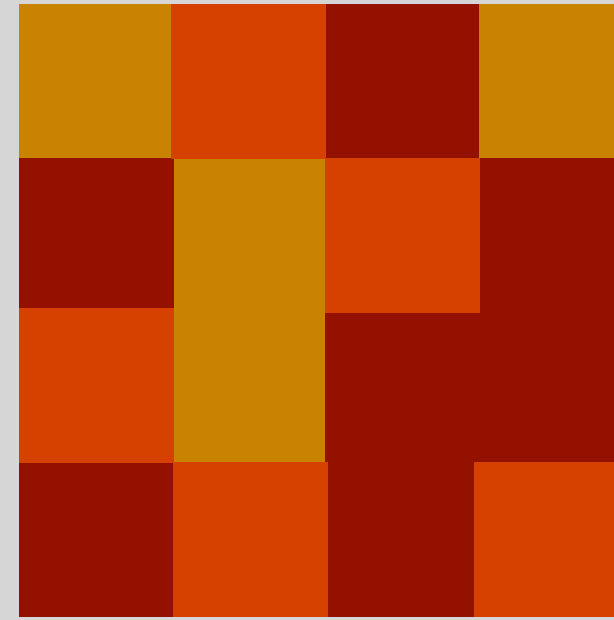


separating concerns

Daniel Jackson

have you ever felt that a problem is hard because...



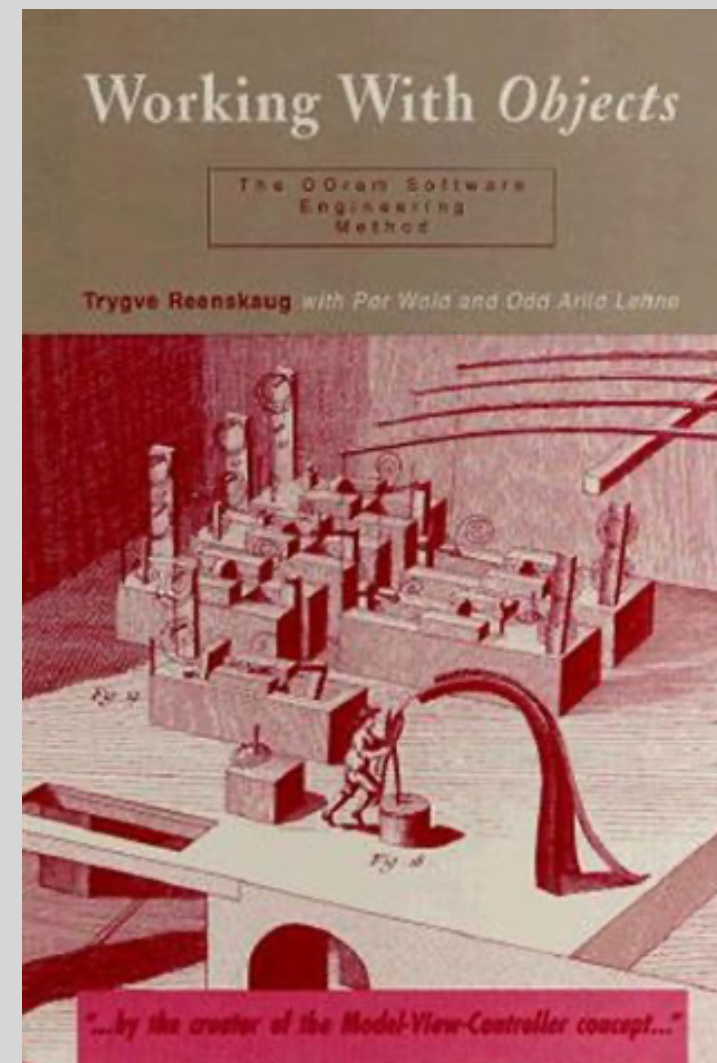
it's actually several problems intertwined?



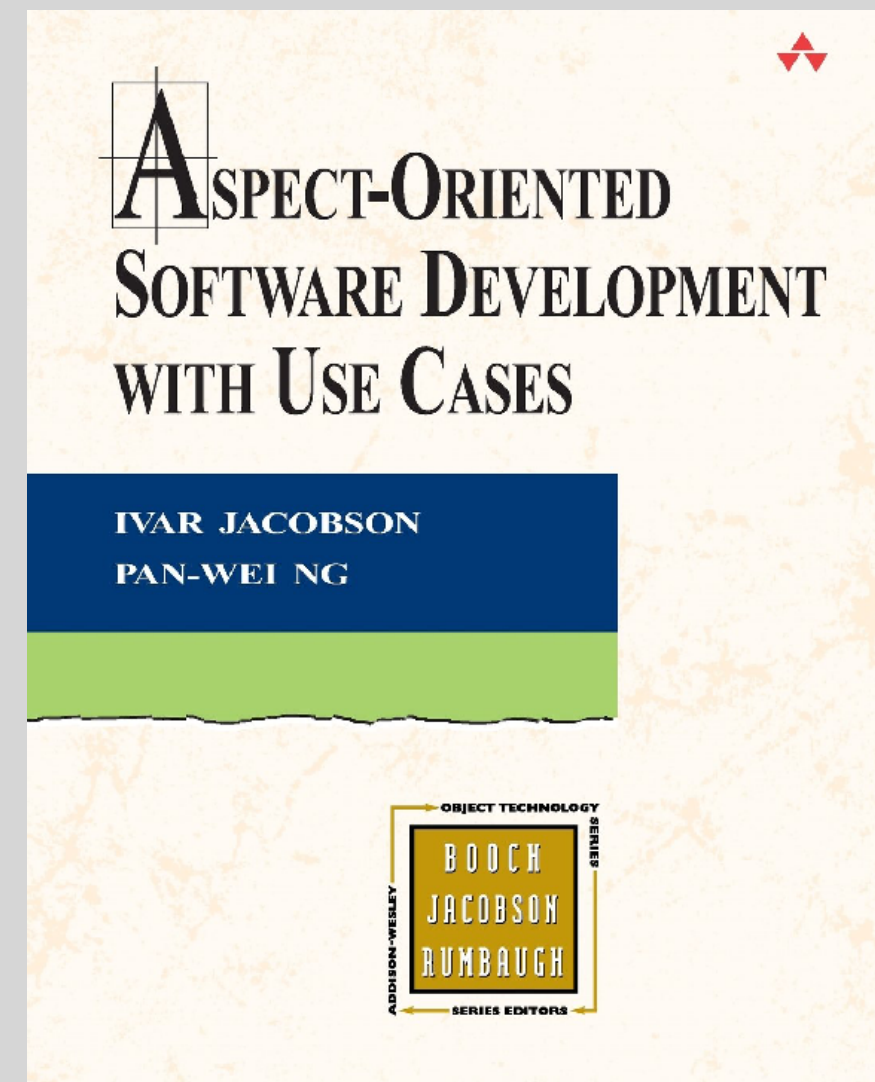
Edsger Dijkstra

Let me try to explain to you, what to my taste is **characteristic for all intelligent thinking**. It is, that one is willing **to study in depth an aspect of one's subject matter in isolation** for the sake of its own consistency, all the time knowing that one is occupying oneself only with one of the aspects... It is what I sometimes have called **“the separation of concerns”**.

