

Building Road Safety Capacity Congress in Warsaw 2013

Session 7

Linear settlements along Highways, vulnerable road users and the implications for urban land use and development in different countries

Hans-Joachim Vollpracht



They call them coffin roads

False settlement policies and endless linear settlements may be...



...the most crucial disaster for road safety in emerging countries, here in Vietnam (R&R 347)



Building Road Safety Capacity

Endless linear settlements in Romania



National Road Nr 1 (R&R 347)



Endless linear settlements without sidewalks

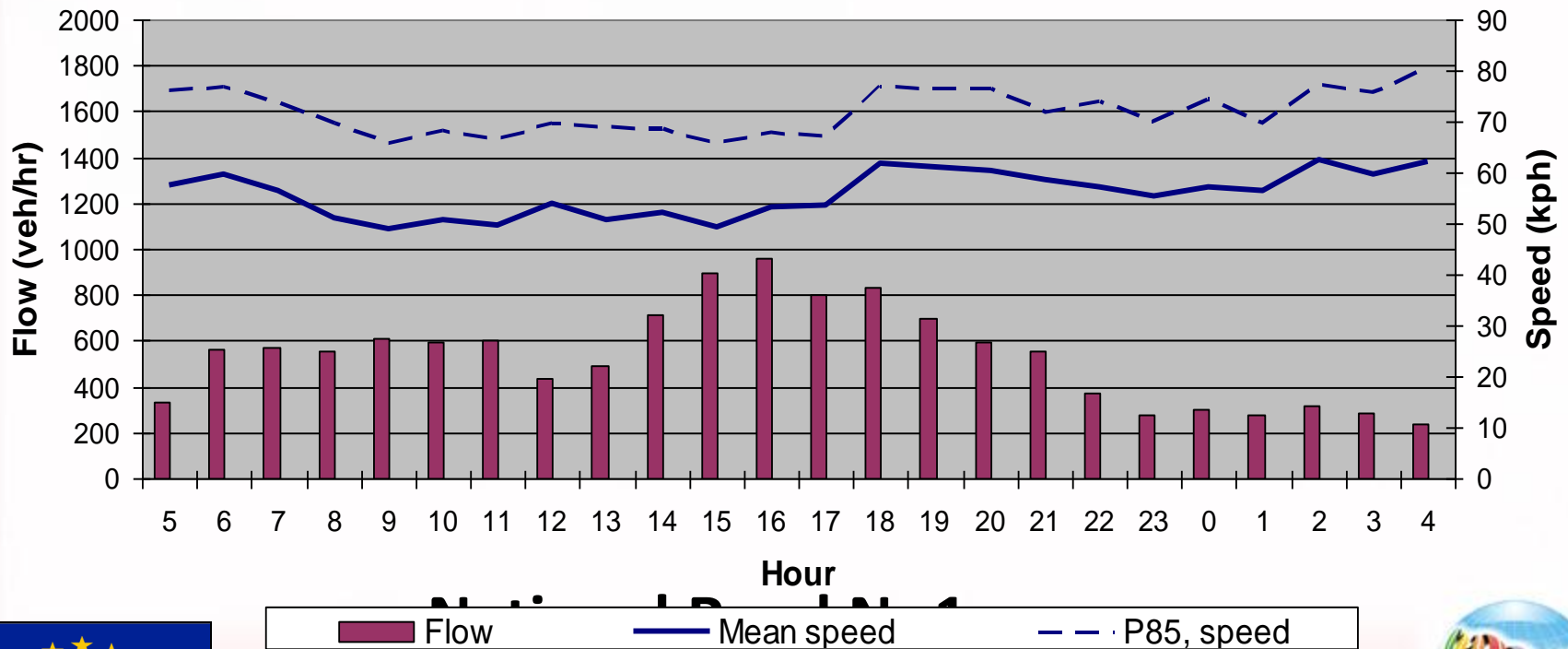


More than 50 % of all accidents victims in Romania are pedestrians! Especially children are overwhelmed to calculate their time gaps for crossing traffic streams from both sides



Typical speeds in linear settlements

Dumbraveni - Spot 1, speed and flow variation
(12887 observations, August 11-12, 2004)



