HEMIS

Electrical powertrain **HE**alth **M**onitoring for the **I**ncreased **S**afety of FEVs

SEVENTH FRAMEWORK PROGRAMME

Data on the degradation process of modern FEVs' electric powertrain are scarce
Current automotive standards do not account vehicles with electric powertrain
Public concern about the reliability of FEVs and the associated electromagnetic fields

Objectives

Develop an in-vehicle Prognostic Health Monitoring System (PHMS) to enhance safety and maintainability of FEVs, which:

- Informs about the fail-safe state of the electric powertrain

- Enables the application of a condition based maintenance by predicting the Remaining Useful Life (RUL)
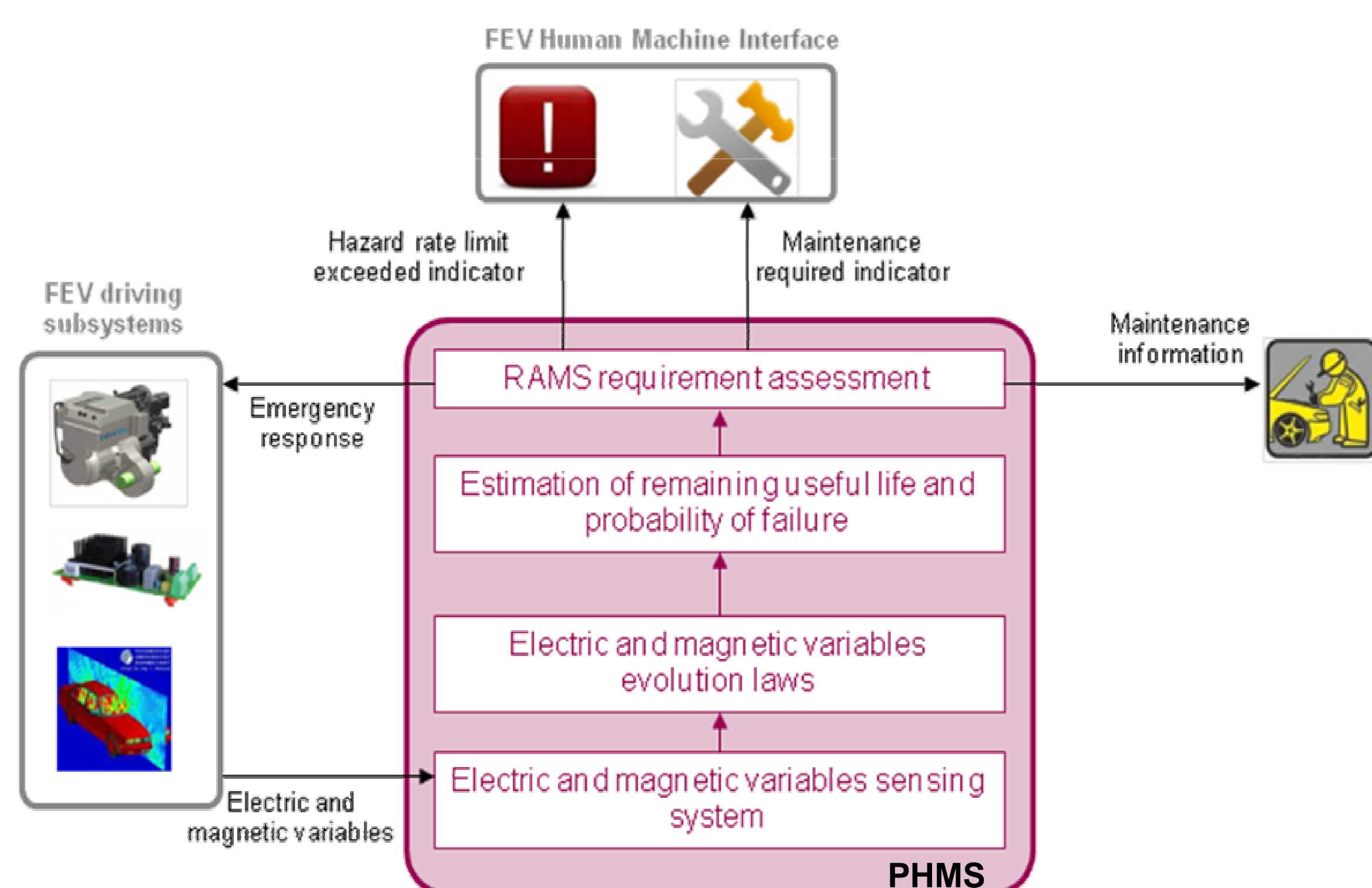
Assess the impact of the emitted electromagnetic field (EMF) on the occupants and EMC issues

