Submitted by the expert from
Poland

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agenda item 4(c))

GRE/2012/21
HOW AND WHY ?

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TWO WAYS TO CONFRONT THE PROBLEM

SCIENTIFIC*
CONFIRMED
REAL
VERIFIABLE
REPEATABLE

IMAGINATION
BELIEF
FEELINGS
EMOTIONS
INTERESTS

”Scientific„ is sometimes understood as something theoretical outside real world. However, here it should be understood as: respecting law of nature „confirmed”, „indisputable”, „real”, „verified”

BASE FOR CHANGE OF LEGAL REQUIREMENTS

?

SCIENTIFIC
CONFIRMED
REAL
VERIFIABLE
REPEATABLE

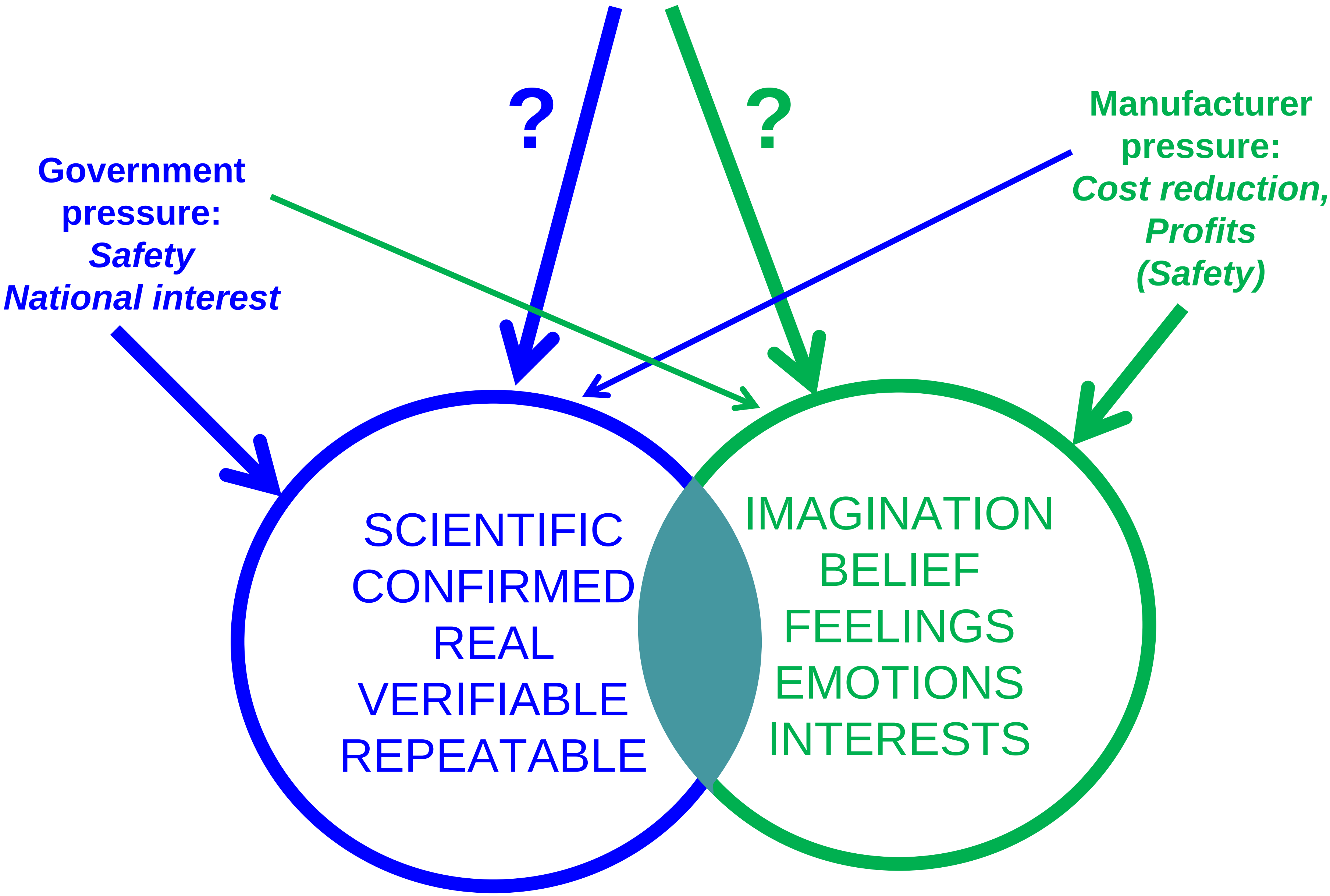
?

