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# Cluster Workshop

## *Land Transport by Fuel Cell Technology*

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### **DREaMCAR**

## *Direct Methanol Fuel Cell Stack for Hybrid Car*

# DREaMCAR : main objectives

- > ***Main objective :***  
**Development of a complete Direct Methanol Fuel Cell (DMFC) System**
- > **Design in such a way to allow easy integration in mobile application**
- > **Decrease noble metal loading**
- > **Increase power density**
- > **Optimize volume and weight power**

# DREaMCAR : the partners (1/2)

## > Thales Engineering & Consulting, France

- general and financial coordination
- MEA preparation and scaling-up
- module and stack design and manufacturing

## > Centro Ricerche Fiat, Italy

- technical coordination
- specifications and cost evaluation
- module and stack design

## > Solvay, Belgium

- membrane development
- MEA preparation

## DREaMCAR : the partners (2/2)

### > CNR-ITAE, Italy

- catalyst development
- membrane characterization
- MEA preparation

### > TAU/RAMOT, Israel

- membrane development
- MEA preparation

# Description of work (1/2)

> **WP 0 : Project Coordination**

*leader : Thales Engineering & Consulting*

> **WP 1 : Specification transfer and user requirements analysis**

*leader : Centro Ricerche Fiat*

> **WP 2 : Development of hybrid membranes and grafted fluorinated membranes**

*leader : Solvay*

> **WP 3 : Preparation of high surface area carbon supported Pt-alloy catalysts**

*leader : CNR-ITAE*

## Description of work (2/2)

> **WP 4 :**        **MEAs preparation**

*leader : CNR-ITAE*

> **WP 5 :**        **Tests in single cell (chemical,  
physical, electrochemical tests)**

*leader : CRF*

> **WP 6 :**        **Design and realization of a  
1.25kW module and a 5kW stack**

*leader : THEC*

> **WP 7 :**        **Module and stack managing  
and testing**

*leader : CRF*

## ***DREaMCAR* : Planning**

- > **Start-up** **T0 = 01/02/2001**
- > **Kick-off meeting** **16/03/2001**
- > **1st Technical Review** **15/06/2001**
- > **1st Progress Review** **07/09/2001**
- > **1st Steering Committee** **08/02/2001**
- (...)**
- > **End of the Project** **31/07/2004**

# ***Phase 1 objectives : from T0 to 24<sup>th</sup> month***

- > Developments of membranes,**
- > Development of catalyst and electrode,**
- > Development of MEA,**
- > Water and methanol management systems,**
- > Selection of both membrane and catalyst for the 1.25kW module,**
- > Design and manufacture of the 1.25kW module,**
- > Test of the 1.25kW module**

## ***Phase 2 objectives : from 24<sup>th</sup> month to 42<sup>nd</sup> month***

- > Adaptation of the 1.25kW module design to the new membranes and electrodes,**
- > Evolution of the 1.25kW module design to the 5kW stack design,**
- > Manufacturing of the 5kW stack,**
- > Preparation of the necessary amounts of items for the final stack manufacturing,**
- > Tests of the 5kW stack**

## ***DREaMCAR* : openings**

**At the end of phases 1 & 2, achievement of the project overall target :**

***Availability of a 5kW DMFC stack exhibiting :***

- > *a set of innovative membranes***
- > *new carbon supported Pt-alloy catalysts***