1. **“Experts cannot be double booked. In other words, a service by a single expert cannot be available to multiple clients on the same day and time.”**

```
context Expert
        inv: self.serviceRequests -> forAll(sr1, sr2 : ServiceRequest | sr1 <> sr2 implies
                                            (sr1.client <> sr2.client implies
                                                    sr1.timeslot.endTime <= sr2.timeslot.startTime or
                                                    sr2.timeslot.endTime <= sr1.timeslot.startTime)
                                            )
```

Logic: If clients in requests are different, then timeslots from the requests must not overlap.

2. **“A consulting service for an auction visit may be available during a time that is within the availability of the auction house.”**

```
context ServiceRequest
        inv:  self.requestType = “Consultation” implies
                (self.timeslot.startTime >= self.timeSlot.auction.auctionHouse.schedule.startTime
                and self.timeslot.endTime <=
                self.timeSlot.auction.auctionHouse.schedule.endTime)
```

Logic: A consultation service request that is available within the availability of an auction house must have its timeslot’s start time and end time within the auction house’s schedule

3. **“A client does not have multiple requests on the same day and time slot.” (either same or overlapping); for example, a request for service on Monday 3pm – 4pm and another also on Monday 3:30pm - 4:30pm should not be acceptable.**

```
Context Client
        inv: self.serviceRequests -> forAll(sr1, sr2: ServiceRequest | sr1 <> sr2 implies
                                            (sr1.timeslot.startTime >= sr2.timeslot.endTime or
                                            sr2.timeslot.startTime >= sr1.timeslot.endTime)
                                            )
```

Logic: A client’s service requests start time must be higher (later) than another request’s end time OR its end time must be lower (earlier) than the other request’s start time so that they do not overlap or coincide.