# Chapter 73 Towards an Enhanced Interoperability Service Utility: An Ontology Supported Approach

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### ABSTRACT

This chapter suggests an innovative approach towards establishing Enterprise Interoperability in the everyday electronic transactions among the contemporary enterprise information systems. Based on the rather cutting-edge concept of the "Interoperability Service Utility (ISU)," enriched with a concrete methodology for ontologies' reconciliation, the authors suggest an enhanced ISU that would serve as a mediator among the incompatible enterprise information systems, providing semantic harmonization of the exchanged knowledge and a fertile ground for achieving Enterprise Interoperability and Collaboration. The authors' proposition and methodology can constitute a high quality scientific and supportive material for any stakeholder in the enterprise field, giving useful directions for any other similar implementation and contributing to the scientific aspect of Enterprise Interoperability.

### CONTEXT, SCOPE AND OBJECTIVES OF THE CHAPTER

#### Introduction

In this chapter we investigate possible ways to *bridge the gap* among the different and heterogeneous ways in which enterprises currently organize

their internal knowledge. The reason for that is the lack of *Enterprise Interoperability* which results into *significant costs* both in terms of time and money, as well as in terms of information loss, which arise during the communication and knowledge exchange among enterprises and their corresponding information systems. Therefore, we suggest combining two innovative concepts in one

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novel approach. More specifically, we propose the implementation of an ISU, which is currently a rather cutting-edge concept, promoted by the EU in the field of Enterprise Interoperability, especially enhanced with MENTOR, an already rigorous and widely-applied methodology for ontologies' reconciliation. That way, we suggest an enhanced ISU that would serve as an intermediary among enterprises and their corresponding information systems, providing added-value Web Services and supporting the achievement of Enterprise Interoperability, especially on a semantic level. Our proposition of this enhanced ISU is beyond any other similar implementation so far, covering a significant amount of aspects, gathering all specifications of other similar implementations and contributing widely to the scientific foundations of Enterprise Interoperability.

## Structure of the Chapter

The structure of the chapter is the following:

The first section, "Context, Scope and Objectives of the Chapter," includes an introduction to the chapter by shortly giving the context, scope and objectives of this joint research work.

The second section, "Current Business Environment," shortly reviews the current business environment, especially regarding to the barriers that prevent the smooth communication and knowledge exchange among enterprise information systems, suggesting, at the same time, a novel idea of an enhanced ISU, in order to overcome those barriers.

The third section, "The ISU concept," includes a thorough presentation of the ISU concept, starting from the conceptual idea of the ISU, explaining why it is a cutting-edge concept, jointly promoted by the EU and the research community, moving on to the design principles that govern ISUs and closing with a bibliographical review of the so far existing ISU implementations. In the fourth section, "An Ontology-Based ISU," the authors suggest embedding a concrete, already existing and tested ontologies' reconciliation methodology, called MENTOR, in an ISU implementation. That way, stems a novel and enhanced ISU that will serve as an intermediary in the semantic harmonization of the different enterprise ontologies.

The fifth section, "The Proposed ISU Platform," gives an in-depth presentation of the suggested by the authors ISU implementation, explaining how it functions and how it would provide semantically harmonized and added-value services to the involved enterprises. It concludes by explaining why the authors' proposed solution is not only the most appropriate, but also an innovative one.

The sixth section, "Application to an Agrofood Business Scenario," includes a scenario of applying the suggested ISU within the everyday and real-life enterprise transactions, grounding and fostering that way, the value of the suggested enhanced ISU.

The seventh section, "Conclusions, Reusable Components and Future Challenges," includes the conclusions of the present research work, highlights the reusable scientific components and acknowledges the future challenges ahead.

## CURRENT BUSINESS ENVIRONMENT

### Introduction

Nowadays, Information and Communication Technologies (ICT) offer to contemporary enterprises a great amount of communication means and channels that enable them to expand their power for communication, collaboration and knowledge sharing and, by extension, their general strategic capabilities and competitiveness. Besides, *fostering collaboration* is a key 26 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/chapter/towards-an-enhanced-interoperability-serviceutility/125360

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