

Developing MetaKnowledge Services: The Next Paradigm for Digital Libraries

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Abstract. Science is matching toward a new paradigm of data-intensive knowledge discovery enabled by massive availability of digital data at a time of grand challenges of global scale, interdisciplinary nature, and translational complexity. This combination of events gives rise to great opportunities of meta-knowledge services where the relations, patterns, emerging trends, hidden possibilities, ignored abnormalities, etc., can be revealed and tested.

Several approaches of meta-knowledge services are here today or in near-future. Intelligent monitoring and visualizing of research fields and emerging topics help researchers keep track of development; Literature and patent analysis reveals complicated patterns of research and its competition or cooperation; Output, impact, and portfolio analysis supports official evaluation of research organizations, groups, and individuals; Path exploration and road-mapping are interactively used to build and test research plans; Meta-reading of large amount of data provides students with effective ways to structure knowledge and identify key points.

National Science Library, CAS, as its innovation and future-enabling strategy, has been developing a meta-knowledge-service-centric service structure. On one hand, it arms its analyst teams with sophisticated computational tools of R&D tracking, trends detecting, technology analysis, competition/cooperation analysis, R&D mapping, etc. On the other hand, it re-structures its digital information services into a linked open data based and ontological systems driven discovery platform. These meta-knowledge services require a much different approach from current digital libraries, with the emphasis on the discovery and decision-making utilization of content. A meta-knowledge-driven service cannot be achieved as a simple extension of current digital libraries. Paradigmatic shifts are needed to go beyond the traditional search and retrieval model.