IMAGINATION
BELIEF
FEELINGS
EMOTIONS
INTERESTS

BASE FOR REAL HUMAN DECISIONS IN MOST SITUATIONS

RATIONALITY IS IN MINORITY

BASE FOR IMPROVEMENT OF REQUIREMENTS



Present requirements responsible for illumination/glare road safety

Reg. 112, 98,123 etc. → Screen based photometry – points, zones, segments → Fixed headlamp position

Reg. 48 → Aiming / leveling provisions → Mounting height Artificial 2000 lm criterion

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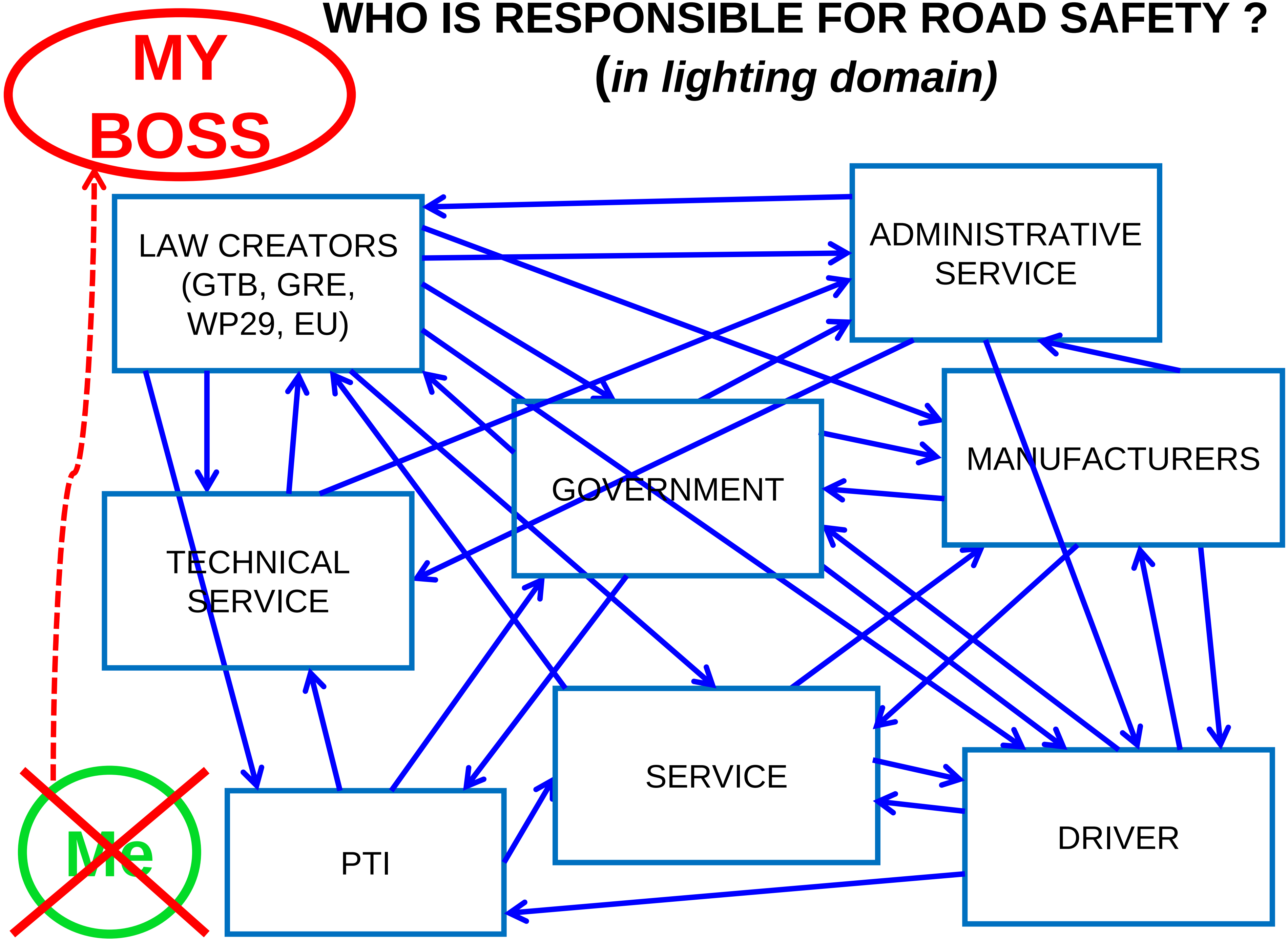
In use conditions - should be separated from GRE discussion

