



SAE
SAE
INTERNATIONAL®



Fuel Cell Initiative

One standard...

one measure...

applied worldwide

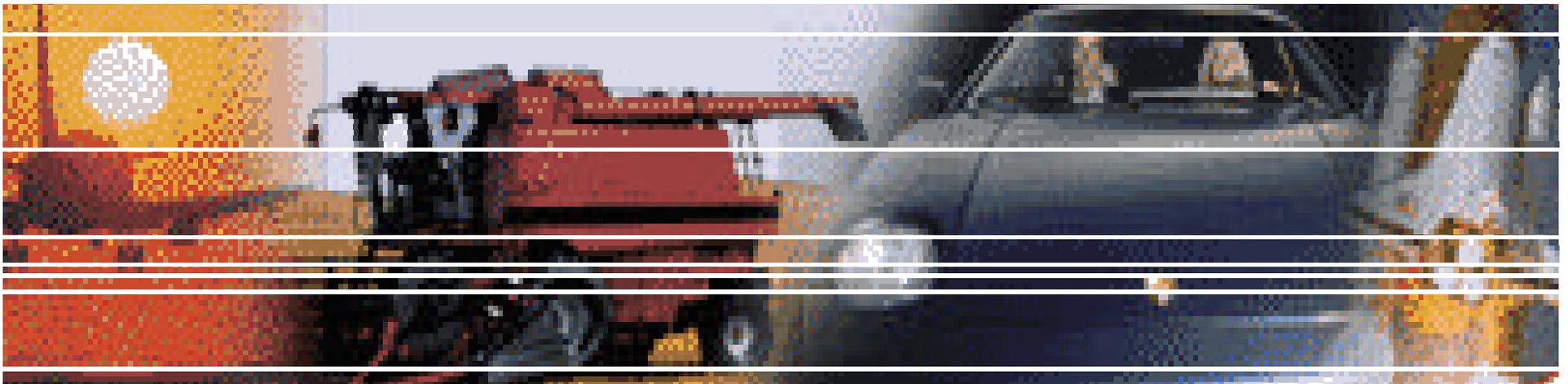
SAE was born in 1905...



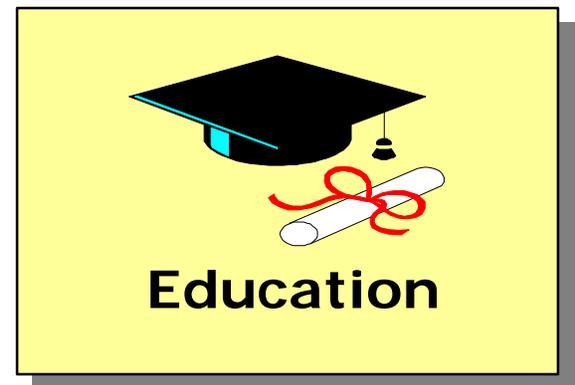
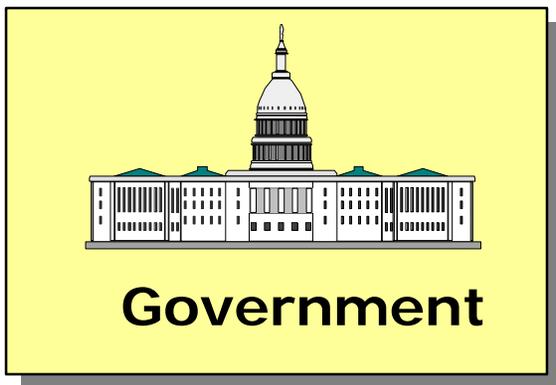
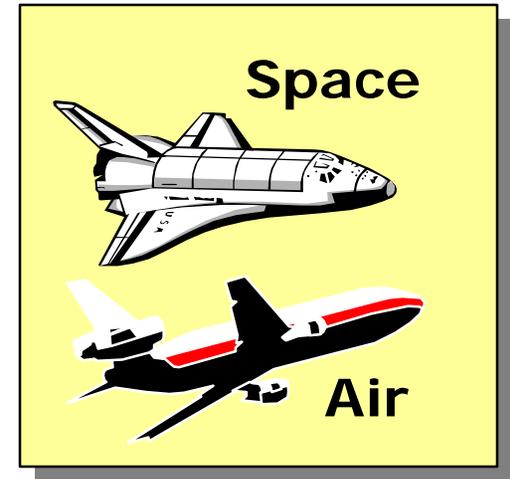
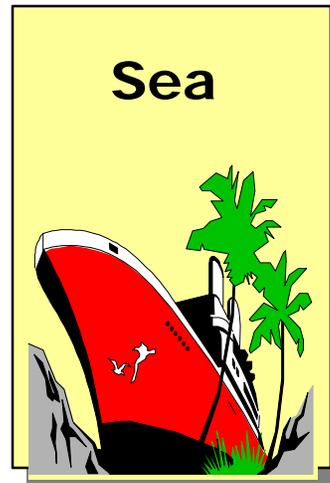
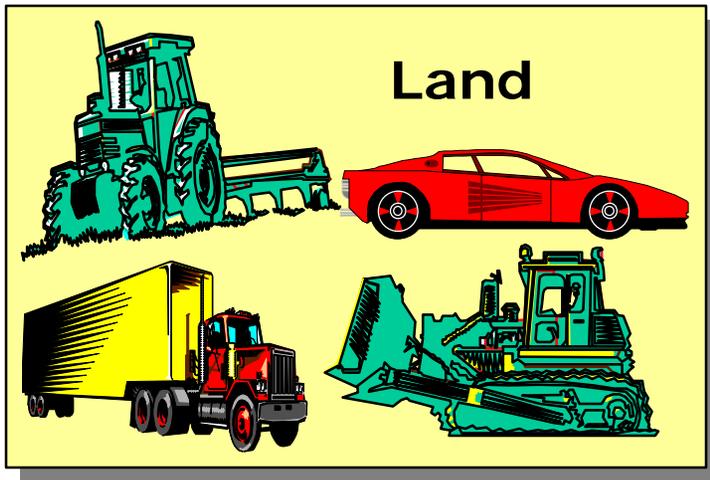
**and we have
changed with
the times!**

