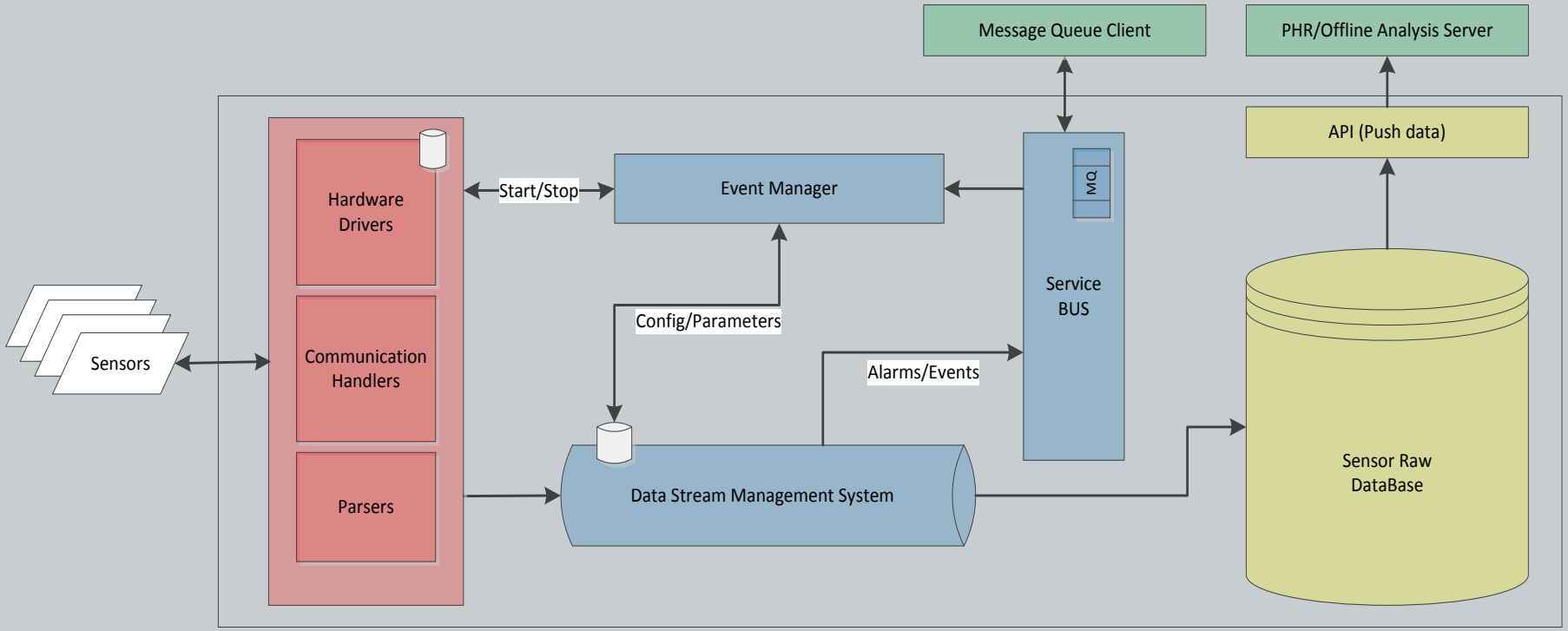
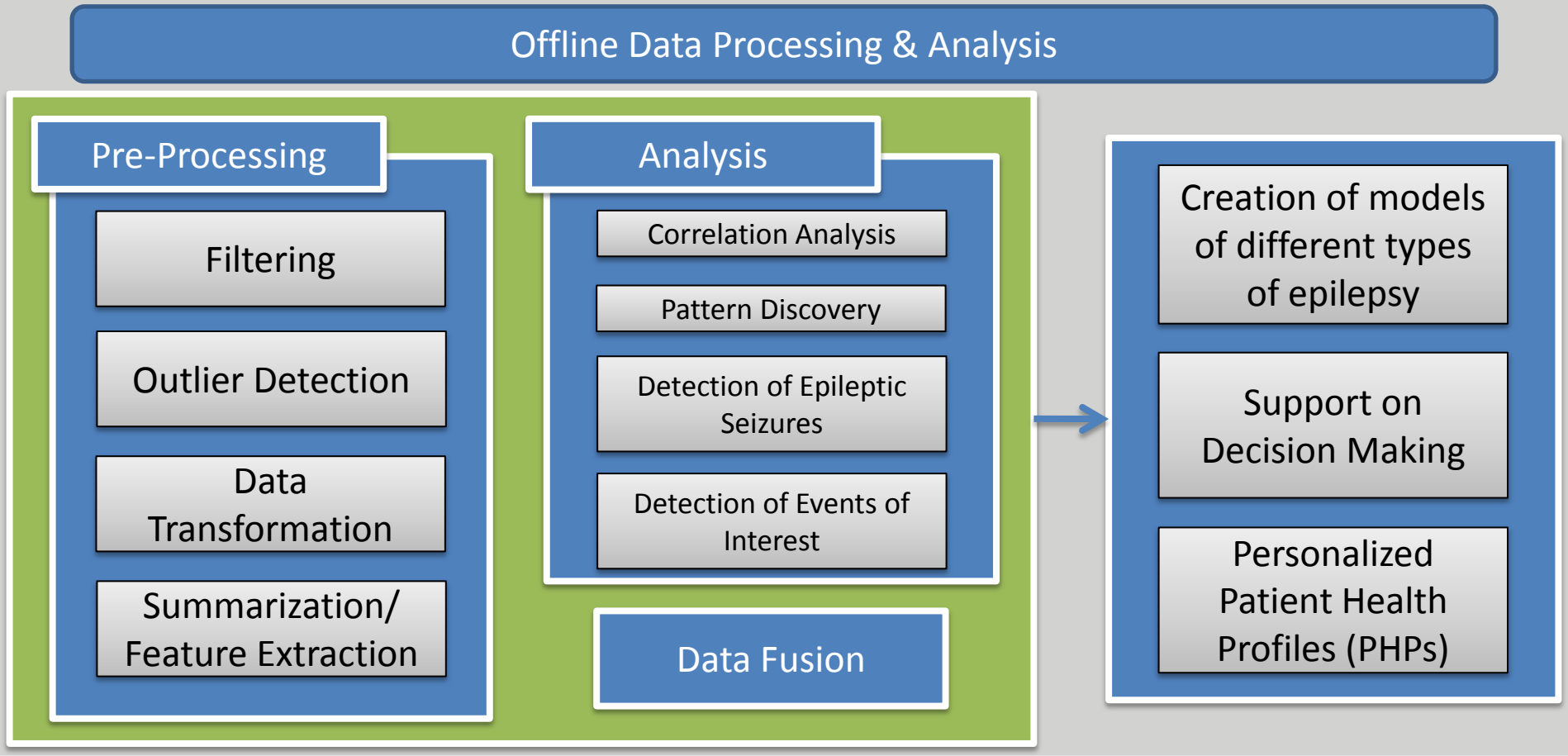
Multi-parametric Data Processing & Analysis (ii)



