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APPLICATIONS of CARS WITH FRONT STOP LAMP TECHNOLOGICAL NOVELTY of ROAD TRAFFIC

1. INTRODUCTION

The constant growth of road traffic, bad situation of interrelations of participants, between all the rest, bring the large number of traffic accidents . Large number measure undertakes for the purpose of quality traffic flows. Carry out the various media campaign mostly declarative character, but weaken, immeasurable efficiencies. Preventive in corrective-educational and technical-technological sense is rare, and insufficient. Chant the safety standard uses beside the specific statistical parameter safety, and the best number (ideal), takes out 0,0 killed / N of inhabitant. AFSL- automobile with the front stop lamp in the application has the primary task of decreasing the possibility of traffic accident [1]. Nowdays interesting thing, and at some time in the past it was legal obliged in the Britain (from 1865 do1896.) a request that in front of every vehicle in movement runs a man with the small red flag, as warning of danger arrival [2]. Resemblance from that time and today (image 1.) is in the average driving speed in towns, growing traffic and more complex safety.

Image 1.

2. TRAFFIC FACTS

Vehicle - automobile with the front stop lamp as judicial-legal fact does not exist. That additional active assurance component of vehicle has not been regulated in the Book Of regulations about technical conditions of vehicles in traffic on roads [3], and nor in the Act about the safety of traffic on roads [4]. Year 2007, has been declared as the year of safety of road traffic, and over the one year course the text of Resolution about the safety of traffic on roads is expected to be adopted worldwide [5].
Elements of cars which influence on the safety of traffic are known as **active** and **passive**.
The **passive** element as technical solution has the task of alleviating the consequence of traffic accident, while the **active** element as technical solution, has the task of reducing the possibility of traffic accident. [6].In further work the effects of active elements of car are more elaborated; lights, signal indicator, brake...

2.1. Factors of safety of road traffic

There are 5 factors of safety of road traffic known. Man, vehicle, traffic on the road and the troublemaking factor - elements which create the safety system. The man in the system is predominant, therefore the man-driver has a large influence on the safety of traffic.
Human perceptions that are important for managing to drive are the sight, hearing, balance, muscular perception and the perception of smell [7], and decision which driver makes in 95 % of cases, depends on the work these organs.

Time of drivers reaction (t_R)**,** by definition,is time which passes from the moment when some determined situation appeared (image 2.) to the moment of reaction with some vehicle command

Separated the interval times spaces

[temporal interval from **0.5 – 1.5** sec.)
is the period of most frequent times of drivers reaction ($\mathbf{t_R}$), and depends on how old is the driver, his/her mental and physical abilities – intelligence, in the sense of managing in new situations.

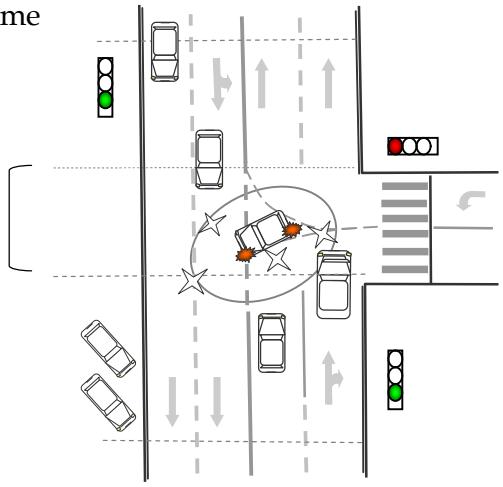


Image 2. Incident situation

Outer impulses as incentive on faster and more precise reflex reaction of drivers
($\mathbf{t_R}$) contains the smaller component ($\mathbf{t_{RR}}$), so it can be determined as ; $\mathbf{t_R} \neq t_{RR}$ that is ; $t_{RR} \leq \mathbf{t_R}$. It is important to know that **this smaller** component of time of drivers reaction can be influenced on and with certain outer incentive.

The **time of the reflex reacting** [2] (t_{RR}), vehicle slowing down ($\mathbf{a_2}$), and vehicle accelerating ($\mathbf{a_1}$), in the time of drive, are values difficult to determine, more in the sphere of expect or foreseeing.
If with certian visual stimulus (not forseeing) we influence on the driver sub component (t_{RR}), integral part of ($\mathbf{t_R}$) - the time of drivers reaction, then ;
<u>length of drivers reaction</u> (1) in some situation <u>may be shorter</u>.

$$\mathbf{l_R = V \cdot t_R = \frac{V \cdot t_R}{3.6}} \qquad (\mathbf{m}) \text{ road of drivers reaction} \qquad (1)$$

The **time of reflex reacting** [2] (t_{RR}) [o.p.I.Poljak], is the time shorter than the time of drivers reaction, and , as positive integral part creates (t_R) the time of drivers reaction.