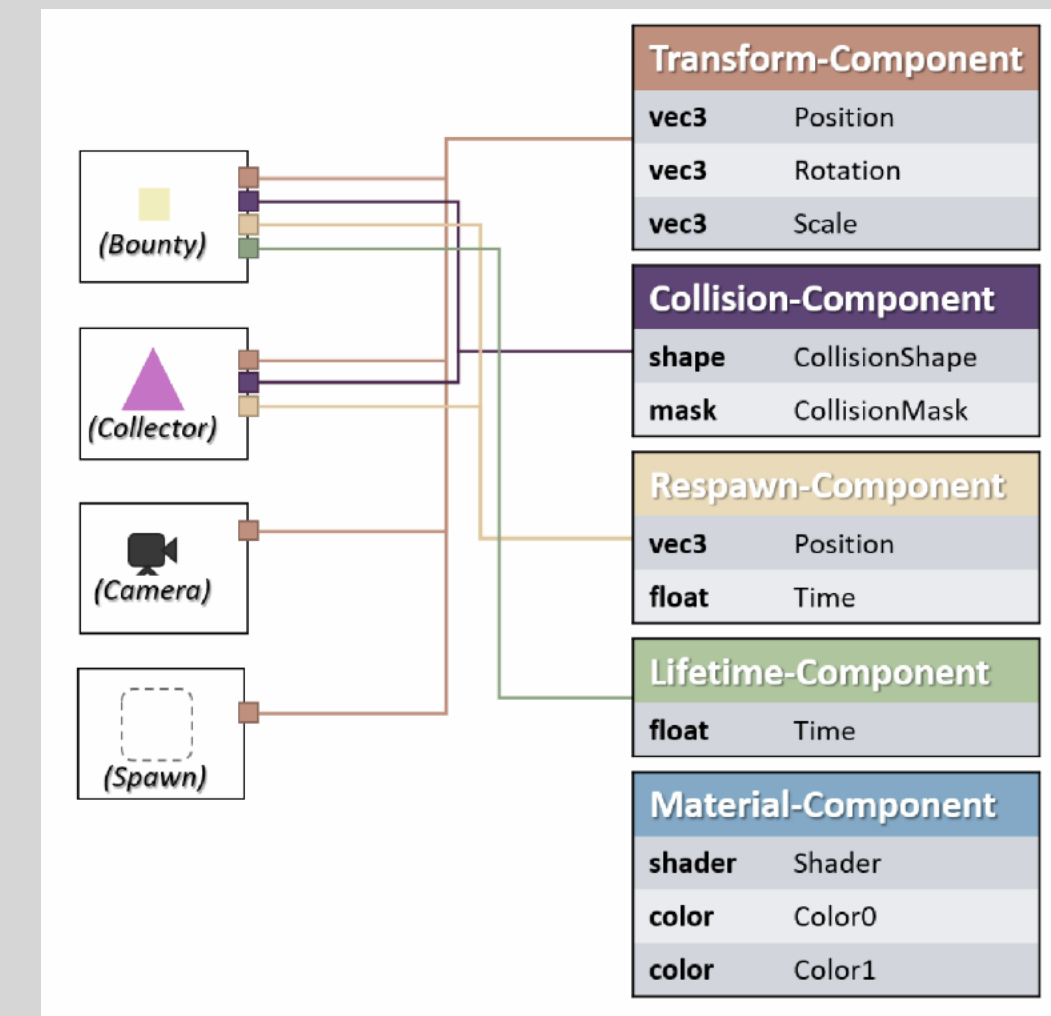
programming techniques for separation of concerns



Role-oriented programming
Reenskaug et al (1983)



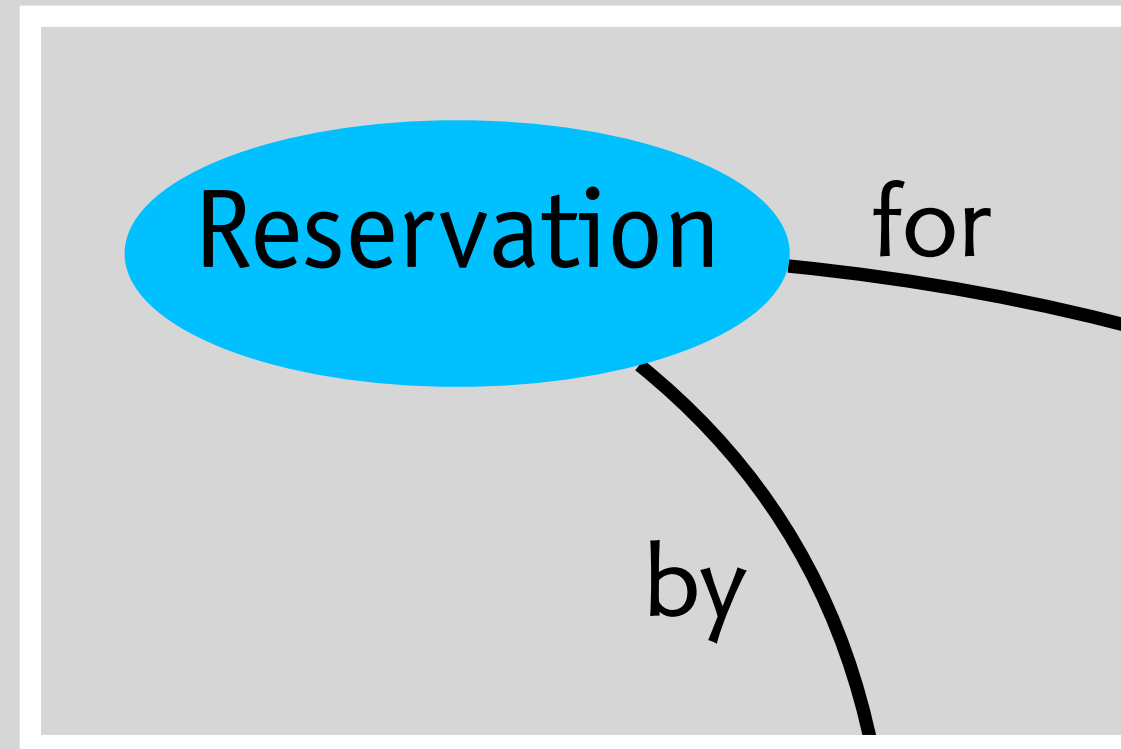
Aspect-oriented programming
Kiczales et al (1997)



