# Flexibility, Configurability and Optimality in UNL Deconversion via Multiparadigm Programming

Jorge Marques Pelizzoni, Maria das Graças Volpe Nunes

Universidade de São Paulo, Instituto de Ciências Matemáticas e de Computação
Av. do Trabalhador São-Carlense, 400. CEP 13560-970. São Carlos – SP – Brasil
{jorgemp, gracan}@icmc.usp.br
http://www.nilc.icmc.usp.br

**Abstract.** The fulfillment of the UNL vision is primarily conditioned on the successful deployment of deconverters, each translating from the UNL into a target language. According to current practice, developing deconverters ultimately means configuring DeCo, the deconversion engine provided by the UNDL Foundation. However, DeCo falls short of expressiveness and several other well-established requirements on software development frameworks, thus hindering productivity, if not the very possibility of quality deconversion. This paper aims at discussing DeCo's shortcomings and introducing an alternative deconversion model – Manati – to overcome them. Manati is the result of preliminary work on UNL-mediated Portuguese-Brazilian Sign Language human-aided machine translation, which scenario is also discussed inasmuch as it poses challenges to deconversion. Manati exemplifies how multiparadigm – namely, constraint, object-oriented and higher-order – programming can be drawn upon not only to specify an open-architecture, optimum-searching deconversion engine but also and above all to rationalize its configuration into deconverters for target languages.

## 1 Introduction

The fulfillment of the UNL vision [18][11][10] is primarily conditioned on the successful deployment of deconverters, each translating from the UNL into a target language; otherwise, the UNL will not represent much of an advance in human communication since Esperanto. UNL deconversion is actually an instance of Natural Language Generation (NLG), which refers to rendering linguistic form to input in a non-linguistic representation. As pointed out by e.g. Reiter & Dale [13], Cahill & Reape [3], and Paiva [12], NLG can be a very complex task involving processing both linguistic (e.g. lexicalization, aggregation and referring expression generation) and otherwise (e.g. content selection and layout planning). The good news is that UNL deconversion is in fact restricted to the linguistic aspect of NLG, which can be termed **linguistic realization** and comprises the usual macro-level tasks of microplanning and surface realization. The bad news is that linguistic realization and thus UNL deconversion, as a rightful instance thereof, are not much closer to a satisfactory theoretical or practical account. Just as to any other worthy research topic, this should