# Identifying management issues in networked KOS: examples from classification schemes

*Aida Slavic*
*UDC Consortium*
*aida.slavic@udcc.org*

*Antoine Isaac*
*Vrije University Amsterdam*
*aisaac@few.vu.nl*

The design and subsequent management of bibliographic classification schemes has to balance two requirements that are not easy to reconcile:

a) schemes have to be extensible, expandable and hospitable to new knowledge over an unlimited period of time
b) schemes have to be stable with as little change as possible, i.e. fewer changes of the main scheme structure as possible to support information integration.

In addition, the classification scheme, being a pre-coordinated KOS, presents a separate set of problems with respect to differences in classification terms as originally published in the scheme by its owners vs. those developed in the process of classification use (subject metadata).

Recent developments in KOS standards, from BS 8723 and SKOS to the new FRSAR model, open new possibilities for exploiting subject data but they also make us aware of various management and usage issues. The SKOS standard, in particular, features the publishing and unrestricted sharing of vocabulary data among its goals. One of the key issues in KOS sharing is the management of persistent identifiers, e.g. HTTP URIs, for concepts. Experience gained from managing older and well-established classification schemes shows that this issue is far from trivial.

The owners and users of universal classification schemes whose world-wide applications have been used for over a hundred years, such as Dewey Decimal Classification, Universal Decimal Classification, and Library of Congress Classification, have been grappling with the issue of class identification for a long time. The automation of these systems in 1980s and 1990s helped owners and publishers manage vocabulary changes but policies and implemented solutions differ from scheme to scheme and are tied to proprietary editorial systems and databases. Porting KOS into an open web of linked data, as SKOS targets it, requires the issue of class/concept identification to be addressed further in the public domain.

Using examples from the Universal Decimal Classification and drawing parallels with other classification schemes, the authors will outline and illustrate aspects of vocabulary change that have a major impact on vocabulary sharing and class URI management.

The following specific issues will be discussed and illustrated with examples:

1. cancellation of class notation
   a) when a cancelled class or concept does not have a replacement or cannot be mapped to another class

b) when a cancelled notation is replaced by another simple notation
c) when a cancelled notation can be represented by the combination of two or more different notations

2. representation of pre-combined notations that can be factored to simple notations that have their own identifiers
      a) in the standard scheme (published by the owner):
- when a compound notation is represented in the scheme with an identifier which is different from identifiers of the component parts
- when a compound notation is represented as an example of combination but is not assigned an identifier

      b) in subject authority data (published by users of the scheme)
- when users create a pre-combined expression that does not exist in the standard scheme and thus the URI is created not by the scheme owner but the scheme user

With respect to scheme revision and cancellations, the authors will also illustrate some problems in re-use of once cancelled notations to represent new concepts over the period of 5-50 years and why in enduring classification systems this problem cannot be avoided and should be anticipated. With respect to the identification, representation and publishing of pre-combined concepts, this issue will certainly need more attention in SKOS as the standard starts to be widely and simultaneously used by both scheme publishers/owners and scheme users.

The problems discussed here are common to all classification schemes and although the editors and designers of traditional schemes may be more aware of them, the examples and illustrations shown here will be of concern to authors and designers of new KOSs as well.