Entity-component system
Scott Bilas et al (2002)

decomposing the data model

Reserving



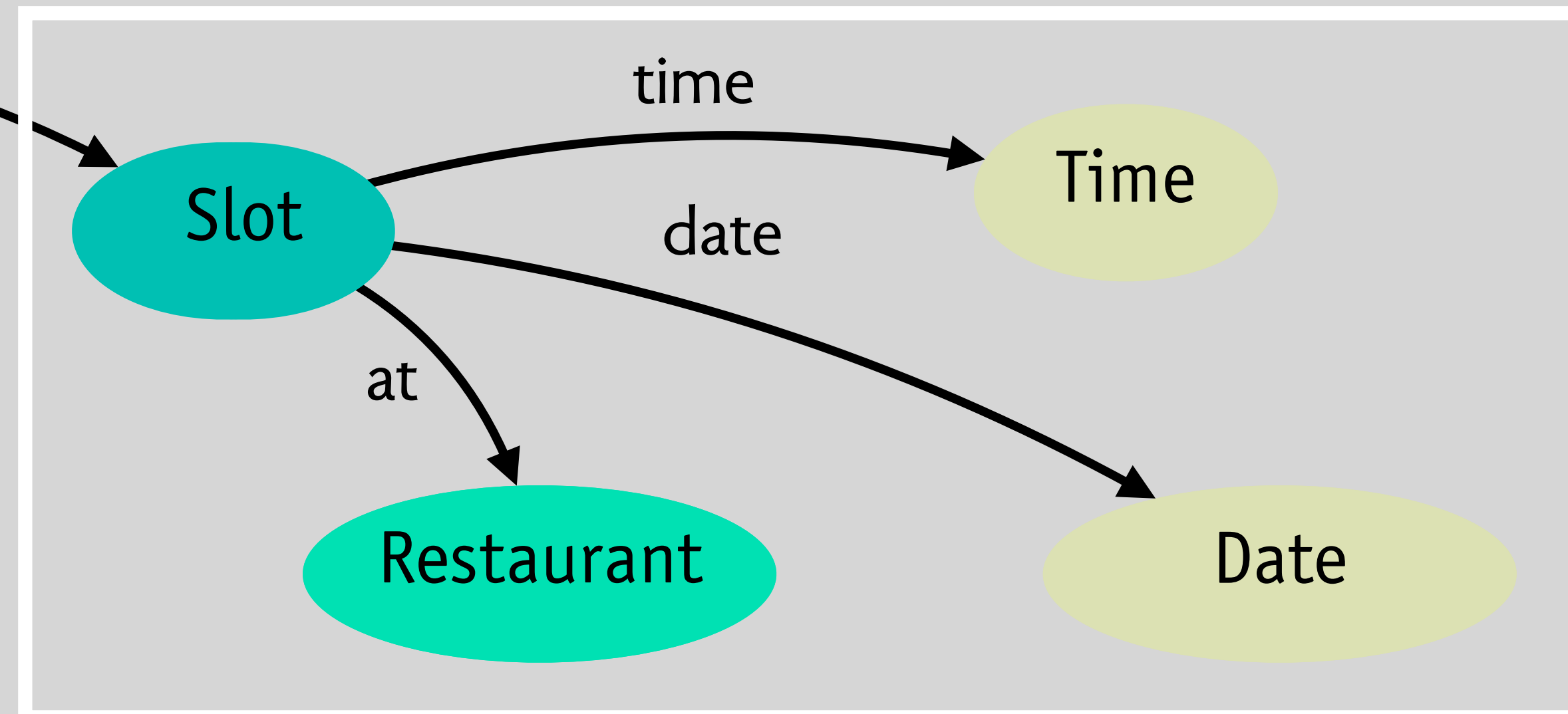
UserAuth



concept Reserving

a set of Reservations with
a for Slot
a by User

Availability

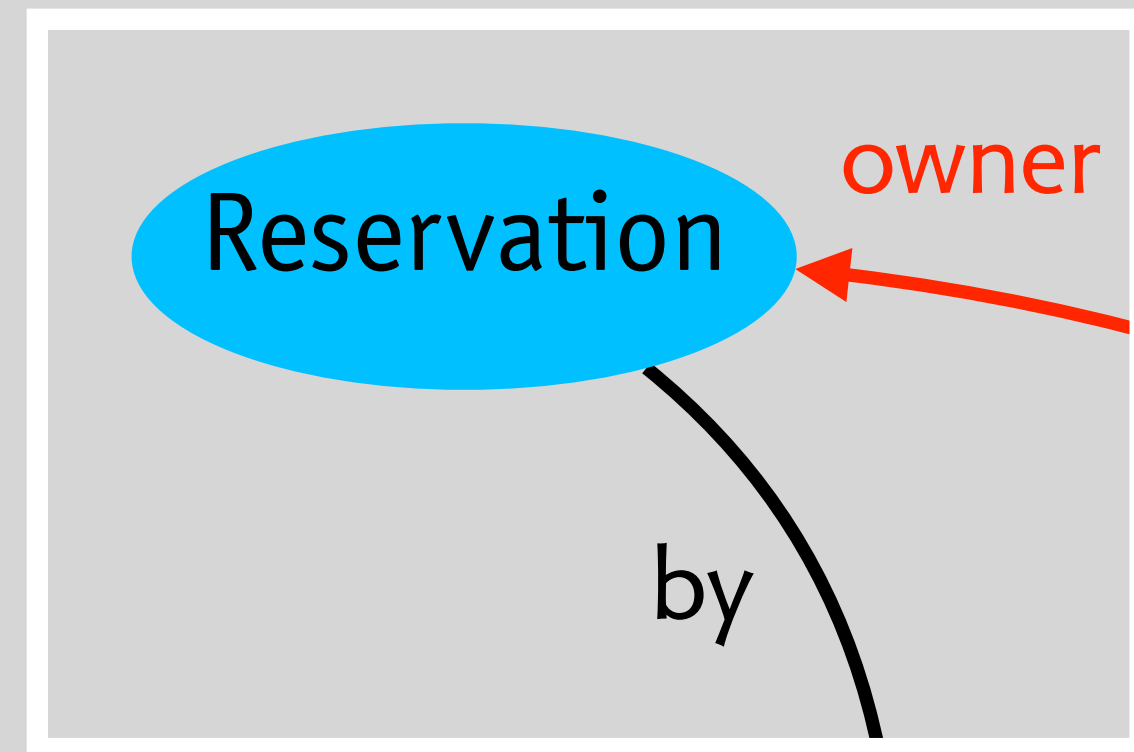


concept Availability

a set of Slots with
a time Time
a date Date
an at Restaurant

what if we flip this?