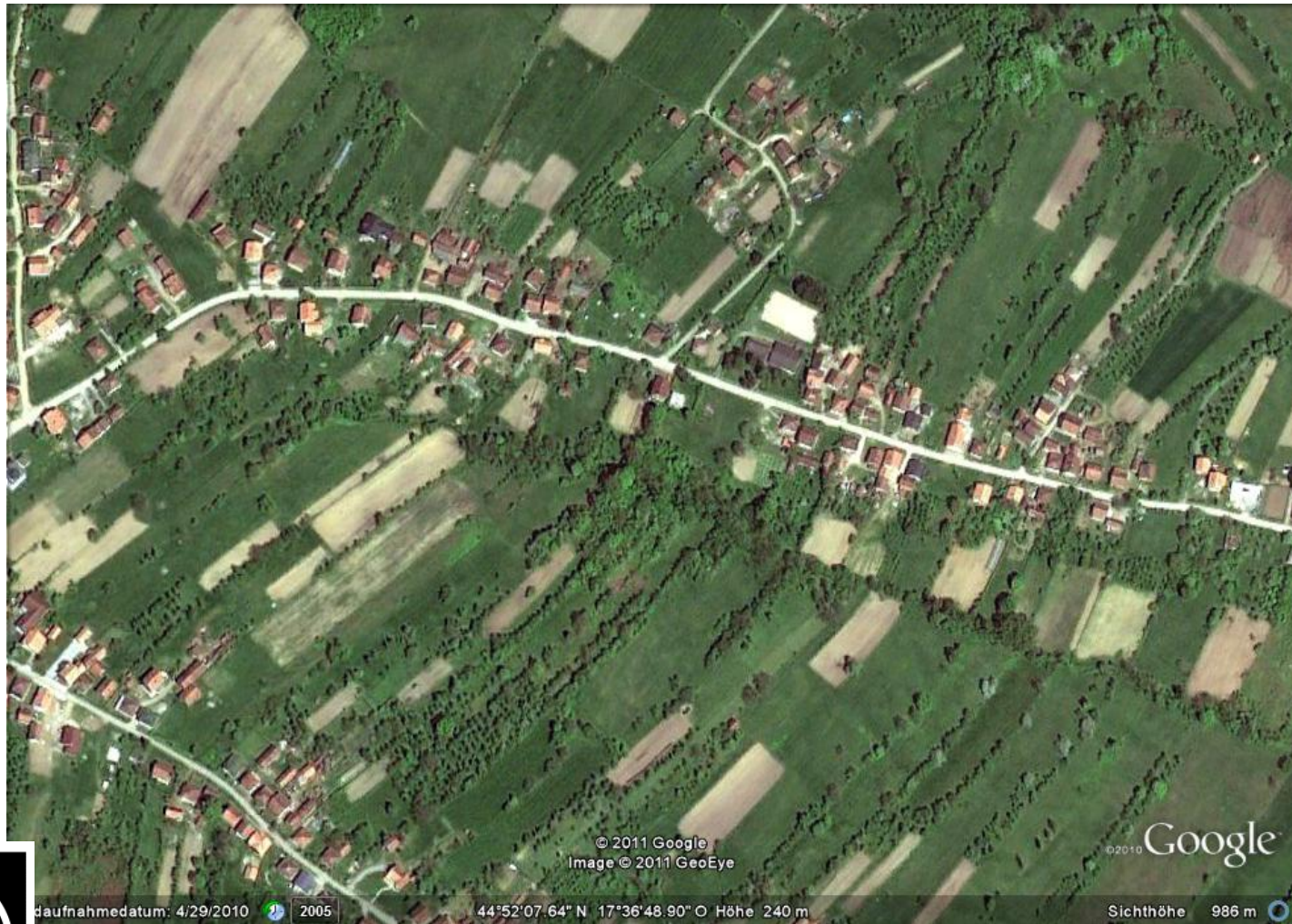
Pedestrian crossings are the typical problems



National Road Nr 1 Romania



Linear Settlements in the Republic of Srpska



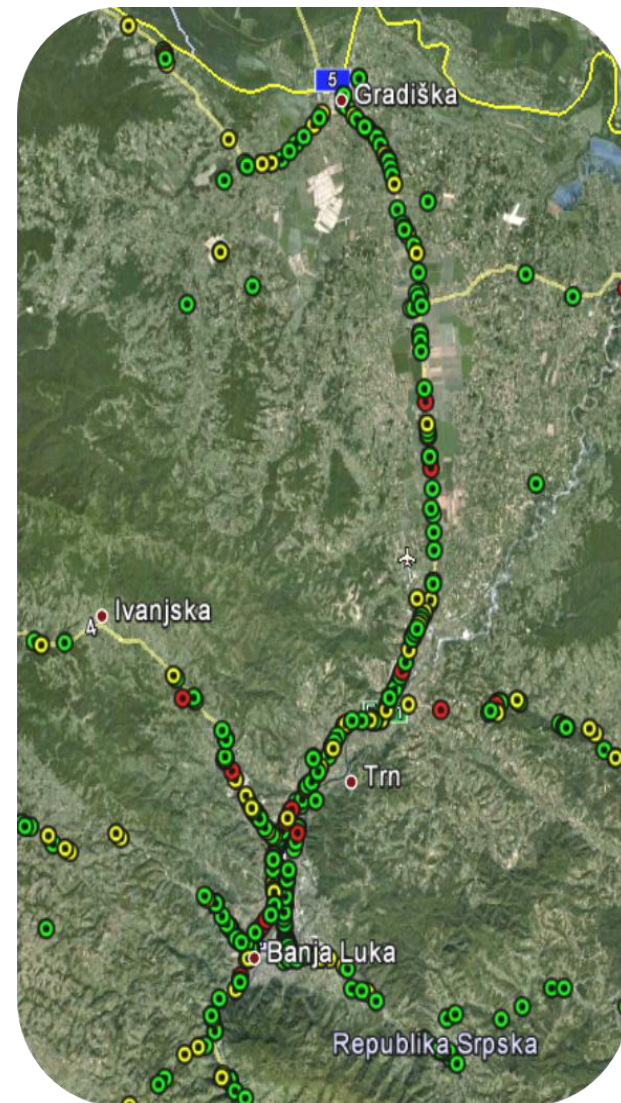
Linear Settlements in the Republic of Srpska



A line of
accident spots



 SWE ROAD



Linear Settlements in the Republic of Srpska



Mixed functions in NovaTopola

The uncontrolled access to properties along highways in medium and low income countries

