

# Time Prediction on Multi-perspective Declarative Business Processes (Summary) \*

Andres Jimenez-Ramirez<sup>1</sup>, Irene Barba<sup>1</sup>, Juan Fernandez-Olivares<sup>2</sup>,  
Carmelo Del Valle<sup>1</sup>, Barbara Weber<sup>3</sup>

<sup>1</sup>Dpto. Lenguajes y Sistemas Informáticos, University of Seville, Spain

<sup>2</sup>Dpto. Ciencias de la Computación e Inteligencia Artificial, University of  
Granada, Spain

<sup>3</sup>Technical University of Denmark, Denmark

**Abstract.** Process-aware information systems (PAISs) are increasingly used to provide flexible support for business processes. The support given through a PAIS is greatly enhanced when it is able to provide accurate time predictions which is typically a very challenging task. Predictions should be (1) multi-dimensional and (2) not based on a single process instance. Furthermore, the prediction system should be able to (3) adapt to changing circumstances, and (4) deal with multi-perspective declarative languages (e.g., models which consider time, resource, data and control flow perspectives). In this work, a novel approach for generating time predictions considering the aforementioned characteristics is proposed. For this, first, a multi-perspective constraint-based language is used to model the scenario. Thereafter, an optimized enactment plan (representing a potential execution alternative) is generated from such a model considering the current execution state of the process instances. Finally, predictions are performed by evaluating a desired function over this enactment plan. To evaluate the applicability of our approach in practical settings we apply it to a real process scenario. Despite the high complexity of the considered problems, results indicate that our approach produces a satisfactory number of good predictions in a reasonable time.

**Keywords:** Flexible process-aware information systems, Time prediction, Constraint programming, Planning and scheduling, Constraint-based process models, Decision Support Systems

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