Combination of modeling and participatory approach tools for integrated groundwater resource management, the case of the Lower Valley of Medjerda basin, Tunisia

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Introduction

Combining research work and stakeholder involvement in River Basin Management Plan was fundamental for IWRM success. This is highlighted by the SMART IWRM Medjerda project that presented an example to build high informative and dynamically growing shared representation of hydrologic systems useful for planning and decision making.

SMART_IWRM_Medjerda aims to improve the sustainable groundwater management for the Lower valley of Medjerda (LVM) river basin, the main river in Tunisia, in compliance with the Sustainable Development Goal 6 (SDG 6) on water and sanitation which seeks to ensure safe drinking water and sanitation for all, focusing on the sustainable management of water resources and ecosystems.

Approach

It is based on **IWRM principles** through three main pillars :
- Overall initial assessment of groundwater resources availability and quality
- Data management & Numerical simulation of water resources
- Capacity Development
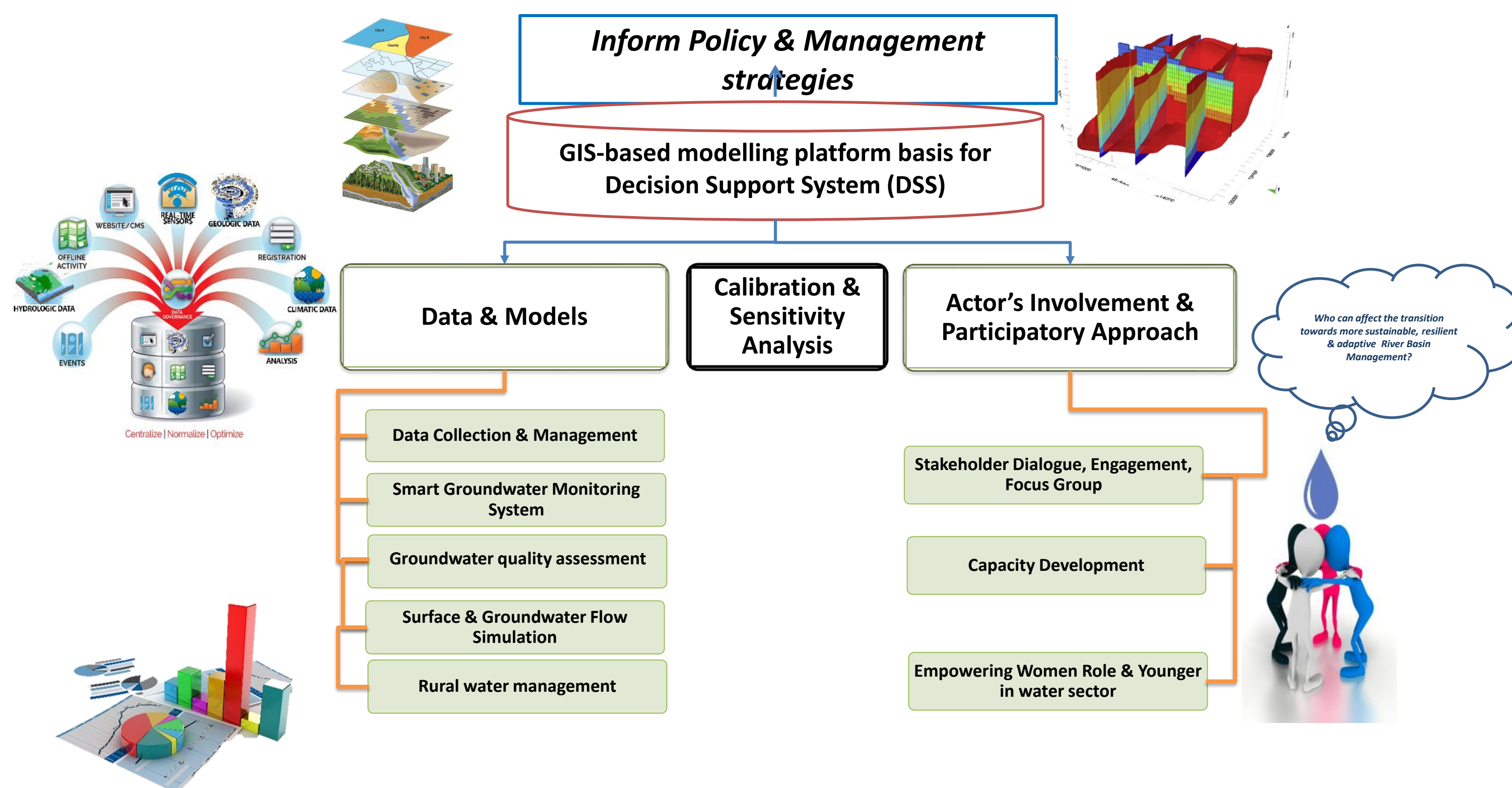
Results