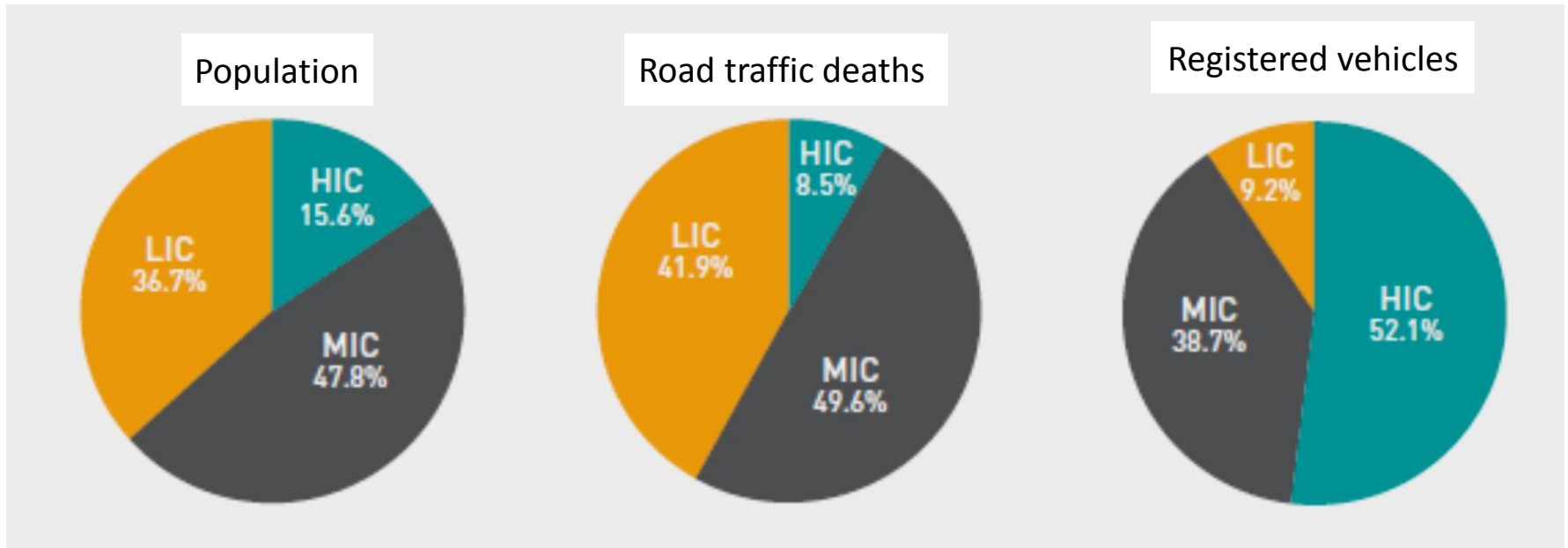


**is starting regularly by farming markets, here in
Togo (R&R 347)**



Deaths vs vehicle ownership

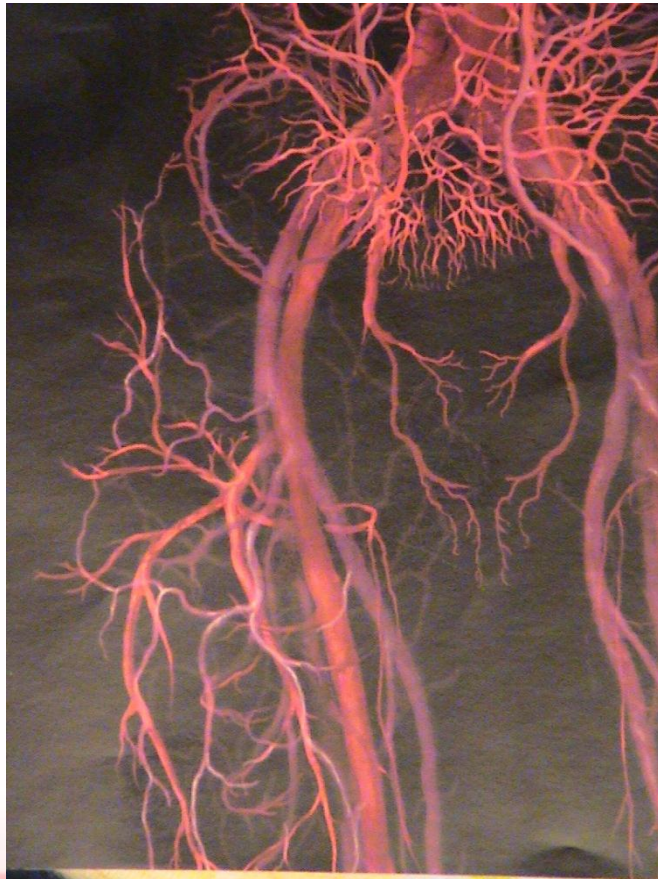
90% of road traffic deaths and injuries occur in low-income and middle-income countries which have only 48% of the world's registered vehicles



False settlements policies and land use planning are reason for so many traffic death in the LIC and MIC countries. What to do?



It needs a better understanding of road networks:
An efficient and safe road network is organized like
our blood system:



It is a hierarchy of

- **Main arteries**
- **Distributors**
- **and capillaries to access the single cells in the muscles and organs.**

Volume and speed:

The blood moves much faster in the Main Arteries

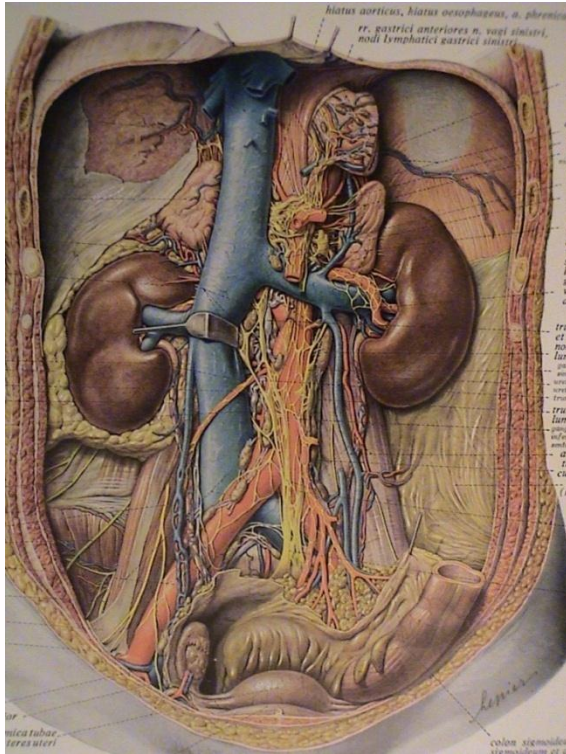
- main arteries to legs and arm 5.8 cm/s
- than in the Organs
- arterioles 0.28 cm/s
- capillaries 0,05 cm/s

