                   Using Universal Content Identifier (UCI)
                       as Uniform Resource Names (URN)

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Abstract

   This document describes a Uniform Resource Name (URN) namespace for
   the National Computerization Agency (NCA) for naming persistent
   digital resources such as music, videos, texts, images, e-books, and
   other types of digital resources produced or managed by NCA.

1. Introduction

   NCA is a non-profit organization with a mandate to develop and
   promote information infrastructure and manage public digital contents
   in Korea and possibly worldwide.

   NCA has been supervising digitalization projects with various
   organizations. The contents involved in such projects include
   millions of technical papers, cultural properties, educational
   materials, scientific research reports. Those organizations manage
   the digital contents in a standardized way set by NCA and provide
   users with various content services via internet.

   NCA wishes to issue globally unique and persistent IDs to digital
   resources and assign relevant organizations as its registration
   agencies under the Universal Content Identifier (UCI) scheme. It is
   beneficial for NCA, its registration agencies, and the value chain
   players in e-commerce, to have the UCI URN namespace, under which all
   the contents and components produced and managed by NCA are digitally
   registered, identified, and resolved.

   NCA has been developing and operating the UCI system that provides
   registration, resolution, search, and administration functionalities.

The functionalities are going to be added and modified once the use
of UCI URN namespace is approved. NCA would like to assign unique,
permanent, and location-independent names based on the URNs for the
resources it produces or manages. See
http://www.nca.or.kr/eindex.htm for more information on NCA.

This namespace specification is for a formal namespace.

2. Specification Template

   Namespace ID:

      "UCI"

   Registration Information:

      Registration Version Number: 1   Registration Date: 2004-07-xx

   Declared registrant of the namespace:

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      Web   : <http://www.nca.or.kr> or <http://home.uci.or.kr>

   Declaration of syntactic structure:

      The Namespace specific string of all URNs assigned by NCA conforms
      to the syntax defined in section 2.2. of RFC2141, "URN Syntax"[1].
      The syntax convention is described in the form of ABNF rules [2]
      as the following.

      UCI = prefix "-" instance *1(":" qualifier)

      prefix = 1*(alphaDigit) *1(":" 1*(alphaDigit))
               1("+" 1(alphaDigit))
      instance = 1*(trans / "%" HEXDIG HEXDIG)
      qualifier = head 1*(alphaDigit) *2("-" head 1*(alphaDigit))
      trans = alphaDigit / other
      alphaDigit = ALPHA / DIGIT
      head = "C" / "R" / "F"
      other = "(" / ")" / "+" / "," / "-" / "." / "=" / "@" /
              ";" / "$" / "_" / "!" / "*" / "'"

The UCI identifier consists of two parts: prefix code and content
code. The content code is also divided into instance code and
qualifier code, which is optional. A prefix code is given to a
registration agency, subordinate registration agency, and/or its
registrants such as 'G3000+music', 'I600', 'I500+paper', and so
forth. A content code is issued to each individual digital
resource such as 'cii90007', '8987409', and so on.

Relevant ancillary documentation:

   None.

Identifier uniqueness considerations:

   It is the responsibility of the registration authority, or NCA, to
   guarantee the uniqueness of identifiers and the names of
   subordinate naming authorities. For example, a software tool
   developed and used by NCA checks if a UCI identifier is being
   reassigned and verifies that it is assigned to at most one
   resource during the registration process.

Identifier persistence considerations:

   Registration Agencies are all eligible to maintain the usability
   of the UCI URNs for a reasonably long period. As a government
   sponsored organization, NCA will operate a backup service and make
   an effort to find a substitute in case a registration agency
   becomes out of operation.

Process of identifier assignment:

   Assignment of UCI identifier is delegated to the registration
   agencies. NCA appoints UCI registration agencies and provides its
   namespace by assigning a unique registration agency code that is a
   part of NSS. Followed by the authorized namespace, each
   registration agency sets its own identifier scheme that conforms
   to the UCI syntactic structure.

   A UCI for a digital resource is issued by the registration agency,
   upon a request of a registrant. The following is an example
   identifier.

   e.g., urn:uci:I700-2987098

   where, I700 is a registration agency code and 2987098 is an
   identifier assigned to a digital content.

   Process for identifier resolution:

      Resolution is controlled by NCA and its delegatees. The list of
      UCI registration agency codes is maintained by the registration
      authority. Each registration agency maintains the list of
      subordinate registrant codes and identifiers registered to the
      registration agency.

      Identifier resolution steps are as follows.

      - (Step1) Global resolution: NCA resolves which RA is dealing with
        the associated resource by parsing the registration agency code
        of the UCI.
      - (Step2) Local resolution: The corresponding RA parses and
        resolves the rest of the identifier

      The global resolution is performed by UCI resolution server that
      is open to public. (Currently http://rootadmin.uci.or.kr:9000/
      {UCI identifier} will give you resolution results.)

   Rules for Lexical Equivalence:

      The "prefix" is case-insensitive. So there will not be two
      registration agencies whose names differ only in case.

         urn:uci:{prefix code}:

      is case-insensitive for matches. Remainder of the identifier is
      case-sensitive.

   Conformance with URN Syntax:

      The UCI syntax fully conforms to RFC2141 syntax rules for both NSS
      and NID.

   Validation mechanism:

      Valid list of prefix code will be available via both on-line and
      off-line upon request. The validity of the rest of identifier can
      be offered via on-line service. (Currently at http://rootadmin.
      uci.or.kr:9000/{UCI identifier} by typing a query UCI identifier)

   Scope:

      Global.

3. Security Considerations

   There are no additional security considerations beyond those normally
   associated with the use and resolution of URNs in general.

4. Namespace Considerations

   The Korean government has been funding the UCI project with the
   vision that it will be an essential component in realizing
   interoperability of digital contents owned by individual institutes
   and organizations. The resolution service provided by NCA and its
   registration agencies via networks will play a central role in
   achieving such a goal. Moreover, the resolution service is open to
   the public without discrimination.

   The assignment and use of identifiers is performed according to the
   rules established by NCA. It abides by the URN requirements and
   syntax. Within a UCI namespace, a registration agency manages
   subordinate namespaces and maintains the metadata of digital
   contents.

   For making the service available to the public, a global resolution
   service is run by NCA through a service server and local resolution
   service is provided by the corresponding registration agency.

5. Community Considerations

   The assignment and use of identifiers within the namespace are open,
   and the related rule is established by NCA. Registration agencies
   are evaluated and selected fairly and shall have the responsibility
   of processing registrants' requests for registering digital contents.
   Registration authority and registration agencies shall operate
   resolution servers for UCI namespace and subordinate namespaces,
   respectively. Digital content users can access the resolution
   servers to fetch resolution results. The reference software is
   developed, and resolution servers are now in operation.

6. IANA Considerations

   The IANA has registered the "UCI" namespace in the IANA registry of
   URN NIDs. For more information about URN namespace, see [3].

7. Normative References

   [1] Moats, R., "URN Syntax", RFC 2141, May 1997.

   [2] Crocker, D. and P. Overell, "Augmented BNF for Syntax
        Specifications: ABNF", RFC 2234, November 1997.

   [3] Daigle, L., van Gulik, D., Iannella, R., and P. Faltstrom,
        "Uniform Resource Names (URN) Namespace Definition Mechanisms",
        BCP 66, RFC 3406, October 2002.

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