Operation (in use) condition requirements → Simple CUT-OFF visual aiming → Manual levelling, automatic levelling - inside Reg.48 ranges

WHO IS RESPONSIBLE FOR ROAD SAFETY ?
(*in lighting domain)*



PRESENTLY ON ROAD

- TO SHORT VISIBILITY DISTANCE

- COMPLAINTS REGARDING GLARE

- NOT OPTYMISTIC ACCIDENTS STATISTICS DURING NIGHT-TIME

Present Reg.48 requirements do not guarantee enough visibility distance and glare protection

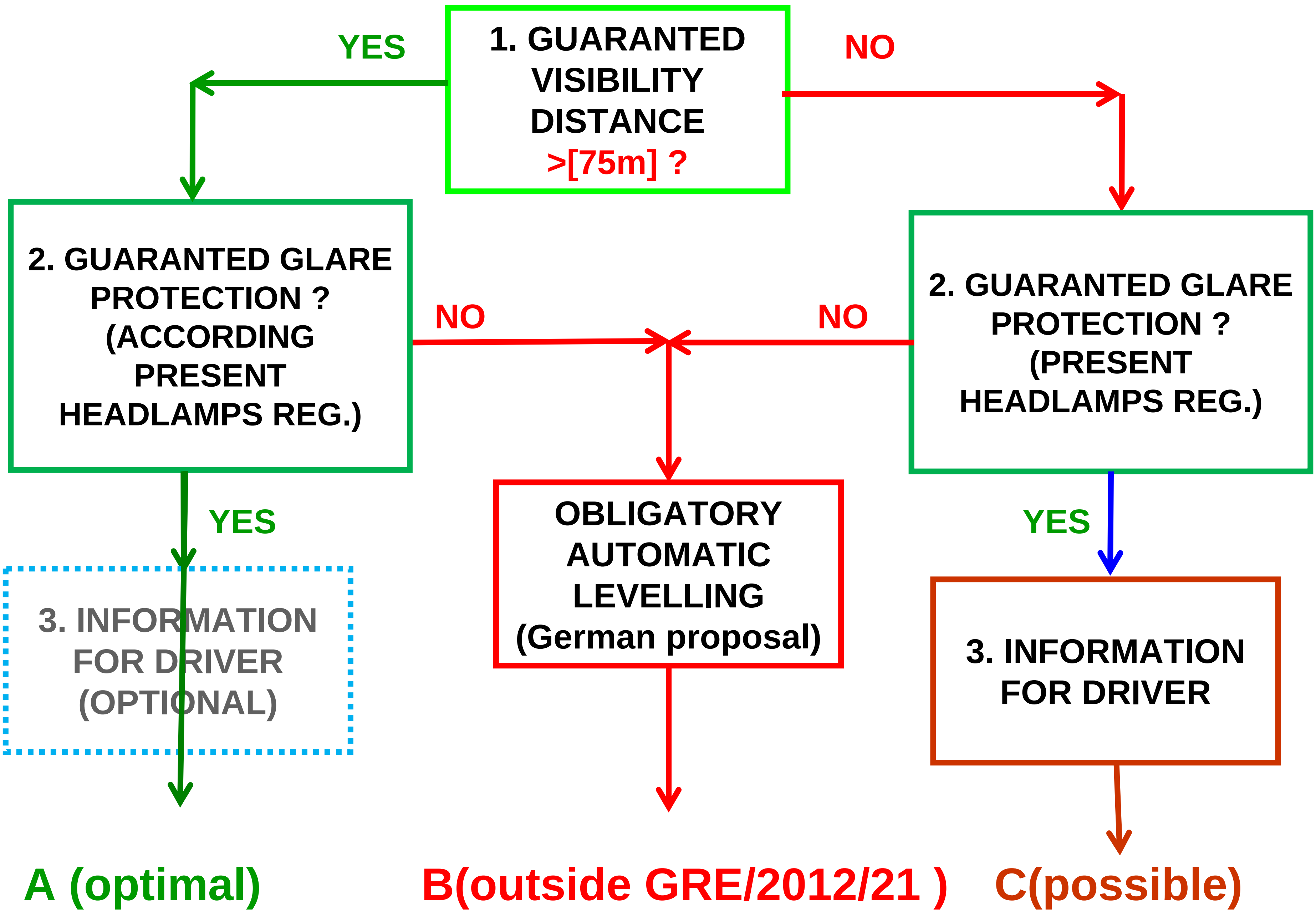
GRE 2012/21
Polish proposal

On the base of present passing beam requirements (Reg.112, 98, 123) and initial aiming/leveling requirements (Reg. 48)

