

# THIS IS EUROMOT



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**EUROMOT**

# Engine in Society

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**EUROMOT** is the

## **European Association of Internal Combustion Engine Manufacturers.**

We are a **reference point** for effective communication among the engine and equipment industries and regulators in Europe and worldwide.

Within the society arena we are **focusing on**:

- the **EU institutions** in Brussels,
- the United Nations Economic Commission - **UNECE** in Geneva,
- the International Maritime Organization - **IMO** in London.
- the Central Commission for Navigation on the Rhine - **CCNR** in Strasbourg.
- and selected national authorities in EU27, Eastern Europe, North and South America, Asia and Oceania.

# Membership

# Stage V for EU inland waterways



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# Stage V Emission Limit Values

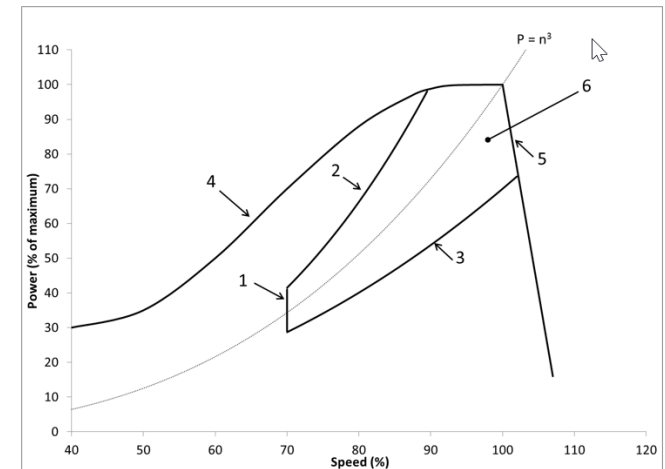
## Inland Waterways (Propulsion and auxiliary)

Liters per Cylinder	NOx / THC / CO / PM (g/kWh) / [PM count/kWh]						(NOx+THC) / CO / PM (g/kWh) / [PM count/kWh]						A	
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025		
≤0.9 (>37kW)	(7.5) / 5.0 / 0.40	>>												
0.9 - 1.2	(7.2) / 5.0 / 0.30	>>			19-75kW	(4.7) / 5.0 / 0.3							IWP-v-1,IWP-c-1 IWA-v-1,IWA-c-1	6
1.3 - 2.5	(7.2) / 5.0 / 0.20	>>			75-130kW	(5.4) / 5.0 / 0.14							IWP-v-2,IWP-c-2 IWA-v-2,IWA-c-2	6
2.6 - 5.0	(7.2) / 5.0 / 0.20	>>			130-300kW	2.1 / 1.00 / 3.5 / 0.10							IWP-v-3,IWP-c-3 IWA-v-3,IWA-c-3	6
5.0 - 15	(7.8) / 5.0 / 0.27	>>			>300kW								IWP-v-4,IWP-c-4 IWA-v-1,IWA-c-1	6
15 - 20, P ≤ 3300 kW	(8.7) / 5.0 / 0.50	>>												
15 - 20, P > 3300 kW	(9.8) / 5.0 / 0.50	>>												
20 ≤ 25	(9.8) / 5.0 / 0.50	>>												
Stage IIIA						Stage V								

