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**STANDARDS HARMONISATION AT THE
INTERNATIONAL LEVEL:
PAVING THE PATHWAY for
COMMERCIALISATION**

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DEFINITIONS

- **STANDARDS**
 - Performance or prescriptive
 - Not ‘legal’ (i.e. not binding) but are intended to be *defacto* models for codes
- **CODES (also know as *regulations*)**
 - *Dejure*/legal, with enforcement implications
 - Can adopt standards by reference or amendment

REALITY & VISIONS

NGVs & H2Vs

WORLDWIDE NGV MARKETS ARE GROWING

- ~3 million NGVs
- Argentina leads the world
 - 1.1 million
 - 30,000 conversions per month
- N.America = 150,000
- Asia-Pacific = 700,000



China



Korea



India

WORLDWIDE NGV MARKETS ARE GROWING

- **Europe 514,000 NGVs: 1550 fuel stations**
 - Italy = 400,000+ & 400+ fuelling stations
 - Germany, Italy, France have public/private agreements and strategies
- **European Commission Transport Policy: target NGVs to replace 10% of transport sector petrol/diesel by 2020**



France



Italy



Germany



LNG Ferry, Norway

EUROPEAN ALTERNATIVE FUELS POLICY

**% Fuel Replacement, Transport Sector, 15 EU
Countries by 2020**
[] = Optimistic

Year	Biofuel	CH4	H2	Total %
2005	2			2
2010	6	2		8
2015	[7]	5	2	14
2020	[8]	10	5	[23]

ALTERNATIVE FUELS CONTACT GROUP REPORT

“A main driving force for the large-scale introduction of natural gas as a motor fuel is concern for the security of supply for the transport sector currently solely dependent upon oil products. Natural gas is the only alternative fuel with the potential for significant market share well above 5% by 2020 which could potentially compete with conventional fuels in terms of economics of supply in a mature market scenario.”

“HYDROGEN IS A POLITICAL PRIORITY”

- Production from renewable sources foreseen...in the future
- Significant government funding
 - U.S. ~\$1.7 billion FY 04–08
 - Japan ~\$250 mil FY 03-07
 - Europe ~€900 mil... ‘into the future’
- H₂ & fuel cells have *sex appeal* (like electric cars in the 1980s)

THERE ARE FUNDAMENTAL LINKS BETWEEN NGVs & H2Vs

- Natural gas (CH₄) is the principle source of hydrogen for the foreseeable future
- CNG fuelling stations likely will be the pathway to the H₂ fuel infrastructure in the future
- *Many* equipment manufacturers are the same: vehicle systems & fuelling
 - Compression: CNG & C-H₂
 - Liquefaction: LNG & L-H₂
 - (Biogas....Renewable source H₂)

THERE ARE FUNDAMENTAL LINKS BETWEEN NGVs & H2Vs

The market introduction & commercialisation of both fuels and the vehicle technologies frequently are hindered by the complexity and pace of the standards and codes process...(but the goals are important & necessary)

STANDARDS & CODES ARE AT THE HEART OF VEHICLE (& TECHNOLOGY) COMMERCIALISATION

- **Facilitates development of equipment
(same stuff for different [all?] markets)**
- **Facilitates country certification**
 - **Vehicle homologation**
 - **Equipment certification/patent protection(?)**
- **Speeds market entry**
- **Costs to ultimate consumer is less**
- **Promotes uniformity... & safety**

