

## An argument-based approach to deal with industrial wastewater discharges at river basin scale

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Industrial wastewater discharges are difficult to predict. During production many industries generate rather constant flowrates, but these change markedly during cleanup and shutdown, as well as when an industry's emergent event occurs. Due to this variability, special attention should be given to industrial discharges done into public sewer systems. In order to avoid upsets to Wastewater Treatment Plant (WWTP) that will affect the final receiving media (*e.g.* river), more consensus amongst the several *agents* is needed to manage the industrial discharges.

Accordingly, we propose the application of an artificial intelligence based model –*ProCLAIM*<sup>1</sup>– for the integrated wastewater management in river basins. The model provides a framework for an effective and monitored deliberation over the appropriateness of proposed actions (*e.g.* industrial discharge). The *agents* potentially affected by the industry's intended discharge (*i.e.* hydraulic infrastructures such as the sewer and WWTP, and water bodies), will be able to defend their interests by submitting arguments *for* and *against* the proposed action. In this work we present a brief case study to show the usefulness of an argument-based approach, in front of the traditional wastewater management characterized by individually taken decisions. The case study takes into account two communities (*Com1* and *Com2*) connected to their particular sewer systems (*SS1* and *SS2*) that count with two WWTPs (*wwtp1* and *wwtp2*) respectively. *SS1* receives wastewater from one industry (*Ind1*) and *SS2* from another facility (*Ind2*). In between *wwtp1* and *wwtp2* there is a connection channel, allowing bypassing wastewater from *wwtp1* to *wwtp2*.

This framework permits to discuss a proposed action and depicts a new approach to attain the *good ecological status* of water bodies required by the European Water Framework Directive by the participation of all the *agents* previously mentioned.

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<sup>1</sup> P. Tolchinsky and U. Cortés. *ProCLAIM: An Argument-Based Model for Monitoring Decisions and Revising Guidelines Knowledge in Safety-Critical Environments*. Technical report, Technical University of Catalonia, 2006 (<http://www.lsi.upc.edu/~tolchinsky/publications/proclaim.pdf>).