

# Short presentation of a possible project proposal for the 5<sup>th</sup> call Space in FP7

„Velocity measurement with improved precision“



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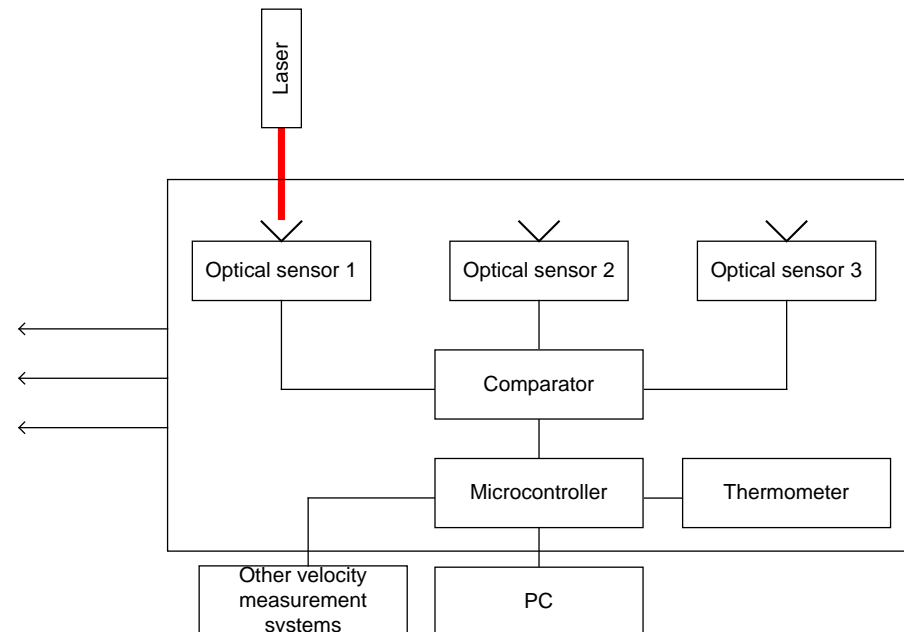
COSMOS FP7 Space Information Day  
19<sup>th</sup> July 2011, Riga, Latvia

# Test equipment for precision velocity measurement



Optical measurement system consists of laser and reference distance fixed on a car. Velocity measurements can be performed under real traffic conditions and various weather conditions. Measurement system can be calibrated with high precision as it is using directly distance and time measurements.

Laser does not have to be perpendicular to the vehicle movement vector. Temperature measurement with thermal expansion compensation makes this system usable in wide range of temperatures ( $-20^{\circ}\text{C} \dots 60^{\circ}\text{C}$ ). Waterproof design makes it possible to use this device in wide range of weather or road conditions. Reference distance is calibrated using distance calibration device with uncertainty of  $11\mu\text{m}$ . Theoretical uncertainty is in the range  $+0.04\% \dots -0.02\%$  (subject for further improvements).



# Precision velocity measurements using GNSS receiver

- Limited signal strength (causes limited measurement time)
- Atmospheric effects
- **Receiver measurement effects**
- **Interference from environment**
- **Reliability**
- **Suitability for legal metrology**

## Needed for possible project

- GNSS receivers possibly suitable for precision velocity measurements
- Simulation of GNSS signal for test purposes in real environment

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