

Submitted by the expert from CLEPA

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Agenda item 8(c)

# e-axles + Self-propelled Trailers

CLCCR / OICA / Clepa

Industry Task Force on Amendments to UN Reg 13

State of play

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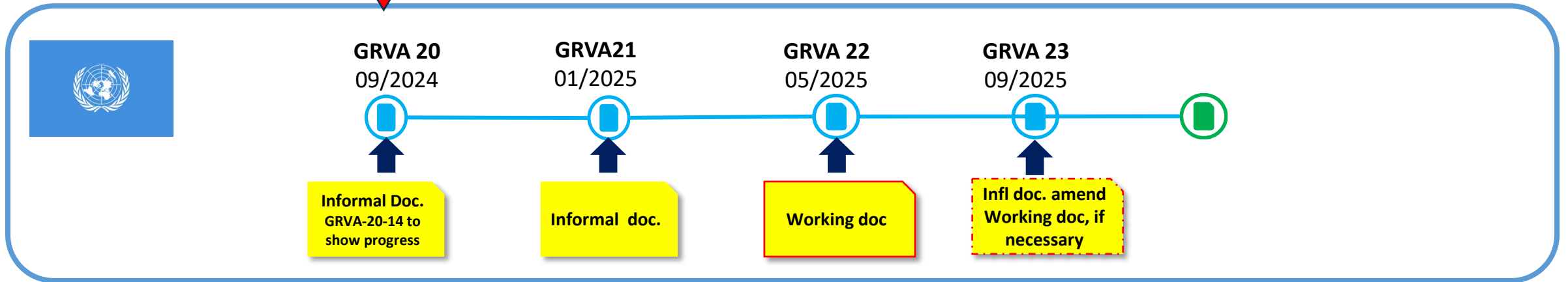
# Motivation and Overview UN Regulatory Activities

- Many vehicle functions are electrified in both light and heavy-duty vehicles and more are to come in near future
- Electric drive and support of sub-systems like compressor, steering system etc are introduced or under development
- In particular propulsion systems with electric drive offer the possibility for energy recuperation during phases of retardation to improve energy efficiency
- An approach of automotive industry to further **improve energy efficiency** is to install axles with electric motors in trailers serving both **energy recuperation and propulsion**
- UN Reg No 100 amended by GRSP to include electrically propelled trailers ✓
- UN Resolution R.E.3 under discussion at GRSG to include propelled trailers
- **UN Reg 13 to be amended to include recuperating and propelling trailer axles**

# Timeline UN Regulatory Activities

Based on document GRVA-2023-03, CLCCR / OICA / Clepa industry task force works with following time line:

**Today**



Technical workshops with Contracting Parties may be done depending on feedback and necessity.

# Amendment to UN Reg 13: General Approach

Since first proposal GRVA 2023-03 a CLCCR / OICA / Clepa task force worked on a joint draft proposal with following approach:

- **Priority lies on a safe operation** of recuperating and propelling trailer axles in particular with regards to dynamic driving situations
- **Motor vehicle systems will keep the upper hand** on control of recuperating and propelling trailer axles
- To allow an **efficient and economic market introduction** of recuperating and propelling trailer axles several steps of performance and capabilities are proposed:

# Amendment to UN Reg 13: Steps of Performance and Capabilities

Increasing performance and capability

## 1. Systems providing recuperation capability, only („dynamo axles“)

- a) Recuperation max 20 kW / trailer with developed brake rate max 0,04 / axle  
No specific approval requirement, but documentation
- b) Recuperation max 20 kW / trailer with developed brake rate higher 0,04 / axle  
Like 1 a) + ABS control on e-axle
- c) Recuperation > 20 kW / trailer with developed brake rate higher 0,04 / axle  
Like 1 b) + data communication acc to ISO 11992

## 2. Systems providing recuperation and propulsion capability („e-trailers“)

- a) Without running data communication truck-trailer: no propulsion, shall work like 1.
- b) With data communication acc to ISO 11992-2:[before 2023]:  
recuperation/propulsion under defined conditions, e.g. no recuperation > 20 kW during traction phase, propulsion during traction phase, only, ...
- c) With data communication acc to ISO 11992-2:[2023 & later]:  
recuperation/propulsion following limits given by motor vehicle, ...

Increasing approval requirements

# Amendment to UN Reg 13: General Requirements

Both recuperating and propelling trailer axles

- Shall not negatively influence ABS
- Shall not negatively influence stability control functions
- Retardation capabilities of recuperation function will not be taken into account during brake performance testing acc to Annex 4

To be done:

- Requirements regarding CAN messages acc to Annex 16 need to be updated following the currently running discussions at ISO
- Focus on heavy trailers O3 and O4 as a first step, but O2 trailers need to be regulated in a second step

Thank you !