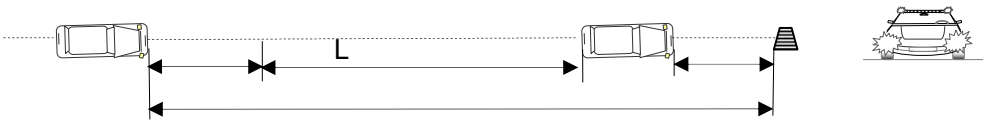
Example 1.:

When the „faster reaction" , for the identical expression is included in this equation, values t_{RO} ***= 0.51*** *sec., and then replaced with some other, „slower reaction" values* t_{R1} ***= 0.71*** *sec., it is completely clear that final result will not be identical.*

Finally, smaller value contains less time of reflex stimulus, expressed in numbers results with more favourable result, and shorter road of drivers reaction for ***5.6*** *m.*

Equation in <u>length of stopping road by free breaking</u> (2) also has the element ($\mathbf{t_R}$) with the integral part (t_{RR}) with which is possible to influencee on the final more favourable result, and that is the shorter stopping road, on the safety distance ($\mathbf{r_z}$) after stopping in front of barrier.

$$\mathbf{L} = \frac{\mathbf{V} \bullet \mathbf{t_R}}{3.6} + \frac{\mathbf{V}^2}{254\,(f_1 \pm u/100)} + \frac{V\,(f_1 \pm u/100)}{1.36\,S_u} + \mathbf{r_z} \qquad (m) \quad (2)$$



(3)

<u>Length of vertical visibility of gradient road</u> (4) is important safety element to driver. For better understanding it is important to mention; that the important safety **parameter** in the previous part was **time**, and in the next part, **space**, road and car are important parameters. Therefore, for the determining of vertical visibility of gradient road with convex break, next parameters influence

$\mathbf{h_1}$ - height of driver's eye ≈ 1.2…m
$\mathbf{h_2}$ - height of barrier ≈ 0.1…m
$\mathbf{h_R}$ - height of headlights ≈ 0.8…m

$$\mathbf{L}. = \sqrt{\mathbf{R}_V}\,(\sqrt{2}\,\mathbf{h}_1 + \sqrt{2}\,\mathbf{h}_2) \qquad (m) \qquad (4)$$

$\mathbf{R_V}$ - radius vertical rounding gradient of road

Example 2.:

Vehicle as object in some less or more assembled situations (night, fog, collision, stoppage..) essentianlly influences on traffic safety. If, for ***parameter*** $\boldsymbol{h_2}$ *of some vehicle at rest, we include his turned on and* ***high set up stop lamps*** *and* ***turn indicators****, we know that it will carry the information* ***longer*** *-faster, than low positioned devices (for example headlight* $\boldsymbol{h_R}$ *if are sheltered by some silhouettes or neutralized by some other lights).*

Finally, larger value parameter $\boldsymbol{h_2}$ *brings more favourable result, that is , larger visibility.*

The horizontal visibility while constructing roads must be ensured for the vehicle in the outstripping and for the safer stopping of the vehicle in front of non-mobile barrier.
As the horizontal visibility in curve is equal to stopping road in front of non-mobile barrier, so is the claim as to formula (2) about the length of stopping road.

2.2.Visual disorder confusion of road traffic

The visual confusion is not unknown in traffic,just the opposite, it has become very frequent – intensive appearance.Consequences of that traffic disorder followed by wrong perception can be tragic.
It is needefully to list components,circumstances and states with which visual confusion makes traffic bewildered,aggravating and dangerous for all active road users?
Howewer ; snow,rain, ice, floods, reflections base,reflections from buildings,blur of glass,fogs of environment,shades,colors and signs of harmful reflection,and direct lights are some of aggravating circusmstances.It is nor easy to balance drivers,car and road state in more complex conditions of drive.So, signals on the must be unified.Visibility and the c larity of message reduces a part of visual confusion, and increases the safety.

2.3. Preventive to greater safety

With preventive activity or preventive of creation of some possibility,we can more of less efficient.
Here the proposal of prevention measures is refering to change of part of the act (legislation) and to application of technical- technological solutions on vehicles, related to legal exchanges.

Important proposals of solutions brings increased interactivity in the traffic part, that is evincible **Q.E.D.**3 (Qued erat demonstrandum).
Measurableness and the efficiency of interaction has been expressed in examples (1.-2. still 3.-6.).

Example 3.: *While special vehicles are interventing, their rotational light are increasing the interaction between participants and influence on next (im)possibility of creation of new damages.*

3. BEFORE JUDICIAL INTERVENTIONS

In the chapter 2. it has been determined that The car with the front stop lamp as legal fact does not exist.Patent registration is the first document with which the project started by DZIV *. The State intellectual property office of Republic Croatia * and appplicant report has determined the date of submission of patent application 01/02/2004, number P20030986A, with the full name:

Automobile with the front stop lamp, active safety component of a vehicle.After publishing the patent registration 28.02.2007 in the Messenger DZIV RH [8], procedure enters in the final phase of acknowledgment of patent (almost 90 % the procedure is done).
Positive results based on procedure of complete testing are expected, what is the step to the solution about the acknowledgment.