<u>adjust 48 initial aiming/leveling requirements</u>

to remove artificial 2000 criterion, to guarantee minimum **<u>visibility distance</u>** and glare protection which is clear defined and give clear message to vehicle user

HOW WILL WORK GRE/2012/21



HOW WILL WORK GRE/2012/21

IT IS POSSIBLE TO ADJUST DETAILS

Way A (optimal):

Guaranted visibility distance (e.g. [75m]), controlled glare, no need special information to diver if headlamp is good performing (e.g. 30lx@75R 2x 3lx at the road at 75m).

HOW WILL WORK GRE/2012/21

IT IS POSSIBLE TO ADJUST DETAILS

Way C (flexible option):

Visibility distance guaranteed by Regulation but shorter, less than [50m].

Guaranteed minimum performance according Reg.112 (12lx @75R) 2X3lx at the road at 50m.

Obligatory information for drivers regarding minimum visibility distance.

Voluntary additional information from manufacturers to drivers regarding better performance.

OUTSIDE GRE/2012/21 PROPOSAL

Way B:

- **<u>Obligatory automatic levelling</u>.**
- **Nothing guaranteed,**
- **Which aiming/levelling tollerances? Present? Other?**

For the time being modified requirements to be accepted by GRE and by industry

- Possible changes should be **within present requirements system** – no significantly new factors. Any set of criterions/conditions not part off current regulations could be questioned (e.g. TC4-45) because should be added to present requirements.

- Results should be **in line with current design and manufacturing practice**

- No significant additional requirements shall be accepted if they are in line with present manufacturing practice - **typical contemporary headlamp should meet it** without problem

Polish proposal GRE/2012/21

Polish proposal GRE/2012/21

Three aspects of safety are included in proposal:

1. **GUARANTEED VISIBILITY DISTANCE**
2. **GLARE PROTECTION**
3. **DRIVERS AWARENESS**

Polish proposal GRE/2012/21

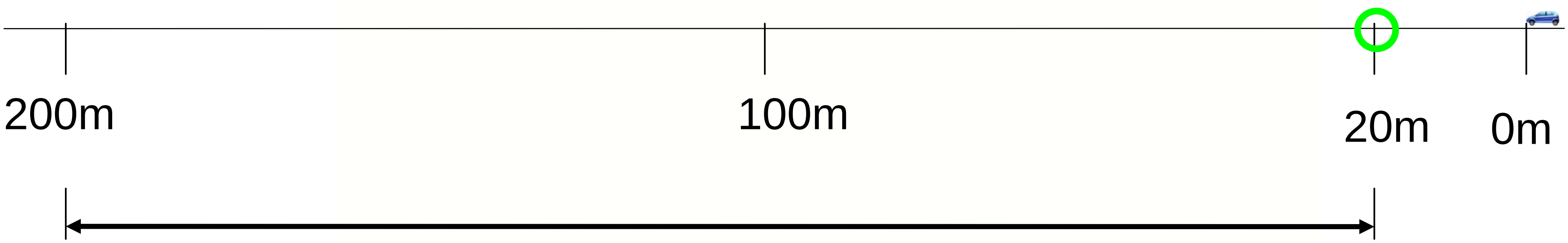
Three aspects of safety included in proposal:

