

GROUP CRACOW

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STARS FINAL REPORT



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INTRODUCTION

The main goal of STARS project is to improve road safety by speed reduction of vehicles. STARS is an acronym for Students Acting to Reduce Speed which means that the project is directed to students. STARS project shows that even people who aren't involved (yet) in roads management can do something, which will improve road safety.

Poland is a country with much old-dated infrastructure. Drivers consciousness of road safety matters is very low and speed limits are constantly being broken. All factors above cause a large number of car accidents. Roads safety is improving very slowly in our country so Poland leads in inglorious classification of killed and wounded people on roads.

The purpose of this document is to present process of projecting and implementing idea of road safety improvement which will improve the social knowledge on road safety and also safety in chosen place by speed reduction. The document describes procedure of social actions taken during STARS project, choosing especially dangerous location and actions that have been taken.

ABOUT US

When we started the competition in 2013 we were students of Cracow University of Technology. Our speciality was strongly connected with the theme of the project – Roads, Streets and Highways so we were very glad that we were chosen to be a part of the project.



When we got to know about the project, there was no doubt we want to be part of it. We wanted to do something profitable, to gain new experiences, to learn new skills. During STARS project we learned how all the phases of a project are done, but also gained some practical knowledge on business contacts. We are really grateful that ETSC gave us a chance to be a part of such a great project.

THE RESULTS OF OUR ACTIONS

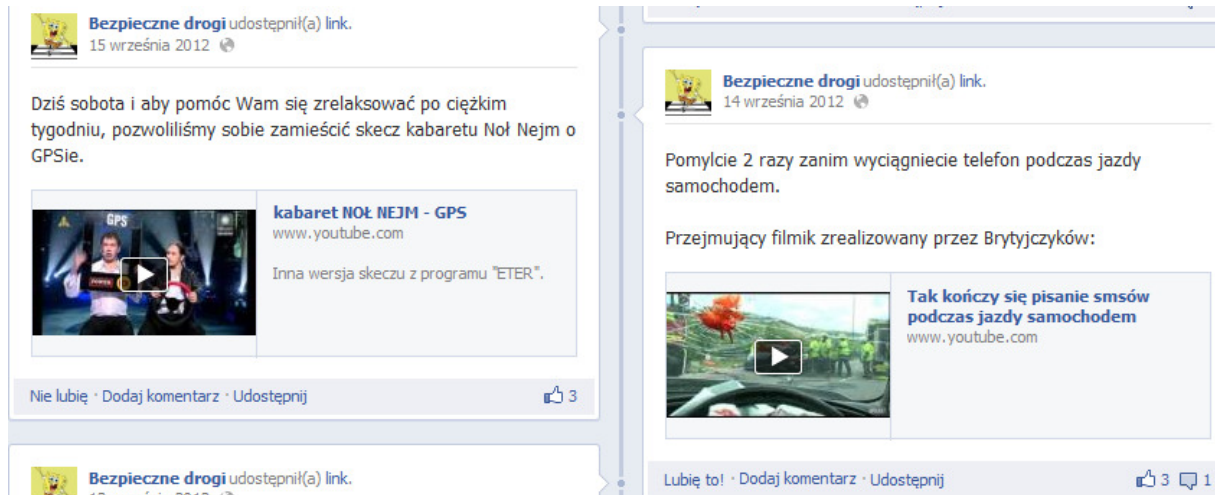
It took us 16 months from the very beginning till the final phase of the project. In November 2011 we decided we will implement our solution on a narrow curve in Dziekanowice next to Cracow. After workshops in Brussels we decided to make a bigger, more complex project.

FACEBOOK PROFILE

We realize how powerful Internet is. It is popular not only among young people, but also mid-aged and older. We decided to create a facebook profile called “Bezpieczne drogi” (“Safe roads”) and make people aware not only of dangers of overspeeding but also other road dangers. We created a profile in May 2012.



Since then we have gathered about 1100 fans – people who are interested in road safety. From May we put on the profile information each few days (sometimes day by day). We try to give people useful, interesting information: about risks of speeding, not wearing seatbelts, drink-driving, clues for pedestrians and cyclists. We sometimes also publish funny stuff connected with road safety (even comedy sketches).