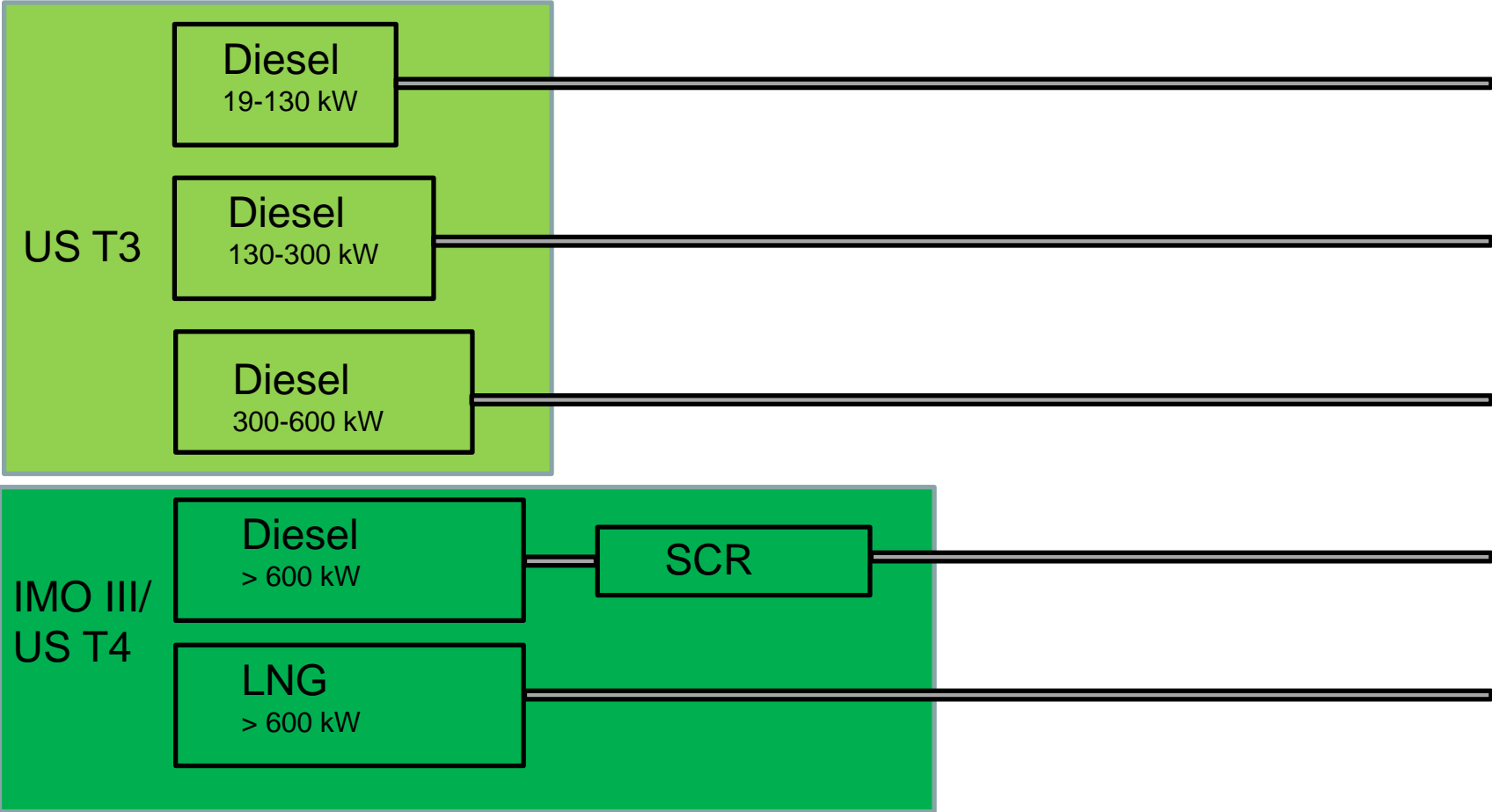
- Auxiliary and propulsions engines regulated together
- NRE (construction equipment) engines may be used <560 kW
- Approximately aligns with US 37-130 kW
- Approximately aligns with IMO III NOx and US HC/CO/PM 130-300 kW
- NOx does not align with US 130 - 600 kW
- SCR/EGR required for diesel > 130 kW
- PM number count included > 300 kW = filter (probably for LNG as well)
- ‘A’ factor (Methane slip limit) not applied anywhere else.

