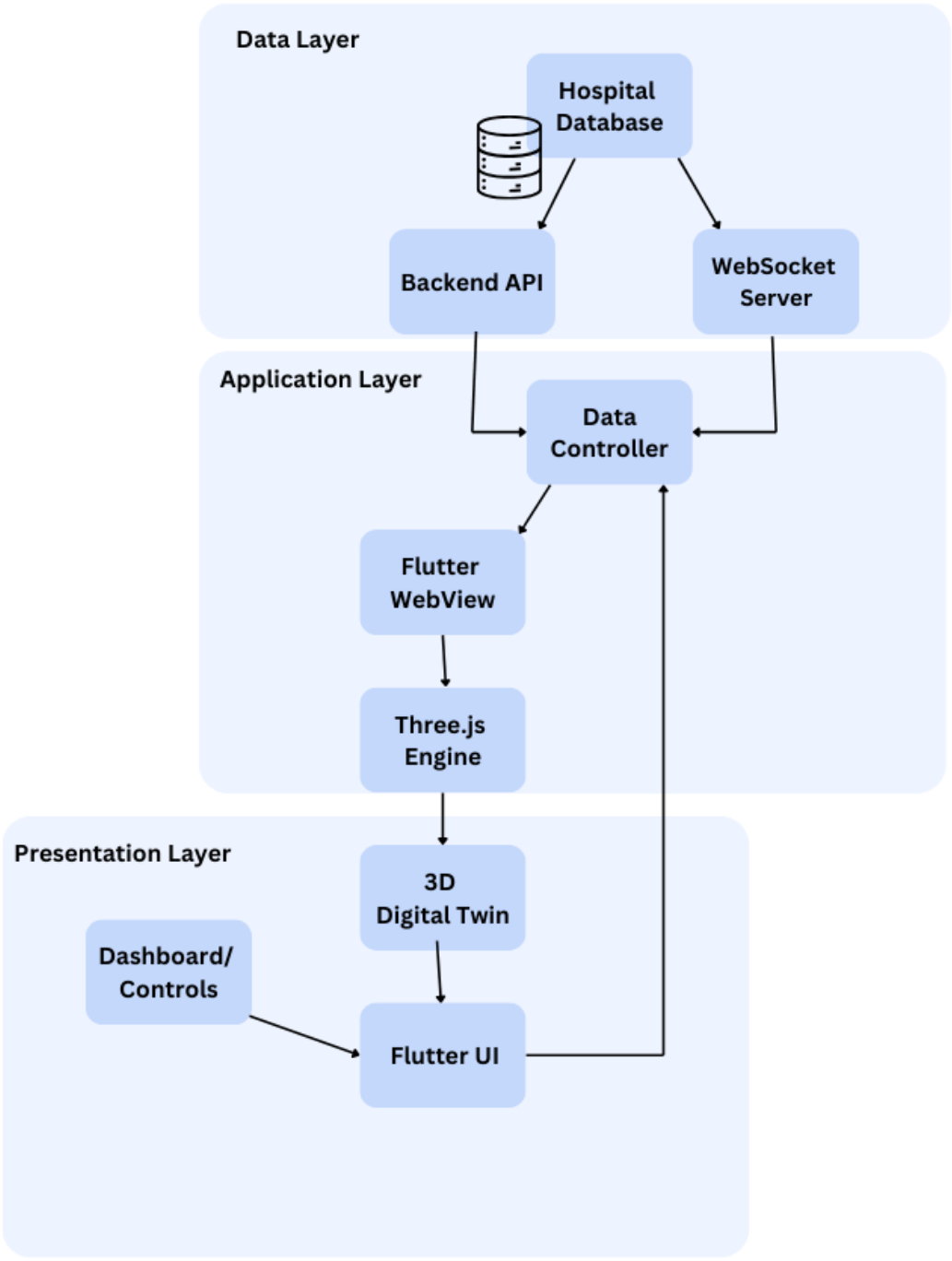
DIGITAL TWIN DOCUMENTATION



A Digital Twin is like a virtual copy of a real hospital.

Imagine the hospital as a video game map - you can see every room, equipment, and patient flow on a computer in real-time.

It doesn’t replace the hospital; it mirrors what’s happening so staff and managers can plan, monitor, and improve operations safely.

How it Works:

Sensors in the real hospital collect data like:

Patient movements and location

Equipment usage (ventilators, beds, monitors)

Staff availability

Room occupancy and temperature

This data is sent to the digital twin system, which updates the virtual hospital in real-time.

Users can interact with the digital twin through a screen/dashboard, similar to controlling a simulation.

Key Features:

Patient Monitoring: Track where patients are, their vitals, and room occupancy.

Resource Management: See which equipment is in use, available, or needs maintenance.

Predictive Insights: Simulate “what-if” scenarios, e.g., if a new patient arrives, which bed can be used safely.

Alerts & Notifications: The system can warn staff about overcrowding, high-risk patients, or equipment shortages.

Visualization: Uses a 3D map or dashboard to show hospital layout and activities clearly.

Benefits for Hospital Staff:

Doctors and nurses can respond faster to emergencies.

Hospital managers can optimize staff and equipment allocation.

Improves safety, reduces errors, and prepares for outbreaks or sudden patient surges.

Training new staff becomes easier with virtual scenarios before handling real patients.

Interaction Example (Simplified Story):

Nurse logs into the digital twin system → sees all occupied beds → notices one ICU bed free → assigns incoming patient → the system updates both the real hospital and digital twin instantly.

Doctor checks vitals → sees if any patient has high fever → receives an alert → can prioritize treatment efficiently.

In simple terms: A digital twin is a smart, virtual mirror of the hospital that helps staff see, predict, and manage everything more efficiently without being physically everywhere at once.