We want to express our sincere gratitude to the reviewers for their valuable insights and constructive criticism, which have undoubtedly contributed to improving the quality and clarity of our work. First, we address the main points raised by the majority and then reply to each review separately.

-GitHub link:

We are thankful to the track chairs for pointing out the technical issue with the GitHub link mentioned in the paper early. We provided a new link(https://anonymous.4open.science/r/pkg-2023) on 2023-05-17 which contains the ontology, PKGs and shared objects as we describe in the paper.

-Research contribution:

Our goal is for our research to provide standards for the creation and automatic update of PKGs. We provide a novel semantic web methodology framework and semantic data integration and mining for representing and integrating data in the PKGs by proposing a new ontology, designing an innovative data integration technique via our algorithm and suggesting a new way of communicating personal data with respect to privacy. Also, we propose an innovative rank model with positive and negative weights for knowledge representation, which personalise the entities based on user data and activity and temporal parameters such as time and frequency of terms.

-Technical soundness:

As in recently accepted papers in the ISWC research track [1,2], the technical soundness of our work is supported through real use case scenarios (4.4,5.1). Our technical soundness incorporates methodological rigour that the research methodology is carefully designed and implemented, including clear research questions, data collection, limitations and ethical considerations. Further, we require that the PKGs produce valid and reliable outcomes, meaning we obtain accurate, consistent and reproducible outputs based on the technical implementation in our use case and paradigm.
The parameters for success of our PKGs are capturing user related data, semantics and personalisation. The first is validated at the extracted PKGs(GitHub), for semantics we rely on DBpediaSpotlight. For personalisation, the user data, user activity, time and frequency of reappearing entities importance are tested and each one affects and influences the PKG content as reported in Sections 4.4 and 5.1.

[1]Leinberger, Martin, et al. "Deciding SHACL shape containment through description logics reasoning." *ISWC 2020*

[2]Van de Wynckel, Maxim, and Beat Signer. "POSO: A Generic Positioning System Ontology." *ISWC2022*

-Initial weights calculation:

To improve the clarity of our work we will add to the

“The exact weight importance of each input data is determined after iterations by the rule of thumb.”

to

“based on empirical data gathered from Learnweb in use and research related to users’ search behaviour [10]. Therefore, our weights indicate that, on average, a user clicks around 1 per 5 snippets and visits 2 websites per search query. The weights can be modified to be adjusted to fit a specific group, as cultural and other parameters could influence online behaviour. "

[10]Zhang, Ruizhe, et al. "Constructing a comparison-based click model for web search." *Proceedings of the Web Conference 2021*. 2021.

-Ontology:

We had our ontology published in a public registry that allowed us to visualise, validate, check for errors, and query it before populating it to create the PKGs. For anonymity reasons, we temporarily removed it from the registry, and for the submission period, it can be found in ttl format on our GitHub.

Review 1:

Our ontology contains the main classes for the description of the processes related to web search. To gain more clarity we added rich metadata, and having it populated with user data we generate the PKGs. Our algorithm is used to create PKGs.

Q1)See “Inital weights calculation” above.

Q2)We report
“The user can demonstrate interests in different ways, by expressing it directly in the user profile section of interests or indirectly, by the groups they have joined and timely search activity. For the latter, the more time passes, the least relevant it becomes.".
We will add for clarification
“...as the user activity demonstrates with higher accuracy the current user’s interest than their profile which could be outdated as time passes.”

Q3)See “Technical soundness” above.

Q4)Based on one semester's data for the PKGs in Section 5.1 “PKGs in Collaborative Search Results”, the size of the PKG grows linearly with the amount of user’s data in the Learnweb platform. Our virtual PKG approach let us restrict the size of additional information which can be contained in a single extra table in RDB as we describe in Section 5.3.

Review 2:

Our paper suggests the creation of PKGs that can connect to KGs; we highlight that we do not feed personal data to a KG but rather create a new model (PKG) which contains personal and personalised data (ranked entities) and communicates with downstream applications while respecting privacy. Our Virtual PKGs can be fully materialised and shared by command.

Lot.linkeddata.es [3] is consistent with the ontology methodology we followed for our ontology development.

Based on FOOPS (https://foops.linkeddata.es/FAIR_validator.html#), we follow FAIR principles, except for the parts which are removed for anonymisation.

[3] *Poveda-Villalón, M., Fernández-Izquierdo, A., Fernández-López, M., & García-Castro, R. (2022). LOT: An industrial oriented ontology engineering framework. Engineering Applications of Artificial Intelligence, 111, 104755.*

Review 3

We will add further explanations in text and comments for each line in Algorithm 1.

Although PKGs are inspired by PIMs they have significant structural differences. Therefore, due to space limitations, our related works are concentrated around PKGs rather than PIMs and modelling languages[7], semantic networks visualisation[6], and ontologies[5]. Research in [4] is related work of our SOTA comparison (ref 19 in manuscript). Similar to w5h[7,8], we develop metadata for our classes, and [7] could fit in our future work as a resources finder in the group.

[4]Dittrich & Salles, iDM: A Unified and Versatile Data Model for Personal Dataspace Management 2006

[5]Katifori et al. :OntoPIM: How to Rely on a Personal Ontology for Personal Information Management,2005

[6]Murakami & Mitsuhashi: A System for Creating User's Knowledge Space from Various Information Usages to Support Human Recollection, 2012.

[7]Vianna et al: Searching Heterogeneous Personal Digital Traces, 2019

[8]Kalokyri et al.: Semantic Modeling and Inference with Episodic Organization for Managing Personal Digital Traces, 2017