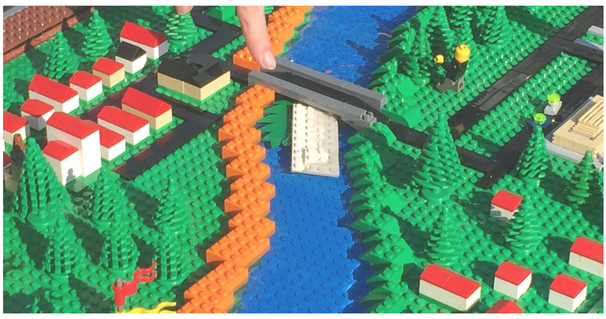
UNIVERSITÀ DEGLI STUDI FIRENZE
DICEA
DIPARTIMENTO DI INGEGNERIA CIVILE E AMBIENTALE

COPIAE AITA FLOOD SCENARIOS THROUGH LEGO BRICKS

The **LEGO bricks** constitute a tangible building material, simple, well-known and especially modular, which can guarantee immediate connection between theoretical and practical aspects and the introduction of new **educational** tools. In this framework, on the basis of project works carried out by the master students of the **"Hydraulic Risk course"**, some **LEGO scenarios** have been developed, and a model that reproduces part of a territory crossed by a river reach has been designed and assembled.
The **base frame** of the model (122 cm x 80 cm) is made by three layers of wood material, covered with **LEGO plates**, and the **LEGO bricks** can be grafted everywhere on the surface. The model is equipped with and hydraulic basin, a plexiglass frame with a couple of bowls, and a submerged pump for the simulation of transitory flows and floods.

The first scenario includes: urban and industrial areas, a bridge and some elements dedicated to the mitigation of **hydraulic risk**. The geometry may be modified trough the grafting of other elements like vegetation, sediments, and other **hydraulic elements**.
Using HEC-RAS v.5.0.5. a combined **1D/2D hydraulic** model of the current **LEGO scenario** has been implemented, in order to represent the flow inundation behavior in river neighboring areas.



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