

# **Electric, hybrid vehicles & HFCV – principles for their introduction into UN Regulations in view of IWVTA (1958 Agreement)**

## **Current situation:**

Provisions for electric vehicles have been introduced in a number of UN Regulations:

1. In the form of new series of amendments i.e. Un Regulations Nos. 12, 94 and 95. or
2. Specific UN Regulation addressing only to vehicles with electric power train: so far only UN Regulation No. 100
3. Heavy and cumbersome text mixing provisions for any kind of vehicles

# IWVTA is a new concept that could result in complications for new CPs

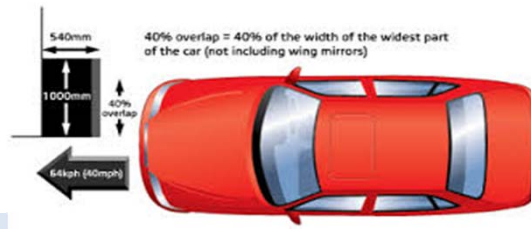
New CPs should have a clear understanding of which series of amendments should apply to TA a specific type of vehicle, ex. Reg. 94 (Frontal collision), possible cases:

- CP that need to start and continue TA only of ICE (01, and eventually its update to obtain recognition of other CPs)
- CP that need to start TA of EV using a previous series (i.e. 01 not admitted because no provisions for EV and REESS)
- The same above for hybrid, HFCV etc.
- Commencement dates of R0 versions should coincide with the dates of new series, which should identify clear steps of new provisions or new vehicles.

# Definitions used to amend UN Regulations

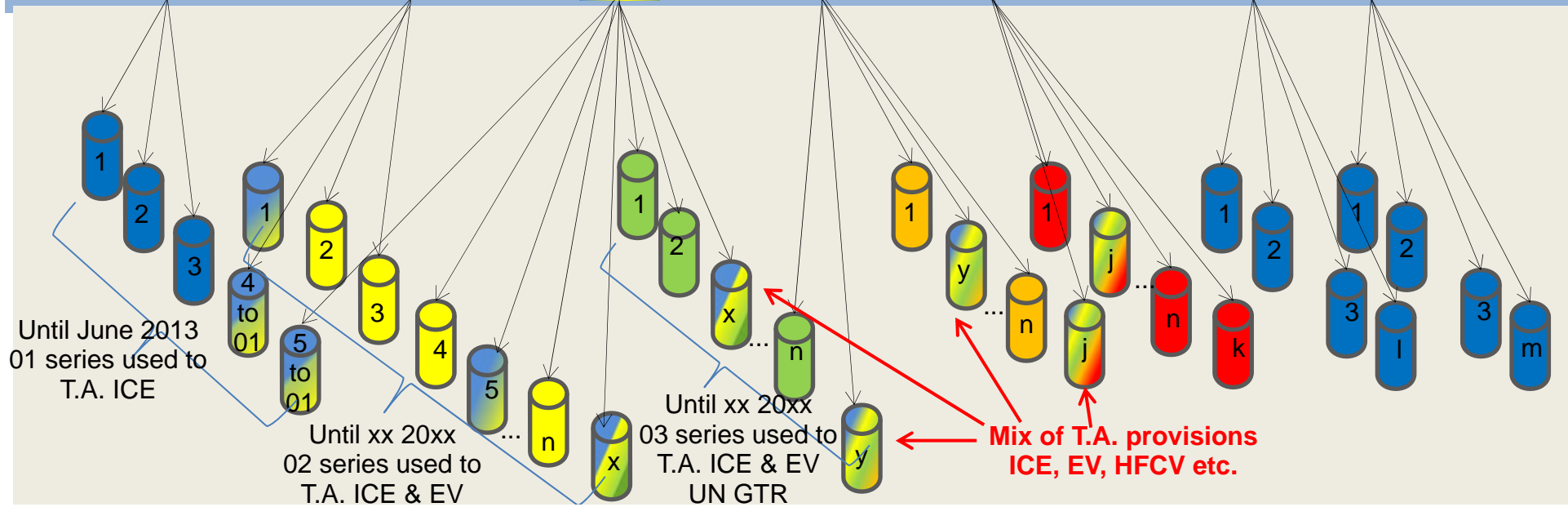
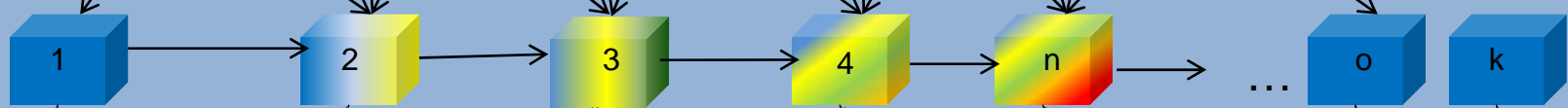
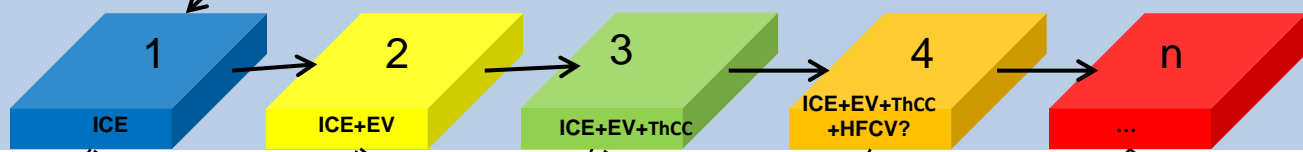
- **Series of amendments:** Series of amendments are developed to change the technical requirements that the vehicle types, systems or components shall fulfil as from a certain date, in order to obtain UN type approval. The new series shall contain at least the following:
  - (a) An update of the series of amendments used in the marking provisions and updated ex. of markings
  - (b) The date as from which Contracting Parties are entitled to issue a UN type approval in accordance with the amended UN Regulation and as from which Contracting Parties may not refuse such type approvals
- **Supplement:** addresses an amendment to a UN Regulation which does not entail a modification in the approval marking and is normally used for:
  - (a) Clarification of test procedures, not imposing new requirements, or
  - (b) Taking into account of new developments which have arisen after the adoption of a UN Regulation (i.e. extension of scope)
- **Revision:** consolidation of the text comprising all previous text(s) of the UN Regulation in force.
- **Corrigendum:** consists of editorial corrections of errors in the issued texts. As from 1969 the corrections are deemed made ab initio, the "date of entry into force".
- **Version:** The term "version of a UN Regulation" indicates that a UN Regulation, following its adoption and establishment, may subsequently be amended following the procedures described in the 1958 Agreement. The unamended UN Regulation as well as the UN Regulation after integration of any subsequent amendment(s) are considered as separate versions of that UN Regulation.