... and we're still here!

- ⌘ **Over 83,000 individual members**
- ⌘ **Over 90 countries**
- ⌘ **Land, sea, air and space practitioners**
- ⌘ **34 non-North American chapters**



Mobility Community



SAE Vision for Standards Development & Research Program

- Provide world-class standards-related products and services to the global mobility industry
- Supports global regulatory needs removes technical barriers to trade
- Are responsive to established environmental, health, and safety standards

- ✍ SAE currently develops more than 600 standards per year in response to customer and market needs
- ✍ SAE also provides the forum for pressing mobility industry concerns to be addressed

Fuel Cell Standards Committee

Scope

Establish standards and test procedures for fuel cell powered vehicles

Mission

The standards will cover the safety, performance, reliability and recyclability of fuel cell systems in vehicles with emphasis on efficiency and environmental impact. The standards will also establish test procedures for uniformity in test results for the vehicle/systems/components performances, and define interface requirements of the systems to the vehicle."

SAE Fuel Cell Working Groups

- Emissions & Fuel Consumption
- Interface
- Performance
- Recyclability
- Safety
- Terminology

Emissions WG

- Establish standards and test procedures for measuring emissions and fuel consumption for fuel cell powered vehicles.
- Provide methods for measuring exhaust and evaporative emissions from the total fuel cell vehicle, plus the fuel consumption in measurement for the fuel cell vehicle.

SAE J2572, Recommended Practice for Measuring the Exhaust Emissions, Energy Consumption and Range of Fuel Cell Powered Electric Vehicles Using Compressed Gaseous Hydrogen

Interface WG

- Develop standards to coordinate between fuel suppliers and vehicle manufacturers to ensure safe, efficient and customer friendly delivery of fuel to fuel cell powered vehicles.

J2600, Compressed Hydrogen Vehicle Fueling Connection Devices

J2601, Compressed Hydrogen Vehicle Fueling Communication Devices

Performance WG

- Develop procedures for testing the Proton Exchange Membrane (PEM) fuel cell system and its major subsystems for automotive applications.

J2615, Performance Test Procedures of Fuel Cell Systems for Automotive Applications

J2616, Performance Test Procedures for the Fuel Processor Subsystem of Automotive Fuel Cell System

J2617, Performance Test Procedures of PEM Fuel Cell Stack Subsystem for Automotive Applications

Recyclability WG

- Develop guidance document that incorporates and summarizes with existing recyclability issues associated fuel cells in End Life Vehicles (ELVs). The recyclability guidelines will cover PEMFC stack and ancillary components only.

J2594, Fuel Cell Recyclability Guidelines

Safety WG

- Define essential design and construction, operation, emergency response, and maintenance requirements for the safe use of fuel cell vehicles by the general public.

SAE J2578, General Fuel Cell Vehicle Safety

SAE J2579, Fuel Systems for Fuel Cell Vehicles

Terminology WG

- Define terminology for fuel cell powered vehicles.

J2574, SAE Information Report: Fuel Cell Terminology

Companies involved with SAE standards development:

*These companies include OEMs, Suppliers, Energy Suppliers & Providers, Fuel Cell Manufacturers, and Collaborative Agencies.

