

Data Interoperability Assessment Towards the Resilience of Data Exchange Systems

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Abstract. Data interoperability allows data exchanges among Information Systems, their subsystems and their environment. The multiplicity of these exchanges and the increasing amount of exchanged data can generate dysfunctions with negative impact on the overall performance of the communicating systems. Data interoperability should therefore be continuously assessed and improved. We summarize in this paper a work in progress where we provide an assessment of data interoperability, we exploit services provided by a messaging based middleware, in order to collect information about IS interactions allowing to assess their level of data interoperability. We propose a Messaging Metamodel that aggregates the collected information. The latter supplies a set of indicators, presented through queries and visualizations, that are confronted with interoperability requirements allowing us to detect interoperability problems and provide their potential causes. We also discuss current and future research work, where we consider the process of establishing data exchange systems, from design to maintenance, with the aim of enhancing the reliability and resilience of data interoperability.

1 Introduction

Most Information Systems (IS) are now made up, and are part, of communicating subsystems. If these systems are able to share and exchange information without depending on a particular actor and are able to use the exchanged information and function independently from each other, we can qualify them as interoperable systems Chen et al. (2008). When established among communicating IS, interoperability ensures an increasing in productivity and efficiency for inter and intra enterprise processes. Technologies such as Cloud, IoT, CPSs confer on Information Systems a wider reach with even more data exchanges and interoperability needs. Exchange systems must take into account more constraints: the adaptation to hybrid