Digital Mathematics Library in Japan as an overlay of digital repository systems

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The notion of Digital Mathematics Library (DML) is based on World Digital Mathematics Library formulated by International Mathematical Union. Because there are various forms of mathematical literature which differ by country, each country was expected to construct their DML called DML-JP (`sparc1.math.sci.hokudai.ac.jp/dmljp/`). DML-JP is the counterpart of DML in Japan and is realized by digital repository overlay. In Japan, there are over 200 mathematical journal titles and about 70,000 articles indexed by *Mathematical Reviews*. All of them are the target of our DML and half of the articles are found in DML-JP, which are harvested from 40 institutional repositories and subject repositories.

Electronic edition of major journal titles are joined with Project Euclid (`www.projecteuclid.org`) and many institutional repositories (`www.nii.ac.jp/irp/`) contain relatively small scale journals. These platforms have OAI-PMH facility and we could construct DML-JP as a metadata based repository through metadata harvesting. The latter jornals are relatively minor titles, however, important resources of scholarly communication to mathematical community. So one purpose of DML-JP is to provide value-add services for such journals.

However, because there does not exist the full list of mathematical journal titles published in Japan, we have difficulty to determine whether an article is mathematical one or not. JAIRO/IRDB (`jairo.nii.ac.jp`) helps us to avoid the problem because it contains all the metadeta of institutional repositories

in Japan and all we have to do is to match each articles in JAIRO/IRDB with *Math. Reviews*. Furthermore, MR number and Mathe-
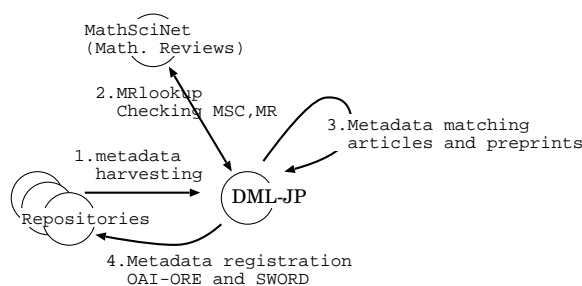

Figure 1: Diagram of DML-JP workflow.

matics Subject Classifications (MSC) on each article in *Mathematical Reviews* are added to original metadata as follows.

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IR Author: Maeda, Masao
IR Title:  The four-or-more Vertex Theorems
    in 2-dimensional Space Forms.
IR Official URL: http://hdl.handle.net/10131/1069
MR MSC Primary:   53A35, 53A, 53
MR Math. Reviews ID: 1710269
```

The table is a sample metadata for an article. IR: means the entry was retrieved from IR and MR: Math. Reviews.

We prepare methods by which we can put the MR number and MSC into the original institutional repositories. One of the method is an original API and the other is SWORD. We also provides the contents of DML-JP by OAI-ORE Atom serialization. Figure 1 shows the workflow. As shown above DML-JP is a typical value-added services from the viewpoint of digital repository community.

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