# Practical best case of UN Reg. 94:



- 1, 2 .. n series
- 1, 2 .. n revision
- Suppl 1, 2 .. n
- Parallel suppl to 01 & 02; 02 & 03; 03 & 04 series

Original version of the UN Regulation (ICE)



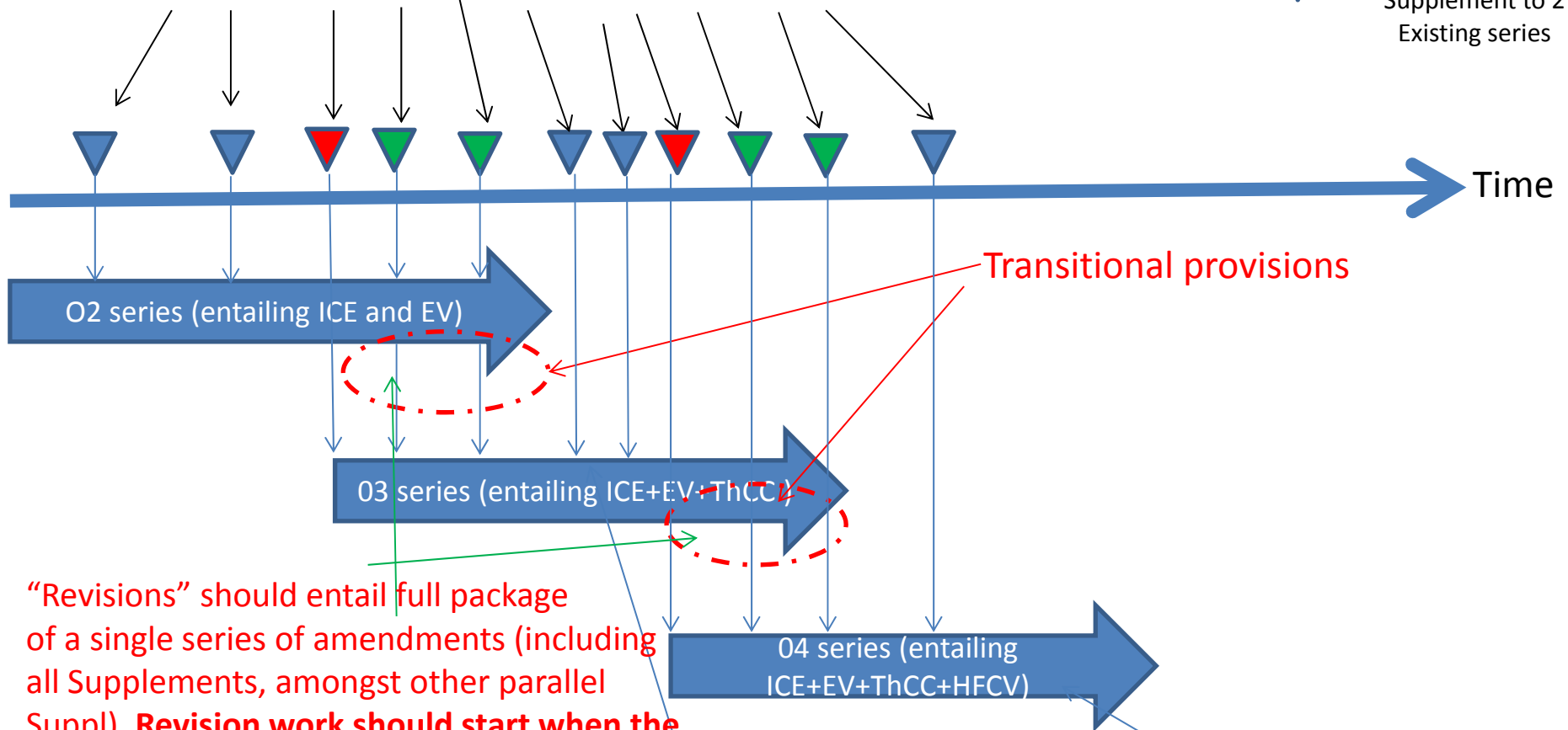
# Practical example case - Hypotesys of amend. to UN Regulation No. 94

