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Establishing Core Concepts for Information-Powered Collaborations

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Abstract

1 Science benefits tremendously from mutual exchanges of information and pooling of effort
 2 and resources. The combination of different skills and diverse knowledge is a powerful
 3 capacity, source of new intuitions and creative insights. Therefore multidisciplinary ap-
 4 proaches can be a great opportunity to explore novel scientific horizons. Collaboration is
 5 not only an opportunity, it is essential when tackling today's global challenges by exploit-
 6 ing our fast growing wealth of data. In this paper we introduce the concept of Information-
 7 Powered Collaborations (IPC) – an abstraction that captures those requirements and op-
 8 portunities. We propose a conceptual framework that partitions the inherent complexity
 9 of such dynamic environments and offers concrete tools and methods to thrive in the data
 10 revolution era. Such a framework promotes and enables information sharing from multiple
 11 heterogeneous sources that are independently managed. We present the results of assessing
 12 our approach as an IPC for solid-Earth sciences: the European Plate Observing System
 13 (EPOS).

Keywords: information and knowledge exchange, semantic interoperability,
 multidisciplinary collaborations, standard vocabularies, DCAT

1. Introduction

14 Cooperation and collaboration have characterised the organisation of work in various
 15 contexts throughout history. Consequently, the support for collaborative work has been
 16 investigated for a long time by scientific disciplines such as the Computer Supported Co-
 17 operative Work (CSCW). Since the mid 80s a rich CSCW literature produced several theo-
 18 ries and approaches proposed to model and improve collaborative work sustaining sharing
 19 of knowledge and expertise [1, 2, 3]. The importance of scientific collaborations is not
 20 only well-recognised but it is encouraged and fostered, *e.g.* by policy makers and funding
 21 bodies, as a way to improve impact, to achieve cost-efficiency and to tackle the pressing
 22

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