BURNS: BASIC URN SERVICE RESOLUTION FOR THE INTERNET

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***Abstract*—This paper describes the design and implementation of a Uniform Resource Name (URN) resolution service. The resolution process is based on standard Internet technologies to encourage early deployment. The URN resolver returns Uniform Resource Characteristics (URCs) which describe attributes of the named resource. The URCs are based on a modified Dublin Core metadata element set. The underlying URCs are managed by an X.500 database.**

***Keywords*—Uniform Resource Name, Uniform Resource Characteristics, WWW, Internet Resolution Service, Naming and Metadata, Dublin Core, X.500 Database.**

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1 INTRODUCTION

To support the activities of information publishing and discovery, an infrastructure for naming and describing resources is very important. This paper gives an overview of the requirements for naming and outlines a solution to these issues, with emphasis on easy deployment on the Internet.

The Internet Engineering Task Force (IETF) has recognised the importance of globally unique resource naming and metadata (descriptions) by supporting two working groups charged with developing solutions for the Internet information architecture. The naming problem is to be addressed using Uniform Resource Names (URNs), and the metadata problem with Uniform Resource Characteristics (URCs) [1].

Currently, the WWW uses Uniform Resource Locators (URLs) to advertise and provide access to information and services on the Internet. The syntax of a URL is strongly coupled to a number of protocol- and system-dependent factors. Although URLs were designed to specify the location of a resource, they have become the defacto standard for identifying resources. This has lead to many problems as URLs frequently change and become invalid.

The main motivation behind the use of URNs and URCs is that the combination of

- a unique naming system (URN), and a flexible metadata scheme (URC)
- will enable resources to be published and effectively located and retrieved. A *resolution* service will bind the URN to a URC.

This paper gives an overview of the naming and metadata issues currently being investigated, and the operation of our implementation of a URN to URC resolver. Section 2 describes the naming issues. Section 3 describes the metadata issues. The operation of our resolver is presented in section 4, and an example of how URNs and URCs may be used, is presented in section 5. Future directions for this work are described in section 6.

2 NAMING

Names are required for identifying resources. Resources must be uniquely identified so that we can find, catalogue and access them. The need for names is fundamental to any activity, and this is universally recognised. However, the actual requirements of the naming system are not always properly recognised, resulting in solutions which do not fully address the needs. In this section, the naming requirements are identified and our naming scheme described; its advantages and disadvantages are discussed.

2.1 REQUIREMENTS

When naming systems are used, the concept of a naming authority is important. This is the body which is responsible for the system and ensures that the naming scheme is adhered to. A naming authority has the right to generate new names under the scheme, or to grant that privilege to others.

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