Our news have different forms: articles, clues, informational sentences, pictures, road safety campaigns (movies) and comedy sketches. We are partners of other road safety facebook profiles. Sometimes we publish their news, sometimes they take our news for their fans.

LEAFLETS

People aged 18-25 are a group which cause accidents more often than other age groups. That's why we decided to spend a part of our money on making and printing leaflets on road safety. We distributed them at six biggest Cracow universities (Cracow University of Technology, AGH, Jagiellonian University, Agricultural University, Economical University, and Jagiellonian University). Our initial plans included a few more universities but two of our sponsors withdrew. Except of information about dangers on road, we wanted to express our gratitude by putting names of our sponsors at the leaflet. We also placed there information about our facebook profile.

UWAGA CAUTION ACHTUNG ATTENZIONE

PODRÓŻUJ BEZPIECZNIE
Przestrzegaj 3 podstawowe zasady!





Nie przekraczaj prędkości!

Przy prędkości 50 km/h na druzi wypadek skutkuje ofiarą śmiertelną.
Przeciętna droga zatrzymania dla pojazdu jadącego z prędkością 50 km/h to 26 metrów, a z prędkością 120 km/h to 102 metry.
Najechanie na pieszego przy prędkości 50 km/h w 85% kończy się śmiercią pieszego, a przy 40 km/h w 40% przypadków.

Nie siadaj pijany za „kółko”!

Czas reakcji pijanego kierowcy jest znacznie spowolniony.
Pijani kierowcy najczęściej powodują wypadki w weekendy przed południem. Są to ludzie, którzy nie pili alkoholu bezpośrednio przed jazdą - za kierownicę usiedli myśląc, że są trzeźwi.

Zapinaj pasy bezpieczeństwa!

Przy zderzeniu z nieruchomym obiektem pojazdu jadącego 50 km/h ułoho człowieka wyrzucane jest z siłą ok. 1 tony.
Poduszki powietrzne są skuteczne tylko w połączeniu z zapiętymi pasami bezpieczeństwa.

UWAGA CAUTION ACHTUNG ATTENZIONE

UWAGA CAUTION ACHTUNG ATTENZIONE

PODRÓŻUJ BEZPIECZNIE
Przestrzeganie 3 zasad jest bardzo ważne, ponieważ...

...w Polsce na drogach rocznie ginie ponad 4000 ludzi. Pod względem statystyk wypadkowych zajmujemy ostatnie miejsce w Unii Europejskiej. Dla porównania: w Austrii wskaźnik liczby zabitych na 100 wypadków drogowych wynosi niecałe 2, natomiast w Polsce ponad 10.

Przestrzeganie wymienionych zasad przyczynia się do poprawy bezpieczeństwa ruchu drogowego (jazda z nadmierną szybkością, nietrzeźwość wśród kierowców i niezapięcie pasów bezpieczeństwa to trzy najczęstsze powody wypadków). Chcemy się czuć bezpiecznie, nie tylko jako kierowcy, ale także jako piesi i rowerzyści, prawda?



BEZPIECZNEJ PODRÓŻY
życząc:

SPONSORZY PROJEKTU:


 European Transport Safety Council





 BEZPIECZEŃSTWO


 ZARZĄD DRÓG POWIATU KRAKOWSKIEGO

Więcej informacji na facebooku profilu → „Bezpieczne drogi!”

UWAGA CAUTION ACHTUNG ATTENZIONE

ROAD PROJECT

We have been looking for a place near Cracow or in the city, which due to permanent speed violations is especially dangerous. One was found just across the border of Krakow (in Dziekanowice) on narrow edge of local road which leads traffic from agglomeration into the city.





The road goes in north-south direction perpendicular to railway lines and just before tracks the road suddenly changes direction to east-west. On both sides the curve is preceded by long straight sections of the roads which causes that drivers exceed the speed there. The road has 5,5 m width, without lines marking. On the curve roads width is increasing to 6,0 m. The road runs through urban area but it doesn't have pavements. It is equipped with road barriers on both sides hover, they are damaged by cars, which have went off the road.



