

# Overall design and implementation of Yunnan hydrological integrated operational system with digital twin watershed technology

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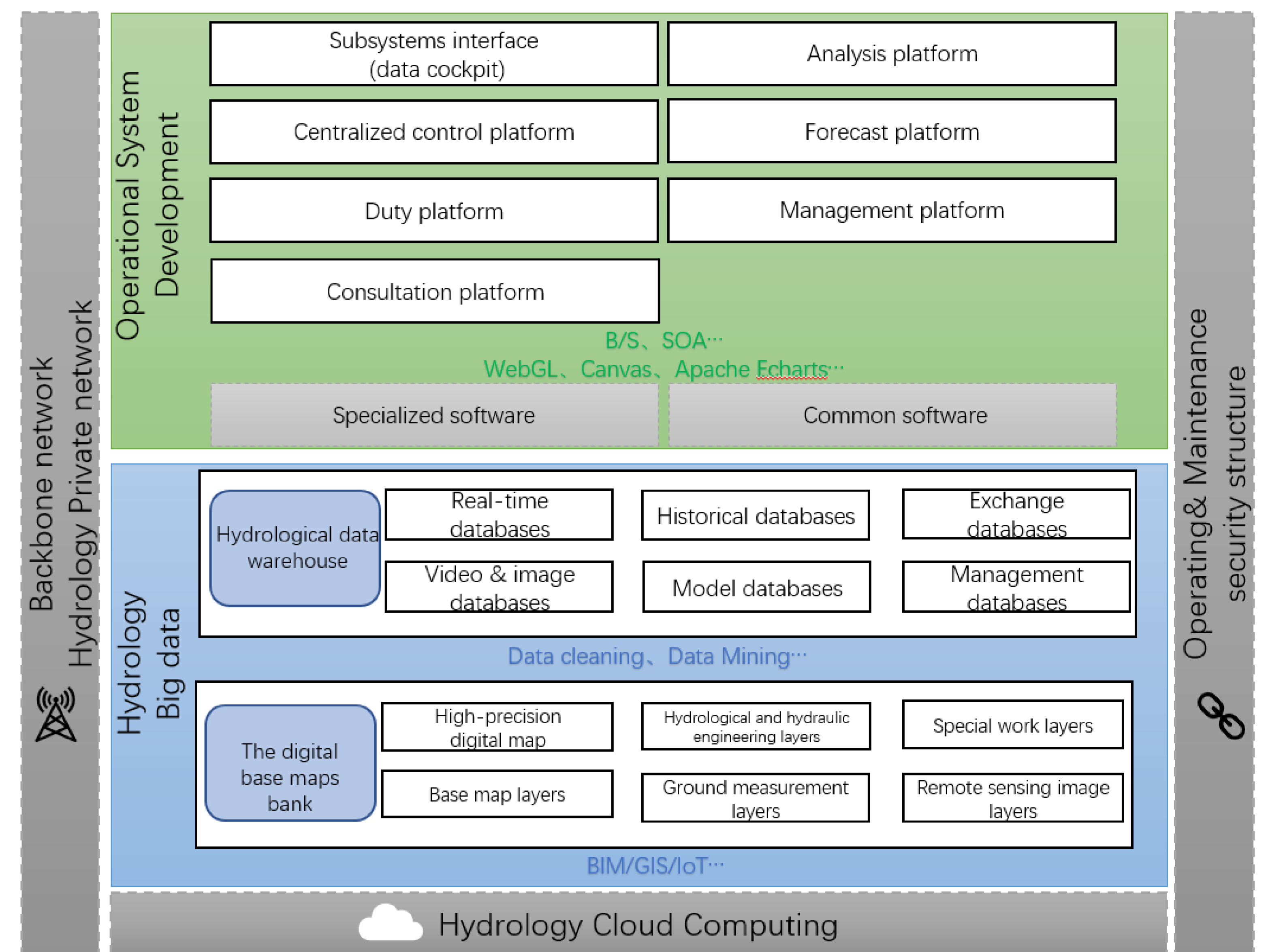
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## Objectives

- This plan outlines the technical steps needed to build the province's hydrological integrated operational system in the future.
- It is hoped that by implementing this plan, key issues with hydrological operational management will be resolved, including data control, on-duty consultation, analysis and calculation, prediction, and forecasting.
- Additionally, this plan will serve as a useful guide for the development of similar systems in other provinces and regions.