Reserving



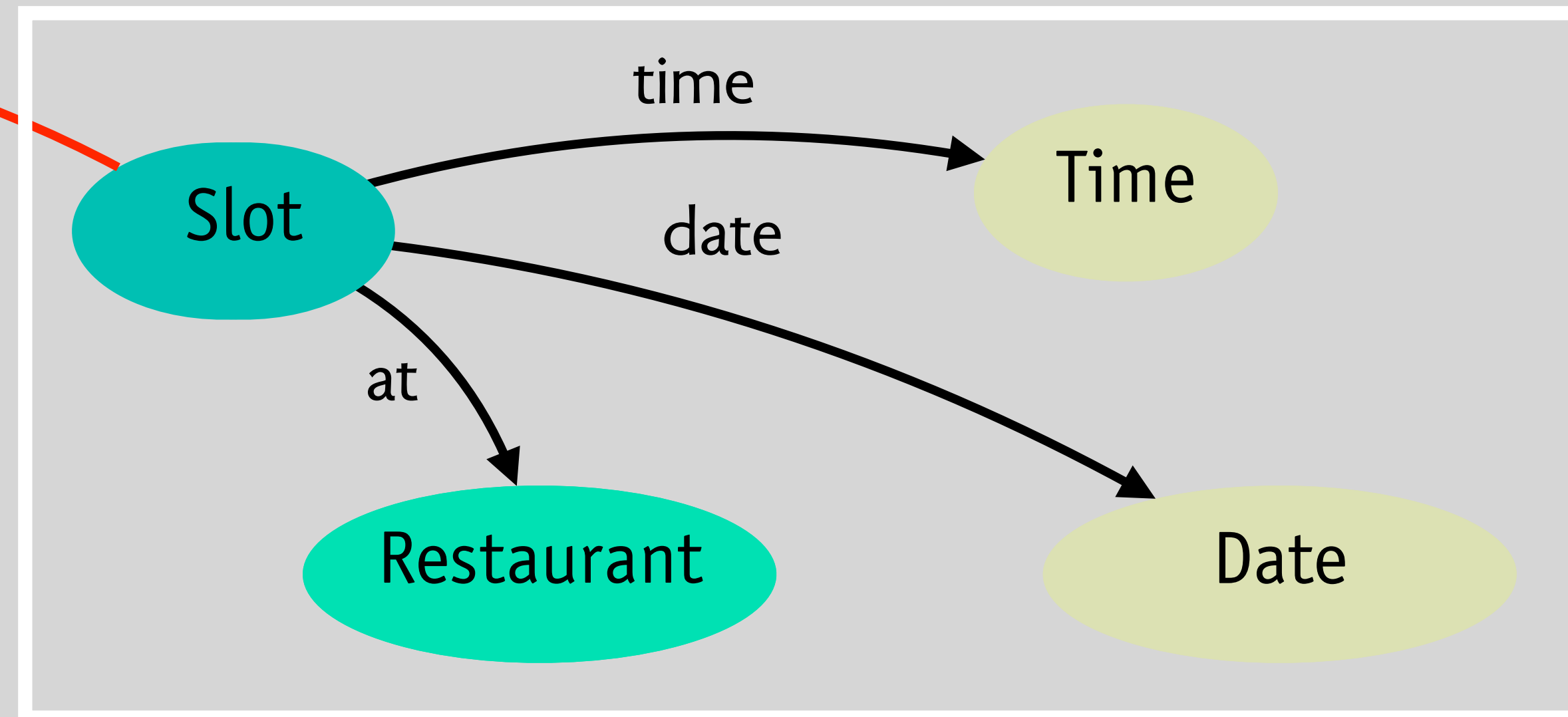
UserAuth



concept Reserving

a set of Reservations with
a by User
a set of Slots with
an owner Reservation

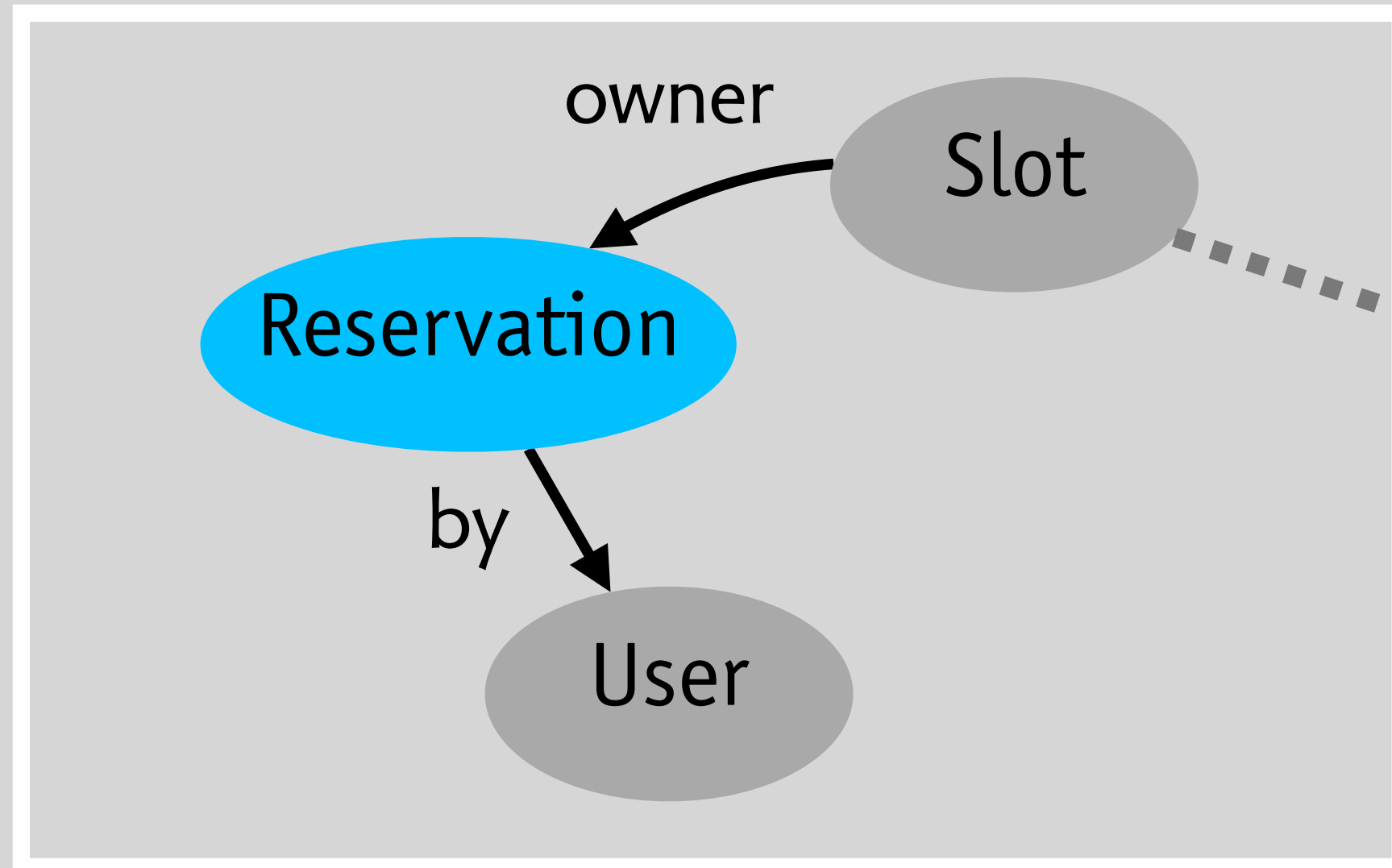
Availability



concept Availability

a set of Slots with
a time Time
a date Date
an at Restaurant

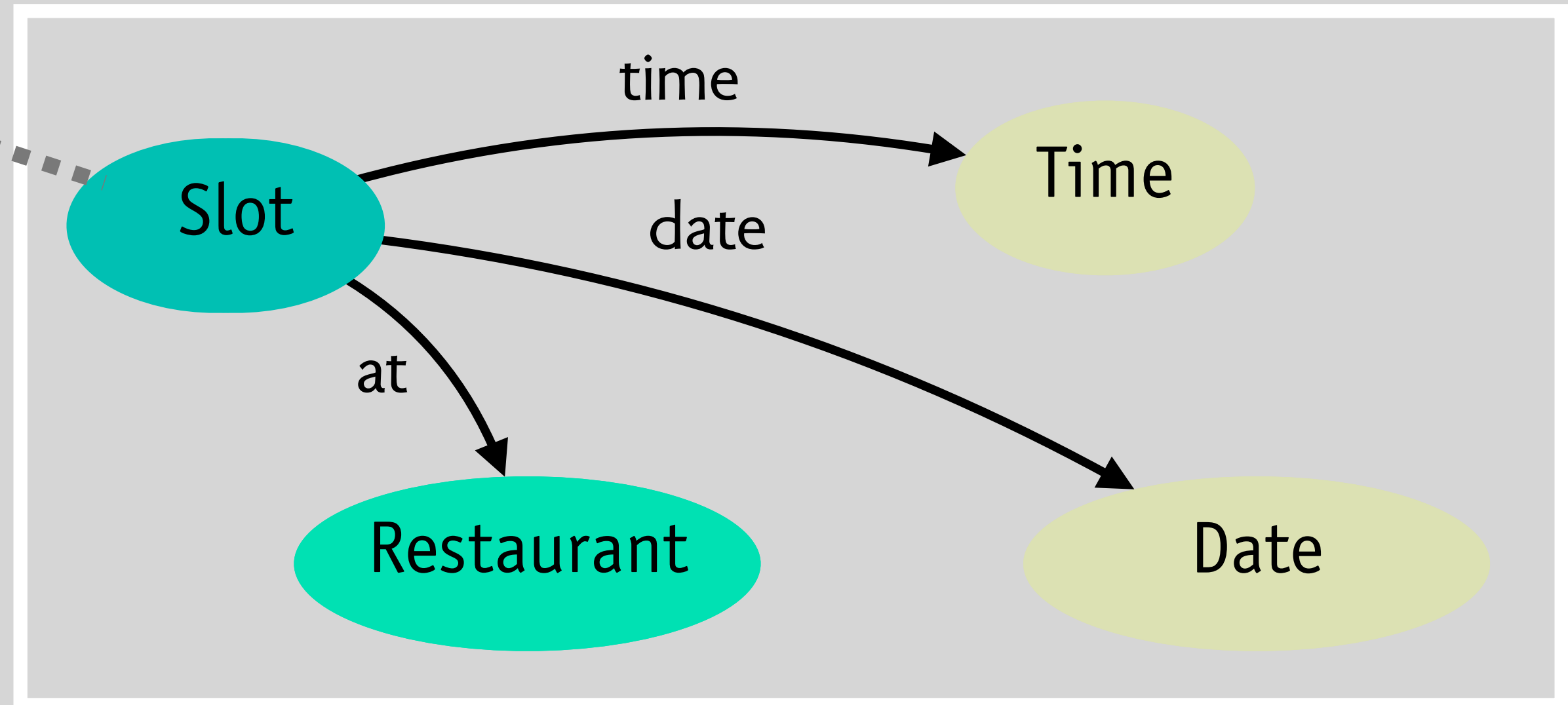
Reserving



concept Reserving

