



POLITECNICO MILANO 1863

# PROJECT PRESENTATION

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myTaxiService

myTaxiService

myTaxiApp + myTaxiWeb

myTaxiAssist

# Requirements specification

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# Functional requirements (a subset of them) I

1. The service shall accept **only valid reservations**:
  - 1.1 The service shall allow only registered customers to reserve a taxi.
  - 1.2 The system shall accept reservations only if they are made between 24 hours and 2 hours before the request time.

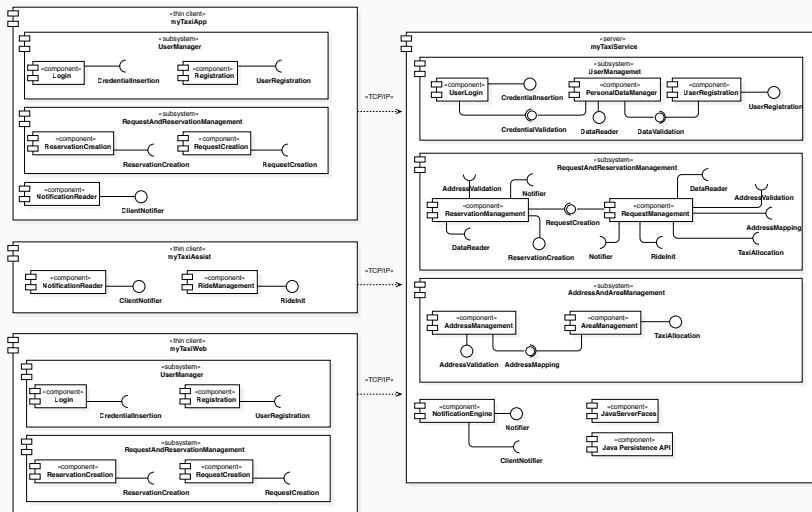
## Functional requirements (a subset of them) II

- 2. The service shall guarantee a **correct taxi allocation**:
  - 2.1 A taxi is allocated to *only one request at the same time*.
  - 2.2 An *unavailable taxi cab* shall not be allocated to a request.
  - 2.3 When a taxi driver refuses a request, the system pushes the taxi at the end of the queue.
  - 2.4 If a request has been accepted by the system, the customer must be taken to its destination:
    - 2.4.1 If the taxi driver refuses the request, the request is forwarded to the first taxi in the queue.
    - 2.4.2 If no taxis are available in the area, the first taxi in the queue of adjacent areas must be selected.
    - 2.4.3 If the taxi breaks down, another taxi has to be allocated.

# Design

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# Component diagram



# Component interfaces I

Component	Interfaces	Description
<b>AddressManagement</b>	<b>AddressMapping</b>	Provides the methods to map addresses into the system, returning the corresponding area.
	<b>AddressValidation</b>	Offers the methods to validate addresses, checking their existence in the database. Also converts addresses in GPS coordinates and vice versa.
<b>AreaManagement</b>	<b>TaxiAllocation</b>	Provides the methods for managing the taxi allocation (e.g., enqueue and dequeue, and the change of a taxi availability).
<b>RequestManagement</b>	<b>RequestCreation</b>	Offers the methods to make a request. It validates data, interacts with the required components to allocate a taxi and stores the request in the database.



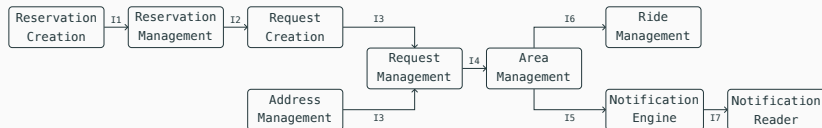
# Component interfaces II

Component	Interfaces	Description
<b>PersonalDataManager</b>	<b>CredentialValidation</b>	Provides the methods that check the personal credentials in the database.
	<b>DataValidation</b>	Provides all the methods to validate personal data, for instance the correctness of the name (it cannot contain numbers) or of a birthdate (it shall not be in the future).
	<b>DataReader</b>	Offers the methods to access customer data, stored in the database.
<b>ReservationManagement</b>	<b>ReservationCreation</b>	Provides the methods to make a reservation. It interacts with other components for data validation and storing.

## Integration testing plan

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# Test procedures



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<b>Procedure ID</b>	TP1
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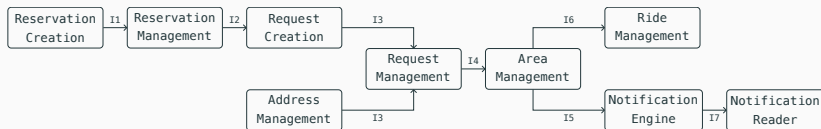
<b>Purpose</b>	This procedure verifies the correct creation of a request.
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<b>Procedure steps</b>	Execute I3
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# Test procedures



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<b>Procedure ID</b>	TP2
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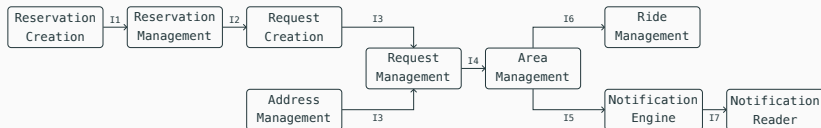
<b>Purpose</b>	This procedure verifies the correct creation of a request, starting from a reservation.
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<b>Procedure steps</b>	Execute I3 after I1–I2
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# Test procedures



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<b>Procedure ID</b>	TP3
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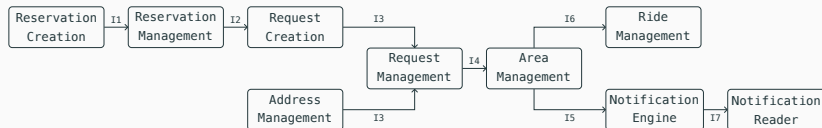
<b>Purpose</b>	This procedure verifies the correct allocation of a taxi.
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<b>Procedure steps</b>	Execute I6 after I3-I4
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# Test procedures



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<b>Procedure ID</b>	TP4
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<b>Purpose</b>	This procedure verifies the correct notification of the ride start.
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<b>Procedure steps</b>	Execute I7 after I3–I6
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## Project planning

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# Function points

ID	Function type	FP
EI	External input	49
EO	External output	5
ILF	Internal logical file	92
EIF	External interface files	0
EQ	External inquiry	6

## Total function points

$$FP = \sum \#functions\_by\_type * weight = 152$$



## Size (SLOC)

$$s = p_{J2E} * FP = 46 * 152 = 6992$$

## Effort (person-months)

$$e = 2.94 * \left( \frac{6992}{1000} \right)^{1.0645} * 0.8586 = 20.0086$$

### Time to develop

$$t = 3.67 * (20.0086)^{0.3109} = 9.3157 \text{ months} \simeq 40 \text{ weeks}$$

### Number of people

$$n = \frac{e}{t} = \frac{20.0086}{9.3157} = 2.1478$$

# Time scheduling

Phase	H	AT	ET
RASD	61	3 weeks	$\simeq 4$ days
DD	68	4 weeks	$\simeq 5$ days
ITPD	10	2 weeks	$\simeq 1$ day
PPD	16	2 weeks	$\simeq 1$ day

## Time to develop and test

$$t - 2 * \left\lceil \frac{EM(DD) + EM(ITPD) + EM(PPD)}{7} \right\rceil = 38$$

# Precedences