- Propose low frequency emissions testing methods

- Provide design guidelines with mitigation techniques

- Propose in vehicle reference levels that ensure the fulfillment of basic restrictions
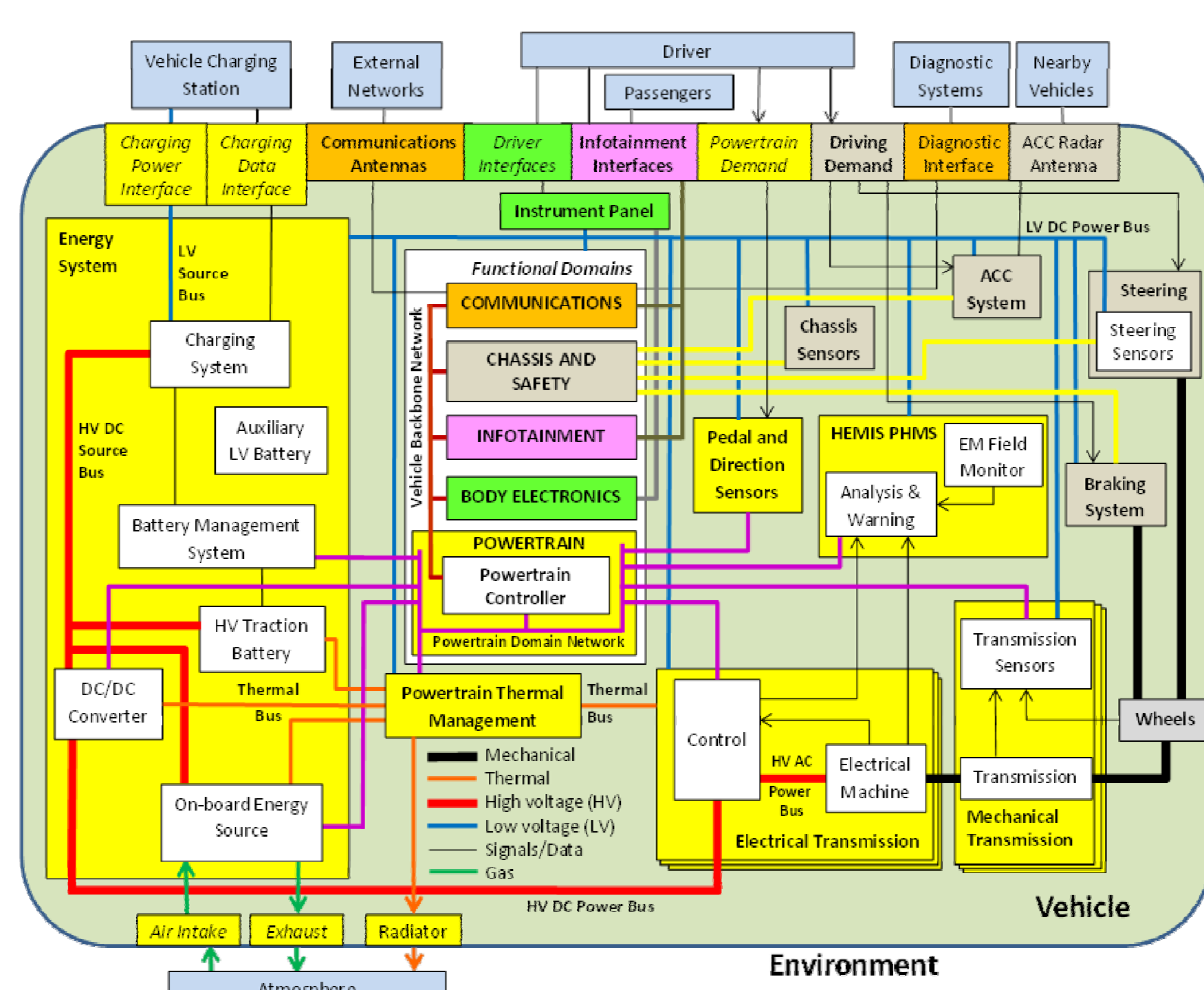
- Integrate EMF measurements in the PHMS

