Elevator System Object Oriented Design

Use Cases:

1) Each floor has up/down button. Person can press any button to request elevator.
2) Elevator is assigned to the request based on certain strategy/algorithm.
3) Elevator door opens on each requested floor.
4) Door does not close for overloaded elevator (optional)
5) Person can press button in elevator to add request to open door at that floor.
6) Elevator serves requests in its current direction in order.
7) Elevator has alarm, force open/close door (optional)

Observations:

1) Elevator assignment can be done using different strategies which are pluggable.
2) All elevators are managed by elevator controller. Its responsibility is to accept request from floor controller, assign elevator using strategy and add request to that elevator.
3) Each elevator is observable and it updates the elevator controller about its current state on moving to each floor.
4) Elevator controller provides states of all elevators to elevator assigner to decide which elevator to pick.
5) Elevator and floor have interaction interface, for elevator once button is pressed, the request is added to request priority queue.
6) Once elevator reaches top/bottom floor, the request queue is inverted.