Well-to-Wheels analysis of future fuels and associated automotive powertrains in the European context

A joint initiative of **EUCAR/JRC/CONCAWE**

Preliminary Results
September 2003

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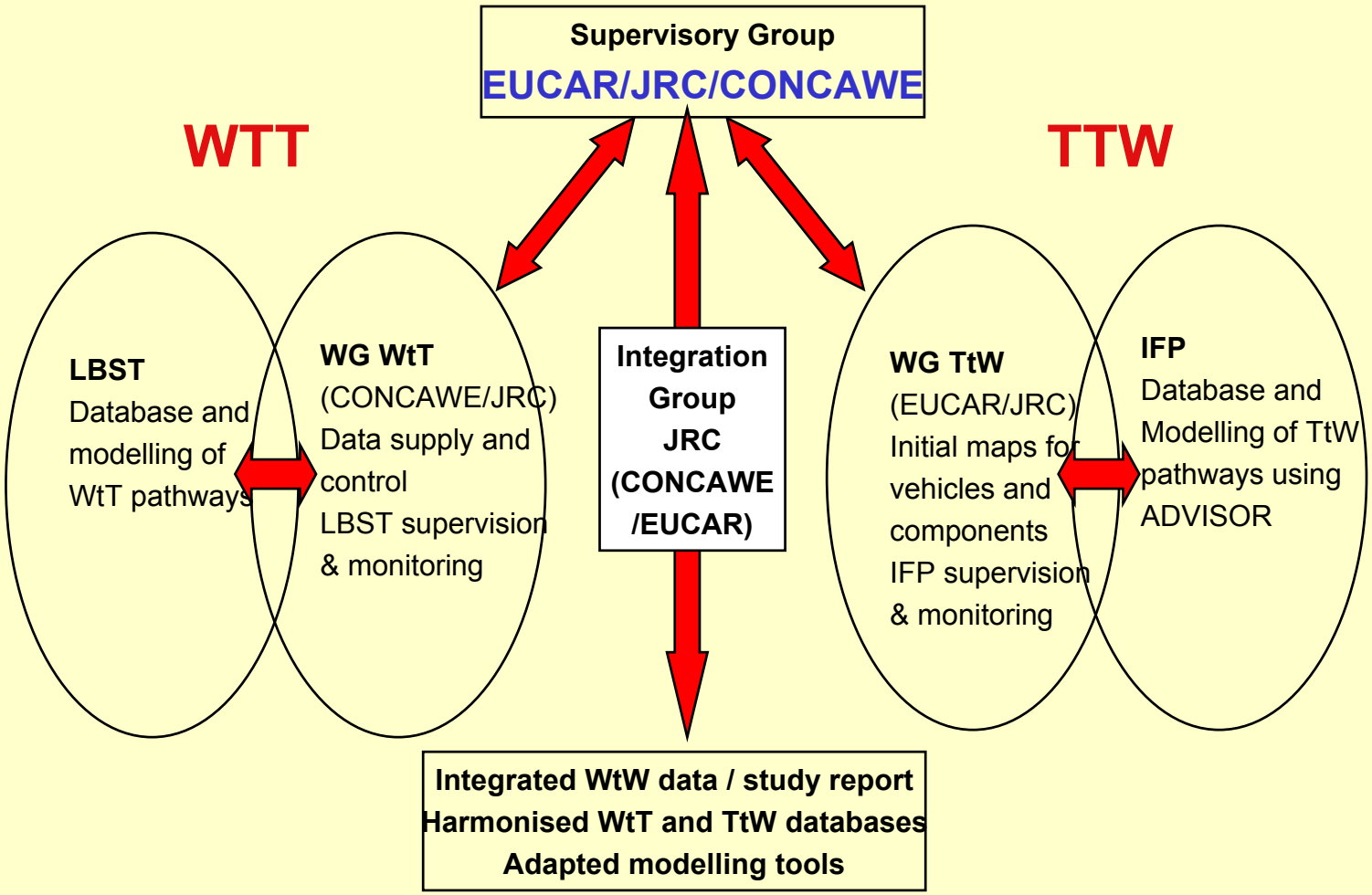
- Objectives
  - Establish, in a transparent and objective manner, a consensual Well-to-Wheels (WtW) energy and GHG emissions assessment of a wide range of the near and longer term automotive powertrains and associated fuels relevant to Europe.
  - Estimate the capital and operating costs associated to the plants, systems and vehicles required for each pathway.
  - Have the outcome accepted as a reference by the European Commission as a common discussion basis.

Structure of WTW Study



What the Study Will Contribute

- Evaluation of future options needs balanced consideration of:

- 1. WTW Energy and GHG balances
  - Pathways expanded to include comparisons eg non-road applications
  - Focus on marginal approach
  - TTW: Transparent approach using Advisor model
  - WTT: Build on strong GM:LBST database, refine data
  - Biofuels: More structured approach with expertise of JRC

- 2. Costs
  - Estimates of 'industrial' costs - investment + operating cost

- 3. Availability
  - Important mainly for biomass, renewables
  - Reconcile conflicting estimates

Boundaries of the European WTW Study

- Considers scenarios for 2010+ time frame
- European average approach
  - A virtual passenger car, based on a VW Golf
- Marginal calculation
  - eg additional natural gas needed in 2010+ will come from imports
  - eg impact of reduced diesel/gasoline production modelled

Programme Status

- 1. Energy and GHG balances
  - Preliminary figures for CNG & H_2 presented to Contact Group
- 2. Costs
  - Work in progress
- 3. Availability
  - Work in progress
- Overall timescale
  - Database to be completed for November
    - Presentation at EUCAR and CONCAWE conferences
  - Report by end 2003

- DATA SO FAR ARE PRELIMINARY