So it is with the road network:

For our economies the traffic volume and the speed along our main arteries along far distances has to be higher than in our towns and cities



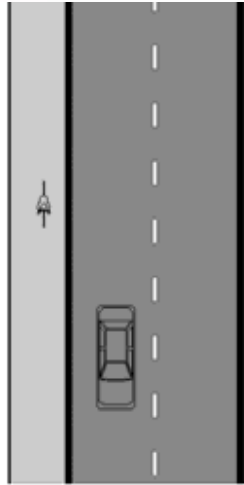
The main blood vessels never provide their surrounding tissue and the organs directly!



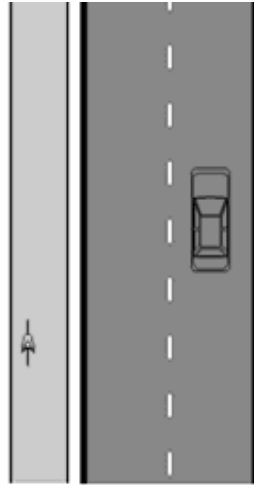
.... And the national trunk roads shouldn't



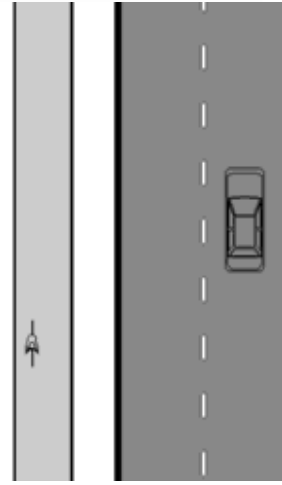
It needs the separation of the vulnerable road users either by parallel access ways/roads