a set of Slots with
an owner Reservation
a set of Reservations with
a by User

Availability

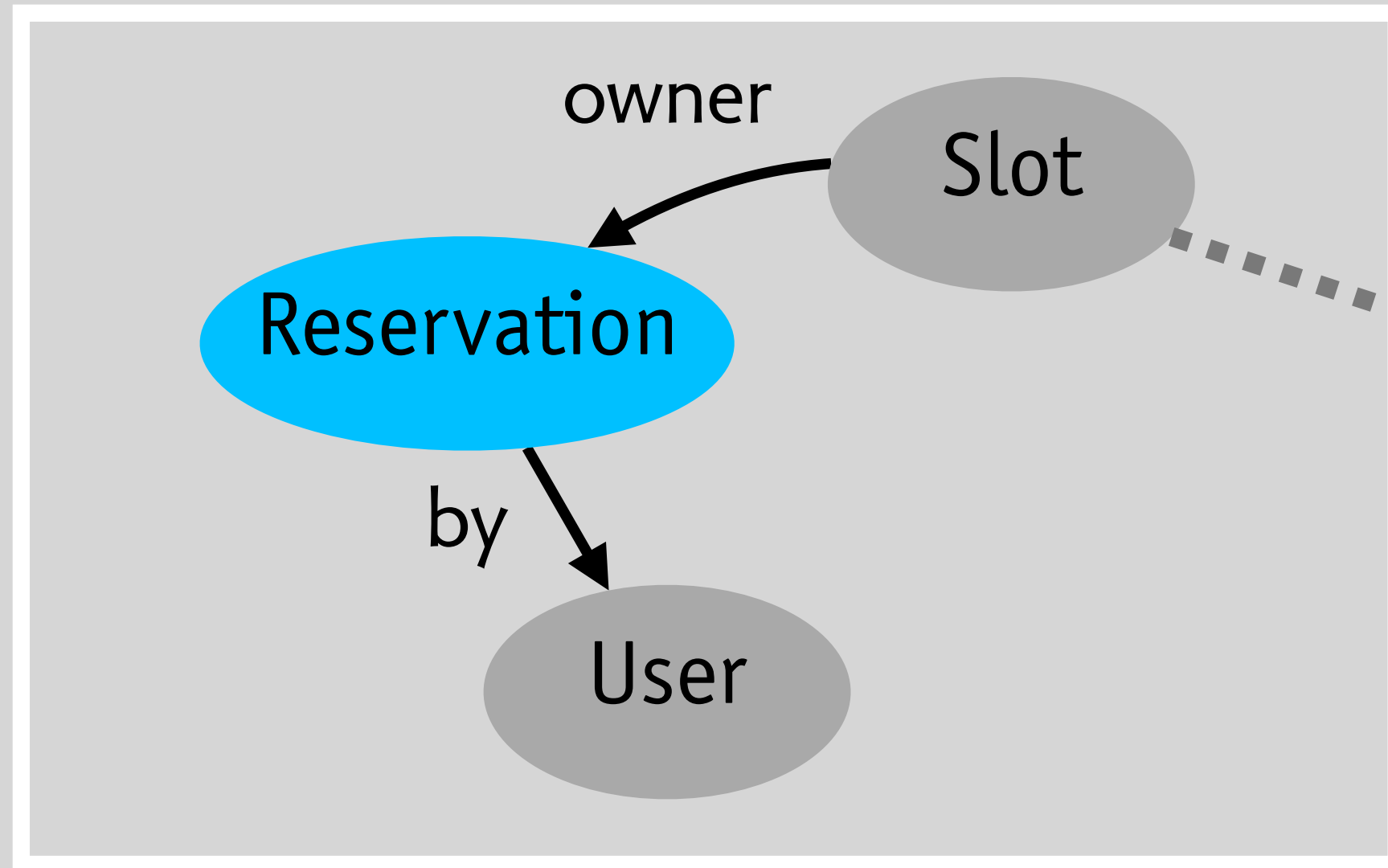


concept Availability

a set of Slots with
a time Time
a date Date
an at Restaurant

two roles of slots

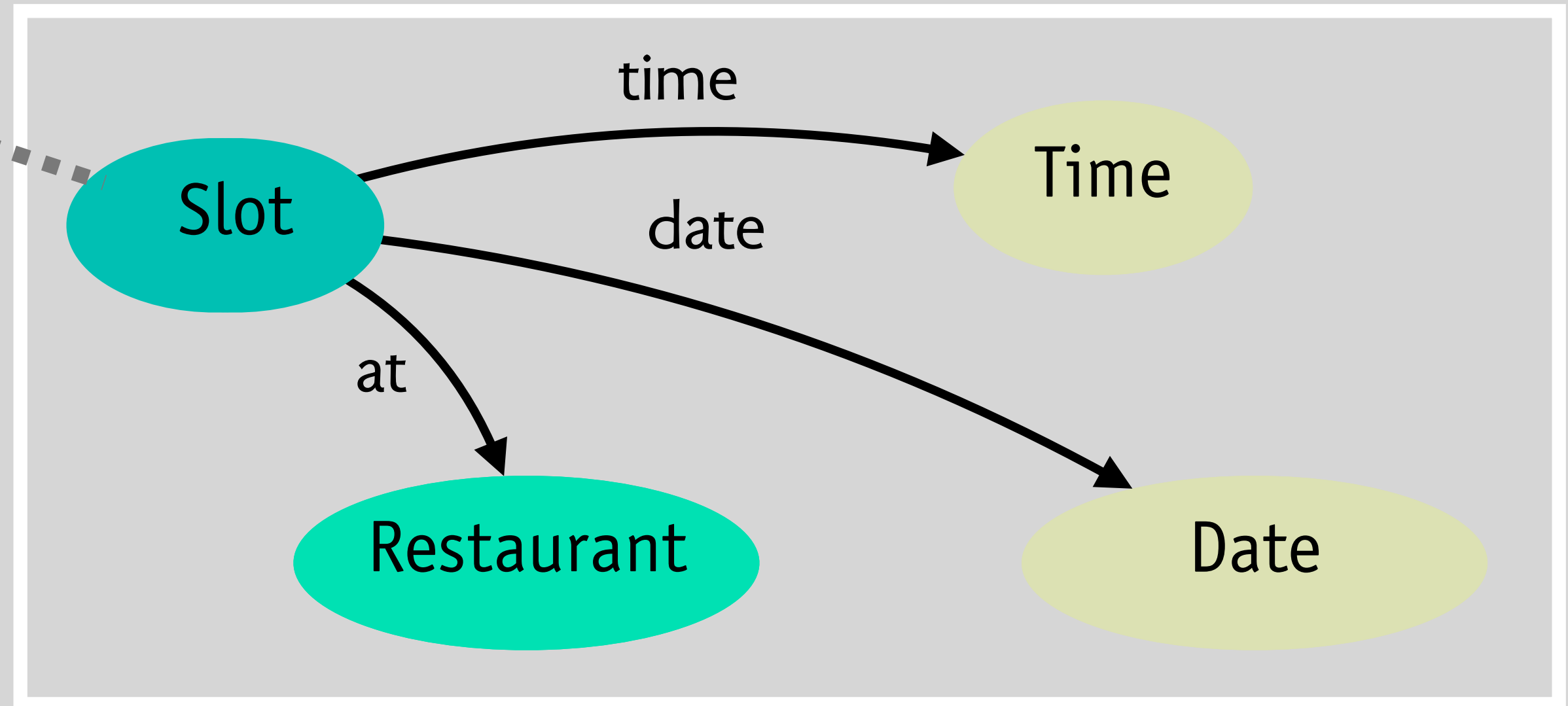
Reserving



a set of Slots with
an owner Reservation
a set of Reservations with
a by User

slots assigned to reservations

Availability



a set of Slots with
a time Time
a date Date
an at Restaurant

slots created and configured

separating stakeholders & purposes

stakeholder: **diner**

concept Reserving

purpose ensure access to resources

state

a set of Slots with

an owner Reservation

a set of Reservations with

a by User

actions

reserve (Slot, User): Reservation

redeem (Reservation)

