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## Conference Abstract

# Integration of Biodiversity Linked Data and Web APIs using SPARQL Micro-Services

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## Abstract

Web APIs (Application Programming Interface) are a common means for Web portals and data producers to enable HTTP-based, machine-processable access to their data. They are a prominent source of information\*1 pertaining to topics as diverse as scientific information, social networks, entertainment or finance. The methods of Linked Data (Heath and Bizer 2011) similarly aim to publish machine-readable data on the Web, while connecting related resources within and between datasets, thereby creating a large distributed knowledge graph. Today, the biodiversity community is increasingly adopting the Linked Data principles to publish data such as trait banks, museum collections and taxonomic registers (Parr et al. 2016, Baskauf et al. 2016). However, standard approaches are still missing to combine disparate representations coming from both Linked Data interfaces and the manifold Web APIs that were developed during the last two decades to expose legacy biodiversity databases on the Web.

The *SPARQL Micro-Service* architecture (Michel et al. 2018) tackles the goal of reconciling Linked Data interfaces and Web APIs. It proposes a lightweight method to query a Web API using SPARQL (Harris and Seaborne 2013), the Semantic Web standard to query knowledge graphs expressed in the Resource Description Framework (RDF). A SPARQL micro-service provides access to a small RDF graph, typically resource-centric, that it builds at run-time by transforming a fraction of the whole dataset served by the Web API into RDF triples. Furthermore, Web APIs traditionally rely on internal, proprietary resource



## Presenting author

Franck Michel is a research engineer at the University Côte d'Azur, CNRS, France. His research topics notably concern the integration and federation of heterogeneous data sources using Semantic Web technologies, and their publication in the Web of Data.

## References

- Baskauf S, Wieczorek J, Deck J, Webb C (2016) Lessons Learned from Adapting the Darwin Core Vocabulary Standard for Use in RDF. *Semantic Web – Interoperability, Usability, Applicability* 7 (6): 617-627.
- Harris S, Seaborne A (2013) SPARQL 1.1 Query Language. W3C Recommendation.
- Heath T, Bizer C (2011) *Linked Data: Evolving the Web into a Global Data Space*. 1st. Morgan & Claypool
- Michel F, Gargominy O, Terceire S, Faron-Zucker C (2017) A Model to Represent Nomenclatural and Taxonomic Information as Linked Data. Application to the French Taxonomic Register, TAXREF. Proceedings of the 2nd International Workshop on Semantics for Biodiversity (S4BioDiv). CEUR, 1933
- Michel F, Faron-Zucker C, Gandon F (2018) SPARQL Micro-Services: Lightweight Integration of Web APIs and Linked Data. Proceedings of the Linked Data on the Web Workshop (LDOW2018).
- Parr C, Schulz K, Hammock J, Wilson N, Leary P, Rice J, Corrigan Jr R (2016) TraitBank: Practical semantics for organism attribute data. *Semantic Web* 7 (6): 577-588. <https://doi.org/10.3233/SW-150190>

## Endnotes

- \*1 19,300+ Web APIs are registered on ProgrammableWeb.com as of March 2018.