Pedestrian-bicycle path separated by kerb stone



Pedestrian-bicycle path separated by narrow strip



Fully separated path for bicyclists, pedestrians + local cars

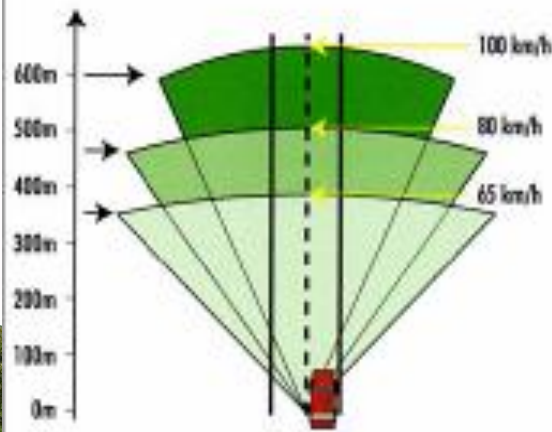


Access road from behind for all local users

Or by new arterials = bypasses for the far going traffic

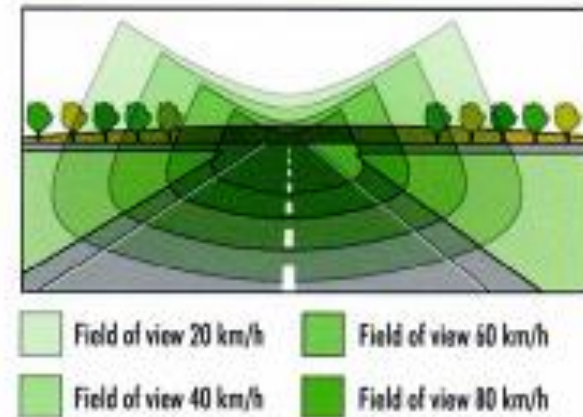
But in the first step it needs

Figure HF-18 Speed and focus point



Based on Cohen, 1964

Figure HF-19 Speed and peripheral vision

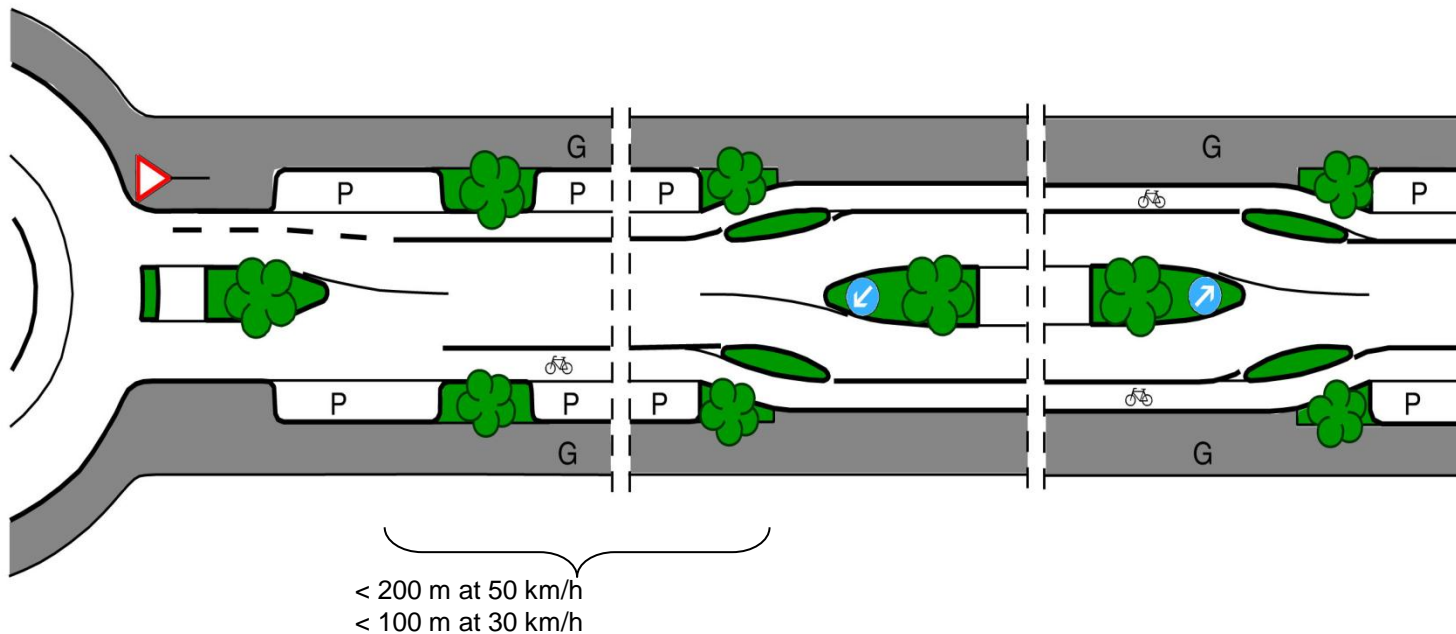


Based on Leutzbach and Papavasiliou, 1980

Speed enforcement by the road itself at the entrance



Systematic Traffic Calming along the settled road sections is the best way for giving safety and good life conditions



