

29th Meeting of the International Traffic Safety Data and Analysis Group (IRTAD) Klettwitz, Germany 22-23 October 2019





Open Science in Road Safety Data

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Background

- Open Science is a new approach to the scientific process, aiming to provide accessibility to all levels of research community and society, increase integrity and reproducibility of research.
- The rapid growth of digital technologies and new collaborative tools enable the vision of Open Science.
- In the EU, the European Open Science Cloud (EOSC) has initiated as a single point of access to all European research data, data services, tools and standards.
- Within this context, there is a need for promoting Open Science within the road safety research community.





What is Open Science?

- Open Science represents an approach to research that is collaborative, transparent, and accessible.
- Research data, research processes and results are freely available, under terms that enable reuse, redistribution and reproduction of the research and its underlying data and methods.
- Includes open:
 - > publications
 - research data / FAIR data
 - software / lab books
 - methodologies / protocols
 - educational resources
 - processes (open peer review)
 - > annotations
- Promotes open research beyond academia, combining
 innovation and citizen science.





The BE OPEN Project



BE OPEN Project



Duration: 30 months

Start Date: 01-01-2019

Call: H2020-MG-2018-SingleStage-INEA Type of Action: Coordination and Support Action GA Number: 824323



Horizon 2020 European Union funding for Research & Innovation Estimated Project Cost: € 1,997,283.75

Requested EU Contribution: € 1,997,283.75



Consortium & Third Parties

- > 17 partners
- > 8 third parties
- > 8 Work Packages
- > 32 Deliverables



(Third Parties)



Objectives

- Capitalize upon existing initiatives enabling Open Science
 - Key actors will coordinate and support actions for promoting Open Science policies, services and infrastructures
 - Involve key actors in planning and implementation
 - Enable key actors to learn from direct experience, previous knowledge and other relevant stakeholders

Facilitate a common understanding among actors

- Promoting Open Science
- Prioritizing existing initiatives and actions at regional, European and International level
- Monitor progress in order to facilitate continuous improvements in Open Science exploitation
 - Proper indicators will be developed for supporting Open Science purposes
 - A monitoring process will be used to address information management, internal coordination, external coordination, risk management and other relevant dimensions
 - Road safety has a prominent role among all transport sectors and topics.



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What are we alming at?

Develop a framework of common understanding of OS in transport

Map existing OS resources

Facilitate an evidence-based dialogue to promote and establish OS in transport

Provide policy framework and guidance for OS implementation in transport

Engage a broad range of stakeholders in a participatory process for OS uptake

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Open Science in Road Safety Research



Opportunities for Road Safety Research

- Open and easily accessible data will facilitate road safety research across communities and countries.
- Open data platforms should make it easier for the researcher to find and use data in research and this should be done at minimal cost.
- The availability of road safety data to all researchers and policy makers could support a data-driven approach in road safety policy making.



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Road Safety Research Data

- Original research data (e.g., data from Field Operational Tests, Naturalistic Driving Studies, research results and research models)
- Operational data directly related to research (as accident data, transport volumes data, etc.)
- Data from published research (as presented in scientific journals, delivered at conferences, workshops, etc.)





Sources of Road Safety Research Data

- EC funded research projects
- Non-governmental and government projects and initiatives
- Industry and research projects
- Libraries of research activities (e.g. CORDIS, TRIMIS, universities, publishing houses or research institutes etc.)
- European Open Science Cloud
- European Union Open Data Portal (EU ODP)
- Registry of Research Data Repositories
- Eurostat, national statistical agencies, national governmental bodies
- Published research articles in scientific journals or at conferences, workshops etc. (e.g. DOAJ)



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Examples of Open Science in Road Safety (1/2)

Road Safety Observatories

- ERSO, European Road Safety Observatory
- OISEVI, Ibero-American Observatory
- African Road Safety Observatory
- Dacota, EC Project Knowledge Centre
- NRSO NTUA Road Safety Observatory





National Technical University of Athens Road Safety Observatory



Examples of Open Science in Road Safety (2/2)

Road Safety Decision Support Systems

- SafeFITS, UNECE-Global Road Safety Model
- SafetyCube, EU Road Safety DSS
- iRAP, Road Safety ToolKit
- PRACT, CEDR
- PIARC, WRA Road Safety Manual
- US NHTSA/FHWA CMF Clearinghouse
- AustRoads Road Safety Engineering Toolkit





road safety TOOLKIT













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Barriers in Data Sharing

- Fragmentation of data ownership and a lack of interoperability between datasets and platforms.
- Different interests of the various road safety stakeholders in data, creating differing requirements for data access.
- Data ownership varies by who generates and collects the data and they may be not willing to share data due to privacy, legal liability, IP, competition, or cost related issues.
- Road safety data are often ethically or commercially sensitive.
- > The diversity of data sources affecting data quality.
- Variations in hardware and software used for collecting the data.
- Lack of expertise in machine learning, data mining, and data management.





Requirements for Open Research Data

- FAIR data: Findable, Accessible, Interoperable and Reusable.
- Ensure data quality, i.e. relevance, accuracy, credibility, timeliness, accessibility, interpretability, coherence.
- Standards are needed for the data collection and data formats.
- > High quality metadata describing properly the data
- Appropriate formats of the metadata, so that search engines easily find and characterize data
- Appropriate infrastructure services so that both data providers and data users easily use open data platforms.
- DMPs should be developed in all research projects, based on online tools conforming to common methodologies.





Ethical Issues

- Road safety data are often ethically or commercially sensitive, requiring tight controls for their access.
- Issues, such as personal or privacy sensitivity, intellectual property rights (IPR), should be taken into consideration.
- Other issues concern fair competition, cybersecurity, and liability.
- The use of strong de-identification techniques, data aggregation and encryption techniques are critical.
- The existence of a clear legislation and a legal framework supporting data security, data protection and privacy is imperative.





Concluding Remarks



Scientific and Social Impact

- During the last years, several Open Road Safety Information Systems have been developed, adding significant value to the quest for safer roads worldwide.
- The more developed Information Systems are associated with countries and regions with higher road safety performance and are a direct sign of advanced road safety culture.
- Road Safety Information Systems are key management tools for developing road safety capacity and engaging stakeholders (not only for providing scientific evidence but also for monitoring efforts).
- Making road safety research results more accessible contributes to better and more efficient science and provides greater evaluation by the scientific community.





Future Challenges

- Open Science could increase the current great potential of Road Safety Systems with:
 - more data and knowledge
 - broader geographical coverage

Global impact could be optimized through:

- a network of open science road safety systems
- standardisation of data, processes and systems
- evidence-based & customized best practice guidelines

Data sharing will allow the verification of the scientific results, could foster collaborations among researchers and promote more public-private partnership.







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