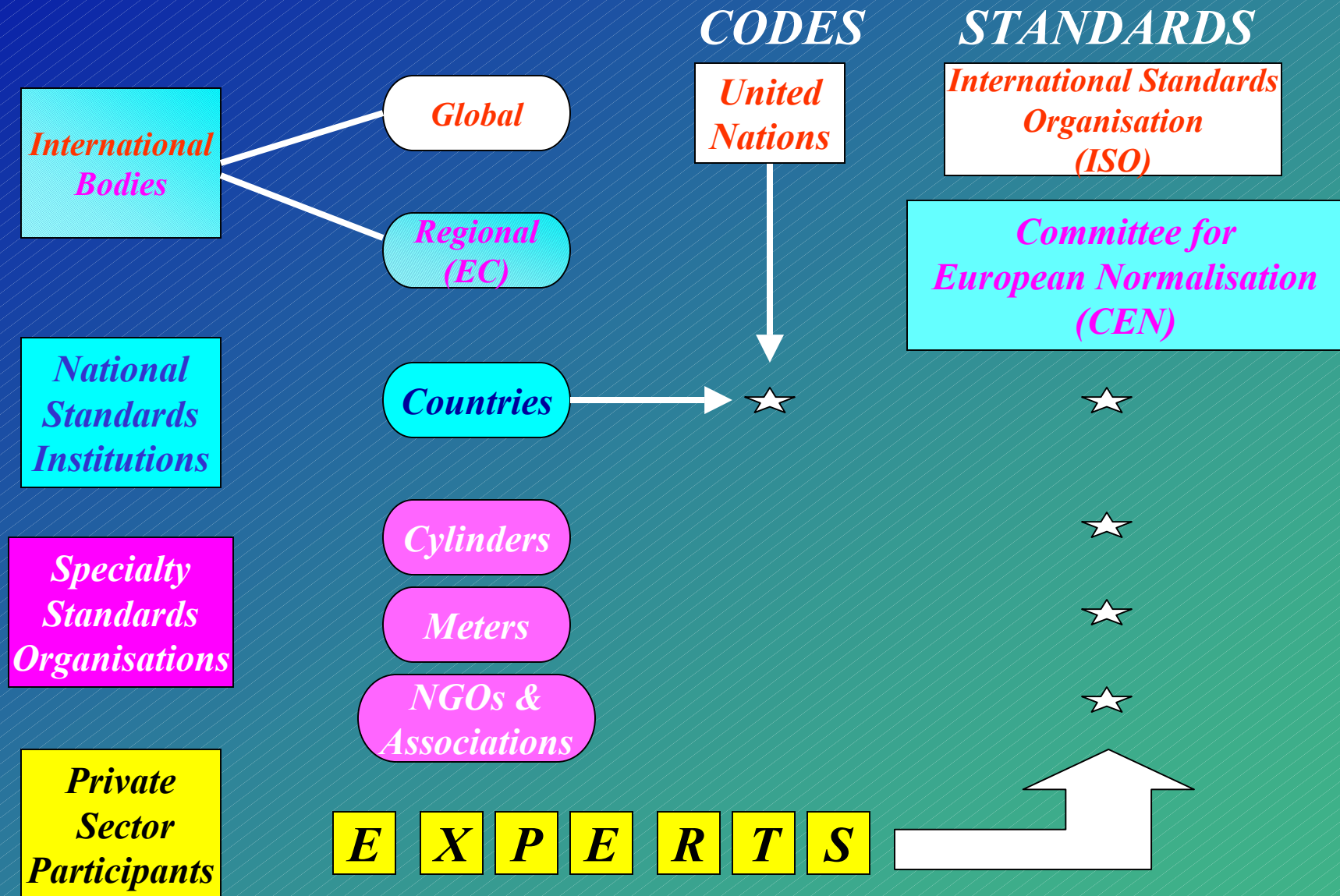
THE STANDARDS PROCESS: CONSENSUS TAKES TIME & COSTS MONEY

- **Int'l standards organisations meet all over the world**
- **Participants can't always come, especially when their companies are not (or can't be) financially committed**
- **Progress can be slowed due to competitive commercial forces**

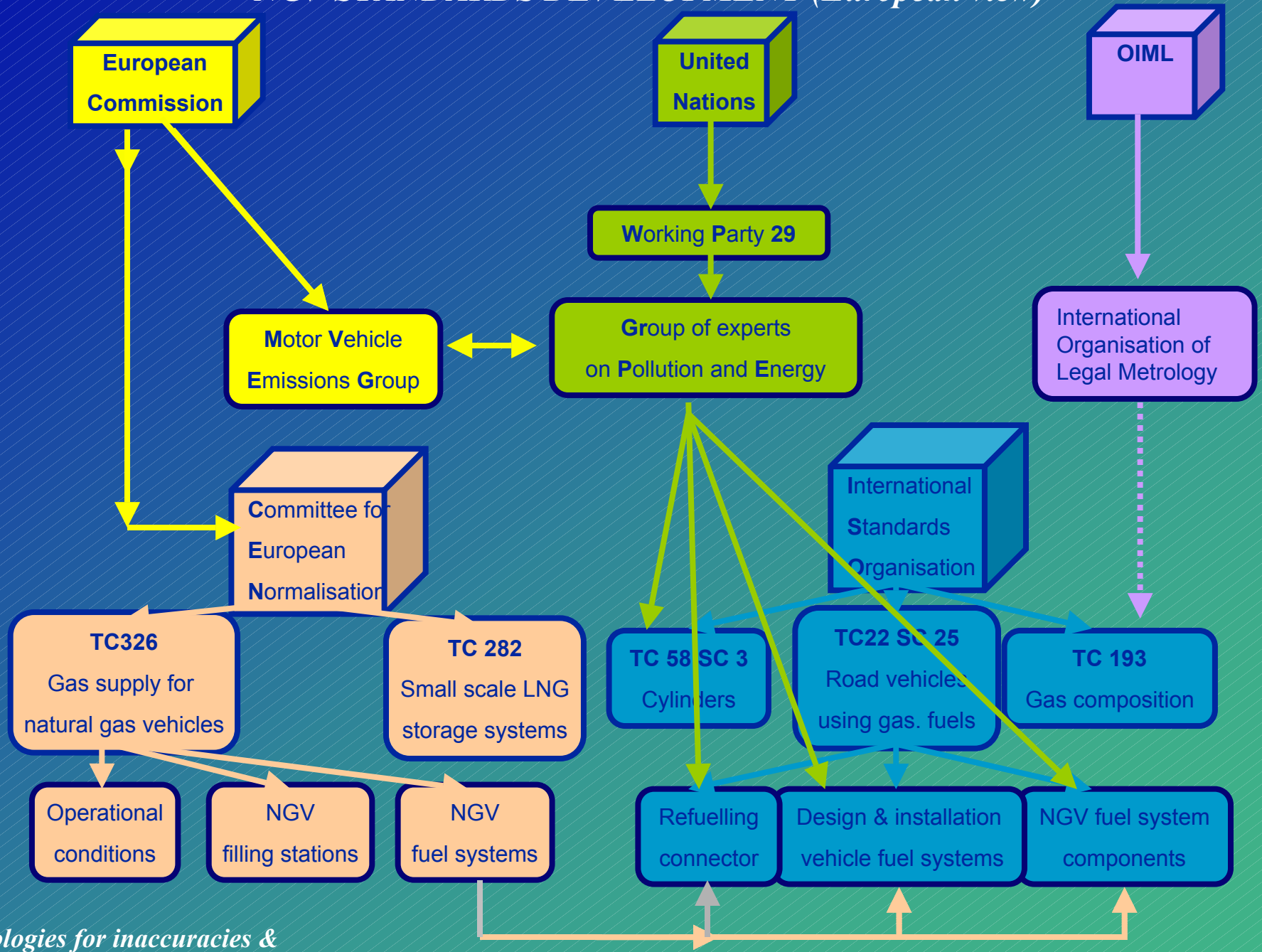
THE STANDARDS PROCESS CAN BE HIGHLY POLITICAL