Multi-parametric Data Processing & Analysis (iii)



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Multi-parametric Data Processing & Analysis (iv)

Online Data Processing & Analysis

Online Analysis will incorporate all necessary processing techniques adopted to the streaming nature of the data, in order to perform real-time :

- •Detection of Seizures
- •Detection of abnormal values (patient-specific) from several modalities like
  - • Excessive tachycardia
  - •Oxygen level excursions
- •Other possible emergency situations

Online Processing involves tasks such as:

- •Preprocessing
- •Data Fusion
- •Decision making

which will be performed with respect to processing time and memory constraints.

Online analysis will involve results from offline analysis in order to adjust parameters according to each patient's personal profile.

Minimal Data Requirements (e.g. number of sensors) will be incorporated with respect to the medical expectations and the desired levels of accuracy

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Expected Results

1 INCREASE OUR UNDERSTANDING

2 ADVANCE NOVEL HOLISTIC MONITORING AND ANALYSIS APPROACH

3 GUIDANCE OF DIAGNOSTIC WORKOUT

4 DETECT LIFE THREATENING SEAZURES

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Consortium

Sensing & Control Systems S.L
SPAIN

Karlsruher Institut fuer Technologie
GERMANY

Technological Educational Institute of Mesolonghi
GREECE

University of Patras
GREECE

King's College London
UK

AAI Scientific Cultural Services Ltd
CYPRUS

INTRACOM S.A. Telecom Solutions
GREECE

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More Information

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Thank you for your attention

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