Project details

- Duration: 30 months (Jun 2012 – Nov 2014)

- Budget: ~3M€ (EC funding 2 M€)
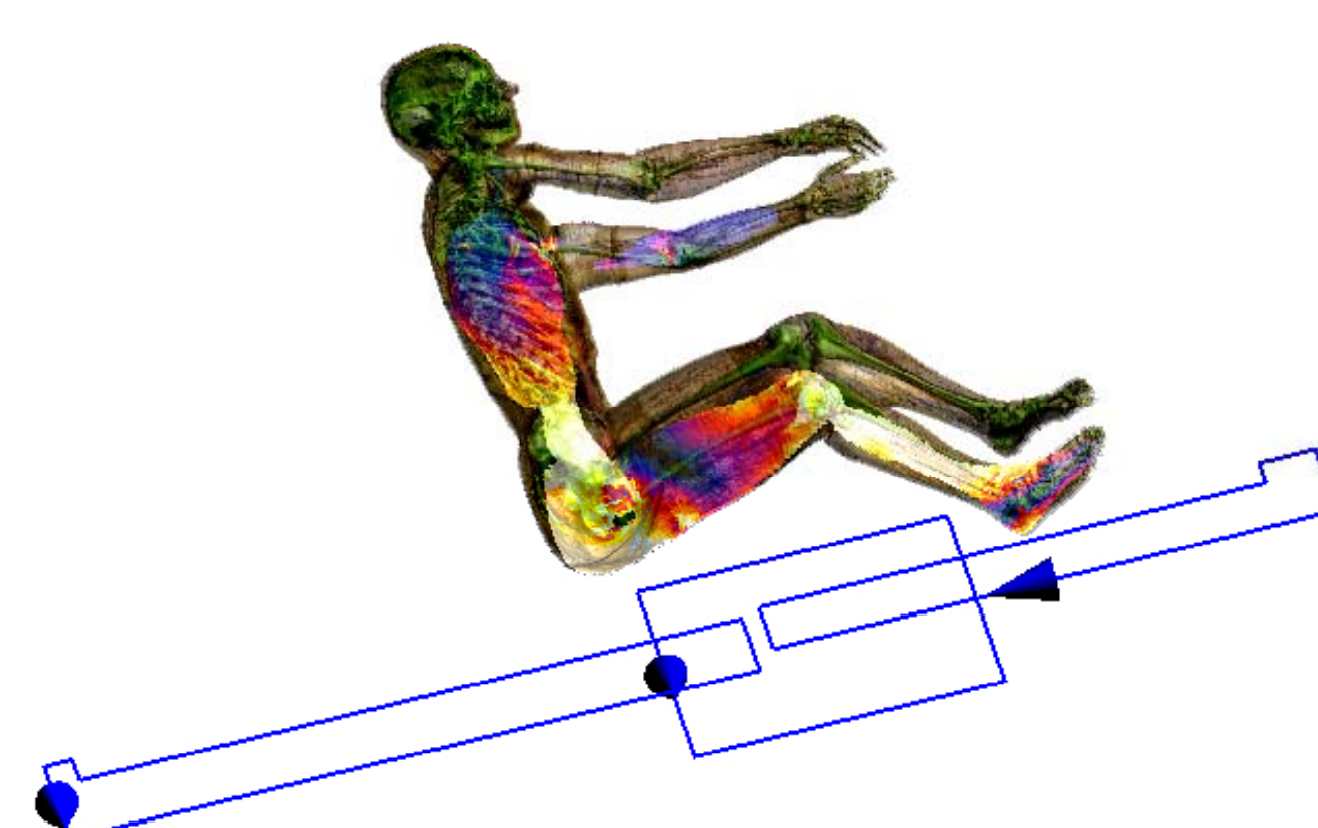
- 314609 FP7-GC-ICT-2011.6.8