The main practical output of the project was the development of a Geographic Information System-based modelling platform as a decision support system tool (DSS).
The geospatial platform of the LVM basin contains a large and rich set of data on water resources, smart groundwater sensors, irrigated areas, climate, land use, groundwater quality, geology, soil types, aquifers boundaries, hydrogeologic data...etc to help strengthen evidence-based decision-making in the water resources management sector.

https://smartmedjerda.agrinet.tn
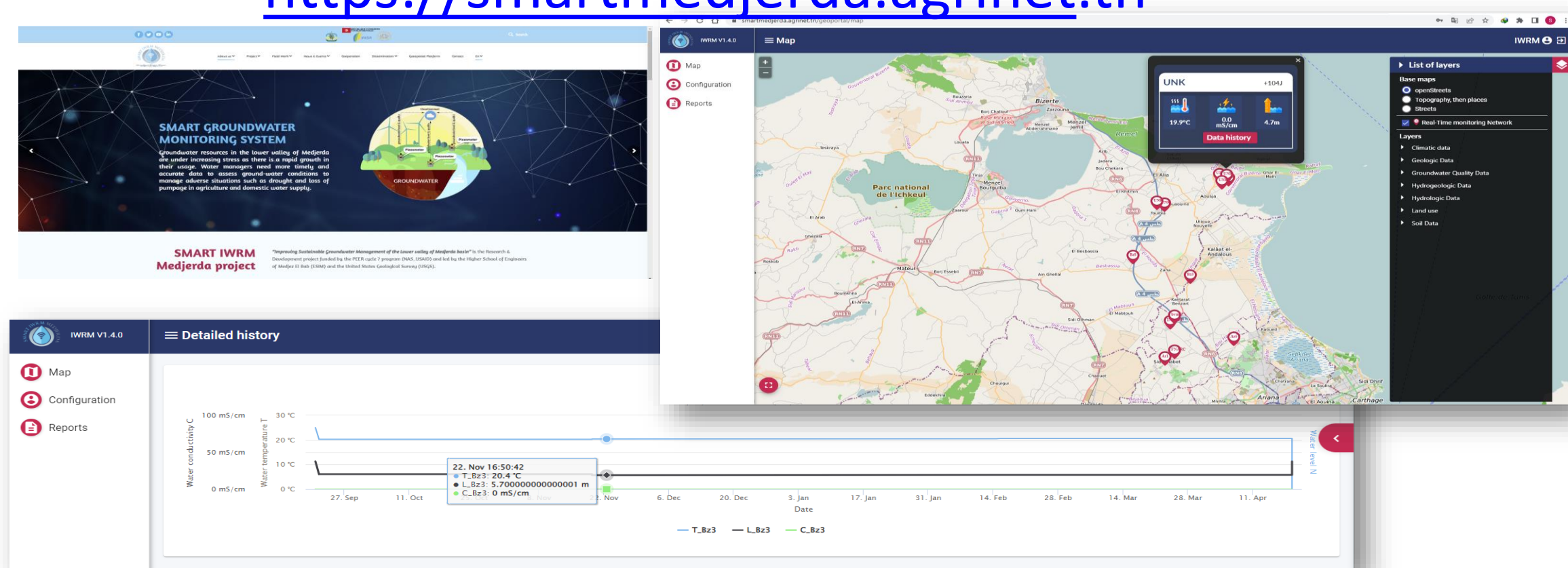
The Geospatial Platform serves as a digital public good to create interactive data maps, analyze trends and identify real-time gaps and opportunities.
It can be used by anyone and its application will in turn help data-driven and evidence-based decision-making in the water sector.
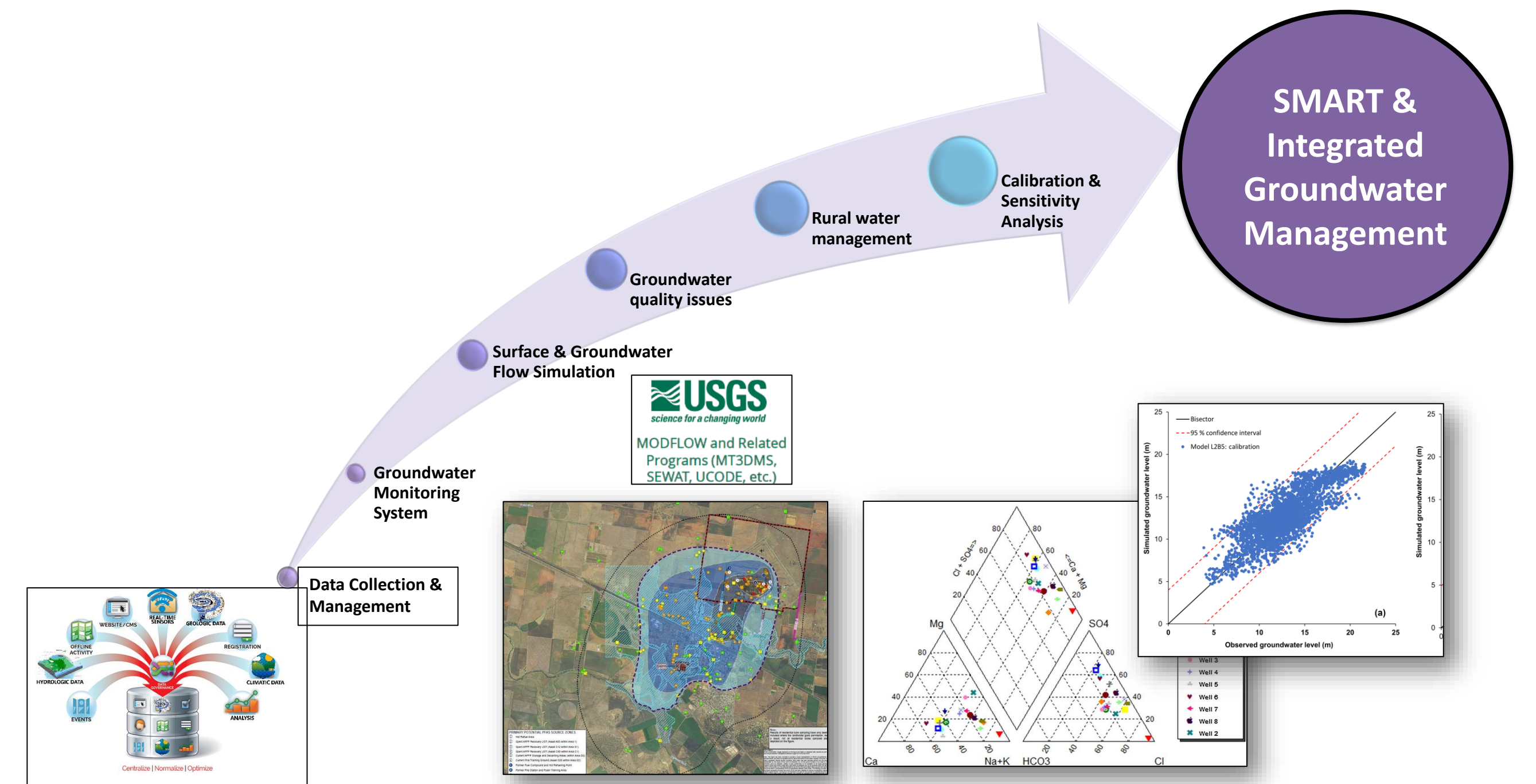
The use of modeling tools in this project was combined with a participatory approach to follow a path where modeling activities are run together with the stakeholders involved in water planning and management in the study area (Public bodies of the Ministry of Agriculture and Hydraulic Resources, NGO's, farmers, researchers..). Several Focus Group (FG) meetings were organized to create a common space for discussion and for sharing ideas and perceptions on the work done.
FG also takes decisions on the scenarios to be simulated for planning and management of the water resource and discusses the results, with the final scope of enhancing participatory approach and decision making in water resource management.

Additionally, capacity building represented a major component of the SMART IWRM Medjerda through the implementation of several training courses, workshops and seminars, in order to improve the capacities of water stakeholders in the field of the IWRM. These events targeted researchers, students, local authorities, environmental agencies and citizens.

Project Outputs

Smart water monitoring system using IoT platform

Development of a GIS modelling platform based decision support system tool (DSS) that can be used by managers in water-resource decision making

Improve capacity building of water stakeholders & empowering women role in water sector