Roundabouts are very useful for the design of such sequences of urban rooms

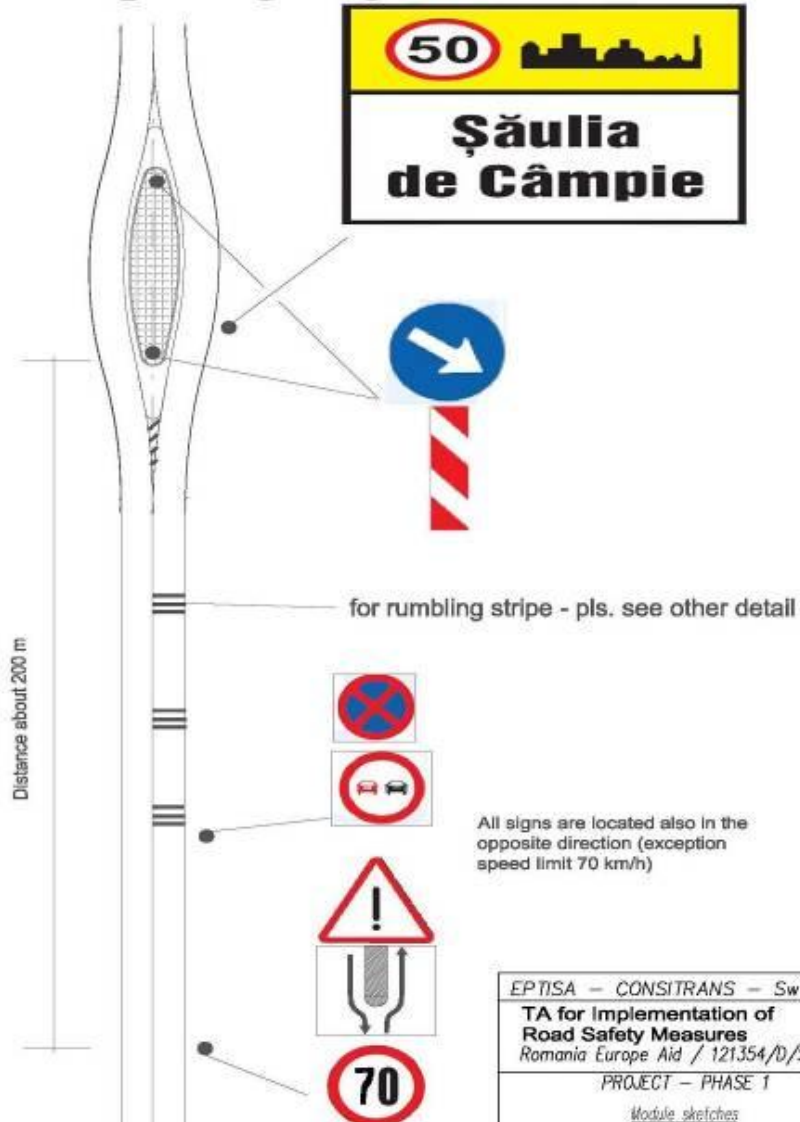


Plantings and islands create those urban rooms



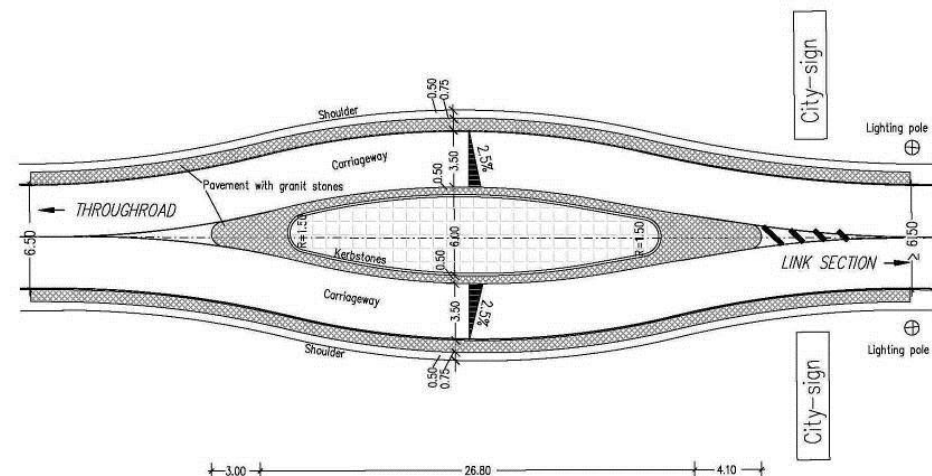
Details at the entrances of settlements

Proper signing of the entrances



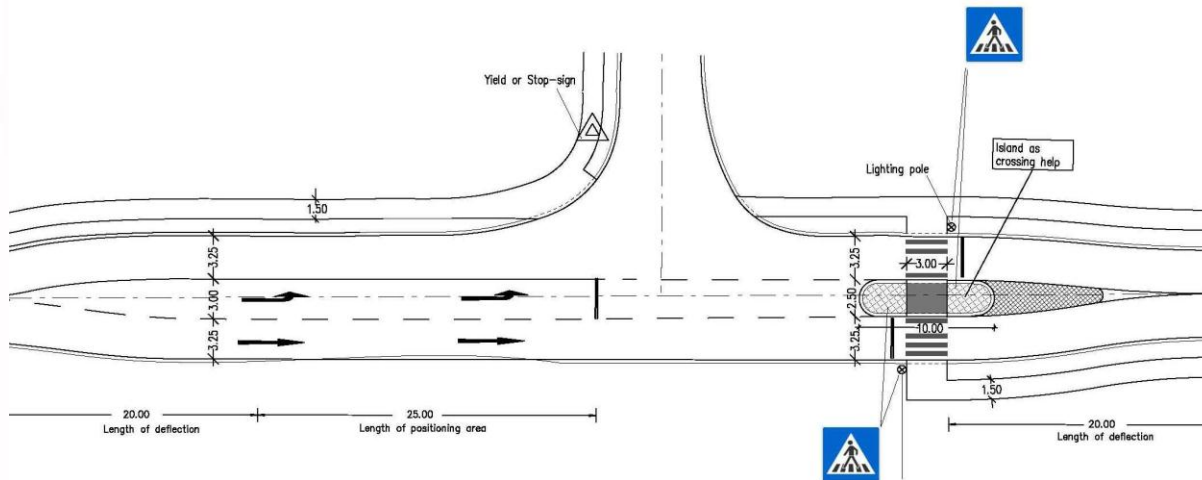
Traffic islands at the entrances of villages and towns