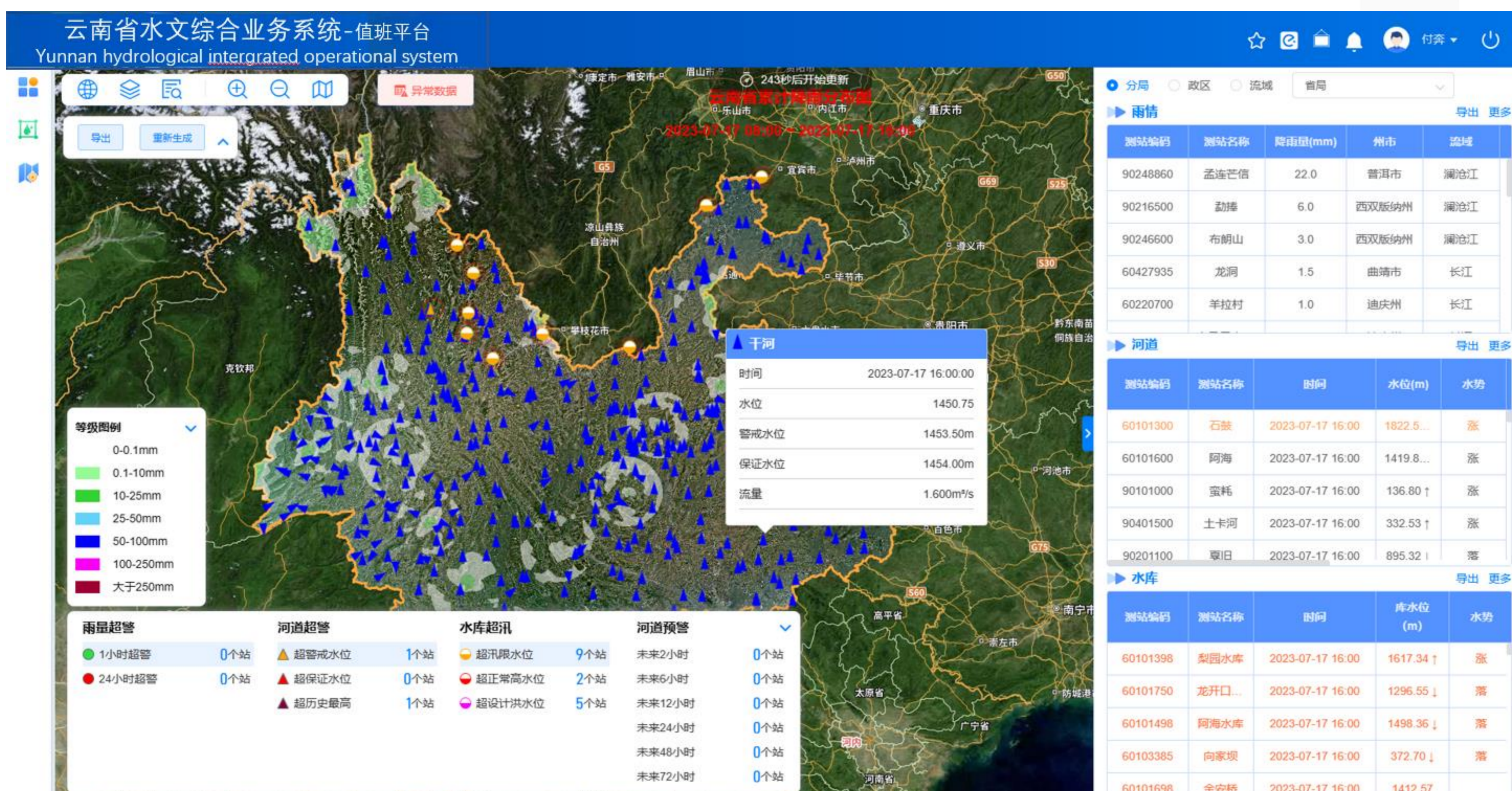
## Framework

Yunnan hydrological integrated business system development and construction primarily consists of two components: the creation of hydrology Big Data and the development of business system Microservices, where Big Data serves as the foundation and system development as the end objective.



## Design

- Based on BIM/GIS/IOT and other technologies, this design integrates existing map resources to build a digital foundation for hydrology in Yunnan province according to the digital base maps, station network and water conservancy project distribution layers, special work layers, grassroots research layers, measured image layers, remote sensing image layers, etc.
- Through data cleaning and mining and other technologies, rationalize the processes of hydrological data collection, transmission, storage and sharing, and build real-time databases, historical databases, exchange databases, video image databases, model databases, management databases and other business databases. And finally, to form a comprehensive, standardized and unified hydrological data warehouse.
- Using WebGL, Canvas, Apache Echarts and other new generation cutting-edge technologies, using B/S mode and SOA service-oriented architecture, the Yunnan hydrological integrated operational system that covering subsystems of system portal (data cockpit), centralized control platform, duty platform, consultation platform, analysis platform, forecast platform, and management platform, will be developed, that is, a new generation of Yunnan hydrological digital brain.



## Conclusions

- We believe that the system's construction will effectively improve the level of hydrological business activities and significantly increase the support capacity of hydrological services.
- However, the development and building of the system is a lengthy and hard process that necessitates regular updates and modifications based on the hydrological profession's development demands in order to accomplish the intended design goals.