Progress report

- A generic architecture of a FEV, defined

- RAMS analysis, completed -> critical failures, identified

- Measurements for condition monitoring, selected

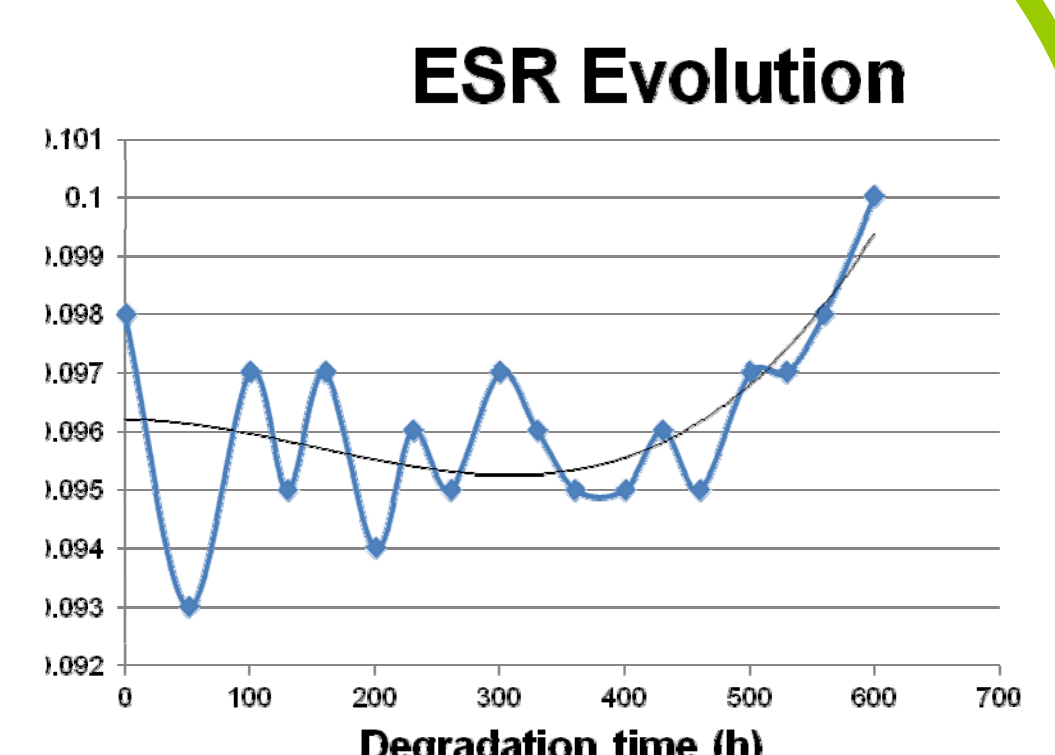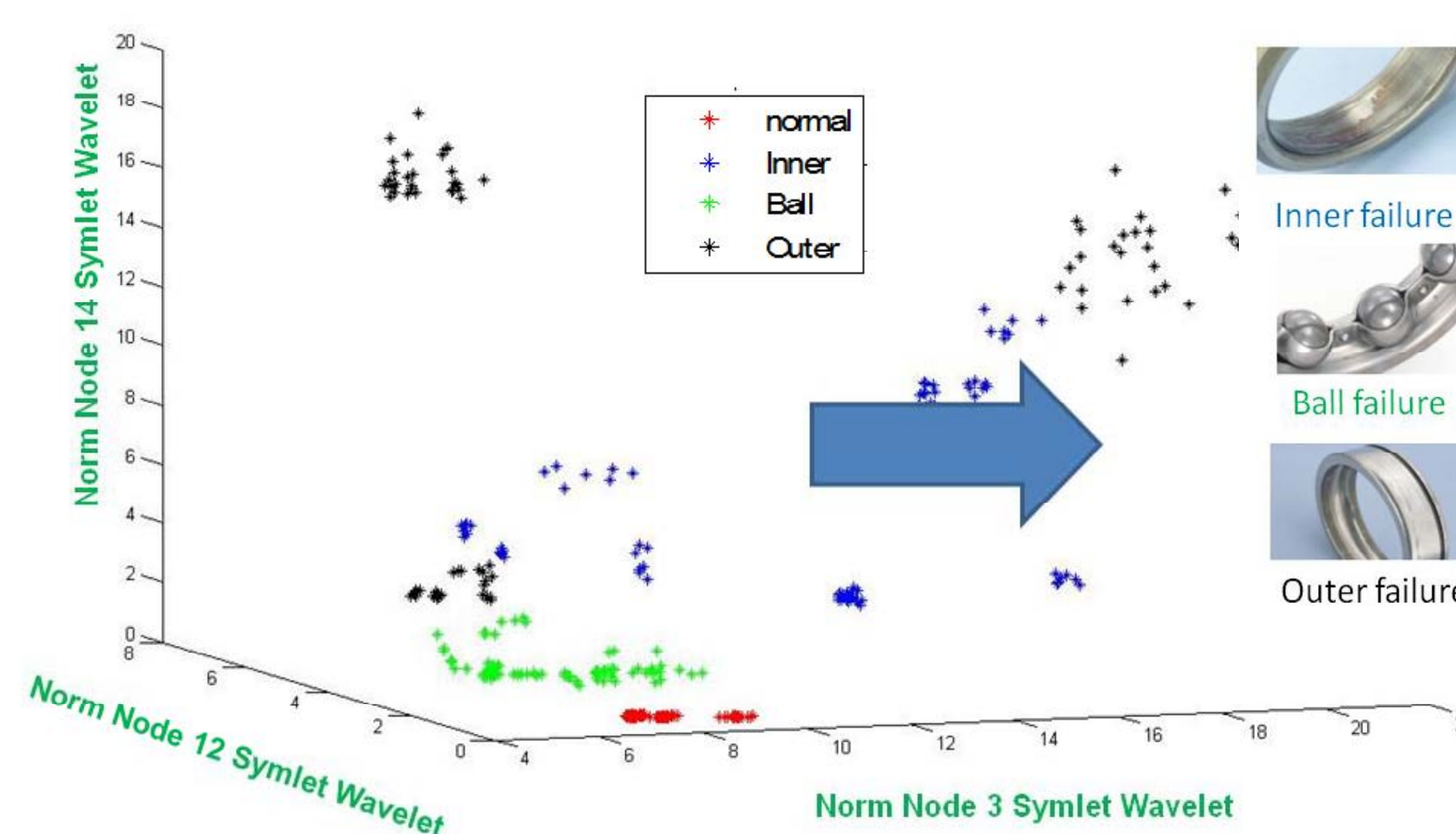- Development of algorithms started, based on:

