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# Paper and pebbles simulations and modelling for the governance of socio-environmental systems: a review of 8 years of experimenting with the Wat-A-Game toolkit

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**Abstract:** Wat-A-Game (WAG) is an open toolkit and a method based on simple bricks for designing and using participatory simulations (i.e. role playing games) for water management, policy design and education. It is included in a more extensive package of integrated methods and tools, called CoOPLAaGE, targeting the main needs and steps in the multilevel decision and management process.

The main principle of WAG is to use pebbles to show explicitly how water (and other resources) flows, and are transformed and used, and different paper elements and cards to represent space, activities and rules (Abrami et al, 2012; Ferrand et al, 2009). WAG can be used everywhere and with everybody and specific “design by playing” methods allow groups of individuals to design models of their own system within simulation exercises.

With more than 30 models covering about 15 different countries and a wide range of natural resources, management situations, issues, scale and climatic context, we now have a proof of concept for the use of the WAG platform to represent and simulate various socio-environmental systems and foster discussions on governance and team activity in groups of actors.

In this presentation, we will focus on the corpus of models and modelling experiences achieved with WAG over the last eight years. We will present a classification of these experience based on scales, resources, issues and context of use. We will assess the genericity of the elements and methods of the kit, present specification elements and singularities, and as well what is difficult to model with WAG. We will also discuss group dynamics and how the different phases of the modelling process are handled, particularly difficult phases such as calibration. We will conclude with ongoing and future developments of the platform

**Keywords:** natural resources governance, water management, modelling platform, computer free simulation and modelling, role-playing game