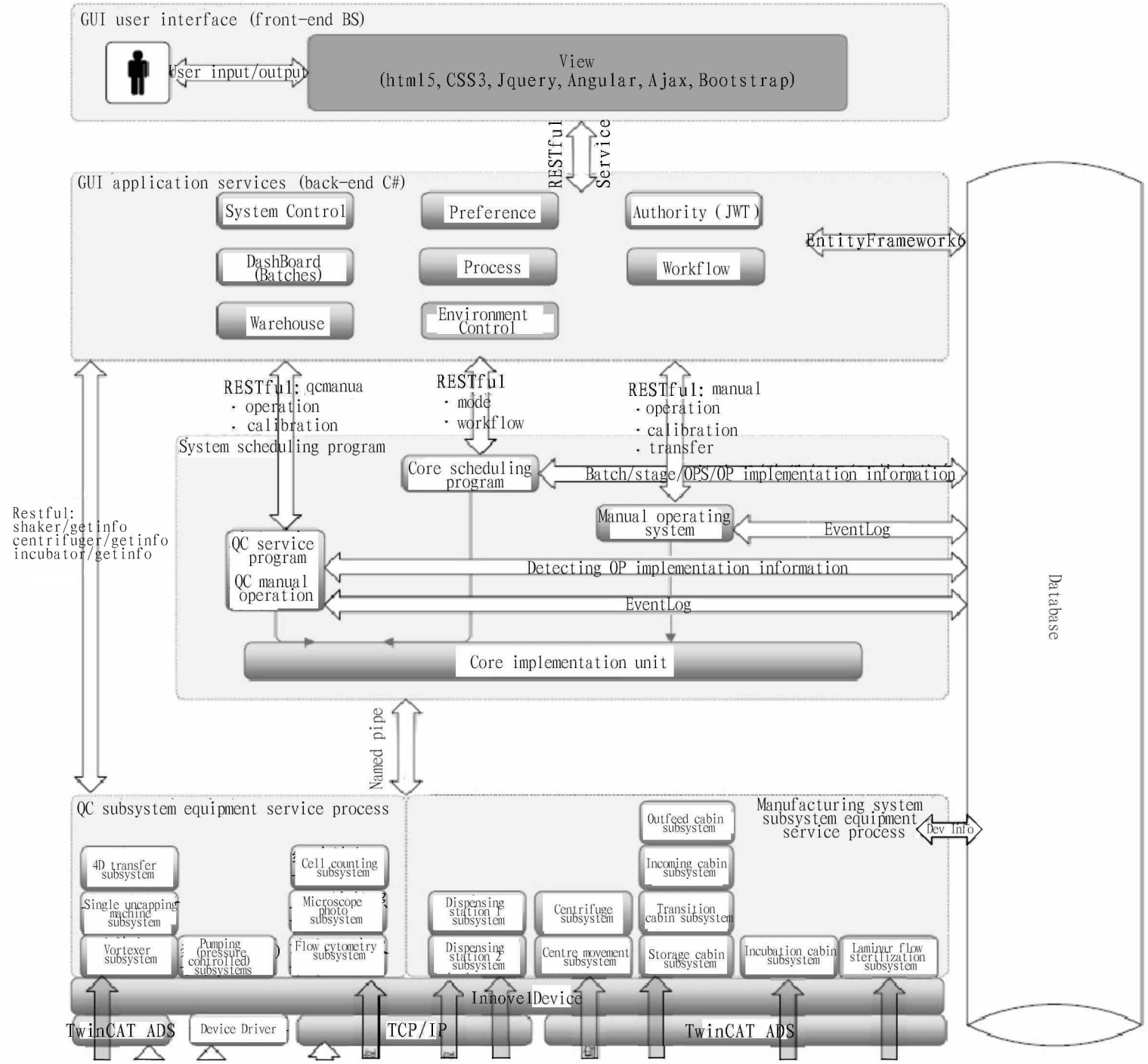

GUI user interface (front-end BS)
User input/output
View
(html5, CSS3, Jquery, Angular, Ajax, Bootstrap)
RESTful Service
GUI application services (back-end C#)
System Control
Preference
Authority (JWT)
EntityFramework6
DashBoard (Batches)
Process
Workflow
Warehouse
Environment Control
RESTful: qcmanua
· operation
· calibration
RESTful
· mode
· workflow
RESTful: manual
· operation
· calibration
· transfer
System scheduling program
Core scheduling program
Batch/stage/OPS/OP implementation information
Restful:
shaker/getinfo
centrifuger/getinfo
incubator/getinfo
Manual operating system
EventLog
QC service program
QC manual operation
Detecting OP implementation information
EventLog
Core implementation unit
Database
Named pipe
QC subsystem equipment service process
Manufacturing system subsystem equipment service process
Dev Info
Outfeed cabin subsystem
Incoming cabin subsystem
4D transfer subsystem
Cell counting subsystem
Single uncapping machine subsystem
Microscope photo subsystem
Dispensing station 1 subsystem
Centrifuge subsystem
Transition cabin subsystem
Vortexer subsystem
Pumping (pressure controlled) subsystems
Flow cytometry subsystem
Dispensing station 2 subsystem
Centre movement subsystem
Storage cabin subsystem
Incubation cabin subsystem
Laminar flow sterilization subsystem
InnovelDevice
TwinCAT ADS
Device Driver
TCP/IP
TwinCAT ADS

Fig. 16