Road administration has reduced speed on the road which signs to 40 km/h, and on the curve to 30 km/h. Car flow on the road is quiet low, which cause even higher speed. There isn't any horizontal marking on the road, but in nearness of the curve there are plenty of road signs, some of them are placed against the law (they are on left side of the road, instead on right side) or in contradiction one to another.



All these together lead to many accidents confirmed by police statistics. In last four years there were ten accidents, one person was seriously injured. Taking into consideration that in Poland about 50% of collisions are not reported, we suppose there could have been much more collisions. Police reports say that accidents happen both in day and night, in sunny and rainy weather. Their common reason was too high speed which leaded to loosing car control causing accident between cars and falling off the road.



We measured speed of vehicles by means of a speed camera to check whether speed is a problem on a curve.

speed [km/h]	a sum of proportional numbers	number	proportional number
30	3,00%	3	3,0%
35	8,00%	5	5,0%
40	21,00%	13	13,0%
45	46,00%	25	25,0%
50	74,00%	28	28,0%
55	93,00%	19	19,0%
60	100,00%	7	7,0%

k85 = 53km/h

Permissible speed – 30 km/h!

We made a project which was discussed with many experts on road safety: prof. Stanisław Gaca and dr Mariusz Kieć from Cracow University of Technology, Krzysztof Jamrozik from Ek-kom, Tomasz Szmyd from City Voirie and experts from Polish Road and Highways Administration. 3 best versions of the project were prepared and presented in front of the Police and City Voirie which accepted the project.



Ideas presented below are divided into few separate parts which were implemented in different extent.

ACOUSTIC LINES

One of the first ideas of speed reduction was to apply acoustic lines on both sides of the curve.



They were supposed to reduce speed, because drivers who run over them feel unpleasant and hear noises. Such solutions are used all over the world. Unfortunately, as we have learned, those types of objects have been experimentally used in a few places in Poland and had little positive results. People living near were complaining about noise. As a result, using of acoustic lines was forbidden.

FALSE POLICEMAN

Solution which hasn't been used in Poland so far is false, plastic or cardboard, standing image of policeman. Assumption is that drivers who will see "policeman" will reduce their speed. Unfortunately, this solution has a few weaknesses. First of all, such an image could easily be destroyed by vandals. Especially because nearby signs are painted with graffiti. Secondly, drivers will feel cheated when they will discover that the policeman isn't real. Finally, implemented solution must give permanent effect, and the proposition doesn't match this requirement. In the best case drivers will soon get used to the policeman and ignore him, in worse he would soon lost his head.

REPAIRMENT OF TRAFFIC BARRIER

From the beginning we considered that repairmen of damaged traffic barrier is essential for road safety in this place. As we have learned this particular section of the barrier is

constantly being damaged and repaired, but we hope that combined with other elements a barrier will survive much longer. Reparation of such a barrier is costly, however the repairmen has been done.

REFLECTIVE TAPE

3M company has proposed that they will give us special reflective tape which can be used on traffic barriers to improve their visibility. This is experimental solution and road administration was procrastinating with decision to accept it or not, so we had to resign from this element as we didn't find a sponsor for barriers that had to be bought and placed into the ground.

ROAD SIGNS CORRECTION

We have cataloged road signs on over 1 km length. Large number of different abnormalities were discovered. After few consultations with road administration they proposed that they will pay for correction of all found mistakes that we will reveal in our documentation. We have prepared ambitious plan to change over 20 road signs. They were supposed to be partly removed, partly moved and some new placed. Unfortunately, road administration has ran out of money and were unable to cover the costs of changes, so we had to find sponsors also for this part of the project and to lower the cost we resigned from many changes focusing only on the curve and its closest surroundings.

