A multi-layered approach to OAI protocol in multiple metadata environment
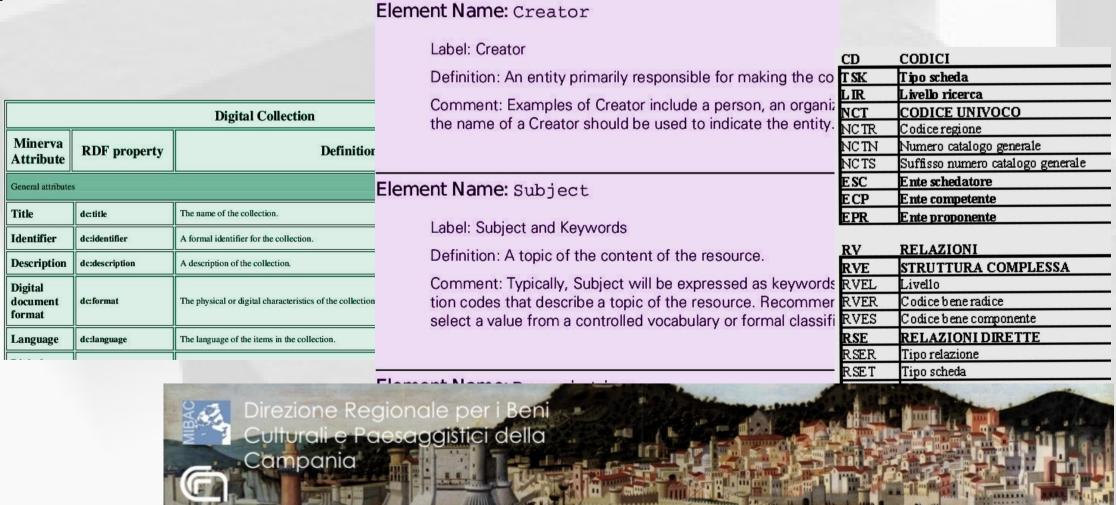
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We developed: an OAI Data Provider Harvester - Gateway, connected to the OAI official site for OAI Server's indexing and update; an experimental OAI server; a registered DSpace repository extended to manage Michael metadata set. The current setup contains about 15.000 elements describing cultural heritage goods located in Naples.

Our researches are focused on managing metadata-based information in the context of the semantic web oriented arena. We are pursuing this goal along different paths: extending the CIMI approach, in order to use the same syntactical element to express more than one meaning; on doing so, we can manage simultaneously both repositories and content using the same metadata set, including digital contents, digital collections and repositories.

Another path is faced with the possibility to attach a "meaning" to DC elements through domain ontology. We are experimenting this approach within the context of the ReMuNa project (www.napolibeniculturali.it), where we build a knowledge based infrastructure, currently adopted by the ministry of cultural heritage and activities (MIBAC) in Campania.

Furthermore, we are experimenting a distributed CMS based on Zope/Plone that interoperate using the OAI protocol. Every Plone instance can act either as Pure or Index Repository. The repository could be chosen according to one of the following criteria: pattern-matching on search keywords; using an ontology; employing a thesaurus, like Pico Thesaurus.

Our repositories are compliant with ICCD, Michael and Dublin Core metadata standards, and give a homogeneous view of all contents mapping semantically equivalent fields among them. To improve the interoperability, we adopted the "normalized records" approach, whose schema is based on qualified Dublin Core. In addition, through encoding schemes it's possible to extend the interpretation of non qualified Dublin Core metadata, e.g. by using a thesaurus tuned on a particular context (in our case, cultural heritage).

This "hierarchical approach" manages two different granularity levels through the OAI protocol, and it can be used in more complex contexts, in which "users" and "repositories" are generically Service Providers. This approach shortens the searching time for digital contents and furnishes to the user a clear view about the search (because it can manage more abstraction levels).