Quod erat demonstrandum 3 Lat. expression for; what is and what needed to be proven.
In the context of patent adoption and undertakings of measures, **and for the possible apllication of the patent**, it is **inevitably to intervent in judicial standards by exchanging** and adding a part of text of paragraph.
Quotation from valid Act about the safety traffic on roads RH art. 42.:

„Vehicle must not have light, light-signalling and reflective devices and substances which gives the chromatic light (blue light and alike) on the facade, and devices and substances which gives the white light on teh back.“

3.1. Proposal for judicial intervention

Paragraph 42. Acts, with suggested intervention, would be changed by inserting a sentence in front of existing sentence in paragraph;

„ Vehicle can have light - signal chromatic device on the facade (red stop lamp), “….

The new reference-definition of paragraph change the original sense of paragraph, in the part which refers to the stop lights on the facade, and integrally would be:

*„Vehicle **can have** light-signal chromatic device **on the facade** (red stop lamp), and mustn't have light and reflective devices and substances which gives the chromatic light (blue light and alike)on the facade, and devices or substances which gives the white light on the back.“*

3.2. Reaseonableness of the intervention

It is the proper time (timing) to offer such definition of paragraph of acts-proposals as CRO (HR) *measure*. Reason is obvious, important improvement of perception and higher quality interactive move expected, evolutionary in the part of safety system of road traffic.
This CRO (HR) proposal, minor or not, will expectingly be a subject for discussion and possible adoption between traffic experts. Faculty of traffic sciences, Institute of traffic, State the office for the Intellectual property RH, Parliament RH as lawgiver, Ministry of traffic RH, MUP RH, HAK4 ,FIA5,CITA6,PRI7, are institutions that are mainly or need to be acquainted with the represented measure. As a part of 62.conference (October 2007) the Assembly of UN, it has been foreseen to adopt the resolution about the safety of traffic on roads worldwide. HR measure -proposal, as component of document of resolution is completely opened possibility.

3.3. Preventive function

Example 4.:

One of active safety elements is ***light*** *of* ***turn indicator,*** *„turn signal", and if it is built-in near the headlamp, flash source (image 3.), may be covered by the same bright light, „fars"(high beam). Turn indicator set up on that place (under the center line),* ***loses*** *its basic* ***function*** *of purpose - signaling intention about the movement of the vehicle.*

HAK 4- FIA5,CITA6 PRI7– Croatia, and international professional institutions of traffic and the transport.

Image 3 . Covered and uncovered open signal and front silhouettes vehicle

Does the *covered* turn indicator reduces or increases the possibility of traffic accident in such case? The solution to this problem can be noticed on same (image 3.) where second upper pair of turn indicators, raised on the higher level, can seamlessly performe the active safety function.

Example 5 .:

Second active safety element ***stop lamp*** *, equally can have the elevated accommodation position (images 3. and 4.), and can seamlessly* ***perform the function*** *of intention on the both sides of the vehicle. Supervision and* ***controls of traffic*** *on the part of official individuals, with vehicles equipped like this, can be significantly improved and secured.*

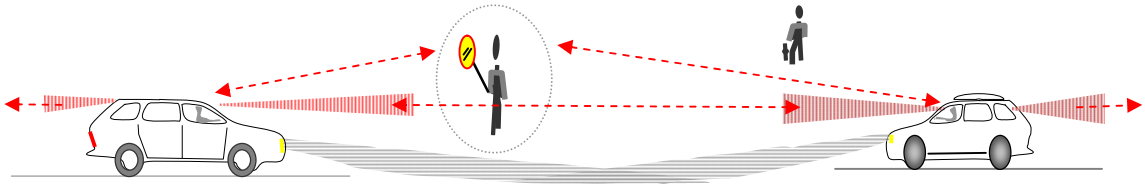


Image 4.

3.3.1. Large interaction through the simulation

Visibility and clarity of traffic situations, signals and signs of the shorter and higher zones are important interactive (safety) elements.Better preventive effect is expected for most frequently **97** % and the most dangerously front movement of a vehicle.

Example 6 .: *Groups of vehicles equipped with active safety element, as on this simulation (image 5.),represents the part of higher quality relationships and states of active road users.*

The technical analysis [9] of simulated states and real traffic accidents vehicle with the front stop lamp as input computer parameter enables yet more precisely and more expected results even in automatic traffic systems [10]. (*examples 1.- 6.*).