1. **GUARANTEED VISIBILITY DISTANCE –**

   safety - the most important issue

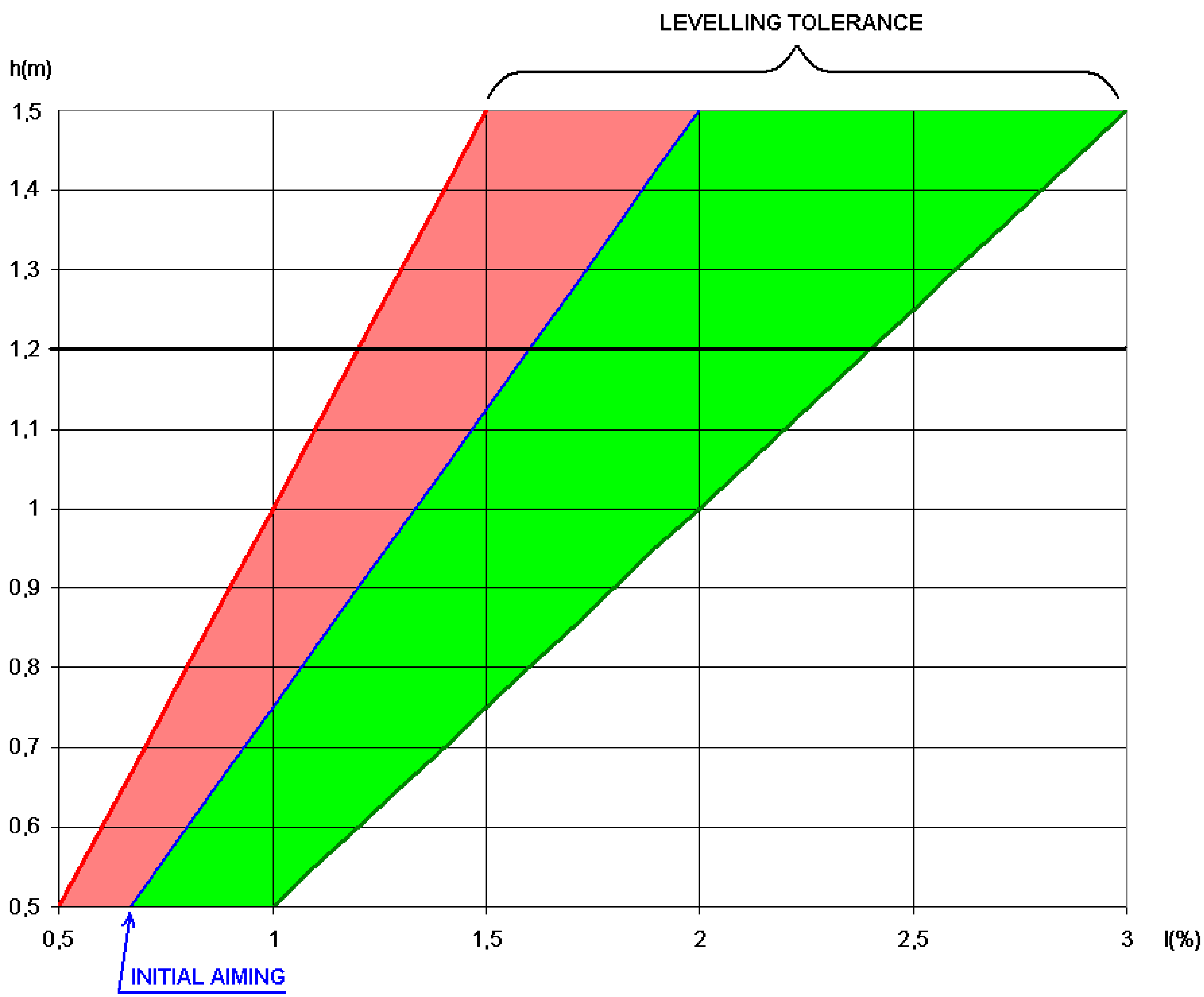
It is not really easy for drivers to detect the visibility distance and then correctly adjust the speed. Presently it is possible too much differential of visibility distance (from 20m to 200 m)

Real sizes and distances



Possible range of visibility distances in Reg 48.

1. GUARANTEED VISIBILITY DISTANCE



GUARANTEED VISIBILITY DISTANCE

1. GUARANTEED VISIBILITY DISTANCE

Visibility distance cut-off crossing with the road surface. Proposed visibility range [50m to 100m]

What should be safety value?
What is feasible value?
Should be included inside required range.

1. GUARANTEED VISIBILITY DISTANCE

What should be minimum visibility distance according safety?

50m road/cut-off crossing correspond to:
 min 3 lx@ 50m (min 12 lx @ 25m for 75R)

Polish proposal GRE/2012/21

2. GLARE PROTECTION

There is a lot complaints concerning glare. It was historically reason for automatic levelling for xenon lights.