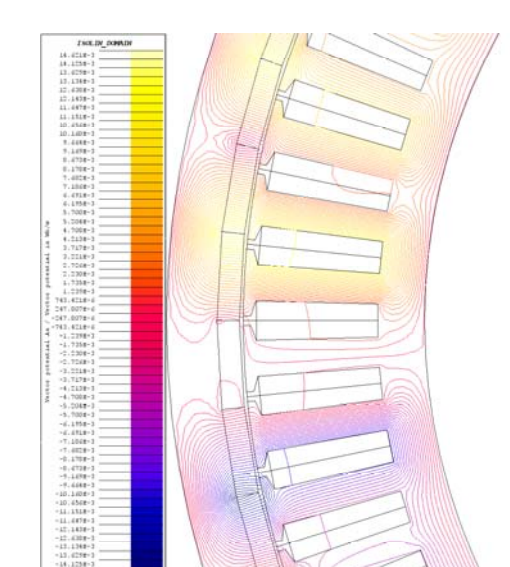 .- Data acquired by ageing testing

  .- Models and failure simulation

Bearings diagnostics

ESR Evolution

Loss of magnetic flux simulation

- Simulation of the electric field induced in seated occupants, started

- The gap in current automotive standards regarding FEVs, analyzed

- Electric powertrain EMF and low frequency magnetic fields emissions, measured

Partners:

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York EMC Services

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