3M

Air Products & Chemicals Inc

American Methanol Institute

American Petroleum Institute

Argonne National Lab

Army TACOM

Automotive Testing Laboratories

Ballard

Branson Ultrasonics

California Fuel Cell Partnership

California Air Resources Board

Canadian Hydrogen Association

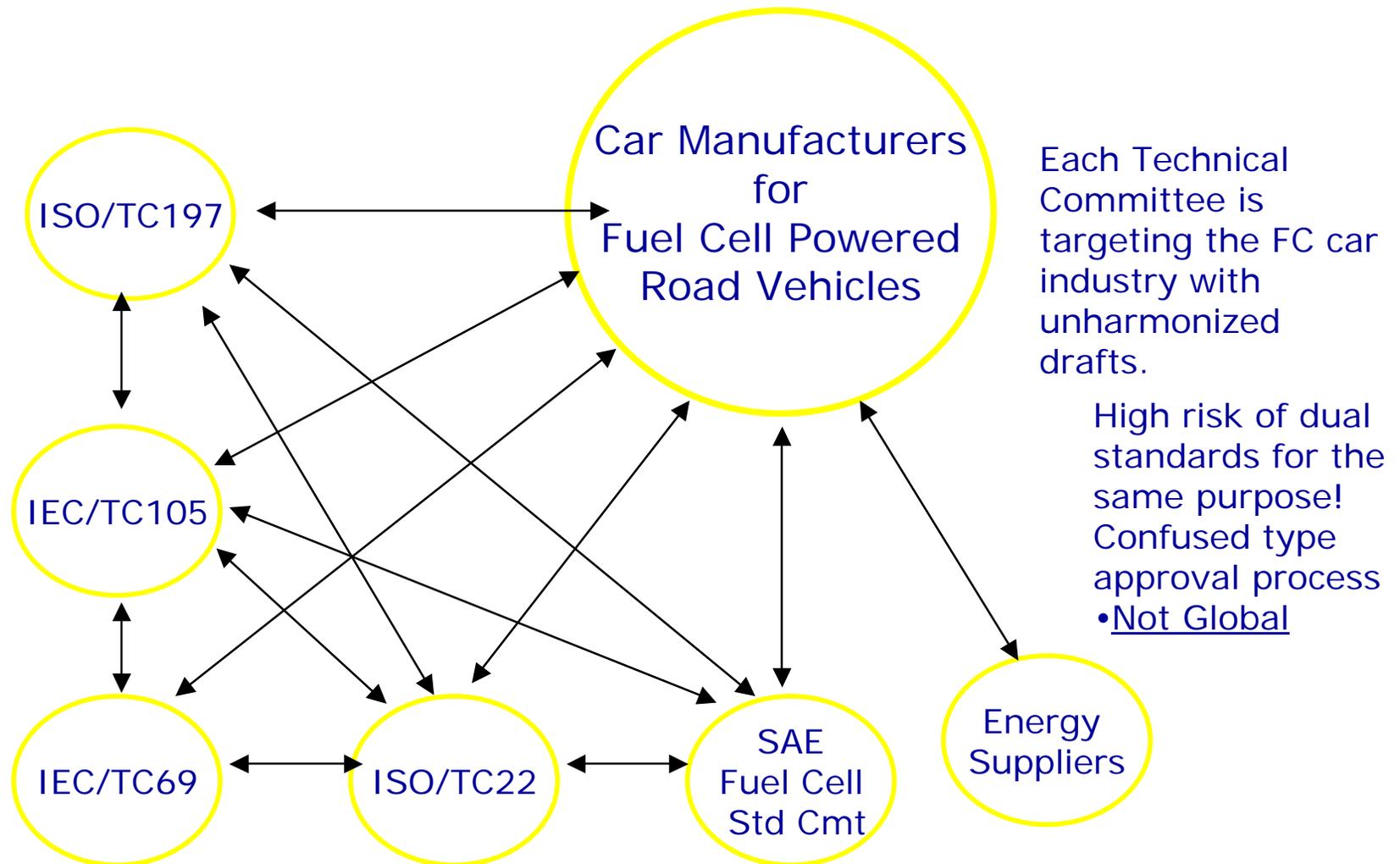
CATARC (China Automotive Technology & Research Center)

Chevron Texaco
Conoco
DaimlerChrysler
Dana
Dana
Delphi
Donaldson Co
Dow Corning
Dupont
EIHP2
Energy Conversion Devices Inc
EPA
Ford Motor Co
Freudenberg-Nok
Gas Technology Institute
General Motors Co
Greenlight Power Technologies
H2 Gen Innovations
Honda Motor Co
ICC
IEC TC105
ISO TC197
ISO TC22/SC21
JEVA