...

no reserve, can't redeem and can't access

stakeholder: **restaurant owner**

concept Availability

purpose maximize utility of dining resources

state

a set of Slots with

a time Time

a date Date

an at Restaurant

actions

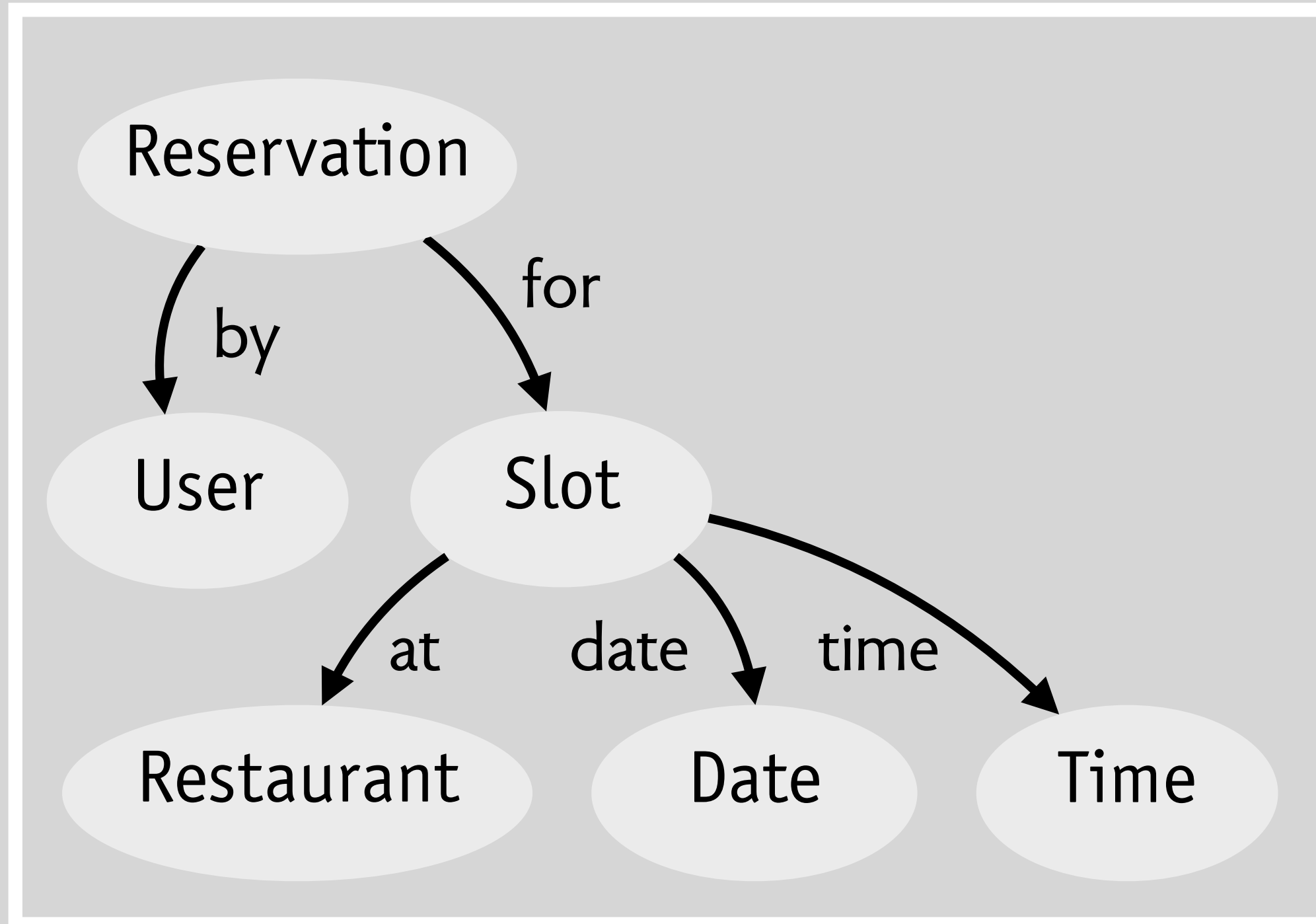
create (...): Slot

...

no slot creation, no tables used

what's the alternative?

Reserving&Availability



concept Reserving&Availability

purpose ensure access to resources and maximize utility of dining resources

state

a set of Reservations with
a for Slot
a by User
a set of Slots with
a time Time
a date Date
an at Restaurant

actions

create (...): Slot
reserve (Slot, User): Reservation
redeem (Reservation)

