3rd Edition of the International Workshop on Semantics and the Web for Transport (Sem4Tra)

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This volume presents the proceedings of the *3rd International Workshop on Semantics and the Web for Transport*[5] (Sem4Tra) held online, September 6, 2021, co-located with SEMANTiCS 2021 (September 6-9, Amsterdam & Online). Sem4Tra is focused on the application of semantic technologies over the transport domain and its heterogeneous data, with a particular focus on how these technologies could facilitate the Mobility-as-a-Service (MaaS) paradigm. The third edition of the workshop also called for contributions in the context of Smart Cities.

Smart Cities could not be realized without envisioning a change towards the MaaS paradigm for integrated and intelligent transportation. MaaS improves every aspect of transportation from ticketing to navigation, from traffic to parking management, and from car/bike sharing to door-to-door travel. However, to make MaaS a reality, challenges in data integration must be addressed. The development of multimodal travel information, planning and booking services, and the interoperability between business applications are currently limited due to the fragmentation and incompatibility of interchange formats and protocols both within and across transport sectors.

The technology known as RDF, Linked Data and the Semantic Web, proposes a framework to discuss the semantics of terms in a decentralized fashion on web-scale. As MaaS is decentralized by definition, the Sem4Tra workshop targets researchers and practitioners that are contributing to transform the transportation sector by proposing new semantic-based solutions to achieve the MaaS objectives. Moreover, Sem4Tra is an opportunity for disseminating and discussing use cases and studies showing the application of semantic technologies in the Transport domain to tackle the above-mentioned challenges.

The articles included in this volume went through a peer-review process where each submission was reviewed by at least two reviewers. The reviews were open and public, and hosted at Open Review[6]. We accepted six papers (four long research/experience papers, one short research paper, and a system/demo paper) and a journal paper presentation. The articles tackle open problems and

[5] https://sem4tra2021.linkeddata.es/
[6] https://openreview.net/group?id=SEMANTiCS.cc/2021/Workshop/Sem4Tra

techniques about the management and interoperability of transport data using semantic web technologies.

The following papers were accepted for publication and presented at the workshop in two sessions:

- Mobility as a Service on the Web
  - *Third-party payment specification for Mobility as a Service.* Brecht Van de Vyvere, Tim Asperges, Pieter Colpaert, Ruben Verborgh.
  - *Towards a More Informed Multimodal Travel Shopping.* Mario Scrocca, Marco Comerio, Damiano Scandolari, Irene Celino.
  - *Linked MaaS: a vision for leveraging Semantic Web Technologies for Mobility as a Service.* Shams Ghazy, Jing Ying Wong, Pieter Colpaert, Yu Hoe Tang, Andy Chan.
- Semantic Data Management for Transport
  - Journal paper presentation: *Publishing planned, live and historical public transport data on the Web with the Linked Connections framework.* Julian Rojas, Pieter Colpaert.
  - *Semantic Conversion of Transport Data Adopting Declarative Mappings: an Evaluation of Performance and Scalability.* Mario Scrocca, Alessio Carenini, Marco Comerio, Irene Celino.
  - *On the Visualization of Semantic-based Mappings.* Nicolò Oreste Pinciroli Vago, Mario Sacaj, Mersedeh Sadeghi, Safia Kalwar, Andrea vogelsang, Matteo G. Rossi.
  - *Enabling Cross-Border Travel Offers Through National Access Point Federation via Metadata Harmonisation.* Alessio Carenini, Andrea Fiano, Mario Scrocca, Marco Comerio, Irene Celino.

The workshop program included a keynote from Kasia Bourée, expert within the European project Data4PT[7], entitled *Transmodel in RDF?* and dealing with challenges and opportunities of an ontological representation of Transmodel[8], the European reference data model for public transport information.

Organizing Committee

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- Marco Comerio, Cefriel
- Mario Scrocca, Cefriel
- Mersedeh Sadeghi, University of Cologne
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[7] `https://data4pt-project.eu/`
[8] `http://www.transmodel-cen.eu/`

Programme Committee

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