

# Prototyping Example

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- Modelling an Uber-like App
  - Idea, problems, solutions
  - Concepts, Tasks, Objects, Actions, Attributes
  - Storyboards and Use Cases
  - Prototyping
- In the previous class:
  - Prototyping Tools
  - Design principles for building prototypes

## Idea!

- App that allows a smartphone user to book a car for a trip
- What problems does it solve?
  - need to know phone numbers of local taxis
  - have to go to the nearest taxi stop
  - not knowing the address of where we are
  - not having cash to pay the taxi
  - not knowing the price of the taxi drive
  - ...



<https://mlsdev.com/blog/how-to-make-an-app-like-uber>

## Associated concepts

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- (book, schedule, visualise, cancel and manage) trip
- Address / local
- (Indicate, visualise, change) route / map
- Date / calendar
- (Manage) payment method
- Price estimative
- (Communicate with the) driver
- Messaging system
- notification
- (select) car
- (indicate the number of) passengers
- (define) tip

## Relations between concepts

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- the route is marked on the map, indicating the pickup place and the destination address
- when selecting the payment method, the tip for the driver can be defined
- through the messaging system the passenger can communicate with the driver
- the route can be visualised using a real-time map
- to choose the type of car, the number of passengers needs to be provided
- to schedule a trip in a specific date, the passenger uses the calendar
- ...

[include additional concept relations if needed]

## Tasks

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- Register
- (login)
- Book a trip
  - Indicate route
  - Select car
  - Indicate number of passengers
  - Select payment method
- Schedule trip
  - Indicate date
  - ... (all of the above sub-tasks)
- Visualize scheduled trips
- Change trips
  - Change time
  - Change route
  - Change car
- Cancel trip
- Insert new payment method
- View history
- View route
- Communicate with the driver

(Go back to [slide 12](#))

# Objects and attributes

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- client
  - (with fields for) name, age, address, password
- driver
  - (with fields for) name, gender
- calendar
  - interactive, single date or time interval
- map
  - interactive, with pickup and destination addresses
- passengers
  - numerical value associated
- cash register
  - with multiple variants associated (credit card, Paypal, MBWay, ...)
- credit card
  - (with fields for) type, name of card owner, number, validity date
- pencil-and-paper
  - (with) text field
- microphone
  - (with a field for) volume

## Actions that can be performed on objects

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- with the client the user-person will be able to enter and modify personal data
- with the calendar the user-person will be able to schedule a trip
- with the map the user-person will be able to indicate the route
- with the cash register the user-person will be able to select an existing method of payment or introduce a new one
- with the car, the user-person will be able to select the type of car
- with the passenger the user-person will be able to indicate the number of passengers
- with the driver the user-person will be able to see the photo and name of the driver
- with the paper-and-pencil the user-person will be able to send a text message to the driver
- ...

## Use cases

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- similar to tasks but with detailed description of the sequence of actions
  - [UC1] **Registration**
    - the user-person opens the app and selects “client”; the app shows a screen where the user selects “new user”; the app shows a new screen where the user-person can enter personal data and complete the operation
  - [UC2] **Login**
    - the user-person opens the app and selects “user”; ...
  - [UC3] **Book trip**
    - after logging in, the user-person indicates that he/she wants to book a trip; the app shows a map to the user who must select two points on the map to define the route (pickup and destination); then the user-person uses the car object to choose a car type; the app tells whether there is availability or not; the app presents to the user-person an estimate of the cost and the user-person confirms or not the booking



## Use cases (2)

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- [UC4] **Schedule trip**
  - the user indicates that he/she wants to schedule a trip (interacts with the calendar); the app opens the calendar and the user selects a date; ...
- [UC5] **View history**
  - the user opens the app and selects “history”; the app open a list of previous trips; ...
- [UC6] **Change trip**
  - the user opens the app and selects “scheduled trips”; the app open a list of scheduled trips; ...
- ...

## Storyboards

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- “Francisco has an important business lunch with 4 other colleagues, to which he can't be late. He had offered to take all his colleagues and when he was supposed to leave, he realised he had a flat tire. He quickly opens the Uber-like app on his smartphone and books a trip, indicating (pickup location and) destination. Before concluding, he realizes that there are 5 passengers and that he has to order a special car ....”
- “Sara has a plane trip planned for 3 days from now, and she should be at the airport by 6:30 am. She knows it is an airport rush hour and has just learned from the news that a subway strike is planned for that day. So, she decides to schedule a trip with Uber-like. A few minutes before picking up Uber, a friend who is traveling with her, calls to say that she cannot arrange transport. Sara cancels her trip and sets a new trip with a route to the airport that includes a stop at her friend's house.”
- ...