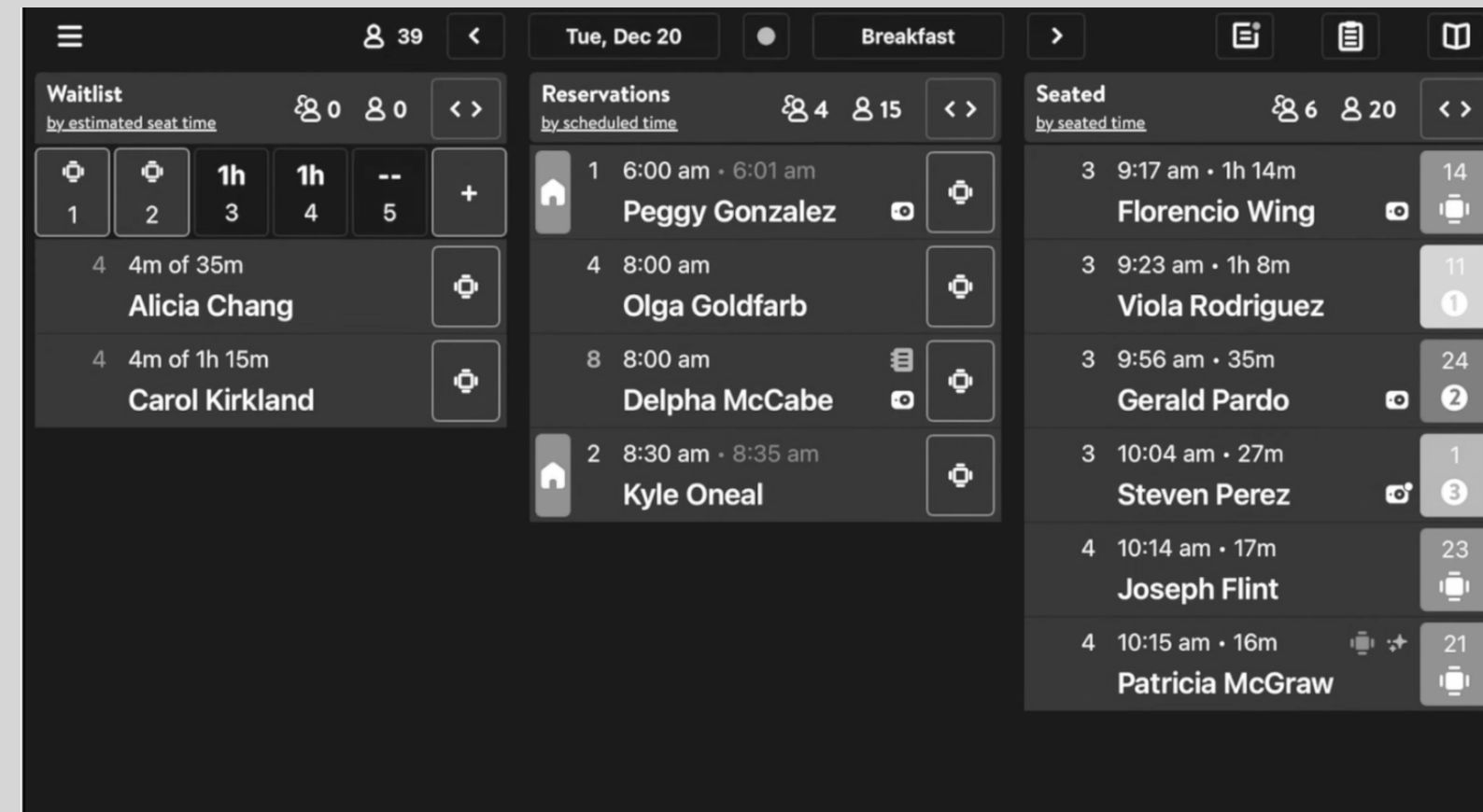
...



a surprise

surprise: it's complicated!

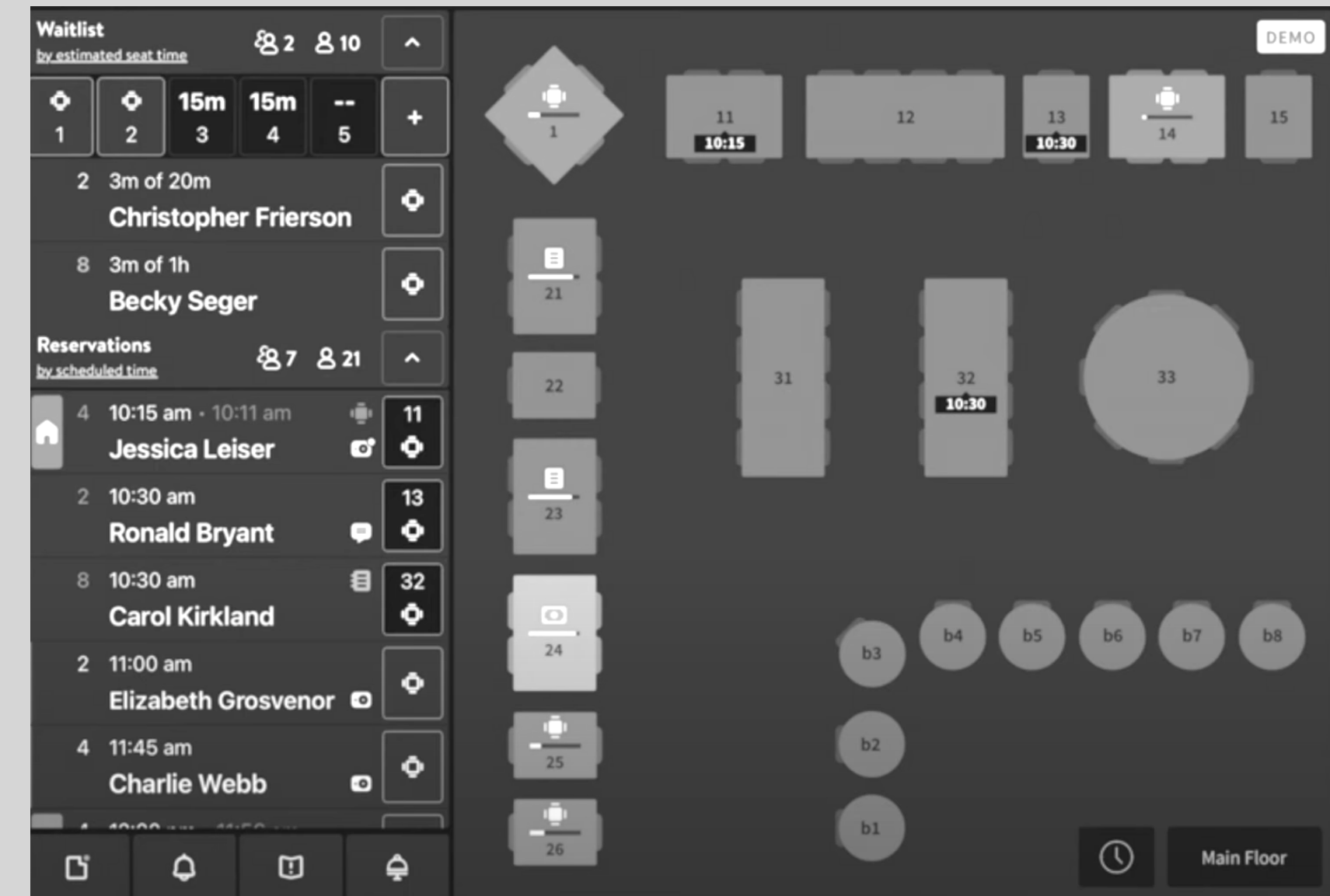
Reserving



Availability



Table Management



reservation changes (time, size)
reservations needing approval
waitlisting vs reserved diners
reservation expiry (late arrivals)

slot pools for inside/outside
weather overrides
turn time depends on party size
controlled overbooking

reconfiguring tables
early or late arrivals
diners bring extra guests
temporary placeholders