Entrance Island Type B

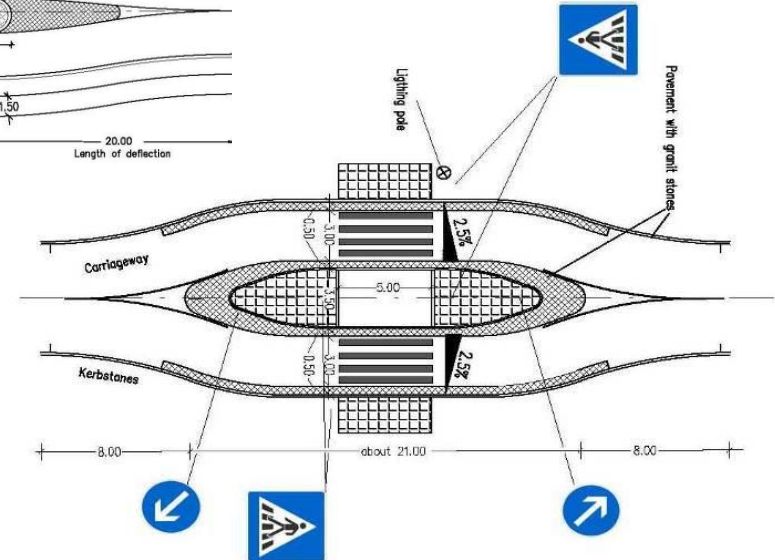


...and inside the settlements

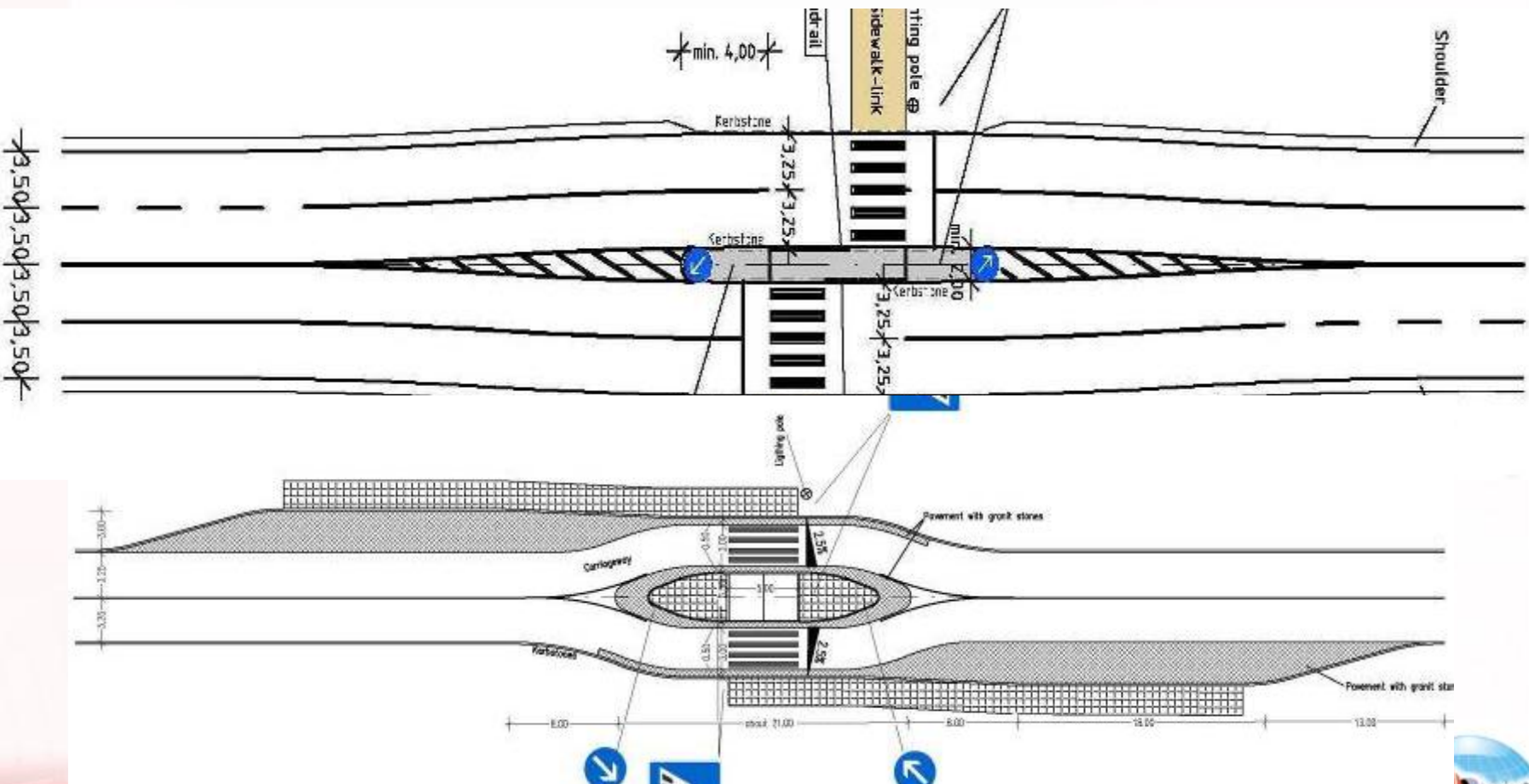
2-lane road with left turn and pedestrian crossing



... safe pedestrian crossings



Stagger island are the safest crossings



The safe System Approach for linear settlements

-needs different design principles and standards for different functions of interurban and urban roads.**
- Avoids mixed functions along urbanized highways.**
Those are the reason for the dramatic losses of lives among vulnerable road users in many low and middle income countries.

We need strong legal regulations against new constructions of houses along highways and rural roads in the laws for Land Use Planning, for Construction and for Access Control in the Road Laws



