1. Introduction

Interoperability is the exchange of information and its use without special effort on the part of systems (ALA 2000; Zeng and Chan 2004). This implies the possibility of different knowledge organization systems (KOSs) communicating with each other with no dependence on a precise actor except on an open standard such as a user interface (UI) (McCrees and Daniel 2017). This delineation is drawn on to present interoperability as a noesis or abstraction that is conceptualizable as a UI. KOSs source(s) and target system(s) have their own – independent – structures and characteristics, hence interoperability cannot be ignored. A UI can be used to hide all the details in each KOS structure and characteristics, and users would only have to interact with the UI since it integrates all the various KOS notwithstanding their structures, purpose and characteristics.

A KOS is layered; and consists of theoretics, structures, symbols, the digital aspect(s), and the application layer. The contribution of this work falls within the application layer (Gnoli 2013). This paper draws a connection between user experience (UE) and (current) interactivity attributes and reports on the possibilities their presence on a KOS UI means towards supporting interoperability for better information access. The aim is to combine the continuous disparate source(s) and heterogeneous target systems that Search Engines (SEs) rely upon - the example KOS highlights the need to find this link. For example, SE - particularly those of the Web – interact with key elements (Garud and Kumaraswamy 2005) (i.e. KO systems) such as thesauri, taxonomies, folksonomies and registers (Shiri 2014). These KO systems are incongruent and need to understand each other for the SE to provide satisfactory services to users. UE, Interactivity and other user attributes are provisions that are required to develop interoperable UIs (iUIs). For instance, a good SE should be able to collate users’ IN(s) as if it completely understands them. The UI can provide a standard for KOSs to connect with each other with no dependence on each other without the user knowing. This can only be possible if there exists a UI that promotes user attributes like UE and interactivity to the foregoing end. Thus, useful user experiences and robust interactivity can influence interoperability and facilitate access to information.

2. Literature review

In the KOS literature effort has been made to introduce interoperability within a single search apparatus (Zeng and Chan 2004). Existing UI were only able to cope with
the level of interoperability that was needed then, unlike now. The consensus in the
digital environment is for more possibilities in terms of information presentation and
access like Google that provides aggregate search platforms. However, it is necessary
to render the different KOS interoperable within a UI. If interoperable KOSs are to be
developed, it requires some level of cogitation, which is both technical and more
intellectually abstract (see Figure 1).

Figure 1: The Intellectual abstraction towards UI modelling

3. Method/methodology

In order not to violate the general principles of UI design especially “user control
and freedom” we are conscious of the fact that UE attributes may be unmanaged. With
the attribute of interactivity (at present), such control can be put in the hands of users.
The constructivist theory was relied on to inform how users can form their own
knowledge, to be able to use UIs towards “best retrieval results”. UE and Interactivity
attributes were conceptualized in a qualitative and quantitative research methodology.
With user-centric data a measurement model was proposed. The outcome of the
analysis was a measurement model that translated users’ requirements and reported
essential components of an iUI. A personal approach was employed to validate the
users’ requirements following the provisions in the literature (Idoughi et al. 2012).

4. Expected result

Interoperability problem in KOS is also a software engineering problem. Measurable
attributes for UI design that support the interoperability of SEs as KOS is presented
using a measurement model as presented in Figure 2. Cognizance of the advent of
mobile devices that use touch-screens, KOSs are used on the fly. This presents a whole
new twist to the issues raised so far. The eclipse sign shows that more attributes can
therefore be added (found) considering the foregoing dynamics.
5. Conclusion
We conclude that KOS’s success at providing information access and service delivery does not depend solely on the technical aspect of re-engineering KOS’s source and target system for better interoperability alone. For SE to operate with satisfactory results, the purpose of each KOS can be harnessed by a good UI. This implies, therefore that the intellectual aspect, which could encompass statistical modelling (among other approaches) of UI to realize user requirements, is also of paramount importance. This work is descriptive and as such further theoretical insights, empirical research, and testing is still needed.

References