- Competitiveness between standards institutions and territoriality can cause overlap & conflicts (even though they try not to)
- National bodies, in the international setting, often act to *protect the internal market(s)*

LEVELS OF CODES & STANDARDS (The Patchwork Quilt)



NGV STANDARDS DEVELOPMENT (European view)



Apologies for inaccuracies & omissions

WORLD-WIDE STANDARDS HARMONISATION: THE OBJECTIVES

- **Produce new and additional standards (NGV & H2) as required (but avoid international overlap/duplication)**
- **Harmonise existing standards**
- **Expedite H2 standard development**
- **Facilitate codification of standards (codes & codes of practices)**

WORLD-WIDE STANDARDS HARMONISATION OVERVIEW

- Bring representatives of all groups together
- Identify the *structure* of the standards institutions ...internationally & nationally
- Identify the *substance*: what exists and what is still needed
- Attempt to assign *institutional responsibility* (tough job)
- Identify *the experts* ('warm bodies') to be involved

DIFFUSION of HARMONISATION LEADERSHIP 2004(?)

- **GRPE Roadmap for hydrogen and H2Vs (2003 & beyond)...but U.S. & Japan also moving forward**
- **New CEN BT 149 on Harmonisation of Alternative (gaseous/liquid) Fuels**
- **ISO 15869 Joint H2 working group**
- **But...who is harmonising the harmonisers?**

THE *STRATEGIC* **HARMONISATION PROCESS** *(Action Plan)*

- *Worldwide Conference on Harmonisation of Gaseous Fuels Standards*
 - Develop strategy for harmonisation
 - Develop guidelines for action (timing & how to meet/exchange information)
 - * Face-to-face (once annually)
 - * Virtual/Electronic meetings
 - * E-mail

THE *STRATEGIC* **HARMONISATION *PROCESS*** ***(Action Plan)***

- **Create small task forces representing each major standards working group**
 - **Compare standards**
 - **Define issues/problems raised by comparison**
 - **Develop strategy to resolve issues**
 - **Recommend actions by each standards group**

THE *NEW* STANDARDS DEVELOPMENT *PROCESS*

(Action Plan)

- New Standards Coordinating Committee (same as Harmonisation Group?)
 - Assess need for new standards
 - Agree which group & who does the work
 - Ensure liaison *back* to various working groups

WHAT CAN BE EXPECTED, *REASONABLY*

(Pick the 'easier' things 1st)

- Standard fuel connectors: facilitate international travel (& equipment sales)
- Cylinder performance, testing, & lifetime
 -then...*
 - Vehicle Systems
 - Fuelling Stations

WHO TAKES RESPONSIBILITY FOR LEADERSHIP?

- United Nations ?
- Support required from regional/national governments & standards institutions
- Funding for private industry participation required
- International/Regional Associations & NGOs

**WE CAN BE HOPEFUL
ABOUT WORLDWIDE
HARMONISATION**

**CAN WE BE OPTIMISTIC?
(Good Question!)**

A LOT OF WORK TO BE DONE!!



GASEOUS FUEL STANDARDS: PAVING THE PATHWAY for COMMERCIALISATION