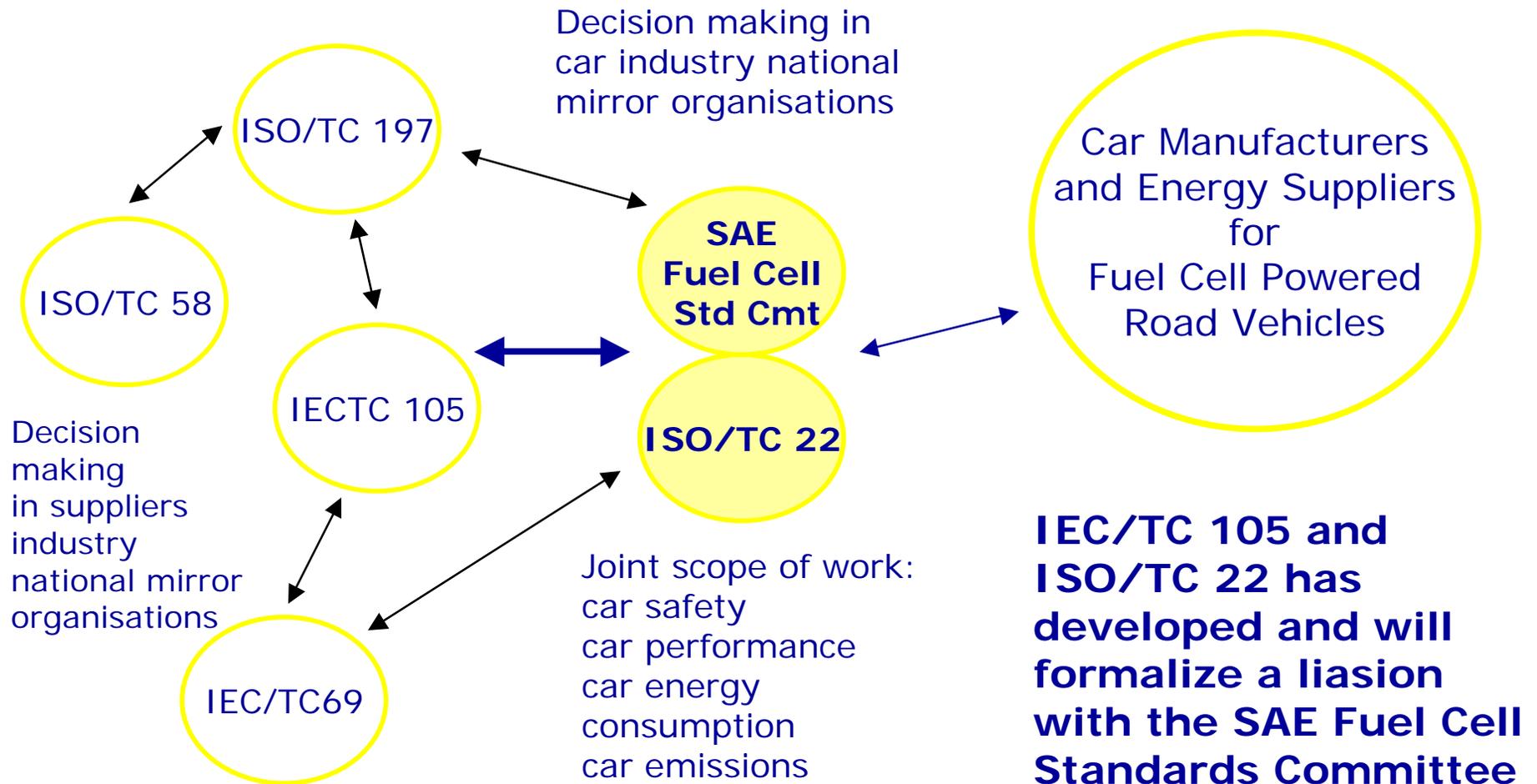
Johnson Controls
JSAE
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Methanol Institute
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MercedesBenz
Millennium Cell
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NASA
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OMG Corp
OPW Fueling Components
Plug Power
PNL
Poco Graphite Inc
Porvair Fuel Cell Technology
PSA Peugeot Citroen
Red Path Energy Inc

Renault
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Ricardo
Ricardo Inc
Saint Gobain Performance Plastics
Southwest Research Institute
Staubli Corporation
Stuart Energy Systems
Suzuki
TI Automotive
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Underwrites Lab
Unifrax
University of California
University of Tokyo
US Air Force
US DOE
US DOT
US Fuel Cell Council
UTC Fuel Cells
Virginia Tech
Visteon
WL Gore

Not Recommended Landscape for Making Standards for Fuel Cell Car Industry



Recommended Landscape for Developing Fuel Cell Vehicle Standards



The ultimate goal --

One standard,

One measure,

Applied worldwide