- Comfort issue
- Safety issue – difficult to measure

Present clear glare ECE requirements – headlamps photometry

2.GLARE PROTECTION

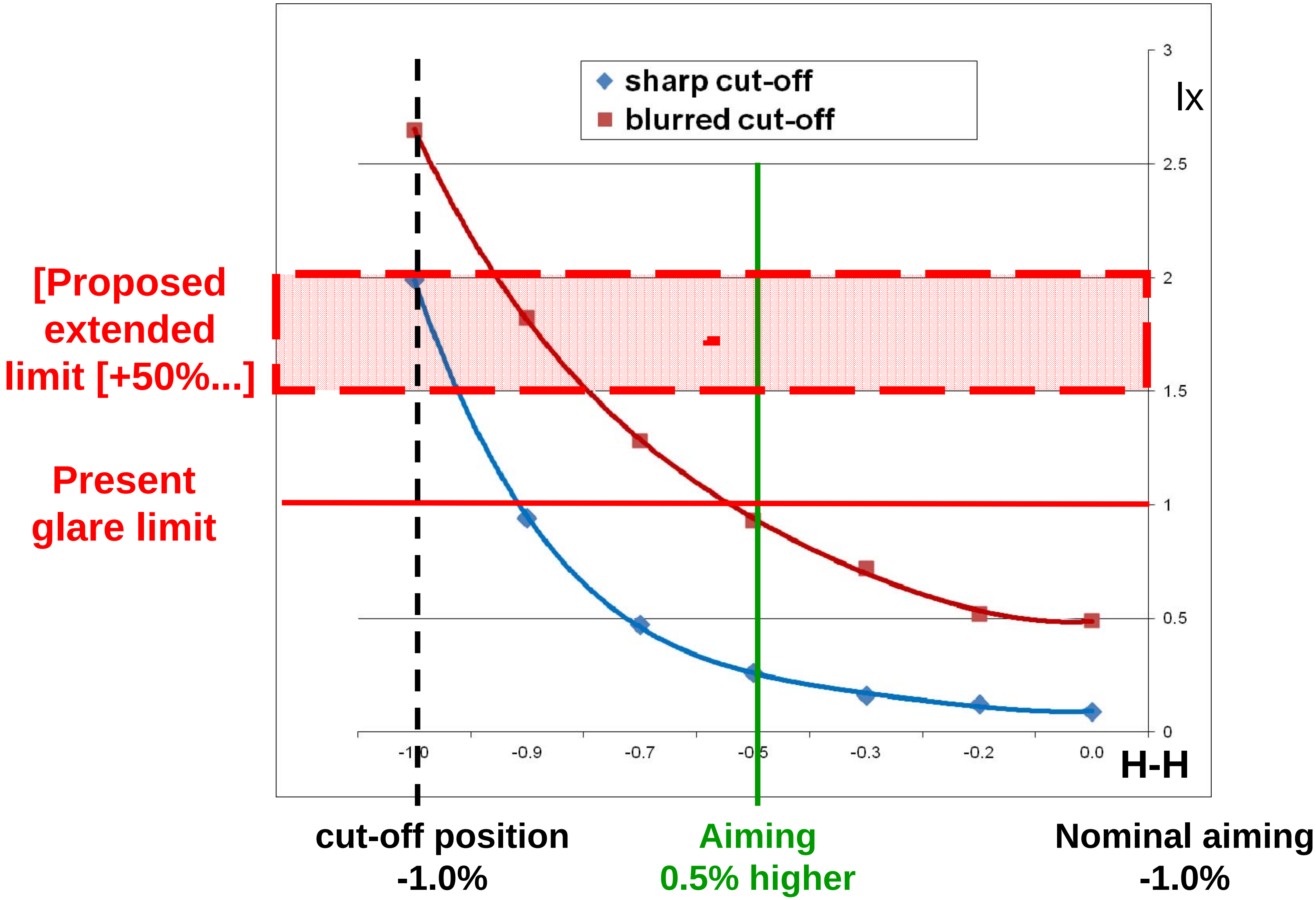
Second part of proposal answer for glare complaints.
It will require nothing more than presently expressed in headlamp regulations.
No need of any additional measurements.

But this part dependent on first part.
When **<u>first part of proposal will be in force</u>** the second could be omitted because automatically the glare requirements will be met.

But If will be not met it will be needed glare restrictions but also will be no need to measure during Reg 48 tests.

Second part play important political role because of aiming/levelling (2000lm etc.) and complaints regarding glare. When glare description will be included in Reg. 48 as a rule only (not measurements requirements) the glare complaints could be only addressed to incorrect exploitation aiming.