INFORMATION SIGN

Although the curve is marked with warning signs, those warnings seem not to be enough. Drivers are very often falling off the road in that place. We have proposed to place additional information board on which we planned to place warning sign about sharp curve and inscription "dangerous sign", all on rectangular bright background. Unfortunately road administration was skeptical towards this solution. They thought that drivers won't note the board, and what is more important, there were some legal problems, as you cannot place a whatever you like near the road. It needed to be approved by higher authorities. What is more, such board had to be done on special request, what would seriously rise its cost, so we decided rather to spend those money on other element.

EDGE LINES

In order to optically narrow the road and persuade drivers to reduce speed, we have proposed to place marking lines on edges of the curve. Unfortunately, such solution could be done only if edges of the road are in good condition. On our curve they aren't good enough so we abandoned that idea.

AXIAL LINE

After consultations with Road administration, new idea has emerged to use axial line on the length of the curve. Road is too narrow to use double continuous line, which is used to divide opposite directions, so we have used so called 'warning line'. Division of opposite directions clearly shows which part of the road can be used by a driver. As it was mentioned earlier drivers willingly are using whole width of the road to turn on the curve, so axial line reminds them that he must use only half of the road to avoid collisions with cars from the opposite direction.

SPOT REFLECTION ELEMENTS

We have proposed to place spot reflection elements, so called 'cat eyes' on edges and on axis of the curve. Using them will greatly improve perceptibility of the curve, especially during night and bad weather conditions.

'SERGEANT' SIGNS

Sergeants signs are used to mark narrow curves and to optically lead driver through a curve. They are already used in our curve, but they are deviated, placed in wrong position and angle, and there are too short, so we have decided to improve this element.

	Element	Extent of usage
1	Acoustic lines	Resignation
2	False policeman	Resignation
3	Traffic barrier	Entirety
4	Reflective tape	Rezygnation
5	Road signs	Partly
6	Information board	Resignation
7	Edge lines	Resignation
8	Axial line	Entirety
9	Cat eyes	Entirety
10	Sergeant signs	Entirety

Our final version of the solution is:

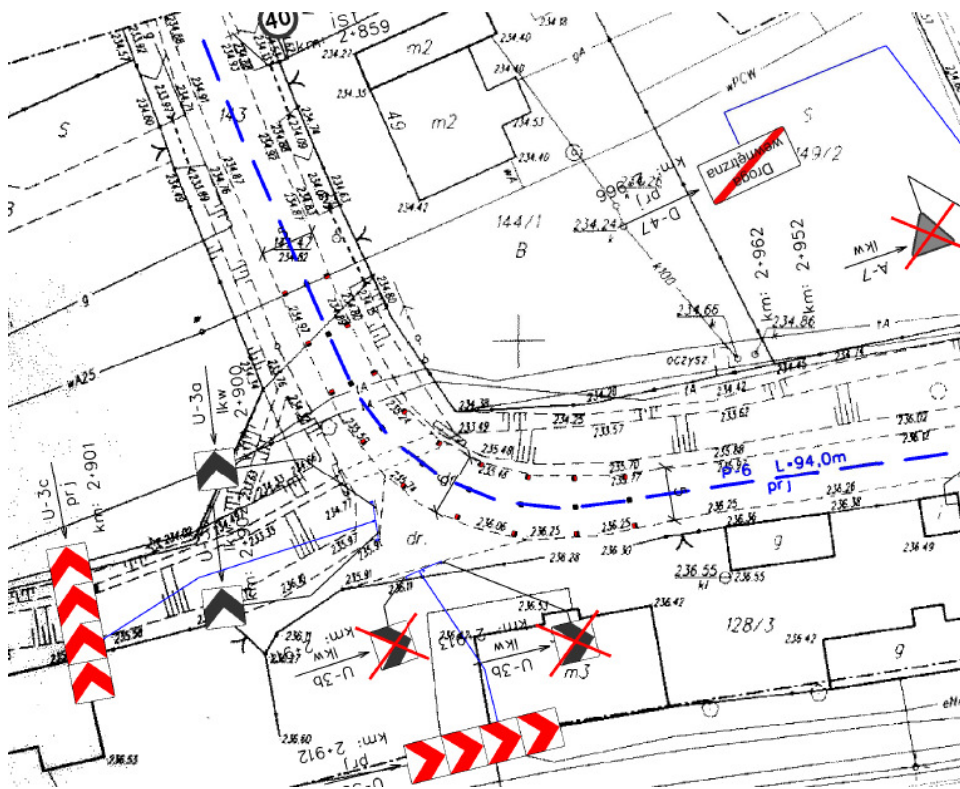
- changing destroyed signs into new ones