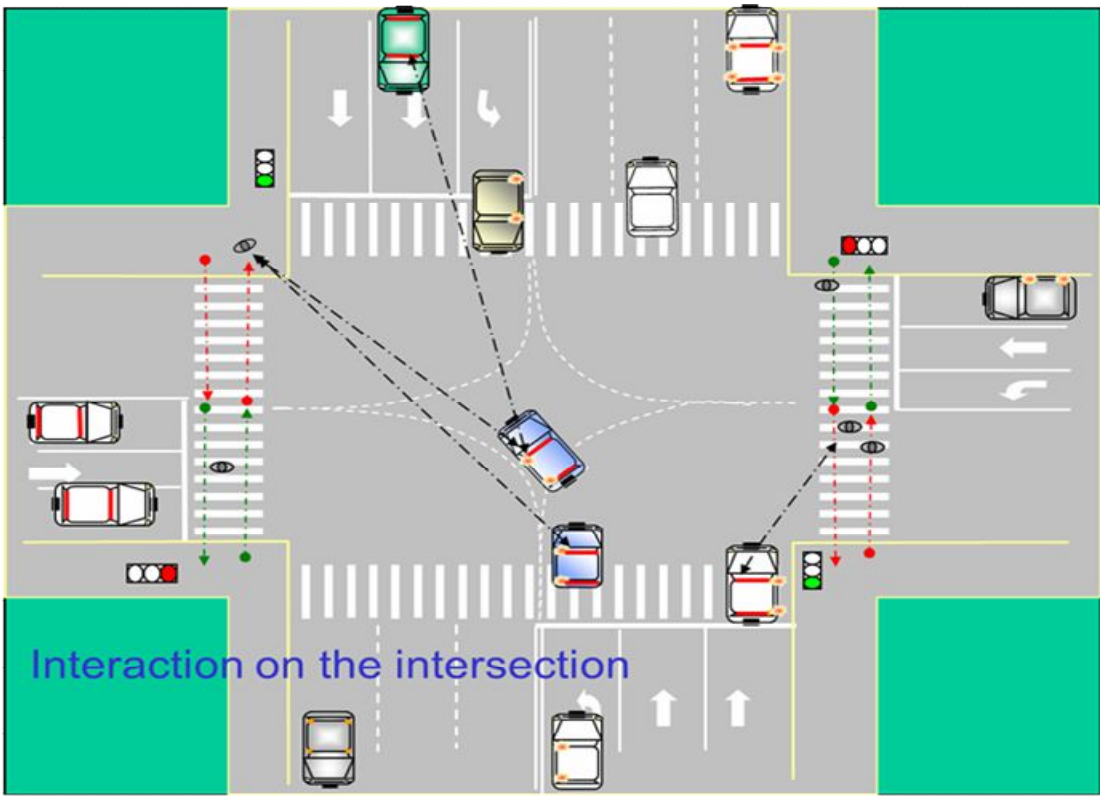


Image 5. Interactivity and self-regulation in the application

4. Conclusion

With application of this proposal better perception of states is expected, importantly larger interaction of active road users, higher quality supervision and control of traffic.A good feeling is to have the initiative and the proposal of solution when it is the most needed.In the spirit of calls for safer roads, and in connection to what is carried out, active access of the experts and multidisciplinary access to the solution of proposal is expected.Instead of conclusion, proposal is the implementation of technical-technological novelty, *judicial and technical intervention* by steps to technological implementation (image 6.).

Image 6.

..as adition ...**as a result**... this is an open call for road traffic experts, physics experts, medical experts, and other experts to analyze my 10 valuations - report - result from my previous expert work, in the context of road traffic technology

QED Qued erat demonstrandum - What needed to be proven

PRODUCT of LITERATURE [10] of [10]

The higer level of interaction of all active participants in traffic [1]

The better perceiving of turn signal on facade of vehicle [2]

The better perceiving of rear turn signal of vehicle [3]

The better perceiving of rear stop lamp signal of vehicle [4]

The better perceiving of front stop lamp of vehicle [5]

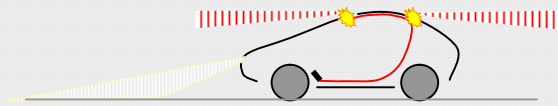
The better and safer information signal about condition on road junction , road curve, concave - convex curve [6]

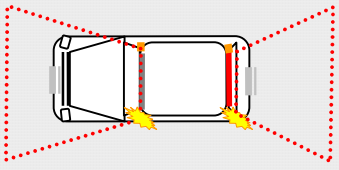
The better warning at rest,at standstill,in the movement [7]

The better-larger help in the regulation of traffic [8]

The better-larger usefulness by the analysis of traffic-dynamically-statically-accidents [9]

All presented calculations are observed through the efficiency,verify null hypotheses as the valid argument [10]





The car with the front stop lamp ! ! (yes or no)