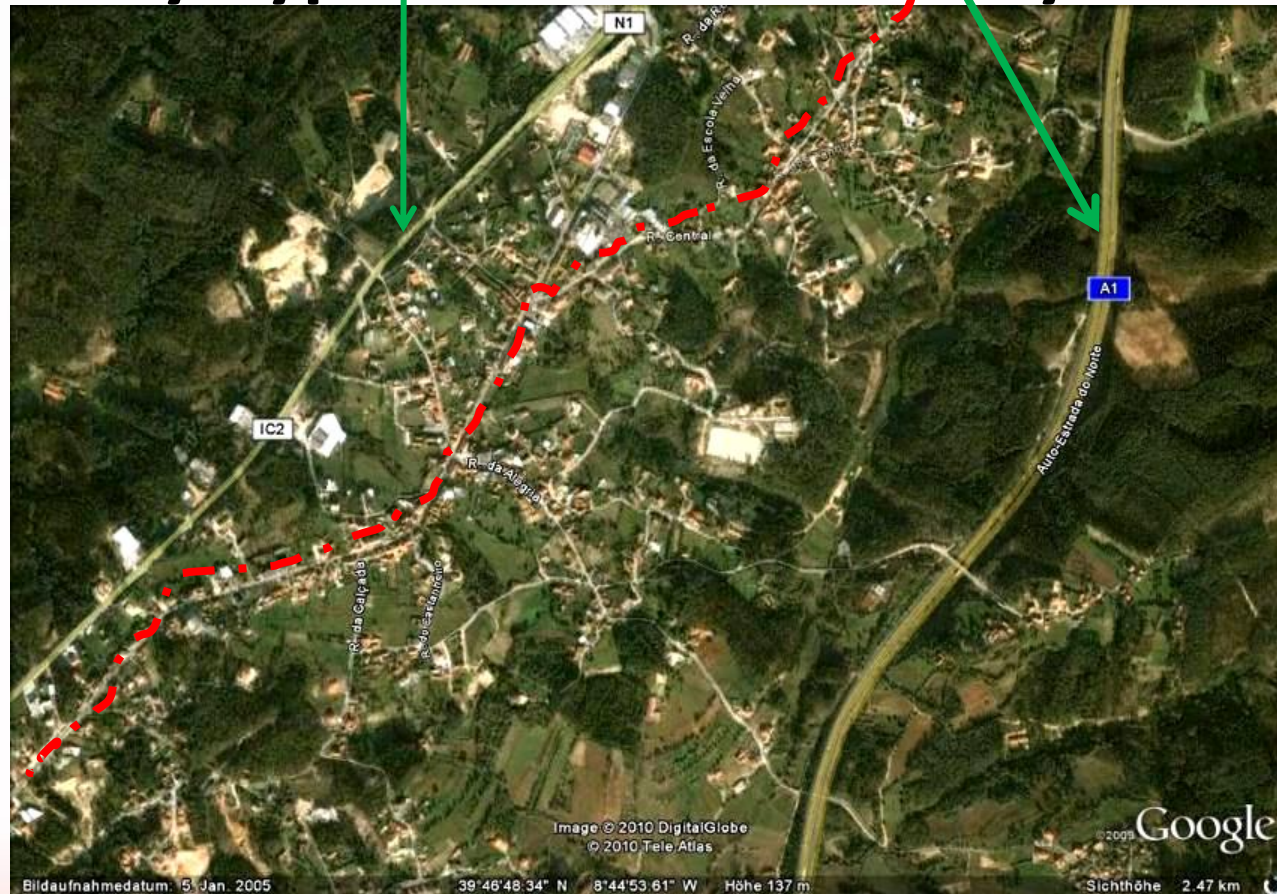
The System Approach to safer roads

we find linear settlements in Belgium from earlier Decades

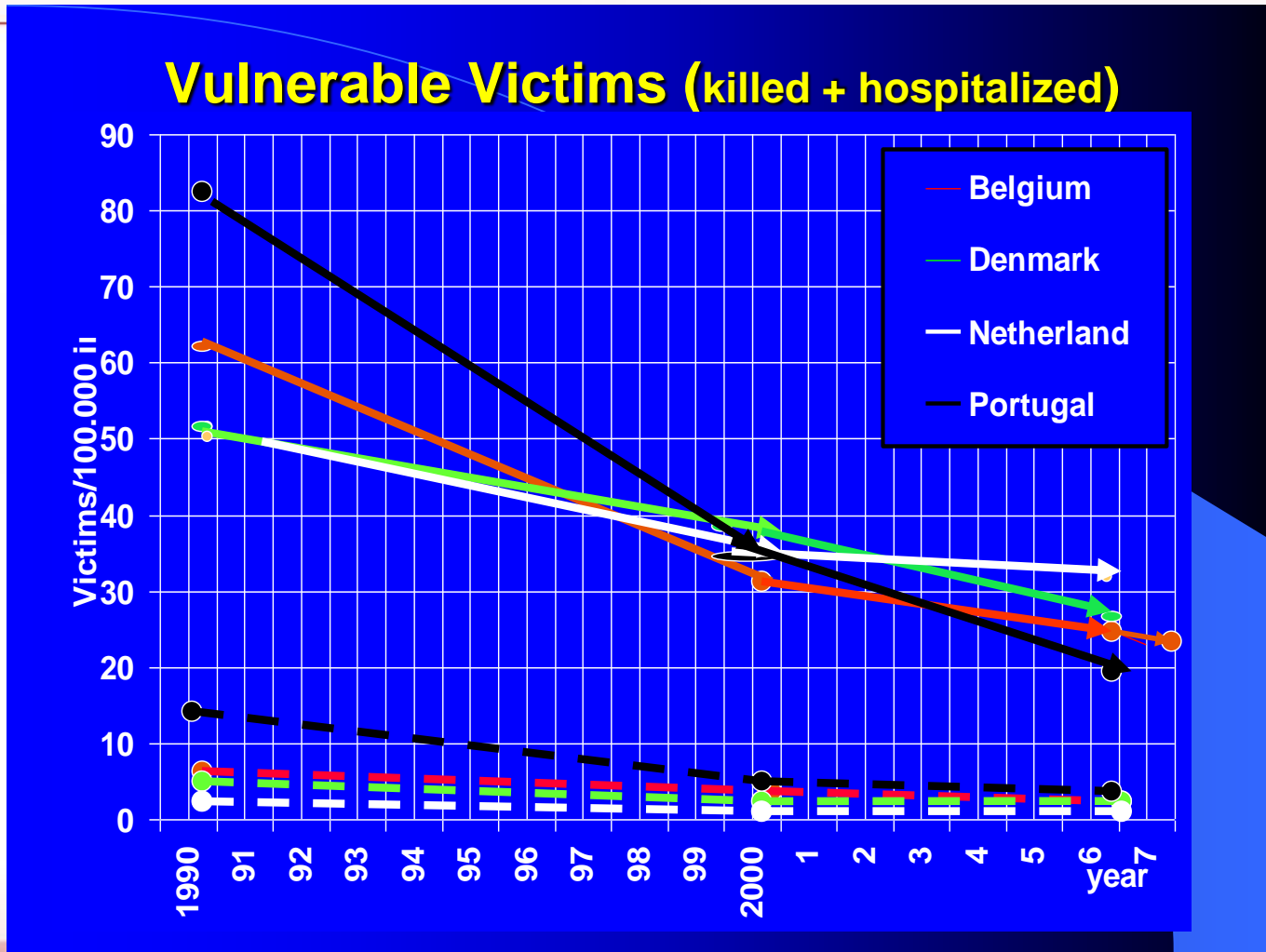


The System Approach to safer roads

Portugal solved the linear settlement problem by bypasses and motorways



Portugal and Belgium solved that problem



But communities need the means and staff for developing their infrastructure to save human lives and health



A Garden City
In Berlin

Tank you
for your
attention