## Sketching

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- based on the storyboards, identify use cases (tasks) that you want/need to prototype
- select the objects that will be needed to implement those use cases (perform those tasks)
  - the attributes they must have
  - the set of actions that will be taken
- sketch
  - give a shape to the objects
  - identify how the action will be triggered (click, double click, mouse over, right-side mouse click, voice, ...)

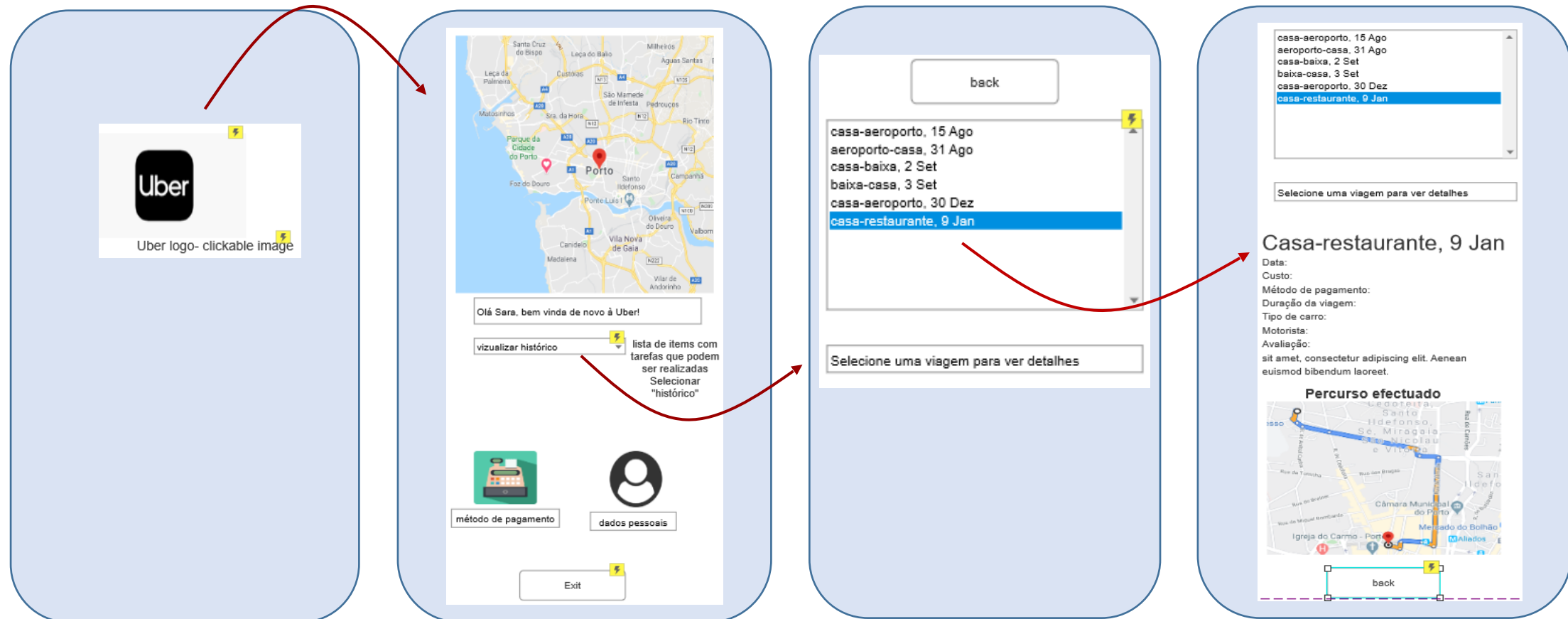
## Tasks / use cases for the second scenario

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- Schedule trip
  - include sub-tasks
    - indicate date
    - indicate route
    - select payment method
- (Visualise scheduled trips
  - Select trip)
- Cancel trip
  - include sub-tasks of visualising and selecting scheduled trip
- Book trip
  - include sub-tasks
    - indicate route (Remember we have identified tasks in [slide 5](#))
    - select payment method

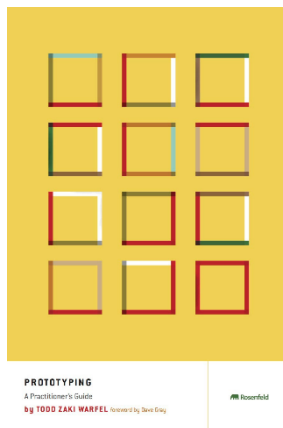
# Example of a prototype with Axure

- View history



## online prototyping tools and bibliography

- Adobe XD: <https://www.adobe.com/products/xd.html#>
- How to sketch and prototype an Uber-like app
  - <https://www.education-ecosystem.com/leila1605/RdAqB-how-to-design-and-prototype-uber-app-adobe-xd/pvxJk-intro-how-to-design-and-prototype-uber-app-adobe-x/>
- Axure: <https://www.axure.com/>



Warfel, T. Z. (2009). *Prototyping : a practitioner's guide*. Rosenfeld Media.