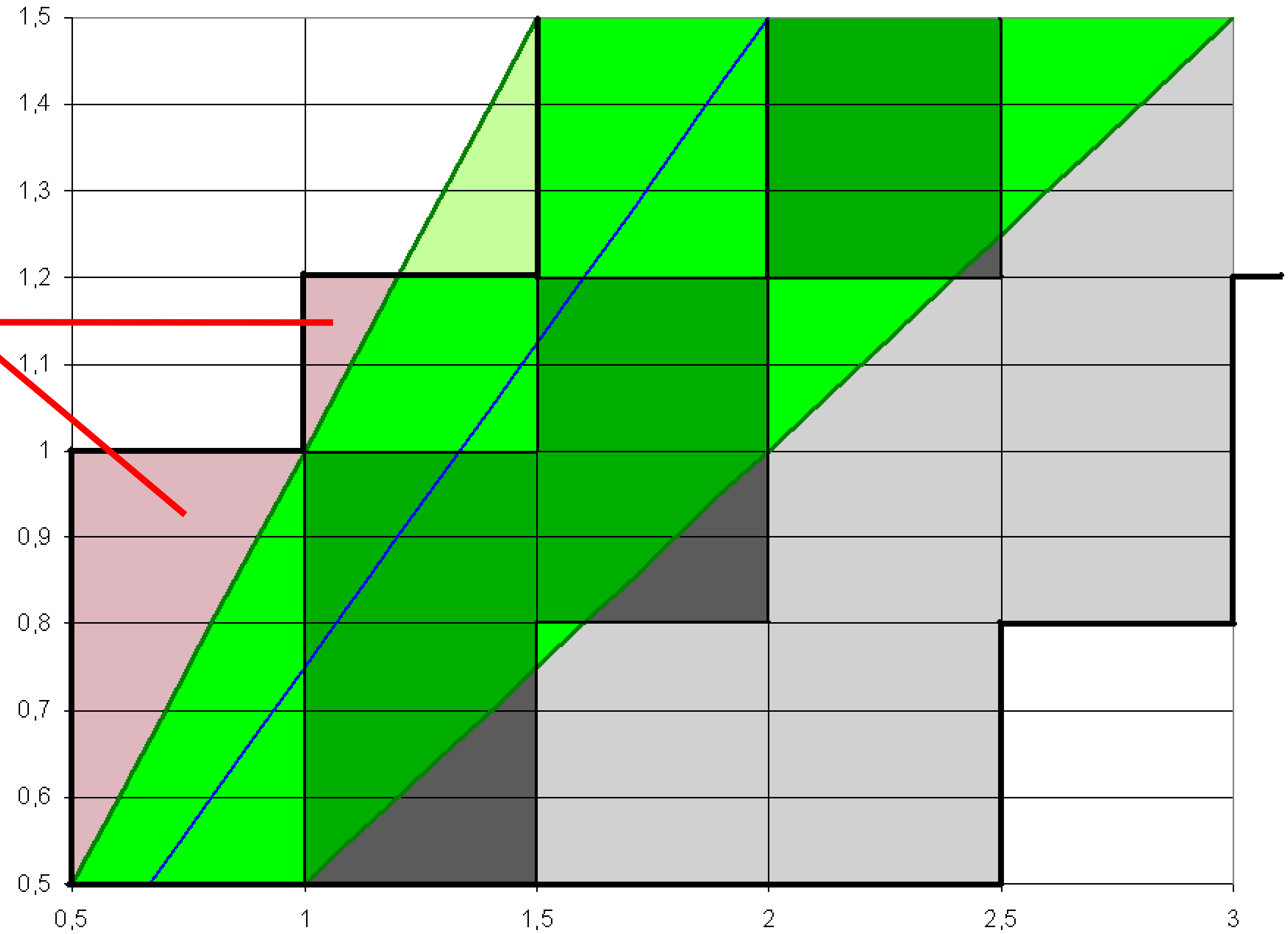
2.GLARE PROTECTION



Typical headlamp illumination over cut-off

2.GLARE PROTECTION

Glare reduction
by proposal
GRE 2012/21



Proposal reduce glare comparing present situation for most vehicles, especially cars

3. DRIVERS AWARENESS

Drivers have no information and no imagination regarding visibility distance and safe speed. They relay on manufacturer and road traffic common law. Their behavior is often similar as during the daytime.

Most drivers do not use manual leveling. Why?

Who is responsible for safety? Drivers only?