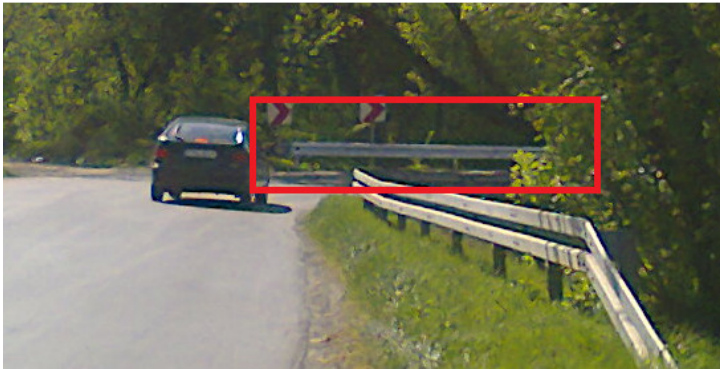
- changing destroyed road barrier into a new one
- placing cat's eyes in a way visible in the picture



- marking the road in a way visible in the picture



- Destroyed barrier was replaced by a new one



- Destroyed and small signs were replaced by new, more visible at night and put in more convenient places
- After the next collision occurred City Voirie declared they will make on the curve a barrier in the place that there is only ground (it will improve the visibility of the curve)

DIFFICULTIES

City Voirie ensured us they will finance the project and we don't have to worry about the implementation. In August we got to know they do not have enough money for the project. We immediately decided to look for other sponsors as soon as possible. We contacted more than 60 institutions and companies. The whole process was discouraging because little amount of companies were interested in cooperation. The decisions weren't made quickly (usually if the company was interested it took 1-3 months to be given answer). In December we had 3 sponsors: 3M Poland, „Stowarzyszenie Droga i Bezpieczeństwo” and „Myślę na drodze”. Unfortunately, „Myślę na drodze” resigned of supporting us financially. We still didn't have enough money. In December we found (as we thought then) our last sponsor – City Road Management. From December we were looking for a company that will implement our solution. Unfortunately, in such an inconvenient conditions there was no chance to implement the solutions quickly. During looking companies which will implement the project, TM-VIA proposed us to make horizontal alignment for their money as soon as possible. City Voirie changed mind and decided to put vertical signs for us for free.

Unfortunately, from the beginning of January the weather was unfavorable and marking couldn't be done. When the temperature will be "+ degrees" we will be able to put marking.

RECOMMENDATION LETTERS

We got not only financial support but also our actions were supported by giving us supportive letter. We got letters from seven companies and institutions eg. "Bezpieczna droga" ("Safe road"), Cracow University of Technology and Polish Association of Engineers and Technicians of Transportation in Cracow.



TO SUM UP

- We created a facebook profile on road safety
- We designed, printed and distributed leaflets at Cracow universities
- We partly made a project on a dangerous curve in Cracow

PRESS

We published an article on our progress in a magazine on road safety “Myślę na drodze” („I think on road”). We had a meeting with a journalist who helped us to publish the article in two Cracow portals with news about the city.



CONCLUSIONS

STARS project was actually more difficult than we thought it will be. We had a lot of obstacles but we are really glad we almost managed to finish the project. We made a facebook profile, distributed leaflets on Cracow universities and almost finished implementing a solution on a narrow curve. All the obstacles we had to go through (like 2 sponsors that withdrawn from financing our project or 3 month delay on answers from the sponsor) learned us that you can't give up. If you have the aim, you have to realize it against all odd. If you can't do something one way, do it another way. Now we are proud we are at the end. As we wrote at the beginning, we are honoured we had a possibility of taking part in STARS project. It was a priceless experience for us, an experience that we will not forget till the end of our lives. Thank you ETSC!

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