Supplement

New series of amendments

Parallel Supplement to 2 Existing series

Proposed amendments to UN Regulation No. 94

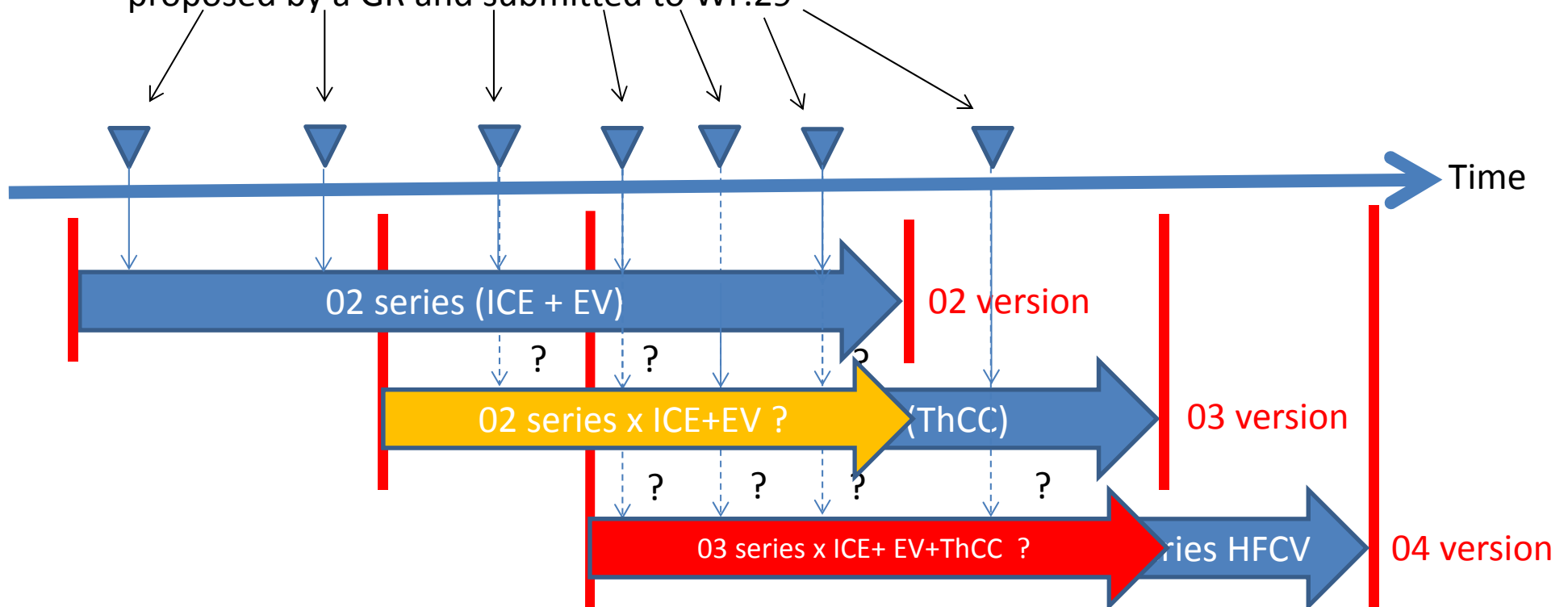


“Revisions” should entail full package of a single series of amendments (including all Supplements, amongst other parallel Suppl). **Revision work should start when the series “expire”.**

**However, the possible O4 series would be based on the latest amendments to the O3 series, i.e.: the content of the O2 series is included in the O3 series. Mix of provisions of ICE, EV, Hybrid and HFC<sup>5</sup>**

# Situation in view of IWVTA

Subsequent amendments to UN Regulation No. 94 proposed by a GR and submitted to WP.29



Difficulties to trigger implementation dates of versions ("frozen") when the same version entails 2 or more different kinds of vehicles needing different EiF

Difficulties for a new Contracting Party to identify which series/version introduces/applies to a specific kind of vehicle .

# Possible solutions 1

Create specific frontal/lateral/impact UN Regulations for each kind of vehicle:

ICE, EV and HFCV

As a first step:

- draft UN Regulations on HFC shall have similar impact provisions of UN Regulations Nos. 94, 95 , 12 etc.
- Split UN Regulations Nos. 94, 95 and 12 for ICE and EV
- Post crash provisions of UN Regulation No. 100 relocated in the specific UN Regulations on EV.

As a second step/or in the meantime, common provisions of all Regulations on impacts could be relocated in R.E.3. or in M.R.1.

(i.e. Dummy calibration, barrier and test specifications etc.)

## **Issues :**

**1) Proliferation of countless Regulations. Who knows what technology would create? (i.e. strong Hybrid, light Hybrid, autonomous vehicles, EV/HFCV autonomous vehicles,, pneumatic vehicles....).**

**2) Difficult to define new type of vehicle, i.e. strong hybrid is EV rather than ICE and conversely light hybrid is more ICE than EV? So far the current situation shows families of categories of vehicles rather than type of vehicles.**

# Possible solutions 2

## STATUS QUO!

### With 3 alternatives

#### Alternative 1:

Develop a specific annex for each technology in the same Regulation

#### Alternative 2:

Develop subcategory in R.E.3:

M1 A = ICE

M1 B = hybrid passenger cars

M1 C = electric passenger cars

M1 D = hydrogen fuel cells passenger cars

...

N1 A = the same as above

In scope of the Regulation would be clarified to which categories it will apply. However, decisions regarding the vehicle categories required on a regional/national basis to meet the requirements of the Regulation shall be dealt with at the regional/national level. A Contracting Party may therefore restrict application of the requirements in its national legislation if it decides that such restriction is appropriate.

#### Alternative 3

1 and 2 combined

**Issues: Difficulties to trigger implementation dates, entailing different kinds of vehicles needing different EiF, with dates of R0. Especially when long TP are needed. It will result that different series of amendments of the same Regulation should be dealt as stand alone Regulations (see UN Regs Nos. 13 and 48).**



# Further issues

## Cross references to other Regulations :

Ex: Regulation No. 94 mentions in para:

«5.1.3. Seating positions...with anchorage points conforming to Regulation No. 14.»

- In the framework of IWVTA, which series of amendments is used to TA a vehicle to Reg.14 then TA to Reg. No. 94?
- If information is available, vehicle TA to UN Regulation No. 94 at its latest version, which TA should entail/allowed (which series) for UN Regulation No. 14, to receive reciprocal recognition of other CPs?