3. DRIVERS AWARENESS

Type approval proces is is the right place to give clear message what is the guarantee minimum visibility distance.

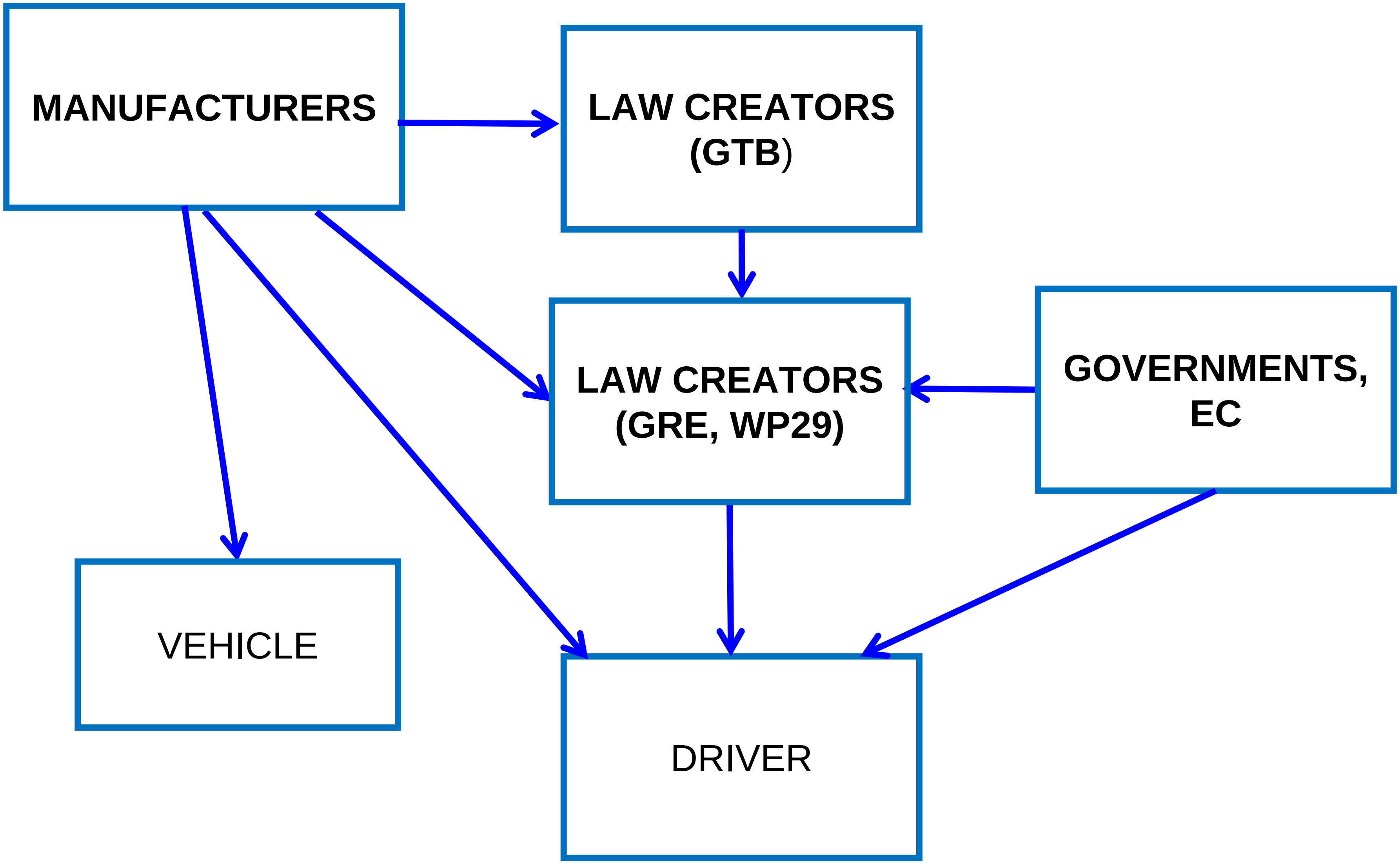
Today for worst allowed situation is less than 20m !!!

Proposal

Acceptance of GRE/2012/21 document will solve manual/automatic levelling problem:

- **No longer 2000 lm criterion,**
- **No longer light source dependent levelling requirements nor obligatory automatic levelling,**
- **Information to drivers regarding visibility distance.**

INFLUENCE AND RESPONSIBILITY FOR ROAD SAFETY ?



THANK YOU FOR YOUR ATTENTION