# Stage V additional requirements

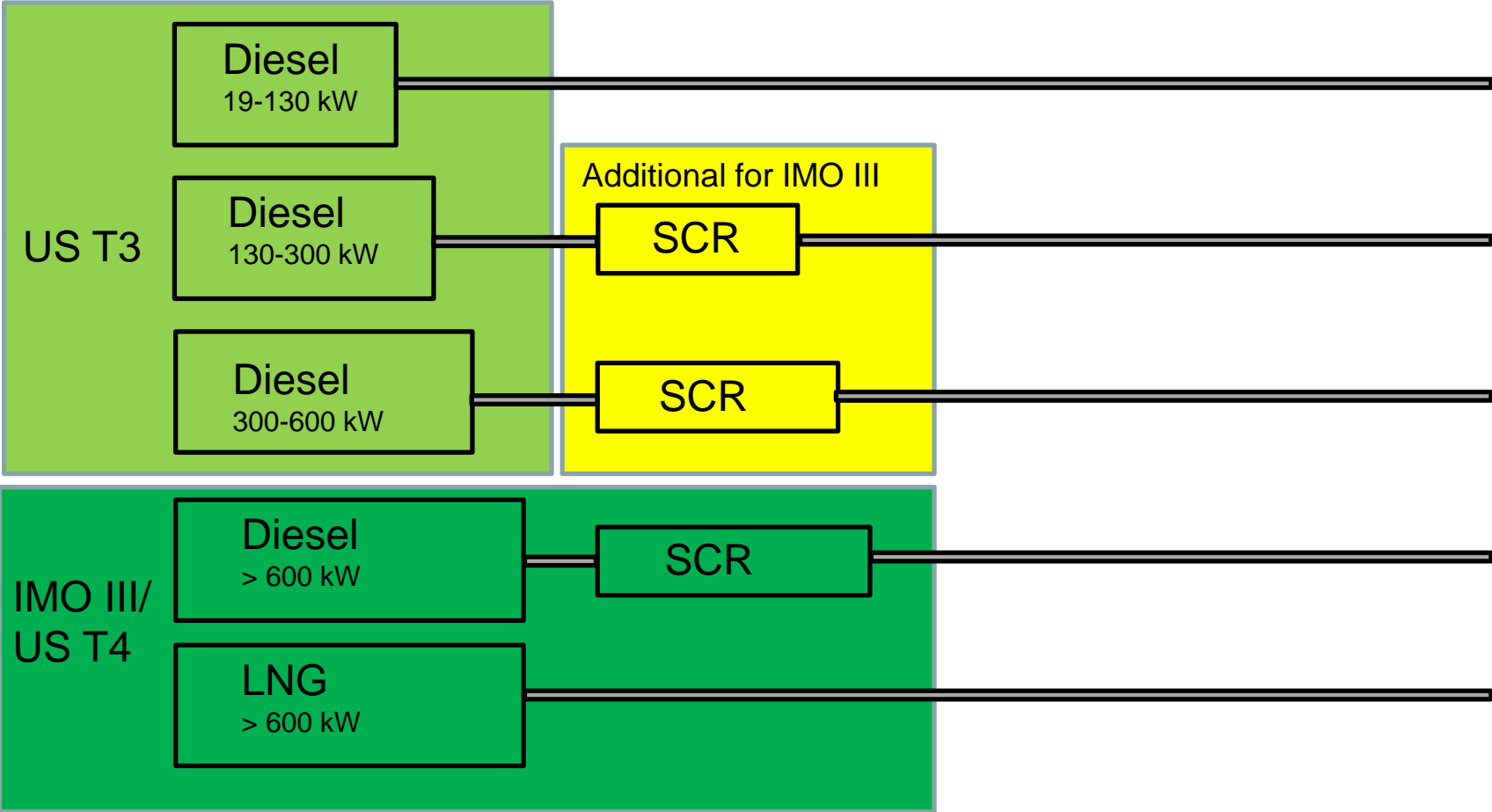
- Administrative changes in-line with stage V mobile machinery
- Testing protocols in-line with stage V mobile machinery
- AECS ambient limitations adapted for IWT
- Control area applied (from 8178-4, aligned with US)
- NOx control (anti-tampering) included
  - No inducements - similar to US
- Particulate control (anti-tampering) included
  - No inducements
- Deterioration factor must be determined and applied
  - Minimum 1923 hour run or justify assigned values
- Replacement engines are not permitted



