A scientific approach for creating digital twins of river basins

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**Abstract**

Digital twin is part an ongoing digital transformation to test, monitor, and maintain physical environment digitally. By imagining smart river basin management via digital twin concept, we are venturing into uncharted territory, with the goal of improving the ecological status of a river basin by balancing environmental and socioeconomic interdependence while minimizing natural resource depletion. The collaboration of smart measurement sensors, advanced communication networks, cloud data storage capacity, and edge computing techniques has the potential to create a digital twin of a river basin with greater physical, spatial, and temporal scalability. This poster provides an overview of the concept, framework, and workflow involved in developing a digital twin of a river basin. The main concept of the digital twin is that it maintains a continuous automated data connection with its physical river basin counterpart and cannot provide services to other river basins. River basin, data, modeling, infrastructure, service, and connectivity are the six dimensions of the framework. The iterative workflow in the digital twin begins with an exact replication of the physical river basin in the virtual environment and ends with strategic actions to achieve the goals.

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