

## **An International Resource Registry for National Metrology Institutes**

Concept Paper  
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An initiative led by NIST, and soon to be carried out in the context of the Research Data Alliance (RDA),<sup>1</sup> aims to build a global data resource registry for materials science. This initiative is inspired by a global astronomy community effort<sup>2</sup> that utilizes a system called the Resource Registry to describe, locate, and provide access to some 13,000 data resources hosted at over 100 organizations. The resulting framework could also be used by national metrology institutes (NMIs) for discovery and access of reference data and other assets in support of research and industry.

### *The Concept*

While the International Bureau of Weight and Measures (BIPM) curates an index of calibration and measurement capabilities of NMIs and their Designated Institutes,<sup>3</sup> presently, there is no systematic way to search across all NMI holdings to discover resources such as standard reference data (SRD), data associated with most peer-reviewed publications, or other data assets that they may have available. By utilizing the resource registry framework already in development for materials science, but modifying the metadata schema to describe metrology data resources, we could build a system for international data discovery in metrology.

### *How It Would Work*

The idea behind a resource registry is to build a combined index of data and data services by drawing on distributed metadata descriptions. A consolidated index is constructed dynamically using the Open Archives Initiative Protocol for Metadata Harvesting (OAI/PMH) or equivalent technology. Metadata records are periodically re-harvested to account for new content or other changes in services. The consolidated index is searchable by individuals through a web page interface, or by computer programs and scripts through an applications programming interface.

NMIs would describe their data resources using an agreed upon metadata vocabulary, and would make this resource metadata available—harvestable—using OAI/PMH or similar technology. NIST can provide a simple software stack to make it straightforward for organizations to make this information available. If a small NMI did not have the means

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<sup>1</sup> <http://rd-alliance.org/>

<sup>2</sup> <http://www.ivoa.net/>

<sup>3</sup> <http://kcdb.bipm.org/AppendixC/default.asp>

to host a metadata service, they could still register their services through another NMI or through a common registration service hosted at BIPM or elsewhere. NMIs with regional centers could use the same technology to harvest distributed metadata records into their combined index, which in turn would be harvested to one or more consolidated resource registries.

### *Benefits*

A system such as this would provide a highly visible means for furthering international collaboration among NMIs, fully consistent with the mission of most NMIs and of the BIPM. NMIs could easily identify valuable data resources already developed by others, avoiding duplication of effort, and gaps in metrology resources such as SRD could also be more easily assessed. The result would be a global ecosystem of metrology data resources of value to the broad research and industrial communities. By championing this initiative, NIST would demonstrate its willingness to support international cooperation and collaboration at the highest level.