# Comparison with other regulations

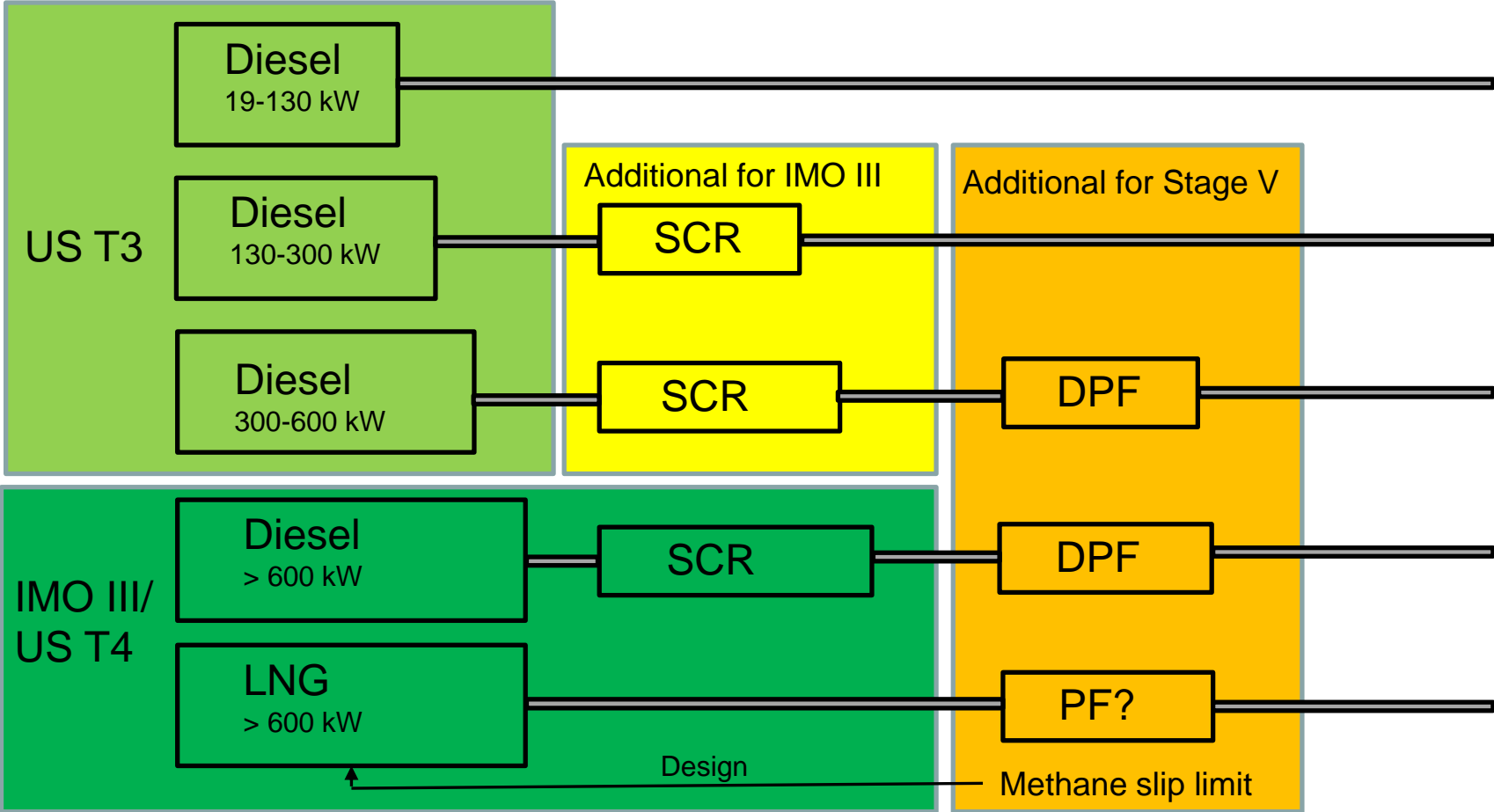


# Comparison with other regulations

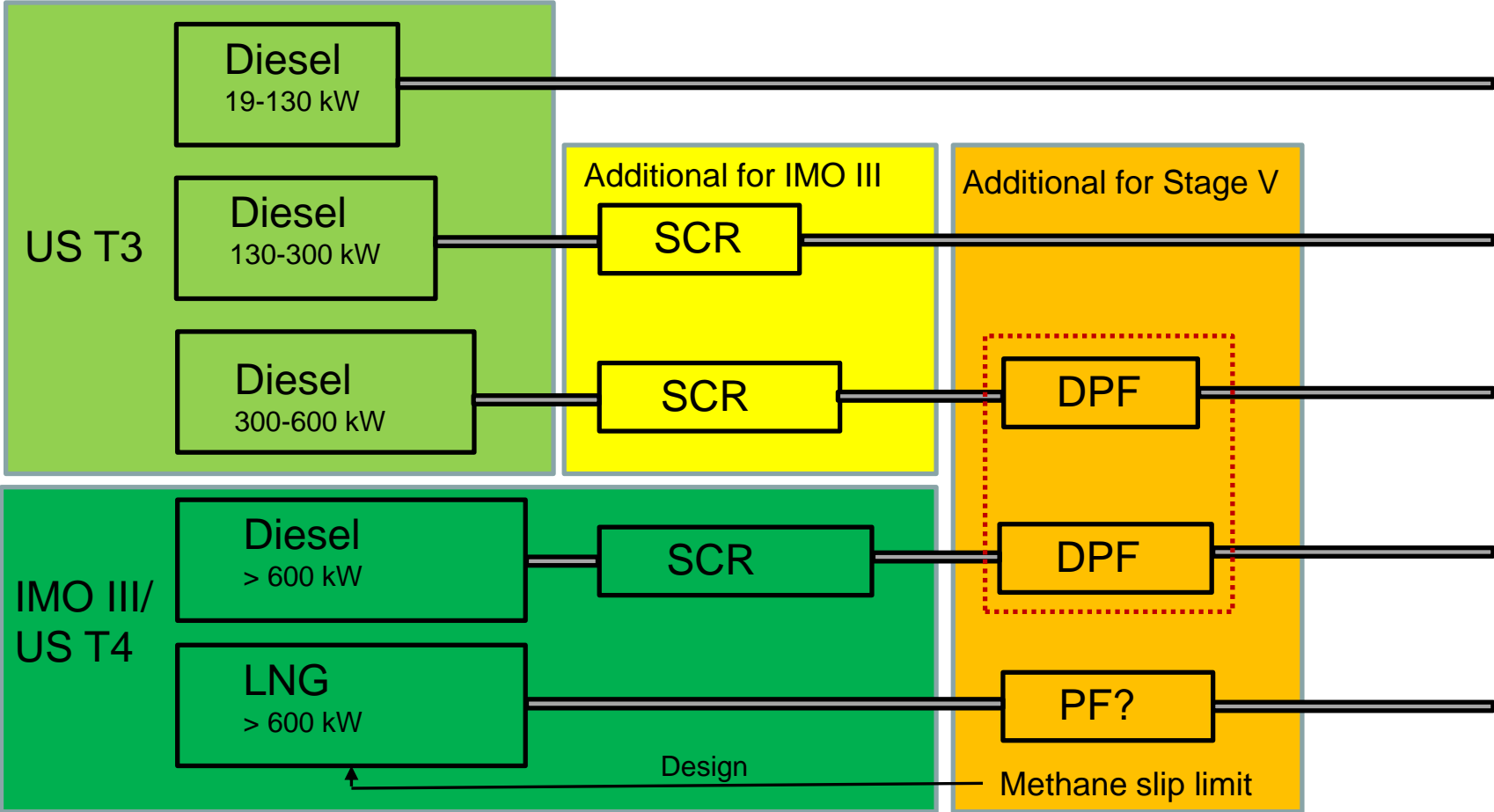




# Comparison with other regulations



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# Product availability and incentives

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- Euromot cannot comment on individual or collective manufacturers future product plans
- EUROMOT position during stage V development was that market size is very small to justify development of bespoke product
- Manufacturers decisions will be driven by cost of development versus volume of expected sales and market price attainable
- Stage V will be undermined if there are incentives that either:
  - Result in increased installation of Stage IIIA/CCNR II engines before Stage V engines become mandatory; or,
  - Encourage retrofit of existing engines in preference to replacement with Stage V engines

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**25** **YEARS**  
1991-2016  
**Promoting  
Engines in Society**

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